START

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Vol. 950 Number 1

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PATENTS

September 7, 1976

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

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DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

September 7, 1976 Volume 950 Number 1

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PATENT AND TRADEMARK OFFICE NOTICES

Registration to Practice

The following are names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before September 30, 1976.

Anderson, J. Wayne, 830 Colson Ave., Ottawa, Ontario, Canada
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Parsons, Richard A. R., 1 Massey Square, #2908, Toronto, Ontario, Canada
Pendygraft, George W., 10354 Dunham Court W., Indianapolis, Ind. 46229
Siskind, Marvin S., 2906 W. Berwyn, Chicago, Ill. 60625
Stolwein, Walter, 5211 Roosevelt St., Bethesda, Md. 20014

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,544,246, G. H. Butterfield, CORNEAL CONTACT LENS, **filed** Oct. 10, 1969, D.C., S.D.N.Y., Doc. 69–4471, *George H. Butterfield, Sr.* v. *Vent Air Contact Lens Laboratories.* Case transferred to the Northern District of Illinois, Feb. 9, 1970. **Same, filed** Oct. 10, 1969, D.C., S.D.N.Y., Doc. 69–4472, *George H. Buptterfield, Sr.* v. *United Contact Corp.* Case transferred to the Northern District of Illinois, Feb. 9, 1970. **Same, filed** Oct. 10, 1969, D.C., S.D.N.Y., Doc. 69–4473, *George H. Butterfield, Sr.* v. *Full Sight Contact Lens Corp.* Case transferred to the Northern District of Illinois (Chicago), Feb. 9, 1970. **Same, filed** Oct. 10, 1969, D.C., S.D.N.Y., Doc. 69–4474 *George H. Butterfield, Sr.* v. *5 Continents Contact Lens, Inc.* Case transferred to the Northern District of Illinois (Chicago), Feb. 9, 1970. **Same, filed** Feb. 16, 1970, D.C., S.D.N.Y., Doc. 70C641, *George H. Butterfield, Sr.* v. *Prestige Contact Lens Inc.* Action transferred to the U.S.D.C. Northern District of Illinois (Chicago), Apr. 10, 1970.

2,976,257, Dawe and Youse, RE-DISPERSIBLE DISPERSION OF POLYTETRAFLUOROETHYLENE, **filed** June 28, 1974, D.C., S.D.N.Y., Doc. 74–2812, *Wallace Clark & Co., Inc.* v. *Acheson Industries, Inc.*

2,980,982, Costa, LeBoeuf, and Lefevre, FIBROUS ARTICLE; **3,214,899,** Wininger, Jr. and Dyer, CORDAGE PRODUCT, **filed** Aug. 14, 1975, D.C., N.D. Ala. (Birmingham) Doc. CA–75–G–1445–E, *Eastman Kodak Company* v. *Wellington Fibres, Incorporated.* Consent judgment, patents are valid and belong to plaintiff. Defendant is permanently enjoined against infringing any claim of said patents, Apr. 14, 1976.

3,000,380, G. O. Doherty, MEANS AND METHODS OF INJECTING OR INFUSING FLUIDS INTO PATIENTS; **3,010,453,** same, APPARATUS FOR INTRAVENOUSLY ADMINISTERING FLUID; **3,047,884,** Doherty and Ballard APPARATUS FOR INJECTING OR INFUSING FLUIDS INTO PATIENTS AND METHOD OF MAKING SAME, **filed** June 21, 1972, D.C. Mont. (Butte) Doc. 2173, *George O. Doherty* v. *Deseret Pharmaceutical Company, Inc.* Pursuant to stipulation of parties an order was filed dismissing action with prejudice, Apr. 16, 1976.

3,010,453. (See 3,000,380.)

3,017,884. (See 3,000,380.)

3,029,650, J. P. Byrd, PUMPING DEVICE, **filed** Mar. 17, 1976, D.C. Colo. (Denver) Doc. 76–W–297, *Kimbark Company* v. *Am-Sac, Inc.* Consent judgment, defendant restrained from further infringement on patent, Apr. 14, 1976.

3,032,345, J. H. Lemelson, TARGET GAME, **filed** Dec. 17, 1975, D.C.N.J. (Trenton) Doc. 75–2168, *Gammon, Inc., doing business as Gammon Games* v. *Jerome H. Lemelson and Synergistics Research Corporation.*

3,056,836, H. D. Moed, ARALKYLAMINES AND METHODS OF PREPARATION THEREOF, **filed** June 6, 1975, D.C., N.D. Ill. (Chicago) Doc. 75c1846, *Mead Johnson & Company and U.S. Philips Corporation* v. *Generic Pharmacal, doing business as Ample Pharmacal Co. and Danbury Pharmacal, Inc.* Cause dismissed, Feb. 23, 1976.

3,081,392, E. L. Warner, HIGH-FREQUENCY OVEN, **filed** Apr. 13, 1976, D.C., N.D. Ohio (Cleveland) Doc. C76–377, *The Tappan Company* v. *Litton Industries, Inc., Litton Systems, Inc. and Schwede Appliance Village.*

3,180,378, R. R. Carlton, BRUSH CUTTING CHAIN, **filed** Dec. 17, 1975, D.C. Oreg. (Portland) Doc. 75–1157, *Omark Industries, Inc.* v. *Carlton Company and Raymond R. Carlton.*

3,180,557, S. G. Thulin, BAG WITH HANDLE OF WELDABLE PLASTIC MATERIAL, **filed** Apr. 8, 1976, D.C.N.J. (Newark) Doc. 76–648, *Mobil Oil Corporation* v. *Aktiebolaget Celloplast and Celloplast U.S.A., Inc.*

3,200,149, Blackwood, Rennhard, Beereboom and Stephens, Jr., a-6-DEOXYTETRACYCLINE DERIVATIVES AND PROCESS, **filed** Jan. 10, 1973, D.C., C.D. Calif. (Los Angeles) Doc. 73–58–R, *Pfizer Inc.* v. *International Rectifier Corporation et al.* Judgment, defendants' motion for partial summary judgment is granted. Said patent is invalid and unenforceable, July 16, 1975. **Same, filed** July 9, 1974, D.C., C.D. Calif. (Los Angeles) Doc. 74–1927–LTL, *Pfizer, Inc.* v. *Revlon, Inc.* Filed conditional transfer order before the Judicial Panel on Multidistrict Litigation, to the USDC for the District of Minnesota, entered Oct. 31, 1974.

3,214,899. (See 2,980,982.)

3,249,352, L. V. Wise, COLLATING MACHINE FOR PRODUCING TAB CARD SETS, **filed** Nov. 25, 1974, D.C.N.J. (Newark) Doc. 74–1839, *Federal Business Products, Inc.* v. *Format Printing Co. Inc.*

3,264,383, Niessner, Sonnleiner, Wolf and Gutlbuber, EXTRUSION METHODS, **filed** May 8, 1975, D.C., N.D.N.Y. (Utica) Doc. 75–CV–222, *Kunststoffwerk Gebruder Anger GmbH & Co. Munchen* v. *Robintech, Inc.*

PATENT NOTICES

Certificates of Correction for the Week of Sept. 7, 1976

Re. 28,827
D. 239,839
3,673,209
3,706,422
3,743,793
3,790,730
3,794,504
3,822,420
3,828,035
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3,966,897
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3,967,380
3,967,553
3,967,645
3,967,649
3,967,915
3,969,459

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 14, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director Inorganic Compounds: Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-2-76
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur: Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Ozo and Oxy; Quinones: Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-2-76
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins: Natural Resins: Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-1-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director Coating; Processes and Misc. Products: Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions: Bleaching; Dyeing and Photography.	9-17-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director Fertilizers; Foods: Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating: Cleaning Processes; Liquid Purification; Distillation; Preserving: Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-2-76
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization: General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures: Illumination: Horology; Acoustics; Recorders; Weighing Scales.	5-21-75
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	11-6-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-3-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles: Joint Packing; Conduits: Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-13-76
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-3-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	4-30-75
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director Conveyors; Hoists: Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes: Railways and Railway Equipment.	11-10-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-18-76
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco: Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-22-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	8-7-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures: Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	2-2-76

Expiration of patents: The patents within the range of numbers indicated below expire during August 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents .... Numbers 2,897,500 to 2,901,748 inclusive
Plant Patents .... Numbers 1,856 to 1,860 inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED SEPTEMBER 7, 1976

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T950,001

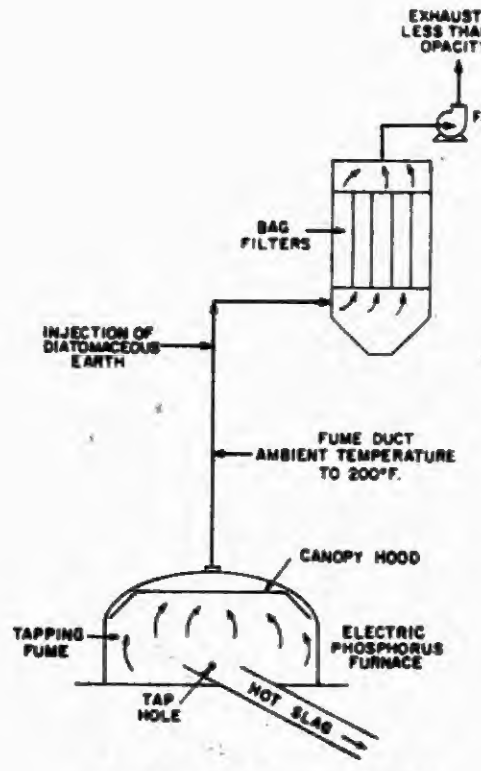
BAG FILTERING METHOD FOR HYGROSCOPIC PARTICULATES

Edwin D. Myers, Sheffield, Ala., assignor to Tennessee Valley Authority

Filed Dec. 19, 1974, Ser. No. 534,193

Int. Cl.² B01D *46/04*
U.S. Cl. 55—96

1 Sheet Drawing. 10 Pages Specification


EXHAUST AIR LESS THAN 5% OPACITY
FAN
BAG FILTERS
INJECTION OF DIATOMACEOUS EARTH
FUME DUCT AMBIENT TEMPERATURE TO 200°F.
CANOPY HOOD
TAPPING FUME
ELECTRIC PHOSPHORUS FURNACE
TAP HOLE
HOT SLAG

BAG FILTER FLOW DIAGRAM FOR REMOVING HYGROSCOPIC SUBMICRON FUME

A process for the recovery of hygroscopic submicron particulates from high opacity stack gas using bag filters precoated with diatomaceous earth to absorb the hygroscopic particulates. Hygroscopic fume such as P_2O_5 laden fume resulting from the slag tapping operation of electric phosphorus furnaces is collected in a hood and piped to a bag filter house. The precoat is applied by continuous or intermittent injection of relatively small amounts of the diatomaceous earth into the airstream prior to its entry into the bag filters. When the pressure drop across the filters has increased to a predetermined amount, the filter cake is removed dry from the surface of the bags by shaking or by a reverse jet of air. The precoating of the filter bags with diatomaceous earth substantially eliminates the problem of blinding and increases collection efficiency.

T950,002

COMPOSITIONS FOR THE STABILIZATION OF FLAME RETARDANT STYRENIC POLYMERS

Richard Bradley, 303 Broadway, Dobbs Ferry, N.Y. 10522; Joseph Martin Farber, 28 Braddock Court, Yorktown Heights, N.Y. 10598; and Lawrence A. Testa, Candlewood Isle, Box 128, New Fairfield, Conn. 06810

Filed Oct. 28, 1975, Ser. No. 626,388

Int. Cl.² C08K *5/53*
U.S. Cl. 260—45.75 N

No Drawing. 39 Pages Specification

Flame retardant styrenic polymers which are normally subject to ultraviolet light and oxidative deterioration are stabilized against said deterioration by incorporating therein, light stabilizers such as substituted benzotriazoles, hindered amines, or hindered phenol metal phosphonates, or a mixture thereof, and combinations of these light stabilizers with a hindered phenol antioxidant, an acid acceptor such as a metal organic salt, such as zinc stearate and tin maleate, or an oxirane compound, and also optionally a thioester, an organic phosphite, such as distearyl pentaerythritol dephosphite.

T950,003

PROCESS FOR PREPARING PROTECTIVE FIBROUS PACKAGING FORMS

Cephas H. Sloan, Rte. 3, Lakeshore Drive, Kingsport, Tenn. 37663

Filed Apr. 3, 1975, Ser. No. 564,939

Int. Cl.² B29C *27/22*
U.S. Cl. 264—271

No Drawing. 3 Pages Specification

Process for forming cellulose acetate staple fiber or continuous filament fiber into a protective package for articles. The cellulose acetate fiber is sprayed with a nontacky bonding plasticizer in the amount of 3–20% by weight and then packed around the article to be protected. The fiber bonds without heat to form a firm protective covering for the article. The preferred bonding plasticizers are prepared from low molecular weight acid esters of glycerol or triethylene glycol.

T950,004

COLLECTOR CLAMP CIRCUIT

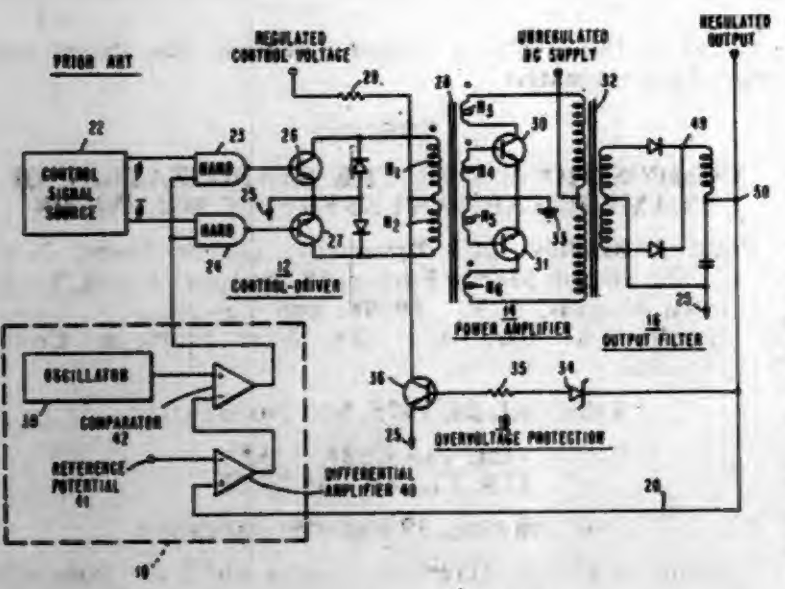
Robert Albert Tuttle, Huntsville, Ala., assignor to International Business Machines Corporation, Armonk, N.Y

Continuation of abandoned application Ser. No. 537,813, Dec. 31, 1974. This application May 30, 1975, Ser. No. 582,537

Int. Cl.² H02M *7/00*
U.S. Cl. 321—26

2 Sheets Drawing. 9 Pages Specification

A collector clamp circuit is disclosed for establishing a fixed current gain for the power transistor in a switching regulator and preventing the power transistor from saturating during conduction while increasing the switching efficiency of the regulator by eliminating losses due to the storage time of the power transistor. The emitter of the power transistor is connected to ground through a first secondary winding of an interstage current transformer. The power transistor is driven by a second secondary winding of the interstage current transformer connected across its base-emitter junction. The collector clamp comprises a third secondary winding of the current transformer connected in series with a diode across the base-collector junction of the power transistor. The turns ratio of the second and third transformer windings can be arbitrarily set to hold the collector to emitter voltage of the power transistor at a predetermined level during its conduction period.



T950,005

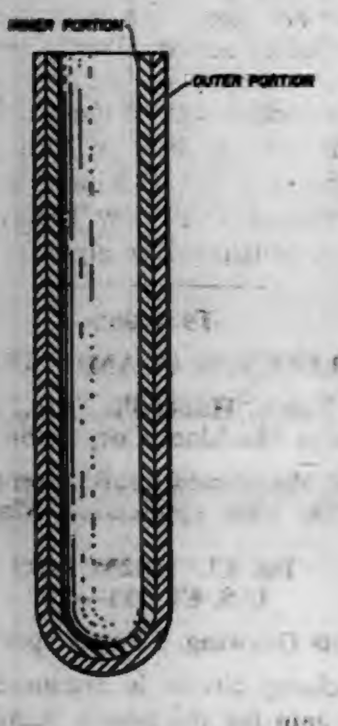
PARISON COMPRISED OF MATING PORTIONS

Edward R. Hollander, Jr., 213 Montezuma St., Kingsport, Tenn. 37664

Filed Aug. 7, 1975, Ser. No. 602,715

Int. Cl.^{2} B32B *9/04*
U.S. Cl. 428—35

1 Sheet Drawing. 3 Pages Specification



Disclosed is a parison comprised of a plurality of mating portions, at least one of the mating portions being comprised of poly(ethylene terephthalate).

T950,006

METHOD FOR REDUCING NOXIOUS GAS CONTENT OF AUTOMOBILE EXHAUST

Leonard Leibowitz, Chicago, and Martin G. Chasanov, Homewood, Ill., assignors to the United States of America as represented by the United States Energy Research and Development Administration

Filed Nov. 6, 1975, Ser. No. 629,261

Int. Cl.^{2} B01D *53/00;* B01K *1/00*
U.S. Cl. 204—177

No Drawing. 13 Pages Specification

The concentration of noxious gases—including NO_x—in automobile exhaust is substantially reduced by drying the exhaust and subjecting the exhaust for at least 15 seconds to a low-intensity electric arc. A Telsa coil producing high-voltage, high-frequency damped pulse with the pulses repeating every $1/120$ second is useful for producing this arc. Exposure of the exhaust to a low-intensity, 13 mm. arc for 15 seconds to 2 minutes reduces the concentration of NO_x and other noxious gases whereas exposure to a high-intensity arc increases the concentration of NO_x.

T950,007

BASE-CATALYZED CYCLIZATION OF POLYBUTADIENE

James Oziomek, Clinton, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of abandoned application Ser. No. 452,774, Mar. 20, 1974. This application Nov. 7, 1975, Ser. No. 629,960

Int. Cl.^{2} C08C *19/10, 19/22;* C08F *8/32, 8/48*
U.S. Cl. 526—21

No Drawing. 17 Pages Specification

This invention provides a process of cyclizing a high vinyl polybutadiene by heating the polymer in a hydrocarbon with a combination of an alkali metal alkyl and a chelating diamine. The polybutadiene prior to cyclization has at least 60%, and preferably up to at least 95% by weight of the butadiene in the vinyl-type of repeating units, the average molecular weight ranging from 1,000 to 10,000, preferably from 3,000 to 10,000. The amount of alkali metal alkyl used is between about 1 and 100 millimoles per hundred grams of polymer, and the chelating diamine is provided in a molar ratio to the alkali metal alkyl, of about 0.1 to 10.0. The cyclizing temperature ranges from about −10° to 100° C., preferably between 30° and 80° C.

T950,008

MODIFYING ARAMIDS

Winfred E. Weldy, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

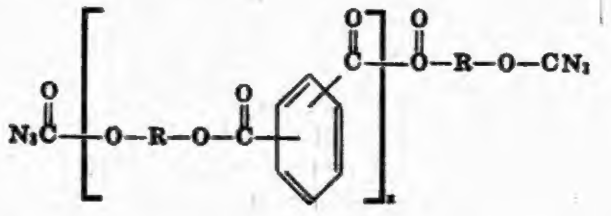
Continuation of abandoned application Ser. No. 550,410, Feb. 18, 1975. This application Dec. 19, 1975, Ser. No. 642,223

Int. Cl.^{2} B32B, *5/28;* D06M *13/38*
U.S. Cl. 428—395

No Drawing. 21 Pages Specification

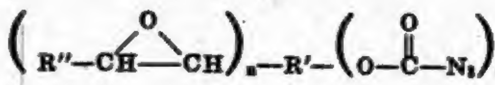
It has been found that the adhesion of aramid polymers (such as described in U.S. Pats. Nos. 3,652,510; 3,699,085; 3,673,143; etc.) can be greatly improved by modifying their surface with certain azidoformate compounds. The modification reaction can be initiated either thermally or by irradiation. The azidoformate compounds

which can be so used are the hydroxyalkylphthalate azidoformates having the formula



$$N_3\overset{O}{\overset{\|}{C}}-\left[O-R-O-\overset{O}{\overset{\|}{C}}-C_6H_4-\overset{O}{\overset{\|}{C}}\right]_x-O-R-O-\overset{O}{\overset{\|}{C}}N_3$$

where R is a straight or branched chain alkylene radical containing 2 to 10 carbon atoms and x is 1 to 10, and epoxy-azidoformate compounds having the formula



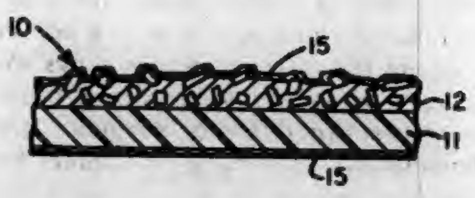
$$\left(R''-\overset{O}{\overbrace{CH-CH}}\right)_n-R'-\left(O-\overset{O}{\overset{\|}{C}}-N_3\right)_m$$

where R′ is a polyvalent organic radical, R″ is a hydrogen, alkyl, cycloalkyl, aryl, or aralkyl radical, and n and m are integers from 1 to 10. Typical uses of the modified aramid polymers are in reinforcing rubber tires, rubber belting and rubber hose with modified fibrous aramid material.

T950,009

CHEESE WRAPPING MATERIAL AND METHOD

Muhammad Saleh Sahli, Richmond, and Raymond Thomas Cole, Bon Air, Va., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.
Continuation of application Ser. No. 488,966, July 16, 1974. This application Jan. 16, 1976, Ser. No. 650,092
Int. Cl.^{2} B65D *85/00*
U.S. Cl. 428—341
1 Sheet Drawing. 9 Pages Specification



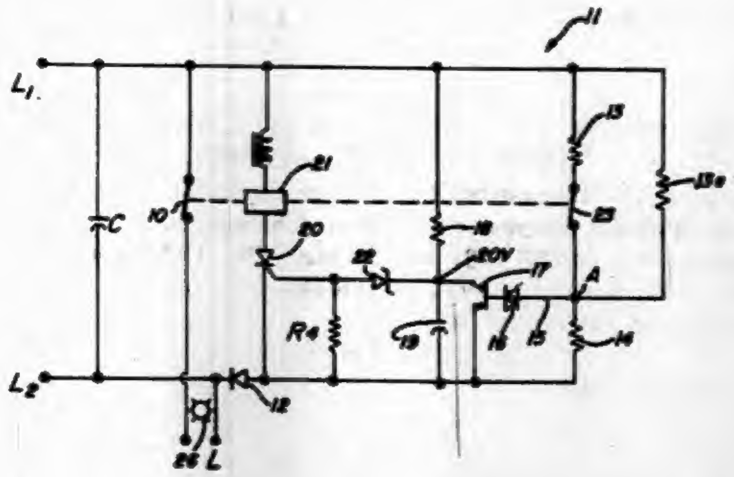
A heat-sealable wrapping material suitable for packaging single slice hot melt extruded process cheese in which a polyester film, having the surface thereof adapted to form the outside of a package, is coated with a copolymer barrier coating. The inner surface of the package and optionally the outer barrier coating surface is aftersized with an ester wax or a hydrocarbon wax having a melting point greater than the cheese extrusion temperature to improve not only cheese/film releasability in both the warm and cool state, but also surface slip properties essential to handling and manipulating the film and package in automatic packaging machines whereby smooth, uninterrupted operation against wet and dry surfaces at different temperatures is insured.

T950,010

LOW VOLTAGE PROTECTOR

Stephen J. Hogan, Coloma, and Donald R. Vander Molen, Stevensville, Mich., assignors to Whirlpool Corporation
Filed Sept. 8, 1975, Ser. No. 611,509
Int. Cl.^{2} H02H *3/24*
U.S. Cl. 317—31
1 Sheet Drawing. 9 Pages Specification

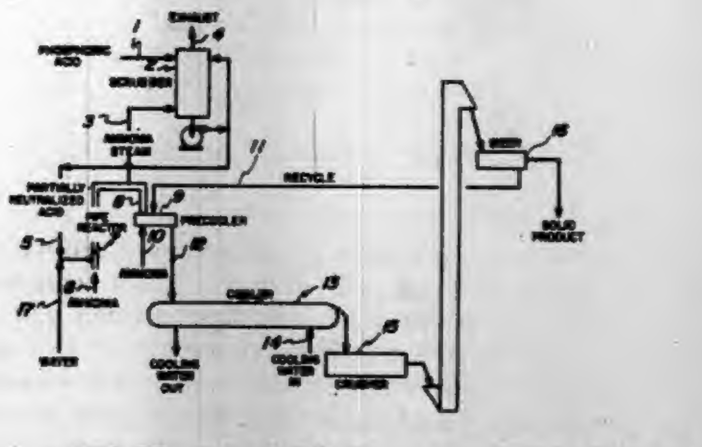
Electrical apparatus for preventing damage to electrical equipment as a result of a low voltage condition. The apparatus includes circuitry requiring that the voltage rise to above the dropout voltage before re-energizing the electrical equipment. The control apparatus may be provided as an integral part of the electrical equipment or may be provided as a separate device as desired. An indicator may be associated with the apparatus to indicate disconnection of the equipment because of the low voltage condition. The apparatus may further be arranged to provide a time delay in reconnection of the equipment.



T950,011

PRODUCTION OF SOLID AMMONIUM POLYPHOSPHATE BY CONTROLLED COOLING

Gordon C. Hicks, Sheffield, and George H. Megar, Florence, Ala., assignors to Tennessee Valley Authority
Filed Nov. 6, 1975, Ser. No. 629,281
Int. Cl.^{2} C05B *7/00*
U.S. Cl. 71—34
1 Sheet Drawing. 9 Pages Specification



FLOWSHEET OF SOLIDIFICATION PROCESS FOR AMMONIUM POLYPHOSPHATE

Process for the production of solid ammonium polyphosphate in which ammonium phosphate melt is prepared in a pipe reactor and is solidified by controlled cooling to form crystals of a size and in quantity suitable to yield a hard, nontacky, and friable solid. Wet-process phosphoric acid is ammoniated in a pipe reactor to an $NH_3:H_3PO_4$ mole ratio of about 1.0, and the resulting melt is agitated and simultaneously partially cooled by introduction of cool recycled pulverized product into the melt, by blowing air through the melt, or by passing the melt through a water-jacketed trough. The partially cooled melt is then solidified continuously into nontacky sheets on a water-cooled metal surface using water or steam to slowly remove sensible heat and heat of crystallization. Up to about 55 percent or higher of the P_2O_5 in the product may be polyphosphate, the concentration of which is varied by controlling the reaction temperature with change in water input to the pipe reactor. With controlled cooling, the product is a hard, friable solid, whereas without controlled cooling, as in conventional granulation processes in which melt is added to cooled recycled fines in a drum or pugmill granulator, the product is a supersaturated solution with microcrystalline texture and is too soft and sticky to be handled.

REISSUES

SEPTEMBER 7, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

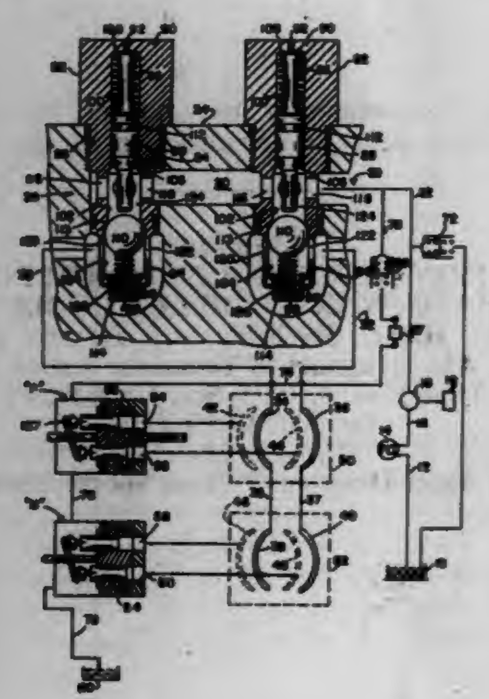
Re. 28,953
HYDROSTATIC TRANSMISSION CHECK VALVES WITH AUTOMATIC UNLOADING

Raymond D. Rubenstein, La Grange Park, Ill., assignor to International Harvester Company, Chicago, Ill.

Original No. 3,788,078, dated Jan. 29, 1974, Ser. No. 291,499, Sept. 22, 1972. Application for reissue July 2, 1975, Ser. No. 592,570

Int. Cl.² F16H *39/10*

U.S. Cl. 60—464 **6 Claims**



1. In a vehicle having an engine, [and traction wheels with] a hydraulic transmission,[and] a hydraulically actuated implement means operatively connected therebetween, *a fluid charge pump driven by said engine and communicatively connecting said transmission to a fluid source, said transmission having* [including] a pump and motor, first conduit means connecting the pump outlet with the motor inlet and second conduit means connecting the motor outlet with the pump inlet so that the pump supplies fluid under pressure to drive the motor, and a variable angle swash plate mechanism in the pump operable for varying the transmission ratio of the transmission and for controlling direction of fluid flow between pump and motor according to desired vehicle movement [and a fluid charge pump driven by the engine and communicatively connected to a fluid source,] the combination therewith of automatic [,] valving means communicatively interconnectable between said charge pump and the first and second conduit means [interconnecting said pump and motor] and operable in one position for porting fluid flow from said charge pump selectively to the first and second of said conduit means, and in another position for by-passing fluid between the said first and second conduit means, said automatic valve means including housing means having first and second power chamber means [, said first power chamber being controlled by pressurized fluid from] *selectively fluidly communicative with* said charge pump means [, said second power chamber being controlled by] *and* said pump and motor means, [whereby] *and spool means responsive to* pressure changes in said power chamber means [cause movement of said valve device means resulting in communicatively] *for selectively* connecting [or disconnecting] said charge pump means *and said transmission*, and said pump and motor means.

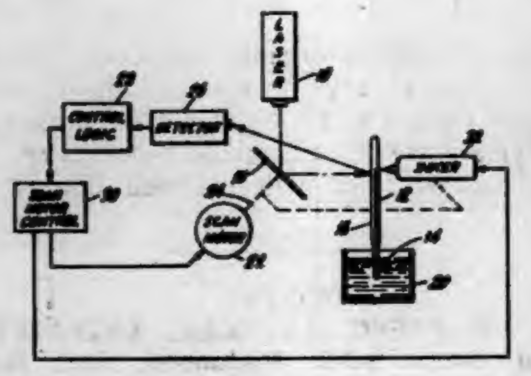
Re. 28,954
AUTOMATIC THERMOMETER CALIBRATION SYSTEM

Cole H. Baker, Westport; James D. Geis, Cheshire; Harry Gluz, South Norwalk, and John H. Troll, Ridgefield, all of Conn., assignors to Kaye Thermometer Corporation, Brooklyn, N.Y.

Original No. 3,678,729, dated July 25, 1972, Ser. No. 60,596, Aug. 3, 1970. Application for reissue June 13, 1974, Ser. No. 479,172

Int. Cl.² G01K *19/00*

U.S. Cl. 73—1 F **21 Claims**



17. In a thermometer calibration process wherein a selected one of a plurality of scales are affixed to a thermometer to match its temperature characteristic, said thermometer having a temperature responsive medium the position of whose end indicates temperature, the method of sorting thermometers into one of a plurality of categories each associated with a particular scale, comprising conveying the thermometers in series along a path leading to a sorting station, prior to the sorting station locating for each thermometer two reference positions related to its temperature characteristic, converting the distance between said two reference positions into an electrical distance signal having a characteristic value dependent on said distance, generating an electrical indexing signal representing the indexed position of the thermometer, and processing the distance signal and indexing signal to cause at the sorting station the automatic classification of each thermometer into its proper category.

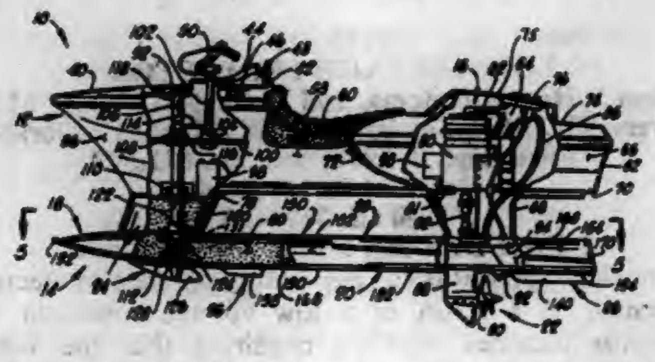
Re. 28,955
HYDROFOIL VEHICLE

William R. Stanberry, Sr., and William R. Stanberry, Jr., both of 1034 N. Kokomo, Derby, Kans. 67037

Original No. 3,827,391, dated Aug. 6, 1974, Ser. No. 353,903, Apr. 23, 1973. Application for reissue July 7, 1975, Ser. No. 593,363

Int. Cl.² B63H *5/06*

U.S. Cl. 115—70 **4 Claims**



1. A hydrofoil vehicle, comprising:

a. a bouyant hull having means to support a rider thereon,

b. a powering means mounted within said hull having a [propeller] *propulsion* means extending therefrom,

c. a [main] ski mounted below said hull attached to said hull on the forward end portions and the aft end portions thereof,

d. [a pair of helper skis oppositely mounted with said main ski and longitudinally alongside an aft end portion of said said main ski,]

e. rudder means operatively mounted on said [main] ski to steer the same, said rudder means comprises a *first* rudder pivotally mounted above said [main] ski *and relative thereto* and a second *smaller* rudder pivotally mounted below said [main] ski *and relative thereto*, said rudders mounted on said forward end portion of said [main] ski and essentially pivot in unison around [the same] *their respective* vertical axis, and

f. stabilizing fin means mounted on said [main] ski and extending [there below,] *therebelow*. [said stabilizing fin means includes a foward fin situated behind and adjacent to said second rudder.]

Re. 28,956
LATENT IMAGE PHOTOGRAPHIC SYSTEM

Eugene Wainer, Shaker Heights, Ohio, assignor to Horizons Research Incorporated, Cleveland, Ohio

Original No. 3,042,517, dated July 3, 1962, Ser. No. 842,569, Sept. 28, 1959. Application for reissue Feb. 1, 1971, Ser. No. 111,773

Int. Cl.² G03C *1/52, 5/24*

U.S. Cl. 96—48 HD **21 Claims**

1. A dry photographic film suitable for the production of visible images by exposure to a combination of light and heat, comprising (I) a film-forming plastic selected from the group consisting of cellulose derivatives and addition polymers; (II) an N-vinyl compound selected from the group consisting of N-vinylamines, N-vinylamides and N-vinylimides; and (III) a halogenated hydrocarbon compound selected from the group of compounds which produces free radicals upon exposure to light of a suitable wave length and in which there is present at least one active halogen selected from the group consisting of chlorine, bromine and iodine which is attached to a carbon atom having not more than one hydrogen atom attached thereto; there being between 0.1 and 2 parts by weight of N-vinyl compound and between 0.1 and 2 parts by weight of halogenated hydrocarbon per part of film-forming plastic, by weight.

Re. 28,957
SYNTHETIC RESIN COMPOSITIONS AND METHODS OF UTILIZING THE SAME

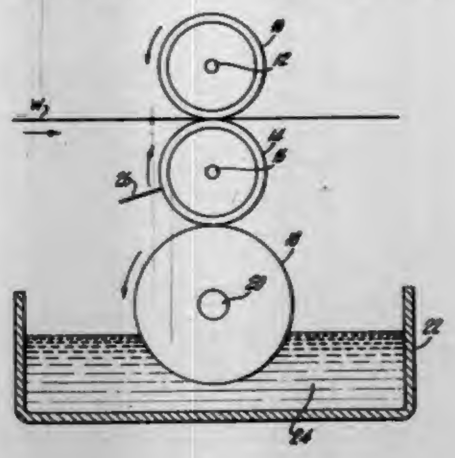
Arthur H. Drelich, Plainfield, and George J. Lukacs, Perth Amboy, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Original No. 3,849,173, dated Nov. 19, 1974, Ser. No. 260,613, June 7, 1972. Application for reissue May 8, 1975, Ser. No. 575,560

Int. Cl.² B05D *3/10;* **B32B** *23/02, 27/02*

U.S. Cl. 427—331 **16 Claims**

1. A method of applying a stable synthetic resin composition having an alkaline pH to porous materials and controlling the migration thereon which comprises: applying to porous materials a stable synthetic resin composition having an alkaline pH and comprising: (1) from about 0.1 percent to 60 percent by weight on a solids basis of a *carboxylated* synthetic resin; (2) from about 0.01 percent to about 5 percent by weight, based on the weight of said synthetic resin of a polyvalent metal complex coordination compound; and (3) a water-soluble, ionically-active ammonium or alkali metal salt of an acid capable of being chemically converted into an ionically-inactive polyvalent metal salt of said acid by chemical reaction and precipitation or sequestration of said polyvalent metal salt, said salt being capable of sequestering or precipitating the metal in said polyvalent metal complex coordination compound and being present in an amount of from about 5 percent to about 90 percent molecular equivalent on a stoichiometric basis of said polyvalent metal and substantially immediately destroying the stability of said synthetic resin composition to coagulate and precipitate the resin on said porous materials under controlled migration conditions.



Re. 28,958
SYNCHRONOUS DISCONNECTION AND REARRANGEMENT

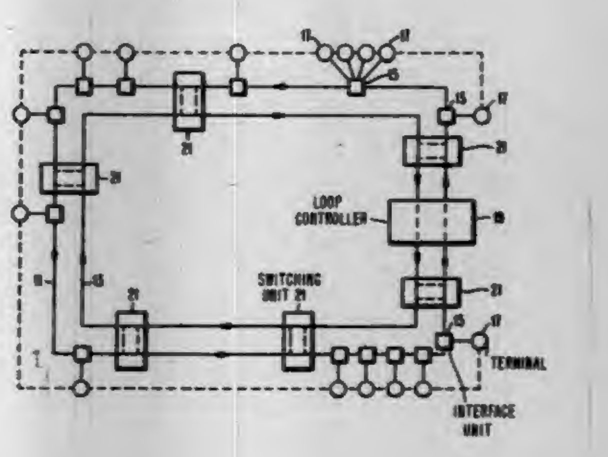
Pietro Alois Zafiropulo, Horgen, and Franz Xaver Zihlmann, Thalwill both of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Original No. 3,876,983, dated Apr. 8, 1975, Ser. No. 464,890, Apr. 29, 1974. Application for reissue Oct. 6, 1975, Ser. No. 619,997

Claims priority, application Switzerland, May 30, 1973, 7783/73

Int. Cl.² H04Q *9/00;* **H04J** *3/14*

U.S. Cl. 340—147 SC **5 Claims**



1. A loop-structured communication system comprising:

a main loop and an auxiliary loop parallel to each other each capable of circulating data signals in one of two possible directions opposite to each other;

a plurality of switchover units each connected at various positions in said loops for subdividing said loops into a plurality of loop sections;

a loop controller connected to said loops for controlling the data flow circulating in said loops;

delay means present in each of said switchover units for synchronizing the data flow between said main loop and said auxiliary loop when one or more of said loop sections is disconnected from the remainder of said loops.

PATENTS

GRANTED SEPTEMBER 7, 1976

ERRATA

For CLASS	See PATENT NO.
068–062	3,978,556
194–097 A	3,978,962
235–092 WT	3,979,055
235–092 MT	3,979,056
235–156	3,979,057
235–156	3,979,058
181–120	3,979,140
260–023 H	3,979,180
134–099	3,979,221
429–081	3,979,222
204–024	3,979,223
429–018	3,979,224
429–017	3,979,225
427–115	3,979,227
429–099	3,979,228
526–345	3,979,366
526–011.2	3,979,368
526–348	3,979,370
526–273	3,979,371
526–351	3,979,372
526–012	3,979,373
526–012	3,979,374
335–016	3,979,675

PATENTS

GRANTED SEPTEMBER 7, 1976

GENERAL AND MECHANICAL

3,978,525

HEAD AND CHEST PROTECTORS FOR EXAMPLE FOR MOTOR CYCLISTS

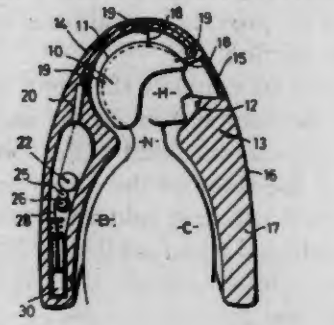
Peter William Bothwell, 114 Shipston Road, Stratford-upon-Avon, England

Filed Jan. 6, 1975, Ser. No. 538,833

Claims priority, application United Kingdom, Jan. 5, 1974, 563/74

Int. Cl.^{2} A42B *3/02*

U.S. Cl. 2—424 **6 Claims**



1. A protector for protecting the head, neck and upper chest of a wearer, said protector comprising a rigid outer shell which comprises a head section formed with a cavity wholly to surround the head of the wearer and having a transparent part at the front thereof, a neck section rigidly connected to the head section and formed to surround the neck of the wearer and a chest section rigidly connected to the neck section and formed to extend over the upper chest of the wearer, and a helmet for fitting on the head of the wearer which is located within said cavity in the head section of the outer shell, the cavity being larger than the helmet so that the latter is movable therein and the helmet being suspended in the cavity by a plurality of elongate elements which are attached to the helmet at different locations over its outer surface and are connected to means adapted normally to permit free movement of the helmet in the cavity relative to the outer shell but in the event of the helmet moving relative to the outer shell at an acceleration above a predetermined value, to shock damp movement of the helmet.

3,978,526

PERISCOPE REAR VIEW HELMET AND HELMET ADAPTER

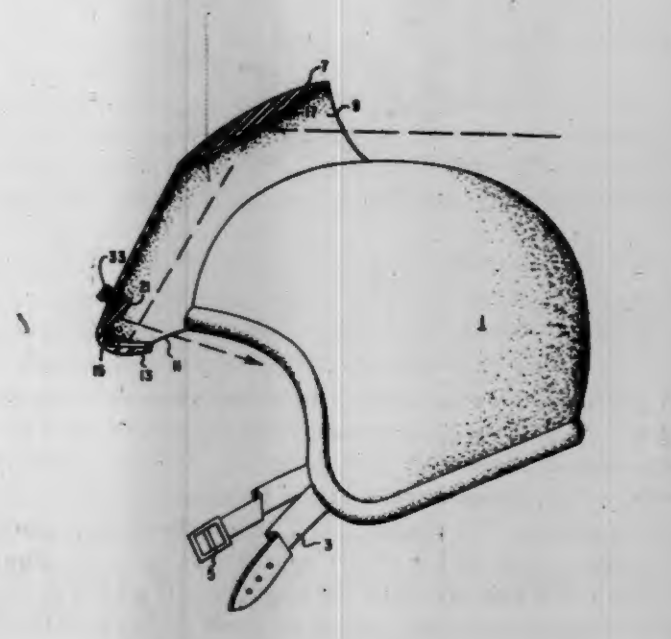
William Leroy Mitchell, 760 Kennebec Court, Bloomfield Hills, Mich. 48013, and John W. Yee, 8870 E. Outer Drive, Detroit, Mich. 48213

Filed Apr. 9, 1975, Ser. No. 566,260

Int. Cl.^{2} A42B *3/02;* G02B *5/08*

U.S. Cl. 2—422 **7 Claims**

1. A head helmet comprising: a head protective shell having a crown, a brim extremity defining the top of an open facial area and a frontal area extending downwardly from said crown to said brim extremity; optical means supported on said shell forwardly of said frontal area thereof for reflecting an image line passing forwardly over said crown downwardly to the wearer's eyes to provide a rearward view for the wearer; said optical means including a scanning mirror positioned adjacent said crown for receiving rearward images and reflecting same downwardly, a reflecting mirror positioned adjacent and spaced forwardly of said brim extremity and facing generally upwardly toward said scanning mirror for reflecting the rearward images from said scanning mirror generally upwardly and forwardly, and a viewing mirror positioned above and forwardly of said reflecting mirror and said brim extremity and generally facing rearwardly and downwardly for reflecting the rearward images from said reflecting mirror through the space between said reflecting mirror and said brim extremity and into the open facial area to the wearer's eyes whereby the image line between the wearer's eyes and said viewing mirror crosses the image line between said reflecting mirror and said scanning mirror.



3,978,527

HEADGEAR

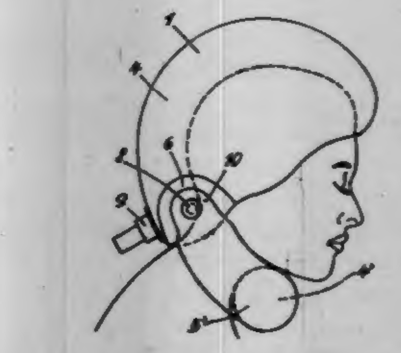
Vladimir Bednar, Mullerwis 27, 8606 Greifensee (Kt. Zurich), Switzerland

Filed Nov. 25, 1974, Ser. No. 526,712

Claims priority, application Switzerland, Nov. 30, 1973, 16814/73

Int. Cl.^{2} A42B *1/12*

U.S. Cl. 2—68 **5 Claims**



1. A buoyant or protective headgear comprising:
- a double-wall cap adapted to fit over the head of a wearer and formed with an inflatable compartment;
- a tubular chin strap affixed to said cap at one end thereof and communicating with said compartment for inflation upon inflation of said compartment, said chin strap being adapted to engage a front portion of the head of the wearer in the region of the chin thereof;
- detachable fastening means on the other end of said chin strap and said cap for releasably connecting said other end of said chin strap to said cap; and
- valve means communicating with said compartment and enabling inflation and deflation of said cap and said chin strap.

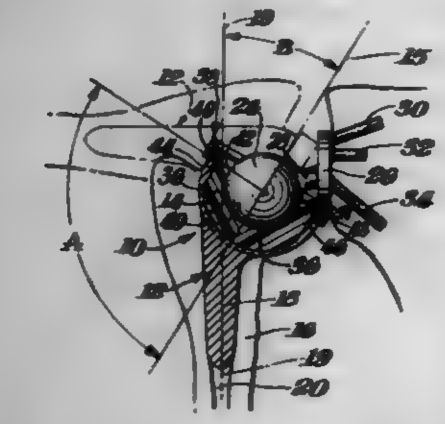
3,978,528
BONE AND JOINT PROSTHESIS

John Anthony Crep, West Nyack, N.Y., assignor to Howmedica, Inc., New York, N.Y.

Filed June 26, 1975, Ser. No. 590,722

Int. Cl.^{2} A61F *1/24*

U.S. Cl. 3—1.91 14 Claims



1. A prosthetic device comprising a cup-shaped component having a cup, fixation stem means extending from the base of the cup-shaped portion for attaching it to a boney portion of the body, a ball component, fixation rod means connected to the ball component for connecting it to another boney portion of the body, a split lining insert means having outer dimensions contructed and arranged for engagement within the cup, the split lining insert means having an inner cavity constructed and arranged for reentrantly embracing the ball, an internally flanged locking ring for engaging the outer rim of the cup, the internally flanged locking ring having an aperture through which the ball component is freely inserted, a circular groove above the rim of the cup for snugly receiving the internal flange of the locking ring, and a retaining shoulder within the locking ring for retaining the insert liners and ball within the cup.

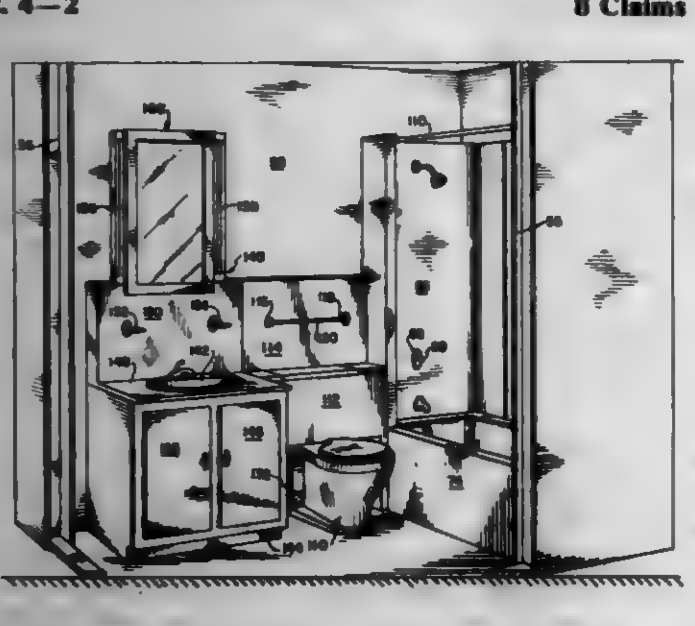
3,978,529
POWDER ROOM AND BATHROOM SYSTEM

Kurt Krafft, Prospect, Ky., assignor to Systems Design & Development, Prospect, Ky.

Filed Oct. 15, 1974, Ser. No. 514,807

Int. Cl.^{2} A47K *4/00*

U.S. Cl. 4—2 8 Claims



1. An assemblage of a plurality of pre-dimensioned and pre-engineered modular units adapted to be assembled to form at least a powder room within a room section of a building structure which comprises:

a. an interface frame adapted to be mounted adjacent to a wet wall portion of the room section, the wet wall portion having a water pipe system extending therethrough and associated with the building water supply, said interface frame being formed of structural frame members dimensioned and configured to be connected in at least one of a plurality of relative positions which define locating positions at least for toilet and lavatory sections;

b. a horizontal support bracket associated with each section defined by said interface frame being connectable to the structural members forming each interface frame section so as to adapt said frame sections to define interface support means at least for modular toilet and lavatory sections;

c. a drain-waste-vent pipe unit adapted to be supported substantially vertically within at least a portion of the wet wall of the room section and adapted to be connected to a drain-waste-vent pipe system of the building structure;

d. drain-waste-vent pipe members adapted to be connected in end-to-end relation and capable of being supported within the interface frame structure to form an interface unit adapted to provide a drain-waste-vent pipe system for the room section;

e. means adapted to connect the vent system of the interface unit to the vent system of the building structure;

f. a modular pre-dimensioned toilet bowl adapted to be supported on the floor of the room section and adapted to be positioned adjacent said horizontal support bracket associated with said toilet section of said interface frame, said toilet bowl defining flush water inlet and waste outlet means at the rear portion thereof;

g. means to secure the rear portion of said toilet bowl to said horizontal support bracket associated with the toilet section of said interface frame and means to connect the waste outlet of said toilet bowl to the waste outlet of said interface unit;

h. a substantially finished shroud member adapted and dimensioned to be selectively removably positioned about at least a portion of said toilet bowl adjacent the toilet section of said interface unit, said shroud member defining a finished wall portion and having means to accumulate flush water therein and control means to selectively release the flush water through an opening defined by a lower portion of said water accumulating means;

i. means to connect the water supply system of the wet wall to said flush water accumulating means to selectively accumulate flush water therein;

j. means to connect the lower opening defined by said flush water accumulating means to the flush water inlet portion of said toilet bowl and resilient means adapted to be positioned within the flush water inlet opening of said toilet bowl and capable of providing a substantially sealed connection between said flush water accumulating means and said toilet bowl;

k. means for supporting towels and the like adapted to be connected to said toilet section of said interface unit in a manner to secure said toilet shroud in adjacent relation with said interface unit comprising:

  1. a first elongated member adapted to support towels and the like; and
  2. at least first and second support members extending from each end portion of said towel support member and adapted to be extended through the toilet bowl shroud at a location above the toilet bowl position, said first and second support members having means to secure said toilet shroud to said interface unit;

l. a modular cabinet member adapted to be supported on the floor of the room section and to be secured to said lavatory section of said interface unit;

m. a modular wash bowl adapted to be supported on said cabinet member adjacent said lavatory section of said interface unit, said wash bowl having a lower drain outlet means;

n. means to connect the water supply of said wet wall to said modular wash bowl;

o. means to selectively activate and direct water from said water supply to said wash bowl;

p. means to connect the drain outlet means of said wash bowl to the drain system of said interface unit;

q. a substantially finished shroud member adapted to be positioned in adjacent relation against said lavatory section of said interface unit above said cabinet;

r. a dish for soap and the like having fastener means adapted to be extended through said lavatory shroud member in a manner to secure said shroud member to said lavatory section of said interface unit;

s. means adapted to support tooth brushes and the like comprising fastener means adapted to be extended through said lavatory shroud member in a manner to further secure said lavatory shroud member to said lavatory section of said interface unit; and

t. a modular cabinet adapted to be positioned adjacent said lavatory section of said interface unit above said modular wash bowl, and means to supportedly position said cabinet on an upper portion of said lavatory shroud, said modular, pre-dimensioned units being capable of being readily assembled to form at least a powder room due to the convenient template provided by said interface unit and drain-waste-vent pipe unit.

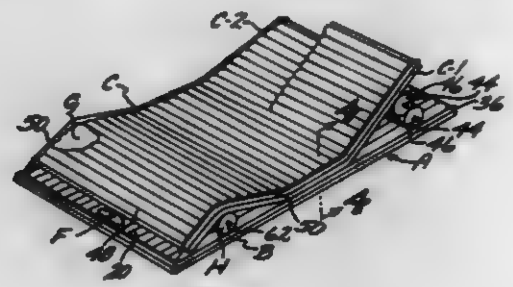
3,978,530
AIR INFLATABLE BED-LIKE DEVICE WITH ADJUSTABLE BACK SUPPORT

John G. Amarantos, 6114 Gardenia Ave., Long Beach, Calif. 90805

Filed Nov. 21, 1975, Ser. No. 634,242

Int. Cl.^{2} A61G *7/10*

U.S. Cl. 5—68 5 Claims



1. An air inflatable bed-like structure that includes:

a. a base assembly that includes an elongate rectangular first envelope of pliable sheet material, which first envelope has a top, bottom, pair of side walls, and first and second end walls; at least one endless resilient restraining tube disposed inside said first envelope that is in abutting contact with the interior surfaces of said first and second end walls and said pair of side walls when said restraining tube is inflated with a fluid; first means for inflating said restraining tube with fluid under pressure; second means for permitting fluid to discharge from said restraining tube to deflate the latter; a plurality of elongate resilient first tubes longitudinally disposed inside said first envelope and within the confines of said restraining tube, said first tubes having first end pieces that cooperate with a portion of said restraining tube to provide a transverse first confined space within said first envelope; third means for discharging air under pressure into said first confined space; first check valve means on said first end pieces that permit air under pressure to flow from said first confined space into said first tubes to inflate the latter; and fourth means for deflating said first tubes;

b. a support assembly that includes an elongate rectangular second envelope of pliable sheet material, which first envelope has a top, bottom, pair of side walls, and first and second ends; a plurality of resilient inflatable second tubes transversely disposed side by side in said second envelope, each of said second tubes having a pair of end walls; a pair of pliable headers that extend longitudinally relative to said second envelope; fourth means for discharging air under pressure into said pair of headers; second check valve means on said end walls for permitting air under pressure in said headers to flow into said second tubes to inflate the latter; fifth means for discharging air from said headers to deflate the latter; sixth means for discharging air from said second tubes to deflate the latter; and seventh means intermediate said first and second ends of said second envelope for bonding the bottom of the latter to the top of said first envelope, with said seventh means so securing said second envelope that first and second longitudinally spaced portions of said support assembly may be moved upwardly relative to said base assembly when both said base assembly and support assembly are inflated;

c. eighth vertically adjustable means disposed on said base and under said first portion of said support assembly that may be actuated to dispose said first portion in an upwardly angled position to support the leg portions of a user; and

d. ninth vertically adjustable means disposed on said base and under said second portion of said support assembly that may be actuated to dispose said second portion at an angled position to support the back of a user.

3,978,531
LIFTING DEVICE

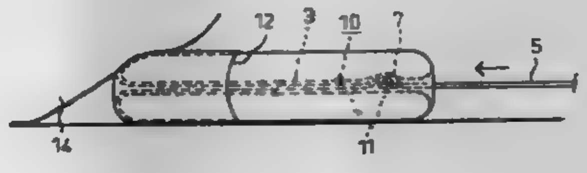
Bengt Erland Ilon, Benzeholzstrasse 39, CH-6045 Meggen, Lucerne, Switzerland

Filed Mar. 25, 1975, Ser. No. 561,976

Claims priority, application Sweden, Apr. 1, 1974, 7404343

Int. Cl.^{2} A47B *83/04*

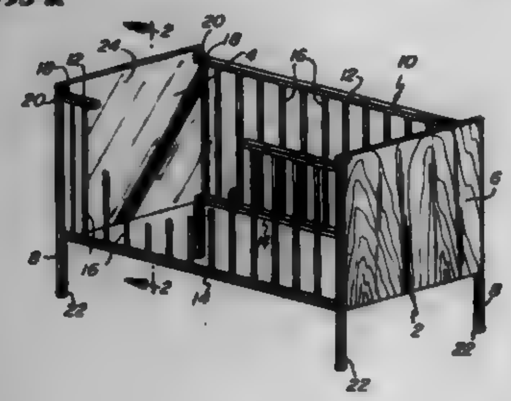
U.S. Cl. 5—81 R 10 Claims



1. A device for lifting an object comprising, a hollow member of thin, flexible material, said member having ends and having a recess extending entirely through the member from one end to the other, said recess being open at each end of the member, said member having an inner portion surrounding and defining said recess and an outer portion surrounding said inner portion and defining the exterior surface of said member, said inner and outer portions defining an enclosed chamber in said member, said chamber surrounding said recess and having a generally elongated, flattened, toroidal configuration, said inner and outer portions of said member forming a continuous, uninterrupted surface, and a protecting means coupled with said member, said protecting means being hollow and having inside and outside surfaces, said protecting means being engageable both with said recess and with the exterior of said member to cover and protect the same, said inside and outside surfaces of said protecting means being inverted when in engagement with the exterior of said member, whereby rolling of said member in a lifting direction causes the inner portion of said member to move to the outer portion and causes part of said protecting means to move from within said recess to the exterior of said member, part of said inside surface of said protecting means thereby becoming everted to face outwardly and to cover an ever increasing area of the exterior of said member.

3,978,532
CRIB INCLUDING REFLECTIVE SURFACE

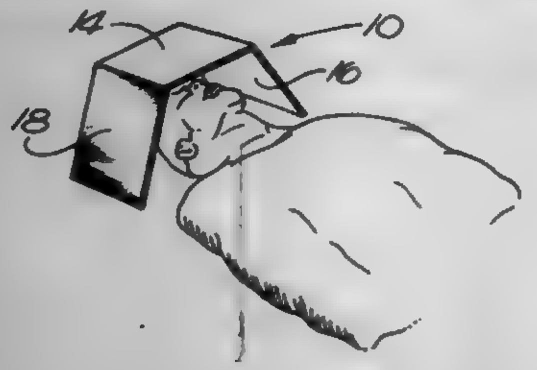
Gloria Scheiner, 81 Meadowbrook Road, Randolph, N.J. 07801
Filed Feb. 23, 1976, Ser. No. 660,483
Int. Cl.² A47D *7/00*; A47C *31/00*
U.S. Cl. 5—93 R **8 Claims**



1. A crib comprising a pair of opposing end members and a pair of opposing side members attached to each of said end members, so that said end members and said side members form an enclosure, wherein at least one of said end members comprises a reflective face so that an infant within the said enclosure can observe his image upon said reflective face.

3,978,533
DEVICE FOR RETAINING FACE WARMTH

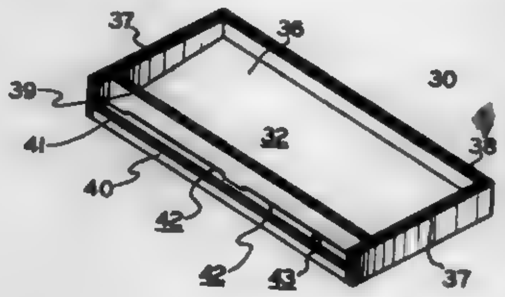
Henry B. Warner, 1956 Gillian St., Placentia, Calif. 92670
Filed Apr. 29, 1974, Ser. No. 464,883
Int. Cl.² A47G *9/00*
U.S. Cl. 5—327 R **10 Claims**



1. A device for retaining face warmth, formed of an integral, one-piece, generally planar blank of rigid material having a metallized surface on at least one planar side, said blank being cut and scored to provide a plurality of walls for folding towards said metallized surface, the edge portions of non-adjacent walls in said blank, which abut when said structure is fully folded, being formed in combination with interlocking tabs and slots, said walls comprising a rear wall hingedly connected along a score line to at least one of said other walls, said other walls being foldable respective each other at said rear wall to form a self-supporting enclosure for a human head, said rear wall having a horizontally central extent approximating the perimeter dimension of a human head, said rear wall having a bottom edge of about 15-26 inches, the width dimension of said rear wall tapering from its bottom edge to at least a region above said central extent, the dimension of said rear wall at said region being about 10-13 inches.

3,978,534
BEE FEEDER

Harry N. Mihos, 110 W. 3rd South, Salt Lake City, Utah 84110
Filed May 19, 1975, Ser. No. 578,399
Int. Cl.² A01K *53/00*
U.S. Cl. 6—5 **6 Claims**



1. Feeding apparatus for mounting in a beehive beneath the roof of the hive and directly above frames suspended therein, comprising:

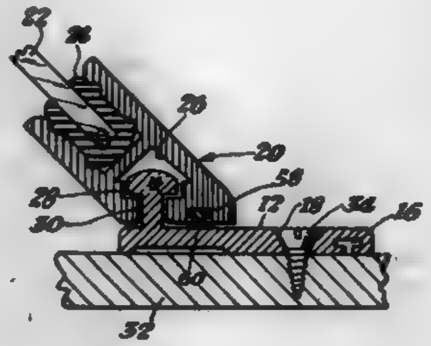
a. a honey board member constituting a ceiling for the hive and provided with an access port which opens into the space immediately above the frames when said honey board is in position atop the hive;

b. a reservoir chamber mounted to the underside of said honey board so that when the honey board is in position atop the hive, the reservoir will extend substantially the entire width of the hive across the frames, said reservoir constituting means for receiving fluid substances introduced through said access port; and

c. a feeding trough with a bottom and a spill guard lip both approximately parallel the upper side of said honey board such that when the honey board is in position atop the hive, said lip is spaced from the honey board and the walls of the hive sufficiently to permit access of a bee to the interior of the trough, said trough extending substantially the entire width of the hive and being connected to said reservoir to receive fluid substances therefrom for distribution throughout substantially the entire trough.

3,978,535
BOAT WINDSHIELD MOUNTING DEVICE

Arnold H. Swan, Lake Worth, and Eugene C. Beals, Hallandale, both of Fla., assignors to American Marine Products, Inc., Fort Lauderdale, Fla.
Filed June 23, 1975, Ser. No. 589,205
Int. Cl.² B63B *17/00*
U.S. Cl. 9—1.5 **5 Claims**



1. A boat windshield mounting device for mounting the windshield of a boat to a boat deck comprising:

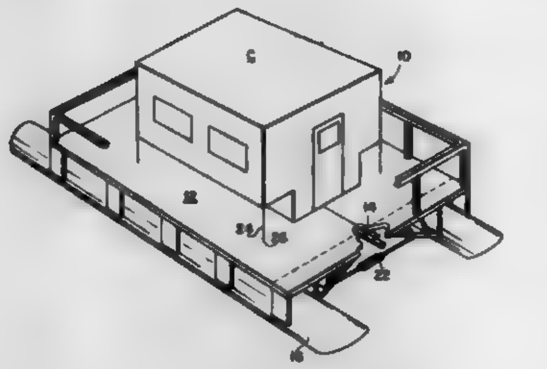
an elongated metal strip having a first and second lateral edge, said strip including a plurality of apertures spaced apart and longitudinally disposed near said first edge for receiving fasteners and unitarily constructed therewith a raised vertically disposed flange having a T-shaped cross-section disposed near said second lateral edge of said strip, said flange running the length of said strip;

a boat windshield frame member, said frame member including a T-shaped groove disposed along its bottom side, said raised flange interlockably receivable into said frame member groove, said first lateral edge sized to project beyond said frame member exposing said apertures; and a

plurality of fasteners receivable through said strip apertures and fastenable to said deck from a single direction.

3,978,536
COLLAPSIBLE WATERCRAFT

Ronald D. Howe, 1330 Fourth St., Red Bluff, Calif. 96080
Continuation of Ser. No. 420,455, Nov. 30, 1973, abandoned.
This application July 25, 1975, Ser. No. 598,981
Int. Cl.² B63B *7/02*
U.S. Cl. 9—2 C **1 Claim**



1. A collapsible watercraft which comprises

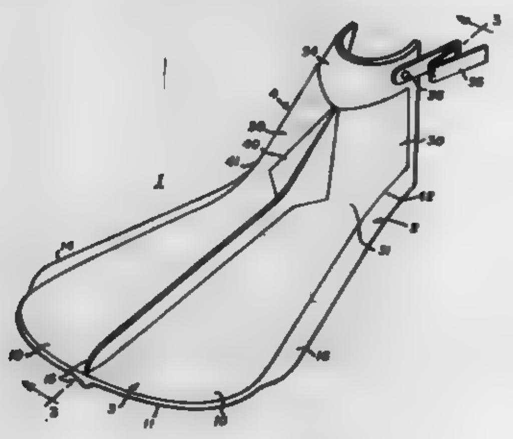
a raft having two hingedly connected sections foldable between an operative extended substantially flat horizontal disposition and a downwardly folded collapsed disposition,

a rigid living unit having a substantially flat bottom arranged to rest on said foldable raft over its hinged connection in its extended disposition, and

holding means including cables connected between the outer sides of said living unit and said raft sections to hold said raft rigidly in its extended disposition and said living unit rigidly connected to said raft, said cables and said rigid living unit constituting the sole means for holding said raft rigidly in its extended disposition.

3,978,537
SWIM FIN INCLUDING MEANS FOR MAINTAINING FOOT AND LEG IN FIXED RELATIONSHIP

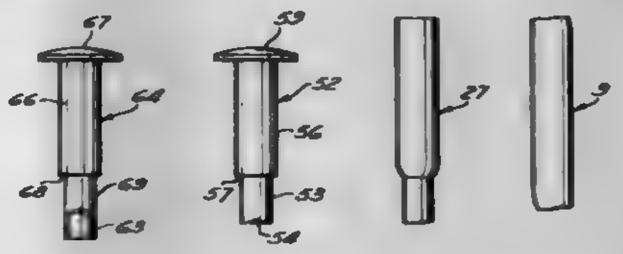
Ralph B. Shamlian, San Francisco, Calif., assignor to Farallon Industries, Inc., Belmont, Calif.
Filed Jan. 14, 1975, Ser. No. 540,908
Int. Cl.² A63B *31/12*
U.S. Cl. 9—309 **13 Claims**



1. A foot mounted swim fin adapted for fitting to the individual legs of a wearer in such a manner that the wearer is able to manipulate his or her legs independently of each other comprising in combination: a foot-receiving portion including a pocket for receiving at least the forward end, including the toes of a wearer's foot; a blade having an upper forward thrust surface extending forwardly from said foot-receiving portion and a leg-bracing portion with means for attachment to a leg extending rigidly from said foot-receiving portion at a predetermined fixed angle for preventing deflection of said foot-receiving portion relative to said leg-bracing portion when forward thrust-producing hydrodynamic forces act on said upper surface of said blade.

3,978,538
METHOD FOR MAKING SHOULDERED TUBULAR RIVETS

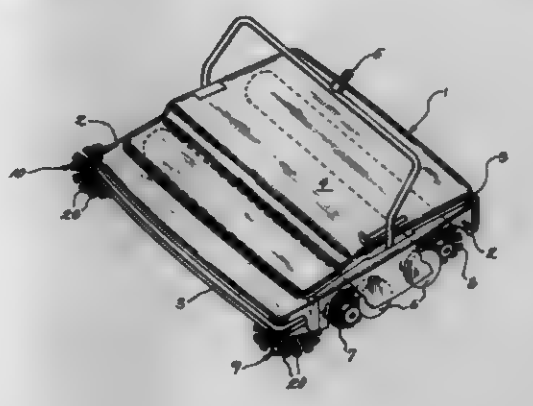
Paul A. Fick, Fremont, Ohio, assignor to The National Machinery Company, Tiffin, Ohio
Filed Nov. 1, 1974, Ser. No. 519,925
Int. Cl.² B21K *1/60*
U.S. Cl. 10—27 E **8 Claims**



1. A method of forming shouldered tubular rivets comprising in a first operation trapped extruding a blank to reduce the diameter of one end thereof thereby forming an extruded portion and squaring the opposite end, in a second operation confining the entire shank including the extruded portion and squaring said one end and producing a shank of predetermined volume, and thereafter upsetting a head on the opposite end whereby variations in volume of said blank appear as variations in the volume of said head, and in a third operation forward extruding a tubular portion on said one end to a predetermined length.

3,978,539
FLOOR SWEEPER WITH AUXILIARY ROTARY BRUSHES

Robert A. Yonkers, Grandville, Mich., assignor to Bissell, Inc., Grand Rapids, Mich.
Filed June 30, 1975, Ser. No. 591,870
Int. Cl.² A47L *11/33*
U.S. Cl. 15—42 **14 Claims**



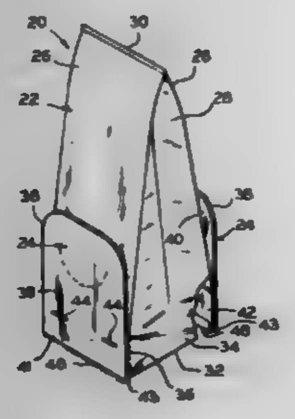
1. A carpet sweeper comprising:

a. a frame,
b. means for supporting said frame for reciprocable translation over the floor,
c. transversely extending brush roller means,
d. at least one generally inverted cup-shaped circular auxiliary brush disposed at and extending beyond a forward corner of said frame and adapted to engage the floor, and

with said auxiliary brush being rotatable about an axis which is inclined from the vertical,
- e. said auxiliary brush being fixed against substantial movement along said axis,
- f. and means mounted beneath said auxiliary brush to bias the brush bristles in a direction away from the floor upon the application of downward force on the sweeper to thereby keep the friction between said auxiliary brush and the floor generally equalized.

3,978,540
DISPOSABLE PICK-UP CONTAINER FOR ANIMAL LITTER

Bernard W. Peck, 4711 N. Lawndale Ave., Chicago, Ill. 60625, and Larry P. Horist, 2709 Simpson St., Evanston, Ill. 60201
Filed Mar. 24, 1975, Ser. No. 561,110
Int. Cl.^{2} A47L *13/52*
U.S. Cl. 15—104.8 10 Claims

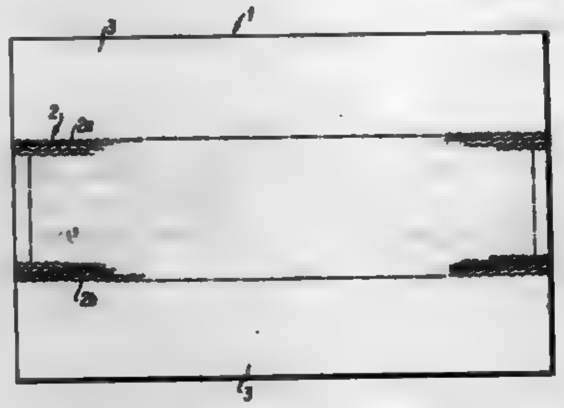


1. A disposable pick-up container for animal litter and which comprises,
- an open-mouthed bag of flexible material serving as a receptacle for animal litter and having a cuff portion around the mouth thereof, and
- a pair of scoops located outside said bag on opposite sides thereof, said scoops each having a blade portion fixed to the cuff portion of said bag at a predetermined position thereon and a handle portion extending from the blade portion, the said positions and the relative dimensions of the blade portions and the periphery of the cuff portion being such that when the container is manipulated to pick up animal litter, by grasping the handle portions of said scoops, placing the mouth of the bag around the litter, bringing the blade portions of said scoops together under the litter, picking up the litter by the blade portions, upending the bag to drop the litter thereinto, and inserting the blade portions into the bag, the cuff portion of the bag will fold automatically so that the blade portions and the periphery of the cuff portion both will lie completely within the bag, and the handle portions may be brought together for bag-closing and carrying purposes.

3,978,541
DRY MOP ELEMENT

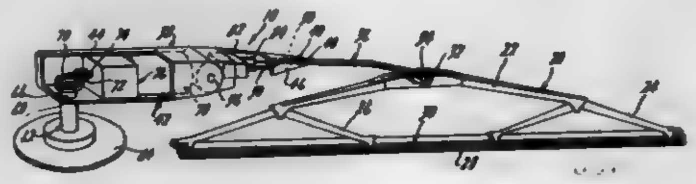
Gunnar Gustafsson, Hogabergsgatan 35, Jonkoping, Sweden
Continuation-in-part of Ser. No. 460,301, April 12, 1974, abandoned. This application Nov. 7, 1975, Ser. No. 629,699
Int. Cl.^{2} A47L *13/20*
U.S. Cl. 15—229 A 9 Claims

1. An element for use a dry mop, dry duster or the like adapted for one-time use and for fastening on a mop head or mop holder, said structure comprising a foundation consisting of a thin flexible sheet of non-woven material having low moisture absorption capacity, and a multitude of strands arranged in substantially parallel lines extending parallel to the length of said foundation sheet, characterized in that the strands consist of soft, fibrous material of substantially cylindrical cross section having a far greater thickness than the foundation sheet, and glue strips engaging a limited part of the circumference of the cylindrical strand and fastening each strand to the sheet in substantially tangential relation thereto, said strips positioning said strands in flush engagement with the sheet continuously along the entire length of the sheet and laterally spaced apart from one another a distance corresponding to the strand thickness, so that upon flexing said foundation sheet as the element is dragged across a surface in a direction transverse to the cylindrical axis of a strand, said strand is free to roll on its circumference on the surface.



3,978,542
WIPER ARM ASSEMBLY

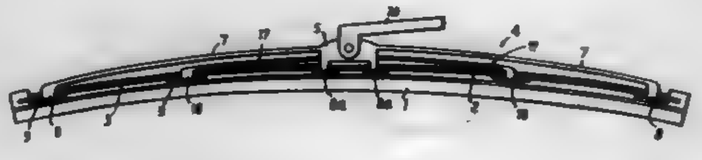
Alex H. A. M. van Eekelen, Hasselt; Albert J. G. Hoebrechts, Bovelingen, and Johan H. van den Berg, Hasselt, all of Belgium, assignors to Monroe Belgium N.V., Sint-Truiden, Belgium
Filed Apr. 29, 1974, Ser. No. 465,293
Int. Cl.^{2} B60S *1/08*
U.S. Cl. 15—250.3 20 Claims



1. In a wiper arm construction for use in pivotably biasing a wiper blade back and forth across an associated surface relative to a preselected pivotal axis,
- means supporting said arm for said pivotal movement, and
- drive means for causing said pivotal movement of said arm,
  - said drive means comprising an electrically energized drive motor mounted on and movable with said arm relative to said pivotal axis.

3,978,543
WINDSCREEN WIPERS

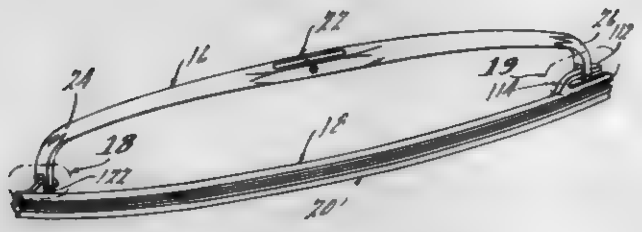
Robert Derrick Tomlin, Hampton Hill, England, assignor to Magnatex Limited, Middlesex, England
Filed Apr. 16, 1974, Ser. No. 461,421
Claims priority, application United Kingdom, Mar. 3, 1970, 10218/70, May 9, 1973, 22230/73
Int. Cl.^{2} B60S *1/04*
U.S. Cl. 15—250.42 10 Claims



1. A windscreen wiper comprising a squeegee element and a pressure-distributing harness, moulded of a resilient plastics material, comprising a pair of resiliently flexible arms, flexible along substantially their entire lengths, extending in opposite longitudinal directions from each side of a substantially rigid central portion adapted for connection of a wiper arm thereto, one arm of each pair being shorter than the other and including claws depending by fixed distances from adjacent said central portion and from the free ends of the arms respectively, said claws being connected to the squeegee element respectively adjacent its centre and its opposite ends, and said arms being biassed over substantially their entire lengths to cause the wiping edge of the squeegee element, when unrestrained, to be curved along its length.

3,978,544
WINDSHIELD WIPER CONSTRUCTION

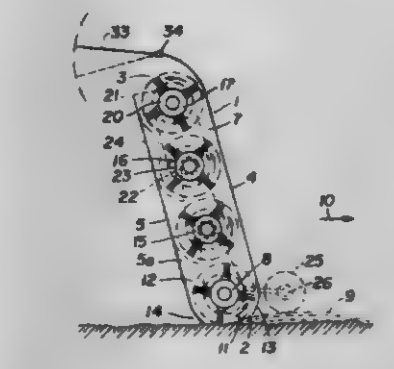
Johan H. van den Berg; Alex H. van Eekelen, both of Hasselt, and Albert G. Hoebrechts, Mechelen-Bovelingen, all of Belgium, assignors to Monroe Belgium N.V., Sint-Truiden, Belgium
Filed Jan. 30, 1974, Ser. No. 438,038
Int. Cl.^{2} B60S *1/04*
U.S. Cl. 15—250.42 9 Claims



1. A windshield wiper blade construction fabricated in part of a molded polymeric material and comprising,
- an elongated flexor section adapted to operatively support a wiper element,
- said flexor member comprising a generally hollow tubular-shaped body of varying wall thickness, with the exterior of said body being of a semi-cylindrical cross-sectional shape for providing an anti-windlift surface and the interior of said body defining an elongated cavity adapted to receive the mounting portion of said wiper element in a manner such that the wiping lip portion thereof projects outwardly away from said anti-windlift surface on said body, a one-piece bridge member having opposed end portions secured to longitudinally spaced portions of said flexor section and an intermediate portion adapted to be operatively secured to an associated wiper arm or the like,
- the major portions of said bridge member between said intermediate and end portions being of a substantially circular cross-sectional shape for reducing the effect of air passing thereover to lift the assembly away from an associated windshield,
- said intermediate portion of said bridge member defining a cavity adapted to removably receive the outer end of an associated wiper arm,
- means extending between the interior of said cavity and said wiper arm outer end for connecting said bridge member to said wiper arm and providing for relative pivotal movement therebetween, and
- means connecting at least one end of said bridge member to said flexor member, whereby to permit said flexor member and wiper element supported thereon to shift longitudinally of said bridge member to accommodate for windshields of varying configurations.

3,978,545
SWEEPING AND LIFTING DEVICE FOR GATHERING CUT GRASS AND THE LIKE

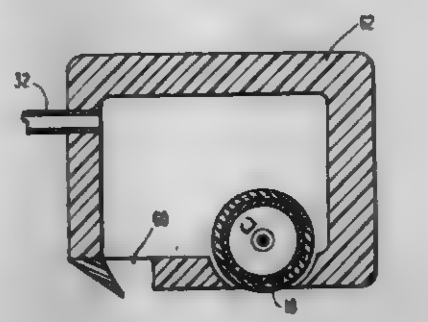
Jean Alexandre Morel, 5 Rue de Malherbe, 76100 Rouen (Seine-Maritime), France
Continuation of Ser. No. 428,417, Dec. 26, 1973, abandoned. This application July 8, 1975, Ser. No. 594,028
Claims priority, application France, Dec. 26, 1972, 72.47153
Int. Cl.^{2} E01H *1/04*
U.S. Cl. 15—83 12 Claims



1. In a sweeping and lifting device for gathering loose matter from a surface
- a. a hollow; inclined, essentially rectangular body having, front and rear and side walls and upper and lower ends which are open;
- b. a rotating base member disposed in said body at the lower end thereof operative to contact the surface and the loose matter, and to sweep the matter from the surface and throw it up in the said body;
- c. at least two rotating upper members disposed one above the other in said body above said base member each said upper member being operative to receive the matter thrown up by the member disposed below, and further throw the matter upward, the uppermost member ejecting the loose matter from said body; and
- d. means for rotating said base and upper members in the same direction.

3,978,546
APPARATUS FOR CLEANING BACK SURFACE OF MAGNETIC TAPE

August P. Epina, Boulder; Dennis R. Olmsted, Broomfield; Sanford Platter; Robert J. Jones, both of Boulder, and Jack L. Marion, Lafayette, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.
Filed Apr. 3, 1975, Ser. No. 564,683
Int. Cl.^{2} B08B *5/04*
U.S. Cl. 15—306 A 11 Claims



11. Apparatus for removing foreign matter from a surface of a length of moving magnetic tape, comprising:
- a substantially rigid body means defining a cavity therein and adapted to be mounted adjacent the path of the tape;
- a cylindrical cleaning means for bearing against the surface of the tape and rotatably mounted in said body, at least part of said cleaning means extending within said cavity, said cleaning means having a resilient, porous outer sur-

face for engaging foreign matter disposed on the surface of the tape;

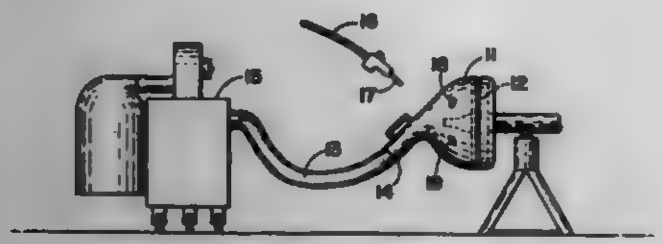
blade means attached to said body means in spaced relationship to said cleaning means and having a sharpened edge oriented in the path of the tape for scraping foreign matter from the surface of the tape;

said body means defining an aperture between said blade means and said cleaning means; and

means for coupling said cavity to a source of negative pressure.

3,978,547
BRAKE HOUSING CLEANER

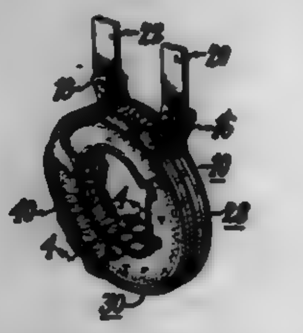
Lee F. Lawson, 12737 Lavista Way, Poway, Calif. 92064
Filed Dec. 22, 1975, Ser. No. 643,150
Int. Cl.^{2} A47L *5/14*
U.S. Cl. 15—345 2 Claims



1. A brake housing cleaner comprising a rigid, substantially curvilinear-shaped bonnet having a first opening adapted to fit snugly over a brake housing, said first opening being provided with a rim member of rubbery material extending inwardly and smaller than the circumference of said first opening, a second opening from the wall of the bonnet and defining a circumference adapted for connection to vacuum means, and a plurality of apertures in the wall of said hood, each of said apertures being provided with a cover of a rubbery material through which an air nozzle is insertable to effect a resiliently snug fit between the outside wall of said nozzle and said rubbery material.

3,978,548
END CAP FOR PRIMARY WINDINGS

Robert S. Cassey, Berwick, Maine, assignor to General Electric Company, Schenectady, N.Y.
Division of Ser. No. 523,255, Nov. 13, 1974, Pat. No. 3,925,744. This application July 29, 1975, Ser. No. 600,036
Int. Cl.^{2} F16L *11/10*
U.S. Cl. 16—109 4 Claims

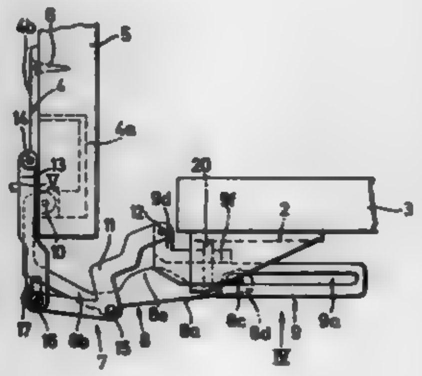


1. An end cap for use with a foil winding to relieve electrical stresses on such foil winding, said end cap comprising;

a disk-shaped member, said disk-shaped member having a central opening therein conforming to the opening of a foil winding, the external and internal surface diameters of said disk-shaped member being provided with radii of curvature for relieving electrical stresses on the sharp edges of a foil winding, four tongues substantially identical in configuration spaced 90 degrees from one another and each having an arcuate width at least four times greater than their radial width, each of said tongues extending from one side of said central opening of the disk-shaped member in a direction substantially perpendicular to one of the generally flat sides of the disk-shaped member and extending beyond said one side a distance substantially equal to the thickest part of said disk-shaped member measured from said one side axially therethrough to its opposite side and a pair of blind recesses on said opposite side of said disk-shaped member.

3,978,549
CONCEALED FURNITURE HINGE

Theodor Vitt, Porz-Eil, Germany, assignor to Prameta Prazisionsmetall- und Kunststofferzeugnisse G. Baumann & Co., Cologne, Germany
Filed Dec. 4, 1974, Ser. No. 529,376
Claims priority, application Germany, Dec. 12, 1973, 2361748; Feb. 11, 1974, 2406439
Int. Cl.^{2} E05D *3/06*
U.S. Cl. 16—129 18 Claims



1. A hinge comprising a pair of relatively movable hinge elements, a first link having opposite ends, first pivot means for pivotally connecting a first end of said first link to one of said hinge elements, means for slidably connecting a second end of said first link to the other of said hinge elements, a second link having opposite ends, second pivot means for pivotally connecting a first end of said second link to said one hinge element, third pivot means for pivotally connecting a second end of said link to the other of said hinge elements, said second link having first and second link arms, means articulately connecting said first and second link arms to each other, fourth pivot means between said articulate connecting means and said third pivot means for pivotally connecting one of said link arms to said first link between said first pivot means and said slidable connecting means, said articulately connecting means includes an elongated slot in one of said first and second link arms, fifth pivot means carried by the other of said first and second link arms, and said fifth pivot means being disposed in said slot for relative sliding motion during relative movement of said hinge elements.

3,978,550
HINGE DISCONNECT MEANS FOR A DOOR

William J. Brown, Naperville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed June 9, 1975, Ser. No. 585,144
Int. Cl.^{2} E05D *1/06*
U.S. Cl. 16—171 7 Claims

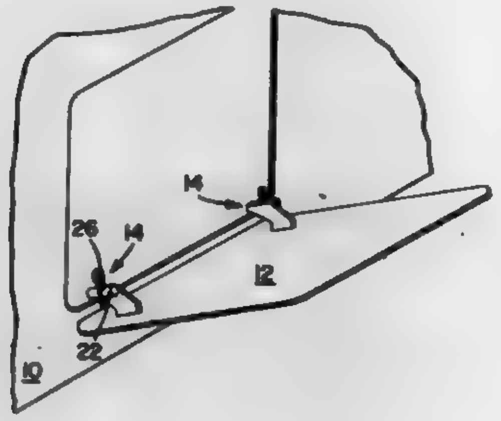
1. A hinge assembly for connecting first and second members comprising:

first arm means pivotally connected relative to the first member;

second arm means secured to the second member; and

means interconnecting the first and second arm means for detachably securing the first arm means relative to the second arm means, so that the second member, second arm means and first arm means are pivotable generally together relative to the first member with the first arm means so secured relative to the second arm means;

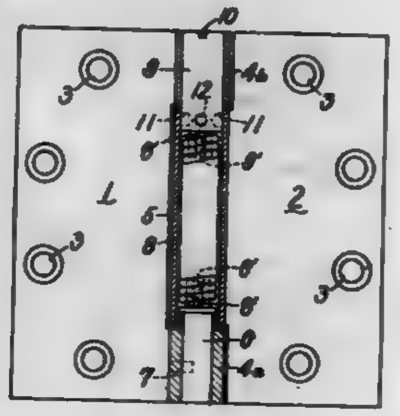
wherein the means interconnecting the first and second arm means comprise a tubular portion defined by one of said first and second arm means, the end portion of the other



of said first and second arm means being positionable within the bore of the tubular portion, and means for securing the end portion within the tubular portion.

3,978,551
DOOR CLOSER HINGE

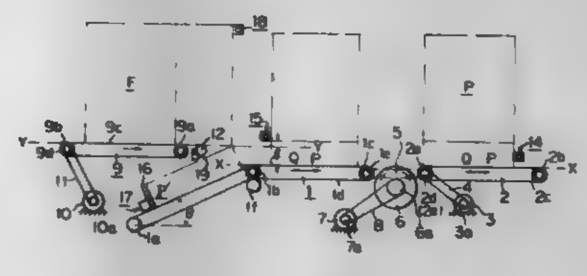
Mitsuo Mochizuki, 3-10 Kamikosaka-cho, Higashi-Osaka, Japan
Filed June 5, 1975, Ser. No. 584,161
Claims priority, application Japan, Nov. 14, 1974, 49-138372
Int. Cl.^{2} E05F *1/1*
U.S. Cl. 16—189 1 Claim



1. A hinge assembly comprising, in combination, a pair of hinge plates (1, 2), means (3) on said hinge plates for mounting the hinge assembly between a closure and closure-opening, one of said hinge plates including integral, with one side edge thereof two axially spaced cylindrical, axis portions (4*a*, 4*b*), the other of said hinges plates including integral at one edge thereof a central, cylindrical axis portion (5) in coaxial alignment with the axially space cylindrical portions of said one plate and forming therewith an axial sleeve extending the height of the adjacent edges of the plates on which the cylindrical axis portions are formed; a first hinge pin (6) projecting into and contained within the cylindrical axis portion (4*a*) of said one hinge plate having a terminal end and within one end of said cylindrical axis portion of the other plate, said first hinge pin having a transverse bifurcation (6′) at the terminal end; lock means (7) extending through the cylindrical axis portion (4*a*) of the one plate and extending into and anchoring the pin (6) against rotation therein; a coil spring (8) having one transverse end (8′) seated in the bifurcation (6′) of said pin, said coil spring extending substantially the length of the central cylindrical axis portion of the other hinge plate; a second hinge pin (9) disposed completely within the other cylindrical axis portion (4*b*) and having a bifurcated terminal end (9′) projecting into the central cylindrical axis portion (5) of the other of said hinge plates, said second hinge pin having a plurality of radially opening, circumferentially spaced recess portion (11), said second hinge pin having a transverse kerf (10) exposed at the end of the cylindrical, axis portion in which said second hinge pin is hidden, said cylindrical axis portion of said other plate in which the coil spring is disposed having a transverse opening (12) alignable with at least one of the radially, opening recesses in said second hinge pin; and fastener means removably secured in the transverse opening and one of the radially opening recesses (11) for retaining the hinge assembly in assembled relationship and permitting the second hinge pin to be rotated at said kerf to impose residual, closing-torque in the hinge and maintain it while the hinge is assembled and while on a closure and closure-opening.

3,978,552
METHOD AND DEVICE FOR SUPPLYING A FRESH COTTON BALE IN A BALE PLUCKING MACHINE

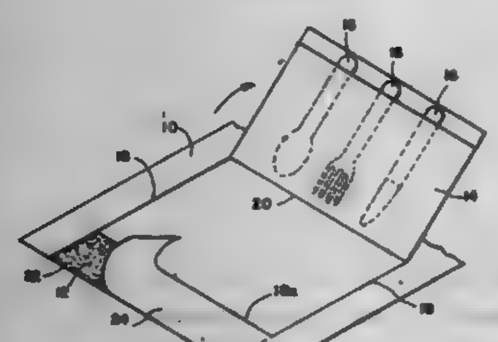
Hidejiro Araki, Toyoake, and Susumu Ōtani, Obu, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Japan
Filed Sept. 4, 1974, Ser. No. 502,924
Claims priority, application Japan, Sept. 10, 1973, 48-101949
Int. Cl.^{2} D01G *7/04*
U.S. Cl. 19—80 R 8 Claims



2. In a bale plucking machine comprising a pair of main conveyer means disposed at an identical level with an intervening space therebetween, and a plucking roller disposed in said intervening space, means for driving said main conveyer means to and fro so that a bale is reciprocally displaced between two ends thereof, end detecting means disposed at respective positions adjacent to said ends of said main conveyers so that the arrival of a fiber bale at each of said ends is detected, means for changing the driving direction of said driving means alternately according to signals from said detecting means, a device including an auxiliary conveyer means for supplying a fresh fiber bale onto one of said main conveyer means, one of said main conveyer means being provided with a downwardly inclined end portion extending from said end, thickness detecting means for detecting the thickness of the fiber bale being processed, said thickness detecting means being disposed at a position above the level of the base of said fiber bale at a predetermined intervening distance (*l*) from said base, said auxiliary conveyer means being disposed above said inclined end portion of said main conveyer means in such a condition that the intervening distance from said inclined end portion of said conveyer means is larger than *l*, means for stopping said fiber bale being processed at a waiting position on said inclined end portion of said main conveyer means in response to detection by said thickness detecting means, a limit switch mounted to said stopping means, and operable when said processing fiber bale contacts said stopping means, means for driving said auxiliary conveyer means by a signal issued from said limit switch, and means for actuating said driving means of said main conveyer means in response to the arrival of a forward end of a fresh fiber bale at a forward end of the waiting fiber bale being processed, while located at said waiting position, and means for stopping said auxiliary conveyer means when a said fresh fiber bale is displaced onto said fiber bale positioned on said inclined portion of said conveyer means.

3,978,553
NAPKIN

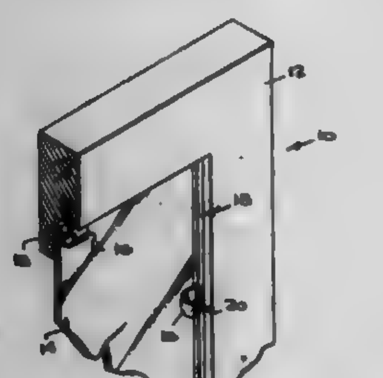
Edith M. Honig, Miami Beach, Fla., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Feb. 6, 1976, Ser. No. 655,709
Int. Cl.² A45F *5/04*
U.S. Cl. 24—7 **5 Claims**



1. A napkin especially adapted to be adhesively retained on the clothing of the user, comprising a first sheet of pliable material, said first sheet having a border defining a substantially centrally disposed flap section, said flap section including at least two layers of opposing second sheets joined on at least three sides and forming a pocket therebetween, said pocket adapted to releasably retain a quantity of flatware therein, said three sides being in contact with and co-forming said border, said three sides being joined to said first sheet along said border by a perforated line, said line adapted to be broken whereby said flap may be lifted upward away from the first sheet, pressure sensitive adhesive means disposed along one lateral end of said first sheet, cover means on said adhesive adapted to be removed therefrom to expose said adhesive layer, said adhesive layer being adjacent one end of said flap.

3,978,554
SPRING CLIP FASTENED PANEL AND FRAME ASSEMBLY

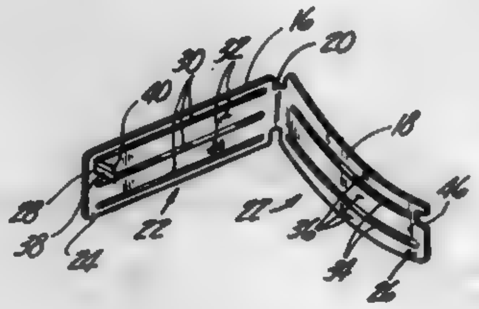
Samuel Miller, Jr., 4106 Camelot, Memphis, Tenn. 38118
Filed Mar. 27, 1975, Ser. No. 562,781
Int. Cl.² A44B *21/00;* E06B *3/32*
U.S. Cl. 24—73 B **2 Claims**



1. A spring clip fastened panel and frame assembly for furniture and the like, said assembly comprising a frame having frame members defining a recess bounded by inwardly facing edge surfaces of the frame members and a support lip extending inwardly from at least one of said edge surfaces, a panel smaller than the recess positioned in the recess and against the suppport lip, the frame members having a groove extending into at least one of said edge surfaces having front and rear groove side walls, and at least one spring clip fastener having a first leg positioned in said groove along an approximately diagonal path inclined to the plane of the groove, a second leg and an arcuately curved convex intermediate portion integrally joining the second leg to the first leg, the first leg having a distal portion spaced inwardly of the groove from the entrance to the groove bearing against the rear groove side wall and having a proximal portion abutting the front groove side wall at the entrance of the groove and stressed toward the rear groove side wall from its normal path, said second leg having a formation at its free end positioned against the panel to retain the panel against relative movement with respect to said formation and thereby retaining the first leg in the groove.

3,978,555
CLOSURE MEMBER FOR BALLOONS

Marvin L. Weisenthal, 2169 Eastman, West Bloomfield Hills, Mich. 48033
Continuation-in-part of Ser. No. 420,264, Nov. 29, 1973, Pat. No. 3,900,989. This application Jan. 6, 1975, Ser. No. 538,809
Int. Cl.² A44B *21/00;* A36H *3/06*
U.S. Cl. 24—255 SL **3 Claims**



1. In a closure member for sealingly closing an inflated balloon about the neck thereof of the type comprising first and second legs which receive the neck of the balloon transversely therebetween, the legs being interconnected by hinge means, the improvement which comprises:

a. a first substantially linear leg,
b. a second arcuate leg,
c. sealing means disposed on the opposed interior surfaces of the first and second legs, the sealing means sealingly closing the neck of the inflated balloon,
d. locking means for compressively locking the two legs together, the locking means comprising: a leg extending from the linear leg and having a sloped shoulder at the free end thereof, the arcuate leg having a cut-out portion, the inner edge of which slides down the sloped shoulder until it engages the undersurface thereof, the locking means and cut-out portion being positioned to one side of a longitudinal line through the center of the closure member so as to provide a pull tab on the arcuate leg, the pull tab flaring away from the free end of the linear leg to facilitate release of the closure member from its locked condition, and

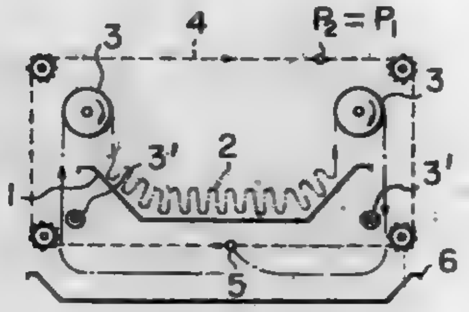
wherein locking of the legs causes the sealing means to compressingly seal the balloon across the neck thereof to prevent the passage of fluid therefrom.

3,978,556
PROCESSING SYSTEM FOR WOVEN, KNIT OR SIMILAR SHAPED MATERIALS

Masao Masuda, Nagoya, Japan, assignor to Masuda Manufacturing Co., Ltd., Nagoya, Japan
Filed Dec. 5, 1974, Ser. No. 529,970
Int. Cl.² D02C *3/00*
U.S. Cl. 68—62 **19 Claims**

1. A processing system for woven, knit or similarly shaped materials, comprising:

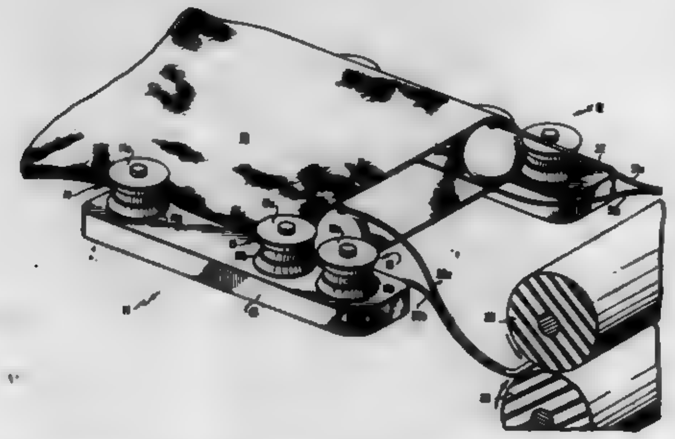
at least one processing section with a processing bath;
an elongated moving material guidance device passing completely through the at least one processing section and;
a material attachment device which is mounted above the bath on the guidance device and oriented transversely relative to the direction of movement of the guidance device and movable with the guidance device for engaging a material to be processed and moving the material through the at least one processing section according to the motion of the guidance device



an initial material feeding device for feeding material to the material attachment device; and
final material take-out and carrier-transporter devices operatively coupled to the material guidance device.

3,978,557
APPARATUS FOR SPREADING AND GUIDING A TUBULAR FABRIC

Sam M. Goodson, 1107 Fleetwood Drive, Lookout Mountain, Tenn. 37350
Filed May 12, 1975, Ser. No. 576,381
Int. Cl.² D06C *5/00*
U.S. Cl. 26—84 **7 Claims**



1. Apparatus for spreading and guiding a tube of fabric comprising:

six contoured sheave means each of which is rotatable about a substantially vertical central axis,
two pair of free turning bodies, one body of each pair being associated with a respective one of the sheave means and the other body of each pair being associated with a respective pair of the sheave means on each side of the spreading apparatus,
means to establish a magnetic attraction between each body and its respective sheave means,
means supporting said sheave means in mutually spaced relationship in two groups of three sheave means each on each side of the spreading apparatus with a pair of the three being longitudinally spaced from the remaining one of the three so as to accommodate an open tube of fabric therebetween with the bodies inside and the sheave means outside the fabric tube,
means for driving said sheave means, and
a guide bar means connected to each pair of free turning bodies, each guide bar means comprising a pair of elongated guide bars which are connected to opposing portions of a respective pair of free turning bodies, each of said guide bars being a mirror image of the other on each side of a substantially horizontal plane which passes through the mid-portion of the free turning bodies, each guide bar being in contact with the other guide bar of the pair at each end thereof and extending from its contact with the other guide bar progressively away from the other guide bar and inwardly in a direction toward the other pair of guide bars to its connection with one of the pair of respective free turning bodies, being substantially straight between its respective pair of free turning bodies and then extending from its connection with the other one of the pair of respective free turning bodies progressively toward the other guide bar and outwardly in a direction away from the other pair of guide bars to its contact with the other guide bar.

6. Apparatus for spreading and guiding a tube of fabric comprising:

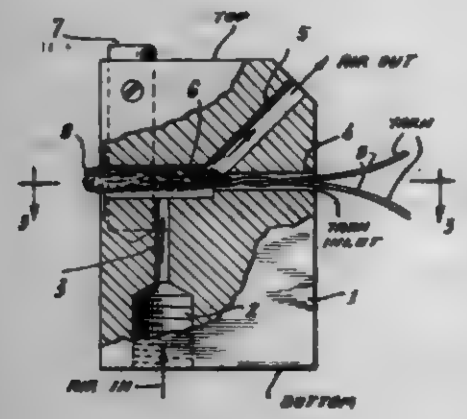
six contoured sheave means each of which is rotatable about a substantially vertical central axis,
two pair of free turning spheres, one sphere of each pair being associated with a respective one of the sheave means and the other sphere of each pair being associated with a respective pair of the sheave means on each side of the spreading apparatus,
means to establish a magnetic attraction between each sphere and its respective sheave means,
means supporting said sheave means in mutually spaced relationship in two groups of three sheave means each on each side of the spreading apparatus with a pair of the three being longitudinally spaced from the remaining one of the three so as to accommodate an open tube of fabric therebetween with the spheres inside and the sheave means outside the fabric tube,
means for driving said sheave means,
means defining a substantially vertical annular passage through each sphere,
a shaft in each passage,
a guide ring connected to each end of each shaft, and
a guide rod means connected to each pair of spheres, each guide rod means comprising a pair of elongated guide rods which extend through the guide rings for connection to the respective spheres, each of said guide rods being a mirror image of the other on each side of a substantially horizontal plane which passes through the center of the spheres, each guide rod being in contact with the other guide rod of the pair at each end thereof and extending from its contact with the other guide rod progressively away therefrom and inwardly in a direction toward the other pair of guide rods to its connection with one of the pair of respective free turning spheres, being substantially straight between its respective pair of spheres, and then extending from its connection with the other one of the pair of respective spheres progressively toward the other guide rod and outwardly in a direction away from the other pair of guide rods to its contact with the other guide rod.

3,978,558
AIR JET YARN ENTANGLEMENT

Herbert J. Pike, Martinsville, N.J., assignor to J. P. Stevens & Co., Inc., New York, N.Y.
Filed Jan. 12, 1976, Ser. No. 647,946
Int. Cl.² D02G *1/16*
U.S. Cl. 28—1.4 **6 Claims**

1. An air jet apparatus for the production of entangled yarn comprising a block; a yarn passageway extending therethrough from side to side: means to feed yarn through said passageway: an air inlet duct for introducing air into the passageway, said inlet duct intercepting said passageway at substantially right angles with the longitudinal axis of said inlet passing through or close to the longitudinal axis of the yarn passageway: an air outlet duct intercepting the top of the yarn passageway and slanting upward therefrom and means extend-

ing into said yarn passageway between the air inlet duct and the exit end of the yarn passageway to contact yarn fed through said yarn passageway and provide resistance to the movement of said yarn.



3,978,559
YARN TREATING APPARATUS

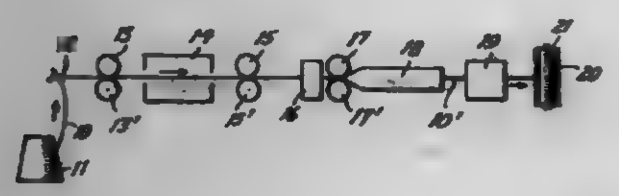
Robert K. Stanley, Media, Pa., assignor to Techniservice Corporation, Kennett Square, Pa.

Continuation of Ser. No. 456,033, March 29, 1974, which is a continuation of Ser. No. 214,893, Jan. 3, 1972, Pat. No. 3,808,654, which is a continuation of Ser. No. 846,457, July 31, 1969, Pat. No. 3,781,952, which is a continuation-in-part of Ser. No. 684,230, Nov. 20, 1967, Pat. No. 3,462,815, Ser. No. 678,428, Oct. 26, 1967, Pat. No. 3,462,814, Ser. No. 606,420, Dec. 30, 1966, and Ser. No. 835,883, June 9, 1969, Pat. No. 3,559,254, said Ser. No. 684,230, and Ser. No. 678,428, each is a continuation-in-part of Ser. No. 302,758, July 31, 1963, Pat. No. 3,376,622, which is a continuation-in-part of Ser. No. 790,658, Feb. 2, 1959, Pat. No. 3,111,740, and Ser. No. 216,524, July 13, 1962, abandoned, said Ser. No. 606,420, is a continuation-in-part of Ser. No. 386,489, July 31, 1964, Pat. No. 3,317,977, which is a continuation-in-part of Ser. No. 216,447, July 13, 1962, Pat. No. 3,145,947, said Ser. No. 835,883, is a continuation-in-part of Ser. No. 650,762, July 3, 1967, abandoned, which is a continuation-in-part of Ser. No. 349,338, March 4, 1964. This application Nov. 11, 1974, Ser. No. 522,424

The portion of the term of this patent subsequent to May 7, 1991, has been disclaimed.

Int. Cl.^{2} D02G *1/12*

U.S. Cl. 28—1.6 3 Claims



1. Apparatus for treating thermoplastic yarn comprising an internally heated roller, means for advancing the yarn in arcuate contact with the internally heated roller, means for rotating the heated roller in the direction of the winding of the yarn in contact therewith, and means for directly crimping the thus heated yarn.

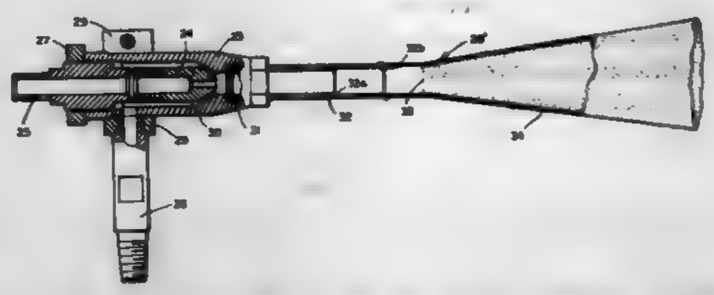
3,978,560
STRAND TREATMENT APPARATUS

Robert K. Stanley, Media, Pa., assignor to Techniservice Corporation, Kennett Square, Pa.

Continuation of Ser. No. 405,262, Oct. 11, 1973, which is a continuation-in-part of Ser. No. 343,644, March 22, 1973, Pat. No. 3,840,950, and Ser. No. 376,890, July 5, 1973, which is a continuation-in-part of Ser. No. 343,644, March 22, 1973, Pat. No. 3,840,950, and Ser. No. 124,213, March 15, 1971, Pat. No. 3,753,275, which is a continuation-in-part of Ser. No. 822,429, May 7, 1969, Pat. No. 3,570,083, which is a continuation-in-part of Ser. No. 678,428, Oct. 26, 1967, Pat. No. 3,462,814, and Ser. No. 302,758, July 31, 1963, Pat. No. 3,376,622. This application Jan. 27, 1975, Ser. No. 544,293

Int. Cl.^{2} D02C *1/12*

U.S. Cl. 28—1.6 8 Claims



1. Apparatus for crimping textile strands, comprising means laterally confining such strand and having an entrance portion and an open-ended exit portion, means for feeding strand into the entrance portion, jet means for injecting fluid into the entrance portion for forwarding the strand at least partially through at least the entrance portion, and wherein the exit portion comprises a laterally confining circumferentially screen with the terminal part having a flared outlet portion.

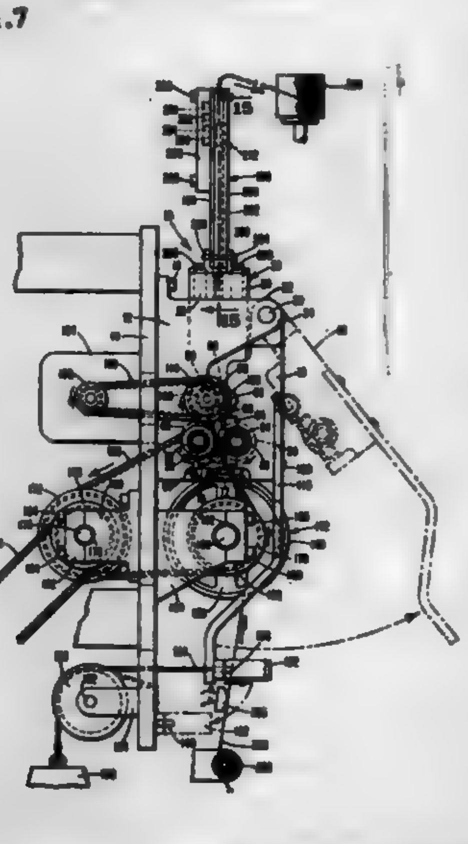
3,978,561
APPARATUS FOR TEXTURING CONTINUOUS FILAMENT YARN

Alexander L. Trifunovic, Wilmington, Del.; William H. Hills, Melbourne; Milton H. Borgman, Satellite Beach, both of Fla., and Emory P. Mersereau, Wilmington, Del., assignors to Indian Head Inc., New York, N.Y.

Division of Ser. No. 366,164, June 1, 1973, Pat. No. 3,894,319. This application Apr. 9, 1975, Ser. No. 566,206

Int. Cl.^{2} D02G *1/12*

U.S. Cl. 28—1.7 10 Claims



1. A stuffer crimper for crimping continuous filament yarn having a denier in the range of approximately 40–150, said crimper comprising:

a housing;

a crimping chamber secured to said housing and having a channel extending therethrough, said channel having a generally rectangular transverse cross-section;

means for heating said chamber;

a pair of opposed feed rolls rotatably mounted on said housing adjacent one end of said chamber for feeding yarn into said chamber channel, the long cross-sectional dimension of said channel extending parallel to the rotational axes of said feed rolls and the short cross-sectional dimension of said channel extending perpendicular to said axes, the ratio of said short cross-sectional dimension in inches to the denier of said yarn having a minimum value of about 0.000667;

at least one crimp control roll rotatably mounted on said housing and extending into said chamber channel, the portion of said channel between the feed rolls and the crimp control roll defining a confined crimping zone, whereby continuous filament yarn is fed into said crimping zone by the feed rolls against a core of crimped yarn therein causing the yarn to collapse longitudinally and fold over forming crimps which become part of said core, the crimp control roll being spaced from the feed rolls along said channel a distance no greater than the distance required for the yarn to be plastically deformed and partially set in said crimping zone, the portion of said channel between the crimp control roll and the end of the chamber opposite the feed rolls defining a setting zone, whereby said core is fed into the setting zone by the crimp control roll and the yarn is fully set therein;

means for rotatably driving said pair of feed rolls at the same rotational velocity;

means for rotatably driving said crimp control roll independently of said feed rolls, whereby the pressure on the crimped yarn core in said crimping zone may be controlled by regulating the relative rotational velocities of the feed rolls and the crimp control roll;

a cooling tower affixed at one end thereof to said chamber at the end of the chamber opposite said feed rolls and having a channel extending therethrough aligned with said chamber channel, said tower channel defining a cooling zone, whereby the crimped yarn core is fed into said cooling zone after passage through said setting zone and the yarn is cooled therein;

means for withdrawing yarn from said tower channel and;

means for controlling the relative rotational velocity of said feed rolls and the withdrawal rate of said withdrawing means.

3,978,562
METHOD OF MANUFACTURING A COLOR CATHODE RAY TUBE

Kazimir Palac, Carpentersville, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Division of Ser. No. 446,845, Feb. 28, 1974, Pat. No. 3,935,036. This application May 1, 1975, Ser. No. 573,692

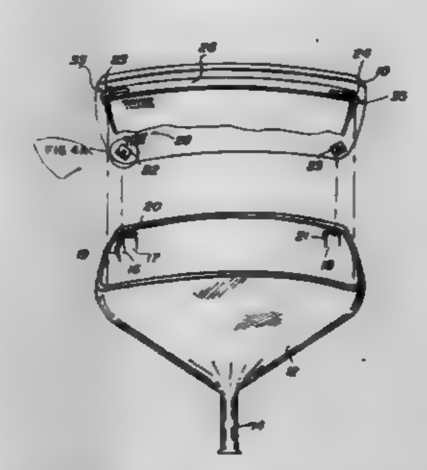
Int. Cl.^{2} H01J *9/18*

U.S. Cl. 29—25.15 6 Claims

1. In the fabrication of a rectangular-type color cathode ray tube which comprises an approximately rectangular, flangeless faceplate having a phosphor screen pattern deposited on an inner surface thereof, a funnel having an approximately rectangular mouth adapted to be sealed to said inner surface of said faceplate, and an elongated cylindrical neck sealed to said funnel on the center line of the tube for receiving electron gun means, a method for referencing said screen pattern on said faceplate to an effective source of electron beams generated by the electron gun means, comprising:

providing in at least two interior corner regions of said funnel mouth a total of at least three spaced insided funnel reference surfaces oriented parallel to said center line;

providing in at least two interior corner regions of said faceplate corresponding to said corner regions of said funnel mouth inside referencing means which extend from said inner surface of the faceplate and which define at least three tangentially spaced, axially oriented inside faceplate reference surfaces so located as to engage said inside funnel reference surfaces when the faceplate and funnel are assembled, the engagement of said inside faceplate and funnel reference surfaces uniquely determining and fixing the azimuthal attitude of said faceplate relative to said funnel in a plane generally perpendicular to said center line;



depositing a phosphor screen pattern on said inner surface of said faceplate in a location and with an orientation which bears a predetermined reference to said inside faceplate reference surfaces;

attaching said neck to said funnel with the neck center line oriented to bear a predetermined reference to said inside funnel reference surfaces; and

sealing said faceplate to said funnel, including bringing said inside faceplate reference surfaces and said inside funnel reference surfaces into referencing engagement during the sealing operation to thereby reference said screen pattern on said faceplate to said neck center line and thus to the effective source of electron beams generated by electron gun means ultimately mounted on the center line of the neck.

3,978,563
METHOD OF MANUFACTURING AN ELECTRIC DISCHARGE TUBE HAVING AN OXIDE CATHODE

Klaas Schol; Johannes Maria Azalina Antonius Compen, and Reinier Maria van den Heuvel, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 26, 1974, Ser. No. 527,242

Claims priority, application Netherlands, Dec. 4, 1973, 7316554; Oct. 11, 1974, 7413378

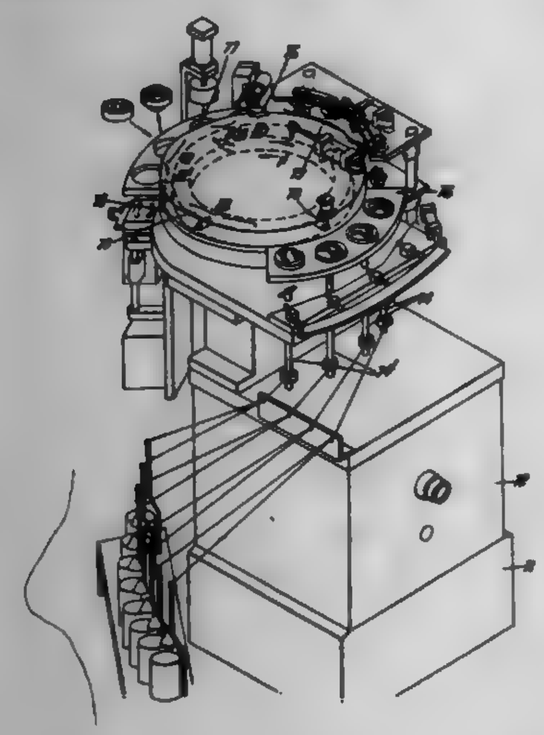
Int. Cl.^{2} H01J *9/12*

U.S. Cl. 29—25.17 7 Claims

1. A method of manufacturing an electric discharge tube having an envelope of a volume of at least 2 liters, and an oxide cathode, comprising the steps of: preparing a suspension containing a mixture of carbonates; a first binder including nitrocellulose; a second binder including at least one substance selected from the group consisting of polyimides, highly molecular acrylic resins and nylon types, said second binder having a higher resistance than said first binder to withstand impacts of water droplets and resist temperatures up to 450°C for at least a few minutes; coating a cathode support with said suspension, drying the coating at a temperature below 450°C; mounting the cathode in said envelope and evacuating said envelope; and activating the cathode at a temperature above 450°C to convert the carbonates into oxides.

3,978,564
WINDING MACHINE

Eduardo Soler Font, 5 Puigreig St., Barcelona, Spain
Filed Jan. 23, 1975, Ser. No. 543,605
Int. Cl.² B65H *81/06*
U.S. Cl. 29—33 F **9 Claims**

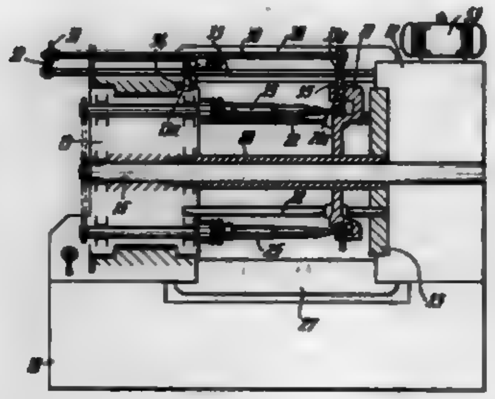


1. A winding machine of the needle type, particularly for winding stators of electric motors having shaded or universal poles, comprising a circular fixed table, at least two flat coplanar supports arranged at the outer periphery of the table, and a winding mechanism arranged generally below the table and including an even number of winding spindles extending to the vicinity of the plane containing the supports, the supports being alternately displaced around the table independently of each other and according to a predetermined program to a number of preparatory positions and a winding position, each support having arranged therealong as many stations as there are winding spindles, each station being designed to accommodate a stator, the winding mechanisms being adapted to wind simultaneously all the stators accommodated in one support when that support is in the winding position, each support passing through a preparatory position at which each wound stator is removed and an unwound stator substituted therefor.

3,978,565
MULTIPLE-SPINDLE MACHINE TOOL

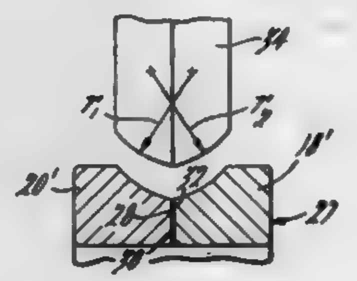
Hermann Fisch, Malesfeld, Switzerland, assignor to Esnipp AG, Zug, Switzerland
Filed Sept. 5, 1974, Ser. No. 503,244
Claims priority, application Switzerland, Sept. 14, 1973, 13193/73
Int. Cl.² B23B *3/32*; B23P *23/02*
U.S. Cl. 29—38 B **22 Claims**

1. In a multiple spindle machine, a combination comprising, a frame having two spaced apart frame members; spaced apart first and second spindle carriers indexible about a common axis and rotatably supported by said frame; a plurality of work spindles mounted in each of said carriers, the axes of said work spindles being parallel to said common axis and each spindle in said first carrier being aligned with a spindle in said second carrier; work engaging devices mounted on the spindles of at least one of said carriers and located in the space between said carriers; means for indexing said spindle carriers in synchronism about said common axis whereby said spindles travel along an endless path; a plurality of elongated guide members extending in parallelism with said common axis between said spaced apart frame members fixed thereto, said guide members including at least one guide member located at the outer side of said path and at least one guide member located at the inner side of said path; tool carriages mounted on and movable with respect to said inner and outer guide members, each of said carriages including a first slide movable lengthwise of the respective guide member and a second slide mounted on and movable relative to said first slide substantially transversely of the respective guide member, and means to so move said carriages.



3,978,566
PROCESS FOR MAKING SECTIONALIZED PRECISION COMPONENTS

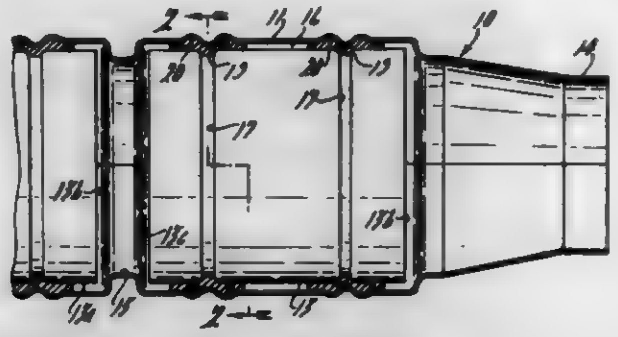
Eli M. Ladin, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.
Continuation-in-part of Ser. No. 444,120, Feb. 20, 1974, Pat. No. 3,871,093. This application Jan. 17, 1975, Ser. No. 541,998
The portion of the term of this patent subsequent to Mar. 18, 1992, has been disclaimed.
Int. Cl.² B23P *11/00, 17/00*; B21H *1/12*
U.S. Cl. 29—148.4 A **18 Claims**



1. In a process for fabricating precision components of the type comprising a member which is of a sectionalized construction including a plurality of sections joined together in assembled condition at an interface defined by a respective parting surface of each section, the steps of forming a plurality of sections having a shape and size such that the assembly thereof at the parting surface of each section substantially defines the sectionalized member, applying a thin film of adhesive to at least one said parting surface at each interface, adhesively securing said sections together at the interface defined by the respective parting surface of each section into a bonded assembly in which the sections are disposed in an assembled relationship corresponding to their ultimate operating disposition, finishing at least some of the surfaces of said bonded assembly including a surface incorporating an exposed edge of said interface to the desired final dimensions and surface finish, and thereafter cleaving said bonded assembly and separating the mated finished said sections.

3,978,567
METHOD OF MAKING A CATALYTIC REACTOR FOR AUTOMOBILE

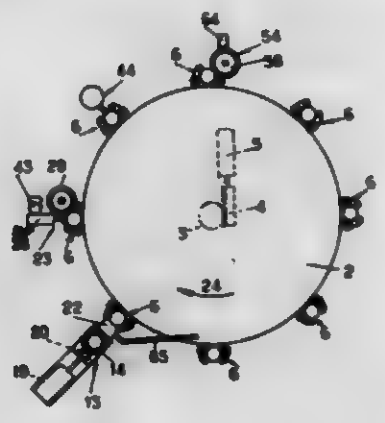
William Riley Vroman, Madison Heights, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Division of Ser. No. 342,575, March 19, 1973. This application Feb. 20, 1975, Ser. No. 551,442
Int. Cl.² B23P *15/00*; B01J *8/04, 35/04*; B29C *15/00*
U.S. Cl. 29—157 R **14 Claims**



1. In the method of manufacturing a catalytic reactor, forming a curable plastic to provide a porous monolithic catalyst substrate adapted for axial gas flow therethrough and, before said plastic is completely cured, increasing the density of said plastic adjacent its outer surface at a region thereof around the axis of said gas flow to reinforce said plastic at said region by depressing the outer surface of said substrate at said region, thereafter curing said plastic to provide a hardened substrate for said catalyst, providing a housing of separate form sustaining sections for said substrate adapted to enclose said outer surface in spaced relationship, and supporting said substrate in spaced relationship within said housing by clamping a substrate support transversely of said axis and between said housing sections and said region of said outer surface.

3,978,568
APPARATUS FOR TREATING LIPSTICK AND LIKE SUBSTANCES

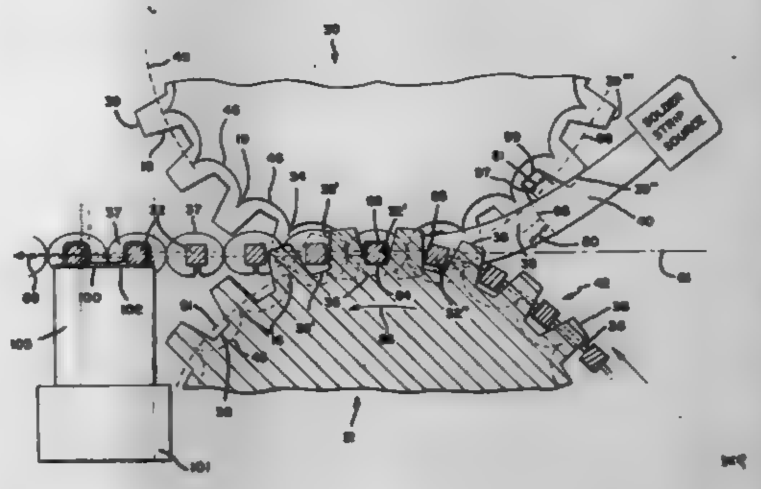
Charles Frydlender, Annecy, France, assignor to SEBEC Societe d'Exploitation de Brevets d'Emballage Cosmetique S.A., Fribourg, Switzerland
Filed June 30, 1975, Ser. No. 592,048
Claims priority, application France, July 11, 1974, 74.24096
Int. Cl.² B23F *19/00*
U.S. Cl. 29—200 D **9 Claims**



1. A machine for putting into practice the process for removing molds from, and for treating lipsticks and other substances of similar physical cahracteristics cast in individual moulds inside containers of a kind having a body an a base mechanism for projecting the stick by rotation of said body with respect to said base, comprising a fixed structure, a round table rotatable about an axis on said structure, a mechanism for indexing said table angularly step by step and, uniformly distributed around its periphery, a plurality of resilient individual grippers for said containers regularly spaced apart, a plurality of fixed treatment stations spaced around said table and comprising a feed-in station for said containers containing cast sticks in their individual molds, all facing the same direction and parallel to the axis of rotation of the table, said feed-in station comprising means for inserting said containers individually, each in one gripper, by pushing said containers laterally in a radial direction towards the axis of said table, a station for projecting the stick, said projecting station comprising means for rotating relatively the body and the base of said container in a direction such as to project said stick out of said container, a station for ejecting the hold, said mold-ejecting station comprising means for releasing said mold from said stick along the axis of said container and means for ejecting the mold, a station for polishing said sticks by surface treatment, a station for retracting said sticks into said containers, said retracting station comprising means for rotating relatively said body and said base in a direction such as to retract said stick into the container, and a station for ejecting the containers, said container ejecting station comprising means for pushing said containers laterally in a radial direction away from the axis of said table.

3,978,569
APPARATUS FOR APPLYING SOLDER RINGS TO TERMINAL POSTS

Robert Franklin Cobaugh, Elizabethtown; James Ray Coller, Mechanicsburg, and Attalee Snarr Taylor, Palmyra, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed June 17, 1975, Ser. No. 587,750
Int. Cl.² B23K *1/20*
U.S. Cl. 29—203 DS **12 Claims**



1. An apparatus for cold working a continuous strip of solder into at least partial rings around a predetermined portion of each post of a strip of posts spaced apart a given distance and in parallel manner upon a common carrier strip and comprising:
- first and second rollers having parallel axes of rotation and each roller having on the perimeter thereof a plurality of circumferential tracks which are axially aligned with a given portion of the perimeter of the other roller and which approach a tangential relationship with said given portion at the pitch plane between said rollers;
- first and second axially aligned circumferential tracks of said plurality of circumferential tracks on said first and second rollers each comprising a plurality of substantially parallel ridges spaced apart said given distance and having a concave portion therebetween;
- the said ridges on one of said rollers being positioned on said rollers to pass through said pitch plane coincidentally with the ridges on the other of said rollers to crimp said strip of solder which is passed through said pitch plane between said first and second tracks at least partially around said predeterined portions of said posts which are also passed through said pitch plane between said first and second tracks;
- a third track on said first roller comprising gear teeth with one side thereof adjacent a first common side of said first and second track of ridges;

a fourth track on said second roller comprising gear teeth with one side adjacent the second common side of said first and second track of ridges;

the gear teeth of said third and fourth tracks being circumferentially positioned with their bottom lands coincident when passing through said pitch plane to thereby trap said predetermined portions of said posts between said one side of said gear teeth of said third and fourth tracks, and with their top lands coincident with said ridges.

3,978,570
METHOD OF MANUFACTURING A ROTOR FOR VANE TYPE ENGINES

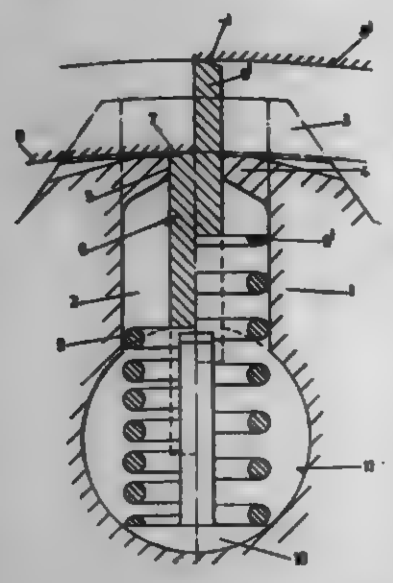
Klaus Winter, Schwalbach, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Aug. 2, 1974, Ser. No. 494,332

Claims priority, application Germany, Aug. 17, 1973, 2341677

Int. Cl.² B23P *15/00*

U.S. Cl. 29—156.4 R 3 Claims



1. A method for manufacturing a rotor for vane-type engines having radial slots for guiding vanes which project into spring chambers provided inside the rotor and containing springs assisting the vanes in extending into a space where the diameter of the springs is chosen to exceed the width of the slots, comprising the steps of

providing radial bores in rotors to serve as spring chambers,
closing the bores by plastic deformation of rotor material at the surface of the rotor,
providing radial slots which run parallel to the rotor axis to intersect the radial bores, said radial slots being formed in a manner to enable them to serve as guides for vanes and permit movement of the vanes,
providing longitudinal bores running parallel to the rotor axis, in which bores the radial bores terminate, and which form the bottom chambers for the vanes,
placing springs in said radial bores, and
placing vanes in said radial slots.

3,978,571
APPARATUS FOR ASSEMBLING STORAGE BATTERY PLATES AND SEPARATORS

Daniel Orlando, New Berlin, and Chester Misurek, West Allis, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

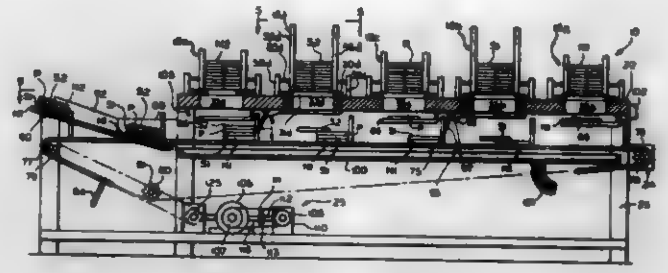
Continuation of Ser. No. 516,172, Oct. 21, 1974, abandoned. This application Apr. 10, 1975, Ser. No. 566,975

Int. Cl.² H01M *2/14*

U.S. Cl. 29—204 R 30 Claims

1. Apparatus for arranging storage battery plates and separators into battery elements, comprising:

loading station means including a plurality of feed means for dispensing battery plates and separators,
conveyor means for receiving said plates and separators from said feed means,
at least one of said feed means comprising a pivotable disc having a first aperture formed therein, and bracket means for maintaining a stack of plates or separators in a horizontally fixed position over said disc and said first aperture, said disc being pivotable between a first position in which said first aperture is aligned with the lower-most member of said stack, and a second position wherein said lower-most member is deposited on said conveyor, means for limiting vertical movement of said stack when said disc is in said first position to permit only the lower-most member of said stack to be received in said aperture.



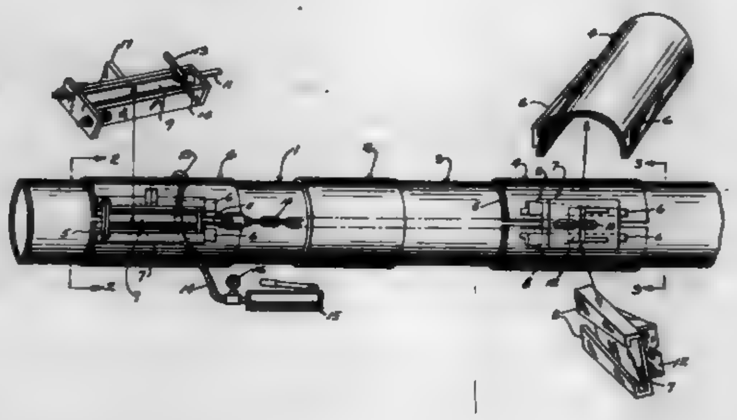
3,978,572
PIPE JOINT MAKE UP TOOL

Robert M. Jackman, Little Rock, Ark., assignor to A. O. Smith-Inland, Inc., Milwaukee, Wis.

Filed Oct. 10, 1975, Ser. No. 621,412

Int. Cl.² B23P *19/04*

U.S. Cl. 29—237 9 Claims



1. A pipe joint make up tool for securing two pipe members together at a joint, which comprises a split gripper collar assembled around the first pipe member and of a construction to provide an internal gripping surface in engagement with the first pipe member, said collar having rails along each facing edge which taper from a lesser height to a greater height in the direction towards the second pipe member, a wedge member disposed on opposite sides of the split gripper collar and having flanges on each side formed complementary to the rails on the split collar and received on said rails, power means connected to each wedge member, and a pulling member secured to each wedge member on opposite sides of the first pipe member and parallel to the axis of each pipe member to be joined and connected at the opposite end to the second pipe member, said power means being disposed to exert a selective balanced force on the wedge members and pull the latter along the rails on the collars to a greater wedging position thereby socketing the first pipe member and second pipe member together at the joint therebetween.

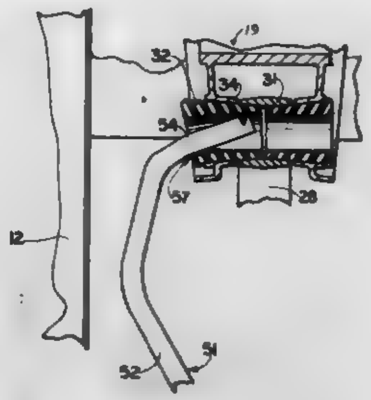
3,978,573
DEVICE FOR EXTRACTING BUSHINGS FROM A BUSHING SUPPORT

Martin D. Williams, 7904 4th St., Maud, Ohio 45069

Filed June 20, 1975, Ser. No. 588,856

Int. Cl.² B23P *19/02*

U.S. Cl. 29—267 3 Claims



1. A device for removing a tubular bushing from a tubular bushing support which comprises a handle portion, and an operative head extending transversely of the handle portion and to one side thereof, the operative head being bar-like with a slot therein to form a hook projection adjacent an end of the operative head and facing away from the handle portion, the hook projection being engageable with the interior of the bushing while a portion of the operative head remote and on an opposed side of the operative head from the hook projection acts as a fulcrum so that the tool can be swung to cause the hook projection to free the bushing from the bushing support.

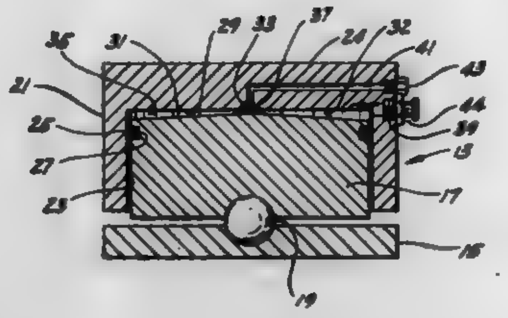
3,978,574
METHOD OF POSITIONING AND SUPPORTING A MACHINE

Morris Randall Stith, Jr., R.R. No. 1, Box 13, Webster, Ky. 40176

Filed Aug. 26, 1975, Ser. No. 607,921

Int. Cl.² B23Q *17/00*

U.S. Cl. 29—407 11 Claims



1. The method of positioning and supporting an object, such as a large machine or other structure, on a foundation comprising the steps of:

placing a plurality of hydraulic jack units between the foundation and the object;
introducing a liquid under pressure into each of said jacking units to move the object relative to the foundation to a selected position, said liquid constituting a hydraulic working fluid and being hardenable to form a solid substantially without expanding or contracting as it hardens;
maintaining said liquid in each of said jacking units under pressure so as to support said object in its selected position; and
effecting the hardening of said liquid maintained in each of said jacking units to fix said jacking units in their respective positions with the object supported in its selected position.

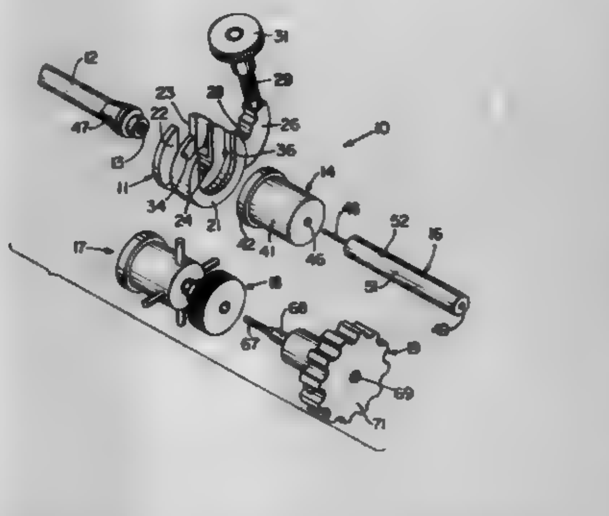
3,978,575
METHOD AND DEVICE FOR EXTRACTING FILTER FRITS FROM LIQUID CHROMATOGRAPHIC COLUMNS

William F. Beyer, Portage, and Harry S. Dankert, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed June 18, 1975, Ser. No. 587,827

Int. Cl.² B23P *19/02*

U.S. Cl. 29—427 7 Claims



1. A method of removing a nonthreaded pluglike filter from the end of a tube, comprising the steps of:

forming a small bore of preselected depth in said filter so that said bore is coaxially aligned with said filter and opens outwardly through one end thereof;
positioning a guiding member on the end of said tube so that an opening in said guiding member is aligned with said filter;
axially securing said guiding member relative to said tube;
rotatably threading a threaded extractor member into the opening formed in said guide member so that a central opening formed in said extractor member is aligned with the bore formed in said filter;
inserting a thread-forming tap through said central opening until the end thereof is adjacent the bore in said filter;
then rotating said tap for causing same to be threadably engaged with said filter and for causing said tap to move axially inwardly relative to said central opening until said tap substantially abuts said extractor member; and then
rotating said extractor member in a reverse direction relative to said guide member for threadably disengaging said extractor member from said guiding member while said extractor member simultaneously imposes an axial pushing force on said tap for pulling the filter from said tube.

3,978,576
NAIL EXTRACTOR

Jack Mustoe, Jr., Cumbernauld, Scotland, assignor to Glentore Timber Products Limited, Cumbernauld, Scotland

Filed Apr. 21, 1975, Ser. No. 569,668

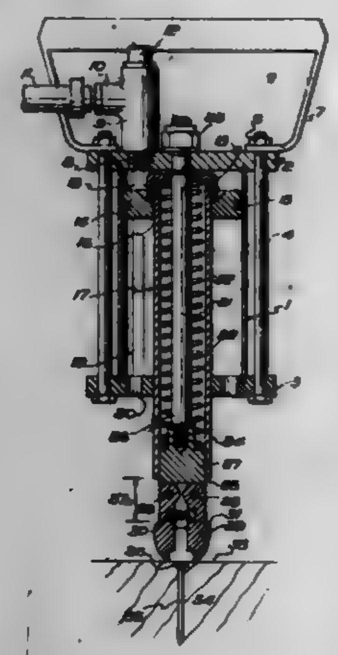
Claims priority, application United Kingdom, Aug. 9, 1974, 35378/74

Int. Cl.² B66F *15/00*

U.S. Cl. 254—18 17 Claims

1. An extractor for nails comprising a cylinder, an end plate at each end of said cylinder, piston means reciprocable in said cylinder under the influence of fluid pressure, a center shaft disposed coaxially with a longitudinal axis of said cylinder and secured at one end to one of said plates, said shaft passing through the other one of said end plates, and a pair of gripping jaws located at the other end of said shaft, at least one of said jaws being movable between nail gripping and non-gripping

positions as a result of mechanical interaction between said piston means and said movable jaws upon displacement of said piston with respect to said jaws under the action of fluid pressure.



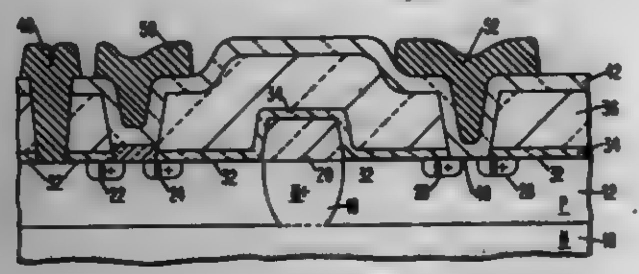
3,978,577
FIXED AND VARIABLE THRESHOLD N-CHANNEL MNOSFET INTEGRATION TECHNIQUE

Arup Bhattacharyya; Madhukar Laxman Joshi, both of Essex Junction; Charles Thomas Kroll, Essex Center, and Ronald Silverman, Essex, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1975, Ser. No. 591,595

Int. Cl.^{2} B01J *17/00*

U.S. Cl. 29—571 4 Claims



1. The method of making fixed and variable threshold field effect transistors comprising the steps of:

providing a plurality of paired source and drain regions and at least one isolation region of n-type semiconductor material in a semiconductor material of p-type conductivity,

providing a field dielectric structure over said source, drain and isolation regions comprising successive layers of silicon dioxide, aluminum oxide and silicon dioxide;

selectively removing said field dielectric structure from the channel regions of a plurality of source and drain regions associated with fixed threshold transistors;

growing a layer of silicon dioxide having a thickness of about 450 to 525 angstrom units in said channel regions of said fixed threshold transistors;

selectively removing said field dielectric from the channel regions of a plurality of sorce and drain regions associated with variable threshold transistors;

growing a layer of silicon dioxide having a thickness of about 31–34 angstrom units in said channel regions of said variable threshold transistors;

depositing a layer of silicon nitride over said field dielectric structure and said silicon dioxide layers in said channel regions;

depositing a layer of silicon dioxide over said silicon nitride layer; and

depositing conductive metallurgy to interconnect said fixed and variable threshold transistors.

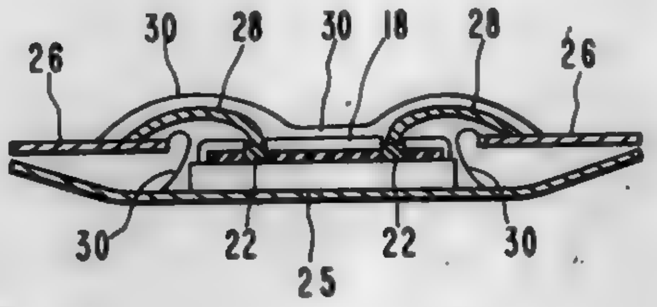
3,978,578
METHOD FOR PACKAGING SEMICONDUCTOR DEVICES

James C. Murphy, Cupertino, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Aug. 29, 1974, Ser. No. 501,577

Int. Cl.^{2} B01J *17/00*

U.S. Cl. 29—577 5 Claims



1. A method for packaging semiconductor devices comprising the steps of:

a. spinning on a rotating platform a semiconductor wafer containing a multiplicity of integrated circuit die;
b. applying a polyimide material on said spinning wafer thereby providing a film of said polyimide material on the surface of each of said die;
c. hardening said polyimide film by heating said wafer at a first elevated temperature in a nitrogen atmosphere and then at a second higher elevated temperature in a nitrogen atmosphere;
d. etching selected areas of said polyimide film from the surface of said wafer, thereby exposing electrical circuit contact areas on each of said die;
e. separating said multiplicity of integrated circuit die from said wafer;
f. attaching each of said multiplicity of die to a support means;
g. electrically coupling said current contact areas on each of said die to electrical conductors by means of bonding wires; and,
h. coating each of said die and said electrical conductors with a second polyimide film, thereby adding strength to said bonding wires.

3,978,579
AUTOMATIC ASSEMBLY OF SEMICONDUCTOR DEVICES

Angelo Daniel Checki, Jr., Lyndhurst, and Anton Griswold Frey, Basking Ridge, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 30, 1974, Ser. No. 501,965

Int. Cl.^{2} B01J *17/00*

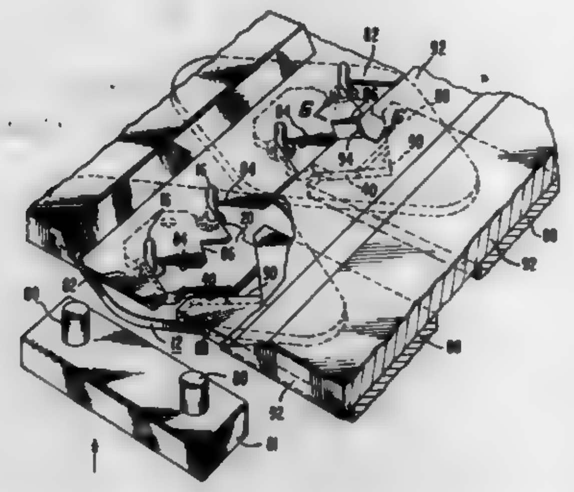
U.S. Cl. 29—589 2 Claims

1. A method of assembling a mount assembly including a stem comprising a header member and at least two leads extending therethrough, and a semiconductor pellet mounted on said header, said method comprising:

accurately positioning the header of a stem at a first apparatus work station and engaging said leads by forming tools at said station for shaping said leads to dispose an end portion of each thereof in preselected positional relationship with said header,

thereafter disposing said header in loosely mounted disposition adjacent to a second apparatus work station and engaging said leads by positioning tools at said second work station for accurately positioning both said leads and said header relative to said station,

disposing, at said station, an open-ended guide chute adjacent and leading to said header, and



disposing a semiconductor pellet within said chute and on said header, said chute providing accurate positioning of said pellet on said header.

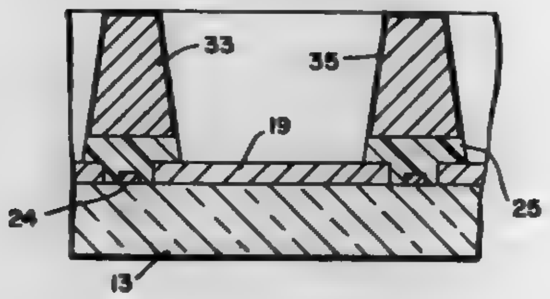
3,978,580
METHOD OF FABRICATING A LIQUID CRYSTAL DISPLAY

Alex M. Leupp, Newport Beach, and Hans G. Dill, Costa Mesa, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 374,444, June 28, 1973, Pat. No. 3,863,332. This application Sept. 27, 1974, Ser. No. 509,754

Int. Cl.^{2} H01L *21/302*

U.S. Cl. 29—582 3 Claims



1. A method of fabricating a liquid crystal display having a backplate with electrodes and integrated spacers comprising the steps of:

a. forming an array of reflective electrodes in spaced apart columns and rows on a surface on a substrate,
b. forming a coating on said surface and over said electrodes by the steps which include,
   i. depositing an insulating layer on said substrate surface and extending over said electrodes, and
   ii. depositing a second layer over said first layer,
c. forming a lattice of said coating, comprised of spaced apart walls of uniform height extending at their bases over the edges of said electrodes, by removing those portions of said coating which overlie said electrodes out to, but not including, said edges, said lattice having a plurality of interstices aligned with said electrodes,
d. placing liquid crystal material into said interstices so as to cover said electrodes, and
e. securing a transparent front plate to said lattice, whereby said lattice maintains uniform spacing between said backplate and said front plate.

3,978,581
METHOD OF MAKING A PIN PLUG

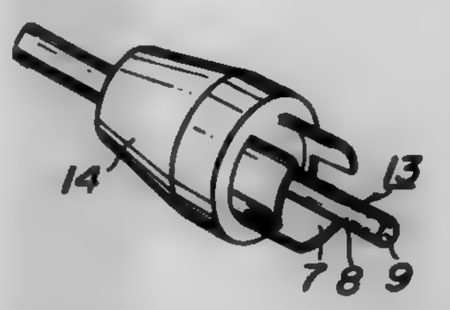
Yoshihiko Miura, Tokyo, Japan, assignor to Yuko Shindosho Company Limited, Tokyo, Japan

Division of Ser. No. 525,266, Nov. 19, 1974, abandoned. This application Feb. 12, 1975, Ser. No. 549,236

Claims priority, application Japan, Feb. 23, 1974, 49-22176[U]; Oct. 11, 1974, 49-116936; Apr. 4, 1974, 49-37894[U]; May 9, 1974, 49-52392[U]

Int. Cl.^{2} H01R *9/00*

U.S. Cl. 29—630 A 4 Claims



1. A method for manufacturing a pin plug having a plug cover and a pin arranged inside of the plug cover coaxially therewith, comprising:

forming a pin of a substantially tubular metal body;

forming a plug cover consisting of a substantially cylindrical metal body having a substantially C-shaped cross section which defines a slit which is wider than a diameter of the pin;

connecting two conductors of an electrical wire to the pin and plug cover, respectively, while the pin is positioned outside of the plug cover;

inserting the pin inside of the plug cover through the slit formed in the plug cover;

thereafter inserting the pin and plug cover into a mold member, the pin being disposed coaxially with the plug cover within the mold member; and

then injecting synthetic resin inside of the mold member so as to fix the pin and plug cover in position by means of the synthetic resin body thus molded.

3,978,582
CABLE INSULATION STRIPPING TOOL

Walter J. Maytham, Los Altos, Calif., assignor to Speed Systems, Inc., Los Altos, Calif.

Filed Feb. 18, 1975, Ser. No. 550,414

Int. Cl.^{2} H02G *1/12*

U.S. Cl. 30—90.1 5 Claims

1. A tool for stripping insulation from an insulated conductor cable comprising:

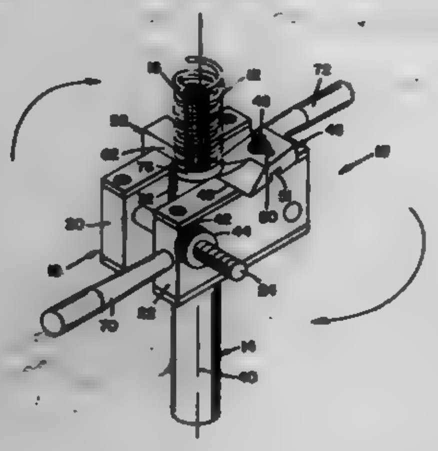
body means;

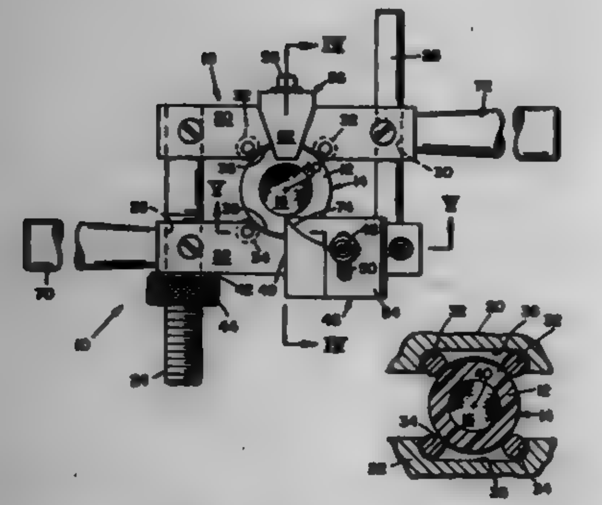
support means mounted to said body means to support a cable seated thereon;

blade means mounted to said body means and having a cutting edge, the blade means being positioned so that upon relative turning of the body means and cable supported by the support means, about the longitudinal axis of the supported cable, (i) the cutting edge cuts the insulation thereof and (ii) the supported cable and body means are urged by the blade means to relatively move a distance generally along the longitudinal axis of the supported cable for each turn of the body means and cable relatively; and

movement control means for limiting relative movement of the supported cable and body means generally along the longitudinal axis of the supported cable for each turn of the body means and cable relatively, to a certain distance less than the distance the supported cable and body means would relatively be moved generally along the longitudinal axis of the cable [illegible] supported under urging of the blade means, whereby the movement control means determine the axial thickness of insulation removed from the supported cable at each turn of the body means and cable relatively;

wherein the support means comprise support roller means comprising a plurality of rollers rotatably mounted to the body means, the axis of rotation of each roller being substantially parallel to one another and to the longitudi-





nal axis of a cable to be supported thereby such that said rollers are positioned generally about a cable seated on the roller means, so that a cable seated on the plurality of rollers is generally surrounded by the rollers and supported thereby, the rollers rolling upon relative turning of the body means and cable.

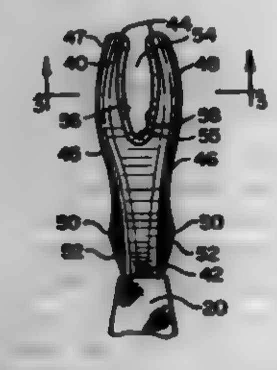
3,978,583
PEELING UTENSIL

William A. Papalardo, 63 Little Neck Road, Centerport, N.Y. 11721

Continuation-in-part of Ser. No. 441,132, Feb. 11, 1974, Pat. No. 3,885,307. This application Apr. 7, 1975, Ser. No. 565,832

Int. Cl.² A47J *17/02*

U.S. Cl. 30—123.5 **14 Claims**



1. A peeling utensil comprising an elongated handle and an elongated blade having a substantially convex bottom surface attached at one end thereof to said handle, said blade having an open ended slot extending for a distance from the other end of said blade, at least one side edge of said slot concave at least in part over its length, and said slot edges are sharpened downwardly and inwardly to form cutting edges on said convex bottom surface of said blade.

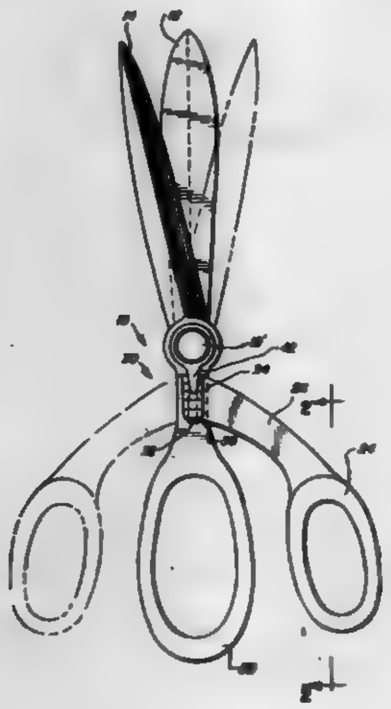
3,978,584
AMBIDEXTROUS SCISSORS

John W. Mayer, 1508 Blackhawk Drive, Schaumberg, Ill. 60172

Filed Dec. 23, 1974, Ser. No. 535,947

Int. Cl.² B26B *13/00*

U.S. Cl. 30—256 **5 Claims**



1. A pair of ambidextrous scissors, comprising:

a first rigid member;

a second rigid member, said first and second rigid members each having a blade portion with opposite edges thereof sharpened to provide two sets of cutting edges, the blade portion of said first member having a blunt blade end and extending past the end of said second member;

a base portion secured to the opposite end of said second member and pivotal means mounting said base to said first rigid member to permit relative pivotal movement between the blade portions of the rigid members;

a finger handle portion on said first rigid member having an eye sized to accommodate at least two fingers of the user;

a movable handle portion having a smaller eye for accommodating the thumb of the user;

hinge means mounting said movable handle portion to said base for pivotal movement about the longitudinal axis of said second member between a first position for use by one hand of the user and a second position for use by the other hand of the user, said hinge means preventing longitudinal movement of said movable handle with respect to said second member;

selectively operable locking means for maintaining the movable handle in either its first or second position, said selectively operable locking means including a plunger mounted in said movable handle portion for alignment with a pair of bores in said base, said bores being spaced from said hinge means by a distance equivalent to the diameter of the bore and on opposite sides of said hinge means so that the plunger will engage one or the other of said bores when in its respective positions; and

a chamfered edge on both sides of the eye of said finger handle and the eye of said movable handle to facilitate the use of the scissors with one hand when in the first position and with the other hand when in the second position.

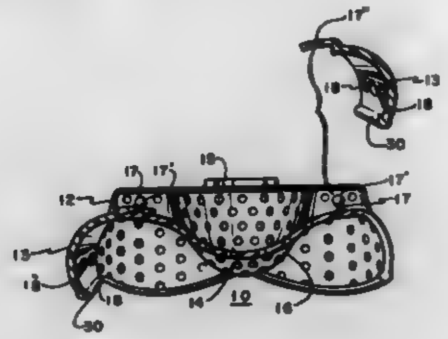
3,978,585
IMPRESSION TRAYS

Burton V. Holcomb, 138 E. 13th St., Burley, Idaho 83318

Filed Apr. 5, 1974, Ser. No. 458,263

Int. Cl.² A61C *9/00*

U.S. Cl. 32—17 **5 Claims**



1. An upper impression tray comprising a body which is a convoluted member having an oral plate which follows the general contours of the roof of the mouth and which provides a lingual portion adjacent the upper teeth, and buccal walls which are detachably mounted by snap lock elements to the outer rectilinear edges of the body, to form a depression in which impression compound may be disposed.

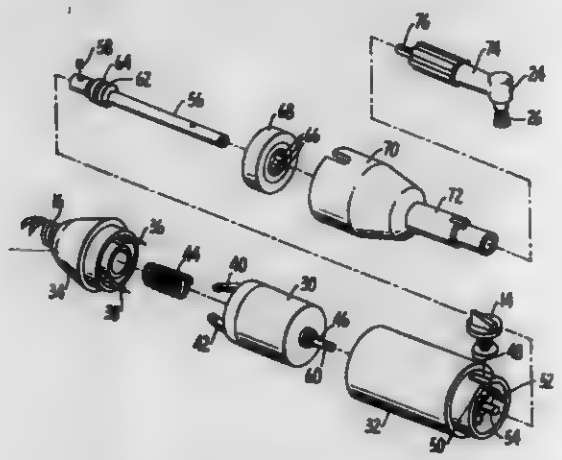
3,978,586
DENTAL APPARATUS

Roger F. Etherington, Newport Beach, Calif., assignor to The Denticator Company, Inc., San Francisco, Calif.

Filed Feb. 10, 1975, Ser. No. 548,478

Int. Cl.² A61C *3/06*

U.S. Cl. 32—27 **9 Claims**



1. In a dental device comprising a casing for an electric motor, a tubular shank extending from the casing, a dental tool at the free end of the shank, and a drive shaft projecting through the shank for driving the dental tool with the electric motor, the improvement comprising a radially self-adjusting bearing circumscribing the drive shaft proximate the electric motor to minimize the imposition of side loads on the motor due to pressure exerted on the dental tool, said bearing comprising:

a first outer race member having a plurality of transverse projections spaced circumferentially about the drive shaft;

a plurality of balls located in the spaces between the respective projections in contact with the drive shaft, said projections preventing unrestricted radially inward movement of said balls; and

a second outer race member having a plurality of bias means disposed over the respective balls to bias said balls radially inwardly and permit limited movement of said balls radially outwardly, said second outer race member further including means for confining the balls between the second outer race member and the first outer race member to limit transverse movement thereof.

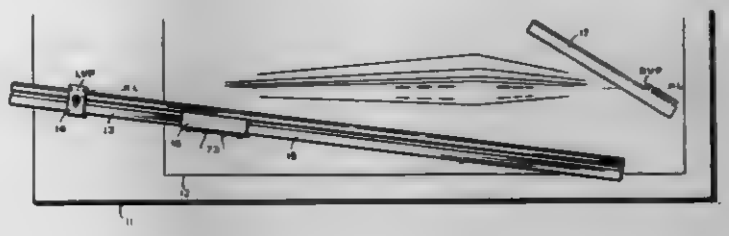
3,978,587
DRAFTING SYSTEM AND APPARATUS

Hilton Baugh, 8575 Glen Ellen Drive, Arvada, Colo. 80002

Filed Oct. 29, 1974, Ser. No. 518,256

Int. Cl.² B43L *13/14*

U.S. Cl. 33—77 **13 Claims**



1. A ruling blade for drawing perspective views and the like comprising:

a thin, flat, elongated body having a pair of oppositely disposed supporting flat side faces arranged parallel to one another and reversible with either side face up, a pair of oppositely disposed parallel ruling edges, a pair of oppositely disposed parallel end edges, a channel-shaped center groove in each of said side faces extending the full length thereof providing a pair of opposed inside flat wall surfaces parallel to one another, one of said side faces having a beveled surface terminating at a ruling edge, the other of said side faces having a lateral recess extending laterally inwardly from each of said ruling edges, the lateral recess adjacent the beveled edge having less depth than the lateral recess adjacent the ruling edge opposite the beveled edge.

3,978,588
MAGNETIC WIRE LINE MARKING, ERASING AND DETECTING METHOD AND APPARATUS

Robert L. Richardson, 536 E. Thompson Blvd., Ventura, Calif. 93001, and Norris Johnston, 4222 Thacher Road, Ojai, Calif. 93023

Continuation of Ser. No. 159,507, July 2, 1971, which is a continuation-in-part of Ser. No. 2,184, Jan. 12, 1970, abandoned. This application Aug. 6, 1973, Ser. No. 385,671

Int. Cl.² G08B *21/00*; G01R *1/16*

U.S. Cl. 33—126.5 **1 Claim**

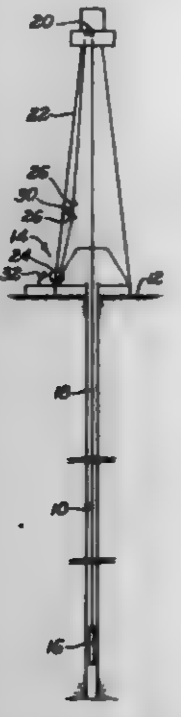
1. A method of relocating equipment at a previously visited point in a well, the equipment being run on a magnetizable wire line, including the steps of:

locating the equipment on the wire line at a desired point in the well;

while the equipment is at the desired point, applying three magnetic dipoles of alternating polarity in a closely spaced line to the wire line at an appropriate spot at the surface of the well, the three magnetic dipoles defining a center one of the dipoles as a guarded magnetic mark;

moving the equipment on the wire line from and then back

to the desired point; and
sensing the guarded magnetic mark at the same approximate spot at the surface thereby indicating the arrival of the equipment at the desired point.

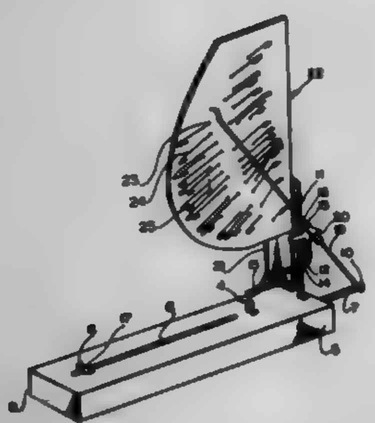


3,978,589

APPARATUS FOR MEASURING TWO DIMENSIONS OF AN OBJECT AND COMBINING THE MEASURED VALUES TO OBTAIN SINGLE VALUE

Lawrence Alvin Courtepatte, 14607 - 86 St., Edmonton, Alberta, Canada (P5E 3C6), and Kenneth Wilbur Currie, 16716 - 81 Ave., Edmonton, Alberta, Canada (T5R 3P7)

Filed Apr. 7, 1975, Ser. No. 565,566
Claims priority, application Canada, Nov. 28, 1974, 214805
Int. Cl.² G01B *5/08*, *5/02*
U.S. Cl. 33—143 R **9 Claims**



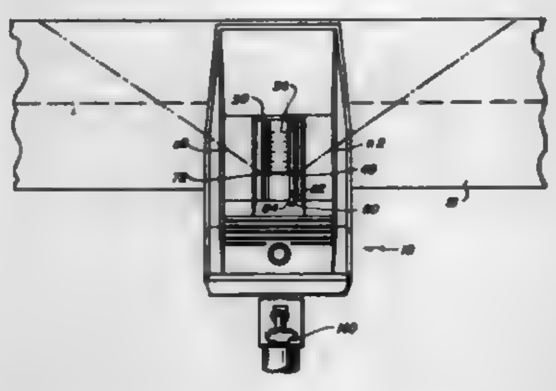
1. Apparatus for measuring two dimensions of an object and combining the measured values to obtain a single value, comprising:
means establishing a fixed reference point,
first means movable with respect to the fixed reference point and adapted to measure one dimension of the object,
second means movable with respect to the fixed reference point and adapted to measure a second dimension of the object,
a fixed reference frame,
a single indicator associated with said first and second movable means, said indicator being movable relative to said reference frame, and
motion transmitting means physically connecting both said first movable means and said second movable means to said single indicator for positioning said indicator with respect to the fixed reference frame in dependence upon the positions of both said first and second movable means.

3,978,590

SIGHTING DEVICE FOR LUMINAIRE POSITIONING

William Ray Wedding, Southaven, Miss., and John David Kiss, Memphis, Tenn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 29, 1974, Ser. No. 501,794
Int. Cl.² F21S *1/10*; F21V *19/02*
U.S. Cl. 33—263 **5 Claims**



2. A sighting device removably mountable on a luminaire adapted to illuminate an area spaced a distance from the luminaire, said luminaire including an illuminating face for projecting a beam of light therefrom directed toward the area to be illuminated, lateral sides of the luminaire bounding said face, and a housing surface enclosing the luminaire on the side remote from said face, said device including means mounting said luminaire at a fixed location at one of a predetermined distances from the area to be illuminated, means for adjusting the inclination of said luminaire on said mounting means to incline the beam and illuminate the area, said sighting device including (1) parallel spaced-apart stationary tracks disposing a rear sighting member of said device in a predetermined angular relationship relative to said illuminating face when said sighting device is mounted on said surface, (2) said sighting member manually translatable along said tracks for movement in a path parallel to said tracks, said sighting member disposed inwardly of said lateral sides of said luminaire when said device is mounted on said surface, (3) a calibrated scale defining positions of said sighting member in said path with positions on said scale for each of said predetermined distances of the luminaire from the area to be illuminated, and (4) a fixed front sighting member adjacent one of the lateral sides of said luminaire to enable visual sighting laterally outwardly from said rear sighting member across said front sighting member relative to a predetermined point adjacent to the lateral extremity of the area to determine the proper adjustment of the luminaire for projection of the beam to the area.

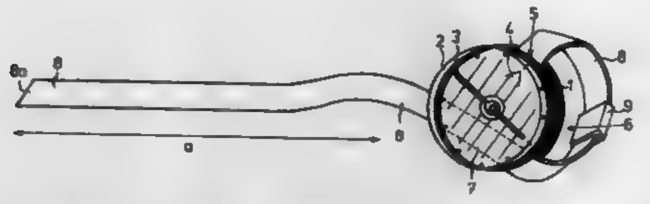
3,978,591

COMPASS, IN PARTICULAR FOR SKI AND COMPETITION TRACK FINDING

Erkki Kalle Jaaskelainen, Hauklahti, Finland

Filed Oct. 7, 1974, Ser. No. 512,927
Claims priority, application Finland, Nov. 6, 1973, 3425/73
Int. Cl.² G01C *17/02*; A45F *5/00*
U.S. Cl. 33—334 **3 Claims**

1. In combination with a compass having a compass needle box containing a compass needle, compass graduations and a base plate with an opening, a device adapting the compass for use in cross-country track finding and in track finding on skis, said device being adapted to affix the compass to the wrist of a user having a hand and a thumb notch, the device being affixable upon the upper edge of the hand adjacent to the thumb notch and comprising an elongated strap, affixed at one end to said base plate and having a free other end, said strap passing complementary slidably through said opening said opening being arranged in said base plate so that as said strap extends therethrough it is held at an angle with respect to said one end so as to define a thumb loop of adjustable size constituting a part of said strap lying between said one end of said strap and said opening, said thumb loop being adapted to encircle the base of a thumb; and closure means disposed in said thumb loop for affixing said free end of said strap thereto, said strap passing when the compass is attached to the hand, starting from said one end, once around the base of the thumb through said opening and further being adapted to go around the wrist to said closure means.

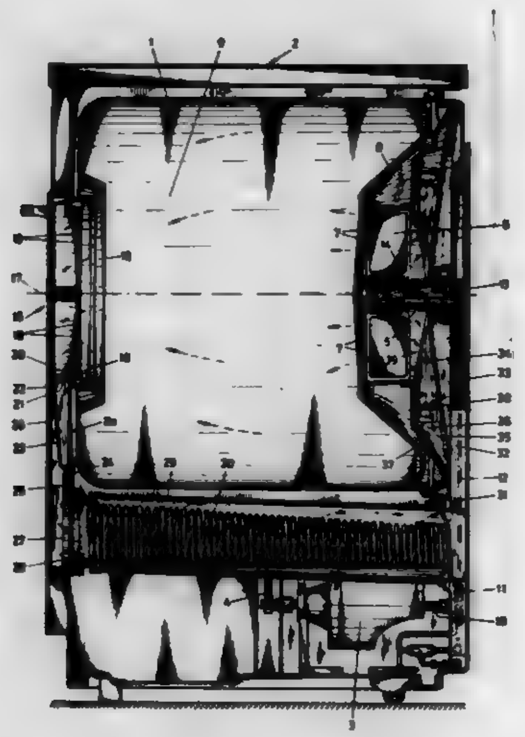


3,978,592

DRYER IN PARTICULAR FOR LAUNDRY

Fredrik A. Schuurink, 27, Fr. Rooseveltlaan, Breda, Netherlands

Filed Aug. 28, 1974, Ser. No. 501,233
Claims priority, application Netherlands, Sept. 3, 1973, 7312132
Int. Cl.² F26B *21/06*
U.S. Cl. 34—82 **4 Claims**



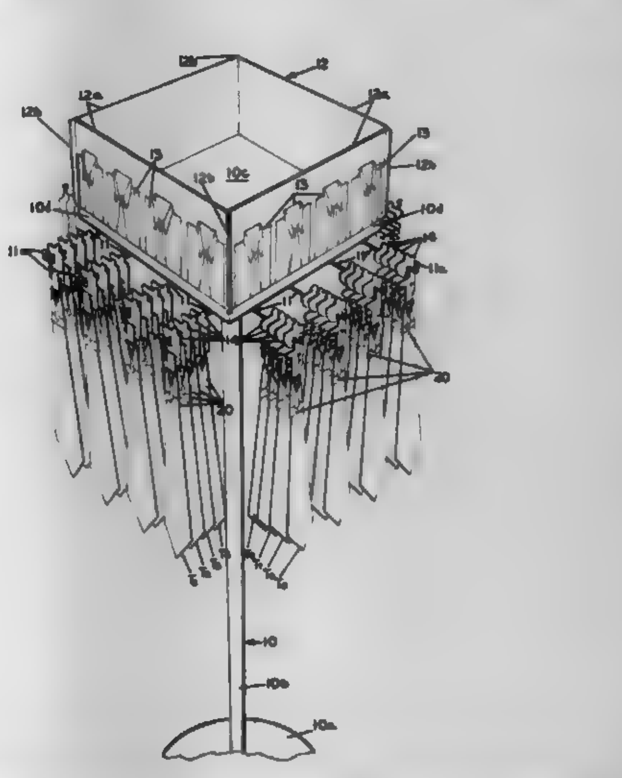
1. A dryer such as for laundry in which at least a portion of the air is recirculated, said dryer comprising:
a housing;
a rotatable drum in said housing, one end wall of said drum having an opening defined therein for access thereto and discharge of air therefrom;
said housing comprising an end plate having an opening therein of a size and location corresponding substantially to that of the drum opening and a plate portion which extends in a first direction from the periphery of the housing opening;
an openable and closable door mounted on said housing, said door comprising:
an outer plate spaced outwardly in a second direction perpendicular to said plate portion from said plate portion to define an air passage therebetween when the door is closed,
a perforated plate having at least a portion spaced inwardly in a direction opposite to said second direction from said outer plate a distance at least as great as the distance between the outer plate and the plate portion when the door is closed, said portion of said perforated plate being coextensive with the drum opening and lying substantially in the plane thereof when the door is closed,
an inner plate having means defining an opening therein of a cross-section greater than that of the drum opening, at least a portion of the periphery of the opening in the inner plate being spaced in said first direction from the periphery of the portion of the perforated plate to define a space therebetween, said inner plate having a portion substantially coplanar with said plate portion when the door is closed, said portion of said inner plate extending substantially in said first direction from the portion of the periphery of the opening in the inner plate and defining with said outer plate a continuation of said air passage when the door is closed, and
a lint screen, one edge of which is connected to the inner plate adjacent the portion of the periphery of the opening therein, said lint screen extending from that connection toward the perforated plate and the outer plate whereby when the door is closed said lint screen extends across the air passage to trap lint moving with the air through the perforated plate, the air passage and said continuation thereof and when the door is open said lint screen can be easily cleaned since it lies in the then open space between the portion of the periphery of the opening in the inner plate and the perforated plate.

3,978,593

DISPLAY AND MERCHANDIZING DEVICE FOR TIES

Sidney C. Pulitzer, New Orleans, and Aubrey L. Gouner, Metairie, both of La., assignors to Wembley Industries, Inc., New Orleans, La.

Filed Jan. 15, 1975, Ser. No. 541,185
Int. Cl.² B65D *73/00*
U.S. Cl. 35—56 **3 Claims**



1. A merchandizing display for men's ties including a vertical panel having a plurality of true color images of popular colors of shirts respectively printed on said panel in a horizontal array, a tie support rod disposed beneath each said image, and means for supporting a plurality of medially folded ties on said rod in depending relationship thereto and with the plane of each tie parallel with the plane of said panel, each said tie being color co-ordinated with the said colored shirt image and

having a wrapper on the top portion thereof, each said wrapper having printed on the front face thereof a color replica of said colored shirt image; a front panel portion dimensioned to overlie and conform to the top portion of the tie when folded about its longitudinal center, said front panel portion bearing said replica of said colored shirt image; a tie-shaped aperture extending between and below the opposed collar edges of said printed shirt replica, whereby the pattern of the tie is displayed as a miniature tie in proper position with respect to said replica of said colored shirt image; a first integral tab secured to one lateral edge of said front panel portion and foldable to lie between the two folded portions of the tie, said tab having a tapering longitudinal extension of lesser width than the adjacent portions of the tie, said extension projecting substantially beyond the longitudinal center of the tie, and being reversely folded at a fold line to conform to the interior surfaces of the folded tie, thereby securing said wrapper in a desired vertical position relative to the folded tie; a second integral tab secured to the other lateral edge of said front panel portion and foldable to lie adjacent to the back surface of the folded tie; a medial portion of said first tab being cut to overlap both of said folded tie portions and lie contiguous with said second tab portion; means for detachably securing said medial portion of said first tab to said second tab; and a tie supporting hook hanging on said tie support rod and having means underlying and contacting said wrapper at said fold line, whereby said wrapper is vertically positioned with respect to said tie supporting hook.

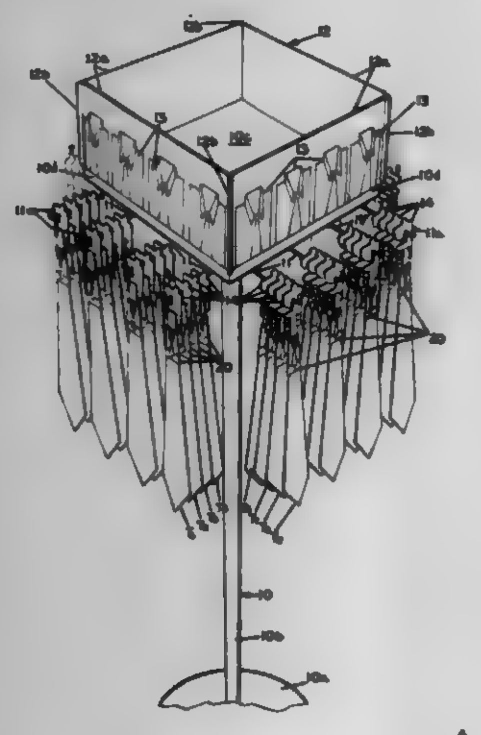
3,978,594
DISPLAY AND MERCHANDIZING DEVICE FOR TIES

Sidney C. Pulitzer, New Orleans, and Aubrey L. Gouner, Metairie, both of La., assignors to Wembley Industries, Inc., New Orleans, La.

Division of Ser. No. 541,185, Jan. 15, 1975. This application Nov. 26, 1975, Ser. No. 635,554

Int. Cl.² B65D *85/18*

U.S. Cl. 35—56 **7 Claims**



1. A display wrapper for an individual tie comprising a die cut sheet of printable material defining:

1. a front panel portion dimensioned to overlie and conform to the top portion of the tie when folded about its longitudinal center, said front panel portion having printed thereon a colored replica of the front collar portion of a colored shirt;
2. a tie-shaped aperture extending between and below the opposed collar edges of said printed shirt replica, whereby the pattern of the tie is displayed as a miniature tie in proper position with respect to said printed shirt replica;
3. a first integral tab secured to one lateral edge of said front panel portion and foldable to lie between the two folded portions of the tie, said tab having a tapering longitudinal extension of lesser width than the adjacent portions of the tie, said extension projecting substantially beyond the longitudinal center of the tie, and being reversely folded to conform to the interior surfaces of the folded tie, thereby providing a tie protecting loop through which a tie mounting hook may be inserted, and also securing said wrapper in a desired vertical position relative to the folded tie;
4. a second integral tab secured to the other lateral edge of said front panel portion and foldable to lie adjacent to the back surface of the folded tie;
5. a medial portion of said first tab being cut to overlap both of said folded tie portions and lie contiguous with said second tab portion; and
6. means for detachably securing said medial portion of said first tab to said second tab.

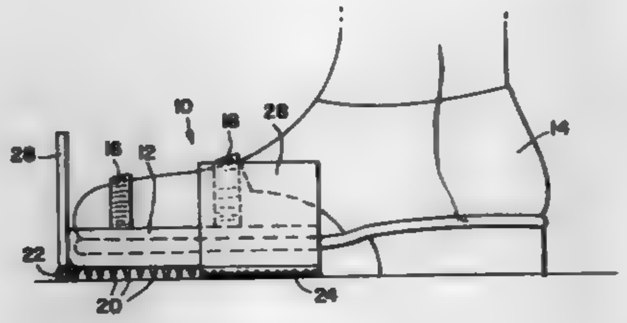
3,978,595
ANTI-SKID ATTACHMENT FOR SHOES

Pauline Carlisle Clark, Westbury, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Aug. 4, 1975, Ser. No. 601,812

Int. Cl.² A43B *3/18*

U.S. Cl. 36—7.7 **4 Claims**



1. An anti-skid attachment for shoes and the like, comprising: a body conforming in shape to the front part of a shoe and receiving same therein; means for removably securing said body to said front part, said body having a lower surface partially provided with rows of anti-skid means protruding therefrom for gripping slippery surfaces; and masking means hinged to the sides and front of said body and adapted to swing from a vertical position to a horizontal position in which said means are held against anti-skid means for rendering same inoperative for walking on ordinary surfaces.

3,978,596
SANDALS AND METHOD OF MAKING SAME

Dwight C. Brown, and Kevin B. Brown, both of 711 1/2 E. Houston, Pasadena, Tex. 77502

Continuation-in-part of Ser. No. 526,466, Nov. 25, 1974, Pat. No. 3,928,927. This application Nov. 24, 1975, Ser. No. 634,407

Int. Cl.² A43B *3/12*; A43D *9/00*

U.S. Cl. 36—11.5 **22 Claims**

1. A sandal adapted to be worn on the foot, comprising:

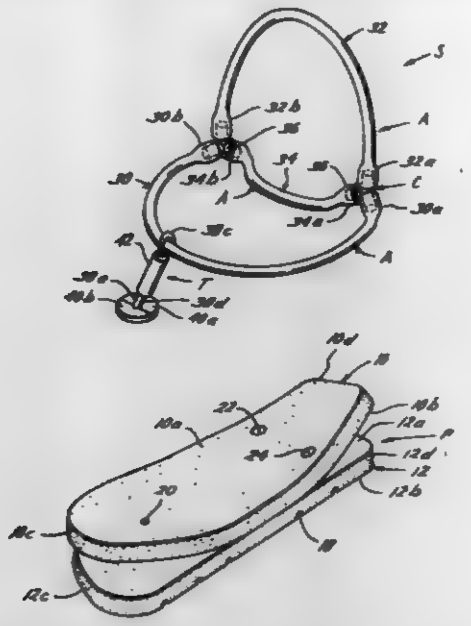
a laminated platform conforming substantially to the shape of the sole of the foot and including a toe end and a heel end, said laminated platform having an upper layer and a lower layer;

stirrup strap means mounted with said laminated platform for securing said platform to the foot, said stirrup strap means including:

instep strap means for extending over the instep of the foot;

heel strap means for extending around the heel of the foot; and,

arch strap means for extending beneath the arch of the foot;



three pronged connector means for adjustably joining said arch strap means, instep strap means and said heel strap means together; and

toe securing means for connecting said toe end of said laminated platform with said instep strap means, said toe securing means adapted to be positioned between adjacent toes of the foot.

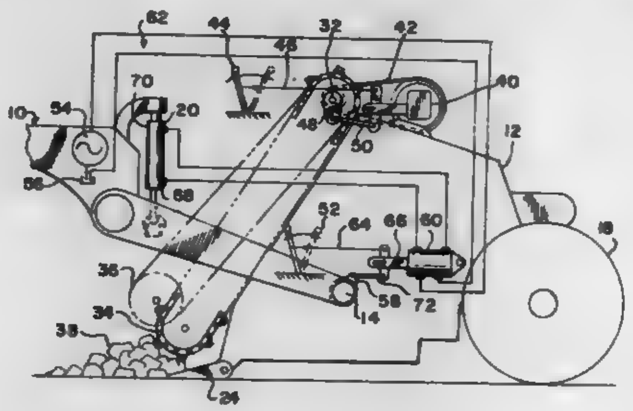
3,978,597
DRAFT SENSING ELEVATING SCRAPER WITH AUTOMATIC ELEVATOR SPEED CONTROL

Andrew Brudnak, Jr., Oak Lawn, Ill., assignor to International Harvester Company, Chicago, Ill.

Continuation-in-part of Ser. No. 470,706, May 16, 1974, abandoned. This application Mar. 27, 1975, Ser. No. 562,624

Int. Cl.² B60P *1/36*; A01B *41/06*

U.S. Cl. 37—8 **4 Claims**



1. An elevator control system for a scraper having a tractor pivotally attached to a bowl, an engine and an elevator pivotally mounted on said bowl, said control system comprising, in combination:

variable speed drive means operably connected to said elevator and said engine for controlling the speed of said elevator;

motion sensing means responsive to said elevator's pivotal motion for varying the speed of said variable speed drive means;

a connector operably connecting said motion sensing means and said variable speed drive means;

speed selector means operably connected to said variable speed drive means for establishing the optimum speed of said elevator; and

a linkage arrangement operably connecting said variable speed drive means and said selector means.

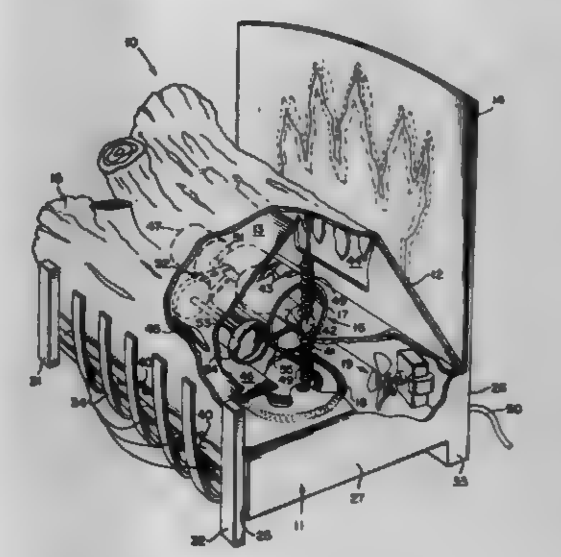
3,978,598
APPARATUS FOR SIMULATING AN OPEN FIRE

Bernard R. Rose, 933 Airole Way, Bel Air, Calif. 90024; Daniel H. Meggs, 4313 Vista Largo, and James Beny, 4445 Pacific Coast Highway, both of Torrance, Calif. 90505

Filed Jan. 16, 1975, Ser. No. 541,605

Int. Cl.² G09F *13/36*

U.S. Cl. 40—106.52 **9 Claims**



1. Apparatus for simulating an open fire, comprising:

base structure having a front and rear edge;

a light projection screen mounted on said base structure to extend upwardly from its rear edge;

first mask means mounted on said base structure forwardly of said projection screen, said first mask means having a light transmitting portion therein which defines the image of a flame;

lens means between said first mask means and said screen;

shell structure mounted to extend from the front edge of said base structure, said shell structure being formed to simulate a pile of burning logs or the like and being at least in part light transmitting; and

lamp means mounted on said base structure forwardly of said first mask means within said shell structure, said lamp means being operable when illuminated to project light towards said shell structure and said first mask means whereby an enlarged image simulative of a flame is projected through said light transmitting portion of said first mask onto said projection screen and the light transmitted through said shell structure gives said shell structure the appearance of burning material;

second mask means mounted on said base structure and positioned to extend between said lamp means and said shell structure for controlling the transmission of light from said lamp means to said shell structure; and wherein:

said lamp means comprising an electrical lamp and said first mask comprising a rotating drum means positioned therearound and which directs a changing light pattern from said lamp towards said shell structure, said lamp being mounted for swinging movement and motor means for producing the swinging movement.

3,978,599
ILLUMINATED DISPLAY DEVICE

Barry D. Berger, Brooklyn, N.Y., assignor to Thomson-Leeds, Company, Inc., New York, N.Y.

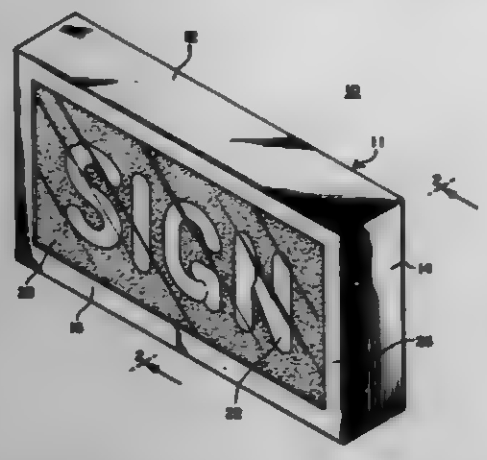
Continuation-in-part of Ser. No. 536,896, Dec. 27, 1974, abandoned. This application Nov. 12, 1975, Ser. No. 631,269

Int. Cl.² G09F *13/08*

U.S. Cl. 40—132 R **6 Claims**

1. An illuminated display device comprising a housing having a front opening, a light transmissive sheet supported by said housing and registering with said opening and having a rearwardly convex curved projecting representation area of hemispherical cross-sectional configuration formed thereon,

said curved representation area having a thickness less than the thickness of the rest of said sheet and possessing fluorescent properties for brightening the image, a substantially opaque layer registering with the area of said sheet other than said representation area, and a fluorescent lamp within said housing and rearwardly of said sheet.



3,978,600

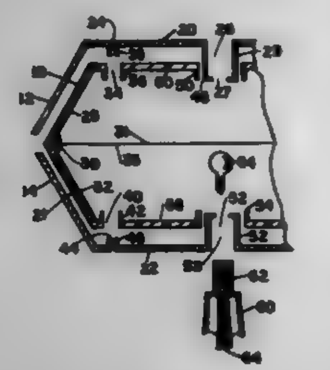
PHOTO-LIGHT FRAME

Seyd M. Rasoulinejad, New York, N.Y., assignor to Lawrence Peska Associates, Inc., New York and Thomas Cantone, Valley Stream, both of, N.Y., part interest to each

Filed Sept. 8, 1975, Ser. No. 611,559

Int. Cl.^{2} G09F *13/00*

U.S. Cl. 40—152.2 10 Claims



1. An illuminated picture display device comprising a first substantially closed hollow body means having a plurality of face means for mounting picture elements thereon, lamp assembly means positioned within said first hollow body means, second transparent substantially closed hollow body means, the inner wall of said second hollow body nestable against the outer wall of said first hollow body, vent hole means in the surface of said second hollow body registerable with vent hole means in said first hollow body.

3,978,601

DISPLAY FRAME WITH RETRACTABLE GARMENT SUPPORT

H. Wayne Catron, Rte. 1, Independence, Va. 24348

Filed Dec. 22, 1975, Ser. No. 643,377

Int. Cl.^{2} G09F *23/06*

U.S. Cl. 40—322 8 Claims

1. A display frame with retractable garment support comprising:

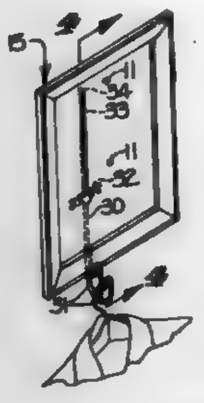
a. a mounting base adapted to be secured to a wall or like support,

b. a display frame removably supported on and covering said mounting base,

c. a garment hanging member supported for vertical movement between said mounting base and said display frame and including at least one garment hanging hook on the lower end thereof,

d. resilient means normally urging said garment hanging member upwardly to retracted position with said hook substantially hidden by said display frame, and

e. locking means operably associated with said garment hanging member for maintaining said hook in a lower extended position below said display frame so that garments may be supported thereon, said hanging member being pivotal about a vertical axis whereby it is disposed parallel to siad mounting base in said retracted position and perpendicular to said mounting base in said lower extended position.



3,978,602

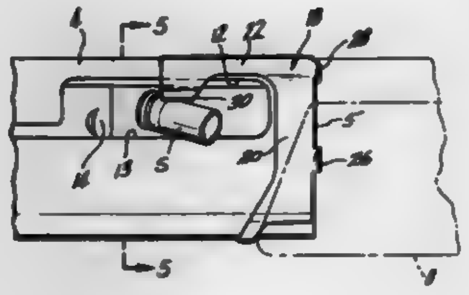
SHELL DEFLECTOR-CATCHER

Edward Lucas Morrow, Fairfield, and Peter Edward Colatosti, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 14, 1975, Ser. No. 622,192

Int. Cl.^{2} F41C *27/00*

U.S. Cl. 42—1 T 7 Claims



1. A device adapted to be removably mounted on a receiver of a firearm to deflect or catch a spent shell casing ejected through an ejection port on the firearm, said device comprising:

a. a pair of legs extending substantially perpendicularly to each other and contoured to fit closely to the side of the firearm receiver;

b. hook means formed at one end of one of said legs for engagement with a side wall of a loading port on the firearm receiver;

c. tab means formed on one edge of said one of said legs and bent at substantially right angles to said one of said legs to engage a front wall of the receiver; and

d. finger means formed at an end of the other of said legs and depending therefrom to a location outwardly offset from the ejection port to engage a spent shell ejected therefrom.

3,978,603

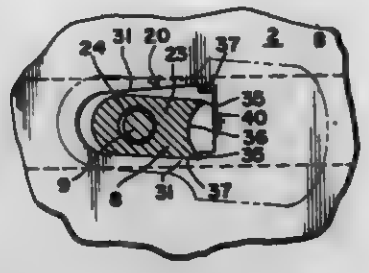
SAFETY FOR REVOLVERS

Frank Murabito, 64-24 80th Ave., Glendale, N.Y. 11227

Filed Apr. 28, 1975, Ser. No. 572,356

Int. Cl.^{2} F41C *17/00, 1/00*

U.S. Cl. 42—66 7 Claims



1. A safety for revolvers comprising:

a revolver frame, having a recess therethrough, said recess being formed having front and rear ends with at least one abutment catch intermediate the ends thereof;

a firing assembly including a hammer pivotally mounted in said frame and having a first portion pivotally operatively connected therewith;

a thumbpiece slidably disposed on the outside of said frame and projecting through said recess, said thumbpiece including an insert member slidably disposed in said recess and having at least one point substantially complementary to said at least one abutment catch for releasable engagement thereagainst;

a slide pin displaceably disposed in said frame and connected to said thumbpiece for joint displacement therewith yet mounted pivotally relative thereto;

said slide pin having a second portion adjacent to said first portion of said hammer, said slide pin being movably between an operative position and an inoperative position;

a cylinder disposed in said frame and operatively receiving said slide pin in an operative position of the latter for retaining said cylinder in said frame, in said inoperative position of said slide pin, the latter being removed from said cylinder, whereby said cylinder is released; and

spring means for operatively biasing said thumbpiece and slide pin toward said abutment catch for holding said slide pin and thumbpiece thereagainst.

3,978,604

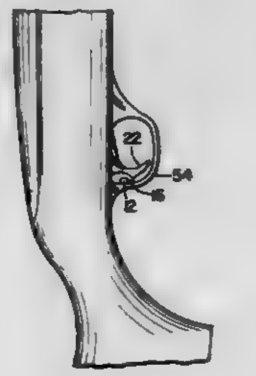
TRIGGER INHIBITING MECHANISM

Joseph E. Smith, 1137 Sherwood Court, Sunnyvale, Calif. 94087

Filed Dec. 9, 1974, Ser. No. 530,891

Int. Cl.^{2} F41C *17/02, 27/00*

U.S. Cl. 42—70 E 12 Claims



1. A safety device for preventing unauthorized firing of a weapon having a trigger and a handle comprising:

a nonferruginous housing for mounting about the handle of said weapon;

a magnetically attractable bar extending outwardly from said housing, pivotally mounted in said housing and balanced about the pivot;

stop means for preventing said bar from pivoting beyond a predetermined arc; and

magnetic means for maintaining said bar in a position subsequently in the center of said arc.

3,978,605

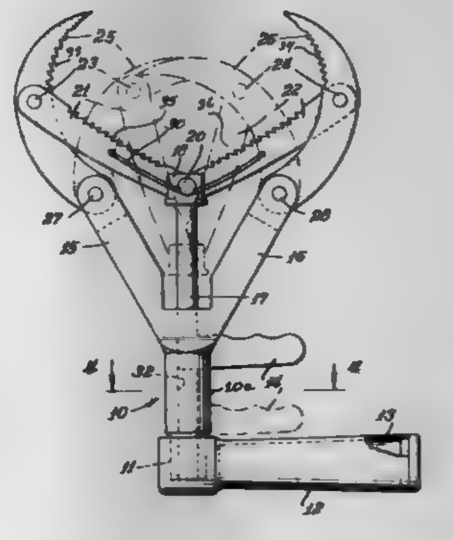
FLOATING FISH GRIP

Adam Maruniak, Otsego, Mich., assignor to Meto-Plast Corporation, Kalamazoo, Mich.

Filed May 30, 1975, Ser. No. 582,346

Int. Cl.^{2} A01K *97/14*

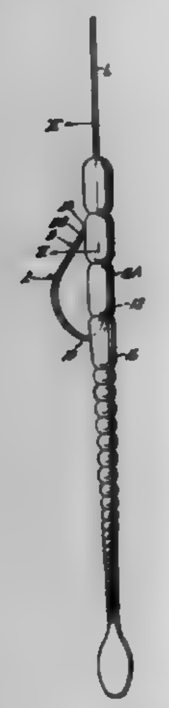
U.S. Cl. 43—5 4 Claims



1. A fish grip comprising a body member having at one end cheliform jaws adapted to encircle and grip a fish and at the other end a handle, means for holding the jaws in open position, and means for actuating the jaws to the closed or gripping position, said grip being characterized in that the parts are constructed of material having a specific gravity greater than one and the handle has an air compartment of sufficient size to reduce the over-all specific gravity to less than one; in that the jaws and the handle are made of rigid plastic which can be molded or machined, has a tensile strength of at least 5,000 psi, and has a specific gravity of about 1.1 to 1.2; in that the body member is Y-shaped, the cheliform jaws are pivotally attached to the arms of the Y-shaped body, and the handle is attached to the bottom of the stem of the Y-shaped body and projects laterally therefrom in the same plane as the jaws and forms a right angle with said stem; in that the means for actuating the jaws to the closed or gripping position, includes a fingergrip, which projects laterally from said Y-shaped body parallel to the handle without changing its parallel relation thereto, is spaced from the handle not more than a handgrip away, and has a spring-biased linkage to the cheliform jaws, which when the fingers apply pressure to the fingergrip, actuates the cheliform jaws against said spring bias to the closed or gripping position and continued pressure on the fingergrip, after a fish has been gripped, asserts a corresponding gripping pressure on the fish; in that the linkage comprises an axially movable member rigidly attached at one end to the fingergrip and pivotally attached at the other end to links which in turn are pivotally attached to the cheliform jaws at points intermediate their free ends and their pivoted ends; and, in that both the links and the cheliform jaws are seriated.

3,978,606
FISHHOOK AND WORM LURE COMBINATION

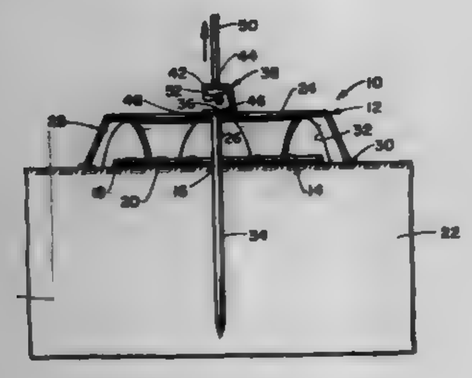
Royal W. Riggs, 2406 Albert Lea, Sedalia, Mo. 65301
Filed July 21, 1975, Ser. No. 597,563
Int. Cl.^{2} A01K *85/00*
U.S. Cl. 43—42.24 **5 Claims**



1. A fishhook and worm lure combination comprising:
a. a fishhook comprising a length of wire formed to present successively an eye, an elongated shank, a re-entrant curved bight, and a barbed point,
b. a slender, elongated worm of soft, elastic material disposed with its nose end adjacent said eye and extending therefrom in the direction of said shank, and
c. an anchor member affixed to said shank adjacent said eye and embedded in the nose portion of said worm, said anchor member comprising a length of wire having the form of a helical coil of larger internal diameter than said shank, afixed to said shank in coaxial relation thereto, whereby said worm may be impaled over the point of said hook, moved slidably along the bight and shank portions of said hook to said coil, and screwed into engagement with said coil by rotating it around said shank.

3,978,607
SNAIL SNARE

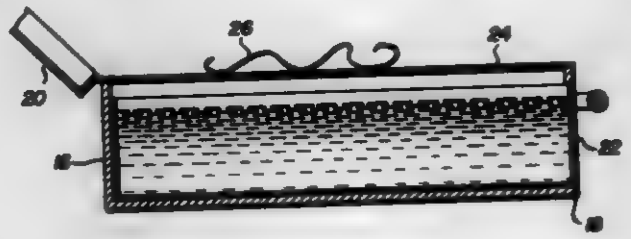
Felix V. Piere, 3602 Summer Shore Lane, Westlake Village, Calif. 91361
Filed May 22, 1975, Ser. No. 579,833
Int. Cl.^{2} A01M *25/00*
U.S. Cl. 43—131 **6 Claims**



1. A snail snare adapted to be placed upon ground comprising:
a disc having a central aperture, said disc adapted to be placed in direct contact with the ground, said disc adapted to have placed thereon a quantity of pelletized poison material;
a cover having a base and an annular wall connected to the periphery of said base, said cover having a central opening, said cover to be positioned over said disc with said base spaced above said disc with said wall in direct contact with the ground, said wall having opening means therein to permit snails to move under said base and have access to the pelletized poison located on said disc;
attaching means extending through said aperture of said disc and said opening of said cover penetrating the ground, said attaching means including an enlarged head in tight contact with said cover to snugly hold said cover upon the ground;
means for removing said attaching means when it is desired to move said snare from one locale to another, said means including a member to grasp said attaching means to facilitate the application of a removal force, said base of said cover being deflectable to permit the insertion of said means between said enlarged head of said attaching means and said base.

3,978,608
METHOD OF EFFECTING A CONTINUOUS MOVEMENT OF A FIBROUS MATERIAL

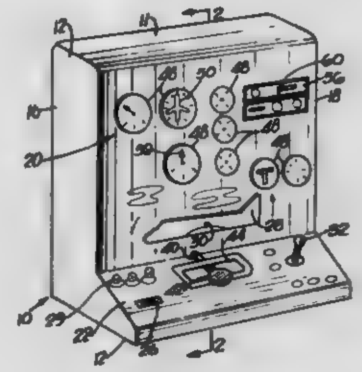
Thomas Kovachevich, 4845 S. Kenwood Ave., Chicago, Ill. 60615
Filed Aug. 20, 1975, Ser. No. 606,069
Int. Cl.^{2} A63H *33/00*
U.S. Cl. 46—1 R **12 Claims**



1. A method for effecting the continuous movement of a fibrous material comprising the steps of
providing an environment which includes a source of gaseous vapors,
providing a membrane permeable to said vapors and positioned relative to said vapors such that vapors emanating from said source make contact with and permeate said membrane,
and providing a body of vapor-responsive flexible sheet material freely positioned on the surface of said membrane and above said source of vapors,
whereby vapors emanating from the source thereof pass through said permeable membrane and coact with said fibrous material thereby causing a twisting, curling end-over-end, horizontal movement of said fibrous material body which is continuous with the provision of vapors through said membrane.
11. An article of manufacture comprising, in combination,
a container adapted to contain a quantity of vaporizable liquid,
a permeable membrane means adapted for supporting said membrane in position immediately above said container with a major surface of said membrane generally facing said container,
a quantity of a vaporizable liquid positioned within said container and immediately below said membrane,
and a body of fibrous vapor-responsive flexible sheet material adapted for free positioning on the upper surface of said membrane and above said liquid,
whereby vapors emanating from said liquid contact and permeate said membrane and coact with said fibrous material to cause movement of said fibrous material body which continues as long as said permeation continues to occur.

3,978,609
AIRPLANE GAME APPARATUS

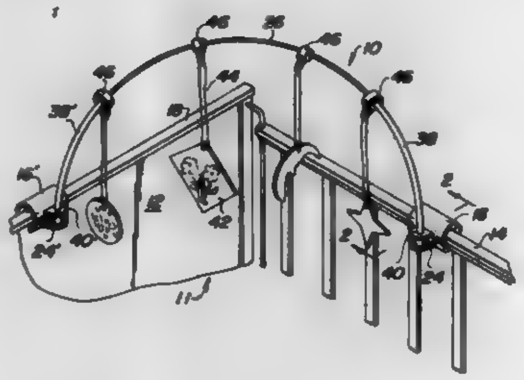
Robert English, Hollywood, Fla., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed July 14, 1975, Ser. No. 595,668
Int. Cl.^{2} A63H *27/04*
U.S. Cl. 46—1 B **4 Claims**



1. An airplane game, which comprises:
a. a housing having a base, a rear wall, a front wall, a pair of sidewalls, and a top, said front wall having a square aperture therethrough;
b. a control rod journalled for rotation through said front wall;
c. a model airplane mounted on a pin, said pin journalled for rotation through said front wall;
d. a connecting rod contained in said housing, said lever arm communicating between said control rod and said pin;
e. a throttle rod extending through a rectangularly shaped aperture;
f. a plurality of first pulleys mounted on said throttle rod within said housing;
g. a plurality of dials having indicia thereon, each said dial mounted on an axle rod journalled for rotation through said front wall;
h. a second pulley mounted on an inner end of each axle rod within said housing; and
i. a pulley belt communicating between each said first and second pulley.

3,978,610
MOBILE

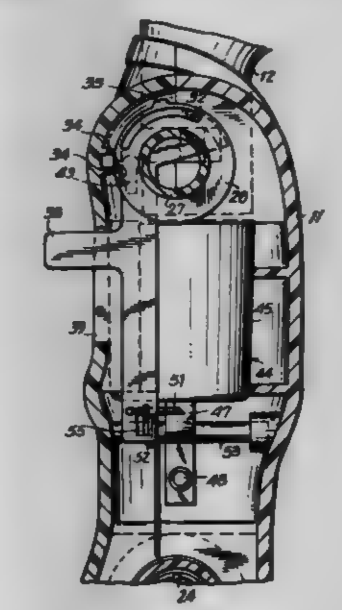
Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner, Inc., New York, N.Y.
Filed Sept. 24, 1975, Ser. No. 616,358
Int. Cl.^{2} A63H *33/00*
U.S. Cl. 46—32 **12 Claims**



12. A pre-assembled mobile for slidable attachment to a crib, comprising:
a flexible arcuate rod;
means slidably mounted on said rod for suspending figures therefrom; and
elastic means for rotatably supporting said rod and for frictionally engaging said crib while being slidable thereon.

3,978,611
TOY FIGURE WITH PISTOL DRAW ACTION

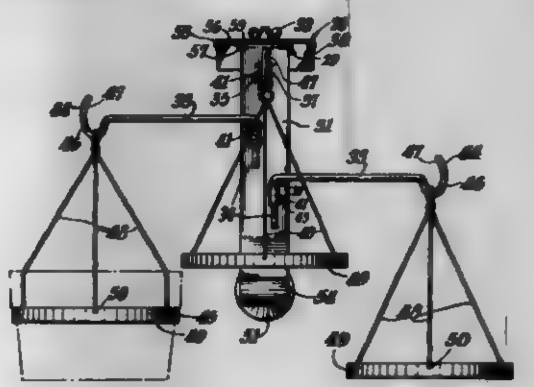
Ned Strongin, Baldwin, N.Y., assignor to Ned Strongin Associates, Inc., New York, N.Y.
Filed May 14, 1975, Ser. No. 577,530
Int. Cl.^{2} A63H *5/00*
U.S. Cl. 46—118 **6 Claims**



1. A toy figure having a torso, a head, a pair of arms with a hand at the end of each arm and a pair of legs comprising a holster positioned on one leg, means movably mounting one said arm on said torso, a toy pistol carried by the hand at the end of said one arm, said pistol being receivable in said holster and movable from a holstered position wherein said one arm is in a first position along the torso of the figure to a firing position wherein said one arm is in a second position extended outwardly of said torso, and means operating between said torso and said one arm for moving said pistol from said holstered position to said firing position, said operating means including pin means carried by said one arm eccentrically of the axis of rotation thereof and an operating element vertically slidable within said torso, said operating element including a control member extending outwardly of said torso for moving said element and means defining a generally concave camming surface for cooperative engagement with said pin means.

3,978,612
FLOWER POT HOLDER

Michael W. K. Young, Flushing, N.Y., assignor to Oriental Buying Service, Inc., Wilmington, Del.
Filed May 30, 1975, Ser. No. 582,212
Int. Cl.^{2} A01G *9/02*
U.S. Cl. 47—40 **2 Claims**



1. In combination with a window having a sash comprising a frame having an upper frame member containing a top

portion, an interior front frame portion, and an exterior back frame portion, a flower pot holder comprising:

a. a bracket comprising
  1. an upper element adapted to rest upon said top frame portion having a downwardly extending exterior portion adapted to engage said exterior back frame portion, said downwardly extending exterior portion lying in a plane, said upper element further being arranged to mate in a slidable engagement with a horizontal portion of a normally vertical downwardly extending bracket portion,
  2. a normally downwardly extending bracket portion having a top horizontal portion adapted to extend over said top portion of the upper frame member and to be in a slidable relationship with said upper element of said bracket screw means passing through said upper element and said top horizontal portion to selectively secure said upper element and said top horizontal portion together, said downwardly extending bracket portion extending down on the interior of said top frame member further than said downwardly extending exterior portion and including means at its lower end for attachment to a pane of glass held by said sash, said downwardly extending bracket portion having attachment means to receive a flower pot suspension rod member, said rod member having a normally vertical portion at one end to pivotally mate with said attachment means, a substantially horizontal portion intermediate its ends and a horizontal loop at its other end to encompass a flower pot, the sliding engagement of the top horizontal portion of said downwardly extending bracket portion and said upper element constituting adjusting means to enable mounting of said bracket on frames of varying thickness, the attachment means further having associated lock means to hold said rod member within a predetermined fixed position.

3,978,613
TURNSTILE MECHANISM

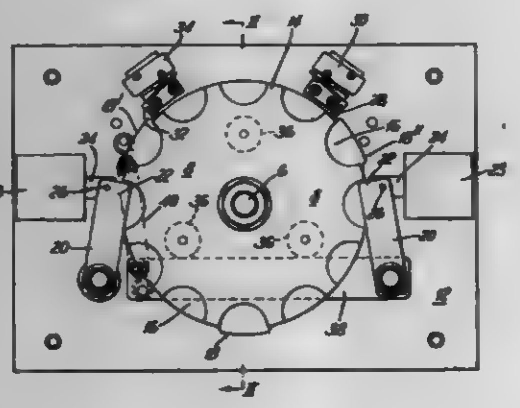
Martin Henry Hayward, Berkhamsted, and Michael Charles Newton, Stevenage, both of England, assignors to Automatic Revenue Controls (Europe) Ltd., Watford, England

Filed Apr. 25, 1975, Ser. No. 571,772

Claims priority, application United Kingdom, Apr. 29, 1974, 1[illegible]11/74

Int. Cl.² E06B ***11/08***

U.S. Cl. 49—46 **11 Claims**



1. A turnstile mechanism of the type having a hub adapted to be driven by a person using said turnstile mechanism, said hub being fixed in place on a rotatable shaft, said turnstile mechanism comprising
  - a stop plate fixed in place on said rotatable shaft, said stop plate defining a number of stop surfaces thereon,
  - a stop member positioned to engage the stop surfaces of said stop plate, said stop member being movable between a first position clear of the path of the stop surfaces and a second position lying in the path of the stop surfaces,
  - a control device connected to said stop member, said control device being operable to hold said stop member against a bias in one of the first and second positions, and said control device being activated to change the position of said stop member from the first position to the second position after said hub has been rotated through a predetermined angle, and
  - a cam plate fixed in place on said rotatable shaft, said cam plate defining at least one cam surface thereon, said cam surface being adapted to activate said control means in response to rotation of said hub through the predetermined angle.

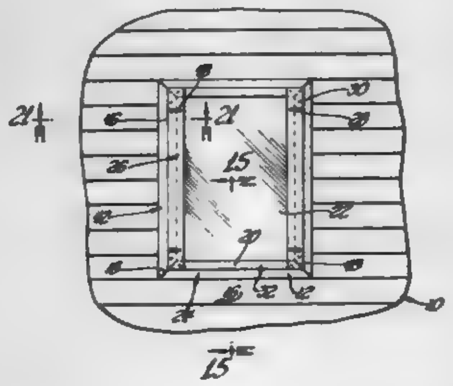
3,978,614
CASEMENT COVERING

Marvin L. Goldhaber, 10005 Talbot, Huntington Woods, Mich. 48070

Filed Dec. 10, 1973, Ser. No. 423,273

Int. Cl.² E06B ***3/30, 7/00***

U.S. Cl. 49—55 **4 Claims**



1. A protective window unit formed to fit in window casements of varying sizes on the outside face of a conventional window, said window unit comprising:
  - a peripheral member having an inner channel;
  - a transparent shielding material, the edges of which are mounted in said channel and enclosed by said peripheral member, said shielding material being of sufficient strength to prevent entry through said window;
  - first threaded fasteners extended through both said peripheral member and the edge portion of said shielding material to attach said window unit to said casement;
  - laterally displaceable side members positionable on the outer side faces of said peripheral member for enclosing any space between the sides of said unit and said casements; and
  - second threaded fasteners extending through said laterally displaceable side members securing same to said casement, said side members being so sized as to cover up the first memtioned threaded fasteners that are located on or in close proximity to said sides of said unit.

3,978,615
SLIDING-OUT SASH WINDOWS HAVING PIVOTAL SUPPORTS

Tetsuro Kagoura, Kurobe, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Japan

Filed Apr. 23, 1975, Ser. No. 570,741

Claims priority, application Japan, Apr. 26, 1974, 49-48462[U]

Int. Cl.² E05D ***15/44***

U.S. Cl. 49—251 **8 Claims**

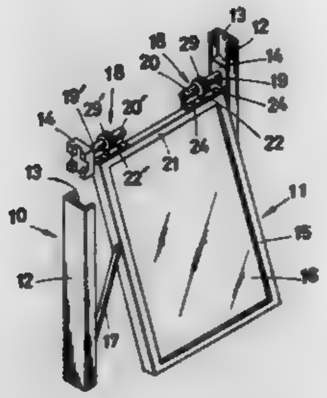
1. A window assembly comprising:

a. an outer frame having a pair of side posts with a pair of opposed elongated guideways therein, respectively;

b. a sash; and

c. means mounting said sash in said frame for swinging movements between open and closed positions, said means including:

  1. a pair of slides slidable in said guideways;
  2. two pairs of axially aligned longitudinally spaced sleeves secured to said sash at opposite sides thereof adjacent said guideways;
  3. two pivot pins respectively secured to said slides and each slidably projecting into one of said sleeves;
  4. a pair of annular adjustor rings rotatably disposed in the spacing between said sleeves of each said pair of sleeves;



  5. a pair of helical compression springs extending through said adjustor rings and into the adjacent ones of said sleeves urging said pivot pins toward said slides, respectively; and
  6. a pair of keys respectively carried by said adjustor rings and projecting into the space between adjacent turns of the adjacent one of said springs;

whereby the compression with which the slides engage the guideways can be adjusted by rotation of the annular adjustor rings.

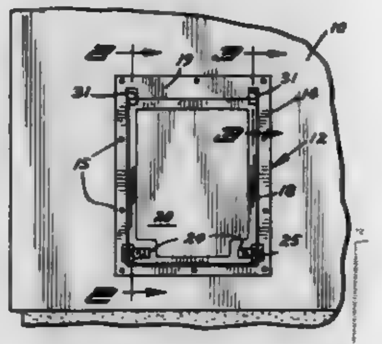
3,978,616
PET DOOR

Evérett C. Pennock, Minneapolis, Minn., assignor to North States Industries, Inc,, Minneapolis, Minn.

Filed June 4, 1975, Ser. No. 583,792

Int. Cl.² E05F ***1/10***

U.S. Cl. 49—386 **4 Claims**



1. In a pet door assembly for mounting in an opening in a shelter wall to permit entrance or exit of an animal pet at its will,

a. a frame for mounting on the wall to define a doorway within said opening,

b. a flat door having substantially the same shape and size as said doorway positioned to close the doorway and having its upper portion hinged to the frame on a horizontal axis for swinging movement of the door from a normal vertical closed position within the doorway to open positions in either direction,

c. said door having an upwardly facing cam on the upper edge thereof, said cam having a dome shape in cross section perpendicular to the plane of the door and having rounded cam surfaces connected by a flat central portion which is parallel to the upper edge of the door,

d. a slide member mounted on the upper portion of the frame for vertical sliding movement and having a flat bottom face in flush engagement with the flat central portion of the cam, and

e. spring means disposed between the slide and the frame to yieldably retain said face and portion in such flush engagement.

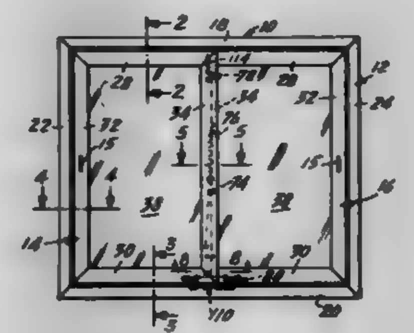
3,978,617
SELF-CLOSING REFRIGERATOR DOOR

Arnold T. Eventoff, 243 N. Ridge St., Port Chester, N.Y. 10573

Filed May 1, 1975, Ser. No. 573,752

Int. Cl.² E05D ***15/06***

U.S. Cl. 49—404 **19 Claims**



1. In a self-closing refrigerator door assembly of the sliding type having a frame mounted in a refrigerator wall opening, said frame having a pair of parallel adjacent tracks depending from the upper portion thereof and a pair of parallel adjacent tracks protruding from the lower portion thereof, inner and outer doors each having a channel in the upper portion thereof mateable with said depending tracks and each being supported on rollers, each of said doors being mounted on one of said pair of upper and lower tracks for translatory movement in said frame, a closing system for each door consisting of an energy producing closing means the biasing action of which is activated upon opening of said door, cable means attached to an end of said closing means, means for guiding said cable means to the underside of said door for engagement with the lower portion of said frame to thereby activate the biasing action of said energy producing closing means, the improvement comprising a latching means attached to the end of said cable means at the underside of said door and a catch secured to the lower portion of said frame engaged with said latching means when said door is in the open position and disengaged from said latching means when said door is in the closed position.

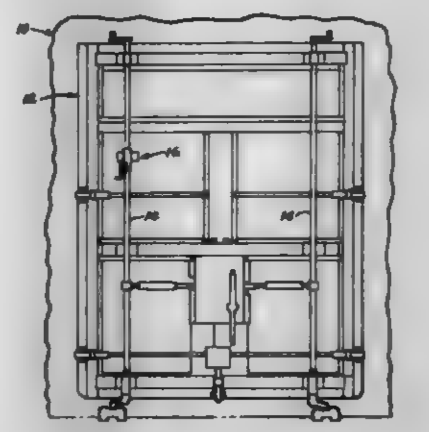
3,978,618
BOX CAR ANTI-PILFERAGE DEVICE FOR PLUG DOORS

Lowell L. Malo, St. Peters, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed May 10, 1974, Ser. No. 468,855

Int. Cl.² E05D ***15/10***

U.S. Cl. 49—449 **12 Claims**



1. A box car plug door anti-pilferage device comprising:

a fixed locking plate mounted upon the plug door and having a locking portion extending outwardly from said door toward the operating arm of a plug door; tripping means also mounted on said plug door and being vertically spaced from said locking portion, said fixed locking plate having a first opening adapted to receive an additional locking device and a second opening adapted to receive a locking pin; a movable locking plate mounted upon said plug door operating arm also having a first opening adapted to align with the first opening in said fixed locking plate and adapted to receive a portion of said additional locking device, and having a second opening adapted to align with the second opening in said fixed plate and adapted to receive a locking pin; a locking retainer plate mounted upon said plug door operating arm having an opening therein adapted to align with the second opening in said fixed locking plate and the second opening in said movable locking plate; said movable retainer plate having a vertical extension; means urging a locking pin having an idler arm toward the second opening in said fixed and movable locking plate whereby said additional locking member is adapted to be removed from the first opening in said fixed locking plate and in said movable locking plate, and said locking pin is adapted to be manually moved out of said second openings in said fixed locking plate and movable locking plate and held out of engagement by engagement of the locking pin idler arm with the vertical extension on said retainer plate, and whereby said tripping member is adapted to disengage said locking pin idler arm from said retainer extension and permit said locking pin to ride upon a surface of said fixed locking plate and whereby when said plug door is rotated into the closed position said second openings in said fixed and movable plates will align and said locking pin will automatically move into said second openings and said first openings in said fixed and movable plates will align and be adapted to receive a padlock, seal or cable.

3,978,619

DOOR FRAME FOR AN OVERLAPPING DOOR

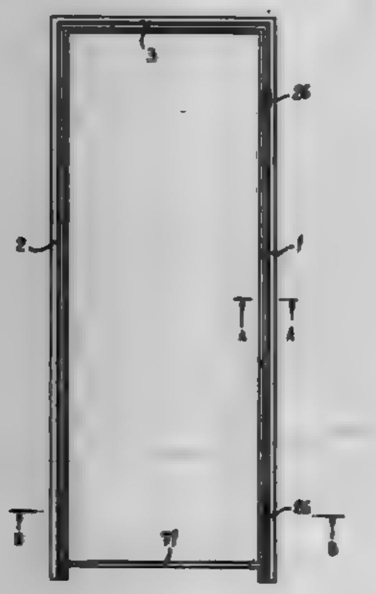
Jean-Claude Gregoire, 24 Saint-Martial D'Artenset, France

Filed Mar. 19, 1974, Ser. No. 452,665

Claims priority, application France, Mar. 20, 1973, 73.09905

Int. Cl.^{2} E06B *1/04*

U.S. Cl. 49—504 11 Claims



1. A door frame structure for an overlapping door, comprising in combination a door frame and hinge means for mounting the door on the frame, the frame defining a front face for receiving a peripheral portion of the door in overlapping relation to the front face and having two posts defining between the posts a door passage, each post having a vertical groove which is open toward the door passage, one of the grooves being a keeper for latch means of the door, at least one of the posts having a vertical groove of dovetail cross-sectional shape defining two corners in cross-section and provided in a part of said front face corresponding to said one of the posts, said hinge means comprising a fixed hinge part, an extension in fixed relation to the hinge part and slidably engaged in the dovetail groove and having a shape complementary thereto and a screw screwthreadedly engaged in the extension the assembly consisting of the extension and screw defining a structure which has in said cross-section two corners which engage said two corners of the dovetail groove and are capable of being spread apart and urged into the dovetail groove corners by rotation of the screw for tightening the assembly in the dovetail groove whereby the extension is held fast at the desired level in the dovetail groove.

3,978,620

APPARATUS FOR WORKING THE MARGINAL ZONES OF A LENS

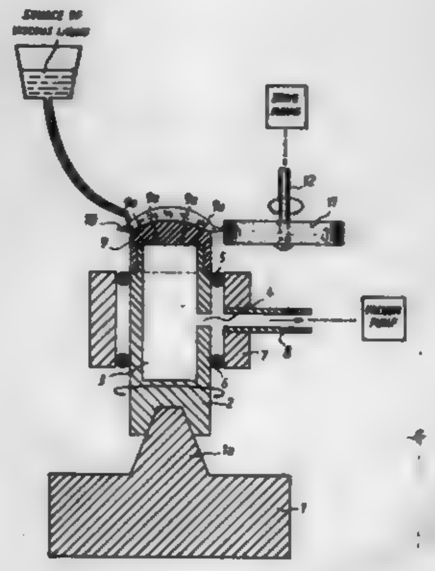
Paul Feneberg, Planegg, and Anton Schätz, Munich, both of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Division of Ser. No. 474,429, May 29, 1974, Pat. No. 3,948,007. This application June 13, 1975, Ser. No. 587,233

Claims priority, application Germany, May 30, 1973, 2327583

Int. Cl.^{2} B24B *13/00, 9/14*

U.S. Cl. 51—105 LG 11 Claims



1. An apparatus for working marginal zones of a lens — particularly a contact lens — which is of soft and readily damaged material and has a curved side bounded by a circumferential marginal portion, comprising a rotatable support having a surface on which the lens is to be placed and which extends transversely through the axis of rotation of said support, said surface having a center portion curved matingly relative to said curved side of said lens and a flattened peripheral portion surrounding said main portion along a junction area therewith; centering means for centering the lens on said surface; means for applying in said junction area suction to said lens so as to draw said marginal portion thereof into contact with said peripheral portion to thereby temporarily flatten and position it for proper working; and working means for working said marginal portion of the lens centered on said surface.

3,978,621

MACHINE FOR SURFACE-, PLANE-PARALLEL-, AND PLAIN LAPPING

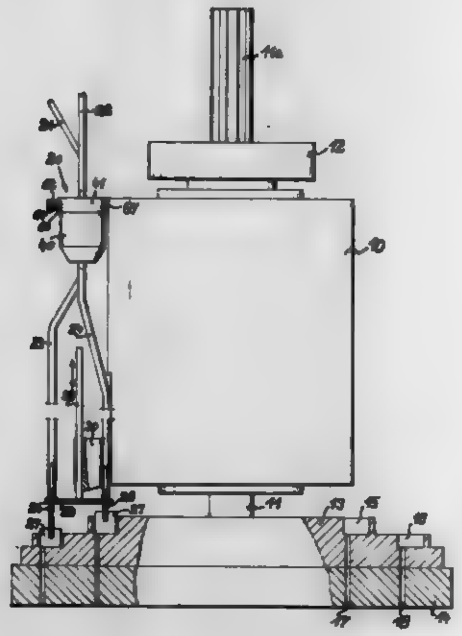
Jos M. Janssen, Mettmann, Germany, assignor to JMJ Werkzeugmaschinen GmbH fuer Feinbearbeitung, Mettmann, Germany

Filed Aug. 15, 1975, Ser. No. 605,156

Claims priority, application Germany, Aug. 27, 1974, 2440978

Int. Cl.^{2} B24B *37/04, 57/00*

U.S. Cl. 51—111 R 9 Claims



1. In a two wheel lapping machine, having two lapping- and working-wheels, respectively, which are mounted on one lapping wheel carrier each, the latter including an upper lapping wheel carrier mounted on a lower end of a main spindle and formed with a first circularly shaped channel means for feeding lapping abrasive via a dosing device to a work piece, the improvement comprising

at least one second circularly shaped channel means formed in said upper lapping wheel carrier for feeding of lapping abrasive to said work piece, said at least one second channel means being concentric to said first channel means and having a different diameter than that of said first channel means.

3,978,622

LAPPING AND POLISHING APPARATUS

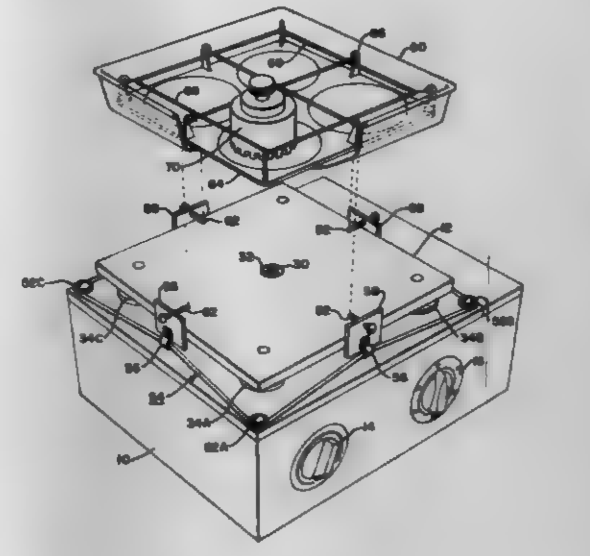
Robert G. Mazur, Monroeville; Gilbert A. Gruber, Pittsburgh, and Robert C. Stephenson, North Irwin, all of Pa., assignors to Solid State Measurements, Inc., Monroeville, Pa.

Filed July 23, 1975, Ser. No. 598,181

Int. Cl.^{2} B24B *7/00*

U.S. Cl. 51—119 7 Claims

1. Apparatus for abrading a workpiece comprising drive motor means provided with a vertical rotatable shaft having connected thereto an eccentric arm, a support plate centrally connected to said eccentric arm at a point removed from said shaft whereby rotation of said shaft will effect an oscillatory eccentric movement of said support plate in a generally horizontal plane, stationary pin means arranged at spaced points around the periphery of said support plate, resilient means connecting the respective pin means to points on the support plate intermediate the pin means, and a lapping and polishing tray disposed on said support plate whereby a workpiece on the tray will be oscillated in a random manner due to the eccentric movement of the support plate and tray to abrade the surface of the workpiece in contact with the tray.



3,978,623

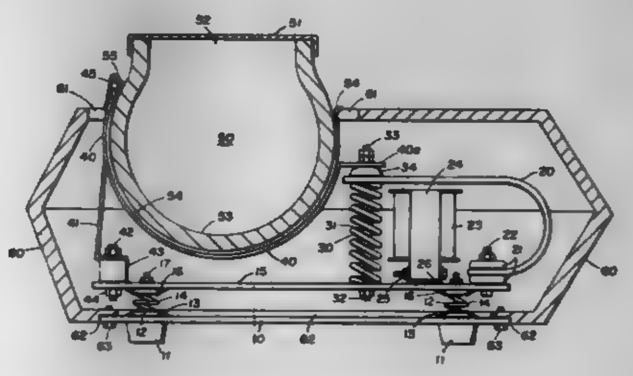
APPARATUS FOR VIBRATORY POLISHING OF STONES AND THE LIKE

Edward Earl Smith, New London, Iowa, assignor to Geode Industries, Inc., New London, Iowa

Filed Aug. 16, 1974, Ser. No. 498,070

Int. Cl.^{2} B24B *31/06*

U.S. Cl. 51—163.1 7 Claims



1. An apparatus for the polishing of material such as stones and the like including a container for the material and abrasive medium, the container having a wall with an inner containing surface arcuate with respect to a first generally horizontal axis, the improvement comprising: first means supporting the container at a first location adjacent said wall laterally disposed in one direction from the first axis, the first supporting means providing for reciprocal movement of the container in a first direction which is substantially horizontal only and transversely of the first axis; second means supporting the container at a second location adjacent said wall laterally disposed in the opposite direction from the first axis, the second supporting means providing for reciprocal movement of the container in a second direction which is substantially inclined between vertical and horizontal directions and generally toward and away from a vertical plane containing the first axis, the first and second supporting means being operatively connected for conjoint movement thereof in said respective first and second directions, said movement of one of the supporting means imparting said movement of the other of the supporting means thereto; and power means providing vibratory movement of one of the supporting means in its said direction, said movements of the first and second supporting means being imparted to the container.

3,978,624

DEVICE FOR ENDING THE FEED MOVEMENT OF A GRINDING WHEEL

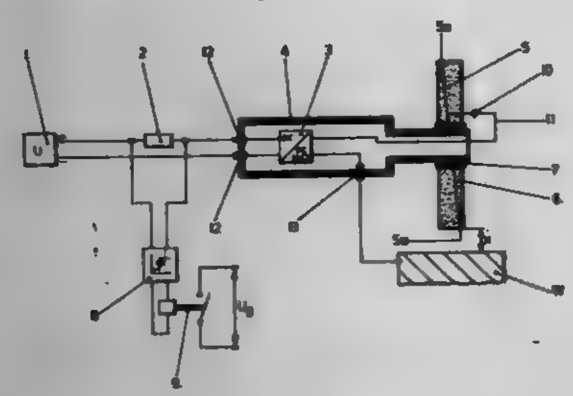
Rudolf Merkel, Coburg-Scheuerfeld; Friedrich Schnell, and Ewald Weber, both of Coburg, all of Germany, assignors to Werkzeugmaschinenfabrik Adolf Waldrich Coburg, Coburg, Germany

Filed May 7, 1975, Ser. No. 575,270

Claims priority, application Germany, May 11, 1974, 2422940

Int. Cl.² B24B *49/10*

U.S. Cl. 51—165.92 **11 Claims**



1. In a device for terminating the relative feeding movement between a rotating grinding wheel carried by a rotatable tool spindle and a workpiece, the improvement comprising wherein said rotating grinding wheel has a plurality of electrical conductors insulated with respect to the material of said grinding wheel, the free ends of said conductors terminating at the active surface of said grinding wheel, rotatable voltage transformer means rotating with said tool spindle and generating an impulse characteristic between said free ends of said conductors and said workpiece surface, said voltage transformer means having a primary circuit and a high voltage secondary circuit and a low voltage secondary circuit, one side of both of said high voltage and low voltage secondary circuits being selectively electrically connected to said conductors and the other side thereof to said workpiece, feed drive means for effecting a relative movement between said grinding wheel and said workpiece at least toward each other, said feed drive means having a pair of differing speed characteristics so that said relative movement at one speed is faster than at the other speed, said high voltage circuit being electrically connected to said conductors when said feed drive means effects said fast relative movement between said grinding wheel and said workpiece, threshold switch means responsive to a spark discharge across a predetermined liquid free gap between said grinding wheel and said workpiece when said fast relative movement is occurring between said grinding wheel and said workpiece for (1) simultaneously switching said connection between said high voltage secondary circuit and said conductors to a connection between said low voltage second circuit and said conductors and (2) switching said feed drive means to the slower one of said speeds of relative movement.

3,978,625

GRINDING WHEEL COOLANT NOZZLE

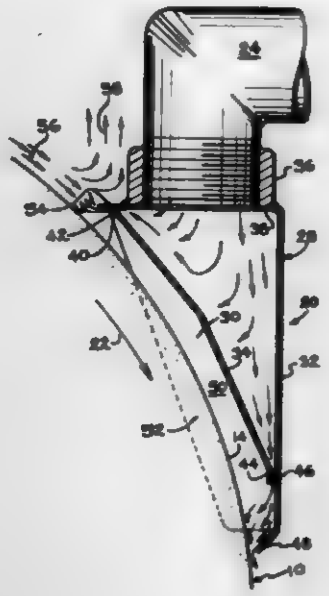
William P. Klaassen, Brooklyn, Mich., assignor to Teer, Wickwire & Company, Jackson, Mich.

Filed Feb. 18, 1975, Ser. No. 550,756

Int. Cl.² B24B *55/02, 1/00*

U.S. Cl. 51—267 **6 Claims**

1. A grinding wheel cooling system characterized by its ability to remove the moving air film and loose particles adjacent the grinding surface of a rotating grinding wheel and apply a cooling liquid directly thereto comprising, in combination, a rotary grinding wheel having a grinding surface including a circular periphery and width, first nozzle means ejecting a first flow of cooling liquid directly on the grinding surface of the grinding wheel at a first surface location, said first nozzle means and thus said flow of cooling liquid being obliquely disposed to the grinding wheel grinding surface at said first surface location in a direction counter to the direction of movement of said grinding wheel surface at said first surface location to counteract and remove the moving film of air and loose particles adjacent said periphery at said first location, and said second nozzle means ejecting a second flow of cooling liquid upon said grinding wheel surface at a second surface location behind said first location with respect to the direction of grinding wheel surface movement to cool said grinding surface.



3,978,626

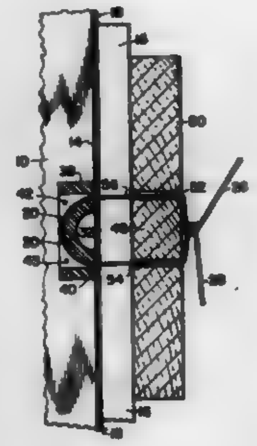
REMOVABLE WIRE TIE FOR ADHESIVE APPLIED WALLBOARD INSTALLATION

Roger N. Weinar, 196 Greenfield Drive, Tonawanda, N.Y. 14150

Filed May 14, 1975, Ser. No. 577,215

Int. Cl.² E02D *35/00*; **E04B** *1/00*

U.S. Cl. 52—127 **10 Claims**



1. In combination, an elongate wall framing member and an arcuate tie wire support, said framing member having a substantially flat front face, a pair of spaced-apart holes extending through said face, an arcuate rigid support surface disposed within said framing member, with the two ends of said arcuate surface being disposed immediately behind the respective two holes of said pair of holes, and a wire disposed with an arcuate portion around said arcuate surface and extending outward through said two holes, whereby said wire is suitably held in place when equal tension is applied to the ends of said wire and is readily removable when light tension is applied to only one end of said wire.

3,978,627

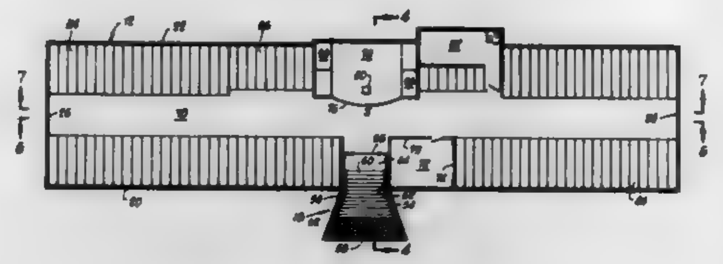
BURIAL FACILITY

Clyde C. Booth, 6001 Northwest Highway, Suite 400, Oklahoma City, Okla. 73132

Filed May 12, 1975, Ser. No. 576,587

Int. Cl.² E04H *13/00*

U.S. Cl. 52—136 **8 Claims**



1. A burial facility comprising:

a rigid burial housing of generally right parallelepiped configuration having a portion disposed below ground level and a portion projecting above ground level;

walls and partitions within said housing defining:

- a plurality of tiers of interment crypts;
- a concourse extending between said tiers of crypts;
- a plurality of rooms including a viewing room positioned adjacent said concourse and having glass paneling along one side thereof facing said concourse to enable persons in said viewing room to view the area within said burial housing across said concourse from said viewing room; and
- funeral services facilities including a space defined by said walls and partitions across said concourse from said viewing room to facilitate viewing by persons in said viewing room of funeral services conducted at the locus of said funeral services facilities;

a generally frusto-pyramidal earthen mound covering and concealing that portion of said housing which projects above ground level and including four sloping earthen walls inclined with respect to the vertical; and

a downwardly sloping entryway extending through one side of said frusto-pyramidal earthen mound and communicating through an opening in one side of said housing with the interior thereof, said entryway communicating through the opening in said one side of said housing directly with said concourse at a location immediately adjacent said viewing room and in direct alignment with said funeral facilities on the opposite side of said concourse therefrom; and

a layer of particulate aggregate material positioned between the outer side of the walls and roof of said housing and the earth of said frusto-pyramidal earthen mound.

3,978,628

CONSTRUCTIONAL UNITS FOR STEPPED STRUCTURES

Jack Turner, High Rise, Highgate Lane, Whitworth, New Rochdale, Lancashire, England

Continuation of Ser. No. 440,077, Feb. 6, 1974, abandoned. This application Aug. 14, 1975, Ser. No. 604,817

Claims priority, application United Kingdom, Feb. 20, 1973, 8221/73

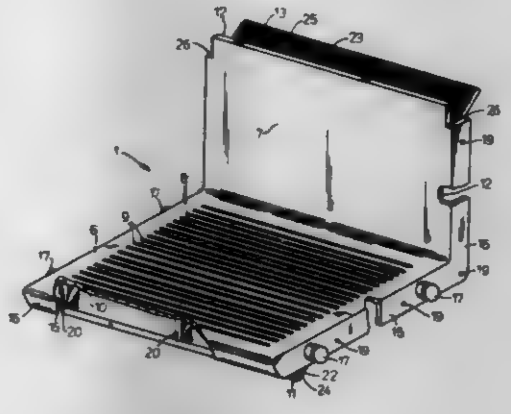
Int. Cl.² E04F *11/00*

U.S. Cl. 52—188 **6 Claims**

1. An adjustable step unit for assembly with at least one similar unit and a pair of laterally spaced apart stringers disposed along the sides of said unit to form a staircase whose height and length can be varied without changing the pitch angle of the staircase, comprising:

- a horizontal tread comprising upper and lower surfaces and front and rear edges;
- a vertical riser comprising front and rear surfaces and upper and lower edges;
- said riser having its lower edge joined to the rear edge of said tread and extending upwardly therefrom;
- a first member joined to the rear surface of said riser near the upper edge thereof and extending upwardly and rearwardly from said rear surface, said first member having an inclined upwardly facing surface with a plurality of first slots formed thereon;
- a second member joined to the lower surface of said tread near the front edge thereof and extending downwardly and forwardly from said lower surface, said second member having an inclined downwardly facing surface with a plurality of different positions with the first slots on a similar step unit in a staircase;

and means at the sides of said unit for securing said unit to said stringers of said staircase.



3,978,629

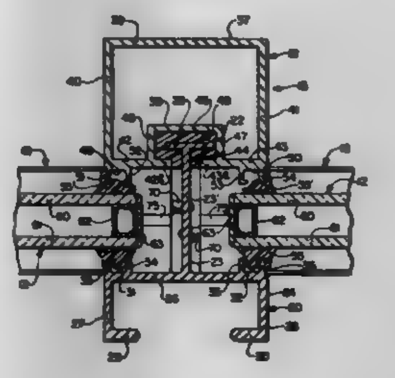
THERMAL BARRIER CURTAIN WALL

Charles W. Echols, Sr., College Park, Ga., assignor to The William L. Bonnell Company, Newnan, Ga.

Filed Apr. 16, 1975, Ser. No. 568,480

Int. Cl.² E04H *1/00*

U.S. Cl. 52—235 **24 Claims**



1. In a curtain wall or wall framing system for a building or the like including vertical mullions and horizontal mullions, the improvement therein wherein the vertical mullions comprise a metal exterior member and an interior metal member joined together by an insulating member or medium to form a unitary thermal break vertical mullion, insertion means on said exterior member integrally formed therewith for mating with said interior member and receiving means on Said interior member integrally formed therewith receiving said insertion means of said exterior member, said insertion means and said receiving means being adapted to be slidably or longitudinally mated with each other, and when said insertion means and said receiving means are mated with each other, lateral separation of said exterior and interior members is prohibited.

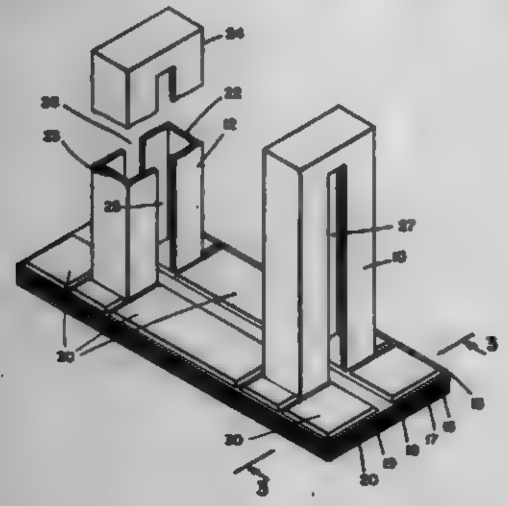
3,978,630
CENTRAL TOWER BUILDING WITH GROUND CONSTRUCTED HOISTED AND SUPPORTED FLOORS

Allan S. Lable, New York; Irwin Paul Lew, Forest Hills; Abraham Gutman, Old Bethpage, and Charles Thornton, Pleasantville, all of N.Y., assignors to International Environmental Dynamics, Inc., New York, N.Y.

Filed Mar. 4, 1975, Ser. No. 555,312

Int. Cl.^{2} E04B *1/34*; E04G *21/00*; E04B *1/35*

U.S. Cl. 52—236 **4 Claims**



1. An improved method of constructing a building of multiple ground constructed hoisted and supported floors, said method comprising the steps of: constructing at least one tower having an interior hollow core, said tower defining in sidewalls of said tower paired, vertically extending slots on opposing sidewalls of said tower to define confronting C-shaped sections of said tower separated by said intervening slots there between, said slots extending from the base of said tower continuously towards the top of said tower to the intended elevation of the highest of said supported floors; constructing horizontal floor slabs at a position proximate the base of said tower, each said slab having a major portion immediately circumscribing the outer periphery of said tower and a secondary portion contiguous to the major portion bridging between the slots in said tower to define at least a portion of the floor interior of said tower and said secondary portion spanning the spatial interval of said slots to fully occupy the section of said slot at said floor; raising said constructed horizontal floor slab from its position proximate the base of said tower to its intended elevation on said tower whereby said major portion circumscribing the outer periphery of said tower prevents outward deflection of said tower to open said slots, and said secondary portion spanning the spatial interval of said slots prevents inward movement of said tower sidewalls to close said slots; and, fastening the raised floor slab to said tower adjacent the openings of said slot whereby said floor slab as fastened to said tower cross braces said tower at said slot to reinforce said tower and simultaneously to support said floor slab.

3,978,631
DISPLAY UNITS WITH SOCKET-MOUNTED STANDARDS

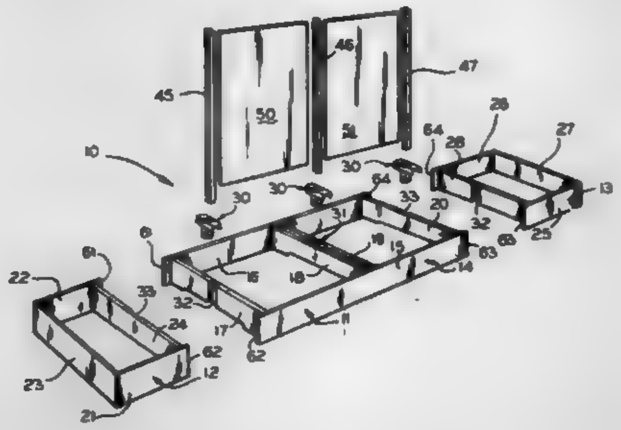
Warren H. Diersing, Lincoln, Ill., assignor to Myers Industries, Inc., Lincoln, Ill.

Filed Aug. 4, 1975, Ser. No. 601,796

Int. Cl.^{2} E04H *1/00, 3/00*

U.S. Cl. 52—239 **6 Claims**

1. A merchandising display unit comprising a horizontal base with horizontal frame members on opposite sides of the base and connected by a plurality of cross frame members, at least one of said cross frame members being a pair of elongated sheets or boards arranged in a contiguous but horizontally spaced, parallel pair, each pair having horizontally spaced, opposed faces lying in respective substantially vertical planes, a pair of opposed, vertically extending grooves each having a vertical bottom wall and planar vertical side walls in said respective opposed faces to provide a vertical socket, a standard-mounting unit embodying a plate having two spaced flanges depending from a horizontal cross wall, said flanges respectively lying against the outermost sides of respective sheets or boards of said pair to hold said sheets or boards together as a pair unit, said horizontal cross wall having a rectangular hole therein positioned substantially midway between said flanges with two opposite edges of said hole being at right angles to said flanges, a metal strap member secured to said horizontal cross wall, said strap member having two, vertical, flat strap legs respectively directly below said respective two opposite edges, said strap legs being at substantially right angles to said flanges, said strap member being seated in said socket with the side edges of said strap legs lying against the respective side walls of said grooves, and a vertical standard having a lower end of substantially rectangular, overall transverse cross section extending downwardly through said rectangular hole with one pair of opposed sides of said lower end lying against and snugly supported by said strap legs and the other pair of opposed sides lying against and supported by said bottom walls of said opposed grooves.



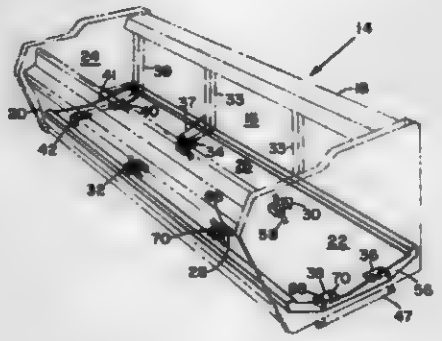
3,978,632
FOAM PLASTICS DISPLAY UNIT

Roger C. Ansted, San Antonio, Tex., assignor to Friedrich Air Conditioning & Refrigeration Co., San Antonio, Tex.

Filed Nov. 11, 1974, Ser. No. 522,684

Int. Cl.^{2} E04C *2/22*

U.S. Cl. 52—309 **1 Claim**



1. A display unit comprising an inner skin, an outer skin extending in a spaced relation to said inner skin, two end pieces secured to said skins at the ends of the space between said skins, a plurality of support plates located in said space with at least a portion of said plates being secured to said end pieces, a hardened foam plastic material extending in said space and surrounding at least a portion of each of said plates for bonding said skins and said plates relative to each other and forming a unitary structure, a plurality of support brackets for supporting additional components of said display unit, and screw means extending through said support brackets, at least one of said skins, a portion of said foam plastic, and into said plates for securing said support brackets to said structure.

3,978,633
BUILDING ELEMENT

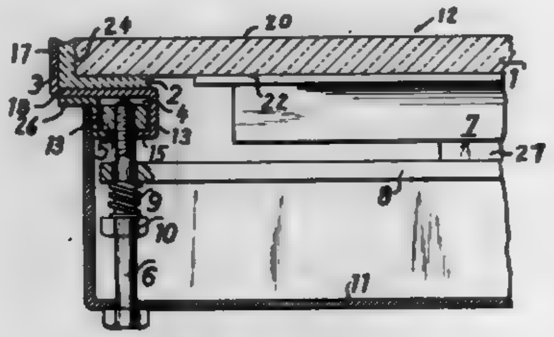
Herwig Scheidler, Mainz, and Klaus Kristen, Wiesbaden, both of Germany, assignors to Jenaer Glaswerk Schott & Gen., Mainz, Germany

Filed Jan. 14, 1975, Ser. No. 540,967

Claims priority, application Germany, Jan. 18, 1974, 7401645[U]; Japan, Feb. 27, 1974, 7406776[U]

Int. Cl.^{2} E04B *1/62*

U.S. Cl. 52—400 **7 Claims**



1. The combination of a base and a construction element comprising:
- a sheet of material having a generally plane front surface, a back surface generally parallel to the front surface, and a planar edge defining the perimeter of and joining the front and back surfaces, and
- an attachment means secured to the back surface of the sheet adjacent to the edge of the sheet for attaching the sheet to the base, the attachment means comprising
  - a frame having two spaced apart flanges arranged substantially perpendicularly to the back surface of the sheet and parallel to each other, each flange having a rim closing toward the opposite flange defining an aperture for receiving a threaded element for securing the construction element to the base,
  - a homogeneous, permanently resilient adhesive substance positioned between the frame and the sheet having sufficient flexibility to allow for the difference in thermal expansion between the frame and the sheet and having sufficient adhesive strength to hold the sheet to the frame, and
- means situated between the sheet and the base for biasing the sheet with respect to the base in a frontward direction away from the base.

3,978,634
SCAFFOLDING CONSTRUCTIONS

Roy Mack, Birmingham, and Terence William Mayo, Redditch, both of England, assignors to Kwikform Limited, Birmingham, England

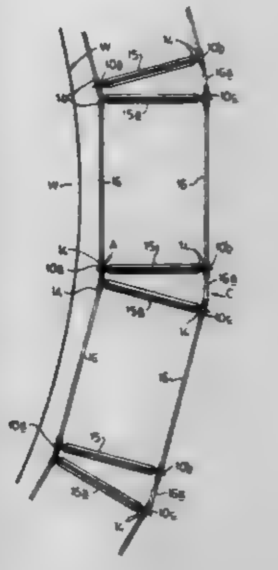
Filed July 17, 1975, Ser. No. 596,594

Claims priority, application United Kingdom, July 19, 1974, 32013/74

Int. Cl.^{2} E04H *12/08*

U.S. Cl. 52—646 **6 Claims**

1. In a scaffolding structure comprising
- a. a plurality of generally vertical uprights arranged in horizontally spaced parallel pairs and each provided at spaced intervals along their lengths with groups of sockets, and
- b. cross members each including at opposed ends thereof connecting means firmly engaging selected ones of said sockets, the cross members comprising firstly transom elements extending between the uprights of said pair and secondly ledger elements extending between the uprights of adjacent pairs, whereby staging can be supported between adjacent pairs of said uprights, the improvement comprising
- c. at least one additional cross member having at one end connection means for firmly engaging a socket afforded by one of said uprights mounted for pivotal movement about a vertical axis, such additional, pivoted cross member extending at an angle other than a right angle relative to one of said transom elements which extends between the uprights of one of said pairs of uprights whilst connected to another socket of the same group as that to which the pivoted cross member is connected, and
- d. an additional socket, similar to the sockets afforded by the uprights, is provided at said one end of the pivoted cross member with one of said ledger elements connected at one of its ends to said additional socket on said pivoted cross member.



3,978,635
SELF-SUPPORTING ELEMENT FOR ROOF STRUCTURES AND COMBINATIONS THEREOF

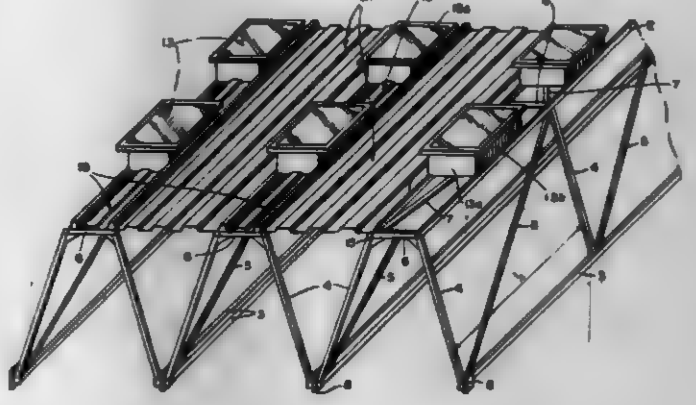
Yves Theault, 51, rue de Bellevue, 14 - Caen, France

Filed Sept. 17, 1973, Ser. No. 398,170

Claims priority, application France, Sept. 19, 1972, 72.33094

Int. Cl.^{2} E04C *3/02*

U.S. Cl. 52—693 **8 Claims**



1. A self-supporting elongated structural element for supporting the roof of a building which is adapted to rest by at least each one of its two opposite ends on a rigid horizontal superstructure and which includes at least four profiled longitudinal ribs extending horizontally and being disposed symmetrically two by two sloping outwardly with respect to a vertical longitudinal plane of symmetry, the two upper ribs being united by horizontal individual beam members on the one hand and each pair of ribs on the same side of said plane of symmetry on the other hand being joined by a lattice framework means to provide an upper beam and two side trusses, respectively, the bottom being open and unobstructed so that said elements can be stacked on top of one another.

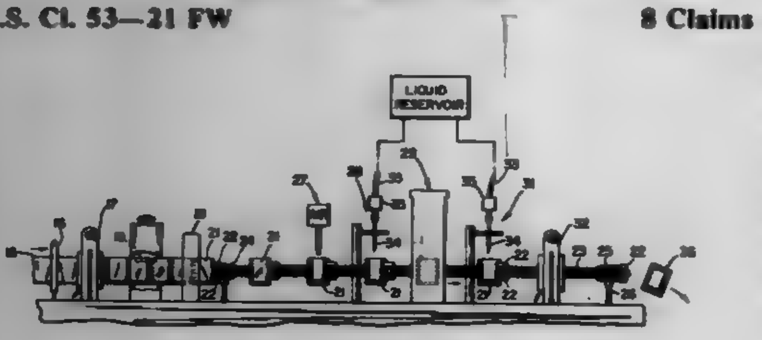
3,978,636
METHOD AND APPARATUS FOR THE PACKAGING OF MOIST ARTICLES

David Clancy, Canaan, Conn., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Sept. 11, 1972, Ser. No. 287,735

Int. Cl.² B65B *9/2, 25/00*

U.S. Cl. 53—21 FW **8 Claims**



1. In the method of automatically making sealed compartmented packages with each compartment containing a towelette or like absorbent article moistened with a liquid in which the steps are carried out of providing a series of open top envelope compartments, stuffing each compartment with a towelette or like article, injecting a quantity of liquid therein and heat sealing the open top thereof, the improvement comprising, injecting part of the required amount of liquid into each envelope compartment, thrusting the towelette or like article into each envelope compartment, injecting the required balance of liquid into each towelette-containing envelope compartment, and then sealing the open top of each filled towelette-containing envelope compartment.

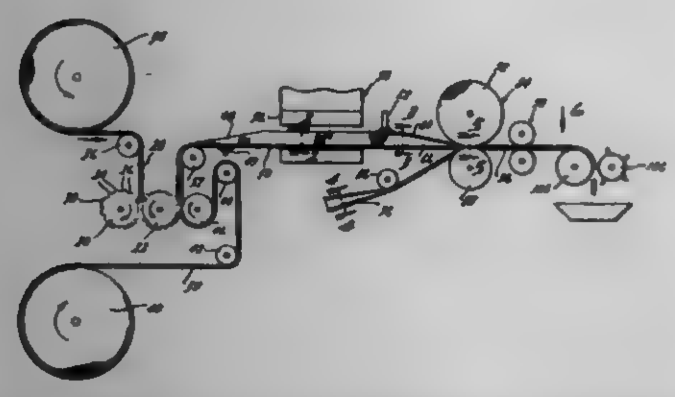
3,978,637
METHOD AND APPARATUS FOR MAKING PACKET ASSEMBLIES

Francis G. Mauriello, Malden, Mass., assignor to Diamond Crystal Salt Company, St. Clair, Mich.

Filed Oct. 24, 1975, Ser. No. 625,523

Int. Cl.² B65B *9/04, 43/06*

U.S. Cl. 53—28 **9 Claims**



1. In an apparatus for making disposable dispensing packet assemblies, the combination comprising means for forming a first continuous web comprised of a pair of opposed strips bonded in face-to-face relationship at longitudinally spaced intervals therealong defining a plurality of first cavities, means for filling said first cavities with a first material, means for sealing the filled said first cavities forming a first continuous ribbon comprised of a plurality of interconnected first packets, means for forming a second continuous web comprised of a pair of opposed strips bonded in face-to-face relationship at longitudinally spaced intervals therealong defining a plurality of second cavities, means for filling said second cavities with a second material, means for sealing the filled said second cavities forming a second continuous ribbon comprised of a plurality of interconnected second packets, means for orienting a lateral edge of said first ribbon and a lateral edge of said second ribbon in aligned adjacent relationship, means for transversely aligning said first packets and said second packets, means for bonding said first ribbon to said second ribbon with said first and said second packets in transversely aligned relationship forming a composite ribbon, and means for transversely severing said composite ribbon into sections each comprising a packet assembly consisting of an interconnected said first and said second packet.

9. A method for making disposable packet assemblies which comprises the steps of forming a first continuous web comprised of a pair of opposed strips bonded in face-to-face relationship at longitudinally spaced intervals therealong defining a plurality of first cavities, filling said first cavities with a first material, sealing the filled said first cavities forming a first continuous ribbon comprised of a plurality of interconnected first packets, forming a second continuous web comprised of a pair of opposed strips bonded in face-to-face relationship at longitudinally spaced intervals therealong defining a plurality of second cavities, filling said second cavities with a second material, sealing the filled said second cavities forming a second continuous ribbon comprised of a plurality of interconnected second packets, orienting a lateral edge of said first ribbon and a lateral edge of said second ribbon in aligned adjacent relationship, transversely aligning said first packets and said second packets, bonding said first ribbon to said second ribbon with said first and said second packets in transversely aligned relationship forming a composite ribbon, and transversely severing said composite ribbon into sections comprising a packet assembly consisting of an interconnected first and second packet.

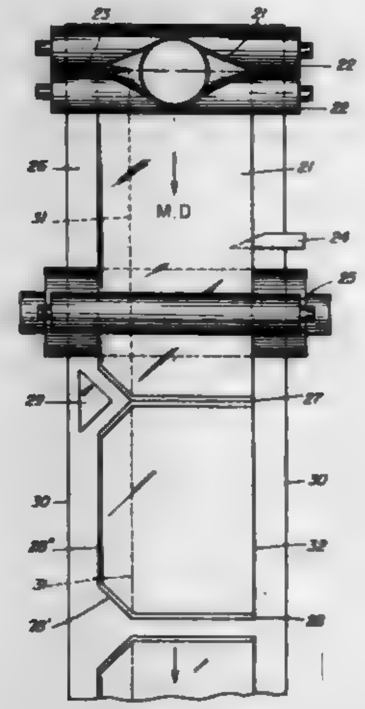
3,978,638
PACKAGE CONSTRUCTION OF ARTICLES WITH SHRINK FILM

Walter H. Sether, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. Nos. 65,562, Aug. 20, 1970, abandoned, and Ser. No. 280,020, Aug. 11, 1972, abandoned. This application May 7, 1974, Ser. No. 467,759

Int. Cl.² B65B *43/04, 53/02*

U.S. Cl. 53—30 S **2 Claims**



1. A method of wrapping a pallet load comprising forming a biaxially oriented shrinkable, thermoplastic film, and providing a greater degree of orientation and therefore a greater shrinkability in a first direction than in a second direction, from said film forming a plastic bag having front and rear walls joined to each other along a pair of opposite edges to define an internal bag enclosure having an open mouth, a continuous square bottom containing a gusset and tabs removably attached to and extending from the joined opposite edges directed toward said gussetted bottom, said bag being formed with said open mouth substantially parallel to said first direction of said film; suspending a plurality of said bags from said tabs in a mouth downward orientation; disposing a loaded pallet below and in substantial vertical alignment with said bags; downwardly propelling a bag with sufficient force to disengage such from said tabs and overwrapping said pallet and load therewith; and heating said overwrapped pallet load sufficient to shrink said bag thereabout, said shrunk bag exerting greater force on said load in a direction substantially parallel to said mouth than in a direction substantially perpendicular to said mouth.

3,978,639
METHOD AND APPARATUS FOR FORMING PACK WRAPPERS IN CIGARETTE PACKERS

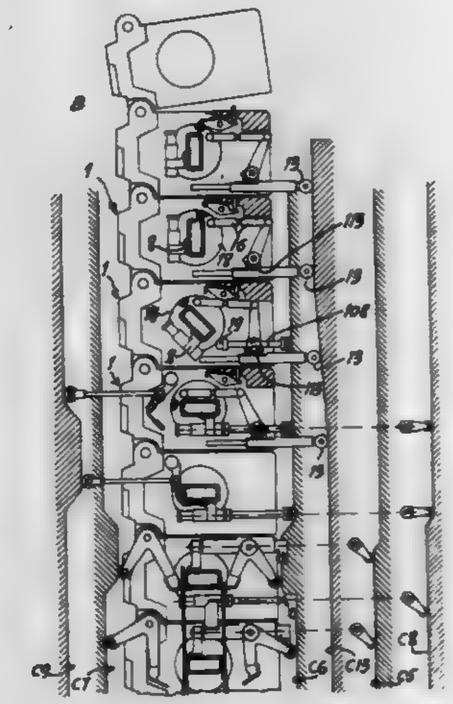
Claudio Ferrozzi, Ferrara, Italy, assignor to AMF Incorporated, White Plains, N.Y.

Filed Jan. 16, 1975, Ser. No. 541,473

Claims priority, application Italy, Jan. 24, 1974, 12443/74

Int. Cl.² B65B *19/24*

U.S. Cl. 53—32 **9 Claims**



1. A method for forming and closing pack wrappers in cigarette packers comprising the steps of:
- providing a set of packmaking devices each with a tube-shaped box and a set of pack closing devices, the devices of each set being connected to one another and continuously driven along a closed path at least in part adjacent the path of the other set of devices.
- forming a foil sheet around each tube shaped box and folding a pair of opposed flaps at one end of said sheet at the bottom of the pack wrapper being formed,
- forming a wrapper sheet around each foil sheet which together provide a pack wrapper,
- rotating each tube shaped box and pack wrapper thereon to change its orientation relative to the path of said packmaking devices and folding the bottom flaps of the pack wrapper thereby closing one end thereof,
- returning each tube shaped box and pack wrapper thereon to its original orientation relative to the path of said packmaking devices and filling each pack wrapper,
- transferring each filled pack wrapper from a packmaking device to an adjacent pack closing device and pivoting each filled pack wrapper to change its orientation to the path of said packmaking devices while folding the flaps at the mouth end thereof, and
- thereafter returning each pack wrapper to its original orientation.

3,978,640
HARD-GELATIN CAPSULE FILLING MACHINES

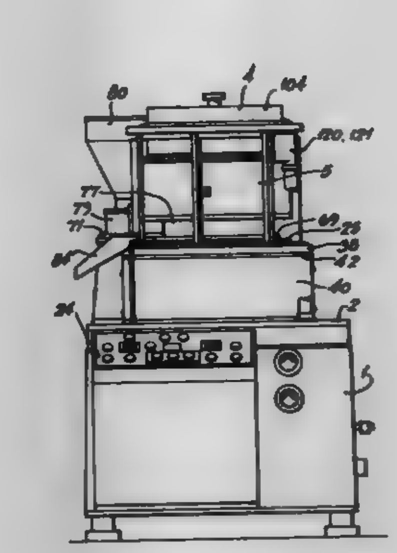
Jack Crossley, and David Henry Wilson, both of Liverpool, England, assignors to Manesty Machines, Ltd., Liverpool, England

Filed Sept. 10, 1974, Ser. No. 504,766

Claims priority, application United Kingdom, Sept. 11, 1973, 42616/73

Int. Cl.² B65B *1/04, 1/24, 43/50*

U.S. Cl. 53—37 **64 Claims**



1. A hard-gelatin capsule filling machine for filling two piece capsules comprising:
- an uncapping station for uncapping capsule, means for compressing a quantity of fill into a soft slug, a filling station for inserting the slug into the bottom part or body of the capsule, a re-capping station for recapping the body part, and an ejection station for thereafter ejecting the filled capsule in a single, continuously rotating phase of the machine;
- said filling station comprising fill forming means including at least one die mounted between upper and lower punches for forming each slug of fill and for delivering the formed slug of fill into a capsule body through the lower end of the die by the upper punch;
- said fill forming means further including a single rotatable turret, which is continuously rotated in use of the machine, the turret comprising a die table having a ring of dies lying on a common pitch circle centered on the axis of rotation of the turret with their axes parallel with the axis of rotation of the turret, and for each die an upper punch movable into and out of the upper end of said die, and a lower punch movable into and out of the lower end of said die; and cam means for reciprocating the lower punches as the turret rotates to advance each lower punch from a withdrawn position relative to its die, into its die to a first position therein in which its tip lies flush with the upper end of the die, thereafter to withdraw the punch to a second position in its die to assist in drawing fill from the die table into the die, thereafter to advance the punch to a second position in its die to eject a quantity of fill from the die and leave a predetermined metered dose of fill in the die, thereafter to withdraw the punch to a third position in its die to prevent spillage of the metered dose of fill material from the die during movement of the upper punch associated with the die into the upper end of the die, thereafter to advance the punch to a fourth position in its die to form a soft slug of the metered dose of fill material in the die and thereafter to return the punch to said withdrawn position.

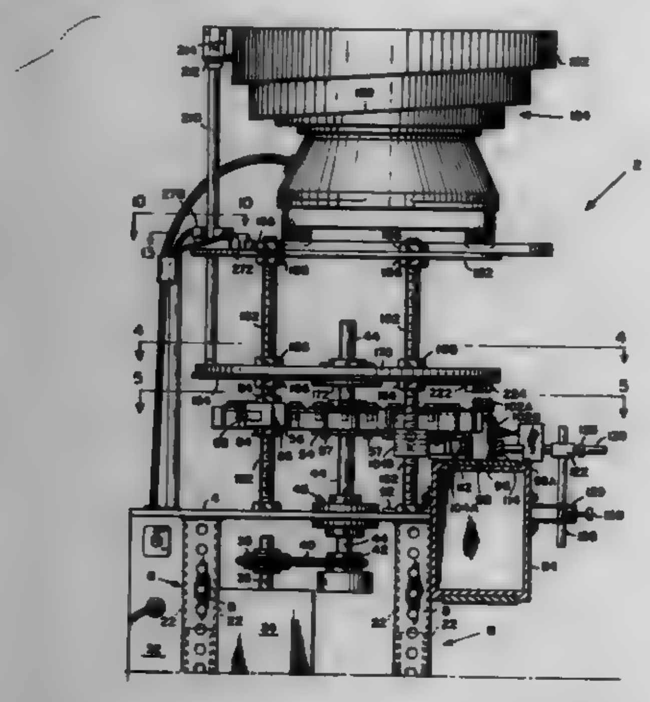
3,978,641
MACHINE FOR SUPPLYING ARTICLES TO OPEN TOP CONTAINERS

Werner L. Tollefsbol, Delran, N.J., assignor to Dower, Inc., Delran, N.J.

Filed June 24, 1975, Ser. No. 589,685

Int. Cl.² B67B *57/16*

U.S. Cl. 53—53 **7 Claims**



1. A machine for supplying articles to open top containers on a moving conveyor comprising:

means including a horizontal wheel adjacent the conveyor having paddles spaced to trap a container between each adjacent pair of paddles to control the movement of the containers adjacent said wheel,

a rotatable horizontal disc mounted above said wheel and having a plurality of vertical openings through the disc each for the reception of an article,

a fixed plate between the disc and the wheel to retain the articles in said openings, a portion of the plate over the conveyor being cut away to permit the release of the articles from the said openings into the containers,

means to rotate the wheel and the disc at the same angular rate, and

means to supply an article to each opening in the disc.

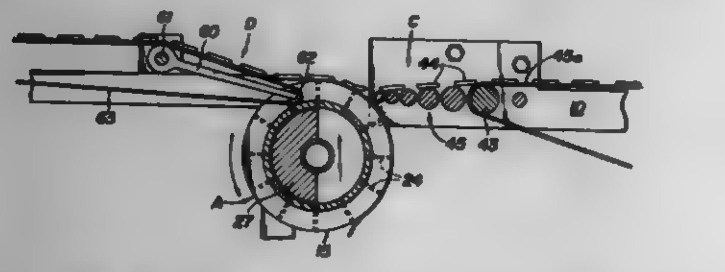
3,978,642
METHOD AND MACHINE FOR PACKING STRIPS OF MATERIAL

James P. Smithers, Glen Ellyn, Ill., assignor to Armour and Company, Phoenix, Ariz.

Filed Feb. 28, 1974, Ser. No. 446,588

Int. Cl.² B65B *35/30;* **B65G** *47/08*

U.S. Cl. 53—159 **3 Claims**



1. A machine for packing strips of material comprising a roll having a cylindrical outer surface, means for passing a film continuously upwardly and over the top of said roll with said film in contact with said roll at an area of said outer surface which area is moving forwardly and upwardly, said roll containing passages therein leading from the interior of said roll to the underside of said film, means for withdrawing air through said passages to thereby draw said film tightly to said surface at said area, means for delivering said strips onto said film over said forwardly and upwardly moving area, means for blocking said passages at an area on the surface of said roll where said passages are moving forwardly and downwardly, and means for picking up and removing said film with said strips thereon at said last mentioned area.

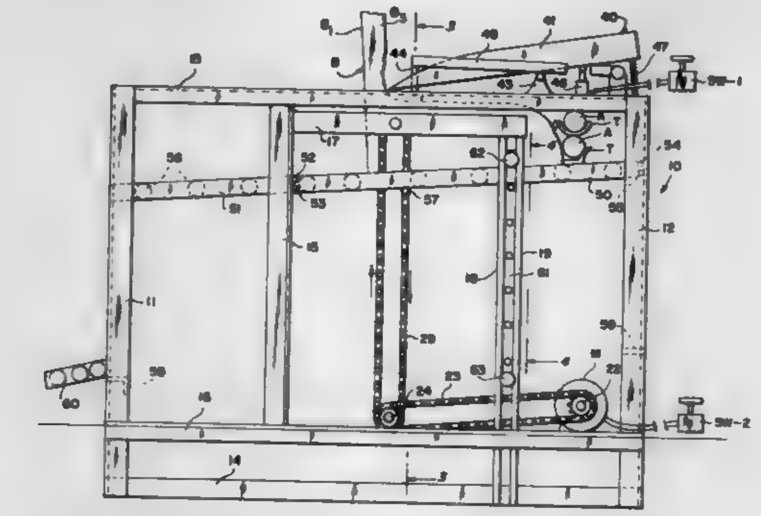
3,978,643
FRUIT LOADING APPARATUS

Riley L. Jones, Hendersonville, N.C., assignor to Thomas L. Tatham Farm, Inc., Miami, Fla.

Filed July 3, 1974, Ser. No. 485,534

Int. Cl.² B65b *35/22;* **B65B** *35/50*

U.S. Cl. 53—160 **13 Claims**



1. Apparatus for loading fruit into an open-sided box by successively discharging into the box a series of batches or pieces of fruit each sufficient to form a complete layer in the box and by continuously moving the box without stopping between a first position underlying a discharging means and a second position spaced from the first position, comprising:

a. means for receiving and discharging plural pieces of fruit; said means having a capacity at least sufficient to receive a batch of fruit sufficient to form a complete layer in the box;

b. platform means for supporting a box for uninterrupted movement between a first position substantially underlying said first mentioned means in which position discharge of a batch of fruit thereinto is initiated, and a second position laterally spaced from said first position, said platform means having a first portion underlying said receiving and discharging means and a second portion laterally thereof for supporting a box in said second position;

c. elevator means for supporting and step-lowering said platform, and

d. means for causing said first mentioned means to discharge a said batch of fruit therefrom into a box on said first portion of said elevator means whereby to discharge a batch of fruit sufficient to form a complete layer into the box,

e. said apparatus being free of means for stopping the continuous movement of said box between said first and second positions, whereby a box may be continuously moved without stopping between said positions.

3,978,644
SADDLE

Jon G. Hillman, Rte. 1, Box 151, Big Spring, Tex. 79720

Filed Sept. 9, 1975, Ser. No. 611,619

Int. Cl.² B68C *1/00*

U.S. Cl. 54—44 **15 Claims**

1. Reinforcing structure for a saddle comprising:

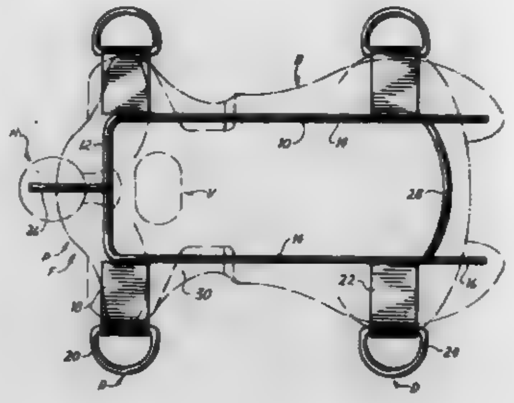
a. a stainless steel frame having

b. a fork bight at the fork of the saddle and

c. two side bars extending along the tree bars of the saddle,

d. the side bars being substantially straight and parallel, thus, lying in a horizontal plane,

e. the fork bight bend upward from the plane containing the side bars,



f. a front D-ring plate on each of the side bars at the forward most point thereof,

g. a rear D-ring plate on each of the side bars near the back thereof,

h. a loop in the bottom of each D-ring plate, and

j. a stainless steel D-ring in each loop.

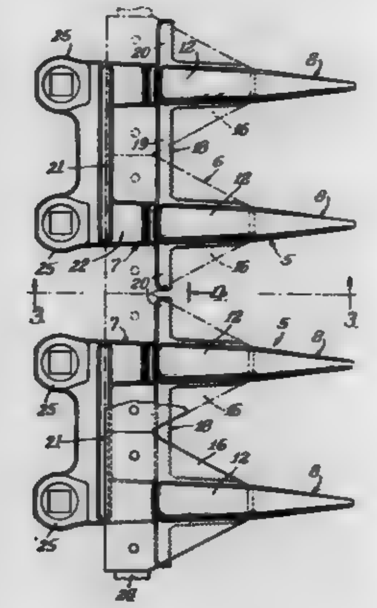
3,978,645
SICKLE GUARD

George H. Bennett, Berrien Springs, Mich., and Wilbur L. Pringle, Washington, Ill., assignors to National-Standard Company, Niles, Mich.

Filed June 27, 1975, Ser. No. 591,160

Int. Cl.² A01D *55/10*

U.S. Cl. 56—310 **9 Claims**



1. In a unitary forged sickle guard having at least one longitudinally extending guard finger for use in a mower having sickle means including:

mounting means for supporting flat cutter sections for movement transversely of said guard finger, wherein said guard finger has a bottom body portion having an upper ledger surface, the ledger surface of said guard finger lying in a horizontal plane and having cutting edges at each of the sides thereof,

trash bar means extending at the rear of said cutting edges of said ledger surface, said trash bar means having a machined upper horizontal surface means lying in said horizontal plane of said ledger surface and having cutting edge means provided by the machining of said trash bar means at the forward portion thereof, said cutting edges of said ledger surface and said trash bar means being integral thereto to provide a continuous cutting edge, and

wear plate means extending transversely of said guard finger rearwardly of said trash bar means, said wear plate means having an upper surface lying in the plane of said ledger surface, said ledger surface and said upper horizontal surface means of said trash bar means and said upper surface of said wear plate means providing support for the cutter sections of the sickle means for movement with respect to said guard finger and in cutting relation to said cutting edges of said ledger surface and the cutting edge means of said trash bar means.

3,978,646
CONTROL OF BREAK-UP ROLLER SPEED IN OPEN-END SPINNING UNIT

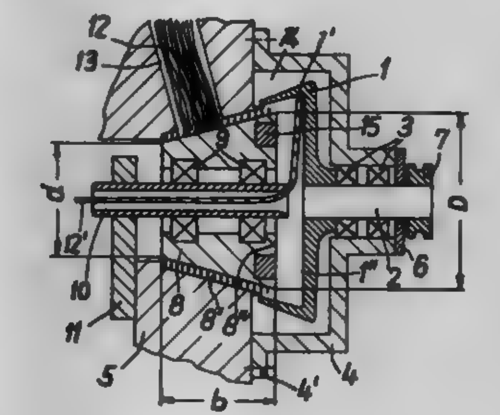
Herbert Hoffmann, Bremen; Rolf Neubert, Schwanewede (Beckedorf), and Friedrich Wachendorf, Schwanewede, all of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Apr. 25, 1975, Ser. No. 571,628

Claims priority, application Germany, May 6, 1974, 2421783

Int. Cl.² D01H *1/12*

U.S. Cl. 57—58.95 **15 Claims**



8. In an open-end spinning unit having a coaxially mounted spinning rotor and a break-up roller which is free of mechanical connection to any drive system and which is mounted to be freely rotatable, the break-up roller being caused to rotate by a force transmission from the coaxially mounted spinning rotor of the unit without any mechanical contact between the roller and the rotor, the improvement wherein said break-up roller has a circumferential surface constituted by a comb wherein rotation of said roller causes said comb to produce ventilation losses constituting a variable retarding force applied to said break-up roller to produce a braking moment while preventing mechanical connection between said roller and any stationary body, and said roller is dimensioned and said comb is formed to cause the retarding force produced by said ventilation losses to have a value which corresponds to the force applied to drive said roller at a selected roller rotation speed.

3,978,647

HIGHLY COHERENT AND RIGID SYNTHETIC MULTIFILAMENTARY YARN AND PROCESS FOR MANUFACTURING THE SAME

Kenzo Kosaka; Toshio Horikawa; Minoru Uchida; Shin Morioka; Kunio Shibata, and Eizi Takahashi, all of Nagoya, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 315,554, Dec. 15, 1972, abandoned. This application Mar. 12, 1975, Ser. No. 557,453

Claims priority, application Japan, Dec. 20, 1971, 46-102587; Dec. 21, 1971, 46-103231

Int. Cl.^{2} D02G *1/02, 3/26*

U.S. Cl. 57—140 R **10 Claims**

1. Highly coherent and rigid synthetic multifilamentary yarn of improved functional properties, composed of a single multifilamentary strand, comprising multiple alternate S- and Z-twist regions of irregular lengths formed by false twisting and retained successively along the yarn length, some of the component filaments of said yarn being partially fused and adhered to each other and the extent of fusing and adhesion and the number of twists of each of the regions having twists of the same direction as the twisting direction being greater than those of the regions having twists of the opposite direction to said twisting direction.

6. A process for manufacturing a synthetic multifilamentary yarn having multiple alternate S- and Z- twist regions retained successively along the yarn length, which process comprises

1. supplying the multifilament yarn to a false-twisting apparatus;
2. passing the yarn through a heating zone having a temperature defined in °C by the equation:

$$\rho + 10\,\Delta n \leqq 0.015\,T - 0.800$$

and

$$T \leqq 260$$

wherein ρ is density of the material in g/cm^3 and Δn is degree of double refraction of said material filament, the individual filaments of the yarn being softened and partially melted such that regions are formed wherein the filaments are intermitently fused and adhered to each other in a twisting direction,

3. passing the yarn in a heated condition through the false-twisting apparatus, whereby regions are formed after passing through the apparatus wherein the individual filaments are substantially unfused and are twisted in a direction opposite to the twisting direction, and
4. recovering the resulting yarn.

3,978,648

HELICALLY WRAPPED YARN

Seiichi Yamagata, and Kozo Susami, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

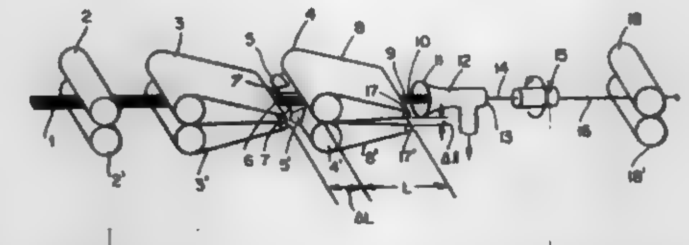
Filed Apr. 9, 1974, Ser. No. 459,396

Claims priority, application Japan, Apr. 10, 1973, 48-39991

Int. Cl.^{2} D02G *3/36, 3/38*

U.S. Cl. 57—144 **8 Claims**

1. A helically wrapped yarn which comprises a bundle of core fibers comprising substantially non-twisted staple fibers, and wrapped staple fibers disposed around said bundle of staple core fibers, said wrapped fibers being helically wrapped around the surface only of said core staple fibers, and being wrapped at a regular helical angle, and not extending into the bundle of core fibers, said wrapped fibers being positioned in an orderly arrangement and extending continuously along the length of the bundle of core fibers.



3,978,649

QUARTZ CRYSTAL ELECTRONIC TIMEPIECE

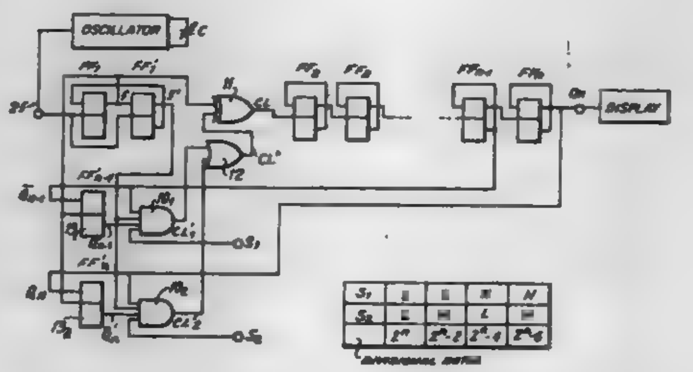
Okito Naito, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed July 22, 1974, Ser. No. 490,550

Claims priority, application Japan, July 20, 1973, 48-80583

Int. Cl.^{2} G04C *3/00*

U.S. Cl. 58—23 R **9 Claims**



1. An electronic timepiece comprising oscillator means for producing a high frequency reference signal, said oscillator means including one of a plurality of quartz crystal vibrators each capable of vibrating at a different frequency, said oscillator means being tunable to vibrate at a predetermined high frequency selected from a group including a desired high frequency and at least one high frequency which varies from said desired high frequency by *m* Hz, where *m* is an integer, as determined by the one of said plurality of vibrators included therein; divider means including a plurality of series-connected divider stages adapted to produce a predetermined low frequency signal, the number of divider stages determining a division ratio for producing said predetermined low frequency signal in response to the application thereto of a high frequency reference signal of said desired frequency from said oscillator means; and adjustment means coupled to said divider means, said adjustment means being adapted to selectively adjust the division ratio fo said divider means to thereby produce said predetermined low frequency signal when said oscillator means produces a high frequency reference signal which varies from said desired high frequency by *m* Hz.

3,978,650

ELECTRIC TIMEPIECE

Yukio Hashimoto, Niiza, and Shigeru Morokawa, Higashiyamato, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1974, Ser. No. 517,231

Claims priority, application Japan, Oct. 24, 1973, 48-119605

Int. Cl.^{2} G04C *3/00;* H03F *1/00*

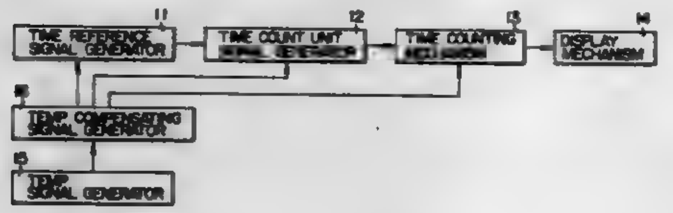
U.S. Cl. 58—23 AC **7 Claims**

1. An electronic timepiece which is provided with a time reference signal having an output signal time count unit signal generator, a time counting mechanism and a time display mechanism; the electronic timepiece further comprising:

a temperature signal generator for generating a temperature signal, said generator including an oscillator circuit having an output different from that of said time reference signal generator, wherein the ratio of output oscillation frequencies changes with temperature variation;

means for transmitting said temperature signal intermittently;

memory means for storing the temperature signal generated by said temperature generator until a subsequent temperature signal is generated and for delivering said stored temperature signal when the subsequent temperature signal is received by the memory;


11
12
13
14
TIME REFERENCE SIGNAL GENERATOR
TIME COUNT UNIT SIGNAL GENERATOR
TIME COUNTING MECHANISM
DISPLAY MECHANISM
TEMP. COMPENSATING SIGNAL GENERATOR
TEMP. SIGNAL GENERATOR

a signal converter for generating a temperature compensating signal, wherein said compensating signal compensates for the variations of the output frequency of said time reference signal generator caused by temperature variations; and

a time reference signal frequency variable controller for synthesizing the output signal of said time reference signal generator and that of said signal converter by compensating for the changes of the output frequency of said time reference signal generator caused by the temperature variations and for delivering a resultant signal to said time unit signal generator.

3,978,651

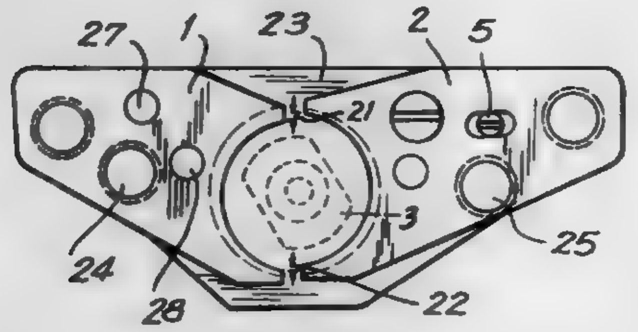
STEP MOTOR FOR QUARTZ CRYSTAL ELECTRONIC TIMEPIECE

Masahito Yoshino, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 27, 1974, Ser. No. 537,029

Int. Cl.^{2} G04C *3/00*

U.S. Cl. 58—23 D **5 Claims**



1. In a stepmotor for use in a quartz crystal electronic timepiece, the improvement comprising a reference member; a pair of stator yokes permanently mounted to said reference member and having ends to define the gap therebetween, at least a region of said reference member in registration with said gap being formed of a material of a magnetic permeability less than the permeability of said yokes to substantially magnetically isolate said yokes from each other; said reference member being mountable on a watch plate; and a permanent magnet rotor in said gap surrounded by said stator yokes.

3,978,652

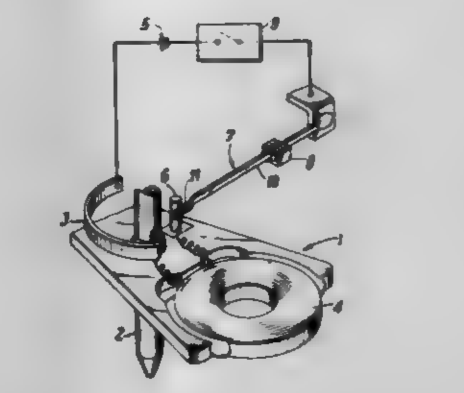
FORMED CONTACT SPRING FOR ELECTRO-MECHANICAL WATCHES

Edward Kaulins, New Milford, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed June 19, 1975, Ser. No. 588,526

Int. Cl.^{2} G04C *3/04*

U.S. Cl. 58—23 D **4 Claims**



1. In an electro-mechanical timekeeping device of the type having an oscillating balance wheel with an electric contact pin thereon and having means to effect driving impulses of said balance wheel repetitively as controlled by alternately striking a contact spring, the improvement in said contact spring comprising:

a straight contact spring member having a flat flexing portion adapted for orientation normal to the plane of oscillation of said balance wheel, said contact spring having a straight terminating end portion adapted for contact on opposite sides by said pin, said end portion being crimped so as to present opposite identical rigid contact surfaces of minimum surface area to said pin.

3,978,653

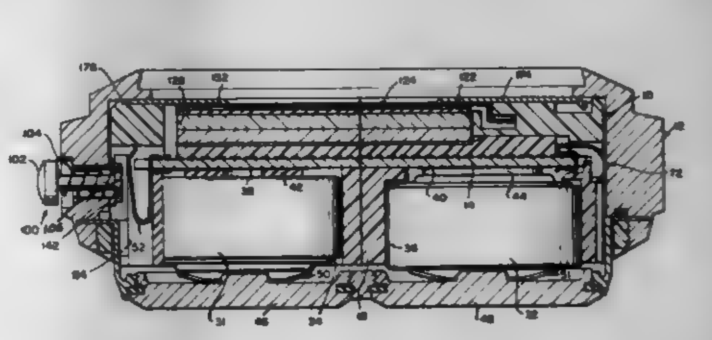
SOLDERLESS CONTACT FOR ELECTRONIC WATCH

Roger A. Burke, Laguna Beach, and Bela Somogyi, Costa Mesa, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed June 27, 1975, Ser. No. 591,219

Int. Cl.^{2} G04C *3/00;* G04B *19/30;* H01R *11/22*

U.S. Cl. 58—23 R **7 Claims**



1. An electronic watch construction comprising:

a substrate having a face and having edges, said substrate carrying electronic watch components on the face thereof, at least one contact pad on said substrate adjacent the edge thereof, said contact pad being connected to said electronic circuitry;

a contact spring having clamp jaws engaged over the edge of said substrate and clamping on said contact pad for electrical contact between said spring and said contact pad, said spring having a free end away from said jaws of said spring, said free end of said spring being contactable at case potential when said electronic watch structure is positioned in a watch case for connecting watchcase potential to said pad.

3,978,654
MOTION TRANSFORMER

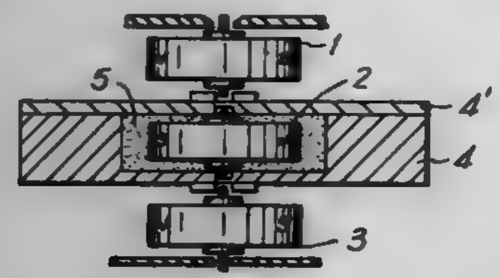
Kenichi Koike, and Yoshikazu Kawamura, both of Shimosuwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Division of Ser. No. 477,239, June 7, 1974. This application Nov. 24, 1975, Ser. No. 634,803

Claims priority, application Japan, June 7, 1973, 48-64079

Int. Cl.² G04C *3/00*

U.S. Cl. 58—23 D **5 Claims**



1. In an electronic timepiece having a step motor for intermittently stepping a gear train including a plurality of intermittently driven gears, the improvement comprising a first permanent magnet associated with at least one gear, said permanent magnet being intermittently rotated by said gear associated therewith, and clock hand means including a permanent magnet disposed to define a flux field between said gear associated magnet and said clock hand magnet, and viscous damping means surrounding said clock hand magnet to effect a continuous rotation of said clock hand means in response to the intermittent rotation of said gear train.

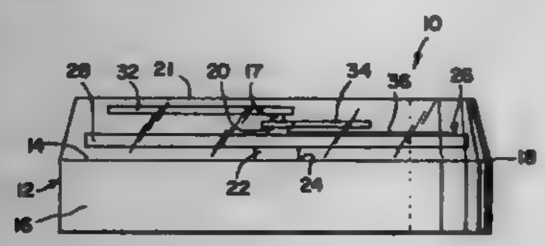
3,978,655
TIME CLOCK

Raymond McGillick, Kinnelon, N.J., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Aug. 4, 1975, Ser. No. 601,804

Int. Cl.² G04B *19/00*

U.S. Cl. 58—126 R **6 Claims**



1. A time clock, which comprises:

a. a clock housing having an open front wall and an interior chamber therein;
b. a clock mechanism contained in said chamber of said housing;
c. a ternary of shafts arranged one within another for rotation, said ternary of shafts communicating with said clock mechanism;
d. a dial having a front face with points equidistantly spaced radially there around and a center aperture therethrough, said ternary of shafts extending through said center aperture of said dial;
e. a minute hand affixed to an outer free end of said longest shaft;
f. a second hand affixed to an outer free end of said shortest shaft;
g. an hour hand affixed to an outer free end of said intermediate shaft;
h. means for integrally joining said second hand to said front face of said dial, said dial rotating in union with said second hand; and
i. a transparent lens contained across said open front wall covering said dial.

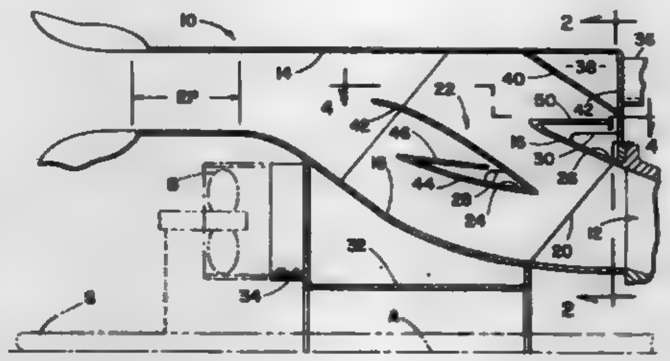
3,978,656
GAS TURBINE ENGINE AIR INLETS HAVING PARTICLE SEPARATORS

Joseph P. Murphy, Newtown, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Feb. 20, 1975, Ser. No. 551,088

Int. Cl.² F02C *7/09, 7/00*

U.S. Cl. 60—39.09 P **12 Claims**



1. A gas turbine engine air inlet comprising:

inner and outer liner means defining an annular air passage which curves inward relative to the engine axis from an entrance portion toward the engine compressor entrance;

a plurality of hollow struts extending radially through the curved portion of the air flow passage;

means for capturing particulate matter from the inner portion of said annular passage, said means including a first trap of generally V-shaped cross section having inner and outer legs, the downstream end of each of said legs being joined to form an apex, said first trap being disposed in and generally aligned with the direction of air flow in the curved portion of the passage, said inner and outer legs of said first trap being concentric with the engine axis, said legs forming at the apex end portion thereof particle receiving pocket portions spanning adjacent struts, said pocket portions opening into the interiors of said struts, the upstream end of said inner leg being joined by an annular plate extending therefrom towards the inner surface of said outer leg, said plate being disposed at a low angle relative to the air flow direction and terminating in spaced relation to said outer leg to define a narrow entrance to the particle receiving pocket portions;

means for capturing particulate matter from the outer portion of the air flow streams, said means including a first outer liner defining the outer bounds of air flow through the entrance portion of the air passage and extending downstream of said first trap of generally V-shaped cross section and outwardly thereof, a second outer liner having its upstream edge spaced to be radially inward of the leading edge of the outer leg of said first trap and intermediate the length thereof, said second outer liner defining the outer bounds of the air passage downstream of its leading edge, and including particle receiving pocket portions, outwardly of the second outer liner, which span adjacent struts and open into the interiors thereof, a plate angled inwardly from the first outer liner towards the outer pocket portions, and a plate extending downstream from the leading edge of the second outer liner and terminating in closely spaced relation from said angled plate to define a relatively narrow entrance to the outer pocket portions,

the outer pocket portions and the plates defining the entrance thereto being concentric of the engine axis; and

means for maintaining a reduced pressure within the interior of said struts to draw particles thereinto from both of said particle collecting pocket portions.

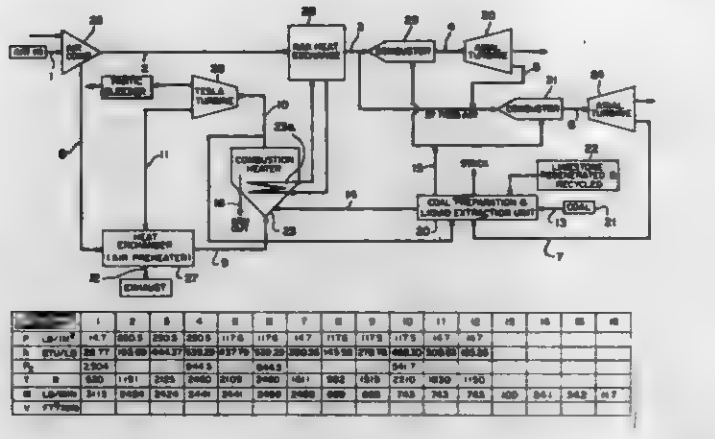
3,978,657
TURBINE SYSTEM

Garland L. Fulton, Wayne, and David W. Taylor, Edgemont, both of Pa., assignors to Combustion Turbine Power, Inc., Doylestown, Pa.

Filed Feb. 6, 1974, Ser. No. 439,994

Int. Cl.² F02B *43/08, 43/00*

U.S. Cl. 60—39.12 **11 Claims**


TESLA TURBINE
COMBUSTION HEATER
HEAT EXCHANGER (AIR PREHEATER)
EXHAUST
STACK
LIMESTONE REGENERATED & RECYCLED
COAL PREPARATION & LIQUID EXTRACTION UNIT
COAL

1. A turbine system comprising; a first turbine and means for heating operating gas for said first turbine including means for directly combustion heating said gas and means for indirectly combustion heating said gas

means for deriving the fuels for both said heating means from a common fuel, said deriving means comprising means for separating from the common fuel, volatile constituents, leaving residual solid matter; means for combusting said residual solid matter; and a disc-type turbine operated by the products of combustion from said residual solid matter combustion means.

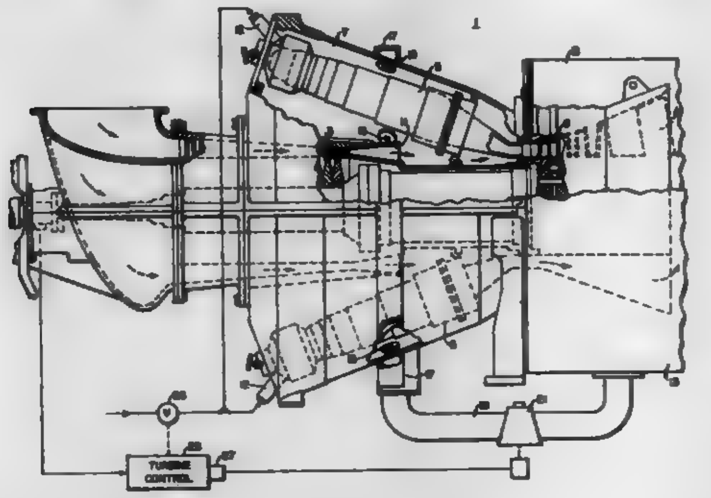
3,978,658
VARIABLE LOAD GAS TURBINE

Sheila M. Forbes, Ancaster, and Arthur W. J. Upton, Hamilton, both of Canada, assignors to Westinghouse Canada Limited, Hamilton, Canada

Filed Mar. 21, 1972, Ser. No. 236,651

Int. Cl.² F02C *9/14, 9/04*

U.S. Cl. 60—39.27 **3 Claims**



1. A gas turbine unit operable to facilitate rapid changes in a load imposed on said turbine unit, said turbine unit comprising:

a compressor for pressurizing a fluid,

a plurality of combustion chambers disposed in annular array in which pressurized fluid is admixed with a fuel and burned to produce a high temperature motive fluid,

a plenum chamber encircling and in fluid communication with said combustion chambers and adapted to direct pressurized fluid from said compressor to said combustion chamber,

a turbine portion in fluid communication with said combustion chamber and adapted to convert energy in said high temperature motive fluid to rotating energy, said turbine portion being so connected to said load and to said compressor to drive said load and said compressor, and said compressor portion and said turbine portion being matched so that during normal operation generally the complete output of the compressor portion passes through the turbine portion,

an exhaust duct into which the motive fluid from the turbine portion is discharged,

means for bleeding pressurized fluid from the plenum chamber and means for maintaining the fuel supplied to the combustion chamber at a predetermined flow rate, said bleed means and fuel flow maintaining means cooperating to negate flameout during rapid reduction in load and to maintain the temperature within the turbine portion at a generally high level so that the turbine unit can pick up load rapidly without large thermal shocks and stresses being produced therein,

said bleed means comprising a plurality of apertures disposed circumferentially around the plenum chamber, a conduit in fluid communication with said aperture, flow control means disposed in said conduit, and a header in fluid communication with said apertures and said conduit, said flow control means being responsive to the speed of the turbine and the power output of the turbine unit.

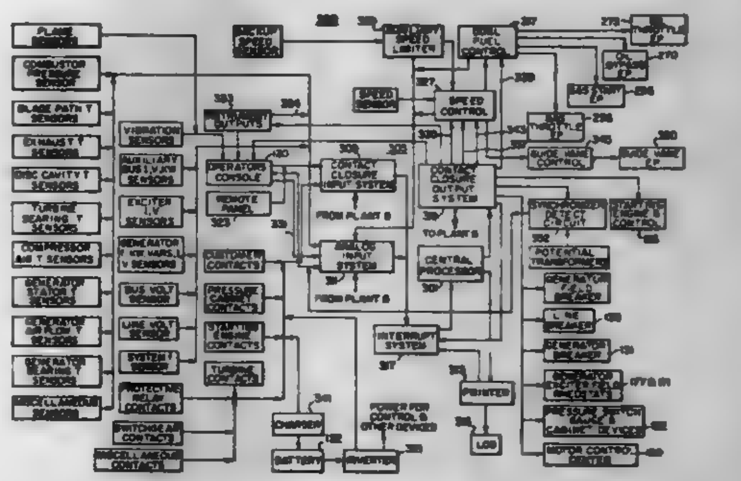
3,978,659
BUMPLESS TRANSFER IN SHIFTING CONTROL COMMAND BETWEEN THE PRIMARY AND BACKUP CONTROL SYSTEMS OF A GAS TURBINE POWER PLANT

Jack R. Smith, Pittsburgh, and Leonard H. Burrows, Gibsonia, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 19, 1975, Ser. No. 551,203

Int. Cl.² F02C *9/08*

U.S. Cl. 60—39.28 R **11 Claims**



1. For a gas turbine power plant having a primary control system which develops a control signal output utilized to regulate fuel flow to the turbine and a plurality of signals for regulating predetermined plant elements, the plant including a plurality of sensors for indicating the status of predetermined plant parameters and operating status conditions, backup control apparatus comprising:

a. input means coupled to receive information from the plant sensors;
b. first means, coupled to said input means, for generating a control signal output independently of the functionally identical signal developed by the primary control system;
c. second means, coupled to said input means, for generating an equal plurality of signals for regulating the predetermined plant elements independently of the functionally identical signals developed by the primary control system;

d. means for comparing each of the functionally identical signals, coupled to said first and second means for generating, and for developing a tracking error signal in response to any difference between any one of said generated signals and the functionally identical signal developed by the primary control system; and

e. transfer enabling means, connected between the primary control system and the means for comparing, for preventing a shift in control command to said backup apparatus whenever said means for comparing develops said tracking error signal.

3,978,660

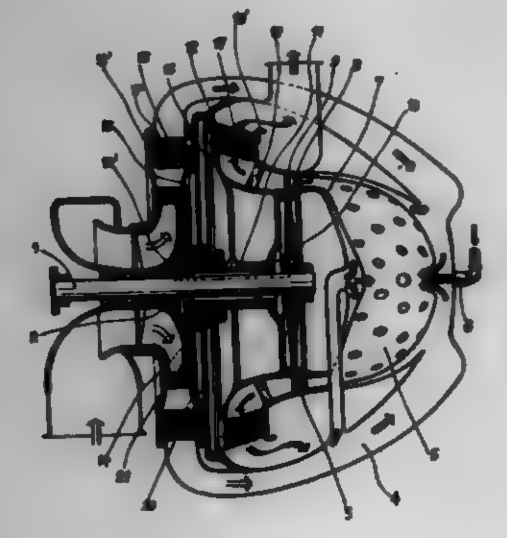
ROTARY HEAT EXCHANGERS IN THE FORM OF TURBINES

Nikolaus Laing, Hofener Weg 35-37, 7141 Aldingen near Stuttgart, Germany

Division of Ser. No. 84,097, Oct. 26, 1970, Pat. No. 3,811,495. This application Apr. 1, 1974, Ser. No. 457,131

Int. Cl.² F02C ***7/08***

U.S. Cl. 60—39.51 R **4 Claims**



1. A heat engine comprising:
a housing provided with a combustion chamber;
a central shaft member rotatably journaled in said housing;
a tubular member coaxial with said shaft member journaled in said housing for rotation independently of said shaft member;
a first and a second annular heat exchanger mounted at axially spaced-apart locations on one of said members for joint rotation therewith, said first heat exchanger extending radially beyond said second heat exchanger;
first conduit means forming a closed circuit through said heat exchangers for a fluidic heat carrier, said circuit passing through said one of said members;
second conduit means for conducting a working fluid rich in ambient air in an open circuit through said housing via said second heat exchanger, said combustion chamber and said first heat exchanger;
fuel-inlet means in said combustion chamber for producing therein a combustible fuel/air mixture generating an expanding gas flow upon ignition thereof;
a turbine mounted on the other of said members between said combustion chamber and said first heat exchanger for rotary displacement by said expanding gas flow;
a compressor in said open circuit upstream of said second heat exchanger mounted on said other of said members for rotary entrainment by said turbine to drive said working fluid into said combustion chamber; and
radial partition means rigid with said housing interposed between said first and second heat exchangers said partition means enabling close axial spacing of said heat exchangers.

3,978,661

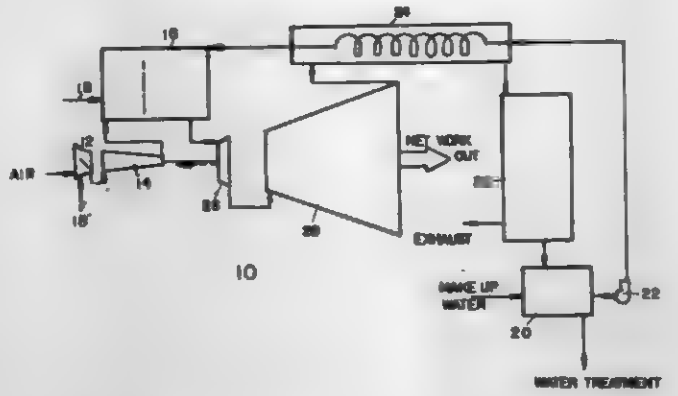
PARALLEL-COMPOUND DUAL-FLUID HEAT ENGINE

Dah Yu Cheng, Palo Alto, Calif., assignor to International Power Technology, Palo Alto, Calif.

Filed Dec. 19, 1974, Ser. No. 534,479

Int. Cl.² F02C ***7/10, 7/00***

U.S. Cl. 60—39.55 **12 Claims**



1. A heat engine comprising:
a. first means for converting heat energy to mechanical work essentially according to the Brayton thermodynamic cycle, having a first working fluid resulting from combustion of a mixture of air and a hydrocarbon fuel in the ratio of from about 0.8 to 2.0 times the stoichiometric air/fuel ratio;
b. second means for converting heat energy to mechanical work essentially according to the Rankine thermodynamic cycle, having a second working fluid comprising water;
c. said first and second means operating in parallel with each other with means for intermixing said first and second working fluids with a ratio of water-to-air by weight in the range of about 0.2 to 1.0 so that the work output of each is compounded and said second working fluid contains greater heat content than said first working fluid, and
d. means for recuperating exhaust heat from said intermixed working fluid for pre-heating said second working fluid to the vapor or mixed liquid and vapor form prior to intermixing with the first working fluid.

3,978,662

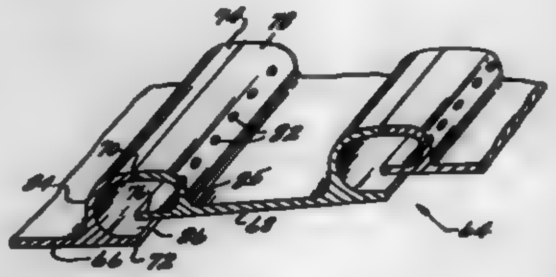
COOLING RING CONSTRUCTION FOR COMBUSTION CHAMBERS

Thomas L. DuBell, Maineville; Thomas C. Campbell, and James L. Thompson, both of Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 28, 1975, Ser. No. 572,066

Int. Cl.² F02C ***3/00, 7/18***

U.S. Cl. 60—39.65 **3 Claims**



1. An apparatus for passing a portion of a cooling fluid, flowing in a plenum in a predetermined direction, in a protective film upon a liner partially defining a hot gas passage, comprising:
a first liner segment partially defining the plenum;
a second liner segment partially defining the hot gas passage, the first and second liner segments cooperating to form a pocket;
a first lip at the downstream end of said second liner segment spaced from said first liner segment to form an exit from said pocket for directing cooling air along said first liner segment in said predetermined direction;
a second lip at the upstream end of said first liner segment, said second lip being radially spaced from said first lip and projecting into said pocket;
a plurality of apertures in said first liner adapted to pass cooling fluid in a plurality of streams into said pocket and along said second lip in a direction substantially opposite from said predetermined direction, said second lip having a length sufficient to permit said plurality of streams to at least partially coalesce while passing along said second lip in said opposite direction.

3,978,663

PROCESS AND APPARATUS FOR EVAPORATING AND HEATING LIQUIFIED NATURAL GAS

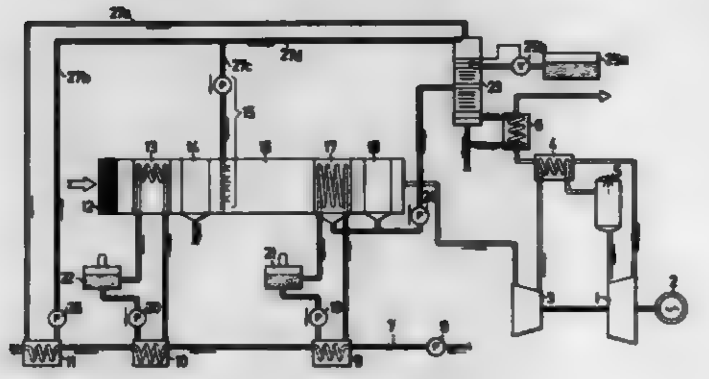
Charles Mandrin, Winterthur, and Mehmet Sahabettin Ergenc, Zollikerberg/ZH, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jan. 9, 1975, Ser. No. 539,653

Claims priority, application Switzerland, Jan. 11, 1974, 333/74

Int. Cl.² F02C ***7/16, 7/12***

U.S. Cl. 60—39.67 **5 Claims**



1. In combination,
an open gas turbine plant for receiving a flow of air;
a conduit for conducting a flow of liquified natural gas;
a first heat exchange system for absorbing heat from the flow of air to pre-cool the flow of air upstream of said plant and for supplying heat to the flow of liquified natural gas to heat and vaporize the flow of liquified natural gas;
a water separator downstream of said first heat exchange system for separating water from the flow of air;
means for mixing a medium having a lower freezing point than water into the flow of air downstream of said heat exchange system;
a second heat exchange system in the path of flow of the air downstream of said mixing means for cooling the flow of air and for supplying heat to the flow of liquified natural gas;
a second water separator downstream of said second heat exchange system for separating a mixture of the medium and water from the flow of air; and
a rectification column connected to said second heat exchange system and said second water separator for receiving the mixture of medium and water to separate the water from the medium and to recover the medium.

3,978,664

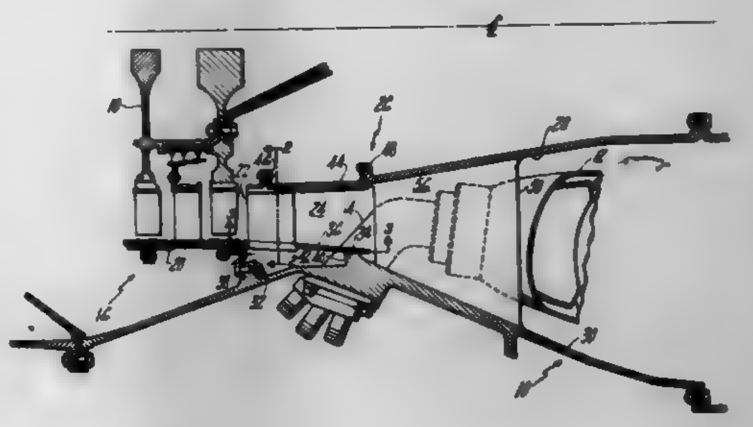
GAS TURBINE ENGINE DIFFUSER

Robert W. Parker, Tolland, and Bertus Ooms, Coventry, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 534,619, Dec. 20, 1974, abandoned. This application Sept. 29, 1975, Ser. No. 617,922

Int. Cl.² F02C ***7/20***

U.S. Cl. 60—39.69 **9 Claims**



1. In a gas turbine engine having a compression section which includes a plurality of exit vanes circumferentially disposed within the path of working medium gases flowing from the compression section and having a diffusion section downstream of the compression section which includes an inner wall and an outer wall which are joined by a plurality of radially oriented struts extending between the inner and outer walls, apparatus for diffusing the working medium gases which flow from the compression section to the combustion section during operation of the engine, comprising:
an inner flow path shroud having an upstream end which is joined to the exit vanes of the compression section and a downstream end which is located radially outboard of and joined to the inner wall of the diffusion section; and
an outer flow path shroud having an upstream end which is attached to the exit guide vanes of the compression section and a downstream end which engages the outer wall of the diffusion section, the inner and outer shrouds forming a controlled diffuser upstream of said struts which is free of protuberances in at least the predominant axial portion thereof.

3,978,665

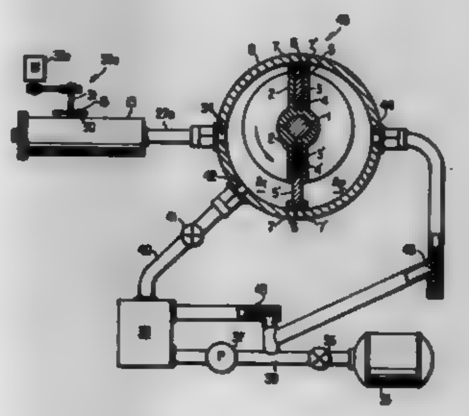
OIL HYDRAULIC MOTOR

Hideaki Yoshioka, No. 20-31, 4-chome, Suizenji, Kumamoto, Japan

Filed Jan. 31, 1975, Ser. No. 545,901

Int. Cl.² F15B ***13/06***

U.S. Cl. 60—325 **4 Claims**



1. An oil hydraulic motor comprising:
a main shaft;

- an auxiliary shaft disposed in line with and directly coupled to said main shaft;
- a pair of rotary type drive units, each including a casing which has a built-in rotor, being connected respectively to the main shaft and the auxiliary shaft;
- said rotor of the drive unit connected to the main shaft being disposed in the corresponding casing at an eccentric position and a pair of shield elements being arranged thereon at diametrically opposite positions;
- said rotor of the drive unit for the auxiliary shaft having a nearly triangular prismatic configuration and carrying an integrally formed internal gear, and a guide gear being supported at a predetermined position so that it is engaged with said internal gear formed on the triangular prismatic rotor and is operative in association with said auxiliary shaft;
- a pair of high pressure generating units adapted to intermittently supply a high pressure oil into the corresponding casings of these drive units; and
- a pair of oil-circulating systems, each including a pressure tank and a pump disposed in the piping communicating the different chambers defined in said casings with each other.

3,978,666

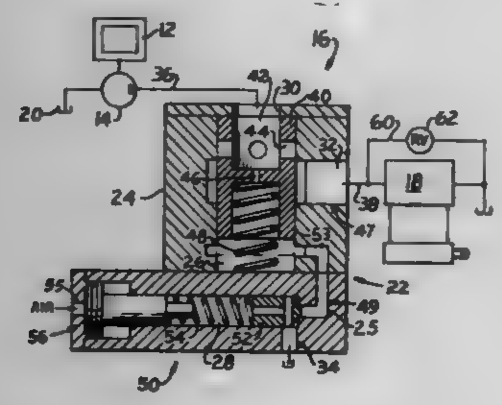
VEHICLE SPEED CONTROL APPARATUS AND METHOD

Kenneth W. Kelly, Warrensburg, and Wayne A. Peterson, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 11, 1975, Ser. No. 612,428

Int. Cl.² F15B *15/18*

U.S. Cl. 60—327 **7 Claims**



1. Apparatus for controlling the velocity of an engine driven vehicle having a control valve connected to a hydraulic system pump driven by said engine, comprising:

- a valve body having first and second chambers, a fluid inlet connected to the pump and opening into the first chamber, a first fluid outlet connected to the control valve and opening into the first chamber, and a second fluid outlet through the valve body and opening into the first chamber;
- a restrictor spool valve having an inlet, first and second outlets and being movable in the first chamber between a first position at which the first restrictor spool outlet is substantially closed and a second position at which the first restrictor spool outlet is open to a greater extent and in fluid communication with the first outlet of the valve body;
- means biasing the restrictor spool toward the first position; and
- means for controlling the passage of fluid through the second restrictor spool valve outlet and the second valve body outlet for further biasing the restrictor spool valve toward the first position.

3,978,667

HYDRAULIC BRAKE BOOSTER

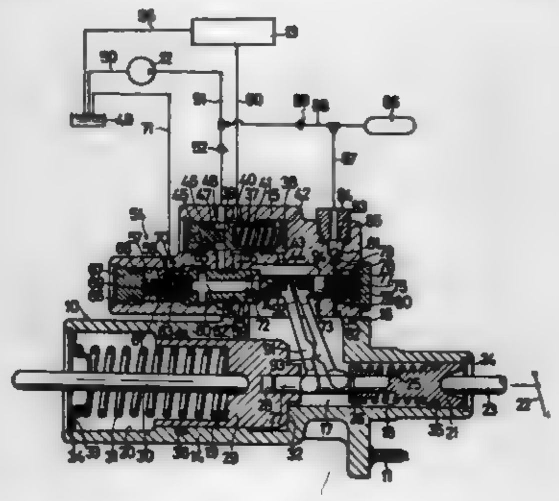
Naoki Ohara, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Toyota, Japan

Filed Sept. 24, 1975, Ser. No. 616,368

Claims priority, application Japan, Oct. 31, 1974, 49-124902

Int. Cl.² F15B *20/00, 1/02*

U.S. Cl. 60—403 **7 Claims**



1. A hydraulic brake booster having a source of continuously circulating fluid pressure comprising:

- a housing having an inlet port and an outlet port;
- input piston means slidable within said housing and operatively connected to a brake pedal;
- power piston means slidable within said housing so as to energize a master cylinder for the brakes;
- a control chamber interposed between said input and power piston means;
- a spool valve assembly slidable within said housing for selectively admitting fluid pressure from said inlet port to said control chamber so as to thereby actuate said power piston means;
- a connecting means for transmitting the movement of said input piston means to said spool valve assembly; and
- a pressure difference responsive means slidable within said housing and movable between a first position in which fluid pressure from said source to said inlet port is circulated to said outlet port through a passage means formed within said pressure difference responsive means, and with respect to said spool valve assembly, and a second position in which the fluid pressure is set greater than the previous fluid pressure from said source after said passage means is blocked by the initial movement of said spool valve assembly,
- whereby said greater fluid pressure is transmitted to said control chamber as a result of further movement of said spool valve assembly.

3,978,668

HYDRAULIC TRANSMISSION WITH INPUT-OUTPUT SPEED RATIO REGULATION

Gerhard Nonnenmacher, Korntal, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

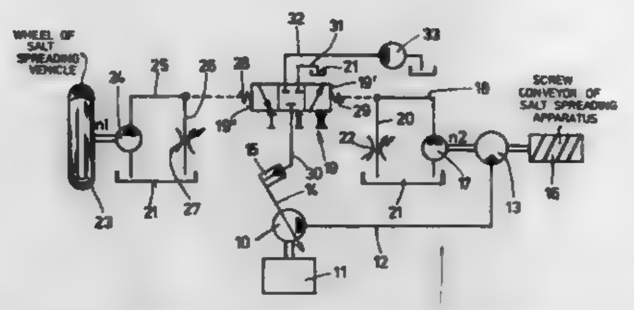
Filed Oct. 10, 1972, Ser. No. 621,633

Claims priority, application Germany, Oct. 29, 1974, 2451293

Int. Cl.² F16H *39/46*

U.S. Cl. 60—447 **16 Claims**

1. An hydraulic transmission arrangement for driving a dispensing apparatus at a speed varying in proportion to a command value furnished by a command means, comprising, in combination, a hydromotor for driving the dispensing apparatus; an adjustable-output main pump fluidly connected to the hydromotor for driving the same by supplying pressurized fluid thereto; regulating means for automatically varying the rotary speed of the hydromotor in proportion to variations in the command value furnished by the command means, including first and second measuring pumps connected to and driven by the hydromotor and the command means, respectively, for generating first and second control pressures respectively dependent upon the rotary speed of the hydromotor and the command value furnished by the command means, hydraulic control means connected to the fluid outputs of the measuring pumps and connected to the adjustable-output main pump for automatically adjusting the output of the main pump in dependence upon the difference between the first and second control pressures, and first and second flow restricting means each leading from the fluid output of a respective measuring pump to an unpressurized space for partially relieving the control pressure generated by the respective measuring pump.


WHEEL OF SALT SPREADING VEHICLE
SCREW CONVEYOR OF SALT SPREADING APPARATUS
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3,978,669

SERVO-POWER-ASSISTED HYDRAULIC BRAKE-ACTUATING ARRANGEMENT

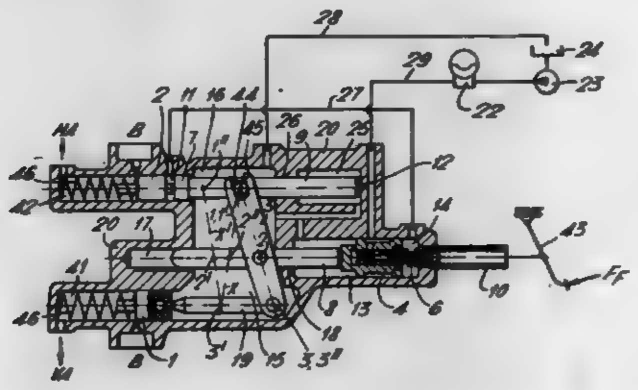
Juan Belart, Walldorf, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Oct. 3, 1975, Ser. No. 619,281

Claims priority, application Germany, Nov. 12, 1974, 2453573

Int. Cl.² B60T *13/20*

U.S. Cl. 60—549 **15 Claims**



1. A servo-power-assisted hydraulic brake-actuating arrangement comprising:

- a housing;
- a first bore disposed in a given plane within said housing having a first axis;
- a second bore disposed in said given plane within said housing having a second axis parallel with said first axis;
- a third bore disposed in said given plane within said housing having a third axis parallel with said first and second axes;
- a source of servo pressure;
- a first displacement piston disposed in said first bore coaxial of said first axis to actuate a first brake circuit;
- a second displacement piston disposed in said second bore coaxial of said second axis to actuate a second brake circuit;
- an ancillary piston disposed in said second bore coaxial of said second axis and in tandem relation with said second displacement piston, said ancillary piston and said second displacement piston being interconnected and forming in said second bore a first chamber;
- a tappet disposed coaxial of said second axis connected to said ancillary piston remote from said second displacement piston and extending in its end position to a housing stop remote from said second displacement piston;
- a brake valve disposed in said third bore coaxial of said third axis, said brake valve being connected to said source and a brake pedal to couple said servo pressure to said first chamber for actuation of said second displacement piston when said brake pedal is actuated;
- a balance arm disposed in said housing pivotably connected at opposite ends thereof to said first displacement piston and said tappet; and
- a force transmitting member disposed in said third bore coaxial of said third axis and in tandem relation with said brake valve, said force transmitting member being connected to said balance arm intermediate said opposite ends to actuate said balance arm with actuates said first displacement piston when said servo pressure is present and which actuates said first and second displacement pistons by a driver's brake pedal effort directly in the event of failure of said servo pressure.

3,978,670

MULTI-CIRCUIT BRAKE INSTALLATION FOR VEHICLES

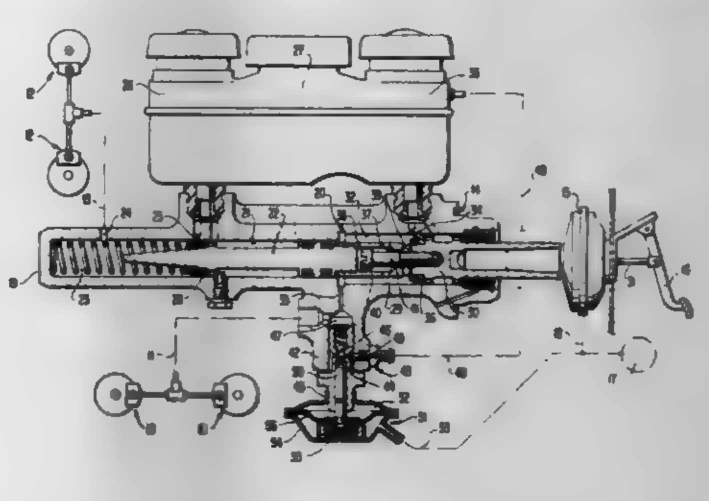
Werner Kruse, Schornbach, and Reinhard Resch, Stuttgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Oct. 17, 1975, Ser. No. 623,253

Claims priority, application Germany, Oct. 24, 1974, 2450474

Int. Cl.² F15B *7/00*

U.S. Cl. 60—562 **27 Claims**



1. A multi-circuit brake installation for vehicles in which at least two transmitter piston means having differently large effective brake pressure piston areas and operatively connected with each other by a hydraulic drive connection means, operate within a master brake cylinder means actuatable at will by a servo-assist means, and in which the transmitter brake piston means are operatively connected with a respective brake circuit and are provided with means for limiting the relative movement with respect to one another, characterized by disconnecting means independent of the brake circuits for disconnecting the hydaulic drive connection means, said disconnecting means being positively displaced into the disconnecting position exclusively upon occurrence of a critical value of the servo-assist means.

3,978,671

DUPLEX ENGINE OIL SEPARATOR

Cesar Gonzalez, Wichita, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.

Filed Oct. 15, 1974, Ser. No. 514,764

Int. Cl.² F02B *33/44*

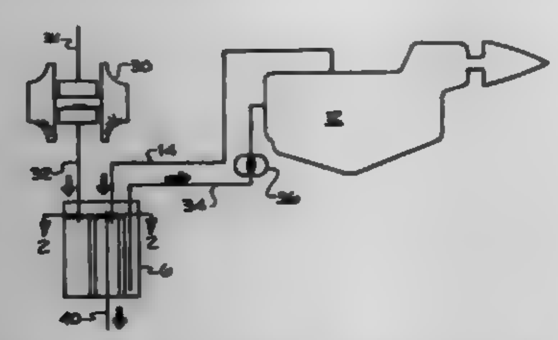
U.S. Cl. 60—598 **5 Claims**

1. A duplex air-oil separator for separating two air-oil mixtures of differing proportions from and engine crankcase vent and a turbo-charger oil drain comprising:

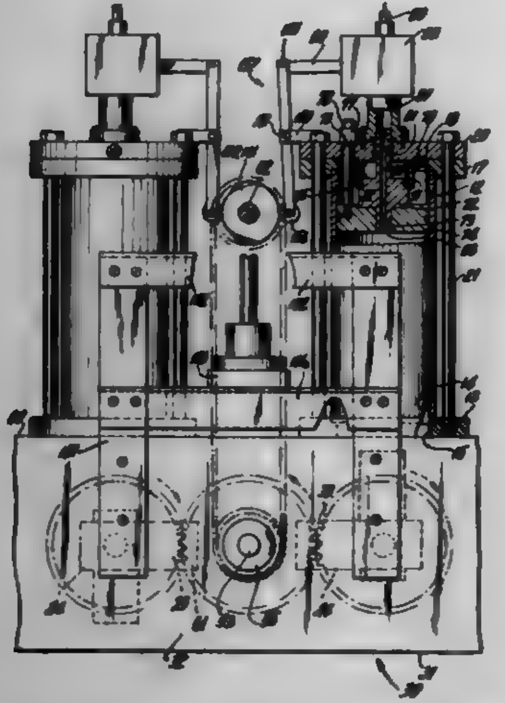
a housing;

a first perforated partition wall located within the housing defining first and second separator chambers each having upper portions and sumps at the bottom thereof;

a first conduit means from the engine crankcase vent communicating with the first separator chamber to transmit the air-oil mixtures high in air to the first chamber for separation, a second conduit means from the turbocharger oil drain communicating with the second separator chamber to transmit air-oil mixtures low in air to the second chamber for separation, an exhaust vent conduit communicating the upper portion of the second chamber to atmosphere, and a sump drain conduit connected to the sump area of the second chamber.

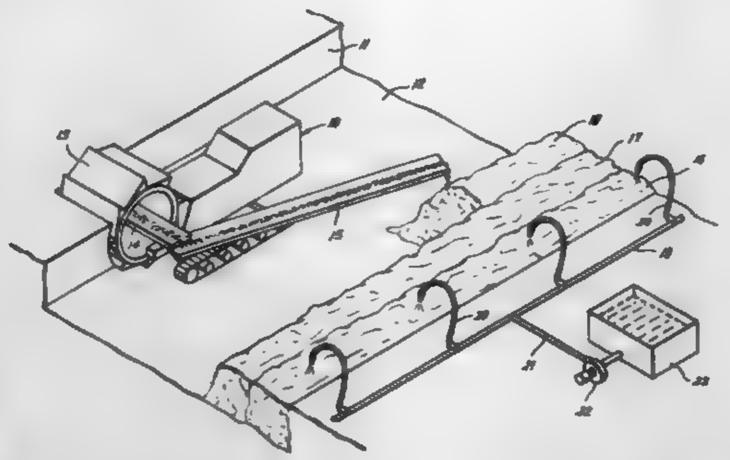


3,978,672
GAS OPERATED ENGINE
Joseph D. Stenger, Brooklyn, N.Y., assignor to Propulsion Machinery Corporation, Brooklyn, N.Y.
Filed Dec. 5, 1973, Ser. No. 422,019
Int. Cl.² F01B *7/20, 25/00*
U.S. Cl. 60—670 **31 Claims**



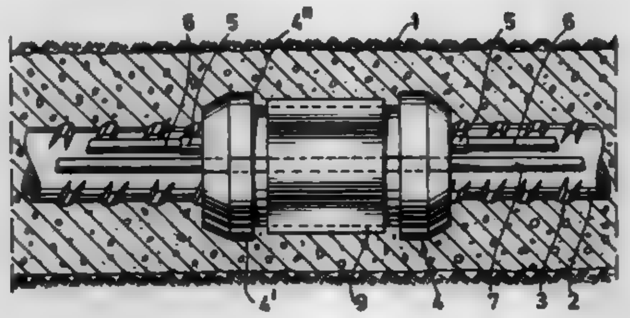
1. An engine comprising a cylinder, a main piston slidable in said cylinder, a head fixed to the top of said cylinder, an auxiliary piston slidable in said cylinder, above said main piston and below said head, pressure actuated means to slidably move said main piston in said cylinder, and pressure actuated means to slidably move said auxiliary piston in said cylinder, a crankshaft, and connecting rod means to connect said crankshaft to said main piston for rotating said crankshaft as said main piston moves in said cylinder, means to actuate said means to slidably move said main piston, in sequence with rotation of said crankshaft, and means to actuate said means to slidably move said auxiliary piston, in sequence with the rotation of said crankshaft.

3,978,673
METHOD OF DISPOSING OF LIQUID WASTE
Stephen C. Schloede, Hinsdale, Ill., assignor to A & H Engineering Corporation, Hinsdale, Ill.
Filed Apr. 21, 1975, Ser. No. 569,694
Int. Cl.² E02D *3/10*
U.S. Cl. 61—35 **4 Claims**



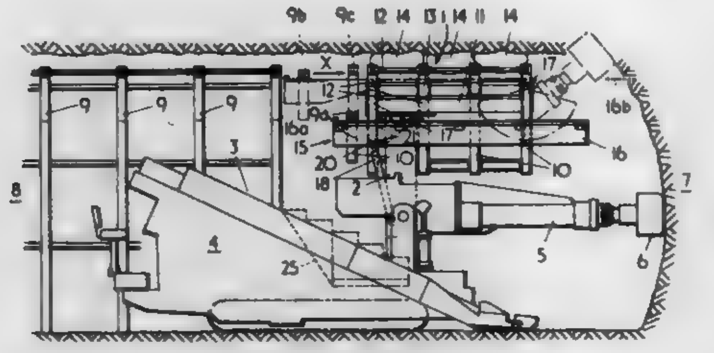
1. The method is disposing of a pumpable liquid waste comprising the steps of continuously and simultaneously (i) excavating earth to a depth of at least six feet from one region and (ii) transporting it to and depositing it at another region, and depositing liquid waste on the excavated earth after it has been deposited at said another region and while the porosity thereof is greater than that of the earth prior to excavation.

3,978,674
DEVICE FOR THE DISCHARGE OF COMPRESSION MATERIAL IN THE PRODUCTION OF THE COMPRESSION MEMBER OF A PULL AND PRESSURE ANCHOR
Thomas Herbst, Munich, Germany, assignor to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Germany
Filed Nov. 28, 1973, Ser. No. 419,617
Claims priority, application Germany, Dec. 6, 1972, 2259648; Aug. 16, 1973, 2341279
Int. Cl.² E02D *5/00*
U.S. Cl. 61—39 **8 Claims**



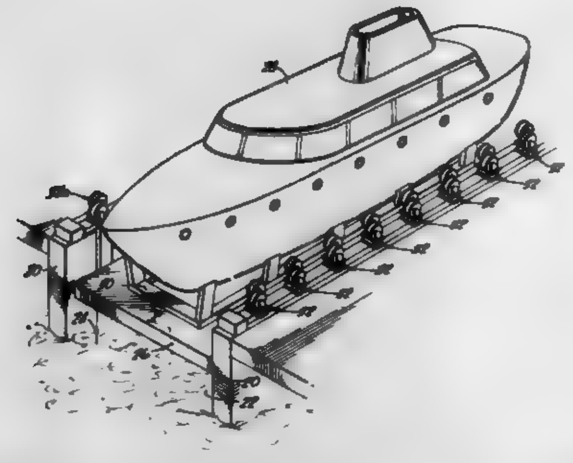
1. An anchoring device adapted to hold one end of a to-be-stressed linear member within the bore hole of an earth formation of the type which surrounds the buried end portion of the stressed linear member and comprises distribution means for feeding hardenable material under pressure to the regions outside the device to compress the earth surrounding the bore hole, comprising a tubular body constructed to surround and retain a section of the linear member, at least one compression channel extending along the circumferential portion of said body, means for feeding hardenable material to the compression channel, said compression channel being open to the outside of the tubular body through a substantial part of its intermediate length to form a distribution channel, and a sleeve of elastic material encompassing said body to normally cover the open part of said distribution channel.

3,978,675
MINE ROOF SUPPORT EQUIPMENT
Philip Peter Jenkins, Cannock, and Stanley Lewis, Tickhill, both of England, assignors to Coal Industry (Patents) Limited, London, England
Filed Jan. 29, 1974, Ser. No. 437,707
Int. Cl.² E01G *3/00*
U.S. Cl. 61—45 F **5 Claims**



1. Mine roof support equipment comprising a canopy, at least one upright member for supporting the canopy, and at least one inflatable, deformable member supported by the canopy, the canopy comprising a framework of parallel beams, spacer means interconnecting the parallel beams and constituting a deck supporting the inflatable, deformable member, a platform pivotally supported by links connected to the beams and rams connected to the platform and to the upright member for swinging and lifting the platform forward and rearward with respect to the movable base.

3,978,676
SHIP LIFTING APPARATUS
Henry B. Chambers, Santa Inez; Clair W. Tellefson, Santa Barbara, and Tony H. Balsillie, Goleta, all of Calif., assignors to Hydranautics, Goleta, Calif.
Filed Oct. 28, 1975, Ser. No. 626,078
Int. Cl.² E02C *5/00;* **B66B** *9/04;* **B63C** *5/00*
U.S. Cl. 61—65 **12 Claims**



1. Ship lifting apparatus comprising a pair of parallel, spaced apart piers defining a slip, a platform in said slip adapted to support a vessel, and means attached to said piers for raising and lowering said platform; in which the improvement comprises:

a. a plurality of chain jacks mounted in an aligned row on each of said piers and having the ends of their raising and lowering chains attached to said platform;

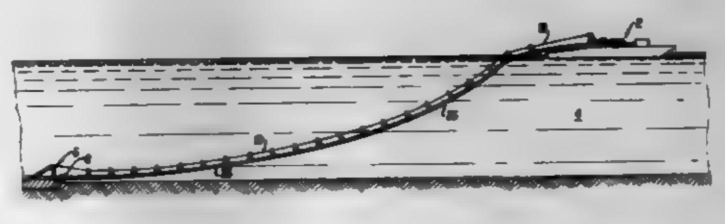
b. said chain jacks each having a base and a hydraulic cylinder for moving a ram repetitively and reciprocally with respect to said base, and having latches operatively attached to said base and to said ram for engaging and disengaging links of said chains;

c. one of said jacks having means for controlling operation of said latches of said jack at predetermined relative positions of its ram and its base;

d. stressed cables for connecting the latches of said one of said jacks with the latches of the others of said jacks, whereby said one of said jacks becomes a master jack and the others of said jacks become slave jacks; and,

e. means for simultaneously introducing pressurized fluid into the hydraulic cylinders of said jacks to cause simultaneous reciprocal movement of the rams of said jacks with respect to their bases and means for actuating said tensioned cables thereby to produce simultaneous operation of said latches resulting in progressive raising and lowering of the chains of said jacks and corresponding raising and lowering of said ship supporting platform.

3,978,677
METHOD OF STARTING AND LAYING SUBMERGIBLE ELONGATE STRUCTURES
Joe C. Lochridge, 518 Winter Oaks Dr., Houston, Tex. 77024
Filed Mar. 2, 1972, Ser. No. 231,201
Int. Cl. F16l *1/00;* **B65g** *9/00*
U.S. Cl. 61—72.3 **14 Claims**



1. A method for starting to lay an integrally united submergible elongate structure upon the bed of a body of water, comprising the steps of:

anchoring one end of a flexible cable adjacent a submerged installation, said installation being operable to connect to an initial end of the integrally united submergible elongate structure to be laid;

connecting the other end of the flexible cable to a marine vessel buoyantly supported upon the surface of a body of water;

tensioning the flexible cable extending between the anchor and the marine vessel;

progressively suspending and lowering sequential portions of the integrally united submergible elongate structure from the tensioned cable at a station upon the marine vessel;

slidably supporting from the flexible cable the integrally united submergible elongate structure between the marine vessel and the bed of the body of water; and

maintaining a profile control over the integrally united submergible elongate structure between the marine vessel and the bed of the body of water.

3,978,678
METHOD AND APPARATUS FOR PLUGGING A PIPELINE
Anthony B. Duncan, Missouri City, and Arthur H. T. Chin, Houston, both of Tex., assignors to HydroTech International, Inc., Houston, Tex.
Filed Oct. 14, 1975, Ser. No. 622,038
Int. Cl.² F16L *1/04;* **B63B** *35/04*
U.S. Cl. 61—112 **17 Claims**

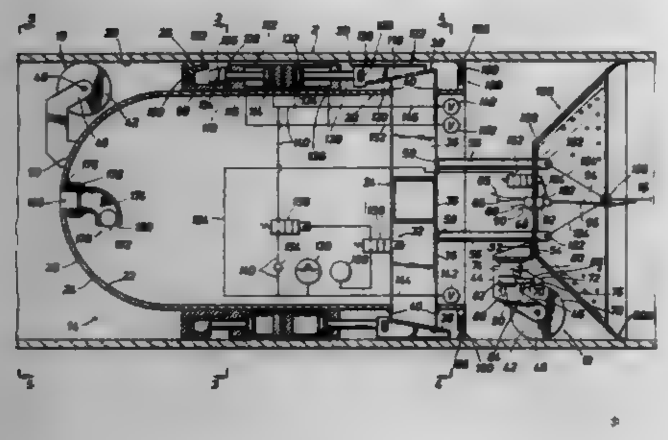
1. Apparatus for plugging a dry section of a pipeline in response to an influx of water into another section thereof while the pipeline is being laid on a sea bottom comprising;

a carriage disposable in said pipeline and including a partition having forward and rearward sides with said forward side being exposable to water which may enter said other pipeline section;

means operably associated with said carriage for effecting a seal between the internal wall of said pipeline and said carriage;

means operably associated with said carriage for disengageably engaging the internal wall of said pipeline to lock said carriage against movement relative thereto, and

means operably associated with said carriage responsive to an influx of water into said other pipeline section on the forward side of said partition to procure actuation of said seal means and said engaging means independently of said partition to sealably lock said carriage in said pipeline with consequent plugging of said first mentioned pipeline section.



3,978,679
METHOD AND APPARATUS FOR UNDERWATER TRENCH EXCAVATION AND PIPELINE LAYING

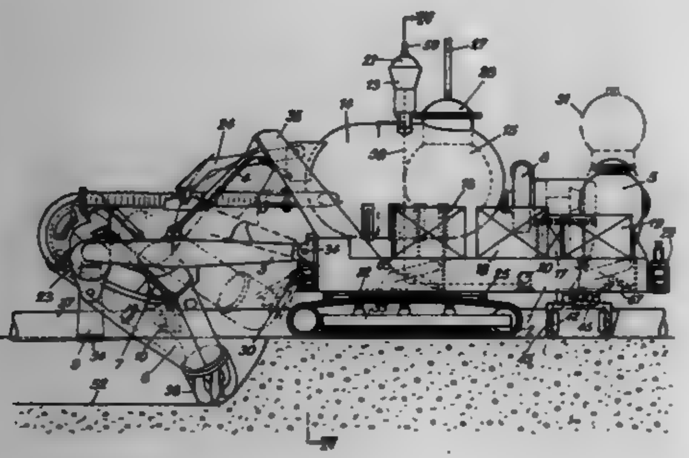
Claude F. Lecomte, Prairie au Duc, 44040 Nates, France

Filed Jan. 22, 1975, Ser. No. 543,105

Claims priority, application France, Jan. 22, 1974, 74.02077

Int. Cl.^{2} E02F *5/06;* **F16L** *1/00*

U.S. Cl. 61—72.4 **23 Claims**



1. In a method of underwater excavation for entrenchment of a pipeline including laying a pipeline to be entrenched on the sea bed and subsequently digging the trench for the pipeline wherein the improvement comprises the steps of: digging the trench by a single lateral excavation of the seabed immediately beneath the pipeline using a tractory excavation machine, said machine positioned laterally from and contacting the pipeline and said trench is excavated on the same lateral side of the pipeline as said machine is positioned.

3,978,680
HEAT ENGINE

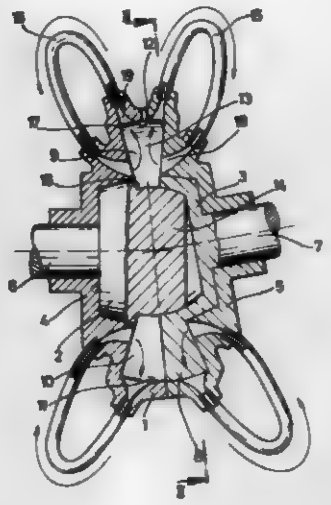
Jürgen Schukey, Borgfelde 16, 2000 Hamburg-Schenefeld, Germany

Filed Dec. 5, 1974, Ser. No. 530,010

Claims priority, application Germany, Dec. 6, 1973, 2360865

Int. Cl.^{2} F25B *9/02;* **F25D** *9/00;* **F01B** *29/10;* **F02G** *1/04*

U.S. Cl. 62—6 **6 Claims**



1. A heat engine which includes: housing means comprising a first section and a second section connected to each other, a first rotor and a second rotor respectively rotatably journaled in said first and second housing sections so that the extension of their axes intersect at an obtuse angle, the periphery of said rotors being provided with displacement bodies arranged in such a manner that the displacement bodies of one rotor in the manner of interengaging teeth extends between two displacement bodies of the other rotor, said displacement bodies together with said housing means forming compression chamber means adapted to receive a working gas and successively decreasing from a maximum volume to a minimum volume and also forming expansion chamber means successively increasing in volume from said minimum volume to said maximum volume for compressing and expanding a working gas so as to pass said working gas through the phases of a thermodynamic cycle, and heat exchanger means associated with said compression chamber means and operable to transfer heat developed in a working gas in said compression chambers during the compression stage to the working gas in the expansion chambers during the expansion stage of the working gas.

3,978,681
METHOD AND APPARATUS FOR THE ADIABATIC EXPANSION OF LIQUID ANHYDROUS AMMONIA

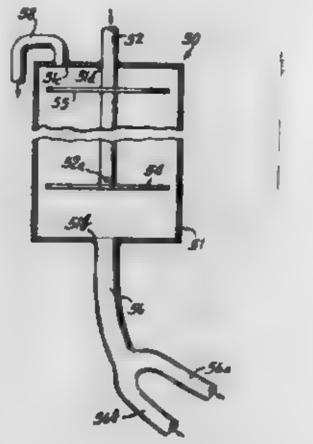
William L. Kjelgaard, and Paul M. Anderson, both of State College, Pa., assignors to Research Corporation, New York, N.Y.

Filed Sept. 16, 1974, Ser. No. 506,516

Int. Cl.^{2} F17C *7/02*

U.S. Cl. 62—51 **4 Claims**

1. A expansion chamber useful for the substantially adiabatic expansion of ambient-temperature, pressurized anhydrous liquid ammonia to produce separate streams of cold ambient or atmospheric pressure gaseous anhydrous ammonia and liquid anhydrous ammonia comprising a closed expansion chamber provided with two outlets, one outlet being useful for the withdrawal of cold gaseous anhydrous ammonia and the other outlet being useful for the withdrawal of cold anhydrous liquid ammonia, said outlet for the withdrawal of gaseous ammonia being located at one end of said chamber and said other outlet for the withdrawal of liquid ammonia being positioned at the other end of said chamber, conduit means associated with said expansion chamber for introducing thereinto a stream of ambient-temperature, pressurized liquid anhydrous ammonia for expansion therein to produce cold gaseous ammonia and cold liquid ammonia at substantially ambient or atmospheric pressure, said conduit means for the introduction of said stream of ambient-temperature, pressurized liquid ammonia into said expansion chamber being provided with an outlet, said outlet being positioned intermediate said gaseous ammonia and said liquid ammonia outlets, a first baffle plate fixed to said conduit means below said outlet provided by said conduit means, said first baffle plate providing a first annular space between the periphery thereof and the inside of said expansion chamber and a second baffle plate fixed to said conduit means, said second baffle plate providing a second annular space between the periphery thereof and the inside of said expansion chamber and being fixed to said conduit means and located within said expansion chamber intermediate the outlet for gaseous ammonia and said outlet provided by said conduit means.



3,978,682
REFRIGERATION METHOD AND APPARATUS BY CONVERTING ^{4}HE TO A SUPERFLUID

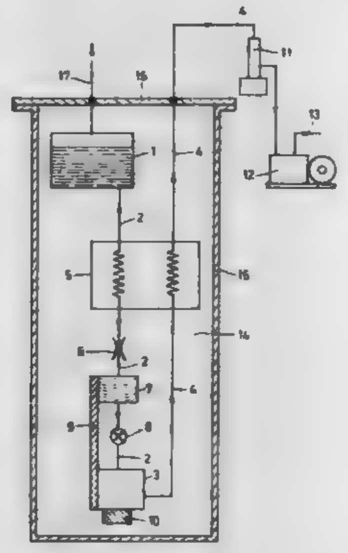
Adrianus Petrus Severijns, and Frans Adrianus Staas, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 21, 1975, Ser. No. 551,636

Claims priority, application Netherlands, Mar. 1, 1974, 7402781

Int. Cl.^{2} F25B *41/00*

U.S. Cl. 62—113 **7 Claims**



1. In a refrigerator operable at temperatures below the λ-point of helium, including a reservoir for containing liquid ^{4}He I, a heat exchanger for further cooling said liquid ^{4}He I, a choke member with inlet and outlet means for reducing the pressure of said further cooled liquid, an evaporation chamber for converting at least part of said further cooled ^{4}He I to superfluid ^{4}He II at a temperature below the λ-point thereof, and duct means for flowing said helium sequentially through said elements, the improvement in combination therewith comprising an auxiliary reservoir intermediate said choke member outlet and said evaporation chamber, and a highly heat-conductive element interconnecting and forming a heat-conductive assembly of said evaporation chamber and said auxiliary reservoir, whereby liquid ^{4}He in said auxiliary reservoir is cooled to below the λ-point by ^{4}He II in the evaporation chamber, and the choke inlet and outlet means are at substantially the same temperature, for preventing flow-back of said ^{4}He II from said evaporation chamber to said auxiliary reservoir.

3,978,683
ABSORPTION REFRIGERATOR OF NATURAL CIRCULATION TYPE

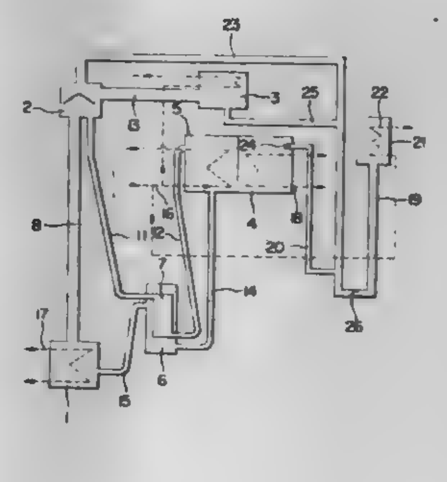
Satoshi Naito, Kosai, Japan, assignor to Yazaki Sogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 4, 1975, Ser. No. 610,177

Claims priority, application Japan, Sept. 19, 1974, 49-107152

Int. Cl.^{2} F25B *41/00*

U.S. Cl. 62—174 **2 Claims**



1. An absorption refrigerator of natural circulation type employing water as a refrigerant and lithium salt as an absorbing medium, comprising a generator for heating to boil a dilute lithium salt solution, a separator for separating water vapor expelled in said generator from the concentrated lithium salt solution, a condenser for condensing the water vapor separated in said separator, an evaporator for vaporizing the water or refrigerant condensed in said condenser by heat exchange with another fluid, an absorber for reintroducing the water vapor generated in said evaporator into said separated concentrated lithium salt solution thereby diluting said concentrated lithium salt solution, and a U-tube disposed in the conduit portion between said condenser and said evaporator, said U-tube being connected at one end thereof to said conduit portion and at the other end thereof to a refrigerant reservoir, wherein the improvement comprises a cooling conduit extending into said refrigerant reservoir for maintaining substantially constant the internal pressure of said refrigerant reservoir so as to control the amount of the refrigerant stored in said refrigerant reservoir depending on the pressure differential across said U-tube, whereby the concentration of said lithium salt solution circulating through the refrigeration system can be controlled depending on the temperature of the heating medium supplied to said generator so as to compensate for variations of the refrigerating capacity due to variations of the heating temperature.

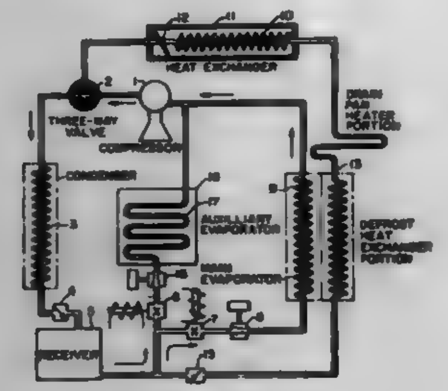
3,978,684
REFRIGERATION SYSTEM

David H. Taylor, Bloomington, Minn., assignor to Thermo King Corporation, Bloomington, Minn.

Filed Apr. 17, 1975, Ser. No. 569,035

Int. Cl.^{2} F25B *13/00;* **F25D** *17/06*

U.S. Cl. 62—324 8 Claims



1. In a system for refrigeration, heating and defrosting, comprising a compressor, a three way valve, a condenser, a first check valve, a first solenoid operated valve, a first expansion valve, a main evaporator, a first heat exchanger, a second heat exchanger adjacent said main evaporator, a second check valve, a second solenoid operated valve, a second expansion valve, an auxiliary evaporator, and means for connecting the above named elements so that when the three way valve is in a first position with the first solenoid operated valve open and the second solenoid operated valve closed, refrigerant will flow from the compressor through the three way valve, the condenser, the first check valve, the first solenoid operated valve, the first expansion valve, the main evaporator, and back to the compressor, and when the three way valve is moved to a second position with the first solenoid operated valve closed and the second solenoid operated valve opened, refrigerant will flow from the compressor through the three way valve, the first heat exchanger, the second heat exchanger, the second check valve, the second solenoid operated valve, the second expansion valve, the auxiliary evaporator and back to the compressor; and adjustable means surrounding the first heat exchanger to control the amount of heat of compression dissipated by the first heat exchanger.

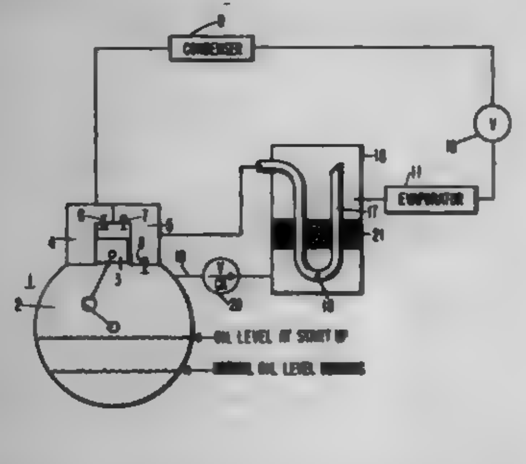
3,978,685
MEANS FOR TRAPPING OIL LOST DURING STARTUP OF REFRIGERANT COMPRESSORS

David H. Taylor, Minneapolis, Minn., assignor to Thermo King Corporation, Bloomington, Minn.

Filed July 14, 1975, Ser. No. 595,983

Int. Cl.^{2} F25B *43/02*

U.S. Cl. 62—471 5 Claims



1. In a refrigeration system, a compressor comprising a crankcase, a reciprocating piston, a compression cavity, and a suction cavity, and leading from said compression cavity a circuit including in series, a condenser, an expansion device, an evaporator, an accumulator, and a connection to the suction cavity, the refrigeration system containing a refrigerant and oil for lubricating the compressor that form a reservoir of oil liquid refrigerant entrained therein during shutdown of the compressor, a conduit for venting foam from the crankcase to the accumulator, said conduit extending to the accumulator from a point on the crankcase that is above the level of the reservoir of oil refrigerant mixture at startup, said conduit having a check valve therein that permits flow only from the crankcase to the accumulator, the accumulator and return to the suction cavity being constructed so the refrigerant vapor drawn from the accumulator to the suction cavity will carry droplets of oil to the suction cavity.

3,978,686
PROCESS FOR TRANSFERRING AND/OR HANDLING OF A COLD TISSUE SECTION ESPECIALLY OBTAINED FROM AN ULTRAMICROTOME AND ARRANGEMENTS FOR PRACTICE OF THE PROCESS

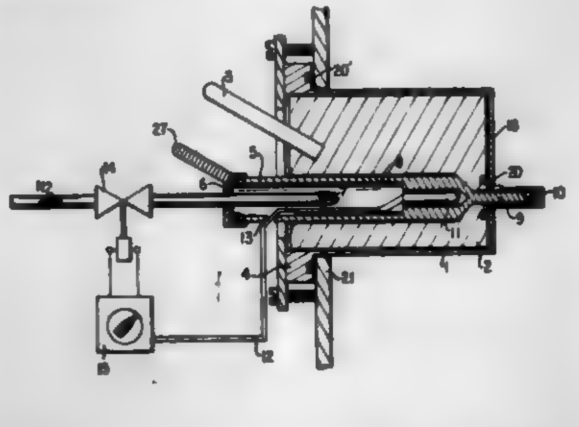
Günther Lechner, and Ferdinand Pauliny, both of Vienna, Austria, assignors to C. Reichert Optische Werke AG, Vienna, Austria

Filed Mar. 31, 1975, Ser. No. 565,988

Claims priority, application Austria, Mar. 29, 1974, 2653/74

Int. Cl.^{2} F25B *19/00*

U.S. Cl. 62—514 R 6 Claims



1. Apparatus for transferring a frozen section from a microtome without an increase in temperature deleterious to the section which comprises, a body having an expansion chamber, a source of compressed fluid operably connected to said expansion chamber to cool said body, a heat conductive finger extending from said body, said finger having a transverse passage adjacent its distal end, said passage having a support to receive said frozen section, a shield adapted to selectively cover and provide access to said passage for placing the frozen section therein and permitting examination of said frozen section, whereby expansion or fluid in said chamber removes heat from said finger to prevent warming of the section during the transfer.

3,978,687
MODIFIED EVAPORATOR FOR AUTOMOBILE AIR CONDITIONING SYSTEMS

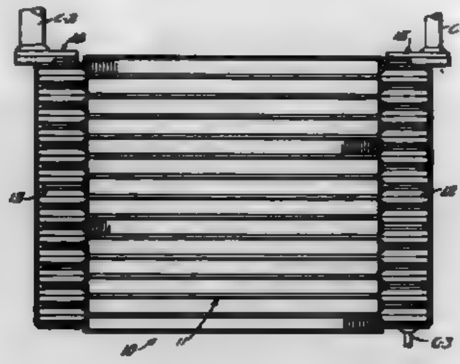
Elio A. Calzadilla, Hialeah, Fla., assignor to Fasco Inc., Hialeah, Fla.

Filed June 23, 1975, Ser. No. 589,379

Int. Cl.^{2} F25B *39/02*

U.S. Cl. 62—525 4 Claims

1. In an automobile air conditioning evaporator having a rectangular heat exchange core, a refrigerant passage vacuum chamber communicating with and extending along one side of the core, a relatively parallel refrigerant passage pressure chamber communicating with and extending along the other side of the core, and a refrigerant conduit connector opening at corresponding ends of each of the core vacuum and pressure chambers; the modifications comprising, a pair of spaced, parallel plate members fixed with respect to and extending perpendicularly outwardly of one of said vacuum and pressure chambers at the connector opening end thereof, a side wall member perpendicularly interconnecting said plate members and defining therebetween a chamber for the through flow of refrigerant, one of said plate members having a through opening in communication with its associated refrigerant conduit connector opening, the other of said plate members having a refrigerant flow opening laterally offset with respect to said associated refrigerant conduit connector opening, the spacing between said plate members defining a shallow chamber having a dimension less than the diameter of the associated refrigerant conduit connector opening but of sufficient dimension to provide for the free flow of both liquid and gaseous refrigerant therethrough (a fraction of the diameter of said associated refrigerant conduit connector opening).



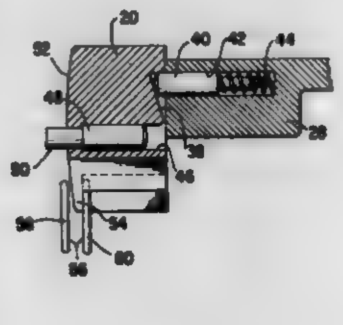
3,978,688
FOLDING HANDLES FOR THE CARRIAGE OF A FLAT BED KNITTING MACHINE

Howard David Rogers, Fanwood, N.J., assignor to The Singer Company, New York, N.Y.

Filed Mar. 26, 1976, Ser. No. 670,793

Int. Cl.^{2} D04B *7/00*

U.S. Cl. 66—60 8 Claims



1. In a flat bed knitting machine which includes a needle bed with sinkers along the outer longitudinal edge thereof and a carriage slidable on the bed, the combination comprising a handle, means pivotally mounting the handle on the carriage for movement between a folded and more upright position, and means movable with the handle to engage sinkers in the folded position of the handle and hold the carriage against longitudinal motion in a defined position on the needle bed.

3,978,689
NEEDLE BED FOR FLAT KNITTING MACHINES

Marcel A. Vandermeirsch, St. Amandsberg, Belgium, assignor to Fabrique Nationale Herstal S.A., Liege, Belgium

Filed Apr. 22, 1975, Ser. No. 570,365

Claims priority, application France, May 14, 1974, 74.16669; Dec. 24, 1974, 74.42703

Int. Cl.^{2} D04B *7/00*

U.S. Cl. 66—75 R 14 Claims

1. Improved needle bed for flat knitting machines of the type having needles with heels which may be sunk within the bed, which comprises, for each needle being sunk, an oscillating lever, one bifurcated end of which receives the tail of the associated needle, while the other end is subjected to the action of a control member which may be reciprocated through the intermediary of selecting means;

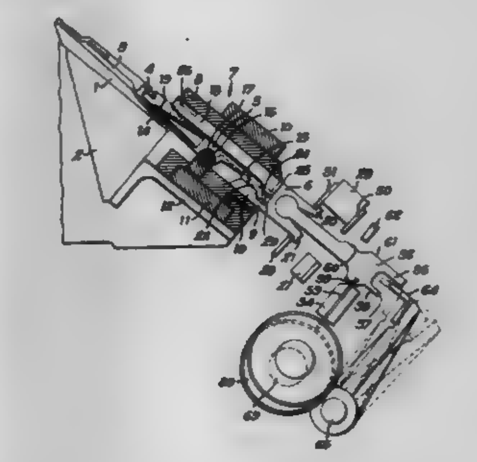
all said oscillating levers being mounted on a common axis;

the bifurcated end of each oscillating lever consisting of two legs which are initially converging and are then parallel near the free ends thereof, the distance separating the parallel portions being very slightly greater than the height of the tail of the associated needle so that the said parallel portions clamp the said tail when the needle is in sunk position;

the control member comprising, at the needle side, two legs having unequal lengths and, on the other side, a tail having two opposite heels;

the facing edges of the said selector legs being profiled to form a control and locking cam for the said tail of the associated oscillating lever;

the said control and locking cam functions to bring and to maintain the associated oscillating lever in any of three predetermined angular positions of the said control member as a result of a suitable reciprocating movement, said three angular positions of the said oscillating lever corresponding respectively to a high position, a low position and a sunk position of the heel of the associated needle.



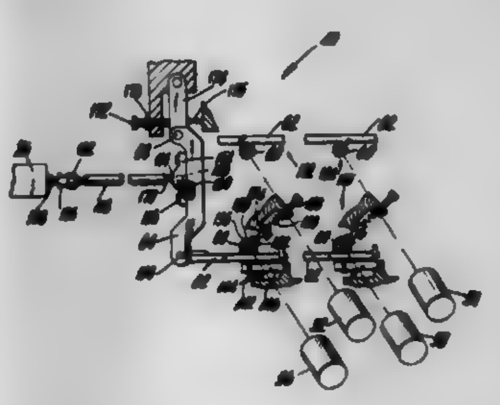
3,978,690
SELECTIVE POSITIONING SYSTEM PARTICULARLY FOR CONTROLLING GUIDE BARS OF KNITTING MACHINES

Thomas E. Beling, Saxonville; John O. Morin, Bedford, and Florian F. Yanikoski, Braintree, all of Mass., assignors to SIGMA Instruments, Inc., Braintree, Mass.

Continuation of Ser. No. 335,811, Feb. 26, 1973. This application Jan. 15, 1975, Ser. No. 541,091

Int. Cl.^{2} D04B *23/00, 27/00*

U.S. Cl. 66—205 49 Claims

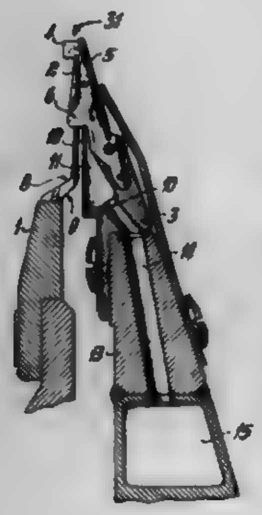


1. An apparatus for controlling one of a plurality of guide bars of a knitting machine in synchronism with at least one moving portion of the knitting machine so as to establish the characteristics of a knitting pattern, comprising: electrical signal producing means coupled to the portion of the machine for producing electrical signals which are in synchronism with

the portion and which define a characteristic of the knitted pattern, electrical rotating means coupled to the signal-producing means for responding to the signals and producing rotary motion corresponding to the signals in the forward and backward directions, transforming means coupled to said rotating means for transforming the rotary motion to corresponding translatory motion for coupling the translatory motion to the pattern bar so that the pattern bar follows a path prescribed by the signals, said electrical signal-producing means including stored program means and pulse-forming means responsive to the program means for producing the signals in the form of discrete pulses, said rotating means responding to said variations by rotating in discrete steps and including an electrical stepping motor capable of responding to pulse signals by rotating a plurality of discrete steps for each revolution in the forward direction and in the backward direction so that each step represents a fraction of a revolution, and braking means coupled to one of said rotating means and said transforming means for braking the motion of one of said rotating means and said transforming means at least once during each step representing a fraction of a revolution.

3,978,691
DUST REMOVING APPARATUS FOR THE NEEDLES OF A WARP KNITTING MACHINE

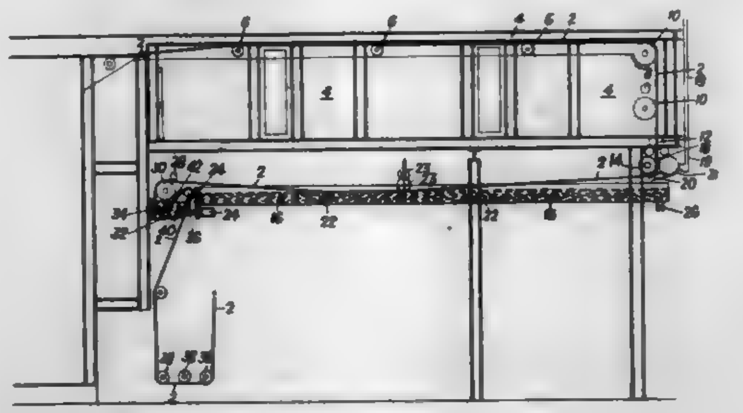
Reinhold Schmid, Rheydt, Germany, assignor to W. Schlafhorst & Co., Moenchen-Gladbach, Germany
Filed Nov. 19, 1973, Ser. No. 417,378
Claims priority, application Germany, Nov. 18, 1972, 2256729
Int. Cl.² D04B *35/32*
U.S. Cl. 66—168 **5 Claims**



1. Means for removing dust in the knitting zone and at the latch needles of a warp knitting machine having at least one casting off bar comprising a plate member on which there are mounted at separate locations a casting off comb plate and a contoured stripping plate with a protruding portion of said stripping plate extending through the spaces between the latch needles, whereby the relative vertical motion between said plate member and said latch needles results in waste being stripped away from the shanks of the needles by said protruding portion, and means for directing a stream of cleaning air to extend across said latch needles and in an upward direction to at least the latches of said latch needles.

3,978,692
CARPET PRINTING APPARATUS

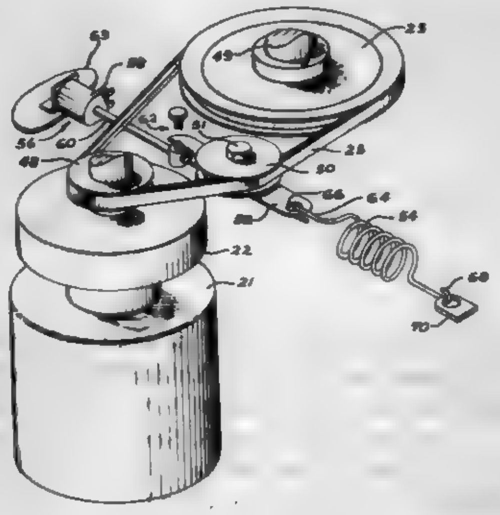
Trevor Hatfield Metcalfe; Geoffrey Scott, both of Bradford; Paul Michael Thompson, Pudsey, near Leeds, and Ernest Wilford, Crossflats, near Keighley, all of England, assignors to Associated Weavers Limited, Bradford, England
Filed Mar. 27, 1974, Ser. No. 455,432
Claims priority, application United Kingdom, Mar. 30, 1973, 15586/73
Int. Cl.² D06B *3/22, 21/00*
U.S. Cl. 68—5 D **5 Claims**



1. Apparatus for treating a printed carpet having a pile on one surface only comprising:
- a steamer through which said carpet may be fed in a single, generally horizontal pass, means for feeding said carpet through said steamer with said one surface uppermost;
- said steamer further having an outlet through which said carpet leaves the steamer, wherein there is further provided;
  - a liquid bath adjacent said steamer outlet and means for conveying said carpet generally horizontally across said bath including means for floating said carpet on said liquid with said one surface lowermost as said carpet is conveyed across said bath.

3,978,693
BELT DRIVE MECHANISM FOR AUTOMATIC CLOTHES WASHING MACHINE

Joseph C. Worst, Louisville, Ky., assigner to General Electric Company, Louisville, Ky.
Filed Sept. 15, 1975, Ser. No. 613,264
Int. Cl.² D06F *23/04, 37/38*
U.S. Cl. 68—12 R **10 Claims**

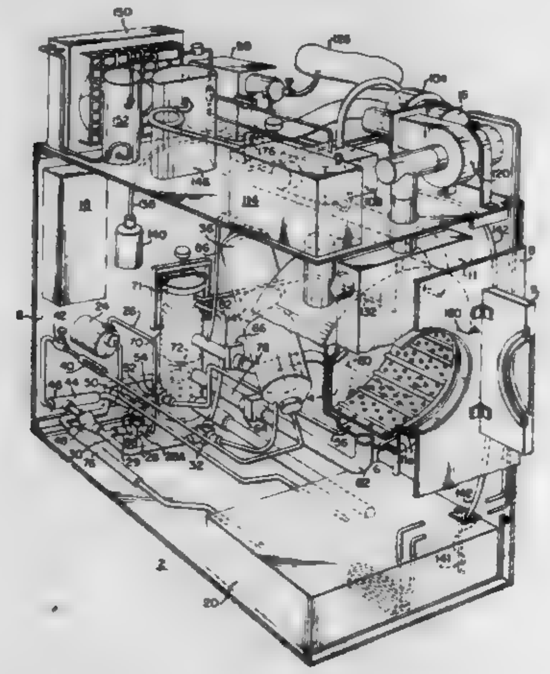


1. A belt drive mechanism for an automatic clothes washing machine having a timer to control the operational cycles of the machine, a basket supported for rotation, and a vaned structure for agitating the clothes in the basket, comprising:

- a. a motor having a start winding and a run winding and providing a plurality of operational modes,
- b. an input shaft,
- c. means including a belt connecting said motor and said input shaft,
- d. means providing coupling between the input shaft and (i) the vaned structure for agitation thereof for the first mode of operation of the motor, (ii) the basket for effecting rotation thereof during a second mode of operation of the motor,
- e. an idler pulley for engaging the belt,
- f. means for biasing the pulley against the belt to place tension on the belt, and
- g. means including the motor windings to overcome the pulley biasing means during energization of the motor start winding to thereby release tension on the belt.

3,978,694
VAPOR SAVING AMBIENT AIR INTAKE SYSTEM FOR A DRY CLEANER

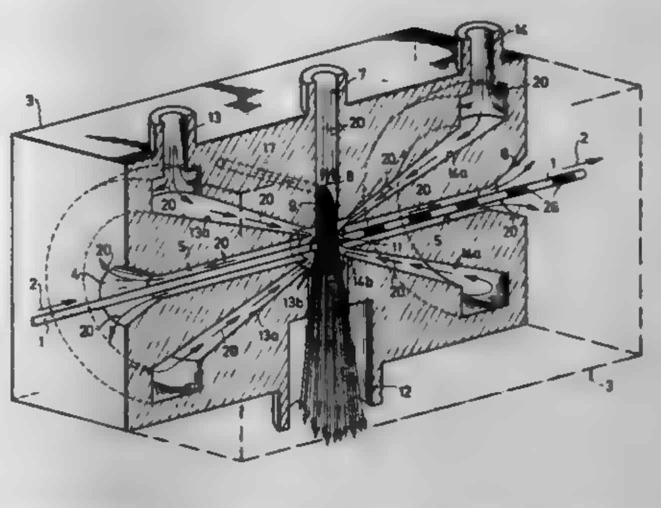
John D. Hughes, Murrysville, Pa., and Al W. Klingensmith, Mansfred, Ohio, assignors to White-Westinghouse Corporation, Cleveland, Ohio
Division of Ser. No. 445,501, Feb. 25, 1974, Pat. No. 3,937,043. This application Sept. 29, 1975, Ser. No. 617,850
Int. Cl.² D06F *43/02, 43/08*
U.S. Cl. 68—18 R **4 Claims**



1. An improved intake air system for a dry cleaning machine having a cabinet, cabinet structure defining an opening in said cabinet, a stationary outer tub and a rotatable inner tub disposed within said cabinet, said tubs having common open ends in alignment with said opening in said cabinet, and door means hingedly attached with said cabinet for movement between an open and a closed position for effectively sealing said opening when in said closed position; and wherein the improvement comprises:
- duct means interposed between said cabinet structure defining said opening and said common open ends of said tubs;
- a normally off intake fan in communication with said duct means for drawing air therethrough when energized to an on condition;
- a normally closed valve means between said duct means and said fan for controlling the flow through said duct means; and,
- means responsive to the movement of said door from said closed position to energize said fan and open said valve means whereby room air entering said opening immediately enters said duct means in a path which effectively excludes the interior of said tubs.

3,978,695
APPARATUS FOR DYEING A TRAVELLING STRIP SUCH AS YARN

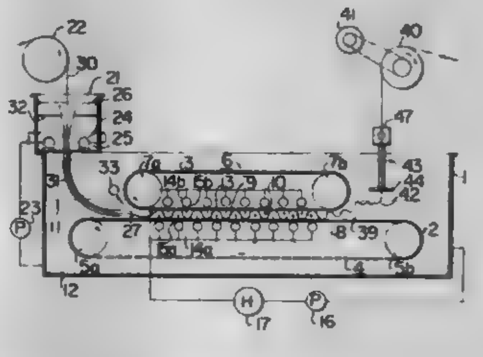
René Hürzeler, Winterthur, and Paul Lincke, Zell, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Mar. 24, 1975, Ser. No. 562,655
Claims priority, application Switzerland, Mar. 29, 1974, 4406/74
Int. Cl.² D06B *1/04*
U.S. Cl. 68—20 **13 Claims**



1. An apparatus for dyeing a travelling strip having
- a conveying channel for passage of the strip through a predetermined treatment station;
- at least one supply channel having an outlet for supplying a treatment medium to said station in a programmed manner; and
- at least one channel downstream of said treatment station relative to the travelling strip and concentric to said conveying channel for supplying compressed air to said treatment station circumferentially of the strip for removing excess treatment medium from the strip.

3,978,696
APPARATUS FOR CONTINUOUSLY RELAXING A TEXTILE FABRIC

Shyogo Ito, Kaga, and Hiroshi Mizutani, Mie, both of Japan, assignors to Teijin Limited, Osaka; Kitanippon Dyeing & Finishing Co., Ltd. and Nippon Dyeing Machine Manufacturing Co., Ltd., all of, Japan
Filed Apr. 29, 1975, Ser. No. 572,722
Claims priority, application Japan, May 11, 1974, 49-51743
Int. Cl.² D06B *3/10*
U.S. Cl. 68—158 **4 Claims**



1. An apparatus for continuously relaxing a textile fabric comprising, in combination:
- a. a treating vessel for containing a treating liquid and a textile fabric to be treated with said treating liquid;
- b. a lower open conveyer having numerous openings formed thereon and movable along a closed lower path formed in said treating vessel, said closed lower path having a horizontally extending upper portion;
- c. an upper open conveyer having numerous openings formed thereon and movable along a closed upper path

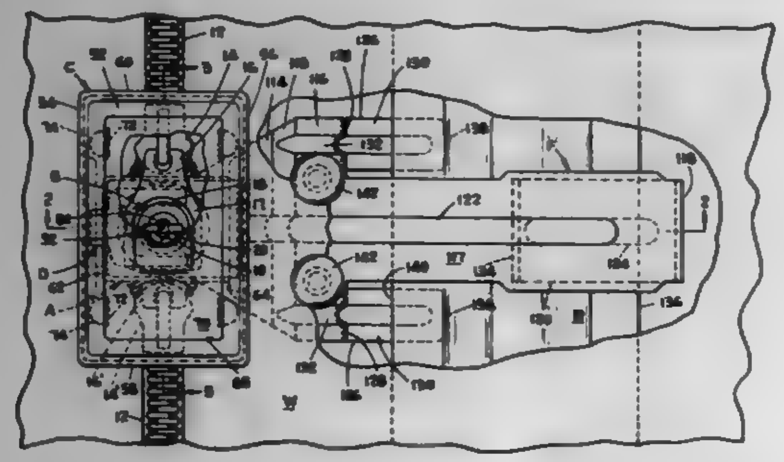
formed above said closed lower path, said closed upper path having a lower portion facing said upper portion of said closed lower path whereby a narrow path in which said fabric is relaxed is formed between said upper portion of said closed lower path and said lower portion of said closed upper path;

d. a plurality of first nozzles, for jetting said treating liquid toward said narrow relaxing path, said nozzles being located outside of said narrow relaxing path along said upper portion of said closed lower path and said lower potion of said closed upper path;
e. a roller for feeding said fabric into said treating vessel;
f. a roller for delivering said fabric from said treating vessel;
g. means for recycling said treating liquid from said treating vessel to said nozzles;
h. an overflow vessel for containing a portion of said treating liquid, located above said treating vessel;
i. means for recycling a portion of said treating liquid from said treating vessel to said overflow vessel;
j. a duct for feeding said fabric into said narrow relaxing path, said duct having an upper inlet portion extending upwardly through the bottom of said overflow vessel and terminating in said overflow vessel to allow said treating liquid in said overflow vessel to overflow into said duct and carry said fabric through said duct, and a lower outlet portion coupled to said inlet portion and extending horizontally and terminating at one end of said narrow relaxing path to allow said treating liquid to be discharged horizontally and to introduce said fabric into said narrow relaxing path; and
k. a plurality of second nozzles aligned above said one end of said narrow relaxing path and above the normal level of said treating liquid in said treating vessel, for jetting a plurality of streams of said treating liquid toward said one end of said narrow relaxing path for assisting the smooth introduction of said textile fabric into said narrow relaxing path while opening said fabric in the lateral direction thereof.

3,978,697
LATCHING DEVICE

Lazlo Bako, Woodcliff Lake, N.J., assignor to Presto Lock Company, Division of Walter Kidde & Company, Inc., Elmwood Park, N.J.

Filed June 5, 1975, Ser. No. 584,053
Int. Cl.² E05B *67/30, 65/52*
U.S. Cl. 70—68 **16 Claims**



1. A latching device for releasably locking therein an element having an opening therein, the latching device comprising a frame, key-receiving means having an opening for receiving a key projecting from the frame, the key-receiving means being dimensioned to be received by the opening in the element, a latch member mounted on the frame for movement between a first position overlying the key-receiving means and a second position removed from the key-receiving means, the latch member in the first position being cooperable with the key-receiving means for preventing removal of the element from the key-receiving means, and locking means actuatable by a key inserted in the opening in the key-receiving means for movement between locking and unlocking positions, the locking means being cooperable with means provided by the latch member for releasably locking the latch member in the first position when the locking means is in locking position.

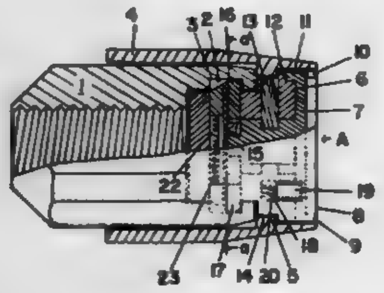
3,978,698
LOCK ASSEMBLY

Zensuke Ono, Izumi, Japan, assignor to Izumi Jiko Co., Ltd., Osaka, Japan

Continuation of Ser. No. 496,631, Aug. 12, 1974, abandoned. This application Sept. 2, 1975, Ser. No. 609,549

Claims priority, application Japan, Mar. 18, 1974, 49-31346

Int. Cl.² F16B *41/00*
U.S. Cl. 70—165 **3 Claims**

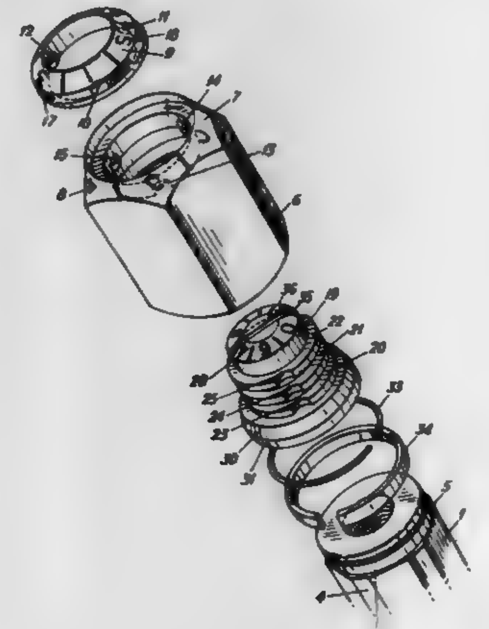


1. A lock assembly comprising, in combination:
a magnetic key including a round casing for defining a relatively flat key cavity being open on one side thereof, and including at least one magnet embedded in a material deposited in said key cavity, said magnet being covered by said material on said open side of said key cavity, said round casing having a basically round outer surface but including at least one projection thereon;
a nut defining a nut cavity and a peripheral groove about said nut cavity;
a shell detachably and rotatably mountable on said nut; and
a lock body attached to said shell for securing said shell about said nut in a locked state, said nut cavity being adapted to receive said lock body, said lock body including a socket member having at least one first pin slot and an arched rail along the perimeter thereof, a round plug member having a central axle portion extending through a central opening in said socket member and having a relatively flat portion covering, and in sliding contact with, the outer surface of said socked member, said flat portion defining at least one second pin slot, said lock body further including at least one magnetic pin means operable within said first and second pin slots for selectively locking said plug member with respect to said socket member, said first and second pin slots substantially aligning in said locked state, said plug-member central-axle portion including at the end thereof a flat, elongated guide block extending transverse to said axle portion, said lock body further having latch means for securing said lock body within said cavity, said latch means being operable between an extended locking state and a retracted state, and bias means for biasing said latch means towards said extended locking state, said latch means lockingly engaging said peripheral groove in said locked state, said latch means defining a latch slot on its upper surface, said guide block, extending into said latch slot and thereby engaging said latch means, said plug-member flat portion including recess walls for defining a substantially round, key-receiving, plug-member recess for receiving said magnetic-key round casing, including said projection when it is in a particular orientation relative to said plug member, said magnetic key and said key-receiving plug member thereby cooperatively defining means for rotating said plug member, said plug member on an inner surface thereof, including a lug slidably engaging said arched rail to cooperatively define means for limiting rotation of said plug member and said guide block between a first guide position and a second guide position, said latch means being moveable between said extending locking state and said retracted state in response to rotation of said guide block, said latch means being in said extended locking state and said retracted state whenever said plug member is in said first guide position and said second guide position, respectively, said magnetic pin means being operable between a normally operative state wherein said plug member is locked and an inoperative state wherein said plug member is freed to rotate in response to said magnetic-key being positioned in said plug-member recess, whereby said plug member is responsively rotatable by said magnetic key.

3,978,699
LOCK

Edward Joseph Kay Triniak, London, England, assignor to George Thomas Schlaefli, Tadworth, England

Filed May 1, 1975, Ser. No. 573,534
Int. Cl.² F16B *41/00;* **B65D** *55/14*
U.S. Cl. 70—232 **5 Claims**

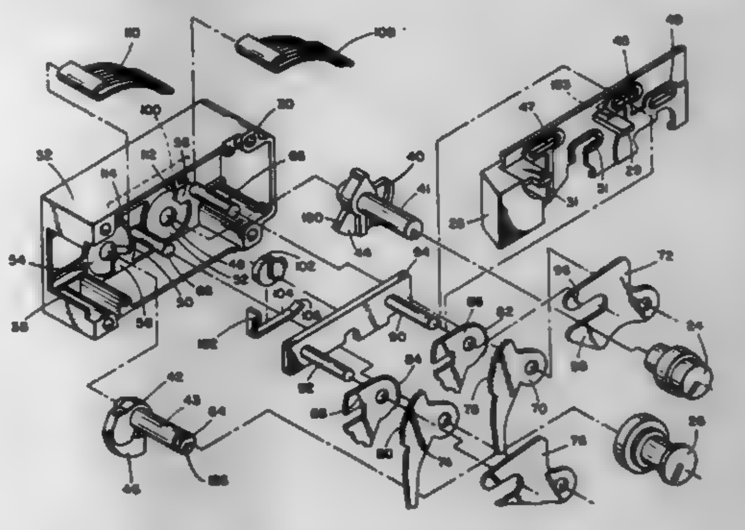


1. A locking member assembly, an item provided with means defining a peripheral groove, said locking member assembly being adapted to be releasably secured to said item, said locking member assembly comprising a housing, defining a central channel therethrough, at least one lug provided on said housing protruding into said channel, an annular locking member rotatably mounted on said housing and defining a central aperture co-aligned with the said channel, at least one lug provided on said locking member, a central post rotatably mounted within said central channel a plurality of fins radially extending outwardly from said post and each defining peripheral indentations therein, the indentations in one fin corresponding to the lug or lugs of the housing and the indentations in another fin corresponding to the lug or lugs of the locking member the lugs being located adjacent said fins with a longitudinally extending flange secured to said post, one end of said flange member being chamfered, and a spring located within said passage and adapted to be urged inwardly into engagement with said groove by movement of said post and said flange relative to said housing.

3,978,700
SAFE DEPOSIT LOCK CONSTRUCTION WITH CHANGEABLE TUMBLER MECHANISM

Dwight W. Glass, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed Jan. 8, 1975, Ser. No. 539,497
Int. Cl.² E05B *25/00*
U.S. Cl. 70—339 **13 Claims**



1. An improved multiple key lock assembly comprising, in combination:
- a housing,
- a bolt in said housing, said bolt slidable between a projected, locked position and a retracted unlocked position, said bolt including at least two separate locking projections extending from the bolt transverse to the direction of bolt travel;
- at least two separate gate tumblers mounted for engagement with the locking projections of said bolt to prevent sliding movement of the bolt from the locked position, said gate tumblers being pivotally mounted on separate connected posts;
- separate means for rotating each of said gate tumblers on said posts to a position of disengagement with the bolt locking projections to permit retraction of the bolt, said means for rotating including separate keys and separate associated pivotal key operated drive tumblers for each key, each drive tumbler engaging a radial portion of each gate tumbler to drive said gate tumbler between bolt engaged and disengaged positions, separate shifters including cam driving surfaces for slidably driving said bolt when the gate tumblers are oriented to permit bolt retraction;
- means for translating the connected gate tumbler posts and gate tumblers independent of the bolt and drive tumblers to thereby separate radial engagement of the gate and drive tumblers; and
- means for maintaining said gate tumblers, drive tumblers and bolt in a fixed position when the gate and drive tumblers are radially separated whereby the separate keys may be removed and replaced independently to provide a new radial relationship between the gate and drive tumblers upon reengagement thereof.

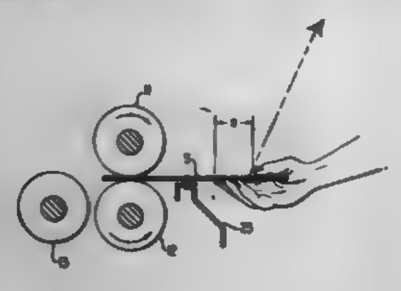
3,978,701
POWER ROLL MILL GUARDING DEVICE

Charles W. Rhodes, Victoria, Tex., assignor to Alfred L. Burden, Victoria, Tex., a part interest

Filed Nov. 6, 1975, Ser. No. 629,534
Int. Cl.² B21B *33/02;* **F16P** *1/00*
U.S. Cl. 72—2 **8 Claims**

1. A guarding device for a roll mill having a pair of parallel, superimposed, counter rotating driven rolls forming a nip between the rolls comprising an elongated guard plate spaced in front of and substantially parallel and coextensive in length with the lower most of said rolls, means for pivotally supporting said guard plate to move toward and away from a neutral

position, resilient means biasing said guard plate to said neutral position, and means for stopping said rolls responsive to the pivotal movement of said guard plate a pre-set distance away from said neutral position, said guard plate having a top edge which is normally positioned adjacent the level of the nip between said rolls, said means for pivotally supporting said guard plate including resilient means for normally holding the top edge of said guard plate adjacent the level of said nip and for allowing said plate to be depressed downwardly from the level of said nip.



3,978,702
METAL COLD FORMING PROCESS AND LUBRICANT COMPOSITION THEREFOR

George E. Barker, Evanston; Stephen C. Cohen, Highland Park, both of Ill.; John L. O'Brien, Winchester, and Jack Milgrom, Concord, both of Mass., assignors to Van Straaten Chemical Company, Chicago, Ill.

Division of Ser. No. 466,643, May 3, 1974, which is a continuation-in-part of Ser. No. 372,125, June 21, 1973, abandoned. This application Nov. 12, 1975, Ser. No. 631,242

Int. Cl.² B21C *23/32*

U.S. Cl. 72—42 **7 Claims**

1. A method of cold extrusion of a ferrous metal workpiece which comprises:

a. applying a liquid lubricant composition directly to the untreated surface of a ferrous metal workpiece, said composition comprising:
   1. an inert liquid carrier vehicle selected from the group consisting of water and organic solvents;
   2. a chlorine-containing polymer which is film-forming at room temperature, selected from the group consisting of polymers and copolymers of vinyl chloride, vinylidene chloride, and epichlorohydrin and chlorinated polyolefin polymers which are relatively non-corrosive to steel, said liquid composition having a chlorine content in bound polymeric form of from 1.5 to 30% by weight (wet basis); and,
   3. a destabilizing agent selected from the group consisting of salts of the transition metals, tin, aluminum and water soluble free radical catalysts selected from the group consisting of peroxides and hydroperoxides, said destabilizing agent being present in an amount of from 0.25 to 10% based on polymer solids.

b. drying the coated workpiece to remove the vehicle and form a dry, essentially continuous, uniform film of the polymeric material and the destabilizing agent on the surface thereof; and

c. subjecting the coated workpiece to a cold extrusion process, said chlorine-containing polymer and destabilizing agent providing an extreme pressure lubricant under the temperature and pressure conditions of the extrusion process.

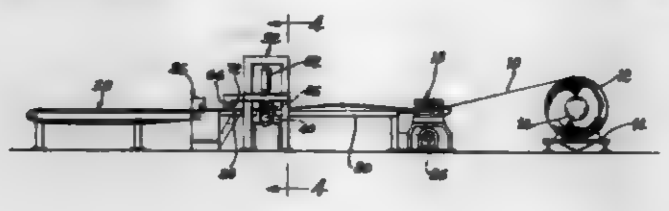
3,978,703
AUTOMATIC STRIP CUTTER

Theodore Primich, Merrillville; David A. Strilich, and David McLeroy, both of Hobart, all of Ind., assignors to Gary Steel Products Corporation, Gary, Ind.

Filed June 23, 1975, Ser. No. 589,253

Int. Cl.² B21F *11/00;* **B26D** *5/26*

U.S. Cl. 72—131 **11 Claims**



1. A machine for cutting sections from a coil of an elongated strip having a leading edge comprising, in combination, means for mounting the coil of the elongated strip to be cut for rotation about an axis, a strip feeder having two parallel confronting rolls disposed adjacent to the means for mounting the coil for engaging the strip normal to the axis of elongation thereof, said strip feeder including means for rotating said confronting rolls in opposite directions to pull the strip from the coil at a constant first speed, path defining means mounted on the side of the feeder opposite the coil mounting means for guiding the strip including a hump table, cutting means responsive to a first signal mounted adjacent to the path defining means, a strip speed control device disposed between the hump table and the cutting means having two rolls disposed normal to and on opposite sides of the path of the strip, and speed control device including a constant speed motor mechanically coupled to one of the rolls of the control device to drive the periphery of said roll at a constant second speed less than the first speed, said speed control device including means responsive to a second signal for translating the other roll of the speed control device toward the one roll thereof to grip the strip therebetween the translation of said strip at the second speed, said speed control device including means responsive to the first signal to stop translation of the strip at the cutting device, and signal generating means responsive to the position of the leading edge of the strip mounted adjacent to the path of the strip, said signal generating means including a first signal source coupled to the cutting means and translation stopping means for producing said first signal when the leading edge of the strip is located at a first position on the side of the cutting means opposite the control device and a second signal source coupled to the means for translating the other roll of the speed control device for producing said second signal when the leading edge of the strip is in a second position located between the cutting means and the first position.

3,978,704
CONE SHELL MAKING MACHINE

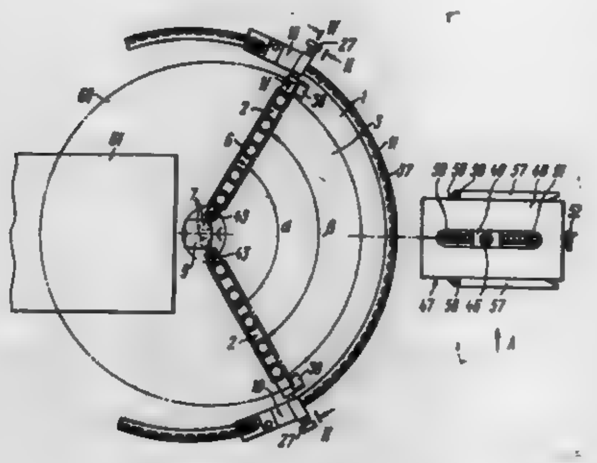
Rudolf Naumovich Fridman, Zhemchuzhny proezd, 3, kv. 1; Mark Lvovich Katalkherman, ulitsa Kirova, 18, kv. 3, and Sergei Petrovich Chistyakov, ulitsa Volodarskogo, 63, kv. 32, all of Penza, U.S.S.R.

Filed Aug. 1, 1975, Ser. No. 600,973

Int. Cl.² B21D *11/00, 5/00*

U.S. Cl. 72—303 **9 Claims**

1. A machine for making cone shells by coiling sheet blanks in the form of a circular sector comprising: a base; two adjustable clamps secured at one end to said base in a common point and serving to clamp the radial edges of the blank; at least one of said adjustable clamps installed on said base with a provision for turning relative to its fixing point in a plane parallel to said base for moving towards the other one of said adjustable clamps; a pusher located under the blank on the bisectrix of its sector angle with a provision for moving perpendicularly to the plane of the blank and being withdrawn from the converging zone of the adjustable clamps; said two adjustable clamps, each installed on said base with a provision for turning around its longitudinal geometrical axis; hinges secured on the ends of each of said adjustable clamps, one hinge being secured at the point where the adjustable clamp is fixed to said base; a device for fixing each of said adjustable clamps against turning around its own longitudinal geometrical axis.



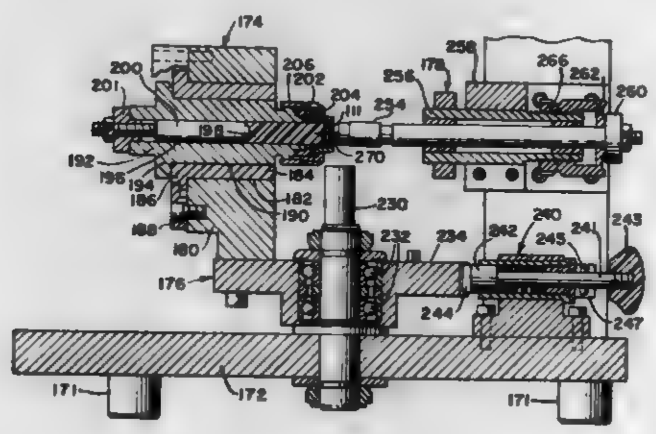
3,978,705
METHOD AND APPARATUS FOR THE MANUFACTURE OF A THIN SHEET ORIFICE PLATE

Larry N. Pearce, Oak Park; Arthur E. Neumann, Winnetka, and Ralph K. Wyssling, Glenview, all of Ill., assignors to Cotton Incorporated, New York, N.Y.

Filed Mar. 14, 1975, Ser. No. 558,237

Int. Cl.² B21D *31/02*

U.S. Cl. 72—325 **21 Claims**



1. A method of manufacturing a thin metal orifice plate having an orifice therethrough comprising the steps of:
- positioning an orifice plate blank having a thickness between 0.001 and 0.010 inches in a holding fixture;
- supporting at least a portion of the orifice plate blank in the holding fixture with a resilient member;
- piercing a generally circular orifice in the resiliently supported portion of the orifice plate blank with a transversely operable punch;
- further extending the punch transversely through the resiliently supported portion of the orifice plate blank and into the resilient member so as to localize deformation stresses during formation of the generally circular orifice having a rounded inlet and an outlet circumscribed by an encircling projection extending from the rounded inlet.

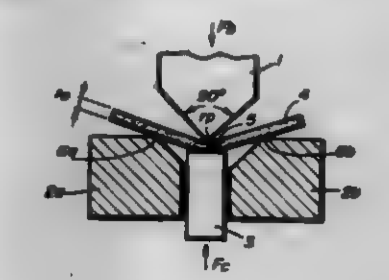
3,978,706
PRECISION BENDING WORK METHOD FOR METALLIC MATERIALS

Takeo Nakagawa, and Teiichi Ohtsuki, both of Tokyo, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1974, Ser. No. 536,160

Int. Cl.² B21D *7/06*

U.S. Cl. 72—389 **2 Claims**



1. A Method of substantially exact bending of metal material wherein the material is subjected to a force in the bending region between supporting dies and wherein the surface of the material on the other side is subjected to a counter force between the supporting dies, characterized in that the force which causes the bending is introduced locally along a line or a narrow area corresponding to the axis of bending, and that the material on the side of and in contact with the counterforce is deformed permanently by this force, the thickness of the material thereby being reduced for forming a localized bend along said line without cracks.

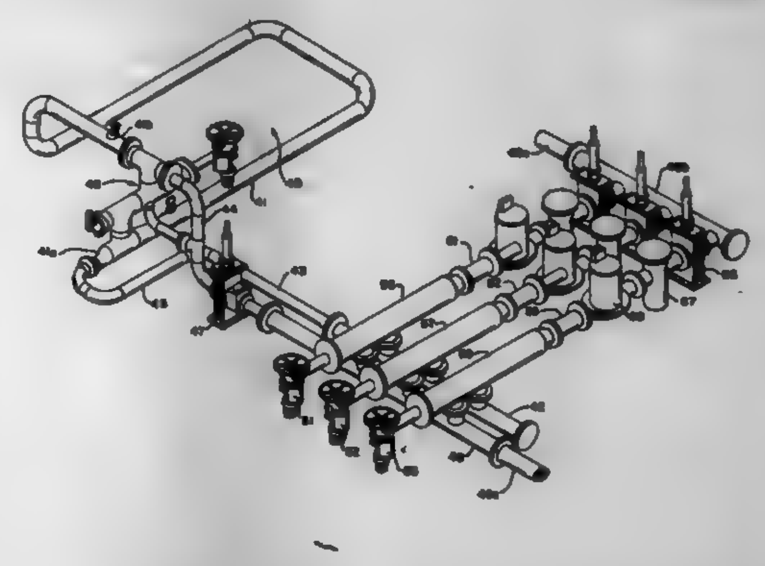
3,978,707
FLOW CONTROL APPARATUS AND SYSTEM

Marvin H. Grove, Houston, and Ronald G. Dunegan, Katy, both of Tex., assignors to M & J Valve Company, Houston, Tex.

Filed Feb. 12, 1975, Ser. No. 549,180

Int. Cl.² G01F *25/00*

U.S. Cl. 73—3 **5 Claims**



1. In flow control apparatus or diverter, a hollow body having its main part annular in section and extended along a central longitudinal axis, flow control means disposed within the body, said flow control means including four sealing assemblies in axial alignment and in spaced relationship (hereinafter termed first, second, third and fourth assemblies in the order at which they are disposed with the fourth assembly nearer the inflow opening), an opening forming an inflow passage at one end of the body and concentric with said axis, the sides of the body having openings forming longitudinally spaced outflow passages, two longitudinally spaced cylindrical sleeves carried by the body, one of the sleeves being located between the outflow passages and the other sleeve being disposed adjacent that outflow passage which is nearest the inflow opening and between such outflow passage and the

inflow passage, means for mechanically connecting all of the sealing assemblies in spaced relationship for conjoint reciprocation within the body with the spacing between successive pairs of assemblies being equal and substantially the same as the spacing between the sleeves, said means comprising tube means aligned with said axis and having a diameter substantially less than the internal diameters of the sleeves and the body, one end of the tube means being in communication with the inflow passage, the portions of the tube means extending between the fourth and third assemblies and also between the second and first assemblies being imperforate and that portion extending between the second and third assemblies being perforate, an operating rod connected to move all of the assemblies to any one of three operating positions, the positional relationship of the four sealing assemblies and the two sleeves being such that for a first operating position fluid flow from the inflow passage is prevented from flowing to either one of the outflow passages by engagement of the first and second assemblies with the sleeves and the outflow passages are isolated from each other, and whereby in a second operating position the second and third sealing assemblies are in sealing engagement with said sleeves whereby flow can occur from the inflow passage to one of the outflow passages and the outflow passages isolated from each other, and whereby in a third position the third and fourth sealing assemblies are in sealing engagement with said sleeves whereby flow may occur from the inflow passage to the second one of the outflow passages and the outflow passages again isolated from each other.

4. A meter proving system comprising a plurality of apparatuses or diverters as defined in claim 1, a plurality of horizontal meter runs adapted to be connected to the upstream side of a main liquid flow line, the diverters being disposed horizontally with each diverter in alignment with its corresponding meter run, a meter prover header and a discharge header disposed horizontally and connected to corresponding outflow passages of the diverters, a meter prover having a metering loop and piping serving to connect the headers to the end portions of the metering loop.

3,978,708

MEMBERS MOVING WITHIN TUBES

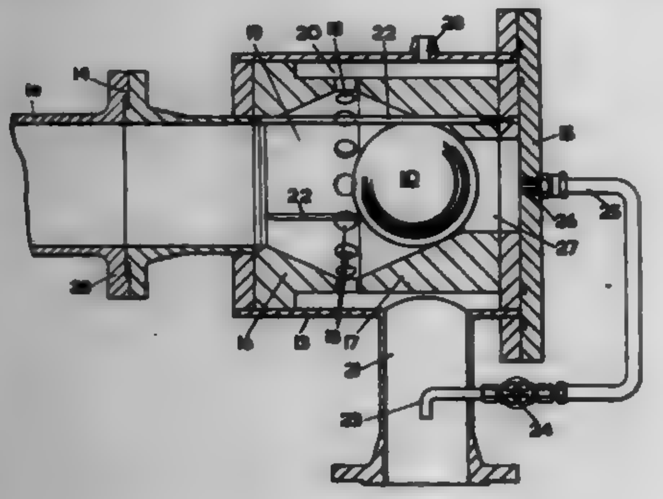
Alan Thomas Joseph Hayward, Glasgow, Scotland, assignor to The Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed June 10, 1975, Ser. No. 585,521

Claims priority, application United Kingdom, June 12, 1974, 26172/74

Int. Cl.^{2} G01F *25/00*

U.S. Cl. 73—3 **8 Claims**



1. A device for arresting a discrete body transported through a closely fitting pipeline by fluid flow, comprising a housing adapted for fluid tight attachment to an open end of the pipeline and provided with an internal chamber for receiving and decelerating said discrete body, said chamber having an open end which communicates with the interior of the pipeline when the housing is connected thereto, a first portion of said chamber adjacent said open end being of a cross-section greater than that of the pipeline, and in which portion there is provided a first fluid transfer port through the wall of the housing, a second portion of said chamber adjacent said first portion having a tapering cross-section which reduces to less than that of the pipeline, said first and second portions being provided with a plurality of axially extending, radially spaced members for guiding the discrete body in movement substantially axially therein, and a closed end portion remote from said open end.

3,978,709

DETECTION OF LEAKAGE FROM LIQUID-TRANSPORTING PIPELINE

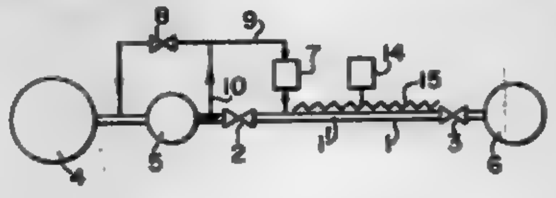
Masao Ando, Yokohama, Japan, assignor to Chisso Corporation, Osaka, Japan

Filed July 18, 1974, Ser. No. 489,654

Claims priority, application Japan, July 19, 1973, 48-82283; Oct. 8, 1973, 48-113055

Int. Cl.^{2} G01M *3/08*

U.S. Cl. 73—40.5 R **10 Claims**



1. A system for measuring leakage from a liquid-containing pipeline that includes a liquid inlet end, a liquid outlet end, and a pair of spaced apart block valves mounted between said inlet and outlet ends to form a blocked section of pipeline between said pair of spaced apart valves; the improvement comprising

1. pump means located exteriorly of said blocked section
2. a first flow path connecting the discharge side of said pump means and the suction side thereof,
3. a throttle valve operatively mounted in said first flow path for establishing a minimum pressure that the pump means has to generate in order to cause liquid to flow back to the suction side of the pump means,
4. a second flow path connecting said blocked section of said pipeline and a point on first flow path between said throttle valve and the discharge side of said pump means, and
5. means for measuring the amount of any liquid flowing through second flow path.

3,978,710

APPARATUS FOR DETERMINING THE DEGREE OF GAS IMPERMEABILITY FOR WATCH CASES AND THE LIKE ARTICLES

Michel Ratajski, Bienne, Switzerland, assignor to OMEGA Louis Brandt & Frere S.A., Bienne, Switzerland

Filed July 9, 1975, Ser. No. 594,543

Claims priority, application Switzerland, July 12, 1974, 9613/74

Int. Cl.^{2} G01M *3/32*

U.S. Cl. 73—49.3 **3 Claims**

1. An apparatus for testing the gas impermeability of watch cases or like objects, said apparatus comprising:

a first enclosure for receiving the article to be tested;

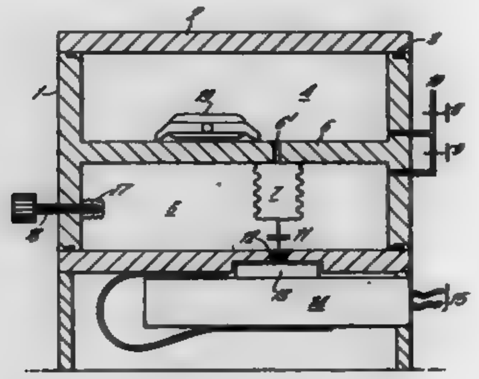
a second enclosure;

means including a means within one of said enclosures and deformable in response to differential pressures for hermetically separating said first and second enclosures;

a variable condenser having a fixed member and a movable member connected to said deformable means;

an electrical oscillator circuit frequency tunable by said variable capacitor;

means for simultaneously pressurizing or evacuating both said enclosures to the same pressure whereby escape of gas from the article being tested effects a differential pressure between said two enclosures thereby deforming said deformable means and moving said movable member to thereby vary the frequency of said electrical oscillator circuit; and



measuring and display means for providing an indication of variations in said oscillator circuit frequency, said measuring and display means including a stable frequency generator and comparator means for comparing the frequency of said oscillator circuit with the frequency of said stable frequency generator.

3,978,711

METHOD OF TESTING WEAR RESISTANCE OF ARTICLES ON THE BASIS OF POLYCRYSTALLINE CUBIC BORON NITRIDE

Boris Aronovich Glagovsky, prospekt M. Toreza, 15, kv. 49, Leningrad; Anatoly Samoilovich Kamenkovich, ulitsa Tashkentskaya, 15/22, kv. 123, Moscow; Vladislav Sergeevich Lysanov, ulitsa Vavilovykh, 15/3, kv. 7, Leningrad; Igor Borisovich Moskovenko, Kirovsky prospekt, 50, kv. 6, Leningrad; Garri Shmilevich Roitshtein, Kirovsky prospekt, 65, kv. 9, Leningrad; Ljudmila Yakovlevna Slavina, prospekt Shvernika, 16, kv. 80, Leningrad; Leon Izrailevich Feldgun, Ligovsky prospekt, 3/9, kv. 13, Leningrad; Larisa Ruvimovna Frenkel, ulitsa Butlerova, 12, kv. 193, Leningrad; Alexandr Lazarevich Khait, prospekt Maklina, 34, kv. 21, Leningrad; Galina Alexandrovna Shashkina, Kirovsky prospekt, 54, kv. 57, Leningrad; Veniamin Alexandrovich Yashin, prospekt Engelsa 70, kv. 37, Leningrad; Zinovy Illich Kremen, Tikhoretsky propspekt, 10, korpus 2, kv. 54., all of Leningrad, and Yakov Abramovich Muzykant, ulitsa Chusoyskaya, 11, korpus 5, kv.1 113, Moscow, all of U.S.S.R.

Continuation of Ser. No. 415,902, Nov. 14, 1973, abandoned.

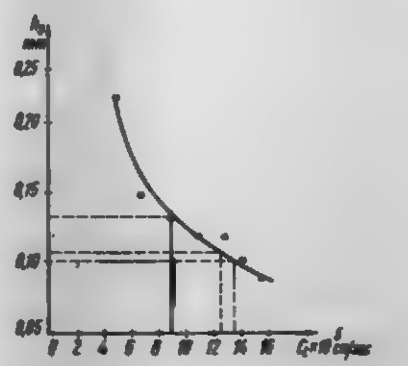
This application Aug. 20, 1975, Ser. No. 606,104

Claims priority, application U.S.S.R., Nov. 4, 1972, 1847757

Int. Cl.^{2} G01N *29/00*

U.S. Cl. 73—67.2 **5 Claims**

1. A method of testing the wear resistance of articles based on the physical properties of polycrystalline cubic boron nitride, comprising the steps of: measuring the rate of propagation of ultrasonic oscillations in a reference article made from cubic boron nitride and having a predetermined resistance to wear equal to the lowest admissible value thereof; comparing the rate of propagation of ultrasonic oscillations in each of the articles being tested with the rate of propagation of ultrasonic oscillations in said reference article; rejecting those articles of the articles being tested having a rate of propagation of ultrasonic oscillations lower than the rate of propagation of ultrasonic oscillations in the reference article.



3,978,712

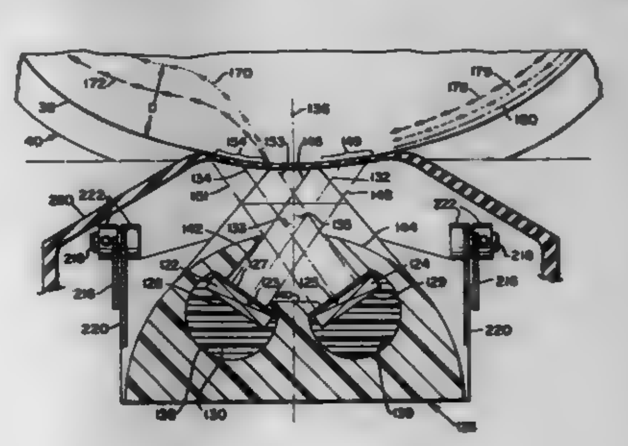
METHOD AND APPARATUS FOR TESTING WEAR, SIZE AND RESIDUAL STRESS CONDITIONS

John Vincent Cowan, Danbury; Gerald De G. Cowan, New Preston, and John Gerald Cowan, Southbury, all of Conn., assignors to Scanning Systems, Inc., Brookfield, Conn.

Continuation-in-part of Ser. No. 199,487, Nov. 17, 1971, Pat. No. 3,812,708. This application May 24, 1974, Ser. No. 473,308

Int. Cl.^{2} G01N *29/04*

U.S. Cl. 73—67.5 R **21 Claims**



1. The method of testing the physical condition of a wheel comprising the steps of:

A. coupling a tangent zone of the wheel with an ultrasonic energy transmitting medium having an index of refraction of ultrasonic energy substantially lower than the index of refraction of ultrasonic energy in the wheel;

B. positioning a first ultrasonic transducer in the coupling medium with the sonic axis of the transducer inclined with respect to the tangent zone at an angle wherein low frequency ultrasonic energy delivered to the wheel along the sonic axis enters the wheel, penetrates to a substantial depth therein, and is refracted substantially tangent to the curved surface; and whereby the energy which penetrates the wheel to a substantial depth travels along a path near to and converging toward the curved surface and having a progressively increasing radius of curvature, and thereby migrates toward the curved surface thereof, as it travels along said path;

C. coupling a second tangent zone of the wheel with an ultrasonic energy transmitting medium having an index of refraction of ultrasonic energy substantially lower than the index of refraction of ultrasonic energy in the wheel, said second tangent zone being at a known angular distance from the first tangent zone;

D. positioning a second ultrasonic transducer in the coupling medium at the second tangent zone with the sonic axis of the second transducer inclined with respect to the tangent zone at an angle corresponding and opposite to the angle of the sonic axis of the first transducer relative to its tangent zone wherein ultrasonic energy delivered to the wheel by the first transducer and entering the tangent zone from within the wheel is refracted out of the wheel to the coupling medium to impinge upon the second transducer;

E. pulsing the first ultrasonic transducer with a low frequency pulse to produce an ultrasonic energy pulse traveling along the sonic axis into the wheel, refracted substantially tangent to the surface thereof, and thereafter traveling about the periphery of the wheel adjacent to the surface;

E. thereafter monitoring the second transducer for receipt of the ultrasonic energy pulse thereat; and

G. measuring the time interval between pulsing the first transducer and receiving the ultrasonic energy pulse at the second transducer wherein the time interval is determined by the length of the circumference of the wheel within the known angular distance and therefore indicates the diameter of the wheel.

3,978,713

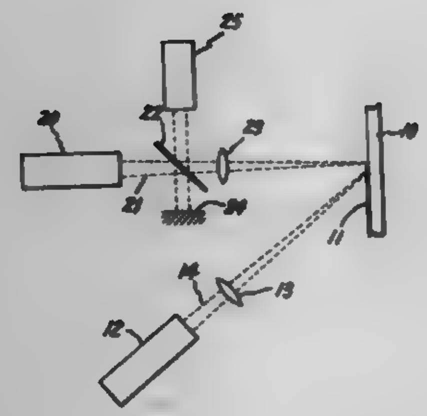
LASER GENERATION OF ULTRASONIC WAVES FOR NONDESTRUCTIVE TESTING

Carl M. Penney, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 27, 1975, Ser. No. 581,047

Int. Cl.² G01N *29/04*

U.S. Cl. 73—67.7 **8 Claims**



1. In apparatus for nondestructively testing a medium by generating pulses of ultrasonic energy within said medium and measuring the response of said medium to said pulses, the improvement wherein at least a portion of said medium comprises a surface absorbent to optical energy and having a characteristic damage threshold for deleterious surface damage, and further including means for directing an intense pulse of optical energy below said damage threshold onto the absorbent portion of said medium to generate said pulses of ultrasonic energy within said medium.

3,978,714

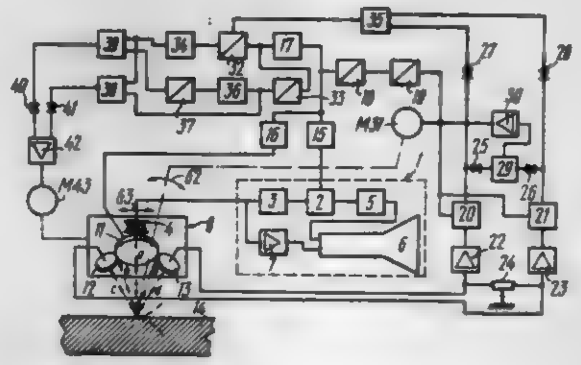
METHOD OF ULTRASONIC ECHO FLAW DETECTION AND DEVICE FOR EFFECTING SAME

David Solomonovich Shraiber, Leninsky prospekt, 39, kv. 100; Boris Glebovich Golodaev, 9 ulitsa Sokolinoi gory, 3, kv. 253; Boris Alexandrovich Paikin, Sirenevy bulvar, 67, korpus 2, kv. 102, all of Moscow; Leonid Mikhailovich Zakharov, Sovetsky prospekt, 14, kv. 31, Ivanteevka, Moskovskaya oblast; Mikhail Abramovich Genkin, ulitsa Bakuninskaya 8, kv. 26, Moscow; Dmitry Alexandrovich Filippov, ulitsa Saratovskaya, 18/10, kv. 138, Moscow, and Anatoly Fedorovich Razumovsky, ulitsa Kantemirovskaya, 5, korpus 1, kv. 31, Moscow, all of U.S.S.R.

Continuation-in-part of Ser. No. 281,010, Aug. 16, 1972, abandoned. This application Mar. 7, 1975, Ser. No. 556,537

Int. Cl.² G01N *29/04*

U.S. Cl. 73—67.8 S **4 Claims**



1. A method of ultrasonic echo flaw detection of articles, with an echo flaw detector having a detecting head carrying an ultrasonic flaw detecting transducer, said method comprising directing ultrasonic oscillation pulses at an article being checked by the ultrasonic flaw detecting transducer; receiving pulses reflected from the surface of said article and carrying information on the presence of flaws in said article; relatively displacing said head and ultrasonic flaw detecting transducer with respect to said article for scanning the article with ultrasonic oscillations; directing additional ultrasonic oscillations at said article at an angle at the point of entry of the ultrasonic oscillations emitted by the ultrasonic flaw detecting transducer, receiving the additional ultrasonic oscillations as a reflected divergent beam by two further ultrasonic transducers arranged in a plane perpendicular to the direction of the reflected ultrasonic oscillations and symmetrically with respect to the longitudinal axis of the detector head; comparing said additional oscillations to obtain a difference signal; turning the detector head in the plane of its displacement around the point of entry of ultrasonic oscillations, in proportion to the magnitude and sign of the difference signal, to decrease and ultimately reduce to zero the difference signal as the detector head approaches a line normal to the surface of the article; and displacing the ultrasonic flaw detecting transducer along a curvilinear path to direct ultrasonic oscillations at an angle to said article to insure the incidence of the ultrasonic beam perpendicular to the plane of a flaw found under a curvilinear surface of the article and oriented parallel to its flat surfaces.

3,978,715

LOW FREQUENCY, HIGH SENSITIVITY ELECTROMECHANICAL TRANSDUCER

Johan T. Farstad, Sunbury, Ohio, assignor to IRD Mechanalysis, Inc., Columbus, Ohio

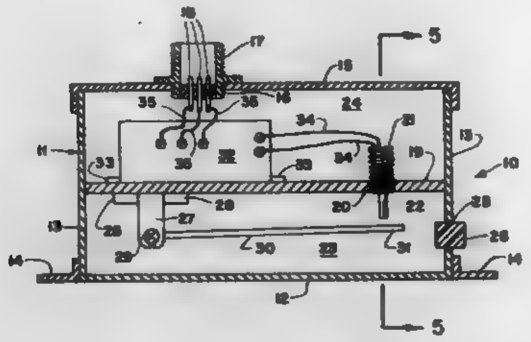
Filed July 15, 1974, Ser. No. 488,694

Int. Cl.² G01P *15/08*

U.S. Cl. 73—71.2 **1 Claim**

1. A self-contained acceleration measuring device confined within an enclosed housing; a barrier wall dividing the said housing into a first chamber and a second chamber; a nonmagnetic metal beam pivotally mounted at one end on a torsion

pivot in the said first chamber and having an unsupported free end; said first chamber being filled with fluid as a damping means for resisting movement of the said beam; an Eddy current type displacement sensing device mounted in said barrier wall with its sensing tip in the said first chamber and having electrical conductors extending into said second chamber; the said free end of the said beam being disposed in confronting relation with the said Eddy current displacement sensing tip in such manner that the instantaneous displacement between the said beam and the said sensing tip corresponds to the instantaneous acceleration applied to the said housing; means within said second chamber for generating an electrical signal directly responsive to the said instantaneous displacement between the said beam and the said sensing tip; and means for converting the said electrical signal directly to an indication of the instantaneous acceleration of the said housing.



3,978,716

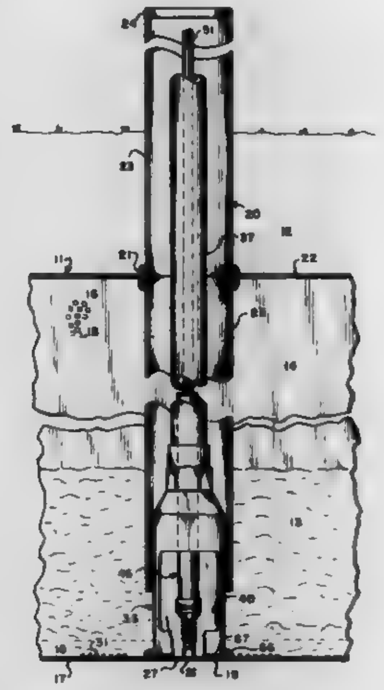
METHOD AND APPARATUS FOR DETERMINING INTERNAL EROSION OF STORAGE TANKS AND REPAIR

John A. Kirschke, P.O. Box 125, Boerne, Tex. 78006

Filed Oct. 1, 1975, Ser. No. 618,440

Int. Cl.² G01N *17/00*

U.S. Cl. 73—86 **8 Claims**



5. A method for determining the internal erosion of a storage tank comprising the steps of:

a. placing a casting cup through the filler pipe,
b. sealing the cup against the interior wall of said storage tank,
c. inserting an injector filled with heavy oil into the casting cup,
d. injecting the said heavy oil into the casting cup displacing casting inhibitors from the casting collar,
e. inserting an injector into the casting cup filled with a casting mixture,
f. injecting the casting mixture into the casting cup,
g. permitting the casting cup to remain in position until the casting compound solidifies,
h. removing the casting cup and the solidified negative casting from the storage tank, and
i. inspecting the solidified casting to observe the extent of erosion in the casting area.

3,978,717

INHIBITED PRE-WASH STRIPPER COMPOSITION FOR WATER-WASHABLE INSPECTION PENETRANTS

James R. Alburger, 5007 Hillard Ave., La Canada, Calif. 91011

Filed Jan. 13, 1975, Ser. No. 540,418

Int. Cl.² G01N *19/08, 31/22*

U.S. Cl. 73—104 **2 Claims**

1. In an inspection penetrant process in which a slow-solubility-type water-washable dyed liquid penetrant is applied to a test surface and surface penetrant is removed by washing said penetrant-treated test surface with water, the improvement consisting of a step of surface washing with a stripper composition, said step being introduced prior to finish-washing said penetrant-treated test surface, said stripper composition consisting of water saturated with dissolved slow-solubility penetrant.

3,978,718

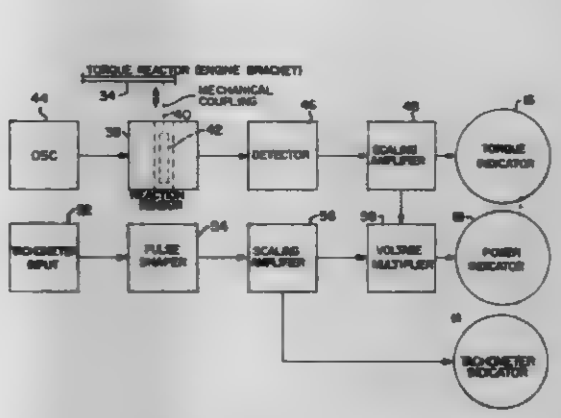
ELECTRONIC DYNAMOMETER

Ronald W. Schorsch, 645 SW. 307th, Federal Way, Wash. 98002

Continuation of Ser. No. 383,621, July 30, 1973, abandoned. This application Mar. 31, 1975, Ser. No. 563,317

Int. Cl.² G01L *5/13*

U.S. Cl. 73—117.3 **11 Claims**



1. Electronic engine dynamometer system for engine analysis wherein as an engine having support mounts and a support frame is operated into a load, a reaction force is generated causing displacement of the engine with respect to its mounts and support frame which is proportional to the torque output of the engine, said system comprising:

a. reaction responsive means for reacting to the displacement of said engine,
b. electronic reaction sensing means operatively connected to said reaction responsive means for electronically sensing the amount of motion caused by the torque reaction of the engine and producing a signal proportion to said amount of motion,
c. electronic torque indicator means operatively connected to said sensing means for instant, continuing visual readout of the torque output of said engine,
d. an electronic detector circuit for receiving and converting A. C. signals from said reaction sensing means to D. C. signals is disposed between said reaction sensing means and said torque indicator,

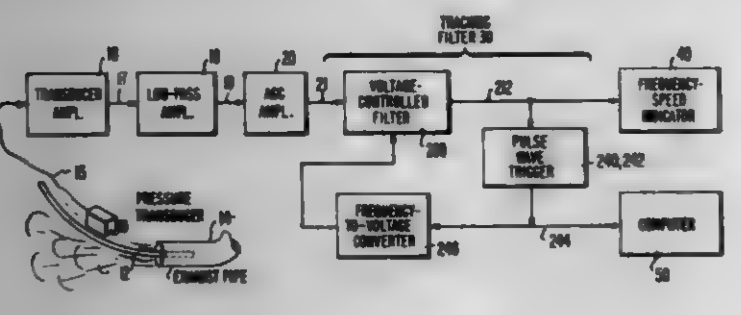
e. electronic tachometer input means for measuring the rotational speed of said engine in rpm,
f. electronic tachometer indicator operatively connected to said tachometer input means for instant continuing visual readout of the rpm of said engine,
g. electronic multiplier circuit means for receiving signals from said reaction sensing means and from said tachometer input means for conversion of said signals to power output, and
h. electronic power indicator operatively connected to said multiplier circuit means for instant, continuing visual readout of the power output of said engine.

3,978,719

TACHOMETER WITHOUT PHYSICAL CONNECTION TO INTERNAL COMBUSTION ENGINE

Stephen Clow Hadden, Cambridge; Leonard Robin Hulls, Marblehead; Patrick John Sinney, Cambridge, all of Mass., and Eldon Marvin Sutphin, Jr., Merrimack, N.H., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1975, Ser. No. 573,032
Int. Cl.² G01M *15/00*
U.S. Cl. 73—115 **8 Claims**



1. A tachometer for internal combustion engines, comprising,
a transducer for translating a pressure waveform emitted by the engine to a corresponding electrical signal having a prominent frequency component which varies in frequency in direct proportion with engine speed,
an amplifier for said signal including automatic gain control means, and
a tracking filter receptive to the output of said amplifier and having a frequency pass band which tracks and passes said prominent frequency component as the frequency changes due to changes in engine speed,
whereby the output of said tracking filter is an electrical wave having a frequency representing engine speed.

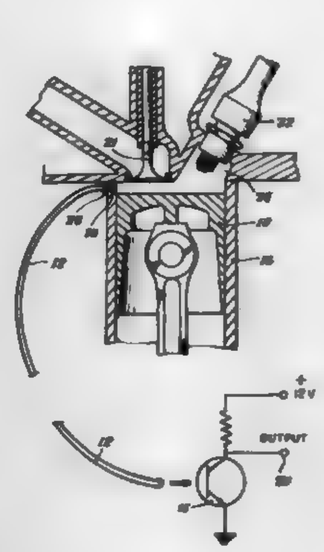
3,978,720

COMBUSTION DETECTOR FOR INTERNAL COMBUSTION ENGINES

Eric Harold Ford, London, England, assignor to Lumenition Limited, England

Filed June 27, 1975, Ser. No. 590,850
Claims priority, application United Kingdom, July 5, 1974, 29783/74
Int. Cl.² G01M *15/00*
U.S. Cl. 73—116 **9 Claims**

1. Apparatus for detecting radiation of a given range of wavelengths from the group comprising visible, intra-red and both visible and infra-red, which radiation is produced as a result of combustion in a given volume within a cylinder of an internal combustion engine, said apparatus comprising a photo-transistor sensitive to the radiation to be detected; a quartz window located in the cylinder at a position beyond that occupied by the piston at top dead center; and a fibre optic light guide, the ends of which are positioned between the quartz window and the photo-transistor.

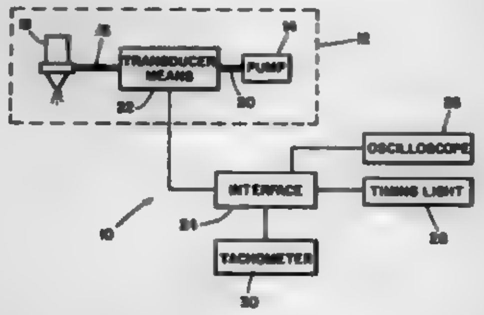


3,978,721

SYSTEM FOR MAINTAINING A DIESEL ENGINE

Gary E. Clark, and Art J. Miller, both of Chicago, Ill., assignors to Sun Electric Corporation, Chicago, Ill.

Filed Oct. 3, 1975, Ser. No. 619,463
Int. Cl.² G01M *15/00*
U.S. Cl. 73—119 A **9 Claims**



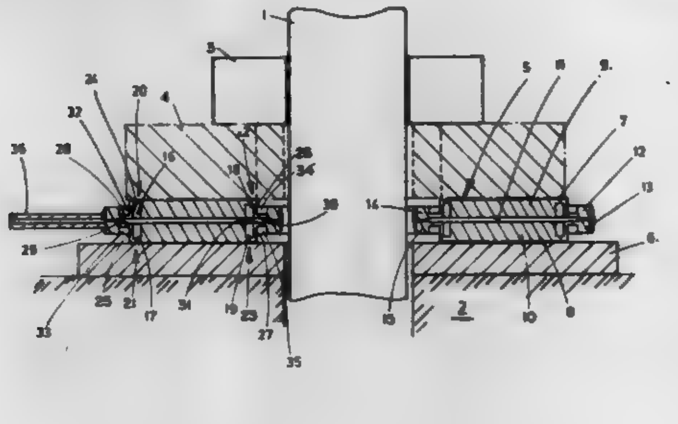
1. A system for maintaining a diesel engine, having a fuel pump and at least one fuel injection line, said fuel pump producing a fuel pressure wave in said fuel injection line, comprising, in combination:
transducer means for producing a voltage signal in response and correlated to said fuel pressure wave;
amplifier means for producing a trigger pulse in response to said transducer means whenever said voltage signal exceeds a trigger threshold;
first pulse generating means for producing a first timing pulse of variable duration in response to said trigger pulse, said first pulse generating means having an input terminal connected to said amplifier means, an output terminal and one control terminal, said first pulse generating means initiating said first timing pulse upon receipt of said trigger pulse and terminating said first timing pulse whenever the voltage at said control terminal exceeds a predetermined termination threshold;
first voltage storage means connected to said control terminal;
first charging means for charging said first voltage storage means in response to initiation of said first timing pulse;
visual output means for producing a visual pulse in response to said first timing pulse; and
control means for controllably charging said first voltage storage means, whereby duration of said first timing pulse is varied according to the speed of said diesel engine.

3,978,722

DYNAMOMETER FOR ANCHORS IN BUILDING CONSTRUCTIONS

Rainer Glötzl, Karlsruhe, and Franz Glötzl, Rheinstetten, both of Germany, assignors to Firma Franz Glotzl, Germany

Filed Aug. 12, 1975, Ser. No. 603,801
Claims priority, application Germany, Aug. 20, 1974, 2439782
Int. Cl.² G01L *1/02*
U.S. Cl. 73—141 R **6 Claims**



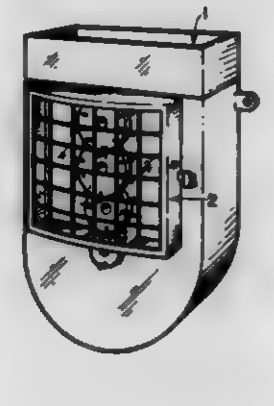
1. A dynamometer for anchors in building constructions, having a measuring device arranged to be inserted between a fixed support and a fixing nut of the anchor, said measuring device enclosing a pressure measuring fluid and comprising two thick walled rigid annular discs arranged to surround a head of the anchor which annular discs are connected to one another in a pressure-tight manner at outer and inner peripheries of the discs and at a distance from one another so as to form a pressure chamber, the wall thickness of at least one of the two annular discs being weakened in the direct vicinity of the inner and outer peripheries thereof from the side facing the other disc so as to form flexible zones over the whole measuring area.

3,978,723

WATER WHEEL ALL SEASON RAIN GAGE

James B. Davis, P.O. Box 5066, Santa Ana, Calif. 92704

Filed Nov. 10, 1975, Ser. No. 630,540
Int. Cl.² G01W *1/14*
U.S. Cl. 73—171 **6 Claims**



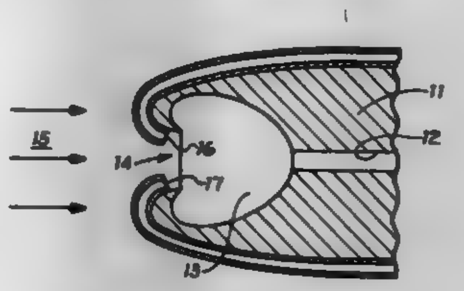
1. A gage for measuring atmospheric precipitation comprising: a trough having an inlet for collecting atmospheric precipitation and an outlet for discharging said precipitation, a water wheel driven by said discharged precipitation, a plurality of dial indicators rotated by said water wheel and slotted sleeve bearings used to mount said wheel and said indicators thereby providing lubrication by said precipitation resulting in uniform friction over an extended period.

3,978,724

FLUIDIC ANGLE-OF-ATTACK SENSOR

Peter A. Freeman, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 4, 1975, Ser. No. 637,541
Int. Cl.² G01C *21/00*
U.S. Cl. 73—180 **6 Claims**



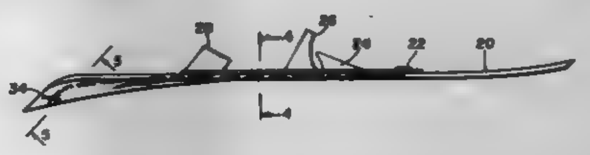
1. A fluidic sensor for determining angle-of-attack of a flow field impinging on said sensor comprising,
a coanda-effect cavity having a centrally oriented impingement cavity,
first and second output pressure sensing ports positioned on opposide sides of said centrally oriented impingement cavity, and
means for supplying excitation fluid into said coanda-effect cavity at a velocity greater than the velocity of said flow field, said coanda-effect cavity directing a portion of said excitation fluid to alternately enter said first and second output pressure sensing ports and provide equal pressure outputs therefrom when said fluidic sensor is oriented in a zero angle-of-attack position and, when said sensor is oriented in an angle-of-attack other than a zero angle-of-attack position, said flow field impinges on said excitation fluid to provide unequal flow of fluid into said first and second output pressure sensing ports to provide differential pressure proportional to the angle-of-attack of said fluidic sensor relative to said flow field.

3,978,725

SPEEDOMETER PARTICULARLY FOR WATER SKIS

Frederick Borden Hadtke, New Providence, N.J., assignor to Robert Hain Associates, Inc., Scotch Plains, N.J.

Filed Jan. 7, 1976, Ser. No. 647,423
Int. Cl.² G01P *5/16*
U.S. Cl. 73—182 **14 Claims**



1. A speed indicating apparatus particularly for water skis, said indicator apparatus including: (a) a ski body; (b) a pressure responsive gauge carried on and by the ski body and having indicia and a viewing face so positioned as to be readily visible to the user of the skis and also when the skis are advanced in normal use in the water; (c) a tubular conductor provided in the ski body and having its forward end operatively connected to the pressure responsive gauge and its rear or other end disposed on the underside and toward the trailing end of the ski as used; (d) a flexible diaphragm carried by the ski and disposed so as to close the tubular conductor at a point near its rear opening to the water, and (e) a fluid means filling that portion of the tubular conductor between the operative connection to the pressure responsive gauge and the diaphragm, and in response to the movement of the diaphragm as effected by the rush of water by the rear opening of the

tubular conductor the diaphragm and the fluid in the sealed conductor is moved so as to actuate the gauge to provide an indication thereon of the rate of travel of the ski through the water.

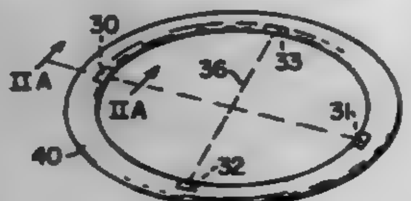
3,978,726
FLUID CURRENT METER

Hsing-Hua Shih, Bowie, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 5, 1975, Ser. No. 574,832

Int. Cl.² G01D *1/00*

U.S. Cl. 73—189 **12 Claims**



1. Fluid flow measuring apparatus comprising:
a. a plurality of pairs of acoustic transducers;
b. support means for supporting said pairs of transducers such that each said pair is positioned along respective acoustic axes;
c. said support means being constructed and arranged to extend along a generally circular path from one transducer to a next so as to provide an obstruction to fluid flow at an angle of ± θ from each said transducer.

3,978,727
METHOD AND DEVICE FOR CORRECTING THE OUTPUT SIGNAL FROM A DIGITAL TRANSDUCER FOR MEASURING A PHYSICAL MAGNITUDE OR VARIABLE

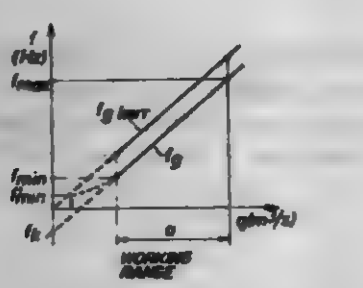
Tor Lennart Bernt Griverus, Nasbydalsvagen 6, 183 31 Taby, Sweden

Filed Nov. 11, 1974, Ser. No. 522,789

Claims priority, application Sweden, Nov. 9, 1973, 7315252

Int. Cl.² G01F *1/05*

U.S. Cl. 73—194 E **10 Claims**



1. A method for correcting an output signal from a digital transducer for measuring a physical magnitude, wherein said output signal is a pulse train of frequency f_g, the transducer frequency f_g being essentially a straight line function of said physical magnitude within the working range of said transducer, said transducer having the inherent quality that in a graphical portrayal of said function including axes representing the transducer frequency and said physical magnitude an extension of said straight line beyond said working range cuts said transducer frequency axis at a point to one side of the zero point of such axis, said method including the step of superimposing a correction pulse frequency of f_k on said transducer pulse frequency f_g to thereby obtain a corrected transducer pulse frequency $f_{g\ korr}$, wherein said corrected transducer pulse frequency $f_{g\ korr}$ is also graphically portrayable as a straight line function of said physical magnitude, said method including the further step of adjusting said correction frequency f_k such that said straight line representation of said corrected transducer pulse frequency $f_{g\ korr}$ cuts substantially through said zero point, the method further comprising:

a. providing correction pulses for superimposition on said transducer pulse train only after occurrence of a said transducer pulse;
b. providing, but limiting to a maximum number, a quantity of superimposed correction pulses per transducer pulse, when the transducer frequency f_g is below its lowest operating frequency; and
c. wherein the step of superimposing the frequencies f_g and f_k includes superimposing the trains of correction and transducer pulses and separating into two clearly distinguishable resulting pulses any transducer pulse and correction pulse which lie close together or substantially coincide to produce said frequency $f_{g\ korr}$.

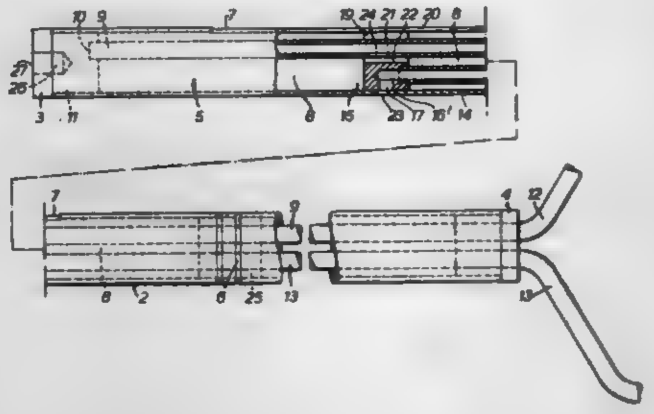
3,978,728
FLUID FLOW MEASURING DEVICES

George Donald Cutler, Weymouth, England, assignor to Dover Corporation, New York, N.Y.

Filed Apr. 10, 1975, Ser. No. 566,726

Int. Cl.² G01F *1/46*

U.S. Cl. 73—212 **4 Claims**



1. In a fluid flow measuring device of the type having an elongate housing member defining a chamber, means defining an aperture in the wall of the housing member opening into the interior thereof positionable in the fluid flow facing upstream, a first tubular probe member mounted in said chamber and having a port connecting the interior thereof with said chamber, and a second tubular probe member having a port opening opposite to the housing member aperture for sensing the suction of the flow impinging against the latter, the improvement in which the aperture defining means comprises an elongate slot extending longitudinally of said housing member opening in a direction opposite the port in the first tubular member.

3,978,729
CIRCUIT FOR MONITORING TEMPERATURE OF HIGH-VOLTAGE EQUIPMENT

Martin E. Jacobs, Chillicothe, Ohio, assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Dec. 9, 1975, Ser. No. 639,134

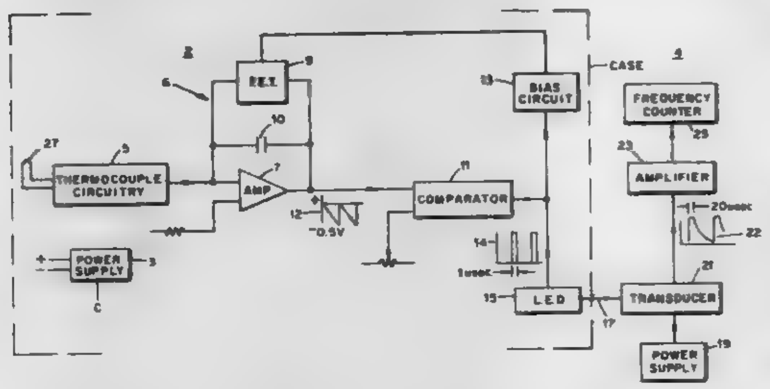
Int. Cl.² G01K *7/02*

U.S. Cl. 73—359 R **9 Claims**

1. A circuit for monitoring the operating temperature of a device situated in a region at relatively high electrical potential and for generating, in a region at a lower electrical potential, an output signal whose frequency is indicative of said temperature comprising:

thermocouple-including circuitry for generating a d.c. voltage proportional to said operating temperature;
a d.c. power supply;
a temperature-compensated operational amplifier for generating a linear ramp voltage whose time of rise varies inversely with the magnitude of said d.c. voltage, said

amplifier having an input which is coupled to said circuitry through a resistor;
a comparator circuit operatively coupled to the operational amplifier for producing a negative output voltage when the magnitude of said ramp voltage is below a preselected value and for producing a positive output voltage when the magnitude of the ramp voltage increases to said preselected value;
a capacitor connected across the operational amplifier;
a field-effect transistor connected across said capacitor;
a switching circuit coupled to the output of said comparator circuit for biasing said transistor off when the output voltage of said comparator circuit is negative and for turning said transistor on when the output voltage of said comparator circuit swings positive and maintaining said transistor on for a time effecting complete discharge of said capacitor;
a light-pulse generating circuit which includes a light-emitting semiconductor component and is coupled to the output of said comparator circuit for energizing said component for a preselected period each time said comparator circuit output swings positive, thereby generating a train of light pulses whose repetition rate is proportional to said operating temperature; and
an output circuit which includes a light-activated semiconductor device optically coupled to said light-emitting component for converting said train of light pulses to an electrical output signal having the same repetition rate.



3,978,730
INDICATING INSTRUMENTS

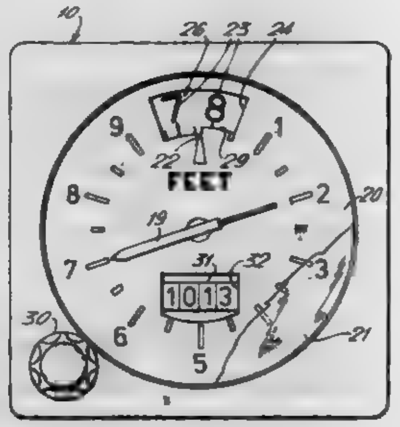
Edward W. Anderson, Cheltenham, England, assignor to Smiths Industries Limited, London, England

Filed Aug. 22, 1975, Ser. No. 606,812

Claims priority, application United Kingdom, Aug. 23, 1974, 37215/74

Int. Cl.² G01L *7/10*; **G01C** *21/00*

U.S. Cl. 73—387 **13 Claims**



1. In an indicating instrument having a scale and in which indication of the value of a variable is provided partly by an index that is arranged to rotate through more than one revolution to pass the zero or other datum of the said scale in response to successive changes of unit quantity in the variable, and in which said instrument further includes a member that bears graduation markings in terms of the said unit quantity and means for driving said member relative to the said scale in accordance with rotation of the index, but at a reduced speed compared with said index, to provide coarse indication of the value of the variable in terms of said unit quantity: the improvement wherein the said graduated member is located to be viewed against the datum of the scale thereby to provide the coarse indication by reference to the positioning of its said graduation markings relative to the same datum as used for the index, said driving means including means for driving said member past said scale datum in opposite sense to said index, and the index, throughout a limited sector of its rotation up to the datum, pointing to the graduated member between two of its graduation markings to emphasize which of those markings is appropriate to the coarse indication.

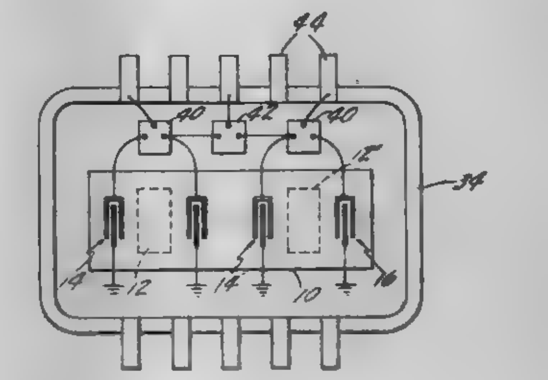
3,978,731
SURFACE ACOUSTIC WAVE TRANSDUCER

Thomas M. Reeder, Glastonbury, and Anthony J. Demaria, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 25, 1974, Ser. No. 445,193

Int. Cl.² G01L *9/00, 11/00*

U.S. Cl. 73—407 PR **2 Claims**



1. A pressure transducer comprising a dielectric substrate having a pair of thin, flexible diaphragms formed as a portion thereof, said diaphragms being adapted to deform in response to an applied pressure on one side thereof,

first and second pairs of electroacoustic transducers, each transducer comprising a plurality of electrodes disposed on a thin layer of piezoelectric material mounted on said substrate a short distance from said diaphragm such that each pair is mounted on opposite sides of a related one of said diaphragms,
means for actuating first electroacoustic transducers of each pair to generate a pair of series of surface acoustic waves, at least a portion of which propagate across the portion of said substrate including the related one of said diaphragms and intersect a second electroacoustic transducer of the related pair producing a corresponding alternating voltage therein,
and a pair of electronic feedback circuits, one for each pair of transducers, each including an amplifier connecting the second electroacoustic transducer of the related pair with said first acoustic transducer thereof, each of said feedback circuits having a gain greater than unity and producing a feedback oscillation signal at a frequency which is a function of the velocity changes in said surface acoustic waves produced by deformation of the related one of said diaphragms in response to said applied pressure.

3,978,732

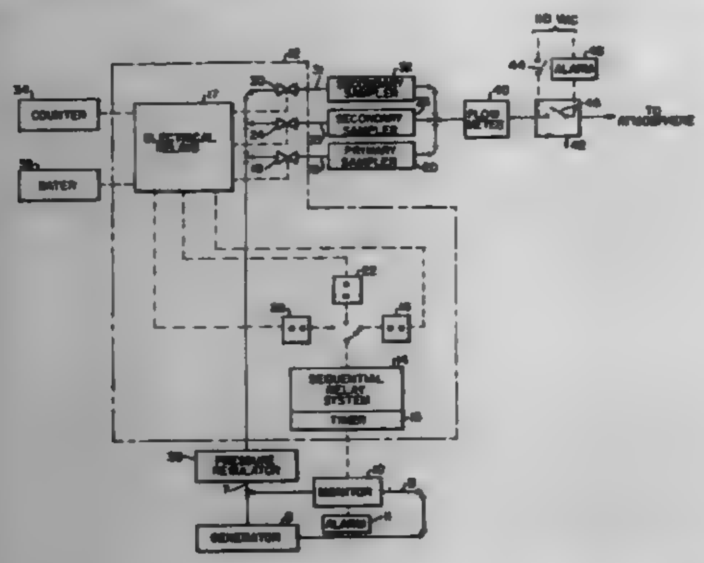
SAMPLING SYSTEM FOR POWER GENERATORS

Thayer L. Dillman, North Versailles, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 1, 1975, Ser. No. 601,579

Int. Cl.² G01N *1/22*

U.S. Cl. 73—421.5 R **9 Claims**



1. A monitoring and sampling system for a fluid subject to introduction of detectable products of deterioration of the fluid enclosure comprising:

- a monitor located in the flow path of said fluid and responsive to a predetermined concentration of said detectable products in said fluid;
- a primary sampler located in a second flow path of said fluid for collecting a single sample by separating said detectable products from said fluid;
- at least one secondary sampler located in a third flow path parallel to said second flow path for collecting at least one additional sample in same manner as said primary sampler;
- valve means responsive to said monitor for permitting flow of said fluid through said primary sampler and not through said secondary sampler during a first time period in which said monitor is detecting said products and through said secondary sampler and not through said primary sampler during a subsequent time period.

3,978,733

SAMPLER FOR EXTRACTING CORE SAMPLES

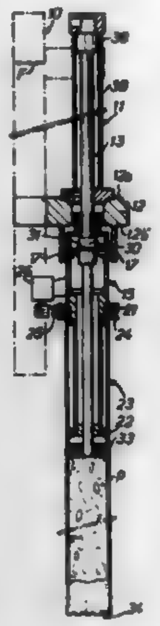
Patrick Paul Avot, Outreau, France, assignor to F. A. P. M. O., Boulogne-sur-Mer, France

Filed Mar. 8, 1974, Ser. No. 449,377

Int. Cl.² G01N *1/08*

U.S. Cl. 73—423 R **8 Claims**

1. A sampler for extracting core samples from a mass, comprising a support, an operating jack including a cylinder fixed to the support and a first piston arranged for displacement in said cylinder, means for admitting pressure fluid to said cylinder to displace said first piston axially in said cylinder, a rod carrying said first piston, a second piston on said rod remote from said first piston, a sleeve member directly received on said rod intermediate said first and second pistons, a core cutter comprising a hollow cylindrical body with a cutting edge at its one end remote from the jack, means mounting said core cutter for axial displacement with and rotation on and relative to said sleeve member, said sleeve member having a portion that projects axially beyond the other end of said core cutter in the direction of said jack, power means mounted on said projecting portion of said sleeve member for rotating said core cutter relative to said sleeve member, said second piston being axially displaceable in said core cutter, and means for selectively securing said projecting portion of said sleeve member to said rod for axial displacement of said core cutter into and out of a mass to be sampled in response to axial displacement of said first piston, and alternatively selectively securing said projecting portion of said sleeve member to said support for axial displacement of said rod relative to said sleeve member for expelling core samples from said core cutter in response to displacement of said first piston toward said cutting edge.



3,978,734

METHOD FOR RECORDING STATIONARY FLOW PATTERNS AT BOUNDARY SURFACES

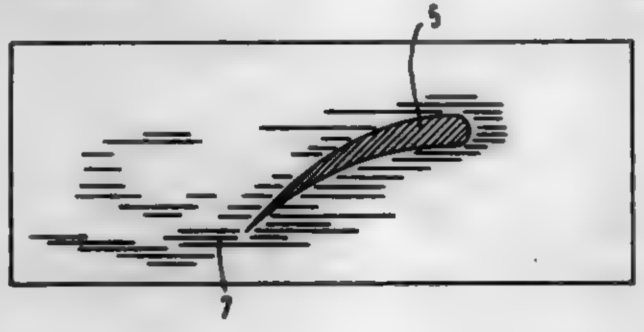
Horst Glüsefeld, Uttenreuth, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 11, 1975, Ser. No. 612,451

Claims priority, application Germany, Sept. 23, 1974, 2545398

Int. Cl.² G01M *1/00*

U.S. Cl. 73—432 R **4 Claims**



1. A method for recording stationary liquid flow patterns at boundary surfaces comprising:

- a. coating the boundary surface at which flow is to be recorded with an attackable layer of lacquer;
- b. dissolving a substance which attacks the lacquer layer in a liquid;
- c. directing said liquid over said boundary surfaces.

3,978,735

ELECTRICALLY ADJUSTABLE VEHICLE ACCESSORY

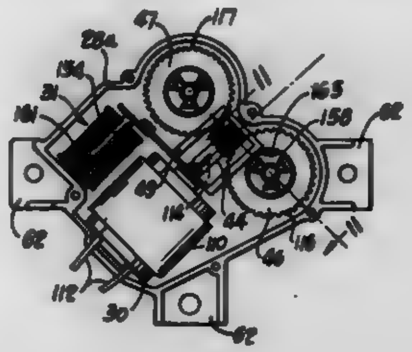
Laszlo N. Repay, Chagrin Falls; Thomas A. Young, Burton, and Andrew A. Amberik, Cleveland, all of Ohio, assignors to Tenna Corporation, Warrensville Heights, Ohio

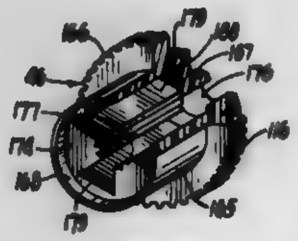
Filed May 16, 1974, Ser. No. 470,570

Int. Cl.² F16H *27/02*

U.S. Cl. 74—89.15 **7 Claims**

1. A drive nut for use with a screw, comprising a body with a central passage in which a screw is receivable, axially extending cavities of the body that open into the passage, means carried by said body in the cavities to act against external threads of a screw in said central passage to drivingly interconnect the body with a screw so that relative rotation between the screw and body will move one relative to the other in a direction axially of the screw, said means being movable from a position at least partially within said passage in engagement with the threads of a screw to a position radially outwardly therefrom out of engagement with the threads in response to relative axial movement between the two without relative rotation or in response to relative rotation between the two without relative axial movement, said means including at least two peripherally displaced members with partial threads, each carried in one of said axially extending cavities, and spring means yieldably resisting movement of the members radially outward of the central passage; each threaded member being of an axial length less than that of the cavities by an amount less than the pitch of the screw to be used, each member being movable axially and radially within the cavity, and the peripheral location of the members being correlated with the axial limits of the respective cavity so that the two inserts abut opposite ends of the respective cavities when threadedly engaged with the screw.





3,978,736

PILGRIM STEP INDEXING MECHANISM

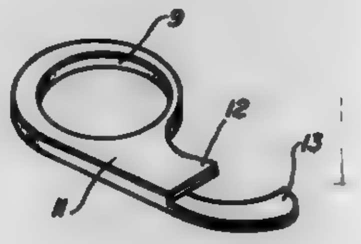
Hans Igelhaut, Leerstetten, Germany, assignor to Triumph Werke Nurnberg A.G., Nurnberg, Germany

Filed May 22, 1975, Ser. No. 579,894

Claims priority, application Germany, Jan. 16, 1975, 2501578

Int. Cl.² F16H *27/02*

U.S. Cl. 74—112 **6 Claims**



1. Indexing mechanism comprising

- a shaft to be indexed,
- a pair of ratchet wheels fixed to said shaft, said ratchet wheels having oppositely facing teeth,
- a single pawl having a pair of spaced teeth operative to engage one and then the other of said ratchet wheels,
- and cyclic means for driving said pawl to rotatively index said ratchets in a first direction through a predetermined angular increment and in a second direction through a larger angular increment.

3,978,737

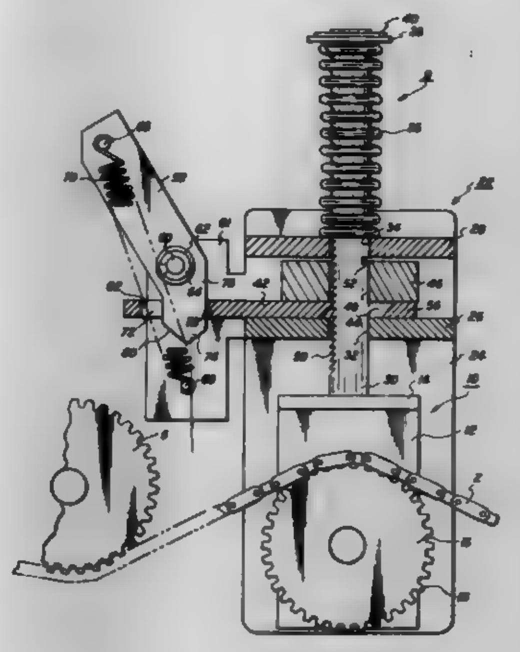
CHAIN TENSIONING DEVICE

Ward E. Bailey, Plano, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 27, 1975, Ser. No. 608,118

Int. Cl.² F16H *7/12, 7/10*

U.S. Cl. 74—242.11 C **10 Claims**



1. A tensioner for an endless member comprising: a support, a shaft mounted for slidable movement in an axial direction on said support, a tension wheel carried by said shaft for rotation about an axis transverse to the shaft axis, means for urging said shaft in an endless member tensioning direction, a detent member slidably mounted on said support for reciprocal movement in a direction transverse to the axis of said shaft, an opening in said detent member through which said shaft extends, first detent means on an axially extending portion of said shaft, second detent means on the opposite side of said shaft, third and fourth detent means on said detent member, said first and third detent means being so constructed and arranged to engage each other and allow movement of said shaft in said tensioning direction and prevent movement thereof in the opposite direction when said detent member is in an endless member tensioning position, said second detent means being axially spaced from said fourth detent means when said detent member is in said endless member tensioning position, said second and fourth detent means being so constructed and arranged to engage each other to prevent movement of said shaft in said endless member tensioning direction when said detent member is out of said endless member tensioning position and in an endless member loosening position, and means for moving said detent member into either said endless member tensioning position or said endless member loosening position.

3,978,738

TOGGLE MANIPULATOR

Michel Naulin, Angouleme, France, assignor to La Telemecanique Electrique, France

Filed Dec. 24, 1974, Ser. No. 536,174

Claims priority, application France, Dec. 26, 1973, 73.46286

Int. Cl.² G05G *9/00*

U.S. Cl. 74—471 XY **5 Claims**

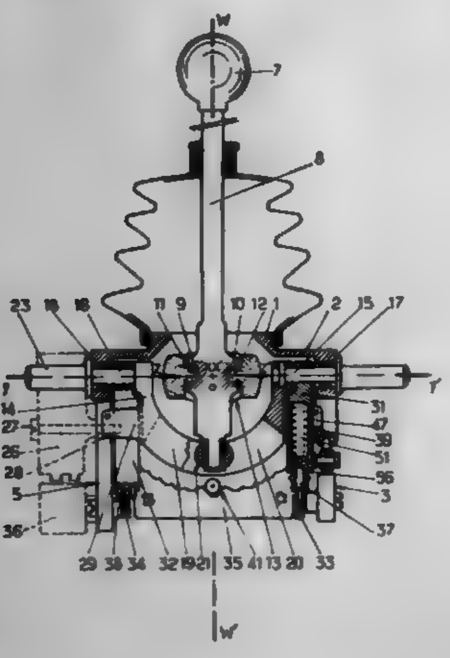
1. A manipulator, for the operation of switches, comprising:

- i. a body
- ii. a first pivoting device pivotably mounted in said body by first pivot means
- iii. a second pivoting device pivotably mounted in said body by second pivot means, the respective pivoting axes of said first and second pivot means being perpendicular and meeting at a point

iv. a control rod mounted on said first pivoting device by means of a bearing the centre of which coincides with said meeting point, said rod having an extension in permanent contact with a portion of said second pivoting device,

v. at least one lever pivotable about one of said pivot means and including an extremity which is radially resilient

vi. a curved concave guide fast with the body and against which said resilient extremity abuts, said guide having a central notch in which the resilient extremity rests in a rest position of the rod



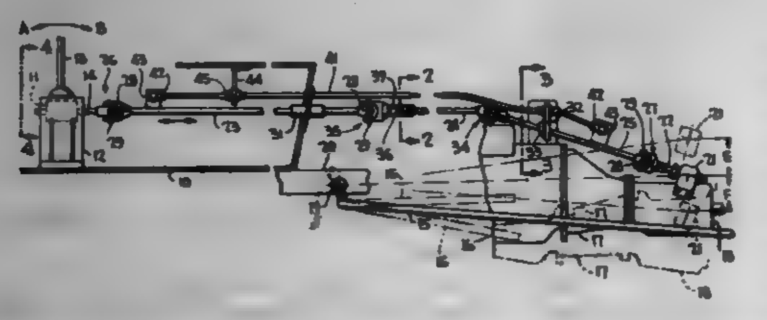
vii. return spring means having first and second ends, said first end being coupled to said lever in the neighbourhood of said resilient extremity, said second end being coupled to the body at a point such that the direction of the spring means makes an angle of 45° with the direction of the lever

viii. a coupling member fast with the first pivoting device and bearing against said lever in a direction corresponding to the extension of said return spring means.

3,978,739
TRANSMISSION SHIFT CONTROL

Dean Hobbensiefken, Rte. 1, Box 241, Lyons, Oreg. 97358, and Michael A. Signa, 1204 Hirsch St., Melrose Park, Ill. 60160

Filed July 23, 1975, Ser. No. 598,289
Int. Cl.² G05G *9/16*
U.S. Cl. 74—473 R **7 Claims**



1. In a transmission shift control mechanism wherein a gear shift actuator is mounted on a main frame and a gear transmission for the engine having a shift control is mounted on a sub-frame, hitch means on said main frame for pivotally connecting said sub-frame thereto, linkage means interconnecting said shift actuator with said transmission shift control, means on said shift actuator connected to said linkage means for linearly and rotationally shifting said linkage means to effect a gear shifting of the gear transmission, said linkage means comprising:

a plurality of links interconnected together for articulated movement about an axis not coincident with the pivot axis of said hitch means;

a coupling on one of said links permitting it to linearly collapse and extend but preventing relative rotational movement between opposite ends of said one link; and

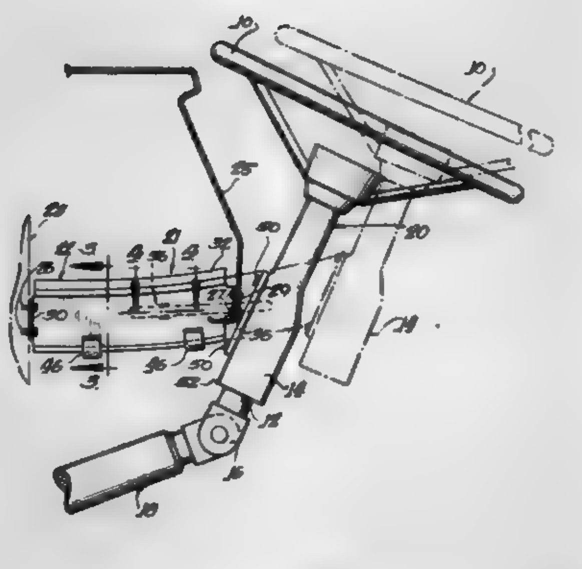
a resilient cable fixedly secured at opposite ends to a forward and to a rearward one of said links so as to span said coupling;

whereby linear and rotational movements of said gear actuator are transmitted to said transmission shift control through said linkage means during pivotal movement of said subframe at said hitch means, said cable shifting linearly to effect said linear movement of said shifting means across said coupling, and said coupling permitting said links to rotate in response to said rotational movement of said shifting means regardless of any linear movement between said opposite ends of said one link.

3,978,740
ADJUSTABLE STEERING COLUMN

Robert J. Seizer, Fort Wayne, Ind., assignor to International Harvester Company, Chicago, Ill.

Filed June 2, 1975, Ser. No. 583,351
Int. Cl.² B62D *1/18*
U.S. Cl. 74—493 **10 Claims**

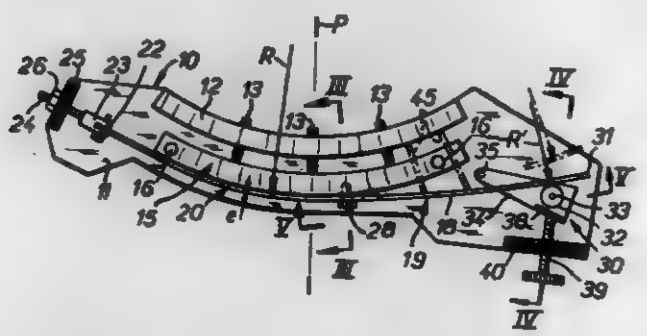


1. An improvement in a steering wheel assembly for a motor vehicle having an upper steering shaft with a steering wheel affixed on the upper end thereof and a shaft support member rotatably supporting said upper steering shaft, said improvement comprising an elongated guide member secured to the body of said motor vehicle and extending transversely towards said shaft support member, said elongated guide member having longitudinally extending arcuate guideway, an elongated slide member secured to said shaft support member and slidably engaged with said guide member, said slide member having longitudinally extending follower portion of the same arcuate configuration as said arcuate guideway, said follower portion being disposed in a slidable interfitting relation with said guideways of said guide member, said arcuate guideway having a curvature shaped to cause the simultaneous two directional movement of said steering wheel in the fore and aft direction and in the up and down direction in response to any displacement of said slide member along said guide member, and lock means for selectively holding said slide member in one of a plurality of pre-set fixed positions along said guide member.

3,978,741
VARIABLE-PROFILE CAM, ESPECIALLY FOR A REPRODUCING MACHINE

Bruno Bettiol, Quincy-Voisins, France, assignor to Essilor International "Cie Generale D'Optique", Joinville-le-Pont, France

Filed Nov. 26, 1974, Ser. No. 527,296
Claims priority, application France, Dec. 4, 1973, 73.43129
Int. Cl.² F16H *53/04*
U.S. Cl. 74—568 R **21 Claims**

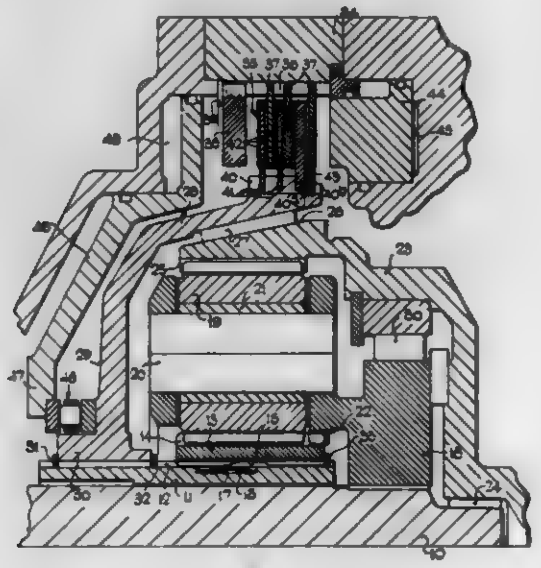


1. A variable profile cam for a machine tool comprising a thin resilient strip having two longitudinal faces, one of the two longitudinal faces of said strip defining a cam surface, two spaced apart support means for supporting a span of said strip for bending therebetween, means for varying the curvature of the strip including adjustment means associated with at least one of said support means for bending said strip elastically generally perpendicularly to its two longitudinal faces, the transverse moment of inertia of the span of said strip being varying lengthwise of said strip intermediate said support means, whereby the curvature of said strip may be adjusted by said adjustment means for determining the profile of said cam surface as desired.

3,978,742
EPICYCLIC GEAR ASSEMBLIES

Randle Leslie Abbott, Tamworth, England, assignor to GKN Transmissions Limited, Birmingham, England

Filed Oct. 23, 1974, Ser. No. 517,196
Claims priority, application United Kingdom, Nov. 8, 1973, 51782/73; Apr. 24, 1974, 17844/74
Int. Cl.² F16H *3/74, 57/10*
U.S. Cl. 74—751 **6 Claims**

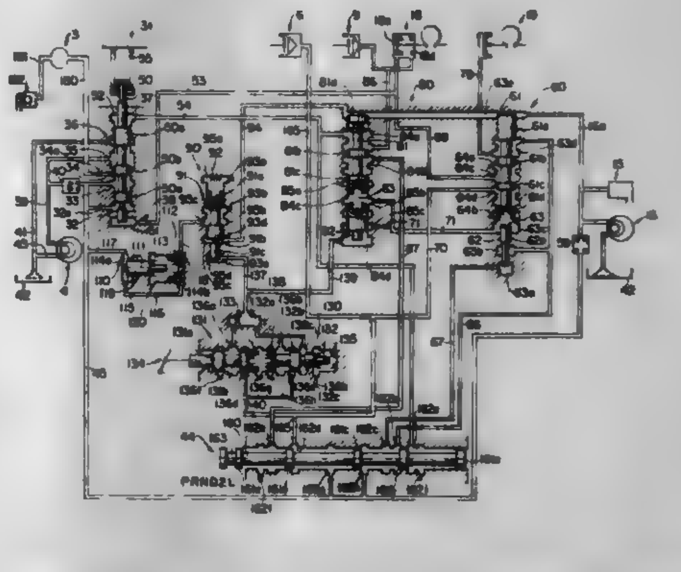


1. An epicyclic gear change assembly comprising: a casing; an epicyclic gearing having three members viz, a sun gear, an annulus gear, and a planet gear carrier carrying planet gears or planet gear clusters which mesh with the sun and annulus gears, the meshing teeth of the gears being of helical form; a friction clutch having an engaged stage in which it frictionally connects two of said members together for rotation and a disengaged stage in which said two members can rotate relatively to one another; locking means for positively locking together two of said members for rotation, said locking means comprising first and second inter-engageable elements relatively movable in directions parallel to the axis of rotation of the sun gear and when engaged locking said members together; spring means for releasably holding said elements out of engagement; said locking means being arranged so that when power is transmitted through the assembly in a predetermined direction and rotational sense the thrust due to the helical form of the teeth automatically tends to displace said elements relatively toward each other in order to engage said elements; actuating means for the clutch and the locking means and selectively operable (1) to disengage the elements and the clutch and (2) to engage the clutch and to allow said thrust to act on the elements to engage them; and brake means for holding one of the elements of the gearing against rotation relative to the casing with the inter-engageable elements disengaged.

3,978,743
FLUID PRESSURE CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

Noboru Murakami, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sept. 16, 1974, Ser. No. 506,330
Claims priority, application Japan, Sept. 27, 1973, 48-104735
Int. Cl.² B60K *41/18*
U.S. Cl. 74—869 **4 Claims**



1. A fluid pressure control system for automatic transmission, comprising:

a fluid pressure source;

a fluid pressure regulating valve for regulating the hydraulic fluid from said fluid pressure source to a particular line pressure;

a plurality of frictional engaging means actuated by said line pressure from said fluid pressure regulating valve for attaining a particular gear ratio within the gear trains of said transmission interposed between an input shaft and an output shaft;

a governor valve for generating a governor pressure which is increased or decreased in response to the rotational speed of said output shaft;

a manual shift valve operatively connected to said fluid pressure regulating valve for supplying said line pressure to said plurality of frictional engaging means;

a throttle valve fluidically connected to said manual shift valve for generating a throttle pressure responsive to an engine throttle valve;

shift valve means actuated in response to said governor pressure and said throttle pressure for automatically selectively actuating said plurality of frictional engaging means; and a pump means to generate an output pressure which is proportional to rotational speed of said engine; and

a creep preventing valve actuated in response to said governor pressure and said output pressure which is proportional to rotational speed of said engine for automatically reducing said line pressure by an amount which is unable to actuate said plurality of frictional engagine means.

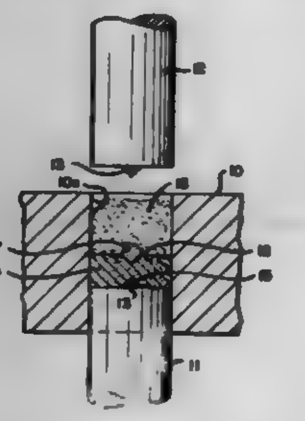
3,978,744
DIAMOND WIRE DRAWING DIE BLANKS AND METHODS OF MAKING THE SAME

Neil J. Zachman, Kokomo, Ind., assignor to Cabot Corporation, Kokomo, Ind.

Filed Mar. 17, 1975, Ser. No. 559,122

Int. Cl.² B21K *5/20*; **B22F** *7/08*

U.S. Cl. 76—107 A **8 Claims**



1. The method of forming diamond wire drawing die blanks comprising the steps of

a. metering substantially one half of a metal powder required to form a shroud around a diamond into a die cavity for receiving powder metal;

b. partially compressing said substantially one half of the metal powder into a flat member of substantially uniform thickness in said die cavity;

c. simultaneous with step (b) forming a central conical shaped depression in the top surface of said compacted powder metal;

d. placing a diamond in said conical depression without removing the compacted powder metal from said die cavity;

e. adding the remaining metal powder required to form a shroud into said die cavity over the diamond and said partially compressed one half without removing the compacted powder metal from said die cavity;

f. compressing said remaining metal powder and said substantially one half of metal powder around said diamond in said die cavity; and

g. sintering said metal powder compact.

3,978,745
NUMERICALLY CONTROLLED AUTOMATIC LATHE

Shoeichi Okamoto, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., [illegible], Japan

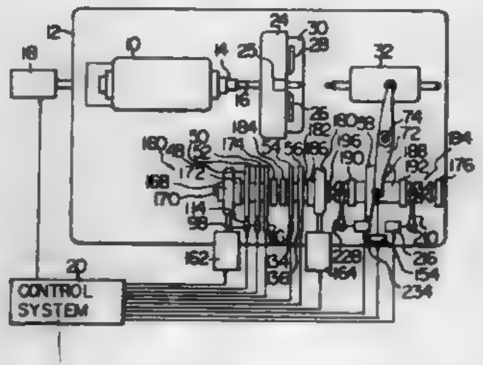
Filed Sept. 25, 1975, Ser. No. 616,707

Claims priority, application Japan, May 27, 1975, 50-62527; July 1, 1975, 50-92052[U]

Int. Cl.² B23B *3/00, 3/28*

U.S. Cl. 82—2 B **9 Claims**

1. A numerically controlled automatic lathe comprising, in combination: a headstock having a rotatable spindle to support a workpiece; a plurality of tool holding means movable toward and away from said workpiece; numerically controlled first and second drive means; a first main cam shaft drivably connected to said first drive means; a second main cam shaft drivably connected to said second drive means; at least one auxiliary cam shaft drivably connectable to one of said first and second main cam shafts; a plurality of master cams having uniform-motion cam lobes and carried on said first, second and auxiliary cam shafts; a plurality of connecting means connected to said plurality of tool holding means, respectively; first means for selectively providing drive connections between those of said plurality of master cams carried on said first and second main cam shafts and corresponding ones of said connecting means; and second means for selectively drivably connecting said auxiliary cam shaft to said one of first and second main cam shafts; said first and second means being operative to drivably connect selected ones of said plurality of master cams to corresponding ones of said plurality of tool holding means whereby selected ones of said plurality of tool holding means may be concurrently fed toward said workpiece at given feed rates.



3,978,746
DEVICE FOR REMOVING FLASH AFTER RESISTANCE BUTT WELDING OF RAILS

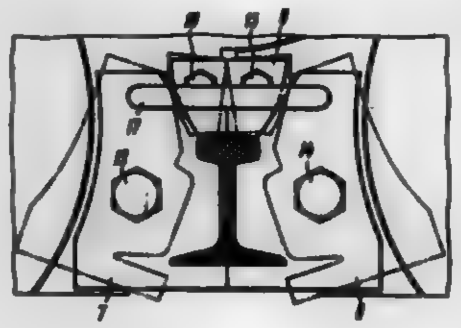
Sergei Ivanovich Kuchuk-Yatsenko, ulitsa Filatova, 1/22, kv. 47; Sergei Alexandrovich Solodovnikov, ulitsa Vernadskogo, 63, kv. 44; Vasily Alexeevich Sakharnov, Bulvar Likhacheva, 3, kv. 64; Ivan Korneevich Golomovzjuk, ulitsa Vetryanaya, 28, kv. 1; Alexandr Ivanovich Kulesh, ulitsa Kudryashova, 6, kv. 39, and Fedor Konstantinovich Porkhun, ulitsa Malaya Kitaevskaya, 73, kv. 56, all of Kiev, U.S.S.R.

Filed May 15, 1975, Ser. No. 577,941

Claims priority, application U.S.S.R., May 30, 1974, 2027967

Int. Cl.² B23C *3/12*

U.S. Cl. 83—1 **1 Claim**



1. A device for removing flash from rails after resistance butt welding mounted on a welding machine, which incorporates cases split along the vertical axis of the rails comprising: three cutters embracing the rail along the entire cross-sectional perimeter thereof and coupled with a hydraulic cylinder drive; one of said cutters pivotally mounted on one of said cases is split along the vertical axis thereof and contacts the rail rolling surface following the shape thereof while the other two of said side cutters embracing the sides of the rail head, the web and the base flange of the rail are arranged symmetrically relative to the vertical axis of said case and hinge-connected thereto, the top portions of side cutters being linked by an articulated rod.

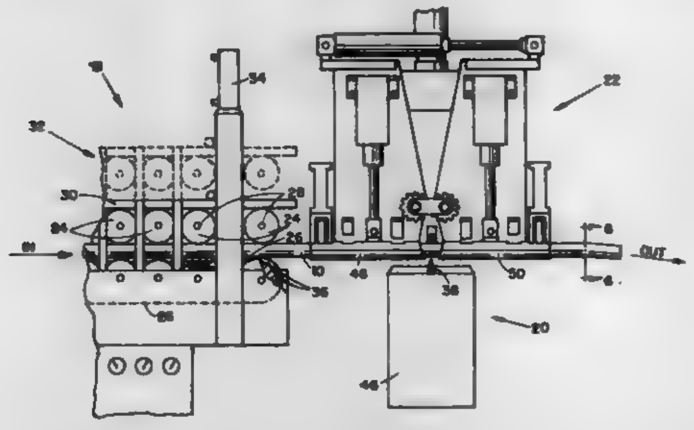
3,978,747
METHOD AND APPARATUS FOR SEVERING REINFORCED ELASTOMERIC TUBULAR ARTICLES

Ivan R. Lyon, Galesburg, Ill., assignor to The Gates Rubber Company, Denver, Colo.

Filed Mar. 24, 1975, Ser. No. 561,400

Int. Cl.² B26D *3/22, 7/14*

U.S. Cl. 83—18 **18 Claims**



1. A method for severing reinforced polymeric generally tubular articles into predetermined lengths comprising:

threading the tubular article axially through a clamping fixture normally having an internal dimension which is greater than the outer diameter of the tubular article, said clamping fixture having longitudinally spaced portions between which is defined a cutting plane substantially normal to the longitudinal disposition of the tubular article;

advancing the tubular article a predetermined distance through the clamping fixture;

clamping the tubular article in the fixture so as to hold it securely, preventing longitudinal displacement thereof;

while continuing to clamp the tubular article as specified above, bending the tubular article in the area immediately proximate to the cutting plane to define a concavo-convex arc surface while simultaneously advancing the convex portion of the concavo-convex surface into contact with a cutting means disposed along the cutting plane;

further bending the tubular article and stretching both the concavo and convex portions of the article longitudinally so that the concavo-convex arc defined thereby is determined by a progressively smaller radius while simultaneously further longitudinally stretching the article and advancing the convex portion of the concavo-convex surface into the cutting means progressively until the tubular article is fully severed.

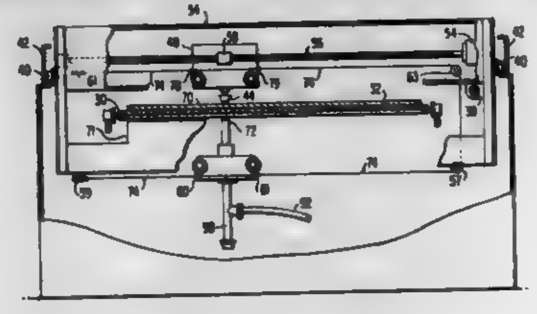
3,978,748
FLUID JET CUTTING SYSTEM

Elmer N. Leslie, and Bobby L. Higgins, both of Dallas, Tex., assignors to Camsco, Inc., Richardson, Tex.

Division of Ser. No. 527,098, Nov. 25, 1974. This application Dec. 30, 1975, Ser. No. 645,158

Int. Cl.² D06H *7/00*; **B26F** *3/00*

U.S. Cl. 83—53 **16 Claims**



1. Apparatus for cutting a workpiece comprising:

a. a source of fluid;

b. means for intensifying the pressure of said fluid coupled to said source;

c. means for supporting the workpiece comprising a plurality of flexible supports;

d. a nozzle movable in relation to said support means;

e. conduit means communicating between said nozzle and said intensifying means for supplying fluid under pressure to said nozzle;

f. means to effectuate a discharge of fluid from said nozzle to cut through the workpiece;

g. means disposed under said support means, on the side of the workpiece opposite the nozzle and movable in correspondence with the movement of said nozzle to receive the fluid discharge from the nozzle and thereby reduce the splashback of fluid on the workpiece;

h. a sensor for determining the distance between the nozzle and the workpiece; and

i. means for moving the nozzle to vary the distance between the nozzle and the workpiece.

3,978,749
CUTTING DEVICE FOR COATED PLATES

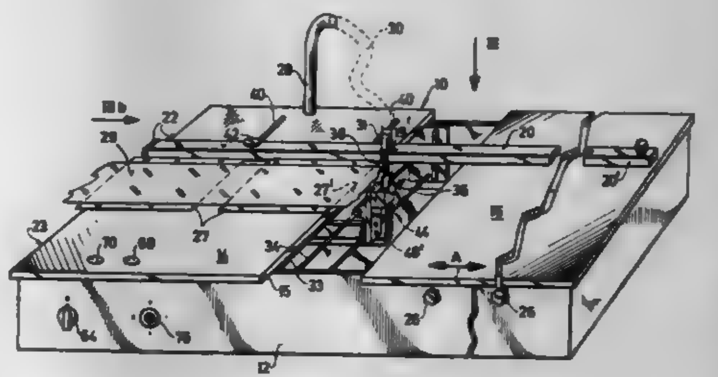
Walther Polenz, Wiesbaden, Germany, assignor to Hoechst Aktiengesellschaft, Germany

Filed Nov. 17, 1975, Ser. No. 632,806

Claims priority, application Germany, Nov. 20, 1974, 2454919

Int. Cl.² B26F *3/08*

U.S. Cl. 83—169 **15 Claims**



1. A cutting device for coated plates comprising frame means,

first stationary cover plate means on said frame means,

second movable cover plate means on said frame means,

heatable knife means adapted to be displaced along one edge of said first stationary cover plate means between said first and second cover plate means,

carriage means below said cover plate means for supporting said knife means,

and means for displacing said carriage means and said knife means supported thereby.

3,978,750
APPARATUS FOR ADJUSTING A FREQUENCY OF AN OSCILLATING ELEMENT PROVIDED A HAIR SPRING

Souichi Inoue, Yokohama; Katsumi Kato, Tokyo, and Yoshiharu Marumo, Matsudo, all of Japan, assignors to Kabushiki Kaisha Seikosha, Japan

Filed June 18, 1975, Ser. No. 587,872

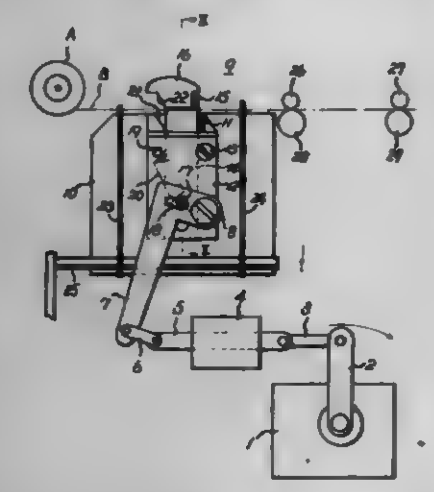
Claims priority, application Japan, June 18, 1974, 49-69499

Int. Cl.² B26D *5/20*

U.S. Cl. 83—208 **2 Claims**

1. Apparatus for adjusting the frequency of an oscillating element provided with a hair spring comprising: a converter circuit which converts into predetermined signal pulses an oscillating output signal of said oscillating element having its oscillation period determined by said hair spring, a first control circuit which controls passage of clock pulses by the

output pulses of said converter circuit, a first counter which counts the clock pulses having passed through said first control circuit, a second control circuit which controls passage of reference pulses, a second counter which counts the reference pulses having passed through said second control circuit, a coincidence circuit which detects coincidence between count contents of said first counter and said second counter, first means to control said second control circuit by the coincidence output and to check said reference pulses to said second counter, and mechanical means to transport said hair spring during the counting operation of said second counter and to cut an unnecessary part of said hair spring after said first counter has counted a predetermined value.



3,978,751

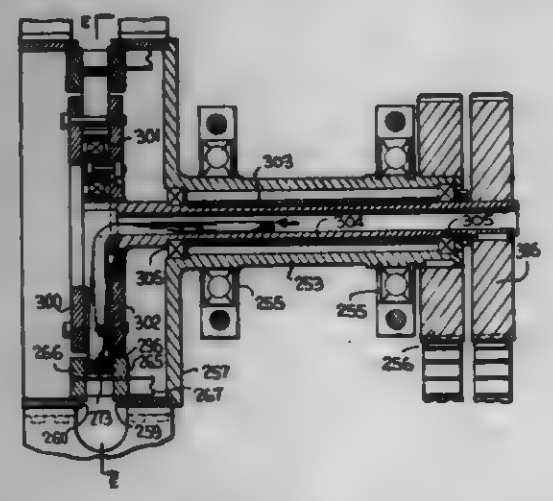
APPARATUS FOR CUTTING FIBROUS TOW INTO STAPLE

Earl T. Farmer, R.F.D. 3, Box 22B5A; Claude R. Keith, R.F.D. 2, Box 68-B, both of Gate City, Va. 24251, and Garland B. Keith, 208 Forest Hills Drive, Kingsport, Tenn. 37663

Filed Oct. 9, 1974, Ser. No. 513,254

Int. Cl.^{2} D01G *1/04*

U.S. Cl. 83—403 **8 Claims**



1. An apparatus for cutting staple fibers, comprising:

A rotatable cam assembly, including a first rotatable shaft, an axial bore in said first rotatable shaft dimensioned to allow passage of a tow there thru, a disc affixed to one end of said first rotatable shaft, a bore centrally positioned in said disc and aligned with said bore of said first rotatable shaft, a plurality of idler rollers axially aligned with said first rotatable shaft and mounted on said disc, and endless belt supported by said plurality of idler rollers, and means for guiding a tow exiting said shaft and disc bores into traction contact with said endless belt; and

a rotatable knife assembly, including a second rotatable shaft, an axial bore in said second rotatable shaft dimensioned to permit passage there thru of said first rotatable shaft, a knife support means rigidly affixed to one end of said second shaft perpendicular to the axis thereof and dimensioned to encompass said rotatable cam assembly thereof, and a knife supported by said knife support means and positioned thereby for cutting engagement with a tow at said traction contact with said endless belt.

3,978,752

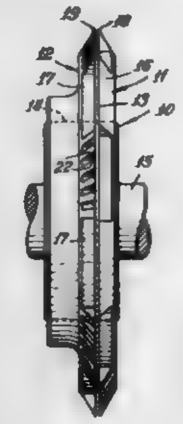
INTERMITTENT PERFORATOR WHEEL

Thomas F. Meaden, LaGrange, and George W. Fieberg, Melrose Park, both of Ill., assignors to Meaden Screw Products Company, Chicago, Ill.

Filed Dec. 29, 1975, Ser. No. 645,283

Int. Cl.^{2} B26F *1/20*

U.S. Cl. 83—678 **11 Claims**



1. An intermittent perforator wheel structure for providing a tearing edge in a workpiece sheet, comprising:

a first wheel having a peripheral cutting edge provided with a plurality of elongated recesses spaced apart by elongated cutting edge portions;

a second wheel having a peripheral cutting edge provided with a plurality of spaced groups of short recesses spaced apart by short cutting edge portions, and a plurality of elongated recesses intermediate said groups; and

means for coaxially securing said wheels with said peripheral edges juxtaposed and with said groups of short recesses of said second wheel aligned one each with said elongated recesses of said first wheel whereby said elongated cutting edge portions of said first wheel comprise means for providing a plurality of spaced elongated slits in a workpiece sheet and said short cutting edge portions of said second wheel comprise means for providing a plurality of spaced short perforation slits in the workpice sheet intermediate the elongated slits cooperatively defining a tearing edge having alternating spaced long slits and groups of short perforation slits.

3,978,753

ADJUSTABLE PERFORATOR WHEEL

Thomas F. Meaden, LaGrange, and George W. Fieberg, Melrose Park, both of Ill., assignors to Meaden Screw Products Company, Chicago, Ill.

Filed Jan. 12, 1976, Ser. No. 648,748

Int. Cl.^{2} B26F *1/20*

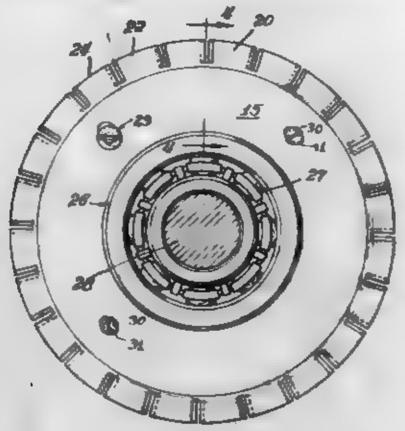
U.S. Cl. 83—678 **13 Claims**

1. A perforator wheel structure for providing adjustable length spaced tear portions in a workpiece sheet, said perforator wheel structure comprising:

a first wheel having a peripheral cutting edge provided with a plurality of circumferentially spaced first slots;

a second wheel having a peripheral cutting edge provided with a corresponding plurality of circumferentially spaced second slots; and

means adjustably coaxially securing said first and second wheels with said cutting edges juxtaposed and with said first slots overlapping said second slots to define nonslitting portions of said perforator wheel structure selectively having any one of a plurality of different lengths.



3,978,754

VOLTAGE CONTROLLED TYPE ELECTRONIC MUSICAL INSTRUMENT

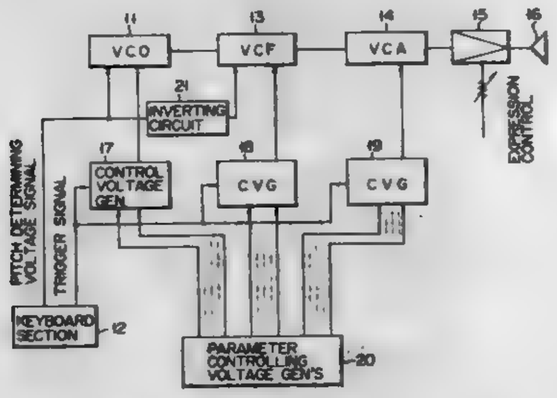
Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Feb. 25, 1975, Ser. No. 552,755

Claims priority, application Japan, Feb. 28, 1974, 49-23925[U]

Int. Cl.^{2} G10H *1/00, 5/02*

U.S. Cl. 84—1.21 **3 Claims**



1. An electronic musical instrument comprising:

a keyboard section including keys and means for generating in response to key operation a pitch determining voltage signal having a voltage representing the note of an operated key and a trigger signal indicative of the actuation of the key;

voltage controlled oscillator means coupled to said keyboard section and responsive to the pitch determining voltage signal to generate a tone signal having a pitch frequency determined by said pitch determining voltage signal;

voltage controlled filter means including a voltage controlled variable cutoff frequency setting means and coupled to said voltage controlled oscillator means and to said keyboard section for imparting a tone color to the tone signal from said keyboard section, said voltage controlled filter means being responsive to the pitch determining voltage signal from said keyboard section to set the cutoff frequency thereof to a low frequency value when said pitch determining voltage signal represents a higher note, and to set the cutoff frequency thereof to a higher frequency value than said low frequency value when said pitch determining voltage signal represents a note lower than said higher note;

control voltage generating means coupled to said keyboard section and responsive to the trigger signal from said keyboard section to generate control voltage waveforms which vary as a function of time and which are coupled to said voltage controlled oscillator means and to said voltage controlled filter means to vary the oscillation frequency of said voltage controlled oscillator means and the frequency characteristics of said voltage controlled filter means, respectively; and

sound reproducing means coupled to said voltage controlled filter means for producing musical sounds.

3,978,755

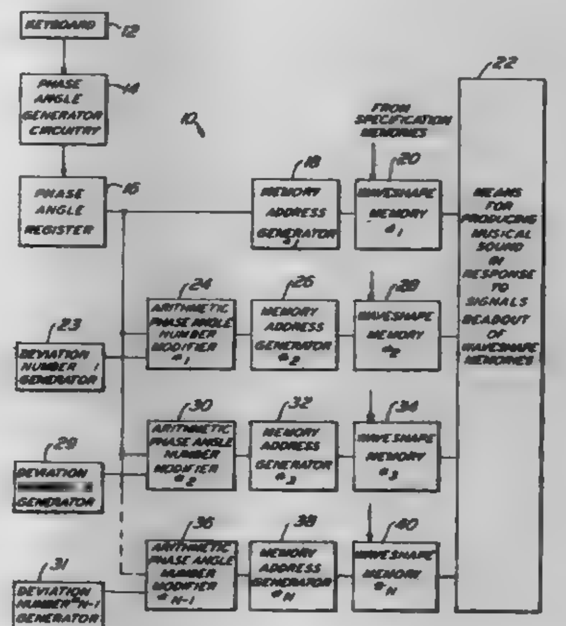
FREQUENCY SEPARATOR FOR DIGITAL MUSICAL INSTRUMENT CHORUS EFFECT

Robert P. Woron, Allentown, Pa., assignor to Allen Organ Company, Macungie, Pa.

Filed Apr. 23, 1974, Ser. No. 463,218

Int. Cl.^{2} G10H *1/04, 5/02*

U.S. Cl. 84—1.24 **6 Claims**


KEYBOARD
12
PHASE ANGLE GENERATOR CIRCUITRY
14
10
PHASE ANGLE REGISTER
16
FROM SPECIFICATION MEMORIES
18
MEMORY ADDRESS GENERATOR #1
20
WAVESHAPE MEMORY #1
22
MEANS FOR PRODUCING MUSICAL SOUND IN RESPONSE TO SIGNALS READOUT OF WAVESHAPE MEMORIES
23
DEVIATION NUMBER 1 GENERATOR
24
ARITHMETIC PHASE ANGLE NUMBER MODIFIER #1
26
MEMORY ADDRESS GENERATOR #2
28
WAVESHAPE MEMORY #2
29
DEVIATION GENERATOR
30
ARITHMETIC PHASE ANGLE NUMBER MODIFIER #2
32
MEMORY ADDRESS GENERATOR #3
34
WAVESHAPE MEMORY #3
31
DEVIATION NUMBER #N-1 GENERATOR
36
ARITHMETIC PHASE ANGLE NUMBER MODIFIER #N-1
38
MEMORY ADDRESS GENERATOR #N
40
WAVESHAPE MEMORY #N

1. An electronic musical instrument having at least two wave shape memory means for storing digital representations of musical voices, means for producing at least two musical sounds in response to wave shape signals read out of said memory means, apparatus for producing a frequency separation between the musical sounds produced in response to wave shape signals read out of said wave shape memory means, comprising:

means for generating a coded digital number corresponding to the frequency of a musical note in response to the actuation of a key of the electronic musical instrument;

means for generating a first memory address signal having a scan rate proportional to said coded digital number for reading wave shape signals out of one of said memory means at a rate proportional to said scan rate;

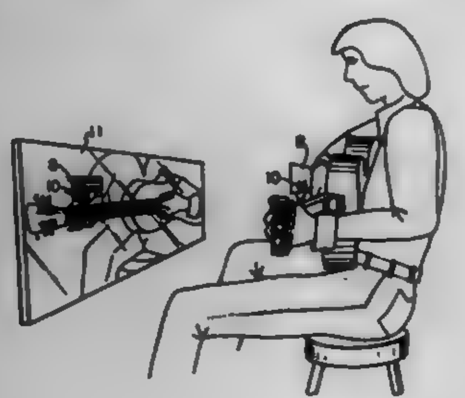
digital arithmetic means for changing the coded digital number output of said number generator by a predetemined value to produce a second coded digital number; and

means for generating a second memory address signal having a scan rate proportional to said second coded digital number for reading wave shape signals out of another memory means at a rate proportional to the scan rate of said second memory address signal.

3,978,756

GUITAR INSTRUCTION SYSTEM

Jerome M. Feldman, Great Neck, N.Y., assignor to Hi-Tech Industries, Incorporated, Jamaica, N.Y.
Filed Aug. 25, 1975, Ser. No. 607,678
Int. Cl.^{2} G09B *15/00*
U.S. Cl. 84—470 10 Claims



1. A guitar instruction system for students learning to play the guitar, said system comprising:

a. a guitar having note indicia adjacent at least some of the frets of the guitar and underlying each of the guitar strings, each of said indicia specifying the letter note of the overlying string when depressed against the adjacent fret, each of said letter notes being written in reverse;

b. a music sheet containing the instructive musical exercise to be practiced, said exercise showing the staff and the notes written in reverse, from right to left on the staff;

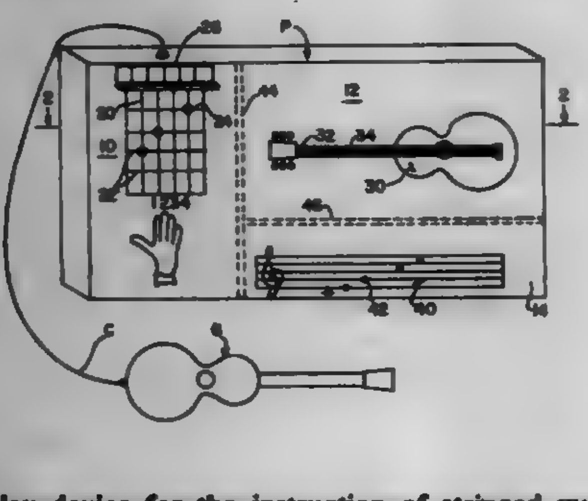
c. a holder for said music sheet fixed to the fingerboard of the guitar for holding the music sheet in upright position and facing away from the student when the guitar is held in the normal playing position; and

d. a mirror for positioning in front of the student and in which the student may observe simultaneously both the music sheet and the fingerboard of the guitar with all indicia appearing in normal orientation for normal reading by the student.

3,978,757

INSTRUCTIONAL DISPLAY DEVICE OPERATED RESPONSIVE TO THE PLAYING OF STRINGED MUSICAL INSTRUMENTS

William T. Johnson, Jr., Winston-Salem, and James B. Joseph, Jonesville, both of N.C., assignors to Sightar Incorporated, Winston-Salem, N.C.
Filed Mar. 19, 1975, Ser. No. 559,791
Int. Cl.^{2} G01G *1/02*
U.S. Cl. 84—485 R 4 Claims



1. Display device for the instruction of stringed musical instruments of the type having a fingerboard comprising:

a. a display panel having thereon a representation of a chord diagram with a plurality of intersecting vertical and horizontal lines representing strings and frets and a representation of at least the fingerboard portion of said stringed instrument with a plurality of intersecting vertical and horizontal lines representing strings and frets, said chord diagram and said fingerboard representation being selectively activated;

b. a first light indicating means comprising indicator lamps mounted behind each of said line intersections on said chord diagram;

c. a second light indicating means comprising indicator lamps mounted behind at least some of the line intersections on said fingerboard diagram;

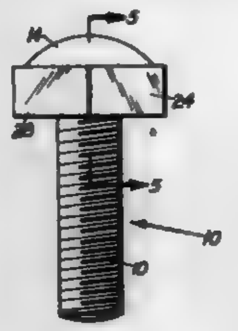
d. electrical means connecting the lamps in said first and second light indicating means with said musical instrument, said electrical means being activated responsive to the depression of the strings of said musical instruments to illuminate corresponding ones of said lamps; and

e. said electrical means further comprising a circuit locking means selectively operable for causing at least one of said light indicating means to remain illuminated upon depression of further string combinations.

3,978,758

BOLT AND PROCESS OF FORMING SAME

William L. Bright, 0605 SW. Curry St., Portland, Oreg. 97201
Continuation of Ser. No. 459,945, April 11, 1974, abandoned.
This application May 29, 1975, Ser. No. 581,879
Int. Cl.^{2} B21K *1/46*; F16B *23/00*
U.S. Cl. 85—9 R 3 Claims



1. A bolt construction comprising,

a. a body member having opposite ends,

b. a head on one end of said body member having an undersurface,

c. said body member having an unthreaded shank portion extending integrally from the undersurface of said head through a portion of the length of the body member,

d. lateral projecting means on said unthreaded shank portion adjacent to the undersurface of said head,

e. said body member having a threaded shank portion extending integrally from said unthreaded shank portion through the remaining portion of the body member,

f. said projecting means extending laterally outwardly beyond the threaded surface of said threaded shank portion,

g. an auxiliary bolt head having an upper surface,

h. said auxiliary head having an axial opening larger in diameter than said threaded shank portion so as to receive the latter during construction of the bolt and smaller in diameter in at least a portion thereof relative to a lateral dimension of said projecting means,

i. said auxiliary head having a non-rotatable securement on said body member with its upper surface in engagement against the undersurface of said bolt head by a forced penetration in an axial movement during bolt construction of said lateral projecting means into the portion of said auxiliary head that defines said axial opening in said auxiliary head,

j. an inwardly swaged portion on a bottom portion of said auxiliary head around its axial opening gripping said body member and further locking said auxiliary head on said body member,

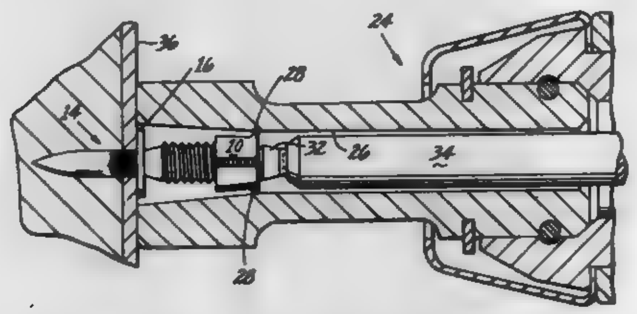
k. said auxiliary head being of greater thickness than the length of said unthreaded shank portion so that said auxiliary head overlaps a portion of said threaded shank and said swaged portion grips in a portion of said threads,

l. and a peripheral wrench-engaging surface on said auxiliary head arranged to receive a tool, whereby a turning force can be applied to the bolt.

3,978,759

CONTRACTIBLE GUIDE FOR STUDS

Andrew G. Bakoledis, Clinton, Conn., assignor to USM Corporation, Boston, Mass.
Filed Mar. 7, 1975, Ser. No. 556,299
Int. Cl.^{2} B25D *17/00*
U.S. Cl. 85—10 E 2 Claims

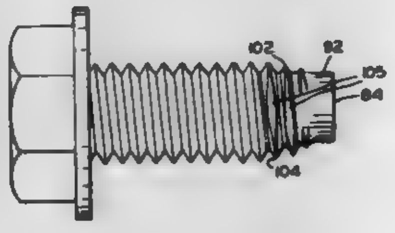


1. A muzzle-loading fastener assembly of the type drivable by a powder actuated tool comprising a fastener having a threaded trailing end portion, and a tubular combination guide and protector of deformable material strippable from covering relation with said threaded portion by radial removal therefrom, said guide-protector being resilient and formed with only one axial slit extending the entire distance between its extremities, and having an axial edge portion to be seized for effecting the removal, and having a plurality of external projections extending outwardly from said threaded trailing end portion and adapted to frictionally retain the fastener for loading in a muzzle bore of said tool.

3,978,760

SELF-THREAD FORMING THREADED FASTENERS AND BLANKS FOR MAKING SAME

Herman M. Muenchinger, South Dartmouth, Mass., assignor to Research Engineering & Manufacturing, Inc., New Bedford, Mass.
Continuation-in-part of Ser. Nos. 3,985, Jan. 19, 1970, Pat. No. 3,681,963, and Ser. No. 253,974, May 17, 1972, Pat. No. 3,803,889. This application Jan. 14, 1974, Ser. No. 432,957
Int. Cl.^{2} F16B *25/00*
U.S. Cl. 85—47 7 Claims

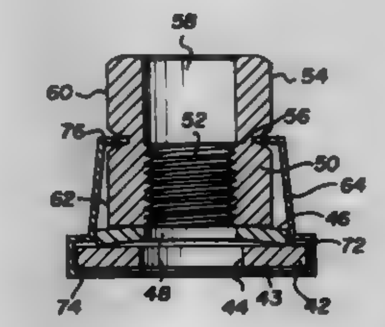


1. A thread-forming screw fastener comprising a threaded shank portion, a tapered thread-forming portion, and a lead portion, said thread-forming portion being intermediate the shank portion and the lead portion, the shank portion and the lead portion being cylindrical, the diameter of the lead portion being less than the diameter of the shank portion, the thread-forming portion diverging from the lead portion in a substantially conical configuration, the axis of a cone circumscribing the thread-forming portion being offset from and parallel with the axis of the lead portion whereby the thread-forming portion and the lead portion are eccentric relative to one another to provide a lobe on a portion of the periphery of the thread-forming portion, a thread-forming portion and the lead portion intersecting along a line which extends at an acute angle with respect to the axis of the lead portion whereby all planes transverse to the axis of the lead portion and extending through said line intersect both the lead portion and the thread-forming portion, the thread-forming portion having a partially formed thread with a substantially fully developed crest on the lobe, the thread on the thread-forming portion being a continuation of the thread on the shank portion.

3,978,761

FASTENER ASSEMBLY

Charles W. Sosinski, Linden, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed June 26, 1975, Ser. No. 590,629
Int. Cl.^{2} F16B *31/02*
U.S. Cl. 85—61 4 Claims



1. A fastener assembly comprising: a flat washer having a first face arranged to be placed adjacent the surface about a threaded stud, a second face and a passage therethrough from said first face to said second face; an elastically deformable washer at least partially overlying said second face of said flat washer having a passage therethrough communicating with said passage of said flat washer; a nut at least partially overlying said elastically deformable washer having a threaded passage therethrough communicating with said passage in said elastically deformable washer; drive means coupled to and spaced apart from said nut; said drive means having a passage therethrough communicating with said passage of said nut; a shroud having a first end extending into the interspace between said nut and said drive means and a second end adjacent said first face of said flat washer; said shroud also having an exterior surface and an interior surface; and an annular ring on said interior surface adjacent said second end, said annular ring having an upper inclined surface in contact with the edge of said flat washer first face to hold said nut, said elastically deformable washer and said flat washer in assembly and as said nut is tightened on a threaded stud to cause said shroud second end to be enlarged and remove said annular ring from said edge of said first face and engage the outer periphery of said flat washer to permit said first face of said flat washer to engage the surface about the threaded stud upon which said nut is tightened.

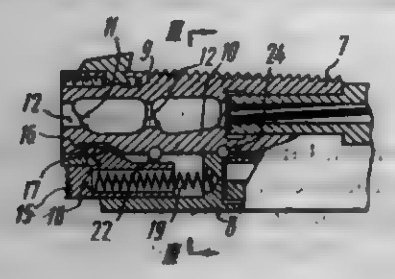
3,978,762

COMPENSATOR FOR SPORTING FIREARMS

Efim Leontievich Khaidurov, ulitsa Glagoleva 25, korpus 2, kv. 138, Moscow, and Vladimir Alexandrovich Razorenov, ulitsa Ponomareva 4a, kv. 51, Minsk, both of U.S.S.R.
Filed May 16, 1974, Ser. No. 470,556
Int. Cl.^{2} F41C *21/18*; F41F *17/12*
U.S. Cl. 89—14 C 4 Claims

1. A compensator for sporting firearms, which utilizes the energy of the powder gases to reduce the jumping of the firearms at shooting, comprising: a case having top and bottom bars spaced a certain distance apart, said bottom bar being somewhat wider than said top bar, said case being open on its top and both sides; crosswise baffle plates to link said

bars, being tilted in the forward direction with respect to the longitudinal axis of the compensator so that when a shot is fired the gases are deflected upward, said baffle plates being trapezoidal in shape with the base upwards, and provided with holes for a bullet to pass therethrough, and also having a width exceeding that of said top bar; a cover attached to said case and embracing it over its bottom and both sides, the inner side surfaces of said cover serving as side deflecting surfaces of the compensator; gas outlet holes on the top of the compensator, formed by said inner side surfaces, said top bar and said baffle plates; and wherein said case, said cover and said deflecting surfaces constitute means for resolving the pressure of the gases applied to said deflecting surfaces into horizontal and vertical components, the former acting in opposite directions and balancing out each other, whereas the latter are directed downward, are added together, and counteract the force that would tend to move upward the firearms.



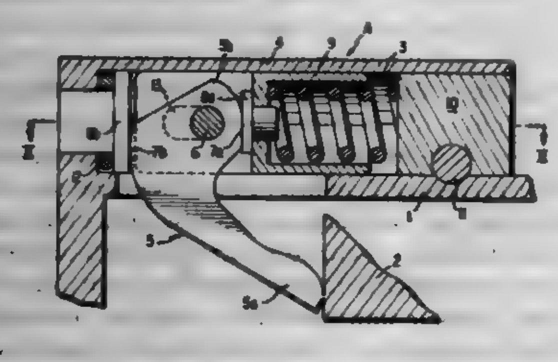
3,978,763
BUFFER DEVICE FOR A SELF-LOADING SMALL ARM
Paul Emile Francois Teille, Saint-Etienne, France, assignor to Delegation Ministerielle pour l'Armement, France

Filed Apr. 14, 1975, Ser. No. 567,872

Claims priority, application France, May 21, 1974, 74.17551

Int. Cl.² F41D *11/12*

U.S. Cl. 89—198 14 Claims



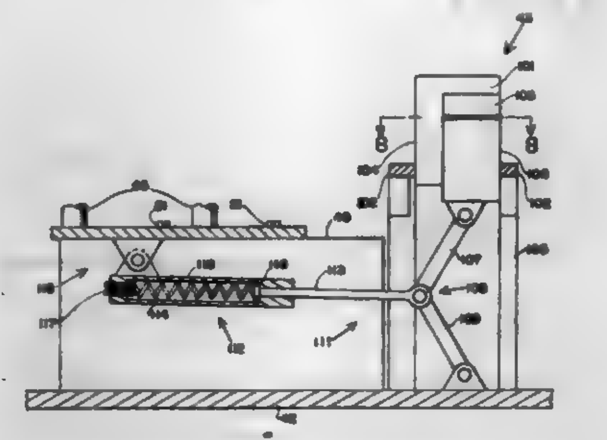
1. A self-loading small firearm, comprising:
a. a receiver including a movable recoilable assembly which reciprocates longitudinally in the firearm; and
b. a buffer device, connected to the rear of said receiver, including a housing which is offset with respect to the axis of the firearm and connected at the same level as the rear of said receiver, an elastic device, connected within said housing, for absorbing part of the recoil energy of said movable assembly towards the end of a recoil stroke of said movable assembly, and means for transmitting the recoil energy of said movable assembly to said elastic device, said transmitting means including a step-down lever having a pivot pin connected within and in the transverse direction of said housing, a large arm protruding into said receiver and a small arm having a first cam, and a first stop connected within said housing and contacting said first cam, said small arm cooperating with said elastic device via said first cam and said first stop, wherein said pivot pin is located with respect to all points of contact of said first cam and said first stop such that the central axis (O) of said pivot pin is located outside but in the immediate vicinity of a predetermined maximum angle of friction (α) for the points of contact.

3,978,764
AUTOMATIC KEY DUPLICATING APPARATUS
George P. Patriquin, Gardner, Mass., assignor to Hudson Lock, Inc., Hudson, Mass.

Division of Ser. No. 394,500, Sept. 5, 1973, Pat. No. 3,865,011. This application Nov. 29, 1974, Ser. No. 528,222

Int. Cl.² B23C *1/16*

U.S. Cl. 90—13.05 6 Claims



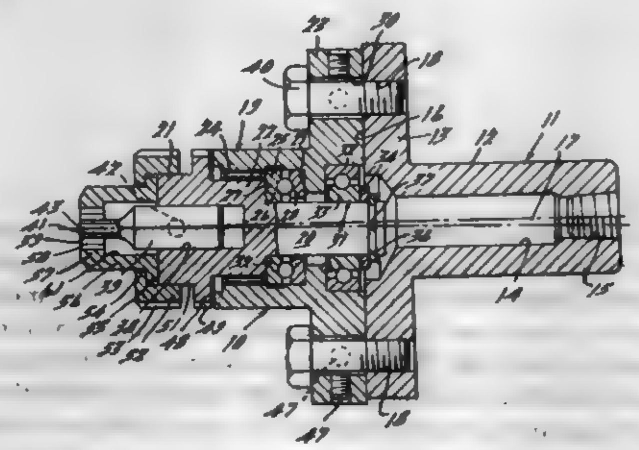
1. A key duplicating machine comprising:
a base;
a sample vise for receiving and retaining a sample key to be duplicated;
a blank vise for receiving and retaining a blank key;
clamp means for opening and closing said sample vise means and said blank vise means, said clamp means comprising spring compensation means for variably yielding to closure forces on said clamp means so as to accommodate sample keys and key blanks of different thickness inserted in said vises, said clamp means further comprising toggle joint means for exerting closure forces on said vises; said toggle joint means comprising a pair of toggle links, one having one end secured to said base and another having one end secured to said vise means, and a pivot connection between the opposite ends of said one and another toggle links;
adjustable bias means for preloading said spring compensation means so as to provide an adjustable, predetermined initial contact pressure in said vise means; and
drive means for applying closure forces to said clamp means.

3,978,765
INTERNAL AND EXTERNAL CUTTING TOOL
John R. Scaduto, 14460 E. State Fair, Detroit, Mich. 48205

Filed July 7, 1975, Ser. No. 593,687

Int. Cl.² B23D *13/00*

U.S. Cl. 90—24 R 3 Claims



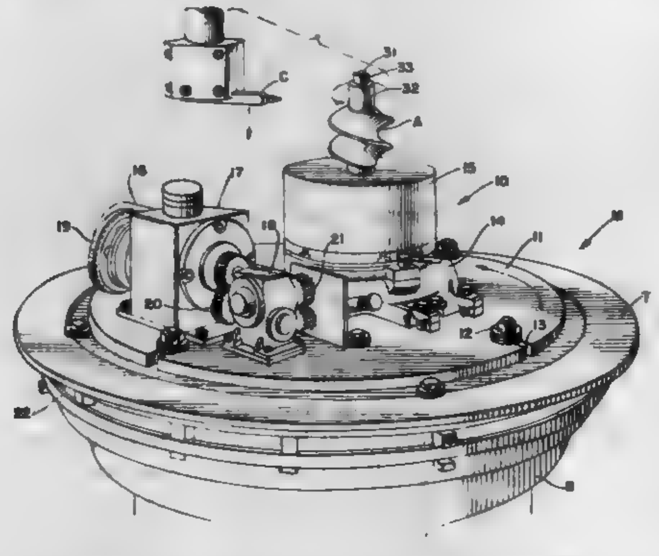
1. In a cutting device for forming the internal and external surface of a workpiece, an adaptor having a supporting shank and a flange at one end having a face which slopes relative to the axis of the shank, a tool holder having a flange engaging said adaptor flange, a rotatable spindle supported within the holder and having a central aperture for receiving a tool, a tool for said aperture, a clamping element about said tool holder and threaded thereon for adjustably supporting a second tool which machines the outer surface of a workpiece, whereby the cutting device is advanced toward a workpiece and is driven in rotation thereby on an axis of the spindle for cutting both an internal and external surface simultaneously.

3,978,766
APPARATUS AND METHOD FOR MACHINING CONTINUOUS MIXER AGITATORS AND THE LIKE
Ambrose K. Brennan, Jr., and Norris H. Whisler, both of York, Pa., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Feb. 3, 1975, Ser. No. 546,817

Int. Cl.² B23D *5/04, 5/00*; B23B *3/00, 1/00*

U.S. Cl. 90—24.5 8 Claims



6. The method of machining a desired profile into a self-wiping, corotating, continuous mixer agitator, having opposite, convex, curved flanks, and opposite crests, comprising the steps of determining the size of the crests desired and determining the radius of curvature desired for the flanks, measuring the offset of the center for the radius of curvature of the flanks from the center of the agitator, providing an attachment for a vertical boring mill or lathe and the like, wherein the attachment includes a rotary indexing table, supporting the agitator to be machined on the rotary indexing table, positioning the center of the rotary indexing table a distance from the center of the vertical boring mill or lathe and the like a distance equal to the aforesaid offset, setting the rotary indexing table to a predetermined first setting to machine at least one flank of the agitator, and energizing the vertical boring mill or lathe and the like and substantially simultaneously therewith energizing the rotary indexing table to effect rotation of the rotary indexing table about its axis and also to effect rotation of the vertical boring mill or lathe and the like to thus obtain orbital motion of the agitator and movement of the agitator relative to a cutting tool to machine at least one flank of the desired profile therein.

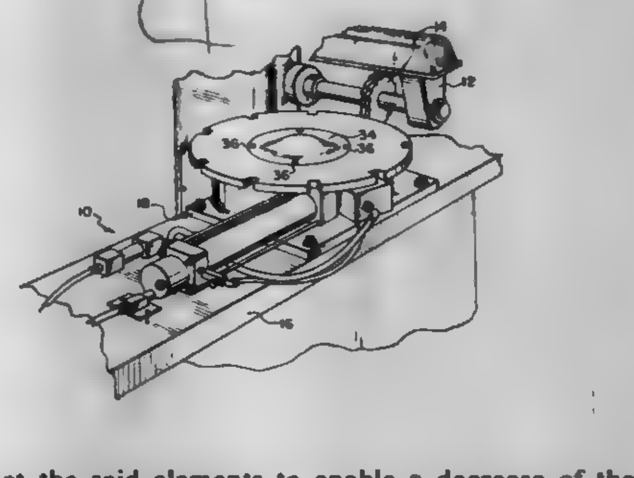
3,978,767
AUTOMATIC CENTER HOLDING FIXTURE FOR AN ANNULAR WORKPIECE
Morris B. Levin, Chicago, Ill., assignor to Joel C. Levin, University City, Mo.

Filed July 11, 1974, Ser. No. 487,626

Int. Cl.² B23B *31/40*; B23Q *1/16*

U.S. Cl. 90—58 B 9 Claims

1. Apparatus for gripping the interior surface of an annular opening in the center of a generally circular workpiece including in combination:
a baseplate having a shaft passing therethrough perpendicular to the plane of said plate and means responsive to the application of fluid pressure axially to move said shaft;
a set of generally arcuate gripping elements circularly positioned about said shaft and coaxial therewith, the elements being circumferentially spaced apart, said elements being slidable upon said baseplate radially of said shaft and each element having an interior radial camming surface and an exterior radial gripping surface, the combined gripping surface generally defining a cylinder, each element has oppositely opening slots on its peripheral ends spaced inwardly of the gripping surfaces,
spring bias means secured to said baseplate and positioned thereon in relation to said gripping elements normally to exert radially inward pressure on the elements tending to contract the said elements to enable a decrease of the diameter of the cylinder defined by the combined gripping surfaces, the bias means comprise leaf spring means secured to said baseplate and extending between the opposed slots of adjacently positioned elements and bearing against the radially inward surfaces of said slots for exerting said radially inward pressure,
an actuating member secured to said shaft above the baseplate and movable in response to said shaft movement to cooperate with the camming surfaces on said elements for moving said elements to slide radially outwardly against the inward pressure of said spring bias means whereby to tend to increase the diameter of the cylinder defined by said gripping surfaces to enable said exterior gripping elements frictionally to engage the annular opening of a workpiece disposed on said baseplate.

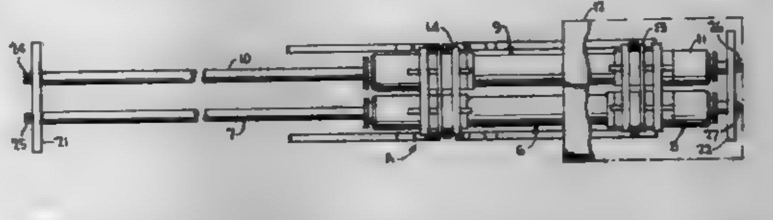


3,978,768
TRANSFER FEED SYSTEM
Joseph D. Ringkamp, Clarks Summit, Pa., assignor to Acker Drill Company, Inc., Clarks Summit, Pa.

Filed Nov. 4, 1974, Ser. No. 520,895

Int. Cl.² F15B *11/18, 13/07*

U.S. Cl. 91—189 R 10 Claims



1. Apparatus for transporting a work member over a predetermined path in such a manner as to minimize the required installation dimension of the apparatus, the apparatus comprising:
means capable of being coupled to the work member for transporting the work member over a portion of said path;
means for maintaining the work member in a coupling arrangement in which it is propelled by said transporting means;

- further means capable of being coupled to the work member for transporting the work member over another portion of said path; and,
- means for sequentially decoupling the work member from the coupling arrangement in which it is propelled by said transporting means and transferring the work member into a coupling arrangement in which it is propelled by said further transporting means, said transporting means and said further transporting means in at least one position thereof being capable of overlapping arrangement.

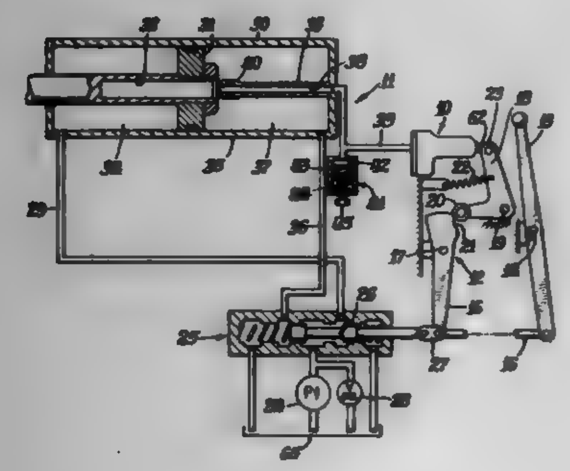
3,978,769
BUCKET POSITIONER KICKOUT SLAVE CYLINDER

Ralph R. Day, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 507,262, Sept. 19, 1974, abandoned. This application Mar. 11, 1976, Ser. No. 665,943

Int. Cl.² F15B *13/16, 15/22*

U.S. Cl. 91—358 A **4 Claims**



1. In a position control apparatus, a detent mechanism, spring means for biasing said detent mechanism, operator means responsive to fluid pressure to move to an operating position preselected to cause operation of the detent mechanism, and regulator means for limiting the fluid pressure to a preselected operating pressure at least equal to that required for operation of the detent mechanism by the operator means, the improvement comprising means for limiting movement of the operator means beyond said operating position to an accurately preselected limit position, said movement limiting means comprising means for discharging pressurized fluid from the operator means to limit the fluid pressure therein to a preselected maximum pressure greater than said operating pressure when the operator means is at said preselected limit position, said operator means comprising means defining a pressure chamber, a piston movable in said chamber, means defining an inlet to said chamber for delivering the pressurized fluid thereto for moving said piston, and spring means in said chamber biasing the piston against movement by the pressurized fluid, and said movement limiting means comprising outlet means for discharging pressurized fluid from said chamber when said piston moves to the preselected limit position, said outlet means including a passage through said piston and means forming a portion of said chamber means for maintaining said passage closed until the piston reaches said limit position.

3,978,770
PRESSURE FOLLOW-UP CONTROL MEANS FOR SERVO-STEERING SYSTEMS, AND THE LIKE

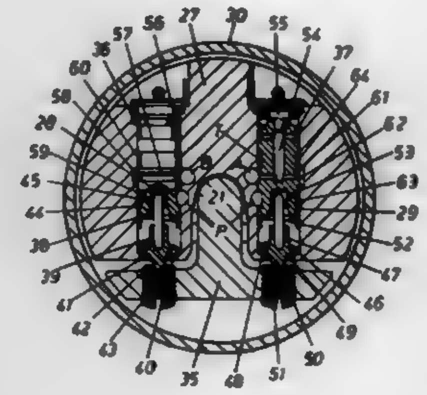
Günther Strauff, Kaarst, Germany, assignor to Langen & Co., Dusseldorf, Germany

Filed Dec. 2, 1974, Ser. No. 528,775

Claims priority, application Germany, Dec. 13, 1973, 2361893; Apr. 9, 1974, 2417194

Int. Cl.² F15B *9/10*

U.S. Cl. 91—372 **16 Claims**



1. In a pressure follow-up control system for servo-steering systems, and the like, comprising, in combination: (a) a fluid servo motor provided with a pair of separated working chambers; (b) a pair of control valves arranged for interchangeably connecting th working chambers of the servo motor with a pressure source and an outflow means, each control valve including a housing; (c) an activating member connected to both of the control valves for operating same, the control valves being connected to the working chambers of the servo motor for sensing pressure in the working chambers and forming pressure-regulating valves having control pistons provided with reaction areas receiving pressure from the working chambers, the valves being arranged for producing a connection between the pressure source and either one of the working chambers when the pressure on the associated reaction area falls below a predetermined value, and for increasingly throttling the connection between the pressure source and either one of the working chambers until the connection is blocked when the pressure in the working chamber increases beyond a predetermined limit, and connect the working chambers to the outflow means when the pressure increases further; and (d) springs arranged in the control valves for regulating same; the improvement in which the springs are prestressed relative to the pressure regulating valve at least in that positions of the valves which block the fluid connections, and the springs are self-supported by ends of the springs being arranged facing the activating member for permitting the entire spring force to be first received by the activating member alone, while below an activating force limit, at least one component of each of the springs is supported by the housing of the control valve, so that the bias on the one component increases, based on the activating force limit during a reduction of the activating force, and reaches a maximum when power-flow between the activating member and the associated regulating spring is interrupted.

3,978,771
MECHANICAL PISTON RETENTION FOR FREE WHEELING

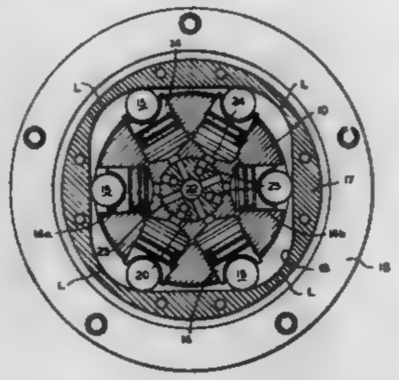
Thomas R. Burnight, and Donald A. Holtkamp, both of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Apr. 21, 1975, Ser. No. 570,335

Int. Cl.² F01B *13/06*

U.S. Cl. 91—491 **4 Claims**

1. A fixed displacement fluid pump or motor having a plurality of pistons reciprocable in a plurality of cylinders, means normally in driving or driven contact with said pistons, valve means operable normally to cycle pressure fluid to said cylinders to operate said pistons and to prevent the pistons from being actuated out of contact with said driving or driven means, outwardly tapered wall means formed in each of said cylinders axially inwardly of the normal inner ends of the strokes of the respective pistons, locking means located on the respective pistons adapted to lockingly engage said tapered wall means in a free-wheeling condition of operation in which said pistons are actuated by inward momentum thereof only under certain conditions of relatively low fluid operating pressure in said cylinders to positions inwardly of one ends of the normal piston strokes wherein said locking means engage said tapered wall means, the pressure fluid conducted to said cylinders by said valve means in normal operation preventing the locking means from engagement with said tapered wall means, said pistons being actuated normally by said driving or driven means into positions closely spaced from the tapered wall means, said locked condition of said pistons under said condition of relatively low fluid operating pressure in said cylinders causing said pistons to be held continuously in positions out of contact with said driving or driven means.



3,978,772
PISTON SHOE FOR FLUID PRESSURE PUMP MOTOR

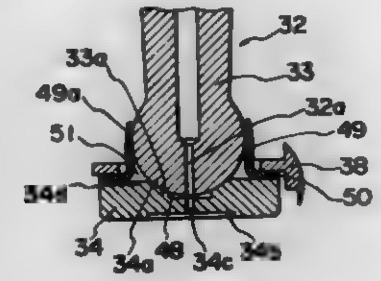
Takayuki Miyao; Hiroaki Maeda, both of Toyota, and Masanori Sato, Nagoya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 19, 1974, Ser. No. 443,518

Claims priority, application Japan, Feb. 16, 1973, 48-19597

Int. Cl.² F01B *31/10*

U.S. Cl. 92—158 **6 Claims**



1. A piston shoe for fluid pressure pump motors of the piston type, comprising:

- a substantially flat, plate-type shoe having a concave portion, for seating a convex portion of a piston rod, defined within one end surface therof and a substantially planar portion for contacting a sliding surface of a swash plate at the other end thereof;
- a malleable holder capable of being worked so as to have a configuration corresponding to that of said convex portion of said piston and thereby support, and be caulked to, said convex portion of said piston rod at one end thereof, said holder being separate from, yet capable of being worked so as to have a configuration corresponding to that of said shoe and thereby be relatively immovably held in contacting relation with said shoe at the other end thereof; and
- discharging means defined within said shoe for discharging the hydraulic fluid within a chamber defined by said shoe, said holder, and said piston.

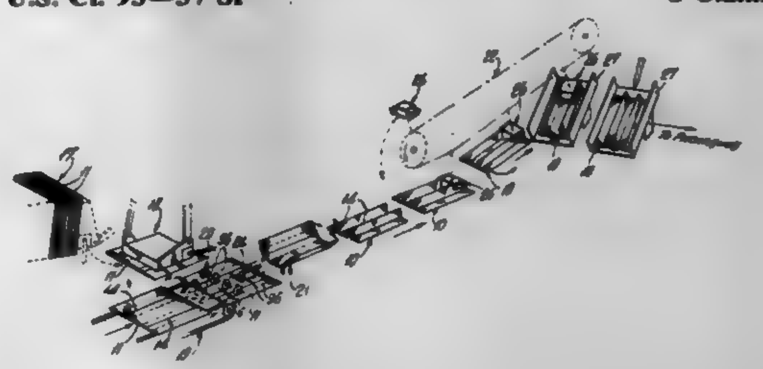
3,978,773
PACKAGE LINER FORMING AND FEEDING APPARATUS

Albert Anthony Pinto, 6 Willows Lane, White Plains, N.Y. 10605

Filed Nov. 29, 1974, Ser. No. 528,424

Int. Cl.² B31B *1/04;* B31D *3/04*

U.S. Cl. 93—37 SP **3 Claims**



1. Apparatus for forming package liners from flat sheets and depositing the formed liner into inclined buckets of a continuously moving bucket conveyor comprising in combination a magazine for holding the flat sheets, means for creasing said sheets, means for individually removing said sheets from said magazine and feeding them through said creasing means, folding means for folding said sheets along said crease lines including plow elements and upper and lower conveyor belts for gripping the upper and lower surfaces of each sheet to draw the sheet past said plow elements, and overhead conveyor means including a plurality of heads spaced along the length thereof for gripping the formed liners and carrying the liners to the bucket conveyor, said overhead conveyor being arranged at an angle to the bucket conveyor and including means for positioning said heads to align said formed liners with said buckets, said creasing means dividing said sheets into panels and said folding means folding said sheets to form upright walls on either side of a panel,

said heads of said overhead conveyor means including a body portion adapted to fit between the upright walls of the formed liner and jaws for clamping the liner walls between the body portion and the jaws.

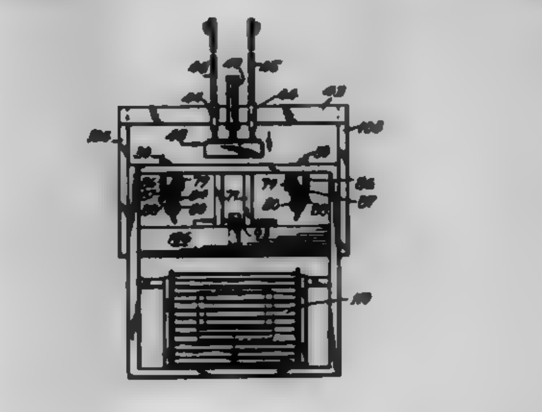
3,978,774
TRAY FORMING MACHINE

Thomas B. Royal, Homestead, Fla., assignor to International Paper Company, New York, N.Y.

Filed Nov. 25, 1974, Ser. No. 526,826

Int. Cl.² B31B *1/46*

U.S. Cl. 93—51 HW **29 Claims**



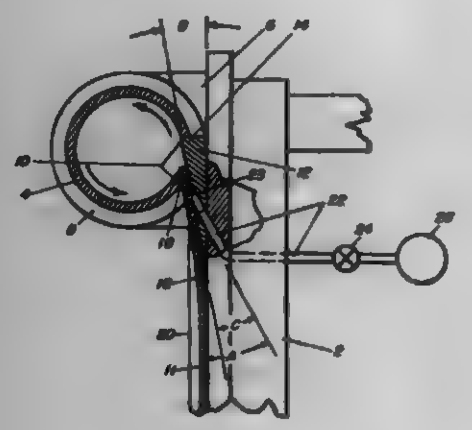
1. An apparatus for forming a blank into a box having side walls, end walls and a pair of horizontally disposed shoulder panels each foldably connected to a respective one of said side walls, said apparatus comprising:

a. a frame;
b. an expandable mandrel mounted on said frame for reciprocating movement;
c. side wall forming means mounted on said frame for forming said side walls as said mandrel pushes said blank downwardly past said side wall forming means;
d. end wall forming means mounted on said frame;
e. means for expanding and contracting said mandrel; and
f. means for folding each of said shoulder panels.

3,978,775
LINER INSERTION APPARATUS

Stephen P. Buckley, Kansas City, Mo., and Edward N. Patigalia, Potomac, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 18, 1975, Ser. No. 588,090
Int. Cl.² B31C *5/00;* B31B *1/12*
U.S. Cl. 93—77 CL **5 Claims**

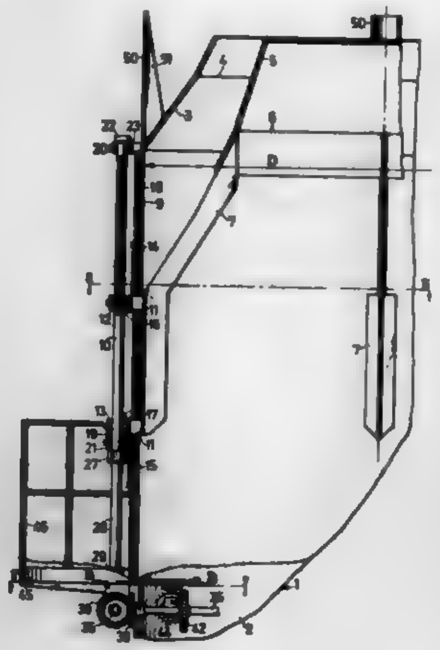


1. Apparatus for coiling and inserting a liner of flexible sheet material having a rough surface on one side into a hollow cylindrical container, comprising:
a support surface;
a longitudinally-slotted tube open at one end and supported on said support surface with its slot at the bottom parallel to and spaced from said support surface;
a wedge-shaped ramp on said support surface, with its thick edge abutting one side edge of said slot and forming a smooth continuation of the liner wall of said tube, and its knife edge merging with said support surface; said ramp being spaced from the other side edge of said slot to leave a clearance slot for insertion of said liner;
means for propelling said liner, placed on said support surface and said ramp with its rough surface facing said ramp, through said slot and into said tube, and forming said liner into a coil, comprisng means for producing a first tangential air jet located midway between the ends of said slot and directed through said ramp and against said rough surface in a direction perpendicular to said slot; and
means for inserting said coil into a hollow cylindrical container, supported adjacent to and in axial alignment with said tube, comprising means for producing a second tangential air jet located near the open end of said tube and directed through said ramp and against said round surface at an acute angle to said slot.

3,978,776
CHIMNEY FOR EXHAUST GAS HAVING MEANS FOR THROTTLING A FLOW OF EXHAUST GAS

Robert Kausche, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 19, 1974, Ser. No. 525,086
Claims priority, application Switzerland, Nov. 23, 1973, 16507/73
Int. Cl.² F23L *17/08*
U.S. Cl. 98—58 **9 Claims**

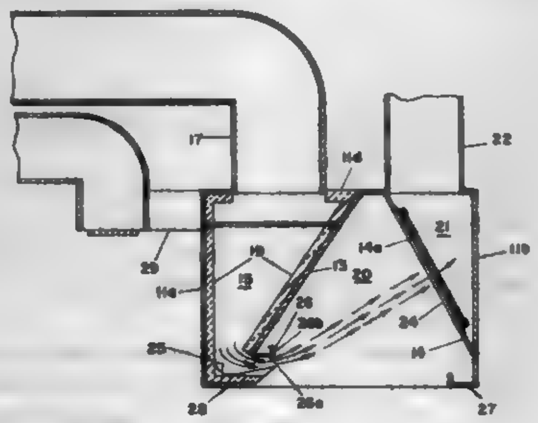


1. An exhaust gas chimney having an outlet end, a first upwardly conveying outflow funnel at said outlet and having an outlet of predetermined size for passage of a flow of exhaust gas therethrough, a second upwardly converging funnel coaxially within said first funnel of smaller size than said first funnel, and means for moving said funnels relative to each other for throttling a flow of exhaust gas between said funnels, said funnels being movable into a closed position relative to each other wherein said funnels adjoin each other to form an outlet of a size smaller than said outlet of said first funnel.

3,978,777
VENTILATING APPARATUS

Louis A. Nett, c/o Climate Control Systems, Inc., P.O. Box 199N, R.R. 1, Cambridge, Wis. 53523

Filed Feb. 24, 1975, Ser. No. 552,228
Int. Cl.² F23J *11/00*
U.S. Cl. 98—115 K **8 Claims**

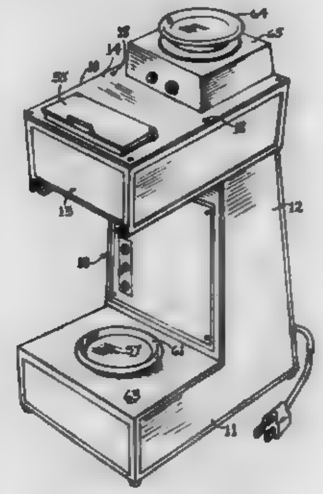


1. Ventilating apparatus for ventilating a room, comprising:
a. an exhaust hood having front, side and rear walls,
b. means extending substantially across the front of said exhaust hood for introducing tempered air adjacent to and downwardly and substantially evenly across the front of said exhaust hood,
c. an interior wall disposed within said exhaust hood and which with said walls forms a smooth walled intake chamber and a fume collection and exhaust chamber within said exhaust hood, said intake chamber being separate from said means for introducing tempered air,
d. air intake means for drawing ambient air from outside the room being ventilated and forcing such air under pressure into said intake chamber,
e. a throat panel extending substantially along the length of the bottom of said interior wall,
f. a deflector panel extending substantially along the length of the bottom of said front wall and positioned in spaced relation below said throat panel to form a longitudinally extending slot with said throat panel, said deflector panel being continuously curved along its width to deflect air introduced into said intake chamber through said slot rearwardly and upwardly into said fume collection and exhaust chamber, and
g. exhaust means for drawing air and fumes out of said exhaust chamber and exhausting such air and fumes into the atmosphere outside the room being ventilated, said exhaust means having capacity to exhaust more air by volume than introduced into said intake chamber by said air intake means.

3,978,778
BEVERAGE-MAKING APPARATUS

Melvin F. Roberts, Chicago, Ill., assignor to Bloomfield Industries, Inc., Chicago, Ill.

Filed Feb. 5, 1975, Ser. No. 547,101
Int. Cl.² A47J *31/00*
U.S. Cl. 99—281 **8 Claims**

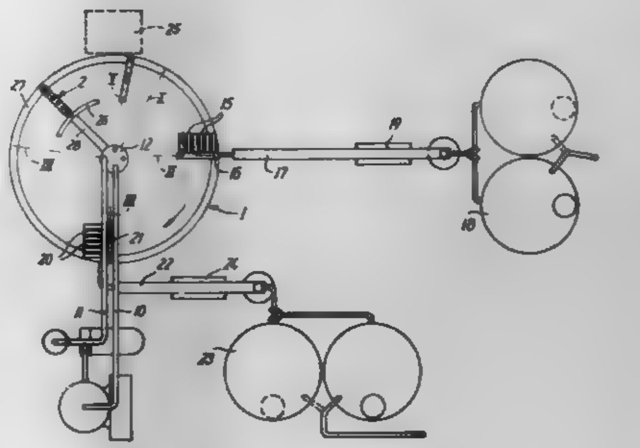


1. A beverage making apparatus including
a. a housing for said apparatus providing a base portion, a hollow upright standard, and an upper chamber,
b. a wall member within said upper chamber defining a liquid basin and a dry compartment disposed in side-by-side relation, with both having open communication with said hollow standard,
c. a removable liquid container supported by said dry compartment within said upright standard between said base portion and said upper chamber,
d. a removable cover for said liquid container closing the same from said dry compartment of said upper chamber,
e. means carried by said cover for delivering liquid from said liquid basin through said dry compartment into the bottom of said liquid container,
f. means carried by said cover for electrically heating the liquid in said liquid container,
g. means carried by said cover for dispensing heated liquid by siphon action from said liquid container through said dry compartment to a remotely located dispensing head, and
h. means for latching said cover on said liquid container and for hermetically sealing the same thereto.

3,978,779
APPARATUS FOR PREPARING EDIBLE PRODUCTS

Gunnar Christian Petersen, Odense; Ole Thisgaard, Hjallese, and Steen Wiig, Naesby, all of Denmark, assignors to Dansk Andels Aegexport, Copenhagen, Denmark

Filed Nov. 24, 1975, Ser. No. 634,708
Claims priority, application Denmark, Nov. 29, 1974, 6241/74
Int. Cl.² A47J *43/20*
U.S. Cl. 99—353 **14 Claims**



1. Apparatus for preparing an edible product including a cylindrical product core and an outer cylindrical shell of coagulated egg-white mass, said apparatus comprising:
a plurality of vertically oriented cylindrical moulds, each formed by an integral cylindrical tube open at both ends,
a bottom plug axially displaceable within each mould in sealing engagement with the inner mould surface,
means for cyclically moving said moulds through a plurality of successive stations including a station for inserting a core member in each mould, a station for withdrawing the core member from the mould, at least one station for supplying liquid egg-white mass to the annular space defined between the inner wall of the mould and the core member, and supplying a material to form said product core to the space formed by the core member, and a station for withdrawing finished products from said mould,
means for heating said moulds and means for subsequently cooling the moulds,
lifting means adapted to move each bottom plug upwardly through at least the majority of the height of the associated mould for permitting withdrawal of the finished product from the top of the mould,
means adapated to move each bottom plug back to its lowermost position in the associated mould, and
applicator means for applying a measured amount of a lubricating agent onto the inner surface of each mould after the associated bottom plug has been lifted and the product withdrawn from the mould.

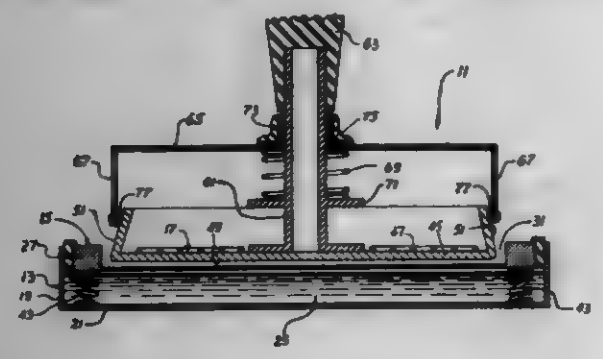
3,978,780
COOKING UTENSIL

Christopher I. Venelin, 608 Larkspur Ave., Corona Del Mar, Calif. 92625

Filed Aug. 15, 1975, Ser. No. 605,048
Int. Cl.² A47J *37/10*
U.S. Cl. 99—422 **11 Claims**

1. A cooking utensil comprising:
a receptacle for batter, said receptacle having a bottom wall and an open top;

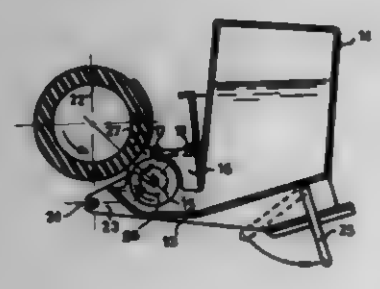
a pumping member at least partially within said receptacle and mounted for movement toward and away from said bottom wall;
resilient means for resiliently urging the pumping member away from the bottom wall;
a heater having a cooking surface, said heater being sized to be received in the receptacle through the open top thereof and moved toward the bottom wall to bring the cooking surface into contact with the batter; and



means for drivingly coupling the heater to the pumping member at least for a portion of the time that the heater is being moved toward said bottom wall whereby movement of the heater toward said bottom wall drives the pumping member against the biasing action of the resilient means toward the bottom wall to elevate the batter toward the cooking surface.

3,978,781
PANCAKE COOKING MACHINE

Pierre Tanguy, Dijon, France, assignor to Etud, Dijon, France
Filed May 24, 1974, Ser. No. 473,227
Claims priority, application France, June 1, 1973, 73.20016
Int. Cl.^{2} A21B *1/48*
U.S. Cl. 99—423 **33 Claims**

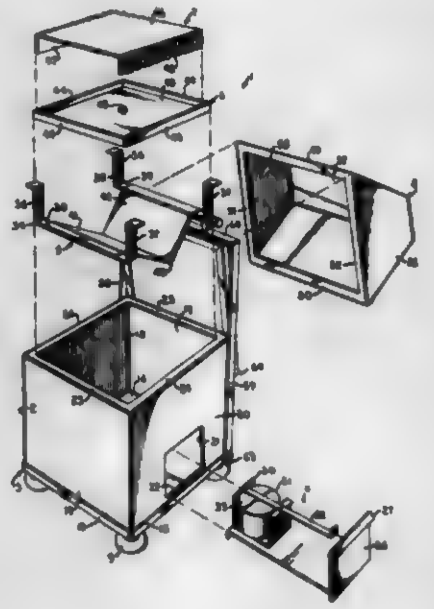


1. A machine for cooking a cooking mix comprising:
a. a tank for containing the mix,
b. a roller, partly immersed in the tank, for entraining a film of the mix thereon,
c. a rotary cooking drum, including means for internally heating said cooking drum,
d. means for rotating said roller and said drum,
e. a retaining means positioned closely adjacent said roller for at least partially retaining the film of mix on the roller thereby forming a bead of the mix adjacent said retaining means, said retaining means being a stable bar,
f. said cooking drum positioned so as to enable said bead to coat said drum with a film of the mix, and
g. means to interrupt the coating of the cooking drum.

3,978,782
HORS D'OEUVRES OVEN

John M. Werling, 209 E. 36th St., Apt. 3, Kansas City, Mo. 64111
Filed May 16, 1975, Ser. No. 578,134
Int. Cl.^{2} A47J *27/00*
U.S. Cl. 99—446 **11 Claims**

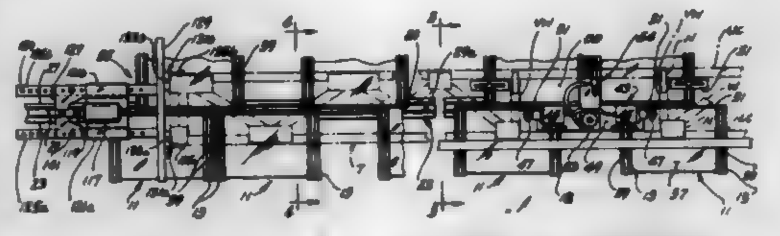
2. A cooking device comprising:
a. a support structure;
b. a housing mounted on said support structure and having walls defining an open top chamber, certain of said chamber defining walls having an upper edge;
c. means positioned in said housing for heating the chamber;
d. means positioned in said housing and above said chamber heating means for supporting food items;
e. means positioned in said housing and between said chamber heating means and said means for supporting food items for receiving and retaining food drippings;



f. a cover for said housing;
g. a pair of elongated arms each having a lower end pivotally mounted on said support structure;
h. means pivotally mounted on said pairs of arms for supporting said cover and including portions engageable with the upper edge of one wall of said chamber defining walls during pivoting of said cover supporting means; and
i. a handle connected to the other end of said pair of arms for moving said cover between a closed position and an open position.

3,978,783
APPARATUS FOR FABRICATING WOOD STRUCTURES

Walter G. Moehlenpah, 906 Old Warson Road, Ladue, St. Louis County, Mo. 63124
Filed June 4, 1975, Ser. No. 583,650
Int. Cl.^{2} B30B *15/16*
U.S. Cl. 100—53 **15 Claims**

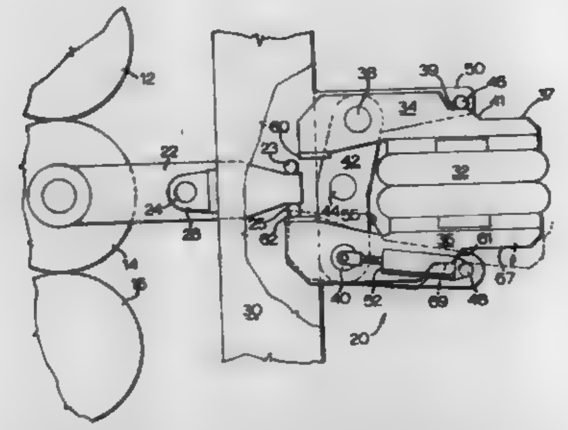


6. Apparatus for fabricating wood structures, such as a truss having upper and lower chord members spaced from one another and a plurality of web members extending between the chord members, said apparatus comprising means for supporting said wood members in position for having nailing plates driven thereinto from above and below at the intersections of the wood members to form said truss, said supporting means comprising a frame extending longitudinally of the truss and a plurality of supports movable longitudinally with the frame for supporting the wood members at each of said intersections, said apparatus further comprising means for driving said nailing plates into said wood members, means for

holding said wood members on said supports in a desired position for being secured together by said nailing plates, and means movable between an operating position for holding at least one end of said upper and lower chord members in desired spaced relation and for holding an end web member in a selected position relative to said one ends of said chord members during fabrication of the truss and a retracted position to facilitate lifting of said truss generally vertically for removal of the truss from the apparatus.

3,978,784
CALENDAR CONTROL SYSTEM

Rodney Harold Bryce, Lachine; Alfred Edel, Montreal, and Adu Randpalu, LaSalle, all of Canada, assignors to Dominion Engineering Works, Limited, Lachine, Canada
Filed Nov. 11, 1974, Ser. No. 522,450
Int. Cl.^{2} B30B *3/04*
U.S. Cl. 100—170 **12 Claims**

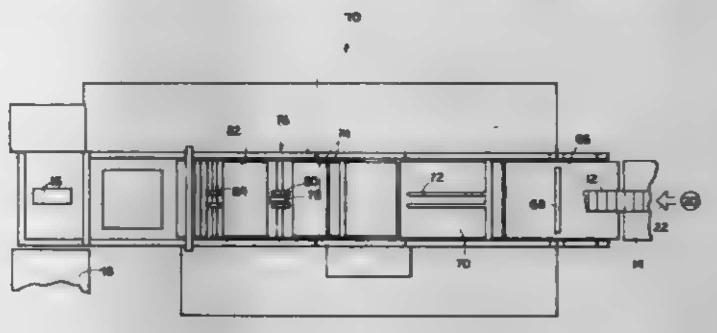


1. Actuating apparatus selectively operable to provide force output in at least two optional directions, comprising:
a primary actuator having a uni-directional output; first linkage means operable in a first mode for connecting said primary actuator with a force output member for working movement in one said optional direction; second linkage means connecting said actuator with a force output member and operable in a second mode for working movement in another said optional direction; and
a secondary actuator connected in positioning relation with said first and said second linkage means to provide selective positioning movement thereto for selectively connecting said primary actuator for actuating a selected said linkage means and said force output member in a respective direction, and to position the other said linkage means in reaction providing relation with said primary actuator.

3,978,785
STACKING AND BUNDLING MACHINE

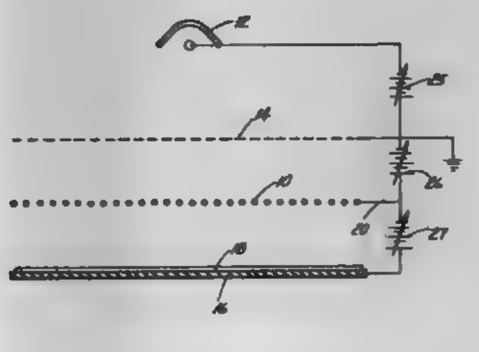
Willis J. Stapp; Norman P. Crowe, and Edwin A. Molitor, all of Clermont City, Ohio, assignors to Multifold-International, Inc., Milford, Ohio
Division of Ser. No. 476,578, June 5, 1974, Pat. No. 3,907,129. This application June 23, 1975, Ser. No. 589,545
Int. Cl.^{2} B30B *15/30*
U.S. Cl. 100—215 **7 Claims**

1. In a machine for bundling flat articles in a compressible stack, a stack compressing assembly which comprises a horizontal elevator platform, means for delivering the stack of articles onto the elevator platform, means for advancing the elevator platform to a stack delivery level, a stack compressor frame mounted for up and down movement adjacent the stack delivery level, an upright crank arm pivotally mounted at a lower end of the stack compressor frame, a stack engaging flap attached to an upper end of the crank arm, means for swinging the crank arm between a retracted position in which the flap is free of the stack and an advanced position in which the flap overlies the stack on the elevator platform at discharge level and the flap is substantially horizontal, means for lowering the stack compressor frame to cause the flap to engage and compress the stack, and means for discharging the stack from between the elevator platform and the flap in a horizontal direction while compressed.



3,978,786
COPY AND REUSABLE MASTER MAKING SYSTEM APPARATUS FOR PREPARING A PERMANENT IMAGE

Curt Robert Raschke, Warrensville Heights, Ohio, assignor to Addressograph Multigraph Corporation, Cleveland, Ohio
Filed Nov. 15, 1974, Ser. No. 524,232
Int. Cl.^{2} G03G *15/00*
U.S. Cl. 101—114 **3 Claims**



1. An apparatus for preparing a permanent image on a carrier sheet confirming to an optical image, comprising:
an electrically conductive platen adapted to support an image receiving carrier member;
a corona source adapted to spray ions toward said image receiving member;
a corona modulating screen disposed between said corona source and said image receiving member;
a toner carriage screen positioned between said modulating screen and platen, said screen having a high resolution of small openings for holding toner particles clinging thereon and bridging said openings, said screen having a conducting core with an insulating coating; and
means for impressing a first field potential between the corona source and said modulating screen in a direction to impel ions toward said platen, a separate second field potential between said modulating screen and said toner carriage screen of complementary direction to said first field, and a separate third field potential between said toner carriage screen and said platen of complimentary direction to said second field for causing said corona to emit ions of a charge to be attracted to said platen;
whereby toner particles on said carriage screen struck by corona ions passing through neutralized portions of said modulating screen will be ionized to a charge which will cause them to be propelled by said field toward said platen.

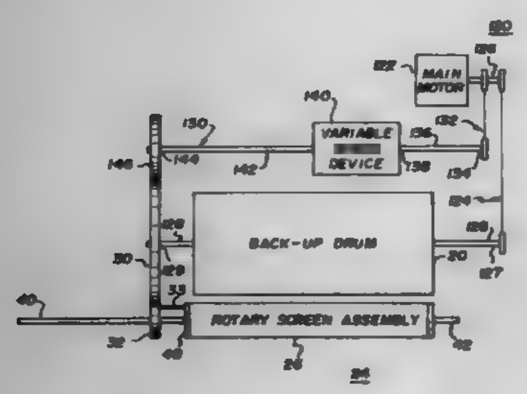
3,978,787
DRIVE MEANS FOR CYLINDRICAL SCREEN PRINTER

Thomas Marino, Totowa Boro.; John Kreeft, Wyckoff, and Peter Stanislaw, Stockholm, all of N.J., assignors to Morrison Machine Co., Paterson, N.J.

Filed Oct. 11, 1973, Ser. No. 405,418

Int. Cl.² B41F *15/10, 5/14*

U.S. Cl. 101—115 **4 Claims**



1. A screen printing machine comprising:
a frame;
a rotary drum supported by said frame and mounted on a shaft having first and second shaft portions extending from opposite ends of said drum;
a plurality of rotary screen assemblies carried by said frame and distributed circumferentially about said rotary drum, each of said assemblies including a rotatable screen;
a single drive mechanism and a first drive means connected to said single drive mechanism for driving said rotary drum independently of driving said rotatable screens;
second drive means driven by said single drive mechanism and operatively connected to said rotatable screens for driving said rotatable screens independently of said rotary drum and simultaneously with said first drive means driving said rotary drum;
variable speed means operatively connected to one of said drive means for continuously synchronizing the velocity of said rotatable screens relative to the velocity of said rotary drum;
said second drive means including a sun gear freely rotatably mounted on said first shaft portion of said rotary drum, a drive gear, second linkage means interconnecting said single drive mechanism and said drive gear, the teeth of said drive gear engaging corresponding teeth of said sun gear, and a screen gear connected to each of said rotatable screens, the teeth of said screen gears engaging corresponding teeth of said sun gear.

3,978,788
INK METERING ASSEMBLY FOR PRINTING PRESS

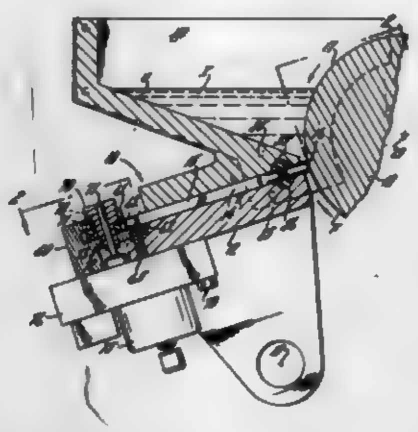
Bert Cappel, Offenbach-Bieber; Siegfried Schuhmann, Offenbach, and Klaus Wolf, Neu-Isenburg, all of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Germany

Filed May 16, 1975, Ser. No. 578,039

Int. Cl.² B41F *31/02*

U.S. Cl. 101—363 **9 Claims**

1. In an ink fountain the combination comprising a frame defining a horizontal slot having parallel walls, a fountain roller rotatable in the frame adjacent the slot, a metering assembly mounted in the slot and having a presented front edge arranged in abutting relation with the surface of the roller, the frame being shaped to support a body of ink adjacent the metering assembly so that a film of ink is formed on the roller by the assembly as the roller is rotated, the metering assembly being in the form of a series of rectangularly shaped slides arranged side by side in coplanar relation with their lateral edges lying closely adjacent one another so that the presented front edge is substantially continuous, the lateral edges of the slides adjacent the front ends thereof being formed with registering notches of uniform size, the registering notches being occupied by slightly oversized buttons of resilient sealing material, the resilience of the oversized buttons tending to spread the slides slightly away from one another to establish uniform spacing between them, vertical end plates at the respective ends of the assembly for clamping the slides together with the buttons of resilient material in compression with the lateral edges of the slides in free relatively sliding relation and so closely spaced as to seal the assembly against leakage of ink, and cam assemblies at the rear ends of the slides for individually adjusting the position of each slide with respect to the fountain roller thereby to meter ink in predetermined thickness in respective zones upon the fountain roller.



3,978,789
PROCESS FOR PRINTING LONG PILED MATERIAL

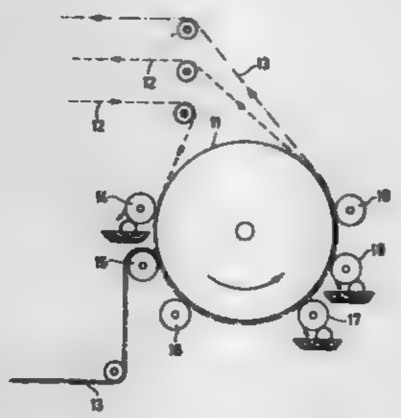
Peter Fenneckels, Kempen-Huls; Sieghard Helfert, Kempen, and Ernst Waltmann, Krefeld, all of Germany, assignors to Girmes-Werke AG, Germany

Continuation of Ser. No. 351,874, April 17, 1973, abandoned. This application Oct. 7, 1974, Ser. No. 512,865

Claims priority, application Germany, Apr. 18, 1972, 2218732; May 10, 1972, 2222838

Int. Cl.² B41M *1/18*

U.S. Cl. 101—211 **3 Claims**



1. A process for printing pile fabric to produce fabric with the natural appearance of animal skins, said printed fabric having areas of different color intensity and shading thereon; characterized by the steps of

a. maintaining a fabric web with a pile surface under longitudinal tension;
b. passing said web through a first ink applying zone defined by a plurality of spaced ink retention areas of different capacity according to the animal skin to be imitated;
c. applying the ink from said plurality of ink retention areas to the back side of said web;
d. passing said web through a pressure nip to force said applied ink upwardly through the individual piles of said web in the areas where ink was applied to the back side of said web;
e. said pressure nip forcing said applied ink into said piles from the back side of said web according to the quantity of ink applied from said ink retention areas of different capacity;
f. passing said web through a second ink applying zone defined by a plurality of spaced ink retention areas of different capacity according to the animal skin to be imitated;
g. said ink retention areas in said first and second zones registering in some cases and not in others according to the animal skin to be imitated;
h. applying the ink from said plurality of ink retention areas in said second ink applying zone to the back side of said web;
i. passing said web through a second pressure nip to force said applied ink from said second ink applying zone upwardly through the individual piles of said web in the areas where ink was applied to the back side of said web;
j. said second pressure nip forcing said applied ink into said piles from the back side of said web according to the quantity of ink applied from said ink retention areas of different capacity;
k. said second pressure nip forcing said ink from said first applying zone further into said piles in those areas of ink retention in said second ink applying zone which are in registry with said areas in said first ink applying zone; and
l. repeating sequentially the application of ink to selected areas of the rear side of said web and passing said web through further pressure nips as required according to the animal skin to be imitated.

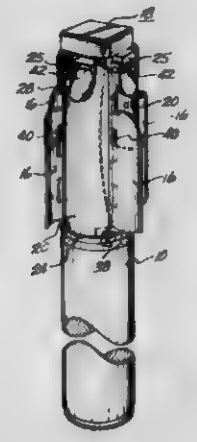
3,978,790
HIGH ALTITUDE SONOBUOY

John Robert Sandelius, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 23, 1975, Ser. No. 625,231

Int. Cl.² F42B *25/02*

U.S. Cl. 102—4 **1 Claim**



1. In a sonobuoy, the improvement for adapting the sonobuoy for high altitude deployment comprising:

a. a rotatable collar rotatably carried by the sonobuoy;
b. a plurality of rotovanes hingedly carried by said rotatable collar, said rotovanes being movable between a stored position adjacent the sonobuoy and an operating position wherein said rotovanes and said rotatable collar will revolve from wind pressure when the sonobuoy is falling in the atmosphere, said rotovanes being so shaped as to lie close adjacent the sonobuoy such that the sonobuoy will fit in a sonobuoy launching and storage tube with the rotovanes in the stored position and provide a lifting force on the sonobuoy when the rotovanes are rotated by wind pressure in the operating position;
c. a plurality of fin retaining leaves being shaped to fit between said rotovanes and the sonobuoy and be held in such position by said rotovanes when said rotovanes are in their stored position, said fin retaining leaves having hinge means carried adjacent one edge of said rotovanes when said fin retaining leaves are being held in place between said rotovanes and the sonobuoy;
d. a plurality of fins carried by said hinge means of said fin retaining leaves, said fins having springs operatively connected thereto to provide a spring bias to urge said fins from a stored position folded close adjacent said rotovanes when said rotovanes are in their stored position to an operating position substantially perpendicular to the sonobuoy to guide the sonobuoy in a ballistic trajectory when th sonobuoy is falling in the atmosphere;
e. retaining means shaped to fit around the sonobuoy and hold said rotovanes in their stored position while allowing said fins freedom to move from their stored position to their operating position, said retaining means having release means which when actuated will allow said retaining means to release said rotovanes from their stored position and move to their operating position; and,
f. altitude responsive means carried by the sonobuoy and operably connected to said release means of said retaining means, said altitude responsive means being set to operate said release means at the preselected altitude where it is desired that ballistic fall of the sonobuoy end and slowed descent by autorotation of said rotovanes begins.

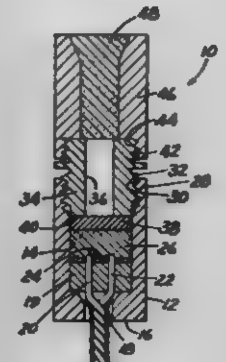
3,978,791
SECONDARY EXPLOSIVE DETONATOR DEVICE

Virgil F. Lemley, Escondido; Glenn E. Seay, La Jolla, and Perry B. Ritter, Encinitas, all of Calif., assignors to Systems, Science and Software, La Jolla, Calif.

Filed Sept. 16, 1974, Ser. No. 506,119

Int. Cl.² F42B *3/12;* **F42C** *19/12*

U.S. Cl. 102—28 R **14 Claims**



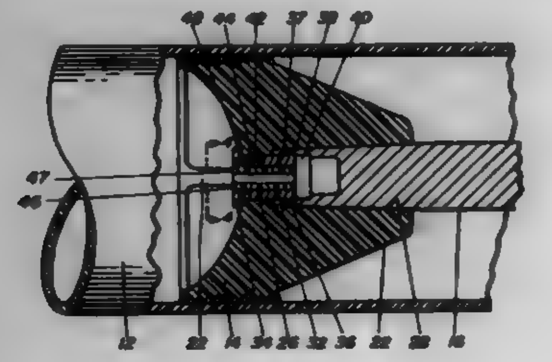
1. A low voltage hot wire detonator device containing all secondary type explosive and comprising:
a body having a closed end and an internal chamber containing a donor secondary explosive therein, said body having internal threads in the open end opposite said closed end;
hot wire means including electrical conductors extending outwardly through an aperture in said body, said hot wire means being adjacent said donor explosive and adapted to cause ignition thereof in response to a low voltage current being applied to said conductor;
an impactor disc positioned within the chamber of said body adjacent said donor explosive so as to generally cover the same;
barrel means having external threads for engaging the internal threads of said body, said barrel means having an elongated bore defining an air gap and a generally flat annular shoulder for contacting said impactor disc, rotation of said barrel means in a first direction relative to said body causing said barrel means to be moved toward said closed end and bring said impactor disc into contact with said donor explosive so as to tightly confine the same;

the central portion of said impactor disc inside of said annular shoulder being sheared therefrom in response to deflagration of said donor explosive;
said impactor disc being of a thickness and material so that the ratio of the thickness of said sheared central portion to the outer diameter of the sheared central portion is within the range of about ⅛ to about ⅝, said sheared central portion being accelerated down said bore as a unitary piece, said ratio thereof substantially preventing tumbling of the sheared central portion during travel, thereby preventing substantial escape of explosive gases between said central portion and the wall of said bore.

3,978,792
PROJECTILE-TO-CARTRIDGE CASE ATTACHMENT

Ralph F. Campoli, Mine Hill, N.J.; Edwin G. Steiner, Waterloo, Iowa; Dennis L. Purtilo, Waterloo, Iowa, and Thomas A. Lynch, Waterloo, Iowa, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 25, 1975, Ser. No. 571,672
Int. Cl.² F42B *5/02*
U.S. Cl. 102—38 **2 Claims**

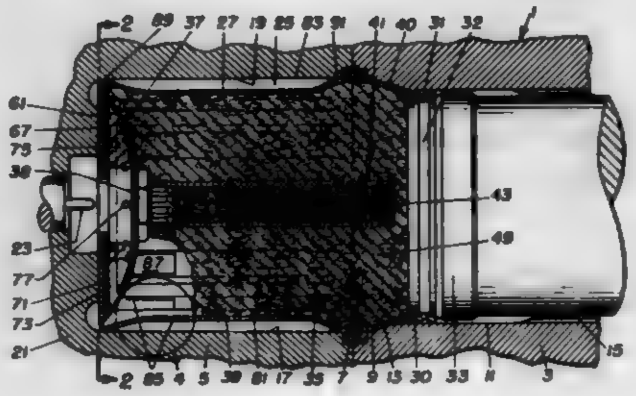


1. A projectile-to-combustible cartridge case attachment for a fin-stabilized projectile which comprises:
a cartridge case adapter having a hollow cylindrical section which integrally supports thereon a plurality of equally spaced, radial gusset members seated on the fin hub of said projectile, said gusset members connected at their base ends by an integral, cylindrically shaped locking member having an axial adapter sleeve bore therein; and
self-locking means for holding said cartridge case adapter to the fin hub of said fin stabilized projectile which includes;
first axially insertable means, operatively disposed within said locking member, for holding said locking member against the fin hub, which includes;
a retainer sleeve having a first shoulder end which abuts against said locking member, a second slotted forward end having a second shoulder thereon, said sleeve having an axial sleeve bore therein and a retainer sleeve annular groove which communicates with said sleeve bore, and
second axially insertable means, operatively positioned within said first axially insertable means, for preventing said first insertable means from being withdrawn from said locking member and positively locking said cartridge case adapter to said projectile, which includes;
a tubularly shaped retainer plug having an annularly positioned shoulder on one end of said plug, said plug being forcibly disposed in said axial sleeve bore so that the shoulder of said plug fits into said retainer sleeve annular groove, said cartridge case adapter being mounted over said fin hub with said gusset members being seated on said fin hub and said slotted sleeve forward end being operatively positioned within said adapter sleeve bore into a fin hub axial bore and annular fin hub groove, said slotted forward shoulder end expanding into said fin hub annular groove, said retainer plug being forced into said retainer sleeve axial bore with said annular plug shoulder engaging said retainer sleeve annular groove, thereby trapping said retainer sleeve slotted second shoulder end in said fin hub groove and locking said cartridge case adapter to said projectile.

3,978,793
MUZZLE-EXPELLABLE CARTRIDGE

William S. McLennan, Wharton, N.J., and George C. Potts, deceased, late of Philadelphia, Pa., by Mary P. Potts, executrix, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

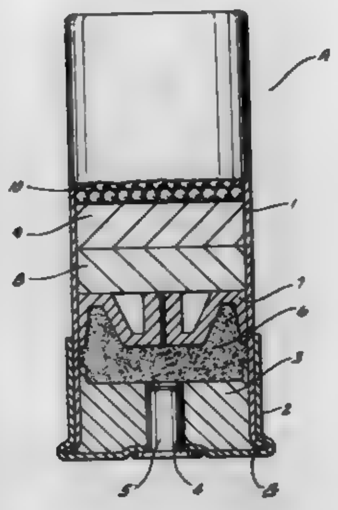
Filed June 30, 1975, Ser. No. 591,802
Int. Cl.² F42B *5/02*
U.S. Cl. 102—38 **7 Claims**



1. A muzzle-expellable cartridge, adapted to be fired in the chamber of a gun barrel, comprising:
a cartridge case including a side wall of sheet material adapted to fit within said chamber, said case being open at its forward end and having a transverse wall at its rear end;
a projectile releasably attached to said open end;
a main propellant charge disposed within said case in front of said transverse wall for propelling said projectile from said case and through said barrel;
an auxiliary propellant charge located behind said transverse wall for propelling said case forwardly through said barrel after the propulsion of said projectile therefrom;
means for initiating said propellant charges; and
means for providing spaces between said side wall of said case and said chamber and for venting a portion of the gases generated by said main projectile charge to said spaces, to collapse said side wall and thereby facilitate removal of said case from said chamber, the last-named means comprising a series of external longitudinal flutes and intermediate ribs formed in and extending along the major portion of the length of said side wall, and apertures in said flutes for venting said gases through said side wall.

3,978,794
BASE WAD FOR SHOTSHELLS

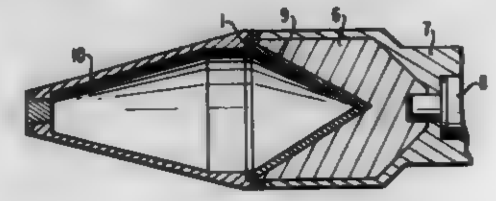
Giuseppe G. Fiocchi, Mandello Lario Como, Italy, assignor to Giulio Fiocchi, S.p.A., Lecco, Como, Italy
Continuation-in-part of Ser. No. 429,094, Dec. 28, 1973, abandoned. This application Dec. 5, 1974, Ser. No. 529,610
Int. Cl.² F42B *7/08*
U.S. Cl. 102—42 R **11 Claims**



1. A shotshell base or under powder wad having a unitary, integrally formed body consisting essentially of a normally soft, relatively low molecular, non-linear, non-copolymerized thermoplastic and a naturally occurring mineral, said body having uniform consistency throughout its extent.

3,978,795
RETAINING RING APPARATUS

Manfred Strunk, Neuenrade; Heinz Kroschel, Troisdorf-Sieglar, and Alfred Voss, Cologne, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany
Division of Ser. No. 376,278, July 5, 1973, abandoned. This application Sept. 16, 1974, Ser. No. 506,338
Claims priority, application Germany, July 5, 1972, 2232955
Int. Cl.² F42B *13/10*
U.S. Cl. 102—56 SC **7 Claims**

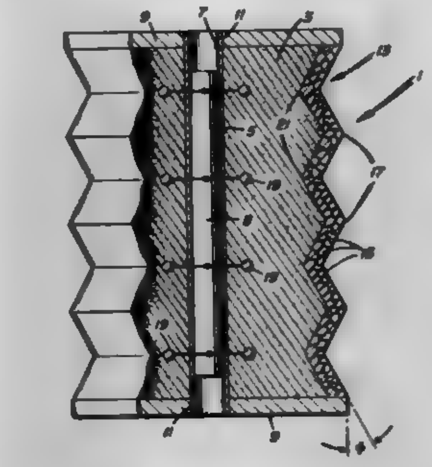


1. Apparatus comprising a hollow charge projectile including a projectile housing, a hollow explosive charge, and a metallic lining within the housing, a tip portion secured to the housing, a retaining ring including a ring-shaped member and resilient tongue members having one end thereof joined to the ring member, the tongue members being bent out of the plane of the ring member and extending at least approximately in the peripheral direction of the ring member, and the retaining ring being arranged for securing the position of the metallic lining within the housing, the retaining ring being disposed in a groove of the tip portion of the projectile.

3,978,796
FOCUSED BLAST-FRAGMENT WARHEAD

Emory E. Hackman, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 30, 1968, Ser. No. 725,546
Int. Cl.² F42B *13/18, 13/10*
U.S. Cl. 102—67 **4 Claims**



1. A fragmentation warhead exhibiting focused blast properties, comprising
a body of explosive material having a generally cylindrical shape with annular conical corrugations radially and regularly disposed over its surface, said corrugations defining troughs therebetween,
a projectile surrounding the cylindrical corrugated surface of the body, said projectile having its surface conforming to the shape of the body surface,
an axial channel disposed within the body,
a liner mounted in the channel,
point initiation detonators embedded in the body, one of the detonators being disposed in confronting relation to each of said troughs whereby, upon initiation of the detonators, explosive of the body will produce shock waves that will act on the walls of the corrugations for fragmenting the projectile and projecting the fragments thereof in a direction normal to the axis of the warhead,
arming means mounted in the liner and connected to said detonators, and
end plates secured to the liner and to the projectile at opposite ends of the body for closing the ends of said body, said end plates partially confining gaseous explosion products produced upon detonation of the body, explosion of the body producing a focused blast characterized by increased metal projection and enhanced blast properties.

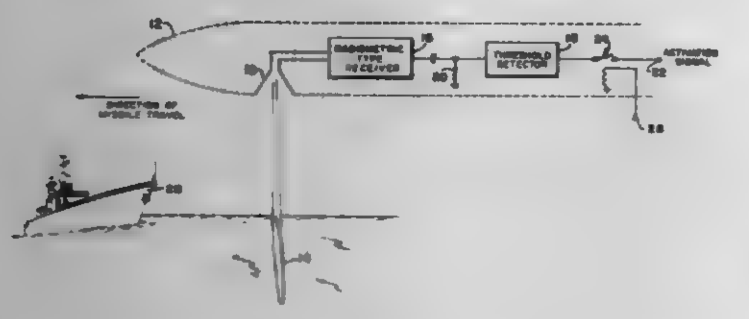
3,978,797
RADIOMETRIC TARGET DETECTION DEVICE

William W. Harrington, China Lake, and Frederick C. Alpers, Riverside, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 28, 1971, Ser. No. 142,837
Int. Cl.² F42C *13/06, 11/00*
U.S. Cl. 102—70.2 P **1 Claim**

1. In a radiometric target detecting device for guided missiles the combination comprising:
a. antenna receiving means including two antennas with one positioned just ahead of the other to form two fanshaped receiving patterns for receiving black body radiation and reflected sky radiation from an area of suspected targets,
b. a radiometric type receiver,
c. switch means alternately connecting said antennas to said receiver,
d. said receiver including a modulation amplifier that amplifies and passes only modulated signals and a phase sensi-

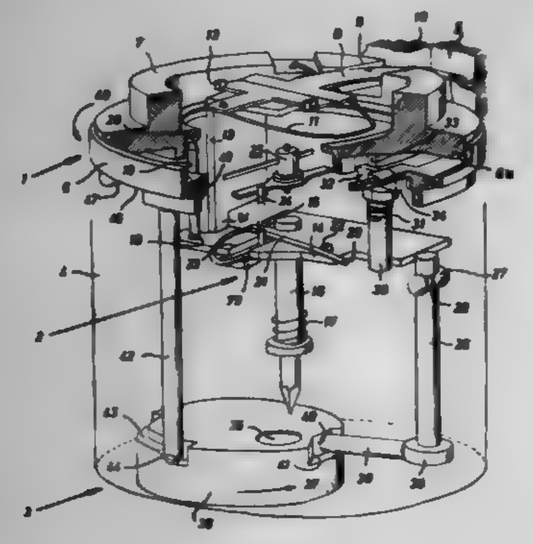
tive detector coupled to said modulation amplifier for detecting any signal modulation and generating an output signal in response to a target being present in one antenna pattern,
e. a delay circuit coupled to the output of said phase sensitive detector,
f. an inverter circuit coupled to the output of said phase sensitive detector for providing an inverted form of the output signal from said phase sensitive detector,



c. g. a monostable multivibrator coupled to said delay circuit for producing a gating pulse of a predetermined time duration in response to the delayed output signal from said delay circuit,
h. a gated amplifier having a first input coupled to the output of said inverter circuit and a second input coupled to the output of said monostable multivibrator and being responsive to generate a warhead actuating signal when the inverted signal arrives in time coincidence with said gating pulse.

3,978,798
FUZE MECHANISM HAVING INTEGRATED SAFETY FUNCTIONS

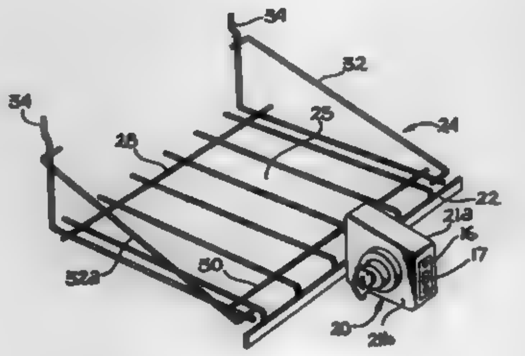
Kaj Backström, Bergstigen 21B, 182 74 Stocksund; Rolf V. Grahn, Solrosvagen 10; Per O. T. V. Hedenmark, Bergius Vag 4, both of 644 00 Torshalla, and Kjell G. Öhrstedt, Hagalundsvagen 42 D, 653 41 Karlstad, all of Sweden
Filed Nov. 4, 1974, Ser. No. 520,860
Claims priority, application U.S.S.R., Nov. 9, 1973, 151961
Int. Cl.² F42C *9/02*
U.S. Cl. 102—71 9 Claims



1. A fuze mechanism for projectiles and the like, which mechanism contains a clockwork (25) brought into operation when the projectile is launched and a blasting cap (35) which is rotated into registration with a firing pin (16) for detonating the fuze after a predetermined series of safety conditions have been met wherein the improvement comprises:
a firing pin lock (14) locking the firing pin and releasable in several successive steps from corresponding positions to unlock the firing pin;
manually adjustable means (19) for releasing the firing pin lock from a first position when the fuze is set or timed;
inertial means (26) for also releasing the firing pin lock from the first position in response to inertial forces generated while the projectile is launched;
a catch (24) connected with the clockwork to inhibit clockwork operation and responsive to preselected movement of the firing pin lock from the first position to release the clockwork and begin clockwork operation; and
time responsive means (30) connected with the clockwork to release the firing pin lock from a second position at the end of a pre-set time whereby the firing pin is released at the end of the pre-set time to fire the blasting cap.

3,978,799
DISPLAY HARDWARE FOR LOCK SETS

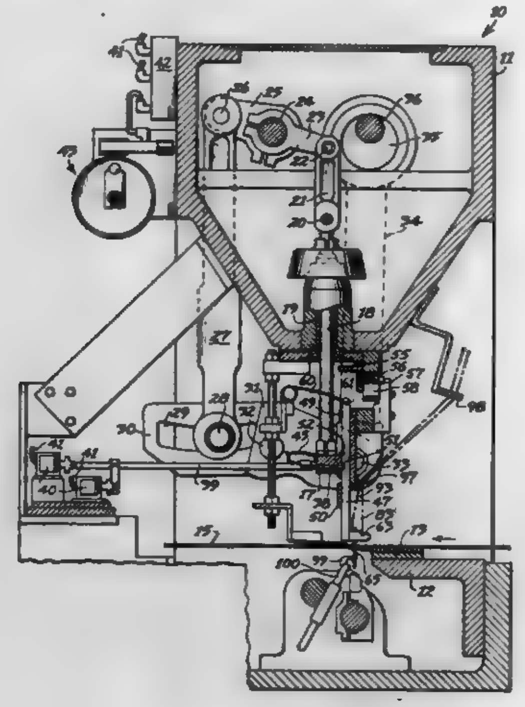
Henry Ross Escalette, Santa Ana, Calif., assignor to TRE Corporation, Beverly Hills, Calif.
Filed Feb. 13, 1975, Ser. No. 549,536
Int. Cl.² A47G *29/00*
U.S. Cl. 108—28 5 Claims



1. Display apparatus for packaged lock sets which provides for visual inspection and manual demonstration of each type of lock set comprising:
a shelf of welded wire construction, said shelf having a plurality of wire members in a horizontal plane defining a shelf surface for supporting a plurality of packaged lock sets thereon, said shelf further having side wire members angularly offset from the plane of said shelf surface, said side wire members extending from the front to the back of said shelf to provide structural support thereto and said shelf having a vertically disposed member at the front edge thereof, said verticaly disposed member being disposed below said shelf surface,
means adjacent the back of said shelf for coupling said shelf to a pegboard;
a block for receiving a lock, said block having substantially parallel first and second sides adjoining a substantially vertically disposed front face simulating a portion of a typical door on which the lock might be used, said block being ported and relieved to receive a lock to be displayed with the latch bolt of the lock disposed outward through said front face; and
means for coupling the back portion of said block to the front of said vertically disposed shelf member whereby said block is supported forward of said shelf surface and may display an individual lock of the type stored in packaged form on said shelf and whereby said packaged locks may be slid directly forward for removal from said shelf surface.

3,978,800
NEEDLE BAR FOOT CONSTRUCTION FOR MULTIPLE NEEDLE SKIP-STITCH TUFTING MACHINE

Roy T. Card, and Rodney E. Hill, both of Chattanooga, Tenn., assignors to Card & Co., Inc., Chattanooga, Ind.
Filed Aug. 15, 1975, Ser. No. 604,903
Int. Cl.² D05C *11/06*; D05B *55/16*
U.S. Cl. 112—79 R 9 Claims

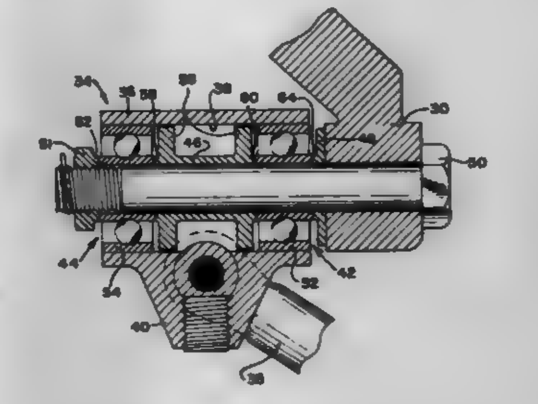


1. In a tufting machine for forming skip-stitch, pile yarn patterns in a base fabric, including means supporting a base fabric for longitudinal movement in a feeding plane through said machine, a reciprocable drive member, a plurality of alternating first and second elongated needle bars, each of said needle bars having an operative end portion, means for latching engagement and disengagement of each needle bar to said drive member, and pattern control means for selectively actuating said latch means, the improvement comprising:
a. a first foot member fixed to the operative end portion of each first needle bar,
b. a pair of first needles supported in said first foot member for penetrating said base fabric with pile yarns to form a first pair of tufts therein when said first needle bar is latched to said drive member,
c. a second foot member fixed to the operative end portion of each said second needle bar,
d. a pair of second needles supported in said second foot member for penetrating said base fabric with pile yarns to form a second pair of tufts therein when said second needle bar is latched to said drive member, and
e. said second foot member supporting at least one of said second needles in a vertical longitudinal plane between said pair of first needles.

3,978,801
BALL BEARING LOOPER DRIVE

Anthony D. Forte, Chicago, Ill., assignor to Union Special Corporation, Chicago, Ill.
Filed July 9, 1975, Ser. No. 594,394
Int. Cl.² D05B *1/24, 57/30*; F16C *35/06*
U.S. Cl. 112—176 5 Claims

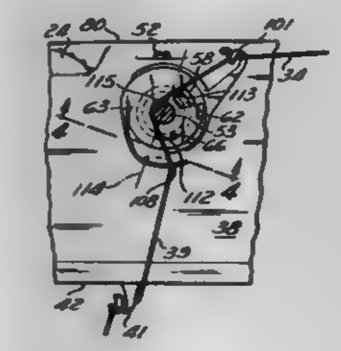
1. In a blindstitch sewing machine having a frame structure, a main rotary drive shaft and stitch forming mechanism including a looper carrying link adapted to be reciprocated longitudinally, turned angularly through a predetermined arc and tilted pivotally about at least one fulcrum, and force transfer means from said drive shaft for imparting all of such movements to said looper carrying link, said force transfer means comprising:
housing means having a horizontally extending bore means and a connection means generally centrally positioned thereon;
first and second ball bearing set means horizontally spaced apart in said bore means, adjacent the ends of said housing, and having the outer race means thereof secured to said housing means;



spacer means having a horizontally extending bore means positioned in said bore means between said first and second ball bearing set means, abutting only the inner race means thereof; and
elongated shaft means journaling said ball bearing set means and said spacer means whereby said inner race means of said bearing set means, through said spacer means, are abuttingly lockable such that force transfer from said main rotary drive shaft to said looper carrying link means is through said ball bearing set means.

3,978,802
SEWING MACHINE THREAD TENSIONER

Sidney J. Hamlett, Parma, Ohio, assignor to White Sewing Machine Company, Cleveland, Ohio
Filed Nov. 8, 1974, Ser. No. 521,956
Int. Cl.² D05B *47/02*
U.S. Cl. 112—254 2 Claims



1. In a sewing machine having a bed plate, a standard extending upwardly from the plate, an arm extending from the standard horizontally over the bed plate to a head, said head being supported by said arm immediately above a work area on the bed plate, said head supporting a needle bar, a thread tensioner device mounted on the upper face of the arm at the head end thereof, thread guide means for directing thread from a supply adjacent the standard and generally below an upper face of the arm through the tensioner device and ultimately to a needle, said tensioner device including means for turning thread in an arc about a vertical axis, means for frictionally engaging portions of the thread in said arc including a pair of friction washers and a spring biasing said washers into abutting contact, said guide means including a pair of guide points for wrapping said thread in said tensioner device about an arc measured on said washers in excess of 180°, whereby said washers are adapted to tilt on said thread to a stable thread-engaging position, said tensioner device and said pair of guide points being a self-supporting subassembly on said head end of said arm, said friction washers and said guide points being disposed above the plane of the upper face of the

arm, each of said guide points being adjacent said tensioner device and each having associated therewith means for restraining the thread from movement vertically upward from the plane of the washers, one of said guide points deflecting thread from said thread turning means slightly towards said standard to produce said arc in excess of 180°, said guide means including means for directing thread from said one guide point forwardly over the upper face of the head and downwardly over a frontal area of the head to a needle on said needle bar.

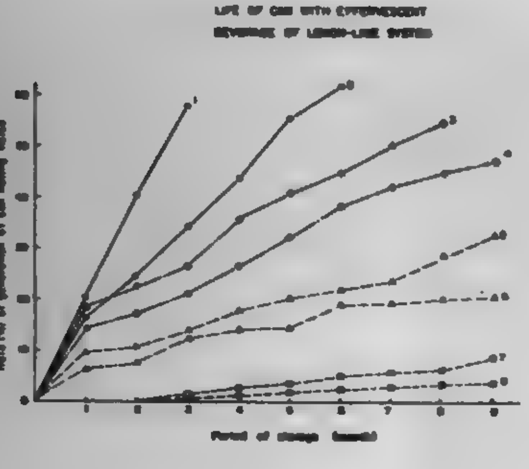
3,978,803
CONTAINER OR CAN AND A METHOD FOR MANUFACTURING THE SAME

Hidejiro Asano, and Yashichi Oyagi, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed July 15, 1974, Ser. No. 488,576

Int. Cl.² B21D *51/16*

U.S. Cl. 113—120 A **2 Claims**



1. A method for making a container or can which comprises the steps of:
- providing a steel sheet;
- applying a base plating of one of Ni or Cu on said steel sheet to the thickness of substantially 0.005 μ to 1.0 μ;
- electrically plating a coating of Sn over said base plating to a thickness of substantially 0.1 μ to 2.0 μ without effecting reflow of the Sn and thereby providing for the absence of any alloy layer between said two platings;
- subjecting said steel sheet to drawing and ironing operations to form a cup-like product; and
- applying an internal coating of an organic material to said cup-like product.

3,978,804
RISER SPACERS FOR VERTICALLY MOORED PLATFORMS

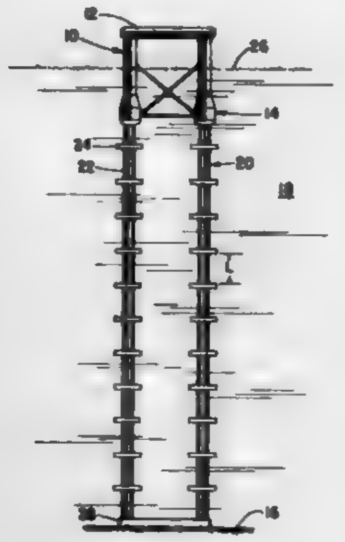
Pierre A. Beynet, and David A. Dixon, both of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Filed Oct. 15, 1973, Ser. No. 406,434

Int. Cl.² B63B *35/44*

U.S. Cl. 114—.5 D **9 Claims**

1. A method of anchoring a floating offshore structure at a selected location in a body of water having a maximum design wave and current which comprises:
- providing an anchor base means at the bottom of the body of water;
- providing a plurality of parallel spaced legs connecting and anchoring the offshore structure with said anchor base means, each said leg comprising a plurality of parallel hollow elongated anchoring members each under tension;
- providing at vertically spaced intervals a plurality of spacing means for holding the elongated anchoring members in a fixed spaced apart position longitudinally and laterally with respect to each other at the level at which the spacing means is provided.



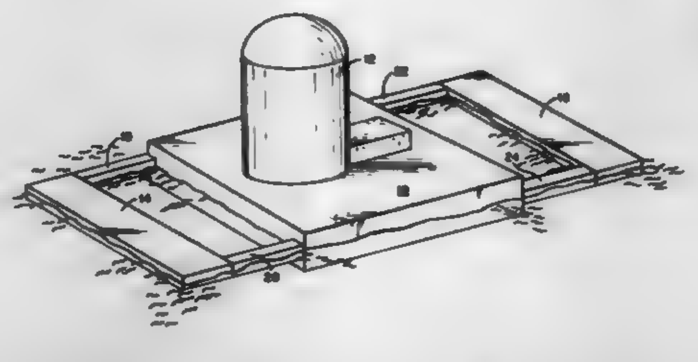
3,978,805
STABILIZED FLOATING PLATFORMS

David G. Thomas, Oak Ridge, Tenn., assignor to The Unites States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Apr. 25, 1975, Ser. No. 571,444

Int. Cl.² B63B *35/44*

U.S. Cl. 114—.5 F **2 Claims**



1. A buoyant structure for supporting a load upon a body of water and having in combination therewith stabilizing means for substantially reducing the effect of wave action upon the structure, comprising a buoyant platform for carrying said load and having a lengh-to-breadth ratio in the range between 1 2:1, 2:1, and said stabilizing means which comprise a single pair of discrete elongated floats separated from one another by said platform and oriented on said body of water so that either one of said floats provides the initial contact with wave motion contacting the buoyant structure, said floats being of a rectangular configuration and disposed parallel to one another and to opposite ends of said buoyant platform and having a breadth similar to that of said buoyant platform, and a pair of elongated rigid booms projecting between each of said floats and said buoyant platform for separating each float from said buoyant platform and for rigidly securing each float to said buoyant platform, said rigid booms forming projections with sides of said buoyant platform and separating each float from said buoyant platform a distance in a range corresponding to about one-eighth to about one-half of the length of said buoyant platform.

3,978,806
VESSEL WITH FLOODED HOLD FOR TRANSPORT OF BARGES

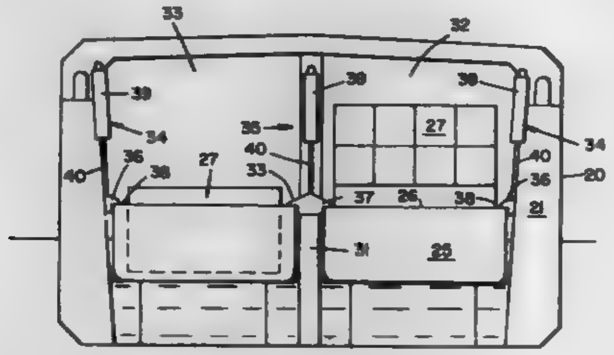
William Everett Kirby, Victoria, Hong Kong, and David Jackson Seymour, Daly City, Calif., assignors to Wharton Shipping Corporation, Panama

Filed June 3, 1975, Ser. No. 583,439

The portion of the term of this patent subsequent to Oct. 21, 1992, has been disclaimed.

Int. Cl.² B63B *35/44*

U.S. Cl. 114—43.5 VC **7 Claims**



1. A vessel for transporting floating buoyant barges, wherein said barges are partially supported in the vessel by their own buoyancy, including in combination:
- a hull having a bottom shell with rigid submarine barge-supporting and hull-reinforcing structure, a bow, a stern, and side walls providing a series of buoyancy compartments, and a hollow enclosed interior,
- a centerline longitudinal bulkhead dividing said interior into a pair of longitudinally extending cargo holds, said hull having conduit means communicating with both said holds for free passage of water therethrough into and out from said holds at all times, so that said holds are always flooded during the voyage,
- means for introducing and expelling water from said buoyancy compartments to adjust the draft, trim, and list of said vessel;
- gate means in said hull for opening to enable flotation loading and unloading of said barges in fore-and-aft orientation into both said holds and for closing during transportation thereof, and
- three series of locking spuds for releasably locking said barges in place in said flooded holds against movement relative to said hull all during a voyage of said vessel, with the bottom of each said barge engaging a substantial area of said submarine cargo-supporting structure, each of said spuds having barge-engaging means,
- one series of said spuds being affixed to said longitudinal bulkhead and one series of spuds being affixed to each said side wall of said vessel,
- whereby the water in the flooded holds enables the buoyancy of the barge to support the vessel, at least in part.

3,978,807
OFFSHORE STATION AND METHOD OF MAINTAINING THE SAME

Leopold Nitzki, Bremen, Germany, assignor to Aktiengesellschaft "Weser", Bremen, Germany

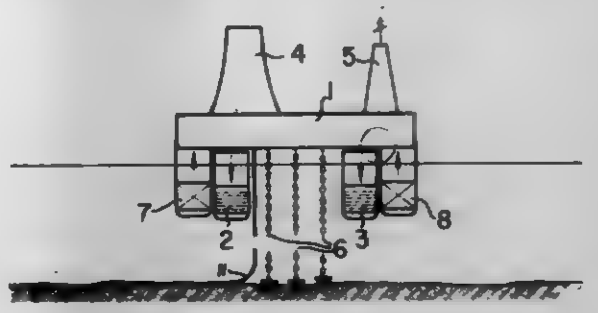
Filed Jan. 14, 1975, Ser. No. 540,946

Claims priority, application Germany, Mar. 16, 1974, 2412687

Int. Cl.² B63B *35/44*

U.S. Cl. 114—.5 D **11 Claims**

1. An offshore station moored at sea, comprising a platform; a plurality of first floats supporting said platform from below at a first platform-supporting position, said first floats being subject to corrosion and marine fouling so that they require periodic maintenance of at least their normally submerged portions; a plurality of second floats underneath said platform and adapted to support the same from below at a second platform-supporting position adjacent said first position, said second floats being free of corrosion and marine fouling; and means for interchanging said first floats with said second floats, said interchanging means including ballasting means in said first and second floats for changing the respective floating levels of the latter, whereby all of said first floats requiring maintenance are removed from their first platform-supporting position and exchanged with said second freshly maintained floats so that the latter now support said platform at said second position.



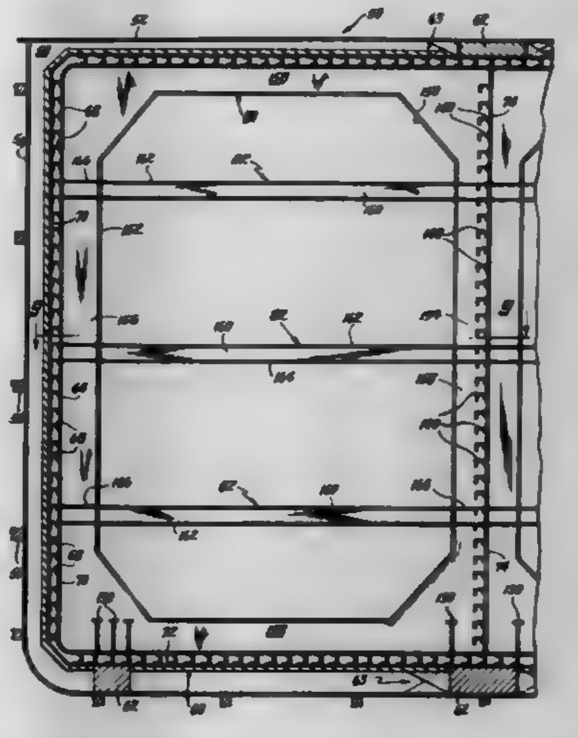
3,978,808
DOUBLE WALL CARGO TANK FOR TRANSPORTING CRYOGENICS

Joseph J. Cuneo, Scarsdale, N.Y., and Ivan Mertl, Greenwich, Conn., assignors to John J. McMullen Associates, Inc., New York, N.Y.

Filed Sept. 11, 1973, Ser. No. 396,302

Int. Cl.² B63B *25/16*

U.S. Cl. 114—74 A **20 Claims**



1. A double wall tank for the transportation of cryogenic materials by ship, the tank comprising: a liquid and gas-impervious primary barrier defining a cargo space, said primary barrier being substantially planar; a plurality of primary webs rigidly connected to the inner surface of said primary barrier and extending into said cargo space in a plane substantially perpendicular to the plane of said primary barrier; a plurality of stiffeners rigidly connected to the outer surface of said primary barrier and extending substantially perpendicular to the plane of said primary webs, each of said stiffeners comprising a web portion lying in a plane substantially perpendicular to the plane of said primary barrier, a primary flange portion attached to said web portion, lying in a plane substantially parallel to the plane of said primary barrier and rigidly connected to the outer surface of said primary barrier, and a secondary flange portion spaced from said primary barrier,

connected to said web portion of said stiffener and lying in a plane substantially parallel to the plane of said primary barrier; a secondary barrier spaced from and surrounding said primary barrier and attached to said secondary flange portion of said stiffener in a liquid and gas-impervious manner, said secondary barrier being substantially planar and non-self-supporting, said secondary barrier comprising a plurality of thin metal sheets attached at their sides to the secondary flange portion of said stiffeners; insulation means located outside of said secondary barrier for thermally insulating said tank, said insulation means comprising a plurality of thermal insulation panels supported by said stiffeners and providing a backing and support for said thin sheets of metal comprising said liquid and gas-impervious secondary barrier; means for attaching each thermal insulation panel to a pair of adjacent stiffeners in a substantially liquid and gas-impervious manner; and means for attaching adjacent thermal insulation panels to each other in an overlapping and substantially liquid and gas-impervious manner.

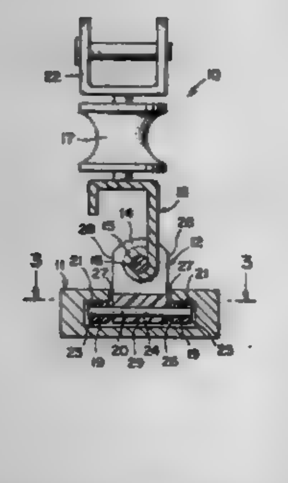
3,978,809
ROLLER TRAVELLER DEVICE

Francis H. Snyder, Jr., Rte. 7, Brookfield, Conn. 06804

Filed July 28, 1975, Ser. No. 599,356

Int. Cl.² B63H *9/10*

U.S. Cl. 114—204 **2 Claims**



1. In a traveller device for positioning a sail, and having a carrier body disposed for longitudinal movement along a guide track, a base with at least one fitting, connected to said carrier body for movement therewith to adjust a line that controls a sail whereby the position of such sail is established by the location of the carrier body on the guide track, the improvement which comprises:

a plurality of rollers borne by said carrier body on opposite sides thereof, said rollers including at least three pairs of rollers, each pair of which is supported on a separate axle that extends transversely through the carrier body and is supported thereby for rotation relative thereto, said rollers being disposed in spaced-apart relation along the length of the carrier body and for rolling contact engagement with longitudinally extending surfaces of the guide track to accommodate the movement of the carrier body therealong;

said carrier body having a limited elastic flexibility operable to maintain all of said rollers in rolling contact engagement with said longitudinally extending surfaces of the guide track as against limited deviations of said surfaces from a planar configuration;

said base being hingedly connected to the carrier body for pivotal movement relative thereto about a longitudinally extending axis;

and said carrier body having surfaces disposed to frictionally engage said guide track under the influence of transversely directed forces applied to the carrier body by said base through the hinged connection thereof.

3,978,810
MOORING BUOY

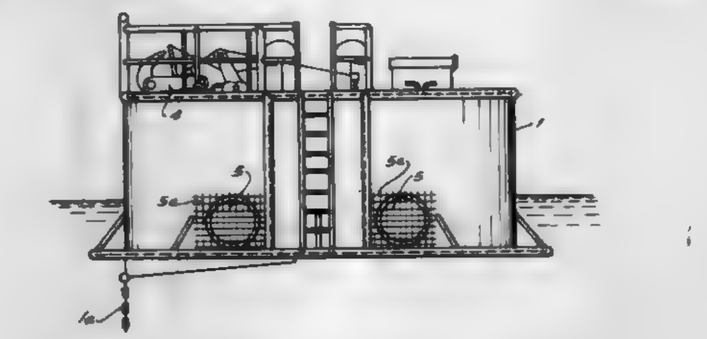
Wilhelm Lucht, Nordenham, and Gunter Ecke, Bremerhaven, both of Germany, assignors to Aktiengesellschaft "Weser", Bremen, Germany

Continuation of Ser. No. 444,240, Feb. 20, 1974, abandoned. This application June 27, 1975, Ser. No. 591,064

Claims priority, application Germany, Feb. 23, 1973, 2308999

Int. Cl.² B63B *21/00*

U.S. Cl. 114—230 **7 Claims**



1. In an arrangement for anchoring watercraft floating on a body of water, a combination comprising anchor means disposable at the bottom of the body of water; variable buoyancy buoy means including a generally hollow float body provided with a recess; means for connecting said buoy means to said anchoring means; means for varying the buoyancy of said buoy means; means for actuating said varying means so as to submerge and surface said buoy means by varying the buoyancy thereof; mooring means including a mounting portion mounted in said recess of said float body for pivoting with respect to the latter about a substantially horizontal axis and a rapid-release slip hook on said mounting portion and operative for anchoring the watercraft thereto when said buoy means is surfaced and for releasing the watercraft during the submerging of said buoy means; an auxiliary float on said body, flexible conduit means connecting the auxiliary float with said body; means for normally holding said auxiliary float to said body; and pressure responsive means for automatically releasing the auxiliary float when said body has sunk to a predetermined depth.

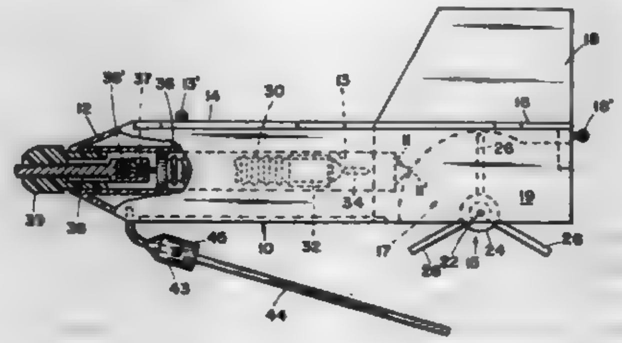
3,978,811
TROLLING DEVICE WITH PARAMETER DETECTING MEANS FOR CONTROLLING THE DEVICE

Charles D. Angus, 302 N. Buchanan St., Spring Lake, Mich. 49456, and John C. Angus, 2716 Colchester Road, Cleveland, Ohio 44106

Filed Mar. 17, 1975, Ser. No. 559,136

Int. Cl.² B63B *21/00*

U.S. Cl. 114—235 B **17 Claims**



1. A device for controlled movement through a fluid comprising:

a body including means for stabilizing said body for motion through a fluid;

a freely rotatable element rotatably coupled to said body for providing a motion-controlling force to said body when held in a stationary position but not substantially affecting the motion of said body when rotating; and

control means for detecting a predetermined parameter and selectively preventing rotation of said freely rotatable element in response to a detected predetermined level of said predetermined parameter to cause said body to move in a selected manner.

3,978,812
SELF-PROPELLED CROSSING AND FLOATING BRIDGE IMPLEMENT ALSO USABLE AS A LAND VEHICLE

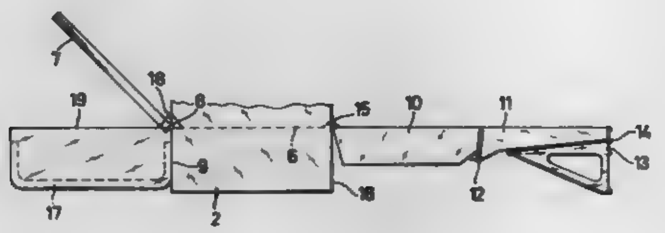
Gerhard Wagner, Mainz-Lerchenberg, Germany, assignor to Magirus-Deutz Aktiengesellschaft, Ulm, Germany

Filed Nov. 14, 1975, Ser. No. 632,068

Claims priority, application Germany, Nov. 14, 1974, 2453925

Int. Cl.² B60F *3/00*

U.S. Cl. 115—1 B **6 Claims**



1. A self-propelled crossing and floating bridge implement also usable as land vehicle, which includes: a main floating body with a deck surface, auxiliary floating means pivotally connected to said main floating body so as to be pivotable into a first position above said main floating body when said implement is used as land vehicle, said auxiliary floating means also being pivotable from said first position to a second position alongside one longitudinal side of said main floating body, a buoyancy body pivotally connected to said main floating body and pivotable to a position alongside the other longitudinal side of said main floating body, and a roadway plate linked to said main floating body and resting thereon when said implement is not used as bridge element, said roadway plate also being shiftable onto said buoyancy body when the latter occupies its position alongside said other longitudinal side of said main floating body, said buoyancy body also being shiftable from its position alongside said other longitudinal side of said main floating body into the position above said main floating body to cover up said auxiliary floating means when the latter occupy their first position above said main floating body.

3,978,813
PROPELLER-DRIVEN HYDROPHONE ARRAY TENSIONING DEVICE

George O. Pickens, San Diego, and Charles E. Hansen, Chula Vista, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 9, 1976, Ser. No. 647,686

Int. Cl.² B63B *21/56*

U.S. Cl. 115—6 **16 Claims**

1. A tensioning device for applying a tensional force to a submarine structure comprising:

a surface float;

a pendent line attached to said float and extending downwardly therefrom;

an electrical conductor carried by said pendent line for transmission of electrical energy therealong;

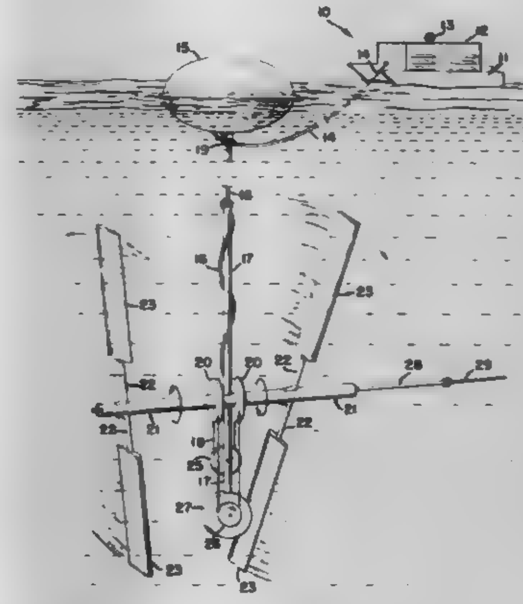
a support attached at one end thereof to said pendent line at the lower, distal end thereof;

an electrical motor mechanically attached to said support means at the end opposite said one end to which said pendent line is attached for providing hydrodynamic stability;

a cross member attached to said support forming a cruciform support therewith;

hydrodynamic screw means rotably mounted on said cross member for providing translatory force on the tensioning device;

power transmission means effectively joining said electrical motor and said hydrodynamic screw means for the transmission of mechanical energy therebetween; and



hitch means effectively connected to said support means for attachment to the submarine structure, whereby the translatory force applied to the tensioning device may be effective to provide a tensioning force to the submarine structure.

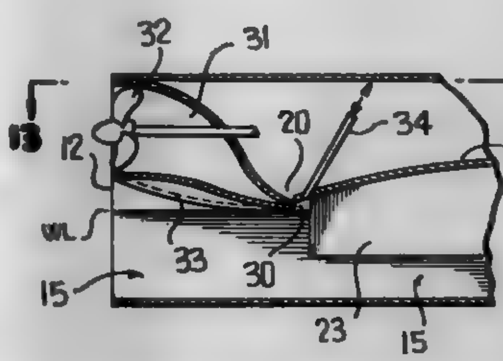
3,978,814
AIR NOZZLE CONTROLLED MARINE PROPULSION SYSTEM

James C. Willyard, 14204 Knotley Road, Silver Spring, Md. 20904

Division of Ser. No. 376,334, July 5, 1973, Pat. No. 3,888,202. This application Mar. 17, 1975, Ser. No. 559,225

Int. Cl.² B63H *11/02*

U.S. Cl. 115—15 **15 Claims**



7. In a marine vessel of the hull displacement type wherein the vessel hull is partially submerged when said vessel is in motion, a propulsion system comprising:

a flow duct extending along the bottom of said hull, said duct being open at both ends and enclosed within said hull along its top, bottom and sides, said duct being mostly submerged with the upper portion of its forward end extending above the water line when said vessel is in motion;

a reaction device in the form of an elongated nozzle defined across the width and proximate the forward end of said duct through the top wall of said duct, said nozzle being connected to an air inlet positioned to receive pressurized air from the bow of said vessel, said nozzle being oriented to issue a high velocity air jet from a location above the in-operation water line of said vessel in a generally rearward direction at a slight angle to the water surface;

selectively actuable air blower means disposed in said air inlet to impart velocity enhancement to air flowing towards said nozzle;

whereby air driven rearwardly by said nozzle initiates a reactive force which drives said vessel in a forward direction without imparting a lift force to said vessel.

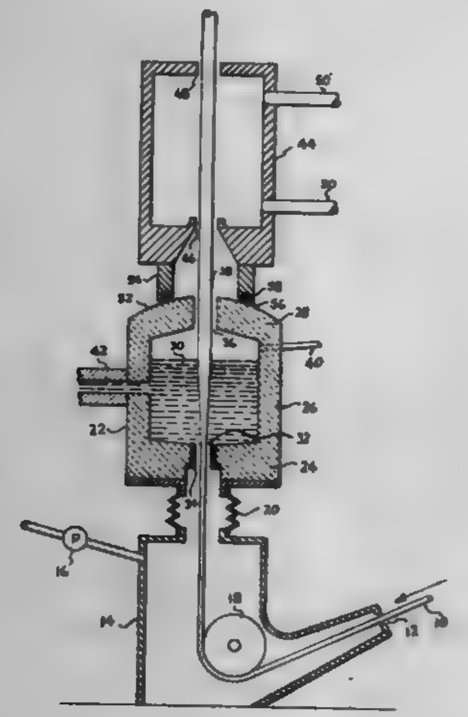
3,978,815
CONTINUOUS CASTING APPARATUS WITH AN ARTICULATIVE SEALING CONNECTION

Marcel Vincent Carrara, Schenectady, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Dec. 22, 1975, Ser. No. 642,771

Int. Cl.² B05C *3/12*

U.S. Cl. 118—69 **6 Claims**



1. Apparatus for the continuous casting of metal by passing a metal core member upwardly through a body of molten metal and thereby accreting and solidifying molten metal on the core member, comprising:

a. a tiltable enclosed casting crucible for the containment of molten metal having an entry port in a bottom wall thereof and an exit port in a top wall thereof for the passage of a metal core member upwardly through the enclosed crucible and molten metal contents thereof to thereby cast the molten metal by accretion and solidification on the core member, said enclosed casting crucible being pivotally mounted for tilting and having a feed inlet in a side wall thereof for the addition of molten metal into the casting crucible whereby the supply of molten metal into the casting crucible can be controlled by tilting the pivotally mounted casting crucible;

b. an enclosed cooling chamber suspended above the tiltable enclosed casting crucible having a lower entry opening and an upper exit opening for the passage of a metal core member with cast metal accreted and solidified thereon from the casting crucible upwardly through the enclosed cooling chamber for the cooling thereof; and,

c. an articulative sealing connection operatively adjoining the exit port in the top of the tiltable enclosed casting crucible with the lower entry opening of the enclosed cooling chamber for the passage of a metal core member upwardly through the tiltable casting crucible and therefrom into and through the cooling chamber, said articulative sealing connection comprising the combination of the tiltable casting crucible top wall having an outer spherical surface extending around the exit port therein and the cooling chamber lower entry opening having a depending annular lip of relatively large diameter surrounding the casting crucible exit port and in circumferential slidable sealing contact with the spherical surface of the top wall thereof whereby the sealing connection adjoining the casting crucible exit port and the cooling chamber entry opening for the passage of the core member upwardly therethrough is maintained while tilting the casting crucible on its pivotal mount.

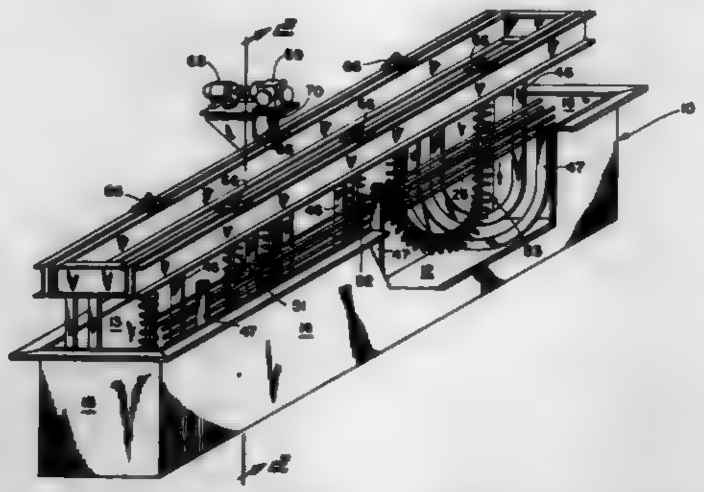
3,978,816
U-SHAPED SCREW TRANSFER MEANS IN IMMERSION COATING APPARATUS

Joseph T. Saloom, Youngstown, Ohio, assignor to Wheatland Tube Company, Wheatland, Pa.

Filed Oct. 15, 1974, Ser. No. 514,606

Int. Cl.² B05C *3/10*

U.S. Cl. 118—426 **15 Claims**



1. An apparatus for moving elongated objects through a liquid coating material contained in a reservoir comprising at least two spaced apart generally vertically oriented, U-shape screws which are partially submerged in the coating material, means to convey the elongated objects to said screws for support thereby, means simultaneously to rotate said screws about their axes to move said elongated objects through said coating material means associated with said U-shaped screws to maintain the elongated objects in driving contact with the screw, and means to remove the coated elongated objects from said screws.

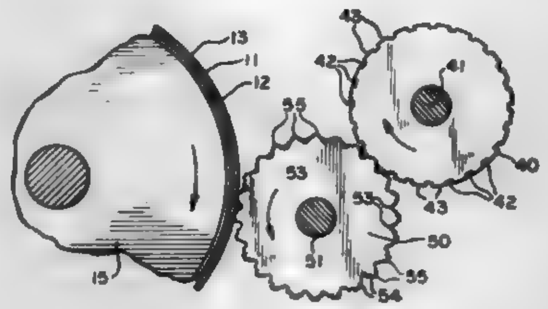
3,978,817
PATTERNED GRAVURE AND DOCTORING MEANS THEREFOR

Oscar G. Hauser, Rochester, and Fred W. Schmidlin, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 16, 1975, Ser. No. 578,064

Int. Cl.² B05B *5/02*

U.S. Cl. 118—637 **12 Claims**



1. In an apparatus for reproducing a selected image by electrostatically attracting development fluid toward receiving means:

patterned gravure means, having a plurality of pockets movable into facing relationship with said receiving means; said pockets being adapted to carry discrete quantities of development fluid characterized by a meniscus;

means defined by each of said pockets, defining a constant point of maximum reach;

means, extending from said patterned gravure means, for spacing each of said constant points a predetermined distance from said receiving means when corresponding pockets are moved into facing relationship with said receiving means; and

a doctoring roll, engagable with said gravure means; said doctoring roll having a surface comprising a plurality of recesses each adapted to accommodate a corresponding spacing means in said gravure means to remove excess development fluid therefrom prior to the movement of pockets adjacent to said spacing means into facing relationship with said receiving means.

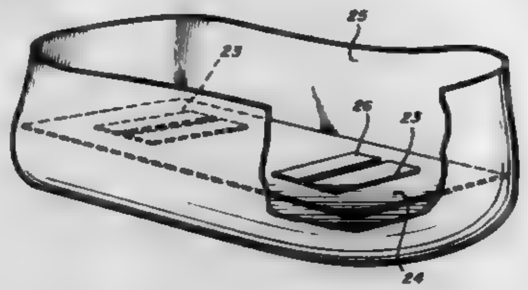
3,978,818
LITTER PACKAGES

Ladd L. Heidenbrand, 2 Bay Road, South Portland, Maine 04106

Continuation-in-part of Ser. No. 412,700, Nov. 5, 1973, abandoned. This application Sept. 27, 1974, Ser. No. 510,002

Int. Cl.² A01K *29/00*

U.S. Cl. 119—1 **12 Claims**



1. A litter package comprising a container of transparent waterproof material, a body of litter within the container for use by a pet animal after the package has been opened to expose the litter with the litter covering the bottom of the container when disposed for use, said body consisting of absorbent particles that are chemically neutral when wet, and testing means within the container and of an indicator type changing color if wetted by urine containing a particular color-changing reactant indicative of an unfavorable current health condition of the animal, said testing means so located within the container that when the container is disposed for use, test areas are provided where they will become wetted by urine in any position the animal will normally occupy while urinating during a predetermined time interval, each test area dimensioned to provide a colored signal, if said reactant is present in the animal's urine, that is readily distinguishable from the remainder of the litter body during the disposal thereof.

3,978,819
CAGE AND ACCESSORIES THEREFOR

Robert O. Lovitt, 1609 Terbit, Fort Worth, Tex. 76112

Filed Nov. 25, 1974, Ser. No. 526,785

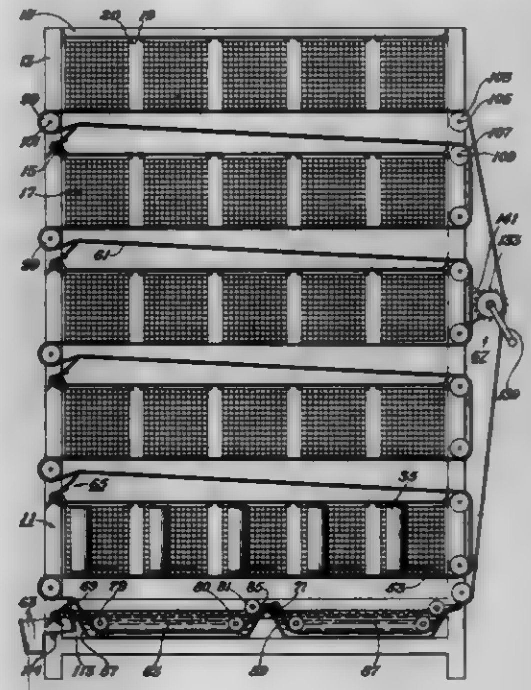
Int. Cl.² A01K *31/04*

U.S. Cl. 119—22 **13 Claims**

10. A rodent cage and water bottle combination comprising:

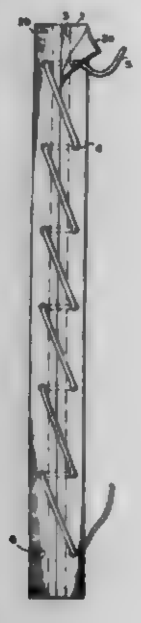
a. a rodent cage having a perforate bottom to allow wastes to be dropped by gravity exteriorly of said cage; having a continuous periphery of walls extending upwardly from said bottom, at least one of said upwardly extending walls affording a view of the interior of said cage, at least one of said upwardly extending walls adapted at the top thereof to engage a member to form a lid, at least one of four upwardly extending walls that is accessible when said cage is installed in a battery having a plurality of spaced apart apertures penetrating therethrough for supporting a water bottle and having at least one other aperture for insertion of a drinking nozzle; said cage comprising a basket having bottom and walls of open grid structure and an invertible insert disposed peripherally therewithin, said insert being solid and opaque along a plurality of said walls and having a plurality of windows at a predetermined edge; and

b. a drinking bottle attached to said rodent cage; said drinking bottle having a plurality of supports spaced apart and adapted to be slipped into said apertures in said cage and thereafter to retain said water bottle in position for dispensing drinking water on demand to said occupant of said cage; said supports of said water bottle being spaced apart vertically so as to define a top support and a bottom support therefor; said top support of said water bottle being mounted on a retainer means and said retainer means slidably engaging said water bottle when said water bottle is inverted to facilitate attachment of said water bottle to said cage without the requirement of predetermined spacing of said supports and said co-engaging apertures on said cage; said water bottle comprising a container having at its first and top end a readily removable lid that can be snapped open with one hand and that seals vacuum tight when pressed into position, a tubular outlet adjacent its second and bottom end; said bottom end being sealingly connected with the walls for holding said water and vacuum; a flexible conduit connected with said outlet; a drinking nozzle of reduced diameter connected with said flexible conduit; said drinking nozzle comprising an elongate inner bore having a diameter less than 5 millimeters and sufficiently small to prevent leaking of water when said vacuum tight lid is sealingly snapped into place and holds a vacuum on said water, and no demand for water is being made by the occupant of said cage; said flexible conduit and said drinking nozzle extending laterally and adapted for insertion of a drinking end interiorly of said cage to afford drinking water to said occupant; said water bottle container, vacuum-tight lid, sealed bottom, flexible conduit and drinking nozzle coacting to dispense water on demand and not otherwise in normal operation and readily refillable by the simple expedient of snapping said top off and refilling said container with flow through said flexible conduit and drinking nozzle being prevented during filling to prevent water running from said container.



3,978,820
PROTECTIVE PET COLLAR

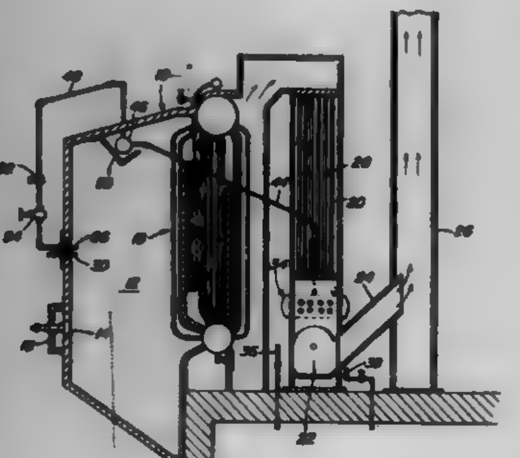
Vera L. Drehman, 17710 SW. 109 Place, Perrine, Fla. 33157
Continuation of Ser. No. 351,801, May 29, 1973. This application July 19, 1974, Ser. No. 489,917
Int. Cl.² A01K *27/00*
U.S. Cl. 119—106 3 Claims



1. A pet collar comprising:
a strip of flexible material having its longitudinal edges folded over towards a central axis of said strip of flexible material so as to form a longitudinally extending holder having inner surfaces forming an internal passage and outer surfaces, said holder being capable of receiving a strip of insecticide impregnated material;
a first plurality of openings provided in each end of said holder;
a lace passing through said openings within said holder for tying said ends of said holder together;
a second plurality of openings provided along each longitudinal edge of said flexible strip and said lace being threaded through said second openings so as to join the longitudinal edges of said flexible strip together; and
a strip of insecticide impregnated material positioned longitudinally within said passage.

3,978,821
ENERGY PRODUCER USING DUAL FUELS

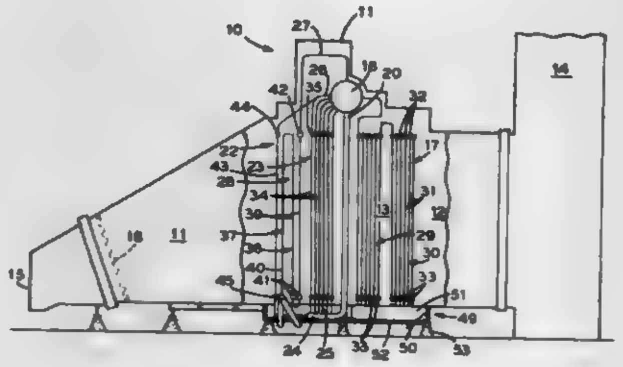
Edward T. Schreiber, 7400 Lyndale Ave. South, Minneapolis, [redacted]
Filed May 9, 1975, Ser. No. 576,201
Int. Cl.² F22B *1/00*
U.S. Cl. 122—5 7 Claims



1. In combination with a combustion chamber into which air and a primary fuel are admitted for continuous burning, an exhaust outlet for said chamber whereby exhaust gases may be vented from said chamber, supplemental fuel inlet means for said combustion chamber, steam generator means having a steam outlet, a gas generator including a housing having a predetermined amount of iron filings disposed therein and fluid inlet and fluid outlet means, means connecting said steam outlet with said fluid inlet means, means communicating said fluid outlet means with said supplemental fuel inlet means, said gas generator housing being closed and disposed within said combustion chamber for heating of said housing, the iron filings therein and the steam discharged into said housing from said steam generator, said steam generator being disposed in good heat transfer relation with at least some of the exhaust gases passing through said exhaust outlet, the steam generated in said steam generator being discharged into said gas generator housing and converted, at least to a great extent, into its hydrogen and oxygen gas components by catalytic action upon being further heated in said housing and passing through the latter in intimate contact with the heated iron filings in said housing with the hydrogen and oxygen gases produced in said gas generator then being admitted into said combustion chamber as supplemental fuels through said supplemental fuel inlet means.

3,978,822
VAPOR GENERATOR

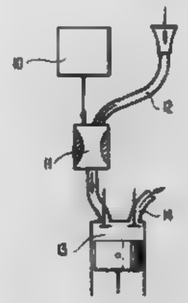
John William Smith, Massillon, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.
Filed Aug. 4, 1975, Ser. No. 601,910
Int. Cl.² F22B *37/24*
U.S. Cl. 122—510 7 Claims



1. A bottom supported steam generator having walls defining a gas passage, means for introducing heating gases through said passage, upright tubes disposed within said passage, at least some of the tubes forming a plurality of spaced platens arranged parallel to one another in a direction transverse to the gas flow, each of said platens having its lower end connected to header means, and means for bottom supporting said header means, the bottom support means comprising a grid formed of intersecting structural members, means fixedly connecting said grid and header means, the grid being mounted on pedestals, and including slidable plate means interposed therebetween.

3,978,823
LPG BURNING INTERNAL COMBUSTION ENGINE, ESPECIALLY OTTO ENGINE

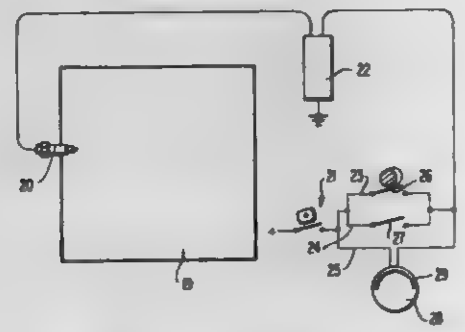
Michael Simon, Munich-Obermenzing, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg AG, Germany
Filed Aug. 27, 1973, Ser. No. 391,773
Claims priority, application Germany, Aug. 26, 1972, 2242049
Int. Cl.² F02B *75/00*
U.S. Cl. 123—1 A 16 Claims



1. An internal combustion engine arrangement comprising:
fuel supply means for supplying the fuel gas in a low-temperature liquefied state,
combustion air supply means for supplying combustion air at a temperature higher than said fuel gas in said fuel supply means,
heat exchange means for effecting heat exchanger between said combustion air and said fuel gas,
and conducting means for conducting said combustion air and fuel gas from said heat exchange means to an engine combustion chamber,
whereby said combustion air is cooled down prior to combustion by its use as a heat-emitting heat-exchanging medium for preheating the low-temperature liquefied fuel gas, and
wherein said heat exchange means is constructed as a carburetor which directly mixes said combustion air and liquefied fuel gas at a position upstream of said combustion chamber.

3,978,824
ROTARY PISTON INTERNAL COMBUSTION ENGINE OF TROCHOIDAL CONSTRUCTION

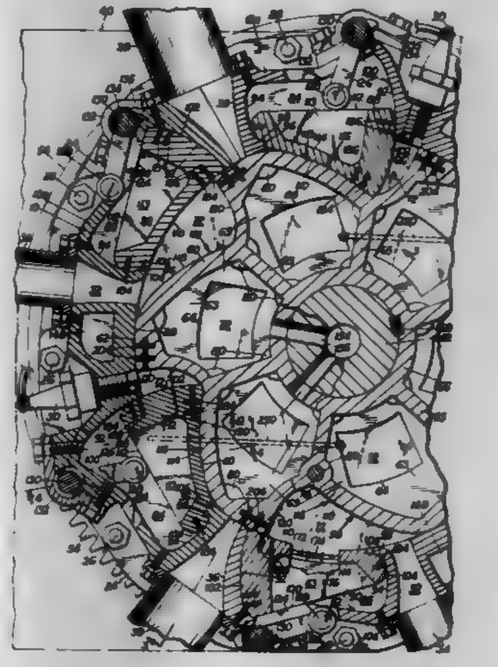
Wolf-Dieter Bensinger, Stuttgart; Gunter Worner, Rommelshausen, and Dietrich Kurz, Stuttgart, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany
Continuation of Ser. No. 307,764, Nov. 20, 1972, abandoned. This application Dec. 12, 1974, Ser. No. 532,177
Claims priority, application Germany, Nov. 20, 1971, 2157646
Int. Cl.² F02B *53/12*
U.S. Cl. 123—8.09 27 Claims



1. A rotary piston internal combustion engine of trochoidal construction having at least one stage, the engine including a housing means, spark plug means disposed in said housing means for igniting a fuel-air mixture, means for supplying ignition impulses to said spark plug means, a trochoidal running surface means provided in said housing means, an eccentric shaft disposed in said housing means, a polygonal piston means for each stage rotatably supported on a corresponding eccentric of said eccentric shaft, said piston means sliding with its piston corners along said trochoidal running surface means and forming a piston flank between each two corners, a working chamber coordinated to each piston flank, said housing means including an inlet channel means and an exhaust channel means, and a throttling device disposed in said inlet channel means, said throttling device being selectively displaceable from an open to a closed position, the improvement comprising: control means for selectively suppressing an ignition pulse to said spark plug means, said control meand being operatively connected with the impulse supplying means and the throttling device and operated in dependence upon the position of the throttling device and the number of stages of the engine, said control means with the throttling device in a closed and substantially closed position, after an ignition of fuel-air mixture in a working chamber, suppresses at least once an ignition of the fuel-air mixture in the same working chamber for achieving at least one of the two characteristics consisting of high uniformity and small periodic length of the torque at the eccentric shaft.

3,978,825
ROTARY INTERNAL COMBUSTION ENGINE

Paul Rogers, 451 SW. Primrose, Portland, Oreg. 97219
Continuation-in-part of Ser. No. 370,821, July 13, 1973, abandoned. This application Oct. 29, 1974, Ser. No. 518,584
Int. Cl.² F02B *53/00*
U.S. Cl. 123—8.45 3 Claims



1. A rotary internal combustion engine comprising:
a. a tubular stationary housing,
b. the inner surface of the housing having at least one pair of circumferentially spaced recesses therein,
c. the pair of recesses having associated therewith circumferentially spaced fuel intake means, spark emitting means and exhaust means,
d. a rotor in said housing having an outer surface rotable closely adjacent said inner surface of said housing,
e. said outer surface of the rotor having a plurality of circumferentially spaced rotor cavities therein each registrable with each recess in the housing during rotation of the rotor, each cavity having a forward driving surface extending inwardly from the outer surface of the rotor and a trailing surface extending rearwardly from the inner edge of the forward driving surface to the outer surface of the rotor,
f. a piston in each recess movable freely at both of its ends radially between a position fully retracted in its recess and a position projecting radially inward into a registering rotor cavity, each piston having a front face arranged in sealed, sliding engagement with the front surface of its

recess, the front face of the piston associated with one of the recesses defining with the forward driving surface of a registering cavity, when the piston is projected thereinto, a combustion chamber registering with the spark emitting means, and each piston having an inner surface which, when the piston is projected into a rotor cavity, is disposed at least at its forward end in sealed, sliding engagement with the trailing surface of said cavity throughout the air-fuel combustion and gas-expansion portions of the operating cycle of the engine,

g. timed piston drive means associated with each piston and operable momentarily to move the piston in said one recess inwardly into a registering rotor cavity to effect compression of air-fuel mixture for combustion and thereafter to allow free outward movement of the piston into its recess, and operable momentarily to move the piston in the other recess of the pair inwardly into a registering rotor cavity to effect scavanging of combustion gases from said rotor cavity to the exhaust means and to effect evacuation of the rotor cavity for drawing air-fuel mixture thereinto from the fuel intake means and thereafter to allow free outward movement of the piston into its recess, and

h. power output means connected to said rotor for rotation therewith.

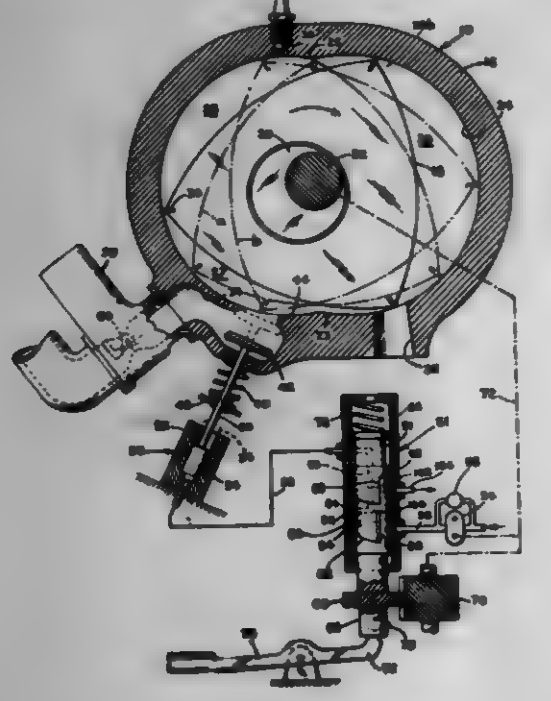
3,978,826
ROTARY ENGINE WITH INTAKE VALVE HAVING A VARIABLE OPEN PERIOD FOR POWER CONTROL

Michael T. Gavrun, Bayonne, and Robert W. Loyd, Jr., Wyckoff, both of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Apr. 14, 1975, Ser. No. 568,124

Int. Cl.² F02B *53/06*

U.S. Cl. 123—8.45 **5 Claims**



1. A power control system for a four-stroke cycle rotary internal combustion engine having an outer body with an internal cavity, the peripheral surface of which has a multi-lobed profile, the outer body having an intake passage and a combustion gas exhaust passage opening into said cavity and having an inner body of generally polygonal profile mounted for relative rotation within said outer body, the apex portions of said inner body having sealing cooperation with said peripheral surface to define a plurality of working chambers which cyclically vary in volume in response to said relative rotation such that each cycle of a working chamber includes an intake phase in which the volume of the chamber progressively expands, said system comprising:

a. an air intake passageway characterized by the absence of any throttle valve but including valve means movable only to either a fully open or a fully closed position for controlling the quantity of air flow through said intake passageway into the engine working chambers during each intake phase;

b. valve actuating means for fully opening said valve means to initiate the intake of air into each working chamber approximately at the beginning of the expansion of said chamber and for closing said valve means during said chamber expansion a variable length of time after the valve means has opened thereby controlling the quantity of air supplied to the engine working chambers during each intake phase;

c. power control means operatively connected to said valve actuating means and manually movable to vary the length of time said valve means is open during each intake phase; and

d. means for supplying fuel into the engine working chambers in accordance with the air supplied to said chambers so that variation in the length of time the intake valve means is open during each intake phase regulates the power output of the engine.

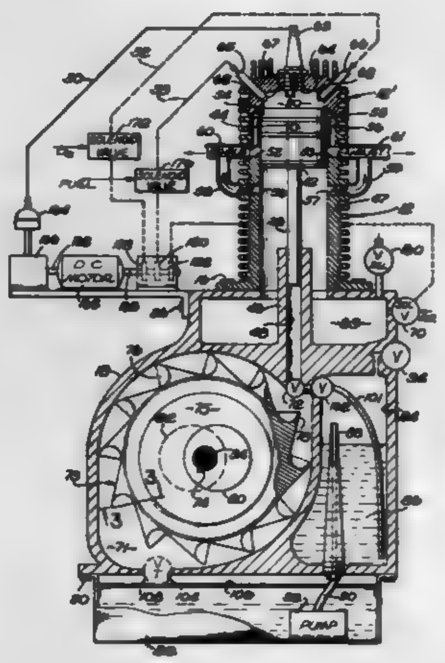
3,978,827
PISTON ENGINE EMPLOYING OXYGEN

Marvin E. Wallis, 3755 San Remo Drive, Santa Barbara, Calif. 93105

Division of Ser. No. 408,368, Oct. 23, 1973, Pat. No. 3,905,339. This application June 23, 1975, Ser. No. 589,502

Int. Cl.² F02B *71/00;* **F02D** *31/10*

U.S. Cl. 123—46 R **2 Claims**



1. In a piston engine having a piston carried in a cylinder therefor and defining therewith a combustion chamber, an improved combustion system comprising:

means for injecting fuel into said combustion chamber;

means for injecting a gas containing oxygen in greater than atmospheric proportion into said combustion chamber;

means for spark-igniting said injected fuel and gas;

a variable speed electric motor; and

means responsive in predetermined sequence to rotation of said electric motor to effect said fuel and gas injections, and said spark ignition.

3,978,828
V-TYPE INTERNAL COMBUSTION ENGINE

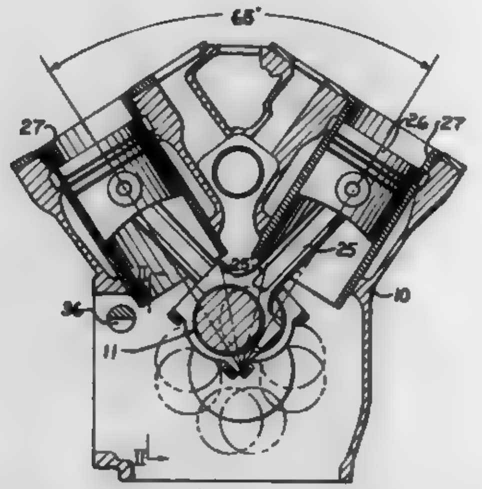
Robert L. Weber, Lacon, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 14, 1972, Ser. No. 280,576

The portion of the term of this patent subsequent to June 7, 1991, has been disclaimed.

Int. Cl.² F02B *75/22*

U.S. Cl. 123—55 VE **2 Claims**



1. A V-type internal combustion engine comprising a cylinder block having two banks of cylinders disposed at an included angle of 65° with respect to each, a crankshaft having a plurality of longitudinally aligned main bearing journals rotatably mounting said crankshaft in said block and pairs of crankpins with the crankpins of each such pair being overlapped and offset at an angle of 25° with respect to each other, each pair of crankpins positioned between an adjacent pair of main bearing journals and having an overlapped integrally connected area which is at least one-third of the combined areas of such pair of crankpins, said crankpins intersecting at a pair of fillets, each extending circumferentially approximately 145° about a respective crankpin with diametrically opposed S-shaped blended surface areas formed at two circumferentially disposed intersections of said fillets, a rod mounted on each of said crankpins, and a piston connected to each one of said rods and reciprocally mounted in a respective one of said cylinders, and a plurality of counterweights secured to said crankshaft disposed solely on each side of four outer ones of said main bearing journals.

3,978,829
SELF-ADJUSTABLE CAMSHAFT DRIVE MECHANISM

Koichi Takahashi, Yokohama, and Nobuteru Hitomi, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

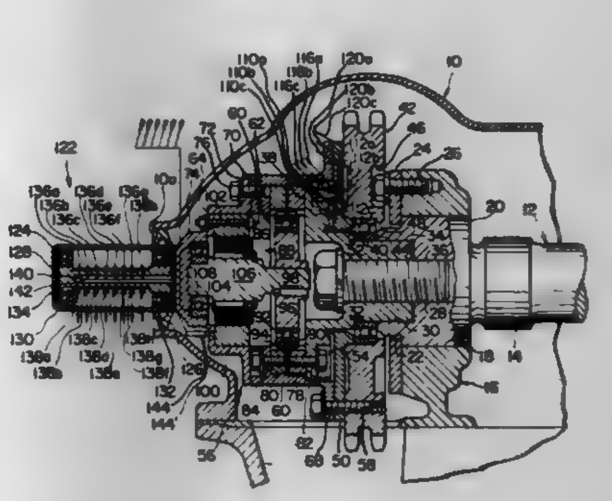
Filed June 9, 1975, Ser. No. 585,052

Claims priority, application Japan, June 10, 1974, 49-64913

Int. Cl.² F01L *1/34*

U.S. Cl. 123—90.15 **11 Claims**

1. A self-adjustable camshaft drive mechanism of an internal combustion engine having a camshaft rotatable about an axis for driving intake and exhaust valves of the engine, comprising a camshaft drive means rotatable relative to the camshaft about an axis substantially in line with the axis of rotation of the camshaft and adapted to be driven from the crankshaft of the engine, a differential reduction gear unit means coaxially rotatable in its entirety with said camshaft drive means and operatively connected to the camshaft, drive means coaxially rotatable in its entirety with said camshaft drive means and said reduction gear unit means and having an output shaft drivingly connected to said reduction gear unit and rotatable relative to the camshaft and the camshaft drive means about an axis in line with the axis of rotation of the camshaft, said gear unit means being operative to transmit therethrough driving torque from said output shaft of the drive means to said camshaft drive means with reduction of speed of revolution at a predetermined ratio for producing relative rotation between the camshaft and the camshaft drive means by an angle and in a direction which are related to the angle and direction of rotation of the output shaft of the drive means, sensing means associated with the camshaft and the camshaft drive means for detecting an angle and direction of relative rotation between the camshaft and the camshaft drive means and producing an output signal substantially representative of the angle and direction of the detected relative rotation between the camshaft and the camshaft drive means, and control means responsive to said output signal of the sensing means and to preselected operational parameters of the engine for producing a control signal effective to actuate said drive means for causing the output shaft of the drive means to rotate a number of turns and in a direction which are dictated by said control signal.



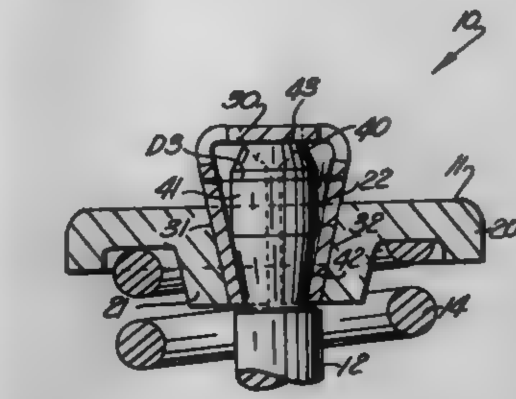
3,978,830
SNAP-ON SPRING RETAINER LOCK

Ernest J. Toth, Jr., South Euclid, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Jan. 13, 1975, Ser. No. 540,588

Int. Cl.² F01L *3/10*

U.S. Cl. 123—90.67 **6 Claims**



1. Apparatus for holding a spring retainer on a valve stem against the bias of a spring, said apparatus comprising a one-piece retainer lock member for insertion onto one end of a valve stem, said retainer lock member comprising a cup-shaped member having a base and a plurality of spring fingers for resiliently clampingly engaging the valve stem, said base and spring fingers defining a chamber for receiving said valve stem, said spring fingers having a generally frusto-conical outer surface and a frusto-conical inner surface, the frusto-conical outer surface of said spring fingers comprising means engageable with the spring retainer for holding the spring retainer on the valve stem against the bias of the spring.

3,978,831
CONTROL DEVICE FOR A VACUUM ADVANCER

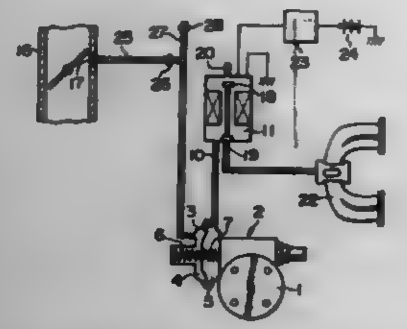
Eiji Yoshikawa, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 7, 1973, Ser. No. 413,620

Claims priority, application Japan, July 3, 1973, 48-78521[U]

Int. Cl.² F02P *5/08, 5/10*

U.S. Cl. 123—117 A **5 Claims**



1. In an internal combustion engine having an inlet tube and a vacuum advancer, said vacuum advancer including two diaphragm chambers defined at opposite sides of a diaphragm and adapted to advance the ignition timing of said engine when said diaphragm is biased in one direction and to delay said ignition timing when said diaphragm is biased in the other direction, the improvement comprising, a control device for said vacuum advancer, said control device comprising switchover means for selectively introducing either the vacuum in the inlet tube or manifold or atmospheric pressure into one of said diaphragm chambers, and a fraction generating means for constantly generating substantially a one-half fraction of the intake vacuum throughout substantially the entire intake vacuum level, said fraction being constantly introduced into said other of said diaphragm chambers.

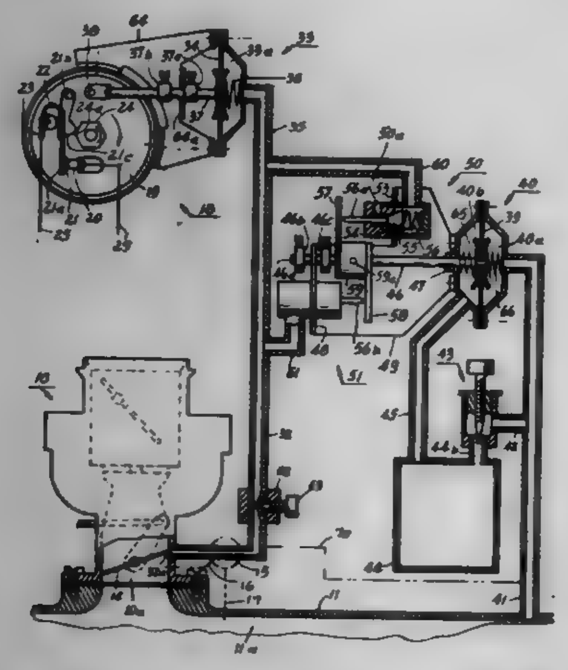
3,978,832
SERVO MECHANISM

Brooks Walker, and Fred V. Hall, both of San Francisco, Calif., assignors to Brooks Walker, San Francisco, Calif.

Continuation of Ser. No. 141,967, May 10, 1971, abandoned, which is a continuation of Ser. No. 571,563, Aug. 10, 1966, abandoned. This application Feb. 15, 1974, Ser. No. 442,835

Int. Cl.² F02P *5/02*

U.S. Cl. 123—117 A **10 Claims**



1. In an internal combustion engaging provided with a throttle valve, an intake manifold providing a source of suction, the amount of suction being controlled by the throttle position, ignition spark means normally biased to retard timing at closed position of the throttle, and control means operative to overcome said bias to advance the spark timing by increasing suction from the source in response to gradual throttle movement at a rate below a predetermined rate, the improvement comprising: suction change sensitive means responsive to a selected one of either a sudden increase or a sudden decrease in suction at the source in response to sudden movement of the throttle valve greater than the predetermined rate for rendering the control means inoperative to overcome said bias, to permit return of the ignition spark means to retarded timing, said suction change sensitive means including means for maintaining the control means inoperative for an appreciable period of time much longer than the time during which the abrupt change in suction took place whether such change be an increase or a decrease of suction at the source.

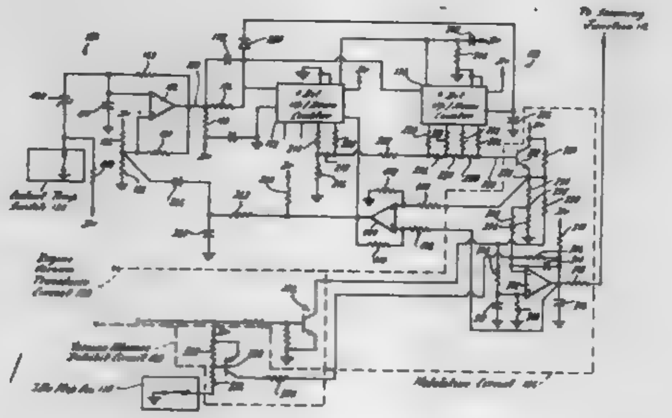
3,978,833
ENGINE CONTROL CIRCUIT FOR PROVIDING A PROGRAMMED CONTROL FUNCTION

Frederick William Crall, Farmington, and LaVerne Andrew Caron, Sterling Heights, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed June 13, 1975, Ser. No. 586,790

Int. Cl.² F02P *5/04;* **F02B** *3/00*

U.S. Cl. 123—117 R **18 Claims**



1. An engine control circuit for generating a programmed engine control signal comprising:

a transducer circuit for providing a transducer signal representative of the instantaneous value of a selected engine operating parameter;

an up/down counter circuit adapted to selectively add to and subtract from the count contained therein, an input signal applied thereto;

an input signal generator circuit for generating said input signal and supplying the same to said up/down counter circuit;

a circuit for modifying said transducer signal by the count in said counter circuit to develop said programmed engine control signal; and

means operatively associated with the engine and said counter circuit for causing said counter circuit to add said input signal to its count when the engine is operating in one selected operating condition and to subtract said input signal from its count when the engine is operating in another selected operating condition.

3,978,834
ARRANGEMENT FOR CONTROLLING THE RECIRCULATION OF EXHAUST GAS IN INTERNAL COMBUSTION ENGINES

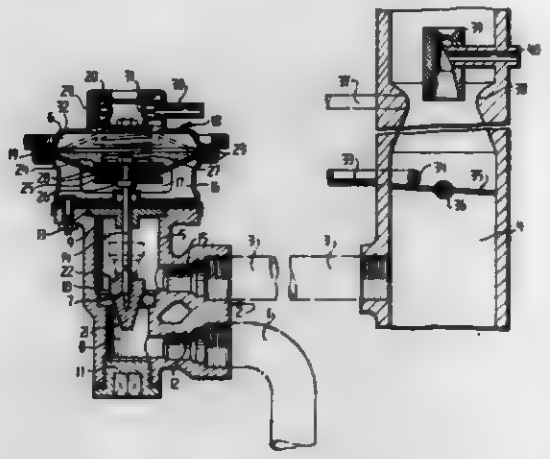
Henri Arnaud, Antony; Martial Hublin, Cerny; Georges Devaux, Galliene Issy; Claude Lambert, Paris, and Henri Milliot, Arpajon, all of France, assignors to Regie Nationale des Usines Renault and Societe Anonyme dite Automobiles Peugeot, both of Paris, France

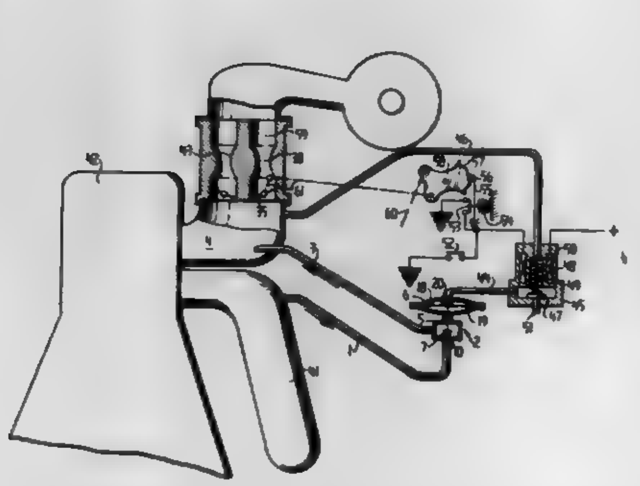
Filed Sept. 25, 1974, Ser. No. 509,256

Claims priority, application France, Oct. 9, 1973, 73.36058

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **14 Claims**





1. An arrangement for controlling the recirculation of exhaust gases within internal combustion engines, a recycling passage connecting the exhaust manifold of said engine to the main intake passage of the carburetion system, and within which is inserted a recirculation valve the obturator of which, effecting the opening and closing of the recirculation circuit and normally returned to the closed position by an elastic means under compression, is actuated to the open condition as a result of the variations in displacement of an elastic membrane which is coupled to a control rod of said obturator and closes off a vacuum chamber which is subjected to the variations in vacuum prevailing within the inlet manifold of said carburetion system, wherein:

said obturator of said recirculation valve has a truncated-cone configuration whereby the increase in the area of the variable opening defined between said stopper or obturator and its seat is a function of the engine speed and load;

said stopper also having a height slightly greater than the diameter of the large end thereof, which is approximately three times that of the small end thereof;

said stopper being secured to said elastic membrane which has a large diametrical extent and the displacement of which is slightly greater than the height of said stopper; and wherein further

said membrane is acted upon by a vacuum control system which is dependent upon the speed of rotation of said engine over a range extending from idle condiitions to the highest speeds and maximum loading of said engine,

said elastic membrane of said recirculation valve is clamped at its periphery, between two gaskets of thermally insulating material disposed upon opposite sides of said membrane;

said membrane gasket assembly is in turn clamped between a cover of said vacuum chamber and support means integrally formed with the body of said valve;

said support means is provided with a plurality of apertures for providing good diffusion of the heat carrier by said exhaust gases passing through said valve as well as providing ventilation of said control rod of said stopper; and

said rod is secured to said elastic membrane by means of two cups, having two washers of thermally insulating material clamped therebetween, disposed upon opposite sides of said elastic membrane.

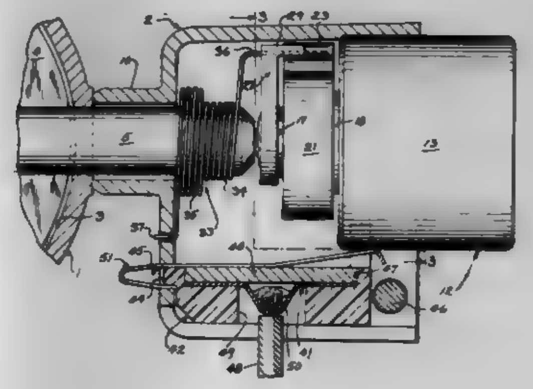
3,978,835
AUTOMATIC CHOKE ASSEMBLY FOR SMALL ENGINES

Alvin P. Fenton, Oostburg, Wis., assignor to Kohler Company, Kohler, Wis.

Filed Dec. 4, 1974, Ser. No. 529,448

Int. Cl.² F02B *33/00*

U.S. Cl. 123—119 F **11 Claims**



1. An automatic choke assembly for controlling the flow of air through the air induction passage of an internal combustion engine, the combination comprising:

a choke valve positioned within said air induction passage and mounted for rotation between a running position in which it provides minimal interruption of the flow of air through said passage and a starting position in which it provides substantial interruption of the flow of air through said passage;

bias means coupled to said choke valve to orient it in its running position;

a choke shaft coupled to said choke valve and being operable when moved to rotate said choke valve;

actuation means for moving an actuator shaft from a running position to a starting position when the engine is being started; and

temperature responsive coupling means having one end connected to said choke shaft and its other end connected to said actuator shaft to couple the motion of said actuator shaft to said choke shaft and to adjust their relative positions as a function of the ambient temperature.

3,978,836

SUCTION HEAT CONTROL UNIT IN INTERNAL COMBUSTION ENGINE

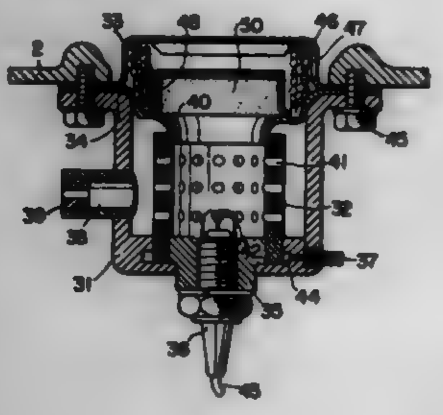
Masaaki Noguchi, Nagoya, and Masaharu Sumiyoshi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sept. 24, 1974, Ser. No. 508,821

Claims priority, application Japan, Oct. 9, 1973, 48-113549

Int. Cl.² F02M *31/00, 31/16*

U.S. Cl. 123—122 G **12 Claims**



1. A suction system for an internal combustion engine, said system comprising:

- a carburetor for producing a fuel-air mixture;
- a suction pipe, through which the mixture is supplied to the engine, in fluid communication with said carburetor;
- a fuel supply source other than the suction pipe;
- an air supply source other than the suction pipe;
- a suction heat control unit mounted on said pipe downstream of the carburetor, said heat control unit comprising:
  - a housing attached to the suction pipe, said housing having an opening defined therein which opens into the suction pipe;
  - a porous body for retaining fuel therein, said body being within said housing and being impregnated with fuel;
  - a fuel supply pipe through which fuel is supplied to said porous body; one end of said fuel supply pipe being connected to said housing and the other end thereof being connected to said fuel supply source;
- an air supply pipe through which air is supplied to said housing; one end of said air supply pipe being connected to said housing and the other end thereof being directly connected to said air supply source; and
- an ignition means for igniting the mixture of fuel evaporated from said body and air supplied through said air supply pipe.

3,978,837

DEVICE FOR AUTOMATIC SPEED CONTROL OF A DIESEL ENGINE

Karl-Erik Lundberg, Solna, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 6, 1974, Ser. No. 530,278

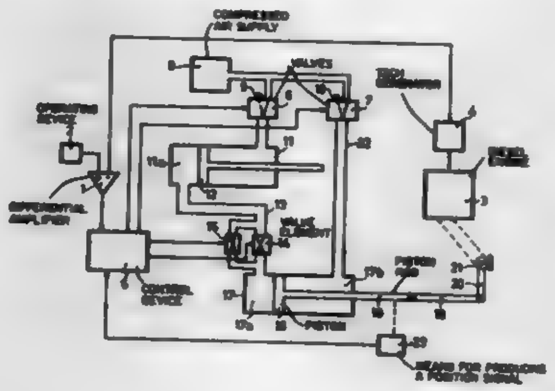
Claims priority, application Sweden, Dec. 14, 1973, 7316934

Int. Cl.² F02D *1/04*; **F02M** *39/00*

U.S. Cl. 123—139 E **9 Claims**

1. A device for control of fuel flow for automatic speed control of an associated diesel engine having an associated fuel control device for controlling the fuel to the diesel engine which comprises:

- a working cylinder and a working piston, said working piston being movable responsive to fluid pressure on each side thereof;
- means coupling said working piston to the associated fuel control device to vary the quantity of fuel delivered to the associated diesel engine as a function of the working piston position;
- a first fluid conduit in fluid communication with said working cylinder and one side of said working piston;
- a second fluid conduit in fluid communication with said working cylinder and the other side of said working piston;
- a first valve element disposed in series with said second fluid conduit;
- means for balancing two fluid pressures between first and second parts thereof without mixing the two fluids under pressure, one part of said means for balancing being in fluid communication with said second fluidconduit; fluid conduit;
- a first valve in fluid communication with said second part of said means for balancing which selectively connects said second part of said means for balancing to ambient or an associated source of fluid pressure;



- a second valve in fluid communication with said first fluid conduit which selectively connects said first fluid conduit to ambient or the associated source of fluid pressure;
- means for producing a first signal which is a function of the speed of the associated diesel engine;
- means for producing a second signal which is a function of a predetermined engine speed;
- means for comparing said first signal and said second signal; and
- means for controlling said first valve element, said first valve and said second valve responsive to said means for comparing.

3,978,838

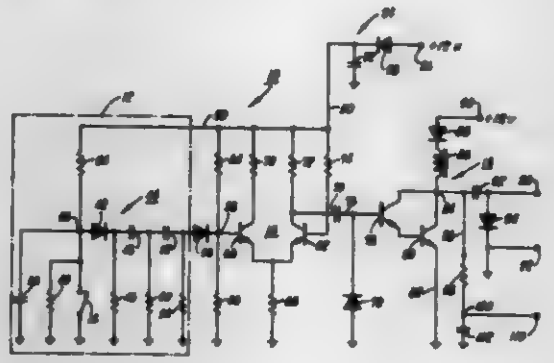
D-C POWER SUPPLY AND IGNITION SYSTEM

George K. Olster, 1109 SE. 11 St., Edmond, Okla. 73034

Filed Feb. 14, 1974, Ser. No. 442,497

Int. Cl.² F02P *1/00*; **H03K** *17/60*

U.S. Cl. 123—148 CA **2 Claims**



1. An engine ignition circuit for generating periodic high voltage from a low voltage D-C power source, comprising:

- an input junction connected through a non-linear filter means to said low voltage D-C power source;
- contactor point switch means connected between said junction and ground to provide periodic ground disconnection of said low voltage D-C power source;
- a resistance-capacitance network connected to said junction and having a network output, said network consisting of a first capacitor coupled between said input junction and a second junction, a resistor connected between said second junction and ground, a second capacitor connected between said second junction and a network output, and a second resistor connected between said network output and ground, said network serving to prevent generation of a trigger pulse except upon initial opening of said contactor points switch means and for a pre-set time duration thereafter;
- one-shot vibrator means connected to said network output and periodically energized by trigger output therefrom to provide an output pulse of pre-set duration;
- coil means energized by said low voltage power source and connected in series with a transistor means, said transistor means being normally non-conducting and rendered conductive in response to input of said output pulse from said one-shot multivibrator; and
- charging capacitor means having one side connected between said coil means and said transistor means and having its other side connected to an output high voltage terminal whereupon D-C high voltage is present each time said transistor means is rendered conductive.

3,978,839

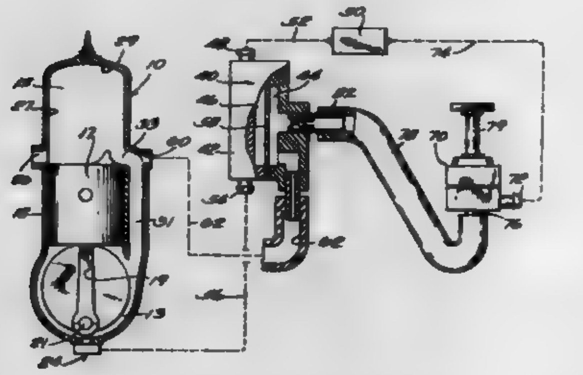
PRIMER SYSTEM FOR INTERNAL COMBUSTION ENGINE

Chester G. DuBois, Zion, and Howard M. Pollari, Libertyville, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 18, 1974, Ser. No. 533,971

Int. Cl.² F02M *1/16*

U.S. Cl. 123—187.5 R **9 Claims**



1. An internal combustion engine including a cylinder having a head end, a piston reciprocal in said cylinder relative to said head end, a port communicating with said cylinder in spaced relation to said head end and subject to pressure variation occurring in response to piston reciprocation, conduit means communicating with said port, a pressure operated fuel pump including a diaphragm defining a pulse chamber communicating with said conduit means and a pumping chamber operable in response to pressure variation in said pulse chamber to effect fuel pumping, and manually operable primer pump means communicating with said port for pumping primer fuel into said cylinder through said port.

3,978,840

CYLINDER HEAD WITH WELDED-ON CYLINDER AND METHOD OF MAKING SAID WELDED UNIT

Herbert Schlefermacher, Bruhl, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

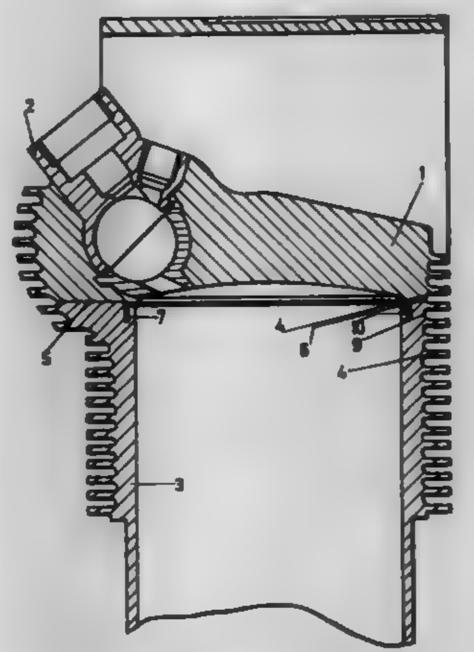
Filed Aug. 21, 1974, Ser. No. 499,543

Claims priority, application Germany, Aug. 21, 1973, 2342114

Int. Cl.² F02F *1/04*; **B23K** *15/00*

U.S. Cl. 123—193 CH **7 Claims**

1. In combination with a cylinder head, tubular cylinder means having one end face electrobeam welded to said cylinder head along a welding seam, said cylinder means having an annular slot provided in said one end portion of said tubular cylinder means to avoid surface post-working and having its extension of depth in the longitudinal direction of said tubular cylinder means, said welding seam extending from the outer circumference of said tubular cylinder means to said slot.



3,978,841

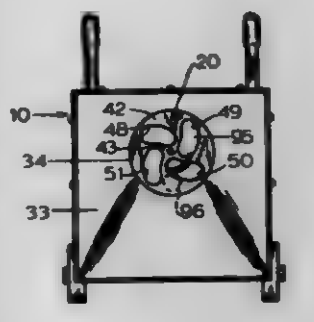
FEEDING APPARATUS FOR BALL PROJECTING MACHINE

Alfredo S. Yarur, 2101 Yorkgate Drive; Alfredo F. Yarur, 4513 Edwards Mill Road, and Nicholas J. Yarur, 2101 Yorkgate Drive, all of Raleigh, N.C. 27612

Filed Apr. 3, 1975, Ser. No. 564,596

Int. Cl.² F41B *15/00*

U.S. Cl. 124—50 **3 Claims**



1. In a ball projecting machine of the type having a frame, a ball hopper for holding a supply of balls and having an opening in the bottom thereof, an elongated feed tube, a rotatable feeding apparatus for singly feeding the balls to the elongated feed tube mounted below the hopper with the feed tube being adapted at its receiving end to receive balls from the hopper opening and at its discharge end to deliver balls to a ball projecting mechanism, an electric motor means for driving the feeding apparatus and having in conjunction therewith control means for controlling the energization and speed thereof, an improved feeding apparatus comprising:

- a. a horizontally-positioned apertured disc rotatably mounted on the machine from below the hopper opening and being connected for being driven by said motor means, said disc having a selected number of apertures of sufficient size to receive at least two balls per aperture, each said aperture being shaped so as to have both an inward-leading ball holding area and an outward-trailing ball holding area whereby balls will tend to be forced toward the said outward-trailing area by the centrifugal force created by the rotation of the disc and by the inertia of balls;
- b. a support plate member fixed below and parallel to and underlying said disc, said plate member having a hole

communicating with the receiving end of the machine ball feed tube and positioned below the path of the outward-trailing ball holding area of said apertures in said disc so as to receive and pass a ball from the outward-trailing ball holding area of each of said apertures into said feed tube as each of said apertures passes over said hole; and

c. a ramp member located on said support plate ahead of the ball-approach side of said hole and terminating adjacent said hole, said ramp member having a height at its terminal point less than the distance between said disc and said plate member and having a curvature as viewed in plan adapted to cause each successive ball in the inward-leading area of each successive aperture to pass over said ramp member and to be elevated as it approaches said hole so as to urge any adjacent ball in the outward-trailing area of the same aperture into said hole and to prevent a elevated ball in such aperture from entering said hole.

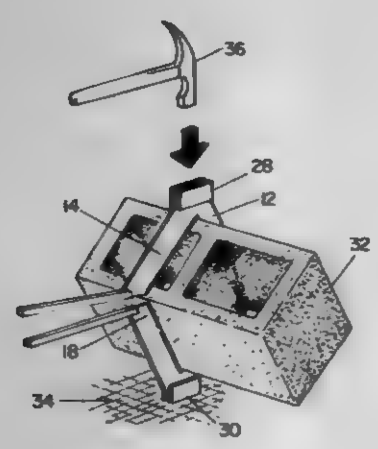
3,978,842
MASONRY BLOCK CUTTER

Leon M. Coffman, 19509 Hart St., Reseda, Calif. 91335

Filed Feb. 27, 1975, Ser. No. 553,595

Int. Cl.² B28D *1/32*

U.S. Cl. 125—23 R **10 Claims**



1. A lightweight portable masonry block cutter comprising:

means including a first pair of blades connected to each other for engaging two adjacent external sides of the masonry block;

means including a second pair of blades connected to each other for engaging the other two adjacent external sides of the masonry block in opposition to said first pair of blades;

handle means for manually urging said blades into resilient engagement with the masonry block around the exterior of said block, and for angularly orienting said block and cutter, means opposite said handle means for connecting said first pair of blades to said second pair of blades for movement toward and away from each other; and means for receiving an impact to move all four of said opposed blades inwardly for cleanly cutting said masonry block in two.

3,978,843
FOOD COOKING OVEN WITH CONTROLLED AIR CIRCULATION

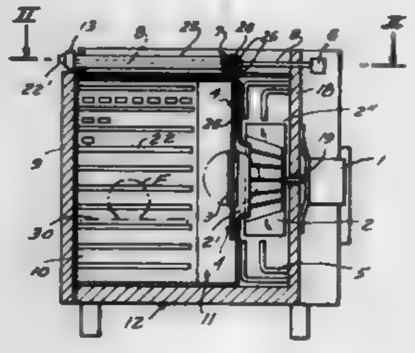
Wilfried Durth, Burbach-Walbach, Germany, assignor to Buderus'sche Eisenwerke Aktiengesellschaft, 633 Wetzlar, Germany

Filed Jan. 6, 1975, Ser. No. 538,562

Claims priority, application Germany, Jan. 9, 1974, 2400845

Int. Cl.² A21B *1/26;* F24C *15/32*

U.S. Cl. 126—21 A **6 Claims**



1. An apparatus for treating a foodstuff, said apparatus comprising:

- a generally closed housing;
- means in said housing for supporting said foodstuff therein;
- a fan in said housing having an input side and an output side;
- drive means for rotating said fan and circulating air in said housing in a closed path over said foodstuff and through said fan from the input side to the output side thereof;
- means in said path in said housing for heating said air;
- at least one swingably displaceable vane in said housing adjacent one of said sides; and
- control means operable externally of said housing and a transmission operatively connecting said control means with said vane varying the orientation of said vane in said path for controlledly limiting air ciculation along said path.

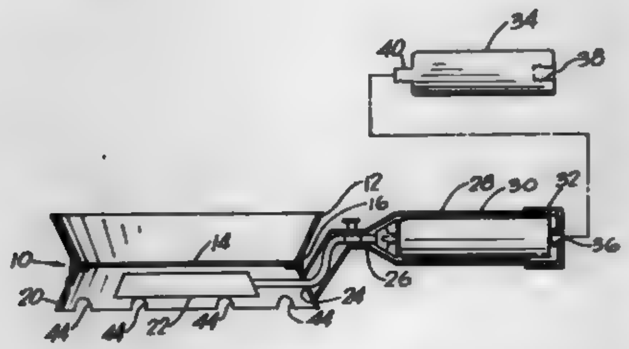
3,978,844
COOKING VESSELS HAVING INTEGRAL GAS AND BURNER ASSEMBLY

Arnold J. Wilkens, Ridgefield, N.J., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Apr. 7, 1975, Ser. No. 565,856

Int. Cl.² F24C *5/20*

U.S. Cl. 126—38 **2 Claims**



1. A cooking apparatus which comprises: a vessel; a base supporting said vessel; a burner carried by said base beneath said vessel for heating said vessel; an elongated tubular handle projecting from said base; an adjustable valve within said handle adjacent said base; a conduit interconnecting said valve and said burner; said adjustable valve having a female fitting remote from said conduit; a first elongated container of gaseous fuel for positioning coaxially within said handle; said first container having male and female fittings respectively at its opposite ends; said fittings of said first container being directed axially of said container; said male fitting being engageable with the female fitting of said valve; said male and female fittings of said first container being dimensioned for mating engagement with each other in a manner that a second fuel container identical with the first container may be engaged with said female fitting of said first container for supplying addition fuel to said burner via said first container and for supporting said first and second containers in coaxial relationship.

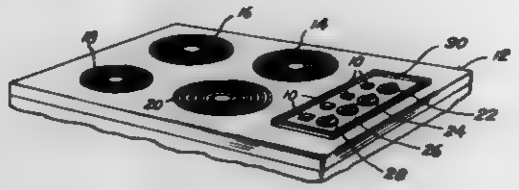
3,978,845
BURNER IDENTIFICATION DEVICE FOR KITCHEN RANGES

Neal Houbolt, Joliet, Ill., assignor to Jemco Engineering Co., Minooka, Ill.

Filed Sept. 11, 1975, Ser. No. 612,349

Int. Cl.² F24C *3/00*

U.S. Cl. 126—39 R **11 Claims**



1. An apparatus mountable in an opening comprising, in combination:

- a plate member having a front face, a rear face and an indicator on said front face;
- a pair of securing prongs attached to said rear face and extending therefrom, said securing prong including a tapered end section and a toothed section interposed said plate member and said tapered end section; and
- means for keying said apparatus and said opening, whereby said pair of prongs is insertable into said opening at substantially only a predetermined orientation with respect to said openings, said indicator and said keying means having a determined coordinated relationship.

3,978,846
SYRINGE FOR TAKING BLOOD SAMPLES

Donald L. Bailey, 11018 Muriel Place, Thornton, Colo. 80233

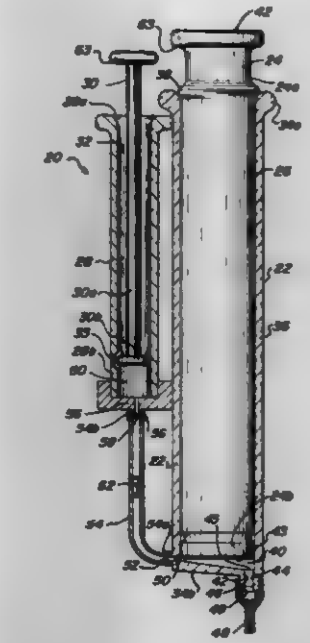
Filed Jan. 2, 1975, Ser. No. 538,101

Int. Cl.² A61B *5/14*

U.S. Cl. 128—2 F **10 Claims**

1. In a syringe for drawing blood comprising:

- a tubular body having a substantially closed leading end with open connection means at said leading end adapted for connection to a needle to be inserted into a donor's blood vessel to transfer blood from the blood vessel into the tubular body, an open trailing end, and a laterally opening passage near the leading end,
- a slide member slidably received in said tubular body in fluid tight relationship therewith,
- a void space inside the tubular body at the leading end thereof when the slide member is fully advanced into the tubular body, said slide member having a leading end and said lateral passage is disposed in the general plane of the leading end of the slide member in communication with said void space when said slide member is fully advanced, and
- conduit means connected to said tubular body in fluid communication with said lateral passage, said conduit means establishing means for allowing the free flow of air under arterial pressure exerted through said connection means from said tubular body through said conduit means and for preventing any air which may have been in said tubular body from contaminating a sample of blood drawn into said tubular body.



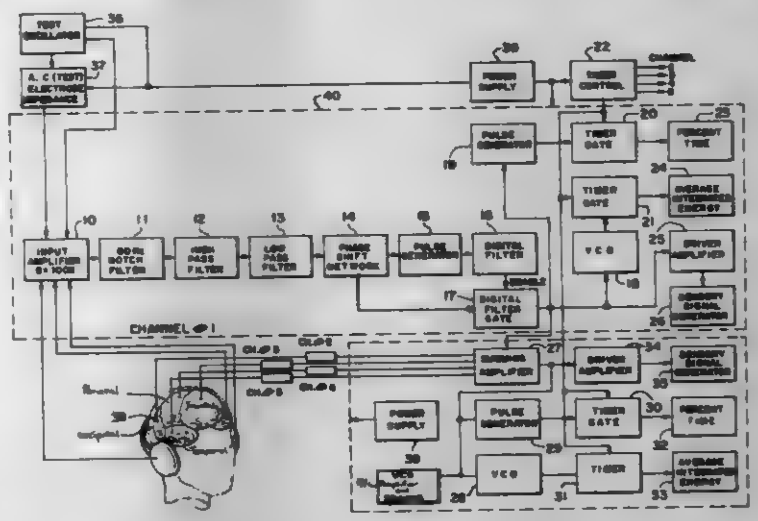
3,978,847
MULTIPLE CHANNEL PHASE INTEGRATING BIOFEEDBACK COMPUTING METHOD

Lester G. Fehmi, Princeton, N.J., and Joseph R. Schneider, Larchmont, N.Y., assignors to Biofeedback Computers, Inc., Rocky Point, N.Y.

Filed July 29, 1974, Ser. No. 492,954

Int. Cl.² D61B *5/04*

U.S. Cl. 128—2.1 B **14 Claims**



1. A method of measuring the electroencephalographic activity of at least two lobes of the brain of a human trainee and providing the trainee with a sensory signal in response to a combination of amplitude and the inphase activity of each of the brain lobes comprising the steps of:

- attaching electrical contacts to the head of the trainee, said contacts being disposed adjacent to at least two lobes of areas of the brain, and to a neutral area of the trainee's head;
- obtaining at least two signals from said contacts which correspond to each of said at least two lobes or areas of the brain;
- amplifying said at least two signals;
- filtering each of the signals to obtain output signals each within a defined frequency range;
- summing the in-phase signals of the defined frequency band of the amplified brain wave activity to produce a phase relevant measure of the trainee's brain wave activity;

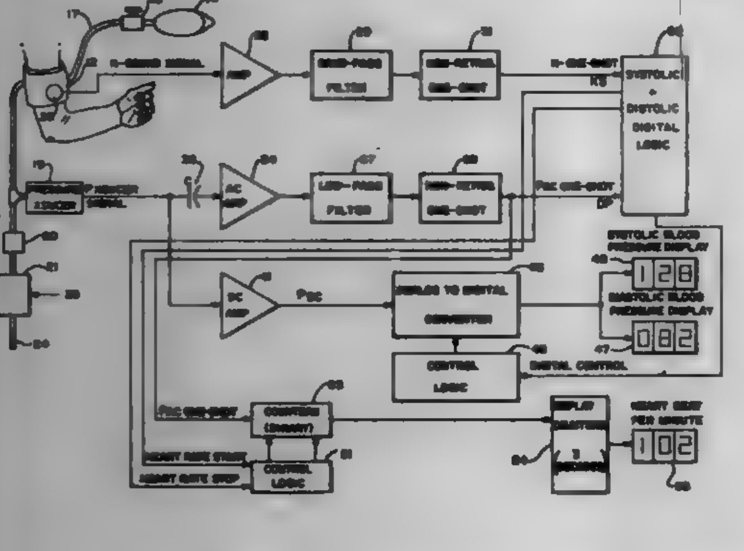
producing an auditory signal and modulating the volume of the auditory signal responsive to the amplitude and phase of the summed brain wave activity; and

presenting to the trainee an audible signal which reflects the degree of phase parity and amplitude of the signals recorded from said at least two lobes or areas of the brain.

3,978,848
MONITORING APPARATUS AND METHOD FOR BLOOD PRESSURE AND HEART RATE

David H. Yen, Sunnyvale; Tim R. Connelly, Campbell, and John J. Lee, Sunnyvale, all of Calif., assignors to Filac Corporation, Sunnyvale, Calif.

Filed Jan. 9, 1975, Ser. No. 539,799
Int. Cl.² A61B *5/02*
U.S. Cl. 128—2.05 M **6 Claims**

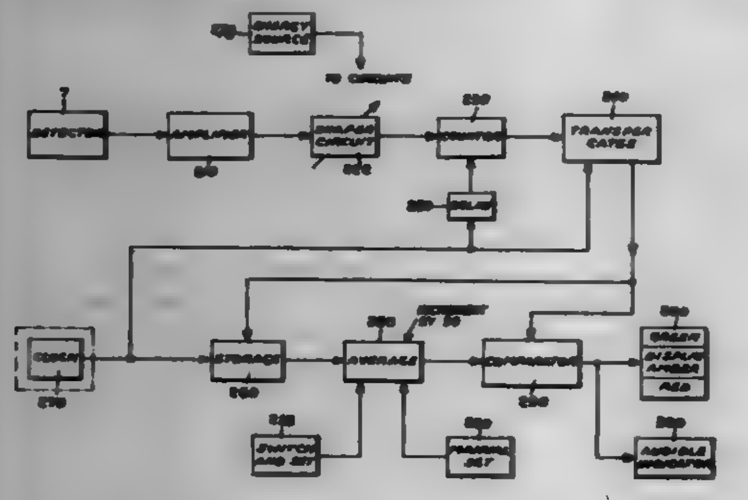


1. In a blood pressure and heart rate monitor: an inflatable cuff for controlled occlusion of a patient's artery, pressure responsive transducer means connected to the cuff for providing a first signal corresponding to the gage pressure in the cuff and a second signal corresponding to variations in the cuff pressure produced by expansion and contraction of the occluded artery due to the pumping action of the heart, means responsive to the first signal for indicating the patient's blood pressure, and means responsive to the second signal for indicating the patient's heart rate.

3,978,849
PULSE RATE INDICATOR

Harold S. Genson, New York, N.Y., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Apr. 17, 1975, Ser. No. 568,884
Int. Cl.² A61B *5/02*
U.S. Cl. 128—2.05 T **5 Claims**



1. A body mounted pulse rate indicator comprising in combination: pulse sensing means for detecting heart pulse beats of a wearer and translating said heart pulse beats into corresponding electrical pulses;

counting means coupled to count said electrical pulses to provide a pulse rate;

averaging means for determining the average pulse rate of the wearer at rest to establish a rest pulse rate;

programming means for automatically adding a predetermined increment to said reference pulse rate to denote an optimum safe exercise pulse rate;

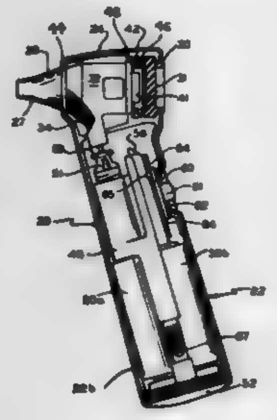
means for setting a predetermined maximum level pulse rate into said indicator to denote a danger level pulse rate; and

means for continuously comparing the pulse rate at any time to said optimum safe exercise pulse rate and said danger level pulse rate to denote the state of the pulse rate.

3,978,850
MEDICAL DIAGNOSTIC INSTRUMENTS

William C. Moore, Skaneateles, and Richard W. Newman, Auburn, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Mar. 24, 1975, Ser. No. 561,308
Int. Cl.² A61B *1/22*
U.S. Cl. 128—9 **6 Claims**



1. In an electrically illuminated medical diagnostic instrument, an elongated hollow body formed of two mating halves, the body having an upper head portion and a lower handle portion, optical means in the instrument body for directing light rays from a light source normally concealed in the interior of the body to a point in the head portion removed from the light source from which the rays are directed outwardly toward the area to be examined, and a light source unit mounted in the handle portion of the body, the unit including a light source in the form of a lamp and means for supplying power to the lamp, means supporting the lamp and power supply means as to be removable as a unit from the handle portion to permit access to the parts of the unit for replacement.

3,978,851
MASSAGING APPARATUS

P. Brav Sobel, 3140 N. Bay Road, Miami Beach, Fla. 33140

Division of Ser. No. 348,128, April 5, 1973, Pat. No. 3,874,373. This application Mar. 31, 1975, Ser. No. 563,572
Int. Cl.² A61H *7/00*
U.S. Cl. 128—49 **8 Claims**

1. A stroking device for stroking erogenous zones of a human body, said stroking device comprising:

a housing;

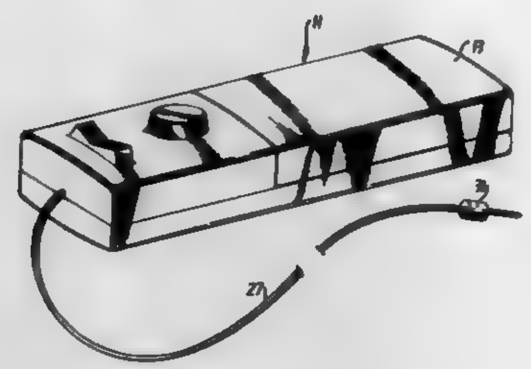
an elongated stroking tool positioned outside of said housing for making contact with said erogenous zones of said human body;

an electric motor for moving said elongated stroking tool mounted in said housing;

mechanical linkage interconnecting said electric motor and said elongated stroking tool;

an electric power source means coupled to said electric motor for furnishing electrical energy to said electric motor;

control means which can be used to adjust the mechanical linkage to a first configuration wherewith said elongated tool is caused to rotate and to a second configuration



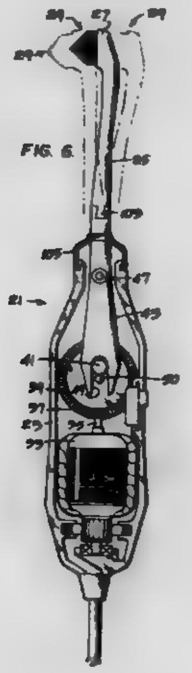
wherewith said stroking tool is caused to pivot laterally back-and-forth;

whereby said elongated stroking tool may be brought into contact with said erogenous zones of said human body and caused to stroke said zones in both circular motions and lateral back-and-forth motions.

3,978,852
PLAQUE JACK TOOTHBRUSH

Jerry D. Annoni, 41-F Admiral Callaghan Lane, Vallejo, Calif. 94590

Filed Apr. 7, 1975, Ser. No. 565,572
Int. Cl.² A61H *7/00*
U.S. Cl. 128—62 A **23 Claims**



1. A powered toothbrush for cleaning teeth and related embrasures, such as the spaces between adjacent teeth at the gum line, by driving the ends of specially constructed brush elements axially (along the brush element axes) in and out against the toothed surfaces to remove plaque and into and out of the gingival cuff to clean this area and into and through the embrasures and the space between adjacent teeth to push out food particles from the embrasures and the space between adjacent teeth, said brush comprising,

a brush holder,

a brush stem member having one end connected to the holder,

a brush head at the other end of the stem member,

said brush head comprising a plurality of elongated brush elements grouped in a relatively small tuft having a shape and length to permit a substantial number of adjacent brush elements to be driven into and through the embrasures and the space between adjacent teeth,

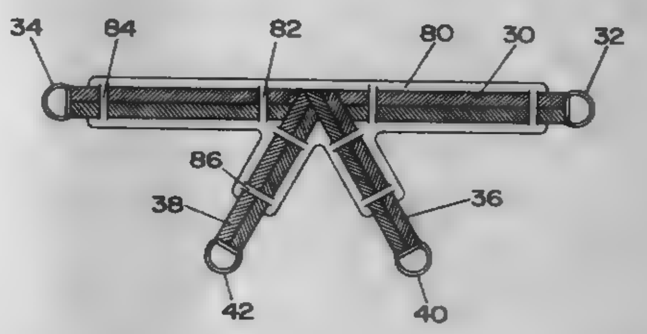
the ends of the brush elements being polished and the brush elements having substantial flexibility for permitting the brush elements to be driven axially into crevices in the tooth surfaces and also into the gingival cuff between the teeth and gums to clean plaque from the tooth surfaces in this area and also to dislodge food particles from the cuff, and

drive means in the holder for rapidly reciprocating the tuft in an axial direction and with sufficient travel to permit the brush elements to be driven far enough into the gingival cuff and into and through the embrasures and the space between adjacent teeth to scrub plaque from the tooth surfaces by frictional engagement of the brush elements on the tooth surfaces and to dislodge food particles from the gingival cuff and the embrasures by physical impact of the brush elements on the food particles.

3,978,853
ANKLE HITCH

Robert D. Morrison, Worthington, Ohio, assignor to Morrison Medical Products Company, Columbus, Ohio

Filed June 4, 1975, Ser. No. 583,588
Int. Cl.² A61F *5/04*
U.S. Cl. 128—84 R **10 Claims**



1. An ankle hitch for securing a human foot in attachment to a traction mechanism and comprising:

a. a first relatively longer, flexible strap having a fastener secured at each of its opposite ends and being sufficiently long to permit said first strap to be wrapped forwardly around the ankle of said foot, crossed upon the instep of said foot with its ends extending downwardly beyond the bottom of said foot; and

b. a pair of relatively shorter flexible heel straps substantially symmetrically secured at one end of each to a central segment of said first strap posteriorly of the axis of the associated human leg, each of said heel straps having a fastener at its other end; the effective length of each of said straps being of a length which permits all four of said fasteners to be brought together beneath said foot with the straps under tension for connection to said traction mechanism whereby counterbalancing moments are applied to said foot with a resultant traction force in substantial alignment with the axis of the associated human leg.

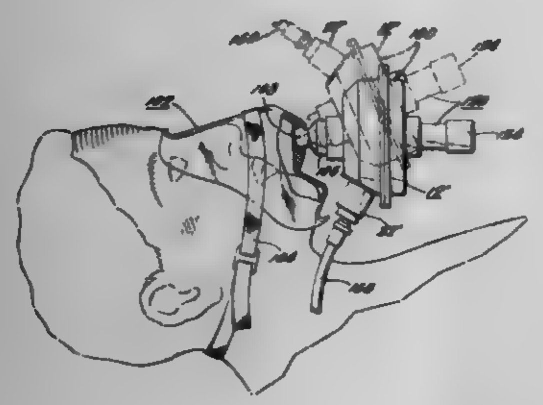
3,978,854
DEMAND REGULATOR

Justin W. Mills, Jr., Salisbury, Md., assignor to Lif-O-Gen, Inc., Cambridge, Md.

Filed Apr. 8, 1975, Ser. No. 566,081
Int. Cl.² A62B *7/00*
U.S. Cl. 128—142.2 **5 Claims**

1. A resuscitator comprising a casing, a flexible diaphragm disposed within said casing, said casing and diaphragm defin-

ing a closed chamber adjacent one side of said diaphragm, the other side of said diaphragm being open to atmospheric pressure, an aperture in said casing opening into said chamber, a breathing mask, a conduit extending between said mask and said aperture to connect said mask with said chamber, a tilt valve assembly in said casing for introducing a pressurized gas into said chamber in response to the pressure differential across said diaphragm, said tilt valve assembly including an elongated valve stem extending into said chamber with the



free end of said valve stem disposed proximate said diaphragm, the inward movement of said diaphragm upon a reduction in pressure in said chamber causing engagement of said diaphragm with said valve stem and an opening of said valve to admit pressurized gas to said chamber, an exhaust valve in said diaphragm, and manually actuatable plunger means on said casing for engaging said diaphragm to simultaneously close said exhaust valve and displace said diaphragm against said tilt valve to actuate said valve.

3,978,855

POLYURETHANE FOAM SURGICAL DRESSING

Wayne A. McRae, Salem, N.H., and Philip B. Reed, Needham, Mass., assignors to Ionics Lye Products Company, Watertown, Mass.

Filed Jan. 17, 1975, Ser. No. 541,809

Int. Cl.^{2} A61L *15/00;* B32B *3/26*

U.S. Cl. 128—156 **18 Claims**

1. An integral, non-laminated, non-rigid, open cell polyurethane foam wound dressing article comprising at least one dense surface with essentially all of said surface having a microporous structure of an average pore cell size between about 0.2 to 200 micrometers in contrast to the remaining less dense macroporous portions of the foam having an average pore cell size range between about 200 – 2,000 micrometers, said microporous surface further characterized by an absorbent structure, readily absorbent to water and fluid exudates and comprised of permanently but only partially collapsed or compressed open foam cells as contrasted to the said remaining macroporous foam cell portions which are substantially uncollapsed and non-absorbent.

10. The process for producing an absorbent structure on a surface of an essentially non-absorbent, non-rigid, open-cell macroporous polyurethane foam starting material having an average pore cell size range between about 200 – 2,000 micrometers comprising applying sufficient heat and pressure to said foam surface to result in permanently but only partially collapsing the surface cells into a dense microporous integral structure having an average pore cell size range between about 0.2 to 200 micrometers whereby essentially all of said denser surface structure is readily absorbent to water and fluid exudates as contrasted to the remaining untreated macroporous foam cell portions which are essentially non-absorbent.

3,978,856

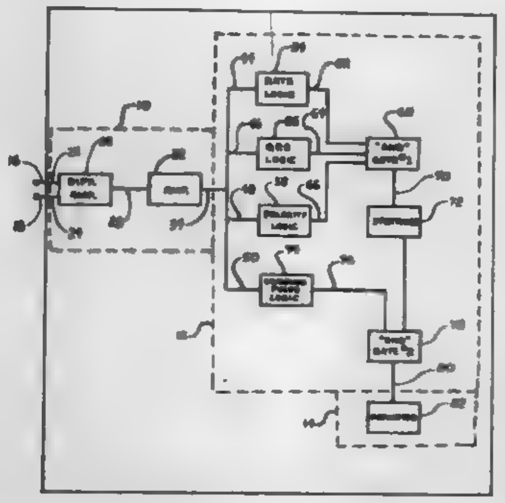
HEART BEAT WAVEFORM MONITORING APPARATUS

Walter A. Michel, 433 Hillside Drive, Highland Park, Ill. 60035

Filed Mar. 20, 1975, Ser. No. 560,351

Int. Cl.^{2} A61B *5/04*

U.S. Cl. 128—2.06 A **7 Claims**



1. Heart beat waveform monitoring apparatus for detecting heart beat waveforms by transducers secured to a patient and for analyzing the waveforms for abnormalities, the apparatus comprising:

first logic means for sensing presence of a QR rise in as heart beat waveform and producing a pulse responsive thereto;

second logic means for sensing presnce of an unusually wide QRS heart beat waveform and producing a pulse responsive thereto;

first AND gate means for receiving pulse signals from said first and said second logic means and passing an output pulse upon coincidence of said signals;

other logic means for detecting absence of a heart beat waveform following a first heart beat waveform and producing an output pulse responsive thereto;

second AND gate means for receiving output pulse signals from said first AND gate means and said other logic means; and

indicator means connected to said second AND gate means to be activated upon receiving a signal from said second AND gate means.

3,978,857

SYSTEM WITH FILTER FOR ADMINISTRATING PARENTERAL LIQUIDS

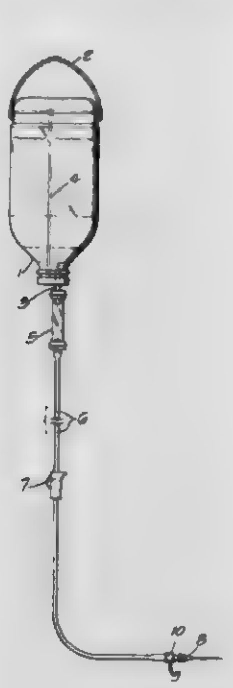
Charles J. McPhee, Sylmar, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Division of Ser. No. 280,542, Aug. 14, 1972, Pat. No. 3,882,026. This application Feb. 3, 1975, Ser. No. 546,509

Int. Cl.^{2} A61M *5/14*

U.S. Cl. 128—214 R **8 Claims**

1. A combination for filtering parenteral solution comprising: a parenteral solution bottle having means for suspending it above a patient, said bottle having a liquid outlet port; an administration conduit connected to said outlet port for draining parenteral solution from said bottle, said administration conduit having a dispensing end; a rigid thermoplastic transparent housing having a hollow chamber and a pair of tubular adapters communicating with this chamber and extending from opposite ends of the housing, one of said adapters being connected to the dispensing end of the administration conduit; a pair of disc-shaped filter membranes fitting inside the hollow housing and permanently secured in face-to-face relationship to the hollow housing, said filter membranes each being of less than 0.375 inch diameter and each having a thickness of from 0.003 to 0.008 inch and having a "depth" of randomly interconnected stacked passages of from 20 to 30 micron size, said membrane being of a nonfibrous hydrophobic material and presenting a porous hydrophobic structure impervious to at least 95 percent of all particulate matter of 5 micron size and greater from parenteral solution in the bottle passing through the filter's interconnected passages; said housing including a



plurality of support prongs having rounded generally hemispherical end contact surfaces abutting a central portion of one of said filter membranes to support it during liquid flow therethrough, said support prongs covering less than 20 percent of the effective filter area of the filter membranes; and a hypodermic needle fitting over the other tubular adapter of the hollow housing.

3,978,858

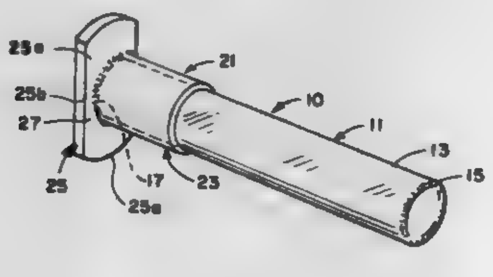
GLASS TUBE AND THERMOPLASTIC RESIN FINGER GRIP SLEEVE ASSEMBLY

Edward A. Tischlinger, Des Plaines, Ill., assignor to MPL, Inc., St. Louis, Mo.

Division of Ser. No. 197,717, Nov. 9, 1971, Pat. No. 3,803,700. This application Mar. 18, 1974, Ser. No. 451,962

Int. Cl.^{2} A61M *1/00*

U.S. Cl. 128—237 **5 Claims**



1. A glass tube and non-glass finger grip arrangement for use particularly in packaging and subsequent dispensing of chemicals, comprising a length of substantially constant diameter die-formed glass tube having a peripheral wall with a die-formed bore and outer annular surface, the diameters both of which bore and outer annular surface are each at least several times the thickness of said peripheral wall whereby said glass tube is thin-walled relative to both its outer and bore diameters,

and a sleeve of thermoplastic resin having a laterally extending finger-grip protrusion integrally formed thereon,

said sleeve having an annularly substantially continuous substantially constant diameter inner bore wall in solely friction-retained engagement in a stretched-fit friction-retained state over and along one end of said glass tube,

the diameters of both the bore and the outer annular surface of said glass tube being at least several times the wall thickness of the longitudinally extent of said sleeve extending over and along said glass tube.

said tube having raised surface projections on the outer annular surface beneath and contiguous with the inner surface of said sleeve, said surface projections being of substantially smaller radial thickness than the adjoining overlying portion of said sleeve.

3,978,859

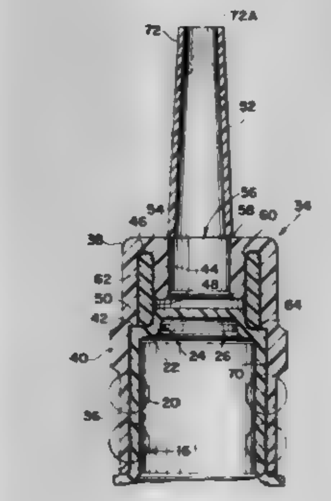
CLOSURE MEMBER FOR PIERCEABLE ACCESS PORTS

John S. Goodenough, Berkeley, and Wendell R. Parker, Moraga, both of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Jan. 23, 1975, Ser. No. 543,466

Int. Cl.^{2} A61J *1/00*

U.S. Cl. 128—272 **23 Claims**

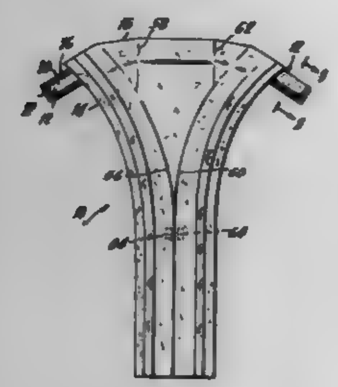


1. In combination, a container for storage and administrationn of parenteral liquids and the like, having a pierceable access port for insertion therethrough of a parenteral administration spike, and a tamper proof protective closure member mounted over and surrounding said access port, wherein:

a. said access port includes:
  i. an upstanding wall portion extending from the body of said container; and
  ii. a pierceable diaphragm constituting a top closure on said wall portion;
b. said tamper proof closure member including:
  i. a base portion engaged around and sealed to said upstanding wall portion of said access port; and
  ii. an upwardly extending closed member integrally connected with said base portion;
c. frangible means for forming a bacteria proof seal between said upwardly extending closed member and said base portion, said frangible means including a frangible material section and being rupturable to remove at least an upper portion of said upwardly extending member to expose said pierceable diaphragm for insertion therethrough of said spike, said frangible material section having a radial cross sectional extent substantially less than the outer radial cross sectional extent of said base portion relative to the longitudinal axis of said base portion.

3,978,860
TABS FOR DISPOSABLE DIAPERS

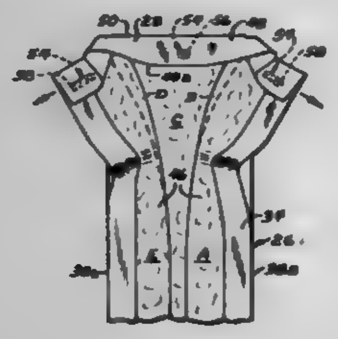
Joseph Frank Stima, Edison, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed July 31, 1975, Ser. No. 600,877
Int. Cl.² A41B *13/02*; A61F *13/16*
U.S. Cl. 128—284 **7 Claims**



1. A disposable diaper comprising a body of absorbent material defined by peripheral edges and having an inside surface for direction toward the body of an infant, and at least one adhesive tape tab affixed to the diaper along a peripheral edge, said tab comprising a strip of tape with pressure sensitive adhesive material on one side thereof and having a pad of cushioning material along its peripheral edge.

3,978,861
DISPOSABLE DIAPER WITH END FLAP MEANS AND METHOD

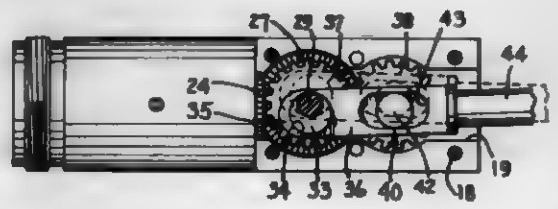
Charles H. Schaar, Lake Zurich, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.
Division of Ser. No. 472,531, May 23, 1974, Pat. No. 3,930,501. This application Sept. 15, 1975, Ser. No. 613,603
Int. Cl.² A61F *13/16*
U.S. Cl. 128—287 **2 Claims**



1. A disposable diaper, comprising: an absorbent pad, a liquid impervious backing sheet defining a back surface of the diaper, a front surface, a pair of side edges, a pair of end edges connecting the side edges, with said backing sheet extending to at least one end edge of the diaper, an end flap of the backing sheet adjacent said one end edge, said end flap being folded over the diaper with the front surface of the end flap facing the front surface of the diaper adjacent the end flap, and means for securing laterally spaced portions of said end flap to the front surface of the diaper to permit portions of the flap intermediate the securing means to gap away from the front surface of the diaper.

3,978,862
SURGICAL CUTTING DEVICE

Marshal Morrison, Comstock, Kalamazoo, Mich., assignor to Stryker Corporation, Comstock Township, Kalamazoo County, Mich.
Filed Aug. 26, 1974, Ser. No. 500,373
Int. Cl.² A61B *17/14*; B27B *19/04*
U.S. Cl. 128—317 **10 Claims**



1. In a surgical cutting device having a housing, an elongated blade holding member movably supported relative to said housing, said blade holding member being adapted to have a cutting blade mounted on the outer end thereof, and drive means mounted on said housing and interconnected to said blade holding member for moving same, comprising the improvement wherein:

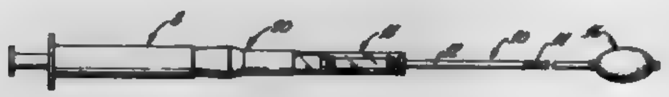
said drive means includes crank means rotatable about an axis and connected to said blade holding member adjacent the inner end thereof for causing the inner end of said blade holding member to be movably displaced in a circular pattern within a plane which is substantially perpendicular to the rotational axis of said crank means, said crank means including a drive crank member which is rotatable about and eccentrically displaced relative to said rotational axis, said crank member being disposed directly in engagement with said blade holding member adjacent the inner end thereof; and

support means pivotally and linearly slidably supporting said blade holding member on said housing for permitting simultaneous angular oscillation and linear reciprocation of said blade holding member within a plane substantially perpendicular to said rotational axis in response to rotation of said crank means, said support means engaging said elongated blade holding member intermediate the ends thereof so as to be disposed between the rotatable crank means and the blade, said support means including a support member mounted on said housing for angular movement about a support axis which is fixed relative to said housing, said support member comprising a support crank member which is rotatable about and eccentrically displaced relative to said support axis, said support axis being substantially parallel to but spaced from said rotational axis, one of said support and crank members having slot means associated therewith and extending in the elongated direction of said blade holding member for slidably supporting said blade holding member for linear movement in a direction which is parallel to the longitudinal direction of said blade holding member and perpendicular to said support axis; and

driving means drivingly interconnecting the drive crank member and the support crank member for simultaneous rotation, whereby the cutting edge of the blade is cyclically moved through a path which defines a closed endless loop in response to movement of said blade holding member by said crank means.

3,978,863
EXPANDING TIP EMBOLECTOMY CATHETER WITH INDICATOR BALLOON

Bruce E. Fettel, Diamond Bar, and Samuel Burd, Long Beach, both of Calif., assignors to Bruce E. Fettel, Diamond Bar and Samuel Burd, Long Beach, both of, Calif.
Continuation-in-part of Ser. No. 477,168, June 6, 1974, abandoned. This application Feb. 18, 1975, Ser. No. 550,703
Int. Cl.² A61M *25/00*
U.S. Cl. 128—348 **17 Claims**



1. A biologically compatible expandable tip embolectomy catheter of the type constructed and adapted to be inserted in and advanced through blood passages, which is capable of being followed by X-ray techniques and which includes means to indicate to the user when the inserted expandable tip has been expanded in the body passage, comprising:

a flexible first tube;

a resilient, expandable second tube adapted to engage the thrombus, attached in fluid communication with the first tube at the distal end thereof, the distal end of said second tube being sealed;

a resilient, expandable third tube, which is more resilient to expansion than the second tube, attached in fluid communication with the first tube proximate to the proximal end of the first tube;

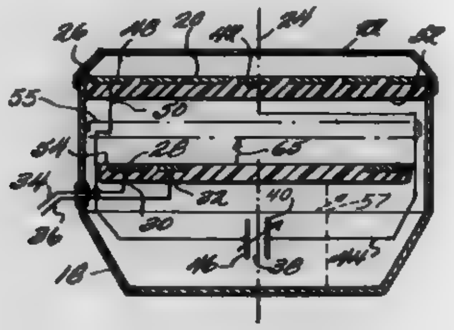
means for limiting the expansion of said third tube;

a flexible, X-ray opaque element extending through said tubes, the tip portion of the second tube being attached proximate the end of the opaque element; and

means in fluid communication with the first tube for connecting the catheter to a fluid source, for applying fluid pressure into the catheter from a fluid source to expand the second tube outwardly into contact with the walls of the body passage in which it has been inserted first, then to expand the third tube outside the body until such expansion is empeded by said limiting means to indicate to the user that the expandable tip has been expanded inside the body, and then to expand the second tube further to press against the walls of the body passage.

3,978,864
ELECTROTHERAPEUTIC TREATMENT HEAD

Luther B. Smith, deceased, late of Miami Beach, Fla., by William F. L. Fry, and Richard E. Jordan, executors, assignors to L. B. Smith Estates, Inc., Washington, D.C.
Continuation-in-part of Ser. No. 552,999, April 29, 1966, abandoned, which is a continuation-in-part of Ser. No. 494,511, Oct. 11, 1965, abandoned. This application Nov. 17, 1966, Ser. No. 600,341
Int. Cl.² A61N *1/40*
U.S. Cl. 128—404 **15 Claims**



1. A treatment head utilizing electromagnetic energy delivered from an electrotherapeutic drive circuit for electrotherapeutically applying said energy to organic matter comprising a hollow housing including a support means;

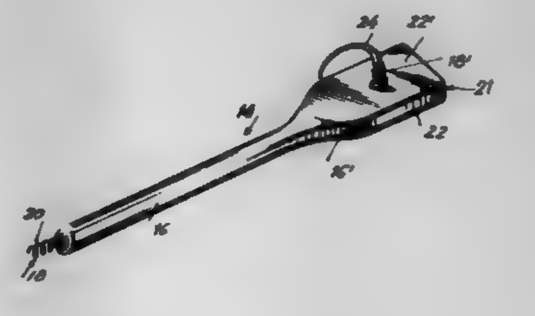
conducting and radiating means for transferring said electromagnetic energy to said matter, said conducting and radiating means being mounted within said housing means and spiraling in one place around an axis approximately from said axis to a point located not farther away from said axis than the periphery of said housing means, at least a portion of the conducting and radiating means being substantially flat in the plane of the spiral, the width in the plane of the spiral of at least part of said conducting and radiating means being greater than half the pitch of said conducting and radiating means;

a primary coil connected to said drive circuit for coupling said energy to said conducting and radiating means, said primary coil having a loop-shape and being flat in the plane of its loop and substantially parallel to spiral-shaped conducting and radiating means; and

means for adjusting and spacing between said conducting and radiating means and said primary coil.

3,978,865
IMPLANTABLE PACEMAKER AND ELECTRODE MEMBER THEREFOR

Hector Osvaldo Trabucco, Av.Santa Fe 2926, VI°B, Buenos Aires, Argentina
Filed Jan. 22, 1975, Ser. No. 542,944
Claims priority, application Argentina, Jan. 25, 1974, 252075
Int. Cl.² A61N *1/36*
U.S. Cl. 128—419 P **16 Claims**



9. In an implantable pacemaker for cardiac stimulation, in combination, a generator of electric pulses and a catheter-type electrode insertable from without through the epicardium into the heart muscle for cardiac stimulation, said electrode comprising:

a holder of dielectric material including a stem and an enlarged elastic pad having a substantially flat major surface; and

conductor means connectable to said generator, said conductor means extending through said stem into said pad and forming therein a helically coiled portion projecting outwardly from said major surface, said portion terminating beyond said major surface in an arcuately curved electrically conductive hook of generally semicircular shape lying in a plane substantially perpendicular to said major surface and having a tip pointing back toward said major surface for holding said pad in a sutureless manner onto the heart surface by said pad upon the heart.

3,978,866
SMOKING COMPOSITIONS

Lawrence C. Cook, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Sept. 3, 1974, Ser. No. 502,601
Int. Cl.² A24B *15/00*
U.S. Cl. 131—2 **8 Claims**

1. A smoking material which contains comminuted peanut shells in combination with tobacco or a flavorant additive, said

peanut shells being in a form resembling cut cigarette filler tobacco or cut pipe tobacco.

3,978,867
APPARATUS FOR INCREASING THE VOLUME OF MOIST TOBACCO

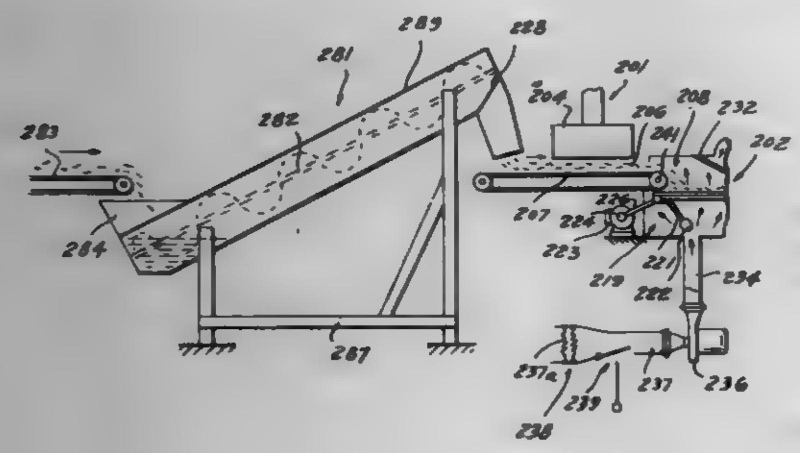
Waldemar Wochnowski, Hamburg, Germany, assignor to Hauni-Werke Korber & Co., KG, Hamburg, Germany

Division of Ser. No. 220,848, Jan. 26, 1972, Pat. No. 3,881,498. This application Apr. 9, 1975, Ser. No. 566,338

Claims priority, application Germany, Jan. 27, 1971, 2103669

Int. Cl.² A24B *3/18*

U.S. Cl. 131—133 R **9 Claims**



1. Apparatus for increasing the volume of tobacco, comprising a feeding unit including a source of supply of a liquid and means for conveying tobacco particles through said supply of liquid to thus subject the particles to an intensive moistening action whereby the particles undergo a pronounced expansion; a drying unit arranged to receive expanded tobacco particles and having means for subjecting the expanded particles to a short-lasting external heating action which is sufficient to effect the drying of tobacco particles in the outer strata immediately adjacent to the external surfaces of tobacco particles and which causes the hardness of said outer strata to substantially exceed the hardness of the inner strata of tobacco particles; and a cooling unit arranged to receive said externally heated particles and having means for subjecting said particles to the cooling action of a fluid coolant resulting in pronounced stabilization of the volume of tobacco particles.

3,978,868
METHOD OF CONDITIONING TOBACCO

Willi Thiele, Geesthacht; Gerd-Joachim Wendt, and Werner Heyden, both of Hamburg, all of Germany, assignors to Hauni-Werke Korber & Co., KG, Hamburg, Germany

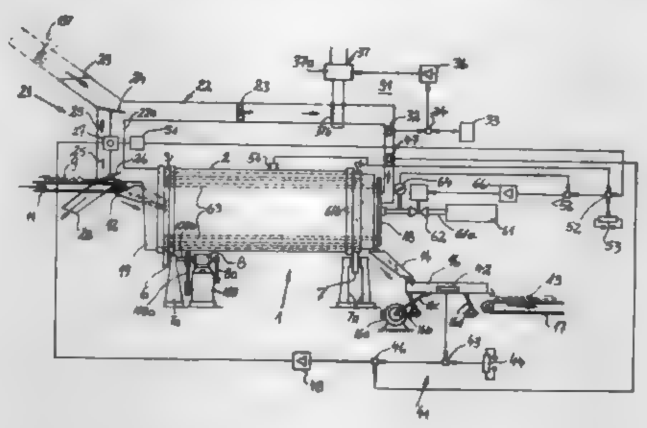
Filed July 25, 1974, Ser. No. 491,867

Claims priority, application Germany, July 27, 1973, 2338129

Int. Cl.² A24B *3/04*

U.S. Cl. 131—135 **7 Claims**

1. A method of reducing the moisture content of a stream of tobacco particles which are transported by a conveyor in a predetermined direction through an elongated conditioning zone into which particles of moist tobacco are admitted at one end and from which particles of dried tobacco are discharged at the other end, comprising the steps of heating the conveyor; passing through the conditioning zone a current of a heated gaseous fluid counter to said direction so that the particles of tobacco are heated by teh conveyor as well as by the fluid and release moisture which is entrained by the fluid; intercepting a portion of moisture-laden fluid at the one end of the conditioning zone and conveying the intercepted portion along a predetermined path into the other end of the conditioning zone; mixing the moisture-laden fluid in said path with a drier fluid while maintaining the quantity of fluid entering said other end of the conditioning zone at least substantially constant; measuring the moisture content of dried tobacco particles; comparing the measured moisture content with a predetermined moisture content; and changing the ratio of moisture-laden fluid to drier fluid in said path as a function of the extent of deviation of the measured moisture content from said predetermined moisture content.



3,978,869
MOUTHPIECE FOR CIGARETTE

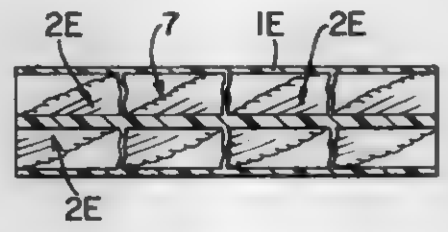
Minoru Uehara; Kazuo Maeda, both of Tokyo; Shoji Fujii, Ichikawa, and Hiromu Nishio, Kamakura, all of Japan, assignors to The Japan Monopoly Corporation, Tokyo and Daicel, Ltd., Osaka, both of, Japan

Continuation of Ser. No. 419,439, Nov. 27, 1973, abandoned. This application June 19, 1975, Ser. No. 589,364

Claims priority, application Japan, Nov. 28, 1972, 47-136791[U]

Int. Cl.² A24F *13/06*

U.S. Cl. 131—261 B **1 Claim**



1. A one-piece, extruded, synthetic resin, cigarette mouthpiece having a cylindrical tubular exterior wall of substantially circular cross-section, and four continuous unitary helical deflecting walls within said exterior wall and extending lengthwise from one axial end to the other axial end of said exterior wall, said four deflecting walls in transverse cross-section extending substantially radially inwardly from substantially uniformly circumferentially spaced-apart points on said exterior wall, said deflecting walls being joined to each other at their radially inner ends at the central longitudinal axis of said mouthpiece so that said deflecting walls form a cross in transverse cross-section, said deflecting walls being helically curved along the entire lengthwise extent of said mouthpiece so that all radii of the circular cross-section of the mouthpiece defined by said exterior wall are occupied by portions of said deflecting walls along the length of the mouthpiece, the radially outer edges of said deflecting walls being integral with said exterior wall, said deflecting walls defining within said exterior wall four separate continuous helical flow passages for cigarette smoke so that said cigarette smoke undergoes smooth and gradual direction change as it flows through said passages, said deflecting walls each having axially spaced-apart pleats extending from the junctures of the radially outer edges thereof with said exterior wall part-way across said deflecting walls and also having longitudinally extending corrugations so that each of said deflecting walls has a wavy configuration in transverse cross-section.

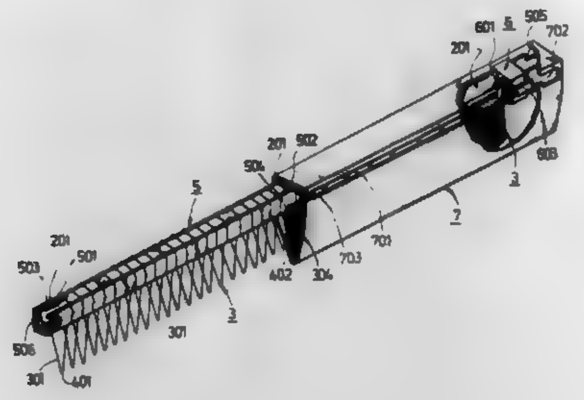
3,978,870
COMB WITH DISPOSABLE COMB-TEETH MODULE

Chung Sing Lin, No. 182-2 Chung Shan Road, Shan Hua Chen, Tainan Hsien, Taiwan, China

Filed Aug. 18, 1975, Ser. No. 605,746

Int. Cl.² A45D *24/00*

U.S. Cl. 132—11 R **6 Claims**



1. A novel comb comprising:

a comb back;

a comb-teeth module detachably mounted on the comb back; and

a case member connected to one end of the comb back for serving as a handle;

charactered in that the comb-teeth module comprises:

a continuous wire wound helically into a plurality of coils in juxtaposition with each coil including a V-shaped lower portion serving as a comb tooth element and a rectangular upper portion defining a channel adapted to snugly receive the comb back therein,

said wire including retainer means at both ends of the wire for engaging the comb back whereby the comb teeth module can be retained on the comb back either in a retracted condition having comb teeth compacted or in an extended condition having comb teeth spaced apart.

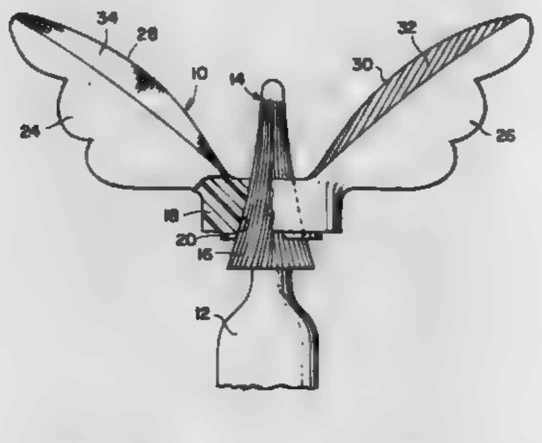
3,978,871
NAIL POLISH BOTTLE OPENER AND NAIL CARE IMPLEMENT

Robert B. Huston, Pompano Beach, Fla., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Oct. 1, 1975, Ser. No. 618,318

Int. Cl.² A45D *29/00*

U.S. Cl. 132—73 **3 Claims**



1. A decorative wrench device for opening a nail polish bottle having an upwardly converging cap with a grooved surface comprising: a collar; a generally conical bore in said collar, said bore having a grooved surface for engaging said cap; an arm projecting integrally from said collar; and nail filing means on said arm.

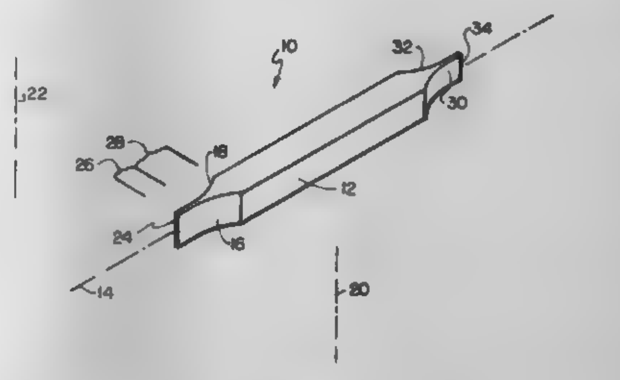
3,978,872
TOOTHPICK

Jesse H. Bond, 1038 Shephard, Corpus Christi, Tex. 78412

Filed Mar. 12, 1975, Ser. No. 557,819

Int. Cl.² A61C *15/00*

U.S. Cl. 132—89 **16 Claims**



1. A unipartite toothpick comprising an elongate element of an abradable material providing a handle portion having a longitudinal axis, one end of the element being provided with a pair of arcuately converging surfaces of hollow-ground shape, each surface defining a radius about an axis, the last mentioned axes being on opposite sides of the longitudinal axis and being spaced apart a distance in the range of 3–8 inches, the element terminating in a bladed end sufficiently thin to extend between human teeth throughout a distance from the front thereof to the rear thereof.

3,978,873
COIN COUNTING APPARATUS

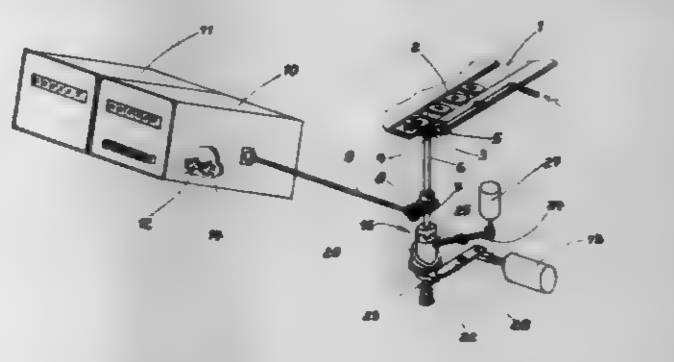
Erwin Gross, Karlsruhe, Germany, assignor to Standardwerk Eugen Reis GmbH, Germany

Filed July 24, 1975, Ser. No. 598,814

Claims priority, application Germany, July 26, 1974, 2436022

Int. Cl.² G07D *9/00*

U.S. Cl. 133—8 A **6 Claims**



1. Apparatus for counting coins comprising a register for recording the number of coins counted, means for transporting coins in single file, a star-wheel arranged adjacent said transporting means having teeth individually receiving a coin, said star-wheel being indexable about its central axis with respect to a null position on the passage of coins therethrough, a freely rotatable shaft fixed at one end to said star-wheel to index conjointly therewith, means for transmitting the indexing of said shaft to said register, a coupling located about said shaft, said coupling comprising a first member secured to said shaft and a second member freely rotatable about said shaft and axially movable thereon, said second coupling member having a cam located about the peripheral surface thereof and an axial extension provided with a radially extending flange, a pivotally mounted lever adapted to tangentially engage said cam, and a pivotally mounted pawl adapted to engage said flange, and means to selectively manipulate said lever to cause said lever to engage said cam to separate said coupling and cause said second coupling member to rotate into the null position about said shaft, and means to selectively manipulate

said pawl to cause said pawl to engage said flange in the null position.

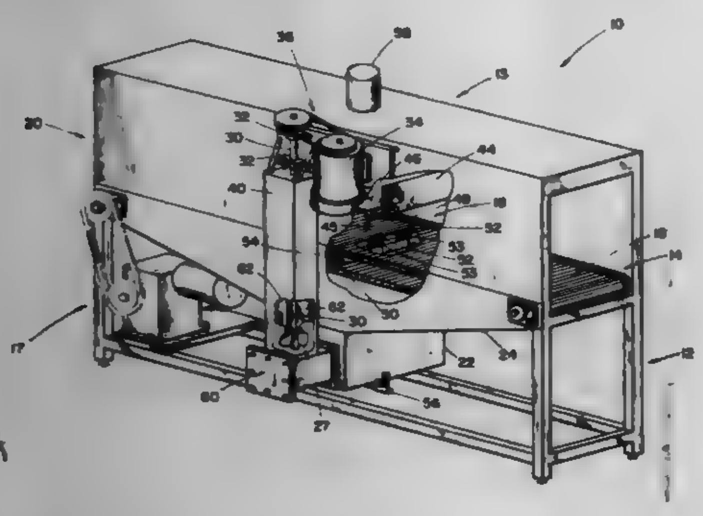
3,978,874
HEAT SENSITIVE FILM SHRINKING MACHINE

Jacob Schmidt, Sr., and Jacob Schmidt, Jr., both of R.D. No. 1, Harleysville, Pa. 19438

Filed June 23, 1975, Ser. No. 589,027

Int. Cl.² B08B *3/02*

U.S. Cl. 134—107 **2 Claims**



1. A heat sensitive film shrinking machine having a supporting frame structure of interconnected vertical and horizontal frame members to support units thereof adapted to recirculate and distribute a heated water medium to shrink heat sensitive film about food product items vacuum wrapped therein during a single pass of said items through said machine, a linked rod conveyor means operable to deliver said items unidirectionally in spaced relationship upon said conveyor through a heated water shrinking chamber of said machine, a water collection and heating means comprising a geometrically shaped water collection tray connected to and communicating with a downwardly disposed geometrically shaped reservoir in which water which has been distributed in the machine is collected, means to reheat said collected water to an elevated temperature for recirculation and redistribution to said shrinking chamber for further film shrinking operations, heated water recirculation means comprising a vertically disposed standpipe, a submerged propeller pump centrally positioned within said standpipe at an elevation below the midpoint but above the lower end of said standpipe, means connecting said standpipe to said reservoir to pump heated water from said reservoir and impart a pressure head to the same for distribution to said shrinking chamber, means below said shrinking chamber operable to receive said distributed water for reheating and recirculation thereof, in combination with a heated water distribution means comprised of a fountain manifold connected to and communicating with said standpipe and disposed longitudinally within said shrinking chamber and also laterally across said shrinking chamber in said machine between the delivery and return courses of said linked rod conveyor, whereby said fountain manifold has a plurality of openings in the upper closure surface thereof operable to deliver an upward coarse droplet sprinkling of heated water to the underside surfaces of said items as conveyed through said shrinking chamber, an upper slotted distribution tray connected to and communicating with said stand pipe above the mid-point thereof but below the upper end thereof and longitudinally extending within said shrinking chamber across the lateral dimension thereof and having a series of parallel transverse slots in the bottom of said tray for downwardly cascaded distribution of heated water to the upper surfaces of said items as conveyed through the shrinking chamber of said machine, said slots in said heated water distribution tray being formed by pairs of "L" shaped flanges each of which has one of the legs thereof downwardly disposed and means to adjust at least one of said flanges transversely relative to the other along the bottom of said distribution tray to vary the width of the slot openings in said bottom of said tray and thereby control the amount and pattern of heated water distributed therefrom in cascading manner.

3,978,875
DISH WASHING MACHINE

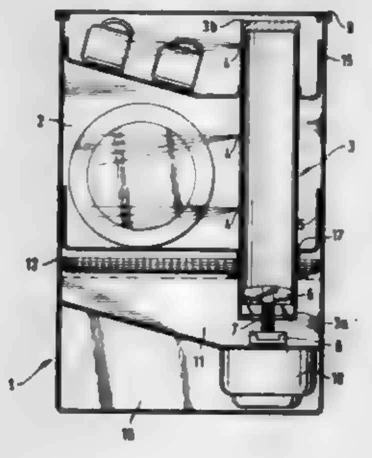
Erich Hans Slany, Muelbergerstr. 90, 7300 Esslingen, Germany

Filed Sept. 5, 1974, Ser. No. 503,450

Claims priority, application Germany, Sept. 11, 1973, 2345705

Int. Cl.² B08B *3/02*

U.S. Cl. 134—112 **14 Claims**



1. A compact, self-contained dish washing machine comprising:
- a watertight machine housing including: a bottom, substantially vertical side walls enclosing a space of generally rectangular cross-sectional outline, and a removable matching top cover; the housing further defining in its bottom portion a reservoir space or well and a dry space between its well and the level on which the housing is normally supported if resting on a flat surface;
- at least one removable dish rack arranged in said housing so as to be capable of holding dishes and other articles within the spray zone;
- a substantially vertically oriented spray pipe arranged inside said housing in the vicinity of a side wall thereof, the spray pipe having its lower end reaching into the water which is normally contained in said well and its upper end closed and located near the top of the housing;
- a plurality of spray orifices arranged on the periphery of the spray pipe, at such vertical locations and angular orientations that the sprays exiting therefrom under pressure collectively cover an effective spray zone of substantially no more than 180 degrees angular extent from the spray pipe axis and of a vertical extent which covers at least a major portion of said enclosed housing space;
- a pump impeller carried by and journalled inside said immersed spray pipe portion on a vertical impeller shaft;
- an electric motor arranged in said dry space underneath the well so as to have its shaft axially aligned with the impeller shaft, the motor shaft extending sealingly through the housing wall which separates the well from the dry space; and
- an axially disengageable coupling between the impeller shaft and the motor shaft, the coupling being arranged inside the well, near the bottom thereof.

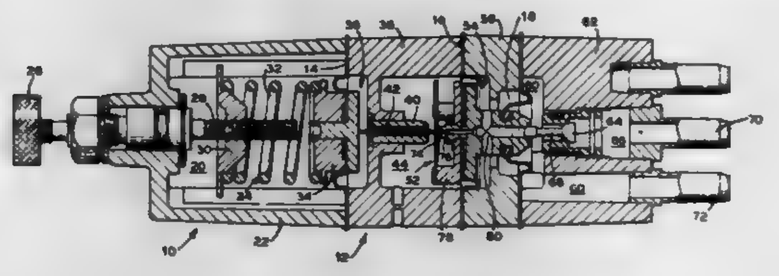
3,978,876
PNEUMATIC PRESSURE REGULATOR

Thomas E. Stevenson, Willoughby Hills, and Kenneth W. Cohen, Chesterland, both of Ohio, assignors to Bailey Meter Company, Wickliffe, Ohio

Filed May 23, 1975, Ser. No. 580,455

Int. Cl.² G05D *16/06*

U.S. Cl. 137—84 **7 Claims**



1. A pneumatic pressure regulator comprising:
- a housing forming an input chamber, a nozzle chamber, an output chamber, a vent chamber, and a feedback chamber;
- a first flexible diaphragm mounted between said input chamber and said feedback chamber to move in response to a pressure difference therebetween;
- a second flexible diaphragm mounted between said nozzle chamber and said vent chamber to move in response to a pressure difference therebetween;
- a vane and nozzle assembly mounted on said second diaphragm to exhaust fluid from said nozzle chamber to said vent chamber according to the spacing between the vane and the nozzle of said vane and nozzle assembly and provide a pressure difference between said nozzle chamber and said vent chamber;
- a coupling member connecting said first diaphragm to said vane to vary the spacing between the vane and the nozzle; and
- output means for varying the pressure in said output chamber in response to movement of said vane and nozzle assembly.

3,978,877
METHOD AND APPARATUS FOR MONITORING AND CONTROLLING THE COMPOSITION OF FLAMMABLE GAS MIXTURES

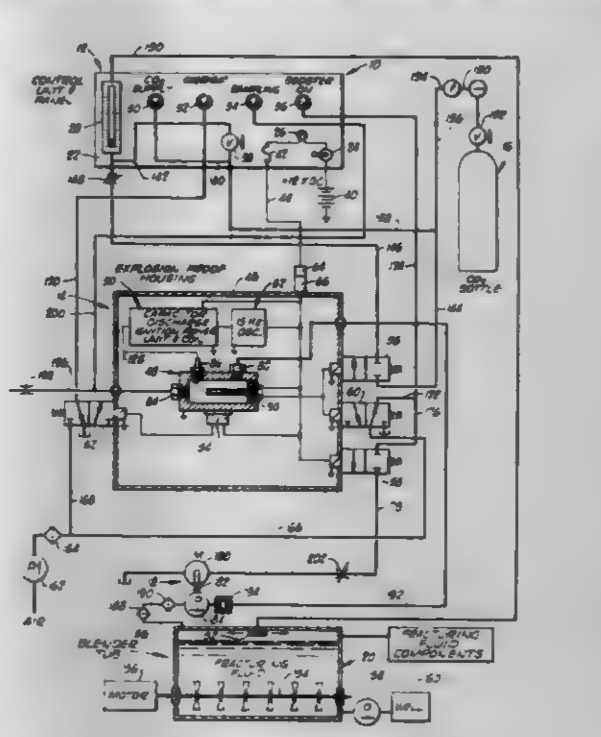
Bruce M. Cox, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 502,389, Sept. 3, 1974, Pat. No. 3,913,600. This application June 4, 1975, Ser. No. 583,735

Int. Cl.² G05D *11/00*

U.S. Cl. 137—90 **9 Claims**

1. An apparatus for use with a source of electric current for monitoring and controlling the composition of gaseous mixtures in a substantially closed container to prevent the accumulation of explosive gas mixtures therein, comprising;
- a combustion chamber having an inlet and an outlet;
- conduit means communicating between said closed container and the inlet of said combustion chamber for conveying a sample stream of gaseous mixture from said container to said combustion chamber;
- pump means communicating with said conduit means for propelling the sample gaseous mixture stream through said conduit means to said combustion chamber;
- ignition generation means connected with said source of electric current and communicating with the interior of said combustion chamber for providing periodic ignition impulses to the interior of said combustion chamber to ignite any explosive gas mixture therein;
- temperature responsive switch means communicating with the interior of the combustion chamber and connected to said source of electric current for regulating passage of electric current therethrough in response to temperatures sensed in said combustion chamber; and
- means electrically connected to said temperature responsive switch means and responsive thereto for introducing non-combustion-supporting gas into the enclosed container upon the sensing of a temperature within said combustion chamber greater than a predetermined value.



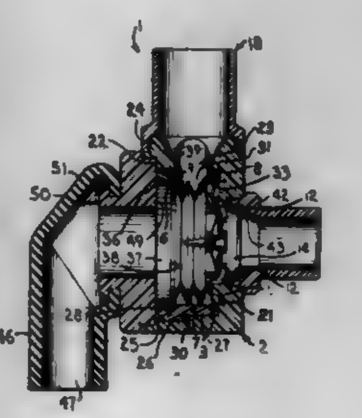
3,978,878
RESILIENT SUPPLY AND EXHAUST VALVE

Hans Rudolph, 7200 Wyandotte, Kansas City, Mo. 64114

Filed Sept. 18, 1975, Ser. No. 614,592

Int. Cl.² G05D *7/00*; F16K *15/14*

U.S. Cl. 137—102 **11 Claims**



1. A valve device comprising:
- a. a valve body having a valve chamber therein and an outlet opening for flow of fluid therethrough, said valve body having a valve seat surrounding the outlet opening;
- b. an elongated tubular member positioned in said valve chamber and having one end thereof in sealing engagement with said valve body and in spaced relation with said valve seat, said tubular member having an end wall at the other end thereof and positioned in facing relation with and shaped to engage said valve seat to close said outlet opening, said end wall of said tubular member having ports therein spaced inwardly of said valve seat;
- c. a valve element spaced inwardly from said valve seat and comprising a flexible member mounted on the end wall of said tubular member and having a portion thereof seating on said tubular member end wall and around the ports therein to close same, said valve element and said tubular member end wall being adapted to flex in response to fluid pressure in said tubular member to open the ports for flow therethrough; and
- d. means extending from said tubular member adjacent said end wall thereof and having a peripheral portion mounted

on said valve body for supporting said tubular member end wall and permitting movement thereof toward and away from said valve seat for seating thereon and unseating of said tubular member end wall, said means for supporting said tubular member end wall being adapted to permit flow of fluid into said valve chamber from the outlet opening.

3,978,879
CONTROL MEANS FOR HYDROSTATIC STEERING SYSTEMS AND THE LIKE

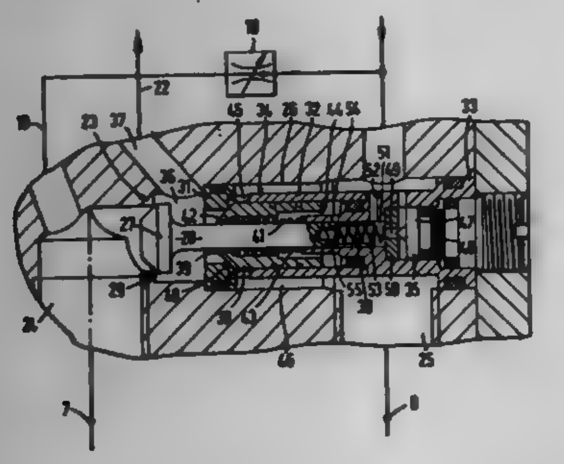
Poul Erik Termansen, Sonderborg, and Thorkild Christensen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 385,891, Aug. 6, 1973, abandoned. This application June 26, 1974, Ser. No. 483,115

Claims priority, application Germany, Aug. 14, 1972, [illegible]

Int. Cl.² B62D *5/08*

U.S. Cl. 137—115 **3 Claims**



1. A control valve assembly for a hydrostatic steering system comprising a casing, inlet and outlet passages in said casing connectable on one side to a pump and a return tank and on the other side to a motor reversing valve unit, a bypass control passage connecting said inlet and outlet passages, a spring biased check valve for said inlet passage openable for normal operation at a predetermined pressure difference in said inlet passage between the up and downstream sides of said check valve, a spring biased excess pressure valve having fluid communication with said bypass passage, cooperable valve openings in said check valve and in said casing which control a subsidiary passage between said inlet passage and said excess pressure valve and which are aligned when said check valve is open.

3,978,880
REGULATOR VALVE DIAPHRAGM AND VALVE ASSEMBLY INCLUDING THE SAME

Marlyn Dale Crown, and Carl Eugene Finley, both of Sycamore, Ill., assignors to Olin Corporation, New Haven, Conn.

Filed June 23, 1975, Ser. No. 589,295

Int. Cl.² F16K *43/00*

U.S. Cl. 137—315 **3 Claims**

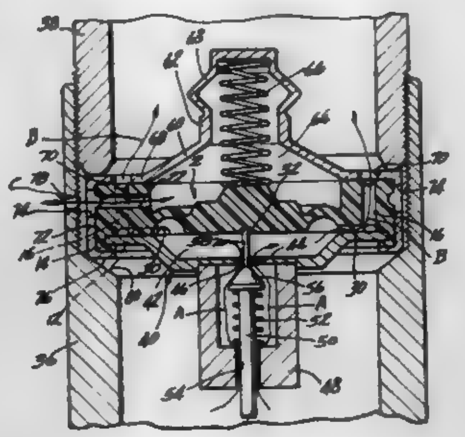
1. A pressure-regulated fluid flow valve assembly comprising: in combination:

a. a housing having at least two components formed of sheet metal;

b. a diaphragm mounted in said housing between said components, said diaphragm dividing said housing into an upstream pressure chamber and a downstream atmospheric chamber;

c. first means forming a plurality of longitudinally extending fluid flow passages extending from said pressure chamber through a radially outermost peripheral portion of said diaphragm and through one of said housing components;

d. second means forming at least one radially extending atmospheric vent passage extending from said atmospheric chamber through said outermost peripheral portion of said diaphragm and through one of said housing components to the surrounding ambient atmosphere, said longitudinally extending flow passages being offset from said radially extending vent passage so as to be sealed from each other; and



e. valve means connected to said housing and including a portion extending into said pressure chamber in contact with said diaphragm, said valve means being operative to control the flow rate of fluid into said pressure chamber in response to variations of pressure in said pressure chamber and sensed by said diaphragm.

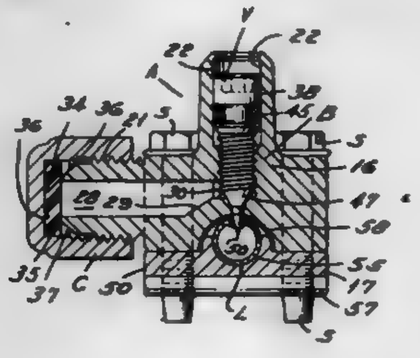
3,978,881
GAS LINE PIERCE VALVE

Edward M. Mouranie, Southfield, Mich., assignor to The Westward Company, Troy, Mich.

Filed June 5, 1975, Ser. No. 584,055

Int. Cl.² F16K *43/00*

U.S. Cl. 137—318 **10 Claims**



1. A valve structure for a refrigerating pipe line comprising a body having a pipe receiving groove on a face thereof, a clamp plate having a face fitting against said body face having a complementary pipe receiving groove, means for clamping said faces together thereby embracing said pipe line in said grooves and securing said valve structure on said pipe line, a stem integral with and projecting from body having an unthreaded cylindrical bore therein with its axis transverse to the axis of said body groove, a nipple projecting from said body having a bore with its axis transverse to and intersecting with the stem bore within said body forming a continuous fluid passageway, said body provided with internal threads in said continuous passageway between said transverse nipple bore and said unthreaded cylindrical stem bore and located in the main portion of the part of said body from which said integral stem projects, a screw valve axially movable within the bore of said stem, said screw valve having a pierce point at the inner end which can be moved through an aperture through the body between said fluid passageway and said body groove, said valve having a conical valve surface adjacent said pierce point for engaging a valve seat surrounding said aperture, said valve having external threads extending outwardly from said valve surface and engaging said internal threads within said body, an enlarged head at the outer end of said valve and entirely within said cylindrical bore of said stem, said head being provided with a circumferential groove, and an O-ring in said circumferential groove of a size to fit within said cylindrical stem bore while squeezed between the end shoulders of said groove thereby forming a seal with said cylindrical bore of said projecting stem during axial adjustment of said screw valve.

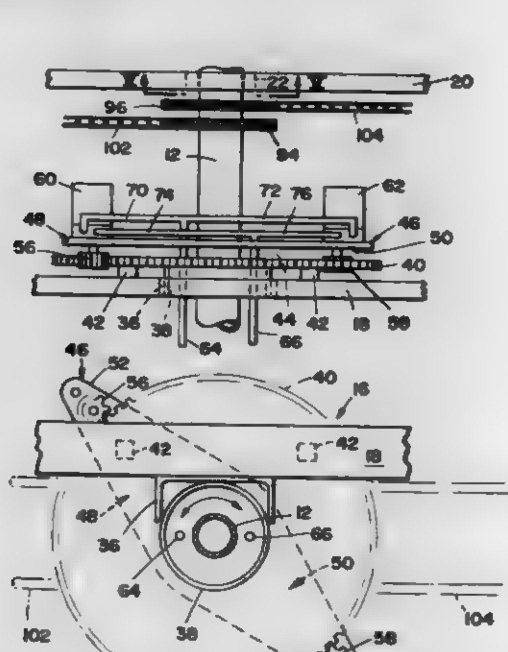
3,978,882
MOVER UNIT FOR IRRIGATION LINE

Gail Cornelius, Portland, Oreg., assignor to R. M. Wade & Co., Portland, Oreg.

Filed Oct. 16, 1975, Ser. No. 622,879

Int. Cl.² B05B *9/02*

U.S. Cl. 137—344 **11 Claims**



1. Apparatus for rotating a wheel-supported irrigation line about its longitudinal axis for travel thereof over a field comprising:

a frame to which the irrigation line is rotatably mounted;
means for supporting the frame;
ring gear means fixed relative to the frame;
arm means fixed relative to the irrigation line and rotatable therewith;
gear means rotatably mounted relative to the arm means and operatively coupled with the ring gear means; and
means for driving the gear means rotatably mounted relative to the arm means so that said driven gear means move about the ring gear means to rotate the arm means and irrigation line.

3,978,883
DEVICE FOR REGULATING THE COMBUSTION AIR OF A FURNACE, ESPECIALLY WITH OIL- OR GASBURNER AND BLOWER FOR HEATING INSTALLATIONS

Jorgen Hartvig Petersen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

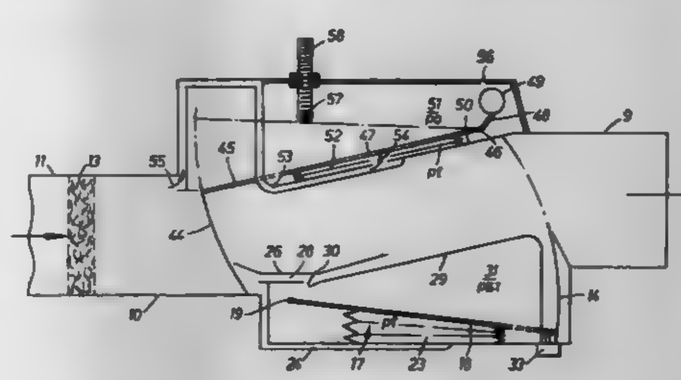
Filed May 2, 1975, Ser. No. 573,865

Claims priority, application Germany, May 6, 1974, 2421873

Int. Cl.² F16K *31/365*; F01B *19/02*; F16J *3/00*

U.S. Cl. 137—489.5 **8 Claims**

1. A furnace type air throttle assembly having automatic volume control comprising, a conduit having entrance and outlet ends, a chimney at said outlet end of said conduit, blower and oil burner units at said outlet end of said conduit upstream from said chimney, a bellows in said conduit at said entrance end, said bellows having an attached end and a free end, plate means attached to said free end, a housing in said conduit surrounding said bellows, pivot means in said housing, said plate means being attached to said pivot means, carrier arms attached to said pivot means exteriorly of said housing, a movable throttle element attached to said carrier arms, a wall dividing said conduit to form first and second channels with said first channel being adjacent said housing, passage means from said inlet end to the interior of said bellows for communicating thereto the total pressure from said inlet end, said first passage having a cross section reduction followed by a cross section enlargement, and an opening in said housing in the region between said reduction and enlargement for communicating the static pressure of said region to the interior of said housing.



3,978,884
POSITION REGULATOR

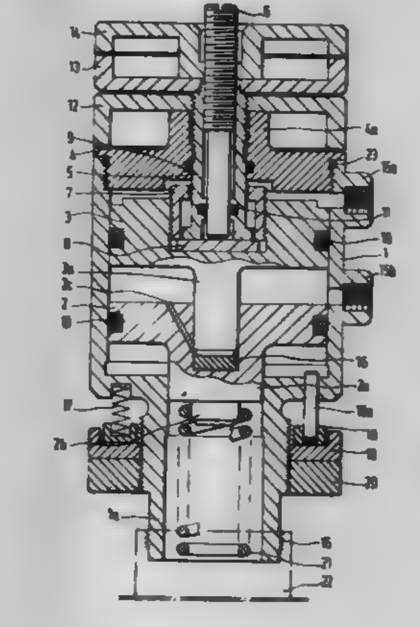
Nils Eskil Sundström, Sodertalje, Sweden, assignor to AB Westin & Backlund, Stockholm, Sweden

Filed Aug. 18, 1975, Ser. No. 605,294

Claims priority, application Sweden, Mar. 24, 1975, 7503346

Int. Cl.² F15B *15/24*

U.S. Cl. 137—495 **5 Claims**



1. A position regulator for a control unit for a pressure medium circuit, the position regulator being operative to cause the control unit to adopt a number of determined positions for adjusting the working pressure of the working medium on the outlet side of the control unit and comprising at least two pistons, a common cylinder in which the pistons are arranged for movement relative to one another and divide the cylinder into a number of pressure chambers for receiving pressure medium supplied in dependence upon control means, and an axial extension provided on one face of at least one piston and extending through the cylinder for co-action with the control unit, the other face of said one piston being formed for co-action with the piston lying therebehind, wherein the improvement comprises stop means fixedly mountably in the cylinder for each separate piston, adjustment means for each stop means for effecting individual adjustment for different lengths of stroke of respective pistons whereby the piston rod or the like providing the output of the cylinder can be caused to adopt a number of axially determined limit positions de-

pending upon the control pressure applied to respective pressure chambers.

3,978,885

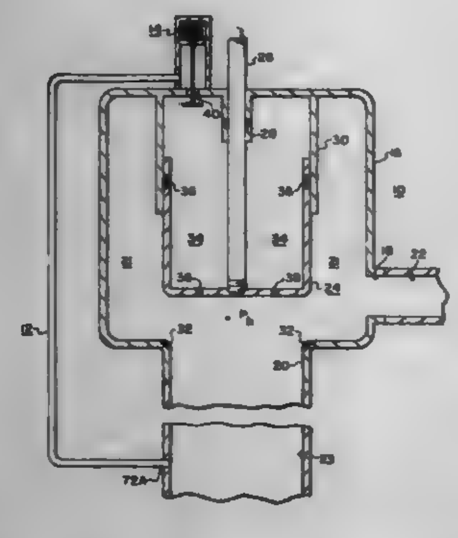
UNBALANCE PRESSURE ACTUATOR FOR A FLOW CONTROL APPARATUS HAVING NOISE AND VIBRATION REDUCING ARRANGEMENT THEREON

Chien Shiung Lo, Glen Mills, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 28, 1975, Ser. No. 563,424

Int. Cl.² F16K *19/00*

U.S. Cl. 137—560 **5 Claims**



1. In a flow control apparatus having a casing with a valve plug movably disposed therein, an internal cavity disposed within said plug, said plug having a substantially axial bore therethrough permitting communication between said internal cavity and a area immediately beneath said valve plug, and external conduit means for conducting fluid from a region having a pressure therein higher than the pressure beneath said valve plug into said internal cavity, wherein the improvement comrpises:

means associated with said conduit means for isolating said internal chamber from said region when said pressure in said internal cavity exceeds the pressure in said region.

3,978,886

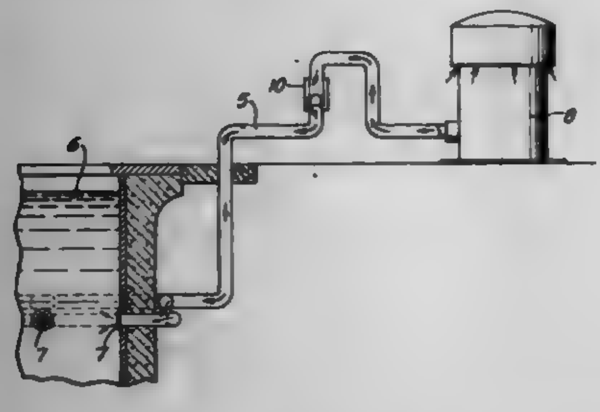
BACKFLOW SAFETY VALVE FOR THERAPY POOLS

Cleo D. Mathis, 1808 Potrero Ave., South El Monte, Calif. 91733

Filed June 25, 1975, Ser. No. 590,035

Int. Cl.² F16K *15/02;* A47K *3/10*

U.S. Cl. 137—565 **1 Claim**



1. An air supply system for a therapy pool comprising an air supply blower, an air supply line connected to and supplied with air from said blower, a plurality of water outlets connected to said air supply line for projecting water into said pool, said water outlets being of the type in which blockage of said water outlets may cause water to enter said air supply line under pressure from a water supply line, a backflow safety valve, said valve being fully automatic in operation, said valve comrising a cylindrical body connected at its opposite ends in a vertical position within said air supply line between said water outlets and said air supply blower, said valve having a valve member comprising an inverted cup mounted for longitudinal movement within said valve body, said cup having a closed end adapted to engage an annular valve seat formed within said valve body adjacent to the closed end of said cup, said cup normally being disposed in an open downward position, said cup being movable upwardly by the pressure of water flowing through said air supply line and into the open end of said cup to move said cup longitudinally upwardly within said valve body into sealing engagement with said valve seat to prevent water from reaching and damaging said air supply blower, said cup automatically returning downwardly to open position upon the flow of water out of said cup.

3,978,887

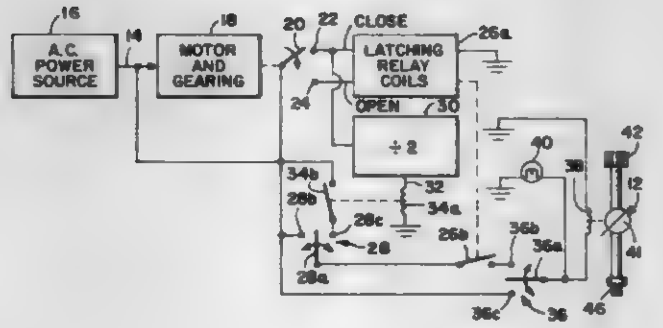
PROGRAMMABLE WATER VALVE

Ronald Dryla, Ta-Ta Creek, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Apr. 7, 1975, Ser. No. 565,596

Int. Cl.² A01G *27/00;* G05D *7/06*

U.S. Cl. 137—624.15 **1 Claim**



1. A timed water valve responsive to a source of electric power comprising: a water inlet; a water outlet; a solenoid actuated valve means for controlling fluid communication between said inlet and said outlet; elctrical timer means having a 24 hour periodic cycle, said timer means including first and second associated switch means which are respectively closed at sequential predetermined first and second times driving each said cycle, said first time being prior to second time in each cycle; a third normally-open switch means; means for connecting said third switch means in a series circuit with said solenoid actuated valve means and said source of electrical power for controlling the turning on of said valve means; means coupled to said first and second switch means and responsive to the closure of said first and second switch means for closing said third switch means for a first time period beginning at said first time and ending at said second time for enabling said valve to be turned on for said first time period in each cycle; a fourth switch means; divide-by-two means coupled to said first switch means and responsive to the closure of said first switch means for closing and opening said fourth switch means on alternate second time periods of 24 hour length beginning at said first time in one said cycle and ending at said first time in the next said cycle; a fifth manually actuatable switch means for selectively placing said fourth switch means in said series circuit, whereby said valve may be selectively turned on for said first time period only in alternate ones of said 24 hour cycles.

3,978,888

ROTARY MEASURING VALVE

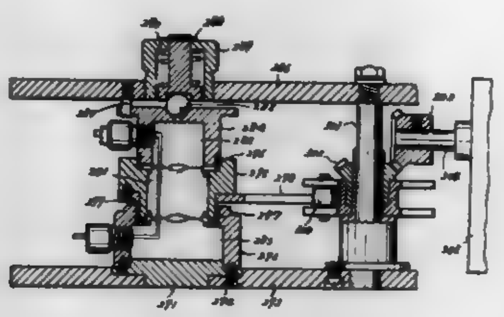
Toyohiko Naono, Akishima, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 387,918, Aug. 13, 1973, Pat. No. 3,933,436. This application Nov. 20, 1975, Ser. No. 633,673

Claims priority, application Japan, Aug. 15, 1972, 47-81709; Aug. 15, 1972, 47-81715; Aug. 15, 1972, 47-81721; Aug. 15, 1972, 47-95684

Int. Cl.² F16K *11/02;* G01N *33/16, 1/14*

U.S. Cl. 137—625.19 **1 Claim**



1. A sample measuring valve comprising:

a. a first rotatable member which is provided with a plurality of sample measuring channels radially spaced and extending between a pair of planar surfaces;

b. a second fixed member which is arranged to abut one surface of the said first member and is provided with an equal number of radially spaced flow lines corresponding to the said sample measuring holes and grooves around every other flow line joining radially spaced points equal distance between each flow lines;

c. a third member arranged to abut the other surface of said first member and being equipped with an equal number of radially spaced flow lines that correspond to said sample measuring holes, a fluid drawing flow line, fluid introducing flow line, the said fluid drawing flow line and said fluid introducing flow line being arranged astride one of said flow lines and grooves around every other flow line to join radially spaced points equal distance between the flow lines such that the first rotary member may be rotated into a position with its channels communicating with the grooves in said second and third fixed members such that the fluid may be drawn into all of the channels of the rotary member through the fluid introducing flow line by suction applied to the fluid drawing flow line and by rotating the channels they can all be aligned with the corresponding flow lines in the first and second members enabling removal of the measured sample portions of the fluid in each measuring channel of the rotary member.

3,978,889

STEAM SUPPLY CONTROL DEVICE

Shinya Kameda, Tokyo; Shunzaburo Nagashima, Yokohama, and Mikio Obi, Tokyo, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

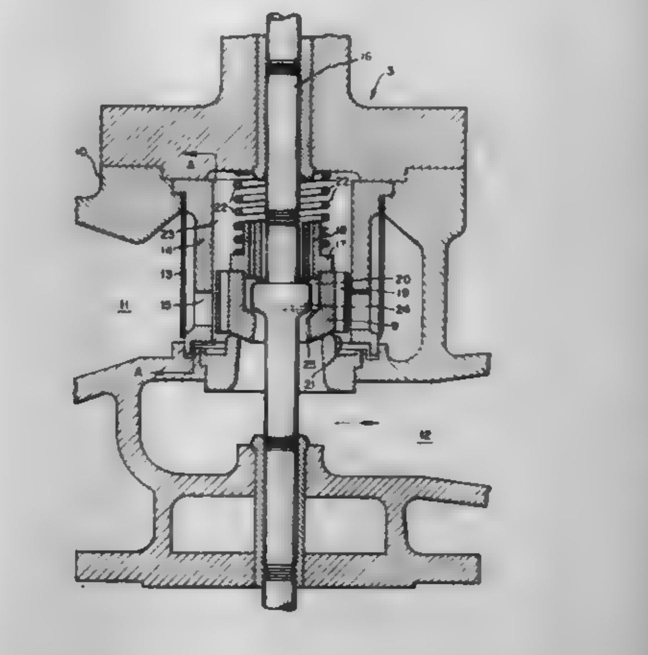
Filed Mar. 20, 1974, Ser. No. 453,037

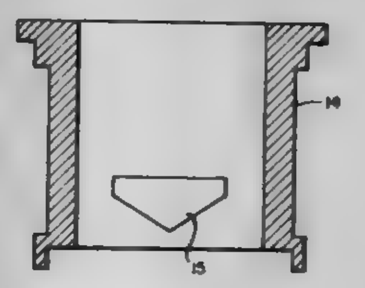
Claims priority, application Japan, Apr. 2, 1973, 48-39831[U]

Int. Cl.² F16K *1/00*

U.S. Cl. 137—630.14 **1 Claim**

1. A control valve having a casing provided with inlet and outlet passages and a central chamber, a port in said casing through which fluid passes from said inlet passage to said chamber, said port being shaped such that the area of opening thereof variably increases from the lower portion toward the upper portion, said control valve comprising a main valve having a cylindrical portion in said chamber and spaced from the wall of the casing to provide a cylindrical passage, said cylindrical portion also providing an interior hollow chamber, a main valve seat, a main valve stem a valve cover secured to the upper portion of said cylindrical portion, a spring interposed between the casing and said valve cover to normally press said main valve against the main valve seat, the diameter of said main valve seat being less than that of said chamber, balance holes extending through the cylindrical portion of said main valve, an auxiliary valve integral with said valve stem, said auxiliary valve being disposed within said hollow chamber of said main valve, balance holes formed in said valve cover to connect said central chamber and said hollow chamber, said auxiliary valve cooperating with a valve seat formed in said cylindrical portion said auxiliary valve being movable between a closed position when it contacts its valve seat to fully open position where it contacts said valve cover for controlling fluid flow independently of the main valve, said auxiliary valve moving said valve cover, said cylindrical portion and said main valve to move the latter toward open position, movement of said cylindrical portion increasing the area of opening of said port as said main valve is opened to increase the fluid flow from the inlet passage to the central chamber through said cylindrical passage.





3,978,890

FLOW CONTROL CAM

Thomas G. Barnum, Fox Point, Wis., assignor to Bradley Corporation, Menomonee Falls, Wis.

Filed Aug. 4, 1975, Ser. No. 601,922

Int. Cl.² F16K *31/32*

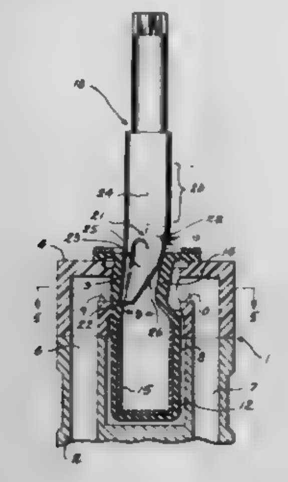
U.S. Cl. 137—636.4 **4 Claims**

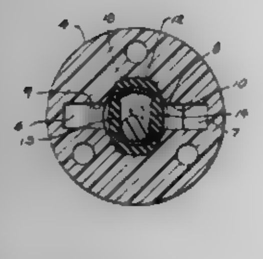
1. A control rod cam for a sleeve type mixing valve that is moved axially to control the volume of flow through valve inlet ports, and that is rotated to control the mixing of the flow through the ports, such cam having:

a. a valve closing portion providing port closing surface areas; and

b. a tapered region extending from said valve closing portion that narrows toward a distal end, which tapered region is canted from the axis of said valve closing portion and presents:

i. an initial slope along a dorsal side of the tapered region for allowing opening of a valve port, and
ii. a port closing face along the ventral side of the tapered region that slopes radially outward beyond the surface of said valve closing portion; and





iii. a receding face on said dorsal side which descends from said initial slope to said distal end at an angle greater than said initial slope.

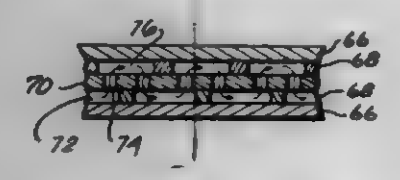
3,978,891
QUIETING MEANS FOR A FLUID FLOW CONTROL DEVICE

Ralph L. Vick, Granada Hills, Calif., assignor to The Bendix Corporation, North Hollywood, Calif.

Continuation of Ser. No. 293,956, Oct. 2, 1972, abandoned. This application May 15, 1974, Ser. No. 470,251

Int. Cl.² F16K *47/08*; F15D *1/02*

U.S. Cl. 138—42 **7 Claims**



1. A fluid flow controlling device comprising:
a rigid structure comprising a series of stacked laminar members having abutting faces, alternate ones of said members having respective patterns of passageways therethrough, said passageways being in offset but partially overlapping relation to one another and others of said members including means defining a plurality of orifices of substantially smaller effective area than the area of said passageways but aligned with the overlapping parts of pairs of said passageways such that a plurality of generally radial flow patterns are created across said structure with individual passages being defined by a plurality of adjacent said stacked laminar members providing two overlapping passageways and an orifice therebetween, said orifice members being positioned between others of said laminar members and some of said laminar members providing walls confining individual flow patterns such that each such pattern always changes direction to flow across the same orifice member, wherein the pressure drop across said structure is substantially that caused by the orificial losses across said orifices in series.

3,978,892
SELF-LOCKING PLUG APPARATUS FOR SEALING AND RECOVERING A PIPELINE LAID ON A DEEP SUBMERGED BED

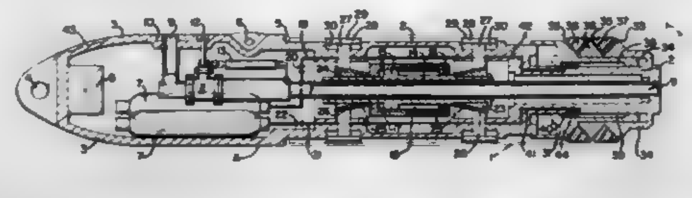
Ambrogio Scodino, San Donato Milanese, Italy, assignor to Saipem S.p.A., Milan, Italy

Filed Apr. 11, 1974, Ser. No. 460,223

Claims priority, application Italy, Apr. 13, 1973, 22952/73

Int. Cl.² F16L *55/10*

U.S. Cl. 138—89 **3 Claims**



1. A self-locking plug for use in the recovery of a pipeline laid on a deep submerged bed, comprising the combination of a cylindrical body member having a rear section adapted to be inserted into the submerged end of the pipeline to be recovered and a hollow ogival front end containing a hole adjacent its rear for the reception of a suspension hook and also containing an exhaust port, an exhaust pipe extending along the axis of the cylindrical body member from its rear end to the exhaust port, an exhaust valve for controlling the flow of water through said exhaust pipe and exhaust port, locking means including shoes carried by the cylindrical body member and means for forcing said shoes against the inner wall of said pipeline to anchor the plug into the pipeline, sealing means including a plastic ring seated in a groove in the outer wall of the cylindrical body member and means for squeezing said plastic ring so that it is forced against the inner wall of the pipeline to prevent the flow of water through the pipeline around the plug, compressed fluid carried in container means located in said ogival end, conduits respectively connecting said container means with the locking means and the sealing means, and valves located in said conduits for regulating the admission of compressed fluid to the locking means and the sealing means, said ogival end having a balancing chamber adjacent its front adapted to contain sufficient water to maintain the axis of the cylindrical body member along a substantially horizontal plane when the plug is suspended at a point coinciding with said hole in the ogival end.

3,978,893
APPARATUS FOR DETECTING SUCCESS IN WEFT INSERTION OF SHUTTLELESS LOOMS

Mitsugu Inagawa, Shizuoka, and Isamu Miyazaki, Hamamatsu, both of Japan, assignors to Enshu, Limited, Shizuoka, Japan

Filed Sept. 22, 1975, Ser. No. 615,475

Claims priority, application Japan, Sept. 26, 1974, 49-116452[U]; Nov. 13, 1974, 49-131427

Int. Cl.² D03D *51/34*

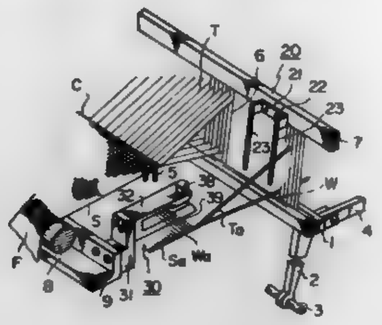
U.S. Cl. 139—370.2 **25 Claims**

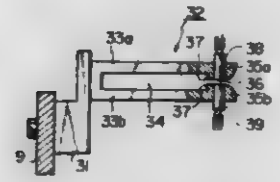
1. Apparatus for detecting success in weft insertion on shuttleless looms of the type wherein two sets of angularly separated warp threads (T) and two sets of angularly separated additional warp threads (Ta) laterally displaced from said warp threads are both attached to a common fabric, a weft ejection nozzle on one side of said fabric ejecting a weft thread into open sheds formed by warp threads and additional warp threads, and wherein a lathe moves a reed for beating said weft thread against said warp threads at a cloth-fell line (6) to form said fabric (F), the improvement comprising, in combination,

a displacement mechanism (20) disposed, on the side of the warp threads opposite to the weft ejection nozzle, to the front side of the lathe (1) at a lateral position between the warp (T) and the additional warps (Ta) and having a pair of forks (23) laterally spaced from each other which extend in a direction crossing the plane including the fabric (F) and movable to a position forwardly of the cloth-fell line at the very moment of cloth-fell beating by the reed for moving the weft end across said cloth-fell line (6) and

a detection mechanism (30) fixed to the loom at a position forwardly of said cloth-fell line and aligned with said displacement mechanism to receive the end of said weft thread and provided with means for photoelectrically detecting the weft end, a center gap (34) formed forwardly of said photoelectric detecting means, and containing means for retaining the weft end therein,

thereby, forward motion of said forks of said displacement mechanism urges said weft end to move, across said cloth-fell line, into said center gap through the operational zone of said photoelectric detecting means of said detection mechanism.





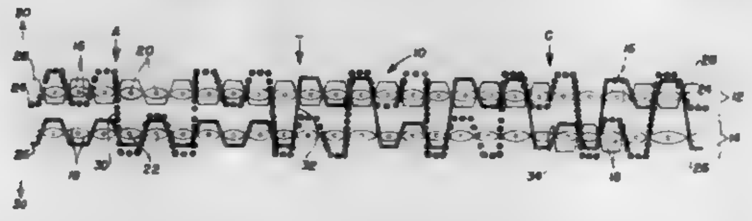
3,978,894
ENERGY ABSORBING TEAR-WEBBING

Jay D. Boone, Seeley, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 5, 1973, Ser. No. 329,502

Int. Cl.² D03D *25/00*, *23/00*

U.S. Cl. 139—383 R **6 Claims**



1. In an energy-absorbing tear webbing comprising at least two independent webbing straps each of which are fabricated of a separate system of woven warp yarns and weft yarns, said webbing straps being detachably secured together in a contiguous face-to-face relation by a plurality of pile tear yarns which are woven simultaneously into each strap and between the straps, the improvement residing in each pile tear yarn being alternately woven over a predetermined plurality of adjacent weft yarns in each strap before crossing over to the other strap, the number of the pile tear yarns that cross between the straps gradually increasing from one end of the webbing to another end of the webbing along the length thereof, whereby any force causing a lateral separation of the webbing straps starting from said one end of the webbing will be gradually absorbed in an increasing magnitude as the number of the pile tear yarns to be broken increases toward said another end of the webbing.

3,978,895
DRIVING MECHANISM FOR SELVAGE FORMING KNITTING NEEDLE IN SHUTTLELESS LOOM

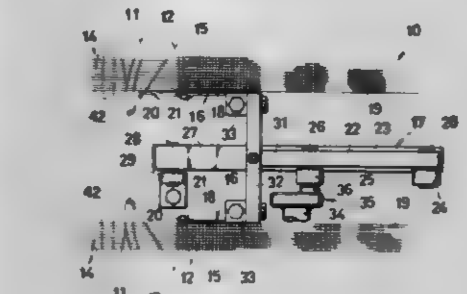
Ryuichi Murasaki, Tateyama, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Japan

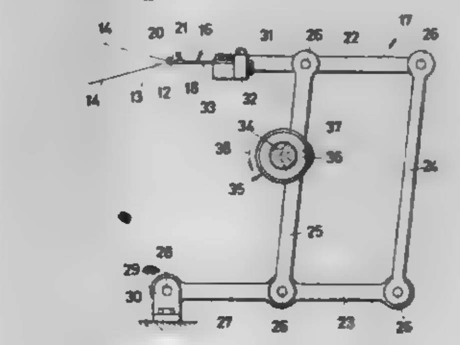
Filed Dec. 24, 1975, Ser. No. 644,152

Claims priority, application Japan, Dec. 28, 1974, 50-1890

Int. Cl.² D03D *47/42*

U.S. Cl. 139—431 **7 Claims**





1. A driving mechanism for selvage forming knitting needles in shuttleless looms for producing woven fabrics, comprising:
a. a pair of upper and lower horizontal links;
b. a pair of front and rear vertical links, said upper and lower links and said front and rear links being pivotally joined together to provide a substantially parallelogramatic construction;
c. a first link extension extending from said lower link and adapted to be pivotally coupled to a machine frame;
d. a second link extension extending from said upper link and having mounted thereon a knitting needle which is provided with a hook and a shank and is located alongside of the fabric; and
e. means for swinging said links so that said knitting needle is movable between a first position where said hook is raised to engage a loop of weft yarn projected through the shed and a second position where said shank is held vertically stationary adjacent to the fabric fell to knit the loop through the previous loop on the shank when said drive shaft is rotated.

3,978,896
WEFT THREAD INSERTING NOZZLE

Adrianus Johannes Franciscus Larmit, Rootven 12, Moergestel, Netherlands

Filed May 21, 1975, Ser. No. 579,696

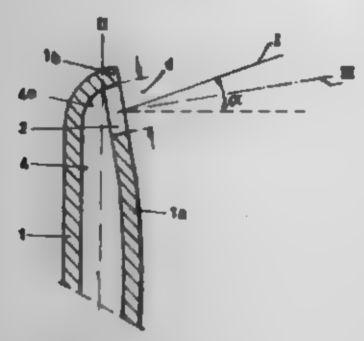
Claims priority, application Netherlands, May 21, 1974, 7406857

Int. Cl.² D03D *47/30*, *47/32*

U.S. Cl. 139—435 **2 Claims**

1. A nozzle adapted to be inserted between warp threads into a weaving shed, for discharging a jet of fluid to propel a weft thread at a high speed through a tunnel formed in the weaving shed, comprising a hollow needle for conducting a

fluid under pressure having a discharge outlet in the side wall of the needle, adjacent to the tip of the needle, characterized



in that said discharge outlet is composed of a plurality of closely spaced elementary apertures.

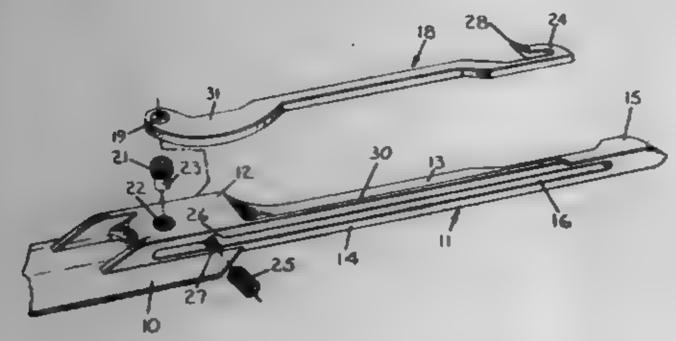
3,978,897
WEFT EXTENDING CARRIER

Anthony J. Tosches, Milford, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed June 6, 1975, Ser. No. 584,267

Int. Cl.² D03D *47/20*

U.S. Cl. 139—448 **1 Claim**



1. An improved weft extending carrier for a loom having weft carriers attached to reciprocable inserter members by which weft from an outside source of supply is inserted as single picks into separate sheds of warp threads, the extending carrier receiving an end of weft from an inserting carrier and extending the end of weft across the remainder of the shed, said extending carrier comprising:

- a. a base portion for attachment to a reciprocable inserter member;
- b. an elongated shank extending outwardly from said base portion in a direction away from the inserter member, said elongated shank having means defining a recess which extends substantially the entire length thereof;
- c. an elongated weft finger mounted for pivotal movement into and from said recess;
- d. means on that end of said weft finger away from said base portion to define a weft engaging recess and to cooperate with said elongated shank to grip the weft as it is being extended;
- e. means biasing said weft finger to a normally closed position within said recess of said elongated shank; and
- f. said elongated weft finger including an arcuated actuating surface defining a camming surface protruding from said recess for effecting pivotal movement of said weft engaging recess to shed lint accumulation from the latter and said elongated shank and release the weft held therebetween in timed sequence with the weaving cycle.

3,978,898
RAPIER LOOMS

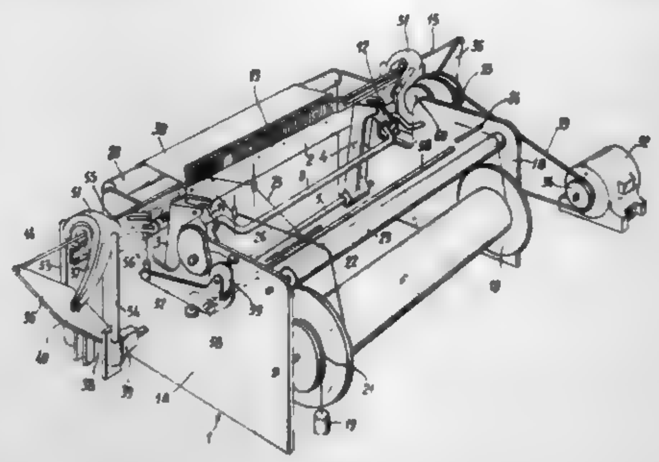
Yves Juillard, Mulhouse, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Mulhouse Cedex, France

Filed Mar. 14, 1975, Ser. No. 558,412

Claims priority, application France, Mar. 15, 1974, 74.08819

Int. Cl.² D03D *47/00*

U.S. Cl. 139—449 **6 Claims**



1. A rapier loom comprising at least two rigid weft carriers, rocking lever mechanisms adapted to impart opposed reciprocatory movements to said carriers, a transverse shaft, a sley, two lateral swords carrying said sley, and means mounting said swords for oscillatory movement about said shaft, said sley being constituted by a one-piece hollow beam which extends at each side of said loom beyond the pertaining sley forming two extensions, one at each said side of said loom, and struts rigidly connecting each one of said two extensions to a corresponding extension of said shaft.

3,978,899
CLOSURE FOR A STEEL BAND OR STRAP PLACED AROUND ONE OR MORE ARTICLES AND METHOD AND DEVICE FOR MAKING SAID CLOSURE

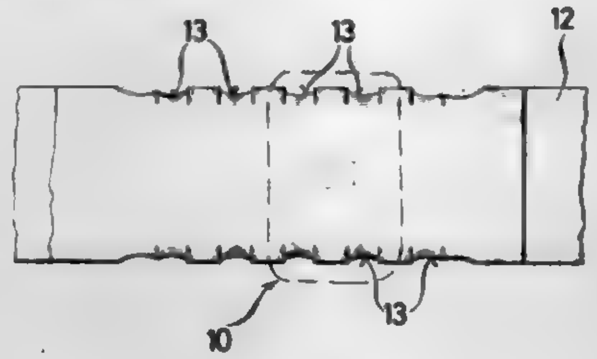
Theodor Schröder, Wuppertal-Beyenburg, Germany, assignor to Titan Verpackungs System GmbH, Schwelm, Germany

Filed Mar. 24, 1975, Ser. No. 561,030

Claims priority, application Germany, Mar. 22, 1974, 2413889; Mar. 22, 1974, 2413890

Int. Cl.² B21F *15/04*

U.S. Cl. 140—93.2 **6 Claims**



1. An apparatus for connecting the overlapping ends of a closure band to secure the band ends together in tension transmitting relation which comprises; a pair of cutting devices adapted to receive therebetween the band ends in superposed face to face relation, said cutting devices being operable upon movement toward each other to cut pairs of lateral incisions into the edges of the band ends to form tabs on the band edges between the pairs of said incisions, said cutting devices also bending the tabs out of the planes of the bands to dispose the tabs on the edges of one band end in the space between a respective pair of incisions in the edges of the other band end, said cutting devices comprising first movable cutting blades engaging one band end at opposite sides of the tab to be formed therein and a second cutting blade engaging the other band end in the region of the tab, said second cutting blade having a nonmovable part engaging the center region of the tab and movable parts on each side of the nonmovable part engaging the side regions of the tab, and means for controlling the movement of said first cutting blades and the movable parts of said second cutting blade.

3,978,900
CARBONATED BEVERAGE FILLER

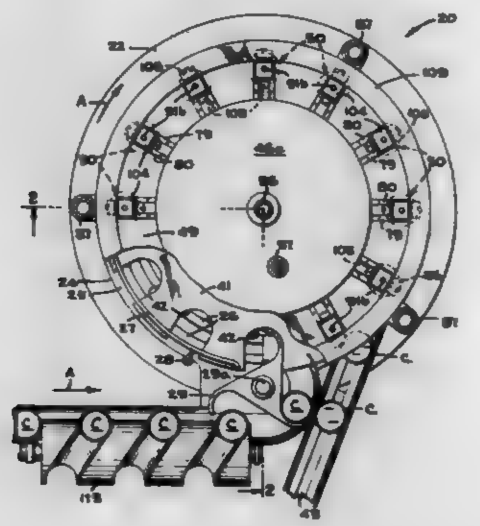
Samuel A. Mencacci, Saratoga, and Gary O. Niemann, Mountain View, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Dec. 17, 1973, Ser. No. 425,587

The portion of the term of this patent subsequent to Dec. 18, 1990, has been disclaimed.

Int. Cl.² B65B *3/04*

U.S. Cl. 141—11 **8 Claims**



1. An apparatus for filling a carbonated liquid into a container comprising, supply means for maintaining a supply of carbonated liquid under superatmospheric pressure, means defining a variable volume measuring chamber for receiving and confining a predetermined quantity of liquid at said superatmospheric pressure from said supply means, foot valve means for releasing the liquid from the measuring chamber into a container at atmospheric pressure, said foot valve means including an expansible resilient sealing element for sealing between said foot valve means and said chamber defining means, and means for slightly increasing the volume of said chamber defining means for reducing the pressure of said liquid to about atmospheric pressure, said last named means comprising means for lowering said foot valve means slightly with respect to said chamber defining means to permit said sealing element to be moved vertically while still maintaining its sealing effect with said chamber defining means.

4. An apparatus for filling a carbonated liquid into a container comprising supply means for maintaining a supply of carbonated liquid under superatmospheric pressure; a vertically oriented cylinder connected to said supply means; a foot valve for closing the lower end of said cylinder; a piston mounted for relative movement within said cylinder, said piston and foot valve defining a variable volume measuring chamber within said cylinder for measuring a predetermined charge of liquid for delivery to said container; an inlet valve provided in said piston for permitting flow of said liquid from said supply means to said measuring chamber; means for holding a container to be filled in a position to receive said predetermined charge of liquid from said measuring chamber; and raising and lowering means attached to at least three of said container holding means, said cylinder, said foot valve, said piston and said inlet valve for relatively moving said container holding means, said cylinder, said foot valve, said piston and said inlet valve so that said cylinder is lowered into said container and said inlet valve is closed with said predetermined charge of liquid being in said measuring chamber, said foot valve and cylinder are separated to permit said liquid to flow into said container, said cylinder is raised relative to said container while said container is filled with the lower end of said cylinder remaining beneath the surface of the liquid in the container substantially until the completion of the filling thereof, said cylinder and foot valve are closed and are brought into engagement with said piston to reduce the volume of said measuring chamber substantially to zero, and said inlet valve is opened and said piston is separated from said foot valve to recharge the measuring chamber.

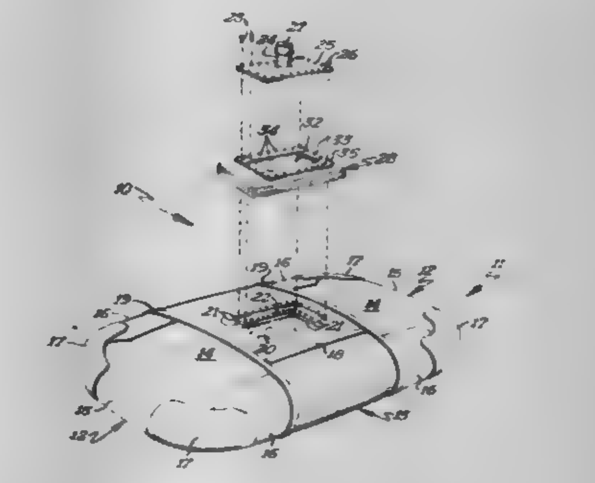
3,978,901
ELASTIC STORAGE TANK

Walter C. Jones, P.O. Box 398, Armstrong, Iowa 50514

Filed June 20, 1975, Ser. No. 588,905

Int. Cl.² B65D *33/16*

U.S. Cl. 150—*.5* **4 Claims**



1. An elastic storage tank for fluid or fluid-like material comprising:

an outer tank member, including a pair of substantially identical end tank sections, each being formed from a single blank of a fiber-reinforced elastomer, each tank section including upper and lower wall portions, each section being defined by a pair of panels, formed by folding the blank along a longitudinal fold line, each tank section including side wall portions extending between and being joined with said upper and lower wall portions, said side wall portions being defined by elongate end panels of said blank which are formed by folding one of the upper or lower wall-defining panels along transverse lines, adjacent opposite ends of said last-mentioned wall-defining panels, each side wall portion having a triangular flap, the other of said upper and lower wall portions having a pair of generally triangular shaped flaps, each projecting therefrom and overlapping and being secured in sealing relation to one of said flaps on a side wall portion, said one upper or lower wall portion having arcuate edge portions, each arcuate edge portion located on the blank between a flap on a side wall portion and a flap on the other upper or lower wall portion, a pair of formed arcuate attachment members, each being secured in sealing relation to the lapped flaps on the side wall portion and on the other of said upper or lower wall portions, and to an arcuate edge portion of said one of the upper or lower wall portions, an intermediate tank section formed from a single blank of fiber-reinforced elastomer, said intermediate tank section having peripheral edges at opposite ends thereof, said end tank sections having a peripheral edge at one end thereof engaging and being secured to the peripheral edge of said intermediate tank section is sealing relation therewith, said intermediate section having an opening therein,

a flexible envelope formed of a film of chemically inert fluid impervious plastic material, said envelope having a shape

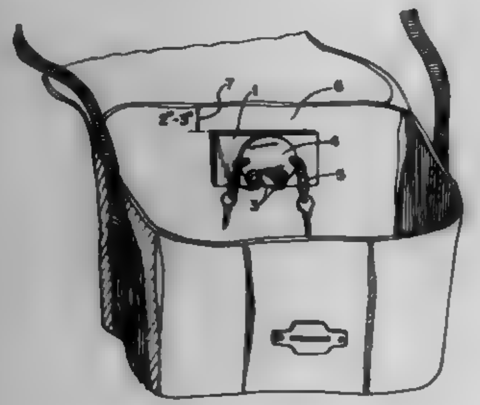
corresponding to the outer tank member and being slightly larger in size than said outer tank member,
said envelope having an opening therein registering with the opening in said inner tank member, said envelope having an outturned collar adjacent said opening extending exteriorly of said outer tank member adjacent the opening therein,
filler means including a filler pipe having an apertured mounting plate secured to the lower end thereof, means securing said plate to the outer tank member to clamp the collar of said envelope in sealed relation therebetween, and closure means for closing said filler pipe.

3,978,902

LOCATOR-HOLDER FOR KEYS

Frances Leedell Adkison, 510-21st St., NW., Washington, D.C. 20006

Filed Dec. 19, 1975, Ser. No. 642,546
Int. Cl.^{2} A45C *1/00*
U.S. Cl. 150—34 **1 Claim**



1. A locator-holder for keys in a purse consisting of a flexible magnetic, self-adhesive tape secured to a purse wall at a point near the purse opening, and adapted to mate magnetically with a steel piece carrying the keys, wherein the magnetic tape is fitted with support means located near the bottom edge of the tape to prevent possible pulling by objects within the purse.

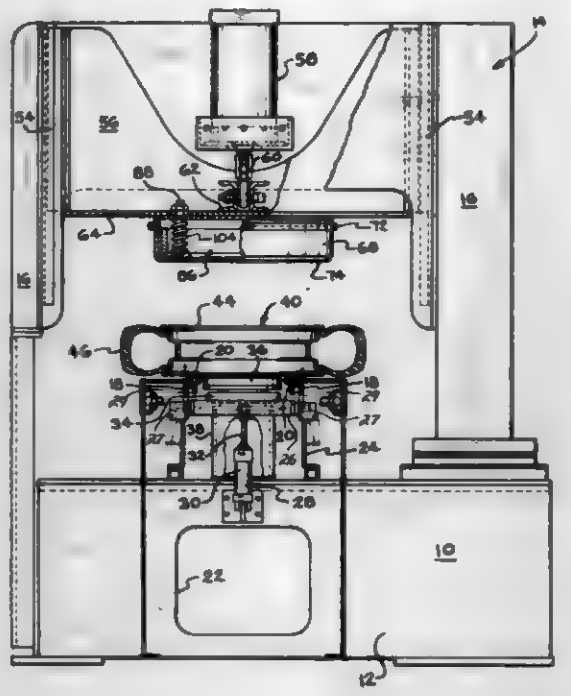
3,978,903

TUBELESS TIRE BEAD SEATER

John L. Mueller, Detroit, and Henry M. Reichert, Roseville, both of Mich., assignors to Sparton Corporation, Jackson, Mich.

Filed Apr. 24, 1975, Ser. No. 571,359
Int. Cl.^{2} B60C *25/06, 25/08*
U.S. Cl. 157—1.2 **8 Claims**

1. Apparatus for seating tubeless tires having sidewalls and beads upon rimmed wheels comprising, in combination, a vertically extending frame having upper and lower regions, wheel elevating means mounted upon said frame lower region for vertically elevating a horizontally disposed wheel from a lower initial position to an elevated position, seal support means mounted upon said frame upper region above said wheel elevating means, an annular sidewall seal ring mounted upon said seal support means in fixed relation thereto, said ring including an annular free lower edge adapted to sealingly engage a tire sidewall, an annular wheel rim seal ring mounted upon said seal support means within said sidewall seal ring, lost motion means mounting said wheel rim seal ring on said support means permitting relative limited vertical displacement thereon, annular sealing means defined upon said wheel rim seal ring sealingly engaging a wheel upper rim when a wheel is in an elevated position, an annular chamber defined by said sidewall and wheel rim seal rings, compressed air supply means communicating with said chamber, said wheel elevating means including compressible means maintaining an elevating force on the elevated wheel less than the downward force exerted on the tire sidewall during completion of inflation of a tire due to engagement of the sidewall seal ring with the tire sidewall whereby said wheel and tire are lowered during tire inflation and said lost motion means maintains a seal between the wheel rim and wheel rim seal ring during such wheel and tire lowering.

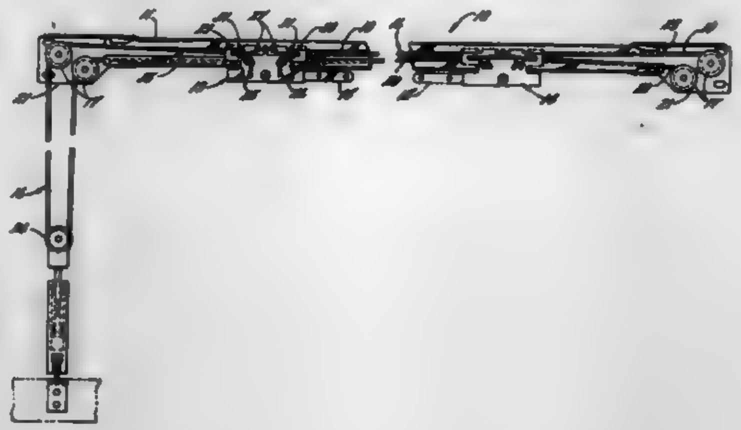


3,978,904

KNOTLESS MASTER CARRIER

William D. Riebock, Rockford, and Delbert B. Graves, Nora, both of Ill., assignors to Newell Companies, Inc., Freeport, Ill.

Filed May 14, 1975, Ser. No. 577,337
Int. Cl.^{2} A47H *15/00*
U.S. Cl. 160—345 **8 Claims**



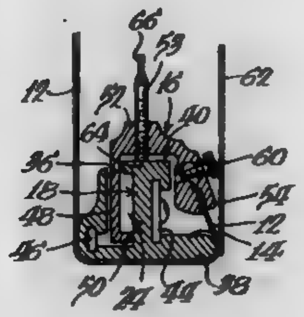
1. In a transverse rod assembly having a support rod, a master carrier slidably supported on said rod, a draw cord threaded along said rod and having at least one free end portion fastened to said master carrier, the improvement in said assembly comprising a finger connected to and projecting outwardly from one side of said carrier, a slot associated with said finger and being formed through said carrier, said slot having one end located adjacent said finger, and a bight formed in said one free end of said cord, around said finger with said one end portion of said cord against the one side of said carrier, said cord being threaded from said bight over said one end portion and then reversely through said slot and along the opposite side of said carrier with said cord being wedged against said one end of said slot thereby anchoring said one end portion of said cord to said carrier.

3,978,905

CANVAS STRETCHER FRAME

Alberto de Lama, P.O. Box 17, Chicago, Ill. 60690, and Joseph Cano, 2033 W. Charleston St., Chicago, Ill. 60647

Filed Sept. 2, 1975, Ser. No. 609,302
Int. Cl.^{2} B44D *3/18*
U.S. Cl. 160—378 **14 Claims**



1. A frame assembly for holding a stretchable web, comprising in combination:
a plurality of elongated frame members with abutting mitered end portions cooperatively positioned to define a polygonal-shaped structure, each of the frame members having a cross-sectional configuration defining an elongated clamp-receiving channel; and
a plurality of clamps permanently coupled to said polygonal-shaped structure, each of said clamps being independently operable of the other and including guide means for slidably engaging said clamp-receiving channel, jaw means for grasping the stretchable web, coupling means connecting the jaw means to the guide means and spaced inward from said frame members within the area bounded by the polygonal-shaped structure, and manually operable means abutting against said frame members and operatively connected to the coupling means for selectively adjusting the tension of the web so as to permit localized stretching and contraction of said web.

3,978,906

PROCESS FOR THE RAPID PRODUCTION OF FOUNDRY MOLDS AND CORES AND TO A COMPOSITION FOR USE THEREIN

Peter Herbert Richard Bryan Lemon, Sherfield, England, assignor to Borden, Inc., Columbus, Ohio

Filed Sept. 11, 1975, Ser. No. 612,363
Claims priority, application United Kingdom, Sept. 24, 1974, 4158/74
Int. Cl.^{2} B22C *9/02, 1/16, 15/10*
U.S. Cl. 164—39 **6 Claims**

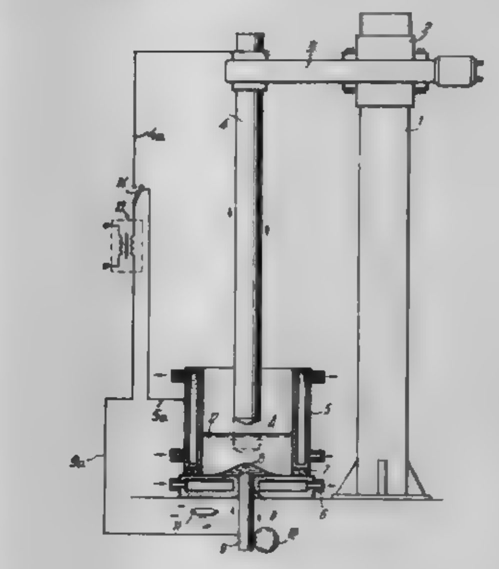
1. A process for the production of foundry molds and cores which comprises coating a granular refractory material with a contact adhesive binder composition comprising a minor proportion of a polymeric material and a major proportion of a tackifier therefor, evaporating volatiles therefrom, comminuting the product, compacting the coated refractory material in or on a pattern mold or core box, removing the mold or core thus formed from the pattern mold or core box and casting metal into the mold or around the core without an intervening curing step.

3,978,907

METHOD OF ELECTROSLAG REMELTING BY MELTING MAIN AND ADDITIONAL ELECTRODES AND MACHINE FOR EFFECTING SAID METHOD

Volf Iudovich Rabinovich, ulitsa Gagarina, 74, kv. 27; Jury Nikolaevich Kriger, ulitsa Oktyabrskaya, 3, kv. 59, both of Chekhov Moskovskoi oblasti; Igor Alexandrovich Svitenko, Teply Stan, 5 mikroraion, korpus 61, kv. 149, Moscow; Viktor Evgenievich Sapunov, ulitsa Gagarina, 52, kv. 44, and Vyacheslav Vasilievich Filippov, 7 kvartal, 10, kv. 36, both of Chekhov Moskovskoi oblasti, all of U.S.S.R.

Filed Mar. 24, 1975, Ser. No. 561,074
Int. Cl.^{2} B22D *27/02*
U.S. Cl. 164—52 **2 Claims**



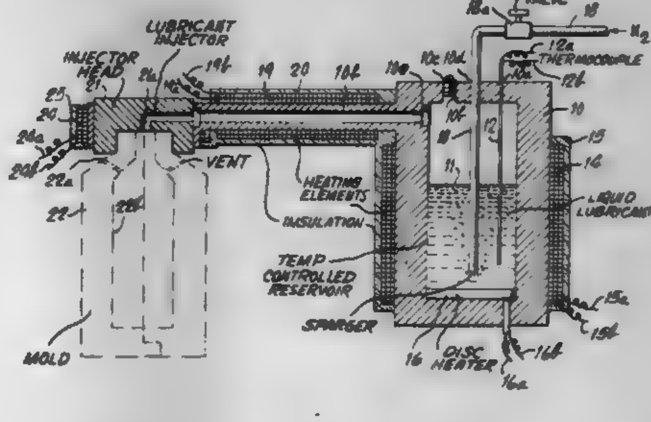
1. A method of electroslag remelting by melting a main electrode and an additional consumable electrode in a mold having a melting space, comprising the steps of introducing said main and additional consumable electrodes into the melting space of said mold, filling a part of the melting space of said mold with slag, cutting-in said mold and additional consumable electrode into an electric current circuit through the slag, heating the additional consumable electrode until it melts off and a metal bath is established, introducing said main consumable electrode into the slag, disconnecting said mold from the current circuit, cutting-in said main electrode into the electric circuit and its melting, and continuing the electroslag remelting process until completion.

3,978,908

METHOD OF DIE CASTING METALS

Elmer E. Klaus, State College, and Chun W. Lai, Wescosville, both of Pa., assignors to Research Corporation, New York, N.Y.

Filed Jan. 6, 1975, Ser. No. 538,568
Int. Cl.^{2} B22D *17/20;* **B22C** *3/00*
U.S. Cl. 164—72 **39 Claims**



1. In a casting operation wherein molten metal is introduced a plurality of times into a mold or die for casting the metal thus-introduced into a corresponding number of objects of a

desired shape, including the application of a lubricant to the mold or die surface prior to the introduction of molten metal into contact therewith, the improvement which comprises intermittently applying said lubricant as a vapor to said mold or die surface during the casting operation under conditions such that the lubricant undergoes thermal decomposition on said mold or die surface.

3,978,909

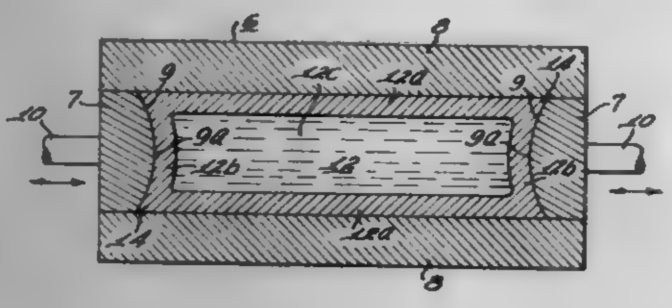
MOLD WITH CONVEX SIDEWALLS FOR CONTINUOUS CASTING MACHINES

Rudolf Schöffmann, Linz, Austria, assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Continuation of Ser. No. 429,702, Jan. 2, 1974, abandoned. This application July 2, 1975, Ser. No. 592,382

Int. Cl.^{2} B22D *11/00*

U.S. Cl. 164—273 R **1 Claim**



1. A mold for a continuous metal casting machine comprising:

a. a plurality of substantially vertical mold walls defining an open ended mold cavity;

b. said plurality of mold walls comprises a pair of vertical planar sidewalls spaced apart in mutually facing parallel arrangement and a pair of end walls narrower than said sidewalls, with said end walls spaced apart in mutually facing parallel arrangement between the sidewalls, said end walls each define a vertical surface which is continuously convex from one of said sidewalls to the other of said sidewalls and with a crest extending between the open ends of the mold, and the adjacent engaging surfaces of said sidewalls and end walls defining four acute included angular corners extending vertically between the upper and lower ends of the open ended mold cavity for casting therein a continuous strand having at least a shell of solidified metal with a pair of oppositely facing flat planar surfaces and a pair of oppositely facing surfaces each defining a continuous concave arch; and

c. at least one of said convex end walls is movable between the flat and planar sidewalls and toward and away from the other of the convex end walls.

3,978,910

MOLD PLATE COOLING SYSTEM

Floyd R. Gladwin, 21000 E. River Road, Grosse Ile, Mich. 48138

Filed July 7, 1975, Ser. No. 593,619

Int. Cl.^{2} B22D *27/04*

U.S. Cl. 164—283 M **3 Claims**

1. In a cooling system for a continuous slab-casting mold section, double-thickness mold plate formed of a substantially flat backing plate and face plate arranged and secured together in a face-to-face relationship so that the exposed surface of the face plate forms a molding surface and the opposite surface of the face plate is in full face-to-face contact with the adjacent surface of the backing plate, a group of approximately equal length closely spaced narrow grooves formed in the surface of the face plate and opening toward the backing plate with said grooves being roughly parallel to each other and extending from near the one end to near the opposite end of the face plate;

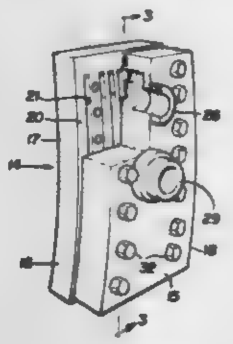
a continuous sealing groove formed in the contacting surface of the backing plate adjacent the margin thereof and surrounding the group of grooves with the sealing groove opening toward the face plate;

a continuous strip of resilient material in said sealing groove;

said grooves being covered by the adjacent backing plate surface whereby the grooves form watercooling channels within the mold plate;

a laterally extending pocket formed in each of the opposite ends of the backing plate contacting surface with each pocket overlapping and opening into all of the grooves at their adjacent ends; and

a pair of internal water-carrying passageways formed in the backing plate, each passageway extending from the backing plate exposed surface to one of said pockets whereby water may flow through one of said passageways and its respective pocket into adjacent ends of all of the grooves and then along the length of the grooves and out of the opposite ends of the grooves and their respective pocket and passageway for circulation of coolant through the mold plate, the improvment comprising:



the backing plate and face plate each having opposite aligned side edges which are curved in the same direction along the length thereof from one end to the opposite end of each of said plates;

each groove in the surface of the face plate being curved in its longitudinal direction to correspond to the curvature of the side edges of the face plate so that said side edges and the grooves each generally form a successively smaller arc of large radius curves with the arcs approximately parallel to one another; and

said sealing groove being curved in its longitudinal direction along the side edge margin of the face plates and being substantially parallel to the adjacent face plate grooves in a curved path corresponding to the arc of curvature of the side edges of the mold plate;

so that the curvature of both the sealing groove and the water-carrying grooves reduces temperature differentials in the continuous strip of resilient material.

3,978,911

TILTING CENTRIFUGAL CASTING MACHINE

Kazunori Harato; Yoshihiro Sakata, and Yutaka Nishimura, all of Kitakyushu, Japan, assignors to Hitachi Metals, Ltd., Japan

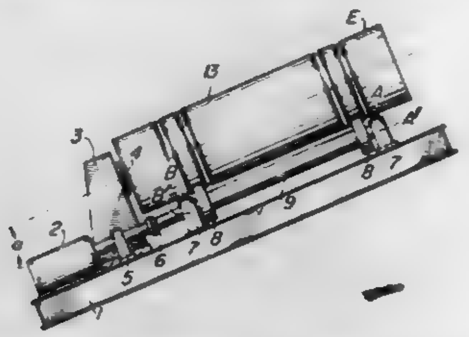
Filed July 20, 1973, Ser. No. 381,005

Claims priority, application Japan, July 31, 1972, 47-75941

Int. Cl.^{2} B22D *13/02*

U.S. Cl. 164—286 **6 Claims**

1. A tilting centrifugal casting machine for casting a solid composite roll, the casting machine comprising: a support means, a mold means for receiving the material to be cast into a solid composite roll, means for supporting the mold means on said support means including a pair of spaced parallel shaft means disposed beneath said mold means and extending parallel to the longitudinal axis of said mold means, means for rotatably mounting each of said shaft means on said support means, a pair of spaced roller means provided on each of said shaft means and engaging said mold means, drive means for driving one of said spaced shaft means, a carrier means disposed on said support means for absorbing the thrust of said mold means, the angle of tilt of the casting machine is fixed to a predetermined value selected within the range of from 15° to 23° and an angle made by a line connecting the center of said mold means and the center of said roller means relative to a horizontal plane is fixed to a predetermined value selected within the range of from 35° to 45°, and wherein said mold means includes a first end and a second end, said first end being closer than said second end to the apex of the angle of tilt, said carrier means is provided on said support means at said first end of said mold means, and wherein a buffer means is provided on said carrier means for absorbing vibrations of said mold means, said buffer means being interposed between said carrier means and said first end of said mold means.



3,978,912

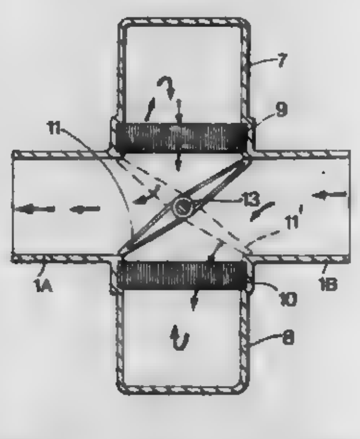
REGENERATIVE HEAT EXCHANGER

Robert Noel Penny, Solihull, and Peter James Waters, Birmingham, both of England, assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 17, 1974, Ser. No. 506,832

Int. Cl.^{2} F28D *17/00*

U.S. Cl. 165—4 **2 Claims**



1. A regenerative heat exchanger comprising a pair of ducts defining flow-paths for the separate passage therethrough of fluid between which heat exchange is to be effected, an aperture provided in opposite sides of each duct, a pair of transfer ducts each arranged substantially transversely of said pair of ducts to provide communication between one said aperture in one of said pair of ducts and a corresponding aperture in the other of said pair of ducts, a stationary heat-storing matrix in the form of a substantially flat panel contained in each aperture in one of said pair of ducts, a pair of valve members each in the form of a pivotally mounted plate arranged in one of said pair of ducts and defining a common wall between the flow-paths in the respective duct, and means to effect movement of the valve members between two extreme operable positions, in each of which each said valve member extends obliquely across the respective duct of said pair of ducts, in one of which extreme positions one of the fluids passes through one of said transfer ducts and said matrix associated therewith and the other of the fluids passes through said other transfer duct and said matrix associated therewith and in the other extreme position the fluid flow through the respective transfer ducts and the associated matrices is interchanged, whereby each of said matrices will be heated in succession by the hotter fluid while the other said matrix is imparting heat to the cooler fluid, each said valve member engaging in each extreme operable position an edge of each aperture in the respective duct.

3,978,913

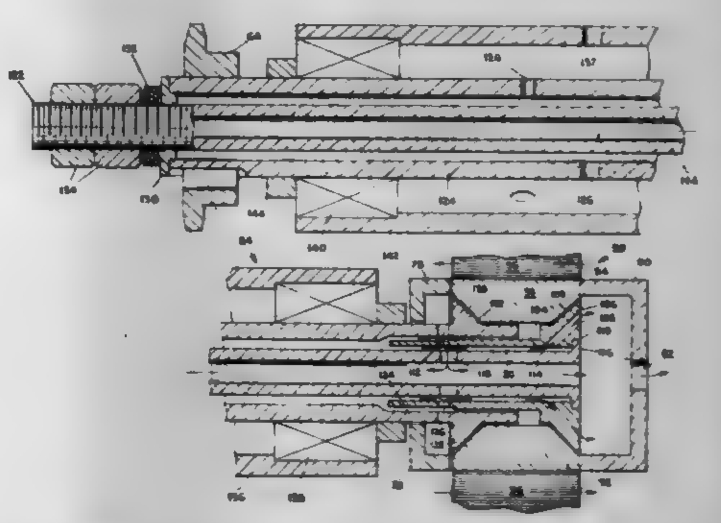
INCINERATOR AND HEAT EXCHANGER STRUCTURE THEREFOR

William A. Phillips, Comstock Park, Mich., assignor to Granco Equipment, Inc., Grand Rapids, Mich.

Filed Sept. 24, 1973, Ser. No. 400,313

Int. Cl.^{2} F28D *19/00*

U.S. Cl. 165—7 **9 Claims**



1. In a fume incinerator having a heat exchanger for hot gases and the like wherein a ceramic wheel has a central core and an annular portion with gas passages extending axially therethrough, mounting means extend through said core for rotation of said wheel about a central axis thereof, and means rotate said mounting means to thereby rotate said wheel, the improvement in said mounting means comprising:

a first wedge member abutting one side of said core and adapted to apply a substantially compressive force to the one side of the core;

a second wedge member abutting an opposite side of said core and adapted to apply a substantially compressive force to the opposite side of the core; and

means for biasing said wedge members together whereby said core is resiliently held substantially under compression between said two wedge members, whereby changes in dimensions of said core and said mounting means are compensated for by said biasing means and tensional stresses on said core due to said mounting means are minimized.

3,978,914

ROTARY CERAMIC HEAT EXCHANGER MOUNTING

William A. Phillips, Comstock Park, Mich., assignor to Granco Equipment, Inc., Grand Rapids, Mich.

Division of Ser. No. 400,313, Sept. 24, 1973. This application May 9, 1975, Ser. No. 576,215

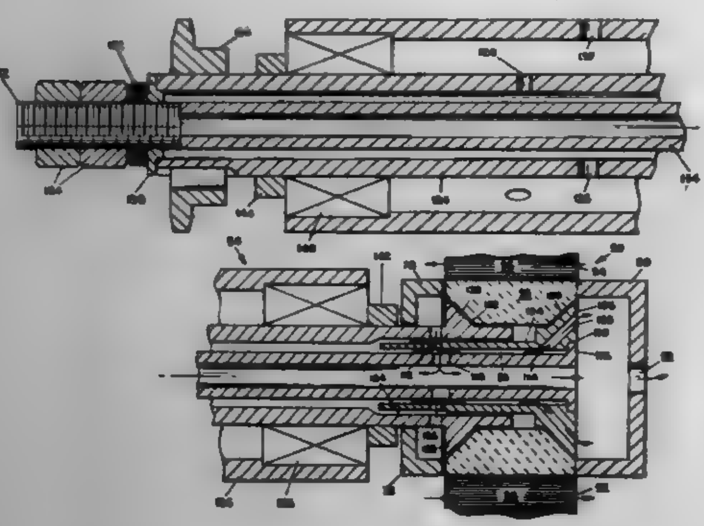
Int. Cl.^{2} F28D *19/00*

U.S. Cl. 165—7 **10 Claims**

1. In a heat exchanger for hot gases and the like wherein a ceramic wheel has a central core and an annular portion with gas passages extending axially therethrough, mounting means extend through said core for rotation of said wheel about a central axis thereof, and means rotate said mounting means to thereby rotate said wheel, the improvement in said mounting means comprising:

a first wedge member abutting one side of said core and adapted to apply a substantially compressive force to the one side of the core;

a second wedge member abutting an opposite side of said core and adapted to apply a substantially compressive force to the opposite side of the core; and means for biasing said wedge members together whereby said core is resiliently held substantially under compression between said two wedge members, whereby changes



in dimensions of said core and said mounting means are compensated for by said biasing means and tensional stresses on said core due to said mounting means are minimized.

3,978,915

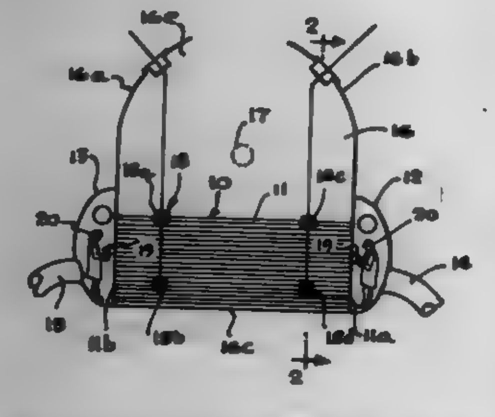
CONDENSER WITH LEAK DETECTING APPARATUS

George A. Harris, Hialeah, Fla., assignor to E. F. I. Inc., Miami, Fla.

Division of Ser. No. 176,479, Aug. 31, 1971, Pat. No. 3,782,180, which is a continuation-in-part of Ser. No. 161,515, July 12, 1971, abandoned, which is a division of Ser. No. 736,917, May 20, 1968, Pat. No. 3,592,967. This application Dec. 28, 1973, Ser. No. 429,347

Int. Cl.² G01N *29/00*

U.S. Cl. 165—11 4 Claims



1. In a steam generating plant having a closed steam system with a steam condenser for spent steam, the improvement wherein the condenser comprises means constructed of ultrasonic radiation reflecting material defining a closed chamber connected in the steam system to receive spent steam and containing a gaseous medium including a first wall having a plurality of apertures therein, a second wall having a plurality of apertures therein equal in number to the apertures in the first wall, a first header sealed to the first wall spaced from and confronting the apertures in the first wall, a second header sealed to the second wall spaced from and confronting the apertures in the second wall, a plurality of hollow tubes equal in number to the number of apertures in the first and second walls, each tube having one end sealed in one of the apertures of the first wall and the other end sealed in one of the apertures of the second wall, and means mounted within the chamber having a radiator coupled to the gaseous medium in the chamber for generating standing waves of ultrasonic energy within the gaseous medium of the chamber, whereby the apertures in the first wall may be scanned with an ultrasonic detector disposed in the first header and the apertures in the second wall may be scanned with an ultrasonic detector disposed in the second header to determine the magnitude of ultrasonic leakage from the chamber through each of the tubes as an indication of fluid leaks from the chamber or thin spots in the hollow tubes.

3,978,916

STRUCTURAL UNIT BODY HAVING A PIPE INCORPORATED THEREIN AND A STRUCTURE ASSEMBLED THEREFROM

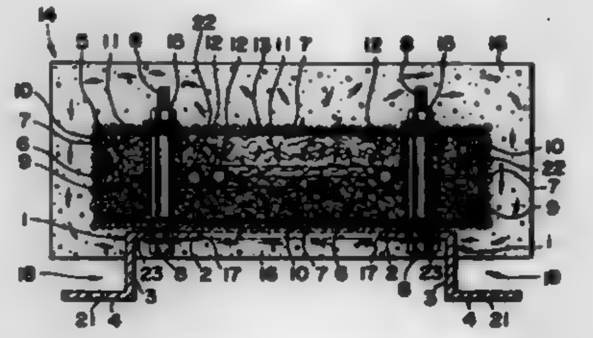
Naomitsu Megumi, Funabashi, Japan, assignor to Tokyo Plywood Kabushiki Kaisha, Tokyo and Naomitsu Megumi, Funabashi, both of, Japan

Division of Ser. No. 420,399, Nov. 30, 1973. This application Apr. 24, 1975, Ser. No. 571,111

Claims priority, application Japan, Dec. 7, 1972, 47-122690; Mar. 10, 1973, 48-32280

Int. Cl.² F24H *9/08*

U.S. Cl. 165—49 5 Claims



1. A construction arrangement for a structure such as a wall or floor comprising a unit body, said unit body including a frame having an outer flange and an inner flange, said inner flange circumscribing an opening in said frame, a stuffing box, a noncombustible material within said stuffing box, means securing said stuffing box to said frame to thereby close said opening, cement mortar disposed on at least portions of said stuffing box and said frame, said cement mortar being arranged relative to said outer flange so as to form a circumferential groove between said cement mortar and said outer flange, conduit means disposed within said stuffing box for conducting a fluid, means securing a plurality of said unit bodies to said structure in an arrangement whereby said plurality of unit bodies are arranged adjacent to one another so that a portion of the circumferential groove of one unit body faces a portion of the circumferential groove of another adjacent unit body, and interconnecting means disposed in said circumferential grooves for interconnecting said adjacent unit bodies to one another, and connecting pipe means connecting the conduit means of adjacent unit bodies to each other.

3,978,917

DESCALING SYSTEM FOR THE COOLING WATER TUBES OF A STEAM CONDENSER

Yoshio Honma, Yokosuka, and Junichi Takahashi, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki and Toshiba Engineering Co., Ltd., Nishishinbashi, both of, Japan

Filed Sept. 5, 1974, Ser. No. 503,315

Claims priority, application Japan, Oct. 22, 1973, 48-121658[U]

Int. Cl.² F28G *1/00*

U.S. Cl. 165—95 4 Claims

1. A descaling system for cleaning the inner walls of cooling water tubes of a steam condenser by passing a large number of descaling elements through said tubes, comprising:

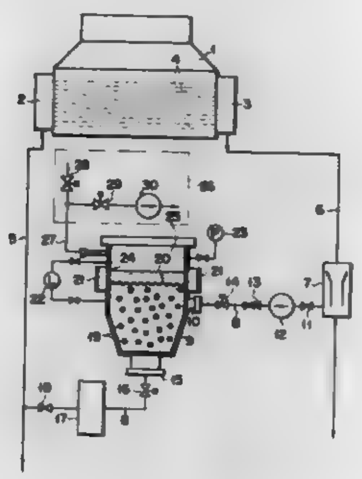
cooling water tubes of a steam condenser;

a circulation passageway for cyclically feeding said descaling elements into said cooling water tubes, said passageway having one end connected to a cooling water feed pipe communicating with one end of said steam condenser and the other end connected to a cooling water discharge pipe communicating with the other end of said steam condenser;

a water soaking vessel provided in said circulation passageway and having a large number of descaling elements disposed therein which are capable of absorbing water;

evacuating means communicating with said vessel for increasing the interior pressure of said vessel to a prescribed vacuum level for promoting the absorbancy of water into said descaling elements,

means for feeding the descaling elements into the circulation passageway from the vessel and for forcibly introducing the same into the cooling water tubes of the steam condenser together with cooling water, thereby cleaning the respective inner walls of the cooling water tubes,



means for determining a limit line level of water to be charged into the vessel whereby a relatively large volume of space is formed between the water level and the vessel ceiling in the upper part of the vessel, said evacuating device being connected to the vessel so as to communicate with said space; and

means disposed within said vessel for preventing a large number of said descaling elements disposed in the vessel from floating upon the surface of said water charged into the vessel.

3,978,918

HEATING AND COOLING DEVICE FOR AN AGITATOR TANK SERVING AS A FERMENTOR

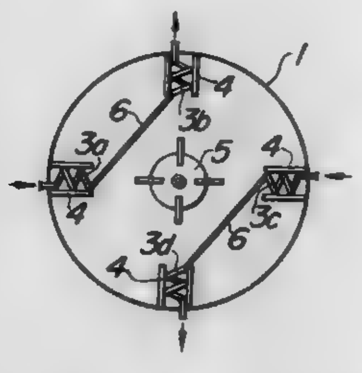
Katuaki Nagatomo; Hiromasa Fukumori, and Hiroyuki Narikiyo, all of Kudamatsu, Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 27, 1974, Ser. No. 455,404

Claims priority, application Japan, Mar. 28, 1973, 48-36722[U]

Int. Cl.² F28F *13/12*

U.S. Cl. 165—109 15 Claims



15. A heat exchange device in a tank provided with agitator means, said device comprising:

at least one block of plural generally vertical heat exchange fluid conduit means disposed within said tank,

wherein said block extends within said tank in a given direction, and

wherein said conduit means are successively disposed in a staggered manner about a line extending in a radial direction within the tank and the agitator means creates flow substantially normal to the radially extending line so that fluid is in equivalent contact with the conduit means.

3,978,919

COOLER-CUM-BLOWER ASSEMBLY FOR INTERNAL COMBUSTION ENGINES

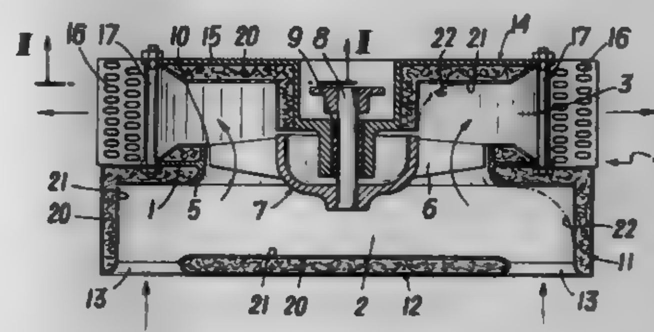
Heinz Fachbach; Gerhard Thien, and Josef Greier, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Sept. 19, 1974, Ser. No. 507,421

Claims priority, application Austria, Mar. 20, 1974, 2314/74

Int. Cl.² F28F *13/00*

U.S. Cl. 165—135 6 Claims



1. A water cooler-cum-blower unit for water-cooled internal combustion engines, in particular for automotive engines, comprising a housing having a front wall, a back wall and a peripheral wall, a partition located between and parallel to the front wall and the back wall, the partition subdividing the housing into first and second adjoining chambers and having a central circular aperture, an axial blower arranged centrally in said housing and having an impeller provided in said aperture of the partition, said first chamber being located in front of the blower impeller and forming a substantially disc-shaped air-intake shaft connecting an air-intake opening provided in said front wall of the housing with said central aperture of the partition, said second chamber being located behind the blower impeller and forming a substantially disc-shaped air outlet shaft connecting the central aperture of the partition with an air-outlet opening provided in the peripheral wall of the housing, both said disc-shaped air intake and air outlet shafts providing means for effecting a non-axial flow path, both said chambers being lined with sound-absorbing coatings, a water-cooler located in the area of said air-outlet opening and forming at least part of the peripheral wall of the housing.

3,978,920

IN SITU COMBUSTION PROCESS FOR MULTI-STRATUM RESERVOIRS

Pratip Bandyopadhyay, and Vaughan W. Rhoades, both of Tulsa, Okla., assignors to Cities Service Company, Tulsa, Okla.

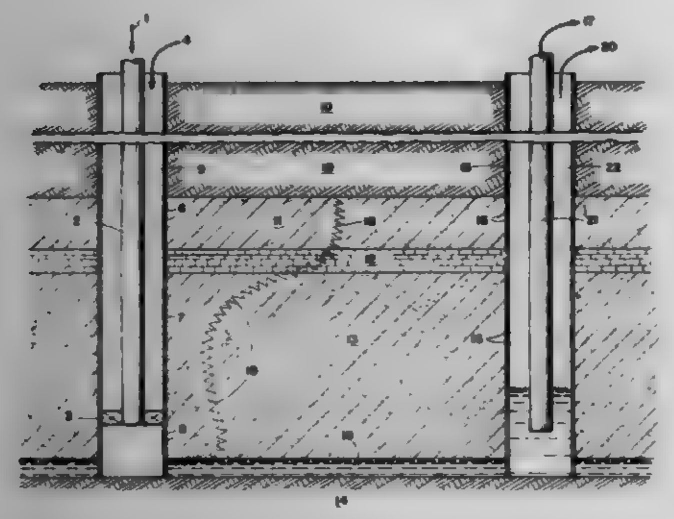
Filed Oct. 24, 1975, Ser. No. 625,416

Int. Cl.² E21B *43/24*

U.S. Cl. 166—258 10 Claims

1. In a subterranean hydrocarbon-bearing formation comprising an upper permeable hydrocarbon-bearing stratum overlying a lower permeable hydrocarbon-bearing stratum and separated therefrom by a semi-permeable stratum which is substantially permeable to oxygen but not substantially permeable to water; a process for recovering the hydrocarbons from the hydrocarbon-bearing strata comprising:

a. vertically traversing the strata with an injection well and a production well,
b. igniting the lower hydrocarbon-bearing stratum at the locus of the injection well,
c. injecting an oxygen-containing gas into the lower hydrocarbon-bearing stratum to combust the hydrocarbon therein at the locus of the injection well and to form a combustion front,



d. injecting an oxygen-containing gas into the lower hydrocarbon-bearing stratum and an aqueous fluid into the upper hydrocarbon-bearing stratum to maintain and move the combustion front between the injection well and the production well and to prevent or mitigate channeling through the upper hydrocarbon-bearing stratum, and
e. recovering hydrocarbons from the hydrocarbon-bearing strata.

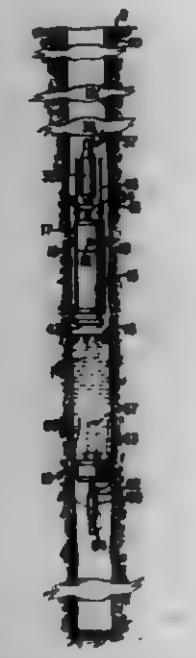
3,978,921
APPARATUS FOR CRYOTHERMAL FRACTURING OF ROCK FORMATIONS

Sigmund L. Ross, Brooklyn, N.Y., assignor to Rose Shuffman, Scarsdale, N.Y.

Continuation-in-part of Ser. No. 148,048, May 28, 1971, Pat. No. 3,759,329, which is a continuation-in-part of Ser. No. 823,306, May 9, 1969, Pat. No. 3,581,821. This application Nov. 14, 1974, Ser. No. 523,887

Int. Cl.² E21B *23/04, 43/26*

U.S. Cl. 166—57 **6 Claims**



6. Apparatus for use in cryogenic fracturing of a rock formation surrounding a hole which comprises an anchoring device adapted to be lowered to desired position in said hole, said anchoring device comprising gripping means movable laterally relative to the axis of said hole, means actuatable for moving said gripping means into gripping relation with the wall of the hole to anchor said anchoring device in said hole and for return of said gripping means to non-gripping relation to said hole, an elongated tank supported by said anchoring device adapted to be lowered into said hole having an outlet adjacent its lower end in advance of said anchoring device, a valve for controlling discharge of cryogenic liquid through said outlet, and means for opening said valve to release cryogenic liquid from said tank through said outlet underneath said anchoring device when said anchoring device is anchored to the side wall of said hole by said gripping means, said tank comprising articulating means at an intermediate position between the ends thereof.

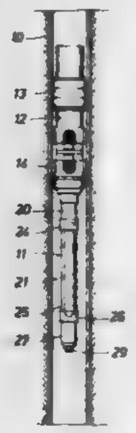
3,978,922
GAS STORAGE WELL SAFETY VALVE APPARATUS

Joseph L. Johnson, Houston, and Shelby L. Guidry, Conroe, both of Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Feb. 26, 1975, Ser. No. 553,348

Int. Cl.² E21B *43/12*

U.S. Cl. 166—224 A **10 Claims**



1. In combination with a safety valve apparatus provided with a dome reference pressure and valve means that is moved from open to closed position in response to a decrease in flowing pressure in a conduit adjacent said valve means to a value that is below said dome reference pressure, flow restriction means in said conduit upstream of said valve means for causing a drop in flowing pressure adjacent said valve means to a value that is below said dome reference pressure in response to abnormal conditions in said conduit downstream of said valve means.

3,978,923
INJECTION SUB FOR DUAL TUBE DRILLING

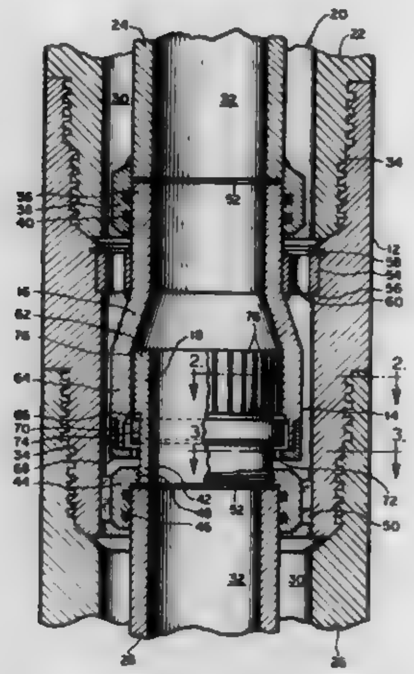
George Alan Ford, Houston, Tex., assignor to Walker-Neer Manufacturing Co., Inc., Wichita Falls, Tex.

Filed Oct. 14, 1975, Ser. No. 621,655

Int. Cl.² E21B *43/00, 21/00*

U.S. Cl. 166—224 R **5 Claims**

1. An injection sub for use with a string of dual concentric drill pipe, comprising:
- an outer tubular member threaded at each end for engagement with correspondingly threaded ends of outer pipes of two segments of said string;
- a first inner tubular member disposed concentrically within said outer member and adapted at one end for telescopic interconnection with the inner pipe of one of said segments of said string, said outer and first inner members defining an annular fluid passageway;
- a sceond inner tubular member disposed concentrically within said outer member and adapted at one end for telescopic interconnection with the inner pipe of the other of said segments of said string, the other end of said second inner member being adapted to fit snugly within the other end of said first inner member in coaxial alignment therewith to form a continuous fluid conduit through said inner members and inner pipes;
- an annular chamber defined between the outer surface of said second inner member and the inner surface of said first inner member;



- an annular valve seat extending between said first and second inner members and adapted to isolate said chamber from said annular passageway, said seat including port means to permit fluid communication between said annular passageway and said chamber;
- valve means in said chamber to open and close said port means; and
- a plurality of apertures providing fluid communication between said chamber and said conduit.

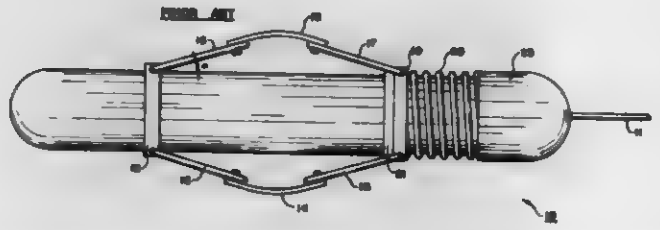
3,978,924
HIDDEN BOW SPRING FOR CALIPERS AND CENTRALIZERS

Raymond E. Roesner, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 28, 1975, Ser. No. 626,606

Int. Cl.² E21B *17/10;* **G01B** *5/12*

U.S. Cl. 166—241 **6 Claims**



6. An apparatus for traversing an earth borehole, comprising:
- an elongated support member adapted for movement through an earth borehole;
- a borehole-engaging member constructed to move along the wall of the borehole;
- a first arm member connected between said borehole-engaging member and a fixed pivot point on said support member;
- a second arm member connected between said borehole-engaging member and a slidable pivot point on said support member; and
- a bow spring having first and second ends, one of said spring ends being fixedly attached to the underside of one of said arm members and the other of said spring ends being slidably attached to the other of said arm members, said bow spring being positioned to push against the underside of said borehole-engaging member.

3,978,925
METHOD FOR RECOVERY OF BITUMENS FROM TAR SANDS

David A. Redford, Fort Saskatchewan, Canada, assignor to Texaco Exploration Canada Ltd., Calgary, Canada

Filed June 21, 1974, Ser. No. 481,582

Int. Cl.² E21B *43/24*

U.S. Cl. 166—261 **10 Claims**

1. A method for the recovery of hydrocarbons from subterranean hydrocarbon-bearing formations traversed by at least one injection well and one production well and having fluid communication therebetween, comprising the steps of:
a. injecting via said injection well into said communications path a mixture of steam and an oxygen-containing gas, said mixture being injected at a temperature in the range of 250°-500°F., thereby generating a low temperature oxidation therein,
b. continuing injection of said mixture until unreacted oxygen is produced at said production well,
c. shutting in said two wells to allow the oxygen of said oxygen-containing gas to be consumed in said low temperature oxidation reaction with said hydrocarbons in said formation,
d. thereafter producing said hydrocarbons from said production well.

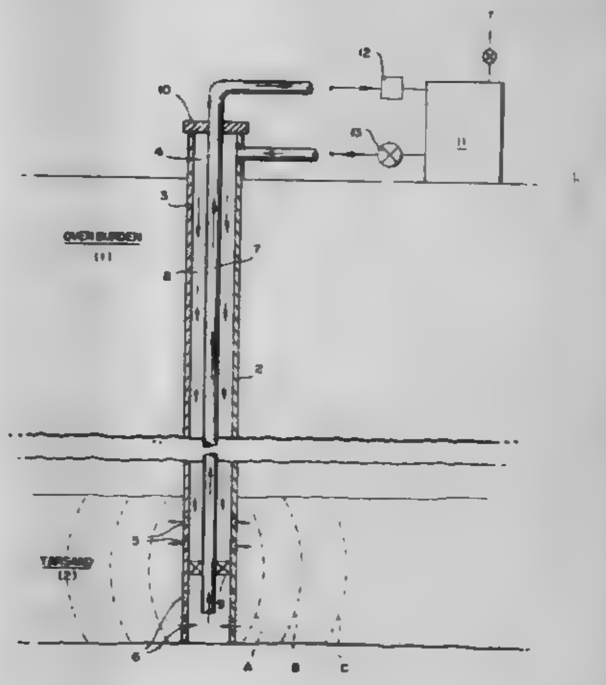
3,978,926
RECOVERY OF BITUMENS BY IMBIBITION FLOODING

Joseph C. Allen, Bellaire, Tex., assignor to Texaco Inc., New York, N.Y.

Filed May 19, 1975, Ser. No. 578,560

Int. Cl.² E21B *43/00*

U.S. Cl. 166—267 **6 Claims**



1. A method for in-situ recovery of bitumen from tar sand deposits by sequential extraction at ambient temperature deposit comprising the steps of;
a. contacting a portion of said tar sand deposits with a paraffin liquid hydrocarbon solvent,
b. allowing said solvent to remain in contact with said portion of said tar sand deposit and imbibe into said deposit thereby dissolving said bitumen,
c. producing said bitumen and solvent mixture,
d. again contacting said tar sand deposit with said mixture to dissolve additional bitumen,

e. producing said mixture,
f. repeating steps (d) and (e) until said bitumen and solvent mixture becomes highly diluted with said bitumen,
g. separating said bitumen from said mixture thereby recovering said bitumen.

3,978,927
ALKOXYLATED ASPHALTS AS SACRIFICIAL AGENTS IN OIL RECOVERY PROCESSES

Mohan V. Kudchadker, and Thad O. Walker, both of Houston, Tex., assignors to Texaco Inc., Houston, Tex.

Filed Sept. 10, 1975, Ser. No. 612,118

Int. Cl.² E21B *43/16*

U.S. Cl. 166—273 **9 Claims**

6. In a method for recovering oil from a subterranean formation containing oil and having an injection well and a production well wherein a surfactant solution is injected into the injection well in order to drive the oil to the production well where it is produced the improvement which comprises:

injecting into the injection well prior to the surfactant an aqueous solution of ethoxylated asphalts.

3,978,928
PROCESS FOR THE PRODUCTION OF FLUIDS FROM SUBTERRANEAN FORMATIONS

Richard L. Clampitt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 14, 1975, Ser. No. 567,958

Int. Cl.² E21B *43/02*

U.S. Cl. 166—294 **13 Claims**

1. A process comprising:

treating a subterranean formation having at least one borehole with an aqueous gel, wherein crude oil and water were produced from said subterranean formation through said borehole until the production of crude oil was reduced due to the presence of sandy material restricting said borehole, so that the sandy material restricting the borehole is controlled as a result of said treatment and the production of crude oil therefrom is increased as a result of said treatment; and

thereafter producing crude oil from the formation.

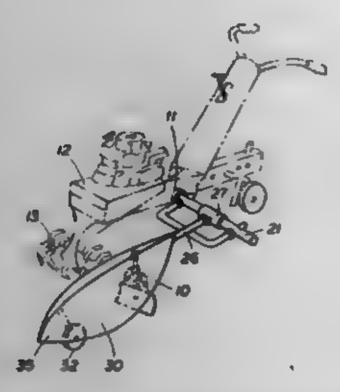
3,978,929
ROTOR TILLER WITH ATTACHMENT THEREFOR

Samuel H. Clark, Marysville, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed June 16, 1975, Ser. No. 587,310

Int. Cl.² A01B *33/16, 33/02*

U.S. Cl. 172—42 **4 Claims**



1. In combination with a rotor tiller machine, said machine including a frame with handle bar means extending rearwardly therefrom for guidance of said machine by a walking attendant, said machine further including rotary tiller blade means forwardly of said handle bar means for cultivating a swath of ground as said machine travels forwardly over the ground, an attachment assembly mounted on said rotor tiller machine and extending alongside of and away from the rotor tiller machine for the purpose of preparing a swath of ground adjacent to the swath cultivated by the rotor tiller,

said assembly comprising a first arm member fixed to a side of said frame of said rotor tiller machine and projecting away from said frame of said rotor tiller machine, a second arm member rotatably hinged to the first arm member so as to extend away from said first arm member in the direction of forward travel of said rotor tiller machine,

a vertical support member fixed to the said second arm member to extend from the second arm member, together with means to fasten a blade to said support member,

said members oriented with respect to each other on said machine so that in the assembled position of use for preparing said swath of ground, the vertical support member extends below the second arm member in a position forwardly of the first arm member.

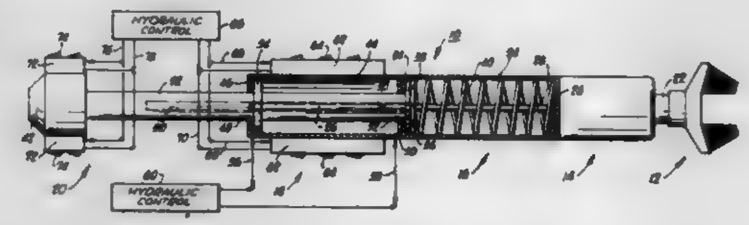
3,978,930
EARTH DRILLING MECHANISMS

Rondon L. Schroeder, Wichita, Kans., assignor to Continental Oil Company, Ponca City, Okla.

Filed Nov. 14, 1975, Ser. No. 632,092

Int. Cl.² E21B *3/12;* E21C *19/00*

U.S. Cl. 175—94 **5 Claims**



1. An improved apparatus for drilling a borehole, comprising:

a drill head including a drill bit and drill motor for powering the drill bit;

a housing including a force accumulator affixed to the drill motor;

a piston including a piston rod extending in sliding engagement with the force accumulator;

a cylinder around the piston and adapted for bi-directional movement along the piston rod;

at least one first anchor assembly disposed on the outer periphery of the cylinder;

at least one second anchor assembly disposed about the outer periphery of the piston rod;

hydraulic control means connected to the anchor assemblies to provide alternate selective actuation of the first and second anchor assemblies into earth engaging affixture within said borehole; and

hydraulic control means connected to the cylinder to provide selective movement of the cylinder relative to the piston rod.

3,978,931
AIR-OPERATED DRILLING MACHINE OR ROTARY-PERCUSSIVE ACTION

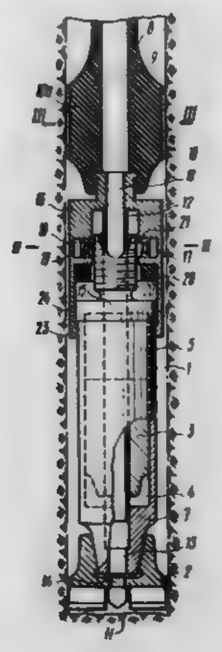
Boris Vasilievich Sudnishnikov, Krasny Prospekt, 56, kv. 59; Veniamin Viktorovich Kamensky, ulitsa Derzhavina, 19, kv. 70; Eduard Petrovich Varnello, ulitsa Dzerzhinskogo, 3, kv. 19; Sergei Konstantinovich Tupitsin, ulitsa Zorge, 123, kv. 31, and Boris Vladimirovich Nazarov, ulitsa Meditsinskie kadry, 4, kv. 18, all of Novosibirsk, U.S.S.R.

Filed Oct. 30, 1975, Ser. No. 627,033

Int. Cl.² E21B *1/06*

U.S. Cl. 175—99 **1 Claim**

1. An air-operated drilling machine of rotary-percussive action, incorporating an arrangement for retaining the machine in operation from rearward motion and rotation, the machine comprising: a housing; a drilling tool accommodated on the head part of said housing and rigidly secured thereto; a hammer received within said housing and defining therewith a front working chamber and a rear working chamber, adapted for reciprocation under the action of compressed air and for effecting percussive action onto said drilling tool; a sleeve adjoining the tail portion of said housing, the latter being connected with said sleeve for rotation and axial displacement relative thereto; a mechanism for rotating said drilling tool, situated intermediate said sleeve and said housing; means for carrying away slime sludge from the borehole being drilled; said drilling tool rotating mechanism including a helicoidal couple with a helicoidally threaded rod rigidly secured to the tail part of said housing and a nut, and a freewheeling clutch of which the movable cage is made integral with said nut; so that with said hammer delivering a blow upon said drilling tool, the latter strikes against the rock of the face of the borehole and recoils therefrom, whereby said tool with said housing and said helicoidally threaded rod are driven rearwardly from the face, in which way rotation of said drilling tool is effected.



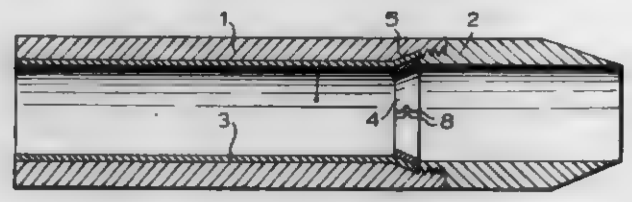
3,978,932
APPARATUS AND METHOD FOR OBTAINING UNDISTURBED SOIL CORE SAMPLES

Lloyd N. Mielke, Lincoln, Nebr., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 465,650, April 30, 1974, Pat. No. 3,872,935. This application Jan. 28, 1975, Ser. No. 544,995

Int. Cl.² E21B *9/20*

U.S. Cl. 175—249 **3 Claims**



1. In an apparatus for collecting undisturbed soil core samples of the type comprising a cylindrical tube or sampler body, open at both ends, and having at one end thereof a cutting tip which is sharpened for facilitating entry into the ground, an improvement comprising a tubular lining of flexible heat-shrinkable plastic open at both ends, contained within said sampler body, and having an outside diameter which is essentially equal to the inside diameter of said sampler body, said sampler body having an annular groove on the inner wall positioned near the cutting tip end; and a compressible, resilient retaining ring positioned in said annular groove and having a compressed outside diameter the same as the diameter of said annular groove for holding said tubular lining in place.

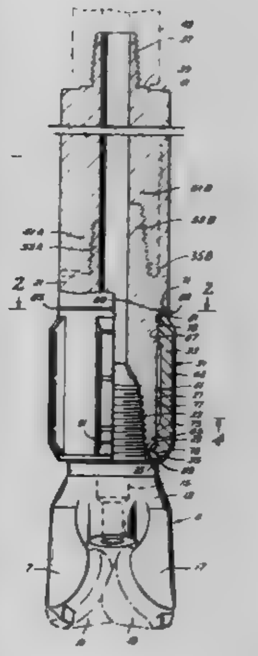
3,978,933
BIT-ADJACENT STABILIZER AND STEEL

Wallace Fred Olson, and James Clifton McNeal, both of Midland, Tex., assignors to Smith International, Inc., Houston, Tex.

Filed Jan. 27, 1975, Ser. No. 544,069

Int. Cl.² E21B *11/00*

U.S. Cl. 175—325 **14 Claims**



1. Drill stem assembly comprising a drill steel having a tool joint connection at one end thereof, a stabilizer sleeve around said end of the drill steel and having an inturned radial flange, and a drill bit having tool joint connection adapted to make up with the tool joint connection of the drill steel, said tool joint connections each including a threaded portion and a shoulder so as to make a rotary shouldered connection when made up, said stabilizer flange being clamped between the shoulders of said tool joint connections, said end of the drill steel being provided with a tool joint pin and the interior of the stabilizer sleeve being formed with a tool joint box engaged with said pin, said pin and box including correlative straight threads and correlative shoulders on said flange and the extremity of said end of the drill steel, said pin and box further including a smooth cylindrical land on the interior of the box between the thread and shoulder thereof and a smooth cylindrical area on the pin between the thread and shoulder thereof fitting snugly within said land.

3,978,934
AMUSEMENT RIDE POWER

Carl Schneidinger, Rolling Hills Estates, Calif., assignor to Jon Daugherty; Jay J. Sarno and Carl Schneidinger, all of Las Vegas, Nev.

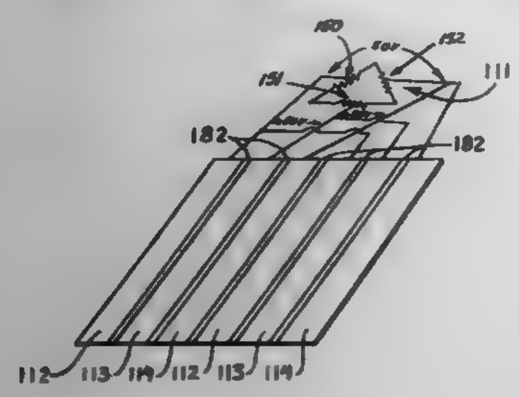
Filed Aug. 30, 1974, Ser. No. 502,177

Int. Cl.² B60L *9/08*

U.S. Cl. 180—2 **12 Claims**

1. The combination with a source of polyphase electrical alternating current of: A floor being composed of a number of strips of electrical conductive material alternately connected to different legs of the alternating current source; an entertainment vehicle for travelling upon said floor; A direct current motor operatively connected to said vehicle; a multiplic-

ity of electrical contact elements carried by said vehicle in contact with said floor; circuitry for rectifying said alternating current to direct current between said electrical contact elements and said motor.

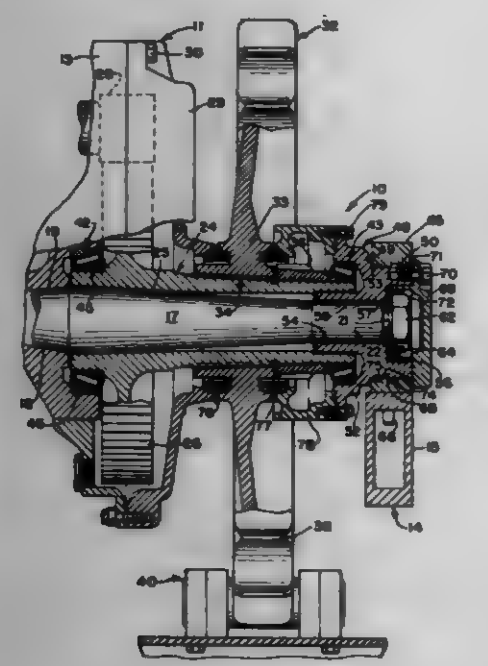


3,978,935

FINAL DRIVE BEARING ARRANGEMENT

Fred R. Dauwalder, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 27, 1975, Ser. No. 608,295
Int. Cl.² B62D *55/12*
U.S. Cl. 180—9.62 **9 Claims**



1. In a crawler tractor having a case, a track frame disposed in laterally spaced relation to said case, and a final drive assembly mounted to the case and having a nonrotatable sprocket shaft extending laterally between the case and the track frame, a track driving sprocket and an elongated hub carrying such sprocket, a bearing arrangement wherein the improvement comprises;

a pair of tapered roller bearings for rotatably mounting the hub in spaced coaxial relation about said sprocket shaft with one of said bearings being mounted between said case and the adjacent inner end of said hub and the other of said bearings being mounted on the outer end of said hub;

a threaded distal end portion on said shaft adjacent said track frame;

a cylindrical portion on said shaft adjacent said distal end portion;

an annular bearing cage for supporting said outer bearing, said bearing cage including an inner sleeve portion positioned in close radially supporting relation about said cylindrical portion of the shaft, said sleeve and cylindrical portions being cooperatively uniformly sized to permit sliding movement of the bearing cage along the shaft for providing an axial floating relationship therebetween; and

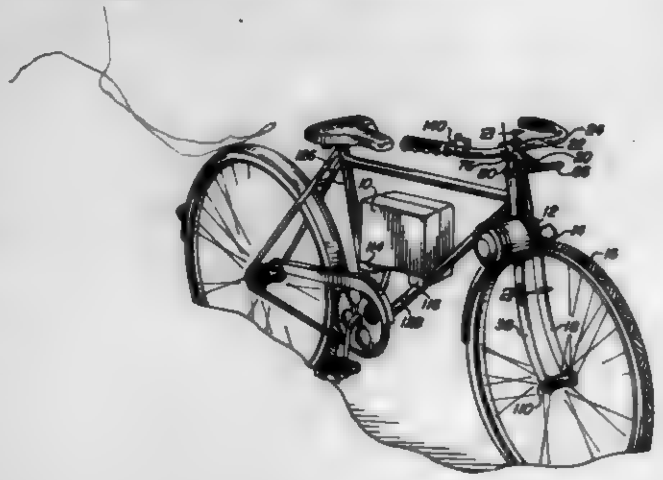
a nut adjustably screw threadably mounted on said distal end portion of the shaft in axial engagement against said bearing cage , said nut being selectively screw threadably tightened against said bearing cage to apply a predetermined axial load thereto, which axial load, due to the axial mobility of the cage relative to the shaft, is freely transmitted through the cage for applying a predetermined axial preload on said bearings.

3,978,936

BICYCLE DRIVE MEANS

Theodore F. Schwartz, 11660 St. Andrews Way, Scottsdale, Ariz. 85254

Filed July 11, 1974, Ser. No. 487,624
Int. Cl.² B62D *61/00*
U.S. Cl. 180—31 **1 Claim**



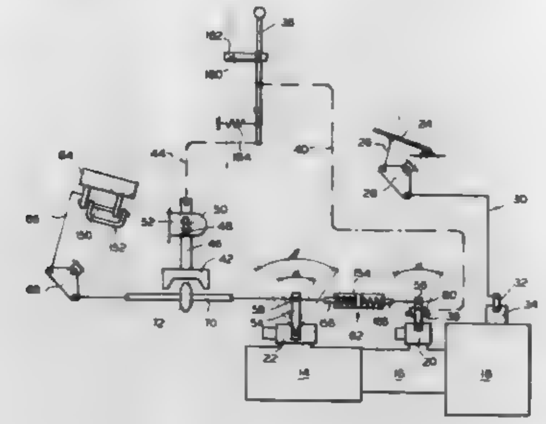
1. A bicycle drive means comprising: a motor having a power output shaft extending therefrom; a bicycle tire engaging rotor fixed on said shaft; a bicycle front fork; a front wheel having a horizontal axis and mounted on said fork; a motor mount on said fork; said motor pivotably mounted on said motor mount on a second horizontal axis parallel to that of said wheel; a tire on siad wheel; said tire having a conventional periphery; said wheel engaging rotor being movable into and out of engagement with said tire by respective pivotable movement of said motor on said motor mount about said second horizontal axis; a telescopic spring loaded strut having a lower end pivot portion pivotably mounted on said motor on a third horizontal axis; a toggle lever; said strut having an upper pivotal bearing portion pivotably mounted on said toggle lever on a fourth horizontal axis; a toggle lever mount for said toggle lever; a bicycle handle bar secured to said front fork; said toggle lever mount secured to said bicycle handle bar; a toggle lever bearing pivotably mounting said toggle lever on said toggle lever mount on a fifth horizontal axis; and stop means on said toggle lever mount adapted to limit movement of said toggle lever to retain the axis of said upper pivotal bearing portion in an over center position relative to the axis of said toggle lever bearing for holding said spring loaded strut in telescopically compressed condition and to thereby hold said rotor firmly rotatably engaged with said tire; said telescopic strut is provided with a hollow tubular body having an upper end on which is fixed said upper pivotal bearing portion; said tubular body having a lower open end; a spring in said hollow tubular body; a plunger extending telescopically into said body through said open end thereof; said plunger having a spring engaging end abuted to said spring; said spring tending to force said plunger outwardly from said open end of said body; said plunger having an annulus in its periphery; said body having a detent projecting into said annulus to limit outward movement of said plunger relative to said open end of said body to allow said toggle lever to retract said rotor away from said wheel when said toggle lever is pivotably moved in a direction away from said stop means.

3,978,937

HYDROSTATIC PROPULSION SYSTEM

Willard L. Chichester, and Donald A. Holtkamp, both of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Sept. 23, 1974, Ser. No. 508,588
Int. Cl.² F16H *39/46;* B60K *17/34*
U.S. Cl. 180—44 F **30 Claims**



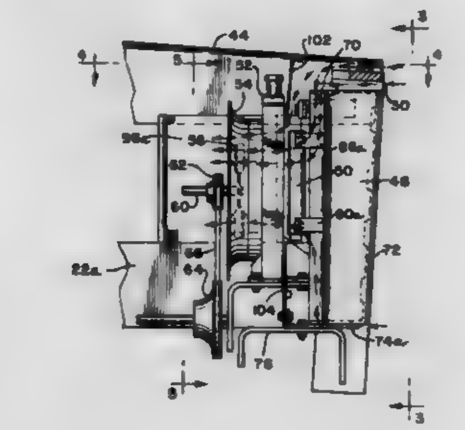
1. In a hydrostatic drive system for a vehicle having a prime mover, first and second traction means, and first and second hydraulic motor means for driving respective ones of said traction means, first and second variable displacement hydraulic pump means driven by the prime mover means for driving respective ones of the hydraulic motor means, said first pump means having a fluid discharge capability greater than the fluid discharge capability of said second pump means, and control means limiting the fluid discharge of said first pump means substantially to the fluid discharge of said second pump means under a first vehicle operating condition.

3,978,938

COMBINED AIRFLOW WITH FRONT MOUNTED FUEL TANK

Alfred J. Joscher, Lombard, and Theodore F. Boone, Tinley Park, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed June 5, 1975, Ser. No. 584,247
Int. Cl.² B60K *11/04, 15/02*
U.S. Cl. 180—68 R **7 Claims**



1. In a tractor vehicle having a pair of longitudinally disposed main frame members which support an engine at a forward portion of the tractor, a fuel tank mounted upright in said forward portion of said tractor, a radiator for cooling said engine mounted between said fuel tank and said engine, an oil cooler mounted to said fuel tank between said tank and said radiator and a system of baffles to direct a flow of air through said radiator and said oil cooler, the improvement comprising:

a vertically disposed main frame appendage having parallel sides permanently affixed to each of said frame members and a cross piece connecting the upper extremities of each of said parallel sides of said frame appendage;

a hood component on the upper portion of said forward portion of said tractor covering said vehicle engine, said fuel tank, said radiator, and said oil cooler and further covering and fixedly attached to said main frame appendage;

a pair of side walls positioned between said main frame and said hood component;

said side walls being equipped with air flow directing ducts for allowing air flow to said radiator.

3,978,939

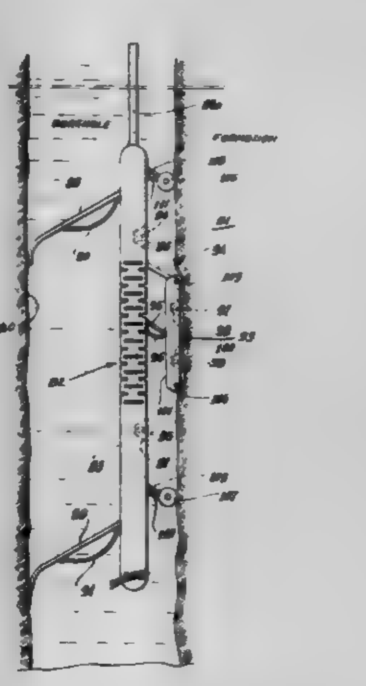
ACOUSTIC WELL LOGGING METHODS AND APPARATUS

Jean-Claude Trouiller, Chaville, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 256,075, May 23, 1972, abandoned. This application July 5, 1974, Ser. No. 486,076

Claims priority, application France, May 24, 1971, 71.18638

Int. Cl.² G01V *1/40, 1/02*
U.S. Cl. 181—104 **23 Claims**



1. A structure adapted for use in investigating earth formations comprising:

a. a longitudinally extending support member adapted for movement through a borehole; and

b. transducer means adapted to be supported by said support member and having an energy responsive surface, a section of said surface of said transducer means defining a curved line along a plane which extends longitudinally and radially with reference to said longitudinally extending support member, said section being principally associated with energy directed generally radially thereto.

3,978,940

ACOUSTIC SOURCE

John V. Bouyoucos, Rochester, N.Y., assignor to Hydroacoustics Inc., Rochester, N.Y.

Filed Mar. 10, 1975, Ser. No. 557,140
Int. Cl.² G01V *1/04, 1/38;* H04B *13/02*
U.S. Cl. 181—120 **20 Claims**

1. An acoustic transmitter comprising

a. means for radiating acoustic energy when vibrated,

b. driving means coupled to said means element to excite said radiating means into vibration.

c. means for providing an acoustic inertance, and

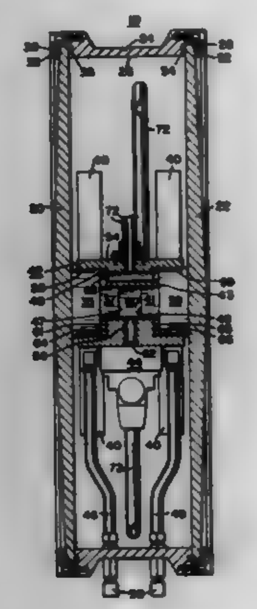
d. means for coupling hydraulically said inertance means to said radiating means for changing the natural resonant frequency of said radiating means whereby to reduce power required from said driving means to drive said radiating means over a given band of frequencies.

11. An acoustic transmitter which comprises:

a. a housing

b. radiating elements having a natural resonant frequency mounted in said housing,

c. hydraulic means coupled to said elements to drive said elements into oscillation,



d. means for supplying pressurized fluid to the hydraulic means, and

e. acoustic inertance means disposed within the path of oscillatory displacement of said elements for loading hydraulically said elements to achieve a desired resonant frequency.

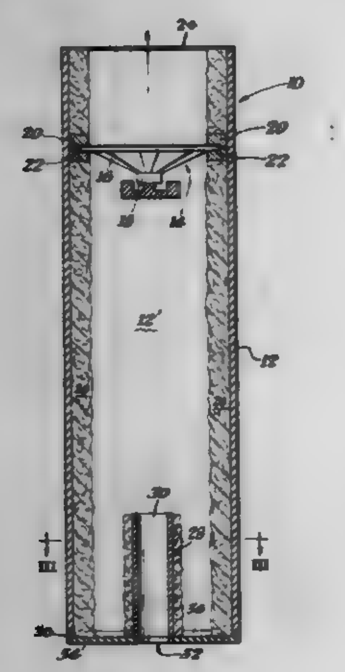
3,978,941
SPEAKER ENCLOSURE

Curt August Siebert, 4711 NW. 24th Court, Apt. 108, Lauderdale Lakes, Fla. 33313

Filed June 6, 1975, Ser. No. 584,617

Int. Cl.² H05K *5/00*

U.S. Cl. 181—151 5 Claims



1. An improved speaker enclosure comprising:

a tubular shaped enclosure body, insulating means disposed within said enclosure, conventional speaker coupled across and adjacent one end of said enclosure body;

a flexible diaphragm said diaphragm being flexibly, dynamically responsive to acoustical wave energy of a predetermined frequency and being disposed opposite said speaker enclosing said outer tubular body at one end, said diaphragm having an aperture disposed therethrough; and

an elongated venting tube connected across said diaphragm aperture and disposed axially in the direction of said speaker within said enclosure chamber.

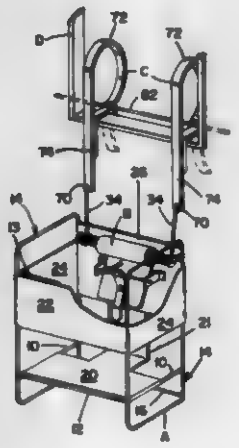
3,978,942
PORTABLE WINDOW-ATTACHED EMERGENCY DESCENT MECHANISM

Ramon Jimenez, 1248 Silver Ave., San Francisco, Calif. 94134

Filed Apr. 17, 1975, Ser. No. 568,975

Int. Cl.² A62B *1/08*

U.S. Cl. 182—75 5 Claims



1. A portable descent mechanism for descending from a window, having sides defining a first width, to a ground level in emergency situations comprising:

at least a pair of attachment hooks for attachment to said window, said attachment hooks having affixed thereto a horizontal crossbar with ends separated by a length greater than the width of the window, said crossbar disposed upon said hooks such that when said hooks are attached to the window said crossbar remains interior of the window with said crossbar ends extending beyond the sides of the window;

a pair of cables connected to said hooks;

means for carrying a passenger during descent from the window to the ground level;

a pair of spools mounted upon said passenger means and having said cables connected thereto and wound thereon, said spools adapted to play out said cables during descent of said passenger means;

braking means connected to said spools and having a first brake control for initiating and permitting descent at a pre-selected rate and a second brake control that overrides said first brake control to decrease the rate of descent from the pre-selected rate;

a first gear fixedly attached to one of said spools;

a second gear disposed to engage said first gear;

means to selectively engage at least one of said gears such that when so engaged rotation of said spool in a direction permitting descent is prohibited; and

a crank handle connected to said second gear for rotation of said second gear such that turning said crank in one direction allows said passenger means to ascend from the ground level.

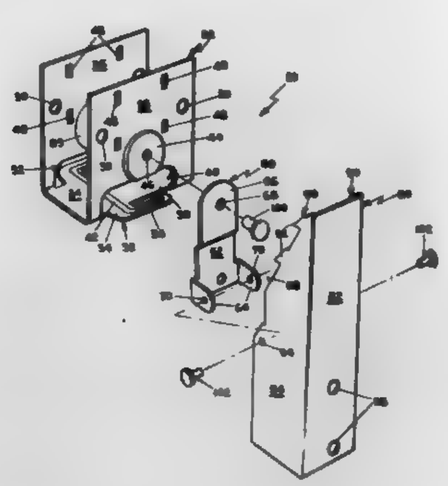
3,978,943
FOLDING SUPPORT BRACKET

James R. Greenman, 5185 Silver Pines Road, and Philip J. Pelky, 9600 Peninsular Drive, both of Traverse City, Mich. 49684

Filed July 7, 1975, Ser. No. 593,645

Int. Cl.² F16M *11/00*

U.S. Cl. 182—155 21 Claims



1. Apparatus for supporting a pair of legs on a beam to form a collapsible sawhorse, barricade, or the like comprising:

a beam support bracket for engaging and supporting a beam, said beam support bracket including a base having a pair of spaced, side flanges extending generally in the same direction from said base;

a pair of leg brackets, each of said leg brackets adapted to engage and support a leg member; and

a pair of swivel brackets each including first securing means for pivotally securing said swivel bracket to one of said side flanges and second securing means for pivotally securing one of said leg brackets to said swivel bracket; said first securing means allowing each of said swivel and leg bracket combinations to be pivoted as a unit between a folded position in which they are generally transverse to said beam support bracket and extend along the sides of said beam support bracket wherein any leg members in said leg brackets are generally parallel to a beam when such a beam is secured in said beam support bracket and an upright position in which said leg brackets extend generally transverse to a beam when such a beam is secured in said beam support bracket; said second securing means allowing said leg brackets to be pivoted into a final position in which they are braced against said side flanges; and

stop means on said beam support bracket for limiting pivotal movement of each of said swivel brackets about said first securing means to position said swivel and leg bracket units in said upright position, said stop means including restraining means spaced apart from said first securing means for preventing movement of said swivel brackets outwardly away from said beam support brackets when said swivel and leg bracket units are in said upright position.

3,978,944
LADDER

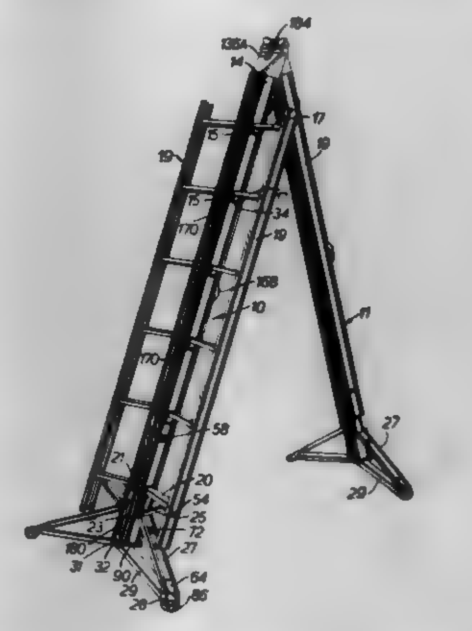
Ronald P. Hickman, Waltham Abbey; Brian Anthony Luff, Norwich; Edgar Ronald Rossell, Waltham Abbey, and Derek John Charles Bernard, Benged, all of England, assignors to Inventec International Limited, Point Robert Sark, Guernsey (Channel Is.)

Filed Mar. 13, 1975, Ser. No. 558,121

Int. Cl.² E06C *1/20, 1/383*

U.S. Cl. 182—162 57 Claims

1. A foldable ladder comprising, in combination: a central elongate member and two outer elongate members arranged one on each side of, and substantially in parallel to, the central member; a series of rungs each foldably connected to the central member and one of the outer members, each rung being arranged to fold between an erected position, in which it extends generally at right angles to the longitudinal direction of said member to which it is connected, and a storage position in which the rung lies substantially parallel to the central member with the outer member to which it is connected extending parallel to and in close juxtaposition with the central member; engaging means, disposed on said central member adjacent its upper end, for holding cooperating engaging means of a supporting member so that the upper end of said central member may be spaced from a supporting surface by said supporting member when the central member is in a substantially uptight, working configuration; and at least one strut means arranged on each side of, and extending outwardly from, said central member to the outboard region of one of said rungs for supporting said rungs and said outer members when in the erected position, the load on at least one rung being transmitted, via the outer member to which it is connected and one of said strut means, to said central member.



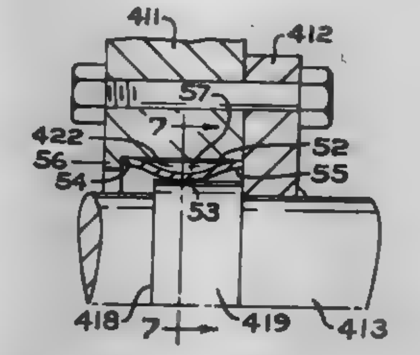
3,978,945
BRAKE DISC MOUNTING

Richard H. Gardner, Pleasant Hill, and Robert D. Kelley, Troy, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Sept. 17, 1974, Ser. No. 506,714

Int. Cl.² F16D *65/12*

U.S. Cl. 188—218 XL 2 Claims



2. A mounting for a brake disc on a shaft having an annular pilot rib for registering said disc comprising a spacer member interposed between said pilot rib and said disc, said spacer member being a resiliently deformable sleeve member with greater resilience than said disc and having a width measured in the axial direction of said shaft at least as great as the thickness measured in the radial direction of said shaft, said sleeve member having central portions with a different diameter than adjacent side portions, said disc having an inner peripheral surface spaced from said pilot rib, said central

portions being first engaging surfaces and said side portions being second engaging surfaces of said sleeve member and at least one of said engaging surfaces being in engagement with said pilot rib and the other of said engaging surfaces being in engagement with said inner peripheral surface of said disc, and said sleeve member being disposed in a position between said pilot rib and said inner peripheral surface to provide an opening located radially of said pilot rib for radial movement of a portion of said sleeve member upon shrinkage of said brake disc on said pilot rib without binding of said disc on said pilot rib.

3,978,946

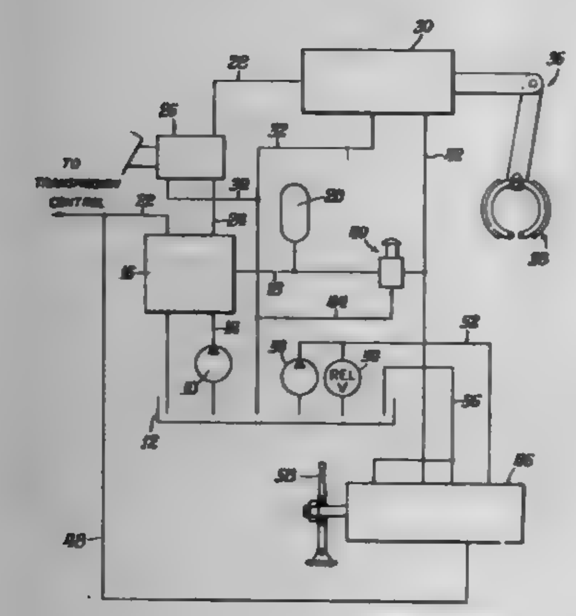
PARKING BRAKE SYSTEM WITH TRANSMISSION INTERLOCK

Michael D. Ream, Lafayette, Calif., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 19, 1974, Ser. No. 507,265

Int. Cl.² B60K *29/02*

U.S. Cl. 192—4 A — 3 Claims



1. In a vehicle the combination of an engine driven hydraulic pump, a hydraulic sump, a transmission control operable by means of fluid supplied by said pump, a brake including a brake actuator which has a double acting piston which is spring biased to normally apply the brake, a parking brake release control for selectively communicating fluid pressure from the pump to the brake actuator to overcome the spring bias thereof to release the brake, a service brake control for selectively communicating fluid to the brake actuator to balance the parking brake release control pressure in the actuator whereby the spring biasing thereof will selectively apply the brake during service operation of the vehicle, and interlock valve means for preventing actuation of the transmission control without releasing the parking brake.

conduit means communicating the interlock valve with the transmission control, the parking brake release control, and to the sump,

said interlock valve including spring biased spool means for venting the transmission control to sump while the parking brake control is selected to cut off parking brake release pressure to the brake actuator, and further including means responsive to parking brake release pressure in the brake actuator, to shift the spool means and interrupt communication of the transmission control with the sump, and allow pressure to build up in the transmission control for operation thereof.

3,978,947

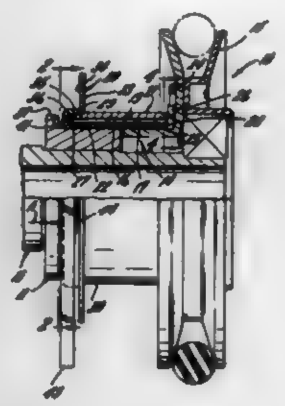
CLUTCH BRAKE UNIT

Charles W. Modersohn, Beloit, Wis., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Aug. 26, 1974, Ser. No. 500,343

Int. Cl.² F16D *67/02*

U.S. Cl. 192—12 BA — 12 Claims



1. A clutch-brake assembly for use on a rotatable shaft including an input hub fixed on said shaft and having a generally cylindrical driving surface, an output hub journaled on said shaft adjacent said input hub and having a generally cylindrical driven surface, a generally cylindrical sleeve having one end fixed to said output hub and a free end portion telescoped over said driving and driven surfaces with the interior surface of said sleeve spaced radially outward from said two surfaces, a helical spring telescoped into the space between said sleeve and said hubs and normally being wound into torque-transmitting engagement with said driving and driven surfaces so said two hubs rotate bodily with said shaft, means holding the output end of said spring against substantial rotational and axial movement with respect to said output hub, an annular shoulder formed on said input hub and extending radially outward from said driving surface, said shoulder being spaced axially from the free end of said sleeve, and a generally circular brake disk loosely telescoped onto the free end portion of said sleeve and including an annular flange extending radially inward between the free end of said sleeve and said shoulder and beyond the interior surface of said sleeve so said disk is captivated against substantial radial and axial movement relative to said shaft, said disk normally being in engagement with the input end portion of said spring so as to rotate with said shaft and being rotatable relative to said sleeve whereby application of a braking torque to said disk retards the rotation thereof thereby unwinding said spring from engagement with said driving and driven surfaces and toward engagement with the interior surface of said sleeve so as to form a torque-transmitting connection between said disk and said output hub to retard rotation of the latter.

3,978,948

NEUTRAL-TYPE ELECTROMAGNETIC CLUTCH-BRAKE UNIT

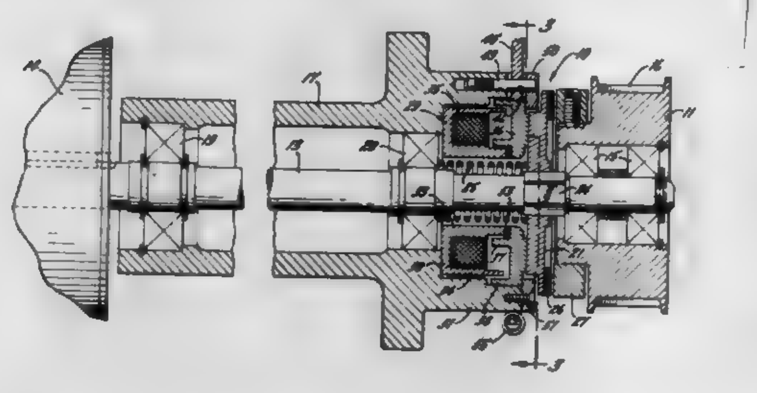
John S. Baer, Bar Harbor, Maine, assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Apr. 28, 1975, Ser. No. 572,195

Int. Cl.² F16D *67/06*

U.S. Cl. 192—18 B — 3 Claims

1. A clutch-brake unit operable selectively to either (a) couple a rotatable driving element to a rotatable driven element, (b) uncouple the elements and brake one of the elements, or (c) uncouple the elements and allow free-wheeling of said one element, said unit comprising a rotatably fixed support, a brake member mounted for rotation relative to said support, means on said support and selectively engageable with said brake member in every angular position of the brake member and operable when so engaged to frictionally hold said brake member against rotation relative to said support regardless of the angular position of the brake member, an armature rotatable with said one element and movable between clutching and braking positions, said armature being disposed out of braking engagement with said brake member and being disposed in clutching engagement with the other of said elements when said armature is in said clutching position whereby said armature couples said elements for rotation in unison, said armature being disposed out of clutching engagement with the other of said elements and being disposed in braking engagement with said brake member when said armature is in said braking position whereby said armature uncouples said elements and coacts with said brake member to brake said one element so long as said brake member is held against rotation relative to said support, selectively operable electromagnetic means on said support for causing said armature to move between said clutching and braking positions, and said holding means being selectively operable, when said armature is braking engagement with said brake member, to release said brake member from said support and permit said brake member and said armature to rotate in unison relative to said support thereby to enable said one element to free-wheel when said armature is in engagement with said brake member and said brake member is released.



3,978,949

FRICTIONAL OVERRUNNING CLUTCH

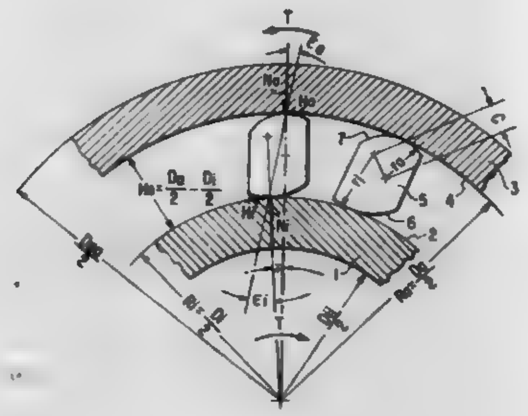
Karlheinz Timtner, Bad Homburg vor der Hohe, Germany, assignor to Ringspann Albrecht Maurer K.G., Bad Homburg vor der Hobe, Germany

Filed Aug. 1, 1975, Ser. No. 601,314

Claims priority, application Germany, Aug. 19, 1974, 2439632

Int. Cl.² F16D *41/07*

U.S. Cl. 192—41 A — 11 Claims



1. In a radially wedging, frictional overrunning clutch having an inner ring and an outer ring arranged concentrically with the inner ring; the inner ring having an outer cylindrical surface constituting an inner track; the outer ring having an inner cylindrical surface constituting an outer track; Z sprags of profiled cross section disposed between the inner and the outer tracks in a circumferential series; each sprag having an inner clutch face cooperating with the inner track and an outer clutch face cooperating with the outer track; each sprag being arranged such that upon rotation between the inner and the outer rings relative to one another in the direction of clutch engagement, the clutch faces of each sprag wedge against the respective track along a line of contact whereby torque is transmitted; the improvement wherein the radius of the inner track is determined by subtracting from the nominal radius of the inner track the extent of compression of the inner ring, at the location of contact with the sprags, caused by a maximum transmissible torque and the radius of the outer track is determined by adding to the nominal radius of the outer track the extent of expansion of the outer ring, at the location of contact with the sprags, caused by the maximum transmissible torque.

3,978,950

FRICTIONAL OVERRUNNING CLUTCH

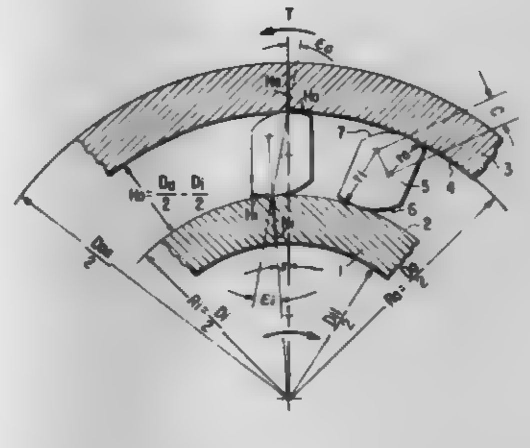
Karlheinz Timtner, Bad Homburg vor der Hohe, Germany, assignor to Ringspann Albrecht Maurer K.G., Bad Homburg vor der Hohe, Germany

Filed Aug. 19, 1975, Ser. No. 605,875

Claims priority, application Germany, Aug. 19, 1974, 2439682

Int. Cl.² F16D *41/07*

U.S. Cl. 192—41 A — 9 Claims



9. In a radially wedging, frictional overrunning clutch having an inner ring and an outer ring arranged concentrically with the inner ring; the inner ring having an outer cylindrical surface constituting an inner track; the outer ring having an inner cylindrical surface constituting an outer track; a plurality of sprags of a profiled cross section disposed between the inner and the outer tracks in a circumferential series; each sprag having an inner clutch face cooperating with the inner track and an outer clutch face cooperating with the outer track; each sprag being arranged such that upon rotation between the inner and the outer rings relative to one another in the direction of clutch engagement, the clutch faces of each sprag wedge against the respective track along a line of contact whereby torque is transmitted; the improvement wherein, while varying the ring thickness ratio of at least one of the two rings in the sense of a maximum of the quotient driving torque/angle of rotation, the radius of the inner track is determined by subtracting from the nominal radius of the inner track the extent of compression of the inner ring, at the location of contact with the sprags, caused by an assumed normal force and the radius of the outer track is determined by adding to the nominal radius of the outer track the extent of expansion of the outer ring, at the location of contact with the sprags, caused by an assumed normal force.

3,978,951

SYNCHRONIZATION APPARATUS FOR SPEED-CHANGING GEARING OR TRANSMISSIONS, ESPECIALLY FOR VEHICLES

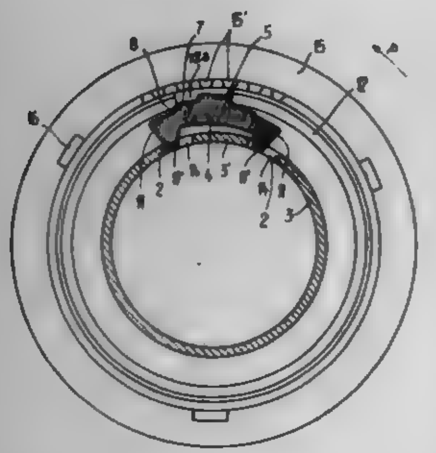
Jackie Andre De Ruyter, L'Escalade C2 no. 307, Saint Julien en Genevois, France (74160), and Jean-Claude Caveng, ch. du Mont-Blanc 8, 1224 Chene-Bougeries, Switzerland

Filed May 27, 1975, Ser. No. 580,588

Claims priority, application France, May 28, 1974, 74.19639; Jan. 13, 1975, 75.1852

Int. Cl.^{2} F16D *23/06*

U.S. Cl. 192—53 C **9 Claims**



1. A synchronization apparatus for speed-changing gearing, especially for vehicles, comprising a claw support and a gear shift sleeve, a slotted synchronization ring possessing a slot, said slotted synchronization ring being arranged between said claw support and said gear shift sleeve, a blocker body supported by the claw support for carrying out a radial outward movement, said blocker body possessing an entrainment cam, said blocker body engaging with play by means of the entrainment cam in the slot of the synchronization ring, said synchronization ring having an end which bears against the entrainment cam during the synchronization operation in the direction of the relative rotation which is to be equalized between the claw support and the gear shift sleeve, said blocker body and said synchronization ring possessing stops coacting with one another such that they can travel over one another, said stops being arranged after the entrainment cam in the direction of the relative rotation which is to be equalized and can be brought into engagement with one another by radially shifting the blocker body.

3,978,952

FLUID COUPLING

Jeffrey Hall, Huddersfield, England, assignor to Holset Engineering Company Limited, England

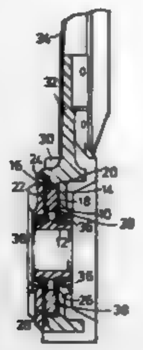
Filed Oct. 30, 1974, Ser. No. 519,108

Claims priority, application United Kingdom, Nov. 15, 1973, 53614/73

Int. Cl.^{2} F16D *31/00*

U.S. Cl. 192—58 B **9 Claims**

1. A viscous shear coupling comprising an annular driving member, a driven member having an internal annular chamber receiving said annular driving member, said driven member being axially and radially located for rotation relative to said driving member, facial planar and circumferential surfaces of said chamber and opposing facial planar and circumferential surfaces of said driving member at least in part being in close-spaced relationship, viscous coupling fluid in said chamber, and a 0.0005 to 0.0015 inch thick layer of non-metallic anti-friction material on at least those parts of said facial planar and circumferential surfaces of said annular chamber which are in close spaced relationship, said non-metallic anti-friction material forming journal and thrust bearing means for



the relative rotation of the driving member and the driven member.

3,978,953

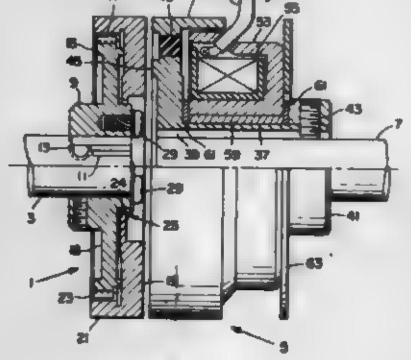
RESILIENT CONNECTION BETWEEN INNER AND OUTER POLES ON ELECTROMAGNETIC CLUTCH

Donald Leroy Miller, Horseheads, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed June 24, 1975, Ser. No. 589,816

Int. Cl.^{2} F16D *27/10*

U.S. Cl. 192—84 C **6 Claims**



1. An electromagnet clutch having a driving clutch member and a driven clutch member, an armature on one of the members, an electromagnet having a pair of poles on the other of the members for providing a driving engagement between the members when the electromagnet is energized, and means for connecting the poles to provide relative axial movement between the poles to enable both poles to engage the armature with substantially equal force.

3,978,954

COIL SPRING TYPE OVER-COVER CLUTCH

Minoru Akita, Osaka, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

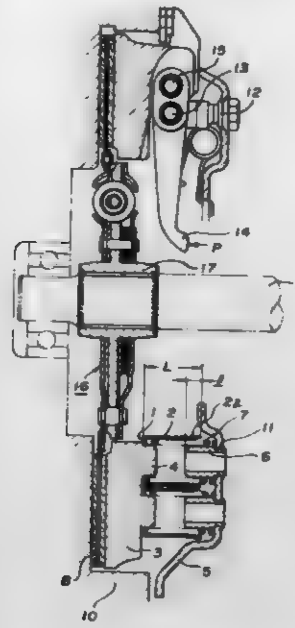
Filed July 14, 1975, Ser. No. 595,878

Claims priority, application Japan, July 22, 1974, 49-87418

Int. Cl.^{2} F16D *13/44*

U.S. Cl. 192—89 R **2 Claims**

1. A deformation and slipping-off prevention means of spring incorporated in a coil spring type over-cover clutch comprising a cylindrical spring cap two having an inward flange one at one end thereof, said flange one being fitted around in a projection four of a pressure plate three, a coil spring seven coaxial with said projection four and a spring support six fixed to a clutch cover five being assembled between the flange one and the clutch cover five, and the lengths of said spring support six and spring cap two being such that the spring cap two does not interfere with the clutch cover five even in the maximum released condition of the clutch and that the spring support six is securely inserted within the spring cap



two even under the maximum worn out state of a clutch facing eight.

3,978,955

AXIALLY AND RADIALLY RIGID SUPPORT PLATE FOR DIAPHRAGM CLUTCH

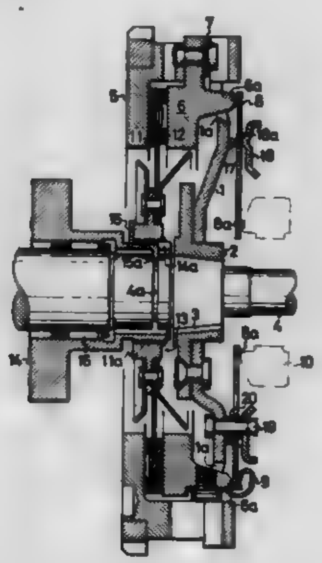
Tamio Nagano, 901, Horimizo, Neyagawa, Osaka, Japan

Continuation-in-part of Ser. No. 331,608, Feb. 12, 1973, abandoned. This application Nov. 8, 1974, Ser. No. 522,302

Claims priority, application Japan, Feb. 22, 1973, 47-22042[U]

Int. Cl.^{2} F16D *13/71*

U.S. Cl. 192—89 B **4 Claims**



3. An axially and radially rigid support plate formed of a single integral piece of sheet material and for pivotally supporting a clutch diaphragm spring, comprising:

A. an axially extending annular projection;

B. a radially extending annular flat base, having a circumferential inner edge and a circumferential outer edge, which is rigidly attached to and is disposed on either side of said projecton, so that said projection extends in one axial direction from said base;

C. an axially extending inner annular lip which is rigidly attached to said inner edge and extends oppositely to said one axial direction; and

D. an axially extending outer annular flange which is rigidly attached to said outer edge and extends oppositely to said one axial direction, said inner lip and said outer flange being radially spaced apart by said flat base, whereby the radially measured width of said support plate, from said inner lip to said outer flange, prevents radial expansion of said support plate and the axial extensions of said inner lip and of said outer flange combine to inhibit axial bending of said support plate.

3,978,956

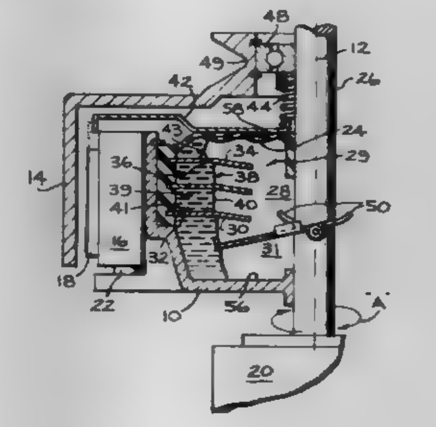
DELAYED-ACTION CENTRIFUGAL CLUTCH TRANSMISSION

John Bochan, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Aug. 26, 1974, Ser. No. 500,390

Int. Cl.^{2} F16D *43/06, 25/00, 13/60*

U.S. Cl. 192—105 A **10 Claims**



1. A delayed-action transmission, comprising:

a rotatable driven member;

a rotatable housing having an axis and being positioned adjacent the driven member;

a diaphragm connected to the housing and defining therewith a reservoir;

a baffle plate extending through a portion of the reservoir from the outer periphery of the reservoir toward and spaced from the housing axis, said baffle plate being movable with the housing and defining upper and lower reservoir portions;

a fluid diverter having a volume chamber having an inlet in fluid communication with the lower reservoir portion and an outlet in fluid communication with the upper reservoir portion; and

actuation means associated with the driven member and the diaphragm for movement by the diaphragm in response to rotation of the housing, said actuating means being movable between a first position at which the driven member is disengaged from the housing and a second position at which the driven member is engaged with and rotatable in response to rotation of the housing.

3,978,957

HOLLOW GUIDING MAST FOR A CHARGING DEVICE OF A CORE REACTOR

Bernhard Hoffmeister, Wilhelmshaven, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Germany

Filed Oct. 10, 1974, Ser. No. 513,765

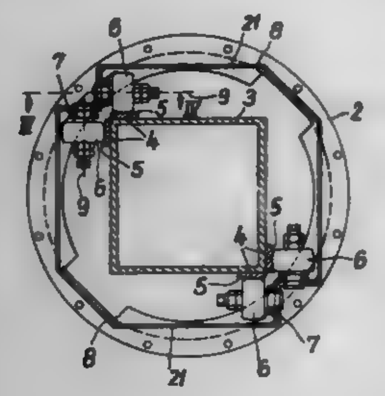
Claims priority, application Germany, Nov. 13, 1973, 2356503

Int. Cl.^{2} G21C *19/20;* **B65G** *11/16*

U.S. Cl. 193—1 **3 Claims**

1. For a charging device of a core reactor apparatus for guiding a gripper body internally of a horizontal hollow mast consisting of sections placed against each other, each section consisting of a plate forming a mantle which is subdivided into two halves and only two horizontal spars inserted between these halves, each spar having two legs which converge toward the inside of the mast and guide means supported thereby inside the mast, the halves of the plate mantle being welded to the spars toward the inside of the mast, the gripper body

having only two diagonally oppositely located pairs of horizontal guide surfaces, the guide surfaces of each pair converg-

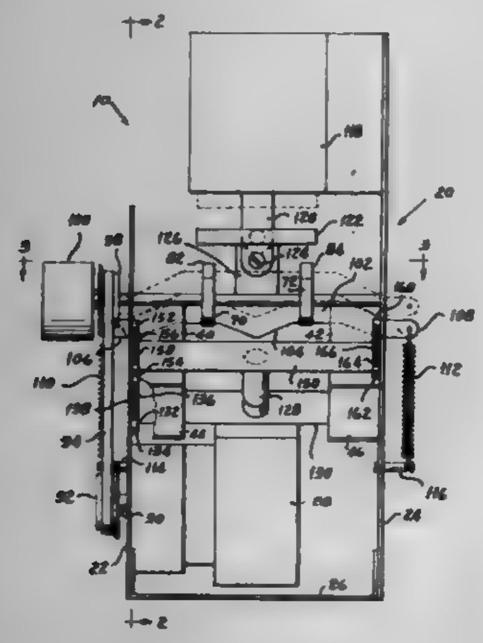


ing in a direction toward one of the spars and engaging against the guide means supported thereby.

3,978,958

TICKET VENDOR

Lawrence Zandstra, Rockford, Mich., assignor to Rowe International Inc., Whippany, N.J.
Filed Oct. 3, 1974, Ser. No. 511,594
Int. Cl.^{2} G07F *11/00*
U.S. Cl. 194—2 **14 Claims**

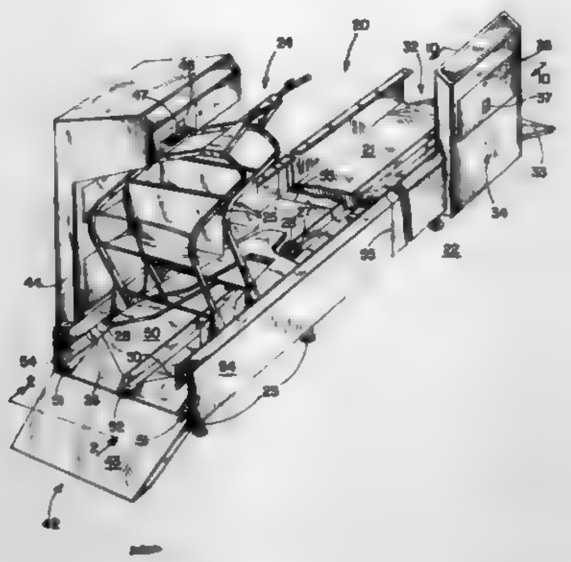


1. Apparatus for dispensing individual tickets from a supply of connected tickets to a delivery opening in response to a credit signal including in combination a cabinet, means forming a delivery opening in said cabinet through which individual tickets are to be delivered to customers, a supply location in said cabinet for receiving a supply of tickets, means forming a path for movement of tickets from said supply to said delivery opening, said path including an escrow location between said supply location and said delivery opening at which escrow location a severed ticket held thereat is inaccessible from outside said cabinet, means at said escrow location for holding a severed ticket, means responsive to said credit signal for advancing said severed ticket from said escrow location to said delivery opening, means responsive to movement of said severed ticket out of said escrow location for moving a ticket from said supply toward said escrow position, and means responsive to movement of said ticket from said supply into said escrow location for severing said ticket from said supply, said means responsive to movement of said ticket from said supply location into said escrow location comprises means for sensing the presence of a ticket in said escrow location and means for adjusting the position of said sensing means along the path of movement of a ticket from said supply to said delivery opening.

3,978,959

DISPENSING SYSTEM FOR WHEELED VEHICLES

James M. Muellner, White Bear Lake, Minn., assignor to Smarte Carte, Inc., White Bear Lake, Minn.
Continuation of Ser. No. 380,822, July 19, 1973, abandoned. This application June 7, 1974, Ser. No. 477,492
Int. Cl.^{2} G07F *7/00*
U.S. Cl. 194—4 R **10 Claims**



1. An improved dispenser apparatus for use in combination with a vehicle vending system of the type characterized by retaining means for retaining a plurality of vehicles each having a chassis carried by a plurality of normally floor-engaging support wheels a dispensing terminal from which the vehicles are dispensed, and monetary actuated control means for normally producing a first vend signal and for producing a second vend signal different from the first vend signal upon receipt thereby of a predetermined monetary amount, said dispenser apparatus comprising:

a. wheel control means operatively connected at the dispensing terminal configured to engage one of the floor-engaging support wheels of that retained vehicle disposed immediately adjacent the dispensing terminal for directly controlling movement of the engaged wheel in a dispensing direction, said wheel control means including a wheel release member operable between first and second positions and mounted for engagingly applying movement controlling forces directly to the circumferential tread portion of the engaged support wheel, said wheel release member being operable in its first position to engage the support wheel so as to directly block movement thereof in said dispensing direction and being yieldingly movable to its said second position in response to forces exerted thereon by the engaged support wheel to enable movement of the engaged support wheel relative thereto in said dispensing direction; and

b. dispenser actuator means operatively connected to receive firsts and second vend signals for activating in response thereto said wheel control means to selectively block and enable dispensing movement of the engaged support wheel, comprising:

i. pawl and ratchet latching means cooperatively engaging said wheel release member for controlling movement thereof between its said first and said second positions, said pawl and ratchet latching means being operable in a latched mode to engagable lock said wheel release member in its said first position, preventing movement thereof toward its said second position, and being operable in an unlatched mode to release locking engagement of said wheel release member, enabling movement thereof between its said first and said second positions; and

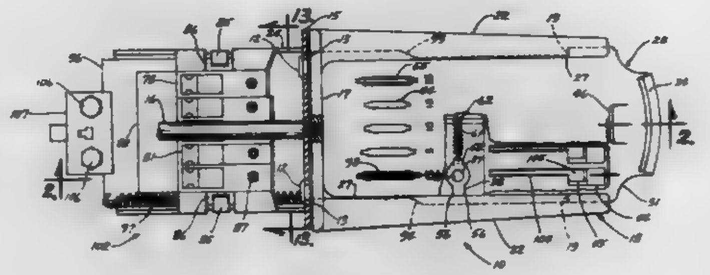
ii. a plurality of actuator members connected to receive the vend signals and being cooperatively responsive thereto for selectively controlling the operative mode of said pawl and ratchet latching means, said actuator

members being cooperatively engageable upon receipt of a first vend signal to actuate said pawl and ratchet latching means for operative engagement in its said latched mode, and being cooperatively engagable upon receipt of a second vend signal to activate said pawl and ratchet latching means for operative engagement in its said unlatched mode.

3,978,960

COIN AUTHENTICATING SLIDE MECHANISM

John C. Mellinger, and William J. McNally, both of Newton, Iowa, assignors to The Maytag Company, Newton, Iowa
Filed Nov. 19, 1975, Ser. No. 633,447
Int. Cl.^{2} G07F *3/02*
U.S. Cl. 194—55 **23 Claims**

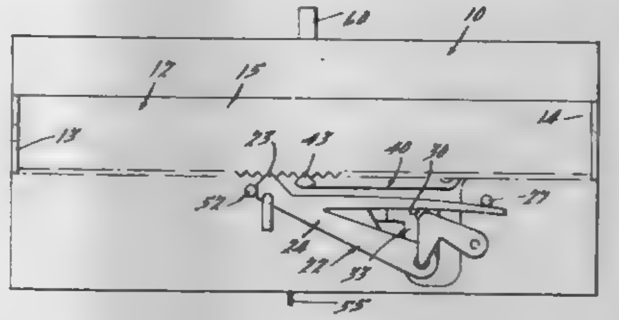


1. A coin slide apparatus for initating the operation of a machine with a predetermined combination of coins supported substantially vertically on edge, comprising: slide support means for mounting said coin slide apparatus to said machine and including a generally vertical faceplate having at least one vertical passageway for passing coins on edge and further including a forwardly and rearwardly extending slide housing defining a coin slide guideway; a coin slide assembly supported on said slide housing and reciprocally movable in said guideway from a coin receiving position and through intermediate coin measuring and coin ejecting positions to an operative position for activating said machine, said slide assembly including a plurality of slots of predetermined size for receiving and supporting said coins for movement with said slide assembly, said slide housing including a guideway surface for supporting said coins in said slots at a first elevation relative to said coin slide assembly in said coin receiving position and further including a downwardly sloping ramp in said guideway surface permitting said coins to drop from said first elevation to a lower second elevation as said slide assembly is moved from said coin receiving position to said coin measuring position; stop means for preventing movement of said slide assembly to said operative position in the absence of said predetermined combination of coins and including a plurality of latch arms pivotally mounted on said slide housing, each of said arms having a pawl engageable with said slide assembly in a first posture of said arms to prevent movement of said slide assembly beyond said coin measuring position; coin authenticating means comprising a cam on each of said latch arms and an abutment on said slide housing spaced above the cam of each latch arm and cooperable with said cam for engaging with opposite edges of said coins, each of said latch arm being responsive to a coin of a predetermined diameter operating on said cam at said lower elevation for pivoting to a second posture for nonengagement with said slide assembly, said slide assembly being movable beyond said coin measuring position toward said operating position only when all of said plurality of latch arms are pivoted to said second postures; and coin ejection means including at least one open port in said slide housing through which coins are ejected.

3,978,961

TYPEWRITER CARRIAGE ACTUATING MECHANISM

James E. Thomson, Pleasant Lake, Mich., assignor to Western Stamping Corporation, Jackson, Mich.
Filed Apr. 21, 1975, Ser. No. 570,167
Int. Cl.^{2} B41J *19/26*
U.S. Cl. 197—89 **8 Claims**

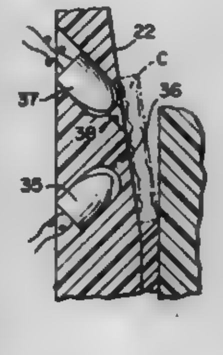


7. A carriage actuating mechanism for a typewriter which includes a frame, a carriage movable in a linear path on the frame and a ratchet-toothed part having a linear series of teeth and movable with and parallel to the path of movement of the carriage, including an actuator having a portion supported on the frame for movement in a path generally parallel to the path of the carriage beside but spaced laterally from said ratchet teeth, a pusher pawl pivotally connected to said portion of the actuator for movement along the path of the carriage and for swinging movement toward and from interengaged relation with the ratchet teeth about its axis of pivotal connection to said portion of the actuator, said pawl being movable longitudinally with the carriage to actuate the same in response to movement of the actuator, characterized by a detent pawl for yieldably opposing movement of the carriage, both of said pawls and the ratchet teeth having inclined surfaces whereby the pawls can be cammed out of engagement by force applied directly to the carriage to move the same in either direction.

3,978,962

SOLID STATE, COIN ACTIVATED MECHANISM

Lester Gregory, Jr., St. Petersburg, Fla., assignor to International Acceptor Corporation of Florida, St. Petersburg, Fla.
Filed Apr. 21, 1975, Ser. No. 569,992
Int. Cl.^{2} G07F *3/02*
U.S. Cl. 194—97 A **24 Claims**



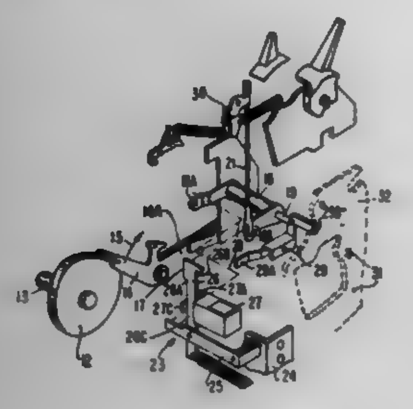
1. Coin rejector means, comprising: a downwardly inclined coin feed chute; means constraining a coin to move along said chute; light emitting means at one side of the chute directed across the path of travel of a coin moving along the chute; signal-producing light sensitive means at said one side of the chute adjacent the light emitting means and aimed to receive light reflected from a bona fide coin of predetermined reflectivity moving past the light emitting means and to produce a signal; said chute having means operatively associated with the light emitting means and the light sensitive means to preclude signal-producing reflection of light to the light sensitive means from an improper coin and the like which has less than the predetermined reflectivity; and gate means operative in response to a signal from the light sensitive means to pass a

bona fide coin of selected value and to reject a slug or coin and the like of improper value.

3,978,963
FORWARD AND REVERSE INDEXING MECHANISM FOR AUTOMATIC TYPEWRITER

Mariano Baffo, Woburn, Mass., assignor to Ty-Data, Inc., Nashua, N.H.

Filed June 4, 1975, Ser. No. 583,679
Int. Cl.^{2} B41J *19/90*
U.S. Cl. 197—114 R **5 Claims**



1. A combined forward and reverse indexing mechanism for an automatic typewriter including a rotatable platen, a rotatable power shaft, a cam mounted on said shaft for rotation therewith and a cam follower operatively engaging said cam and movable in response to rotation thereof, said mechanism comprising:

- A. a forward indexing ratchet attached to the platen;
- B. forward indexing means for incrementing said forward indexing ratchet and rotating the platen in a first direction;
- C. a reverse indexing ratchet attached to the platen;
- D. reverse indexing means for incrementing said reverse indexing ratchet and rotating the platen in a second direction opposite to said first direction,
- E. means for selectively coupling motion of the cam follower to said forward and reverse indexing means, respectively, said coupling means comprising
  - i. an actuator lever engaging the cam follower for movement therewith,
  - ii. an actuator arm including a portion which is pivotally attached to said lever and a free end,
  - iii. the free end of said arm being pivotal between first and second positions and having ridge means thereon so that in the first position the ridge means couples the motion of the cam follower only to said forward indexing means and in the second position the ridge means couples the motion of the cam follower only to said reverse indexing means, and
- F. means for engaging said actuator arm and for pivoting the free end of said actuator arm between the first and second positions.

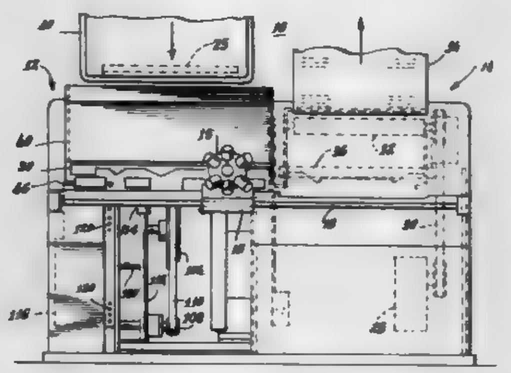
3,978,964
MAGNETIC HEAD CONTROL ASSEMBLY FOR A MAGNETIC PASSBOOK PRINTING SYSTEM

Okun Kwan, Trumbull, Conn., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed July 31, 1974, Ser. No. 493,398
Int. Cl.^{2} B41J *13/12, 19/92*
U.S. Cl. 197—127 R **8 Claims**

1. A printing apparatus having a printer for printing on a document containing a stripe on which indicia with respect to the printing operation to be performed may be written and/or read therefrom by a scanner assembly, which indicia is used in the printing operation, comprising

- a. a document printing station for receiving a document which is to be printed upon having a stripe thereon on which indicia may be recorded and/or read pertaining to the print operation which is to be performed on said document,
- b. said document printing station having a scanner assembly carrying a transducer head adapted to scan the stripe of said document positioned when received in said document printing station and a document positioning means having a home position for positioning said document for scanning by said scanner assembly and a plurality of other positions corresponding to the positioning of said document by said document positioning means for the printing of one or more lines thereon,

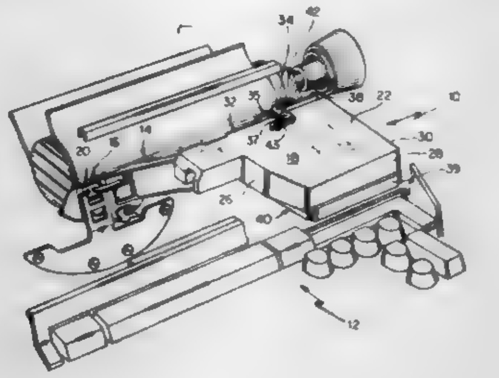


- c. a document guide means mounted on said document printing station for guiding said document into said document positioning means,
- d. a transducer head aperture located in said document guide means for providing a travel path for said transducer head to scan said stripe, and
- e. a plurality of pivotal fingers pivotally suspended on the front of said transducer head aperture which are pivoted out of the way of the transducer head as said transducer head moves in said aperture and which functions to prevent said document from catching in said aperture or otherwise interfering with the proper insertion of said document into said document positioning means.

3,978,965
RIBBON CARTRIDGE FOR AUTOMATIC TYPEWRITER FUNCTION

Stanley J. Klem, Cortland, N.Y., assignor to SCM Corporation, New York, N.Y.

Filed June 23, 1975, Ser. No. 589,646
Int. Cl.^{2} B41J *33/02, 19/62*
U.S. Cl. 197—151 **12 Claims**



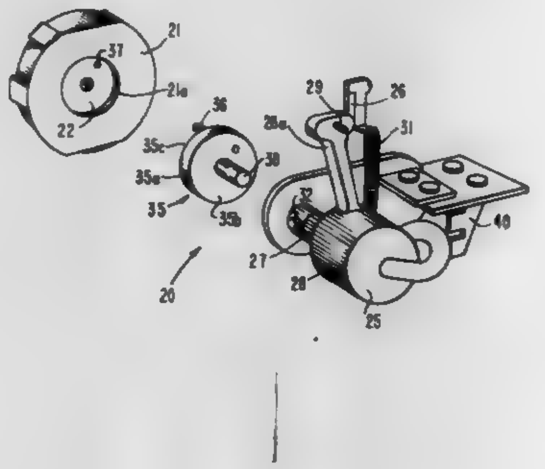
1. A cartridge for a typewriter, which typewriter includes means for receiving the cartridge and actuable means to perform a typewriter function for causing the alignment of a selected platen impact point relative to the typewriter print point, the cartridge comprising:

an abutment carried on the cartridge having means yieldable relative to the cartridge upon cartridge insertion and rigid relative to the cartridge upon cartridge removal for actuating the typewriter actuable means to thereby perform the typewriter function.

3,978,966
TABULATION OPERATION SENSING UNIT FOR AUTOMATIC TYPEWRITER

Mariano Baffo, Woburn, Mass., assignor to Ty-Data, Inc., Nashua

Filed June 4, 1975, Ser. No. 583,668
Int. Cl.^{2} B41J *21/00*
U.S. Cl. 197—176 **1 Claim**



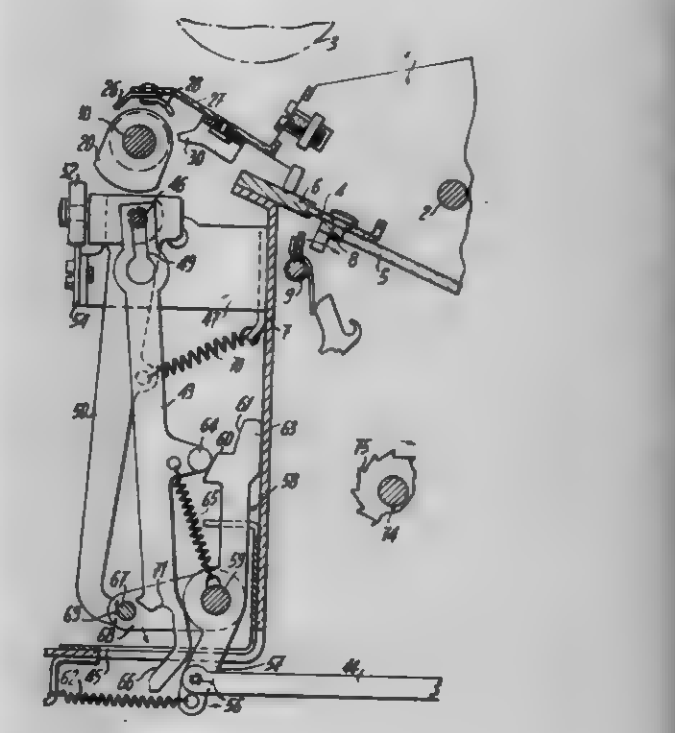
1. A tabulation sensing mechanism for use in an automatic typewriter of the type including tabulating means with a mainspring which unwinds during a tabulation operation, said mainspring including an outer housing, a central hub exposed through the outer housing which rotates when the mainspring unwinds and which includes an eccentrically located hole therein, said tabulation sensing mechanism comprising:

- A. a fluid clutch including
  - i. an outer housing containing a viscous fluid,
  - ii. a fluid clutch shaft rotatably mounted in said fluid clutch housing and protruding therefrom, the end of said shaft protruding from said fluid clutch housing being hollow,
  - iii. set screw means positioned on the hollow end of said shaft and tightenable into said shaft,
  - iv. said fluid clutch housing being pivotal between first and second positions in response to rotation of said shaft;
- B. switch means for generating an electrical signal in response to the pivotal movement of said fluid clutch housing from said first to said second position; and
- C. an interconnecting member for coupling the rotary motion of the mainspring hub to said fluid clutch shaft including
  - i. a disk having first and second major surfaces,
  - ii. an eccentric pin integral with said disk and extending axially from said first major surface for engaging the eccentrically located hole in the hub of said mainspring and to be rotated when the mainspring unwinds, and
  - iii. a centrally located shaft integral with said disk and extending axially from said second major surface, said disk shaft being dimensioned to fit within the hollow end of said fluid clutch shaft and to be secured therein by said screw means whereby said interconnecting member transfers the rotary motion of the mainspring to said fluid clutch shaft and the electrical signal generated by said switch means signifies that the typewriter is undergoing a tabulation operation.

3,978,967
TYPEWRITER TABULATOR

Gustave Gagnebin, Yverdon, Switzerland, assignor to Hermes Precisa International S.A., Yverdon, Switzerland

Filed Sept. 16, 1974, Ser. No. 506,583
Claims priority, application Switzerland, Sept. 17, 1973, 13285/73
Int. Cl.^{2} B41J *21/14*
U.S. Cl. 197—177 **11 Claims**



1. A tabulator for typewriters having a carriage carrying a type head and movable along a platen, the tabulator comprising a rack having a series of tabulator blades that are individually movable between an inactive position and a set position, and the carriage comprising a carriage stop for cooperating with a blade in the set position, and wherein the improvement comprises a tabulator rod defining an axis, comprising the rack, and carrying the blades; means for mounting said tabulator rod free to pivot about said axis and to move therealong from a rest position; means for pivoting said tabulator rod under control of the typist to a plurality of distinct angular positions for tabulation, whereby the pivoting of said tabulator rod moves said blades into a plurality of different angular positions from a rest position; first and second areas comprised by each of said blades; first and second fixed stops comprised by said carriage and moving therewith and so located thereon, with respect to said first and second areas, that, when said carriage is stationary in a determined position for setting the tabulator, they face and cooperate with respective ones of said first and second areas of a blade for setting and subsequently clearing the latter during pivoting of said tabulator rod; and wherein said second areas are so located on said blades that a second area is placed in the path of the carriage stop when the blade thereof is rotated to the set position, so that when setting the tabulator said carriage stop of the moving carriage hits said second area of the set blade and causes said tabulator rod to move along said axis with said carriage; and selector means under control of the typist for limiting the axial movement of said tabulator rod and therefore of said carriage so that the latter is stopped for typing at the chosen tabulating position.

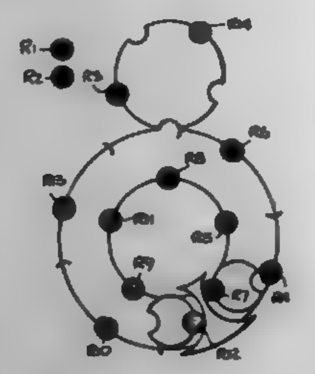
3,978,968
ARTICLE HANDLING SYSTEM

Richard S. Rose, Schenectady, N.Y., and Burton P. Clark, St. George, Vt., assignors to General Electric Company, Burlington, Vt.

Division of Ser. No. 377,396, July 9, 1973, Pat. No. 3,868,884. This application Oct. 24, 1974, Ser. No. 517,535

Int. Cl.² B65G *47/52*

U.S. Cl. 198—339 **6 Claims**



1. An article handling system including:
a plurality of work stations disposed in an annular row about a central axis;
a distributor ring journaled for rotation about said central axis and having
a first plurality of first pockets disposed in an annular row about said central axis, and
a second plurality of second pockets disposed in an annular row about said central axis,
said first and said second pluralities of pockets being in congruent annular rows and alternately interspaced;
feeding means for receiving work pieces from a supply and for providing these work pieces to said first plurality of pockets in a train; and
transfer means journaled for rotation about said central axis and having
first means for transferring work pieces from said first plurality of pockets to said work stations, and
second means for transferring work pieces from said work stations to said second plurality of pockets,
said first means of said transfer means including a first sprocket journaled for rotation about its own axis and for traveling along a path concentric with said central axis, and
said second means of said transfer means including a second sprocket journaled for rotation about its own axis and for traveling along a path concentric with said central axis;
said feeding means including a feeder sprocket; and
said transfer means further including:
guide means journaled for oscillation between a first position wherein it guides a work piece from said feeder sprocket into said first sprocket, and a second position wherein it guides a work piece from said second sprocket into said feeder sprocket.

3,978,969
METHOD AND APPARATUS FOR THE MANUFACTURE OF FILTER-TIPPED CIGARETTES

Robert Ernest Williams, and Clifford Russell Marritt, both of London, England, assignors to Molins Limited, London, England

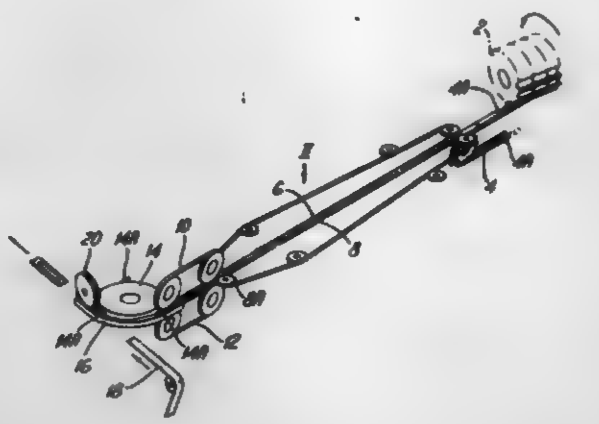
Filed July 16, 1974, Ser. No. 489,025

Claims priority, application United Kingdom, July 17, 1973, [illegible]

Int. Cl.² B65G *47/00*

U.S. Cl. 198—461 **21 Claims**

1. Apparatus for feeding rod-like articles comprising means for supplying a stream of axially-moving rod-like articles, a first pair of cooperating belts for receiving said articles from said supply means and arranged such that in use said articles are gripped between the belts and accelerated thereby to space said articles apart in an endwise-moving stream, a second pair of cooperating belts arranged in line with said first pair of belts to convey said spaced-apart articles in an endwise-moving stream from said first pair of belts, said second pair of belts being arranged to grip said rod-like articles in a plane substantially at 90° to the plane in which said first pair of belts grip said articles, and a timing device for receiving the spaced-apart articles from said second pair of belts and arranged to enter the spaces between the articles and engage the ends of successive articles to carry said articles forward at regular intervals in an endwise-moving stream.



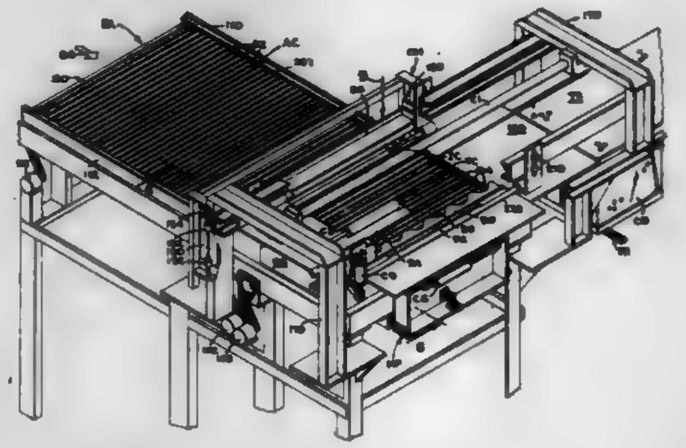
3,978,970
LOADER FOR CONTAINERIZED COOKER

James L. Reimers, Saratoga, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Apr. 25, 1974, Ser. No. 464,283

Int. Cl.² B65G *47/00*

U.S. Cl. 198—425 **7 Claims**



1. Container handling apparatus for assembling a pattern for containers and transferring the assembled pattern into a receptacle, said apparatus comprising a conveyor having a container delivery section and a pattern forming section, a receptacle at one side of the conveyor pattern forming section, a pocketed pattern bar mounted at the delivery end of the pattern forming section for arresting containers on the conveyor, means for temporarily arresting a transverse row of containers on said conveyor delivery section to form a pattern of containers on the pattern forming section, a separator plate having peripheral downturned flanges for confining the pattern, means for depositing said separator plate on said pattern of containers, means for moving said pattern bar clear of the pattern of containers, and ejector means for engaging the separator plate and pushing the plate and the pattern of containers transversely off the pattern forming section of said conveyor and into said receptacle.

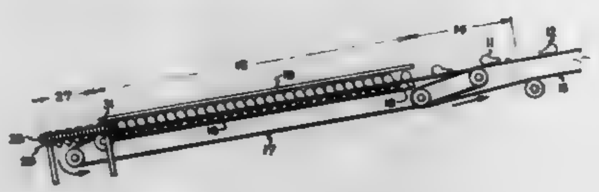
3,978,971
BULB ACCUMULATOR

Jonathan M. Conrow, Cleveland Heights; Myron Radzykewycz, and Darrell W. Markijohn, both of Lakewood, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed June 6, 1975, Ser. No. 584,390

Int. Cl.² B65G *47/29*

U.S. Cl. 198—462 **8 Claims**



1. An in-line bulb accumulator for electric lamp bulbs comprising:
a pair of spaced-apart conveyor belts for holding bulbs therebetween;
a drag strip positioned below and spaced from said belts so that the cullets of said bulbs are inclined away from the direction of travel and drag on said strip when moving, said bulbs stacking when accumulating wherein each bulb is substantially supported by the preceding bulb and said strip and each accumulated bulb has minimal contact with said belts; and
horizontal escapement means for selectively debouching bulbs from said accumulator causing less than all of the accumulated bulbs to contact said belts and move with said belts.

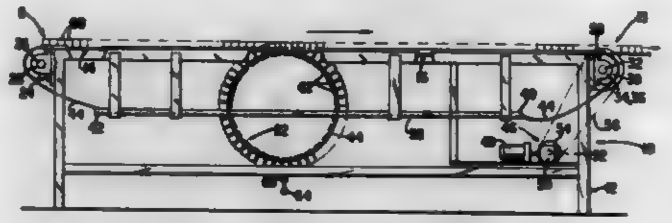
3,978,972
CAN INVERTING AND CLEANING APPARATUS

Frank E. Lyle, Duluth, Ga., assignor to American Home Products Corporation, New York, N.Y.

Filed Aug. 22, 1974, Ser. No. 499,708

Int. Cl.² B65G *17/46*

U.S. Cl. 198—836 **4 Claims**



1. Apparatus for inverting open ended, ferromagnetic articles comprising:
A. a support structure;
B. a helical support member supported from said support structure;
C. a plurality of magnets coupled to the inside of said helical support member;
D. an endless belt;
E. means to move said belt from one end of said support structure to the other while passing around the outside of said helical support member and maintaining the open ends of the ferromagnetic articles continuously facing away from said helical support member.

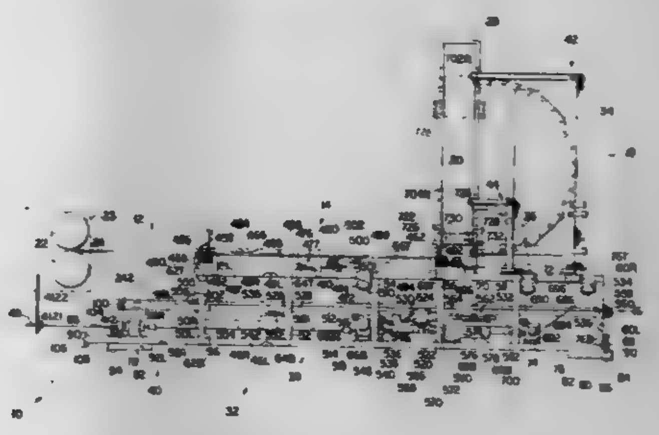
3,978,973
MACHINE FOR INVERTING AND STACKING FLAT ARTICLES

Allen H. Lloyd, Terrace Park; Edwin A. Molitor, Miami Township, Clermont County; Quentin E. Honnert, Cincinnati; Ronald H. Porter, Milford, and Norman P. Crowe, Miami Township, Clermont County, all of Ohio, assignors to Multifold-International, Inc., Milford, Ohio

Filed Dec. 12, 1974, Ser. No. 531,860

Int. Cl.² B65G *47/18;* **B65H** *5/22*

U.S. Cl. 198—401 **7 Claims**



1. In a machine for delivering flat articles, the combination of a hopper, input conveyor means for supplying articles to an upper portion of the hopper, a first hopper conveyor belt means extending transversely of the hopper in the lower portion thereof, the first hopper conveyor means supporting articles in the hopper, a second hopper conveyor means, the second hopper conveyor means including a pair of spaced conveyor belts disposed on opposite sides of the first hopper conveyor means and directed substantially parallel to the first hopper conveyor means, the second hopper conveyor means having a pick-up station adjacent and underlying a side wall of the hopper, the second hopper conveyor means receiving articles from the hopper at the pick-up station, there being an unobstructed space between the belts of the second hopper conveyor means downstream of the first hopper means, and means for driving the first and second hopper conveyor means in a direction to advance articles from the hopper onto the second hopper conveyor means to be delivered thereby.

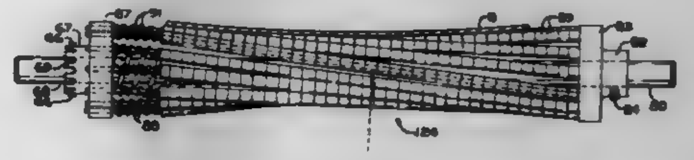
3,978,974
CONVEYING GLASS SHEETS OF DIFFERENT CURVATURES

Jack D. Morrissey, Tyrone, and Robert G. Frank, Murrysville, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 4, 1975, Ser. No. 546,854

Int. Cl.² B65G *13/02*

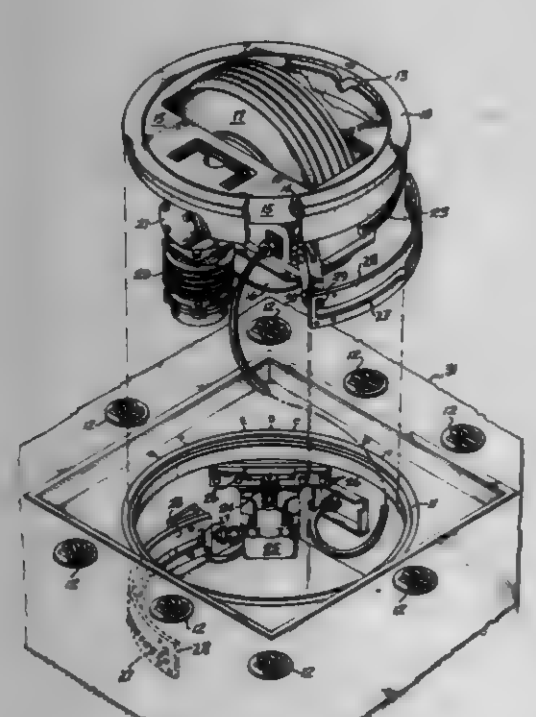
U.S. Cl. 198—782 **10 Claims**



1. A conveyor roll for use in transporting glass sheets between spaced, opposed plenum chambers comprising a center driving shaft, a pair of axially spaced hubs mounted on said center shaft, a plurality of flexible peripheral shafts interconnecting peripheral portions of said hubs, each peripheral shaft having sufficient structural rigidity to support a moving glass sheet without appreciable distortion, means composed of a material harmless to glass mounted in glass contacting relation about the perimeter of said roll between said roll and said moving glass sheets engaged by said roll, means to fix a first one of said hubs to said center shaft in a given angular relation thereto, the second of said hubs being rotatably mounted on said center shaft in spaced relation to said fixed hub for receiv-

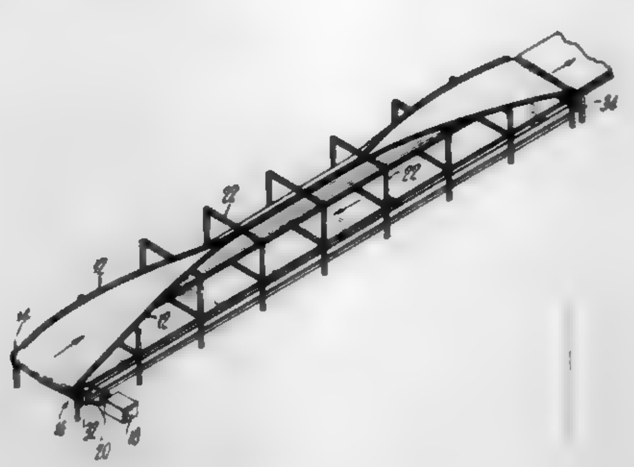
ing the end portions of said peripheral shafts opposite those received by said fixed hub, hub locking means positioned on said center shaft and comprising a hub locking member constructed and arranged to lock said second hub in any one of a series of discrete, preselected, readily obtained angularly disposed orientations relative to said first hub, and means to urge relative movement between said hub locking member and said second hub relative to the longitudinal axis of said center shaft to engage said second hub with said hub locking means in any selected one of said angularly disposed, discrete orientations, each of said orientations providing a discretely different configuration for the outer surface of said conveyor roll.

3,978,975
CARGO POWER DRIVE UNIT
Edwin James Herbes, and Ray Vere Riggs, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed June 30, 1975, Ser. No. 591,974
Int. Cl.² B65G *13/02*
U.S. Cl. 198—782 **4 Claims**



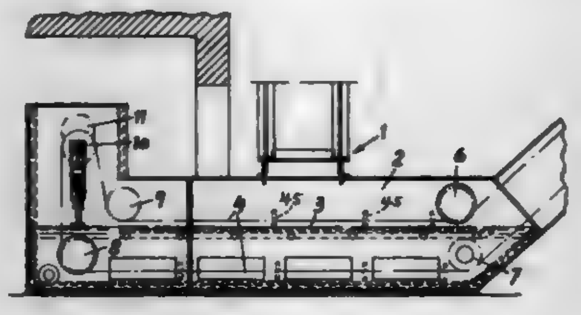
1. A power drive unit for cargo handling, comprising: a wheel mounted on an axle; means mounting the axle horizontally; means for rotating the wheel; means for vertically positioning the wheel to three positions: a raised position for maximum frictional engagement with the undersurface of cargo positioned thereon to move it in a horizontal direction, a lowered position for complete disengagement with the undersurface of cargo, and an intermediate position therebetween for partial frictional engagement with the undersurface of cargo positioned thereon during transition between predetermined directionally orientated cargo driving positions; said means for vertically positioning the wheel including mechanism for changing the directional orientation of the horizontal driving force of the wheel, while the wheel is substantially at said intermediate position; and said vertically positioning means, the wheel, and the directional orientation change mechanism, in combination, imparting a vertical raising and lowering motion to the wheel without changing the directional orientation of the wheel as it is moved between said raised position and said intermediate position.

3,978,976
CONVEYOR WITH METALLIC MESH BELT DISTORTION COMPENSATING MEANS
Ewald Albert Kamp, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.
Filed Mar. 30, 1972, Ser. No. 239,628
Int. Cl.² B65G *15/08*
U.S. Cl. 198—617 **8 Claims**



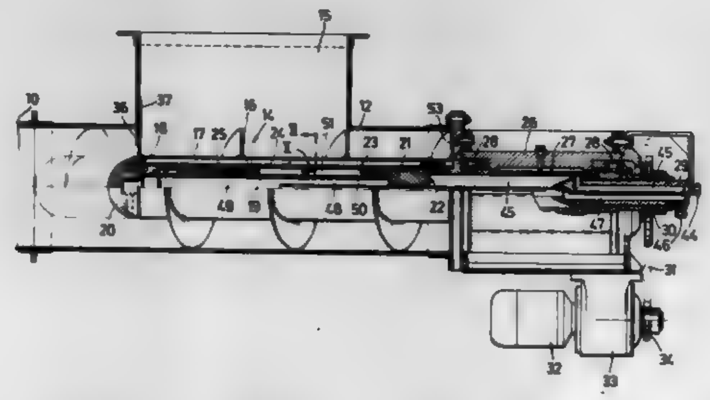
1. A moving belt mechanism comprising:
a continuous belt which is substantially inelastic and is susceptible to only limited distortion and flexing,
drive means engaging said belt along lines parallel and proximate with or coincident with the edges of said belt,
belt edge guide means contacting said belt along lines parallel and proximate with or coincident with the edges of said belt to guide the edge areas of said belt along predetermined paths, and
belt contouring means comprising at least one belt shaping device in a contoured shape of preselected design contacting the surface of said belt so as to change the cross-sectional profile of said moving belt in a pre-selected distortion-compensating sequence such that the distortions introduced into said belt by variations between the paths of the center of said belt and the edge areas of said belt are compensated for and thus removed, said contoured shape being a curve such that when said belt is passed across said device the surface of the belt is displaced from the place of the edges of said belt in a smooth curve, said belt shaping device comprising a plurality of adjacent pulleys freely rotating about a straight central axis, said pulleys varying in diameter to provide on their outer surfaces a smoothly curved surface.

3,978,977
APPARATUS FOR INDEPENDENT ADJUSTMENT OF THE TENSION OF CONVEYOR CHAINS
Bernhard Michelbrink, Bislich, and Manfred Goeke, Oberhausen, both of Germany, assignors to Babcock & Wilcox Limited, London, England
Filed Apr. 22, 1974, Ser. No. 462,727
Int. Cl.² B65G *15/30*
U.S. Cl. 198—816 **4 Claims**



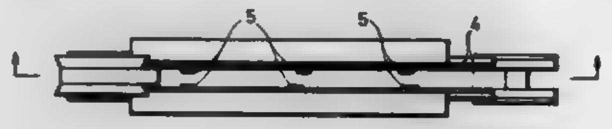
1. A conveyor having two parallel flexible transversely connected members each having a tensioning device separately adjustable to maintain a desired tension, means for continuously moving the members in unison, each tensioning device comprising a slideable member, a guide member in which the slideable member is free to move only in a predetermined linear path, an adjustable sprocket wheel rotatable about a separate axle disposed within the slideable member, and a linearly adjustable threaded spindle having one end set against the slideable member and providing over the full range of rotation of the spindle linear movement to the slideable member to adjust the tension of the flexible member.

3,978,978
APPARATUS FOR CONVEYING PARTICULATE MATERIALS
Martin Herter, Amdriesch 19, B-5021 Geyen, Germany
Continuation-in-part of Ser. No. 338,972, March 7, 1973, abandoned. This application June 9, 1975, Ser. No. 584,982
Claims priority, application Germany, Mar. 10, 1972, 2211549
Int. Cl.² B65G *33/00;* F04D *3/02;* F04B *15/02*
U.S. Cl. 198—601 **6 Claims**



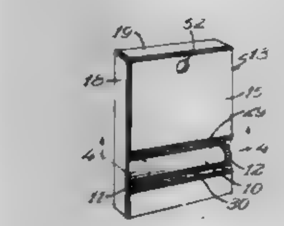
1. Apparatus for conveying-away metal chips or other materials, which transmit an energy initiated into them onwards in the direction of introduction of the energy with minimal loss, comprising a channel which extends from at least one material supply station to a remotely located material delivery station, and drive means for moving said materials through the channel, characterized in that the channel is an inwardly smooth conveying pipe (10), and the drive means includes a tubular housing (12) and a worm (14) rotating in said tubular housing (12) and reciprocably driven in axial direction, said worm including a worm tube and an axial drive disposed in said worm tube, said axial drive having a piston (21) which can be stressed on both sides with pressurized medium and which is disposed in the axis of the worm and is connected to the worm tube (17), the cylinder of which piston consists of an axially fixed tube (24) provided with a rotational drive (30–34), said fixed tube being disposed between the worm tube and the piston, while the pressurized medium supply line (48) extends centrally through the piston so that pressure can be applied to one side (23) of the piston.

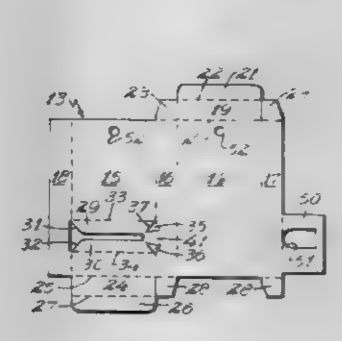
3,978,979
APPARATUS FOR ARRANGING, SEPARATING AND POSITIONING OF ITEMS BEING CONVEYED
Sandor Mezey, Budapest, Hungary, assignor to Egyesult Izzolampa ES Villamossagi RT, Budapest, Hungary
Filed Mar. 14, 1975, Ser. No. 558,502
Int. Cl.² B65G *47/14*
U.S. Cl. 198—394 **2 Claims**



1. An apparatus for the arranging, separating and positioning of individual items which have a bulbous portion and a neck portion, the apparatus comprising two mutually spaced parallel, movable endless conveying elements, and pairs of elements for regulating the positioning of the items arranged at the adjacent sides of the conveying elements, the spacing of the regulating elements in the direction at right angles to the length of the conveying elements is larger than the greatest width of the neck portion.

3,978,980
CARTON
Harry I. Roccaforte, Western Springs, Ill., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.
Filed June 27, 1975, Ser. No. 591,103
Int. Cl.² B65D *5/50*
U.S. Cl. 206—45.14 **1 Claim**

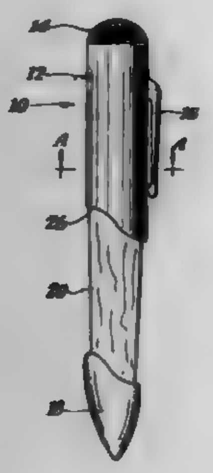




1. In a display carton for a cylinder or tube, said carton being rectangular in shape and having parallel front and back panels and two parallel side panels with a die cut section formed in said front panel, said section including two parallel shadow panels defined by hinge lines and extending the length of said die cut section and separated from each other, and means at one end of said die cut section adjacent a first side panel of said carton for engaging and restraining a first end of said tube, an improved die cut section in said front panel for supporting the end of said tube opposite said first end, said improved section comprising:
a center support member connected to a second side panel along a hinge line perpendicular to said shadow panels, said support member having die-cut sides and a fourth rounded edge opposite said hinge line, said member connected to said shadow panels by a nick at each end of said fourth rounded edge;
a triangular member positioned between each of the sides of said support member and said shadow panels, said triangular members connected to said second side panel along hinge lines extending between the ends of said hinge line connecting said support member and the point of intersection of the lateral edge of said front panel and said triangular members connected to said shadow panels to said front panel, said triangular members connected to said shadow panels by at least a nick near the ends of said fourth rounded edge.

3,978,981
LIGHTED CIGAR HOLDER

Francis S. Musick, 1169 A1A, Hillsboro Beach, Fla. 33062
Filed May 2, 1975, Ser. No. 573,815
Int. Cl.² A24F *15/00*; B65D *85/10*, *85/12*
U.S. Cl. 206—276 3 Claims



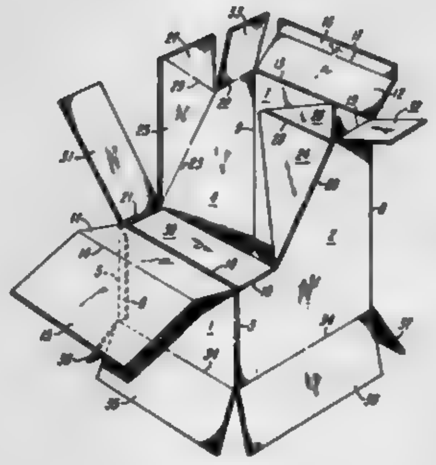
1. A lighted cigar holder for retaining and carrying a lighted cigar comprising:
- a tubular cigar receptacle body, said body diameter being sized to receive an end longitudinal portion of a lighted cigar, said body having a first end and a second end, said first and second ends being open;
- a mesh screen disposed over and connected to said first end of said receptacle body;
- a helically shaped cigar receiving spring which is thermally conductive, said spring being connected inside said tubular body, said spring having a larger diameter sized to encompass the diameter of a cigar adjacent the second end of said tubular body and a smaller diameter at the first end, and
- a plurality of ribbed spacing means connected and disposed longitudinally along said interior receptacle body, said larger diameter spring portion conected to said ribbed means.

3,978,982
FORM-FITTING SHIPPING CONTAINER

Richard K. Duncan, Lithonia, Ga., assignor to The Mead Corporation, Dayton, Ohio
Filed Dec. 9, 1974, Ser. No. 530,509
Int. Cl.² B65D *85/54*
U.S. Cl. 206—326 9 Claims

1. A blank of substantially rectangular outline defined by spaced upper and lower longitudinal edges and spaced transverse side edges, adapted to be formed into a stepped container having a reinforced inclined upper front wall, comprising
- a series of rectangular blank sections including a front wall section, two side wall sections, and a rear wall section, arranged in side-by-side relation;
- said front wall section comprising, in the order named, a lower front wall panel extending upwardly from said lower edge of said blank, an intermediate horizontal wall panel and an upper front wall panel, foldably joined to each other along spaced first and second longitudinal fold lines, respectively;
- said rear wall section comprising a rear wall panel extending upwardly from said lower edge of said blank and having a transverse dimension substantially greater than that of said lower front wall panel, and a top wall panel joined to said rear wall panel along an upper longitudinal fold line;
- each of said side wall sections comprising a side wall panel having a stepped upper edge defined by
- a short lower score line aligned with said first fold line and having a length corresponding to the spacing of said first and second fold lines;
- a short upper score line aligned with said upper fold line and having a length corresponding to the transverse dimension of said top wall panel;
- a diagonal score line interconnecting said lower and upper score lines;
- each of said side wall sections including reinforcing flaps foldably joined to said lower and upper score lines, respectively, and defined by slots extending from the ends of said lower and upper score lines to said upper edge of said blank; and
- a reinforcing panel and a stabilizing flap disposed between said reinforcing flaps, said reinforcing panel being foldably joined to said side wall panel along said diagonal score line and said stabilizing flap being foldably joined to said reinforcing panel along a fold line perpendicular to said diagonal score line.

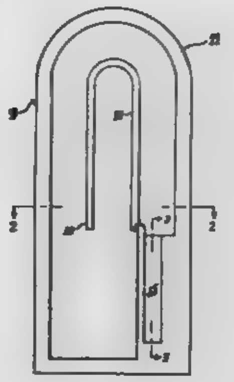
4. A stepped shipping container formed from a single unitary blank, comprising
- a. a lower front wall;
- b. a rear wall spaced from said lower front wall and having a vertical extent substantially greater than that of said lower front wall;
- c. an inwardly extending intermediate horizontal wall joined to the upper edge of said lower front wall and having an inner edge spaced from said rear wall;



- d. a forwardly extending horizontal top wall joined to the top edge of said rear wall and having a forward edge spaced from the plane of said lower front wall;
- e. an upper inclined front wall integrally joined to said intermediate horizontal wall and extending between said inner edge of said intermediate horizontal wall and said forward edge of said top wall, respectively;
- f. opposing side walls interconnecting said lower front wall and said rear wall along vertical fold lines, each of said side walls having a stepped upper edge defined by
- aa. an intermediate horizontal edge adjacent said intermediate horizontal wall and coextensive therewith;
- bb. an upper horizontal edge adjacent said top wall and coextensive therewith; and
- cc. an inclined edge interconnecting said intermediate horizontal and upper horizontal edge, respectively;
- g. a reinforcing panel joined to said inclined edge of each of said side walls and folded into underlying face-contacting relation with said upper inclined front wall;
- h. a stabilizing flap joined to said reinforcing panel along a horizontal fold line and underlying said top wall;
- i. and a top wall reinforcing flap joined to said upper horizontal edge of each of said side walls and folded into cooperating relation with said stabilizing flap.

3,978,983
CATHETERIZATION TRAY WITH LUBRICATION CHANNEL

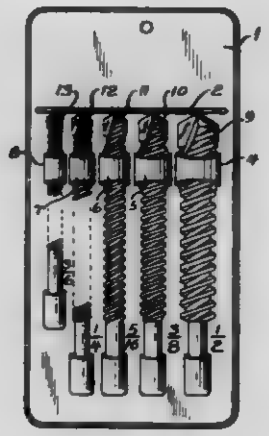
Michael Warren Brezette, Roselle, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Nov. 4, 1974, Ser. No. 520,594
Int. Cl.² B65D *85/08*; A61M *25/00*
U.S. Cl. 206—364 6 Claims



1. In a tray useful for catheterization of a urethra by a urethral catheter, said tray having an upper surface with at least one compartment recessed therefrom for receiving said catheter or other implements necessary to said catheterization; the improvement which comprises:
- a lubrication channel for holding a lubricant while it is applied to said catheter, said channel recessed from said upper surface of said tray and closed at least at one end thereof, the length of said channel being substantially less than the length of said catheter and the lower surface of said channel arcuately rising to said upper surface at said closed end of said channel.

3,978,984
DRILL PACK HOLDER

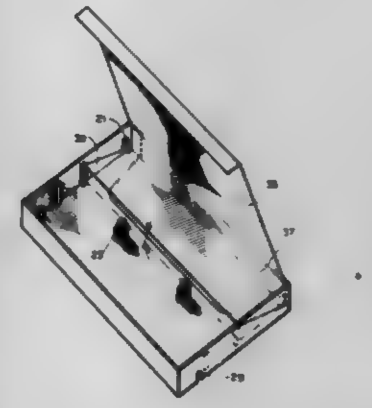
William E. Cowley, Louisville, Ky., assignor to Vermont American Corporation, Louisville, Ky.
Filed Feb. 11, 1976, Ser. No. 657,149
Int. Cl.² B65D *85/20*, *85/24*
U.S. Cl. 206—379 4 Claims



1. A holder for drills comprising a main planar sheet of tough flexible molded plastic having a front face and a back face, a thin transverse integral flange extending across the upper part of the front face of said sheet and lying at right angles to the plane of the main sheet, a series of parallel, vertically extending loops of graduated diameters corresponding to the sizes of the drills to be held thereby, and extending side-by-side in a row transverse to the longitudinal axis of the main sheet and being disposed a short distance below said flange, said loops being of graduated diameter for receiving and holding drills of corresponding diameters and lengths to fit with sliding clearance between the drills and the loops, the drills to be held thereby, said plate having pockets open at their upper ends toward the loops and being closed at their lower ends for receiving and holding with sliding clearance the lower ends of the articles to be mounted, the pockets being disposed at levels suitable for supporting the shanks of the drills with their upper ends substantially in a straight transverse line immediately below the aforesaid flange, the base plate extending upwardly above the flange a distance great enough to provide leverage for bending the base plate, in the region between said flange and said loops, to expose the upper ends of the supported drills for convenient grasping by the thumb and finger of the operator, said flexed portion of the back being resilient and when released springing back into substantially the plane of the sheet below the loops.

3,978,985
TWO-PIECE CASE

Gerald Boyd Zinnbauer, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Apr. 30, 1975, Ser. No. 572,994
Int. Cl.² B65D *85/67*
U.S. Cl. 206—387 8 Claims



1. A case comprising a rigid rectangular receptacle and a rectangular cover formed from flexible sheet material, said receptacle having a pair of side walls, a front wall, and a bottom wall integrally connected together, said side walls having a pair of rear corners, a pair of pivot elements extending from the inner surfaces of said receptacle adjacent to and in closely spaced relationship to said side walls and said rear corners, said cover having two parallel fold lines defining a top panel, a rear panel and a bottom panel, said pivot elements being engaged with said bottom panel contiguous to said fold line between said bottom and rear panels for pivoting of said bottom panel thereabout from a closed position to an open position with said pivot elements further maintaining said rear panel adjacent said receptacle rear corners.

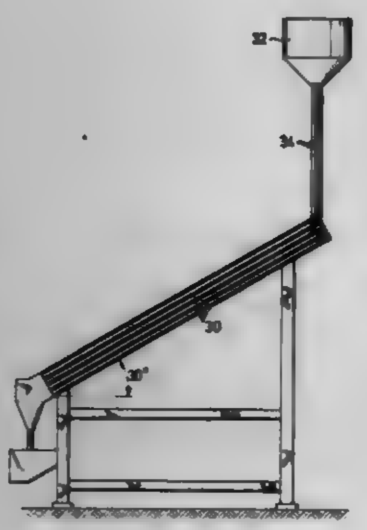
3,978,986
PROCESS AND APPARATUS FOR SEPARATING ASPHERICAL PARTICLES FROM SPHERICAL PARTICLES

Hartmut Schmidt, Wiesbaden-Bierstadt; Jürgen Neumann, Russelsheim, and Reinhold Arneth, Budenheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed Oct. 31, 1974, Ser. No. 519,661
Claims priority, application Germany, Nov. 5, 1973, 2355135
Int. Cl.² B07C *9/00*
U.S. Cl. 209—112 1 Claim

1. An apparatus for separating spherical particles from aspherical particles in an admixture thereof, comprising:
- a. a base member;
- b. a plurality of planar members substantially parallel to one another and spaced apart from one another, said plurality of planar members being secured to said base member at an inclined angle with respect to horizontal;

c. means, operatively associated with each planar member of said plurality of planar members, for directing said mixture of particles upon the associated planar member;

d. means, operatively associated with each planar member of said plurality of planar members, for producing a relative velocity between the associated planar member, on the one hand, and said particles, on the other hand, each relative velocity producing means including means for impinging said particles onto said planar member at a relative velocity having a principal directional component approximately normal to the steepest inclination gradient of the associated planar member; the plurality of particle impinging means including a storage vessel for said particles elevated above said planar members and conduit means communicating with the inside of said vessel and leading to said planar members, each conduit means including outlet means angularly bent in the direction of the plane of each planar member; and



e. means positioned relative to said plurality of planar members for collecting a portion of said particles in a zone of said planar members wherein predominantly spherical particles have accumulated as a result of their greater tendency to roll in response to said relative velocity than said aspherical particles.

3,978,987

CUTTING OF A STREAM OF TOBACCO INTO MEASURED WEIGHT PORTIONS

Richard Ernest Gartside Neville, Salisbury, and Frank Baxter Bardsley, Newton Toney, both of England, assignors to AMF Incorporated, White Plains, N.Y.

Filed June 18, 1974, Ser. No. 480,453

Claims priority, application United Kingdom, July 3, 1973, 31444/73

Int. Cl.² B07C *5/16*

U.S. Cl. 209—121 **25 Claims**

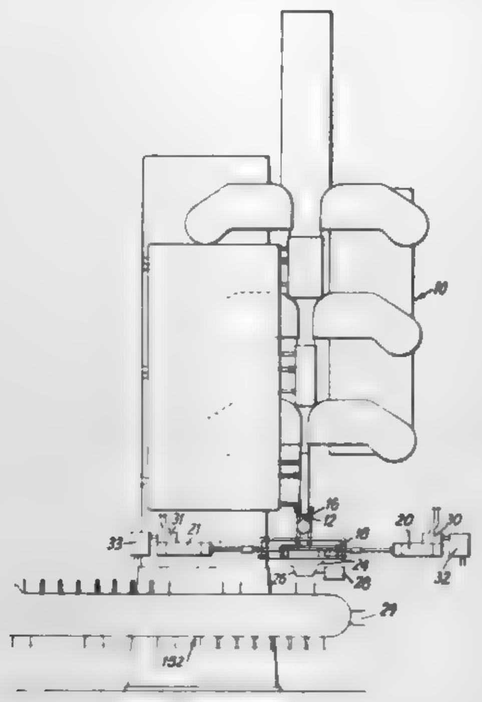
1. A method of dispensing portions of particulate material of predetermined weight, comprising

providing a flow of particulate material through a measuring area,

measuring the flow through the measuring area and providing a signal representing the measured flow rate of the particulate material,

integrating the flow rate signal with respect to time to provide a resultant signal of a value proportional to the total weight of the particulate material passed through the measuring area,

delivering the particulate material to a separating means and separating the particulate material in said separating means from the flow through the measuring area when the value of the resultant signal is proportional to the desired predetermined weight.



3,978,988

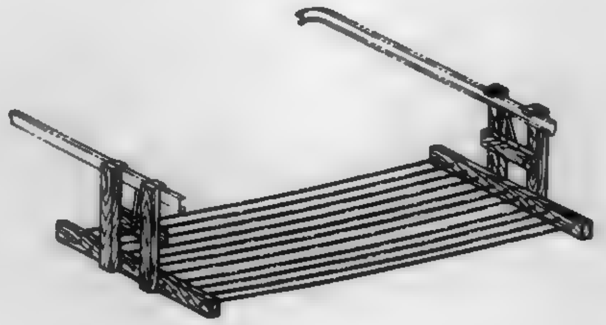
PORTABLE GARAGE CLOTHESLINE HOLDERS

Donna Lea Berg Friedeberg, 103 Farmstead Lane, Glastonbury, Conn. 06033

Filed Aug. 26, 1974, Ser. No. 491,937

Int. Cl.² D06F *53/04*

U.S. Cl. 211—113 **1 Claim**



1. An overhead clothesline support adapted to be attached to an overhead garage door track, said support comprising a horizontally disposed elongated end-beam having two ends and having means along its length for attaching clothesline thereto, a pair of vertically disposed, spaced, beams each having a first end and a second end, the first end of each beam being secured to said end-beam intermediate the ends of the end-beam, a pair of J-shaped hooks opening downwardly and having a long leg and a short leg, the long leg of each hook being secured to the second end of a beam, said short leg of each hook lying in a plane spaced from the beams and being adapted to hook over the garage door track, a horizontally disposed crossbeam having ends and extending between the beams, said crossbeam being secured at its ends to the beams intermediate the first and second ends thereof, a brace extending upwardly from said crossbeam toward said plane of the hook short legs and said brace adapted to engage said garage door track to retain said J-shaped hooks in engagement with said track without interfering with garage door operation in said track.

3,978,989

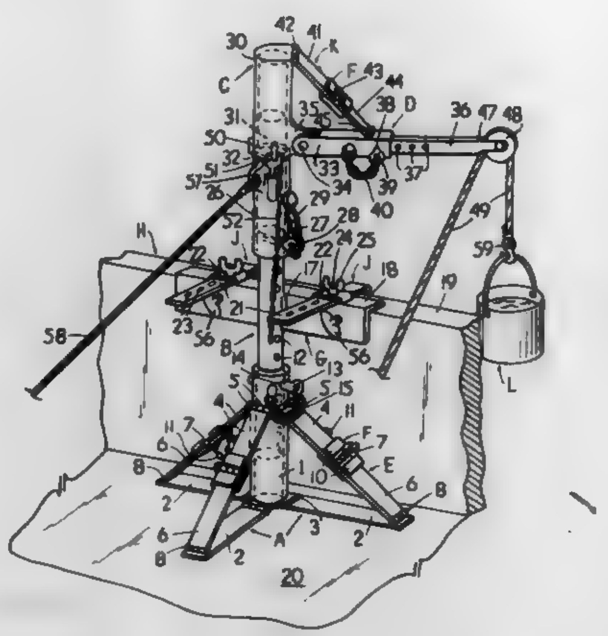
EXTENSIBLE AND COLLAPSIBLE PORTABLE DERRICK

Fred Avila, Jr., 27318 Tyrrell Ave., No. C-6, Hayward, Calif. 94544

Filed Feb. 7, 1975, Ser. No. 548,086

Int. Cl.² B60P *1/46;* **B66P** *23/00;* **B66C** *23/62*

U.S. Cl. 212—1 **1 Claim**



1. A portable derrick comprising:

a. a base including a hollow upright with hinged base members swingable outwardly into a plane that extends at right angles to the axis of said upright;

b. hinged braces interconnecting the outer ends of said base members with said upright and each consisting of two parts hinged together with removable clips holding said two parts in lineal alignment with each other when said base is in operative position;

c. an intermediate unit having an extension removably and slidably receivable in said upright with means for securing said intermediate extension in said upright in adjusted position;

d. a transversely extending bracket, angle-shaped in cross section and having the midpoint of its front face permanently secured to the extension of said intermediate unit, the top of said bracket lying in a plane which extends at right angles to the axis of said extension;

e. a hook disposed on each side of said extension and being adjustably received in sleeves secured to the top of said bracket, the outer ends of said hooks extending downwardly and cooperating with the front face of said bracket to form shoulder engaging members when said intermediate unit is freed from the hollow upright of said base when it is desired to carry the intermediate unit independently of said base;

f. means carried by said sleeves for securing said hooks in adjusted position therein for permitting said hooks to contact with one side of a building parapet and the front face of said bracket being disposed adjacent to the other side of the parapet, and hand screws on the front face for clamping the bracket to the parapet;

g. a top unit having a cap removably and rotatably mounted on the top of the extension for said intermediate unit;

h. an extensible arm pivotally secured to said cap and being swingable from a closed position, where the length of the arm parallels the axis of said cap, into an operative position where said arm projects radially from said cap, and a pulley mounted at the outer end of said arm; and

i. a hinged brace for supporting said arm in operative position, said cap and arm being rotatable around said extension.

3,978,990

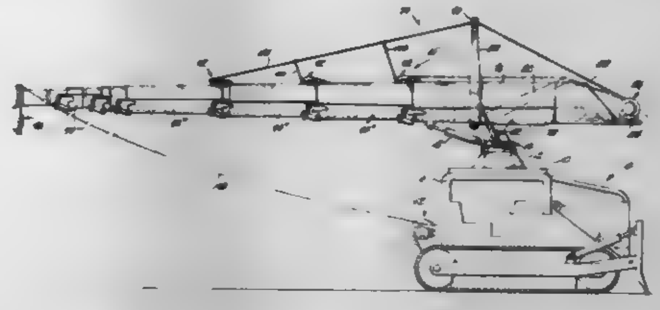
MOBILE LOG SKIDDER

Thomas H. Honea, 11258 Slater Ave. NE., Kirkland, Wash. 98033

Filed July 12, 1974, Ser. No. 487,902

Int. Cl.² B66C *23/00*

U.S. Cl. 212—9 **21 Claims**



1. In a mobile log skidder, a carriage having an extensible and retractable multi-sectioned boom mounted thereon, free spooling cable winding winch means on the carriage having a haulback cable wound thereon independently of the boom, means connecting the haulback cable to an extensible section of the boom for payout of the cable with the section on extension of the boom, means in the connection between the cable and the section whereby an operator can detach the cable from the boom at the site of a log for haul in of the cable by the winch means independently of the boom, means for lowering and raising the extensible section of the boom in relation to the ground, and means on the attachment end of the cable for engaging a long, said log engaging means being releasably engaged on the extensible section of the boom and responsive to lowering and raising of the section to alternately engage a log and disengage from the boom, respectively.

3,978,991

STORAGE INSTALLATION WITH AUTOMATIC PICK-UP DEVICE

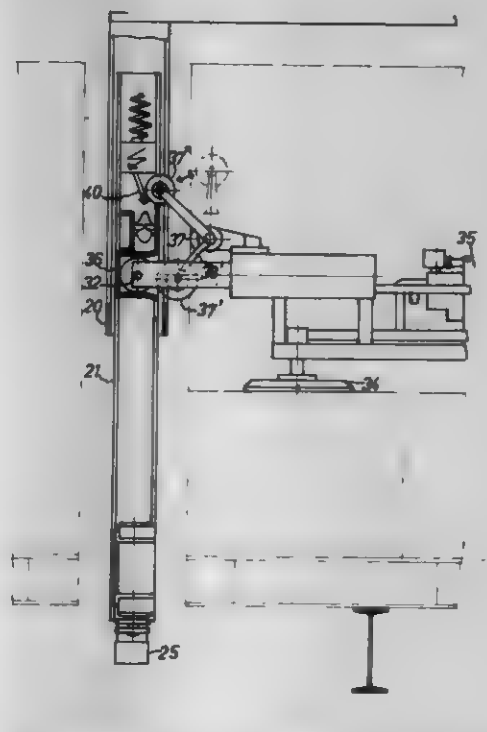
Uwe Kochanneck, 81, Neuer Graben, Dortmund, Germany (46)

Continuation-in-part of Ser. No. 442,715, March 26, 1974. This application Aug. 15, 1974, Ser. No. 488,359

Claims priority, application Germany, Sept. 3, 1973, 2344329

Int. Cl.² B65G *61/00*

U.S. Cl. 214—1 BT **3 Claims**



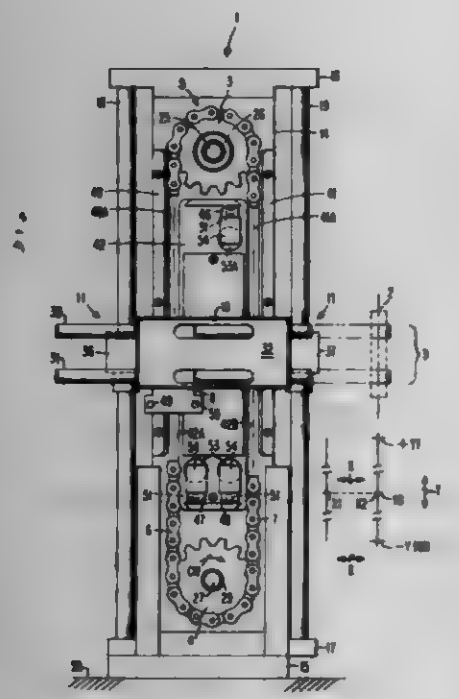
1. A storage installation, comprising load-gripping means having a plurality of parallel telescopable elements surround-

ing a central space and each including three telescopable sections; a socket in the center one of said telescopable sections of the respective telescopable elements; article pick-up means arranged to be positioned within said central space surrounded by said telescopable elements; locking means on said pick-up means and engageable in the respective sockets; actuating means responsive to telescoping-apart of the respective sections for actuating said locking means to cause engagement thereof with said sockets so as to lock said pick-up means to said load-gripping means; and means for effecting connection of current supply lines and activator circuit lines between said load-gripping means and said pick-up means in automatic response to operation of said actuating means.

3,978,992
POSITIONING APPARATUS

Alfred Paul Mulzet, Endicott, and James Louis Sirico, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 2, 1975, Ser. No. 592,584
Int. Cl.² B65G *25/00*
U.S. Cl. 214—1 BB **21 Claims**

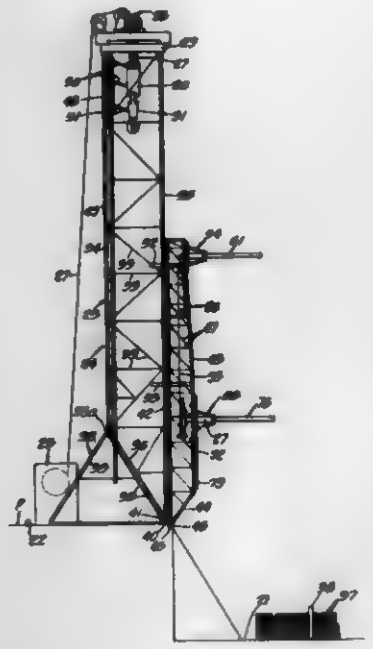


1. Apparatus for positioning an object to two spatially displaced first and second positions, said apparatus comprising:
- first and second rotatable sprocket wheels disposed in a common plane,
- an endless sprocket chain entrained about said sprocket wheels in operable relationship therewith, said chain having first and second opposing reaches between said wheels,
- first member means pivotably connected to said chain,
- second member means affixed to said first member means and adapted to support said object,
- third member means having said second member means slidably mounted thereto,
- guide member means for guiding said third member means in a predetermined aligned relationship with said reaches,
- chain guide means for guiding said chain along said first and second reaches, and
- driver means coupled to one of said wheels for driving said endless chain to carry said first member means along each of said first and second reaches, said object being positionable thereby with respect to said first position when said chain carries said first member means along said first reach, and said object being positionable thereby with respect to said second position when said chain carries said first member means along said second reach.

3,978,993
VERTICALLY ADJUSTABLE PIPE RACKING APPARATUS

James A. Howard, Houston, Tex., assignor to Byron Jackson, Inc., Long Beach, Calif.

Continuation of Ser. No. 433,331, Jan. 14, 1974, abandoned. This application June 24, 1975, Ser. No. 589,830
Int. Cl.² E21B *19/00*
U.S. Cl. 214—2.5 **16 Claims**



1. A well drilling rig comprising: a vertically disposed supporting structure having hoist mechanism therein for raising and lowering a string of drill pipe with respect to the floor of the rig, pipe rack means in said supporting structure at one side thereof for removably storing vertically disposed lengths of pipe, upper pipe racker means carried by said supporting structure, lower pipe racker means carried by said supporting structure and spaced below said upper pipe racker means, each of said pipe racker means including a horizontally disposed racker arm having an inner end provided with a pipe engaging head, means supporting said respective racker arms for horizontal movements to move a length of generally vertically disposed pipe engaged by said heads between the center of said supporting structure and said pipe rack means, motor means for moving said racker arms as aforesaid, means mounting said lower racker means for vertical movement with respect to said supporting structure, and hoist means directly connected to said lower racker means for raising and lowering the latter.

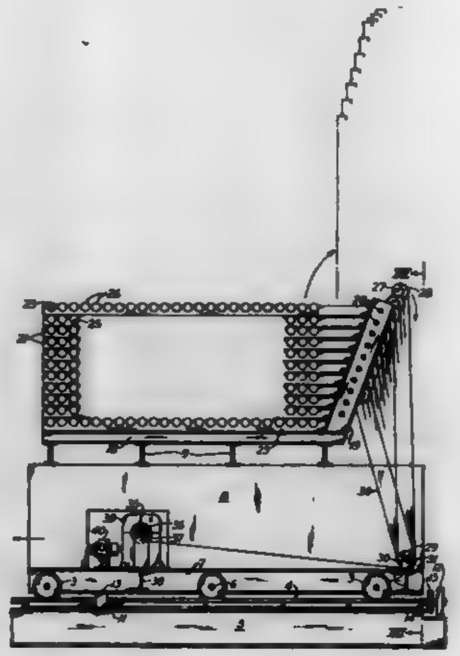
3,978,994
PIPE RACK WITH PIVOTED FINGERS

Homer J. Woolslayer, and Cecil Jenkins, both of Tulsa, Okla., assignors to Lee C. Moore Corporation, Tulsa, Okla.

Filed July 7, 1975, Ser. No. 593,473
Int. Cl.² E21B *19/14*
U.S. Cl. 214—2.5 **10 Claims**

1. A drill pipe rack comprising a plurality of vertically spaced rows of laterally spaced fingers, the fingers in each row being formed at longitudinally spaced points along them for supporting laterally spaced drill pipe extending across the fingers, a carriage beneath said fingers, means mounted on the carriage pivotally supporting said fingers at one common end on transverse horizontal axes, means for moving the carriage from a starting location step by step in a direction lengthwise of the horizontal fingers to first locate at a pipe pick-up station a pipe supported by the fingers in the upper row nearest their free ends and then each successive pipe in that row until all of the pipe have been removed from that row, means for thereafter swinging said upper row of fingers up out of the way, and

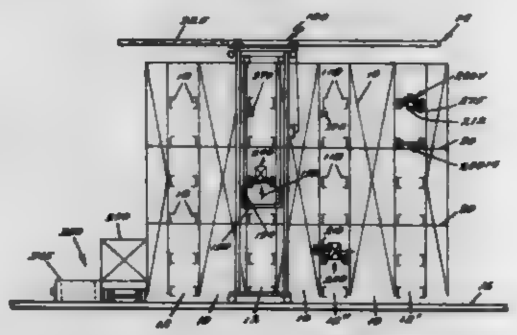
means for returning the carriage to said starting location, whereby said step by step movement of the carriage can be repeated for each successive upper row of fingers after the row above it has been swung up out of the way.



3,978,995
MOBILE TIER PICKING APPARATUS FOR A WAREHOUSING SYSTEM

Howard A. Zollinger, Ada Township, Kent County, and LeRoy Lubbers, Grand Rapids, both of Mich., assignors to Rapistan, Incorporated, Grand Rapids, Mich.

Division of Ser. No. 332,903, Feb. 15, 1973, Pat. No. 3,866,767. This application Nov. 11, 1974, Ser. No. 522,724
Int. Cl.² B65G *1/06*
U.S. Cl. 214—16.4 A **5 Claims**

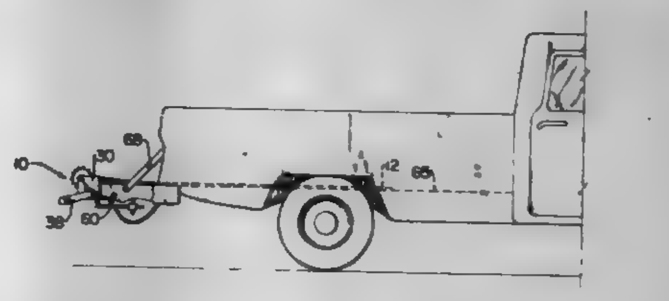


1. In a materials handling system including storage racks with an array of storage locations for receiving and storing tiered articles and including access aisles extending adjacent the storage locations and having a pair of vertically spaced guide and support means thereon extending along discrete storage levels to provide access to an open end of each of the storage locations in the system, means for transferring tiers of articles within the system comprising:
- a mobile tier picking vehicle for movement within a preselected access aisle along the upper one of a pair of vertically spaced guide and support means at a preselected discrete storage level within said aisle to transfer tiered articles within the storage aisle;
- a picking head movably positioned on said tier picking vehicle for picking tiers of articles from unitized loads of tiered articles in said storage racks;
- means for aligning in a predetermined manner a unitized load of tiered articles stored within said system and said picking head;
- a separate independently operable mobile make-up vehicle dispatched on the lower one of said pair of vertically spaced guide and support means in said preselected aisle below and aligned under said tier picking vehicle to receive picked tiers of articles from said picking head of said mobile transfer picking vehicle; and
- control means for moving said picking head into contact with said tier of articles and for shifting the position of said picking head to transfer said tier of articles from said unitized load to said mobile transfer vehicle.

3,978,996
TAILGATE UNLOADER

Victor Conrad Oltrogge, 6054 Queen Court, Arvada, Colo. 80004

Filed Jan. 15, 1975, Ser. No. 541,156
Int. Cl.² B60P *1/38*
U.S. Cl. 214—17 D **8 Claims**

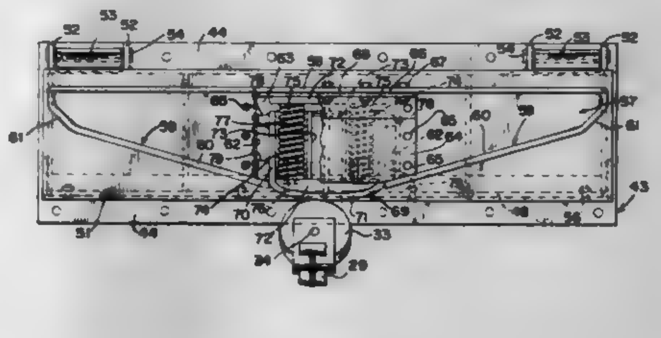


1. Apparatus for conveying objects or materials from a storage location which has a flat bed area and side walls enclosing the flat bed area except at one open or openable edge with the flat bed area having first and second spaced parallel surfaces along the edge comprising:
- a beam having a length substantially the same as said open edge and having spaced side plates extending outwardly therefrom in perpendicular offset relation to the length of said beam,
- a roller means rotatably attached between said side plates,
- clamping means surroundingly engageable with said first and second surfaces for releasably attaching said beam to said open edge so that the axis of said roller is substantially parallel to said open edge of the flat bed area,
- a flat flexible belt atttached to said roller means and having a length sufficient for extending from said roller means into at least a portion of the flat bed area,
- a source of rotary power, and
- transmission means for coupling said rotary power source to said roller means, whereby any object or material placed upon said flexible belt when extended into the flat bed area can be moved towards said roller means by actuating said rotary power source and thus rolling said belt upon said roller means.

3,978,997
DOOR TRIPPING DEVICE FOR RAILWAY HOPPER CAR

Roy W. Miller, Highland, and Eugene I. Varda, St. John, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Apr. 28, 1975, Ser. No. 572,684
Int. Cl.² B65G *67/24*
U.S. Cl. 214—63 **10 Claims**



1. In a railway hopper car having a body structure and a hopper, bottom dump door means hingedly connected to said

body for hinging movement downwardly about a longitudinal axis from a closed to a discharge position;

a bell crank shaped lever having a substantially upright arm and a laterally extending arm,

first pivot means connecting said lever to said body for pivotal movement about a longitudinal axis,

a strut including second pivotal means connected to said laterally extending arm and third pivotal means connecting said strut to said door means,

said second pivotal means in a closed position of said door being disposed in an over-center position relative to said first pivotal means and said third pivotal means,

a stop carried on said body limiting the movement of said door means to said over-center position,

cam engageable means on said upright arm, the improvement comprising,

a closing cam mechanism including a base supported adjacent track means on which said railway car is traveling,

a vertical pedestal member supported on said base,

camming means on said pedestal including a vertical cam having vertical cam sections each extending from an opposite longitudinal end of said pedestal diagonally inwardly relative to said track means,

said cam sections terminating in laterally spaced ends to provide a space there-between,

said pedestal including a laterally extending pocket communicating with the space provided by said lateral ends,

a laterally movable cam disposed in said pocket,

said cam including an outer cam surface extending from said pocket to provide a continuous camming surface with said cam sections,

and biasing means within said pocket for biasing said outer cam surface in a lateral direction toward said track means, whereby said cam engageable means initially engages and travels along one of said cam sections during movement of said car and thereupon engages said biased laterally movable cam which exerts an inwardly directed force for moving said lever to its over-center position.

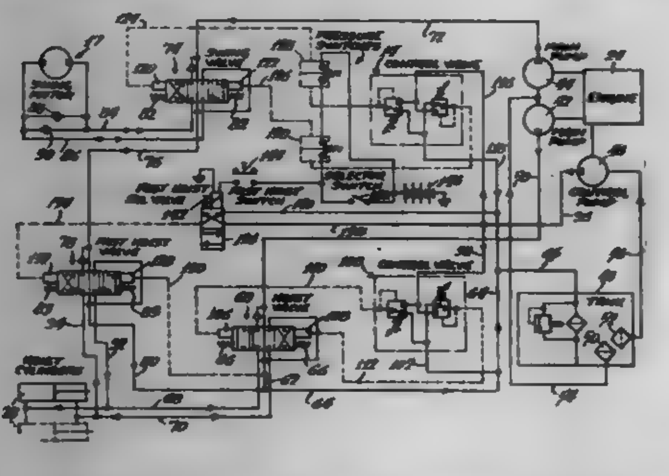
3,978,998
FAST HOIST CONTROL SYSTEM

Ronald J. Klitz, Mosinee, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed May 16, 1975, Ser. No. 578,112

Int. Cl.² E02F *3/00*

U.S. Cl. 214—132 **5 Claims**



1. In a vehicle having an upper structure supported thereon and rotatable with respect thereto by hydraulic swing motor means and an earth working implement supported on said upper structure and movable with respect thereto by hydraulic lift motor means, a control system comprising:

first main hydraulic circuit means including said lift motor means, a reservoir, main pump means for supplying pressurized fluid from said reservoir to said lift motor means, and first fluid actuated lift valve means actuatable to control flow of pressurized fluid to and from said lift motor means;

second main hydraulic circuit means including said swing motor means, said lift motor means, said reservoir, said main pump means for supplying pressurized fluid from said reservoir to said swing motor means and to said lift motor means, fluid actuated swing valve means actuatable to control flow of pressurized fluid to and from said swing motor means, and second fluid actuated lift valve means actuatable to control flow of pressurized fluid to and from said lift motor means;

first control hydraulic circuit means including said first lift valve means, said reservoir, control pump means for supplying fluid under pressure from said reservoir to said first lift valve means, and manually operated lift control valve means for controlling flow of fluid to and from said first lift valve means to control actuation thereof;

second control hydraulic circuit means including said swing valve means, said reservoir, said control pump means for supplying fluid under pressure from said reservoir to said swing valve means, manually operated swing control valve means for controlling flow of fluid to and from said swing valve means to control actuation thereof, and normally closed switch means opening in response to a preselected condition in said second control hydraulic circuit means;

third control hydraulic circuit means including said second lift valve means, said reservoir, said control pump means for supplying fluid under pressure from said reservoir to said second lift valve means, and second lift control valve means for controlling the flow of fluid to and from said second lift valve means to control actuation thereof; and

fourth control circuit means including said normally closed condition responsive switch means selectively operable switch means connected to said condition responsive switch means for selectively actuating said second lift control valve means and thereby said second lift valve means when said condition responsive switch means is closed, and means selectively operable to bypass said condition responsive switch means;

whereby said selectively operable switch means selectively actuates said second lift control valve means independently of said condition responsive switch means.

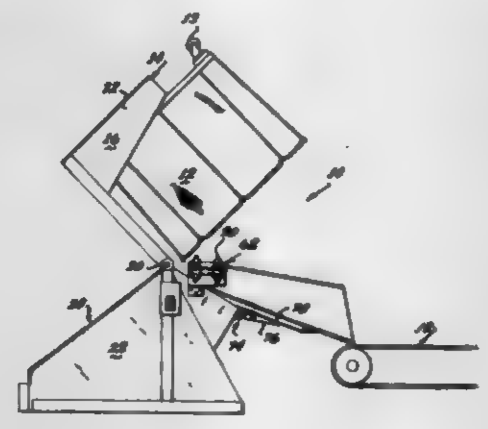
3,978,999
CONTAINER DISCHARGE DAMAGE REDUCTION FLAP

James J. Ryder, Santee, Calif., assignor to Rohr Plessey Corporation, Rockville, Md.

Filed Nov. 8, 1974, Ser. No. 522,033

Int. Cl.² B65G *65/04*

U.S. Cl. 214—314 **3 Claims**



1. A hamper dumper comprising:

a base frame,

a cradle having means to receive a hamper that is to be unloaded,

means pivotally attaching said cradle to said base frame,

means for pivoting said cradle with respect to said base frame from a loading position to a dumping position,

a chute assembly that functions as a cover for the top of a hamper when it is positioned on said cradle,

said cradle and said chute assembly are attached to each other so that they normally pivot together as one member with respect to said base frame,

a chute pivot assembly for pivotally attaching said chute assembly to said frame,

said chute assembly comprising:

a chute,

a hinge assembly connecting said chute to said chute pivot assembly,

an actuator assembly for pivoting said chute about said hinge assembly,

said means for pivoting said cradle with respect to said base frame comprising:

first motor means having one end pivotally secured to said base frame and its other end pivotally secured to said cradle, said motor means comprising a hydraulic cylinder with piston reciprocally mounted therein, and

said cradle having upstanding arms that are pivotally secured adjacent their tips to a shaft fixedly attached to said base frame, said chute pivot assembly comprising a transverse plate secured to the bottom surfaces of a U-shaped stiffener with said shaft passing longitudinally within said enclosure formed by said transverse plate and said U-shaped stiffener, the ends of transverse plate and said U-shaped stiffener being fixedly secured to said upstanding arms whereby said cradle and said chute pivot assembly as a single member.

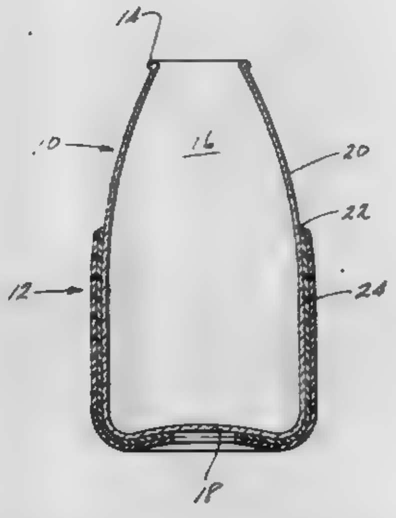
3,979,000
CONTAINER WITH IMPROVED HEAT-SHRUNK CELLULAR SLEEVE

James A. Karabedian, Garden City, N.Y., assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 505,646, Sept. 13, 1974. This application Mar. 5, 1975, Ser. No. 555,507

Int. Cl.² B65D *11/16*

U.S. Cl. 215—12 R **16 Claims**



1. In an article of manufacture comprising a container having an annular rim defining a mouth opening at one end thereof, a lower end providing a bottom thereof, and an annular wall interposed said rim and said lower end, and further including a heat-shrunk, polymeric sleeve disposed circumferentially outwardly of said wall and in snug engagement therewith, the improvement wherein said polymeric sleeve is a composite structure of a closed cellular polymeric layer preponderantly of polystyrene having incorporated therein, in an amount from zero weight percent up to compatible amounts, a copolymer of ethylene and vinyl acetate, or a copolymer of ethylene and an alkyl ester of an alpha-beta monoethylenically unsaturated carboxylic acid, or a copolymer of ethylene and an alpha-beta monoethylenically unsaturated carboxylic acid, or mixtures thereof, and a non-cellular polymeric layer having preponderantly ethylene moieties and incorporated therein moieties of vinyl acetate or an alkyl ester of an alpha-beta monoethylenically unsaturated carboxylic acid, or an alpha-beta monoethylenically unsaturated carboxylic acid, or mixtures thereof, the amount of said incorporated moieties in said non-cellular layer being sufficient to promote the adhesion of said layers, said cellular layer being disposed outwardly of said non-cellular layer and said non-cellular layer being disposed intermediate said cellular layer and said wall.

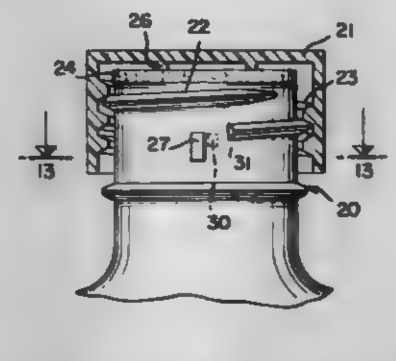
3,979,001
SAFETY CLOSURE FOR CONTAINERS

Clayton Bogert, 118 Lowell Road, Glen Rock, N.J. 07452

Continuation-in-part of Ser. No. 311,119, Dec. 1, 1972, abandoned. This application Nov. 29, 1974, Ser. No. 516,231

Int. Cl.² B65D *55/02, 85/56;* **A61J** *1/00*

U.S. Cl. 215—217 **6 Claims**



1. A safety closure for containers comprising a neck portion provided with a thread and a stop disposed adjacent to the terminus of the thread,

a cap provided with a thread for cooperatively engaging the thread on the neck portion,

protrusion means disposed in the cap adapted to engage the stop on the neck portion when the cap is threaded on the neck portion,

said protrusion means occupying the space between the stop and the terminus of the threads on the neck portion when the cap is in closed position, and

a pressure member interposed between the underside of the top of the cap and the top of the neck portion.

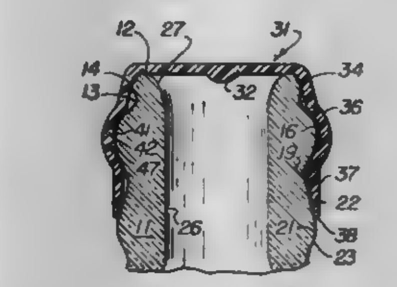
3,979,002
TEARABLE SKIRT PLASTIC WATER BOTTLE CAP

George W. Faulstich, San Carlos, Calif., assignor to Three Sisters Ranch Enterprises, San Carlos, Calif.

Filed Jan. 13, 1975, Ser. No. 540,397

Int. Cl.² B65D *41/48*

U.S. Cl. 215—256 **4 Claims**



1. In combination a container having a container neck having an annular finish at the end of said neck, a short cylindrical terminus below said finish formed with an external screw thread, an upper external first bead having a substantially circular arcuate upper corner and a downward tapering lower curvature ending in a minimum diameter portion and a second bead below said minimum diameter portion; and a cap of a flexible plastic material, said cap deformable to accommodate minor variations in container dimensions and also to permit said cap to stretch over said first bead, said cap preformed, said cap comprising a flat top disk having a diameter about equal to that of said finish, an external third bead below said disk complementary to and tightly engaging said first bead down to the upper end of said lower curvature, an imperforate vertical skirt below said external third bead having a diameter less than said first and second beads of said neck, and a short depending upper skirt around the periphery of said top disk above said external third bead and having an inside diameter slightly greater than said terminus and equal to said threads, said third bead being weakened in a first score line located opposite said downward tapering lower curvature and below the maximum diameter portion of said first bead, said first score line having an arcuate length of about 180°, said skirt formed with a thickened internal terminus at a first end of said first score line to limit tearing of said skirt, said skirt being formed with an internal, circumferential thin, flexible first leak ring immediately above said first score line and engaging said maximum diameter portion of said first bead and with an internal, circumferential, thin, flexible second leak ring above said first leak ring engaging said first bead, said skirt being weakened with an internal second score line extending from a second end of said first score line and slanting downward to the bottom edge of said skirt and a pull tab depending from the lower edge of said skirt below said second score line and immediately to the side of the point where said second score line intersects said bottom edge, said skirt being tearable along said second and first score lines, said cap in intact condition on said neck sealing said neck against either input or output of liquid, said cap when torn along said second and first score lines permitting removal of said cap from said neck.

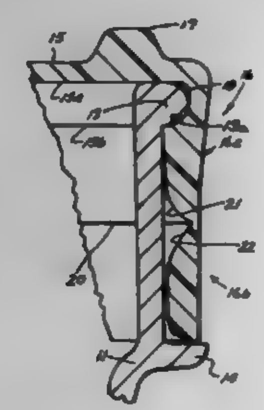
3,979,003
RE-USABLE FRANGIBLE CLOSURE

David O. Allen, Martinsville, Ohio, assignor to Buckeye Molding Co., New Vienna, Ohio

Continuation of Ser. No. 387,352, Aug. 10, 1973, abandoned. This application Mar. 10, 1975, Ser. No. 557,083

Int. Cl.^{2} B65D *41/32*

U.S. Cl. 215—256 **5 Claims**



1. A resilient deformable closure for sealing and/or re-closing a container having an open upper edge comprising

a body formed of a molded plastic material and having a top portion and a skirt portion depending therefrom and having all portions of the distal extremity of said skirt portion parallel to said top portion.

said skirt portion having an inner surface forming a re-entrant portion joined to the inner surface of said top portion and sealingly engaging the open upper edge and outer surface of a container when the closure is mounted thereon,

a score line on said inner surface of said skirt portion forming a continuous weakened section in said skirt portion at a location between the distal extremity thereof and said re-entrant portion and forming a removable skirt portion between said weakened section and said distal extremity, and

removal means including a pair of spaced-apart terminal tabs connected to said removable skirt portion and disposed between said weakened section and said distal extremity, said skirt portion also having an outer surface portion disposed above said weakened section and adjacent said pair of terminal tabs and recessed inwardly from other portions of the outer surface of said skirt portion, the peripheral extent of said recessed portion being slightly greater than the spacing between said terminal tabs to facilitate lifting and grasping thereof.

3,979,004
BOTTLE CAP

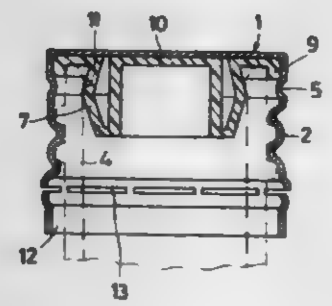
Luigi Bertario, Milan, Italy, assignor to Alluminio Mauceri Borghetto S.p.A., Milan, Italy

Filed Dec. 11, 1974, Ser. No. 531,744

Claims priority, application Italy, Dec. 11, 1973, 3003/73[U]

Int. Cl.^{2} B65D *53/00*

U.S. Cl. 215—341 **3 Claims**



1. A cap-and-stopper assembly for closing a bottle having an exteriorly threaded mouth, comprising a screw cap and a resilient stopper located inside the cap, the cap being formed by an end wall and by a lateral wall provided with internal threads and the stopper including a twin-conical wall tapered toward opposite ends and adapted to engage the inner wall of the bottle mouth and a peripheral bead coaxial with the twin-conical wall and held between the end wall of the cap and an annular inner ledge of the lateral wall of the cap so that the stopper will be removed from the bottle mouth when the cap is unscrewed from the bottle, said stopper further includes a central cylindrical closed body, from which the twin-conical wall coaxially extends, and an annular flange which connects said twin-conical wall to the peripheral bead.

3,979,005
CRYOGENIC TANK AND AIRCRAFT STRUCTURAL INTERFACE

Robert K. Robinson, Mercer Island, and Philip C. Whitener, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

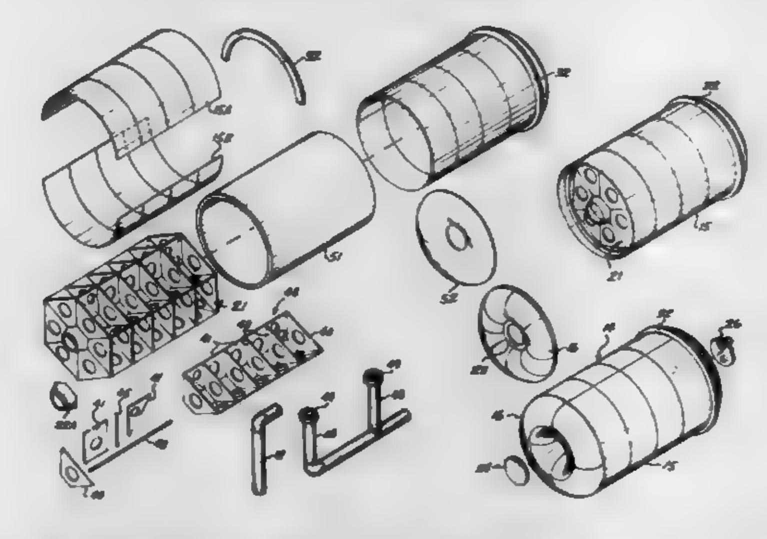
Division of Ser. No. 469,583, May 13, 1974, Pat. No. 3,951,362. This application Mar. 17, 1975, Ser. No. 558,578

Int. Cl.^{2} B65D *25/04, 81/00, 85/70, 87/24*

U.S. Cl. 220—9 LG **8 Claims**

1. A container for fluids, comprising: a cylindrical center section with toroidal-ring surface end members; a baffle assembly positioned within the container to prevent undue sloshing of its contents; said baffle assembly having a core structure interconnecting the toroidal-ring surface end members for supporting the baffle assembly in spaced relation to the interior wall surfaces of the container; said baffle assembly

core structure being supportably attached to the central portion of the toroidal-ring surface end members for reacting to sloshing fluid pressure loads imposed on the baffle assembly through said toroidal-ring centers.



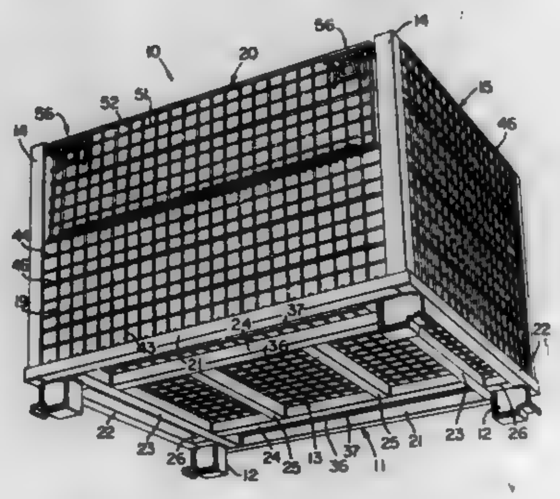
3,979,006
RIGID CONTAINER

Stanley J. Jurasek, Concord Township, Jackson County, Mich., assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Division of Ser. No. 323,513, Jan. 15, 1973, Pat. No. 3,907,150. This application July 28, 1975, Ser. No. 599,402

Int. Cl.^{2} B65D *7/20*

U.S. Cl. 220—19 **3 Claims**



1. A material handling container, comprising:

a deck bed comprised of structural members forming a substantially rectangular peripheral frame, said structural members being upwardly opening substantially U-shaped channels having parallel inner and outer upright walls interconnected at their lower ends by transversely extending base walls, said structural members being joined together at their ends to define upwardly opening, closed bottom sockets at the corners of said peripheral frame wherein the sidewalls of said sockets are defined by the inner and outer upright walls of said structural members and the closed bottom walls of said sockets are defined by the base walls of said structural members;

legs secured directly to the underside of the deck bed adjacent to the corners of said rectangular peripheral frame, said legs extending downwardly from the deck bed for engagement with a support surface or for stacking on another container of the same dimensions;

a plurality of upright rigid posts secured to and extending upwardly from said peripheral frame at the corners thereof, and with their lower end portions being disposed in said sockets, said posts each consisting essentially of an angle member having two flanges extending a right angle to each other, the lower ends of said posts substantially bottoming against the base walls of said structural members and the outer surfaces of the lower end portions to the two flanges of said posts being in abutting face-to-face contact with and extending parallel to the inner surfaces of the outer upright walls of the structural members and being welded thereto, said posts being separate from said legs and being connected thereto only by said deck bed;

upright wire mesh walls extending between and rigidly secured to said posts and defining a rigid, non-foldable enclosure extending upwardly from said deck bed, said wire mesh walls being comprised of vertically spaced, horizontally extending rods whose opposite ends extend into overlapping abutting face-to-face contact with the inner surfaces of the flanges of said posts and are welded thereto, said wire mesh walls also having horizontally spaced, vertically extending rods whose lower ends extend into overlapping abutting face-to-face contact with the inner surfaces of the outer walls of said structural members and are welded thereto;

a horizontal bottom wall of wire mesh construction extending across the bottom of the enclosure and comprising rods whose end portions extend across the upper ends of said structural members and are welded to the upper edges of the inner and outer upright walls of said structural members.

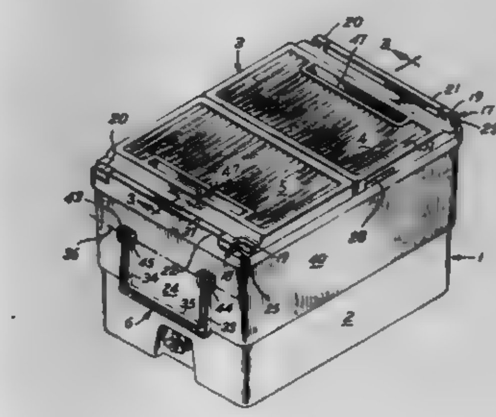
3,979,007
PICNIC COOLER

Bruce Norman Thornbloom, Jr., Clinton, Mass., assignor to Bee Plastics Corporation, Chicago, Ill.

Filed Oct. 16, 1975, Ser. No. 623,014

Int. Cl.^{2} B65D *25/04, 25/28, 43/16*

U.S. Cl. 220—23 **12 Claims**



1. An improved container having a lid and handle assembly comprising:

a. a container body having walls and a bottom defining therebetween a useful volume;

b. at least one lid having an inside and an outside surface, said lid being pivotally mounted on one of said walls;

c. at least one handle pivotally mounted on one of said walls;

d. said pivotal handle mounting being adapted to provide for motion of said handle through an arc from a first, lowered position to a second, raised position;

e. said handle having a cross member and at least one depending arm;

f. first means for limiting the rotational motion of said arm disposed in cooperating relation to said arm and said wall to space said crosspiece from said wall a distance sufficient to prevent discomfort of the hand of a person carrying said container by said handle;

g. second means for cooperatingly engaging said handle crosspiece when in said raised position, said engaging means being disposed in association with the outside surface of said lid;

h. third means for preventing outward and downward rotational motion of said handle and to retain said lid in a substantially horizontal position thereby providing a useful work space on said inner surface of said lid when said lid is in the open position, said third, handle motion preventing means being disposed adjacent and in cooperating relation with said second engaging means on said lid.

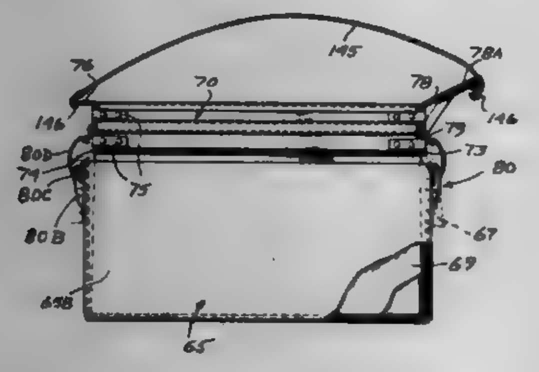
3,979,008
REMOVABLE RECEPTACLE FOR TRASH COMPACTOR

Charles B. Weeks, Boston, and Paul V. Choate, Milton, both of Mass., assignors to Norris Industries, Inc., Los Angeles, Calif.

Division of Ser. No. 515,675, Oct. 17, 1974. This application May 27, 1975, Ser. No. 580,578

Int. Cl.² B65D *39/00*

U.S. Cl. 220—65 **6 Claims**



1. A trash-receiving unit for holding a bag in a trash-receiving position in a trash compactor, said unit comprising a pan member including side walls of flexible, resilient plastic, and dimensioned to receive a substantial part of a bag, and an open top, open bottom container member the walls of which are downwardly and outwardly inclined and extend above the pan and of a flexible, resilient plastic, the bottom of the container member dimensioned to fit within a bag and seat against the bottom of the pan member substantially at the junction of the bottom and side walls thereof, the upper part of the side walls of the pan spaced from the walls of the container to provide a storage space for the remaining portion of the bag while trash is being compacted, the upper end of the container member also including a rigid frame encircling the upper end of the container and attached thereto, and means including parts attached to both members to enable the two members and a bag to be removed from the compactor and carried together by means of said frame or the container member removed and the pan member and bag to be carried together by means of the pan.

3,979,009
CONTAINER BOTTOM STRUCTURE

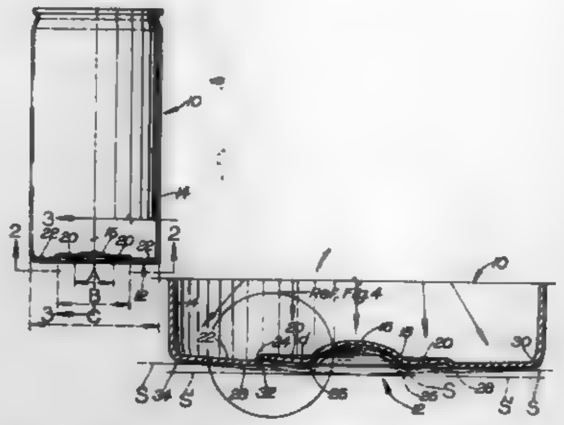
Charles E. Walker, Walnut Creek, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Continuation-in-part of Ser. No. 560,456, March 21, 1975, abandoned. This application Oct. 17, 1975, Ser. No. 623,271

Int. Cl.² B65D *7/42*

U.S. Cl. 220—66 **21 Claims**

1. A seamless metal container body comprised of a sidewall and a bottom having controlled distention characteristics and formed integrally with the lower extremity of the said sidewall, said bottom having a centrally and inwardly disposed relatively shallow dome-like depression the outer peripheral edge of which terminates in a slight upwardly and outwardly projecting dished section, the outer extremity of the said dished section merging with a generally planar section, and the outer periphery of said planar section merging with the sidewall, said planar section constituting at least a substantial part of the total cross-sectional area of the said bottom and the point of mergence of the dished section and said generally planar section being comprised of a selectively thinned and work hardened portion having distortion resistant hoop-like strength characteristics, and said last mentioned portion also acting as a relatively stiff hinge about which the central part of the container bottom including the dished section is allowed to flex selectively outwardly beyond the outermost plane of the outer surface of the planar section when the overall bottom flexes and is distended outwardly a controlled amount under the influence of internal pressures within the container body.



3,979,010
FUEL TANK FOR A MOTOR VEHICLE

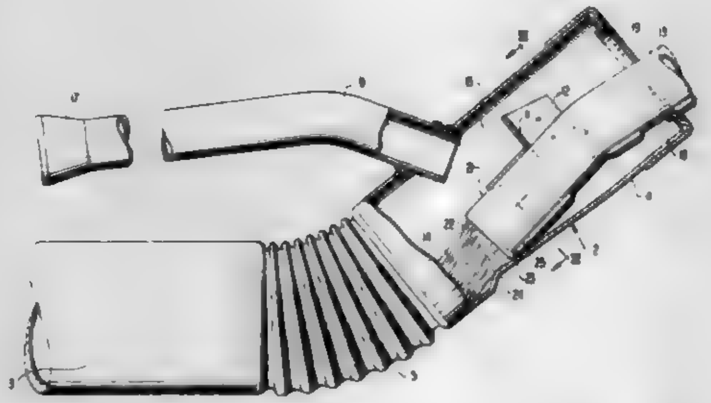
Horst Fiedler, Stuttgart; Walter Schuller, Winnenden-Schelmenholz, and Manfred Distel, Ruit, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed July 12, 1974, Ser. No. 488,157

Claims priority, application Germany, July 17, 1973, 2336239

Int. Cl.² B65B *1/04*

U.S. Cl. 220—86 R **5 Claims**



1. A fuel tank with a rear wall for an automotive vehicle, comprising

a filler pipe terminating in the upper portion on one side of the rear wall and having sections extending obliquely to the rear wall in a horizontal plane;

a rectilinear rear section of the filler pipe extending rearwardly from said sections at an inclination and being provided with an opening for the insertion of a fuel discharge pipe;

support means located in the opening defining an aperture of smaller area than that of the opening and providing a sufficient passage means for venting of air from the fuel tank, a portion of the opening being of larger area than the aperture defined by the support means being located to the rear of the support means as viewed in the inflow direction of fuel during a filling operation such that the fuel discharge pipe rests against a lower edge of the large area portion of the opening and an upper surface of the fuel discharge pipe rests against the support means;

a vent pipe from the fuel tank terminating in the filler pipe to the rear of the support means as viewed in the inflow direction of the fuel; and

the rear section having a lower inner wall with an inwardly formed step-like indentation as viewed in the inflow direction of fuel directly downstream of the lower inner surface of the opening upon which the fuel discharge pipe always rests during the filling operation so that fuel impinges the inner wall of the filler pipe at a relatively large distance from the fuel discharge pipe exit for an unimpaired inflow of fuel.

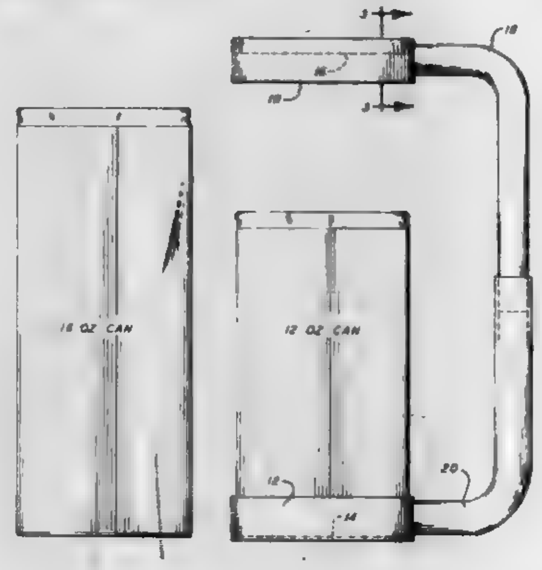
3,979,011
AUXILIARY HANDLE FOR A BEVERAGE CAN

Roger W. Schleicher, 139 Croyden Lane, DeWitt, N.Y. 13224

Filed Dec. 23, 1974, Ser. No. 535,273

Int. Cl.² A47G *19/22;* **B65D** *25/28*

U.S. Cl. 220—94 R **2 Claims**



1. An auxiliary handle for a beverage can formed with an annular groove just inside its upper edge, the handle comprising upper and lower annular members adapted to engage the upper and lower ends of the can, and tubular elements extending outwardly from the annular members and telescopically engageable with one another to form the portion of the handle that is grasped by the user, the lower annular member having the form of a vertically walled ring that extends upwardly to form a band around the lower end of the can, the lower annular member having an inwardly extending horizontal flange at its lower edge for engagement with the bottom of the can, and the upper annular member having the form of a vertically walled ring that extends downwardly to form a band around the upper end of the can, the upper annular member having a flexible, integral lip at its upper edge that extends inwardly to overlie the upper edge of the can and then downwardly to extend into the annular groove that is inside thereof, the flexibility of the lip permitting it to extend into the annular grooves of standard beverage cans of different diameters.

3,979,012
CONTAINER HAVING OPENING MEANS

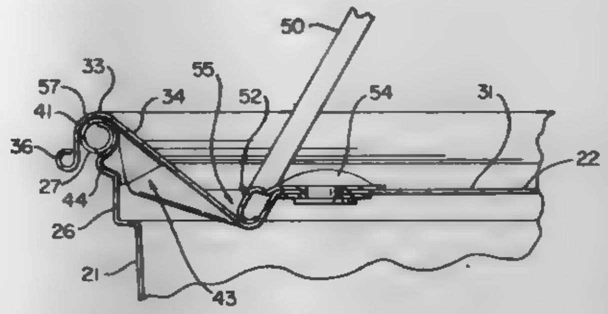
Horst F. W. Arfert, and Edward D. Gardner, both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Dec. 22, 1975, Ser. No. 643,527

Int. Cl.² B65D *51/16*

U.S. Cl. 220—231 **10 Claims**

1. A container comprising, a deformable metal container body adapted to contain a product therein and having a bottom wall and a side wall which has a tubular upper portion terminating in a first circumferential bead defining an open end in said container body, a deformable metal closure for said container body, said closure having a main body portion adjoined at its outer edge by an annular flange, said flange having a generally U-shaped cross-sectional configuration defined by a bight with an inner leg portion and an outer leg portion extending from opposite ends of said bight, said inner leg portion adjoining said main body portion and said outer leg portion terminating in a second circumferential bead, an annular indentation in said inner leg portion of said flange and said tubular upper portion beneath said first bead, said annular indentation providing a seal between said closure and container body, and force transmitting means provided as a part of said closure for permanently deforming at least part of said main body portion within said container body and causing at least a portion of said inner leg portion to be pulled away from said tubular upper portion and first bead thereby enabling removal of said closure by lifting upwardly on said closure.



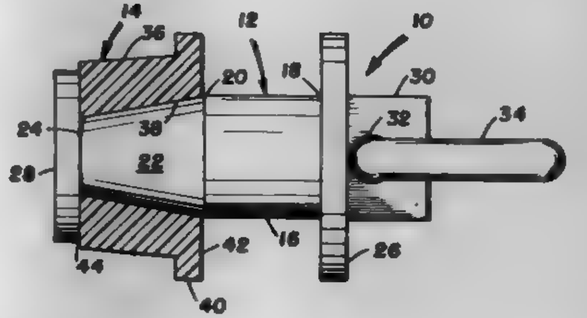
3,979,013
PUSH PLUG

Harry R. Schulte, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 12, 1974, Ser. No. 505,395

Int. Cl.² B65D *53/00*

U.S. Cl. 220—234 **11 Claims**



1. A readily insertable and removable closure plug comprising:

an elongated expander core comprising at least two longitudinally adjacent segments, a first segment cylindrical in cross-sectional shape, and a second segment tapering in cross-sectional shape, said second segment having a cross-sectional diameter varying from at one end essentially equal to the cross-sectional diameter of said first cylindrical segment to a smaller cross-sectional diameter at the other end; and

an annular deformable sealing member positioned circumferentially on and deformable by longitudinal movement of said expander core, said sealing member having tapered inner and outer surfaces.

3,979,014
SEAL DEVICE FOR USE IN FLANGE MATING SURFACES OF VACUUM CONTAINER

Hiroo Iwase, Juochi, and Satoshi Ninomiya, Hitachi, both of Japan, assignors to Hitachi, Ltd., Japan

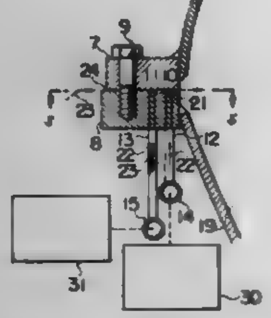
Filed Nov. 26, 1974, Ser. No. 527,230

Int. Cl.² B65D *53/00*

U.S. Cl. 220—240 **10 Claims**

1. In a seal device for use in the flange mating surfaces of a container of the type, in which there are provided a first member and a second member both having flanges which are fastened together by means of fastening members; the improvements comprising:

a first space and a second space defined in said flange mating surfaces of said first and second members;
sealing fluid guide holes defined in either of said flanges;
sealing fluid discharge holes defined in either of said flanges;
a sealing fluid generating source; and
means for maintaining said second space to a given pressure;



said first space being located inwardly of said fastening members in said mating surfaces of said flanges and communicated with said sealing fluid guide holes which are communicated with said sealing fluid generating source; and said second space being communicated with said sealing fluid discharge holes which are communicated with said means for maintaining said second space to a given pressure.

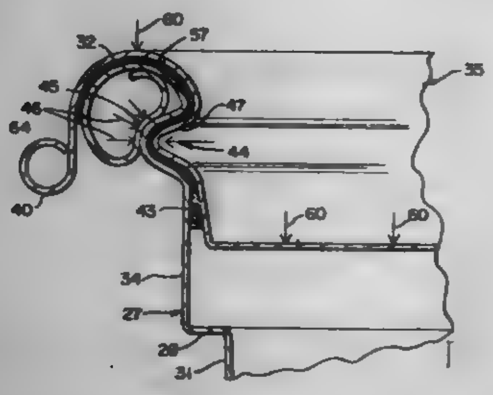
3,979,015
CONTAINER

Horst F. W. Arfert, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Dec. 20, 1974, Ser. No. 534,721

Int. Cl.² B65D *43/10*

U.S. Cl. 220—307 **15 Claims**



1. A container comprising, a metallic container body adapted to contain a product therein and having a bottom wall and a side wall terminating in a first deformable circumferential bead of substantially tubular toroidal form defining an open end in said container body, a deformable metallic closure for said container body, said closure having a main portion adjoined at its outer edge by an annular flange, said flange terminating in a second circumferential bead, force transmitting means provided as an integral part of said main portion, seal means between said closure and first bead, and an annular indentation in said flange and first bead which cooperates with said seal means to provide an improved seal between said closure and said first annular bead, said flange having a roughly U-shaped cross-sectional configuration defined by a bight having an inner leg portion and an outer leg portion with said leg portions extending downwardly from opposite ends of said bight and said annular indentation being in the form of a roughly V-shaped indentation in said inner leg portion and in said first bead, said annular indentation positions said closure on said container body and simultaneously results in a deformation of a portion of said first bead which is a part plastic deformation and a part elastic deformation, said part elastic deformation causing said portion of said first bead to be resiliently urged more tighly against said closure, said resiliently urged portion cooperating with said seal means to provide said improved seal, said force transmitting means causing release of said inner leg portion of said flange away from said first bead by shearing said seal means upon urging and permanently deforming at least part of said main body portion toward the center of said container body enabling removal of said closure simply by lifting upwardly against said second bead.

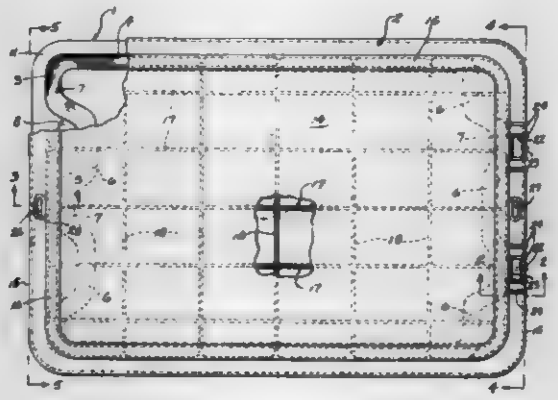
3,979,016
SECURITY COVER FOR A CONTAINER

James J. Frater, Watertown, Wis., assignor to Menasha Corporation, Neenah, Wis.

Filed Feb. 9, 1976, Ser. No. 656,819

Int. Cl.² B65D *43/08, 45/16, 21/00, 45/00*

U.S. Cl. 220—315 **13 Claims**



1. A container assembly, comprising a container having a pair of opposed first walls and a pair of opposed second walls and a bottom wall connecting the first and second walls, said container also having a rim connected to the upper edges of the first and second walls and terminating in a downwardly extending flange, a cover to enclose the upper end of the container, said cover having a surface resting on said rim and having a downwardly extending flange located outwardly of the container flange, a hook member connected to the flange of the cover and terminating in an upwardly extending section disposed generally parallel to the flange on the cover and disposed inwardly of the flange of the container, and a tab connected to the flange of the cover and spaced from the hook member, said tab disposed in engagement with the lower edge of the flange on the container.

3,979,017
ARTICLE DISPENSING APPARATUS

Francis Charles O'Toole, Lafayette Hill, and Charles Philip Comeau, Oreland, both of Pa., assignors to Captain International Industries, Inc., Montgomeryville, Pa.

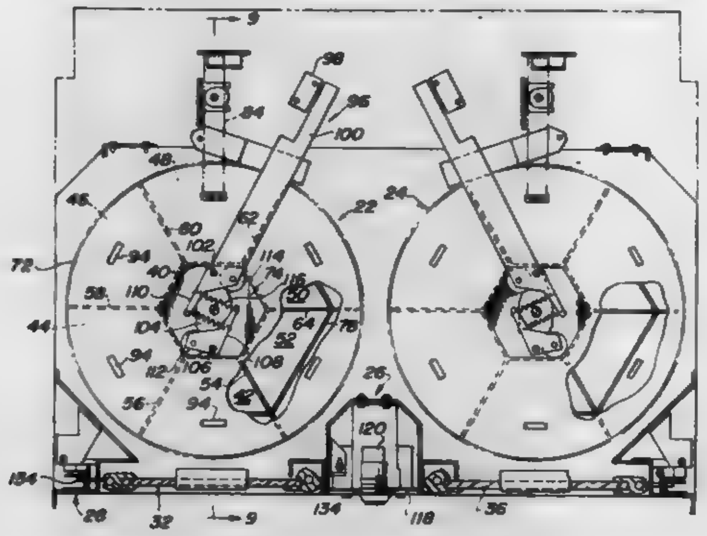
Filed June 11, 1975, Ser. No. 586,102

Int. Cl.² B65G *1/12*

U.S. Cl. 221—7 **13 Claims**

1. Article dispensing apparatus comprising:
a. A housing, a rotatable article support in said housing, means supported by said housing for rotating said support, said support having a plurality of compartments, each compartment being open on the periphery of the support,
b. A movable door on said housing opposite the open side of one of said compartments,
c. An interlock supported by said housing for latching said article support in a dispensing position wherein one of said compartments has its open side opposite said door,
d. A lock means supported by said housing for locking said door in a closed position,
e. A detent means supported by said housing, said detent means being coupled to said lock means and said interlock for causing said lock means to block any opening

movement of said door unless said article support is in a dispensing position so it can be latched by said interlock, said detent means being responsive to rotation of said article support and during such rotation prevents opening of said lock means, and



f. means to open said lock means and for causing said interlock to latch said article support in a dispensing position while opening said door.

3,979,018
APPARATUS FOR SEPARATING BUNDLED BARS

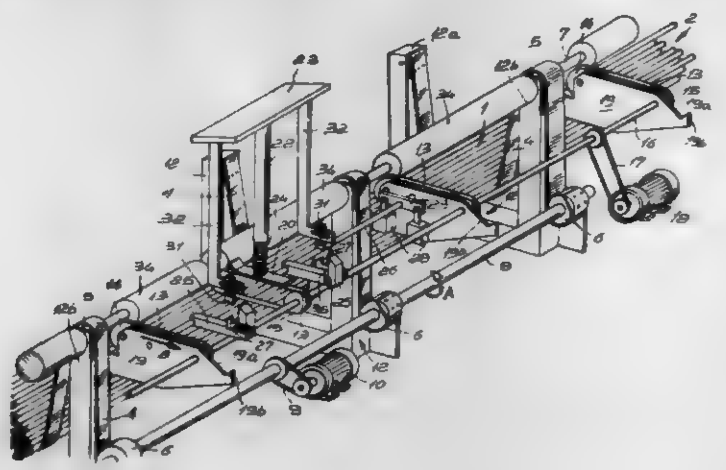
Guido Modiano, Via Gallignani, 9, Faenza (Ravenna), Italy

Filed June 3, 1975, Ser. No. 583,355

Claims priority, application Italy, June 5, 1974, 3409/74

Int. Cl.² G07F *11/00*

U.S. Cl. 221—10 **2 Claims**



1. Apparatus for separating bundled bars, characterized in that it comprises a magazine for longitudinally containing a bundle of bars and cooperating with means for reducing the transversal width thereof in order to cause the overflowing of a few bars from a longitudinal side thereof; a device for the alternate transfer of the overflown bars, in a perpendicular direction thereto; an elastic pressing element, extending longitudinally parallel to the direction of displacement of the bars under the action of said device and facing this latter at its axis, which at its minimum distance from said device forms therewith a passage in which the bars may be held only side by side; a device for sensing the presence of bars on the transfer device, a sensing device which controls said reduction means by way of activating it and causing the bars to overflow till depletion thereof on said device, instead, of returning them to their rest position on arrival of the bars on the transfer device and which also controls a programmer for the alternating advance and return strokes of the transfer device by imparting to the programmer the starting signal at each overflow of the bars and that for returning to the initial conditions at each mentioned depletion; a device for intercepting the bars, arranged contiguous to said passage and close to its end, which on the arrival of the bar, controls the stopping of the advancement of the transfer device while preparing for the return stroke with the consequent backing of the bars; hooking means, placed in relation to said intercepting device and operating in combination therewith at least after a fixed number of said alternating strokes, for engaging the first bar sent by the transfer device and then withholding it during the subsequent return stroke of said same device, from the separation of this bar from the remaining ones on the transfer device, while alternately the same hooking means, during the new advance stroke of the transfer device, release the bar by its action so that subsequently it reaches a withdrawal station for entry into a bar pushing device.

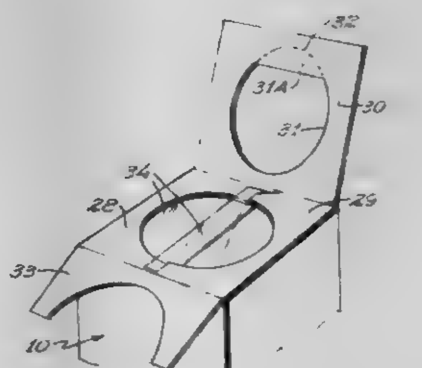
3,979,019
DISPENSING CLOSURE FOR TISSUE CARTON

Robert A. Bliss, St. Paul, Minn., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed Aug. 7, 1975, Ser. No. 602,789

Int. Cl.² B65H *1/04*

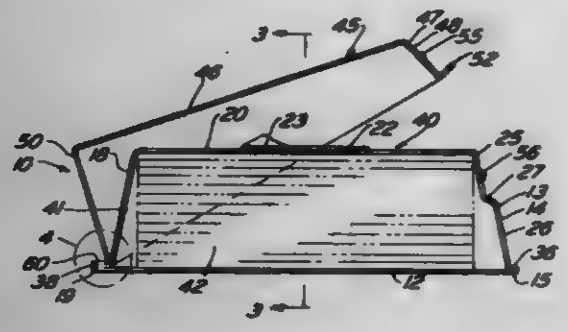
U.S. Cl. 221—48 **6 Claims**



1. A dispensing carton for tissues made from foldable sheet material having four side walls connected in rectangular tube-like configuration, means closing the bottom end of the box, and a stack of interleaved tissues disposed therein, said carton having a top dispensing closure comprising:
a pair of first folded flaps, one of said first folded flaps being hingedly connected along the top edges of each of two opposing side walls, said first folded flaps extending substantially one half the distance across the end of said carton and positioned in substantially abutting relationship with one another;
each of said first folded flaps having a die cut area removed therefrom creating a cooperating aperture for purposes of withdrawing said tissues from said carton;
each of said first folded flaps having adhesively attached thereto and covering at least said removed area a piece of flexible film, each of said strips having an inside edge positioned at approximately the midpoint of said carton;
a cover flap formed in size substantially equal to the end of said carton and hingedly attached to one of the remaining two side walls and foldable downwardly into overlapping relationship with said first folded flaps, said cover flap having an aperture formed therein and adapted to lie in juxtaposition with the opening created by the two abutting die cut areas in said first folded flaps and covered by said film strips.

3,979,020
ARTICLE DISPENSING CONTAINER

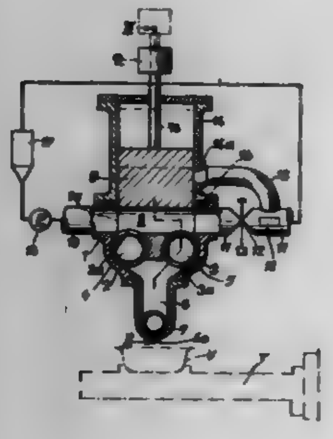
Robert J. Braber, P.O. Box 568, and Paul L. Weber, 50 Connecticut Drive, both of Burlington, N.J. 08016
Continuation of Ser. No. 420,605, Nov. 30, 1973, abandoned. This application July 21, 1975, Ser. No. 597,370
Int. Cl.² B65H *1/00*
U.S. Cl. 221—63 **7 Claims**



1. A fluid sealed dispensing container fabricated entirely of thermoplastic sheet material and comprising a generally flat bottom wall, a separate upstanding peripheral side wall upstanding entirely about the periphery of said bottom wall spaced inwardly from the circumference thereof, an outstanding circumferential flange extending entirely about said side wall integral therewith and sealed thereabout in fluid-tight downwardly facing relation to the circumferential margin of said bottom wall, a generally flat top wall spaced over said bottom wall and integral with the upper extremity of said side wall entirely about the latter and combining with said side and bottom walls to define a fluid sealed contents holding space, said top wall having a through opening for outwardly passing contents, a closure patch removably secured to said top wall in moisture-proof closing relation with said opening, a separate cover overlying said top wall, and a resiliently flexible hinge flange extending outwardly from said cover integrally therewith and fixedly secured relative to said top wall to mount said cover resiliently urged toward said overlying relation.

3,979,021
SYSTEM FOR DOSING A VISCOUS HARDENABLE MASS INTO A SUCCESSION OF CONTAINERS

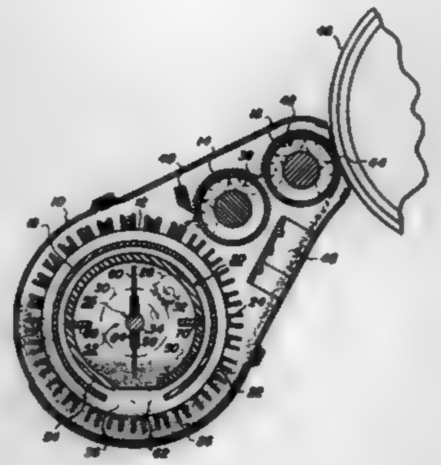
Günter Reinecke, Wuppertal-Elberfeld, Germany, assignor to Benz & Hilgers GmbH, Dusseldorf, Germany
Filed Mar. 27, 1975, Ser. No. 562,870
Claims priority, application Germany, Mar. 29, 1974, 2415237
Int. Cl.² B67D *5/52*
U.S. Cl. 222—1 **8 Claims**



8. A method of filling containers with a viscous mass, comprising the steps of:
feeding said viscous mass from an intake compartment into a rotating cylinder having an aperture registrable with said intake compartment by displacing a piston axially in said cylinder to accommodate the mass therein;
simultaneously and synchronously rotating another cylinder previously filled with said mass to communicate the same with a discharge compartment, and driving the mass out of said other cylinder into said discharge compartment by displacing a respective piston axially therein;
filling a container with the material from said discharge compartment; and
continuously rotating said cylinders and alternately operating said pistons to communicate said cylinders alternately between said intake compartment and said discharge compartment and alternately draw said mass into said cylinders and displace said mass out of said cylinders into said discharge compartment while maintaining a substantially constant flow of said mass into and from said intake compartment.

3,979,022
MONITORING DEVICE

Charles A. Whited, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed June 28, 1972, Ser. No. 266,936
Int. Cl.² B67D *1/08*
U.S. Cl. 222—23 **2 Claims**



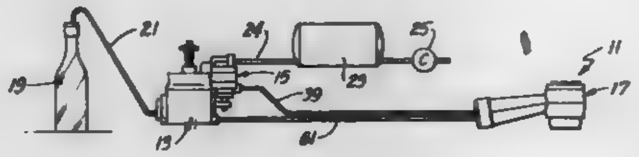
1. A device for monitoring the quantity of particles stored in a container, including;
sensing means mounted for movement within the container and being in contact with the particles stored therein, said sensing means comprising a shaft member mounted rotatably within the container and having a generally planar surface with a portion thereof adapted to contact the particles stored in the container;
first magnetic means mounted on said shaft member in the region of the end portion thereof opposed from the planar surface in a spaced relationship with the particles stored in the container; and
second magnetic means mounted on said container substantially aligned with said first magnetic means and radially spaced therefrom, said second magnetic means cooperating with said first magnetic means to exert a torque on said shaft member for rotating said shaft member from the first position to the second position when the quantity of particles stored in the container is beneath the predetermined level.

3,979,023
DISPENSER FOR FLOWABLE MATERIAL

Ezra Dale Hartley, 2700 Jalmia Drive, Los Angeles, Calif. 90046
Filed Sept. 5, 1975, Ser. No. 610,746
Int. Cl.² B67D *5/14*
U.S. Cl. 222—61 **16 Claims**

1. A dispenser for flowable material comprising:

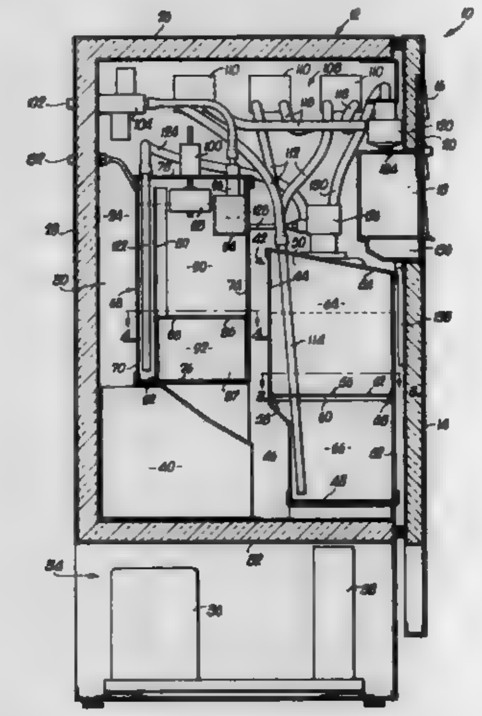
a housing having a cavity therein;
a pumping member at least partially in said cavity, said pumping member and said housing at least partially defining a dispensing chamber, said dispensing chamber having an inlet adapted to communicate with a supply of the flowable material and an outlet;
said pumping member being movable on an intake stroke to allow the flowable material to enter the dispensing chamber and on a discharge stroke to force the flowable material in the discharge chamber through said outlet whereby the flowable material is dispensed;



means coupled to said outlet for dispensing flowable material received from said outlet;
means for moving said pumping member through said strokes;
manually operable means for actuating said moving means; and
first means responsive to the pressure in the pumping chamber as said pumping member moves on said intake stroke thereof for preventing interruption of said intake stroke by operation of said manually operatable means.

3,979,024
INGREDIENT TEMPERATURE STABILIZATION APPARATUS FOR POST-MIX BEVERAGE DISPENSING MACHINES

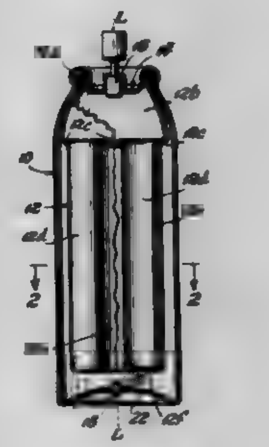
William C. Hoppe, Kansas City, Mo., assignor to The Vendo Company, Kansas City, Mo.
Filed Dec. 27, 1974, Ser. No. 536,821
Int. Cl.² B67D *5/62*
U.S. Cl. 222—67 **2 Claims**



1. In a post-mix beverage dispensing machine:
a cabinet having a chamber therein;
means for refrigerating said chamber;
means within said chamber for utilizing a liquid ingredient in preparing a beverage to be dispensed;
an ingredient container within said chamber;
generally horizontally extending partition means within said container dividing the interior of said container into separated upper and lower zones, said partition means being provided with an opening placing the bottom of said upper zone in restricted liquid communication with the top of said lower zone;
means for permitting introduction from time to time of supply-replenishing quantities of a liquid beverage ingredient at substantially ambient temperature into said upper zone of said container, said introduction means including an open-top overflow cup within said upper zone of said container adjacent the top thereof, into which cup said quantities of said ingredient may be initially introduced for relatively gentle overflow therefrom into the remainder of said upper zone for minimizing agitation in connection with intermixing of said newly introduced quantities with quantities of cooler ingredient already within said upper zone;
means coupled with said ingredient utilization means and communicating with said lower zone adjacent the bottom thereof for removing from said lower zone amounts of said ingredient as required for the preparation of beverages to be dispensed,
whereby said quantities of said ingredient initially introduced into said cup at ambient temperature are gently delivered to said container and are cooled during storage and migration thereof from said upper zone to said lower zone as said amounts of already cooled ingredient are removed as required from said lower zone.

3,979,025
DEVICES FOR HOLDING AND DISCHARGING LIQUID AND PASTE-LIKE SUBSTANCES UNDER PRESSURE

Richard Friedrich, 26 Auf Loebern, 7701 Walschingen Kreis, Constance, Germany, and Frank A. E. Rindelaub, Ave. Marechal Foch, Rixensart, Belgium
Filed July 24, 1975, Ser. No. 598,785
Int. Cl.² B65D *35/28*
U.S. Cl. 222—95 **28 Claims**



1. In a dual-chamber pressurized dispenser comprising an outer container having an opening; an inner container disposed within said outer container and having an opening; a retaining member connecting said outer and inner containers at their respective openings; a dispensing valve secured in the opening of said inner container by said retaining member; and a predetermined quantity of pressurizing propellant between said inner and outer containers, the improvement comprising: a plurality of hollow, product-containing longitudinal stiffening rib means formed in said inner container and operative to prevent the formation of pockets of entrapped product during the collapsing of said inner container radially inwardly toward its longitudinal axis.

3,979,026

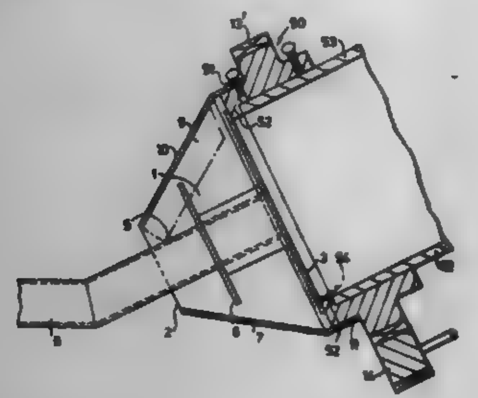
APPARATUS FOR DISPENSING PARTICULATE AND VISCOUS LIQUID MATERIAL

Roger Howard Lee, 69 Bramstead Ave., Compton Ridge, Wolverhampton WV6 8AT, England

Filed Sept. 16, 1974, Ser. No. 506,161

Int. Cl.² B67D *5/64*

U.S. Cl. 222—167 2 Claims



1. An apparatus for dispensing a particulate material comprising a container section for holding the material to be dispensed, and a frustoconical chamber section, said frustoconical chamber section having a narrow end portion which serves as an outlet for the material and a wide end portion, a circular end plate adapted to substantially cover the wide end portion of the frustoconical chamber section and to separate said chamber section from the container section, said circular end plate defining a circumferential inlet which enables the material to pass from the container section into the frustoconical chamber section, said frustoconical chamber section and container section being mounted for axial rotation with their axis at such an angle to the horizontal that the portion of the frustoconical wall which at any instant is lowermost is either horizontal or slopes upwards at a small angle from the circumferential inlet towards the outlet, said circular end plate being fixed so that it does not rotate with the frustoconical chamber and container sections, thereby acting as an agitator for the particulate material and ensuring that the material flows continuously through the circumferential inlet to replace material discharged through the outlet, a probe means attached to the end plate and extending into the inlet between the chamber section and the container section, said probe means agitating the material passing through the inlet, thereby preventing clogging, fixed scouring means disposed within the frustoconical chamber and in operative engagement with the sides thereof for wiping the inside of said chamber as it rotates to loosen any material adhering to the chamber wall and means provided for rotating the frustoconical chamber section and the container section relative to the circular end plate.

3,979,027

PRODUCT PRESSURIZED COMPRESSED AIR DISPENSER HAVING IMPROVED PRODUCT CONTROL VALVE ACTUATOR

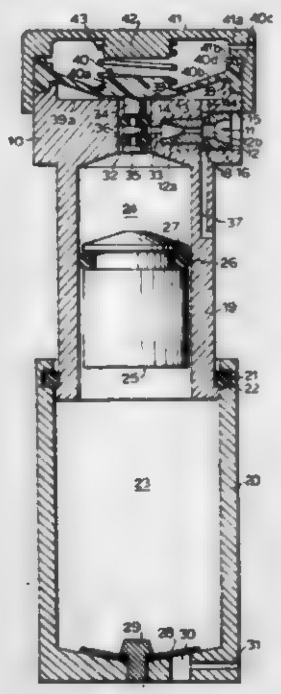
Herbert H. Loeffler, Arlington, Mass., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 520,946, Nov. 4, 1974, Pat. No. 3,910,465. This application Sept. 19, 1975, Ser. No. 615,087

Int. Cl.² B67D *5/54*

U.S. Cl. 222—193 4 Claims

1. In a dispenser for dispensing a fine spray by means of compressed air and having a body having a dispensing nozzle means therein for mixing and dispensing a fluent product and compressed air, a piston-cylinder means depending from said body and having a fixed member in said body and a movable member movable relative to said fixed member for compressing air therebetween, said fixed member having a fluent product containing recess therein opening toward said movable member, a product pressurizing piston in said product containing recess having an end exposed toward said movable member, said body having a product flow path therethrough from said product containing recess to said nozzle means and a product control valve means in said product flow path for controlling flow of product therethrough, and said body further having a compressed air flow path therethrough to said nozzle means and compressed air valve means in said compressed air flow path which is opened near the end of the movement of said movable means for releasing compressed air at a predetermined pressure into said compressed air flow path, the improvement comprising:



a product valve actuator having an actuator element coupled to said product valve, a flexible diaphragm extending outwardly from said actuator element and sealing means on the periphery of said diaphragm fixed in sealing engagement to said body, said compressed air flow path opening beneath said diaphragm and said product valve actuator being movable in response to the pressure of the compressed air for opening said product valve,

whereby when the movable member is moved toward the fixed member for compressing air, the compressed air acts on said product pressurizing piston for pressurizing the product, the compressed air at a predetermined pressure is released to said flow path, said valve actuator is moved to open said product valve.

3,979,028

FLUID INJECTOR

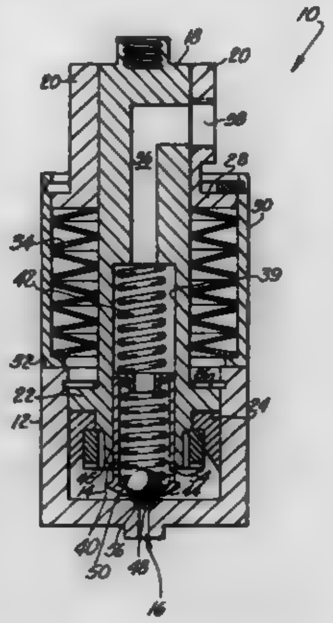
Paul H. Smith, Hinckley, Ohio, assignor to Colorflo Limited, Hitchin, England

Filed Oct. 31, 1974, Ser. No. 519,513

Int. Cl.² B41F *31/08*

U.S. Cl. 222—380 8 Claims

1. Apparatus comprising a housing including a chamber, means for conducting fluid material to said chamber, said fluid chamber including an outlet passage, a first piston movable in said chamber, said first piston including means defining a bore, said bore opening toward said chamber, a second piston slidable in said bore, self-sealing valve means carried by said second piston, spring means operative to urge said second piston toward a closed position in which it closes said outlet passage against fluid flow therethrough, means for moving said first piston to a position in which it is operative to apply pressure to the fluid in said chamber, surface means on said second piston and oriented such that the fluid in said chamber operates against said surface and tends, upon pressurization of said fluid, to urge said second piston away from said closed position, and a flange carried by said second piston around the periphery of said second piston having an outer dimension greater than the inner dimension of said bore and operative upon movement of said second piston away from said closed position to act as a sealing means to block fluid flow from said chamber through the spaces between said piston and said bore and to act as a stop means to engage a portion of said first piston which defines said bore, said flange having an effective surface area acted on by the fluid in said chamber upon pressurization of said fluid which is sufficiently less than the effective surface area of said surface means in order to cause said second piston to move away from said closed position.



3,979,029

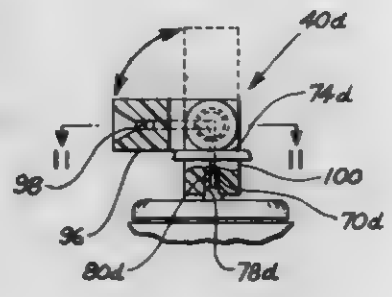
MULTI-DIRECTIONAL AEROSOL VALVE FOR USE ON AN AEROSOL CONTAINER

R. W. Hodgson, 1680 N. Vine St., Hollywood, Calif. 90028, and Steve A. Rands, 4353 E. Floral Drive, Los Angeles, Calif. 90022

Filed Dec. 16, 1974, Ser. No. 532,998

Int. Cl.² B05B *1/16*

U.S. Cl. 222—402.17 8 Claims



1. A multi-directional aerosol valve for use on an aerosol container to provide for substantially completely emptying such an aerosol container in any selected one of multiple directions relative to the longitudinal axis of such a container, comprising: a hollow valve housing capable of being affixed to a top wall of such a container; a valve body within said hollow valve housing and having a dip tube attaching means adjacent to a bottom portion thereof; a dip tube affixed to said attaching means; a hollow, longitudinally movable valve stem having passage means therein for dispensing pressurized liquid material from within such a container, said stem having a closed end which reciprocates within said hollow valve body and having cap-attaching means on its other end, said other end protruding upwardly through said hollow valve housing; valve sealing gasketing means for said passage means; valve stem biasing means cooperable for biasing said valve stem so that said passage means of said valve stem is biased against said sealing means to maintain said valve stem and passage means in a normally sealed, closed condition biased into a maximum extension position; and stem-covering valve cap means having controllably selectively operable, differently directible spray-discharging orifice means; said differently directible spray-discharging orifice means of said valve cap means being provided with controllably operable and movable selector means for selecting multiple different spray-discharging directions for said orifice means including at least one substantially laterally facing direction and at least one substantially upwardly facing direction and with said controllably operable and movable selector means also effectively functioning as activation and inactivation means for controllably inactivating the non-selected ones of said multiple different spray-discharging directions of said orifice means other than the selected spray-discharging direction selected by said controllably operable and movable selector means which is effectively activated thereby, said selector means comprising a common rotary sleeve member carried by and comprising a portion of said cap means for rotary displacement between a first lateral discharge selector position and a second vertical discharge selector position.

3,979,030

APPARATUS FOR DISPENSING POURABLE SUBSTANCES UNIFORMLY ONTO BELTS HAVING HIGHLY SENSITIVE SURFACES

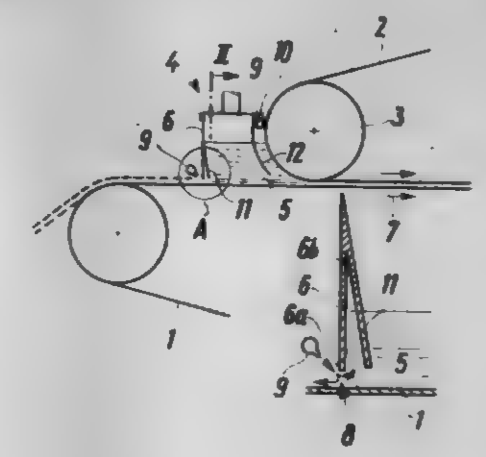
Karl Gunnar Boman, Neckarrems, Germany, assignor to Sandco Ltd., Canada

Filed Oct. 9, 1973, Ser. No. 404,386

Claims priority, application Germany, Oct. 11, 1972, 2249632

Int. Cl.² B60P *1/38*

U.S. Cl. 222—415 51 Claims



1. An apparatus for dispensing viscous, pourable substances uniformly onto belts having highly sensitive surfaces, especially for dispensing a uniform layer of polymer resins onto a steel belt, comprising a storage box which is open at the bottom and consists only of side walls which are located directly adjacent to the surface of the belt and in which at least the bottom edge of the end wall located at right angles to the direction of travel of the belt is arranged just above the surface of the belt and sealed by means of a flow of gas or liquid directed at the gap between the bottom edge and the surface of the belt from the outside.

3,979,031

DISCHARGE VALVE ASSEMBLY FOR A METAL LADLE ACTUATED THROUGH BOTTOM OF LADLE

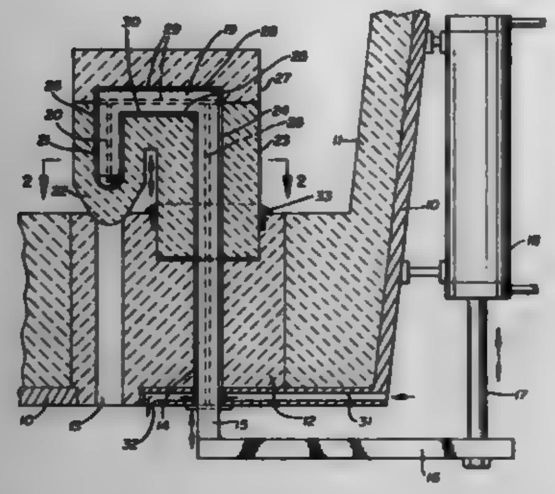
John A. Ericson, 732 Market St., Youngstown, Ohio 44502

Filed May 5, 1975, Ser. No. 574,565

Int. Cl.² B22D *35/06, 41/10*

U.S. Cl. 222—592 5 Claims

1. In a ladle for molten metal having a bottom wall and means in the bottom wall providing a discharge opening and a separate passageway therethrough, a valve assembly for said discharge opening and consisting of a stopper in said ladle and means positioning said stopper for vertical movement toward and away from said discharge opening, said means including a vertical portion extending through said passageway and



having a sideward extension carrying said stopper in depending relation thereto and means exteriorly of said ladle for moving said vertical portion of the means positioning said stopper and a sleeve disposed in said separate passageway for sliding sealing engagement with said vertical portion of the means positioning said stopper.

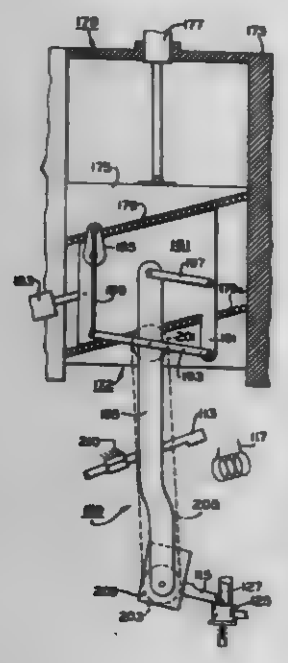
3,979,032
METAL MELTING AND CASTING APPARATUS

Jesse A. Stoner, DeKalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 397,425, Sept. 14, 1973. This application July 22, 1974, Ser. No. 490,257

Int. Cl.² B22D *39/00, 41/04, 41/06*

U.S. Cl. 222—593 38 Claims



33. Apparatus for casting a metal comprising means for casting the metal melted therein, means for receiving a predetermined amount of the metal in its solid state and generally constituted by a tube into which the metal is inserted, a slot in said tube for the passage therethrough of the metal into said casting means, means operable generally for depositing the metal into said casting means through said slot from said tube, and means for moving said casting means to a metal casting position when the metal therein is melted.

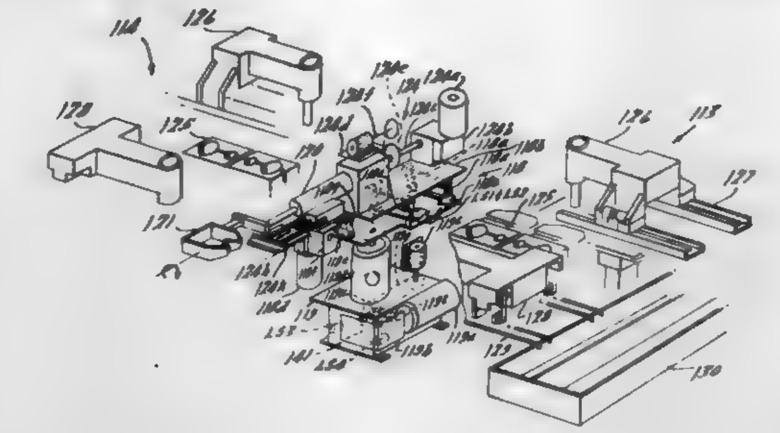
3,979,033
AUTOMATIC PISTON POURING EQUIPMENT

Robert J. Fulton, Mississauga; Neil S. Calvert, Toronto, and Joseph W. Valler, Downsview, all of Canada, assignors to Chrysler Corporation, Highland Park, Mich.

Filed Sept. 29, 1972, Ser. No. 293,712

Int. Cl.² B22D *41/04, 41/06*

U.S. Cl. 222—604 14 Claims



1. An automatic ladle for pouring molten material comprising:

a pouring ladle,

a substantially horizontal arm supporting the ladle at one end thereof for rotational movement between a substantially horizontal normal attitude for filling the ladle and a tilted attitude for pouring the metal from the ladle when the arm is rotated about its longitudinal axis, and

rotating means operatively connected to the arm for rotating it about its longitudinal axis in a controlled manner whereby pouring from the ladle is accomplished, the rotating means including:

variable speed electric motor means operatively connected to the arm for rotating it, and

electrical control means responsive to ladle-arm rotation and operatively connected to the motor means for controlling the speed of rotation thereof to provide pouring of the metal therefrom a variable controlled pour rates during pouring.

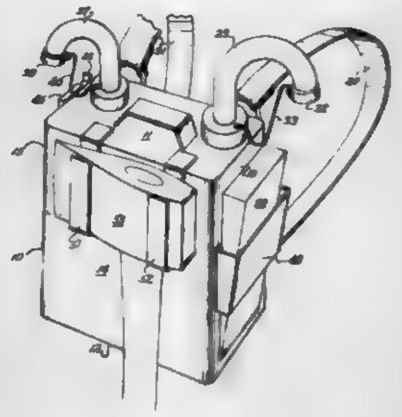
3,979,034
LOGGER'S COMBINATION FUEL CONTAINER AND TOOL CARRIER

Henry J. Larman, Ajlune Rte. Box 102, Mossyrock, Wash. 98564

Filed Feb. 20, 1975, Ser. No. 551,306

Int. Cl.² A45F *3/04*

U.S. Cl. 224—5 W 3 Claims



1. A combination fluid container and tool carrier transportable on the back of a chain saw operator, the invention comprising,

a fluid container partitioned to define at least two fluid storage chambers, said container having front and rear walls with intermediate side walls,

flexible spout arrangements serving each of said chambers, said spout arrangements including a cap closure to prevent spillage,

a vent line terminating adjacent the spout end and oppositely in communication with a buoyant vent block within one of said chambers thereby communicating atmospheric pressure to the last mentioned chamber interior,

shoulder straps attached to the container permitting convenient transport of same on the operator's back, and

tool receiving housings secured in place on at least one wall of said container serving to receive chain saw maintenance tools, said housings of a weatherproof nature to protect tools housed therein.

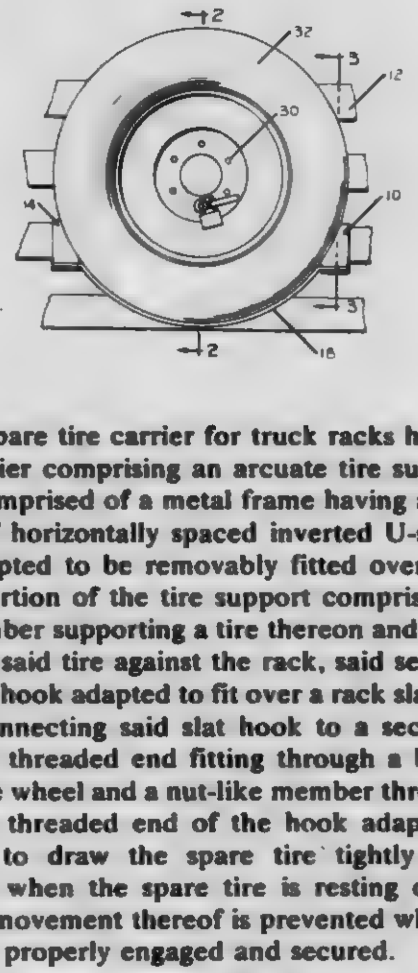
3,979,035
TIRE CARRIER FOR STOCK RACKS

Tommy J. Huot, Rte. 1, Linn, Mo. 65051

Filed June 10, 1975, Ser. No. 585,662

Int. Cl.² B62D *43/00*

U.S. Cl. 224—42.24 3 Claims



1. A spare tire carrier for truck racks having parallel slats, said carrier comprising an arcuate tire support, said support being comprised of a metal frame having at an upper portion a pair of horizontally spaced inverted U-shaped hook members adapted to be removably fitted over a rack slot and a lower portion of the tire support comprising an arcuate rim like member supporting a tire thereon and securing means for securing said tire against the rack, said securing means comprising a hook adapted to fit over a rack slat and an adjustable chain connecting said slat hook to a second hook member having a threaded end fitting through a bolt opening in the spare tire wheel and a nut-like member threadably engageable with the threaded end of the hook adapted to be adjusted thereon to draw the spare tire tightly against the rack, whereby when the spare tire is resting on the arcuate tire support movement thereof is prevented when the securement means is properly engaged and secured.

3,979,036
PAPER GUIDE FOR TAPE PERFORATORS WITH AN AUTOMATIC PITCH-ADAPTED THREADING MECHANISM FOR THE FEED ELEMENT ZONE

Guenther Vorbach, Schwindegg, and Wolfgang Peter Mueller, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

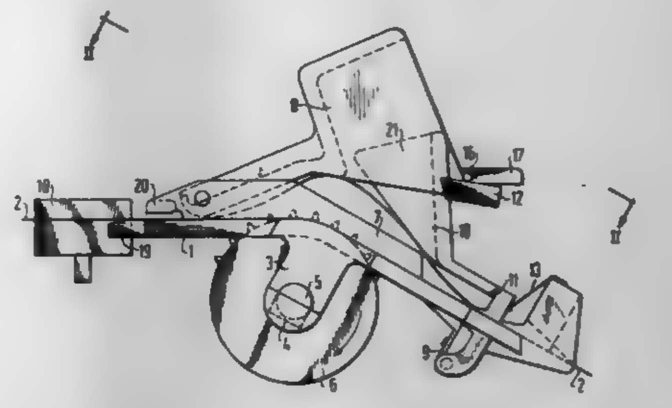
Filed Aug. 29, 1975, Ser. No. 608,891

Claims priority, application Germany, Sept. 20, 1974, 2445060

Int. Cl.² G03B *1/24;* B65H *25/00*

U.S. Cl. 226—83 11 Claims

1. A mechanism for automatic pitch-adapted threading and guiding of data carriers adjacent the feed and scanner elements of perforating punches comprising: a guide track having interlocking retainers pivotably connected thereto including a pivoting component and a locking component, the guide track having fixed flange means formed therewith, a shaft of a rotatable feed element received in said flange means whereby the feed element is carried by said guide track, the retainers pivotable through an arc, an electrical sensing device associated with said guide track, a portion of at least one of said retainers contacting the electrical sensing device during movement through its arc to actuate the sensing device, the sensing device operatively coupled with the feed element whereby actuation of the sensing device causes rotation of the feed element, and at least one of the retainers positioned with respect to the feed element to urge a data carrier positioned on the guide track above the feed element into contact with the feed element during pivoting of the at least one of the retainers to a closed, electrical sensing device actuating position.



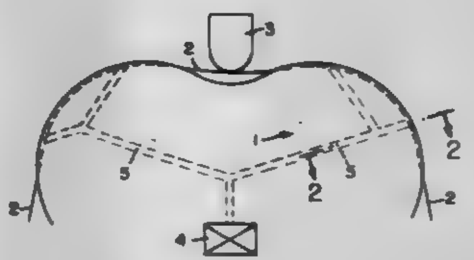
3,979,037
AIR GUIDE FOR TAPE TRANSPORTS

Donald L. Burdorf, Newport Beach, Calif., assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Nov. 7, 1974, Ser. No. 521,882

Int. Cl.² B65H *17/32*

U.S. Cl. 226—97 4 Claims



1. An air guide apparatus adapted to guide a span of recording tape as it is transported past a head, said apparatus comprising:

a concave guide surface;

a pair of flanges spaced apart a distance slightly greater than the width of the recording tape and located on opposite sides of the path to be followed by said tape along said guide surface;

at least one air port, having a means for providing air under pressure connected thereto, located in said guide surface substantially at the point where a pressurized air film is sought to be initiated;

said guide surface being located adjacent to said head whereby, as said tape travels along and is guided by said guide surface and between said flanges, a film of pressurized air is generated between said guide surface and tape in the direction of tape travel along said guide surface which effectuates a reduction in sliding friction therebetween and maintains a substantially linear profile of said tape across its width as it is transported past said head.

3,979,038

ARRANGEMENT AT TRANSPORT OF WEB OR SHEET MATERIAL

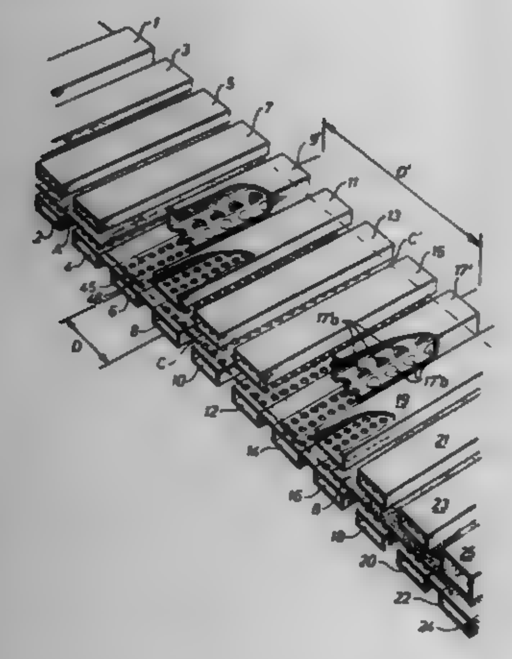
Ingemar Karlsson, Vaxjö, Sweden, assignor to Aktiebolaget Svenska Fläktfabriken, Nacka, Sweden

Filed May 28, 1975, Ser. No. 581,668

Claims priority, application Sweden, May 29, 1974, 7407115

Int. Cl.² B65H *17/32*

U.S. Cl. 226—97 **5 Claims**



1. An apparatus for the transport of web or sheet material carried on air to advance the material in a fixed stable floating position without flutter in a conveying path through one or more decks of a treating plant having air supply means comprising a plurality of blow boxes distributed along the conveying path of the material and provided with apertures for air outflow against the material, and air exhaust means comprising a plurality of exhaust spaces provided adjacent the blow boxes, which blow boxes are mounted in spaced parallel relation with each other and perpendicularly to the conveying direction of the material on both sides of the plane surfaces of the material at substantially equal distances from the plane through the material, and having plane surfaces facing toward the material with apertures directed against the material and designed to blow the air substantially perpendicularly against the material, and a smaller number of fixing chambers mounted at least on one side of the material and disposed perpendicularly to the conveying direction of the material with a separation relative to each other along the conveying path exceeding the separation of the blow boxes, which chambers are provided with air outflow apertures directed against the plane of the material to bring about an air flow in parallel with the plane of both the material and the fixing chamber, characterized in that the fixing chambers are mounted at a smaller distance from the conveying path than the blow boxes and are provided with outflow apertures directed obliquely to the plane of the conveying path, and that at least one blow box with apertures distributed over its plane is mounted directly in front of a fixing chamber, and that exhaust spaces adjacent said one blow box are entirely or partially closed.

3,979,039

BLIND RIVET APPARATUS

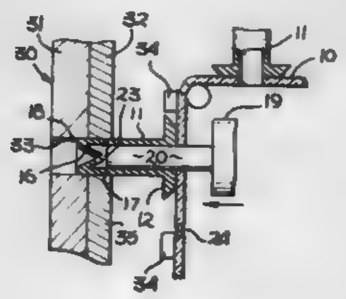
Melvin J. David, 16221 Quemada Rd., Encino, Calif. 91316

Division of Ser. No. 307,442, Nov. 17, 1972, abandoned. This application June 21, 1974, Ser. No. 481,502

Int. Cl.² B21J *15/36*

U.S. Cl. 227—60 **6 Claims**

1. A blind rivet and insertion tool for use with a blind rivet assembly which has a preformed rivet head having top and bottom surfaces, a cylindrical member having a uniform inner and outer diameter integral with and depending from said preformed rivet head, said preformed rivet head having an aperture therethrough coextensive with the inner diameter of said cylindrical member, a rivet head forming end integral with said bylindrical member and in axial opposition to said preformed rivet head, said preformed rivet head comprising first and second portions, the diameter of said first portion being reduced along the axis thereof, said first portion depending into said second portion, said second portion having a continually increasing diameter along the axis thereof, the maximum diameter of the second portion being substantially equal to that of said cylindrical member, said insertion tool comprising means for forming said rivet forming end into a blind rivet including a base member of substantially the same shape as said preformed rivet head and a forming stem coupled to said base, said forming stem comprising a plurality of aligned forming members having an outer cylindrical profile adapted to be slidably received within the cylindrical member of said blind rivet, said aligned forming members each comprising first and second sections pivotally coupled to one another and having an inner cylindrical aperture along the axis thereof, said cylindrical aperture extending outwardly into a symmetrical cavity uniformly disposed into the inner surfaces of said aligned forming members, said forming stem including means for imposing an outwardly directed radial force on said forming stem, said means being slidably disposed within said forming stem whereby a radial force is imposed on said second portion when said means is withdrawn from said forming stem, the symmetrical cavity disposed into the inner surfaces of said aligned forming members being adapted to receive said means therein.



3,979,040

NAIL DRIVER

Adam Denin, P.O. Box 10021, Amarillo, Tex. 79106

Filed Sept. 22, 1975, Ser. No. 615,798

Int. Cl.² B25C *5/06*

U.S. Cl. 227—113 **7 Claims**

1. A magnetic nail driver comprising:

a. a cylindrical tube made of nonmagnetic material having a handle end and a magnetic end,

b. a rod-shaped driver telescoped within the tube,

c. a weighted handle on the driver, the handle extending from the handle end of the tube,

d. a tubular magnetic holder over the tube at the magnetic end forming

e. an annular space between the magnet holder and tube, and

f. a plurality of permanent bar magnets in the magnet holder,

g. all said magnets aligned with the tube and oriented in the same direction.

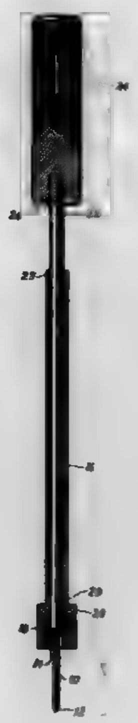
7. A magnetic nail driver comprising:

a. a cylindrical tube made of nonmagnetic material having a handle end and a magnetic end,

b. a rod-shaped driver telescoped within the tube,

c. a weighted handle on the driver, the handle extending from the handle end of the tube,

d. said handle of magnetic material and having a shoulder adjacent the rod-shaped driver so the tube may be reversed and held together magnetically for storage and transportation, and



e. at least one magnet on the magnetic end of the tube.

3,979,041

CLAMPING MECHANISM FOR LINE-UP OF PIPES

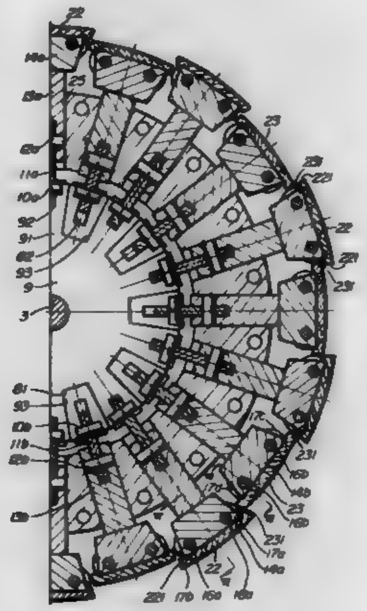
Kiyoshi Kaneyama; Masashi Nakamura, and Takanobu Murakami, all of Kanagawa, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1975, Ser. No. 549,003

Claims priority, application Japan, July 13, 1974, 49-79743

Int. Cl.² B23K *31/02*

U.S. Cl. 228—49 **5 Claims**



1. An apparatus for aligning, expanding and welding pipes, comprising

a pair of cylindrical housings;

a first assembly in one of said housings, comprising a plurality of first members extending in a radial direction, metal backing means affixed to each of said first members, roller means on each of said first members, and means for moving alternate ones of said first members in radial direction;

a second assembly in the other of said housings, comprising a plurality of second members extending in a radial direction and means for moving all of said second members together in said radial direction; and

driving means, including hydraulic means, for driving said first and second members.

3,979,042

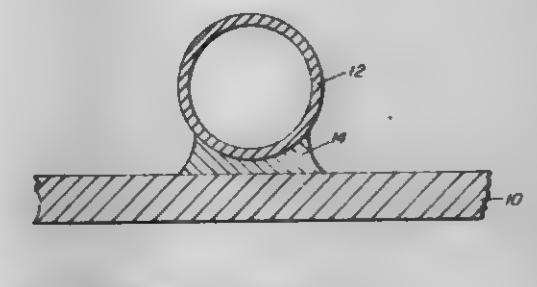
VACUUM BRAZING OF NICKEL TO ALUMINUM

Bruce J. Peters, Hanover, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jan. 16, 1975, Ser. No. 541,534

Int. Cl.² B23K *1/04*

U.S. Cl. 228—183 **15 Claims**



1. The method comprising the steps of:

providing members or predominantly nickel and aluminum or alloy of aluminum;

assembling said members in a preferred configuration;

providing a brazing material at junctures between said members, said brazing material comprising aluminum, silicon, and magnesium;

providing a non-reactive atmosphere around the assembled members; and

heating said members until a braze forms therebetween.

3,979,043

ALUMINUM BRAZING METHOD

Calvin C. Lowery, Huntington Woods, Mich., assignor to Wall Colmonoy Corporation, Detroit, Mich.

Filed Oct. 17, 1975, Ser. No. 623,437

Int. Cl.² B23K *1/04, 1/20*

U.S. Cl. 228—205 **8 Claims**

1. A method of brazing members composed of aluminum and alloys of aluminum which comprises the steps of applying a substantially uniform coating of metallic manganese to at least one of the surfaces of the members to be joined in an amount sufficient to react with the aluminum oxide film on said surfaces to enable a penetration of said oxide film by a molten brazing filler metal and a wetting of the underlying base metal substrate, applying a brazing filler metal to the member in the region of the surfaces to be brazed, heating the member to an elevated brazing temperature in the presence of a vacuum of at least about 0.001 Torr to effect a melting and flow of said brazing filler metal between the surfaces to be joined and a penetration and wetting of the substrate base metal beneath the oxide film, and thereafter cooling and extracting the brazed said member.

3,979,044

CARTON CONSTRUCTION

Masuzo Tani, No. 19-9, 2-chome, Minami Umagome, Ota, Tokyo, Japan

Filed Apr. 17, 1975, Ser. No. 568,821

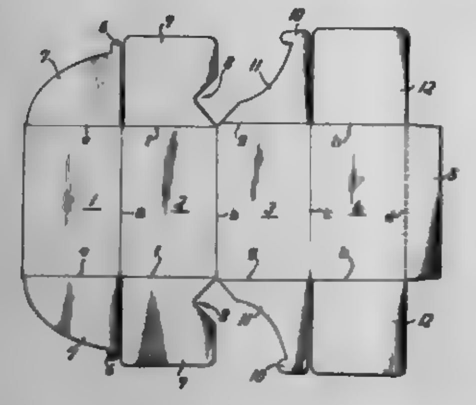
Claims priority, application Japan, Jan. 13, 1975, 50-6147

Int. Cl.² B65D *5/72, 5/54*

U.S. Cl. 229—17 R **3 Claims**

1. A carton construction comprising a first side panel, supporting flaps hingedly connected to said first side panel at each end thereof, said supporting flaps having a fan-shaped convex edge and a projection located adjacent the convex edge outermost from the hinged connection, a second side panel hingedly connected to said first side panel, lower cover flaps hingedly connected to said second side panel at each end thereof, said lower cover flaps having substantially rectangular edges and having a V-shaped cutout at one edge, said V-shaped cutout located adjacent the hinged connection be-

tween said second side panel and said lower cover flap, a third side panel hingedly connected to said second side panel, locking flaps hingedly connected to said third side panel at each end thereof, wherein the distance between the ends of said second side panel is less than the distance between the ends of said third side panel, said locking flaps having an angle portion at an edge opposite from the V-shaped cutout of said



lower cover flaps, a concave portion extending from said angle portion, and a projection extending from said angle portion, a fourth side panel hingedly connected to said third side panel, upper cover flaps hingedly connected to said fourth side panel at each end thereof, said upper cover flaps having substantially rectangular edges, and a connecting panel hingedly connected to said fourth side panel.

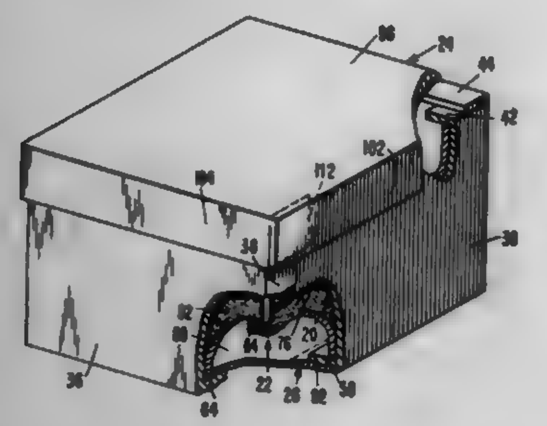
3,979,045
BULK MATERIAL CONTAINER

Robert A. Bamburg; Farris N. Duncan, both of West Monroe, and Roger M. Floyd, Monroe, all of La., assignors to Olinkraft, Inc., West Monroe, La.

Filed Aug. 28, 1975, Ser. No. 608,799

Int. Cl.² B65D *13/04*

U.S. Cl. 229—23 R **7 Claims**



1. A bulk material container comprising
an integral body having side panels for forming an enclosed wall and having short flaps hinged on the edges of the side panels at one of the top and bottom ends of the body,
a large flap overlapped and secured to one of the short flaps and adapted to be overlapped and secured to the other short flaps to close the one end,
said integral body formed of a paperboard having a first weight,
said large flaps formed of a paperboard having a second weight,
said first weight being substantially greater than said second weight,
means for closing the other of the top and bottom ends of the body, and
said large flap having a fold line adjacent the edge of the one short flap opposite to the hinge on the respective side panel for allowing the large flap to be folded over the one short flap and respective side panel.

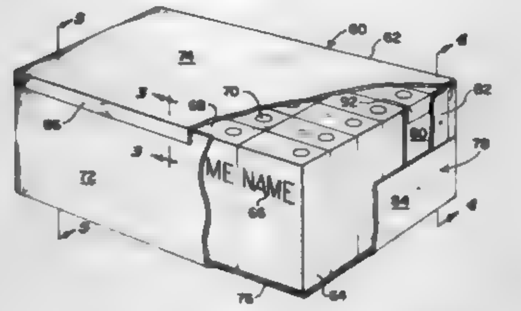
3,979,046
SPECIAL SHIPPING CASE HAVING MODIFIED END FLAPS

Charles J. Wilbur, Barrington, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Feb. 27, 1975, Ser. No. 553,565

Int. Cl.² B65D *5/18, 5/36*

U.S. Cl. 229—37 R **14 Claims**



1. A tubular partially assembled blank corrugated shipping case comprising a top panel, side panels, and bottom panel, each of said panels being delineated by respective score lines; respective minor end flaps extending from each end of said side panels and being delineated therefrom by score lines therebetween, major end flaps extending from both ends of said top and bottom panels and being delineated therefrom by respective score lines, said minor and major end flaps being hinged to said respective panels, and being free of direct attachment to adjacent end flaps along the respective edges thereof; separator strips of corrugated material integral with said minor end flaps adjacent the top and middle edges of said minor end flaps; said major end flaps being unattached to said minor end flaps in a cutting zone along the entirety of the adjacent edges of the top panel, said major end flaps being secured to said minor end flaps below said zone.

3,979,047
CIGARETTE PACKETS

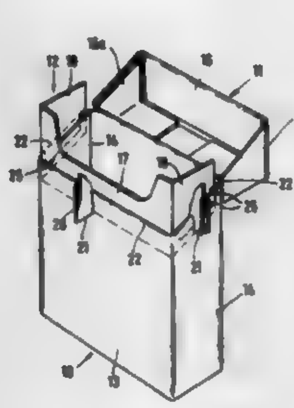
Heinz Focke, and Kurt Liedtke, both of Verden, Aller, Germany, assignors to Focke & Pfuhl, Verden, Aller, Germany

Filed May 29, 1975, Ser. No. 581,995

Claims priority, application Germany, May 29, 1974, 2426131

Int. Cl.² B65D *5/34*

U.S. Cl. 229—44 CB **6 Claims**



1. In a blank for forming a hinged lid packet for cigarettes or the like wherein the blank has integral portions which are folded to form the front, back, sides, bottom and hinged lid of the packet, the improvements comprising:
a. a first pair of parallel fold lines defining a first folding strip extending laterally across the portion of the blank which forms the front of the packet; and
b. a second pair of parallel fold lines extending obliquely across the portions of the blank which forms the sides of the packet, one end of the second pair of parallel fold lines coinciding with an end of the first pair of parallel fold lines, said second pair of fold lines defining second folding strips, each of said second folding strips having at

least one relief aperture therethrough the relief apertures allowing the blank to be folded in a Z fold about the parallel fold lines to form an inwardly disposed collar portion, about which the hinged lid fits such that outer surfaces of the hinged lid is flush with the outer surfaces of at least the front and sides of the packet.

3,979,048
PACKAGE COMPRISING A STIFF STRIP

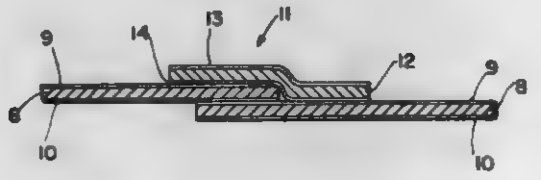
Olof Stark, Rydsgard, and Rolf Dilot, Lund, both of Sweden, assignors to AB Ziristor, Lund, Sweden

Filed Dec. 4, 1974, Ser. No. 529,540

Claims priority, application Sweden, Dec. 5, 1973, 7316394

Int. Cl.² B65D *5/42, 3/00*

U.S. Cl. 229—48 T **1 Claim**



1. In a filled package of the type which is manufactured from a material web of laminated material comprising a base layer of paper or cardboard which is coated at least on the inside with a heat-sealable polyethylene material and which material web is formed into an end closable tube in which the longitudinal edge zones of the web are heat sealed together in overlapping relation, the improvement in which the longitudinal joint on the inside of the package is covered by a strip of a laminated material consisting of a base layer of polyamide having a higher softening temperature than the polyethylene on the inside of the package, both sides of said strip base layer being coated with polyethylene, one side of which is heat sealed to the polyethylene coating on the inside of the package along the longitudinal joint.

3,979,049
CROSS-BOTTOM BAG

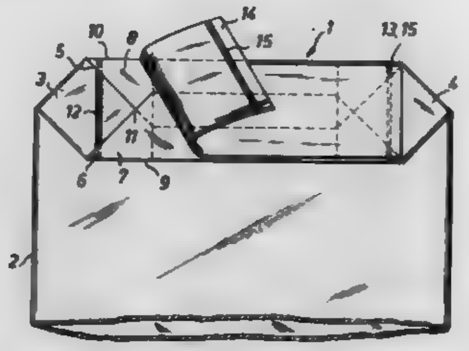
Fritz Achelpohl, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed May 8, 1974, Ser. No. 468,168

Claims priority, application Germany, May 10, 1973, 2323726

Int. Cl.² B65D *33/02, 33/22*

U.S. Cl. 229—60 **2 Claims**



1. A cross-bottom bag comprising, in combination, a pair of oppositely disposed, inwardly folded corner tucks at one end of the bag, a pair of oppositely disposed, inwardly folded side fold portions at said one end of the bag, said side fold portions having diagonal fold edges extending in overlying relationship with said corner tucks, a bottom cover sheet being adhesively secured in overlying relationship with said folded corner tucks and said folded side portions, a strip of adhesive material of the thermoplastic type on each of said corner tucks, each of said strips having end portions extending in underlying relationship with the diagonal fold edges of said folded side portions and across the fold lines of said side fold portions in doubled-back overlying engagement, each of said strips having an intermediate portion between diagonal fold edges in underlying relationship with said bottom cover sheet and a strip of adhesive material of the thermoplastic type adjacent each end of said bottom cover sheet on said one side in overlying aligned sealing engagement with said respective strips of adhesive material on said corner tucks to form a sealed bottom on the bag.

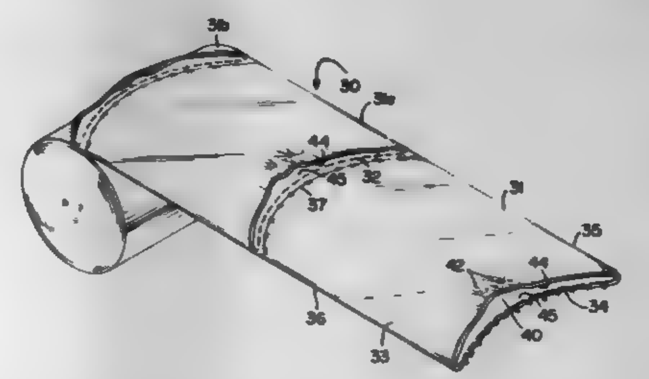
3,979,050
MULTI-PLY FILM ARTICLES

Phillip F. Cilia, Palos Hills, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 399,315, Sept. 21, 1973, abandoned. This application Aug. 11, 1975, Ser. No. 603,293

Int. Cl.² B65D *33/00*

U.S. Cl. 229—66 **10 Claims**



1. A flat flexible multi-ply plastic film article comprising a first ply of flat flexible plastic film superimposed over a second ply of flat flexible plastic film, having opposite edges thereof joined and an openable end with substantially aligned edges, characterized by a portion of said first ply of film defining the openable end being puckered and non-uniformly distorted, separating a portion of the confronting face of said first ply of film from the opposed confronting face of said second ply of film and displacing a portion of said aligned edge of said first ply of film relative to the opposing aligned edge of said second ply of film, said displaced edge portion of film being contracted and drawn back generally towards a central portion of said article, whereby the distorted portion of film provides means for grasping and readily separating the confronting faces of said first and second plies of film.

3,979,051
MULTI-COMPARTMENT ENVELOPE

Patrick J. Close, Media, Pa., assignor to American Fiber Velope Manufacturing Company, Collingdale, Pa.

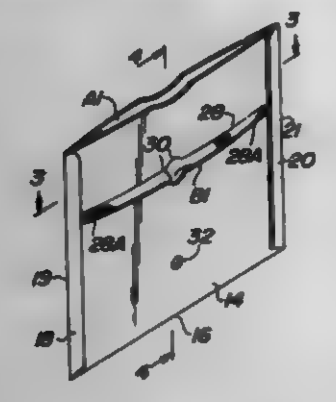
Filed June 23, 1975, Ser. No. 589,343

Int. Cl.² B65D *27/08, 85/30*

U.S. Cl. 229—72 **7 Claims**

1. A multi-compartment envelope comprising:
a. a first sheet folded along a medial line thereof defining a front and back panel, said front and back panel secured together on opposing lateral edges forming a first vertically accessible pocket opening;
b. a second sheet separate and distinct from said first sheet and having dimensions not exceeding those of said front panel; and,
c. means cementing at least an upper portion of the marginal edges of the second sheet to the interior surface of said front panel, said front panel having a slot formed therethrough being vertically displaced from said first pocket opening, said upper portion marginal edges of said

second sheet being cemented to said interior surface above and contiguous to said slot to enable vertical access to a second pocket opening between the front panel and the second sheet.



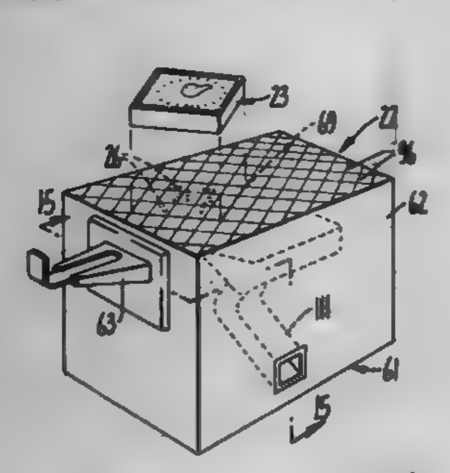
3,979,052
HIGH SECURITY LOCK

Joseph R. Dettling, Santa Clara, and John P. Barry, Woodland Hills, both of Calif., assignors to United Technologies Corporation, East Hartford, Conn.

Division of Ser. No. 464,013, April 25, 1974, Pat. No. 3,873,892, which is a continuation of Ser. No. 248,196, April 27, 1972, abandoned. This application May 6, 1974, Ser. No. 467,420

Int. Cl.² B65D *91/00*

U.S. Cl. 232—43.1 4 Claims



1. A keyhole-less, drawerless, coin-collecting security device for a coin-operated machine comprising in combination:

a. a receiver structure formed, at least in part, from a magnetic field permeable material; said structure providing a barrier to physical penetration thereof;
b. a coin slot means on said receiver for introducing coins into said receiver;
c. coin storage means disposed within said receiver in coin receiving relationship to said coin slot means, said storage means being adapted to contain simultaneously a multiplicity of coins and being provided with a hopper-shaped bottom;
d. chute means within said receiver leading from said hopper-shaped bottom to a discharge opening in the exterior of said receiver; said coin slot means and said discharge opening normally constituting the sole means of access from the exterior of said receiver to said coin storage means;
e. valve means, within said receiver movable from a closed position which blocks said chute to an open position which permits coin flow through said chute from said hopper to the exterior of said receiver;
f. magnetic locking means within said receiver, said locking means comprising:
  i. magnetic field detecting means for detecting a predetermined externally generated magnetic field pattern; said magnetic field detecting means being located within said receiver and in proximity to said magnetic field permeable portion thereof; and,
  ii. actuating means for moving said valve means from said closed position to said open position; said actuating means being responsive to a predetermined magnetic field pattern detected by said magnetic field detecting means.

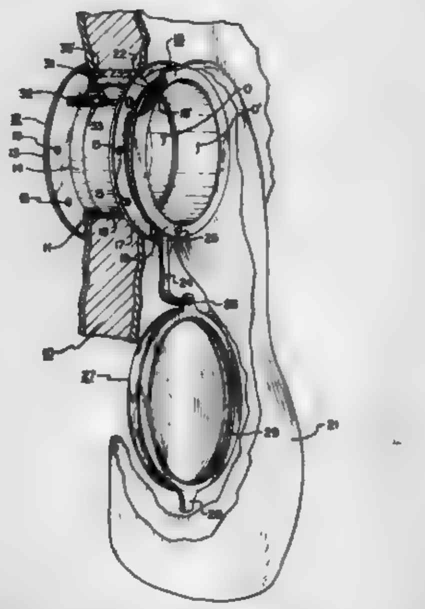
3,979,053
REFUSE DEVICE

Arthur M. Amann, Box 594, Lyman, Wyo. 82937

Filed Dec. 30, 1974, Ser. No. 537,128

Int. Cl.² B65D *91/00*

U.S. Cl. 232—43.2 1 Claim



1. A refuse passage device for installation in a pass-through aperture of a structural member, said device including, in combination, ingress and egress flange members, each having an annular, radially outwardly extending flange portion and an inner tubular portion integral with its respective flange portion, said tubular portions being in mutual telescoping cooperation, and said egress flange member also including a refuse-bag-attachment annular outwardly extending flange circumscribing the interior of said tubular portion thereof and spaced outwardly from said egress flange portion, said egress flange member being provided with a recessed surface disposed between said refuse-bag-attachment annular flange and said egress member annular flange portion, and wherein said egress flange member includes flanged cap means secured to and suspended vertically beneath said egress flange member for releasably closing and retentively fitting over said refuse-bag-attachment annular flange.

3,979,054
COIN COLLECTION SYSTEM

Billy J. Graham, Smithfield, Tex., assignor to National Pride Equipment, Inc., Livonia, Mich.

Filed July 27, 1973, Ser. No. 383,086

Int. Cl.² B65D *91/00*

U.S. Cl. 232—43.2 1 Claim

1. A system for use in two stalls formed on each side of a separating wall in a coin operated vehicle cleaning facility for receiving coins from both stalls, comprising:

a coin collector safe to be embedded in concrete, said safe having two conduits extending therefrom forming two coin inlets, one for each stall, said safe having a door formed in one end for removing the coins collected,

metal sidewalls for surrounding said safe to define a space around said safe for receiving wet concrete whereby said metal sidewalls form part of the completed structure for holding the concrete which embeds the safe when the wet concrete is inserted into and hardens in the space between said safe and said surrounding walls,

said sidewalls comprising two sections, each section having three sides connected together for surrounding opposite ends of said safe at positions to form a gap between said sections intermediate said opposite ends of said safe to allow said system to be inserted through an opening in the separating wall of the motor vehicle cleaning facility with the edges of said separating wall forming the opening, located in said gap whereby opposite ends of said safe may be located in the two stalls formed on opposite sides of the separating wall,

at least one of said sections being connected to said safe.

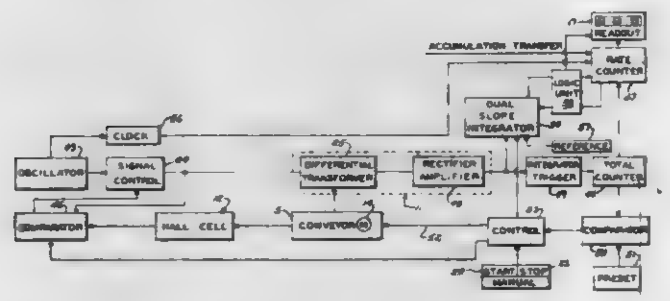
3,979,055
WEIGHING SYSTEM FOR CONVEYING MEANS

George H. Fathauer, Mesa, Ariz., and Wesley J. Bachman, Auburn, Ill., assignors to A.O. Smith Harvestore, Inc., Arlington Heights, Ill.

Filed May 3, 1974, Ser. No. 466,678

Int. Cl.² G01G *11/14*

U.S. Cl. 235—92 WT 30 Claims



1. An electronic scale conveyor apparatus having a conveyor element for through flow of material, comprising detection means for generating a rate weight signal proportional to the weight of material delivered per unit of time by said conveyor element, a digital rate counter, a clock source for driving said digital counter, logic circuit means coupled to said detection means and said digital counter to cyclically actuate said counter to detect the weight rate of material conveyed, a counter readout, and readout transfer means for operatively coupling the readout to the counter, said transfer means being connected to said logic circuit means to transfer the output of the counter to the readout with each cycle of said counter, pulse means for generating a pulse train signal having a repetition rate corresponding to a predetermined function of the rate-weight signal, a digital total counter connected to said pulse means to record the total weight delivered by said conveyor element, and means coupling said digital total counter to said rate counter and including total transfer means to force set rate counter to the setting of the total counter and to transfer the output to the readout.

3,979,056
MULTI-PRODUCT COOKING COMPUTER

Miles J. Barnes, Woodbridge, Conn., assignor to Food Automation Service Techniques, Inc., Stratford, Conn.

Filed Aug. 25, 1975, Ser. No. 607,189

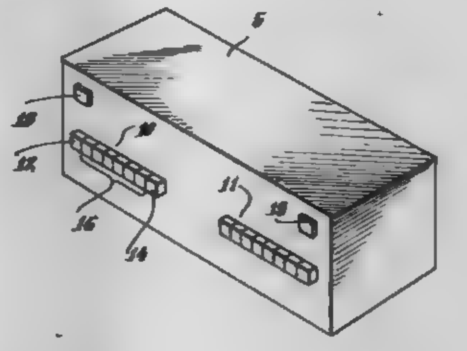
Int. Cl.² G06M *3/02;* **A47J** *27/62*

U.S. Cl. 235—92 MT 18 Claims

1. A multi-product cooking computer for timing the cooking of foods immersed in a heated cooking medium, said computer being adapted to compensate for variations in temperature of the medium and in the type of food being cooked, said computer including,

a temperature sensing probe adapted to be positioned in said medium and to produce an electrical signal corresponding to the temperature of said medium,

a plurality of timing circuits, each corresponding to a preselected type of food and producing an electrical signal related to the required amount of cooking for the respective food types,



a signal controlled oscillator adapted to have its rate of oscillation controlled by said two electrical signals, said rate increasing for increasing cooking medium temperatures and decreasing for longer required cooking times for particular foods,

a counter associated with said oscillator to receive the output of said oscillator and produce an output signal at a pre-determined oscillation count, and an operator warning device activated by said output signal,

whereby a variety of foods may be individually cooked in said medium and the time of cooking determined by the type food and the temperature of the cooking medium.

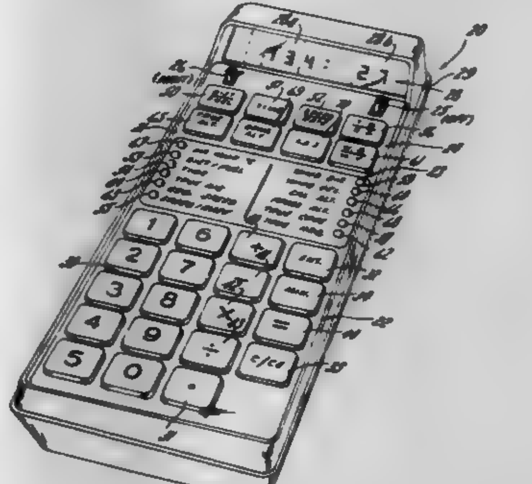
3,979,057
ELECTRONIC NAVIGATIONAL COMPUTER

Ronald Katz, Indian Head Park; Aaron Aronson, and Clarence Turek, both of Glenview, all of Ill., assignors to Specialized Electronics Corporation, Chicago, Ill.

Filed Oct. 29, 1974, Ser. No. 518,728

Int. Cl.² G06F *15/50, 9/18*

U.S. Cl. 235—156 31 Claims



1. A self-contained hand-held electronic computer for aircraft navigational problems comprising in combination:

a housing having a storage battery power unit, a visual numerical display, a keyboard, program director means, register means for storage of data including input data and intermediate results, calculator means for performing predetermined computational functions, and interfacing circuit means for operatively connecting said keyboard, said program director means, said register means, said calculator means and said display;

said keyboard comprising a plurality of input data keys including 0 to 9 days and an enter key;

a plurality of program selector keys for at least each of the following navigational and performance problems:
  1. effect of winds aloft on aircraft progress and maintenance of course,
  2. effect of non-standard atmospheric conditions on aircraft performance, and

a plurality of porgram selector keys for time related problems involving two entry multiplication or division functions relating the following variables:
  1. time, distance and speed, and
  2. time, fuel quantity and fuel consumption rate;

said program director means including pre-programmed dedicated memory means for storing programs comprising a sequence of steps including instructions to route data to and from and perform computational functions by said calculator means to solve each of the navigational, performance and time related problems within the repertoire of the computer, said instructions calling for the manual entry of data in a predetermined sequence in the course of the programs; and

said interfacing circuit means including means operable in response to actuation of one of said program selector keys to initiate a selected program stored in said memory means, and pursuant to instructions from said memory means to operate said calculator means to perform computational functions on input data after entry via said input data and enter keys in the course of the selected program and on data routed from said register means,

and display encoder means for receiving output data from said calculator means pursuant to instructions from said memory means and connected to show the final solution to said problems visually on the numerical display.

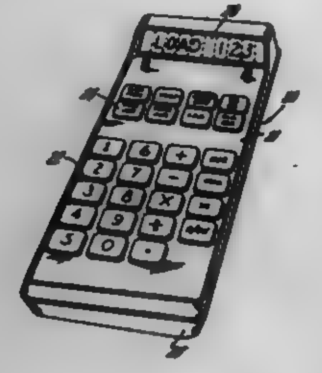
3,979,058
OPERATOR PROMPTING SYSTEM FOR STORED PROGRAM CALCULATOR

Ronald. C. Katz, Indian Head Park; Aaron Aronson, and Clarence Turek, both of Glenview, all of Ill., assignors to Specialized Electronics Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 518,728, Oct. 29, 1974. This application Mar. 17, 1975, Ser. No. 559,062

Int. Cl.² G06F *9/18, 15/02*

U.S. Cl. 235—156 **9 Claims**



1. In a self-contained electronic computer for mathematical problems having: a housing including a plurality of data input keys, a plurality of program selector keys, a visual numerical display, calculator means for performing mathematical operations, a stored program controller, said controller having a plurality of programs stored therein for solving a plurality of mathematical problems, each of said programs comprising a routine of program steps, means coupling the controller to the calculator means for causing said calculator to perform the mathematical operations indicated by said program steps, at least some of said program steps requiring the manual entry of data during the course of the program via the data input keys of said keyboard, means coupling said program selector keys to said controller for selecting associated ones of the programs stored in said controller, an operator prompting system comprising means for visually indicating in conversational language with data titles the individual types of data to be entered during said programs, and means for driving said indicating means and operative in conjunction with said program steps requiring manual entry of data for displaying selected ones of said data entry titles to prompt the operator as to the type of data required by said program steps, whereby selection of a program is effective to cause said computer to demand the necessary input data in sequence and manipulate said data to calculate the desired results.

3,979,059
SYSTEMS FOR CONTROLLING THE TEMPERATURE WITHIN AN ENCLOSURE

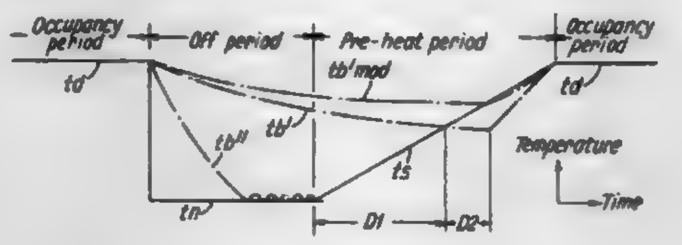
James Ralph Davis, 21a Pennyletts Garden, Stoke Poges, Buckinghamshire, and Peter Pressner, 525 Bath Road, Slough, Buckinghamshire, both of England

Filed Feb. 10, 1975, Ser. No. 548,766

Claims priority, application United Kingdom, Feb. 12, 1974, 6372/74

Int. Cl.² F23N *5/20*

U.S. Cl. 236—46 R **13 Claims**



1. A control means for regulating the operation of a system for controlling the temperature within an enclosure so that a desired temperature within the enclosure is attained at a predetermined time, the control means comprising:
  I. thermal conditioning apparatus for said enclosure;
  II. first means for generating a first signal representative of the temperature within the enclosure;
  III. second means for generating a second signal representative of a temperature set point which changes at a predetermined rate prior to said predetermined time and equals said desired temperature at said predetermined time;
  IV. third means for generating a third signal representative of the temperature outside the enclosure; and
  V. fourth means connected with said first, second and third means for bringing said thermal conditioning apparatus into operation in response to the existence of a particular relation between said first and second signals,
  VI. said particular relation between said first and second signals varying with said third signal so as increasingly to delay the operation of the thermal conditioning apparatus as the outside temperature changes towards said desired temperature.

3,979,060
AUTOMATIC MULTIPLE UNIT CONTROL APPARATUS

James Allen Tierce, 723 Melrose St., Richardson, Tex. 75080

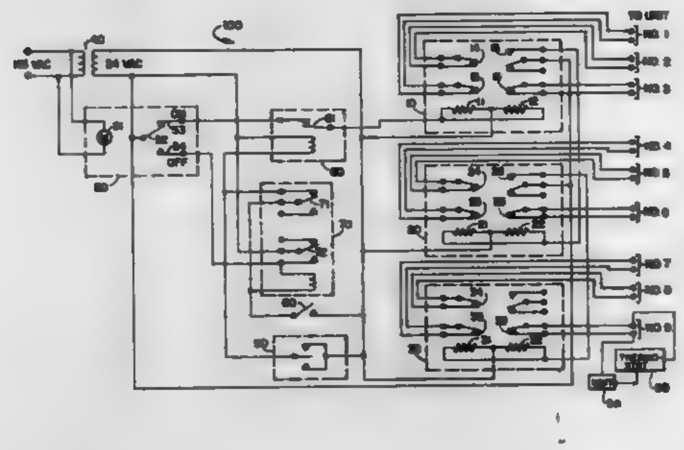
Filed Mar. 20, 1975, Ser. No. 560,156

Int. Cl.² F23N *5/20;* **G05D** *23/00*

U.S. Cl. 236—46 R **7 Claims**

1. Apparatus for controlling a plurality of devices to be alternately enabled and disabled during predetermined cyclically recurring time periods including: two state programmable timer means arranged to be in a first of its states during those of said time periods when said plurality of devices are to be enabled and in the second of its states during those of said time periods when said plurality of devices are to be disabled; a plurality of bistable elements connected in chain-like configuration to said timer means so as to sequentially switch in a predetermined order from their first states to their second states responsive to said timer means changing from its first

state to its second state and to sequentially switch in said predetermined order from their second states to their first states responsive to said timer means changing from its second state to its first state, said bistable elements including delay means so that the sequential switching is spread out over a predetermined period of time; switch means operatively connecting said plurality of devices to respective ones of said plurality of bistable elements so as to enable each of said devices when its respective bistable element is in its first state and to disable each of said devices when its respective bistable element is in its second state; manually operable override switch means for providing an indication that said devices are to be enabled; override enabling means connected to said override switch means and responsive to said indication for switching said bistable elements to their first states; override disabling means interposed between said override switch means and said override enabling means, said override disabling means being responsive to said indication from said override switch means and to said timer means changing to its first state for opening the connection between said override switch means and said override enabling means, and said override disabling means being further responsive to a subsequent termination of said indication from said override switch means for closing the connection between said override switch means and said override enabling means.



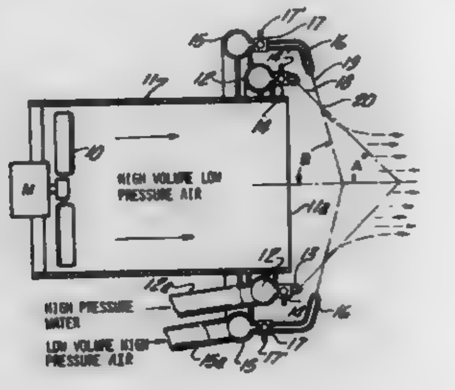
3,979,061
METHOD AND APPARATUS FOR MAKING ARTIFICIAL SNOW

Everett F. Kircher, P.O. Box 32, Boyne Falls, Mich. 49713

Filed Feb. 4, 1974, Ser. No. 439,574

Int. Cl.² F25C *3/04*

U.S. Cl. 239—2 S **26 Claims**



1. Apparatus for making and depositing artificial snow comprising, in combination,

means providing a substantially unidirectional large volume movement of air in outside ambient air substantially at atmospheric pressure,

first nozzle means disposed externally of said air movement and providing a high velocity water spray directed into said unidirectional air movement at a first angle with respect to the direction of movement thereof, and

second nozzle means distinct from said first means disposed externally of said air movement and communicating with a source of compressed air providing a high velocity expanding air stream directed into said unidirectional movement at a second angle with respect to the direction of movement thereof, one of said nozzle means being disposed radially between the major central axis of said unidirectional air movement and the other of said nozzle means, said first and second nozzle means being oriented with respect to one another such that said air stream intersects said water spray at an unconfined point remote from said first and second nozzle means in the outside ambient air such that droplets in said water spray are driven into and substantially dispersed within said air movement by the conjoint action of the momentum of said water spray and the additional forces imparted thereto by said air stream, and at least a portion of said water droplets are frozen into seed crystals by the refrigerating action of said high velocity expanding air stream.

20. The method of making and depositing artificial snow comprising the steps of

providing a large volume movement of air at atmospheric pressure having a temperature less than 32°F.,

directing a high velocity spray of water into said movement from a point externally thereof at a first angle with respect thereto, and

directing a high velocity air stream into said movement from a point externally thereof at a second angle with respect thereto so as to impinge said water spray when both said air stream and said water spray are unconfined, such that droplets in said water spray are substantially dispersed within said air movement and at least some of said spray droplets are frozen by expansion of said air stream to form seed crystals.

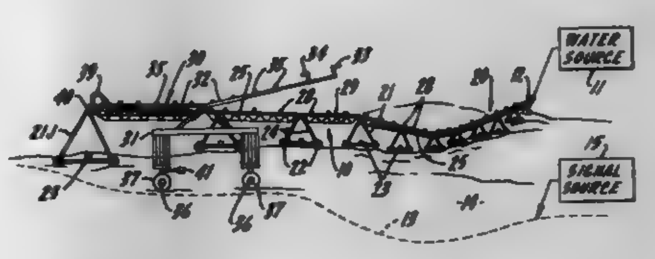
3,979,062
PERIPHERAL WATER BALANCE CONTROL FOR CENTER PIVOT IRRIGATION SYSTEM

Dale A. Christensen; Carl R. Ostrom, both of Omaha, and Ronald L. Frankenstein, Fremont, all of Nebr., assignors to Valmont Industries, Inc., Valley, Nebr.

Filed Nov. 26, 1975, Ser. No. 635,278

Int. Cl.² B05B *17/04, 3/18*

U.S. Cl. 239—11 **18 Claims**



15. A method of water balance control for a center pivot irrigation system of the kind including an elongated main conduit assembly having an inner end pivotally connected to a water source at a central pivot point and having a plurality of discharge nozzles at spaced intervals along its length, main drive means for moving the main conduit assembly around the pivot point to irrigate a primary field area of circular configuration, an elongated auxiliary conduit assembly having an inner end connected to and movable with the outer end of the main conduit assembly and having a series of discharge nozzles at spaced intervals along its length, and auxiliary drive means for moving the auxiliary conduit assembly over a range between a fully contracted position and a fully extended position, relative to the main conduit assembly, to irrigate at least one secondary field area beyond the periphery of the primary field area, water balance control method comprising the steps of:

sensing angular movements of the auxiliary conduit assembly, within its range, relative to the outer end of the main conduit assembly,

and regulating the rate of water discharge from the auxiliary conduit nozzles in accordance with the position and direction of movement of the auxiliary conduit assembly within its range by actuating the individual discharge nozzles of the auxiliary conduit assembly between closed and maximum open conditions in accordance with two predetermined programs, one for swing-out motion and one for swing-in motion of the auxiliary conduit assembly.

3,979,063
INSECTICIDE SPRAY SYSTEM

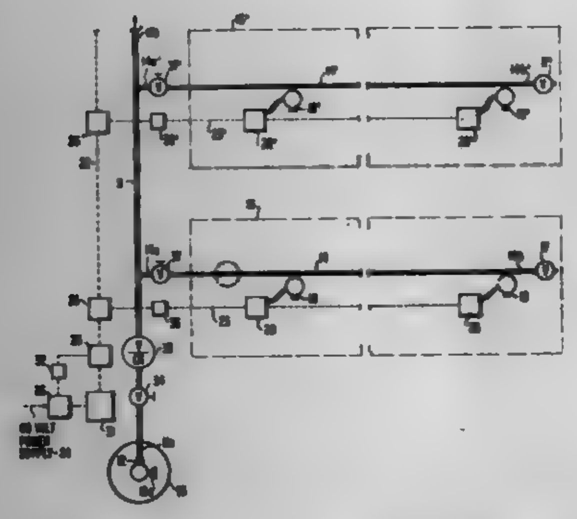
Grady W. Query, 3534 Central Ave., Charlotte, N.C. 28202

Filed June 26, 1973, Ser. No. 373,879

The portion of the term of this patent subsequent to Aug. 7, 1990, has been disclaimed.

Int. Cl.² B05B *12/02*

U.S. Cl. 239—70 10 Claims



1. A distribution system for a combination of liquid gas comprising:
- a. a main conduit through which said combination may flow;
- b. a plurality of branch conduits, through which said combination may flow, connected to said main conduit at one end and closed at the other end;
- c. a plurality of spray nozzles connected on each of said plurality of branch conduits;
- d. a plurality of valve means, one on each of said plurality of spray nozzles, operable to control flow of said combination through each of said plurality of spray nozzles; and
- e. flow control means introducing said combination of a liquid and a gas into said main conduit and thereby to said plurality of branch conduits, including a supply source, and for maintaining said combination of a liquid and gas in similar proportions in said main conduit and said plurality of branch conduits as it is in said supply source.

3,979,064
SHOWER HEAD

Lars Nordentoft, Menden, Germany, assignor to ITT Industries, Inc., New York, N.Y.

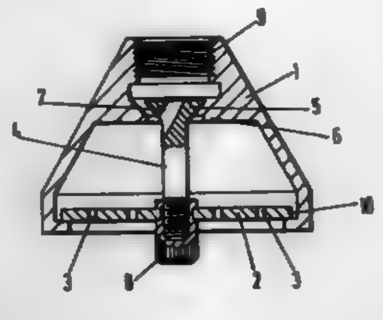
Filed Nov. 6, 1975, Ser. No. 629,485

Claims priority, application Germany, Dec. 14, 1974, 2459318

Int. Cl.² B05B *1/14*

U.S. Cl. 239—107 7 Claims

1. A shower head for regulating the flow of water comprising a shower head casing, a flexible diaphragm-like disc retained by its edge in the shower head casing, a plurality of outlet holes arranged in said flexible disc, means supporting the center of the disc on one end of a valve rod, and a valve cone supported concentrically on the other end of the valve rod, the valve cone being fitted to a valve seat in the shower head casing to form a valve capable of being adjusted to opened and closed positions.



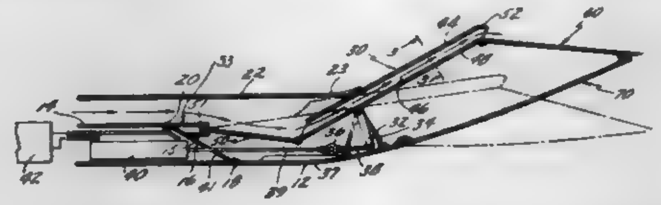
3,979,065
COOLING LINER FOR AN EXHAUST NOZZLE

William M. Madden, Palm Springs, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 31, 1974, Ser. No. 519,739

Int. Cl.² B64D *33/08;* B64C *15/06*

U.S. Cl. 239—127.3 11 Claims



1. In combination with jet engine fixed structure including an exhaust duct, an exhaust nozzle mounted on said fixed structure, said nozzle comprising a circumferential row of flaps, means pivotally mounting said flaps on said fixed structure for controlling the flow area of said exhaust duct, seal means being positioned between each pair of flaps to prevent leakage therebetween, said flaps comprising an inner flap member having an outer flap member spaced therefrom, said seal means comprising an inner seal member having an outer seal member spaced therefrom, said inner seal member being positioned to cooperate with each adjacent inner flap member and said outer seal member being positioned to cooperate with each adjacent outer flap member providing a passageway for coolant flow through said flaps and seals said passageway having an inlet and outlet, means for directing a coolant flow into the inlet of said passageway.

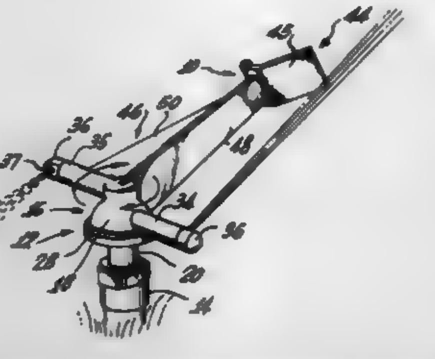
3,979,066
GOVERNOR FOR ROTARY SPRINKLER

Bennie Fortner, Covina, Calif., assignor to Rain Bird Sprinkler Mfg. Corporation, Glendora, Calif.

Filed July 1, 1975, Ser. No. 592,165

Int. Cl.² B05B *3/06*

U.S. Cl. 239—252 11 Claims



1. In a reaction drive rotary sprinkler of the type primarily intended for use in irrigating plants, and which includes a body supported for rotation in one direction, at least one spray nozzle attached to said body for rotation therewith and disposed to eject a water stream having a velocity component in a tangential direction relative to the axis about said body rotates whereby a reaction torque for rotating said body in said one direction produced, the improvement comprising:

governor means for controlling the speed of rotation of said body and attached to said body for rotation therewith, said governor having a reaction means disposed to be laterally spaced from the path of the stream ejected from said nozzle when said body is rotating at or below a preselected speed in said one direction, and to be hit by said stream when said body is rotating in said one direction above said preselected speed, said reaction means when hit by said stream imparting to said body a reverse reaction torque to control and slow the speed of rotation of said body in said one direction.

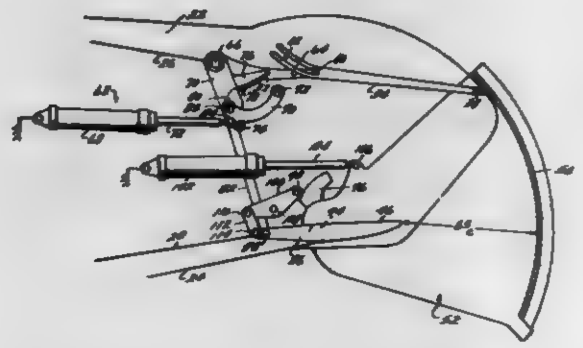
3,979,067
ACTUATING MEANS FOR A THRUST VECTORING GAS TURBINE ENGINE EXHAUST NOZZLE

Dudley O. Nash, Forest Park, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Apr. 28, 1975, Ser. No. 572,341

Int. Cl.² F02K *1/20*

U.S. Cl. 239—265.35 7 Claims



1. In a gas turbine engine flight maneuverable exhaust nozzle including a plurality of substantially opposed walls partially defining an exhaust stream flow path; variable position convergent-divergent means partially defining a first of said walls; deflector means positionable between a stowed position external to the exhaust stream flow path and a deployed position further defining the exhaust stream flow path; and a variable position ventral flap partially defining a second of said walls, the improvement comprising:

first actuation means for positioning said convergent-divergent means;

second actuation means for deploying said deflector means;

first cam and follower means operatively connecting said convergent-divergent means and said ventral flap for providing simultaneous relative movement thereof when said deflector means is stowed; and

second cam and follower means operatively connecting said deflector means and said ventral flap for providing simultaneous relative movement thereof, said second cam and follower means overriding said first cam and follower means to reposition said ventral flap when said deflector means is deployed.

3,979,068
SPRAY NOZZLE ASSEMBLY FOR A WINDSHIELD OF AN AUTOMOBILE

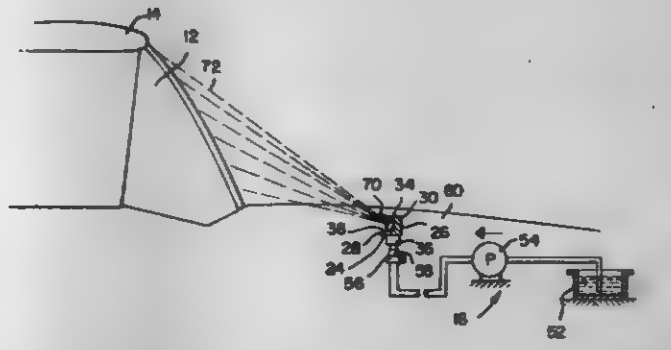
Beverly Applebaum, Toronto, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed July 14, 1975, Ser. No. 595,670

Int. Cl.² B60S *1/52;* B05B *1/10, 1/26*

U.S. Cl. 239—284 R 3 Claims

1. A spray nozzle assembly for a windshield of an automobile adapted to be coupled to a fluid supply assembly of said automobile, which comprises:
- a. a housing having a base, a top, a pair of upwardly extending distal end walls, an upwardly extending rear wall, an upwardly extending front wall with an elongated slotted aperture therein, an interior chamber, and a plurality of passageways extending between said interior chamber and said slotted aperture, said front wall being longer than said rear wall;
- b. a mounting leg having a continuous bore therethrough affixed to said housing, said bore communicating in a fluid serial connection with said interior chamber, said mounting leg adapted to be mounted on a bracket member affixed to said automobile;
- c. a spray nozzle member affixed into each said passageway, said nozzle members in combination adapted to direct a spray of fluid onto said windshield, each said nozzle spray member angled relative to a latitude median of said housing, each said nozzle member including an outer conical section having a base and an apex with a pinhole aperture therein and a cylindrically shaped rod section affixed linearly to said base, said conical and said rod section having a continuous tapered bore therethrough, said rod section mounted into said passageway, each said spray nozzle member recessed into said front wall; and
- d. a water deflector shield affixed onto said housing, said deflector shield deflecting said fluid spray onto said windshield, said deflector shield, said mounting leg, and said housing are of a unitary construction.



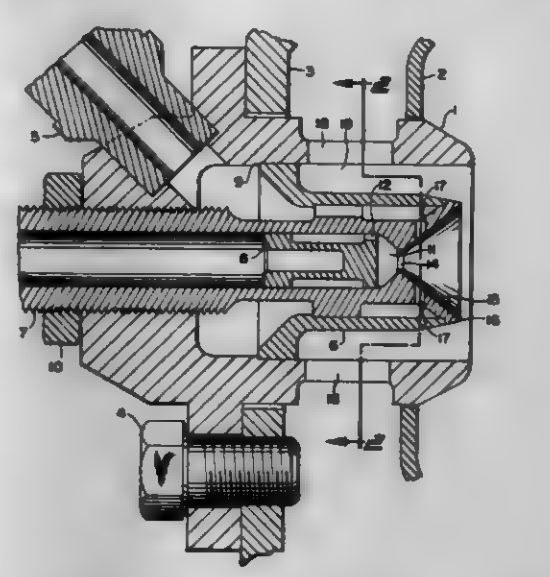
3,979,069
AIR-ATOMIZING FUEL NOZZLE

Luigi Garofalo, 1583 Sunview Road, Lyndhurst, Ohio 44124

Filed Oct. 11, 1974, Ser. No. 514,118

Int. Cl.² B05B *1/34*

U.S. Cl. 239—400 4 Claims

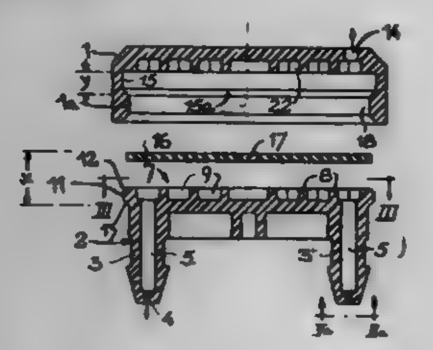


1. An air-atomizing fuel nozzle comprising a nozzle body assembly defining therewithin a fuel passage, and first and second air passages; a nozzle body means communicating with said fuel passage and having a vortex chamber to impart a

whirling motion to the fuel flowing through said fuel passage, and having a discharge orifice with an outwardly flared trumpet portion through which the fuel is discharged in the form of a swirling conical sheet; sleeve means in said assembly isolating said first and second air passages from each other; said trumpet portion between its ends having a circumferential series of holes opening thereinto from said first air passage for discharge of high velocity air jets into said trumpet portion to atomize the swirling conical sheet of fuel as it flows around said trumpet portion; said second air passage surrounding said sleeve means and said trumpet portion to form an annular air discharge passage for mixing of air with the fuel-air mixture emerging from the large end of said trumpet portion; said sleeve means and body means defining therebetween a radially narrow annular air passage at the large end of said trumpet portion, said narrow annular air passage communicating with said first air passage for discharge of high velocity air to further atomize the fuel-air mixture as it emerges from said trumpet portion.

3,979,070
DRIP OR TRICKLE EMITTER FOR USE IN DRIP OR TRICKLE IRRIGATION

Moshe Lemelshtrich, 100 Petah Tikva Road, Tel Aviv, Israel
Continuation-in-part of Ser. No. 561,978, March 25, 1975. This application July 21, 1975, Ser. No. 597,914
Claims priority, application Israel, Mar. 26, 1974, 44502; Apr. 21, 1975, 47127
Int. Cl.² B05B *15/00*
U.S. Cl. 239—542 **7 Claims**

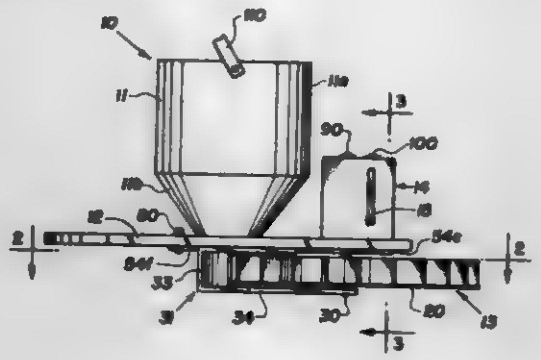


1. A plate-like drip or trickle emitter comprising two matingly connected disc-shaped parts press-fitted into one another, said parts together forming, at least in part from interior surfaces of both of said parts, a tortuous path for a flow of liquid in the interior thereof, at least one inlet provided at one end of said path and at least one outlet at the opposite end of said path, urging means being provided for urging contacting regions of said two disc-shaped parts into forced intimate contact with one another in the axial direction, a first of said parts having an all-round extending ribe at the inside of the circumferential wall thereof which forms a groove between said rib and a flat wall of said first part, said groove being partly of cylindrical and partly of truncated cone cross-section, and the other of said parts having a circumferential rib around the outside of the circumferential wall thereof whose cross-section corresponds to that of said groove.

3,979,071
APPARATUS FOR BROADCASTING GRANULAR MATERIAL

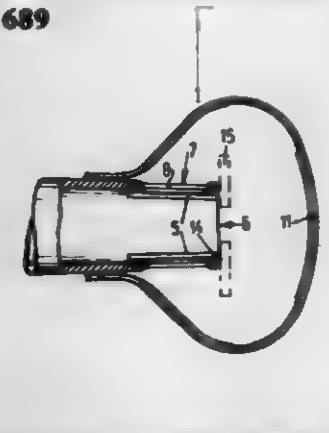
Charles L. Biggs, Jr., 2309 Regal Road, Plano, Tex. 75074
Filed Dec. 15, 1975, Ser. No. 640,437
Int. Cl.² A01C *17/00*
U.S. Cl. 239—653 **14 Claims**

1. A spreader device for broadcasting substantially granular material comprising: hopper means for holding said material, said hopper having a discharge opening in a bottom end thereof; a distributor wheel rotatably secured below said hopper, said wheel being provided with a plurality of outwardly opening compartments spaced around the periphery thereof; skirt means around a portion of said wheel closing the outward open ends of a portion of said wheel compartments as said compartments are filled with said granular material from said hopper; said wheel compartments being closed to discharge flow of said material therefrom while said compartments are in communication with said hopper; and means for rotating said distributor wheel.



3,979,072
DEVICE FOR SPREADING DISTRIBUTABLE MATERIAL COMPRISING A RECIPROCATORILY SWINGING PIPE-SHAPED DISTRIBUTOR

Pieter Adriaan Oosterling, Nieuw-Vennep, and Johannes Phillippus Hooftman, Hoofddorp, both of Netherlands, assignors to H. Vissers B.V., Nieuw Vennep, Netherlands
Filed Nov. 6, 1974, Ser. No. 521,474
Claims priority, application Netherlands, Nov. 8, 1973, 7315342
Int. Cl.² A01C *3/06*
U.S. Cl. 239—689 **10 Claims**



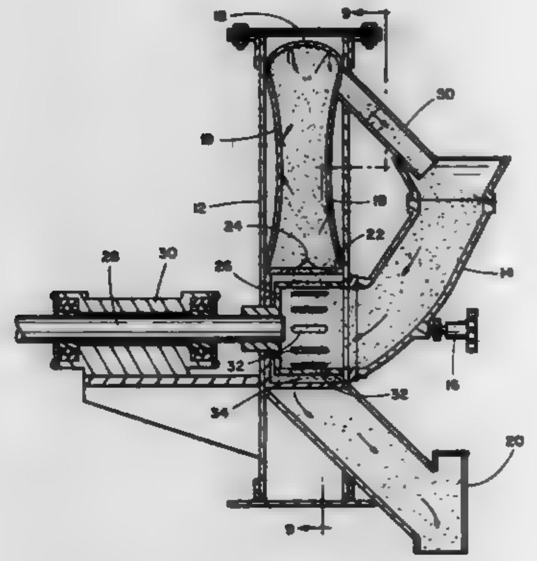
1. A device for spreading distributable material, for example fertilizer, comprising a hopper containing said material having a delivery port and a reciprocatorily swinging distributor pipe of synthetic resinous material communicating with said delivery port, more particularly a fertilizer distributor pipe, said distributor pipe having one end communicating with said delivery port and an opposite outlet end which whips horizontally back and forth to fling material over a wide swath, and a pair of wear-resistant layers on the inner surface of said distributor pipe at said outlet end thereof, each layer extending over a region beginning at a boundary spaced between said ends of the distributor pipe, extending therefrom to said outlet end and covering only the substantially upright portions of said inner surface.

3,979,073
METHOD AND APPARATUS FOR CONDITIONING GRANULAR MATERIAL

Raymond M. Leliaert, South Bend, Ind., assignor to Wheelabrator-Frye, Inc., Mishawaka, Ind.
Filed Apr. 3, 1975, Ser. No. 564,860
Int. Cl.² B02C *19/06*
U.S. Cl. 241—5 **16 Claims**

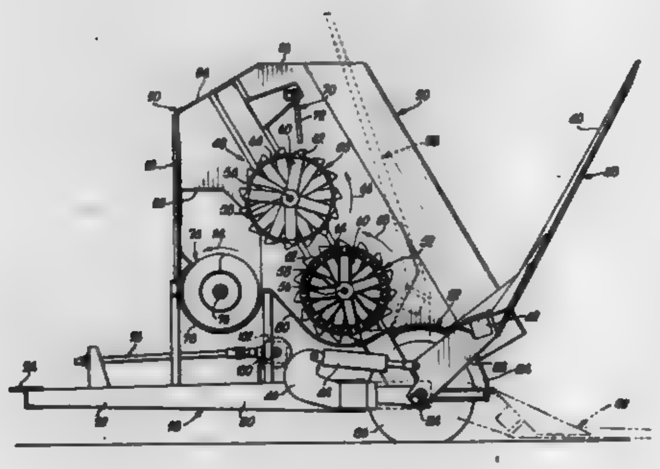
14. A method for conditioning granular material to reduce buildup of contaminants on the surface thereof comprising the steps of:

a. supplying granular material to a projecting means;
b. continuously projecting said granular material in an upward path at a target with sufficient kinetic energy to strike said target and rebound therefrom downwardly through the continuing upward stream of material whereby substantial numbers of intergranular collisions are produced to effect a reduction in surface contaminants;
c. discharging the conditioned granular material; and
d. returning a portion of the granular material striking said target to said projecting means for further conditioning prior to discharge.



3,979,074
METHOD AND APPARATUS FOR PROCESSING CROP STACKS

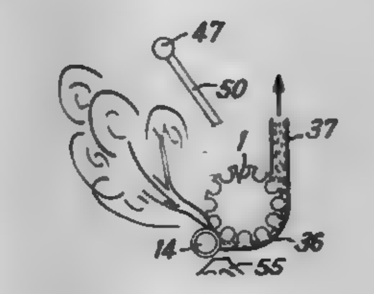
Allen Andrew White, Peabody; Ray Addison Adee, and Ronald Henry Knopp, both of Newton, all of Kans., assignors to Hesston Corporation, Hesston, Kans.
Filed Oct. 11, 1974, Ser. No. 514,110
Int. Cl.² B02C *21/02*
U.S. Cl. 241—30 **29 Claims**



24. A method of processing a mass of animal foodstuffs which includes the steps of pressing the mass against disintegrating structure while on the move and while the structure progressively disintegrates the mass, and discharging the disintegrated foodstuffs in a continuous stream as said movement continues.

3,979,075
MACHINES FOR CUTTING WOOD AND OTHER LIGNEOUS MATERIALS INTO SMALL PIECES

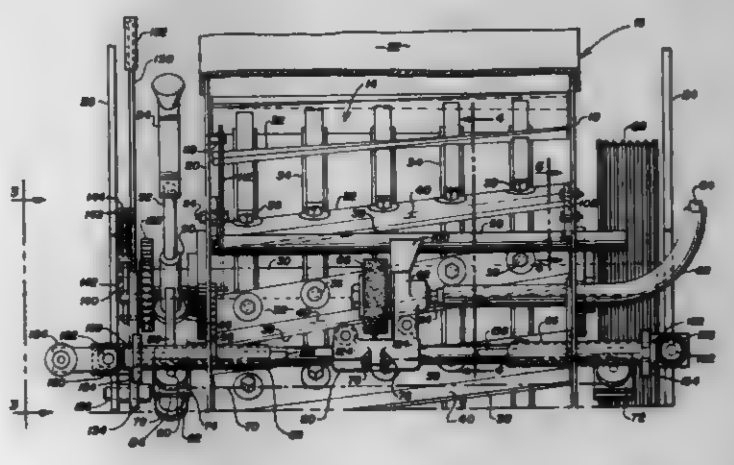
Pierre D. Heron, Nogent sur Marne, France, assignor to Centre Technique du Bois, France
Filed July 3, 1974, Ser. No. 485,753
Claims priority, application France, July 5, 1973, 73.24796
Int. Cl.² B02C *18/22, 21/02*
U.S. Cl. 241—93 **17 Claims**



1. In a cutting machine for cutting ligneous materials into small pieces: a cutting cylinder rotatable about an axis and having a periphery with longitudinal recesses defined therein, the cutting cylinder comprising cutter blades with cutting edges, mounted in respective recesses, the said recesses each defining a cavity for pieces cut off a workpiece by the cutter blades, a reaction member having a working surface drivable around a closed path, a portion of the working surface being disposed adjacent to the cutting cylinder and being of a part circular form, and means governing the relative speeds of the cutting cylinder and the working surface such that the tangential speed of the cutting cylinder is higher than the speed of the working surface, the ratio between these speeds being constant whereby the length of the pieces cut is substantially constant, said reaction member being positioned in closely adjoining relation to the cutting cylinder to define therewith a curvilinear wedge shaped feed zone of decreasing size whereby substantially the entire reaction forces of cutting are applied between the cutting cylinder and reaction member.

3,979,076
GRINDING WHEEL GUIDE MEANS FOR FORAGE HARVESTER

David D. Stoltzfus, Gordonville, and Benjamin H. Snavely, New Holland, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed June 18, 1975, Ser. No. 588,095
Int. Cl.² B24B *19/00*
U.S. Cl. 241—101.2 **4 Claims**



1. In a forage harvester of the type having a frame, a shear bar stationarily mounted upon said frame, a cylindrical type cutter head having a plurality of similar knives spaced circumferentially around said head, power means to rotate said head about the axis thereof in shearing engagement of the knives thereof with said shear bar, said knives being skewed to dispose the cutting edges thereof within the circumferential outline of said cutter head and each knife having a similar

cutting edge and a bevel surface rearwardly thereof, guide means coextensive with said cutter head mounted in substantially parallel relation to the axis of said cutter head and positioned adjacent the circumferential outline thereof, a head movable along said guide means and rotatably supporting a grinding wheel to grind the cutting edges and bevel surfaces of said knives, power means to rotate said grinding wheel while the same traverses said knives, and means to move said head and grinding wheel relative to said knives; the improvement comprising support means for the opposite ends of said guide means adapted selectively to support the same in a first position parallel to the circumferential outline of the cutting edges of the knives of said cutter head to sharpen said cutting edges and movable to a second position in which one end of said guide means is shifted from said first position thereof to guide said head and grinding wheel along said bevel surfaces of said skewed knives to grind bevel surfaces of uniform depth and width along said skewed knives rearwardly of the newly sharpened cutting edges of said knives.

3,979,077

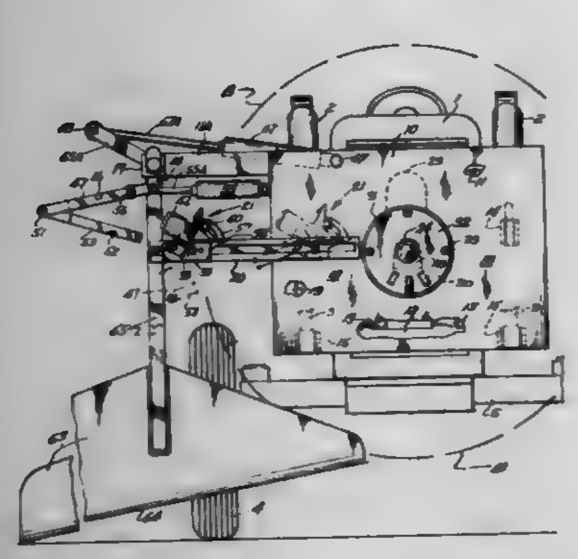
DISPENSING APPARATUS FOR CIRCULAR HAY BALES

Donald S. Dahmen, P.O. Box 156, North Plains, Oreg. 97133

Filed June 13, 1975, Ser. No. 586,571

Int. Cl.^{2} B02C *18/02*

U.S. Cl. 241—101.7 7 Claims



1. An attachment for lifting and transporting circular bales of hay or the like and dispensing same, said attachment adapted for coupled engagement with the lift arms of a vehicle, said attachment comprising,
a frame disposed transversely and forwardly of the vehicle and adapted for supported engagement with the vehicle lift arms,
spindle means rotatably mounted on said frame and projecting forwardly therefrom for inserted engagement with a bale,
means on said frame imparting rotation to said spindle,
an elongate cutter assembly supported by said frame in offset parallel relationship to said spindle means, and
means mounted on said frame urging said cutter assembly toward and away from the bale for dispensing the baled material.

3,979,078

BEATER BAR FOR ROTORS OF IMPACT MILLS

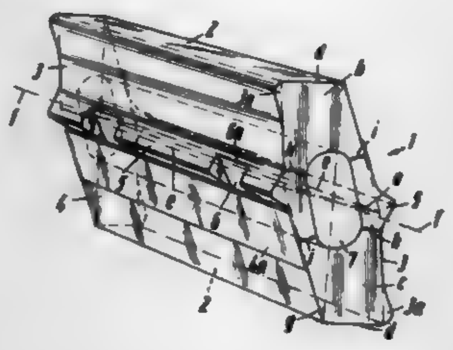
Hans-Joachim Böddeker, Munster, and Rolf König, Handorf, both of Germany, assignors to Hazemag Dr. E. Andreas KG, Munster, Germany

Filed Mar. 14, 1975, Ser. No. 558,719

Claims priority, application Germany, Mar. 15, 1974, 2412507; Mar. 15, 1974, 2412508

Int. Cl.^{2} B02C *13/28*

U.S. Cl. 241—191 17 Claims



1. In a material-treating beater bar of the type which is mounted in peripheral cut-outs of the rotor of an impact mill in such a manner that an outer part of the beater bar side face which is the leading surface as considered in the direction of rotation of the rotor projects freely beyond the rotor periphery and directly contacts material to be treated, the improvement wherein said side face and another side face parallel thereto are each provided with a longitudinally extending rib, said ribs each being offset from the longitudinal midpoint line of the respective side faces in opposite directions, said side faces due to the offsetting of the ribs each having a larger and a smaller face portion of which the larger face portions partially overlap one another.

3,979,079

ROLL FILM WINDING MECHANISM

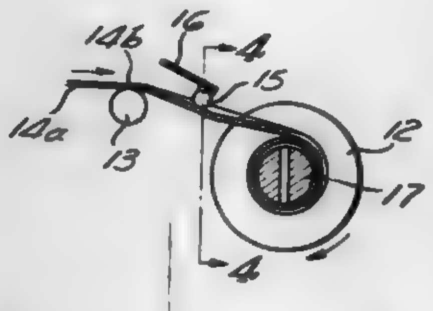
Katsuaki Ohashi, Shiki, and Hirao Monde, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Japan

Filed Oct. 28, 1975, Ser. No. 626,313

Claims priority, application Japan, Nov. 5, 1974, 49-127396

Int. Cl.^{2} B65H *23/10*

U.S. Cl. 242—75.2 10 Claims



1. A roll film winding mechanism for film and superposed liner paper characterized in that a tension member is arranged between a winding shaft adapted to mount a winding spool having a shaft and flanges adjacent its axial ends and a roller adapted to guide the traveling film and liner paper, said winding spool shaft and roller defining a plane including the common tangential line connecting the outer circumferences thereof on the film-contacting side of the roller, said tension member being arranged to bias the film and liner paper in a direction from the remote side of said plane toward the side of said plane on which said winding spool and roller are located, said tension member including means for curling both the liner paper and the film inwardly so that, during film

winding, the opposite edges of said liner paper are brought into contact with the base portions of said flanges adjacent to where said flanges are connected to said winding spool shaft.

3,979,080

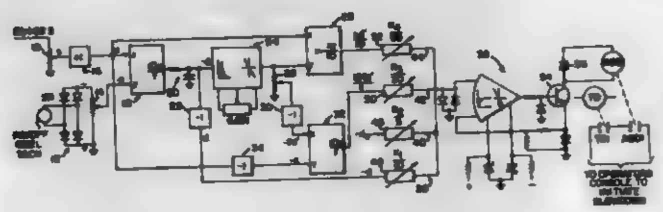
ANALOG AUTOMATIC SLOWDOWN SYSTEM

Roger B. Herbert; Harvey A. Horowitz, both of Williamsville, and Donald F. Barrett, Buffalo, all of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 27, 1975, Ser. No. 562,616

Int. Cl.^{2} B21C *47/16;* B21B *37/00*

U.S. Cl. 242—78.6 5 Claims



1. In a process line wherein a coil of material mounted on a mandrel driven by a payoff reel motor, is being unwound at a linear speed S, an analog automatic slowdown control system for determining the optimum instant of time to initiate slowdown of the material being payed out, comprising:
a. means for determining the instantaneous diameter of the coil of material to derive a signal d;
b. means for differentiating, connected to receive said signal d and deliver a signal d', where d' is the derivative of the instantaneous diameter d with respect to time;
c. means for deriving a signal s which is a function of said linear speed;
d. means for deriving a signal n which is a function of the speed of the payoff reel motor;
e. means for determining the desired remaining portion of the coil diameter after stopping, adapted to receive said signals d', s, and to deliver an output signal which is a function of (d'/s);
f. means for determining the change in the diameter of the coil of material during deceleration adapted to receive said signals d', s, and to deliver an output signal which is a function of d', s;
g. means for deriving an analog signal do which is a function of the diameter of said mandrel, and
h. means for summation adapted to receive the signals: d, do, functional signals (d'/s) and $d's$, and to deliver an initiation signal to begin slowdown when the signal d equals the sum of said other signals.

3,979,081

MOTORIZED FISHING REEL

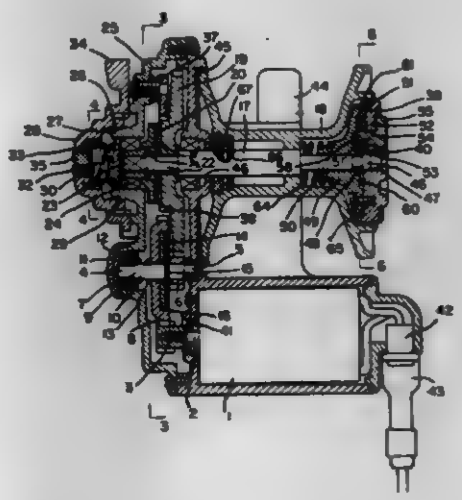
Toshiaki Miyamae, Lot 16, No. 2, 2-Chome, Nishi-Iwata, Higashi-Osaka, Osaka, Japan

Filed Feb. 1, 1974, Ser. No. 438,618

Int. Cl.^{2} A01K *89/017*

U.S. Cl. 242—84.1 A 2 Claims

1. A motorized fishing reel comprising
an electric motor having a drive shaft;
a first pinion affixed to said drive shaft of said motor;
a driven shaft having a large diameter portion at one end and a smaller diameter portion at the other end and a square section portion therebetween, a part of said large diameter portion having threads thereon;
a reduction gear rotatably held by the large diameter portion of said driven shaft and engagable with said first pinion;
a second pinion affixed to the smaller diameter portion of said drive shaft;
a first clutch plate affixed to said square portion of said driven shaft;
a first friction member affixed to said reduction gear and positioned to be contactable with said first clutch plate;
a manually operable first adjusting nut screwable into said threads at said outer portion of said large diameter portion of said driven shaft;
anti-rotation device connected to said adjusting nut to prevent said nut from moving after manual operation;
first spring means disposed between said anti-rotation device and said reduction gear whereby said first adjusting nut controllaby adjusts the force of said first spring means to normally press said first clutch plate against said first friction member thereby to controllably transmit rotation of said reduction gear to said second pinion;
a rotary shaft having a small diameter portion, a tapered portion having an annular groove therein and a square section portion and disposed parallel to the axis of said second pinion;



a mounting structure for supporting said rotary shaft;
  a main gear movably supported on said small diameter portion of said rotary shaft and engagable with the said second pinion;
a second friction member affixed to said main gear;
a second clutch plate affixed to said square section of said rotary shaft and being connectable with said second friction member
a bearing disposed on said second clutch plate with its axis coaxial with the axis of said rotary shaft;
a pressing plate disposed adjacent to said second clutch plate for pressing said bearing;
a receiving plate disposed opposite said pressing plate;
a second spring means disposed between said pressing plate and said receiving plate to normally maintain resilient force between said receiving plate and said pressing plate;
a second adjusting nut connectable to said receiving plate for manually adjusting the space between said second clutch plate and said receiving plate by adjusting said second spring means;
a cap for mounting said second adjusting nut to said receiving plate;
a first operating lever affixed to said cap for rotating manually said cap;
a third spring means disposed between said main gear and said second clutch plate for controlling the space between said main gear and said second clutch plate;
a second gear means disposed toward the end opposite the location of said main gear and having ratchet teeth and connected to said rotary shaft;
a ratchet pawl engagable with said ratchet teeth for preventing reverse rotation of said rotary shaft;
a second operating lever mounted on said mounting structure;
a cam affixed to said second operating lever; and
a third spring means for holding said cam in said groove of said small diameter portion of said rotary shaft.

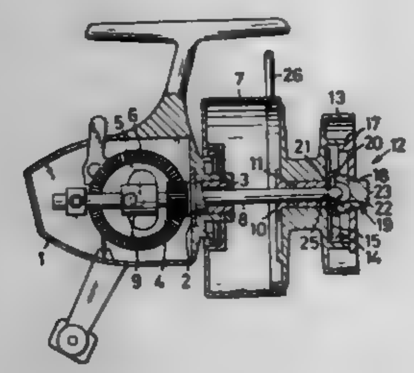
3,979,082
FISHING SPINNING-REEL SPOOL MOUNTING AND DEMOUNTING DEVICE

Yasumatsu Morishita, Kure, Japan, assignor to Ryobi, Ltd., Hiroshima, Japan

Filed Apr. 2, 1975, Ser. No. 564,223

Int. Cl.² A01K *89/00*

U.S. Cl. 242—84.2 R **4 Claims**



1. A device for mounting and demounting a fishing spinning-reel spool on a reel shaft having slits provided near the front end thereof, said device comprising:

a plate spring having a pair of elastic holding arms sized and spaced to fit into said slits in the unstressed state of said arms;

a push button having a rear edge in contact with said holding arms; and

a cover mounted on the front of the spool and having a central hole therein for projection of the front edge of said push button therethrough;

said holding arms each comprising outside plate portions bent away from the plane of said plate spring toward said rear edge of said push button to thereby form a pair of slanted cam faces against which said rear edges of said push button can be pushed to spread said arms apart and release said arms from confinement in said slits.

3,979,083
WINDING-UP DEVICE WITH AUTOMATIC LOCK FOR SAFETY BELT

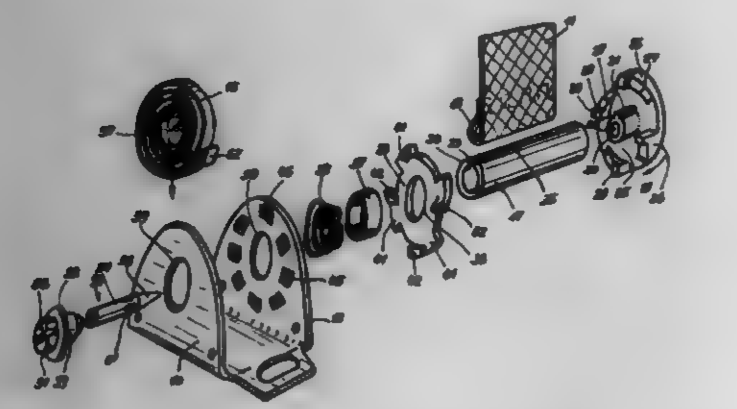
Artur Föhl, Schelmenwasenstr. 68, 7061 Haubersbronn, Germany

Division of Ser. No. 250,010, May 3, 1972, Pat. No. 3,851,837. This application May 31, 1974, Ser. No. 475,029

Claims priority, application Germany, May 6, 1971, 2122419; Dec. 22, 1971, 2163732

Int. Cl.² B65H *75/48*

U.S. Cl. 242—107.4 R **28 Claims**



1. In combination with a winding device for a safety belt, a spool connected to one end of the belt, a return spring biasing the spool in take up direction, a housing having a base and end walls upstanding from the base and in which the ends of said spool are journaled, and a locking device operatively interposed between said spool and said housing operable in quick response to acceleration of said spool in pay out direction to lock the spool to the housing, said locking device comprising a support disc fixed to one end of said spool outside one end wall of said housing, an inertia disc loose on said spool between said one end wall and said support disc, axial cams on said support disc comprising straight surfaces inclining upwardly in a direction opposite to the pay out direction of rotation of said spool, said inertia disc having radial arms adjacent said straight inclined surfaces which ride up said surfaces when the spool is accelerated in pay out direction, first abutment noses on said one wall of said housing to abut one circumferential side of said arms when the arms ride up said inclined surfaces, and second abutment noses on said support disc at the upper ends of said inclined surfaces facing said first abutment noses and engageable with the other circumferential sides of said arms when the arms ride up said inclined surfaces, said first and second abutment noses being axially offset so as normally freely to pass by one another during rotation of said spool, and a casing concentric with said spool, said inertia disc having a closed circular periphery which centers the inertia disc in said casing.

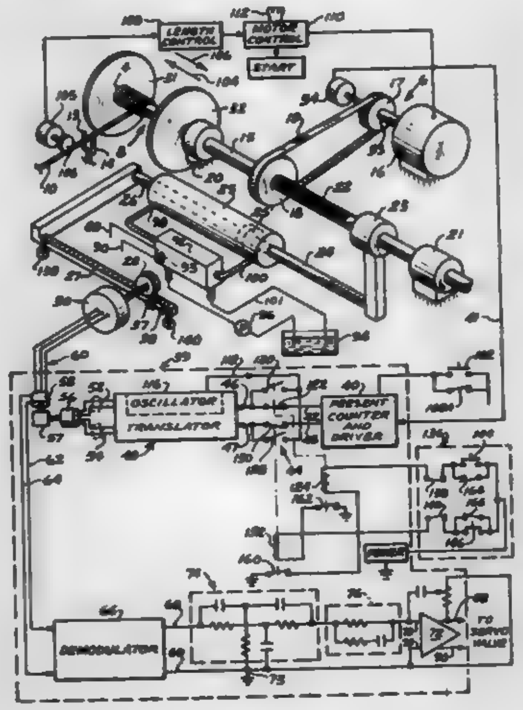
3,979,084
APPARATUS FOR LEVEL WINDING TUBING

Robert C. Ruhl, Cleveland Heights, Ohio, and James E. Johnson, Southfield, Mich., assignors to Chase Brass and Copper Co., Inc., Cleveland, Ohio, by said Robert C. Ruhl

Filed May 1, 1975, Ser. No. 573,761

Int. Cl.² B65H *57/28*

U.S. Cl. 242—158 F **6 Claims**



1. A level wind arrangement for accurately level winding material of a substantially uniform transverse dimension comprising, in combination

reel means;

drive means for rotating the reel means with a torque sufficient to wind the material on the reel means;

traverse means for traversing one of the material and reel means with respect to the other, and comprising

a double acting, double rod hydraulic cylinder having a piston with two working faces, said faces having equal areas so that the traverse characteristics of the cylinder are the same in both a forward and a reverse direction;

pulse deriving means for deriving a pulse in response to each predetermined increment of rotation of the reel means from a start position so that rotating the reel means produces a first plurality of pulses;

means for dividing said pulses from said pulse deriving means by a quantity indicative of the transverse dimension of the material wound on the reel means to produce a second plurality of pulses;

means responsive to said second plurality of pulses for deriving a reel rotation signal indicative of the rotational position of the reel means, and comprising

a synchro transmitter having an input shaft,

motor means having a shaft driven a predetermined increment in response to each of said second plurality of pulses, and

transmission means connected between said motor shaft and synchro transmitter input shaft for rotating said input shaft an amount proportional to but different from the rotation of the motor shaft;

a synchro transformer having an input shaft;

means for driving said synchro transformer input shaft in response to traverse;

means connecting said synchro transmitter to said synchro transformer to derive an error signal in response to nonsynchronism of the transmitter and transformer;

control means responsive to the error signal for controlling the traverse means to correct the traverse position of the reel means with respect to its rotational position, so that the transformer and transmitter move toward rotational synchronism to reduce the error signal, said means comprising,

servo-valve means colsely adjacent said hydraulic cylinder for controlling the flow of hydraulic fluid to said cylinder;

counter means for counting one of said series of pulses and comprising

means for discontinuing said second plurality of pulses to said motor means in response to the attainment of a predetermined first count, so that traverse in one direction ceases while the reel means continues to rotate; and

means responsive to a predetermined second count for again supplying said second pulses to the motor means, so that traverse commences in an opposite direction.

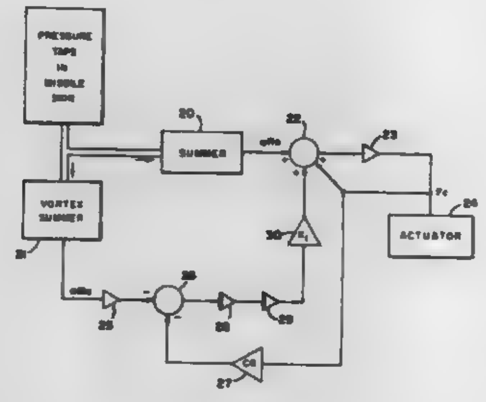
3,979,085
GUIDED MISSILE USING FLUIDIC SENSING AND STEERING

John P. Leonard, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 8, 1974, Ser. No. 513,015

Int. Cl.² F42B *15/18*

U.S. Cl. 244—3.15 **5 Claims**



1. An attitude control system for a missile having attitude control means, the invention comprising: means for determining net aerodynamics force on said missile; means for determining net aerodynamic moment on said missile; an attitude control system connected to the said means; each of said means for determining and said attitude control system are fluidic; said means for determining net aerodynamic force includes pressure taps distributed in the skin of said missile; fluidic means for algebraically summing the pressure from said taps; said means for determining net aerodynamic moment includes fluidic means for algebraically summing weighted pressures from said taps; said attitude control system includes: first and second fluidic summing junctions each having inputs and an output; fluidic attitude changing means having a fluid input connected to the output of said first fluidic summing junction; wherein each of said means for determining has an output; first means for connecting the output of said means for determining net aerodynamic force to a first fluid input of said first fluidic summing junction; second means connecting the output of said means for determining net aerodynamic moment to a first fluid input of said second fluidic summing junction; third means connecting said output of said second fluidic summing junction to a second fluid input of said first fluidic summing junction; and fouth means connecting said output of said first fluidic summing junction to a third input of said first flidic summing junction and to a second input of said second fluidic summing junction.

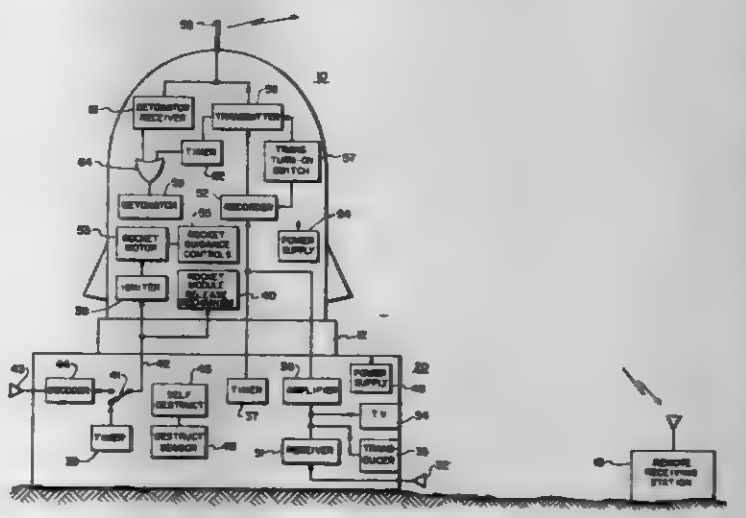
3,979,086
ROCKETED DATA COMMUNICATION SYSTEM

James F. MacAdam, San Francisco, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 8, 1974, Ser. No. 522,158

Int. Cl.² F42B *9/00;* **F41G** *9/00*

U.S. Cl. 244—3.19 **4 Claims**



1. A data retrieval system for obtaining information emanating from a hostile region on the earth's surface comprising:

an information receiving station remote from said hostile region,

a rocket module, a surface module and an umbilical connector initially interconnecting said rocket module and said surface module for emplacement at the aforesaid region,

sensor means within said surface module for receiving said information and for converting that information into information signals of suitable electrical form,

recording means within said rocket module receptive of said electrical signals and connected originally through said umbilical connector to said sensor means for recording said electrical information signals, said rocket module including a transmitter, a rocket motor having associated ignition and guidance means, and a rocket module release mechanism,

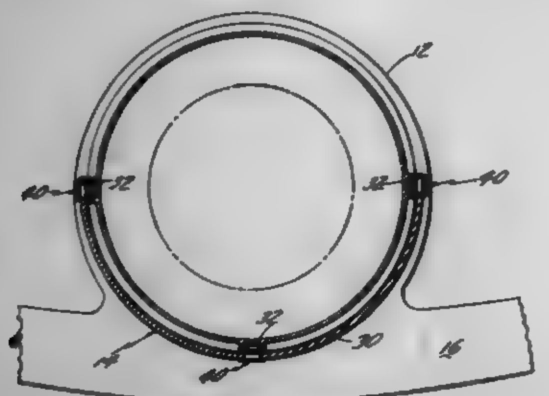
means within said surface module for igniting said rocket motor and activating said release mechanism in response to a control signal to launch into near space only said rocket module, and

means responsive to attainment of an altitude above the earth's surface suitable for straight line transmission to said remote control station for activating said transmitter to transmit said control station the recorded information from said recording means.

3,979,087
ENGINE MOUNT

Paul A. Boris, Ellington, and Jon A. Marx, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed July 2, 1975, Ser. No. 592,440
Int. Cl.^{2} B64D *27/18*
U.S. Cl. 244—54 **6 Claims**

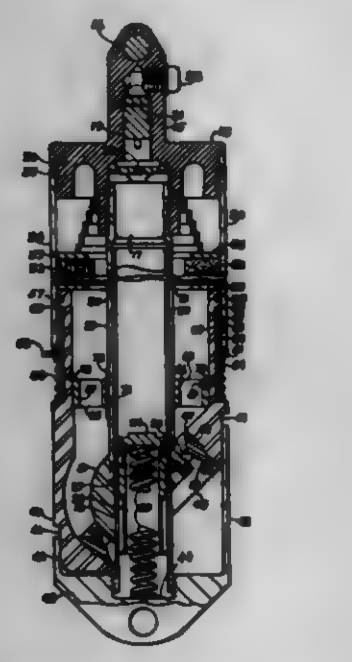


1. A support system to mount a turbine type power plant to aircraft structure wherein the power plant includes an outer case having a given annular portion adapted to receive the support system, a yoke for partially receiving said annular portion of said power plant case, a first pin at the bottom of said yoke extending into a recess formed in said case in said annular portion, a second and third pin diametrically opposing each other and equidistance from said first pin at the side of said yoke extending into recesses formed in said annular portion of said casing, said first, second and third pins lying in a plane transverse to the power plant axis being the sole support for the thrust, vertical, side and torque loads, said first, second and third pins each having partially spherical balls pivotally mounted on the ends thereof, and each of said pins having a shank portion having a frustoconical shape and a complementary opening in said yoke for accommodating said shank, means for securing said yoke to said aircraft structure.

3,979,088
ROCKET CATAPULT

Joseph B. McCormick, Willingboro, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 26, 1975, Ser. No. 617,208
Int. Cl.^{2} B64D *25/10*
U.S. Cl. 244—122 AB **6 Claims**



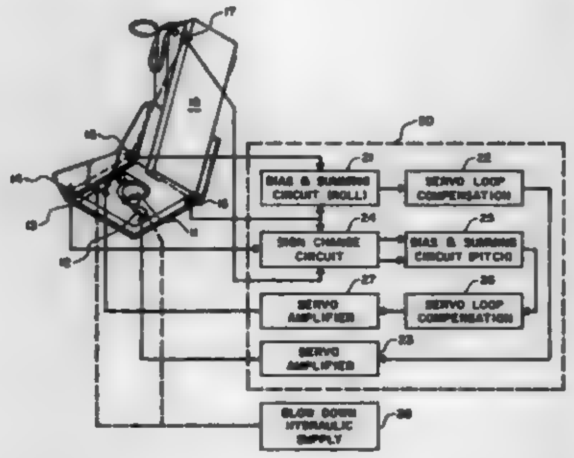
1. In a rocket catapult ejection system for a seat-occupant mass of an aircraft having a catapult tube secured to said aircraft and rocket motor means having a head member at one end attached to an aircraft seat structure,

- a guide tube secured at one end to said head member, slidably mounted on said catapult tube, and having a spherical pintle at its other end,
- a booster cartridge seated in said head member and extending into said catapult tube,
- releasable locking pin means initially securing said guide tube and catapult tube against relative longitudinal motion,
- a control piston in said catapult tube and responsive to ignition of said booster cartridge for releasing said locking pin means,
- a rocket tube secured at one end to said head member, surrounding and concentrically spaced from said guide tube, and housing a main rocket propellant grain,
- a nozzle housing having a reduced portion slidably mounted in said rocket tube and an inclined throat member surrounding a portion of said spherical pintle to define an annular nozzle effective throat therebetween for providing a thrust vector of generated rocket gases at a predetermined angle inclination to the longitudinal axis of said guide tube and in alignment with a predetermined seat occupant mass center of gravity,
- means biasing said nozzle housing away from said rocket tube, and
- means for adjustably camming said nozzle housing to a desired position along the longitudinal axis of said guide tube in opposition to said biasing means,
- so constructed and arranged that said rocket thrust vector can be adjusted for deviations in said seat occupant mass center of gravity.

3,979,089
VERTICAL SENSING AND CONTROL SYSTEM

Ray A. Miller; Robert B. Dillinger, both of Ridgecrest; W. James Stone, China Lake, and Vernon D. Burklund, Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 22, 1975, Ser. No. 615,867
Int. Cl.^{2} B64D *25/10*
U.S. Cl. 244—122 AD **11 Claims**



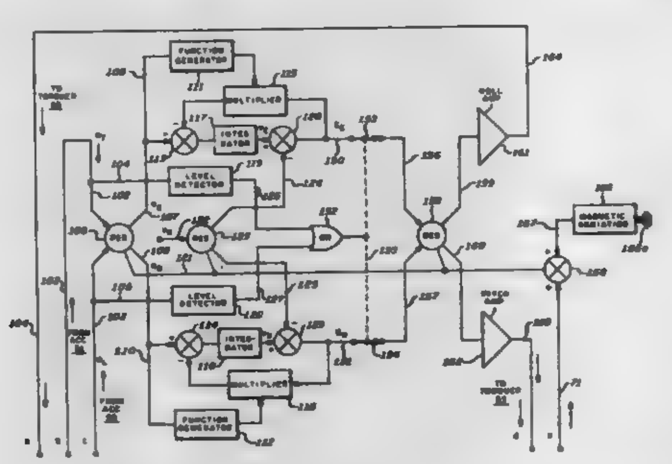
1. An attitude seeking emergency escape vehicle, comprising:

- a cradling member havng means for attachment to the body of a user;
- propulsion means pivotally attached to said cradling member;
- positioning means connected to said cradling member and to said propulsion means, said positioning means being responsive to guidance commands;
- first attitude sensing means for detecting when said vehicle is inverted;
- second attitude sensing means for detecting vehicle attitudes of pitch and roll relative to a predefined plane;
- guidance command generating means communicating with said first and second attitude sensing means, and communicating with said positioning means,
- for establishing and maintaining said vehicle in a predefined attitude during an escape maneuver.

3,979,090
VELOCITY DAMPED ERECTION SYSTEM FOR STABLE GYROSCOPIC ATTITUDE AND HEADING REFERENCE APPARATUS

David R. Brickner, and James S. Johnson, both of Phoenix, Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 17, 1975, Ser. No. 558,868
Int. Cl.^{2} G05D *1/00;* B64C *13/18*
U.S. Cl. 244—175 **7 Claims**



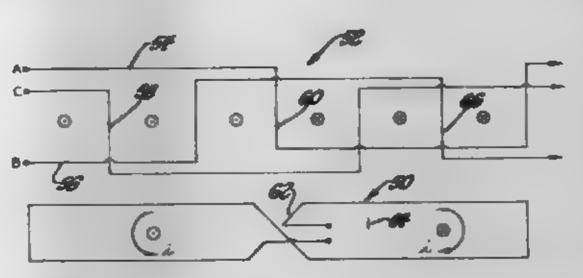
1. In an erection system for a stable gyroscopic reference of the kind having stabilized craft pitch and roll accelerometer means, stabilized craft heading pick off means, and pitch and roll axis gyroscopic reference gimbal torquer means:

- first resolver means responsive to said craft pitch and roll accelerometer means and to said craft heading pick off means for generating first and second outputs respectively representative of craft east and north accelerations,
- first and second means for integrating said respective first and second outputs to yield respective third and fourth outputs respectively representative of craft east and north velocities,
- second resolver means responsive to craft reference velocity and to said craft heading pick off means for generating fifth and sixth outputs respectively representativve of craft east and north reference velocities,
- first combining means for algebraically combining said third and fifth outputs for generating a seventh output representative of craft east velocity error,
- second combining means for algebraically combining said fourth and sixth outputs for generating an eighth output representative of craft north velocity error,
- third resolver means responsive to said seventh and eighth outputs and to said craft heading pick off means for generating ninth and tenth outputs for torquing said respective pitch axis and roll axis gyroscopic reference gimbal torquer means,
- first multiplier means responsive to said seventh output for providing an eleventh output for algebraically combining with said first output before supply of the latter to said first means for integrating said first output,
- second multiplier means responsive to said eighth output for providing a twelfth output for algebraically combining with said second output before supply of the latter to said second means for integrating said second output, and
- means for respectively controlling said first and second multiplier means in accordance with said first and second signals and thereby independently modifying said seventh and eighth signals whereby to modify the authority of said first and second signals in said seventh and eighth signals supplied to said pitch and roll axis gimbal torquer means.

3,979,091
COMMUNICATION SYSTEM FOR GUIDEWAY OPERATED VEHICLES

Forrest W. Gagnon, Littleton, and Arthur H. Marsh, Arvada, both of Colo., assignors to Otis Elevator Company, New York, N.Y.

Continuation of Ser. No. 389,766, Aug. 20, 1973, abandoned.
This application June 6, 1975, Ser. No. 584,669
Int. Cl.^{2} B61L *1/08*
U.S. Cl. 246—8 **23 Claims**

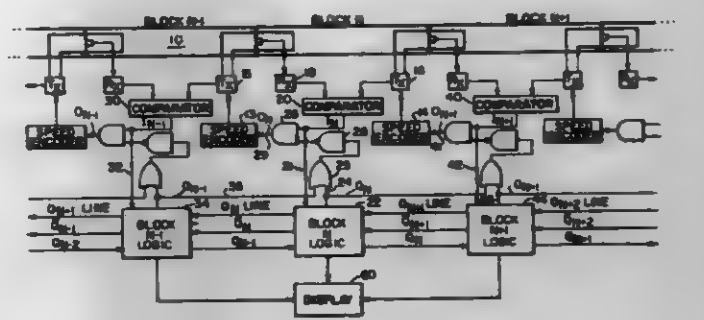


1. A communication system for a vehicle movable along a predetermined path, a transmission line extending along said path and including at least three conductors each conductor having a wave configuration, the cycle length of each wave configuration being the same for all of said conductors, the wave configurations in any one conductor being phase offset along the line from the wave configurations in at least two other of said conductors by a distance equal to said cycle length divided by the number of said conductors, an inductive loop coupled with the transmission line and adapted for movement with the vehicle, means for energizing said inductive loop with a continuous wave signal, whereby signals are induced in said conductors which vary in amplitude as a function of displacement of said vehicle along said path and which are of the same frequency, equal amplitude and phase displaced relative to each other, and receiver means coupled with said line for receiving the signals induced in said line, the received signals being indicative of the speed, direction and position of the vehicle.

3,979,092
SEQUENTIAL OCCUPANCY RELEASE CONTROL METHOD AND APPARATUS FOR TRAIN VEHICLES

Robert H. Perry, Canonsburg, and David H. Woods, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 3, 1975, Ser. No. 554,783
Int. Cl.^{2} B61L *21/06*
U.S. Cl. 246—34 R **28 Claims**



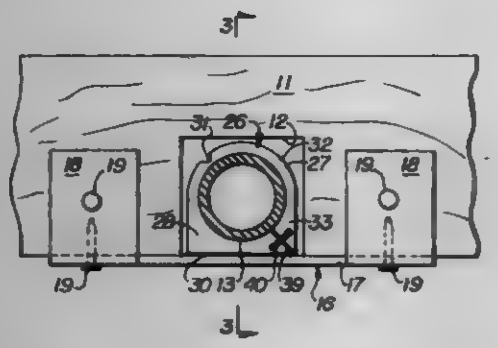
1. In apparatus for controlling the speed of a plurality of train vehicles along a track including a plurality of signal blocks, the combination of

- means for providing an occupancy indication signal in relation to the sensed occupancy of a first signal block by one of said train vehicles,

means for providing a first protection signal in response to said occupancy indication signal, and
means for providing an occupancy control signal in response to the provision of said occupancy indication signal and in response to said first protection signal to determine a zero speed code for a second signal block previous to said first signal block.

3,979,093
MEANS FOR MOUNTING PIPES AND CONDUITS IN STUDS AND JOISTS

James E. Madden, 14826 Skyline Blvd., Apt. 4, Woodside, Calif. 94062
Continuation-in-part of Ser. No. 407,534, Oct. 18, 1973, Pat. No. 3,918,667. This application Apr. 7, 1975, Ser. No. 565,812
Int. Cl.² F16L *5/00*
U.S. Cl. 248—56 1 Claim

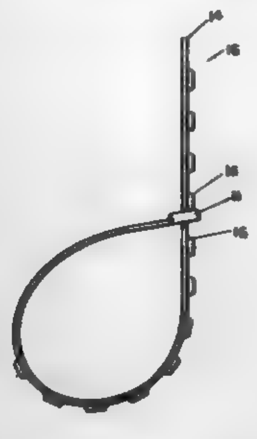


1. A reinforcement for a conventional wall stud formed with a notch in one edge to receive a pipe extending transverse to said stud comprising an elongated metal plate dimensioned to fit along said one edge of said stud to bridge said notch and adapted to be secured to said stud to reinforce said stud in the area where said notch is formed and a flexible sleeve for said pipe, said sleeve having a straight base edge permanently fixed to said plate, a first side substantially perpendicular to said base extending from one end of said base, a top and a second side normally parallel to said first side engaging the opposite end of said base, said sleeve having a bore shaped to engage the outside of said pipe and being dimensioned to fit within said notch, said sleeve being formed with a split at the juncture of said base and said second side to permit said sleeve to be distended to be slipped over a pipe, said split being located out of contact with said plate, whereby said sleeve may be distended without interference from said plate, said sleeve being formed with a weakened portion to facilitate distention of said sleeve, and closure means adjacent said split to hold said sleeve with the edges of said split abutting each other, said closure means comprising enlargement of said sleeve having apertures parallel to said pipe on opposite sides of said split and fastening means fitting into the apertures in both said enlargements.

3,979,094
ADJUSTABLE HANGER STRAP

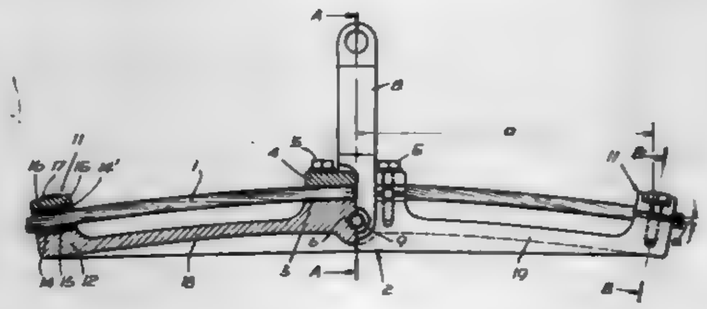
Stuart DeWitt, 799 Wendover Blvd., Muskegon, Mich. 49441
Filed Feb. 19, 1975, Ser. No. 550,982
Int. Cl.² F16L *3/14*
U.S. Cl. 248—60 5 Claims

1. An adjustable hanger strap for securely suspending pipes, cables and the like from a support, the strap comprising:
an elongated and flexible strip having a relatively thin cross-sectional thickness such that opposing facial surfaces are substantially wider than adjoining edge surfaces;
a plurality of spaced protuberances of solid material projecting outwardly from the plane of one of said facial surfaces of said strip, the protuberances having holes therethrough for positioning fasteners therethrough for securing the strap to supports; and
an aperture formed at one end of said flat strip, said aperture having a length at least as large as the width of said strip and a width less than the sum of the thickness of said strip and said protuberances, said aperture receiving the free end extremity of said flat strip to form and to releasably retain said flat strip in a looped position by virtue of a releasable retention of said protuberances within said aperture.



3,979,095
SUSPENSION CLAMP FOR ELECTRICAL OVERHEAD LINES

Heinz Schlotz, Esslingen-Hegensberg, Germany, assignor to Patentanwalte Dr.-Ing. Held, Stuttgart, Germany
Filed Feb. 18, 1975, Ser. No. 550,650
Int. Cl.² H02G *7/04*
U.S. Cl. 248—63 5 Claims

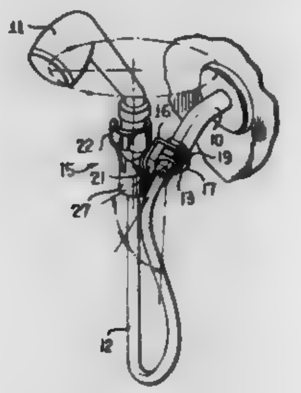


1. A suspension clamp for an electrical cable having a characteristic pitch including
clamping apparatus to clamp said cable along a portion of its longitudinal side;
means to support said clamping apparatus so that said clamping apparatus is free to move about an axis transverse to said cable;
two arms integral with and extending outwardly respectively from opposed sides of said clamping apparatus along but spaced from said cable; and
supporting devices for said cable, one of said supporting devices being mounted on each of said arms at a predetermined distance from said clamping apparatus said predetermined distance being approximately equal to said characteristic pitch.

3,979,096
MOUNTING ARRANGEMENT FOR HAND-HELD SHOWER HEAD

Claus D. Zieger, Covina, Calif., assignor to Interbath, Inc., El Monte, Calif.
Filed Nov. 30, 1973, Ser. No. 420,608
Int. Cl.² B05B *15/06*
U.S. Cl. 248—75 6 Claims

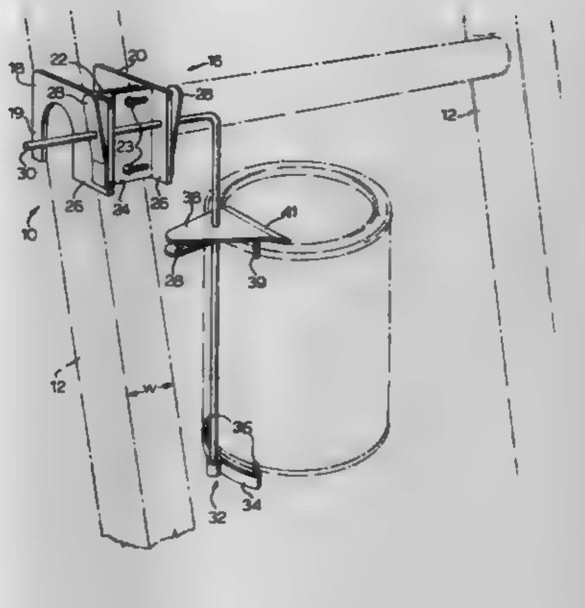
1. In a shower installation of the type having a rigid water supply pipe with an outlet from which pressurized water can be supplied to a shower head via a flexible hose which attaches to the supply pipe outlet and has insufficient rigidity of itself to support said shower head in an operable position, wherein said shower head is of the type which receives pressurized water at one end from said hose and issues the pressurized water from its opposite end after re-directing the water flow direction internally of the shower head, a mounting arrangement for said shower head, comprising:
a support member of regular polygonal periphery secured to said shower head proximate said one end thereof;
a bracket member having an apertured leg and a further leg oriented perpendicular to said apertured leg, means for fixedly securing said apertured leg to supply pipe with the supply pipe extending through the apertured leg such that said apertured leg is perpendicular to said supply pipe and said further leg is parallel to and spaced from said supply pipe;
a receiver member; and
means for rotatably securing said receiver member to said further leg to permit operator-initiated rotation of said receiver member relative to said bracket member about a single axis extending perpendicular to said further leg;
said receiver member including a hollow member having an opening at least as wide as the diameter of said flexible hose extending along the entire length of one of its sides, said hollow member having: a first longitudinally-extending section having a regular polygonal internal cross-section which matches but is slightly larger than the regular polygonal periphery of said support member; and a second longitudinally-extending section having a cross-section which is smaller than the support member periphery and larger than the circumference of said hose; whereby, upon positioning said support member in said first longitudinally-extending section said hollow member is capable of removably holding said shower head in a plurality of different rotational positions of said shower head about a second axis, said second axis being generally perpendicular to said single axis.



3,979,097
LADDER CADDY

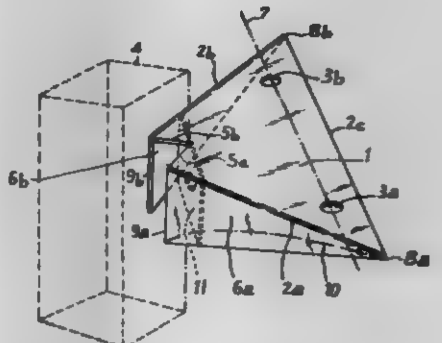
John Alfred Baine, 1247 Haig Blvd., Mississauga, Ontario, Canada
Filed Aug. 19, 1975, Ser. No. 605,900
Int. Cl.² E06C *7/14*
U.S. Cl. 248—211 6 Claims

1. The combination of an accessory holder and an attachment frame for use with a ladder to provide ready engagement and detachment of said attachment frame in selected alternative positioned relation on said ladder, said accessory holder having a spindle portion for transverse sliding entry and engagement with said frame, said frame comprising a pair of spaced apart side members having plate means in connecting relation extending therebetween, hook means to engage a step portion of said ladder in drop-over hooking engagement, aperture means in said frame side members in mutual aligned relation to receive said spindle member in transverse sliding relation therethrough and manually operable lock means to transversely secure said spindle member relative to said frame while permitting said accessory holder to pivot about the axis of said spindle under working loads.



3,979,098
SUPPORT FOR SECURING A SLAB TO AN UPRIGHT

Claude Louis Albert Vattier, Rue Lavoisier, 76260 Eu, France
Filed Aug. 5, 1975, Ser. No. 601,990
Claims priority, application France, Aug. 7, 1974, 74.27400
Int. Cl.² A47B *3/06*
U.S. Cl. 248—247 10 Claims

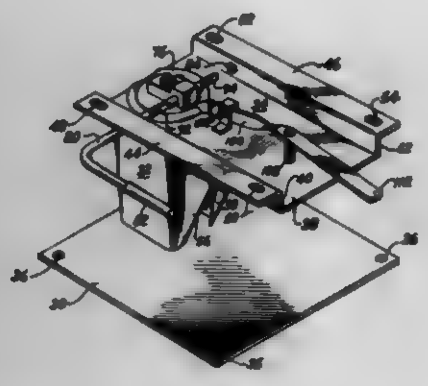


1. Support for securing a slab to an upright, said support comprising a bearing surface having the general shape of a triangle of which the apex of one angle is positionable adjacent the upright and has a suitable profile arranged to mate closely with part of the half-periphery of the upright, said bearing surface having two openings for the passage of slab-fixing means arranged on said surface along a line substantially parallel to the side of the triangle opposite said angle, each of the sides of the triangle adjacent said angle having a flange formed substantially at right-angles to said bearing surface, extending from the edge of said profile to a point on the side concerned situated at least slightly beyond the line of said openings with respect to the apex, the end sections of the flanges adjacent the profile being arranged so as to be supportable on the upright substantially along two generators of the latter, said support also comprising fastening means for securing the support to the upright.

3,979,099
VEHICLE SEAT PEDESTAL

Robert E. Strang, North Liberty, Ind., assignor to The Injection Plastic Co., Inc., Plymouth, Ind.

Filed Sept. 8, 1975, Ser. No. 610,993
Int. Cl.² F16M *13/00*
U.S. Cl. 248—418 **8 Claims**

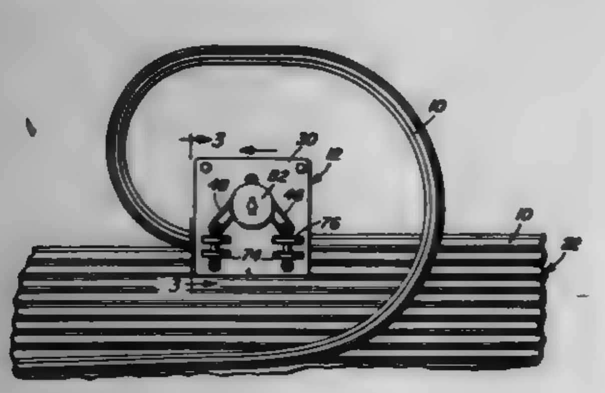


1. A pedestal for a vehicle seat, comprising a base, a post secured to said base and having a horizontally disposed plate at the upper end thereof, a platform mounted on the upper end of said post for angular movement on a horizontal plane, a pivot means connecting said platform to said plate, a lever pivoted on said pivot means, and locking means including a handle having a shaft for pivoting said lever to urge said plate and platform in firm contact for holding said platform in any horizontal angular position with respect to the vertical axis of said post, said pivot means including a bolt extending through said plate, platform and lever, and with said lever applying a compressive force against said three parts when said handle is moved to the position for locking said platform in fixed position with respect to the said post.

3,979,100
ENDLESS BAND WALL FORM

Buster C. Phillips, 550 Morgan St., West Liberty, Ky. 41472

Division of Ser. No. 416,324, Nov. 15, 1973, Pat. No. 3,888,959, which is a continuation-in-part of Ser. No. 238,805, March 28, 1972, abandoned. This application Apr. 3, 1975, Ser. No. 564,949
Int. Cl.² E04G *13/02*
U.S. Cl. 249—48 **4 Claims**

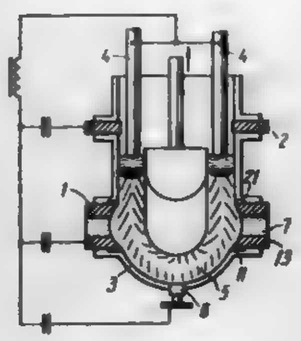


1. In a structural wall for use as a form against which a hardenable material is cast in a workable condition and permitted to harden, the improvement wherein said wall comprises a series of convolutions of an elongated strip of a substantially rigid material formed into an endless band, said strip being sufficiently flexible to permit it to be formed into said convolutions without permanent deformation thereof, and tongue and groove means integrally formed on opposed edge surfaces of said strip, said opposed edge surfaces being disposed in adjacent side-by-side relation with said tongue and groove means therebetween releasably interlocking successive ones of said series of convolutions in edge-to-edge relation to define a wall extending around a closed path with the convolutions forming the opposed ends of said wall being connected by a length of said endless band.

3,979,101
MOULD FOR CASTING AT LEAST ONE COMPONENT OF COMPLEX-SHAPED METAL ARTICLES

Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 9; Boris Izrailevich Medovar, Bulvar Lesi Ukrainki, 2, kv. 8; Georgy Alexandrovich Boiko, ulitsa Vladimiro-Lybedskaya, 16, kv. 106; Ilya Iosifovich Kumysh, Vozdukhoflotsky prospekt, 42, kv. 51; Leonid Gustavovich Puzrin, ulitsa Vladimirskaya, 71, kv. 48; Viktor Alexandrovich Kovalev, ulitsa Ivana Kudri, 23/21, kv. 30; Georgy Sergeevich Marinsky, ulitsa Tatarskaya, 1"b", kv. 19; Alexandr Petrovich Beloglazov, ulitsa Ushinskogo, 5a, all of Kiev; Pavel Osipovich Siry, ulitsa Kotelnaya, 1/15, kv. 285; Alexandr Ivanovich Sopozhnikov, ulitsa Mosfilmovskaya, 17/25, kv. 63, both of Moscow; Valentin Alexandrovich Nosanov, prospekt Bolshevikov, 37/1, kv. 13, Leningrad; Volf Iudovich Babinovich, ulitsa Gagarina, 74, kv. 27, Chekhov; Lev Vasilievich Popov, ulitsa Kharkovskaya, 2, kv. 21, Bryansk; Sergei Mikhailovich Shelkov, ulitsa Bryanskoi proletarskoi divizii, 9, kv. 33, Bryansk; Vladimir Nikolaevich Strukov, ulitsa Kuibysheva, 13, kv. 17, Bryansk, and Boris Markovich Babich, ulitsa Bryanskoi proletarskoi divizii, 26, kv. 19, Bryansk, all of U.S.S.R.

Division of Ser. No. 432,154, Jan. 10, 1974, Pat. No. 3,894,574, which is a continuation of Ser. No. 323,379, Jan. 15, 1973, abandoned, which is a continuation of Ser. No. 120,141, March 2, 1971, abandoned. This application Feb. 7, 1975, Ser. No. 548,032
Int. Cl.² B22D *19/04, 27/02*
U.S. Cl. 249—97 **1 Claim**



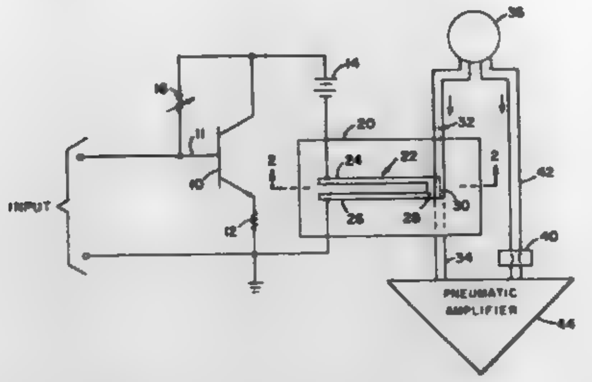
1. A mould for casting at least one component of a complex-shaped metal article, the mould comprising: a base plate; a housing mounting the base plate and fitted with at least one hole located in the fusion area of the mould, the number of holes being equal to the number of article components to be bonded by fusion to the at least one component being cast in the mould, and the geometric dimensions and shapes of the holes matching those of the fusion area of the article components to be bonded by fusion; and slots in the holes to provide expension of the holes from the mould interior to ensure the formation of a slag blanket in a volume required for a uniform removal of heat in the fusion area.

3,979,102
ELECTROFLUID CONVERTER

Aubrey Rodgers, Huntsville, and Rayburn K. Widner, Arab, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 22, 1975, Ser. No. 606,818
Int. Cl.² F16K *31/02*
U.S. Cl. 251—11 **3 Claims**

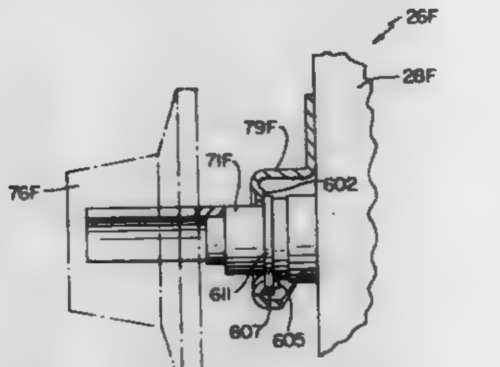
1. An electrofluid converter comprising: an electrofluidic converter gate having a thermal expansion wire therein disposed to receive electrical stimulation for providing thermal expansion therein; a fluidic passageway through said gate; said thermal expansion wire being a single aluminum ribbon having first and second parallel, spaced apart, conductive members terminated at one end in a thin, flat surfaced member having an edge positioned for linear movement across said passageway to restrictively vary the passageway opening in response to thermal expansion; and an electrical power supply and variable coupling means connected respectively to the other ends of said ribbon for stimulating expansion of said ribbon.



3,979,103
FUEL CONTROL SYSTEM AND CONTROL DEVICE THEREFOR OR THE LIKE

Charles D. Branson, and Roy C. Demi, both of Greensburg, Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 530,605, Dec. 9, 1974, which is a continuation-in-part of Ser. No. 443,783, Feb. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 380,389, July 18, 1973, abandoned. This application Apr. 23, 1975, Ser. No. 570,866
Int. Cl.² F16K *35/02*
U.S. Cl. 251—97 **2 Claims**

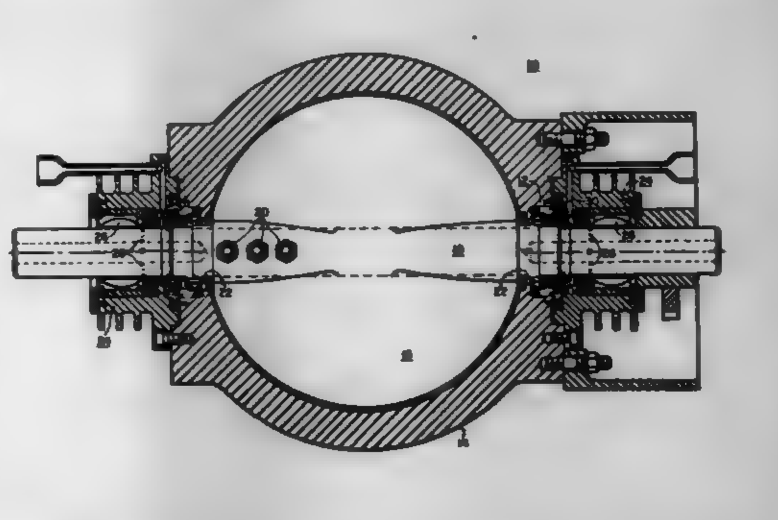


1. In a fuel control system for a fuel burning apparatus or the like having a source of fuel adapted to be interconnected by a passage defining means to main burner means of said apparatus, the improvement comprising a fuel control device disposed in said passage defining means and having poppet valve means that is directly manually operated for opening and closing said passage defining means so as to control the flow of fuel from said source to said main burner means, said control device having a selector means operatively interconnected to said poppet valve means to operate the same between its opened and closed positions, said selector means having latch means for latching said selector means in its off position when said poppet valve means is in its closed position, said control device having latch means cooperable with said latch means of said selector means for latching said selector means in said off position thereof, said selector means being axially movable to clear said latch means of said selector means from said latch means of said control device, said selector means being rotatable in the unlatched condition thereof to operate said poppet valve means, said latch means of said control device comprising a cam surface having a drop-off, said latch means of said selector means comprising a tang that cooperates with said drop-off of said cam surface to latch said selector means in said off position thereof, said cam surface being relatively long and gradual to permit said tang to ride up the same to said drop-off thereof without excessive feel of axial movement of said selector means as said selector means is moved to said off position thereof.

3,979,104
SHAFT SEALING DEVICE FOR A BUTTERFLY VALVE

Bernard L. LaCoste, Wilmington, Del., and Thomas H. McCloskey, Media, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 434,322, Jan. 17, 1974, abandoned. This application Mar. 18, 1975, Ser. No. 559,464
Int. Cl.² F16K *31/44*
U.S. Cl. 251—214 **4 Claims**



1. A butterfly valve for a steam turbine power plant comprising:
- a valve casing defining a valve chamber therein,
- a butterfly valve shaft mounted on a bearing for reciprocating angular rotation within said valve casing,
- a butterfly valve disc mounted on said butterfly valve shaft for movement within said valve chamber, and,
- a seal device for preventing leakage of a pressurized fluid from within said valve chamber along said butterfly valve shaft, said seal device being disposed within a seal chamber defined by said valve casing and said shaft and including a rotatable seal assembly mounted on said shaft and a stationary seal assembly mounted on said valve casing,
- said rotatable seal assembly comprising an annular mating ring attached to said shaft,
- said stationary seal assembly comprising first and second annular seal rings in contact with opposing surfaces of said annular mating ring to form first and second friction face seal interfaces respectively therebetween,
- said stationary seal assembly further comprising first and second resilient bellows members disposed between said first and second annular seal rings, respectively, and said valve casing,
- said first bellows member, said first annular seal ring and said annular mating ring defining a first region communicating with said valve chamber and containing a pressurized fluid to be contained therein by said seal device,
- said second bellows member, said second annular seal ring and said annular mating ring forming a second region adjacent said second seal interface which communicated with a fluid for cooling said bearing, which fluid is sought to be not contaminated by fluid from said valve chamber,
- said first and second bellows members, said first and second annular seal rings and said annular mating ring defining, on the side thereof opposite to said first and second regions, a third region filled with a fluid pressurized to a pressure greater than that of either said fluid in said valve chamber or said bearing coolant fluid to prevent contamination of said bearing coolant fluid by said fluid in said valve chamber.

3,979,105

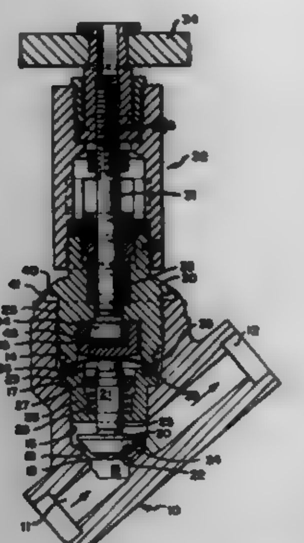
VALVE WITH IMPROVED FLOW PASSAGE

Elbert B. Peel, Pittsburgh, and Raymond L. Schweitzer, Allison Park, both of Pa., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 402,165, Oct. 1, 1973, abandoned. This application Apr. 3, 1975, Ser. No. 564,956

Int. Cl.² F16K *47/04, 41/12*

U.S. Cl. 251—121 4 Claims



1. A metal diaphragm low lift valve comprising: a valve body having an inlet passage and an outlet passage aligned along a common axis; a cylindrical control chamber in the valve body having an axis intersecting said common axis at a substantial angle of inclination; a circular passage in the valve body at one end of the control chamber coaxial therewith and fluidly connecting the inlet passage and the control chamber; a frusto-conical valve seat at said one end of said control chamber, said valve seat diverging outwardly from the circular passage and having a lesser diameter than said control chamber, said valve seat being coaxial with the axis of the chamber, the valve seat having a slant line in a plane of the common axis and the axis of the chamber substantially parallel to and extending a distance below the common axis with the outlet passage being adjacent thereto whereby a straight flow path is established along the common axis between said inlet passage and said outlet passage; means including a metal diaphragm sealing the other end of the chamber; said diaphragm having a limited axial flexure movement; means including a metal diaphragm sealing the other end of the chamber, said diaphragm having a limited axial flexure movement; means for imparting axial flexure movement to the diaphragm; a cylindrical closure disc mounted for movement along the axis of said control chamber in accordance with movement of said diaphragm; an outwardly diverging frusto-conical surface on said closure disc disposed opposite to and coaxially with said frusto-conical valve seat, said frusto-conical surface being diametrically coextensive with the valve seat and diverging outwardly therefrom at a shallow angle, said disc having a lesser diameter than said control chamber so as to establish outwardly thereof a region of considerably greater volume; an annular surface on the closure disc inwardly of the frusto-conical surface for sealingly engaging the inner periphery of the valve seat in a closed position to seal the said circular passage, said closure disc being axially movable along the axis of said control chamber to an open position a limited distance above said common axis as permitted by said limited axial flexure movement of the diaphragm, said closure disc in said open position partially obstructing the projected continuation of the inlet passage and defining an annular diffuser passage having a length of about four times the movement of the disc and a flow area less than the area of said circular passage thereby presenting a flow restriction passage at the entry of diffuser, said open position providing a sector within said projected continuation of the inlet passage providing direct fluid communication with minimum turbulence for a portion of the fluid flow between said inlet passage and said outlet passage, said diffuser passage providing a gradually increasing cross sectional flow area that permits fluid to expand gradually with a reduction of velocity for discharge to the control chamber and outlet passage with minimum pressure loss.

3,979,106

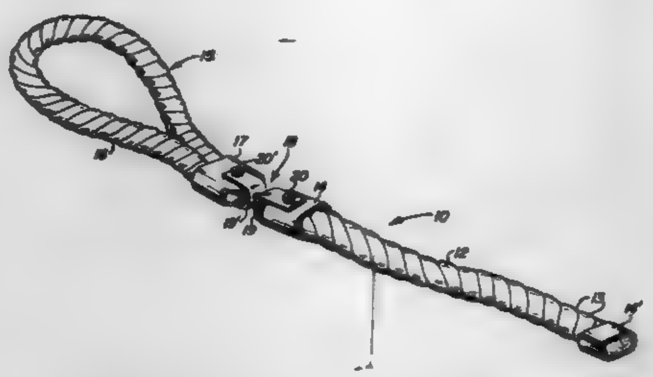
STEEL TAPE AND WIRE PULLER

Michael J. Jaques, 602 S. Hobson, Mesa, Ariz. 85204

Filed Aug. 7, 1975, Ser. No. 602,689

Int. Cl.² B65H *59/00*

U.S. Cl. 254—134.3 FT 6 Claims



1. A steel tape and wire puller comprising:

a handle portion comprising a first elongated member forming a loop having a plurality of braided strands,

the ends of said first elongated member being interconnected by a first cap member,

a cordage portion formed of a plurality of strands of a pliable plastic material braided to form a second elongated member,

the ends of said second elongated member being interconnected by a second cap member, and

means for pivotally interconnecting the first and second cap members,

whereby when said strands of said cordage portion of said puller are unbraided a predetermined amount along the length thereof and an end portion of a steel tape or wire is layed between the strands and the strands then released to assume their normal braided position, the strands of the cordage portion will firmly grip the tape or wire along given portion of its length.

3,979,107

METHOD OF AND APPARATUS FOR THE ADMIXING OF A PIGMENT COLOR IN A DOSAGED MANNER INTO A PLASTICS MATERIAL GRANULATE

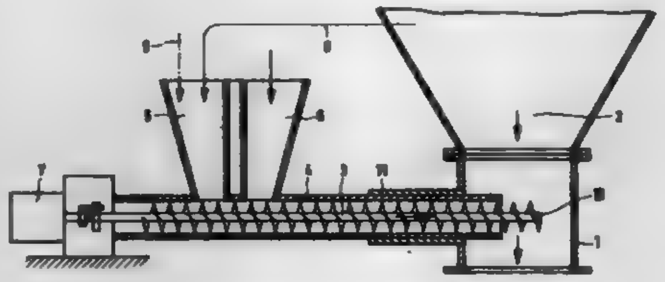
Adolf Leak, Osterburken, Germany, assignor to AZO-Maschinenfabrik Adolf Zimmermann, Osterburken, Germany

Filed Oct. 10, 1973, Ser. No. 404,905

Claims priority, application Germany, Oct. 14, 1972, 2250561

Int. Cl.² B01F *7/02*

U.S. Cl. 259—10 24 Claims



1. A process for admixing a controlled amount of a colorant in the form of a fine powder with a granulated plastic material being fed via a hopper to a plastics material processing machine, said process comprising feeding a quantity of a cleaning material comprising a coarse-particle plastic material to said hopper by means of a dosaging screw connected to said hopper, feeding to said dosaging screw said colorant so that said colorant and said cleaning material are fed together to said hopper, said colorant being fed to said dosaging screw downstream of the location at which said cleaning material is fed to said dosaging screw, and mixing said colorant and said cleaning material with said granulated plastic material prior to entry of said colorant, said cleaning material and said granulated plastic material into said processing machine.

3,979,108

METHOD AND APPARATUS FOR REMOVING SLAG

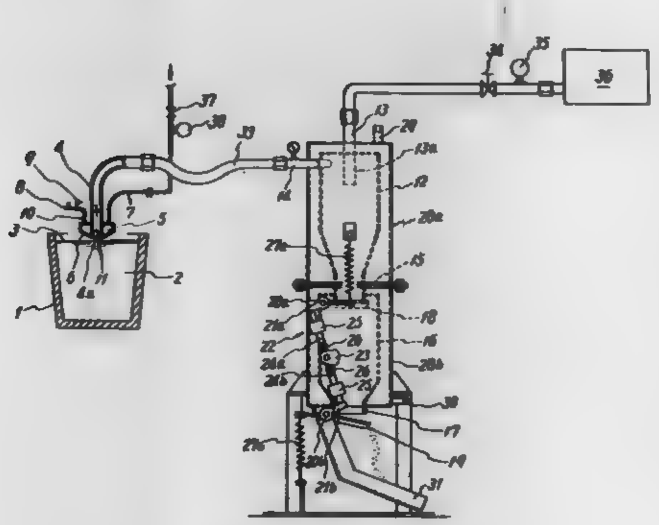
Katsumi Nagasaki, Sakai; Yoshito Seto, Yamato-Koriyama, and Hiroyuki Yamasaki, Amagasaki, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Jan. 15, 1975, Ser. No. 541,139

Claims priority, application Japan, Jan. 17, 1974, 49-89171

Int. Cl.² C21C *7/00*

U.S. Cl. 266—201 17 Claims



1. Apparatus for removing slag from the surface of a molten metal, comprising:

a suction pipe having an inlet end adapted to be positioned above said surface so as to draw the slag therefrom;

means for supplying water to the interior of said suction pipe adjacent to the inlet end thereof to pelletize entering slag;

a separator hopper communicating with said suction pipe, said separator hopper having a slag discharge port and first valve means for opening and closing said discharge port;

exhaust means for evacuating said separator hopper and applying suction to said suction pipe;

an auxiliary hopper mounted in sealed relation to said separator hopper so as to receive slag from said discharge port, said auxiliary hopper having a slag discharge port and second valve means for opening and closing the same;

and control means for operating said first and second valve means alternately, said control means acting to open the discharge port of the separator hopper when the discharge port of the auxiliary hopper is closed and vice versa whereby slag can be continuously drawn into said separator hopper and intermittently discharged from said auxiliary hopper.

3,979,109

LOCKING DEVICE IN GAS SPRING

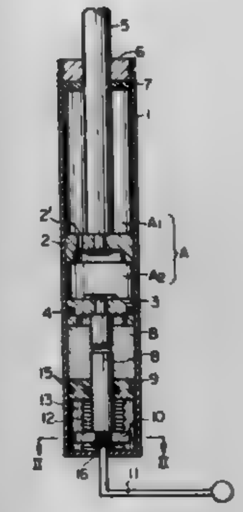
Kunio Ishida, Yokohama, Japan, assignor to Tokico Ltd., Japan

Filed Oct. 8, 1975, Ser. No. 620,854

Claims priority, application Japan, Oct. 14, 1974, 49-117867

Int. Cl.² F16F *9/49*

U.S. Cl. 267—64 R 3 Claims



1. A locking device of a gas spring including a cylinder, a free piston slidably disposed in the cylinder for dividing the interior of the cylinder into a gas chamber and an oil chamber, and a piston slidably disposed in the oil chamber and having a piston rod projecting outwardly from the cylinder, the locking device comprises a free piston rod secured to the free piston and projecting outwardly from the cylinder, and means secured to the cylinder for engaging with and preventing movement of the free piston rod relative to the cylinder.

3,979,110

ENERGY ABSORBERS

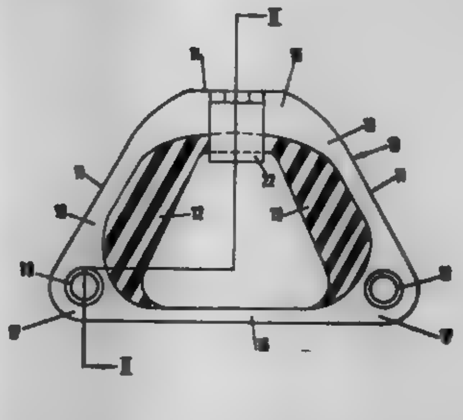
Derek Alan Newton, Bushby, England, assignor to Dunlop Limited, London, England

Filed Mar. 26, 1974, Ser. No. 454,927

Claims priority, application United Kingdom, Mar. 29, 1973, 15164/73

Int. Cl.² F16F *7/12*

U.S. Cl. 267—140 37 Claims

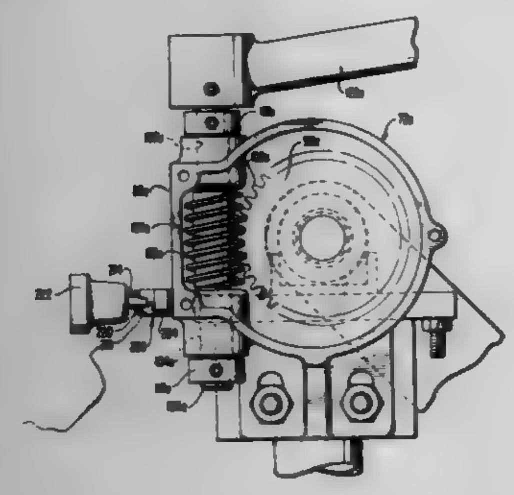


1. An energy absorber comprising in cross-section at least one limb of rubber-plastic composite material comprising a layer of rubber and an adjacent layer of plastics, said layers being united together and each extending substantially in the direction of the length of the limb, the layer of plastics material being capable of absorbing more energy than the layer of rubber during progressive deformation of the limb by bending or buckling when subjected to compressive forces acting substantially in a direction of the length of the limb, and the rubber, when deformed, being capable of storing sufficient

energy substantially to restore the energy absorber to substantially its original shape and configuration.

3,979,111
OUTBOARD MOTOR REPAIR STAND WITH LOCKABLE WORM GEAR SHAFT

Robert M. Kerr, P.O. Box 1135, Winter Garden, Fla. 32787
Continuation-in-part of Ser. No. 289,367, Sept. 15, 1972. This application Aug. 4, 1975, Ser. No. 601,289
Int. Cl.² B23Q *1/12*; B25B *1/22*
U.S. Cl. 269—76 1 Claim



1. In a repair stand for an outboard motor or the like, of the type including a base, and a standard assembly of changeable height connected to the base: that improvement comprising:

a horizontal cross plate fixedly secured to the standard in perpendicular relation thereto and projecting outwardly at opposite sides thereof;

a U-form channel member, including a bight portion and confronting, spaced apart arms, the bight portion being secured to the cross plate with the arms extending outwardly;

an elongated tube fixedly mounted in the channel member between the arms, the tube having a horizontal bore therein, and the tube extending outwardly of the cross plate at each side thereof;

a gear housing having inner and outer side walls, the inner side wall having an opening therein, base and top sections and end sections fixedly secured to the tube and to the plate;

an elongated substantially cylindrical horizontal main shaft positioned in the tube for rotation therein and having opposite ends extending outwardly of the tube at each side thereof;

one end of the shaft extending into the gear housing through said opening in said inner side wall thereof;

a worm wheel fixed to the one end of the main shaft within said housing;

the base and top sections of the housing having vertically coaligned openings therein, and a rotatable worm gear shaft extending in vertical orientation through said openings;

a worm drive gear on said worm gear shaft within the housing in mesh with said worm wheel;

an actuating handle on the worm gear shaft adjacent the top section of the housing in an upper, readily accessible location;

a single offset bar element having one end affixed to the end of said main shaft protruding from said housing;

a mounting saddle fixedly secured to the distal end of said element, the mounting saddle being parallel to the shaft, and being rotatable with the shaft responsive to turning of the actuating handle in a 360° arc, the angle of the mounting saddle relative to the base being constantly altered by said rotation;

a safety lock assembly comprising a plug member engaged in an end section of the gear housing;

the plug member having a chamber therein;

a shaft extending through the plug member and having an enlarged locking lug thereon;

a coil spring within the chamber constantly urging the locking lug in the direction of the worm gear shaft;

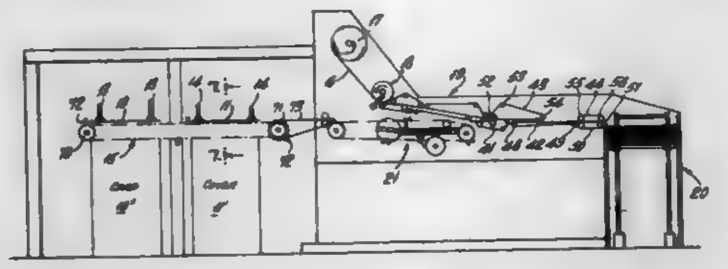
a handle on the safety lock shaft;

means for retaining the safety lock shaft in retracted position; and

the worm gear shaft having means thereon engaged by the locking lug to prevent further rotation of the worm gear shaft.

3,979,112
SHEET STACKING AND INTERLEAVING APPARATUS

Robert Munn, Garnerville, and Albert Tiso, Eastchester, both of N.Y., assignors to George Hantscho Company, Inc., Mount Vernon, N.Y.
Filed Feb. 6, 1975, Ser. No. 547,508
Int. Cl.² B65H *39/055*
U.S. Cl. 270—58 7 Claims



1. Apparatus for stacking sheets of paper and similar material interleaved with pieces of material of equivalent area but increased thickness to form pads and other similar articles comprising means for feeding successive sheets along a predetermined path and onto a stack, means for counting successive sheets, loading means for feeding successive pieces of material periodically from a supply location into a second path aligned with and spaced from the first said path, said paths intersecting at a point spaced from said stack, means for periodically transporting said successive pieces of material along said second path to a position spaced from said supply location and adjoining said intersecting point, said transporting means also being periodically actuated by said counting means for propelling a leading piece of material in said second path adjoining said intersecting point through said intersecting point at the precise speed of movement of and in alignment with one of said sheets entering said intersecting point from said first path for deposition onto said stack and simultaneously advancing a successive piece of material into said position and feeding another piece of material into said second path, said counting means functioning to actuate said transporting and loading means each time a predetermined number of sheets have passed said point of intersection, a cutting station having cutting means, means for feeding a web to said cutting station to cut said web into said sheets, means carried by said cutting means and coupled with said counter for counting said sheets, said counter being operable upon the attainment of a predetermined count to actuate said transporting and loading means and to automatically reset and start the next successive count.

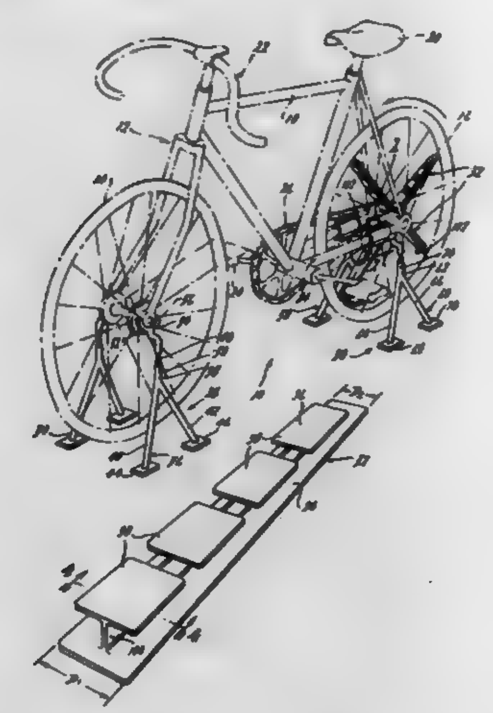
3,979,113
BICYCLE EXERCISING APPARATUS

Gerald A. Uhl, 35271 Drakeshire Place, Apt. 203, Farmington, Mich. 48024, and Johannes J. M. Pennock, 1815 E. Lincoln, Birmingham, Mich. 48008
Filed Jan. 28, 1975, Ser. No. 544,745
Int. Cl.² A63B *21/00*
U.S. Cl. 272—73 1 Claim

1. An exercise device for use with a rotatable spoke-type wheel of an operator propelled vehicle,

said device including at least one air deflector rotatable with the wheel for increasing the resistance to rotation thereof, and

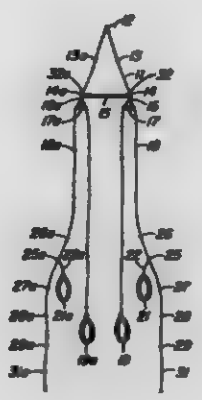
means cooperable with the spokes of the wheel supporting said deflector at a position extending generally radially between the center of rotation of the wheel and the outer periphery thereof,



said deflector comprising a monolithic structure fabricated of a molded polymeric material and including first and second deflector sections that are interconnected by an intermediate web section arranged generally perpendicular to the plane of said deflector sections, one of said deflector sections comprising a plurality of deflector portions that are separated from one another in a radial direction relative to the axis of said wheel.

3,979,114
PUSH-PULL TYPE EXERCISING DEVICE

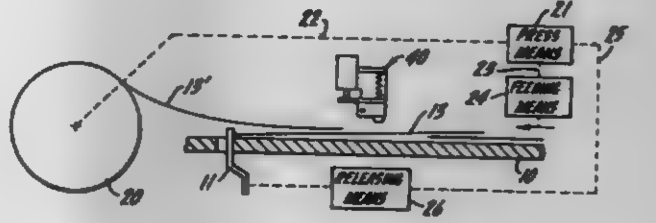
Anthony E. Codina, 2337 Cypress Ave., Lemon Grove, Calif. 92045
Filed June 12, 1975, Ser. No. 586,185
Int. Cl.² A63B *21/00*
U.S. Cl. 272—126 4 Claims



1. A device of the character described comprising two flexible lines, each line having a stirrup member at one end for receiving a person's foot therein and a loop member at the other end for grasping by a person's hand; said loop members being knotted onto said flexible lines between knots located at predetermined points on said lines; a pair of pulleys, each receiving one of the said flexible lines; an elongated, hollow spacer having an opening at each end, said spacer supporting said pulleys; a hanger line for said spacer passing longitudinally through the length of said opening of said spacer, said hanger line being knotted adjacent to said spacer, to prevent movement of said spacer with respect to said hanger line; additional knots being spaced apart on said hanger line to permit placement of said last mentioned additional knots on one side of a doorjamb so that on closing of a door the said additional knots remain on one side of a door and the spacer on the other; each of said pulleys having a rotatable eye member through which passes said hanger line as it goes through said spacer and through said outer surface openings and maintains said pulleys near the ends of said spacer.

3,979,115
SHEET LOCK FOR FEED TABLE IN PRINTING PRESS

Carl-Heinz Bruckner, Bensheim-Auerbach, and Claus Simeth, Offenbach am Main, both of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Germany
Continuation-in-part of Ser. No. 570,265, April 21, 1975, abandoned. This application June 19, 1975, Ser. No. 588,226
Int. Cl.² B65H *7/14*, *7/08*
U.S. Cl. 271—261 14 Claims



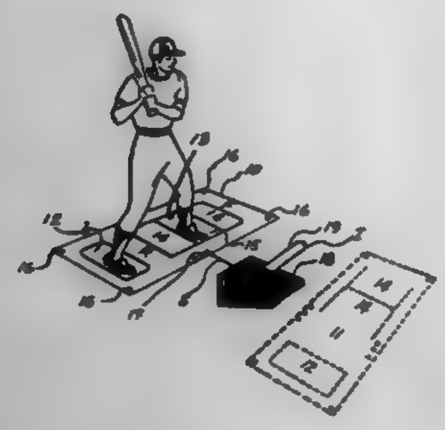
1. Means for interrupting the feeding of sheets to a sheet-fed printing press comprising, in combination, a press drive, a feed table, means defining a registered position of a sheet thereon, means coupled to the drive for feeding sheets across the feed table in succession into engagement with the registering means, a gripper cylinder, said gripper cylinder being coupled to the drive for picking up successive sheets following register intervals, retaining means having a retaining foot spaced opposite a sheet on the feed table and having provision for energization to press the foot downwardly against the sheet to immobilize the sheet so that it is not picked up by the cylinder, means for detecting failure of register of a sheet during a register interval for energizing the retaining means, time delay means interposed between the detecting means and the sheet retaining means to delay operation of the retaining means thereby to insure that the preceding sheet picked up by the gripper cylinder is clear of the feed table so that the foot presses downwardly upon the non-registered sheet, and means for permitting manual removal of the non-registered sheet from below the foot.

3,979,116
STRIDE-BOX

John T. Matchick, 126 N. Master's Court, Maumee, Ohio 43537
Filed Mar. 7, 1975, Ser. No. 556,333
Int. Cl.² A63B *69/40*
U.S. Cl. 273—26 R 10 Claims

2. A batter's training device comprising a planar sheet material defining a first area for receiving a batter's pivot foot and a second area for receiving a batter's stride foot, first closure means adjacent at least one of said first or said second

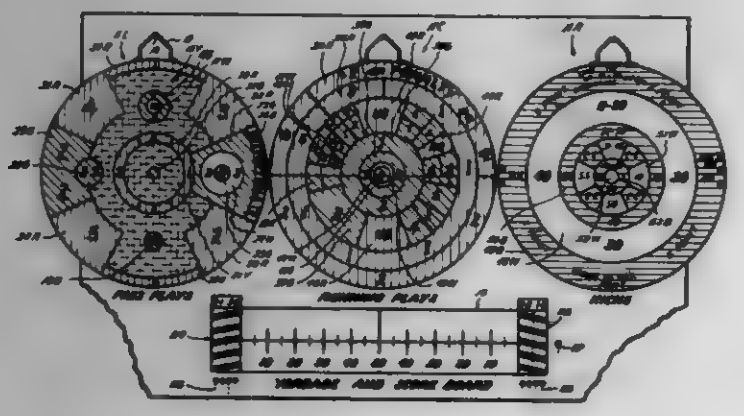
areas for adjustably setting a first distance between said first and said second areas and second closure means adjacent said



second area for adjustably changing the length dimension of said second area.

3,979,117
FOOTBALL DART BOARD GAME

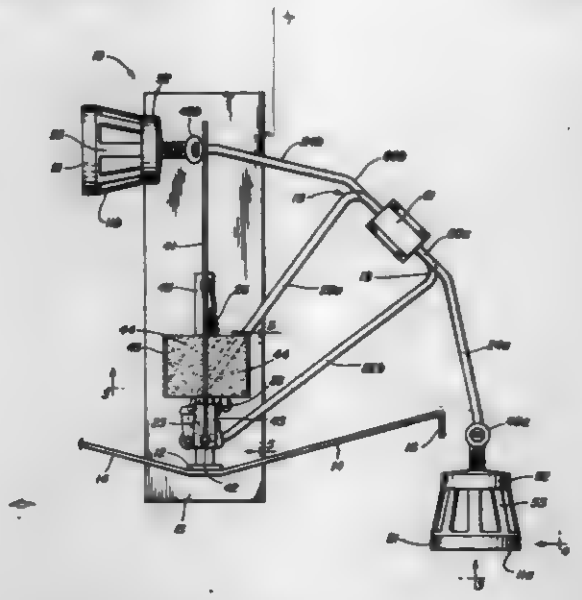
Ronald E. Worsham, 2410 Bluebonnet, Houston, Tex. 77025
Continuation of Ser. No. 160,687, July 8, 1971, abandoned. This application May 14, 1973, Ser. No. 361,097
Int. Cl.² A63B *71/02*
U.S. Cl. 273—102 B **1 Claim**



1. A football dart board game apparatus comprising:
a. dart board target means for receiving darts therein;
b. said dart board target means consisting of a plurality of aligned dart boards for receiving darts therein;
c. each of said dart boards consisting of at least one colored, circular area defining a dart target area thereon;
d. each of said dart boards also consisting of at least one colored ring defining dart target areas thereon;
e. each of said dart boards also consisting of at least one colored segment of a circular area defining dart target areas thereon;
f. at least one of said dart boards also consisting of at least one circumferentially and radially extending colored portion and wherein a part of such portion is of greater radial extent and of less circumferential extent than the remainder of such portion to define dart target areas thereon;
g. the arrangement of said target areas on one board being different from the arrangement of dart target areas on each other board whereby each board represents a particular type of football play; and
h. indications on said colored circular dart target areas, colored ring dart target areas, colored segment dart target areas and on said circumferentially and radially extending colored portion dart target area for indicating the results of various plays which may be made in a game of football when said target areas are penetrated by darts.

3,979,118
MARKSMANSHIP TARGET INCLUDING PIVOTING TARGET ARMS

Charles A. Saunders, and Thomas A. Saunders, both of Columbus, Nebr., assignors to Saunders Archery Company, Columbus, Nebr.
Continuation-in-part of Ser. No. 484,287, June 28, 1974, Pat. No. 3,915,454. This application Oct. 20, 1975, Ser. No. 623,793
Int. Cl.² A63B *71/02*
U.S. Cl. 273—102.1 R **10 Claims**

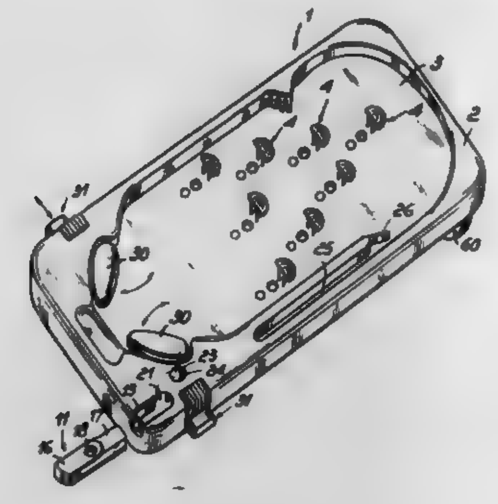


1. In a target assembly including
a target support standard,
first and second targets,
arm means pivotally supporting each of said targets on said standard,
means interconnecting said arm means with one another to ensure concordant movement therebetween, and
biasing means for holding said arm means relatively fixed in each of a first and second rest position, in each of which rest positions a face of one of said targets is presented to the view of a marksman,
said arm means being shiftable through an arc about said standard and being responsive to the force of a missile striking one of said targets to overcome said biasing means and to pivot about said standard between the first rest position and the second rest position;
the improvement comprising damping means to preclude rebound of said arm means from a new rest position assumed when a missile strikes a target, said damping means comprising
a cushion carried by each said arm means and directed rearwardly of said targets; and
a cushion-engaging plate disposed rearwardly of said target support standard and in a line of movement of said cushion, said plate being adapted to engage said cushion upon pivotal shifting of said arm means about said standard.

3,979,119
GAME BOARD STRUCTURE

Claudio Cecchetti, Via Verdi 54, Cernusco sul Naviglio, Italy (20063)
Filed June 3, 1974, Ser. No. 475,692
Claims priority, application Italy, Oct. 30, 1973, 22631/73[U]
Int. Cl.² A63D *13/00*
U.S. Cl. 273—121 R **5 Claims**

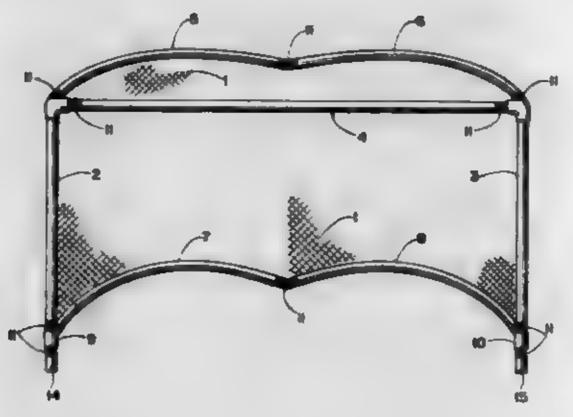
1. A game board structure comprising a support frame constructed in a single piece, a playing board supported by said frame and having an upper and a lower face, means for propelling a ball on to said playing board, a pair of repelling arms disposed close to one end of said playing board, two pushbuttons for operating said repelling arms, said two pushbuttons being slidably supported in opposing positions on the lateral sides of said frame and being in line with said frame after having been pushed, and further comprising a plurality of holes of constant cross section provided in said playing board and a plurality of obstacles irremovably inserted in said holes, said obstacles each comprising spaced parallel feet and means for connecting said feet of said each of said obstacles together, said feet each comprising a head having a hooked projection defining a ledge spaced from said connecting means by an extent substantially equal to the thickness of said playing board, said feet being made of resilient material and said head having a cross size slightly larger than said holes and being arranged to pass beyond said holes provided in said playing board by the resilient bending of said feet, said ledge adhering to the lower face of said playing board while said



connecting means adhere to the upper face of said playing board preventing said feet from being removed through said holes, and further including a pair of levers, each of said levers connecting one of said pushbuttons with one of said repelling arms, and each of said levers having a shaped head at one end thereof, each of said pushbuttons having a seat arranged internally thereof for snap engagement with a corresponding one of said shaped heads of said levers, said levers each comprising near the other end two spaced through holes, said repelling arms each having a pin extending therebelow and projecting therefrom, the pin of one of said repelling arms rotatably engaging a corresponding one of said through holes of one of said levers and the pin of the other of said repelling arms rotatably engaging the corresponding other of said through holes of the other of said levers.

3,979,120
RESTORABLY DEFORMABLE HOCKEY GOAL

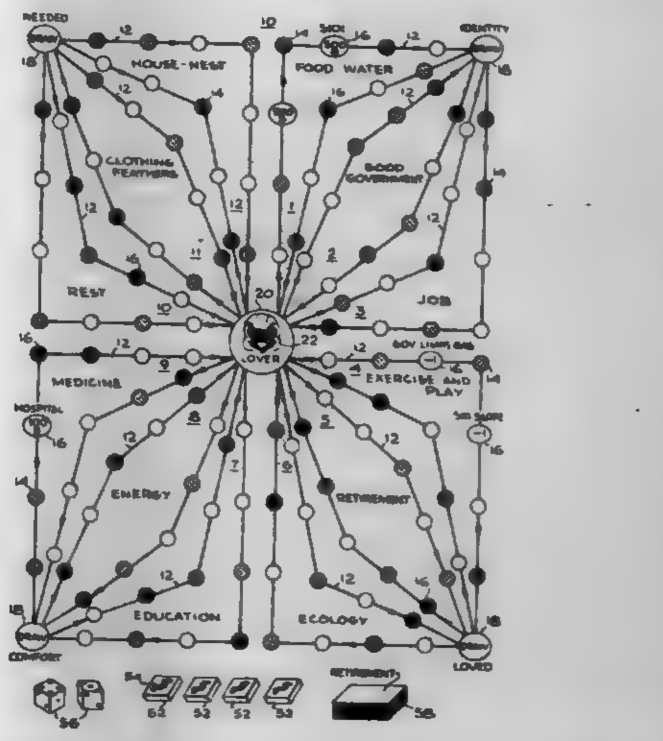
John Stuart Dietrich, c/o Harold Bick, Barrister and Solicitor, 905 Metro Trust, Windsor, Ontario, Canada
Filed Dec. 2, 1974, Ser. No. 528,918
Int. Cl.² A63B *63/00*
U.S. Cl. 273—127 B **4 Claims**



1. A restorably deformable hockey goal frame, comprising:
a plurality of rigid tubular frame members having internally threaded ends that are interconnectable to form the frame, said members including,
  a pair of straight upstanding tubes spaced apart in substantially parallel relation;
  a straight upper tube disposed transversely between and joining first upper end portions of the upstanding tubes, the combination of the three tubes defining a goal entrance;
  a pair of curved upper tubes joined together at one end and having their free ends joined to corresponding second upper end portions of the upstanding tubes, the curved portions of said curved upper tubes extending rearwardly from the goal entrance;
  a first pair of anchor members each having oppositely disposed first and second ends and a third end perpendicular thereto, the first ends being joined to respective ones of the lower ends of the upstanding tubes; and
  a pair of curved base tubes joined together at one end and having their free ends joined to respective ones of the third ends of said anchor members, the curved portions of said base members extending rearwardly from the goal entrance;
  and;
a plurality of resilient helical springs, individual ones of which flexibly interconnect the joined corresponding pairs of said ends, each spring having a center portion of uniform diameter substantially equal to the outside diameter of the members and an end portion on each side of the center portion, the end portions having an outside diameter and helical pitch adapted to threadably join a corresponding pair of said ends into abutting relation with the center portion to provide a substantially smooth and continuous flexible joint that is resilient and permits restorably displaceable movement between each corresponding pair of joined frame members.

3,979,121
EDUCATIONAL BOARD GAME

John Harris, 18717 Ramar St., Northridge, Calif. 91324
Filed Nov. 11, 1974, Ser. No. 522,337
Int. Cl.² A63F *3/00*
U.S. Cl. 273—134 AD **5 Claims**



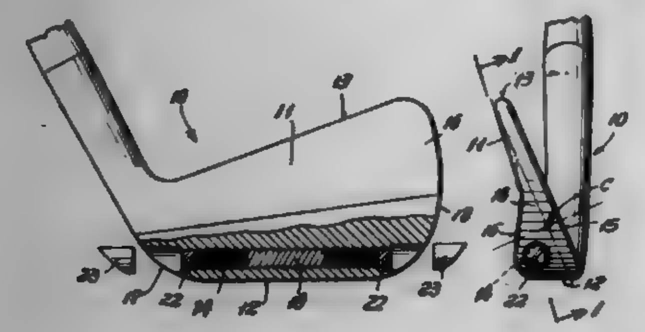
1. A novel educational game, said game comprising, in combination:
a. A game playing area bearing a plurality of separate circuitous pathways, each said pathway bearing a plurality of separate transfer stations spaced therealong, each said transfer station bearing distinctive individual indicia,

various indicia being utilized among said transfer stations, each said pathway also including penalty stations and reward stations interspersed with said transfer stations;

b. A plurality of individual player markers for progressive movement from station to station along said pathways, each said marker being transferable from any of said pathways at any of said transfer stations to a like transfer station on another of said pathways;
c. marker movement determining means;
d. A plurality of individualized reward tokens bearing indicia corresponding to indicia at said reward stations; and,
e. A plurality of individual tally figures, each bearing a plurality of reward token-receiving means, whereby during operation of said game each tally figure can receive at least certain of said reward tokens to reflect progress towards a successful game conclusion.

3,979,122
ADJUSTABLY-WEIGHTED GOLF IRONS AND PROCESSES

Peter A. Belmont, 7 White Birch Ridge, Weston, Conn. 06608
Filed June 13, 1975, Ser. No. 586,598
Int. Cl.² A63B *53/04*
U.S. Cl. 273—171 **9 Claims**

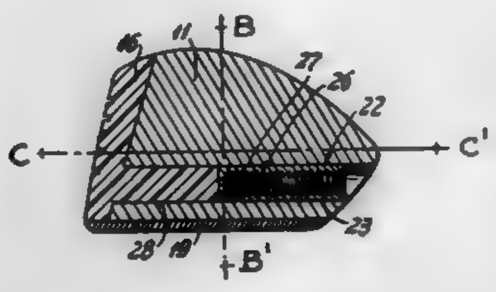


1. A golf iron comprising a blade containing means for adjusting the swing weight, the heel-toe balance and the lift- and distance-imparting properties thereof, said blade having a core comprising its center of gravity, a heel section and a toe section on opposite sides of said core, a relatively thin upper section extending from said toe section to said heel section above said core and a substantially thicker sole section extending from said toe section to said heel section below said core, a flat ball-engaging face surface between said heel, toe, upper and sole sections in front of said core and a rear surface between said heel, toe, upper and sole sections to the rear of said core, said iron having its greatest thickness in said sole section, a threaded cylindrical bore completely through said sole section adjacent but spaced from the undersurface of said sole section and the rear surface of said blade, said bore extending from said heel section to said toe section, below and to the rear of the core in the lower rear quadrant of the blade, and at least one threaded insert having a predetermined weight selected from a group of threaded inserts having different known weights engaged within said bore as the sole weight adjustment therein and providing said golf iron with a predetermined desired swing weight and predetermined lift- and distance- imparting properties, and located at a predetermined position within said bore to provide said golf iron with a predetermined desired heel-toe balance.

8. A process for producing a golf iron having an adjustable swing weight, an adjustable heel-toe balance and adjustable lift-and distance- imparting properties which comprises providing a golf iron having a blade having a core comprising its center of gravity, a heel section and a toe section on opposite sides of said core, a relatively thin upper section extending from said toe section to said heel section above said core and a substantially thicker sole section extending from said toe section to said heel section below said core, a flat ball-engaging face surface between said heel, toe, upper and sole sections in front of said core and a rear surface between said heel, toe, upper and sole sections to the rear of said core, said iron having its greatest thickness in said sole section, cutting a cylindrical bore completely through said sole section adjacent but spaced from the under-surface of said sole section and the rear surface of said blade, said bore extending from said heel section to said toe section, below and to the rear of the core in the lower rear quadrant of the blade, forming a thread within said bore, and screwing at least one threaded insert selected from a group of such inserts having different known weights into said bore, as the sole weight adjustment therein, the weight of said insert providing said iron with a predetermined swing weight and predetermined lift- and distance-imparting properties, and the location of said insert within said bore providing said iron with a predetermined heel-toe balance.

3,979,123
GOLF CLUB HEADS AND PROCESS

Peter A. Belmont, 7 White Birch Ridge, Weston, Conn. 06608
Continuation-in-part of Ser. No. 419,797, Nov. 28, 1973, Pat. No. 3,897,066. This application Apr. 2, 1975, Ser. No. 564,426
Int. Cl.² A63B *53/08*
U.S. Cl. 273—171 **6 Claims**



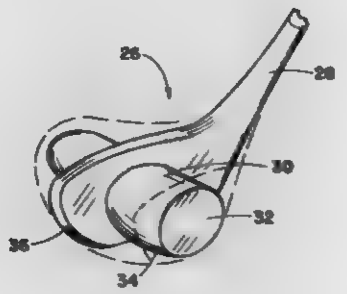
1. Wooden head for a golf club comprising a wooden body having a core comprising its center of gravity, heel and toe sections on opposite sides of said core a hosel located at said heel section, said feel out toe section being separated by a central vertical axis plane which intersects said core, face and rear sections on opposite sides of said core and separated by a transverse vertical axis plane which intersects said core at an angle perpendicular to said central axis and rearwardly of said hosel sole and upper sections below and above said core and separated by a horizontal axis plane which intersects said core, and at least two hollow threaded tubular chambers in said wooden body each of which is adapted to receive and threadably engage a unitary weighted closure means selected from a group of graduated, threaded weighted closure means each having a distinct known weight as the sole weight in said chambers, an equal number of said tubular chambers being located within said wooden body on opposite sides of said central vertical axis plane in said heel and toe sections, extending from said rear surface to said transverse vertical axis plane in said rear section behind and beneath said core and horizontal axis plane in said sole section and spaced from the under surface of said sole section, said tubular chambers extending parallel to each other and to the central vertical and horizontal axis planes and having their weighted closure means exposed and removable through openings in the rear surface of the wooden body, one of said weighted closure means of different known weight being threadably engaged within each of said tubular chambers to provide the desired, variable balance and swing weight of said wooden head while also providing variable delayed impact thrust to the ball being hit and variable increased lift and distance thereto.

4. Process for producing a wooden head for a golf club comprising a wooden body having a core comprising of said core, a hosel located at said heel section, said heel and toe section being separated by a central vertical axis plane which intersects said core, face and rear sections on opposite sides of said core and separated by a transverse vertical axis plane which intersects said core at an angle perpendicular to said

central axis and rearwardly of said hosel sole and upper sections below and above said core and separated by a horizontal axis plane which intersects said core, comprising the steps of boring an equal number of hollow tubular openings from the surface of said rear section to the transverse vertical axis plane in each of the heel and toe sections of said wooden body at the rear section thereof, on opposite sides of said vertical axis plane, behind and beneath said core and horizontal axis plane in said sole section and spaced from the under surface of said sole section and parallel to each other and to the central vertical and horizontal axis planes of said wooden body, providing said openings with thread means to form threaded chambers adapted to receive and threadably engage a unitary, weighted closure means selected from a group of graduated, threaded weighted closure means each having a distinct known weight as the sole weight in said chambers, said threadably engaging one of said weighted closure means of different known weight within each of said tubular chambers to provide the desired, variable balance and swing weight of said wooden head while also providing delayed impact thrust to the ball being hit and increased lift and distance thereto.

3,979,124
PRACTICE GOLF CLUB

Carl A. Uraneck, Rte. 3, Box 148, Bartlesville, Okla. 74003
Continuation-in-part of Ser. No. 378,682, July 12, 1973, abandoned. This application Sept. 11, 1974, Ser. No. 505,072
Int. Cl.² A63B *69/36*
U.S. Cl. 273—186 A **6 Claims**

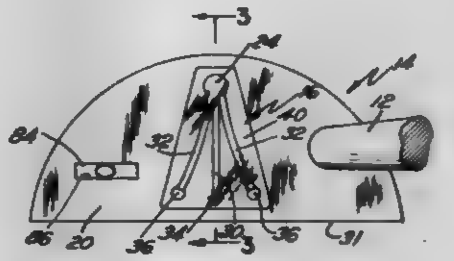


1. A practice golf club for use as a substitute for a golf club, said golf club having a shaft, a grip at one end of said shaft, a shank at the opposite end thereof, a club head secured to the shank and having a flat base portion thereon, a front striking face provided on one side of the club head and disposed at an incline extending upwardly and rearwadly from the front edge of the base portion, a sweet-spot on said club face representing the center of percussion of the golf club when swung about an axis at the grip and having a sweet-spot area smaller than the club face and lying on said face surrounding the sweet-spot; said practice club comprising:

1. a shaft substantially identical to the shaft of the golf club,
2. a grip at one end of the shaft substantially identical to the grip of the golf club,
3. a shank at the opposite end of the shaft of the type on the golf club,
4. a practice club head having the same weight as that of the golf club head secured to the shank and having a base portion and a front striking face on one side thereof, said practice club striking face extending upwardly and rearwardly from the front edge of the base portion and being disposed at an incline and position with respect to the base portion of the practice club head substantially identical to the corresponding incline and position of the striking face of the golf club, the practice club striking face having a sweet-spot at the same position of the sweet-spot of the golf club, said practice club striking face being of a size smaller than the golf club striking face and surrounding the sweet-spot.

3,979,125
GOLF PUTTER PRACTICE DEVICE

William E. Lancellotti, 371 Broadway, Providence, R.I. 02903
Filed Nov. 10, 1975, Ser. No. 630,659
Int. Cl.² A63B *69/36*
U.S. Cl. 273—186 A **23 Claims**



1. A golf putter practice device comprising indication means including a reservoir for receipt of a liquid indicator, such as mercury, a plurality of separate liquid receiving channels converging with each other and communicating with said reservoir at adjacent points along an edge thereof, means operatively associating said reservoir and channels with the top surface of the putter wherein the reservoir is disposed toward the rear edge of the putter with the channels extending forwardly toward the ball-contacting face of the putter and being viewable by the golfer, wherein momentum transmitted to said liquid indicator during a putting stroke and upon impact with a ball serves to force liquid from said reservoir into said channels in varying amounts dependent upon the alignment of the putter face and the ball during impact.

3,979,126
BALL AND PROCESS AND COMPOSITION OF MATTER FOR PRODUCTION THEREOF

Warren M. Dusbiber, Plymouth, Mich., assignor to Acushnet Company, New Bedford, Mass.
Continuation-in-part of Ser. No. 110,313, Jan. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 856,890, Sept. 2, 1969, abandoned, which is a continuation of Ser. No. 434,227, Feb. 23, 1965, abandoned. This application Jan. 10, 1973, Ser. No. 322,296
Int. Cl.² A63B *37/00*; C08K *5/11, 5/12*; C08L *75/08*
U.S. Cl. 273—218 **14 Claims**

1. A polyurethane golf ball having the following physical characteristics:

Diameter	less than 1.70 inches
PGA Compression	at least 25
Hardness Shore "C" Scale	at least 60
Rebound 72 Inch	at least 48 inches
Initial Velocity USGA	at least 230 feet/second

prepared from the composition comprising a prepolymer of a polyether and a diisocyanate and a curing agent selected from the group consisting of trifunctional and tetrafunctional polyols and curing agents capable of curing the prepolymer and having at least two reactive amine groups, the prepolymer and the curing agent being present in an equivalent weight ratio of 1:1 ± 20%.

3,979,127
RECORD PLAYERS

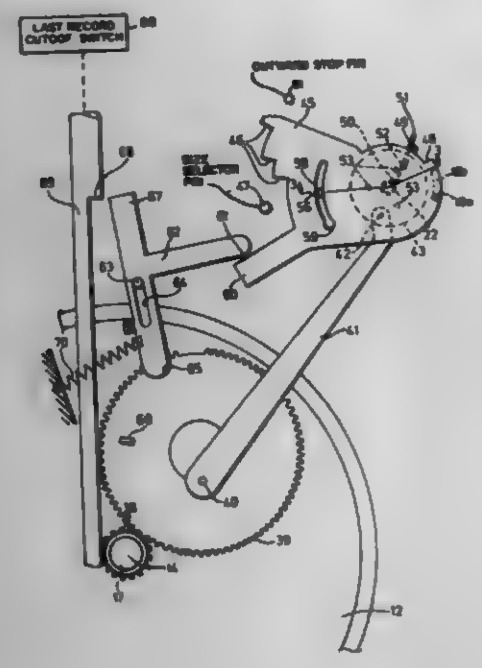
Daniel McLean McDonald, 28 Chemin de Bellefontaine,, 1223 Cologny, Geneva, Switzerland

Filed Jan. 23, 1975, Ser. No. 543,267

Claims priority, application United Kingdom, Jan. 31, 1974, 4555/74

Int. Cl.^{2} G11B *15/00*

U.S. Cl. 274—10 R **13 Claims**



1. An automatic record player for playing disc records of different sizes comprising,

a deck plate,
a turntable rotatably mounted on said deck plate,
a centre spindle extending upwardly from the centre of said turntable from which records are fed singly in succession from a bottom of a stack onto said turntable,
a vertical spindle pivotally mounted for movement about a vertical axis relative to said deck plate,
a pick-arm pivotally mounted for movement about a horizontal axis on the upper end of said vertical spindle,
a drive gear rotatably mounted on said deck plate,
means for rotating said drive gear during a record changing cycle,
automatic mechanism for raising and lowering said pick-up arm for pivoting said pick-arm inwardly and outwardly relative to said turntable,
said automatic mechanism including,
a first reciprocatably rotatable memeber,
means driven from said drive gear to reciprocatably rotate said first member;
a cam track on said first member engaged by a pick-up arm raising spindle to raise and lower said pick-up arm,
a second reciprocatably rotatable member,
a torque limiting means to releasably connect said second member to said first member to be rotated thereby, said torque limiting means mounted to releasably interconnect said first and second members at determined angular displacements,
an element connected to said vertical spindle,
spring means provided on said first member, said spring means being positioned to apply torque to said element to thereby rotate said vertical spindle in a direction to move said pick-up arm outwardly relative to said turntable, and an abutment on said first member positioned to limit the angular movement of said spring means,
stop means positioned to arrest outward movement of said pick-up arm in a predetermined position,
an abutment fixed relative to said second member adapted to engage said element to rotate said vertical spindle in the opposite direction, and
further stop means to arrest rotation of said second member when said pick-up arm is in a predetermined position,
the torque required to disconnect said torque limiting means being greater than the torque applied by said spring means to said element.

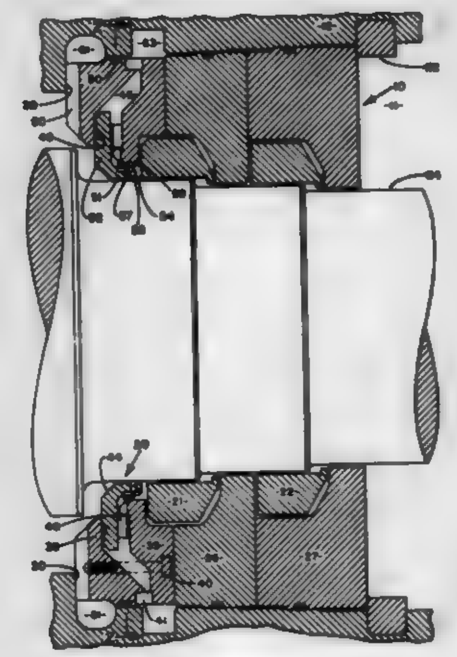
3,979,128
INTERFACE BUSHING FOR FLUID-TO-FLUID SHAFT SEAL ASSEMBLY

Carl H. Geary, Greensburg, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 3, 1975, Ser. No. 619,326

Int. Cl.^{2} F16J *15/44*

U.S. Cl. 277—75 **3 Claims**



1. An assembly for supporting a bushing seal within a rotary machine and establishing a positive fluid seal about the machine shaft to prevent working fluids from escaping about the shaft, the assembly including

a first ring adapted to loosely encompass the shaft and being positionable to confront the working fluids located within the machine,
a second ring also adapted to loosely encompass the shaft and being positioned behind said first ring in regard to the working fluids,
said first and second rings having opposed contoured radially extended faces for providing an annular opening therebetween when said rings are brought into abutting contact,
an annular bushing seal having a portion thereof adapted to encircle the shaft with a close running fit therebetween, said portion being dependent upon a radially extended arm arranged to pass upwardly into the annular opening formed between the two rings,
means to secure the two rings in abutting contact with the bushing arm extending into the annular opening,
a wave washer positioned between one wall of the annular opening and the radial arm of the bushing for exerting a perpendicular biasing force against the bushing arm to permit said bushing to move radially with the shaft as the shaft deflects under load when the rings are secured in abutting contact,
means to bring a sealing fluid into the annular opening whereby the fluid is directed downwardly through said opening.

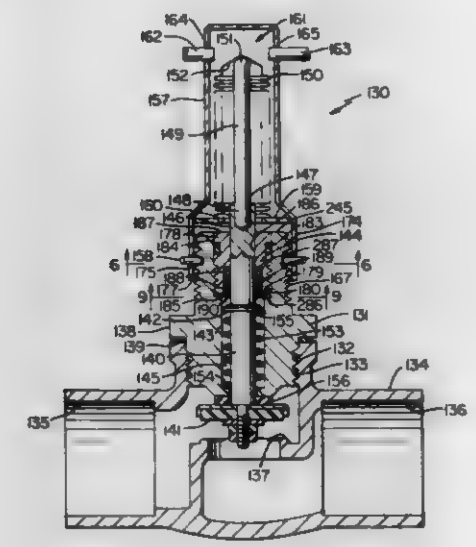
3,979,129
VALVE CONSTRUCTION AND IMPROVED PARTS FOR THE SAME OR THE LIKE

Edward N. Caldwell, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 405,130, Oct. 10, 1973, Pat. No. 3,884,587, and a continuation-in-part of Ser. No. 290,558, Sept. 20, 1972. This application Mar. 7, 1975, Ser. No. 556,277

Int. Cl.^{2} F16J *15/18*

U.S. Cl. 277—110 **2 Claims**



1. In a control device having a packing gland and a movable valve stem or the like passing through said packing gland to be sealed thereto while moving axially relative thereto, the improvement wherein said packing gland carries two resilient O-rings separated by an annular lubricant impregnated packing material, said valve stem passing axially through said O-rings and said annular packing material to be sealed thereby while being axially movable relative thereto, said O-rings and said annular packing material being disposed in stacked and compressed relation, said packing gland having opposed ends interrupted by a stepped bore passing through said packing gland and defining an annular shoulder in said packing gland, one of said O-rings being disposed in stacked compressed relation against said shoulder, and a washer completely disposed within said bore and being disposed against the other O-ring to hold said O-rings and said packing material in said stacked and compressed relation in said packing gland.

3,979,130
SLEEVES

George Raymond Cowie, Middlesbrough, England, assignor to Fisons Limited, London, England

Continuation of Ser. No. 435,009, Jan. 21, 1974, abandoned, which is a continuation-in-part of Ser. No. 264,068, June 19, 1972, abandoned. This application July 31, 1975, Ser. No. 600,852

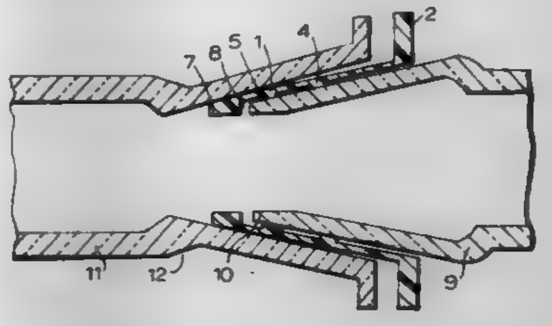
Claims priority, application United Kingdom, June 18, 1971, 28626/71

Int. Cl.^{2} F16L *19/00;* F16J *9/00*

U.S. Cl. 277—208 **9 Claims**

1. In an open ended conical sleeve member having a wall thickness of from 0.1 to 1.5 mm and suitable for use as a sealing interface between the co-operating mating surfaces of a tapered male/female push fit type glassware joint, the improvements which comprise:

said sleeve having a substantially smooth exterior surface;
at least two generally circumferential ribs integral with the interior surface of said sleeve member;
an external integral annular flange positioned at the broader end of said sleeve member and extending radially outwardly therefrom, whereby said sleeve member may be gripped during assembly and dismantling of a joint incorporating the sleeve member;
said sleeve member, said generally circumferential ribs and said annular flange being constructed from a material having a static coefficient of friction of less than 0.2, having a modulus of elasticity in the range of 80×10^3 to



200×10^3 at 23°C, having a hardness as measured on the Shore D scale of from 50 to 80, being resistant to thermal degradation at temperatures up to 200°C and being resistant to structural degradation when immersed in a corrosive chemical for a period of 12 hours at 50°C.

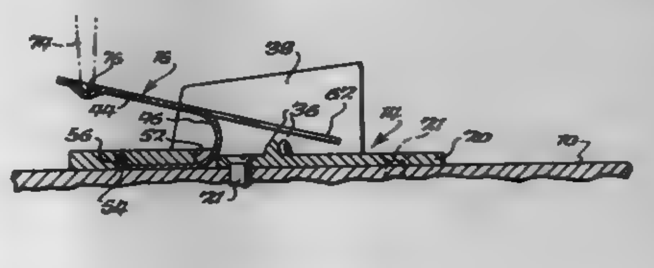
3,979,131
SKI BINDING

George E. Ginther, 432 Porter Ave., Buffalo, N.Y. 14201

Filed Mar. 18, 1975, Ser. No. 559,540

Int. Cl.^{2} A63C *9/10*

U.S. Cl. 280—615 **10 Claims**



1. A binding for touring skis comprising:

a. a toe plate element adapted to be fixed to a touring ski for receiving the toe portion of the boot of a skier, said toe plate comprising a base and a pair of upstanding side walls each having generally planar and vertical inner surface portions; and
b. a toe spring clamp element operatively associated with said toe plate element and having a pair of spaced apart arms for clampingly engaging the skier's boot along the sides of the toe portion thereof, said arms being entirely inwardly of said inner surface portions of said walls and being movable freely with respect to said walls, said clamp element comprising a unitary bail spring element having a planar main body portion, means on said body portion permitting operative engagement by an end of a ski pole to operate said clamp, a central leg portion extending from one end of said main body portion and out of the plane of said body portion, said leg portion being fixed to said toe plate element, and said arms of said clamp element extending from said one end of said body portion on opposite sides relative to said central leg portion, said arms being disposed in the plane of said body portion.

3,979,132
HEEL BINDING FOR CROSS COUNTRY SKIS

Herbert Iser-Iser, Teufelsbergstrasse 8, 8000 Munich 60, Germany

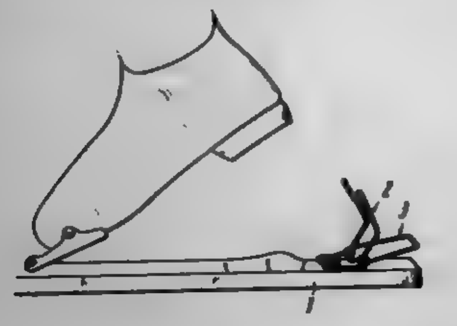
Filed Sept. 5, 1975, Ser. No. 610,744

Int. Cl.^{2} A63C *11/12*

U.S. Cl. 280—614 **10 Claims**

1. A heel binding for a cross-country ski comprising:

two swivel mounted stirrups (2,3) each pivotally mounted about an axis transverse to said ski and arranged parallel and some distance apart, one (2) of said stirrups being a tensioning stirrup which is guided and operated by means of the other stirrup (3) such that by swivelling said operating stirrup for closing or opening said binding, said tensioning stirrup may be brought into positive contact with the heel of the cross-country ski shoe, or released;



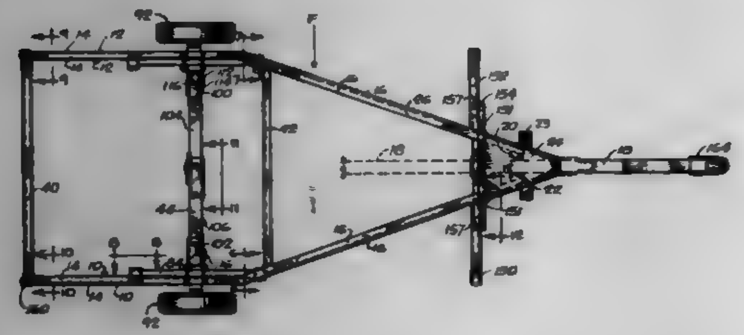
said operating stirrup being mounted in front of said tensioning stirrup in the direction of travel of said ski; and

eye-type guide means (10′) fixed to the sides (3′, 3″) of said operating stirrup and operatively engaging the sides (2′, 2″) of said tensioning stirrup so as to guide and operate said tensioning stirrup.

3,979,133
FOLDABLE TRAILER

William E. Morris, Appleton, Wis., assignor to Spec-Co Industries, Inc., Appleton, Wis.

Filed Sept. 8, 1975, Ser. No. 610,918
Int. Cl.² B62D *21/14*
U.S. Cl. 280—42 **11 Claims**

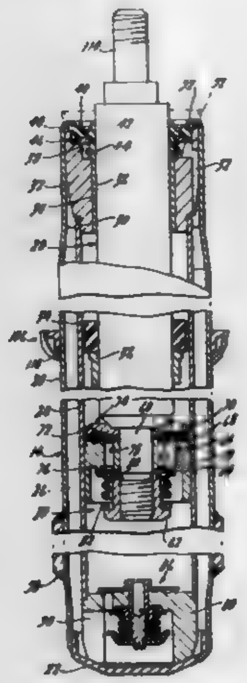


1. A foldable trailer comprising a frame assembly which includes a pair of rigid side frame members in which each member of the pair is pivotally mounted for rocking movement in a horizontal plane about their forward end portions between folded and unfolded positions of adjustment, said side frame members having a rearward portion which extends in spaced parallel relation and a forward portion which extends angularly in the direction towards each other to converge towards the longitudinal center line of the frame, a tail gate pivotally mounted at one end to the rearward end portion of one of the side frame members for rocking movement between folded and unfolded position, and means releasably latching the other end portion of the tail gate to the rearward end portion of the other of the side frame members when in unfolded position, at least one mid cross brace member pivoted at one end to a mid portion of one of the side frame members for rocking movement in a horizontal plane between folded and unfolded positions and means releasably latching the other end of the mid cross brace member to the other side frame member when in unfolded position to extend crosswise between the side frame members, an axle assembly subdivided into segments including a pair of outer segments and a pair of inner segments, means supporting the outer segments from the outer side frame members, means pivotally mounting the outer ends of the inner segments to the inner segments to the inner ends of the outer segments for rocking movement of the inner segments relative to the outer segments about a horizontal plane and means pivotally interconnecting the inner ends of the inner segments for relative rocking movement about a horizontal plane between folded and unfolded positions of adjustment, and latching means for releasably locking the inner segments against pivotal movement from unfolded position with the segments extending crosswise of the frame, wing members pivotally mounted to the forward end portion of the side frame members for rocking movement about a horizontal plane between spread and folded positions of adjustment, and means for releasably latching the wing members in unfolded position to extend outwardly from the side frame members, and tongue means for connecting the frame to a powered vehicle.

3,979,134
VEHICLE SUSPENSION SYSTEM

Johan H. Keijzer, Hasselt, and Maes, Gery O., Sint-Truiden, both of Belgium, assignors to Monroe Belgium N.V., Sint-Truiden, Belgium

Continuation of Ser. No. 466,230, May 2, 1974, Pat. No. 3,893,702. This application June 19, 1975, Ser. No. 588,360
Int. Cl.² B60G *11/26*
U.S. Cl. 280—710 **21 Claims**



1. A vehicle suspension system for use in operatively supporting the road engaging wheels on an automotive vehicle,

said suspension including at least one suspension strut comprising an elongated tubular pressure cylinder,

a valved piston reciprocably disposed in said cylinder and connected to one end of a piston rod extending axially from one end of said cylinder,

attachment means operatively securing one end of said piston rod to a sprung portion of the associated vehicle,

a rod guide disposed at one end of said pressure cylinder for supporting said piston rod for reciprocal movement relative to said cylinder.

an elongated reserve tube extending concentrically around said pressure cylinder,

said reserve tube being spaced radially outwardly from said pressure cylinder and defining a fluid reservoir therewith,

a base valve located at the opposite end of said pressure cylinder from said rod guide and operable to control fluid flow between the interior of said pressure cylinder and said reservoir,

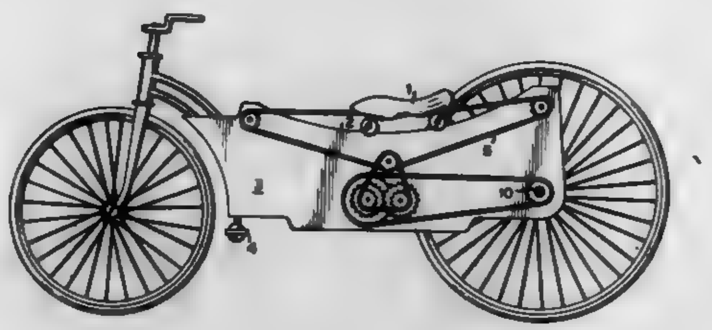
a wheel spindle located adjacent one end of said strut and including a first portion fixedly secured to the outer periphery of said reserve tube and a second portion removably secured to said first portion and adapted to support a vehicle wheel thereon,

the end of said reserve tube adjacent said rod guide extending axially beyond the axially outer end of said guide, with the terminal portion thereof being deformed radially inwardly over at least a portion of the axially outer side of said guide.

3,979,135
VEHICLE PROPELLED BY RECIPROCATING OCCUPANT MOTION

Athanassios N. Meritzis, 666 Coronado Ave., Long Beach, Calif. 90814

Filed Jan. 21, 1974, Ser. No. 434,796
Int. Cl.² B62M *1/18*
U.S. Cl. 280—226 R **2 Claims**



1. A vehicle comprising a frame supported by wheels rotatively mounted with a movable seat sliding on the curved rails of the said frame and adapted to be reciprocated by the rider's force and a motion transmission mechanism comprising:

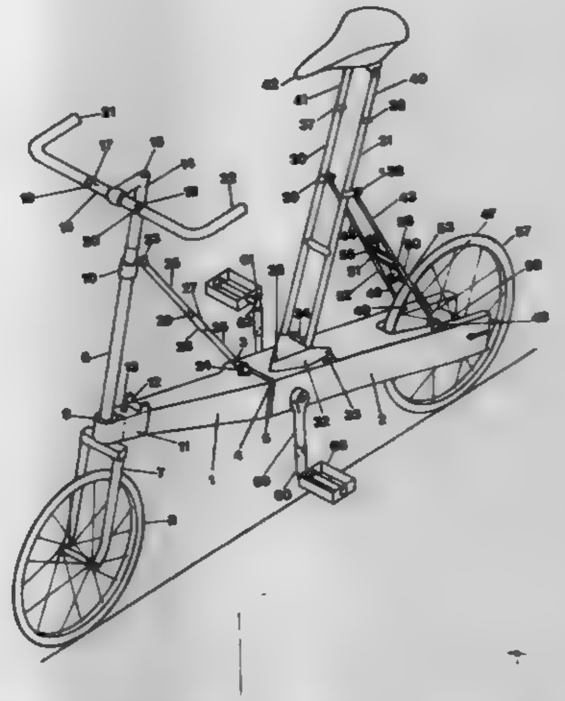
a. A pair of freewheels mounted on separate and parallel shafts on bearings and turning with a chain attached by its two ends to the sliding seat.
b. A pair of intermeshed spurgears attached to the same shafts with the freewheels such that, in combination, a forward propulsion may be achieved by both forward and reverse occupant motion.
c. A chainwheel attached to the extension of one of the two shafts supporting the freewheels and the spurgears which transmits the motion with another chain to the rear wheels supporting the vehicle.
d. A plurality of loose and fixed sprockets used for directing the motion of the chains and for turning the different shafts of the mechanism.

3,979,136
FOLDABLE BICYCLE

Alan Lassiere, Leatherhead, England, assignor to A. Lassiere Ltd., Leatherhead, England

Filed Dec. 16, 1974, Ser. No. 533,009
Claims priority, application United Kingdom, June 3, 1974, 24472/74
Int. Cl.² B62K *15/00*
U.S. Cl. 280—278 **14 Claims**

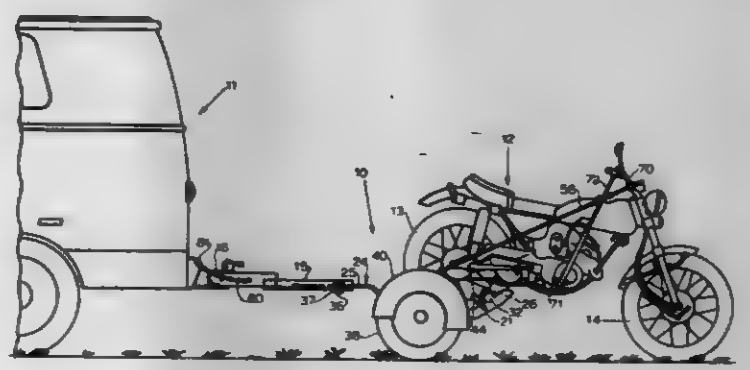
1. A portable foldable bicycle comprising a main frame divided into a front frame part and a rear frame part which are hingedly connected together, a front fork and a steering assembly hingedly connected to the front frame part, a saddle supporting assembly hingedly connected to the rear frame part, and locking means provided in operative association with each of the hinged connections, and in which the front and rear parts of the main frame are of generally box shaped cross section and a hinge pin is arranged adjacent one side thereof to permit the two parts to be positioned side by side in the folded position and including a foldable front stay which is hingedly connected at its ends to the front tube and to the rear end of the front frame part, and in which adjacent inner ends of the front stay are hingedly interconnected and a spring loaded sleeve coacting with a collar is provided to lock the stay in an in line position.



3,979,137
MOTORCYCLE TRAILER

Orange Ray Lipscomb, Jr., 4308 Ward Road, and Edward Bernard Sales, 4501 Denfield St., both of Durham, N.C. 27704

Filed July 17, 1975, Ser. No. 596,756
Int. Cl.² B60P *3/06*
U.S. Cl. 280—402 **10 Claims**



1. A trailer for towing behind a towing vehicle a motorcycle having front and rear wheel means, a handle bar, and a foot peg, comprising in combination:

a. a frame;
b. a pair of trailer wheels attached to said frame for supporting said frame above the road surface;
c. a curved channel cradle secured to said frame for horizontal pivotal movement, said cradle comprising an arc-like portion having channel sidewalls and a peripheral curvature approximating the curvature of said motorcycle wheels and having a width between said sidewalls sufficient to receive a selected motorcycle wheel;
d. means on said cradle for securing said selected motorcycle wheel within said cradle;
e. a draw bar attached at one end to said frame and adapted to be removably attached at the other end to said towing vehicle; and
f. rigid connecting means releasably secured at one end to said handle bar and at the other end to said foot peg, said connecting means holding said handle bar in a fixed position during towing.

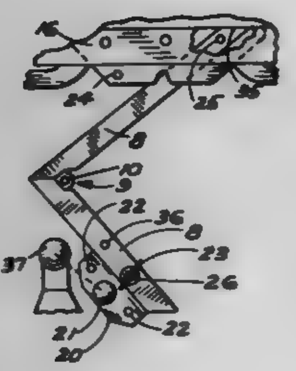
3,979,138
ADJUSTABLE TRAILER HITCH

Jimmie George, P.O. Box 212, and Charles P. Tyson, P. O. Box 191, both of Mer Rouge, La. 71261

Continuation-in-part of Ser. No. 492,679, July 29, 1974, Pat. No. 3,904,225. This application Mar. 28, 1975, Ser. No. 563,216

Int. Cl.² B60D *1/06*

U.S. Cl. 280—478 R **9 Claims**



1. An adjustable trailer hitch comprising:
- a. a frame capable of being mounted on a vehicle;
- b. an arm pivoted to said frame at one end thereof and having an elbow hinge intermediate the ends thereof dividing said arm into a pair of pivotal arm members movable about said elbow hinge and bevelled to permit a predetermined degree of extension of said pivotal arm members with respect to each other about said elbow hinge, said arm also having a bevel at the pivoted end thereof, said bevel contacting said frame when said arm is fully extended to a preselected degree with respect to said frame, said pivotal arm members being foldable about said elbow hinge into parallel abutting relation when said arm is pivoted into a fully retracted position with respect to said frame; and
- c. means carried by the free end of said arm for releasably locking to a trailer to permit towing of said trailer by said vehicle.

3,979,139
SAFETY DEVICE HAVING A CONTOURED ENERGY ABSORBING IMPACT ELEMENT

Gunter Hoffmann, Gifhorn; Wilfried Kopke, Sulfeld, and Rudiger Weissner, Fallersleben, all of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

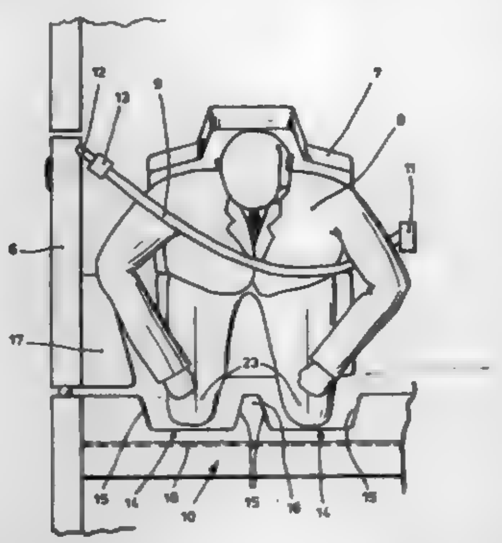
Filed Jan. 31, 1975, Ser. No. 545,967

Claims priority, application Germany, Feb. 15, 1974, 2407178

Int. Cl.² B60R *21/02*

U.S. Cl. 280—751 **12 Claims**

1. A safety device for a passenger in a vehicle comprising means for restraining an upper portion of the passenger's body relative to a vehicle seat and impact energy absorbing means disposed on the vehicle in a zone adjacent the knees of the passenger when seated in the vehicle seat and having a configured impact surface presented to the passenger's knees for guiding the knees of the passenger, when impacting on the energy absorbing means, into positions in which the passenger's thighs are aligned generally parallel to the longitudinal axis of the vehicle, wherein said configured impact surface includes a frontal impact portion and lateral guiding portions leading in toward the frontal impact portion, said frontal and lateral portions defining at least one recess adapted to receive the passenger's knees into aligned positions upon impact.



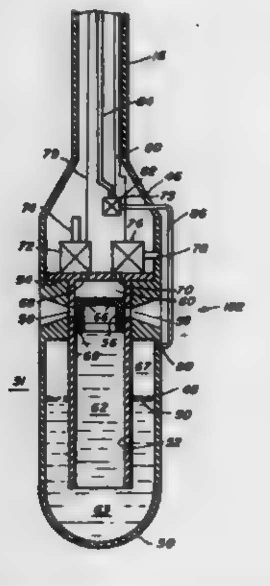
3,979,140
SEISMIC METHOD FOR LOGGING POSITION OF A DEEP BOREHOLE IN THE EARTH

Daniel Silverman, and John R. Bailey, both of Tulsa, Okla., assignors to Senturion Sciences, Inc., Tulsa, Okla.

Filed June 3, 1974, Ser. No. 475,589

Int. Cl.² G01V *1/40*

U.S. Cl. 181—120 **16 Claims**



1. Apparatus for seismic logging of the position of a deep borehole in the earth at least partially filled with liquid, comprising:
- a. a plurality of ground motion sensors positioned in a two dimensional array on the earth about said boreholes, and means to amplify and record the output signals of said sensors;
- b. a long continuous pipe and means for inserting the free end of said pipe into the mouth of said borehole and lowering it to selected depth in said borehole and means for determining the length of said pipe in said borehole;
- c. means for introducing a fluid under high pressure into the surface end of said pipe, whereby said pipe will be filled with said pressurized fluid;
- d. chamber means on the lower end of said pipe for storing said pressurized fluid the pressure of said pressurized fluid being greater than the pressure in said liquid in said borehole;
- e. means for suddenly opening said chamber to the liquid in said borehole in the vicinity of said chamber; and
- f. means for determining the time instant of said opening.

3,979,141
PRESSURE-SENSITIVE RECORDING SYSTEM COMPRISING 3′-AMINO-6′ OR 7′-(PYRAZOL-1-YL)FLUORAN COMPOUNDS AS COLOR PRECURSORS

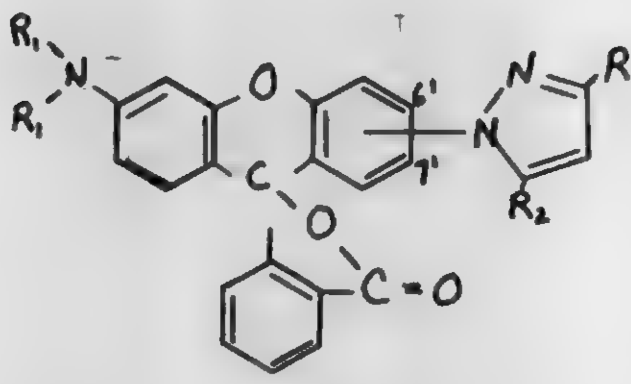
Derek J. Alsop, North Tonawanda, N.Y., assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.

Division of Ser. No. 525,991, Nov. 21, 1974, Pat. No. 3,929,828. This application July 9, 1975, Ser. No. 594,287

Int. Cl.² B41M *5/22*

U.S. Cl. 282—27.5 **4 Claims**

1. In a pressure-sensitive recording system comprising a layer containing a substantially colorless color precursor compound and a layer of an electron-acceptor material, the improvement which comprises utilizing, as said color precursor compound, a chromogenic 3′-amino-(pyrazol-1-yl) fluoran compound having the following structural formula:



wherein each R_1 represents either a hydrogen atom or a lower alkyl group having from one to five carbon atoms; wherein each R_2 represents either a hydrogen atom, a lower alkyl group having from one to five carbon atoms or a phenyl group; and wherein the pyrazol group is attached to the fluoran moiety at either the 6′ position or the 7′ position of the latter.

3,979,142
ABRASION RESISTING FLEXIBLE JOINT PIPE

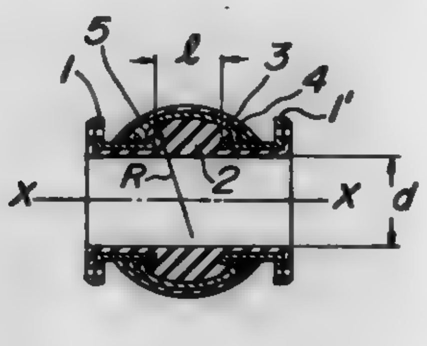
Masao Fujisawa, Chigasaki, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 17, 1974, Ser. No. 533,592

Claims priority, application Japan, Dec. 21, 1973, 48-142498; Dec. 21, 1973, 48-142499

Int. Cl.² F16L *21/00*

U.S. Cl. 285—235 **3 Claims**



1. An abrasion resisting joint pipe comprising a pair of opposed end tubes separated from each other and aligned with a common center axis, an elastic rubber body extending across and flexibly holding together said end tubes and defined by a cylindrical inner rubber surface and a spherical shell-shaped outer rubber surface, and a spherical shell-shaped reinforcing layer comprised of at least two rubberized cord fabrics embedded in said elastic rubber body and bound at each end about said end tubes, said flexible joint pipe satisfying the condition given by

$$l < 0.68d$$

where *l* is the distance between said opposed end tubes and *d* is the inner diameter of said end tube.

3,979,143
DEVICE FOR DETACHABLY FASTENING HOSE OR PIPE ENDS

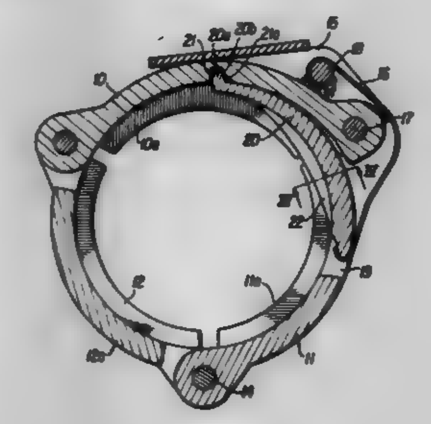
Karl Weinhold, Im Jagdfeld 43, 4040 Neuss, Germany

Continuation of Ser. No. 463,034, April 22, 1974, abandoned. This application Aug. 8, 1975, Ser. No. 603,018

Claims priority, application Germany, Apr. 25, 1973, 2320815

Int. Cl.² F16L *33/12*

U.S. Cl. 285—243 **7 Claims**



1. A device for releasable attachment of the ends of hoses and pipes comprising at least two partial shells having a radial flange at each edge and means pivotally connecting, said partial shells together, clamping means for clamping said partial shells together, said clamping means including a first peripheral lock for connecting a first and a second of said partial shells, said first lock including a clamping lever hinged to said first partial shell and a spring mounted on said first partial shell and engageable with said second partial shell for clamping said first and second partial shells, said clamping means including a rigid second peripheral lock for connecting said first and second partial shells and including a rigid bridge member integral with said second partial shell, said bridge member being extended radially inwardly of said first partial shell in the closed position of the device, and abutment means on said first partial shell and bridge member for rigid connection of said first shell and said bridge member in the fully closed position of the device.

3,979,144
LUGGAGE BOOT LID LOCK FOR MOTOR VEHICLE

Jacques Bascou, Boulogne-Billancourt,(Hauts de Seine, France, assigner to Regie Nationale des Usines Renault and Automobiles Peugeot, both of Paris, France

Filed Apr. 10, 1975, Ser. No. 566,702

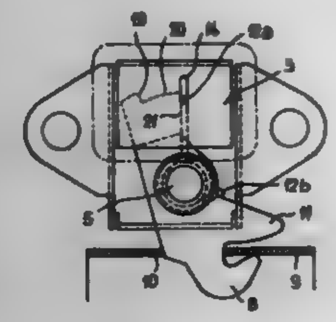
Claims priority, application France, Apr. 11, 1974, 74.12833

Int. Cl.² E05C *3/16*

U.S. Cl. 292—216 **7 Claims**

1. A lock comprising, in combination, a support, a pivot pin mounted on said support, a keeper, a locking hook pivotally mounted on said pivot pin for pivotal movement between a locking position in locking engagement with said keeper and an unlocking position, a pair of stop members on said hook, a spring for yieldingly urging said hook pivotally in one direction, said spring having an arm arranged for limited flexible movement on said support towards and away from said pivot pin, manual control means engageable with said spring arm for moving said spring arm flexibly a selected distance with respect to said pivot pin, said spring arm being movable into one position for engagement with one of said stop members on

said hook to maintain said hook in said unlocking position and said spring arm being movable into a second position for engagement with the other of said stop members to maintain said hook in said locking position.



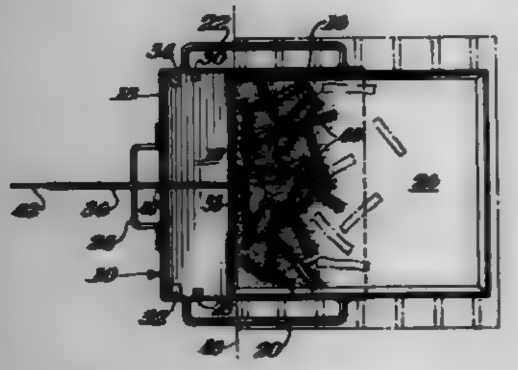
3,979,145
HOT PAN HANDLING DEVICE

A. Harry Clemente, New Castle, and Alfredo A. Clemente, Newark, both of Del., assignors to Jumpan Corporation, Newark, Del.

Filed June 10, 1975, Ser. No. 585,768

Int. Cl.² A47J *45/10*

U.S. Cl. 294—32 3 Claims



1. A combination of a hot pan handling device and a push-pull bar for pushing and pulling hot pans off of and onto the handling device, the handling device comprising a bottom wall of sheet-like material with opposite side walls and a single front end wall of sheet-like material integrally connected thereto and extending upwardly therefrom to thereby provide the handling device with an open back, a cut-out portion approximately located in the mid portion of the front end wall and open at the upper boundary of that wall, a side handle connected to each of the opposite side walls and extending generally upwardly therefrom, a front end handle connected to the front end wall and extending generally upwardly therefrom whereby a hot pan may be manipulated onto the bottom wall of the handling device by way of the open back thereof and transported by lifting the side handles, and the push-pull bar having a downturned end for manipulating hot pans with a substantially flat element at the opposite end of the bar for prying hot pans upwardly to facilitate positioning the handling device thereunder, and the cut-out portion in the front end wall of the handling device cooperating with the push-pull bar for guiding and supporting the bar during the pan manipulation operation.

3,979,146
BEACH CLEANING APPARATUS

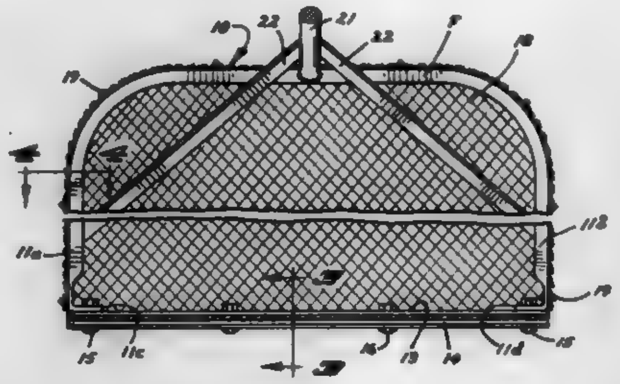
Robert M. Berg, 5250 James Ave. No., Minneapolis, Minn. 55430

Filed June 19, 1975, Ser. No. 588,321

Int. Cl.² A01B *1/02*

U.S. Cl. 294—55 7 Claims

1. A tool for cleaning debris and litter from beaches and the like as it is pulled in a forward direction comprising an open, upright, generally rectangular frame having a top frame portion and a bottom frame portion, a manually pullable handle having one end portion secured to the top frame portion to extend upwardly and forwardly thereof, a blade having a front cutting edge, an open mesh collapsible bag having a mouth edge portion, said mouth edge portion having a lower mouth edge portion extended between the bottom frame portion and the blade, and top and side edge portions, means for removably securing the blade to the bottom frame portion with the lower mouth edge portion between the bottom frame portion and the blade and the cutting edge forwardly of the frame to mount the blade on the bottom frame portion and releasably clamp the lower mouth edge portion between the blade and the bottom frame portion, and means for removably fastening the bag mouth top and side edge portions to the frame to retain the bag mouth in an open condition with the bag extending rearwardly of the frame in a collapsed condition.



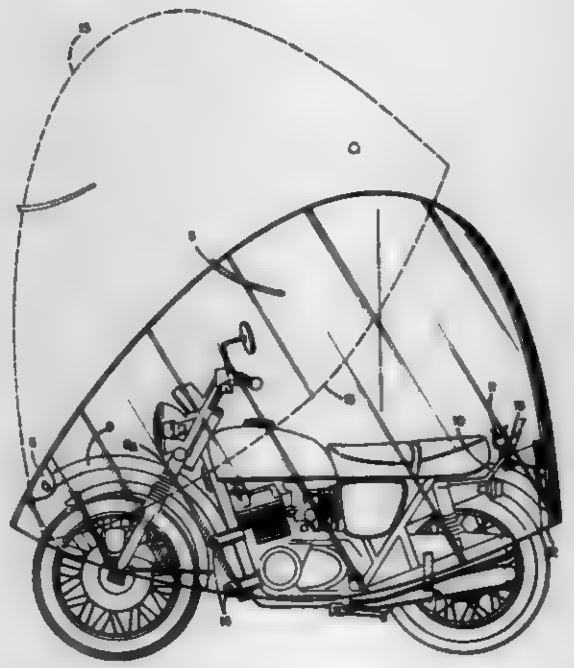
3,979,147
TRANSPARENT COVER WITH CONNECTING DEVICES FOR MOTORCYCLES AND RIDERS

Robert F. Kelley, 247 Humphrey St., Marblehead, Mass. 01945

Filed Mar. 14, 1975, Ser. No. 558,552

Int. Cl.² B62T *17/00*

U.S. Cl. 296—78.1 2 Claims



1. A full Cover, providing cosmetic and weather protection for motorcycle and riders at rest or in motion, comprising:

a rigid, transparent, thermoplastic, semidomed shaped full Cover of sufficient size to cover a motorcycle with rider;

said Cover containing a struct-brace, running laterally within the interior of the Cover, which struct-brace is attached at its ends to the interior side surfaces of the Cover at its rearward portion, which struct-brace engages and disengages the topmost clamp of

a Rear Connecting Device, consisting of two pressure clamps attached head-to-head of which the bottommost clamp is attached to a standard grab-bar of a motorcycle thus providing a rearward attachment and stabilization device to coincide with

a Front Connecting Device consisting of a goose-necked shaped tube, oval in cross-section, which tube is attached, by means of clamps, at its rear lower end to the frame of a motorcycle directly in front of the motorcycle's engine; such tube projects forward through and between the space between the front forks of the motorcycle's front wheel; the tube arcs to a point above and forward of the front wheel, at which point the tube is connected via a swivel arrangement to a knob, which knob is also attached to the front interior surface of the aforementioned Cover, thus allowing the Cover to be raised or lowered for rider entry or exit while a motorcycle with Cover is at rest.

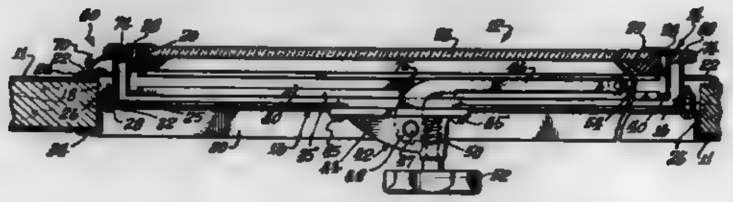
3,979,148
WINDOW FRAME APPARATUS FOR VEHICLES

Wayne Martin, 2301 McCart Ave., La Habra, Calif. 90631

Filed June 12, 1975, Ser. No. 586,158

Int. Cl.² B60J *7/08*

U.S. Cl. 296—137 B 4 Claims



1. A window frame apparatus for use in a vehicle, comprising:

a window casement fixedly secured in an aperture disposed in said vehicle;

a window unit operably connected to said casement having a glass panel mounted therein, said unit including an inner peripheral track;

a hinge means releasably connecting said window unit to said window casement along one side thereof, wherein said hinge means comprises:

a first hinge member fixedly secured to said window casement, said member having a pivot pin mounted thereto;

a second hinge member fixedly secured to said window unit, said second hinge member having a tongue member adapted for releasable engagement with said pivot pin of said first member;

an operably lever means secured to said fixed window casement and being operably engaged with said track means for disengaging said lever means therefrom, whereby said hinge means can be separated to allow said window unit to be disengaged from said window casement, wherein said operable lever means comprises:

a housing fixedly secured to said window casement;

an adjustable lever arm having one free end and the opposite end thereof pivotally mounted in said housing;

a roller attached to said free end of said arm and removably received in said track of said window unit;

gear means disposed in said housing and operably connected to the pivotal end of said lever arm; and

disengaging means disposed in said track comprising a slot positioned in said track whereby said roller of said lever means can be disengaged from said track when said window unit is raised to a predetermined point.

3,979,149
VEHICLE SEAT

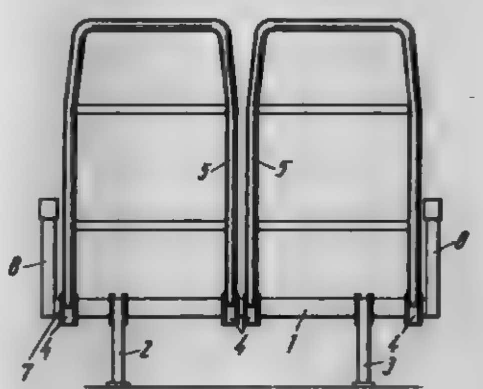
Heiner Vogel, Karlsruhe, Germany, assignor to Ignaz Vogel GmbH and Co. KG, Karlsruhe, Germany

Filed Aug. 20, 1974, Ser. No. 498,933

Claims priority, application Germany, Aug. 20, 1973, 2341981

Int. Cl.² A47C *15/00*

U.S. Cl. 297—232 4 Claims



1. A light seat construction, which comprises a support frame having a horizontal polygonal tubular member with opposite side walls in vertical planes, a plurality of seat means mounted on said polygonal torsion member with the central vertical plane through said polygonal torsion member passing through the center of said seat means, each seat means having a pair of connecting means fixed below said seat means in a central transverse vertical plane of said seat means, each of said connecting means being substantially an inverted U-shaped bracket member complementary to said polygonal torsion member and having its vertical sides closely fitting the vertical side walls of said polygonal torsion member and having clamping means below said polygonal torsion member clamping the sides of said connecting means against said polygonal torsion member, and an end unit comprising a tubular arm rest supporting member and a slotted tube section extending at right angles to said supporting member and into the end of said polygonal tubular torsion member, and a tapered member fitting into the slotted end of said tube section, a threaded clamping member extending from said arm rest supporting member through said tube section and engaging said tapered member for drawing said tapered member into said tube section to clamp said tube section to said polygonal torsion member.

3,979,150
CHAIR HAVING A VERTICALLY ADJUSTABLE HEADREST

Manfred Elzenbeck, Steinheim, Germany, assignor to August Froscher K.G., Germany

Filed Apr. 15, 1975, Ser. No. 568,275

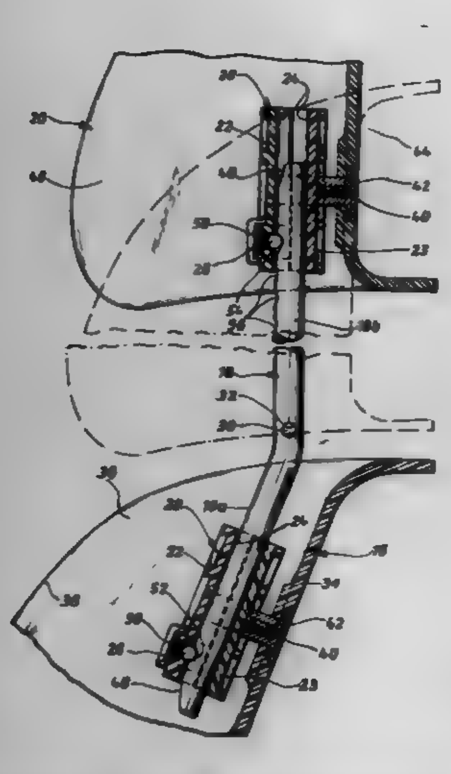
Claims priority, application Germany, Apr. 23, 1974, 2419483

Int. Cl.² A47C *1/10*

U.S. Cl. 297—410 19 Claims

1. In a chair having a backrest and a vertically adjustable and removable headrest, means for adjustably and removably mounting said headrest on said backrest comprising two parallel struts extending downwardly from said headrest, guide means on said backrest having guide apertures receiving said struts, said struts being longitudinally slidable and also rotatable in said guide apertures and having on one side of a lower portion of each strut a transverse groove, said guide means comprising spring pressed detents engageable in said grooves in said struts when said struts are in one angular position and disengaged from said grooves when said struts are in another

angular position, whereby said detents are disengageable from said grooves by rotation of said struts for longitudinal movement of said struts in said guide members for removal of said headrest from said backrest.



3,979,151
ROCK EXCAVATING ARCHED TUNNEL FORMING MACHINE

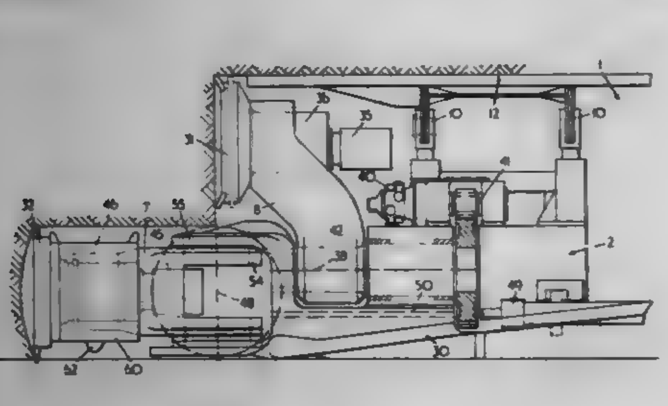
Derek Plummer, Burton-on-Trent, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Feb. 13, 1975, Ser. No. 549,725

Claims priority, application United Kingdom, Mar. 1, 1974, 9334/74

Int. Cl.² E21C *29/00*

U.S. Cl. 299—31 **11 Claims**



5. A rock excavating machine for forming arch type underground roadways, comprising a body for arrangement in the underground roadway, a first forwardly extended forked support member on the body, a stay unit anchorable in the roadway, advancing ram means for interconnecting the body to the stay unit, a roof support assembly carried by the body, a forwardly extending large cutter carrying arm pivotally mounted on said forked support members for movement about a generally vertical axis and an upwardly extending large cutter carrying arm pivotally mounted on the body for movement about generally horizontal axis.

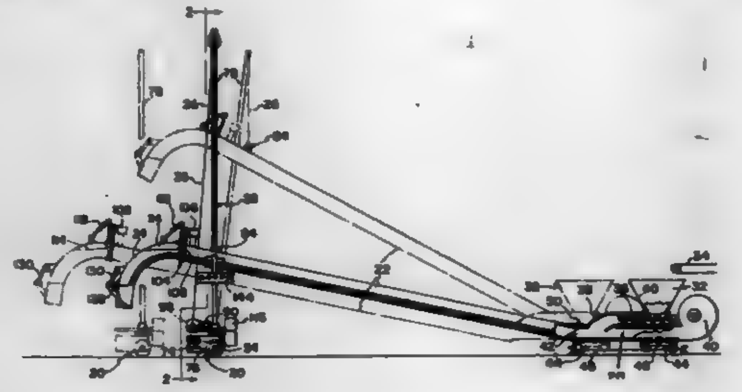
3,979,152
PARTICULATE MATERIAL HANDLING APPARATUS

Norval K. Morey, Winn, and Leward N. Smith, Remus, both of Mich., assignors to Morbark Industries, Inc., Winn, Mich.

Filed Nov. 22, 1974, Ser. No. 526,126

Int. Cl.² B65G *53/52*

U.S. Cl. 302—17 **5 Claims**



1. Material handling apparatus for receiving particulate material, such as wood chips or the like, from a material source and discharging a stream of the particulate material toward a selected location, said apparatus comprising a first carriage mounted for limited movement along a first path, material receiving hopper means mounted upon said first carriage for pivotal movement relative to said first carriage about a vertical axis, an elongate rigid discharge tube operatively coupled at one end to said hopper means for pivotal movement relative to said hopper means about a horizontal axis, blower means on said hopper means for blowing particulate material from said hopper means through said discharge tube to discharge a stream of material from the other end of said discharge tube, a second carriage mounted for movement independently of said first carriage, a mast mounted on said second carriage and projecting upwardly therefrom, support means supporting the other end of said tube from said mast for free vertical and horizontal movement relative to said mast, power means for driving said second carriage in movement relative to said first carriage, and steering means for controlling the direction of movement of said second carriage.

3,979,153
MASTER CYLINDER ASSEMBLIES FOR VEHICLE HYDRAULIC BRAKING SYSTEMS

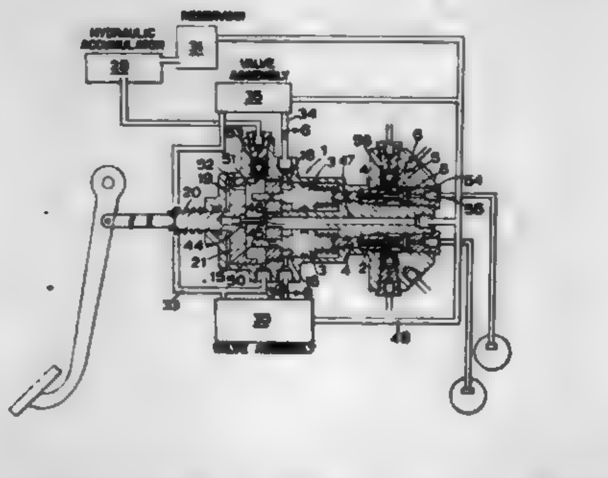
Brian Ingram, Balsall Common, and David Anthony Harries, Shirley, both of England, assignors to Girling Limited, Birmingham, England

Continuation of Ser. No. 424,887, Dec. 14, 1973, abandoned. This application Aug. 5, 1975, Ser. No. 601,994

Claims priority, application United Kingdom, Mar. 31, 1973, 15597/73; Dec. 15, 1972, 57887/72

Int. Cl.² B60T *8/02, 15/02*

U.S. Cl. 303—6 R **2 Claims**



1. In an anti-skid braking system for a vehicle comprising brakes on wheels of the vehicle, a source of booster fluid under pressure, a first reservoir for fluid for said source, a master cylinder assembly responsive to said source of booster fluid to apply said brakes, and skid sensing means for providing a signal when at least one of said wheels skids during application of said brake on that wheel, said master cylinder assembly comprising a housing, a booster valve assembly for controlling flow of fluid from said source to a booster chamber in said housing, at least two master cylinder pistons working in separate first bores in said housing to generate hydraulic fluid pressure in pressure spaces for connection to said wheel brakes and defined in said bores ahead of said pistons, normally open valves controlling communication between said pressure spaces and at least one second reservoir, said valves being closed when said master cylinder pistons are advanced in said bores, modulator pistons corresponding in number to said master cylinder pistons working in separate second bores in said housing, means for applying from each modulator piston an operating force to the one master cylinder piston with which it corresponds to advance the said one master cylinder piston in said first bore, valve housings corresponding in number to said master cylinder pistons and each having ports connected respectively to said booster chamber, said modulator piston and the reservoir for said source of fluid pressure, a solenoid operated valve in each of said housings normally occupying a first position connecting the booster chamber port and modulator port while disconnecting the latter and said reservoir port but being movable to a second position disconnecting said booster chamber port and said modulator port while connecting the latter and said reservoir port, and means for actuating said solenoid operated valve to move it from its first normal position to its second position to reduce the force on said modulating piston by relieving the pressure fluid acting thereon to the reservoir for said source of fluid pressure in response to a signal from said skid sensing means when a wheel on which the brake is being applied through said modulator piston skids.

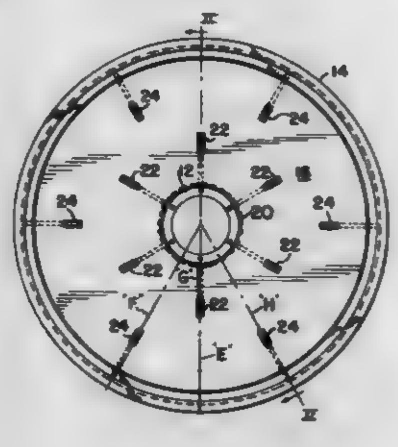
3,979,154
TRACK WHEEL FOR CRAWLER TYPE VEHICLES

Eugene R. Groff, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 14, 1975, Ser. No. 622,335

Int. Cl.² B60B *3/12*

U.S. Cl. 305—21 **10 Claims**



1. A wheel for carrying continuous track chains of crawler type vehicles, comprising:

a hub member;

an annular rim;

first and second spaced panels each connecting the hub to the rim;

a plurality of first plates each having first and second ends and opposed outwardly extending flanges on the first end, said flanges each being connected to respective first and second panels and each second end being connected to the hub with said first plates being positioned at spaced locations; and

a plurality of second plates each having first and second ends and opposed outwardly extending flanges on the first end, said flanges each being connected to respective first and second panels, each second end being connected to the rim with said second plates being positioned at spaced locations, said flanges of said second plates being a greater distance from said hub than said flanges of said first plates, and said second plates being arcuately spaced from radial planes of the first plates.

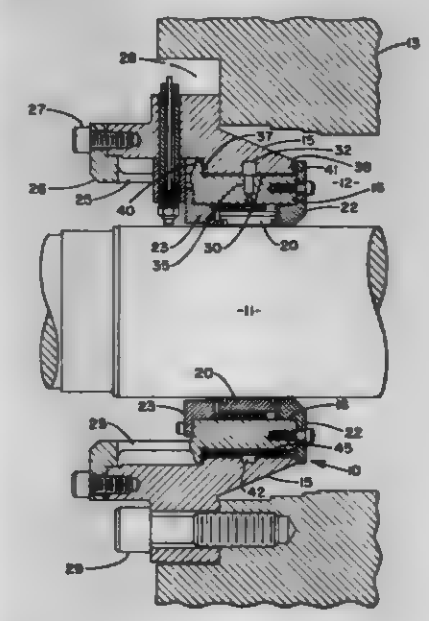
3,979,155
FLEXIBLE DAMPED BEARING SUPPORT

Vijay K. Sood, Murrysville, Pa., and Keith L. Streifert, Duanesburg, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 3, 1975, Ser. No. 619,325

Int. Cl.² F16C *35/08*

U.S. Cl. 308—15 **8 Claims**



1. In a flexible damped bearing assembly, for rotatably supporting a generally horizontally aligned rotor shaft, of the type wherein the bearing is mounted within a movable member suspended from a stationary member upon a series of resilient springs and having a fluid film acting between the movable member and the stationary member for damping the bearing reaction to the shaft, the improvement comprising

a helper spring positioned beneath the horizontal centerline of the shaft being arranged to act between the stationary member and the movable member to support the weight of the rotor acting upon the bearing, the spring being a beam having a raised support pad at each end arranged to seat against one of said members and a raised reaction pad at the approximate center of the beam arranged to seat in contact against the other of said members.

3,979,156
DECORATIVE AUXILIARY TRANSPARENT TABLE TOP UNIT FOR TABLES, DESKS, AND THE LIKE

Henry Gross, 1715 Ave. X, Brooklyn, N.Y. 11235

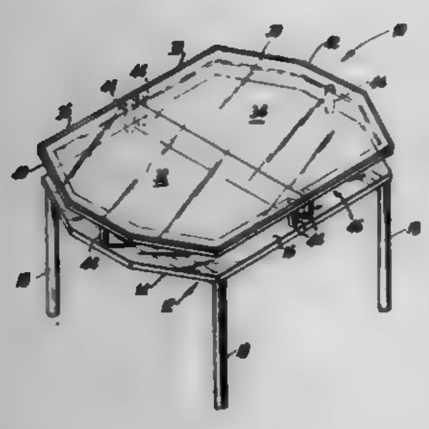
Filed May 6, 1975, Ser. No. 575,012

Int. Cl.² A47F *9/00;* **A47B** *87/00*

U.S. Cl. 312—196 **7 Claims**

1. A decorative auxiliary table top unit for a table, desk and the like, said unit comprising a transparent planar table top member, vertical means disposed below an undersurface of said table top member for supporting said table top member above a top surface of the table, desk and the like to define a compartment space between said undersurface of said top member and the top surface of the table, desk and the like for receiving articles of food, writing material and the like which can be seen through an upper surface of said transparent table top member, said vertical means including a plurality of support members disposed under said table top member, said support members being spaced apart to permit horizontal access to said compartment space, first means securing said

support members to the table, desk and the like, second means for maintaining said table top member stationary relative to said support members, said second means including an edge member disposed around periphery of said table top member, said edge member being disposed against said undersurface of said table top member, said support members being disposed against said edge member, said second means further including fastening means for securing said edge member to said support members, said edge member being provided with vertically extending lip means engaging peripheral edge of said table top member for preventing horizontal movement of said table top member.

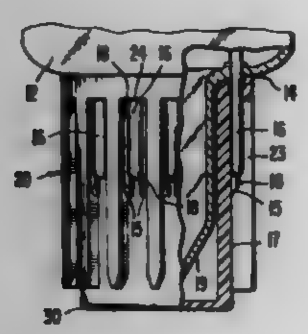


3,979,157

ELECTRON TUBE BASE

Louis Joseph DiMattio, Dunmore, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 10, 1974, Ser. No. 513,599
Int. Cl.² H01R *13/50*
U.S. Cl. 339—145 T **2 Claims**



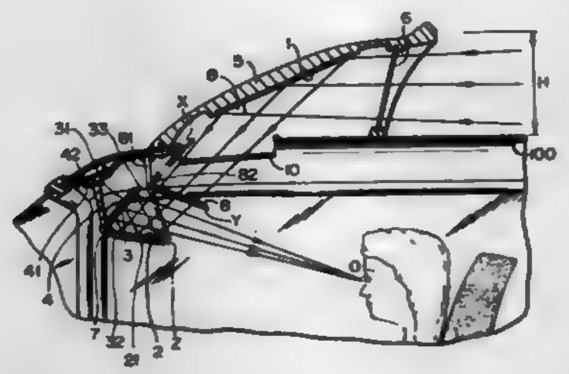
1. A base for an electron tube comprising:
a hollow cylindrical body of insulating material;
a plurality of longitudinally extending grooves in the outer surface of the body, said grooves extending from one end of said body to a closed end point spaced from the other end of said body, said grooves having two longitudinal walls and an inner groove surface between said walls;
a plurality of apertures extending through said body from the other end thereof to said grooves with each of said apertures opening into a separate one of said grooves; and
a pair of spaced raised guide tracks in each of said grooves, each of said guide tracks extending longitudinally from said closed end point of the groove along one of said walls for a length less than the length of said groove and terminating in an exposed end point within the groove, the exposed end points of said guide tracks being inclined from the inner groove surface to the surface of the raised tracks.

3,979,158

PERISCOPE-TYPE REAR VIEW MIRROR APPARATUS FOR AUTOMOBILE

Makoto Yamashita, Kanagawa; Masagoro Kushida, Isehara; Fumio Niitsuma, Hatano; Masao Enomoto, Yokohama, and Akira Miyamoto, Tokyo, all of Japan, assignors to Ichikoh Industries Limited, Tokyo, Japan

Continuation of Ser. No. 426,691, Dec. 20, 1973, abandoned. This application June 23, 1975, Ser. No. 589,771
Int. Cl.² G02B *5/08*
U.S. Cl. 350—302 **2 Claims**



1. A periscope-type rear view mirror apparatus for an automobile having a roof with an aperture therein in front of the driver's position comprising:
1. a hollow housing fixed to the roof of said automobile above said aperture having an inclined wall inclining at an angle substantially equal to the angle of inclination of the front windshield, having two side walls extending from the opposite side edges of said inclined wall toward the roof of the automobile, and further having a rearward opening opposing said inclined wall and defined by said inclined wall, said side walls, and the roof of said automobile;
2. a planar objective mirror fixed to said inclined wall above the aperture and positioned within the housing opposite the rearward opening;
3. adjustable stay means secured at one end thereof to the inner surface of the automobile body at a position above and near the windshield and extending downward therefrom, said stay means comprised of:
   a. a stay bar having a cylindrically shaped fulcrum member at one end thereof transverse to the length of said bar;
   b. a mounting bracket attached to the inner surface of the automobile body above and near the windshield having a groove therein for receiving the fulcrum member of said stay bar;
   c. a cover plate having a groove therein corresponding to the groove in said mounting bracket, whereby the fulcrum member of said stay bar can fit into the bore formed by the grooves between said mounting bracket and said cover plate; and
   d. screws for holding said cover plate over said mounting bracket with said fulcrum member therebetween, whereby adjusting the tightness of the screws will adjust the positioning of said stay bar;
4. a planar reflecting mirror substantially horizontally fixed on the free end of said stay means, below said aperture, so that the reflecting surface of the reflecting mirror faces upwardly toward the aperture in the roof of the automobile and said objective mirror;
5. a planar eye-piece mirror pivotally secured to said stay means adjacent to said reflecting mirror and having its reflecting surface opposed to the reflecting surface of said reflecting mirror at an acute angle thereto and directed toward the eyes of the driver of the automobile, said eye-piece mirror further having a cylindrical extension along one side thereof;

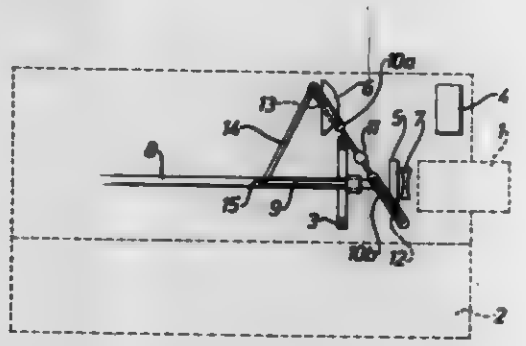
6. said stay bar has therein a socket with flexible sidewalls at a position close to said reflecting mirror for receiving said cylindrical extension of said eyepiece mirror;
7. a bolt passing through said extension of said eye-piece mirror and said sidewalls, whereby tightening the bolt will urge the sidewalls toward each other to hold the cylindrical extension therebetween;
8. transparent panel means on the rearward opening of said hollow housing for sealing this opening from the outside;
9. filter means slightly larger than said reflecting mirror for filtering the intensity of light reflected by said mirrors; and
10. support means located above the windshield and close to said aperture for adjustably supporting said filter means, whereby:
   said filter means can be adjustably positioned substantially parallel to the pathway between said objective mirror and said reflective mirror outside of the path of said light rays reflected from said objective mirror to said reflecting mirror, and further
   said filter means can be adjustably positioned substantially parallel to the light rays reflected from said eye-piece mirror to the eye position of the driver between said objective mirror and said reflecting mirror, thereby filtering only those light rays traversing the path between said objective and reflecting mirror, and still further
   said filter means being slightly larger than said reflective mirror can be adjustably positioned against the edge of said reflecting mirror across the path of light rays travelling from said eye-piece mirror to the eye position of the driver and across the path traversed by the light rays reflected from said objective mirror to said reflecting mirror, thereby filtering the light rays once between said objective mirror and said reflecting mirror, and once between said eye-piece mirror and the eye position of the driver.

3,979,159

PROJECTOR

Jan Erik Asterö, Tumba, Sweden, assignor to Lindaco Ltd., Geneva, Switzerland

Filed Dec. 4, 1974, Ser. No. 529,528
Int. Cl.² G03B *19/18*
U.S. Cl. 352—136 **8 Claims**



1. A projector for alternate projection of dia pictures and cinematographic film comprising: a lens system; a light source emitting light along a given path in a direction through said lens system; means mounting said light source for reciprocal linear movement along said path of its emitted light toward and away from said lens system; a link mechanism mounted upon a stationary point on said projector, said link mechanism being movable between a first and a second position; a condenser lens; a stationary frame for dia pictures; a film feeding mechanism including a film window; said condenser lens and said film feeding mechanism being mounted to said link mechanism for movement into and out of the path of said light emitted from said light source by movement of said link mechanism between said first and second positions; and means connecting said light source with said link mechanism to effect said reciprocal movement of said light source by movement of said link mechanism between said first and second positions; said link mechanism being arranged when moved to said first position to move said film feeding mechanism into operative position into the path of said emitted light in front of and close to said lens system, to move said light source toward said lens system in front of and close to said film window of said film feeding mechanism, and to move said condenser lens out of the path of said emitted light; with movement of said link mechanism to said second position operating to move said film feeding mechanism out of the path of said emitted light, to move said condenser lens to within the path of said emitted light in front of said stationary frame for the dia pictures, and to displace said light source rearwardly away from said lens system to a position behind said condenser lens.

3,979,160

COMPACT OVERHEAD PROJECTOR

Raymond H. Anderson, St. Mary's Point, and Ning Wu, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 3, 1975, Ser. No. 554,418
Int. Cl.² G03B *21/08;* **F21V** *13/04, 7/00*
U.S. Cl. 353—63 **5 Claims**

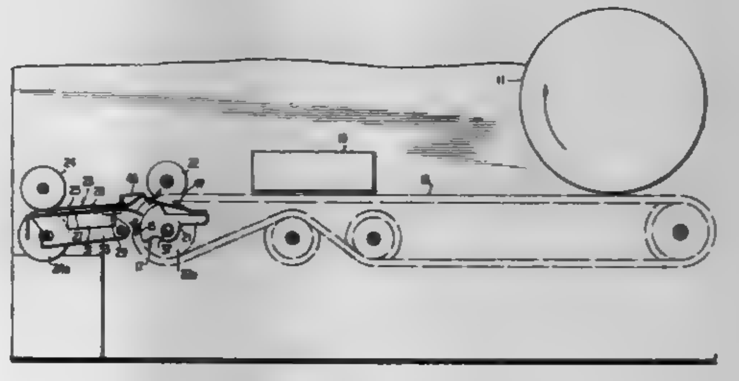
1. A compact overhead projector having aligned along an optical axis, in order, a light source, an aperture plate, a plane mirror, a Fresnel condensing lens, a stage, and a projection head, the latter being adapted to direct and focus onto a remote screen an image of graphic information contained on a transparency laid on the stage, and wherein said light source includes a truncated light-diffusing ellipsoidal reflector having an inner and an outer focal point and an axially disposed incandescent filament offset from said inner focal point toward said outer focal point, said source generating a light pattern having a minimum-diameter high-intensity area, said aperture plate being disposed perpendicularly to said optical axis at a point offset from said outer focal point toward said inner focal point and at the point along said optical axis of said minimum-diameter high-intensity light area, the aperture being of lesser diameter than said high-intensity minimum-diameter area.

3,979,161

COPYING MACHINE FIRE SNUFFER

David G. Kremer, Telford, Pa., and Moni Chu, Long Island City, N.Y., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 18, 1975, Ser. No. 559,571
Int. Cl.² G03G *15/00*
U.S. Cl. 355—133 **2 Claims**



1. A printing machine for printing images on individual copy sheets comprising:
a copy-sheet transporting system for transporting copy sheets along a predetermined path through a plurality of stations;
a transfer means at a transfer station for transferring heat sensitive developing material to said copy sheets in concentrations representative of said images;

- a fusing means at a fusing station for heating said developing material on said copy sheets when said copy sheets are transported through said fusing station;
- a fire-extinguishing snuffer for extinguishing fires on said copy sheets caused by the heat of said fusing means said fire-extinguishing snuffer being located downstream of said fusing means at an extinguishing station, said fire snuffer including a pair of flat metallic plates for defining a flat-shaped 0.1 to 0.125 inch gap therebetween and being arranged so that said copy sheets pass through said gap, said plates having a width at said gap which is greater than the widths of said copy sheets; and,
- a guidance means including upper and lower wire-like guidance springs upstream of said fire-extinguishing snuffer for directing the leading edges of said copy sheets into said gap.

3,979,162
APPARATUS AND METHOD FOR ATOMIC SPECTROSCOPY

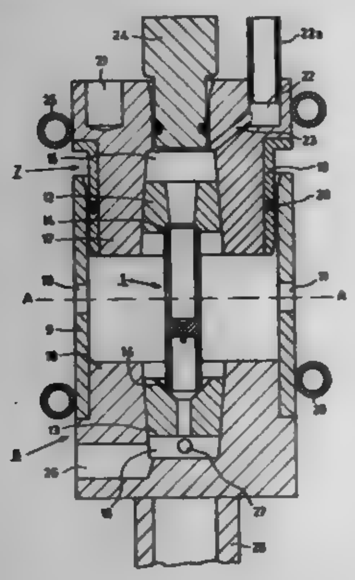
Richard Alexander George, Cambridge, England, assignor to Pye of Cambridge Ltd., Cambridge, England

Filed July 9, 1973, Ser. No. 377,796

Claims priority, application United Kingdom, July 10, 1972, 32253/72

Int. Cl.² G01J *3/30, 3/02*

U.S. Cl. 356—85 **4 Claims**



1. A furnace for heating a sample of a substance to produce free atoms for atomic spectroscopy, comprising;
- a hollow furnace element forming a passageway for gas along which a desired sample may be deposited;
- means for directing a flow of protective gas into and through said passageway for sweeping free atoms out of said furnace element without oxidising said free atoms; and
- means for heating said furnace element to produce free atoms from a sample deposited therein, said heating means producing an unequal temperature distribution within said furnace element, the temperature within said furnace element increasing in the direction of flow of said protective gas, to reduce the tendency of said free atoms to condense on surfaces within said furnace element.

3,979,163
CLEANING AND SCRUBBING TOOL

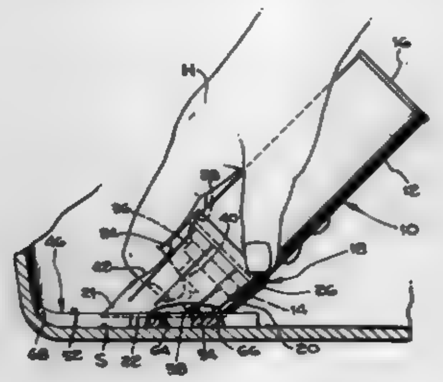
Walter C. Beard, Middlebury, Conn., assignor to Aerosol Techniques Incorporated, Milford, Conn.

Filed June 16, 1975, Ser. No. 586,902

Int. Cl.² A47L *13/26*

U.S. Cl. 401—139 **9 Claims**

1. An in-use regenerable, hand held surface cleaning and scrubbing tool having a cleaning-scrubbing head and a cleaning liquid containing aerosol can having a finger actuable nozzle for directional delivery of cleaning liquid therefrom onto a surface to be scrubbed and forming a handle for scrubbing manipulation of the head, said cleaning head comprising a generally cylindrical synthetic, organic thermoplastic bracket rigidly supported on the can in nozzle surrounding relation and defining a finger access hole adjacent said nozzle, a locally apertured fluid permeable, resilient scrub pad having interior reticulations carried by said bracket in peripherally unsupported relation for conforming engagement with curved surfaces to be scrubbed and with its aperture disposed in registration with said nozzle opening for free fluid passage through said pad aperture onto a surface to be scrubbed, said pad being coupled to said bracket at an angle of about 45° to the can longitudinal axis by locally deflected bracket extensions within the pad interior having engagement with the reticulation-defining portions of said pad to support said pad during the scrubbing operation-regeneration of absorbed cleaning liquid in the pad and responsive to repeated surface delivery of said cleaning liquid onto said surface through said registered opening and aperture.



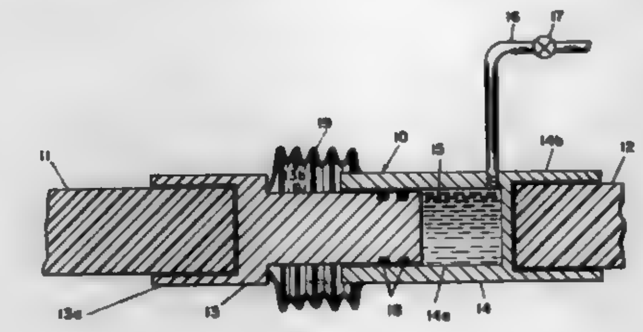
3,979,164
EXPANSION JOINT LOCK FOR LOW TEMPERATURE STRUCTURES

Moyses Kuchnir, Elmhurst, Ill., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jan. 30, 1975, Ser. No. 543,331

Int. Cl.² F16C *9/00;* **F16D** *1/00;* **F16B** *7/00*

U.S. Cl. 403—28 **6 Claims**



1. An expansion joint lock for transmitting compression forces between two structural members which contract as they are cooled down to the temperatures at which they carry loads, comprising:
- a. a piston member having an extending piston portion;
- b. means for mounting said piston member to a first of the structural members with said piston portion thereof extending in the direction of the compression forces to be transmitted;
- c. a reception member having walls defining a chamber therein adapted to receive and slidingly engage said piston portion of said piston member;
- d. means for mounting said reception member on the second of the structural members in position to have said chamber therein receive and engage said piston portion; and
- e. means for maintaining the space in said chamber between the walls of said chamber and said piston portion filled with a liquid having a freezing point above the ambient temperature at which said structural members normally carry loads, whereby said liquid is frozen in said chamber at the ambient temperature at which said structural members carry loads to allow transmission of forces between said structural members through said frozen liquid.

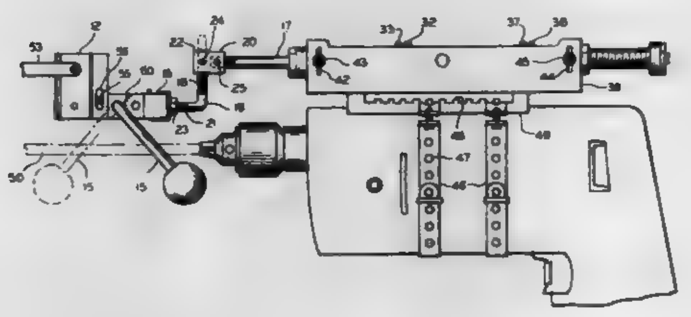
3,979,165
DRILL GUIDE

Arnold S. Pyle, 629 Marston, Glen Ellyn, Ill. 60137

Filed May 22, 1975, Ser. No. 579,952

Int. Cl.² B23B *45/14, 49/00*

U.S. Cl. 408—14 **29 Claims**



1. A universal drill guide for portable, hand-held drills comprising:
- housing means,
- said housing means being removably and adjustably attachable to a portable hand-held drill;
- externally threaded hollow guide means,
- said guide means being aligned and supported by said housing means;
- platform means,
- axially and transversely adjustable shaft means with respect to said platform means and slidably cooperating with said guide means;
- spring bias means,
- said spring bias means being surrounded and enclosed by said guide means, and contacting said shaft means,
- said spring bias means urging said shaft means to slidably extend from said guide means;
- stop means,
- said stop means being threaded on said external threads of said guide means,
- said stop means adapted to contact said shaft means, thus selectively limiting the slidable movement of said shaft means in said guide means.

3,979,166
GETTER DEVICE

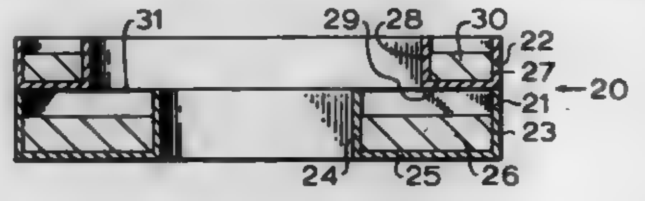
Mario Zucchinelli, Milan, Italy, assignor to S.A.E.S. Getters S.p.A., Milan, Italy

Filed Feb. 12, 1975, Ser. No. 549,487

Claims priority, application Italy, Mar. 18, 1974, 86247/74

Int. Cl.² F04B *37/02*

U.S. Cl. 417—48 **8 Claims**



1. A getter device for releasing an evaporable getter metal in a vacuum tube, said device comprising:
- A. a first U-shaped cross-section annular ring, having a bottom wall attached to inner and outer side walls,
- B. a compressed particulate getter metal releasing material attached to said ring,
- C. a second U-shaped cross-section annular ring, having a bottom wall attached to inner and outer side walls,
- D. a compressed particulate getter metal releasing material attached to said second ring,
- whereby the axes of the first and second rings are substantially co-extensive and the rings are in heat conducting contact one with the other
- in which the external radii of both annular rings are substantially equal and the inside diameter of the second annular ring is greater than the inside diameter of the first annular ring.

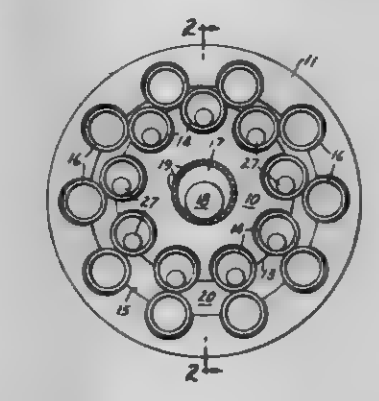
3,979,167
INTERNAL GEAR SET HAVING ROLLER TEETH

Leslie H. Grove, 707 E. Hoyt Ave., St. Paul, Minn. 55106

Filed Jan. 27, 1975, Ser. No. 544,644

Int. Cl.² F01C *1/02, 1/10;* **F03C** *3/00;* **F16H** *1/28*

U.S. Cl. 418—61 B **16 Claims**



1. An internal gear set comprising first and second gear members, the first gear member having *n* identical cylindrical rollers in slightly oversize semi-cylindrical pockets formed in its radially outer face and equally spaced along a circle, the center of which is the axis of the first gear member, and the second gear member having $n + 1$ identical cylindrical rollers in slightly oversize semi-cylindrical pockets formed in its radially inner face and equally spaced along a circle having the axis of the second gear member as its center, *n* being an integer greater than 2, the first gear member nesting within and axially offset from the second gear member to provide expanding and collapsing chambers between the gear members upon rotation of one gear member relative to the other, each roller being free to move radially except to the extent that such movement may be restricted by its pocket and by rollers of the other gear member, and the diameter of each roller exceeding the spacing between adjacent rollers of the other gear member.

3,979,168
APPARATUS FOR THE MANUFACTURE OF LIGHT GRANULATES

Raymond Chauvin, Verneuil-en-Halatte, France, assignor to Charbonnages de France, Paris and Houilleres du Bassin du Nord et du Pasde-Calais, Douai, both of, France

Division of Ser. No. 390,345, Aug. 22, 1973, Pat. No. 3,891,734, which is a continuation-in-part of Ser. No. 159,275, July 2, 1971, abandoned. This application Feb. 11, 1975, Ser. No. 549,099

Claims priority, application France, July 10, 1970, 70.25915

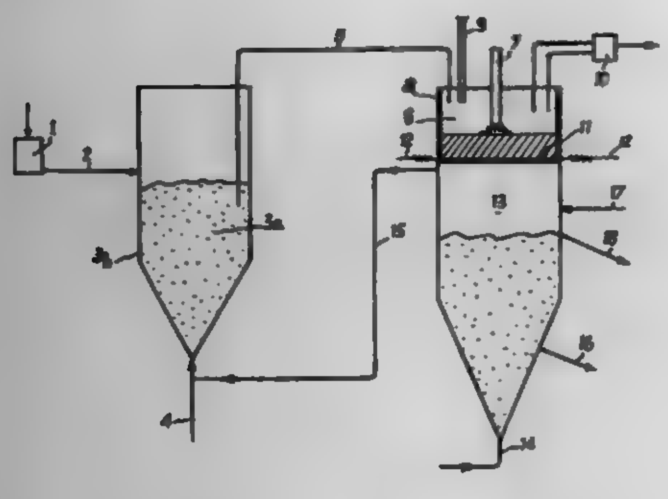
Int. Cl.² B29C *23/00*

U.S. Cl. 425—6 **8 Claims**

1. An apparatus for the manufacture of lightweight aggregate from fusible silico-aluminous material, comprising:
- means to reduce said silico-aluminous material to a melt without permitting escape of gases generated within said melt, said means comprising a melting chamber having walls of material not wettable by the fused silico-aluminous material, means to heat said chamber to a tempera-

ture on the order of about 1300° – 1400°C., means to control within said chamber the partial pressure of at least one selected gas in the atmosphere above said melt;

means for producing drops of said molten silico-aluminous material from said melting chamber, said drop producing means forming the bottom of said melting chamber; and



means for expanding said drops and effecting simultaneous cooling thereof to provide expanded granules, said expanding and cooling means comprising an expansion and cooling chamber, said drop producing means forming the ceiling of said expansion and cooling chamber, means to control the temperature within said chamber, and means for removing expanded granules from said chamber.

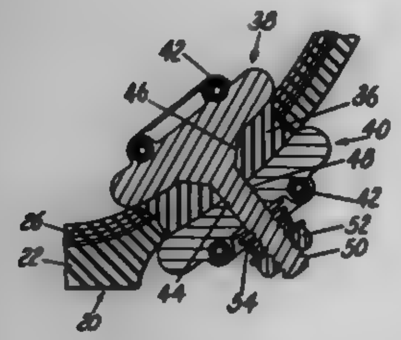
3,979,169
APPARATUS FOR REPAIRING TIRE CASINGS

Benjamin Whittle, R.R. No. 3, Paw Paw, Mich. 49079

Filed Oct. 30, 1970, Ser. No. 85,578

Int. Cl.² B29H *5/16*

U.S. Cl. 425—12 **6 Claims**



1. Apparatus for use in preparation of tires for repairing breaks in the tire casings comprising

inner and outer mold plates adapted to be clamped in opposed non-penetrating relation against inner and outer surfaces of a casing and in overlapping relation to the edges of a break in the casing,

a pin extending from one of said plates to project through the break in the casing and the other of said plates when the plates are lapped against the inside and outside of the casing,

the other of the plates having a hole formed therethrough to slidably pass the shank of the pin,

means coacting with the end of said pin and the opposite side of the other of said plates for clamping said plates to the opposite sides of a casing,

and means forming an outwardly tapering annular protuberance at the outer side of said inner plate located around the axis of said pin and extending axially no more than half the thickness of the casing to be repaired.

3,979,170
APPARATUS FOR INJECTION MOLDING ARTICLES COMPOSED OF A MATERIAL IN WHICH ARE EMBEDDED MASSES OF ONE OR MORE OTHER MATERIALS

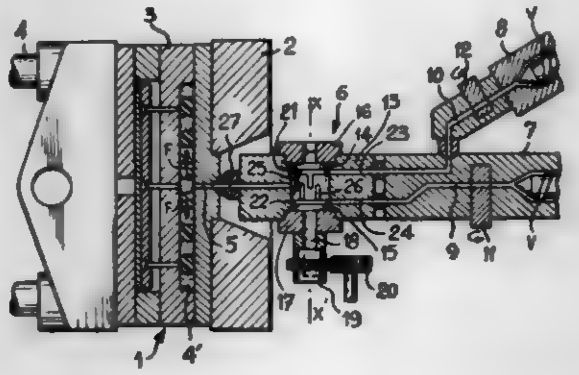
Bernard Leon Monnet, Bellignat, France, assignor to Billion S.A., Oyonnax, France

Filed Sept. 23, 1974, Ser. No. 508,569

Claims priority, application France, Sept. 21, 1973, 73.34012

Int. Cl.² B29F *1/12*

U.S. Cl. 425—130 **10 Claims**



1. Injection molding apparatus for molding articles having local masses of at least one material located here and there in at least one other material, said apparatus comprising a mold, a single passage in communication with the mold, a plurality of separate plastification units each adapted to deliver one of said materials, a distribution system located between the plastification units and the mold and adapted to deliver said materials from the units to said passage, said system comprising a plurality of channels isolated from each other, means for continuously communicating each of said channels with one of said plastification units so that each channel is fed with a continuous stream of material, means for directing the material from the channels to the single passage, and means for breaking up the stream of material in at least one of said channels into measured quantities so that at least one of the materials will be fed to said passage in an intermittent manner to thereby ensure intercalation of said material into at least one other material.

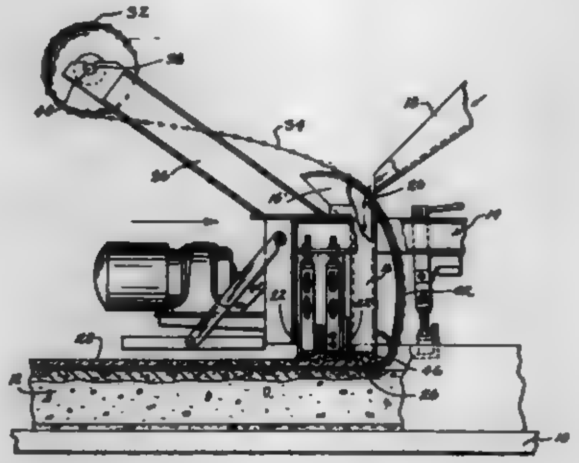
3,979,171
CONCRETE PLANK MACHINE WITH WIRE MESH GUIDE

Robert H. Nagy, 1720 Arrowhead Court, Brookfield, Wis. 53005

Filed Nov. 29, 1974, Ser. No. 528,534

Int. Cl.² B28B *13/02, 23/06*

U.S. Cl. 425—64 **5 Claims**



1. In a movable machine for manufacturing concrete planks by the discharge of concrete onto a bed, said machine having a frame, having means including at least one hopper mounted on the frame to extend transversely thereof for discharging concrete which is to form the plank structure onto said bed, and having a chute supported on the frame in a position to extend transversely of the frame over said hopper and direct concrete into said hopper, the improvement comprising means on said frame in trailing relationship with said hopper for supporting a supply of reinforcing wire mesh, means on said frame for guiding said wire mesh from said supply between said chute and said hopper in a position where the concrete from the chute passes through said wire mesh into the hopper substantially throughout the length of the hopper, said guiding means being positioned to direct the wire mesh downwardly in a position in advance of the hopper and then in a reverse direction beneath said hopper in a position where it is laid on the plank which is being formed while additional concrete is discharged thereover from the hopper.

3,979,172
ICE CREAM FREEZER

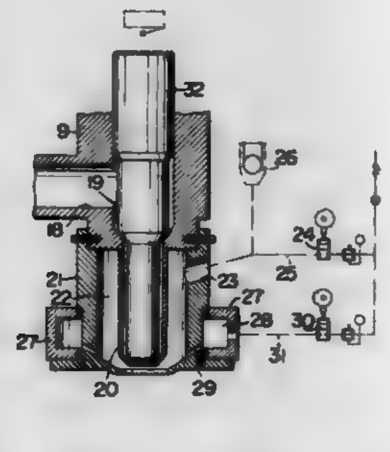
Yukio Sogo, Kawasaki; Kazuo Ido, Fuchu; Kiyoshi Seko, Nagoya, and Hiroshi Takahashi, Numazu, all of Japan, assignors to Snow Brand Milk Products Co., Ltd.; Fuji Machinery Co., Ltd. and Sanwa Machine Co., Inc., all of, Japan

Filed Mar. 18, 1974, Ser. No. 451,861

Claims priority, application Japan, Mar. 29, 1973, 48-36032

Int. Cl.² A23G *9/28, 9/24*

U.S. Cl. 425—104 **3 Claims**



1. An ice cream dispenser comprising: a nozzle for forcing out ice cream, and means for supplying solid material onto the ice cream being forced out through said nozzle, said supplying means comprising a member surrounding said nozzle and spaced therefrom so as to form an annular chamber around said nozzle, at least one port leading into said annular chamber, and means for feeding solid material through said at least one port and through said chamber onto the ice cream being forced out through said nozzle, said feeding means comprising means for blowing said solid material through said port, and a valve for controlling the feeding of said solid material, and supplemental means for blowing said solid material against the ice cream being forced out through said nozzle.

3,979,173
RECEIVER AND TRANSFER DEVICE FOR TRANSFERRING DOUGH FROM A SUPPLY SOURCE TO A RECEIVING STATION

Raymond Fox, Leeds, England, assignor to Oddy Limited, Leeds, England

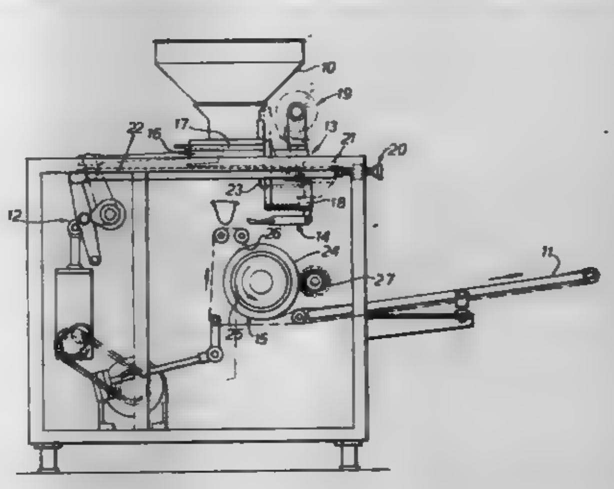
Filed Jan. 22, 1975, Ser. No. 543,055

Claims priority, application United Kingdom, Jan. 22, 1974, 2980/74

Int. Cl.² A21C *5/00*

U.S. Cl. 425—238 **9 Claims**

1. A dough treatment apparatus having a dough divider; an inlet for the supply of dough to said divider; an outlet for the discharge of divided pieces of dough from said dough divider; and a receiver and transfer device arranged to receive the divided pieces of dough from said outlet, and to transfer the pieces to a discharge location; said receiver and transfer device comprising a plurality of catcher members mounted for pivotal movement about an axis between a substantially horizontal receiver position and a discharge position, and being displaceable parallel to said axis between first and second positions, said catcher members being positioned to receive divided pieces of dough from said outlet when said catcher members occupy said substantially horizontal receiver position and said first axial position, and being positioned to discharge divided pieces of dough at the discharge location when the catcher members occupy said discharge position and said second axial position; first drive means coupled with said catcher members to effect axial displacement of said catcher members between said first and second positions, while the catcher members are maintained in said substantially horizontal receiver position; and second drive means, coupled with said catcher members independently of said first drive means, and arranged to effect pivotal movement of the catcher members from said substantially horizontal receiver position to said discharge position only after substantial completion of displacement of the catcher members by said first drive means from said first position to said second position.



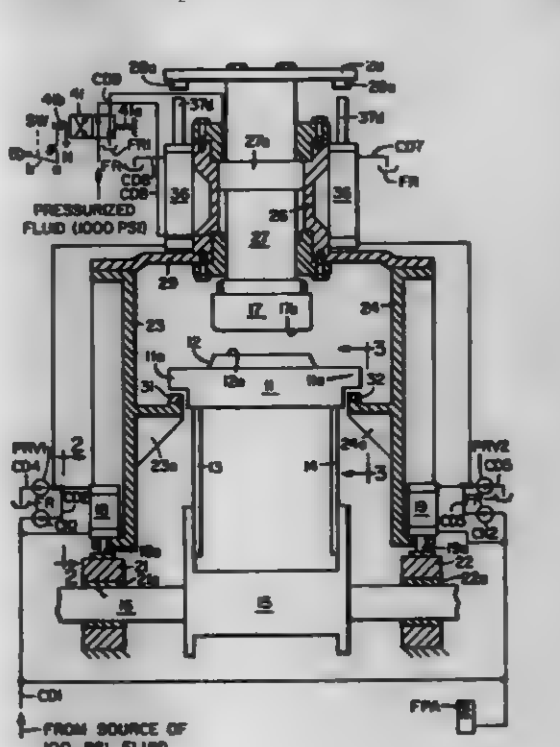
3,979,174
ARTICLE TRIMMING APPARATUS

Thomas F. Hillman, Bath, and Arthur H. Pienkoski, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 24, 1975, Ser. No. 625,644

Int. Cl.² B29C *3/00, 17/08*

U.S. Cl. 425—292 **5 Claims**


CD9
PRESSURIZED FLUID (1000 PSI)
CD7
27
26
36
29
17
23
24
11
32
31
2
3
CD4
CD5
19
21
22
16
15
CD1
FROM SOURCE OF 100 PSI FLUID PRESSURE
FPA

1. In an apparatus for trimming thermoplastic material surrounding the bordering edge of an article formed in a die

from a sheet of thermoplastic material arranged over said die, such die having an upwardly disposed trimming edge, and such apparatus including first and second upwardly extending support arms supporting at their upper ends a relatively large hydraulic cylinder embodying a piston extending through the ends of such cylinder; a trimmer having a lower cutting edge cooperative with said trimming edge of said die for trimming said thermoplastic material, such trimmer being attached to the lower end of said piston; a die carrier supporting said die below said cylinder; and conduit means for alternately supplying hydraulic fluid at a relatively high pressure to the upper and lower ends of said cylinder for downward and upward actuation of said piston, such downward actuation of such piston moving said trimming and cutting edges into cooperative relationship with each other for trimming said thermoplastic material surrounding said bordering edge of said die; a modification for assuring the horizontal alignment of said cutting and trimming edges with each other prior to said thermoplastic trimming operation, such modification comprising;

I. first and second anvils carried by said first and second support arms respectively and having upper faces disposed in close proximity to the lower surface of an overhang of said die carrier, such anvils being located on opposite sides of said carrier along the diametric centerline thereof;
II. similar first and second relatively small hydraulic cylinders and associated piston rods attached to said first and second support arms respectively for upward actuation thereof and thereby said faces of said anvils into contact with said lower surface of said overhang;
III. means including pressurized fluid conduits for supplying hydraulic fluid at an increasingly intensified pressure to said first and second cylinders to actuate said faces of said anvils upward and into contact with said lower surface of said overhang when said piston of said large hydraulic cylinder is actuated downwardly by said hydraulic fluid supplied to said upper end of such large cylinder; and
IV. pressure relief valve means connected to said pressurized fluid conduits for relieving further intensification of the pressure of said intensified hydraulic fluid when such fluid exceeds a preselected intensified pressure above that required for said upward actuation of said faces of said anvils.

3,979,175
VAPOR RECOVERY AND DISPOSAL SYSTEM

Abraham Kattan, North Miami Beach, Fla., and John E. Gwyn, Pasadena, Tex., assignors to Shell Oil Company, Houston, Tex.

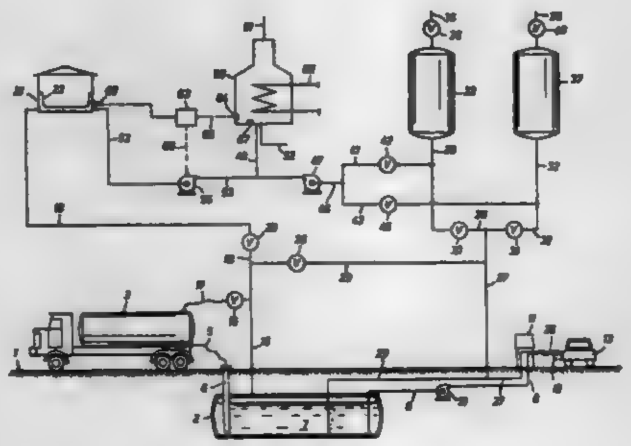
Continuation-in-part of Ser. No. 401,514, Sept. 27, 1973, Pat. No. 3,897,193. This application Feb. 24, 1975, Ser. No. 552,573

Int. Cl.^{2} F23G *7/06*

U.S. Cl. 431—5 **4 Claims**

1. A system to recover and dispose of gasoline from gasoline vapor-laden air that is vented from a gasoline storage tank while said tank is being filled, comprising:

A. means for collecting vapor-laden air from said storage tank,
B. at least one vessel containing a bed of solid adsorbent capable of selectively adsorbing gasoline from said vapor-laden air,
C. a vent to the atmosphere from said vessel,
D. a valved inlet into said vessel on the other side of said bed from said vent, said inlet connected to said means for collecting vapor-laden air,
E. a valved conduit from said vessel connecting the inlet side of said bed to the inlet of a furnace,
F. means for measuring the volume of vapor-laden air passing through the valved inlet into the vessel,



G. means for drawing backwash air through said bed for desorbing gasoline therefrom and discharging said gasoline-containing air in said furnace,
H. means of igniting said desorbed gasoline in said furnace,
I. control means operatively connected to said volume measuring means, to means for drawing backwash air and to means for igniting, for activating said means for drawing backwash air and means for igniting, upon passing of a predetermined volume of vapors through said volume measuring means, and
J. means for stopping said discharge of backwash air to the furnace when combustion of the gasoline is concluded.

CHEMICAL

3,979,176
PROCESS FOR THE CONTINUOUS LEVEL PROCESSING OF POLY-ACRYLONITRILE IN THE HYDRATED CONDITION

Leo Kaiser, Aesch, and Otto Nothiger, Oberwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 31, 1975, Ser. No. 545,847

Claims priority, application Switzerland, Feb. 6, 1974, 1626/74

Int. Cl.^{2} D06P *3/70*

U.S. Cl. 8—177 R **9 Claims**

1. A process for the continuous treatment, of hydrated polyacrylonitrile tow, with a dyestuff or an optical brightening agent to give a level treatment effect, comprising the steps of:

a. spreading out the wet tow to form a ribbon having a maximum thickness of 2 mm. and
b. impregnating the spread-out tow ribbon with a processing liquor that contains a dyestuff or an optical brightener.

3,979,177
METHOD FOR THE MANUFACTURE OF VOLUMINOUS BLENDED YARNS AND FABRICS AND KNITTINGS TO BE MANUFACTURED FROM THEM

Hendrak Johannes Selling, Voorburg; Hendrick Van Lingen, The Hague; Njo Hong Han, all of Netherlands, assignors to Nederlande Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid Handle En Verkeer, The Hague, Netherlands

Filed Dec. 3, 1973, Ser. No. 420,935

Int. Cl.^{2} D08M *9/04*

U.S. Cl. 8—115.7 **9 Claims**

1. A method for the manufacture of a voluminous blended yarn characterized in that a blended yarn consisting essentially of flax fibres and non-shrinkable synthetic fibres is given a swelling treatment, whereby the yarn is subjected to a tensionless shrinking procedure such that the flax fibres shrink maximally by 35%.

3,979,178
FINISHING OF CELLULOSE FABRICS WITH N-METHYLOL AMIDE CROSSLINKING AGENTS, MAGNESIUM SULFATE AND SULFURIC ACID

Robert M. Reinhardt, New Orleans, and Russell M. H. Kullman, Metairie, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 9, 1974, Ser. No. 513,361

Int. Cl.^{2} D06M *13/40*

U.S. Cl. 8—185 **4 Claims**

1. In a process of finishing cellulose-containing fabrics to impart durable press properties by treatment with aqueous formulations containing N-methylol amide crosslinking agents, crosslinking catalysts, and, other compatible additives or agents to enhance properties other than durable press or strengh properties, the improvement consisting of:

a. adding to aqueous formulations as the sole crosslinking catalyst, a mixture of sulfuric acid and magnesium sulfate in amounts such that for every 100 parts by weight of said formulation there are about from 5 to 20 parts by weight N-methylol amide crosslinking agent, about from 0.2 to 2 parts by weight of sulfuric acid, and about from 0.3 to 2.5 parts by weight of magnesium sulfate;
b. impregnating a cellulose-containing textile with the formulation from a; and Serial No. 513,361
c. curing the wet, impregnated textile by heat treatment at from about 60°C to about 100°C for about from 2 minutes to about 8 minutes to obtain a moisture content in the treated textile of about 2 to 5%; and
d. washing and drying the textile.

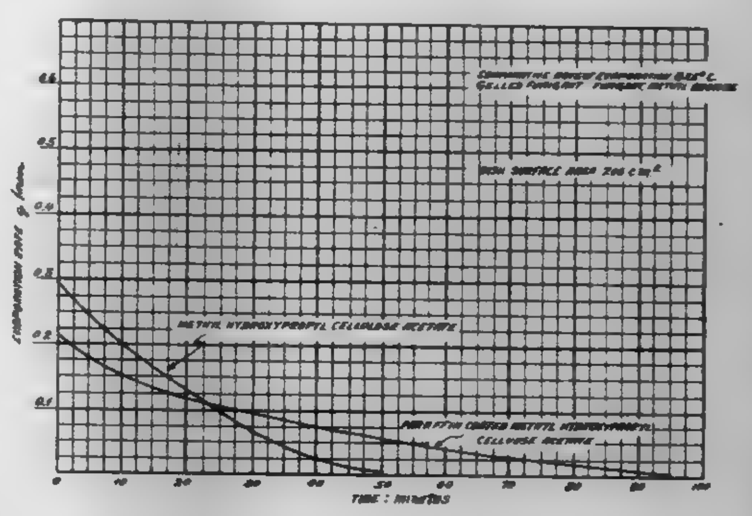
3,979,179
PROCESS AND COMPOSITION FOR REDUCING EVAPORATION OF VOLATILE LIQUIDS

James Teng, St. Louis County, Mo., assignor to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Apr. 1, 1974, Ser. No. 457,081

Int. Cl.^{2} B01J *1/18*

U.S. Cl. 21—60.5 A **7 Claims**



1. The method of gelling volatile organic liquids wherein the rate of evaporation of the volatile organic liquid is reduced, comprising the steps of:

A. agitating a cellulose ester having a degree of substitution from about 0.1 to about 2.8 and a degree of molar substitution of hydroxypropyl groups of about 2 to about 8,
B. adding with agitation about 5 to about 35% by weight paraffin heated to a temperature above its melting point,
C. cooling the mixture while continuing the agitation,
D. agitating the mixture until free flowing granules are formed, said granules consisting of cellulose ester particles coated with the paraffin,
E. adding about 0.5 to about 4 grams of the granules to each 100 ml. of volatile organic solvent to be gelled with agitation, and
F. forming a continuous and resilient film over the entire surface of the gel.

3,979,180
STABILIZED CROSSLINKED POLYETHYLENE AND ETHYLENE-VINYL ACETATE

George E. Lorand, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Sept. 12, 1975, Ser. No. 612,891

Int. Cl.^{2} C08J *3/20*

U.S. Cl. 260—23 H **20 Claims**

1. A composition comprising (a) a resin selected from the group consisting of unfilled low density polyethylene and mineral filled ethylene-vinyl acetate copolymer, (b) an organic peroxide, and (c) about 0.5 to 1.95 parts per hundered parts of polymer of an anti-oxidant composition, said anti-oxidant composition comprising (1) at least one member of the group of hindered phenol and diarylamine, (2) a metal organic thiophosphate and (3) about 1 to 100 parts per million parts of resin of a transition metal salt selected from the group consisting of cobalt stearate, iron stearate, manganese stearate, nickel stearate, and the trivalent chromium salt of mercaptobenzothiazole.

3,979,181

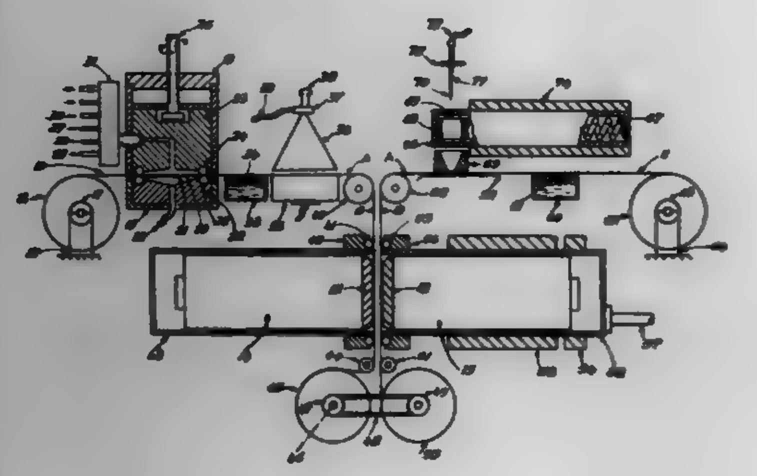
TAPE TRANSPORT FOR LUMINESCENT REACTION TESTING

Chris J. Plakas, Alexandria, Va., assignor to Vitatect Corporation, Alexandria, Va.

Filed Nov. 12, 1975, Ser. No. 630,943

Int. Cl.² G01N *21/30, 33/16*

U.S. Cl. 23—230 B **3 Claims**



1. In a surface reaction system for optically detecting reactive materials in a test sample by means of luminescent reaction comprising:

A. means for placing the residue obtained by filtering a sample of reactive material on an elongated flexible carrier element when the carrier element is in a first position,
B. means for advancing the carrier element to a second position,
C. means for placing a reagent material in contact with the residue at the second position, and
D. means for measuring the luminescence produced by the reagent material in contact with the residue,

the improved means for advancing the carrier element comprising:

E. a pair of pinion rollers, each having a plurality of teeth thereon, the carrier element being gripped between the rollers, and
F. means for driving at least one of the pinion rollers to advance the carrier element between the rollers.

3,979,182

CHEMICAL DETECTION OF NITROGEN CONTAINING COMPOUNDS

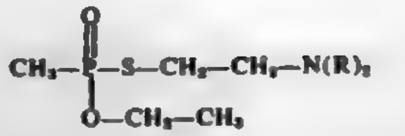
Michael D. Zumelt, Sacramento, Calif.; Neil R. Hofmann, Angola, N.Y., and Melvin C. Bassett, Baltimore, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 29, 1969, Ser. No. 821,168

Int. Cl.² G01N *27/62*

U.S. Cl. 23—232 R **7 Claims**

1. In a method for detecting toxic compounds the step comprising contacting an effective amount of compounds of the formula



$$\mathrm{CH_3}-\underset{\displaystyle \mathrm{O-CH_2-CH_3}}{\overset{\overset{\mathrm{O}}{\|}}{\mathrm{P}}}-\mathrm{S-CH_2-CH_2-N(R)_2}$$

wherein R is ethyl or isopropyl and their decomposition products with a composition comprising a lower alkyl alcohol, a dialkyl ketone, a nitrobenzene and collodion.

3,979,183

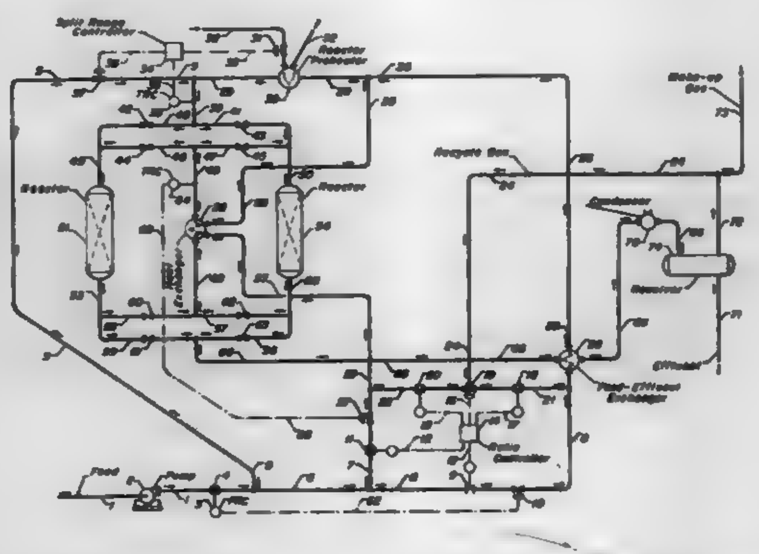
HEAT EXCHANGE AND FLOW CONTROL SYSTEM FOR SERIES FLOW REACTORS

Norman H. Scott, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 25, 1974, Ser. No. 527,007

Int. Cl.² G05D *11/02;* **G06F** *15/46;* **G06G** *7/58*

U.S. Cl. 23—253 A **1 Claim**



1. In an apparatus comprising two reactors, fluid conveying means connecting the two reactors for series flow, means for feeding reactants to the fluid conveying means and reactors, and heat exchange means utilizing reactor effluent to preheat feed streams, the improvement comprising a temperature and flow control system having:

a. a first flow rate measuring and controller means for a primary feed stream, said controller means generating a first signal;
b. a first bifurcating means for splitting said feed stream into a first fluid stream and a second fluid stream, said first bifurcating means being in interconnection with said feed stream;
c. a second bifurcating means for splitting said second fluid stream into a third fluid stream and a fourth fluid stream, said second bifurcating means being in interconnection with said fluid stream;
d. a second flow rate measuring and signal means which generates a signal representative of a flow rate in said fourth fluid stream;
e. a first contol valve means connected to said first flow rate sensing and controlling means for regulating the rate of flow of said fourth fluid stream in accordance with said first signal means, said first control valve means being in interconnection with said fourth fluid stream;
f. a third flow rate measuring and signal means which generates a signal representative of a rate of flow in said third fluid stream;
g. a second control valve means for division of a hydrogen rich system into a first gas stream and a second gas stream, a first commingling means for the admixture of said first gas stream with said third fluid stream to form a first reactant stream, and a second commingling means for the admixture of said second gas stream with said fourth fluid stream to form a second reaction stream, said control valve means being in interconnection with said first and second gas streams;
h. a first ratio control means connected to said second and third signal means for regulation of the rate of flow of said first and second gas streams in response to said second and third signal means;
i. a first heat exchange means for heating said first reactant stream, said first heat exchange means being in interconnection with a reactor effluent from a first series reactor;
j. a second heat exchange means for heating said second reactant stream, said second heat exchange means being in interconnection with a reactor effluent from a second series reactor;
k. a third commingling means for formation of a first reaction system stream from admixture of said first reactant stream with said second reactant stream, said commingling means in connection with said first reactant stream and second reactant stream;
l. a first preheater means for heating said first reaction system stream;
m. a fourth commingling means for admixture of said first reaction system stream with said first fluid stream to produce a second reaction system stream, said second commingling means being in interconnection with said first reaction system stream and first fluid stream;
n. a first temperature measuring means for determination of the temperature in said second reaction system stream;
o. a fourth signaling means for transmittal of the temperature determined by said first temperature recordation means to a first split range control means, said fourth signaling means being in interconnection with said first temperature recordation means and first split range control means; and,
p. a first split range control means for generation and transmittal of a fifth signal, said means utilized to increase the temperature in said preheater means or of actuating a change of flow rate of said first fluid stream as determined by a comparison of said fourth signaling means with a predetermined temperature value of said second reaction system stream, said first split range control means being in interconnection with said fifth signal and first fluid stream.

3,979,184

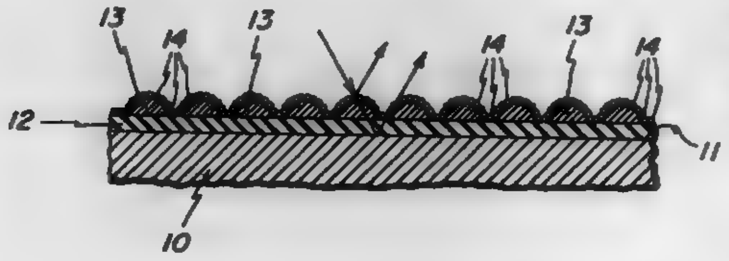
DIAGNOSTIC DEVICE FOR VISUALLY DETECTING PRESENCE OF BIOLOGICAL PARTICLES

Ivar Giaever, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 27, 1975, Ser. No. 580,603

Int. Cl.² G01N *33/16*

U.S. Cl. 23—253 TP **15 Claims**



1. A diagnostic device for detecting the presence or absence of select biological particles in a liquid sample consisting of:

a substrate member, at least one face of which is a non-transparent surface of metal, said metal surface being a comparatively poor reflector of light,
a thin, transparent first layer of dielectric material adhered to said surface,
a transparent second layer of metal adhered to the outer face of said first layer,
a monomolecular layer of biological particles specific to the select biological particles overlying at least a portion of said second layer.

3,979,185

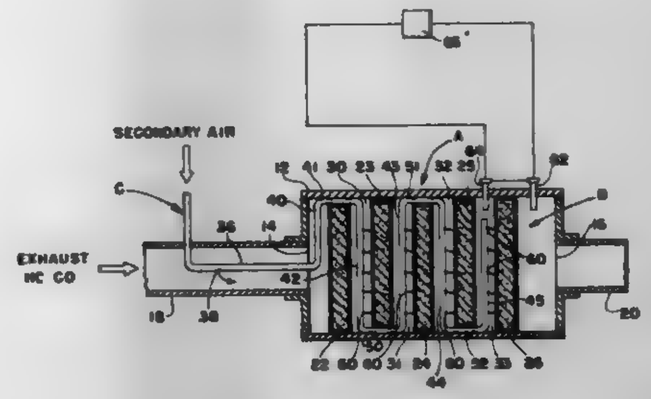
CATALYTIC CONVERTER HAVING PLURAL REACTION STAGES WITH TEMPERATURE-COMPARING MEANS THEREIN

David John Stevenson, Arcadia, Calif., assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jan. 21, 1974, Ser. No. 434,776

Int. Cl.² B01J *8/04;* **F01N** *3/15, 7/00*

U.S. Cl. 23—288 FB **12 Claims**



1. A catalytic converter for purifying exhaust gases, comprising: a reactor chamber having longitudinally spaced inlet and outlet openings for passage of exhaust gases therethrough, oxidizing catalyst means longitudinally distributed along said chamber between said inlet and outlet openings, means for causing exhaust gases to flow in a longitudinal direction successively through said longitudinally distributed oxidizing catalyst means for contact with said oxidizing catalyst means, secondary air feed means for feeding secondary air into said chamber at a plurality of longitudinally spaced-apart locations between said inlet and outlet openings, said secondary air feed means extending longitudinally through said chamber for a substantial portion of the length thereof between said inlet and outlet openings in direct exposure to the exhaust gases passing through said chamber for pre-heating said secondary air flowing therethrough prior to discharge of said secondary air from said secondary air feed means into said chamber, said secondary air feed means having a plurality of outlet means at longitudinally spaced-apart locations between said inlet and outlet openings for distributing a portion of said secondary air flowing through said secondary air feed means at each of said longitudinally spaced-apart locations, said oxidizing catalyst means including a plurality of catalyst beds longitudinally spaced apart in said chamber between said inlet and outlet openings therein to define a plurality of longitudinally spaced reactor stages each comprising one of said beds and the space longitudinally downstream of each said bed, and temperature comparing means for comparing the temperature of at least two of said stages so as to obtain the temperature differential between said stages.

3,979,186

STEEL ROD FOR PRESTRESSING CONCRETE

Katsuhisa Mizuma, Fujisawa, Japan, assignor to Neturen Company Ltd., Tokyo, Japan

Filed Mar. 17, 1975, Ser. No. 559,302

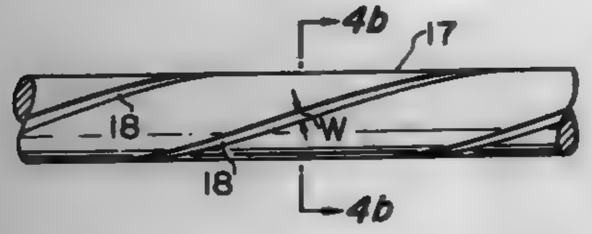
Claims priority, application Japan, Oct. 25, 1974, 49-122427; Oct. 25, 1974, 49-122428

Int. Cl.² B21C *37/04*

U.S. Cl. 29—183.5 **7 Claims**

1. A steel rod for prestressing concrete by pretensioning the rod and then casting the concrete therearound said rod, having a circular cross-section and having a plurality of spiral grooves therearound and at a uniform pitch of about 10 times the diameter of said rod, the total width of the voids of the spiral grooves being 1/6 – 2/5 of the total circumference of the

rod, the width of each spiral groove being from 1/24 – 2/15 of the total circumference, and the depth of each spiral groove



at the center thereof being less than 1/10 of the outside diameter of the rod.

3,979,187
VACUUM-TIGHT METAL-CERAMIC SOLDERED JOINT

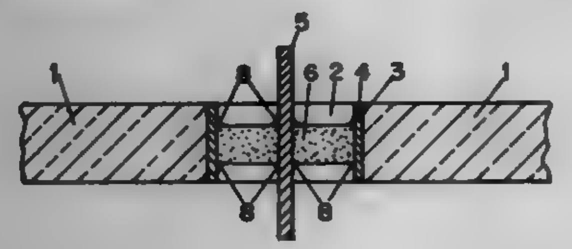
Fridolin Scherer, Untersiggenthal, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Oct. 1, 1974, Ser. No. 511,057

Claims priority, application Switzerland, Oct. 1, 1973, 14043/73

Int. Cl.² B32B *15/00*

U.S. Cl. 29—195 **10 Claims**



1. A vacuum-tight metal-ceramic soldered joint comprising:
a ceramic member having an aperture defined therein,
a metallic layer on the wall of said aperture,
a solderable plug,
an aperture defined within said solderable plug; and
an electrical and mechanical through-connection disposed within said aperture of said solderable plug;
said solderable plug comprising fused metal powder and solder and positioned in said aperture of said ceramic member bonding together said metallic layer and said through-connection.

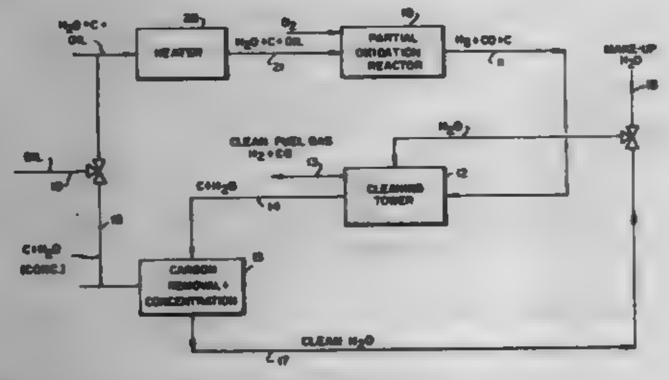
3,979,188
PARTIAL OXIDATION CARBON REMOVAL PROCESS

Robert A. McCallister, Mountain Lakes, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Oct. 25, 1974, Ser. No. 518,007

Int. Cl.² C01B *2/14*

U.S. Cl. 48—215 **5 Claims**



1. A method for the recovery of unreacted carbon produced by reaction of fossil fuel and oxygen in a partial oxidation reactor to produce an effluent stream of synthesis gas and entrained carbon comprising of the steps of: washing the effluent stream with water to remove unreacted carbon therefrom to produce a stream of clean synthesis gas and a stream of water and entrained carbon, concentrating the stream of carbon and water formed during the cleaning step into a slurry of carbon and water containing about 5 to 7 percent by weight of carbon and producing a stream of relatively clean water substantially free of carbon, introducing said slurry into a vessel, combining the slurry in said vessel with a fuel oil, mixing said fuel oil and slurry in said vessel to produce a feed stream, then pumping the feed stream through a preheater and injecting the feed stream, without vaporization, into the partial oxidation reactor.

3,979,189
ELECTROSTATIC FILTER

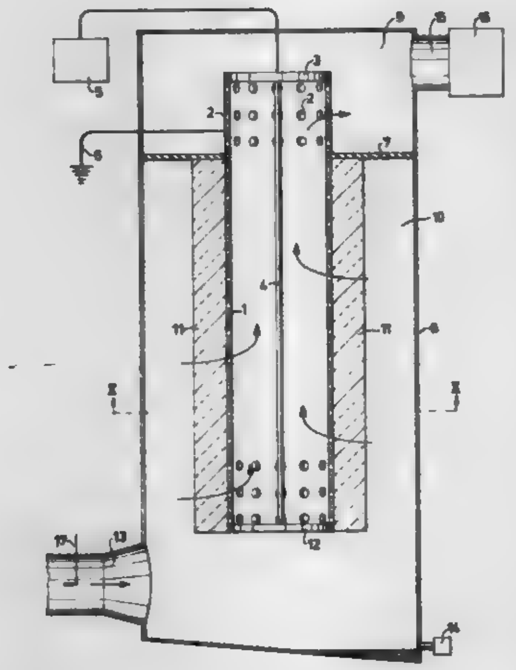
Magnus Alskog, Skara, Sweden, assignor to Aktiebolaget Lectrostatic, Skara, Sweden

Filed Jan. 29, 1975, Ser. No. 545,077

Claims priority, application Sweden, Feb. 13, 1974, 7401939

Int. Cl.² B03C *3/45*

U.S. Cl. 55—131 **8 Claims**



1. An electrostatic filter for separating solid particles or liquid particles or a combination of both suspended in air, comprising:
an electrically conducting, elongate separation tube having air-inlet openings distributed over the surface thereof, said separation tube being open at one end and closed at the other end by an end wall,
at least one elongate electrode positioned within said separation tube in spaced relation thereto,
a high-voltage direct current source connected across said separation tube and said at least one elongate electrode to produce an electric charge current from said electrode to said separation tube,
a layer of air-permeable material on the outer surface of said separation tube covering all of said air-inlet openings,
a housing having an air-intake opening at one end thereof and an air-outlet opening at the other end thereof, said separation tube being supported within said housing by sealing means transversely dividing the interior of said housing into a suction chamber and a separation chamber with the open end of said separation tube communicating with the suction chamber having the air-outlet opening and the remainder of said separation tube projecting into the separation chamber having the air-intake opening, and
suction means connected to the air-outlet opening of said housing for drawing air into said separation tube through said layer of air-permeable material and said air-inlet openings, said layer of air-permeable material being dimensioned and said air-inlet openings being dimensioned and spaced over the surface of said separation tube to provide an air resistance such that substantially the same pressure drop of the air passing through said layer and said air-inlet openings to the interior of said separation tube along the whole of the length of said separation tube covered by said layer is created.

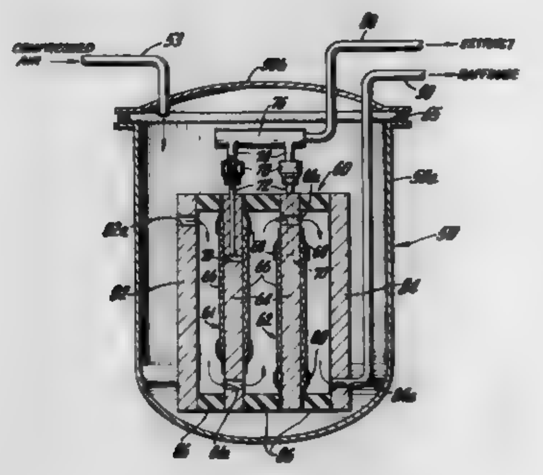
3,979,190
SERIES FEED MEMBRANE STACK

Jonathan W. Hedman, Burnt Hills, N.Y., assignor to General Electric Company, Milwaukee, Wis.

Filed June 4, 1974, Ser. No. 476,419

Int. Cl.² B01D *59/14*

U.S. Cl. 55—158 **9 Claims**



9. The assembly for use in providing gas enriched in oxygen from atmospheric air comprising:
a pressure vessel adapted to receive compressed atmospheric air from a source; an array of selectively permeable membrane cells within said vessel, said array including a plurality of rigid support substrates, each substrate having a polyphenylene ether membrane of smaller dimension sealingly positioned on opposite surfaces thereof, said membranes being adapted to permit oxygen to permeate therethrough at a greater rate than nitrogen, each substrate having passage means for the removal of oxygen enriched gas from the interface of the membranes and substrates; means for mounting said substrates in parallel, spaced apart relation including a plurality of gasket members positioned in sealing relationship with the peripheral portions of each of said substrates and end plates positioned in sealing relationship with the outermost gasket members, said end plates and said substrates each defining a flow port therethrough at alternate ends thereof to form a series flow path through said array; and means for extracting oxygen depleted air from the downstream end of said series flow path.

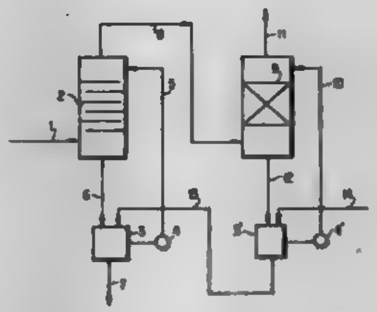
3,979,191
METHOD FOR DENITRATING EXHAUST GASES

Isao Furuta, Mikata; Kazuhito Yagaki, and Masami Takao, both of Kobe, all of Japan, assignors to Kobe Steel Ltd., Kobe, Japan

Filed Jan. 27, 1975, Ser. No. 544,380

Int. Cl.² B01D *53/34*

U.S. Cl. 55—68 **6 Claims**



1. A method for removing NO from an exhaust gas which comprises washing the exhaust gas with a first aqueous solution containing 5–42% wt. of a chloride of Mg or Ca, and 0.01–20% wt. of a hypochlorite of Mg or Ca, and washing said washed gas with a second aqueous solution of an alkali.

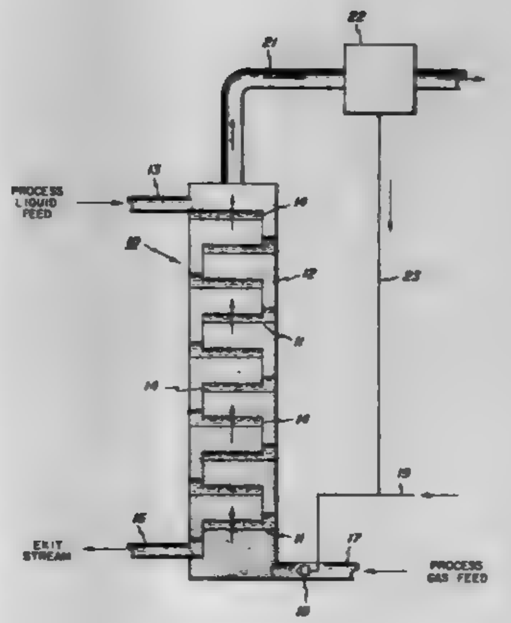
3,979,192
CONTROL OF FOAM GENERATION IN GAS-LIQID SEPARATION TOWERS

Stanley Y. Hobbs, Scotia, and Charles F. Pratt, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 20, 1974, Ser. No. 525,289

Int. Cl.² B01D *47/12*

U.S. Cl. 55—87 **6 Claims**



1. In the process of contacting a liquid with a pressurized gas wherein the liquid is introduced into the upper region of a separation tray tower having a plurality of sieve trays and a plurality of interconnecting downcomers, the pressurized gas being admitted in the lower region of said tower in countercurrent flow with the liquid, the improvement comprising the steps of intermittently dispersing a finely-divided antifoam composition into the pressurized gas at a location below the sieve trays such that the antifoam continues unabated through the plurality of trays in the tower to effectively inhibit foam formation therein.

3,979,193

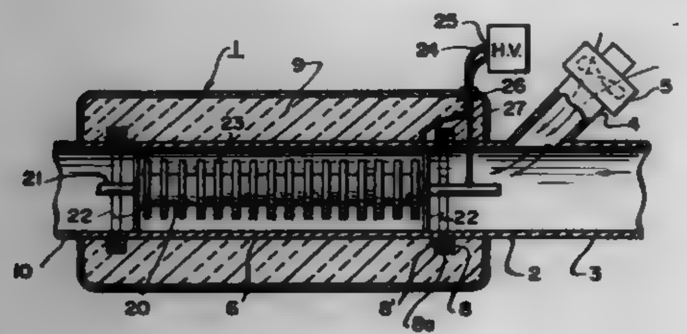
CORONA DISCHARGE APPARATUS

Jack Sikich, 105 S. Orchard, Waukegan, Ill. 60085

Continuation of Ser. No. 268,834, July 3, 1972, abandoned, which is a continuation of Ser. No. 105,013, Jan. 8, 1971, abandoned. This application Nov. 29, 1974, Ser. No. 528,407

Int. Cl.² B03C *3/04*

U.S. Cl. 55—123 **7 Claims**



1. A pollution control apparatus for reducing the amount of pollutants in a fluid discharge comprising:

a pollution elimination means having an inlet adapted to be attached downstream of a source emitting a fluid discharge, an outlet to release treated fluid discharge, and flow passage therebetween,

said pollution elimination means including spaced conductive members positioned downstream of the inlet to allow the fluid discharge to pass adjacent thereto,

a source of alternating electrical potential coupled to the spaced conductive members to create a corona discharge therebetween for effecting chemical reactions to reduce the amount of pollutants in the fluid discharge passing through and the pollutants eliminating means and prevent adherence of material in the fluid discharge to the pollution elimination means,

said spaced conductive members comprise a first hollow conduit and a second elongated member positioned in spaced relation therein,

said second elongated member includes a rod extending co-axially with the longitudinal axis of the flow passage and having a plurality of thin conductive elements mounted thereon,

said conductive elements being cup-shaped and including a serrated peripheral edge,

electrically insulative support means coupled to said rod to maintain said elongated member centrally of said conduit,

said thin conductive elements comprise a plurality of discs, and

the peripheral edge of the discs are serrated to form a series of points from which the corona discharge is emitted.

3,979,194

DUST FILTER

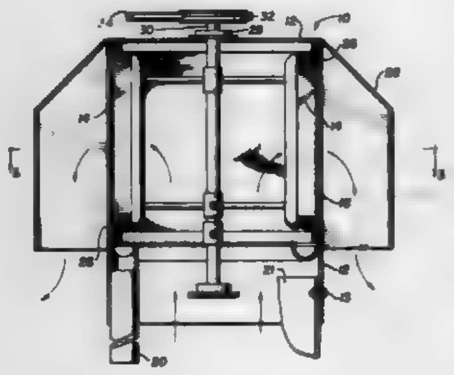
Abram J. Wiser, 1436 N. Tenth St., Enid, Okla. 73701

Continuation of Ser. No. 458,299, April 5, 1974, abandoned. This application Mar. 4, 1975, Ser. No. 555,103

Int. Cl.² B01D *46/04*

U.S. Cl. 55—296 **1 Claim**

1. A dust filter to be mounted on the upper end of an air exhaust pipe comprising, in combination, a circular wall defining an impervious tubular housing having an open bottom inlet for the axial reception of exhaust air and means for attaching it to the upper end of an exhaust pipe; said housing having a closed top and diametrically opposed lateral exhaust outlets formed in the side thereof adjacent to the top; said outlets being of substantial width and extending downwardly more than half of the height of said housing; a tubular filter unit mounted in said housing and covering said lateral exhaust outlets so as to filter dust particles from the air being exhausted therethrough; a power driven shaft rotatably mounted in the top of said housing and depending concentrically therefrom; a pair of brushes vertically coextensive with said filter unit mounted on said shaft for rotation therewith and engaging the inner surface of said filter to brush therefrom dust particles which are deposited by air passing vertically through said open bottom inlet and laterally out of said exhaust outlets; filtered dust particle collecting means concentric and radially coextensive with said filter comprising an annular trough fixed to the inside bottom portion of said circular wall of said housing and encircling said air inlet; a dust outlet pipe connected to said trough and a dust particle scraper fixed to said shaft and conforming with and movable in said trough to move collected dust particles to said dust outlet pipe; and a hood fixed to and projecting outwardly of said housing over each of said entire exhaust outlets to exclude rain from within said housing.



3,979,195

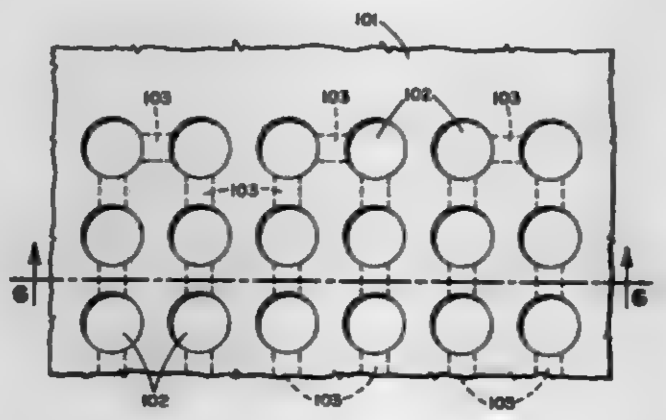
GLASS FIBER ORIFICE PLATE

Edward T. Strickland, San Diego, Calif., assignor to Kaiser Glass Fiber Corporation, Oakland, Calif.

Division of Ser. No. 500,303, Aug. 26, 1974, Pat. No. 3,905,790, which is a continuation-in-part of Ser. No. 432,997, Jan. 14, 1974, abandoned. This application Jan. 8, 1975, Ser. No. 539,403

Int. Cl.² C03B *37/02*

U.S. Cl. 65—1 **6 Claims**



1. An orifice plate for forming glass fiber filaments including a generally flat orifice area having a plurality of orifices therein, each said orifice being adapted for the formation of a fiber-forming cone of molten glass, and capillary grooves in the underside of said orifice plate connecting adjacent orifices, whereby controlled flooding occurs between adjacent orifices connected by a capillary when a fiber drawn from one of said orifices breaks.

3,979,196

METHOD FOR THE HOT-WORKING OF GLASS

Berthold Frank; Bernhard Lersmacher, both of Aachen, and Hans-Jürgen Lydtin, Stolberg, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 17, 1975, Ser. No. 632,273

Claims priority, application Germany, Dec. 12, 1974, 2458787

Int. Cl.² c03B *11/00*

U.S. Cl. 65—25 R **6 Claims**

1. A method for the hot-working of glass by means of a mould which consists of glassy carbon at least at its surface contacting the heated glass, characterized in that the glassy carbon of the mould used has a porous structure, in which pore size and pore density (pore distribution) are adjusted so that during the moulding process the glass cannot penetrate into the surface, and the pores are accessible from the side of the mould remote from the heated glass, that prior to the moulding the pores are filled with a gas-forming liquid or a gas, and the resulting gas film between the glass and the surface of the mould is removed after completed moulding.

3,979,197

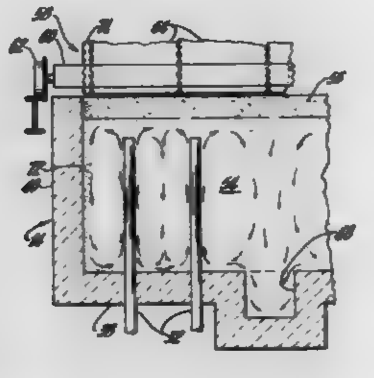
METHOD OF OPERATING GLASS MELTING FURNACE

Magnus L. Froberg, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 458,142, April 5, 1974, abandoned. This application May 1, 1975, Ser. No. 573,700

Int. Cl.² C03B *5/16*

U.S. Cl. 65—135 **14 Claims**



1. In a method of operating an electrically heated, melting furnace having a tank formed in part by a wall of refractory, said method including forming a pool of molten material in the tank, adding a layer of batch material to the surface of the pool, and heating the pool internally, the improvement comprising adding an infrared ray absorbing compound to the surface region of the molten material only adjacent the wall to form adjacent the wall a generally vertically curtain-like region of downwardly moving material, such curtain-like region of downwardly moving material having a composition containing at least one-quarter of one percent of such compound and in an amount sufficient to resist the erosive effects on the refractory wall from infrared radiation emitted from within the pool but insufficient to significantly affect the physical characteristics of the molten pool, said compound comprising an oxide selected from the group consisting of copper, uranium, cobalt, nickel, iron and vanadium.

3,979,198

POLYURETHANE PLANT GROWTH MEDIUM

Charles E. Bardsley, Pascagoula, Miss., assignor to Agritec, Co., Houston, Tex.

Continuation of Ser. No. 410,881, Oct. 29, 1973, abandoned. This application Sept. 27, 1974, Ser. No. 509,980

Int. Cl.² A01N *7/00*

U.S. Cl. 71—1 **4 Claims**

1. A plant growth medium consisting essentially of

a polyurethane matrix having at least 40% open cells and having integral tertiary amine groups, the inductive effect of which provides anion retention and release sites capable of taking on exchangeable ions of nitrate, phosphate, and sulfate,

a filler in an amount of from about 36% to about 60% by weight based on the total weight of the plant growth medium dispersed throughout the polyurethane matrix,

the filler comprised of about 69% to about 78% by weight based on the filler of a calcium-hydrogen montmorillonite clay having cation retention and relase sites capable of taking on exchangeable cations of magnesium, potassium, iron and ammonium nitrogen by replacement of calcium and hydrogen ions, and

from about 22% to about 31% by weight based on the filler of plant nutrients and their carriers comprised of salts and compounds at least partly encapsulated by cells of the polyurethane matrix capable of diffusion through membranes of the cells in response to osmotic pressure,

the cations of the nutrients being exchangeably retained on the cation retention sites and the anions of the nutrients being exchangeably retained on the anion retention sites.

3,979,199

TREATMENT OF PHOSPHATE ROCK IN SOIL TO PROVIDE FERTILIZER AND GYPSUM

Dwight D. Collins, Bakersfield, and Fred W. Lauer, Jr., Hillsborough, both of Calif., assignors to Chemsoil Corporation, Bakersfield, Calif.

Continuation of Ser. No. 371,877, June 20, 1973, abandoned. This application Mar. 10, 1975, Ser. No. 557,017

Int. Cl.² C05B *1/00*

U.S. Cl. 71—40 **5 Claims**

1. The method of providing available phosphate and gypsum to soil comprising:

a. applying in situ to soil to be treated granules consisting essentially of phosphate rock containing phosphorus and calcium, said rock being previously untreated by sulfuric acid; and

b. applying to the soil after application of said granules water into which sulfur dioxide gas has been dissolved whereby to solubilize phosphate values from the rock and to form gypsum in the soil in situ.

3,979,200

N-NITROSO-N-PHOSPHONOMETHYL GLYCINE COMPOUNDS AND HERBICIDAL USE THEREOF

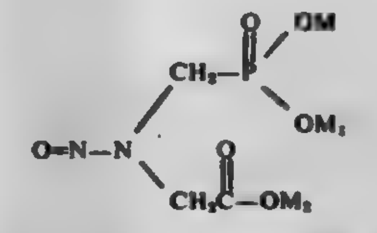
Gerhard H. Alt, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 394,019, Sept. 4, 1973, Pat. No. 3,888,915. This application Apr. 11, 1975, Ser. No. 567,214

Int. Cl.² A01N *9/36*

U.S. Cl. 71—86 **4 Claims**

1. A herbicidal method which comprises contacting a plant with a herbicidally effective amount of a compound having the formula



wherein M, M_1 and M_2 are each individually hydrogen or a salt-forming cation selected from the class consisting of alkali metals, alkaline earth metals, ammonium, aliphatic ammonium or phenyl ammonium.

3,979,201
CHEMICAL REGULATION OF PLANT GROWTH

Jordan J. Bloomfield, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 275,129, July 26, 1972, Pat. No. 3,873,568. This application Nov. 18, 1974, Ser. No. 524,583

Int. Cl.^{2} A01N *9/12*

U.S. Cl. 71—91 **7 Claims**

1. A method of regulating the natural growth or development of dicotyledonous plants which comprises treating said plants with an effective plant-regulating amount of 3-thiabicyclo(3.2.0)heptane-6,7-dicarboxylic anhydride 3,3-dioxide.

3,979,202
META-BIFUNCTIONAL BENZENES AND HERBICIDAL COMPOSITIONS

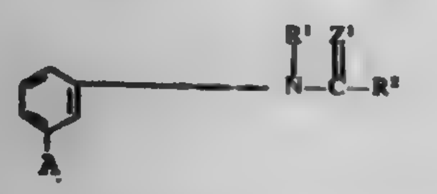
John F. Olin, Ballwin, and Philip C. Hamm, Glendale, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 40,742, May 26, 1970, Pat. No. 3,865,867, which is a continuation-in-part of Ser. No. 647,202, June 19, 1967, abandoned. This application Feb. 6, 1975, Ser. No. 547,539

Int. Cl.^{2} A01N *9/12*

U.S. Cl. 71—98 **6 Claims**

1. A compound of the formula



wherein

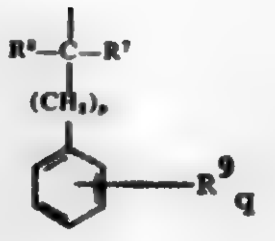
Z^1 is selected from the group consisting of oxygen and sulfur;

R^1 is selected from the group consisting of:

- I. Hydrogen,
- II. $R^3 - (B)_n$ - wherein B is selected from the group consisting of carbonyl and oxygen; R^3 is selected from the group consisting of alkyl having a maximum of 12 carbon atoms; alkenyl having a maximum of 7 carbon atoms and alkynyl having at least 3 and a maximum of 6 carbon atoms; and n is an integer from 0 to 1; and
- III. $R^6O - (R^5O)_m - R^4$ - wherein R^4 is alkylene of not more than 4 carbon atoms; R^5 is alkylene of not more than 4 carbon atoms; R^6 is selected from the group consisting of alkyl and alkenyl of not more than 6 carbon atoms; and m is an integer from 0 to 1;

R^2 is selected from the group consisting of

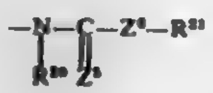
- I. hydrogen,
- II. hydrocarbyl selected from the group consisting of alkyl having a maximum of 12 carbon atoms, alkenyl having a maximum of 8 carbon atoms, alkynyl having a maximum of 6 carbon atoms and haloalkyl having a maximum of 6 carbon atoms, and a maximum of 3 halogen atoms;
- III. $R^6O - (R^5O)_m - R^4$ - wherein R^4, R^5, R^6 and m are as previously defined,
- IV. cycloalkyl and alkylcycloalkyl having 3 to 7 ring carbon atoms and a maximum of 4 chain carbon atoms;
- V. phenyl and substituted phenyl having a maximum of two substituents said substituent being selected from the group consisting of halogen, and alkyl having a maximum of 4 carbon atoms; and
- VI. aralkyl of the formula



wherein

R^7 is selected from the group consisting of hydrogen, alkyl having a maximum of 4 carbon atoms, alkenyl having a maximum of 3 carbon atoms and haloalkyl having a maximum of 4 carbon atoms and a maximum of 3 halogen atoms; R^8 is selected from the group consisting of hydrogen, alkyl having a maximum of 4 carbon atoms and haloalkyl having a maximum of 4 carbon atoms and a maximum of 3 halogen atoms; R^9 is independently selected from the group consisting of alkyl having a maximum of 4 carbon atoms, alkoxy having a maximum of 2 carbon atoms, and halogen; p is one of the integers 0 to 2; and q is one of the integers 0 to 2; and

A is



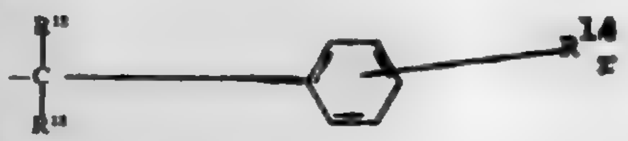
$$-\underset{\substack{|\\ R^{20}}}{N}-\underset{\substack{\|\\ Z^{5}}}{C}-Z^{6}-R^{21}$$

wherein

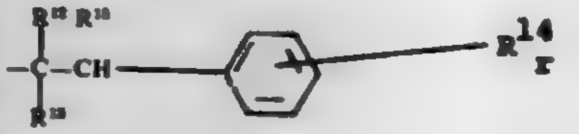
Z^5 and Z^6 are oxygen;

R^{20} is selected from the group consisting of hydrogen, alkyl having a maximum of 6 carbon atoms and alkenyl having a maximum of 6 carbon atoms; and

R^{21} is selected from the group consisting of alkyl having a maximum of 8 carbon atoms, alkenyl having a maximum of 6 carbon atoms, cycloalkyl having from 3 to 7 ring carbon atoms; cyclohexenyl, phenyl, substituted phenyl having a maximum of two substituents said substituents being selected from the group consisting of halogen, nitro and alkyl having a maximum of 4 carbon atoms, the group



and the group



wherein

R^{12} and R^{13} are each independently selected from the group consisting of hydrogen, alkyl having a maximum of 4 carbon atoms, alkenyl having a maximum of 3 carbon atoms, chloroalkyl having a maximum of 3 carbon atoms and a maximum of 3 halogen atoms, chloroalkenyl having a maximum of 3 carbon atoms and 3 halogen atoms, provided that only one of R^{12} and R^{13} can be alkenyl or chloroalkenyl; R^{14} is selected from the group consisting of halogen, alkyl having a maximum of 4 carbon atoms, nitro, alkoxy having a maximum of 3 carbon atoms, R^{15} is selected from the group consisting of alkyl and alkenyl each having a maximum of 4 carbon atoms, provided that R^{15} is other than alkenyl where either R^{12} or R^{13} is alkenyl, and r is one of the integers 0 to 2.

6. A phytotoxic method which comprises contacting a plant with a phytotoxic effective amount of a compound of claim 1.

3,979,203
SULFONAMIDO HERBICIDAL COMPOSITIONS AND PLANT CONTROL METHODS USING THE SAME

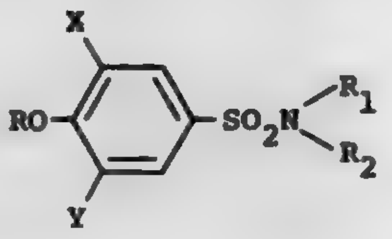
Milon Walker Bullock, Hopewell, and Bryant Leonidas Walworth, Pennington, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 219,123, Jan. 19, 1972. This application Sept. 12, 1974, Ser. No. 505,407

Int. Cl.^{2} A01N *9/14*

U.S. Cl. 71—103 **8 Claims**

1. A method for the control of undesirable plant species comprising contacting said undesirable plant species with a herbicidally effective amount of a compound having the formula:



where X is a member selected from the group H, Br, and Cl; Y is a member selected from the group NO_2, Br, and Cl; R is a member selected from the group H, alkanoyl C_1–C_4 and N-alkylcarbamoyl C_1–C_4; R_1 is a member selected from the group H, alkyl C_1–C_6 and alkynyl C_3–C_6; R_2 is a member selected from the group alkyl C_1–C_6 and alkynyl C_1–C_6, with the proviso that when X is H then Y must be NO_2.

3,979,204
PLANT GROWTH REGULANT COMPOSITIONS COMPRISING 2-CYANO-BICYCLO[2,2,1]HEPTANE

Helmut Timmler, Wuppertal, and Klaus Lurssen, Koenigsdorf, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 16, 1974, Ser. No. 533,392

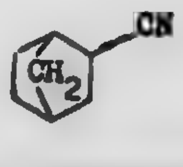
Claims priority, application Germany, Jan. 5, 1974, 2400454

Int. Cl.^{2} A01N *9/20*

U.S. Cl. 71—105 **9 Claims**

1. Plant growth regulating composition which consists essentially of a carrier selected from the group consisting of (1) a ground natural mineral or a ground synthetic mineral solid carrier containing a surface-active agent selected from the group consisting of non-ionic and anionic emulsifiers, dispersants and foam forming agents and mixtures of such agents and (2) a liquid carrier selected from the group consisting of aromatic hydrocarbons, chlorinated aromatic or aliphatic hydrocarbons, aliphatic hydrocarbons, ethers, esters, ketones, strongly polar solvents and water and containing a surface-active agent selected from the group consisting of a non-ionic and anionic emulsifiers, dispersants and foam-forming agents, and mixtures of such agents, and

a 2-cyano-bicyclo[2,2,1]heptane of the formula



(I) ,

comprising from 0.1 to 95% by weight of the total composition and in amount sufficient to increase the yield of crop plants.

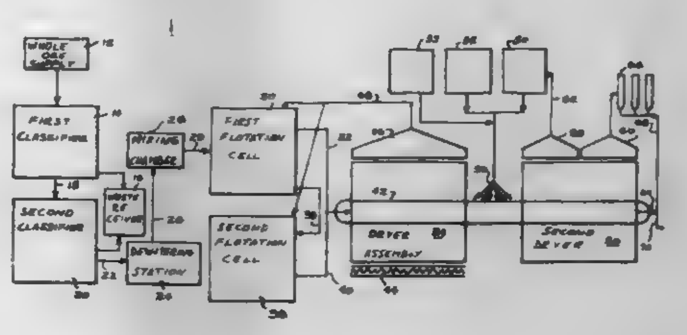
3,979,205
METAL RECOVERY METHOD

Fritz W. Wanzenberg, 9 Campbell Lane, Larchmont, N.Y. 10538

Continuation-in-part of Ser. No. 132,061, April 7, 1971, Pat. No. 3,819,363, which is a continuation-in-part of Ser. No. 49,455, June 24, 1970, abandoned. This application June 19, 1974, Ser. No. 480,965

Int. Cl.^{2} C22D *7/00*

U.S. Cl. 75—10 R **34 Claims**



1. A method of treating noble metal containing sea carbonaceous ore having therein noble metal containing composite organic materials and gangue fractions, including sand and shells, to produce therefrom elemental noble metals, noble metal oxides and other noble metal compounds, said method comprising:

stripping said noble metal containing composite organic materials, having therein naturally occurring carbonaceous reducing agent components, from said gangue fractions to form a carbonaceous concentrate;

treating said noble metal containing composite organic materials with a strong oxidizing agent in amounts substantially stoichiometrically balanced with said carbonaceous reducing agent components of said composite organic materials;

heating said treated composite materials until said materials autogeneously ignite;

allowing complete combustion of said carbonaceous reducing agent components and said strong oxidizing agent in said treated composite materials, whereby the energy released by said autogeneous ignition is sufficient to drive all said noble elemental metals, noble metal oxides and other noble metal compounds into the vapor phase to produce thereby a particulate plasma with solid non-combustible residues remaining in the form of an ash; and

recovering from the vapor phase said noble elemental metals, noble metal oxides and other noble metal compounds.

3,979,206
PROCESS FOR THE PREPARATION OF MAGNESIUM

Servaas Middelhoek, Arnhem, and Diederich J. Baan, Ede, both of Netherlands, assignors to Billiton Research B.V., Netherlands

Filed Jan. 14, 1975, Ser. No. 540,921

Claims priority, application Netherlands, Feb. 18, 1974, 7402177

Int. Cl.^{2} C22B *26/22*

U.S. Cl. 75—67 R **14 Claims**

1. A process for reducing magnesium oxide in an oxidic magnesium-containing material to form magnesium which comprises reacting said oxidic magnesium-containing material with carbon, in the presence of, and in admixture with, an additional material consisting essentially of iron, cobalt, nickel, chromium or manganese metal, and mixtures thereof, at a temperature between 1000°C. and 2000°C., whereby the carbon is consumed reducing magnesium oxide to magnesium, the additional material remaining as the metal, after the reaction.

3,979,207
REFINING OF NOBLE GROUP METALS

John James MacGregor, London, England, assignor to Matthey Rustenburg Refiners (Proprietary), Johannesburg, South Africa

Filed Dec. 10, 1974, Ser. No. 531,371

Claims priority, application United Kingdom, Dec. 13, 1973, 57793/73

Int. Cl.² C22B *11/04*

U.S. Cl. 75—121 **35 Claims**

1. A process for the separation and purification of platinum, rhodium and iridium present as salts in an aqueous solution which cmprises the steps of:

a. adjusting the pH, as necessary, to provide an acidic solution;

b. contacting the acidic solution with an oxidising agent sufficient to effect the oxidation of all iridium to Ir(IV);

c. contacting the oxidised solution with a tertiary amine of the general formula R_3N where R is alkyl of from 6–12 carbon atoms;

d. removing from contact with the oxidised solution an organic phase containing substantially all of the platinum and iridium present in association with the nitrogen-containing organic compound used in step (c);

e. removing the iridium from the organic phase by contacting with an aqueous solution of a reducing agent leaving substantially all of the platinum in the organic phase; and

f. removing the platinum from the organic phase with an aqueous stripping solution.

3,979,208
DUCTILE ALUMINUM BRONZE ALLOY AND ARTICLE

Norman Coupe Ashton, Huddersfield, England, assignor to N. C. Ashton Limited, Huddersfield, England

Continuation-in-part of Ser. No. 394,625, Sept. 6, 1973, abandoned. This application Sept. 11, 1974, Ser. No. 505,019

Int. Cl.² C22C *9/00*

U.S. Cl. 75—154 **7 Claims**

7. An integral corrosion resistant screw threaded securing member of improved ductility formed from an aluminum bronze alloy consisting essentially by weight of 5% to 8% aluminum; 0.1% to 2% cobalt; 0.10% to 0.25% tin; not more than 0.10% iron; and the balance of copper and impurities associated with copper; and further characterized by having been cold worked at least 15%.

3,979,209
DUCTILE TUNGSTEN-NICKEL ALLOY AND METHOD FOR MAKING SAME

William B. Snyder, Jr., Knoxville, Tenn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Feb. 18, 1975, Ser. No. 550,677

Int. Cl.² B22F *1/00, 1/02*

U.S. Cl. 75—227 **3 Claims**

1. A method of preparing a tungsten-nickel alloy of a ductility characterized by a tensile elongation in the range of about 1.0 to about 20.0 percent in 1 inch at 25°C., comprising the steps of forming a powder mixture consisting of tungsten and about 0.5 to about 10 weight percent nickel, pressing the mixture into a compact, heating the compact in a hydrogen atmosphere to a temperature above 1510°C. to effect liquid-phase sintering of the powder, heating the compact in an inert atmosphere at a temperature above approximately 970°C. to stabilize the matrix phase, and thereafter quenching the compact to room temperature with sufficient rapidity for maintaining the matrix phase in a metastable, face-centered cubic, solid solution of tungsten in nickel while inhibiting the formation of the intermetallic WNi_4.

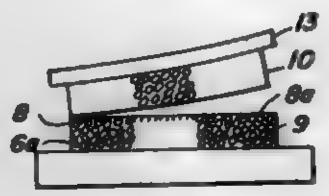
3,979,210
MIGRATION IMAGING MEMBER EMPLOYING A SURFACE SKIN

David A. Buckley, Rochester, and Frank G. Belli, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 22, 1974, Ser. No. 499,716

Int. Cl.² G03G *5/00*

U.S. Cl. 96—1.5 **10 Claims**



1. An imaging member comprising:

a first layer of softenable material containing migration material, said first layer of softenable material overlying a second layer of softenable material, said second layer of softenable material being substantially free of migration material, said softenable material being either electrically photosensitive or substantially electrically insulating, at least one of said layers of softenable material containing a surface skin located at the entire surface of at least one of said softenable layers and at the interface between said layers of softenable material, said surface skin formed by exposing said surface of at least one of said layers of softenable material to hardening radiation sufficient to form said surface skin having a thickness from about 0.01 to about 0.5 micron, said layers of softenable material capable of being softened sufficiently to allow migration of migration material in depth in said layers of softenable material, and through the interface thereof.

3,979,211
VESICULAR IMAGE TRANSFER PROCESS

Saul W. Chaikin, Menlo Park, Calif., assignor to Xidex Corporation, Sunnyvale, Calif.

Filed Feb. 11, 1974, Ser. No. 441,094

Int. Cl.² G03C *5/54, 5/18, 5/34*

U.S. Cl. 96—29 R **10 Claims**

1. A method for transferring a photographic image comprising: exposing a vesicular film having a vehicle and light sensitive diazonium salt uniformly dispersed therein to actinic radiation to form a latent nitrogen gas image in said vehicle of a preselected master image; promptly directly physically contacting the vehicle of said vesicular film while it still contains said latent image with a sensitizer-free vesicular film vehicle having a nitrogen permeability not substantially lower than vehicle of said vesicular film; and applying sufficient heat and uniform pressure to cause an image-forming amount of said nitrogen gas to be transferred to said sensitizer-free vesicular film vehicle as a latent image; said heat being below the amount which causes vesiculation, subjecting said vesicular film vehicle after said gas is transferred to sufficient heat to develop a vesicular image within said vesicular film vehicle.

3,979,212
LAMINATED LITHOGRAPHIC PRINTING PLATE

John E. Peters, and Vincent A. Pagliaro, both of Racine, Wis., assignors to Printing Developments, Inc., New York, N.Y.

Filed Oct. 4, 1974, Ser. No. 512,002

Int. Cl.² G03C *1/94*

U.S. Cl. 96—86 R **9 Claims**

1. An inexpensive, strong, durable, noncracking, high fidelity lithographic printing plate which comprises a laminated base or substrate formed of a soft temper aluminum sheet laminated to a nonstainless steel sheet with an adhesive.

3,979,213
SPECTRALLY SENSITIZED SILVER HALIDE EMULSION CONTAINING AN INTERNAL METAL DOPANT

Paul B. Gilman, Jr.; Francis J. Evans, and Gene L. Oliver, all of Kodak Park Works, Rochester, N.Y. 14650

Continuation-in-part of Ser. No. 263,899, June 19, 1972, abandoned, which is a continuation of Ser. No. 56,702, July 20, 1970, abandoned. This application Aug. 19, 1974, Ser. No. 498,837

Int. Cl.² G03C *1/28, 1/02*

U.S. Cl. 96—108 **8 Claims**

1. A photographic element comprising a support and at least one layer containing a negative-working silver halide emulsion comprising silver halide grains substantially free of surface sensitivity and having metal dopants occluded therein and wherein the radiation sensitivity is predominantly internal to said grains and wherein said grains have a spectral sensitizing dye adsorbed to the surface of said grains having a radiation absorption peak below 700 millimicrons and a cathodic halfwave potential less positive than −1.0 volt present in a concentration which will lower the blue-speed sensitivity of a control sulfur and gold surface-sensitized silver bromoiodide emulsion, wherein the halide is 6 mole percent iodide, of similar average grain size at least 0.3 log E when developed for 3 minutes at 20°C in Kodak Developer D-19 consisting essentially of:

N-methyl-p-aminophenol sulfate	2.0 g
sodium sulfite, desiccated	90.0 g
hydroquinone	8.0 g
sodium carbonate, monohydrated	52.5 g
potassium bromide	5.0 g
water to	1.0 liter.

3,979,214
SINTERED ALUMINA BODY

Louis J. Trostel, Jr., Princeton, Mass., assignor to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 345,550, March 28, 1973, abandoned. This application May 5, 1975, Ser. No. 574,448

Int. Cl.² C04B *35/56, 35/48, 35/70*

U.S. Cl. 106—44 **6 Claims**

1. A monolithic refractory shape consisting essentially of bonded particles of alumina and silicon carbide containing from 15 to 44% by weight of silicon carbide grains, 56 to 85% alumina grains, at least 25% of the alumina grains being finer than 50 microns in size, at least 8% of the body by weight is alumina grains finer than 10 microns in size, and at least 75% of the silicon carbide grains being coarser than 100 mesh.

3,979,215
REFRACTORY ARTICLES AND METHODS OF PRODUCING SAME

Harold Garton Emblem, Grappenhall, near Warrington, and Leslie Edward Shiel, Newcastle-upon-Tyne, both of England, assignors to Zirconal Processes Limited, Bromley, England

Division of Ser. No. 256,728, May 25, 1972, abandoned. This application July 1, 1974, Ser. No. 484,399

Int. Cl.² C04B *35/14*

U.S. Cl. 106—55 **21 Claims**

1. A process for producing a shaped refractory article comprising:

a. forming a gelable binding solution by hydrolyzing together under acidic conditions (1) an organic silicate and (2) a salt of a metal selected from the group consisting of calcium, magnesium, zinc, aluminum, zirconium and chromium, said hydrolyzing being carried out in an aqueous solvent for the silicate and the salt;

b. mixing with the binding solution so formed a refractory powder and an alkaline gelation accelerator to form a slurry;

c. forming a self-supporting body by molding the slurry into a desired shape and allowing the binding solution to gel; and

d. firing the resulting body.

3,979,216
LOW THERMAL EXPANSION COEFFICIENT SYNTHETIC CORDIERITE-CONTAINING CERAMIC BODIES AND METHOD FOR PRODUCING SAME

Carl W. Fritsch, Jr., Dushore, and Sergej-Tomislav Buljan, Towanda, both of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Mar. 27, 1975, Ser. No. 562,773

Int. Cl.² C04B *35/20*

U.S. Cl. 106—62 **10 Claims**

1. A polycrystalline cordierite-containing ceramic body of magnesium aluminum silicate having the composition in weight percent within the range of 13 to 16 percent magnesium oxide, 30 to 36 percent aluminum oxide, and 49 to 54 percent silicon dioxide, the body consisting essentially of at least 90 percent by weight of crystalline phase, remainder glassy phase, the body characterized by a microstructure having microcracks at least 3 micrometers in length and a microcrack occurrence frequency of at least 0.02 per micrometer, and further characterized by a thermal expansion within the temperature range of 25° to 800°C of up to 1100 parts per million.

5. A process for producing a polycrystalline cordierite containing magnesium aluminum silicate ceramic body, the body consisting essentially of at least 90% by weight of crystalline phase, remainder glassy phase, the body characterized by a microstructure having microcracks at least 3 micrometers in length and a microcrack occurrence frequency of at least 0.02 per micrometer, and further characterized by having a thermal expansion within the range of 25° to 800°C of up to 1100 parts per million, the process comprising:

a. combining talc, ball clay and alumina containing starting materials in amounts to achieve a sintered ceramic body having the composition in weight percent 13 to 16 percent MgO, 30 to 36 percent Al_2O_3, and 49 to 54 percent SiO_2, the starting materials containing less than about 600 parts per million total of the alkaline earths selected from the group consisting of calcium, strontium and barium, less than about 6,000 parts per million total of the alkali metals selected from the group consisting of lithium, sodium and potassium, less than about 0.5 weight percent iron and less than about 1 weight percent titanium,

b. ball milling the combined starting materials,

c. consolidating the milled starting materials into a green ceramic body of a desired shape,

d. heating the green body at a rate of up to 350°C per hour to a temperature within the range of about 1350° to 1425°C,

e. maintaining the temperature of the green body within the above range for from ½ hour to 1 hour at the higher temperature, and for at least 6 hours at the lower temperature, thereby to convert the green body to a sintered polycrystalline cordierite-containing ceramic body, and

f. cooling the sintered body at a rate of up to 500°C per hour down to a temperature below 1,000°C.

3,979,217

LIGHTWEIGHT CELLULAR CEMENT COMPOSITIONS AND METHODS OF CASTING THE SAME

David L. Sutton, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 365,918, June 1, 1973, abandoned. This application May 5, 1975, Ser. No. 574,226

Int. Cl.^{2} C04B *21/00*

U.S. Cl. 106—88 2 Claims

1. A method of producing an integral lightweight high strength cement composition having at least one high strength densified layer adjacent at least on lightweight cellular layer comprising mixing hydraulic cement; water added in an amount of about 23–80% by weight of said dry cement; a foam stabilizer added in an amount 0.25–5% by weight of dry cement selected from organic surfactants, inorganic lamellar particulate and mixtures thereof; a dispersing agent selected and added to facilitate formation of a high strength densified layer prior to setting of said composition; and air added in an amount sufficient to reduce density to less than about 80 pounds per cubic foot; forming said cement composition into the desired shape; positioning an air and water permeable material adjacent the cement composition; promoting and controlling formation of said high strength densified layer by establishing a pressure differential across said permeable material causing air and water to flow from the layer to be densified and allowing said composition to set.

3,979,218

PROCESS FOR PREPARING CEMENT

Wolfgang Hesse, Wiesbaden; Guido Lorentz, Frankfurt am Main-Hochst, and Klaus Rauhut, Wiesbaden, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 5, 1975, Ser. No. 555,587

Claims priority, application Germany, Mar. 9, 1974, 2411297

Int. Cl.^{2} C04B *7/02*

U.S. Cl. 106—90 14 Claims

1. A process for the preparation of an acid-hardenable cement composition yielding alkali-resistant cements which comprises mixing a) a solution of a resol resin derived from at least one methylol phenol partially etherified at the phenolic hydroxy group and at least one compound selected from the group consisting of a methylol alkylphenol and a methylol aralkylphenol, both partially etherified at the phenolic hydroxy group in a reactive solvent which increases its molecular size by self-condensation or by reactionn with the resin under setting conditions, the basic phenol components having at least two positions reactive with formaldehyde and the resin being freed from alkaline catalysts used in its preparation, with b) a cement powder containing an acid setting catalyst.

3,979,219

WOOD FINISH REMOVER

Edward H. Chang, Burnsville; William V. Block, Minneapolis, and Mark L. Gruss, Excelsior, all of Minn., assignors to Fremont Industries, Inc., Shakopee, Minn.

Filed Mar. 6, 1975, Ser. No. 555,862

Int. Cl.^{2} B08B *3/04;* **C08L** *91/06*

U.S. Cl. 106—271 3 Claims

1. A film stripping composition for cohesive finish films consisting essentially of from 1% to 11% by weight of hydroxyacetic acid, 3.5% to 11% by weight of a vapor pressure depressant consisting of a mixture of paraffin and toluene; from 5% to 20% by weight of methanol, and from 3% to 15% by weight of an anionic detergent selected from the group consisting of linear alkyl benzenesulfonic acid with an alkyl chain length of from 10 to 13 carbon atoms; from about 0.5% to about 5% water; balance methylene chloride.

3,979,220

METHOD FOR TREATING AND RINSING METAL ARTICLES

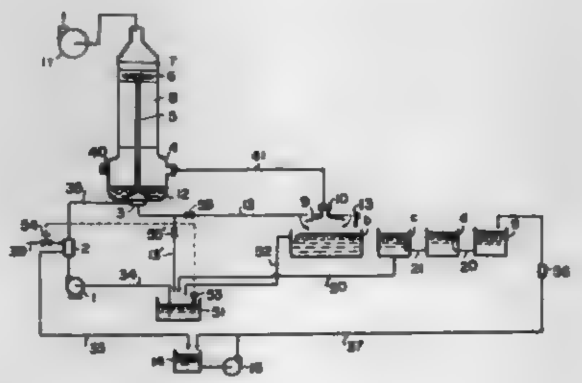
Koichi Ishiyama, Yokohama; Yuji Sakata, Omiya, and Ikuo Wada, Fujisawa, all of Japan, assignors to Ebara Udylite Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1974, Ser. No. 519,707

Claims priority, application Japan, Nov. 15, 1973, 48-128635; Nov. 22, 1973, 48-131483; Jan. 25, 1974, 49-10643

Int. Cl.^{2} B08B *7/04;* **C23G** *1/36*

U.S. Cl. 134—10 7 Claims



1. In a process wherein articles are to be treated in a surface-treatment tank containing process solution having chemical-surface-treating agents therein and washed with wash water in a plurality of series-connected water-washing tanks, the improvement comprising the steps of introducing condensate water at a constant rate from a condensate-storage tank into the water-washing tank furthest from said surface-treatment tank, successively treating said articles in said surface-treatment tank and washing said articles in said series-connected water-washing tanks, transferring said wash water in a direction counter-current to the movement of said articles through said water-washing tanks from the tank furthest from said surface-treatment tank to the tank nearest to said surface-treatment tank, transferring overflow process solution from said surface-treatment tank and overflow water from said water-washing tank nearest said surface-treatment tank to a first receiving tank, transferring process solution from said receiving tank through a heat-exchanger and thence to a concentrator, subjecting said process solution to a concentration treatment in said concentrator, returning concentrated process solution to said surface-treatment tank and to said receiving tank in a controlled ratio, sensing the liquid level in said receiving tank and adjusting the heat input to said heat-exchanger in response to said liquid level, an increase in liquid level calling for an increase in heat input, supplying said heat input as condensing steam by way of said heat-exchanger to cause evaporation of water in said concentrator, transferring the condensate from said heat-exchanger to said condensate storage tank, collecting any mist and harmful gases arising from said surface-treatment tank and subjecting said mist and gases to counter-current contact with process solution in said concentrator to recover active constituents of said process solution from said mist and gases, the extent of concentration being related to the quantity of wash-water introduced into said water-washing tank and the quantity of condensate formed in said heat-exchanger so that said tanks and concentrator may function as a closed system without discharge of surface-treatment ingredients or waste water to the exterior of the system.

3,979,221

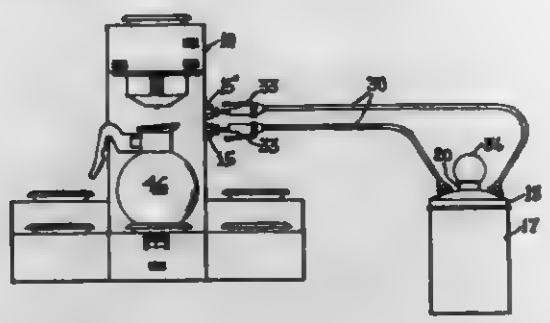
WATER SYSTEM DELIMING APPARATUS

Melvin F. Roberts, Chicago, Ill., assignor to Bloomfield Industries, Inc., Chicago, Ill.

Filed Feb. 28, 1975, Ser. No. 554,132

Int. Cl.^{2} B08B *9/02*

U.S. Cl. 134—99 7 Claims



1. A portable apparatus for deliming a device such as a coffee brewing machine utilizing in its normal operation a water supply system, comprising

a. a water supply intake line provided by the device to be delimed,

b. means in said intake line providing connections for a detachable secondary line system,

c. a detachable secondary line system connectable into said intake line,

d. a refillable sealable tank in said secondary line system for containing a lime solvent for introduction into said intake line,

e. means detachably connecting said secondary line system and said tank in open communication to said intake line, with the lime solvent in said tank introduced under water pressure through said secondary line system into the apparatus, and

f. a directional valve means in said secondary line system automatically operable by the difference in water pressure between said secondary line system and said intake line so as to cooperate with said last-named means for directing the water supply into and out of said tank prior to its introduction into the device to be delimed.

3,979,222

METHOD AND DEVICE FOR CONNECTING ELEMENTS OF A FORCED FLOW ELECTROCHEMICAL STORAGE CELL

Jean-Paul Pompon, Vitry-sur-Seine, France, assignor to Compagnie Generale d'Electricite, Paris Cedex, France

Filed Mar. 19, 1975, Ser. No. 559,948

Claims priority, application France, Apr. 5, 1974, 74.12152

Int. Cl.^{2} H01M *10/00*

U.S. Cl. 429—81 5 Claims

1. In an electrochemical storage cell comprising a plurality of elementary cells each having negative and positive terminals at either end of the cell and being of the type in which an alkaline electrolyte including in suspension a metal suitable for supplying on discharge of the cell a compound soluble in the electrolyte is made to flow within the elementary cells, said elementary cells each having a negative collector grid in contact with said electrolyte, a catalytic active layer and a positive collector grid, said negative and positive collector grids being connected to said negative and positive terminals, respectively, the method of connecting said plurality of elementary cells in series to form said storage cell comprising the steps of

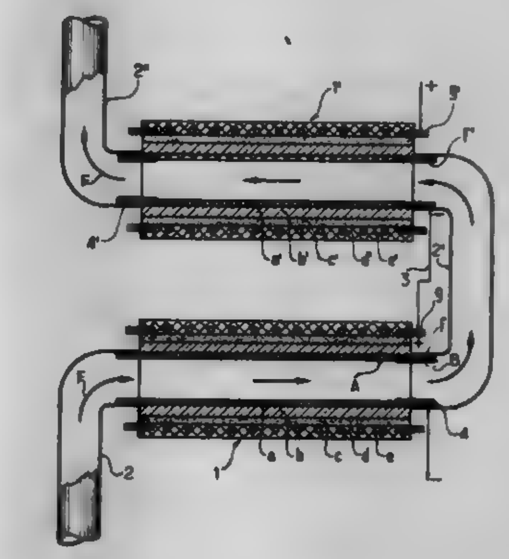
hydraulically feeding each of said elementary cells in series with said electrolyte,

electrically connecting said elementary cells in series, and

electrically insulating the negative terminal of each elementary cell located hydraulically the nearest to the following elementary cell having a higher potential so that the interference transfer of charges resulting from connecting said elementary cells in series can be effected only by ionic conduction in the electrolyte flowing between said elementary cells.

2. An electrochemical storage cell comprising:

a plurality of elementary cells each having negative and positive terminals at either end of the cell and being of the type in which an alkaline electrolyte including in suspension a metal for supplying on discharge of the cell a compound soluble in the electrolyte is made to flow within the elementary cells, said elementary cells each having a negative collector grid in contact with said electrolyte, a catalytic active layer and a positive collector grid, said negative and positive collector grids being connected to said negative and positive terminals, respectively,



means for hydraulically feeding each of said elementary cells in series with said electrolyte,

means connected to said negative and positive terminals for electrically connecting said elementary cells in series, and

insulating means on the negative terminal of each elementary cell located hydraulically the nearest to the following elementary cell having a higher potential for electrically insulating said negative terminal from said electrolyte so that the interference transfer of charges resulting from connecting said elementary cells in series can be effected only by ionic conduction in the electrolyte flowing between said elementary cells.

3,979,223

ELECTROCHEMICAL IMPREGNATION OF ELECTRODE FOR RECHARGEABLE CELL

Hanns H. Kroger, Gainesville; Stuart F. Acree, Archer, and Allen P. Akridge, Gainesville, all of Fla., assignors to General Electric Company, Columbus, Ohio

Continuation of Ser. No. 120,504, March 3, 1971, abandoned. This application Mar. 30, 1973, Ser. No. 346,633

Int. Cl.^{2} H01M *4/22*

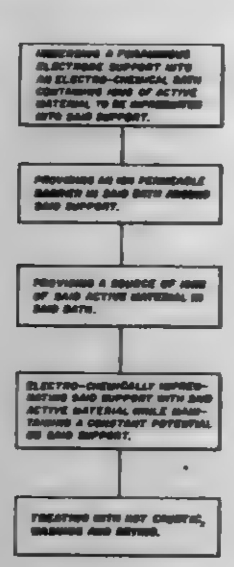
U.S. Cl. 204—24 2 Claims

1. A process for preparing by electrodeposition electrodes for use as positive electrodes for nickel-cadmium, alkaline electrolyte, rechargeable cells, said process comprising the steps of:

a. immersing a porous metallic support in an acidic electrolyte bath comprising solutions of nickel nitrate and cobalt nitrate in predetermined weight proportion to provide a weight ratio of nickel to cobalt of about 9:1;

b. maintaining, with the use of at least one consumable electrode comprised of a nickel-cobalt alloy, the weight ratio of nickel to cobalt substantially constant by supplying ions of nickel and cobalt in said bath in substantially the same weight-ratio; and

c. applying a constant electric potential between said metallic support and said at least one consumable electrode to deposit the hydroxides of nickel and cobalt in the pores of said metallic support in substantially the same weight ratio.


IMMERSING A FORAMINOUS ELECTRODE SUPPORT INTO AN ELECTRO-CHEMICAL BATH CONTAINING IONS OF ACTIVE MATERIAL TO BE IMPREGNATED INTO SAID SUPPORT.
PROVIDING AN ION PERMEABLE BARRIER IN SAID BATH AROUND SAID SUPPORT.
PROVIDING A SOURCE OF IONS OF SAID ACTIVE MATERIAL IN SAID BATH.
ELECTRO-CHEMICALLY IMPREGNATING SAID SUPPORT WITH SAID ACTIVE MATERIAL WHILE MAINTAINING A CONSTANT POTENTIAL ON SAID SUPPORT.
TREATING WITH HOT CAUSTIC, WASHING AND DRYING.

3,979,224
FUEL CELL BATTERY CONSISTING OF A PLURALITY OF FUEL CELLS

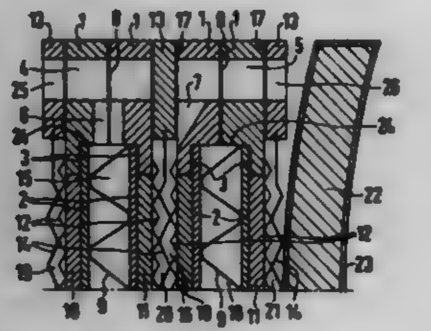
Karl Strasser, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 261,245, June 9, 1972, abandoned. This application Feb. 26, 1974, Ser. No. 446,082

Claims priority, application Germany, June 11, 1971, 2129187

Int. Cl.² H01M *8/02*

U.S. Cl. 429—18 **7 Claims**



1. A fuel cell battery, comprising a plurality of fuel cells, for reacting gaseous reactants and a liquid electrolyte, each of said fuel cells comprising:

plastic frames (1) provided with recesses (24) for enclosing each fuel cell;

asbestos diaphragms (2) cemented at the rim thereof into said recesses, each diaphragm and plastic frame forming a structural part, two of said structural parts being arranged in mirror-image fashion and having the plastic frames thereof cemented together to form a structural unit;

canals in each of said plastic frames for feeding in and discharging reactants and electrolytic liquid;

main ducts in each of said plastic frames for feeding in and discharging reactants and electrolytic liquid;

a support frame (9) disposed between said diaphragms of said structural unit and forming an electrolyte chamber (15);

catalytic material in powdered form disposed on the opposite side of each diaphragm from said support frame and forming electrodes (10 and 11) for said fuel cells;

spacer screens (12) disposed adjacent said catalytic material for supporting said catalytic material adjacent said diaphragms;

the fuel cell battery further comprising:

first metallic contact plates (14) disposed between said structural units and contacting said spacer screens, each of said first metallic contact plates having an elastomer layer (13) pressed onto said plate at its edge forming a frame enclosing said edge of each of said first metallic contact plates, said elastomer layer being provided with openings (25,26) for the main ducts and being cemented to the plastic frames of two of said structural units;

second metallic contact plates (14) disposed at the ends of said fuel cell battery, each of said second metallic contact plates having an elastomer layer (13) pressed onto said plate at its edge forming a frame enclosing said edge of each said second metallic contact plates, and said elastomer layer being provided with openings (25, 26) for the main ducts and being cemented to the plastic frames of two of said structural units; and

end plates (22) comprised of metal and having a plastic coating (23) disposed at the ends of the battery, each of said end plates being disposed adjacent one of said second metallic contact plates, said second metallic contact plates each being disposed between a structural unit and one of said end plates.

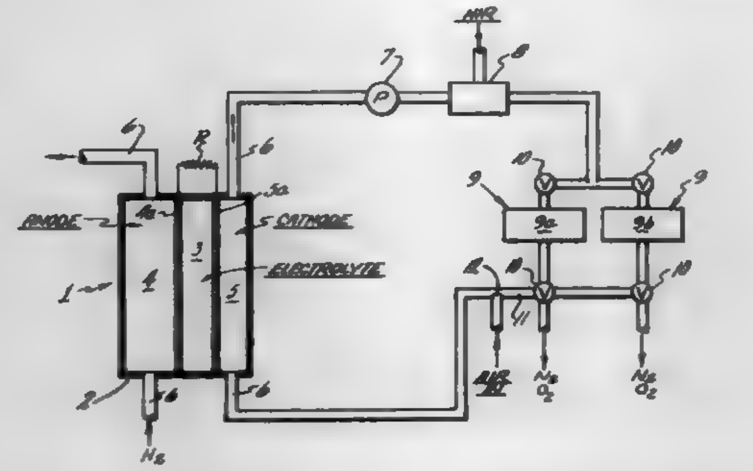
3,979,225
NITROGEN DIOXIDE REGENERATIVE FUEL CELL

Stanley W. Smith, Vernon, Conn., and Lawrence J. Bregoli, Southwick, Mass., assignors to United Technologies Corporation, East Hartford, Conn.

Filed Dec. 13, 1974, Ser. No. 532,568

Int. Cl.² H01M *8/06*

U.S. Cl. 429—17 **3 Claims**



1. In a method for operating a fuel cell cathode which comprises passing an oxidant gas stream into contact with an electrolyte on an electrode connected to an external circuit and causing the chemical reduction of the oxidant gas stream to occur with associated transfer of electrons in the external circuit, the improvement which comprises:

a. using as the oxidant gas stream a mixture comprising gaseous nitrogen dioxide and gaseous oxygen in an amount sufficient to oxidize a substantial portion of the nitric oxide formed by the reduction of nitrogen dioxide back to nitrogen dioxide during passage through the fuel cell cathode;
b. exhausting said oxidant gas stream from the fuel cell cathode;
c. introducing air into said exhaust gas stream;
d. separating the nitrogen dioxide in said gas stream from the remaining components of the gas stream formed according to step (c);
e. introducing air into the nitrogen dioxide stream obtained according to step (d); and,
f. introducing the gas stream produced by step (e) into the fuel cell cathode and repeating steps (a) through (f) continuously to provide recirculation and regeneration of said oxidant gas stream.

3,979,226
THERMAL GENERATOR WITH PARALLEL CIRCUITS

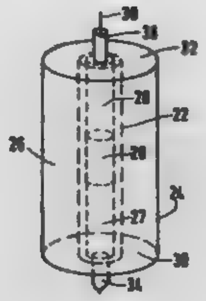
Theodor Renner, Nurnberg-Eibach; Dieter Falkenberg; Gerhard Rittmayer, both of Erlangen, and Georg Grübmuller, Nurnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 13, 1974, Ser. No. 496,997

Claims priority, application Germany, Aug. 30, 1973, 2343840

Int. Cl.² H01L *35/10;* G21H *1/10*

U.S. Cl. 136—208 **3 Claims**



1. A thermal generator including a plurality of film thermocouples deposited on an insulating carrier in the form of a winding which comprises:

a. at least two rows of said thermocouples each arranged on said carrier such that individual thermocouples alternate in polarity along the length of each row and are serially connected to the others in said row; and
b. means for electrically bridging two consecutive thermocouples in one row to two corresponding consecutive thermocouples in a second row, said winding being formed into a cylindrical shape for placement about a correspondingly shaped "heat source", and the length of said bridging means, h, between the pairs of consecutive thermocouples being approximately equal to the axial length of said cylindrical shape.

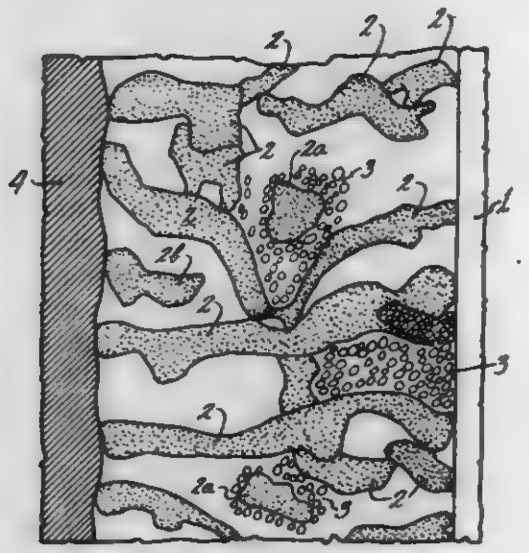
3,979,227
METHOD FOR CATALYZING A FUEL CELL ELECTRODE AND AN ELECTRODE SO PRODUCED

Murray Katz, Newington, and Arthur Kaufman, Bloomfield, both of Conn., assignors to United Technologies Corporation, East Hartford, Conn.

Division of Ser. No. 533,918, Dec. 18, 1974, Pat. No. 3,932,197. This application Jan. 2, 1976, Ser. No. 645,962

Int. Cl.² H01M *4/88*

U.S. Cl. 427—115 **4 Claims**



1. A process for introducing a soluble, catalyst containing material into a conducting particle, hydrophobic-bonded electrochemical cell electrode which comprises:

a. dissolving said soluble catalyst-containing material in a liquid solution of dissimilar liquids which liquid solution is:
    i. capable of wetting the hydrophobic bonding material of the electrode at a first composition range of said liquids,
    ii. incapable of wetting the hydrophobic bonding material at a second composition range of said liquids, and
    iii. capable of changing from said first composition range to said second composition range on evaporation of said solution;
b. contacting said electrode structure with said soluble catalyst-containing material dissolved in the liquid solution in said first composition range, whereby said solution enters the hydrophobic and hydrophilic regions of said electrode structure, and
c. evaporating said solution to change its composition from said first composition range to said second composition range whereby said solution withdraws from the hydrophobic bonding material of said electrode structure.

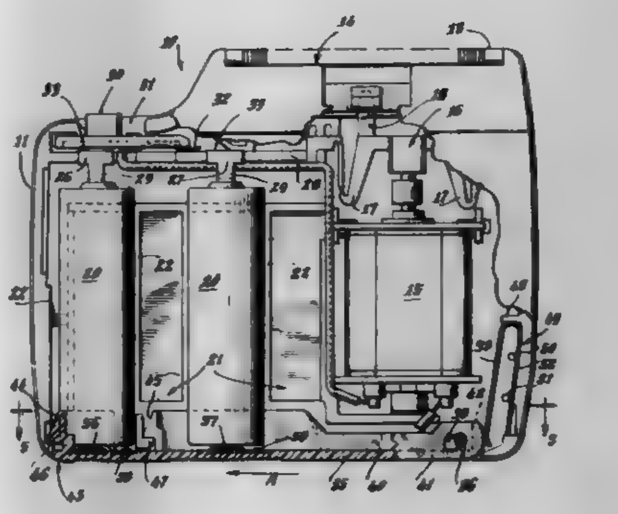
3,979,228
BATTERY OPERATED APPLIANCE

Michael J. Marchetti, Bridgeport, Conn., assignor to Sperry Rand Corporation, Bridgeport, Conn.

Filed May 1, 1975, Ser. No. 573,433

Int. Cl.² H01M *2/10*

U.S. Cl. 429—99 **5 Claims**



1. In a battery operated appliance,
a. a casing,
b. a compartment within said casing,
c. an opening at one end of said compartment for receiving a plurality of batteries therein,
d. closure means for said compartment opening including,
e. a slide member having elongated slots and being operable to cover the compartment opening,
f. hinge means interconnecting the closure means and the casing and including,
g. pintles on opposite sidewalls of the casing in operative engagement with said slots, and
h. detent means on the closure means and the casing to maintain the slide member in a detented position wherein the slide member covers the compartment opening,
i. said detent means including means permitting slidable movement of the slide member on said pintles along the slots to release the slide member from said detented position prior to pivotal movement of the slide member about the pintles.

3,979,229

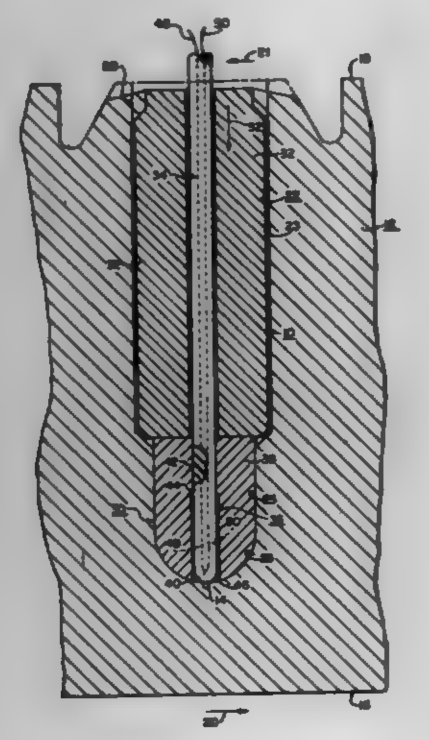
TEMPERATURE MEASURING DEVICE HAVING A DEFORMABLE TEMPERATURE SENSING HEAD THEREOF

Serge P. Barton, Wallingford, Pa., and William R. Berry, Camden, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 20, 1974, Ser. No. 481,270

Int. Cl.² H01V *1/04*

U.S. Cl. 136—232 **6 Claims**



1. A temperature measuring device for electrically measuring the temperature at a predetermined point within a body, said device comprising:

a temperature sensor,

a metallic sheath surrounding said sensor, said sheath having a closed terminus within which said temperature sensor is disposed,

an insulating member surrounding said sensor and disposed within said sheath to electrically isolate said sensor from said sheath,

a mounting head intimately attached to said sheath so as to enclose said terminus thereof, while disposing said sensor in a temperature sensing relationship with said predetermined point in said body,

said body having a cavity therein, said cavity terminating in a predetermined shape adjacent said predetermined point,

said mounting head being fabricated of the same material as said body and conforming substantially to said shape of said cavity adjacent said point by deformation of said head to generate a gripping force maintaining said sensor within said cavity and in said temperature sensing relationship with said predetermined point,

a spacer element disposed to completely fill the remainder of said cavity and abutting said mounting head, said spacer completely surrounding said sheath as said sheath extends from its intimate contact with said head to prevent thermal distortion within said cavity, said spacer also being fabricated of the same material as said body,

a lip at a surface of said body immediately adjacent said cavity, said lip being deformed onto said spacer and imposing a holding force transmitted by said spacer to said mounting head to augment said gripping force to maintain said sensor in said temperature sensing relationship with said predetermined point within said body.

3,979,230

METHOD OF MAKING ISOLATION GRIDS IN BODIES OF SEMICONDUCTOR MATERIAL

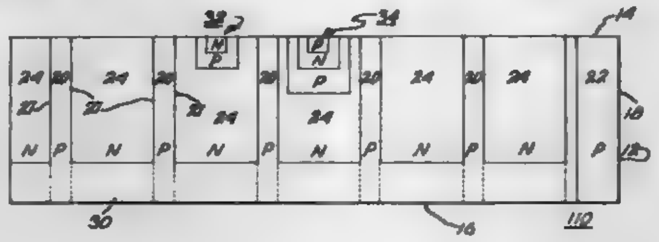
Thomas R. Anthony, and Harvey E. Cline, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 411,022, Oct. 30, 1973, Pat. No. 3,904,442. This application Nov. 1, 1974, Ser. No. 519,913

The portion of the term of this patent subsequent to Sept. 9, 1992, has been disclaimed.

Int. Cl.² H01L *21/228*

U.S. Cl. 148—1.5 **47 Claims**



1. A method for making a grid arrangement in a body of semiconductor material of a semiconductor device to produce a plurality of regions of semiconductor material of the body electrically isolated from one another, the method comprising

a. selecting a body of single crystal semiconductor material having a preferred crystallographic structure, two major opposed surfaces being respectively the top and botton surfaces thereof, a preferred planar orientation of at least the top surface, a first selected type conductivity, a selected level of resistivity and having a vertical axis substantially aligned with a first axis of the crystal structure which is substantially perpendicular to the selected surface of the body;

b. forming a first region of second type conductivity in the body substantially parallel to the two major opposed surfaces and having a major surface coextensive with the bottom surface thereof;

c. disposing a first array of metal wires on the selected major surface having the preferred planar orientation, the metal comprising at least one dopant material, the direction of the metal wires being oriented substantially aligned with at least one of the other axes of the crystal structure;

d. heating the body and the first array of metal wires to a preselected elevated temperature sufficient to form an array of liquid wires of metal-rich semiconductor material on the body;

e. establishing a temperature gradient substantially parallel to the vertical axis of the body and the first axis of the crystal structure, the surface on which the liquid wires are formed being at the lower temperature;

f. migrating the first array of liquid wires through the body from one major opposed surface to the other major opposed surface substantially aligned with the axis of the body and the first axis of the crystal structure to at least intersect with the first region and to form a plurality of first planar regions of recrystallized semiconductor material of the body having solid solubility of the dopant material of the wire therein to provide a substantially uniform level of resistivity throughout the entire region which imparts a second type conductivity thereto, each first planar region being integral with the first region;

g. disposing a second array of metal wires on the selected top surface of the body, the metal of the wire comprising at least one dopant, material, each of the metal wires having a second preferred wire direction which is oriented substantially aligned with a second different axis of the crystal structure and at a first preselected angle to the first stable wire direction;

h. heating the body and the second array of metal wires to an elevated temperature sufficient to form an array of liquid wires of metal-rich semiconductor material on the top surface;

i. establishing a temperature gradient substantially parallel to the vertical axis of the body and the first axis of the crystal structure, the top surface being at the lower temperature; and

j. migrating the second array of liquid wires through the body from the top to the bottom surface substantially aligned with the vertical axis of the body and the first axis of the crystal structure to at least intersect with the first region and to form a plurality of second planar regions each of which intersects and is integral with the first region and at least one of the plurality of first planar regions, the material of the second planar regions comprising recrystallized semiconductor material of the body having solid solubility of at least the dopant metal of the wire therein to provide a substantially uniform level of resistivity throughout the entire region which imparts a second type conductivity thereto, thereby forming a plurality of unit cells of semiconductor material of the initial body electrically isolated from each mutually adjacent cell and from the bottom major surface of a composite which includes the body of semiconductor material and the first region.

3,979,231

METHOD FOR PRODUCING LARGE DIAMETER STEEL PIPES

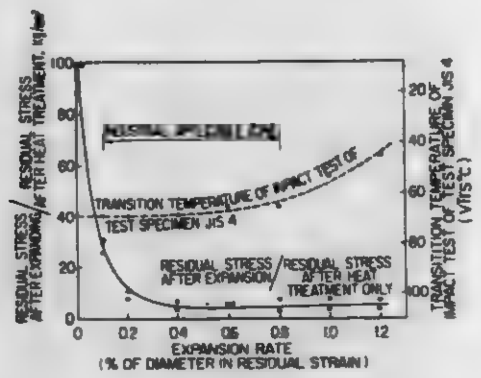
Hisashi Gondo; Masatoki Nakayama; Hajime Nakasugi, all of Kisarazu, and Masanobu Yamaguchi, Kimitsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 3, 1975, Ser. No. 546,783

Claims priority, application Japan, Feb. 4, 1974, 49-14292

Int. Cl.² C21D *9/08, 9/14*

U.S. Cl. 148—12 R **9 Claims**



1. A method for producing a large diameter steel pipe having excellent shape, toughness and tensile strength, comprising subjecting the pipe to descaling, heat treating the pipe by heating the steel pipe at least one time locally successively from one end to the other end of the steel pipe in the axial direction, and forcedly cooling the steel pipe after each heating step at an average thermal conductivity rate not lower than 2000 Kcal/°C m².hr. between 800°C and 500°C and an average cooling rate not lower than 10°C/sec. between 800°C and 500°C, and expanding the steel pipe after the heat treatment.

3,979,232

MERCURY CADMIUM TELLURIDE ANNEALING PROCEDURE

Robert J. Hager, Minneapolis; Joseph L. Schmit, Hopkins; M. Walter Scott, and Ernest L. Stelzer, both of Minnetonka, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 28, 1975, Ser. No. 554,294

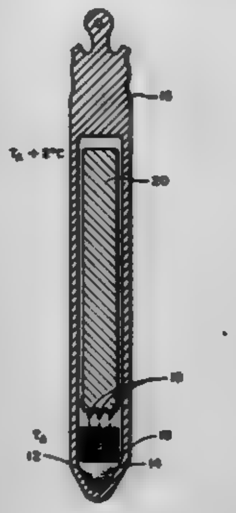
Int. Cl.² C22F *1/02*

U.S. Cl. 148—20.3 **14 Claims**

1. A process for controlling the stoichiometry and free-carrier concentration of a mercury cadmium telluride alloy, the process comprising:

providing a body of the alloy; and

heat treating the body in the presence of mercury vapor and cadmium vapor from a mercury vapor source and a cadmium vapor source other than the body and maintaining the body at a temperature for a time of sufficient duration to adjust stoichiometry and free-carrier concentration.



3,979,233

MAGNETIC NI-CR-MN-GE-FE ALLOY

Nobukazu Kuroda, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 480,116, June 17, 1974. This application Jan. 28, 1975, Ser. No. 544,674

Claims priority, application Japan, Feb. 5, 1974, 49-14747

Int. Cl.² C04B *35/00;* **C22C** *19/05*

U.S. Cl. 148—31.55 **1 Claim**

1. A magnetic alloy consisting essentially of, on a 100 weight percent basis, between 79 and 85 weight percent nickel; between 3 and 6 weight percent chromium; between 0.01 and 1 weight percent germanium; between 0.8 and 6 weight percent manganese; and at least 9 weight percent iron, said alloy being characterized by having a coercive force not larger than 0.07 oersteds, a magnetic flux density greater than 6400 Gausses, an intial permeability greater than 4,000 and a specific resistance greater than 60μΩ-cm.

3,979,234

PROCESS FOR FABRICATING ARTICLES OF TUNGSTEN-NICKEL-IRON ALLOY

Walter G. Northcutt, Jr., Oak Ridge, and William B. Snyder, Jr., Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Sept. 18, 1975, Ser. No. 614,458

Int. Cl.² B22F *3/16, 3/24*

U.S. Cl. 148—126 **7 Claims**

1. A method of fabricating articles of W—Ni—Fe alloy comprising:

a. providing a uniformly blended mixed powder of 85–96% by weight W and the remainder Ni and Fe in a Ni—Fe weight ratio of 5:5–8:2,

b. pressing said powder into a compact,

c. sintering said compact in reducing atmosphere at a temperature at least 1200°C and below the liquid phase temperature for a period of time sufficient to provide an article of at least 95% theoretical density,

d. further heating the article to a temperature 0.1°–20°C above the liquid phase temperature for a period of time sufficient to cause the formation of a liquid phase, yet insufficient to cause slumping of the article,

e. vacuum annealing the article by maintaining the article in a vacuum at 700°–1420°C for sufficient time to remove entrapped gases, and

f. machining the article to the desired dimensions.

3,979,235

DEPOSITING DOPED MATERIAL ON A SUBSTRATE

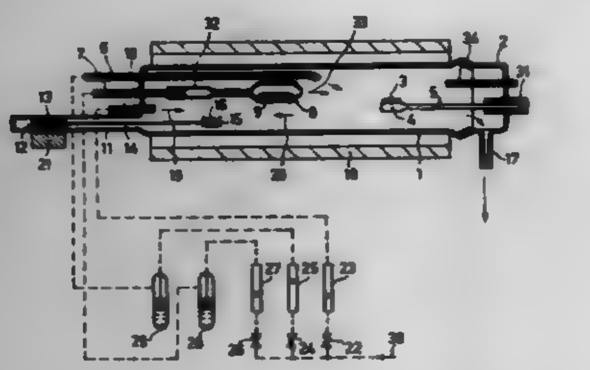
André Boucher, Sevres, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 6, 1975, Ser. No. 538,717

Claims priority, application France, Jan. 10, 1974, 74.00838

Int. Cl.² H01L *7/36*

U.S. Cl. 148—175 10 Claims



1. A method of depositing a thin layer containing at least one dopant on a suitable substrate, placed in a reaction chamber, by chemical vapor deposition, said method comprising: passing a flowing reactive gas stream of a carrier gas containing vapors of components capable of reacting to form the deposited layer, placing a source of at least one dopant in non-gaseous form for said layer inside said reaction chamber but outside said flowing reactive gas stream, passing a flowing stream of a gas non-reactive with said source along said source toward the path of said flowing reactive gas stream and controling the resultant concentration of dopant from said source in the resultant deposited layer by moving said source along said path of the flowing stream of the non-reactive gas.

3,979,236

ANTI-EROSIVE, SOLID ROCKET DOUBLE-BASE PROPELLANT COMPOSITIONS

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 579,655, May 21, 1975. This application Dec. 17, 1975, Ser. No. 641,409

Int. Cl.² C06B *45/10*

U.S. Cl. 149—19.8 2 Claims

1. In a solid double-base propellant composition comprised of a binder of nitrocellulose, a plasticizer compound selected from the energetic plasticizer nitroglycerin and the less energetic plasticizer triethylene glycol dinitrate, and an optional metal fuel, the improvement to reduce erosive burning which is achieved by incorporating into said solid double-base propellant composition limited percentages from about 0.1 to about 1.0% of a silicate which reduces erosive burning which takes place during the burning phase of said solid double-base propellant composition when said solid double-base propellant composition is encased in a solid propellant rocket motor having a large length-to-diameter ratio, said silicate selected from talc, kaolinite, kaolin, muscovite mica, and feldspar.

3,979,237

DEVICE ISOLATION IN INTEGRATED CIRCUITS

William R. Morcom, Indian Harbour Beach, and Thomas J. Sanders, Indialantic, both of Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Apr. 24, 1972, Ser. No. 246,982

Int. Cl.² C23F *1/02*; H01L *7/50*

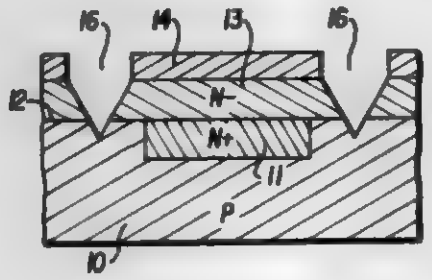
U.S. Cl. 156—3 14 Claims

1. A method of isolating circuit devices in a semiconductor body having first and second substantially parallel major planar surfaces and having at least two contiguous layers of distinct and different conductivity type the major portion of whose boundary lies substantially parallel to said planar surfaces, which comprises

adherently forming on said first planar surface of said semiconductor body a thin film of polish-resistant material,

etching grooves penetrating substantially normal to said first planar surface through said film and to a depth exceeding the depth of said boundary but short of said second planar surface of said semiconductor body, to define portions of said body encompassed by said grooves and in which circuit devices are to be fabricated,

thermally growing an oxide isolation layer on exposed surfaces of said grooves, of insufficient thickness to fill said grooves,



depositing polycrystalline film material on said oxide isolation layer in said grooves in sufficient quantity to fill the remainder of the grooves and overlie said thin film of polish-resistant material,

polishing away the polycrystalline material in excess of that required to fill said grooves until said thin film is encountered to retard further removal and to prevent damage to said first planar surface of said semiconductor body, and

fabricating circuit devices in said body adjacent said first planar surface thereof while leaving the portion of said body unpenetrated by said grooves intact to constitute a rigid support for said devices and to provide junction isolation between said two contiguous layers, with lateral isolation between devices within body portions encompassed by said grooves provided by said oxide isolation layer.

3,979,238

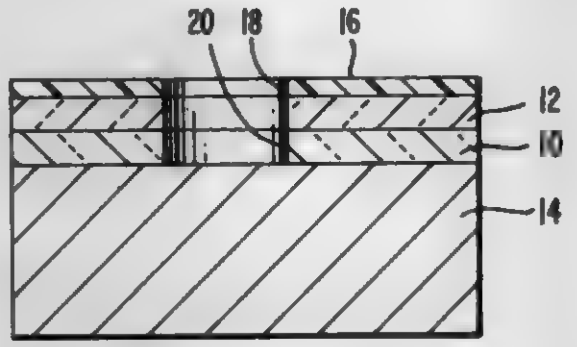
ETCHANT FOR SILICON NITRIDE AND BOROSILICATE GLASSES AND METHOD OF USING THE ETCHANT

Henry Wayne Justice, Washington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 14, 1975, Ser. No. 577,606

Int. Cl.² C03C *15/00*; C09K *13/08*, *13/06*

U.S. Cl. 156—3 10 Claims



4. A method of etching silicon nitride and borosilicate glasses comprising contacting said materials with an etchant consisting essentially of 75 to 25% by volume of phosphoric acid, 25 to 75% by volume of glycerine and fluoboric acid in the amount of 1 to 6% by volume of the mixture of phosphoric acid and glycerine.

3,979,239

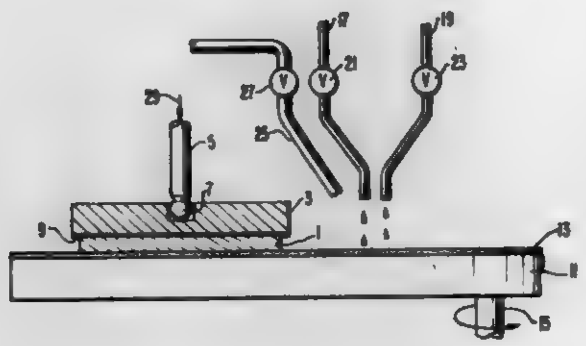
PROCESS FOR CHEMICAL-MECHANICAL POLISHING OF III-V SEMICONDUCTOR MATERIALS

Robert J. Walsh, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 30, 1974, Ser. No. 537,478

Int. Cl.² H01L *21/304*

U.S. Cl. 156—4 17 Claims



1. A process for polishing a surface of a III - V semiconductor compound, comprising mechanically polishing said surface while applying thereto in an acid environment an etchant concentration of an aqueous solution of a compound which yields free chlorine under acid conditions.

3,979,240

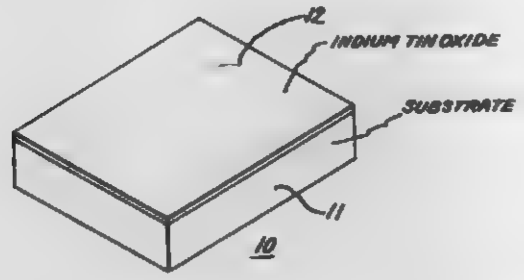
METHOD OF ETCHING INDIUM TIN OXIDE

Mario Ghezzo, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 2, 1975, Ser. No. 573,843

Int. Cl.² C23F *1/02*

U.S. Cl. 156—8 13 Claims



1. A method of etching a first pattern in a layer of indium tin oxide on a surface of a substrate comprising

applying a coating of photoresist material over the exposed surface of said layer of indium tin oxide,

forming in said coating a hardened pattern identical to said first pattern and exposing said layer of indium tin oxide unmasked by said hardened pattern,

immersing said substrate with said hardened photoresist thereon in a solution of hydrobromic acid for a time sufficient to etch away indium tin oxide unmasked by said hardened photoresist,

removing said hardened photoresist from said layer of indium tin oxide.

3,979,241

METHOD OF ETCHING FILMS OF SILICON NITRIDE AND SILICON DIOXIDE

Kazuo Maeda, Chigasaki, and Bunya Matsui, Kawasaki, both of Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

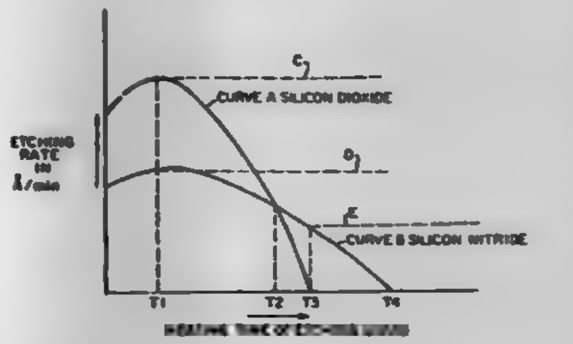
Continuation of Ser. No. 887,575, Dec. 23, 1969, abandoned. This application Mar. 29, 1973, Ser. No. 346,095

Claims priority, application Japan, Dec. 28, 1968, 44-44177

Int. Cl.² H01L *21/302*, *21/316*

U.S. Cl. 156—13 4 Claims

2. A method of manufacture of a semiconductor device having a semiconductor substrate, said method comprising the steps of heating an alcohol selected from the group consisting of ethylene glycol, polyethylene glycol, glycerine, polymethylene glycol, ethylene chlorohydrin, pinacol and ethylene glycol monomethyl ether; dissolving ammonium fluoride in the amount of 2 to 50% by weight of the total solution or alkali fluoride in the amount of 5 to 50% by weight of the total solution in the polyvalent alcohol to produce an etching liquid; forming an insulating layer selected from silicon nitride and silicon dioxide on the substrate; forming a window selectively on said insulating layer to expose a part of the surface of said semiconductor substrate; forming an aluminum wiring layer conductively contacting the surface of the semiconductor substrate within said window and extending onto the surface of said insulating layers; forming an upper insulating layer selected from silicon nitride and silicon dioxide on the wiring layer and said insulating layer; forming a mask for producing a window on a desired portion on an aluminum wiring layer of said upper insulating layer; immersing the semiconductor substrate and the layers thereon in the etching liquid while heating the etching liquid for a period of time before the etching rate of silicon dioxide becomes equal to the etching rate of silicon nitride thereby etching an opening through the upper insulating layer to expose the aluminum wiring layer.



3,979,242

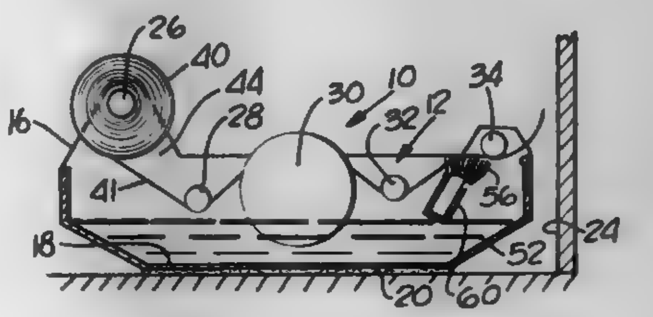
WALLPAPER DISPENSER AND METHOD OF OPERATION

Leo Holland; Joseph P. Holland, and Alvina Holland, all of Westwood, N.J., assignors to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed June 18, 1975, Ser. No. 588,033

Int. Cl.² E04F *13/20*

U.S. Cl. 156—71 5 Claims



1. A wallpaper dispenser apparatus comprising: a housing, means on said housing for rotatably mounting a roll of wallpaper, a reservoir for paste formed in said housing, applicator means communicating with said reservoir, said applicator means positioned for receiving wallpaper from said mounting means, brush means positioned in said housing to act on wallpaper coming from said applicator means for removing excess paste from said wallpaper, wherein said housing has a base adapted to rest on the floor as wallpaper is pulled from said dispenser, said mounting means for said roll of wallpaper being positioned proximate said base in order that said roll of wallpaper may be located at the base of a wall to which said wallpaper is to be applied, said dispenser being configured to enable said wallpaper to be pulled vertically upward from said dispenser while being unrolled from said mounting means and

passed by said applicator means, said applicator means being configured for applying paste to the side of said vertically upward directed wallpaper which faces said wall.

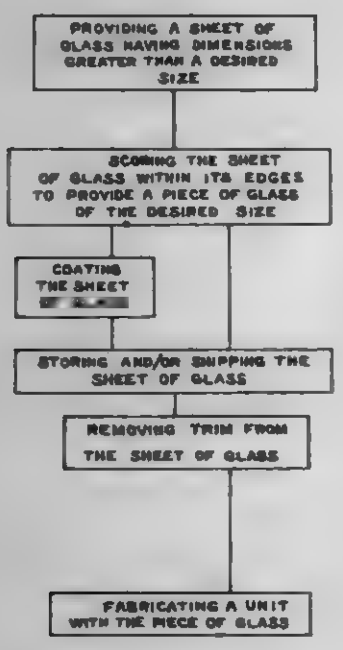
3,979,243
METHOD OF MAINTAINING EDGE STRENGTH OF A PIECE OF GLASS

Robert P. DeTorre, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 438,096, Jan. 30, 1974. This application Mar. 31, 1975, Ser. No. 565,922

Int. Cl.² C03C *27/06*; B26D *3/08*

U.S. Cl. 156—109 **13 Claims**


PROVIDING A SHEET OF GLASS HAVING DIMENSIONS GREATER THAN A DESIRED SIZE
SCORING THE SHEET OF GLASS WITHIN ITS EDGES TO PROVIDE A PIECE OF GLASS OF THE DESIRED SIZE
COATING THE SHEET OF GLASS
STORING AND/OR SHIPPING THE SHEET OF GLASS
REMOVING TRIM FROM THE SHEET OF GLASS
FABRICATING A UNIT WITH THE PIECE OF GLASS

1. In a method of fabricating a multiple glazed unit wherein the method includes the steps of providing at least two pieces of glass each having generally similar predetermined size and shape; providing a spacer between the two pieces to provide a compartment therebetween; and hermetically sealing the edges of the glass pieces, the improvement comprising the steps of:

providing at least one sheet of glass having at least one peripheral dimension greater than a peripheral dimension of a one of the pieces and one major surface having a surface area greater than the surface area of one major surface of the one of the pieces;
scoring the at least one sheet at a first position with a score line that is essentially free of wing or spall to provide a glass piece having trim;
moving the glass piece having trim to a second position;
supporting the glass piece having trim during movement to and/or at the second position by way of the trim to protect the peripheral edge portions of the glas piece from edge contacting forces by the trim;
running the score line on the piece having trim to remove the trim to provide at least one glass piece having the generally similar predetermined size and shape; and
practicing the hermetically sealing step.

3,979,244
RESIN BONDED COMPOSITE ARTICLES AND PROCESS FOR FABRICATION THEREOF

Richard Charles Novak, Glastonbury, and Roscoe Adams Pike, Simsbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 446,890, Feb. 28, 1974, Pat. No. 3,915,781. This application June 2, 1975, Ser. No. 583,129

Int. Cl.² B32B *31/20*

U.S. Cl. 156—179 **3 Claims**

1. A process for manufacturing a composite monolayer tape material of high strength, high modulus filaments in a metal matrix for use in the fabrication of a multilayer tape, composite article comprising the steps of:

positioning a plurality of high strength, high modulus reinforcing filaments parallel to each other and substantially uniformly spaced apart on a layer of metal foil, said filaments being aligned along the tensile axis of the tape material;
depositing a plasma spray layer of metal matrix material over said filaments to bond the filaments to the metal foil layer and to each other;
positioning an additional metal foil layer over the filaments and plasma sprayed matrix material;
consolidating the combination of foil layers, filaments, and plasma sprayed matrix material by the application of heat and pressure thereto until the matrix material is fully densified thus forming a consolidated, monolayer tape;
cleaning at least one side of said consolidated tape; and
applying a layer of adhesive polymer immediately after said step of cleaning to a cleaned side of said tape, the adhesive polymer being selected from the group consisting of a liquid resin, an unsupported layer of thermoplastic resin, a thermoplastic resin supported in a medium of fibrous material, and thermosetting resin supported in a medium of fibrous material.

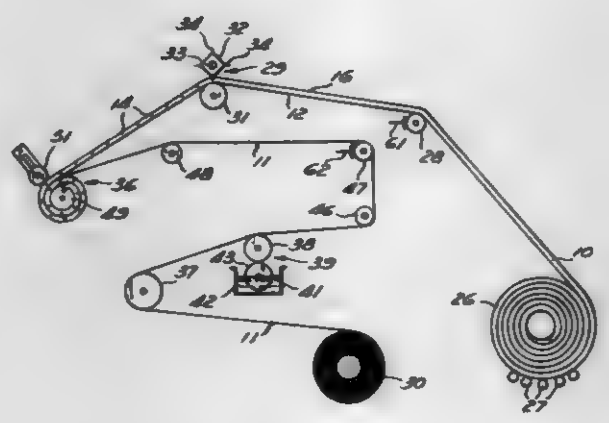
3,979,245
INSULATION BLANKET AND METHOD AND APPARATUS FOR MAKING SAME

John Bondra, Jr., Macedonia, and William R. Ruhling, Northfield, both of Ohio, assignors to Metal Buildings Insulation, Inc., Brooklyn Heights, Ohio

Division of Ser. No. 421,345, Dec. 3, 1973. This application Mar. 7, 1975, Ser. No. 556,283

Int. Cl.² B65H *81/00*

U.S. Cl. 156—184 **15 Claims**



1. A method of laminating a blanket having a facing on one side of an elongated insulation body formed of a loose fiber mat which is bendable and provides spring-back tending to cause it to assume a normal flat and uncompressed position in which the facing is substantially smooth comprising forming a plurality of lateral cuts in said body extending toward said one side from the opposite side thereof, engaging said facing with said one side with an intermediate layer of unset adhesive, rolling said facing and body with said facing inside and allowing said adhesive to set while in such rolled condition.

7. A machine for laminating an insulating body in accordance with claim 6 wherein said cutter is journalled on said machine for rotation about an axis extending laterally with respect to said body, and reaction means operate to hold said body against said cutter as said body moves through said cutter.

3,979,246
HEAT-INSULATED EXHAUST PIPE

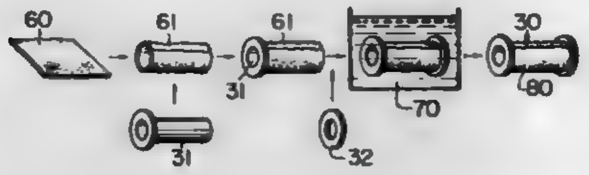
Koichi Ikeda, and Hideo Ikeda, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 4, 1974, Ser. No. 447,741

Claims priority, application Japan, Mar. 5, 1973, 48-25918

Int. Cl.² B65H *81/00*

U.S. Cl. 156—187 **1 Claim**



1. A method of making a heat-insulated pipe for use in an exhaust line of an automobile internal combustion engine, comprising the steps of:

covering the outer surface of a stainless steel tube with an asbestos sheet;
immersing the covered tube in a processing liquid, said processing liquid being a colloidal dispersion in water of a mixture comprising about 45 parts by weight of amorphous silica gel, about 25 parts by weight of alumina and about 10 parts by weight of an organic polymer; and
drying the covered tube after removal from said processing liquid at a temperature of about 120°C thereby to make the asbestos sheet stiffen and cling to the outer surface of the tube.

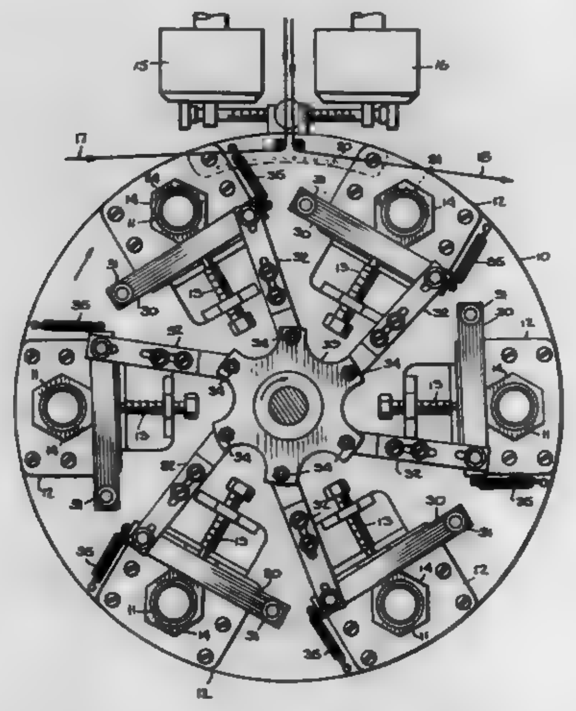
3,979,247
METHOD AND APPARATUS FOR DECORATING ARTICLES

Thomas L. Berg, 1110 23rd St., N. Bergen, N.J. 07047

Filed Jan. 15, 1975, Ser. No. 541,112

Int. Cl.² B44C *1/24*; B32B *1/02*, *31/20*; B41F *17/14*

U.S. Cl. 156—297 **6 Claims**



1. An apparatus for decorating the outer surface of articles at a plurality of decorating stations which comprises:

a. a first decorating station;
b. a second decorating station spaced from said first decorating station;
c. a rotary table adapted to advance the articles being decorated to said first and second decorating stations;
d. a plurality of mandrels rotatably mounted on said rotary table for supporting simultaneously articles to be decorated;
e. holding means engagable with each of said mandrels to restrict the movement of each of said mandrels during advancement of said rotary table so as to maintain orientation of the articles to be decorated with respect to one another;
f. registration means disposed between said first and second decorating stations for controlling the movement of each of said mandrels as it moves from said first decorating station to said second decorating station and changing the orientation of said article moving between said first and second decorating stations from that of the remaining articles mounted on said rotary table;
g. coupling means connected to said mandrel engagable with said registration means when the article is being moved from said first decorating station to said second decorating station, the relationship between said registration means and said coupling means being such that said mandrel is thereby positioned at said first and second decorating stations in accordance with a predetermined relationship; and
h. means for releasing said holding means when said article is being decorated.

6. A method of decorating the outer surface of articles at a plurality of decorating stations including at least a first and second decorating station which comprises:

a. mounting the articles on mandrel type holding means provided on a rotary table;
b. advancing the rotary table and articles mounted thereon to the first of said plurality of decorating stations;
c. restricting the movement of said article during said step of advancing so as to maintain the orientation of the mounted undecorated articles with respect to one another;
d. releasing the article from its movement restriction while at said first decorating station so as to allow the desired decoration to be applied thereto;
e. decorating the article at said first decorating station;
f. engaging the article holding means with a registration means subsequent to said article being decorated at said first decorating station to control the movement thereof and causing said article to be rotated 360° plus the angular distance between said first and second decorating stations while advancing the rotary table and article mounted thereon from said first decorating station to said second decorating station so that the article is thereby positioned with the same orientation at said first and second decorating stations;
g. releasing the article while at said second decorating station so as to allow the desired decoration to be applied thereto; and
h. decorating the article at said second decorating station.

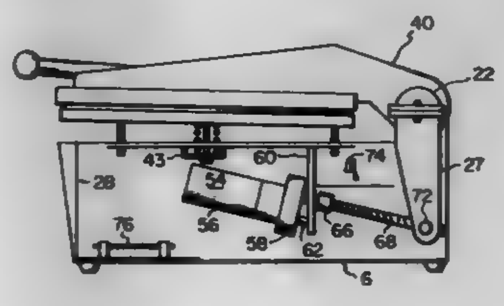
3,979,248
DECAL TRANSFER PRESS

Ernest A. Kussmaul, Sayville, N.Y., assignor to Images De Luxe, Inc., New York, N.Y.

Filed Sept. 12, 1975, Ser. No. 612,983

Int. Cl.² B32B *3/00*; G05G *15/00*

U.S. Cl. 156—358 **17 Claims**



1. A decal transfer press in which a surface heater mounted on an upper platen is brought into surface-to-surface contact

with a lower platen by moving the upper platen downwardly about the horizontal axis of a rock shaft to which the rear end of the upper platen is rigidly connected, wherein:

a. the lower platen is resiliently mounted at a central point thereof to the top of a box-like base,
b. the rock shaft is journaled above the lower platen at the top of said base,
c. a reversible motor within said base is coupled in driving relation to said rock shaft for moving said upper platen about said rock shaft axis,
d. means are provided for selectively energizing said motor to move said upper platen toward and away from said lower platen, and
e. means are provided, responsive to the force applied to said lower platen by said upper platen when said surface heater is brought into said surface-to-surface contact with said lower platen, for deenergizing said motor.

3,979,249
TIRE BUILDING APPARATUS

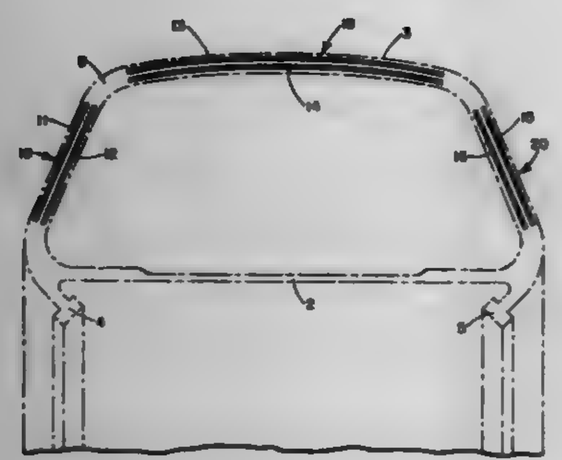
Ernest George Nicholls, Balsall Common, near Coventry, and Bernard Charles Allitt, Sutton Coldfield, both of England, assignors to Dunlop Limited, London, England

Continuation-in-part of Ser. No. 259,151, June 2, 1972, abandoned. This application Aug. 20, 1974, Ser. No. 498,935

Claims priority, application United Kingdom, June 10, 1971, 19818/71

Int. Cl.² B29H ***17/16***

U.S. Cl. 156—416 **12 Claims**



1. An inflatable shaping bag or diaphragm for a tire building or shaping former which is expansible in a radial direction to effectively increase the diameter of at least a portion thereof to a substantially toroidal configuration comprising a flexible elastomeric sheet material and, in at least one circumferentially extending region, a means for reinforcing said region to have a high lateral bending stiffness while remaining radially expansible, said means comprising at least one pair of layers of substantially inextensible reinforcing elements lying in planes including the axis of the bag or diaphragm said elements providing a high stiffness in said planes, the layers of each pair being radially spaced apart and separated from one another by a layer of elastomeric material thereby creating a beam-like structure having a high lateral bending stiffness resulting in the outside shape of the bag or diaphragm in said planes being substantially flat in said reinforced regions.

3,979,250
APPARATUS FOR MAKING CONTINUOUS LENGTHS OF RESIN TUBES

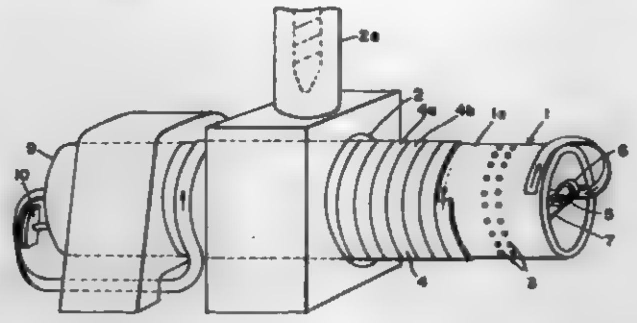
Frede Hilmar Drostholm, 2950 Vedbaek, Denmark

Filed Aug. 16, 1971, Ser. No. 171,921

Claims priority, application Denmark, Aug. 21, 1970, 4315/70

Int. Cl.² B32B ***31/30;*** **B65H** ***81/08***

U.S. Cl. 156—425 **5 Claims**



1. In apparatus for making tubes of resin material, which apparatus is of the kind having a supporting structure on which a carrier strip is mounted and fed through a plurality of adjacent turns of a helical path providing a moving surface for carrying the resin material, characterized in that the carrier strip has a projecting flange at one edge thereof offset inwardly from the strip so that the opposite edge of the helical turns of the strip overlap the flange of the adjacent helical turn, and further characterized by a supporting structure having a substantially cylindrical strip supporting surface, and friction reducing means associated with the interface between said substantially cylindrical supporting surface and the inner surface of the helical turns of the carrier strip.

3,979,251
APPARATUS FOR PRODUCING A PILE CARPET

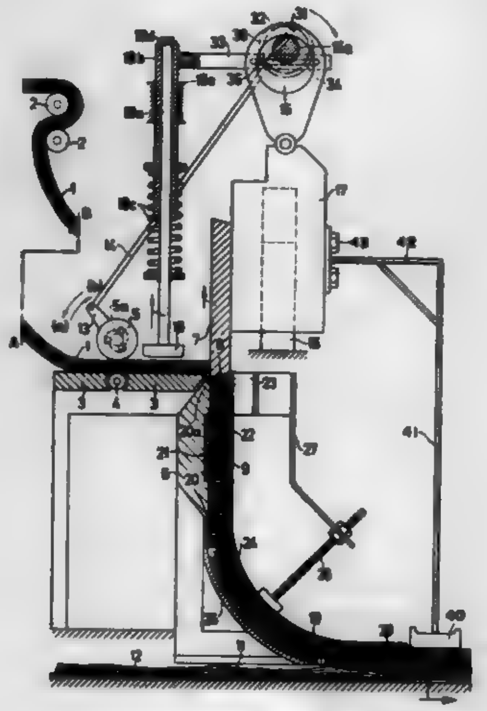
Rudolf Thiel, Hameln, and Kurt Witt, Coppenbrugge, both of Germany, assignors to Firma Otto Golze & Sohne, Kokosweberei, Hameln, Germany

Filed Mar. 5, 1975, Ser. No. 555,913

Claims priority, application Germany, Mar. 6, 1974, 2410710

Int. Cl.² B32B ***5/00***

U.S. Cl. 156—435 **15 Claims**



1. Apparatus for producing pile fabric with step-wise feeding and withdrawing of the free end of a warp composed of fibers, thread or yarn, said apparatus comprising: feed means positioned to feed said warp; cutting apparatus positioned to receive said warp from said feed means, including a moveable cutting member and means for advancing said cutting member for cutting increments of length of said warp and for retracting said cutting member for advancement of additional increments of said warp into cutting position; means for pushing cut increments of warp into a first conveyor means for transporting the cut increments to a second conveyor; means for causing withdrawal of the free end of the warp from contact with said cutting member before retraction of said cutting member; and a second conveyor means for carrying a pile fabric carrier material, positioned to receive said cut increments from said first conveyor; whereby withdrawal of said warp reduces disorganization of the fibers, thread or yarn in the warp increments delivered to the second conveyor.

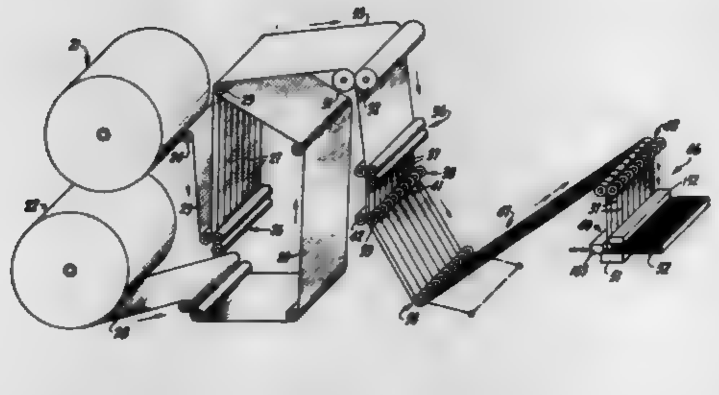
3,979,252
APPARATUS FOR MANUFACTURING CELLULAR STRUCTURES

Edwin R. Hoyt, Everett, Wash., assignor to The Hoyt Corporation, Everett, Wash.

Filed Dec. 21, 1973, Ser. No. 427,381

Int. Cl.² B31D ***3/02;*** **B32B** ***31/18***

U.S. Cl. 156—512 **7 Claims**



6. Apparatus for making a cellular core structure from a web composed of plies of flexible sheet material comprising a laminating section and a cutting and assembly section in which the web is cut into transverse strips of predetermined width and assembled together; said laminating section comprising means for applying first lines of adhesive to a face of one of said plies, means for adhering said ply to a second ply along said lines of adhesive including continuously driven drive rolls which continuously withdraw said plies from supply sources thereof to form a web of said plies, web tensioning means following said drive rolls, and means located between said drive rolls and said web tensioning means for applying second lines of adhesive to a face of said web between the first lines of adhesive; said web cutting and assembly section comprising intermittent drive means including a rotatably mounted drive roller and drive discs adapted to have said web extend therebetween for engagement thereby, a continuously rotated wheel having a drive bar pivotally connected thereto at an adjustable radial distance from the center thereof, and connecting means engaging said drive bar and connected through a one-way clutch to said drive roller whereby said drive roller is periodically rotated through a controllable angle to periodically advance said web a controllable distance, and cutting means following said intermittent drive means and periodically operable to shear transverse strips of predetermined width from the end of the web; and means for continuously maintaining the section of the web between said web tensioning means and said intermittent drive means in the form of a preformed loop having a length in excess of the distance between said intermittent drive means and said web tensioning means.

3,979,253
METHOD FOR DISPERSING GLASS FIBERS FOR THE PREPARATION OF GLASS FILTER MEDIA

Robert C. Clark, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 462,841, April 22, 1974, abandoned. This application Feb. 5, 1976, Ser. No. 655,359

Int. Cl.² D21H ***5/18***

U.S. Cl. 162—145 **7 Claims**

1. A method of making Beta fiber reinforced glass filter media which comprises:

heat cleaning a batch of Beta Glass fibers to remove any starch type sizing from the surface thereof;
mixing a small amount of a hydrophobic fumed silicon dioxide treated with a silane with a solution of hydrochloric acid;
adding said surface cleaned Beta Glass fibers to said hydrochloric acid solution containing said hydrophobic fumed silicon dioxide treated with a silane thereby forming a slurry and conditioning said fibers so that they will be held apart thus preventing roping or tangling of said fibers;
subjecting said slurry to a sonic probe for a period of about 6 minutes to disperse any clumps of Beta fibers into individual strands and to open the fibers to that they will become coated with said hydrophobic fumed silicon dioxide treated with a silane;
adding other glass fibers to said slurry;
mixing said added glass fibers with said Beta Glass fibers in said slurry;
pouring said slurry mix into a hand sheet mold;
permitting said solution to drain from said mold leaving behind said glass fiber mixture which forms a glass fiber filter, and then
removing said filter from said mold.

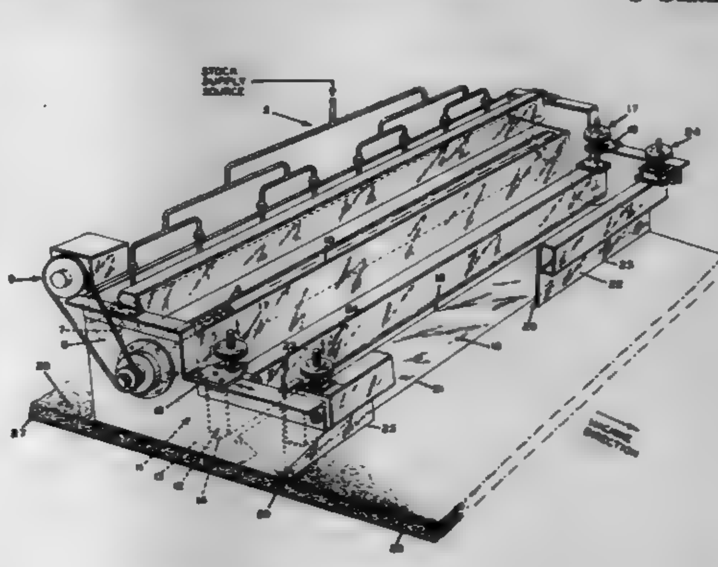
3,979,254
SECONDARY HEADBOX FOR OVERLAY APPLICATION IN BOARD FORMATION

Howard L. McIntyre, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Apr. 6, 1973, Ser. No. 348,752

Int. Cl.² D21F ***1/00***

U.S. Cl. 162—299 **3 Claims**



1. In combination with a board forming fourdrinier having a base sheet forming on the wire thereof, a secondary headbox capable of handling slurries of high solids consistencies positioned above and across the fourdrinier's machine direction, said headbox comprising:

a. a slurry feed header;
b. a first chamber into which the slurry from said header is introduced, said chamber including an underflow baffle beneath which the slurry initially passes and a driven perforated roll into and through which the slurry flows

whereby the slurry is mixed and evenly distributed across the width of said chamber;

c. a first weir over which the slurry from the first chamber passes into a second chamber;
d. a second chamber having a baffle positioned therein under which the slurry flows, the lower edge configuration of said baffle conforming to the hydraulic flow of the slurry whereby any slurry turbulence is dampened, said baffle being positioned from the wall of said second chamber whereby the flow of the slurry through the chamber is controlled;
e. a second weir over which the slurry flows out of the second chamber onto a declined apron; and
f. a baffle positioned from and forming a nip opening with the leading edge of said declined apron whereby slurry flow direction onto the base sheet is controlled, the lower edge of said baffle terminating in a straight edge parallel to the leading edge of the declined apron and positioned from 0 inches to about 3 inches below said leading edge whereby slurry flow is directed vertically downward onto the base sheet carried by the fourdrinier wire passing thereunder.

3,979,255

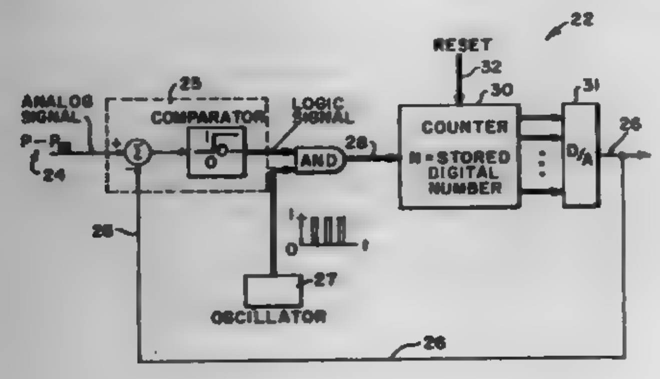
METHOD FOR OPERATING A SYSTEM WITH A VARIABLE EXCURSION MARGIN SETPOINT

Lawrence Ware Bulgier, West Suffield, and Charles Ronald Musick, Vernon, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sept. 4, 1973, Ser. No. 394,030

Int. Cl.^{2} G21C *7/00*

U.S. Cl. 176—20 R **9 Claims**



1. A method of operating a system in response to a system parameter excursion of determinable magnitude but of indeterminate length, the method comprising the steps of:

a. determining a maximum allowable parameter excursion to determine an excursion margin;
b. monitoring said parameter;
c. generating a variable excursion setpoint by tracking and holding the minimum value of the sum of said monitored parameter and said excursion margin;
d. resetting said excursion setpoint to a value larger than said minimum value of the sum of said excursion margin and said monitored parameter only on permission from an independent decision maker;
e. comparing said monitored parameter to said setpoint; and
f. instituting responsive action when said monitored parameter exceeds said setpoint.

3,979,256

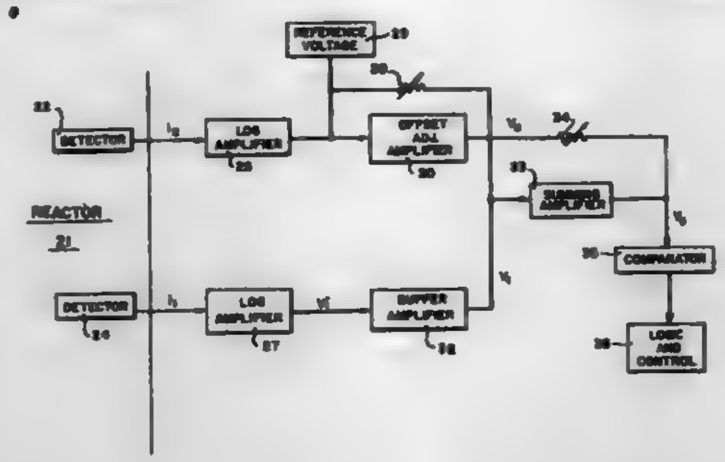
MONITORING CIRCUIT FOR REACTOR SAFETY SYSTEMS

Donald J. Keefe, Lemont, Ill., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Mar. 4, 1975, Ser. No. 555,330

Int. Cl.^{2} G21C *7/00*

U.S. Cl. 176—22 **3 Claims**



1. In a nuclear reactor which includes first and second reactor safety channels coupled to the reactor, each of the first and second reactor safety channels being responsive to the same reactor parameter to develop first and second measurement signals respectively, with each of the first and second measurement signals having a magnitude which is a function of the reactor parameter being measured, a safety circuit for continuously monitoring the first and second reactor safety channels, comprising: first and second log amplifiers coupled to said first and second safety channels respectively, said first and second log amplifiers being responsive to said first and second measurement signals to develop first and second log measurement signals proportional to the log of said first and second measurement signals respectively, a summing circuit to which said log amplifiers are coupled developing a ratio signal being the subtraction of one of said log measurement signals from the other of said log measurement signals, an offset voltage circuit coupled to one of said first and second log amplifiers for applying a reference dc voltage thereto so that with the absolute values of said log measurements equal said ratio signal has a desired nonzero value, and a comparator circuit coupled to said summing circuit and responsive to said ratio signal to develop an alarm signal with the magnitude of said ratio signal being outside of a predetermined range of magnitudes.

3,979,257

BOILING-WATER REACTOR

Diethelm Knödler, Erlangen, and Leonhard Irion, Ruckersdorf, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

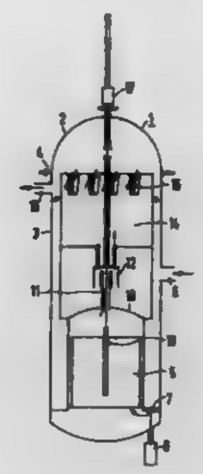
Filed Feb. 28, 1974, Ser. No. 446,957

Claims priority, application Germany, Feb. 28, 1973, 2310080

Int. Cl.^{2} G21C *7/12, 15/16*

U.S. Cl. 176—54 **4 Claims**

1. A boiling-water reactor comprising a reactor pressure vessel having an inside and an outside and upper and lower ends, a reactor core in the inside of said vessel and positioned adjacent to said lower end, a steam dome in the inside of said vessel above said core, said vessel and steam dome forming a steam space above the steam dome inside of the vessel, said vessel having means for feeding feed water to below said steam dome and means for discharging steam from said space, at least one water separator positioned inside said vessel above said steam dome, at least one control rod drive on the outside of said vessel, a control rod drive shaft extending from said drive through said vessel into the vessel's inside, and at least one control rod insertable in said core and connected to said drive shaft, at least one standpipe extending upwardly from said steam dome into said space and having a lower end fixed to the steam dome and opening from said core, said standpipe conducting steam from below said steam dome to said steam space and having an upper portion connected with and supporting said water separator and the standpipe having an upper end opening into the water separator, said standpipe having an inside, said control rod drive being positioned above the pressure vessel's said upper end and said control rod drive shaft extending downwardly from said drive through the vessel's said upper end and said water separator and having a lower end in said inside of said standpipe, said control rod having an upper end connected to the control rod drive shaft's said lower end and said control rod depending from the lower end of said drive shaft and extending below the standpipe's said lower end below said steam dome and being insertable downwardly into said core and withdrawable upwardly from said core, and guide means for guiding said control rod vertically slidably in said inside of said standpipe.



3,979,258

NUCLEAR REACTOR

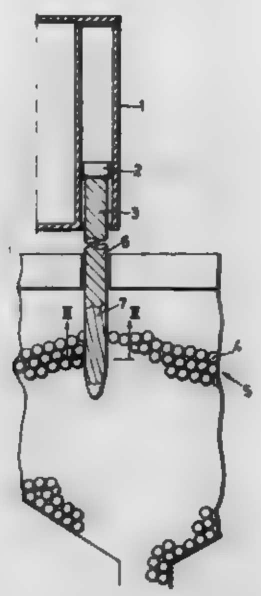
Fritz Schweiger, Hagen, and Erwin Glahe, Uentrop, Unna, both of Germany, assignors to Hochtemperatur-Kernkraftwerke GmbH (HKG) Gemeinsames Europaisches Unternehmen, Uentrop, Germany

Continuation of Ser. No. 234,632, March 14, 1972, abandoned. This application Apr. 1, 1974, Ser. No. 456,850

Claims priority, application Germany, Mar. 16, 1971, 2112472; Nov. 24, 1971, 2158178

Int. Cl.^{2} G21C *7/10*

U.S. Cl. 176—86 R **5 Claims**



1. In a nuclear reactor having a bed of spherical reaction elements forming a core, at least one axially elongated absorber control rod, and means connected to said control rod for inserting and withdrawing said rod in the axial direction into and out of the core, wherein the improvement comprises that said control rod as it is inserted into the core by said means contacts the reaction elements directly, said means is connected to said rod for moving said control rod only in the rectilinear direction into and out of the core in the axial direction of said control rod and wherein the connection of said rod to said means permits rotation of the rod about its longitudinal axis in response to the direct contact of the control rod with the spherical elements independent of the rectilinear movement provided by said drive means, said control rod having an external surface which contacts the reaction elements and said external surface has an axial length with the actual axial length of said external surface in contact with said reaction elements being variable based on the extent to which said control rod is inserted into said core, said axial length consists of a lead-in portion which extends for a substantial portion of said total axial length of said control rod which can contact the reaction elements from the end thereof which first enters the core as the control rod is inserted into the core and a remaining portion which extends axially from the trailing end of said lead-in portion and follows said lead-in portion as it is inserted into the core, the circumferentially extending said external surface of said lead-in portion has a varying radial dimension from the longitudianl axis of said control rod so that the reaction elements are deflected outwardly away from said control rod as it is displaced axially within said core, said remaining portion of said control rod has an axially extending thread means, and said thread means on said remaining portion comprises a screw thread formed continuously about the circumferential periphery of the external surface of said remaining portion so that the moving contact between said screw thread and the reaction elements caused by the movement of said control rod by said means effects the rotation of said control rod.

3,979,259

PROCESS FOR THE PRODUCTION OF FERMENTATION BROTH WITH INCREASED VITAMIN B_{12} CONTENT BY SYNCHRONIZING THE BACTERIUM POPULATION

Bela Johan; Laszlo Szemler; Tamas Szontagh; Laszlo Kuti; Emilia Simonovits; Judit Bekes nee Erdos; Denes Szekely; Janos Kiss; Erzsebet Kovacs nee Komoreczy, and Aniko Hargitai nee Franyo, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Oct. 24, 1974, Ser. No. 517,788

Claims priority, application Hungary, Oct. 26, 1973, RI 524

Int. Cl.^{2} C12D *5/06*

U.S. Cl. 195—28 VB **2 Claims**

1. In a process for the anaerobic septic fermentation of a broth to produce vitamin B_{12} in the presence of bacterial nutrients, methanol, and a methane producing bacteria capable of fermenting methanol to produce vitamin B_{12} and wherein portions of the fermenting broth are periodically removed and replaced by a nutrient broth containing nutrient components in a normal concentration to sustain fermentation, the improvement which comprises in combination the following steps:

a. adding methanol in daily amounts of 0.4 to 0.7 volumes/-volume % for 2 to 4 days to said fermenting broth;
b. thereafter monitoring the pH of said fermenting broth and upon the pH falling to 5.6 to 5.8 removing 5 to 15 volume percent of the fermenting broth and replacing same with an equal volume of a concentrated bacterial nutrient broth which contains the nutrient components in 5 to 12 times higher concentration than said normal concentrations, and repeating this step once during each interval of 5 to 12 days;
c. between repetitions of step (b) and each day for periods of 5 to 10 days removing 5 to 15 volume percent of the fermenting broth daily and replacing same with an equal volume of the bacterial nutrient broth with said nutrient compositions in said normal concentrations together with 0.4 to 1.5 volume percent of methanol; and

d. interrupting the removal of fermenting broth in step (c) for a period up to two days and adding only 0.4 to 1.5 volume percent of methanol to the ferming broth during the interruption.

3,979,260

PRODUCTION OF DEACETOXYCEPHALOSPORIN C

Yoshio Nakao; Kazuaki Kitano; Kazuhiko Kintaka; Shigeru Suzuki; Kazuyoshi Katamoto, all of Osaka, and Kiyoshi Nara, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed June 14, 1974, Ser. No. 479,575

Claims priority, application Japan, June 16, 1973, 48-68106; Oct. 8, 1973, 48-113000; Jan. 16, 1974, 49-8098

Int. Cl.² C12D *9/04*

U.S. Cl. 195—36 C **29 Claims**

1. A method for producing deacetoxycephalosporin C which comprises cultivating *Streptomyces griseus*, *Streptomyces hygroscopicus*, *Cephalosporium acremonium* K-186 (ATCC-20416) *Emericellopsis microspora* K-163 (ATCC-20422), *Paecilomyces carneus* C-2237 (ATCC-20417), *Paecilomyces carneus* C-4053 (IFO-9730), *Paecilomyces persicinus* C-3009 (ATCC-20418), a microorganism of the genus Anixiopsis, a microorganism of the genus Arachnomyces or a microorganism of the genus Spiroidium, which is capable of producing deacetoxycephalosporin C, in a culture medium containing an assimilable carbon source and a digestible nitrogen source until deacetoxycephalosporin C is accumulated in a substantial amount in the cultured broth, and recovering the accumulated deacetoxycephalosporin C from the broth.

3,979,261

PRODUCTION OF GLUCOSE ISOMERASE BY BACILLUS COAGULANS

Helle Outtrup, Vaerloese, Denmark, assignor to Novo Industri A/S, Bagsvaerd, Denmark

Filed Dec. 27, 1973, Ser. No. 428,682

Claims priority, application United Kingdom, Jan. 12, 1973, 1773/73

Int. Cl.² C12D *13/10*

U.S. Cl. 195—65 **2 Claims**

1. A process for the production of glucose isomerase, comprising cultivating under aerobic conditions an atypical *Bacillus coagulans* productive of a glucose isomerase, said *Bacillus coagulans* being capable of growth on only inorganic nitrogen sources as the nitrogen source and at a temperature of 65°C on a nutrient medium containing a nitrogen source, a carbon source, optionally including xylose, small amounts of inorganic salts, at a pH value between 5 and 9 and a temperature between 40° and 65°C, whereafter the glucose isomerase thus produced is recovered.

3,979,262

COMPOSITIONS AND METHODS FOR THE DETERMINATION OF OXIDIZING AGENTS

Paul Hunziker, Basel, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 11, 1975, Ser. No. 548,939

Claims priority, application Switzerland, Feb. 12, 1974, 2150/74

Int. Cl.² C12K *1/04, 1/10*

U.S. Cl. 195—103.5 R **22 Claims**

1. A composition for the colorimetric determination of oxidizing agents comprising:

a. as the first component, an amine selected from the group consisting of an aromatic amine and an acid addition salt thereof with the proviso that substituents on the aromatic amine are not simultaneously in the ortho and para positions;

b. as the second component, a compound, capable of oxidatively coupling with the amine of the first component to form a colored entity, selected from the group consisting of a hydrazone and an acid addition salt thereof; and

c. as the third component, a buffer selected from the group consisting of citric acid, maleic acid and mixtures of citric and maleic acid wherein the amount of the buffer component in the composition is such as to provide for a preselected pH range of from about 3.2 to about 5.5 in a resulting colored medium.

3,979,263

METHOD FOR GROWING CULTURES IN A BODY CAVITY IN THE PRESENCE OF GAS

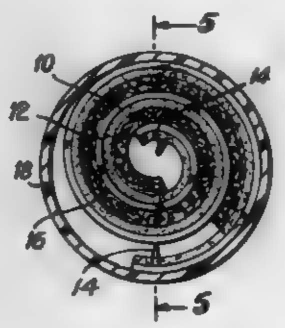
Louis Bucalo, Holbrook, N.Y., assignor to Microbyx Corporation, Holbrook, N.Y.

Continuation-in-part of Ser. No. 405,939, Oct. 12, 1973, Pat. No. 3,864,213, which is a continuation-in-part of Ser. No. 329,862, Feb. 5, 1973, Pat. No. 3,842,166. This application June 12, 1974, Ser. No. 478,706

The portion of the term of this patent subsequent to Oct. 15, 1991, has been disclaimed.

Int. Cl.² C12K *1/04*

U.S. Cl. 195—103.5 R **16 Claims**



1. In a culturing method, the steps of supporting a nutrient for a microorganism on a carrier for the nutrient, situating the carrier with the nutrient thereon in a body cavity which has a given atmosphere while contacting the nutrient with a body fluid which may have therein a microorganism which will grow in the nutrient, modifying said atmosphere for said microorganism to facilitate the growth of said microorganism, maintaining the nutrient while it is in the body cavity exposed to said modified atmosphere so that a microorganism will grow in the nutrient, and, after a given time sufficient for growth of the microorganism in the nutrient adequate to render the microorganism visible, removing the carrier with the nutrient thereon from the body cavity and then checking for the presence of the microorganism.

3,979,264

BAND FOR CARRYING OUT MICROBIOLOGICAL EXAMINATIONS

Heinz Buerger, Kaiserstrasse 25, 6500 Mainz, Rhineland 1, Germany

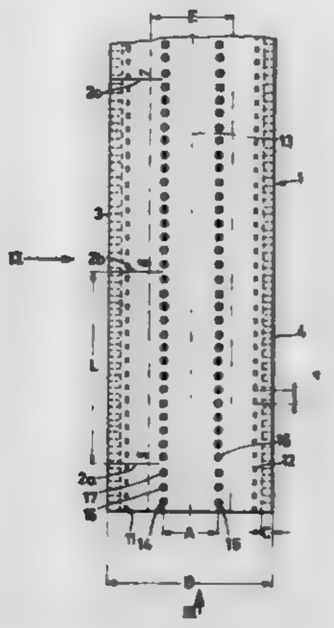
Filed Mar. 31, 1975, Ser. No. 563,839

Int. Cl.² C12K *1/10*

U.S. Cl. 195—139 **18 Claims**

1. In an elongated flexible band having a nutrient medium on a nutrient surface thereof intended for inoculation in microbiological examinations and further having a sufficient length for several samples to be applied in sequence, the improvement comprising a pair of spaced rows of longitudinal spacer means mounted on the opposite surface of said band, said spacer means being of a sufficient height above said opposite surface of said band to prevent the opposite surface of said band from contacting said nutrient surface and said nutrient medium thereon when said band is rolled or folded to effect an engagement of said nutrient surface with said spacer means, said spacer means defining passageway means extending laterally of said band to facilitate the lateral movement of a gas across said nutrient medium when said band is in a rolled or folded condition wherein the nutrient surface is engaging said spacer means.

18. A method for coating and inoculating a band comprising the steps of continuously applying said nutrient medium to said band in liquid condition and wherein after the inoculation of a certain band section with a sample to be examined, a trace of p-nitrophenylglycerin is laid on said band to prevent bacteria from migrating from the section.



3,979,265

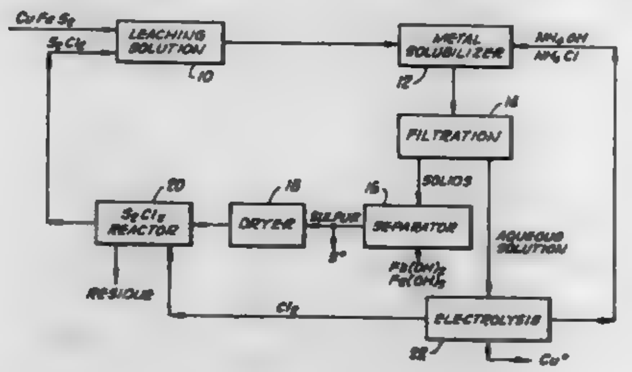
RECOVERY OF METALS FROM SULFUR BEARING ORES

Anthony G. Fonseca, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Dec. 19, 1974, Ser. No. 534,324

Int. Cl.² C25C *1/12, 1/08, 1/16, 1/20*

U.S. Cl. 204—105 R **13 Claims**



1. A process for recovering certain metals which form water-soluble ammonium-containing compounds, from raw materials comprising an ore containing said certain metals in a form leachable with sulfur monochloride and also containing iron and sulfur in a form leachable with sulfur monochloride, comprising:

leaching the raw material with sulfur monochloride at a temperature of from about −30° to about 160°C to remove therefrom as chlorides, the metal to be recovered and iron, and to remove elemental sulfur therefrom;

solubilizing the metal values to be recovered by contacting said chlorides and sulfur with an aqueous solution containing ammonium ions and having a pH of at least about 3 whereby said iron chlorides are converted to iron hydroxides and precipitated; then

recovering the metal values from the aqueous solution by an electrowinning process or by precipitating the metal values as metal oxide.

3,979,266

PROCESS FOR PURIFYING AQUEOUS SOLUTIONS, OF METAL IONS PRECIPITATING AS ARSENIDES, ANTIMONIDES, TELLURIDES, AND SELENIDES

Sigmund Peder Fugleberg, Kokkola, and Jussi Kalevi Rastas, Pori, both of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Sept. 8, 1975, Ser. No. 611,002

Claims priority, application Finland, Sept. 20, 1974, 2754/74

Int. Cl.² C25C *1/16*

U.S. Cl. 204—119 **11 Claims**

1. A process for purifying aqueous solutions of cobalt, nickel and copper ions precipitating as arsenides, comprising:

adding to the aqueous solution as an auxiliary agent at least one of arsenic and arsenic (III) compounds;

maintaining reducing conditions to cement the impurities from the aqueous solution by means of said auxiliary agent; and

contacting the aqueous solution with a quantity of the cementate substantially greater than that primarily cemented from the aqueous solution in order to catalyze the cementation.

3,979,267

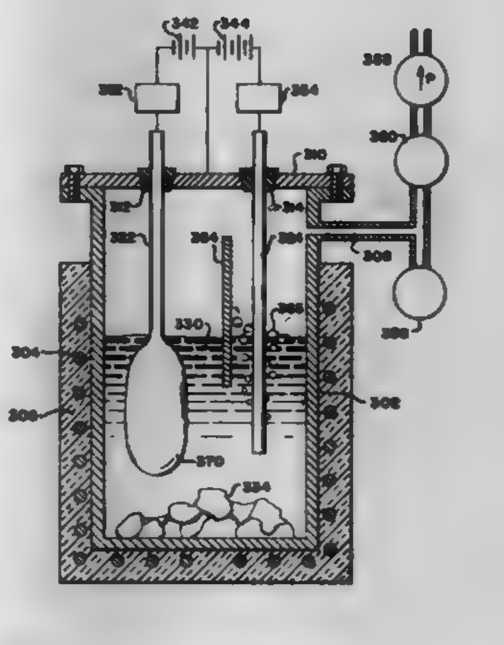
ELECTROLYTIC METHOD

Douglas W. Townsend, 35 Front St. S. Apt. 410, Port Credit Ontario, L5H 2C6, Canada

Continuation-in-part of Ser. No. 220,245, Jan. 24, 1972, abandoned. This application May 15, 1973, Ser. No. 360,467

Int. Cl.² C25D *21/04, 3/54;* **C25C** *3/18, 3/26*

U.S. Cl. 204—130 **11 Claims**



1. For removing substantially all oxygen from a electrolytic melt consisting essentially of at least one fluoride selected from the group of alkali metal fluorides and alkaline earth metal fluorides, the process comprising the steps of:

A. maintaining said melt above its melting temperature;

B. maintaining the ambient pressure on said melt at less than one-third atmosphere;

C. providing in said melt an anode comprised essentially of carbon, and

D. maintaining a positive potential of about 1 to 3 volts on said anode relative to said melt sufficient to remove oxygen but less than the potential at which anode effect occurs.

3,979,268

METHOD AND APPARATUS FOR REMOVING IMPURITIES FROM LIQUID METALS

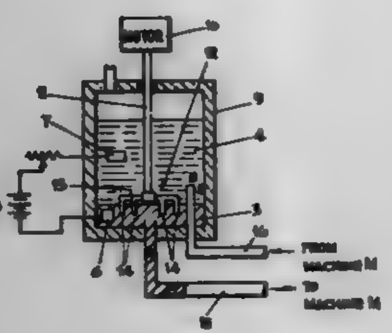
Anthony John Walkden, Carpenders Park, England, assignor to The General Electric Company Limited, London, England

Filed May 28, 1975, Ser. No. 581,487

Claims priority, application United Kingdom, June 6, 1974, 25147/74

Int. Cl.² C25C *3/00*

U.S. Cl. 204—140 15 Claims



1. A method of removing from a liquid metal an impurity produced during circulation of the liquid metal through an equipment, the method comprising: passing a flow of liquid metal from the equipment into a chamber containing a quantity of said liquid metal and a quantity of liquid electrolyte in which electrolyte the impurity dissociates to form positive and negative ions, said electrolyte floating on said liquid metal or vice versa depending on their relative densities; applying a voltage between a pair of electrodes disposed respectively in said electrolyte and said liquid metal in said chamber; and circulating a flow of said liquid metal from said chamber through said equipment and thence back to said chamber with an appreciable quantity of said electrolyte.

3,979,269

METHOD FOR OBTAINING TETRACYCLINEHYDROCHLORIDE

Hristo Dimitrev Vasilev; Simeon Assenov Zahariev, and Danail Yovchev Donev, all of Razgrad, Bulgaria, assignors to DSO "Pharmachim, Bulgaria

Filed Feb. 25, 1975, Ser. No. 553,043

Int. Cl.² B01J *1/12*

U.S. Cl. 204—158 S 4 Claims

1. Method for obtaining tetracycline hydrochloride through interaction of a suspension consisting of tetracycline base in an organic solvent with concentrated hydrochloric acid, wherein the solution containing tetracycline base and hydrochloric acid is treated by high-frequency oscillations.

3,979,270

METHOD FOR CURING ACRYLATED EPOXIDIZED SOYBEAN OIL AMINE COMPOSITIONS

David John Trecker, Old Lyme; George Wayne Borden, East Lyme, both of Conn., and Oliver Wendell Smith, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 476,055, June 3, 1974, which is a division of Ser. No. 343,691, March 22, 1973, Pat. No. 3,876,518, which is a continuation-in-part of Ser. No. 103,912, Jan. 4, 1971, abandoned. This application Mar. 28, 1975, Ser. No. 563,131

Int. Cl.² C08F *8/00*

U.S. Cl. 204—159.14 10 Claims

1. A method for curing acrylated epoxidized soybean oil amine compounds having in the molecule the group:

$$\begin{array}{ll}-\mathrm{CH}- & \mathrm{CH}- \\ \;| & \;| \\ \mathrm{HO} & \mathrm{OOCCHXCH_2NR'_2}\end{array}$$

wherein X is hydrogen or methyl, R' taken singly is alkyl of 1 to 15 carbon atoms or phenyl, and the two R' groups taken together with the nitrogen atom attached thereto form a heterocyclic ring having from 5 to 6 ring atoms, said compound being the reaction product of:

A. epoxidized soybean oil reacted with at least two moles of acrylic acid or methacrylic acid per mole thereof and

B. from 5 to 40 mole percent, based on acrylyl groups of an organic amine of the formula R'_2NH wherein R' is as defined above,

said method comprising exposing said compounds to ionizing radiation or high intensity predominantly continuum light radiation for a period of time sufficient to cure said compound to a tack-free state.

3,979,271

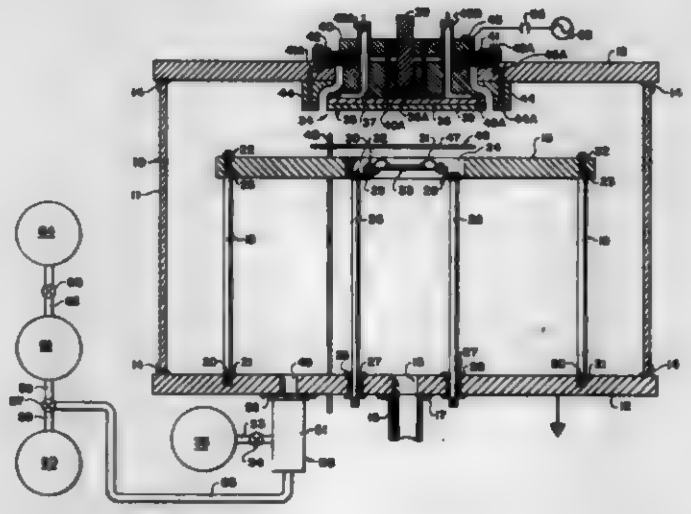
DEPOSITION OF SOLID SEMICONDUCTOR COMPOSITIONS AND NOVEL SEMICONDUCTOR MATERIALS

Alexander J. Noreika, and Maurice H. Francombe, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 23, 1973, Ser. No. 381,653

Int. Cl.² C01C *15/00*

U.S. Cl. 204—192 20 Claims



1. A method of forming a solid semiconductor layer on a substrate comprising the steps of:

A. forming at least one sputter target containing at least one component material selected from the group consisting of Group IIIa-Va and Group IVa-IVa compounds and Group IIIa, Group IVa, and Group Va elements for forming material to be deposited on the substrate;

B. disposing each formed sputter target and a substrate prepared for deposition thereon in a spaced relation in a partial vacuum chamber;

C. introducing into the vacuum chamber a gas mixture containing at least one reactive gas composition containing at least one element selected from the group consisting of Group III*a*, Group IV*a* and Group V*a* elements for forming material to be deposited such that the formed sputter target or targets introduced reactive gas composition or compositions are capable of forming all the materials to be deposited on the substrate;

D. sputtering the component material from at least one said sputter target to deposit material on the substrate; and

E. simultaneously with step D, electrically discharge reacting at least one said reactive gas composition to deposit material on the substrate, and forming on the substrate, with the material deposited by sputtering, said solid layer of semiconductor material.

3,979,272

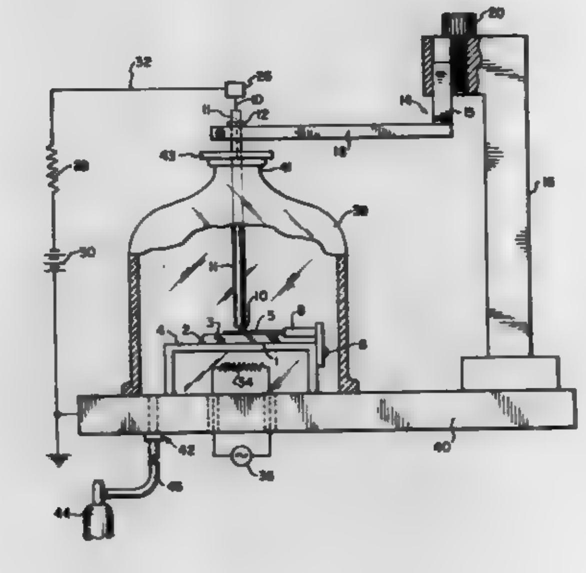
METHOD OF PRODUCING SEMICONDUCTOR DEVICES WITH MINORITY CHARGE CARRIERS HAVING A LONG LIFETIME AND DEVICES PRODUCED THEREBY

Metro M. Chrepta, Neptune, and Harold Jacobs, West Long Branch, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 18, 1974, Ser. No. 489,872

Int. Cl.² H01L *21/203, 21/265, 21/38*

U.S. Cl. 204—192 6 Claims



1. A process for implanting a material for producing a region of charge carriers of one conductivity type into the surface of an intrinsic semiconductor substrate comprising the steps of:

establishing a potential difference between said material and said substrate,

heating said substrate by an electrical heating filament disposed beneath said substrate,

moving said material into proximity to said substrate to draw a single continuous electrical arc therebetween to vaporize said material and to etch a region of the surface of said substrate, and

maintaining said arc for a time sufficient to deposit an amount of the vaporized material into the etched region to form a semiconductor junction between said intrinsic semiconductor substrate and said region of charge carriers.

3,979,273

METHOD OF FORMING ALUMINIDE COATINGS ON NICKEL-, COBALT-, AND IRON-BASE ALLOYS

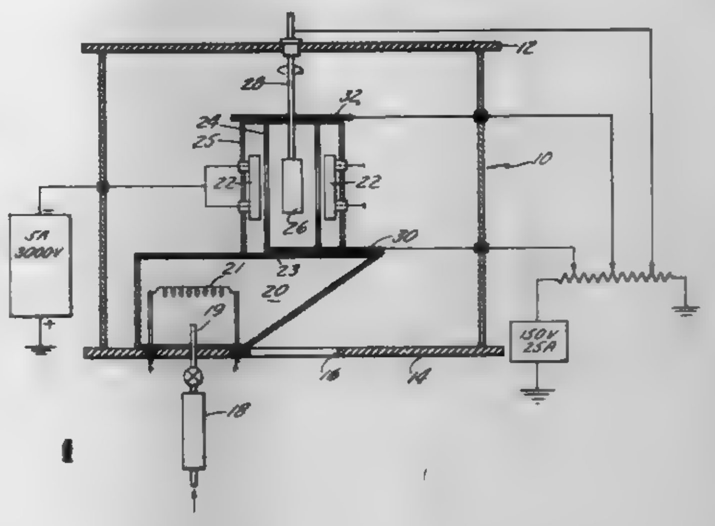
Carlino Panzera, Cromwell, Conn., and Richard Carroll Krutenat, Richland, Wash., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 27, 1975, Ser. No. 580,631

Int. Cl.² C23C *15/00, 13/02;* B23P *3/20*

U.S. Cl. 204—192 5 Claims

1. In a method of forming an oxidation- and sulfidation-resistant alloy coating on a nickel-base, cobalt-base or iron-base alloy gas turbine engine component wherein a platinum group metal is deposited on said alloy and then aluminized to diffuse both said aluminum and said platinum group metal into the surface thereof, the improvement which comprises, prior to aluminizing, depositing on said alloy a combination coating at least approximately one micron, but less than three microns thick, consisting essentially of 90–97%, by weight, platinum group metal selected from the group consisting of platinum, palladium, rhodium, ruthenium, osmium and iridium and 3–10%, by weight, of an active metal selected from the group consisting of yttrium, hafnium and zirconium.



3,979,274

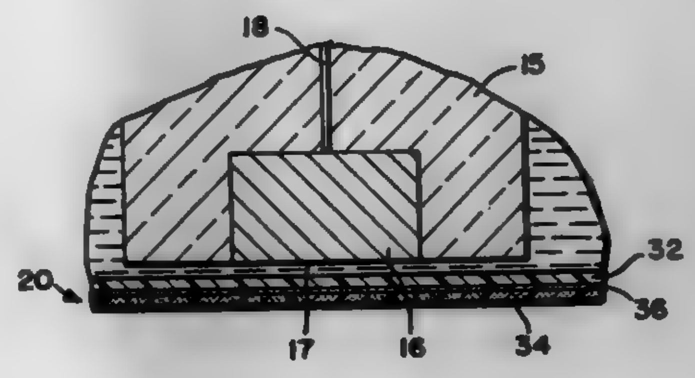
MEMBRANE FOR ENZYME ELECTRODES

David P. Newman, Yellow Springs, Ohio, assignor to The Yellow Springs Instrument Company, Inc., Yellow Springs, Ohio

Filed Sept. 24, 1975, Ser. No. 616,326

Int. Cl.² G01N 27/46

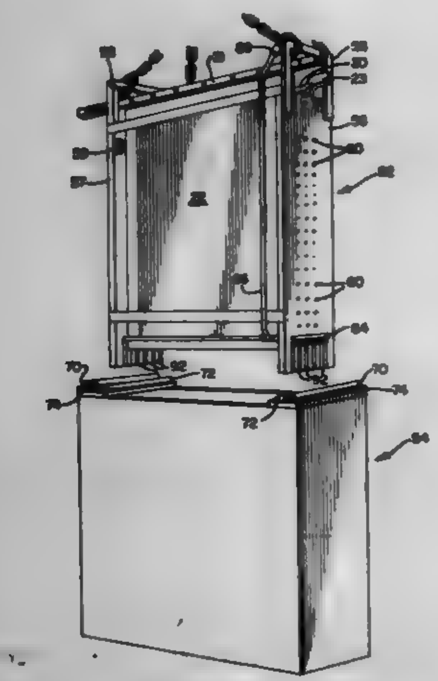
U.S. Cl. 204—195 B 9 Claims



1. A polarographic cell structure for use in polarographic analysis of an unknown comprising an electrically insulating support means, and electrode means mounted in said support means, said electrode means including means defining an active exposed working face, wherein the improvement comprises:

a laminated membrane of a total thickness of less than 25 microns positioned between said working face and said unknown, said membrane consisting essentially of a first layer of an essentially homogeneous material selected from the group consisting of silicone rubber, methyl methacrylate, and cellulose acetate and having a thickness of less than 2 microns, a second layer of a support material which permits passage of low molecular weight substances but excludes high molecular weight substances, said support material having a thickness of between 1 and 20 microns, and an enzyme preparation positioned between and adhesively bonding said first and second layers.

3,979,275
APPARATUS FOR SERIES ELECTROWINNING AND ELECTROREFINING OF METAL
Walter W. Harvey, Bedford; Myron R. Randlett, Burlington, and Karlis I. Bangerskis, Walpole, all of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 445,435, Feb. 25, 1974, Pat. No. 3,875,041. This application Feb. 26, 1975, Ser. No. 553,139
Int. Cl.² C25C *7/00*
U.S. Cl. 204—198 **14 Claims**



1. A series electrodeposition cell comprising:
a. a tank for containing electrolyte;
b. a conveyable rack in the tank which can be loaded with electrodes at a location remote from the tank, said rack being formed of a non-conductive material and including a pair of side walls having slots on the bottom extending through the side walls to allow fluid flow through the side walls, non-conductive bottom support members extending between and secured to each side wall between the slots for supporting electrodes and fixing the bottom position of the electrodes in the cell and providing non-conductive baffles below the electrodes and between the slots for improving electrolyte convection and reducing bypass current from the anode to the cathode along the bottom of the cell, non-conductive electrode guides on the sides of the rack for positioning the sides of the electrodes and reducing bypass current along the sides of the cell, said electrode guides extending the entire length of an electrode, means for shielding the anode to prevent current from passing along the sides, bottom and back of the anode toward the cathode;
c. an anode positioned in the rack;
d. a cathode positioned in the rack;
e. a series of bipolar electrodes within the electrode guides and resting on the bottom support members and close spaced apart from each other between the anode and the cathode; and,
f. bubble tubes having orifices for generating sheets of relatively small, rapidly ascending bubbles of gas that result in agitation of the electrolyte over the cathode faces of the bipolar electrodes, the portion of the bubble tubes having orifices being positioned between and below the bipolar electrodes, said bubble tubes being positioned in the slots in said sides; said baffles and electrode guides forming compartments within the cell which minimize lateral spreading and contraction of the sheet of bubbles and reducing the possibility of bypass current by blocking the electrical path along the bottom and sides of the electrode, the slots on the bottom of the sidewalls of the rack enabling the electrolyte to circulate throughout the cell in a continuous manner when the upward convection created by the bubbles of gas pushes the electrolyte over the top edge of the rack and down the side of the tank to the bottom of the rack said compartments and bubble tubes producing electrolyte convection which enables the efficient use of high current densitites in an electrodeposition process.

3,979,276
SILICATE TREATED ASBESTOS DIAPHRAGMS FOR ELECTROLYTIC CELLS
Franklin Strain, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 468,844, May 10, 1974, which is a division of Ser. No. 343,600, March 21, 1973, Pat. No. 3,847,762. This application Aug. 5, 1975, Ser. No. 602,174
Int. Cl.² C25B *13/06;* **C25C** *7/02*
U.S. Cl. 204—282 **8 Claims**

1. In a porous sodium chloride brine permeable fibrous chrysotile asbestos diaphragm, the improvement wherein said diaphragm has an amorphous, hydrated silica surface formed by depositing thereon to a depth of at least 0.08 inch from 0.01 to 5.0 grams per square foot of diaphragm area of a water soluble silicate having the empirical formula:

$$(Me_2O)_m(SiO_2)_n$$

where Me is chosen from the group consisting of lithium, sodium, and potassium, and the ratio of m to n is from about 1:1 to about 1:10, and thereafter contacting said diaphragm with aqueous acidic media.

3,979,277
HYDROPROCESSING OF HYDROCARBONS
John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Division of Ser. No. 443,046, Feb. 15, 1974, Pat. No. 3,900,386, which is a continuation-in-part of Ser. No. 365,782, May 31, 1973, Pat. No. 3,839,193, which is a continuation-in-part of Ser. No. 27,457, April 10, 1970, abandoned. This application Feb. 21, 1975, Ser. No. 551,955
Int. Cl.² C10G *23/04*
U.S. Cl. 208—143 **4 Claims**

1. A hydrocarbon hydroprocess for hydrogenating a coke-forming hydrocarbon distillate containing di-olefinic and mono-olefinic hydrocarbons and aromatics which process comprises reacting said distillate with hydrogen at a temperature below about 500°F. and at conditions selected to effect chemical consumption of hydrogen, in contact with a catalytic composite of a platinum or palladium component, an iridium component, a germanium component and a porous carrier material, substantially all of the platinum or palladium component and the iridium component being in the elemental metallic state and the germanium component being in an oxidation state above that of the elemental metal and recovering an aromatic/mono-olefinic hydrocarbon concentrate substantially free from conjugated di-olefinic hydrocarbons.

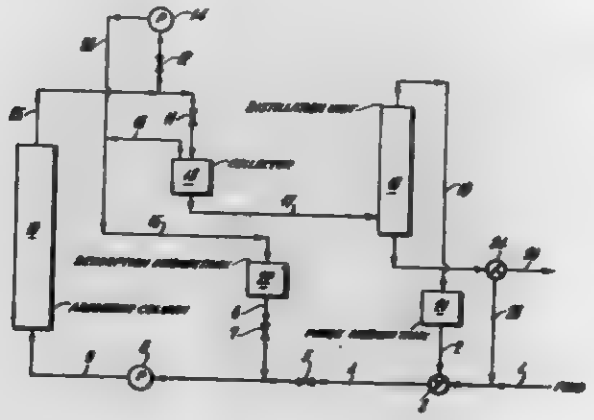
3,979,278
HYDROPROCESSING OF HYDROCARBONS
John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Division of Ser. No. 443,046, Feb. 15, 1974, Pat. No. 3,900,386, which is a continuation-in-part of Ser. No. 365,782, May 31, 1973, Pat. No. 3,839,193, which is a continuation-in-part of Ser. No. 27,457, April 10, 1970, abandoned. This application Feb. 21, 1975, Ser. No. 551,956
Int. Cl.² C10G *23/04*
U.S. Cl. 208—143 **5 Claims**

1. A hydrocarbon hydroprocess for improving the jet fuel characteristics of a sulfurous kerosene boiling range fraction, which process comprises reacting said kerosene fraction with hydrogen at conditions selected to effect chemical consumption of hydrogen in a catalytic reaction zone containing a catalytic composite of a platinum or a palladium component, an iridium component, a germanium component and a porous carrier material, substantially all of the platinum or palladium component and the iridium component being in the elemental metallic state and the germanium component being in an oxidation state above that of the elemental state, and separating the resulting reaction zone effluent to recover a normally liquid kerosene fraction having improved jet fuel characteristics.

3,979,279
TREATMENT OF LUBE STOCK FOR IMPROVEMENT OF OXIDATIVE STABILITY
Tsoung-Yuan Yan, Trenton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.
Filed June 17, 1974, Ser. No. 480,062
Int. Cl.² C10G *23/04*
U.S. Cl. 208—264 **20 Claims**

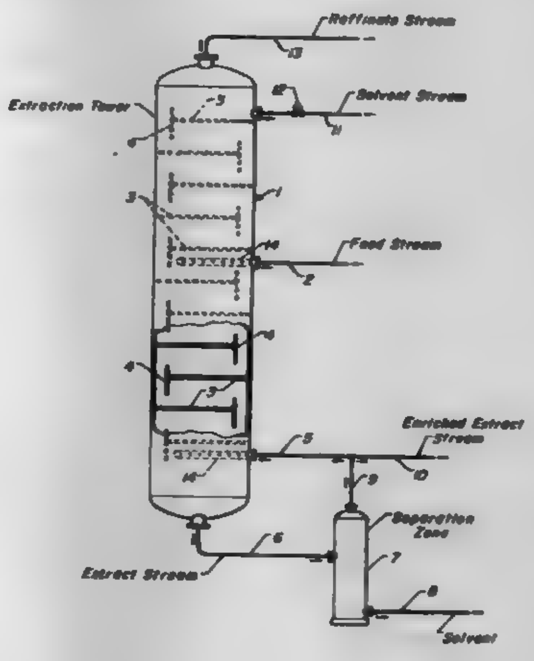
1. A process for forming a stabilized lubricating oil resistant to oxidation and sludge formation upon exposure to a highly oxidative environment which comprises contacting a high boiling hydrocarbon fraction lubrication oil stock having a sulfur content above about 0.4 weight percent with hydrogen in the presence of a catalyst of low acidity having a chlorine content of less than about 1.5 weight percent comprised of from about 0.1 to about 10 weight percent metal selected from the group consisting of platinum, palladium and a combination thereof on a solid refractory inorganic oxide support, said contacting at a temperature of about 400°F, a pressure in the range of from about 150 psig to about 1200 psig and a weight hourly space velocity in the range of from about 0.1 to about 10.

3,979,280
SEPARATION OF UNSATURATED COMPOUNDS FROM LIQUID HYDROCARBON MIXTURES CONTAINING SAME
Maximilian Dielacher, Hamburg, and Uwe Hansen, Jesteburg, both of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany
Filed Dec. 12, 1974, Ser. No. 531,950
Claims priority, application Germany, Dec. 22, 1973, 2364306
Int. Cl.² C10G *25/02*
U.S. Cl. 208—310 R **11 Claims**



1. In a process for the separation of unsaturated compounds from liquid hydrocarbon mixtures containing same by contacting the mixture with a metal ion laden cation exchange resin having a specific surface area of at least 1 m²/g and an average pore diameter of greater than 10 A, the improvement which comprises adsorbing said unsaturated compounds on a macroporous dehydrated cation exchange resin laden with monovalent silver or copper ions and subsequently displacing said unsaturated compounds in liquid phase from said resin at a temperature between about 10° and 40°C. and a pressure between about 1 and 30 atmospheres using a normally gaseous olefin as the desorption medium.

3,979,281
CONTINUOUS LIQUID EXTRACTION PROCESS WITH PERIODIC FLOW OF THE DENSER STREAM
Clarence G. Gerhold, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Dec. 16, 1974, Ser. No. 533,435
Int. Cl.² C01G *21/00*
U.S. Cl. 208—311 **7 Claims**

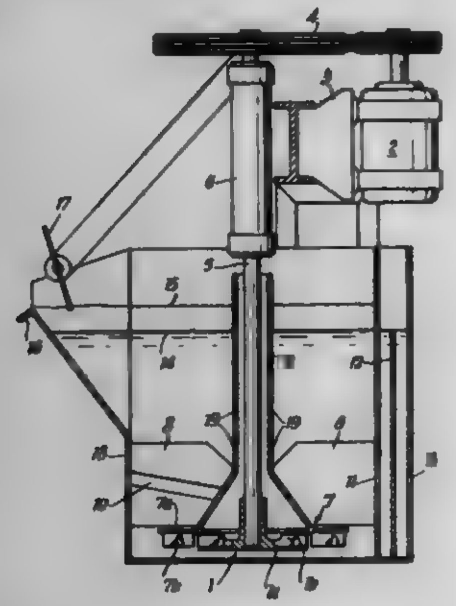


1. In a liquid-liquid extraction process wherein a high density first liquid is passed into a first portion of an extraction tower containing a plurality of perforated contacting trays, a second liquid having a lower density than the first liquid is continuously passed into a lower second portion of the extraction tower at a constant rate of flow, and the first liquid and the second liquid are contacted as the second liquid passes unidirectionally upward through a layer of the first liquid maintained on the perforated contacting trays, the improvement in the method of operation of the process which comprises passing the first liquid of higher density into the extraction tower in the form of a stream having a discontinuous flow rate comprised of preselected quantities of the first liquid corresponding to the amount of first liquid maintained on one of said perforated contacting trays, which discontinuous flow rate effects a pulsed flow of the first liquid downward between contiguous contacting trays.

3,979,282
FLOTATION OF FINE-GRAINED MATERIALS
Edwin K. Cundy, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, Cornwall, England
Continuation of Ser. No. 263,611, June 16, 1972, abandoned, which is a continuation-in-part of Ser. No. 803,875, March 3, 1969, abandoned. This application Jan. 16, 1975, Ser. No. 541,398
Claims priority, application United Kingdom, Mar. 11, 1968, 11856/68
Int. Cl.² B03D *1/00*
U.S. Cl. 209—166 **14 Claims**

1. A process for treating a fine mineral consisting substantially completely of particles smaller than 50 microns equivalent spherical diameter in order to separate therefrom mineral impurities, which process comprises the steps of (a) conditioning the fine mineral in the form of an aqueous slurry, having a solids content of at least 30 percent by weight and containing a deflocculant, for a time sufficient to dissipate therein at least 25 horsepower hours of energy per ton of mineral solids; (b) mixing with the aqueous mineral slurry

before or during the conditioning thereof a collector; (c) introducing the conditioned mineral slurry into a froth flotation cell having a central, internal, submerged impeller which comprises a base plate, to which there are attached a plurality of blades in radial arrangement, and a stationary cover plate separated from the tips of the blades by a small clearance; and



(d) thereafter subjecting the conditioned aqueous mineral slurry to a pumping action in a froth flotation process in which the impeller of said froth flotation cell has a peripheral speed of at least 2,000 feet/minute and in which the aeration rate is at least 0.8 cubic feet of air per minute per cubic foot of froth flotation cell volume.

3,979,283

MICROBIAL DEGRADATION OF DDT

Caroline M. Prudom, McLean, Va., assignor to Bioteknika International, Inc., Springfield, Va.

Filed Sept. 25, 1974, Ser. No. 509,115

Int. Cl.^{2} C02C *5/10*

U.S. Cl. 210—11 9 Claims

1. A process for the microbial degradation of dichlorodiphenyl-trichloroethane (DDT) which comprises treating the DDT with Penicillium sp. ATCC *20369* for a sufficient time until the DDT has been substantially degraded.

3,979,284

ARTIFICIAL HAEMODIALYSIS KIDNEYS

Alain Granger, Lesigny, and Andre Sausse, Sceaux, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Continuation of Ser. No. 384,286, July 31, 1973, abandoned. This application Mar. 21, 1975, Ser. No. 560,861

Claims priority, application France, July 31, 1972, 72.27582

Int. Cl.^{2} B01D *31/00, 13/00*

U.S. Cl. 210—22 A 3 Claims

1. An artificial haemodialysis kidney comprising, in combination:

a. A source of dialysis liquid;

b. a haemodialyser including a membrane capable of permitting simultaneous dialysis and ultrafiltration of blood;

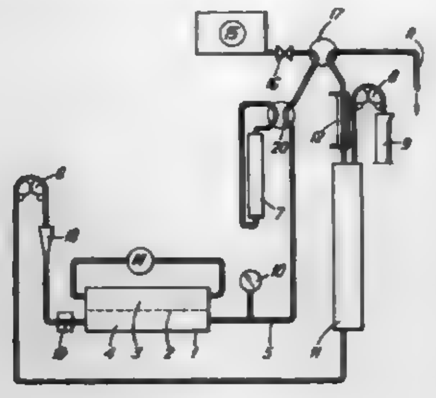
c. a chamber on one face of said membrane connectable to a blood stream;

d. a constant volume closed system in the form of a closed loop having a wall portion formed by a second face of said membrane, said system containing a dialysis liquid;

e. a circulation pump in said loop downstream of the dialyser;

f. means for withdrawing by pumping from said constant volume closed system, at a predetermined rate, a fraction of the dialysis liquid so that the volume of liquid in said system is maintained constant;

g. a two position valve system, movable between a first position in which simultaneously the source of liquid is connected to the constant volume closed system to direct said liquid to said membrane and the liquid having passed said membrane is directed in open circuit to the exterior,



and a second position which simultaneously isolates the constant volume closed system from the source and from the exterior to form a closed circuit for the dialysis liquid; and

h. means for adjusting the pressure difference on either side of the membrane.

3,979,285

PROCESS FOR THE PURIFICATION OF INDUSTRIAL EFFLUENTS

Hans Wegmüller, Riehen, and Jaroslav Haase, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 356,853, May 3, 1973, abandoned. This application May 29, 1975, Ser. No. 582,021

Claims priority, application Switzerland, May 10, 1972, 007012/72

Int. Cl.^{2} C02B *1/60;* C02C *5/08*

U.S. Cl. 210—36 6 Claims

1. A process for purifying industrial effluents containing residual substances consisting of dyestuffs, optical brighteners, dyeing auxiliaries, detergents or tanning agents, which comprises bringing said effluents into contact with a cellulosic adsorbent which is pretreated with polyamidopolyamines produced by condensation from a polymeric fatty acid and a polyamine, to remove said substances.

3,979,286

REMOVAL OF HEAVY METAL IONS FROM AQUEOUS SOLUTIONS WITH INSOLUBLE CROSS-LINKED-STARCH-XANTHATES

Robert E. Wing, Peoria, and William M. Doane, Morton, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 16, 1974, Ser. No. 515,262

Int. Cl.^{2} C02B *1/40*

U.S. Cl. 210—38 B 4 Claims

1. A process of removing heavy metal ions from aqueous solutions comprising contacting heavy metal ions in aqueous solutions with an amount of a water-insoluble crosslinked-starch-xanthate, wherein said crosslinked-starch-xanthate has been prepared by first crosslinking starch with a crosslinking reagent and subsequently xanthating the crosslinked starch by reacting the same with carbon disulfide, and wherein said crosslinked-starch-xanthate has a degree of crosslinking (DCL) such that said crosslinked-starch-xanthate exhibits a degree of swelling in water at 95° C. of from 65% to 450%, said amount of crosslinked-starch-xanthate being such that the molar ratio of the xanthate moiety to metal ions is about 1:1, and removing said heavy metal ions from said aqueous solution.

3,979,287

ADSORPTION PROCESS

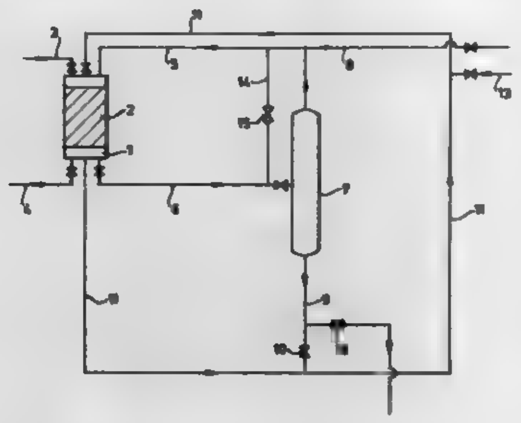
Pierre Roland Edouard Vulliez-Sermet, London, and Elio Fiorentino, West Byfleet, both of England, assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed July 9, 1975, Ser. No. 594,258

Claims priority, application United Kingdom, July 12, 1974, 30951/74

Int. Cl.^{2} B01D *15/06*

U.S. Cl. 210—40 8 Claims



1. A process for separating in concentrated form a dissolved component from a liquid stream in which the dissolved component is present in low concentration which comprises passing the liquid stream through a bed of adsorbent until the capacity of the bed for adsorption of the dissolved component from the liquid streams is substantially reached, passing a more concentrated solution of the dissolved component through the bed of adsorbent until it is more highly loaded with the dissolved component, and thereafter passing an eluant through the bed to regenerate the adsorbent and yield an eluate containing the dissolved component in high concentration.

3,979,288

DOUBLE-FLOW MAGNETIC FILTER, APPARATUS AND METHOD

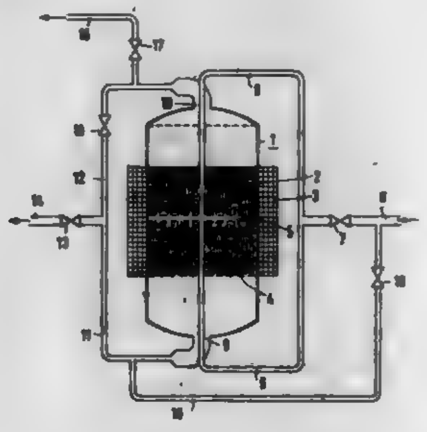
Hans-Günter Heitmann, Erlangen-Buckenhof, and Manfred Schott, Erlangen, both of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim, Germany

Continuation of Ser. No. 460,166, April 11, 1974, abandoned. This application Apr. 22, 1975, Ser. No. 570,414

Claims priority, application Germany, Apr. 13, 1973, 2318755

Int. Cl.^{2} B01D *35/06*

U.S. Cl. 210—42 S 5 Claims



4. A method of removing magnetic impurities from water containing the same and separately discharging said magnetic impurities which comprises maintaining two sections of magnetizable ball-like pellets in a vessel, with one section of pellets above the other section of pellets and a passageway between said sections, said passageway having a multiplicity of openings to permit the flow of liquid into said sections of pellets, introducing said water containing said magnetic impurities into said passageway, passing a portion of said water containing magnetic impurities upwardly through said upper section of magnetizable pellets, passing another portion of said water containing magnetic impurities downwardly through said lower section of magnetizable pellets, producing a magnetic field by electrically energizing an electric coil coaxially surrounding said vessel to cause said magnetic impurities contained in the water to remain on said magnetized pellets, discharging water freed of magnetic impurities as a supply of water for further use, from the top of said upper section of pellets out through the top of said vessel and from the bottom of said lower section out through the bottom of said vessel, and periodically removing accumulated magnetic impurities retained in said vessel by interrupting the flow of said water containing magnetic impurities to said passageway, interrupting said magnetic field, introducing rinsing water at the lower end of said vessel passing said rinsing water upwardly first through said lower and then through said upper sections of pellets, and discharging said rinsing water carrying magnetic impurities from said sections of pellets from the upper end of said vessel.

3,979,289

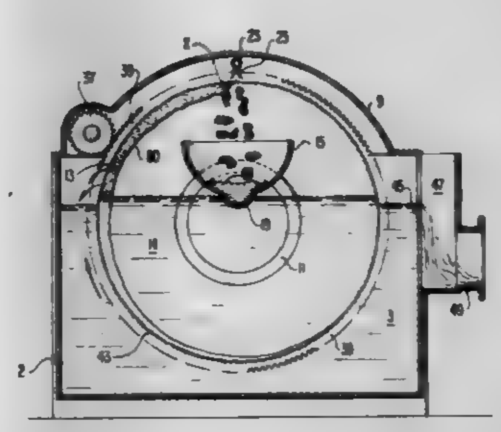
FILTRATION METHOD

Michael J. Bykowski, Trenton, and Lloyd Ewing, Bayside, both of Wis., assignors to Water Pollution Control Corporation, Milwaukee, Wis.

Continuation of Ser. No. 304,886, Nov. 8, 1972, abandoned. This application Aug. 23, 1974, Ser. No. 500,213

Int. Cl.^{2} B01D *23/24*

U.S. Cl. 210—79 32 Claims



U

1. In the process of separating a liquid from solids in an admixture of the two by using an internal rotary filter system comprised of a rotatable hollow drum defining therewithin a filter zone, said filter zone communicating with a liquid collection zone external to the drum through separation is accomplished by presenting the admixture in the filter zone, rotating the drum, causing solids to adhere to the internal portion of the filter medium and causing liquid to flow through the filter medium and to said liquid collection zone, and wherein the separated solids are collected by cotacting the filter medium with a fluid to dislodge the solids from the medium and cause them to collect in a solids collection zone separate from said liquid collection zone, an improved process for lessening the necessity for chemical cleaning and shut-down for cleaning, which process comprises contacting the filter medium with the fluid cycled at at least two different finite pressures including high pressure in the range of about 60 to about 200 psig and low pressure in the range of about 15 to about 60 psig, the duration of the high pressure segment of each cycle being equal to at least about the time required for one complete revolution of said drum, and representing from about 0.5% to about 33% of the total time in each cycle whereby the combination of time, pressures and interval of each within the cycle removes substantially all solids from the filter medium without overburdening the system with fluid.

3,979,290
APPARATUS AND PROCESS FOR CONTROLLING AND REGULATING THE FREEDOM OF SUSPENDED MATTER

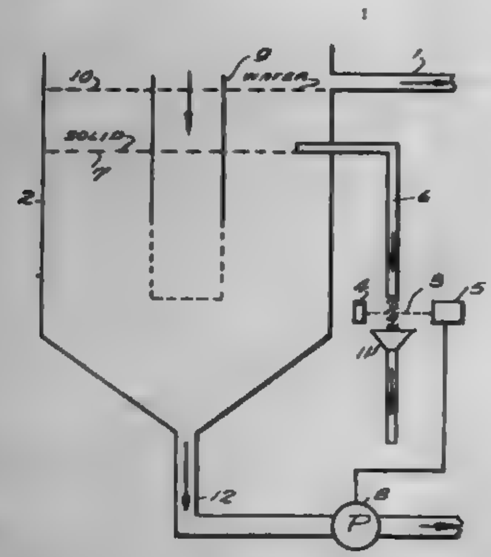
Friedrich Löffler, Bruhl, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Filed Nov. 25, 1975, Ser. No. 635,267

Claims priority, application Germany, Nov. 27, 1974, 2456011

Int. Cl.² B01D *21/24*

U.S. Cl. 210—83 9 Claims



1. An apparatus for automatically controlling and regulating the freedom from suspended matter of quiescent reservoir overflow liquid in mechanical separatory processes for liquid-solid phases in the sedimentation of suspended particles in quiet or slow flowing liquids comprising in combination a quiescent reservoir means, overflow conduit means, the upper portion of said reservoir means for the removal of clear overflow, upper withdrawal conduit means for removing liquid or suspension from said reservoir means, said upper withdrawal conduit means having a first portion terminating in said reservoir means below said overflow conduit means and having a second portion ending outside said reservoir means, a free falling space below the end of said second portion of the upper withdrawal conduit means, a light source on one side of said free falling space, a photoelectric cell on the opposite side of the free falling space, a light ray between said light source and said photoelectric cell, said reservoir means having lower withdrawal conduit means for removing settled suspended particles, pump means connected to said lower withdrawal conduit means, means driving said pump means and means operatively connecting said photoelectric cell with said driving means whereby when suspended particles pass through said free falling space they interrupt said light ray and the photoelectric cell actuates said pump means to withdraw settled suspended particles through said lower withdrawal conduit means.

3,979,291
OIL BOOM AND METHOD OF SKIMMING FLOATING OIL FROM THE SURFACE OF A BODY OF WATER

Cornelis in 't Veld, Vlaardingen, Netherlands, assignor to National Marine Service, Inc., St. Louis, Mo.

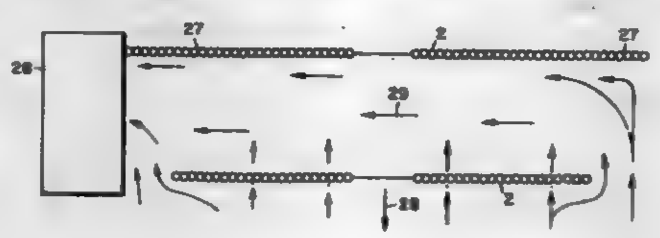
Continuation of Ser. No. 422,603, Dec. 6, 1973, abandoned. This application May 30, 1975, Ser. No. 582,271

Claims priority, application Netherlands, Dec. 7, 1972, 7216633

Int. Cl.² E02B *15/04*

U.S. Cl. 210—84 13 Claims

1. An oil boom for collecting lighter liquid floating on a body of water, the boom comprising at least two rows of multiple, contiguous, elongate, buoyant, vertical members; flexible means securing said vertical members together in generally parallel relationship; a plurality of rigid bracing members; each row of vertical members being retained in spaced-apart, parallel relationship from an adjacent row by the bracing members, the bracing members bridging adjacent rows and being secured to the vertical members by means



enabling the latter to be supported vertically by said bracing members; the upper and lower ends of the vertical members extending above and below the surface of a body of water when the boom is afloat.

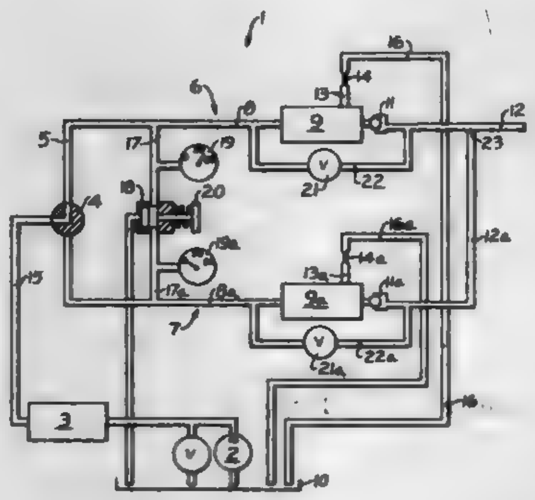
3,979,292
DUPLEX FILTER SYSTEM

Charles W. Kuhn, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 10, 1973, Ser. No. 387,351

Int. Cl.² B01D *35/14;* C02C *1/14*

U.S. Cl. 210—90 1 Claim



1. In a duplex filter system having two fluid circuits, of the type used in an internal combustion engine, said system including, a working fluid circuit, an alternate fluid circuit, fluid conduit means connecting said circuits to said engine, filter means for filtering foreign materials from said fluid passing through each circuit check valve means proximate an outlet of each of said filter means for preventing reversal of fluid flow in said circuits, by-pass means in each of said circuits for selectively by-passing fluid around said filter means, valve means for redirecting fluid flow through the alternate circuit from said working circuit, means for charging said alternate circuit with liquid while draining fluid from said working circuit to permit a change of filter means in said working circuit, the improvement comprising; a fluid flow control system including liquid obstructing air vent means for selectively venting air from said alternate circuit while charging said circuit with liquid, said air vent means operative to cause liquid pressure to build-up within said alternate circuit sufficiently to open said check valve means associated with said alternate circuit and to permit fluid flow through said check valve to a junction of said alternate circuit and said working circuit, and pressure-detecting means for detecting and registering the pressure in each of said circuits and for indicating when said alternate circuit is fully charged with liquid, and for detecting and registering the pressure level in said working circuit after fluid flow has been redirected to said alternate circuit.

3,979,293
APPARATUS FOR THE PURIFICATION OF EFFLUENT

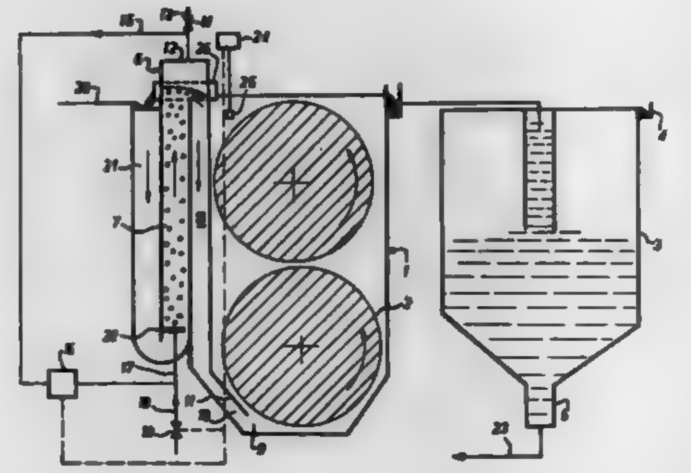
Paul Boulenger, Grenoble, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Division of Ser. No. 477,343, June 7, 1974, Pat. No. 3,945,916. This application Sept. 3, 1975, Ser. No. 610,009

Claims priority, application France, June 25, 1973, 73.23073

Int. Cl.² C02C *1/08*

U.S. Cl. 210—96 R 6 Claims



1. An apparatus for the purification of a waste-containing liquid by oxygenation of said waste-containing liquid with an oxygen-enriched gas in contact with a biologically activated sludge, which apparatus comprises:

a. an uncovered main treatment tank for containing a liquor comprising a suspension of the biologically activated sludge in the waste-containing liquid;

b. withdrawing means of the overflow type connected to said treatment tank for withdrawing an effluent portion of the liquor;

c. an inlet receptacle, separate from said main treatment tank, for containing a waste/sludge mixture;

d. feeding means connected to said treatment tank for withdrawing another portion of the liquor from said treatment tank and feeding said portion into said inlet receptacle;

e. introduction means for introducing raw waste-containing liquid into said inlet receptacle;

f. a preliminary oxygenation chamber ensuring flow from said inlet receptacle to said main treatment tank, said preliminary oxygenation chamber comprising:
  - an ascending flow-path entrance conduit extending inside said inlet receptacle and opening at its lower end into said inlet receptacle,
  - a descending flow-path discharge conduit extending into said main treatment tank and opening at its lower end into said main treatment tank, and
  - a gas-accumulation receiver, above said entrance and discharge conduits, in fluid communication with the upper ends thereof;

g. gas injecting means for injecting the oxygen-enriched gas upwardly into said ascending flow-path entrance conduit to oxygenate said waste/sludge mixture within said ascending flow-path entrance conduit; and

h. recycling means for recycling at least a portion of the non-dissolved gas recovered in said gas-accumulation receiver, said recycling means comprising:
  - a compressor communicating on the suction side with the gas-accumulator receiver and on the delivery side with said gas-injecting means,

wherein said gas-injecting means and said recycling means impart circulation of the oxygenated waste/sludge mixture successively upwardly through said ascending flow-path entrance conduit and downwardly through said descending flow-path discharge conduit into said main treatment tank.

3,979,294
CLARIFICATION PLANT

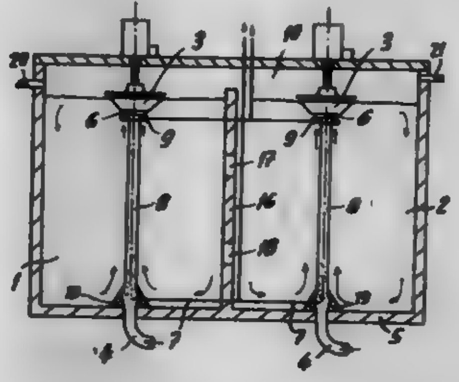
Joseph Richard Kaelin, Villa Seeburg, CH-6374 Buochs, Switzerland

Continuation-in-part of Ser. No. 308,600, Nov. 21, 1972, abandoned. This application Jan. 21, 1975, Ser. No. 542,812

Claims priority, application Switzerland, Nov. 22, 1971, 17043/71

Int. Cl.² C02C *1/10;* B01F *3/04*

U.S. Cl. 210—195 S 5 Claims



1. In a clarification plant provided with at least one gas-tight activation tank which is provided with a surface ventilation rotor, a re-clarification tank, inlet means for supplying sewage to said activation tank and outlet means for conducting activation sewage to said re-clarification tank, a conduit having one end vertically oriented and disposed in said activation tank directly below said surface ventilation rotor and being connected at its other end to said reclarification tank for recycling activated sludge concentrate from said reclarification tank, an outlet aperture in said one end of said conduit being located in a suction zone of said surface ventilation rotor directly therebelow whereby the activated sludge in said conduit is sucked upward through the suction of said surface ventilation rotor thereinto, the improvement comprising:
  - means for supplying substantially pure oxygen in a finely divided form to said other end of said conduit for application to the concentrated recycled activated sludge prior to the entry of said concentrated recycled activated sludge into said surface ventilation rotor.

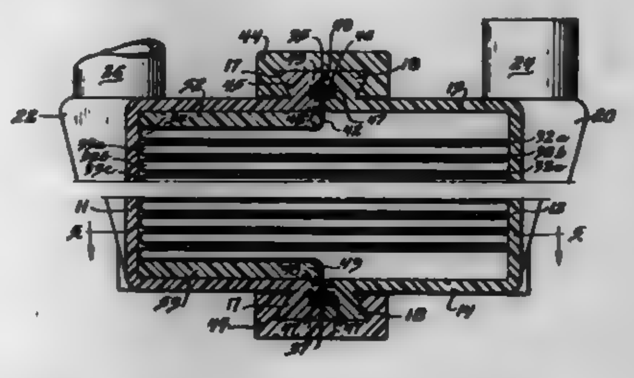
3,979,295
FOLDED MEMBRANE DIALYZER WITH MECHANICALLY SEALED EDGES

Finley W. Markley, Burnsville, Minn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Apr. 9, 1975, Ser. No. 566,497

Int. Cl.² B01D *31/00*

U.S. Cl. 210—321 B 11 Claims



1. A dialyzer comprising:

a case;
a semipermeable membrane sheet disposed within said case and folded into a stack of very closely spaced pleats, said folded membrane having end edges and serpentine side edges, and said membrane including near each end edge an end portion extending from said stack of pleats;
means for sealingly separating one surface of said membrane from the opposite surface, said sealing means comprising a solidified plastic material surrounding and embedding the side edges of said membrane and clamping means in the form of a pair of mutually opposed case sealing flanges formed on said case engaging the opposite surfaces of the membrane near each of the end edges in sealed relation thereto, and means for pressing said case sealing flanges toward each other with said end portion captured therebetween; and
means for passing a first fluid through the pleats in contact with one surface of the membrane and a second fluid through the pleats in contact with the opposite surface.

3,979,296
FILTER

Wendell Bastgen, Betzdorf, Germany, assignor to Albert Klein KG, Nieder-Fishbach, Germany

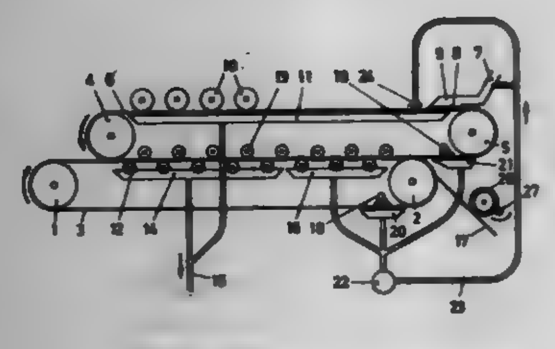
Continuation of Ser. No. 449,611, March 11, 1974, abandoned, which is a division of Ser. No. 253,178, May 15, 1972, Pat. No. 3,800,952. This application Apr. 21, 1975, Ser. No. 569,803

Claims priority, application Germany, June 5, 1971, 2127974

The portion of the term of this patent subsequent to Apr. 2, 1991, has been disclaimed.

Int. Cl.² B01D *33/04*; B30B *9/24*

U.S. Cl. 210—324 27 Claims



1. A filter for removing liquid from a slurry, comprising:
a. a first endless belt of filter fabric mounted on end rollers so as to form a horizontally-elongated loop having an upper run and a lower run,
b. a second endless belt of filter fabric mounted on end rollers above the first belt so as to form a horizontally-elongated loop having an upper run and a lower run,
c. means pressing the lower run of the second belt against the upper run of the first belt,
d. a feed device situated at the upstream end of and above the upper run of the second belt, the material from the feed device eventually entering the nip between the lower run of the second belt and the upper run of the first belt, which runs are driven in the same direction, and
e. means underlying the upper run of the second endless belt to hold it substantially flat for conveying and preliminary draining of the newly-introduced slurry.

3,979,297
MEMBRANE SUPPORT-PLATES FOR FLUID SEPARATING APPARATUS AND APPARATUS USING SUCH SUPPORT-PLATES

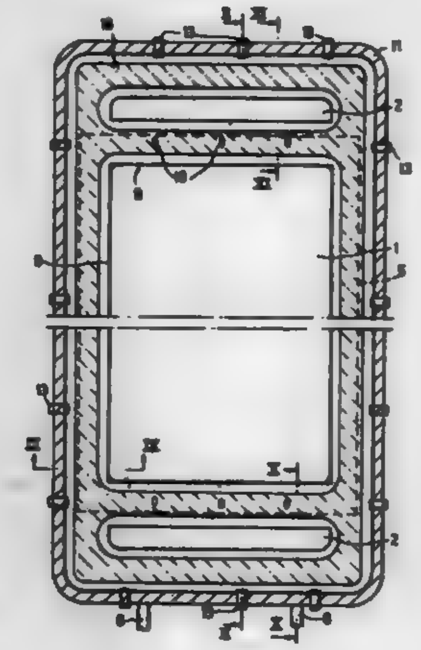
Robert Bardin, Vienne, and André Toulouze, Lyon, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed May 28, 1974, Ser. No. 473,739

Claims priority, application France, May 29, 1973, 7319533

Int. Cl.² B01D *31/00*

U.S. Cl. 210—232 14 Claims



1. Apparatus for effecting separation by selective permeation, said apparatus comprising two end plates, at least one feed pipeline for the fluid to be treated passing through one of said end plates, at least one pipeline for discharging the untreated fluid passing through the other end plate, at least two support-plates positioned between said end plates, each support-plate comprising, in combination:
a. a generally rectangular support-plate having opposite ends and faces;
b. at least one orifice near one of its ends for the passage of fluid to be treated;
c. at least one cell forming cavity on at least one of its faces;
d. a membrane covering said at least one cell;
e. means communicating said cell with the exterior for discharging the permeate which is passed through the membrane;
f. a detachable device positioned on each face of the support-plate having a membrane, the device having dimensions substantially as those of the support-plate, and maintaining the membrane over the entire periphery of the cavity and having a central opening in register with the cavity and dimensions substantially those of the cavity, and an orifice in register with the orifice of the fluid to be treated of the support-plates and the dimensions of said orifice of the support plate; and
g. a gasket separating in a fluidtight manner the two support-plates, said gasket being in contact with the detachable device and comprising a central opening in register with the cavity and of substantially the same width as that of the central opening in the detachable device and of which the length is substantially equal to twice the distance between a median plane perpendicular to the longitudinal axis of the support-plates and the part of the orifice of the detachable device most spaced from said median plane.

3,979,298
FLUID SEPARATING APPARATUS

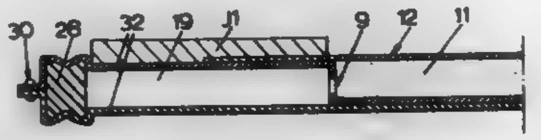
Jacques Breysse, Villeurbanne, and Jean Roget, Lyon, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Continuation-in-part of Ser. No. 326,853, Jan. 26, 1973, abandoned. This application May 28, 1974, Ser. No. 473,677

Claims priority, application France, Jan. 28, 1972, 73.02900

Int. Cl.² B01D *31/00*

U.S. Cl. 210—232 10 Claims



1. Fluid separating apparatus comprising, in combination:
a. two end plates;
b. a stack of membrane support plates clamped between said end plates, each membrane support plate comprising:
i. two elementary plates of generally rectangular configuration and substantially constant wall thickness;
iii. front and back faces on said elementary plates, said elementary plates being assembled in back-to-back relationship;
iii. means joining such elementary plates in fluidtight manner to one another;
iv. at least one orifice extending through each elementary plate in the vicinity of at least one end thereof for the passage of fluid to be treated;
v. first recess defining means on said front face of at least one of said two elementary plates, said recess defining means forming a cell;
vi. means defining a chamber between said back faces of said elementary plates;
vii. means defining perforations through said at least one elementary plate to provide communication between each cell and the associated chamber; and
viii. duct forming means providing communication between the chamber and the edge of the support plate;
c. a membrane support and a membrane located in each cell, with the membrane outermost; and
d. a gasket located between adjacent membranes of adjacent support plates.

3,979,299
PRESSURE FILTER WITH CONTINUOUSLY OR INTERMITTENTLY MOVABLE FILTER CLOTH

Dieter Ruland, Monheim-Hitdorf, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

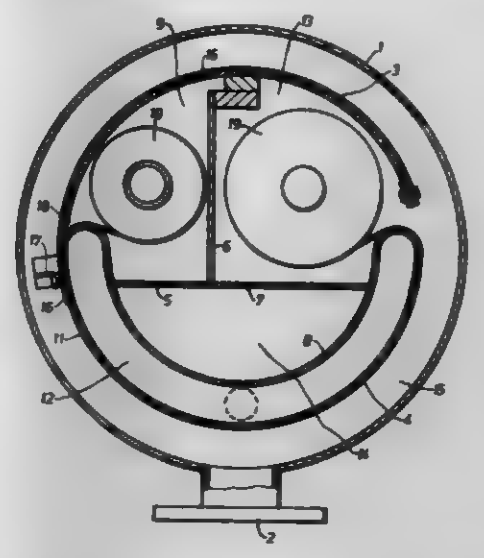
Filed July 31, 1974, Ser. No. 493,364

Claims priority, application Germany, Aug. 1, 1973, 2338911

Int. Cl.² B01D *29/02*

U.S. Cl. 210—387 4 Claims

1. Apparatus for filtering fluids with a filter cloth wherein the filter cloth is subjected to transport continuously or intermittently over a supporting sieve plate, which comprises:
a. a housing, means mounted in the housing providing therein a pressure chamber for receiving the unfiltered fluid and a filtrate chamber for the filtered fluid, said means comprising said supporting sieve plate for passage therethrough of fluid from the pressure chamber to the filtrate chamber,
b. means within the housing defining a magazine chamber for holding and supplying the filter cloth for said transport over the supporting sieve,
c. means for taking up the filter cloth after the transport thereof over the supporting sieve,
d. filtering means communicating the pressure chamber and the magazine chamber for introduction of filtrate into the magazine chamber for immersion of the filter cloth in the magazine chamber in filtrate before transport of the filter cloth over the supporting sieve, and



e. means defining a slot between the magazine chamber and the pressure chamber for passage of the filter cloth from the magazine chamber to the pressure chamber, and means for sealing the slot for preventing passage of unfiltered fluid into the magazine chamber.

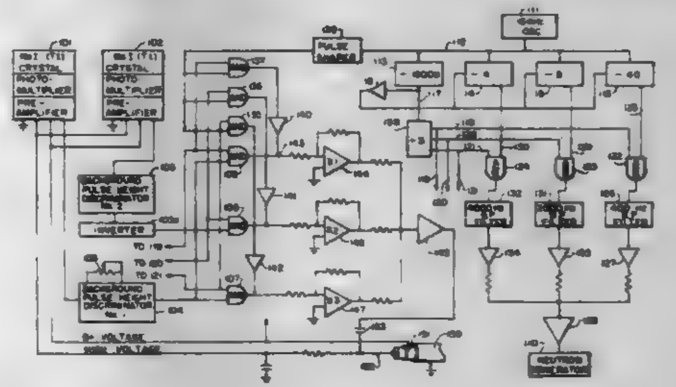
3,979,300
THREE FREQUENCY MODULATED COMBINATION THERMAL NEUTRON LIFETIME LOG AND POROSITY

Hans J. Paap; Dan M. Arnold, both of Houston, and Michael P. Smith, Bellaire, all of Tex., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 489,330, July 17, 1974. This application May 12, 1975, Ser. No. 576,539

Int. Cl.² G01V *5/00*

U.S. Cl. 250—265 24 Claims



1. A method for simultaneously determining the thermal neutron decay time and the porosity of earth formations in the vicinity of a well borehole comprising the steps of:
continuously irradiating the earth formations in the vicinity of a well borehole with a phase coherent harmonically intensity modulated cloud of fast neutrons having at least three different frequency modulation components;
detecting as a function of time the intensity modulated thermal neutron populations resulting from said irradiation of said at least three different modulation frequencies at least at two different longitudinal distances from the source of said irradiation in the borehole;
determining from said detected thermal neutron populations measured as a function of time at said different longitudinal distances from the source of said irradiation, the relative phase shift between said fast neutron cloud and said thermal neutron population at said at least three different modulation frequencies at said different longitudinal distances;
combining said three different modulation frequency relative phase shift measurements at least at one of said

different longitudinal distances according to a first predetermined relationship to derive an indication of the thermal neutron decay time of the earth formations in the vicinity of a well borehole; and

combining said three different modulation frequency relative phase shift measurements at least at two of said different longitudinal distances from the source of said irradiation according to a second predetermined relationship to derive an indication of the porosity of the earth formations in the vicinity of a well borehole.

3,979,301

IMMERSION OIL FOR MICROSCOPY

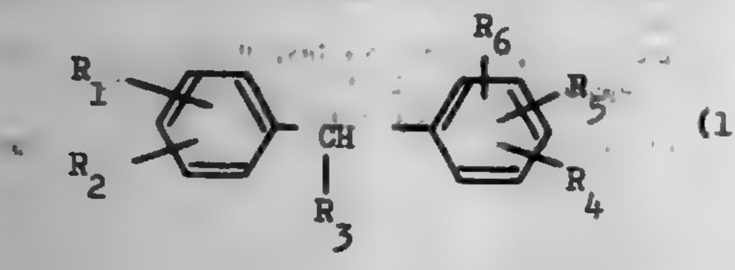
Katsuyoshi Ushiodo, Tokyo; Toshikatsu Nishioka, and Hiroshi Okada, both of Chiba, all of Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed June 17, 1975, Ser. No. 587,693

Int. Cl.² C09K *3/00*

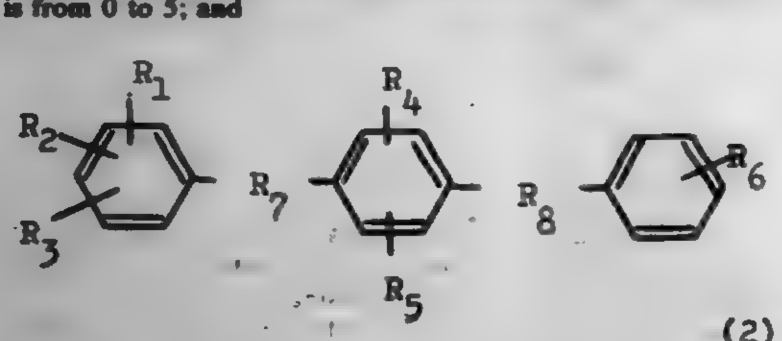
U.S. Cl. 252—1 **5 Claims**

1. An immersion oil for microscopy which comprises 10 to 90 parts by weight of chain hydrocarbon having 200 to 5,000 of molecular weight and 10 to 90 parts by weight of at least one compound selected from the compounds of the following general formula (1), (2), (3):



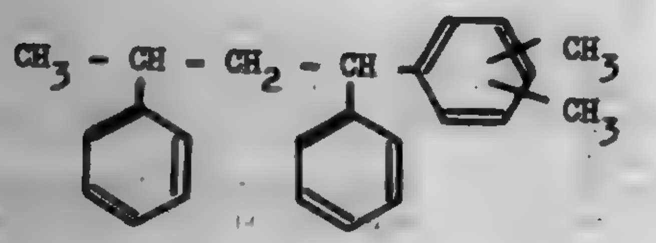
(1)

where R_1 to R_5 are hydrogen or alkyl group having from 1 to 2 carbon atoms and R_6 is hydrogen or alkyl group having from 1 to 4 carbon atoms and the total carbon number of R_1 to R_6 is from 0 to 5; and



(2)

where R_1 to R_3 are hydrogen or alkyl group having from 1 to 4 carbon atoms and the total carbon number of R_1 to R_3 is from 0 to 4 and R_4 to R_6 are hydrogen or methyl group and R_7 to R_8 are alkylene group having from 1 to 3 carbon atoms or methylene group; and,



(3)

3,979,302

OIL AND GASOLINE FIRE EXTINGUISHING COMPOSITION AND METHOD OF MAKING

Alfred R. Globus, Bayside, Long Island, N.Y., assignor to Guardian Chemical Corporation, Hauppauge, N.Y.

Filed Mar. 19, 1974, Ser. No. 452,603

Int. Cl.² A62O *1/00*

U.S. Cl. 252—2 **16 Claims**

1. A composition comprising a polymerized (hydrated amide-amine)complex formed from at least one fatty acid having 8 to 18 carbon atoms and at least one dialkanol amine having 1 to 6 carbon atoms per alkanol group.

3,979,303

OIL WELL DRILLING FLUID

Kenneth Suk Kang, La Jolla, and William H. McNeely, San Diego, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 435,145, Jan. 21, 1974, abandoned, which is a continuation of Ser. No. 228,868, Feb. 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 854,322, Aug. 29, 1969, abandoned. This application Jan. 2, 1975, Ser. No. 538,232

Int. Cl.² C09K *7/02*

U.S. Cl. 252—8.5 C **11 Claims**

1. A water base drilling fluid comprising water and about 0.05 to about 2.25% by weight of the Heteropolysaccharide S-7 said Heteropolysaccharide S-7 having an acetyl content of about 8–10% by weight and the carbohydrate portion thereof consisting of, by weight, about 73% glucose, about 16% rhamnose, and about 11% of a uronic acid, said Heteropolysaccharide S-7 being soluble in water.

3,979,304

METHOD FOR DRILLING AND TREATING SUBTERRANEAN FORMATIONS USING A LOW FLUID LOSS AGENT

Paul W. Fischer, Whittier; David S. Pye, Brea, and Julius P. Gallus, Anaheim, all of Calif., assignors to Union Oil Company of California, Brea, Calif.

Continuation-in-part of Ser. No. 293,388, Sept. 29, 1972, Pat. No. 3,882,029, and a continuation-in-part of Ser. No. 293,389, Sept. 29, 1972, Pat. No. 3,870,668. This application Nov. 20, 1974, Ser. No. 525,366

Int. Cl.² C09K *7/02*; E21B *43/26, 43/27*

U.S. Cl. 252—8.5 C **8 Claims**

1. A method for reducing the permeability of a permeable subterranean formation penetrated by a well bore, which comprises:

preparing an aqueous dispersion by dispersing in an aqueous liquid a fluid loss reducing amount of discrete, slowly oil-soluble, water-insoluble solid particles consisting essentially of a homogeneous solid solution of (1) about 30 to 75 weight percent of wax; (2) about 10 to 25 weight percent of an oil-soluble polyhydroxy higher fatty acid partial ester surface active agent; (3) about 15 to 35 weight percent of a water-dispersible surface active agent selected from the group consisting of polyoxyethylene alkyl phenols, polyethylene glycol higher fatty acid esters, polyoxyethylene polyhydroxy higher fatty acid esters, polyoxyethylene tertiary fatty amines, and polyoxyethylene fatty amide condensates; and (4) about 0.5 to 5 weight percent of a fatty alcohol containing 10 to 14 carbon atoms; and

injecting said dispersion into said well bore and into contact with said formation.

3,979,305

LOW FLUID LOSS ADDITIVE COMPOSITION

Paul W. Fischer, Whittier; David S. Pye, Brea, and Julius P. Gallus, Anaheim, all of Calif., assignors to Union Oil Company of California, Brea, Calif.

Continuation-in-part of Ser. Nos. 293,388, Sept. 29, 1972, Pat. No. 3,882,029, and Ser. No. 293,389, Sept. 29, 1972, Pat. No. 3,870,668. This application Dec. 11, 1974, Ser. No. 531,603

Int. Cl.² C09K *7/02*; E21B *43/25*; C08F *45/52*

U.S. Cl. 252—8.5 C **18 Claims**

1. A composition useful in the treatment of subterranean formations comprising discrete particles of a homogeneous solid solution consisting essentially of (1) about 30 to 75 weight percent of wax; (2) about 10 to 25 weight percent of an oil-soluble polyhydroxy higher fatty acid partial ester surface active agent; (3) about 15 to 35 weight percent of a water-dispersible surface active agent selected from the group consisting of polyoxyethylene alkyl phenols, polyethylene glycol higher fatty acid esters, polyoxyethylene polyhydroxy higher fatty acid esters, polyoxyethylene tertiary fatty amines, and polyoxyethylene fatty amide condensates; and about 0.5 to 5 weight percent of a fatty alcohol having 10 to 14 carbon atoms.

3,979,306

METHOD AND COMPOSITION FOR FINISHING CLOTHINGS TO PREVENT YELLOWING

Haruhiko Arai, Narashino, and Junryo Mino, Kamagaya, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1973, Ser. No. 416,194

Claims priority, application Japan, Nov. 21, 1972, 47-116783

Int. Cl.² D06M *13/16, 13/46*

U.S. Cl. 252—8.6 **3 Claims**

1. A clothes starching composition consisting essentially of from 10 to 99 percent of a starching agent selected from the group consisting of carboxymethyl cellulose, starch, polyvinyl alcohol, polyvinyl acetate and mixtures thereof, from 0.001 to 5 percent by weight of an anti-yellowing agent selected from the group consisting of 4,4′-butylidene-bis(6-tert.-butyl-3-methyl-phenol), 2,2-butylidene-bis(6-tert.-butyl-4-methylphenol), 4,4′-thio-bis(6-tert.-butyl-3-methylphenol) and 4,4′-thio-bis(6-tert.-butyl-2-methylphenol, and the balance is water.

3,979,307

FABRIC SOFTENER COMPOSITION

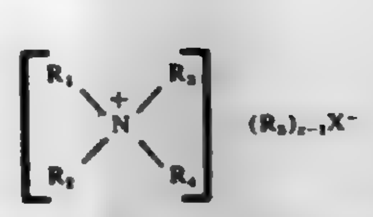
Jack H. Kolaian, Wappingers Falls; Ronald E. Jones, Glenham; Wheeler C. Crawford, and William M. Cummings, both of Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 290,687, Sept. 20, 1972, abandoned. This application Sept. 10, 1973, Ser. No. 395,464

Int. Cl.² D06M *13/46*

U.S. Cl. 252—8.75 **8 Claims**

1. A fabric softener composition comprising an aqueous dispersion containing between about 0.1 and 10 wt. % of a di(secondary alkyl) ammonium ester derivative corresponding to the formula:



$$\left[R_1R_2\overset{+}{N}R_3R_4 \right] (R_5)_{z-1}X^-$$

wherein R_1 and R_2 are the same and are C_{10}–C_{30} secondary alkyl groups:

R_3 is selected from the group consisting of hydrogen, methyl, $(CH_2CH_2O)_nH$ group with $n = 3$;

R_4 and R_5 are selected from the group consisting of alkyl, aryl and aralkyl radicals of from 1 to 10 carbons, and

X is an anion selected from the group consisting of sulfate and phosphate

z is an integer equal to the valence of X.

3,979,308

LUBRICANT COMPOSITIONS WITH IMPROVED VISCOSITY INDEX

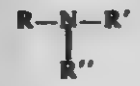
Theodore C. Mead, Port Arthur; Richard T. McDill, Houston; Ralph P. Chesluk, and Norman R. Odell, both of Nederland, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 27, 1974, Ser. No. 455,447

Int. Cl.² C10M *1/10, 1/46*

U.S. Cl. 252—32.5 **5 Claims**

1. A lubricating composition comprising a major amount of a mineral lubricating oil and a minor viscosity index improving amount of an adduct of an amine selected from the group consisting of cyclohexyl piperidine, furfuryl amine and amines of the formula:



$$R{-}\underset{\displaystyle R''}{\underset{|}{N}}{-}R'$$

wherein the substituents are either hydrogen, alkyl or aryl groups having up to 30 carbon atoms with ethyl oleyl acid orthophosphate, the adduct being formed at a temperature of above about 200°F and wherein the amine is present in about a stoichiometric quantity.

3,979,309

LUBRICATING OIL ADDITIVE

Edward M. Geiser, Downers Grove, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 14, 1975, Ser. No. 604,756

Int. Cl.² C10L *1/10, 1/22*; C10M *1/44, 3/38*

U.S. Cl. 252—32.5 **9 Claims**

1. An additive for a lubricating oil which comprises an admixture of a major amount of the salt of two equivalents of an N-alkyldiaminoalkane with one equivalent of a dimer dicarboxylic acid and one equivalent of an alkyl acid phosphate, a minor amount of an alkylated hydroxytoluene, and a paraffin oil vehicle.

8. A lubricating oil composition for a two-cycle engine comprising a major proportion of a hydrocarbon lubricating oil and a minor amount of the additive of claim 1.

3,979,310

PROCESS FOR PREPARING FERROMAGNETIC CHROMIUM DIOXIDE

Ugo Montiglio; Giampiero Basile; Pierfrancesco Aspes, and Elio Gallinotti, all of Alessandria, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Apr. 29, 1975, Ser. No. 572,655

Claims priority, application Italy, May 9, 1974, 22489/74

Int. Cl.² C01G *37/02*

U.S. Cl. 252—62.51 **12 Claims**

1. A process for producing ferromagnetic chromium dioxide by thermally decomposing hydrated trivalent chromium chromate, said process comprising preparing a mixture of $Cr_2(CrO_4)_3.nH_2O$ wherein n is between 8 and 12 and antimony

or a compound thereof and wherein the antimony is present in the mixture in an amount corresponding to 0.2 to 1.8% by weight based on the weight of anhydrous $Cr_2(CrO_4)_3$ and heating the mixture to a temperature of 250°–500°C. at a pressure of at least 80 atmospheres.

3,979,311
CORROSION INHIBITOR COMPOSITIONS

Herbert D. Clark, Burbank, Calif., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed May 30, 1974, Ser. No. 474,568

Int. Cl.² C23F *11/04*; C23G *1/06*

U.S. Cl. 252—82 **4 Claims**

1. A synergistic mixture of from about 50% to about 70% by weight of ethynyl cyclohexanol and from about 50% to about 30% by weight of N,N′-dicyclohexyl-thiourea.

3,979,312
DETERGENT COMPOSITION CONTAINING NOVEL BLEACHING AGENT

Yunosuke Nakagawa, Koshigaya; Shigetsugu Sugiura, Tokyo; Kinjiro Matsunaga, Funabashi, and Yoshio Ito, Kohriyama, all of Japan, assignors to Kao Soap Co., Ltd. and Nippon Peroxide Co., Ltd., both of Tokyo, Japan

Filed July 7, 1975, Ser. No. 593,203

Claims priority, application Japan, July 12, 1974, 49-79967

Int. Cl.² C11D *3/395*, *7/54*

U.S. Cl. 252—99 **3 Claims**

1. A substantially neutral detergent composition having a pH of about 6 to about 8, consisting essentially of

from about 3 to about 40 percent by weight of $4Na_2SO_4.2H_2O_2.NaCl$,

from about 3 to about 50 percent by weight of water-soluble anionic surfactant, or water-soluble nonionic surfactant, or water-soluble amphoteric surfactant, or mixtures thereof,

from about 10 to about 90 percent by weight of water-soluble neutral inorganic detergent builder or filler salt,

from zero to about 20 percent by weight of water-soluble alkaline inorganic detergent builder salt, with the proviso that the amount of said water-soluble alkaline inorganic builder salt is such that the pH of the detergent composition is not higher than about 8, and

from zero to about 10 percent by weight of water-soluble organic detergent builder,

the detergent composition being free of activator for said $4Na_2SO_4.2H_2O_2.NaCl$.

3,979,313
BLEACHING COMPOSITION

Yunosuke Nakagawa, Koshigaya; Shigetsugu Sugiura, Tokyo; Kinjiro Matsunaga, Funabashi, and Yoshio Ito, Kohriyama, all of Japan, assignors to Kao Soap Co., Ltd. and Nippon Peroxide Co., Ltd., both of Tokyo, Japan

Filed July 7, 1975, Ser. No. 593,201

Claims priority, application Japan, Oct. 3, 1974, 49-114129

Int. Cl.² C11D *7/54*, *7/18*, *7/56*

U.S. Cl. 252—99 **9 Claims**

1. A bleaching composition consisting essentially of from about 20 to about 100 percent by weight of a mixture of

1. $4Na_2SO_4 \cdot 2H_2O_2 \cdot NaCl$, and
2. an activating agent capable of reacting with hydrogen peroxide in aqueous solution to form an organic peracid,

wherein the weight ratio of (2) / (1) is from 99/1 to 1/99,

from zero to about 10 percent by weight of water-soluble anionic surfactant, or water-soluble nonionic surfactant or mixtures thereof,

from zero to about 80 percent by weight of water-soluble neutral inorganic detergent builder or filler salt,

from zero to about 30 percent by weight of water-soluble alkaline inorganic detergent builder salt, and

from zero to about 10 percent by weight of water-soluble organic detergent builder.

3,979,314
DETERGENT COMPOSITIONS

Terence Frederick Child, Wirral, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Aug. 14, 1974, Ser. No. 497,425

Claims priority, application United Kingdom, Aug. 15, 1973, 38646/73

Int. Cl.² C11D *3/12*

U.S. Cl. 252—140 **13 Claims**

1. A detergent composition comprising from about 5% to about 40% of a synthetic anionic, nonionic, amphoteric or zwitterionic detergent active compound, from about 10% to 75% of sodium or potassium carbonate detergency builder and from about 5% to about 60% of finely divided precipitated calcium carbonate prepared by passing carbon dioxide into a suspension of calcium hydroxide, said calcium carbonate having a surface area of from about 30 to about 100 square meters per gram (m^2/g) treated before drying with a water insoluble inorganic dispersing aid selected from the group consisting of natural montmorillonite-type clays and synthetic montmorillonite-type materials, in an amount of about 1% to about 50% by weight based on the weight of the calcium carbonate, said treated calcium carbonate having a decreased tendency to aggregation and deposition on washed fabrics.

3,979,315
METHOD FOR TREATING SCALE

Jack F. Tate; Russell D. Shupe, and Jim Maddox, Jr., all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 20, 1974, Ser. No. 534,960

Int. Cl.² C02B *5/06*

U.S. Cl. 252—180 **4 Claims**

1. A method of controlling the build-up of inorganic mineral scale deposits in an aqueous system which comprises incorporating into said system a scale-treating composition consisting essentially of a sulfonated, ethoxylated compound having the general formula:

$$R(OCH_2CH_2)_nSO_3A^+$$

wherein R is an alkylphenyl group containing from about 6 to about 18 carbon atoms in the alkyl portion thereof, *n* is a number from one to about 10, including fractions, and A^+ is a monovalent cation selected from the group consisting of sodium, potassium, and ammonium, and mixtures thereof, in a concentration of from about 0.0005% to about 0.005%, on a weight basis.

3,979,316
PELLETED SULFUR COMPOSITIONS AND PROCESSES FOR THEIR PRODUCTION

Henning Bartzsch, Hannover, Germany, assignor to Kali-Chemie Aktiengesellschaft, Hannover, Germany

Filed Sept. 27, 1973, Ser. No. 401,502

Claims priority, application Germany, Sept. 27, 1972, 2247371

Int. Cl.² C09K *3/00*

U.S. Cl. 252—189 **6 Claims**

1. A process for the production of a pelleted sulfur composition consisting essentially of particles of sulfur which include a substantial proportion of carbondisulfide-insoluble sulfur particles which comprises subjecting the sulfur particles to a simple mixing operation in a high-intensity mixing apparatus together with a binder consisting essentially of a rubber plasticizing oil whose surface tension has been reduced by an amount of an anionic or nonionic surfactant, the amount of the surfactant being equivalent to between 0.5 and 10% by weight of the total mixture and the amount of the plasticizing oil being equivalent to between 10 and 60% of the weight of

the total mixture, and continuing the mixing until the mixture is formed into pellets.

3,979,317
VOLATILE CLEANING SOLUTION FOR PHOTORECEPTORS

Dominic J. Angelini, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 28, 1975, Ser. No. 572,038

Int. Cl.² C09D *9/04*

U.S. Cl. 252—170 **12 Claims**

1. A method of cleaning insulating photoconductive photoreceptor surfaces comprising providing a filmed photoconductive insulating photoreceptor surface, applying a cleaning solution which consists essentially of a lower alcohol, water and 3,5-dimethyl-1-hexyn-3-ol surfactant, with the proviso that the ratio of said alcohol to said water is 30–90 parts of said alcohol per 70–10 parts said water and that said surfactant comprises 0.1–50 parts per 100 parts of said solution.

3,979,318
STABILIZED SODIUM PERCARBONATE COMPOSITION

Fumikatsu Tokiwa, Sakura, and Takehiko Kobayashi, Zushi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Dec. 13, 1974, Ser. No. 532,414

Claims priority, application Japan, Dec. 20, 1973, 48-143092

Int. Cl.² C01B *15/10*

U.S. Cl. 252—186 **11 Claims**

1. A stabilized sodium percarbonate composition consisting essentially of particles of sodium percarbonate uniformly coated with a film of a hydrophobic liquid organic compound in an amount of from about 5 to about 10 weight percent, based on the weight of said sodium percarbonate particles, said hydrophobic liquid organic compound having a melting point below about 15°C, a boiling point above about 100°C, and being non-reactive to and being a non-solvent for sodium percarbonate and sodium perborate, said hydrophobic liquid organic compound forming a moisture-resistant coating film on said sodium percarbonate particles, said composition also containing from about 5 to about 20 weight percent of a fine powder of sodium perborate, based on the weight of said sodium percarbonate particles, said sodium perborate particles being of smaller size than said sodium percarbonate particles and being mixed in or adhered to said film.

3,979,319
LIQUID CRYSTAL COMPOSITION

Masakazu Fukai, Nishinomiya; Komei Asai, Hirakata; Seiichi Nagata, Sakai; Hiroshi Tatsuta, Katano, and Koshiro Mori, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

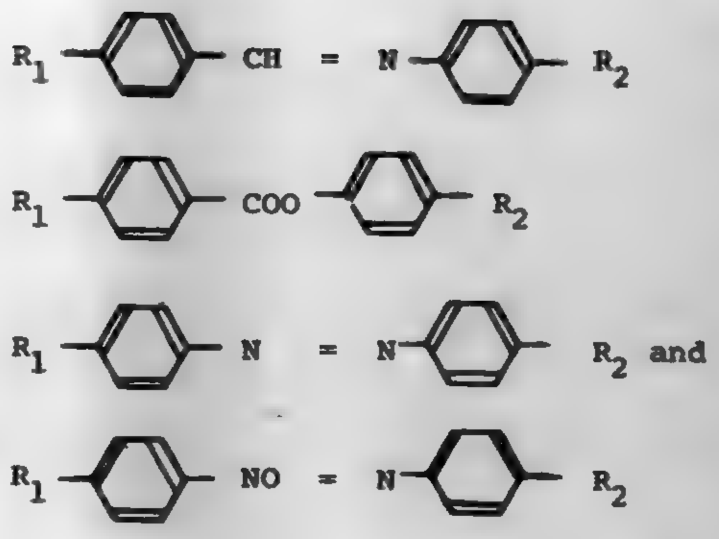
Filed Apr. 4, 1973, Ser. No. 347,632

Claims priority, application Japan, Apr. 5, 1972, 47-34764; Apr. 5, 1972, 47-34765; Apr. 5, 1972, 47-34766; Apr. 5, 1972, 47-34767; Apr. 5, 1972, 47-34768; Apr. 5, 1972, 47-34769; Apr. 5, 1972, 47-34770

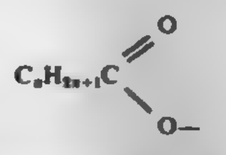
Int. Cl.² C09K *3/34*

U.S. Cl. 252—299 **2 Claims**

1. A liquid crystal composition consisting essentially of a nematic liquid crystal compound selected from the group consisting of compounds of the formula,

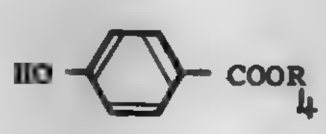


wherein R_1 and R_2 represent C_nH_{2n+1}—, $C_nH_{2n+1}O$— or

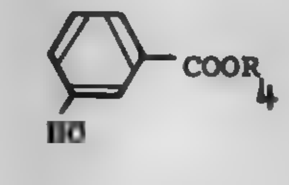


functional group ($1 \leq n \leq 7$) or mixture thereof and 0.1% to 5% by weight, based on said liquid crystal compounds, of at least one additive compound selected from the group consisting of compounds of the formula,

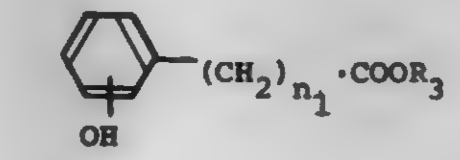
(1)



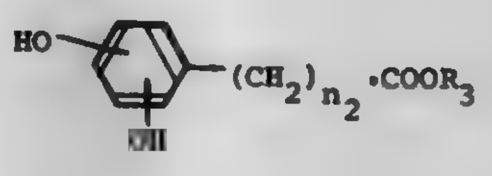
(2)



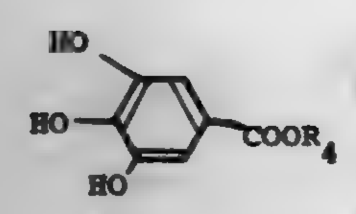
(3)



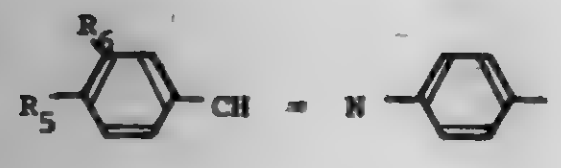
(4)



(5)

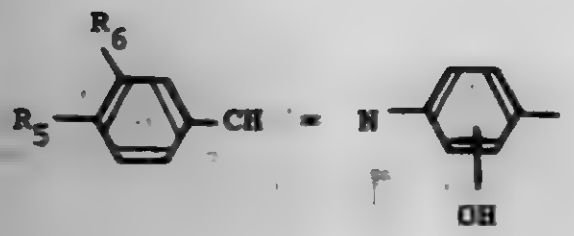


(6)



$(CH_2)_{n_2} \cdot COOR_3$ and

(7)



$(CH_2)_{n_1} \cdot COOR_3$

wherein R_3 is selected from the group consisting of hydrogen and a normal alkyl group having 1 to 18 carbon atoms; R_4 is a normal alkyl group having 1 to 18 carbon atoms; R_5 is selected from the group consisting of hydrogen, hydroxy, a normal alkyl group having 1 to 16 carbon atoms and a normal alkoxy group having 1 to 16 atoms; R_6 is selected from the group consisting of hydrogen, hydroxy and nitro; n_1 is for 1 or 2 and n_2 is 0, 1 or 2.

3,979,320

LIQUID CRYSTAL COMPOSITION

Minoru Ozutsumi; Yoshitake Ohnishi; Yoshihide Miyazawa, and Michihiro Gonda, all of Tokyo, Japan, assignors to Hodogaya Chemical Co., Ltd. and Nippon Electric Company, Ltd., both of Tokyo, Japan

Filed Sept. 18, 1974, Ser. No. 507,130

Claims priority, application Japan, Sept. 22, 1973, 48-106521; Sept. 22, 1973, 48-106522; Oct. 30, 1973, 48-121928

Int. Cl.² C09K *3/34;* G02F *1/13*

U.S. Cl. 252—299 **27 Claims**

1. A liquid crystal composition capable of spontaneously forming therein a homogeneous alignment of liquid crystalline molecules, which comprises a liquid crystal material and an additive consisting of at least one five- or six-membered heterocyclic compound selected from the group consisting of isatin; 2,5-diketopiperazine; 1-phenyl-2,5-diketopiperazine; 1,4-diphenyl-2,5-diketopiperazine; 3-aminopyrazolone; 1-phenyl-3-aminopyrazolone; creatinine; α-amino -γ-butyrolactam; 5-amino-barbituric acid; 5-phenylbarbituric acid; 5-(σ-aminophenyl) barbituric acid; 4-phenylurazol; 4-(p-hydroxyphenyl) urazol; 4-(p-aminophenyl) urazol; 1-phenylurazole; 4-methylcarbostyril; carbostyril; 4-hydroxycarbostyril; hydantoin; hydantoin imide-(2); hydrouracil; 2,4-tetrahydroquinazoline-dion; 3-methylpyrazolone; 1,2,4-triazole-5-thiol; 1,2,4-triazole-3,5-dithiol; 1-(m-chlorophenyl) barbituric acid; isatoic acid anhydride; 2-hydroxypyridine; 3-amino-1,2,4-triazolo[1,2-d] barbituric acid; 8-hydroxyquinoline; tautomeric isomers of the above mentioned compounds, and mixtures of two or more of the above mentioned compounds.

11. The liquid crystal composition as claimed in claim 1, which further contains a reversible or oxidation-reduction system in the form of a supplementary additive consisting of at least one substance selected from the class consisting of

a. mixtures of at least one quinone compound and at least one quinone compound wherein oxo groups of the quinone compound are substituted by hydroxyl groups;
b. organic cyclic compounds having at least one radical selected from the group consisting of hydroxyl and amino radicals and at least one radical selected from the group consisting of carbonyl and imino radicals, and;
c. mixtures of at least one organic cyclic compound as defined in the above Item (b) and at least one compound selected from the group consisting of the quinone compounds and the substituted quinone compounds as defined in the above Item (a).

3,979,321

MIXTURE OF LIQUID CRYSTALS EXHIBITING POSITIVE DIELECTRIC ANISOTROPY AND A WIDE MESOMORPHIC RANGE

André Couttet; Jean Claude Dubois, and Annie Zann, all of Paris, France, assignors to Thomson-CSF, Paris, France

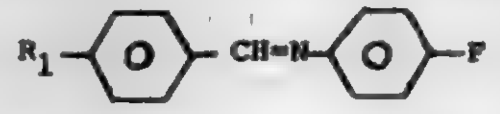
Filed June 11, 1975, Ser. No. 585,869

Claims priority, application France, June 14, 1974, 74.20714

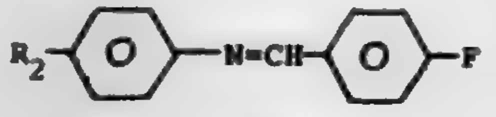
Int. Cl.² C09K *3/34;* G02F *1/13*

U.S. Cl. 252—299 **6 Claims**

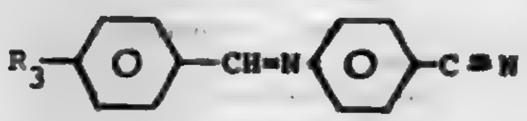
1. A eutectic mixture of liquid crystals consisting essentially of at least one compound selected from the formulae:



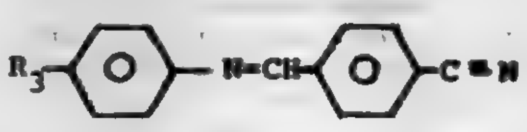
where R_1 is C_4H_9O, $C_6H_{13}O$ or $C_8H_{17}O$ or



where R_2 is C_5H_{11}, C_6H_{13} or C_7H_{15}, and mixtures thereof, mixed with at least one compound selected from the formulae:

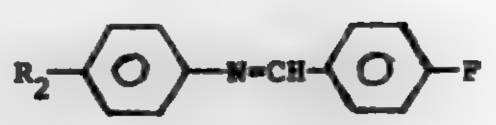


and

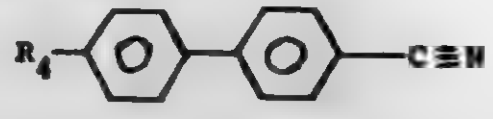


where R_3 is $C_6H_{13}O$ or $C_8H_{17}O$ and mixtures thereof.

2. A eutectic mixture of liquid crystals consisting essentially of at least one compound of the formula:



where R_2 is C_5H_{11}, C_6H_{13} or C_7H_{15} mixed with at least one compound of the formula:



where R_4 is C_5H_{11}, C_3H_7O, $C_5H_{11}O$, $C_8H_{17}O$ or $C_7H_{15}O$.

3,979,322

PHOSPHATE GLASS FOR LASER USE

Nikolai Efimovich Alexeev, ulitsa Gorkogo 8, korpus 1, kv. 21, Moscow; Igor Mikhailovich Buzhinsky, ulitsa Pervomaiskaya 5, kv. 46, Lytkarino Moskovskoi oblasti; Mark Efremovich Zhabotinsky, ulitsa Pogodinskaya 2/3, kv. 53, Moscow; Anatoly Andreevich Izyneev, ulitsa Vokzalnaya, 19, kv. 18, Fryazino Moskovskoi oblasti; Elizaveta Ivanovna Koryagina, ulitsa Oktyabrskaya 15, kv. 31, Lytkarino Moskovskoi oblasti; Valery Borisovich Kravchenko, ulitsa Lenina 14, kv. 47, Fryazino Moskovskoi oblasti; Jury Petrovich Rudnitsky, ulitsa Ostrovityanova 31, kv. 298, Moscow; Valentin Pavlovich Gapontsev, ulitsa Godovikova 1, kv. 110, Moscow, and Vadim Vasilievich Tsapkin, Tatarskaya ulitsa 4, kv. 14, Moscow, all of U.S.S.R.

Filed Apr. 9, 1973, Ser. No. 349,669

Int. Cl.² C09K *11/10*, *11/08*, *11/42;* C03C *3/00*

U.S. Cl. 252—301.6 P **6 Claims**

1. A glass for laser use having the following mol percentage composition:

phosphorus pentoxide — 35–49;
oxides of one or more alkali metals — 1–30;
oxides of one or more metals of group II — 20–45;
neodymium oxide — 0.1–25;
oxides of elements selected from the group consisting of B, Al, Nb and Pb — 0–27;

the ratio of the sum total of the oxides of mono-, bi- and trivalent metals to the phosphorus pentoxide being in excess of unity, said glass having a thermal refractive index coefficient of (−30 to + 20) . 10^{-7} deg^{-1} and a cross-sectional area of stimulated radiation of 1.10^{-20} to 5.10^{-20} cm^2.

3,979,323

METHOD OF MAKING A BITUMINOUS EMULSION

John Spahr, c/o P.O. Box 1457, Lafayette, Ind. 47902; Kenneth E. McConnaughay, deceased, late of Lafeyette, Ind., by Esther L. McConnaughay, executrix, 1205 Hayes St., West Lafayette, Ind. 47906

Filed Aug. 20, 1973, Ser. No. 389,802

Int. Cl.² B01J *13/00*

U.S. Cl. 252—311.5 **5 Claims**

1. A method of making a bituminous emulsion comprising the steps of mixing a straight chain fatty acid containing from 11 to 20 carbon atoms with a water solution of a base having a pH in range of from about 7.5 to about 9.0 to produce a water dispersion of said acid, said water solution containing at least 9 parts of water to one part of said acid, mixing said dispersion with an aminoethyl substituted imidazoline to form an emulsifier, said imidazoline containing an alkyl radical containing from 10–19 carbon atoms, said dispersion being mixed with said imidazoline to provide from about 1.5 to about 2.5 parts of said fatty acid to one part imidazoline, dissolving said emulsifier in water and emulsifying it with a petroleum bitumen to form the finished emulsion, said bitumen being added in an amount to constitute from about 60% to about 75% of said emulsion and said emulsifier being added in an amount of from about 0.5% to about 2% based upon the weight of the bitumen.

3,979,324

DYE SOLVENTS FOR PRESSURE-SENSITIVE COPYING SYSTEMS

John F. Herber, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

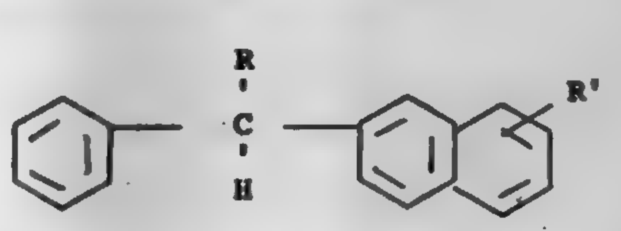
Filed Sept. 8, 1975, Ser. No. 611,465

Int. Cl.² B01F *1/00*

U.S. Cl. 252—364 **5 Claims**

1. A dye solvent composition for use in pressure-sensitive copying systems comprising

A. About 45 to 75 weight percent of one or more compounds having the general formula



wherein R and R′ can be the same or different and are selected from the group consisting of hydrogen, methyl and ethyl; and

B. about 55 to 25 weight percent of
  i. hexylbenzene; or
  ii. a composition comprising about 45 to 75 weight percent C_{10} to C_{16} alkanes and the balance C_7 to C_{10} alkylbenzenes.

3,979,325

WINDOWLESS CRYOSTATIC DEVICE FOR LOW-TEMPERATURE SPECTROMETRY

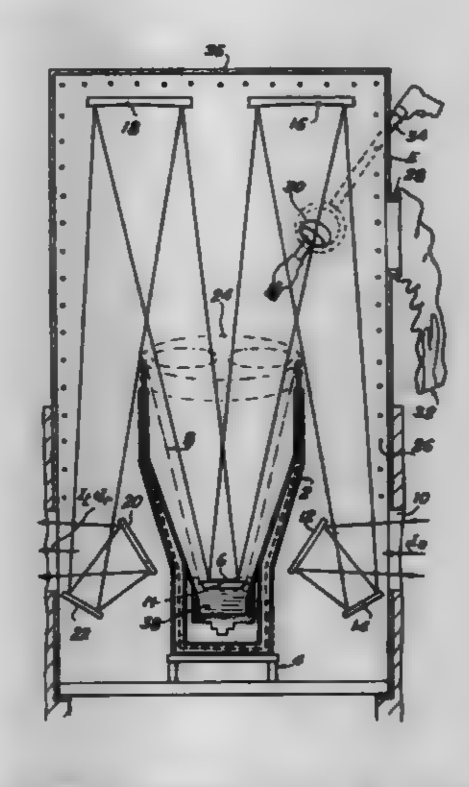
Maurice Ceccaldi, Chatillon, and Pierre Roubeau, Palaiseau, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 10, 1975, Ser. No. 566,700

Claims priority, application France, Apr. 22, 1974, 74.13951

Int. Cl.² G01J *3/02*

U.S. Cl. 250—352 **9 Claims**



1. A windowless cryostatic device for low-temperature spectrometry and primarily employed in infrared spectrometry, wherein said device comprises:

a vertically oriented vessel having an open top, heat-insulating walls and a bottom portion capable of containing a cryogenic liquid;
a cryogenic liquid contained in said bottom portion of said vessel;

a bell-shaped housing encapsulating the vessel, said housing defining an interior chamber containing said vessel, said housing provided with at least one aperture, said aperture being such as to establish an area of communication between a point external to said housing and said interior chamber, said area of communication being a spaced distance below the open top of said vessel;

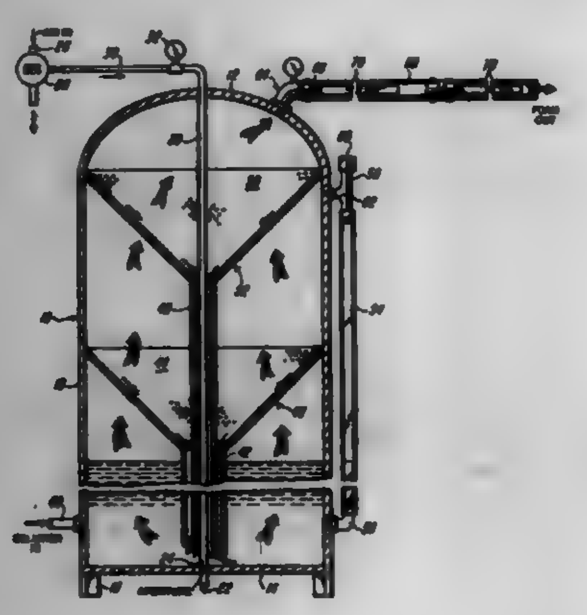
support means for maintaining a sample to be studied in a position above said cryogenic liquid such as to ensure that said sample is cooled by said support means, said support means being cooled by the cryogenic liquid;

means for introducing the cryogenic liquid into the vessel.

3,979,326
DRY FOAM PRODUCING APPARATUS

James Chatterton, 2916 Philadelphia Drive, Dayton, Ohio 45405

Filed Apr. 11, 1974, Ser. No. 459,882
Int. Cl.² B01J *13/00;* A62C *35/00*
U.S. Cl. 252—359 E **14 Claims**



1. Foam producing apparatus comprising, a container having inlet means providing that it receives interiorly thereof, in its bottom, a limited amount of a liquid solution having foaming properties when subjected to an introduction of air, means for injecting air into said liquid at the bottom of said container to cause portions thereof to re-form as bubbles and to rise above the level of said liquid as a layered foam-like substance, multi-apertured structure disposed within and in elevated spaced relation to the bottom of said container through the apertures of which the foam-like substance is forced to squeeze the bubbles of which it is comprised, thereby to extract liquid from the walls thereof, and tubular guide means connected with and dependent from a central area of said multi-apertured structure arranged to extend substantially to the bottom of the container for directing said extracted liquid in a guided flow, back to the bottom of said container.

3,979,327
DYE SOLVENTS FOR PRESSURE-SENSITIVE COPYING SYSTEMS

John F. Herber, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Sept. 8, 1975, Ser. No. 611,116
Int. Cl.² B01F *1/00*
U.S. Cl. 252—364 **4 Claims**

1. A dye solvent composition for use in pressure-sensitive copying systems comprising:

A. About 45 to 55 weight percent of hydrogenated terphenyl having no greater than about 40% hydrogenation; and

B. About 55 to 45 weight percent of

i. hexylbenzene; or

ii. a composition comprising about 45 to 75 weight percent C_{10} to C_{16} alkanes and the balance C_7 to C_{10} alkylbenzene.

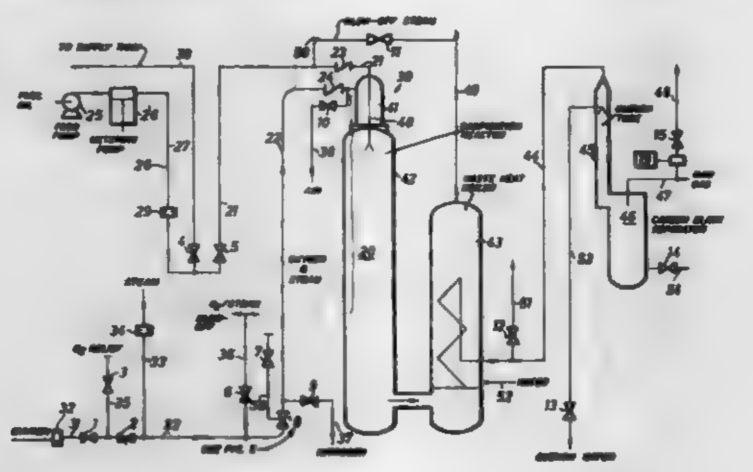
3,979,328
AUTOMATIC CONTROL FOR PROCESS FOR THERMALLY GASIFYING HYDROCARBONS WITH OXYGEN AND WATER VAPOR

Günther Pockrandt, Bad Homburg, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 12, 1974, Ser. No. 523,191

Claims priority, application Germany, Dec. 6, 1973, 2360757

Int. Cl.² C01B *2/14*
U.S. Cl. 252—373 **4 Claims**



1. In a process for thermally gasifying hydrocarbons with oxygen and steam under pressure in the range of 3–100 kilograms per square centimeter and at temperatures in the range of about 1000–1500°C wherein the gasification reaction is carried out in a reactor having temperature measuring means, valved conduits for the supply of hydrocarbons, oxygen, steam and an inert purging gas, and valved blow-off conduits for venting oxygen and steam, the hydrocarbon supply conduit connecting a nozzle in the reactor and a hydrocarbon supply tank and having a feed pump and a valved recycle conduit for returning hydrocarbon to the supply tank from the hydrocarbon supply conduit, and the product gas from the gasification reactor is cooled and scrubbed, the improvement which comprises carrying out the following sequence of steps during start-up of the gasification reactor via an electric circuit as shown in FIGS. 3 and 4:

i. receiving at a first electronic gate device (80) signals (S2) and (S4) indicating that the hydrocarbon feed pump (26) is energized and the blow-off conduit (36) is open;

ii. sending a signal via switch (81) to said first gate device (80) whereupon said first gate device emits a signal (S5) causing the hydrocarbon recycle conduit (30) to open via valve (4) and the hydrocarbon supply conduit (21) to close via valve (5) thereby causing hydrocarbons normally fed to the reactor to be recycled;

iii. the closing of the hydrocarbon supply conduit (21) emitting a signal (S61) causing at least the opening of the oxygen supply conduit (31) via valve (1);

iv. receiving signals (S8), (S9), (S13) and (S14) at a second gate device (82) from the supply conduits for hydrocarbons (21), oxygen (31) and steam (33) whereupon a signal (S17) is given to initiate a second signal via switch (86) which causes the purge gas supply conduit (37) to open via valve (9), the hydrocarbon supply conduit (21) to open via valve (5) and the oxygen and steam supply conduit (22) to open via valve (8); and

v. the opening of the oxygen and steam supply conduit (22) emitting signal (S25) causing the purge gas conduit (37) to close via valve (9) and the blow-off conduit (36) to close via valve (6).

3,979,329
CARBON MOLECULAR SIEVE CATALYST

Barry John Cooper, London, England, assignor to Johnson Matthey & Co., Limited, London, England

Continuation of Ser. No. 97,043, Dec. 10, 1970, Pat. No. 3,793,224. This application Feb. 19, 1974, Ser. No. 443,787

Claims priority, application United Kingdom, Dec. 12, 1969, 60743/69

Int. Cl.² B01J *37/00, 29/02, 21/18, 23/42*
U.S. Cl. 252—422 **2 Claims**

1. A method of preparing a selective catalyst which includes the steps of treating furfuryl alcohol with an aqueous solution of chloroplatinic acid, warming the mixture to initiate polymerisation of the alcohol, drying the polymer by heating under nitrogen, curing the polymer by heating to 200°C for 16 hours and carbonising the polymer by heating to 650°C for four hours, both the curing and carbonising steps being carried out under nitrogen.

2. A method of preparing a selective catalyst which includes the steps of heating furfuryl alcohol in an aqueous solution of chloroplatinic acid to polymerise said furfuryl alcohol, curing the polymer and carbonising the same, the curing and carbonising being carried out in an inert atmosphere.

3,979,330
CARBON CONTAINING MOLECULAR SIEVES

Heinrich Münzner, Essen-Kray; Heinrich Heimbach, Bochum; Werner Körbacher, Essen-Borbeck; Werner Peters, Wattenscheid; Harald Jüntgen, Essen-Heisingen; Karl Knoblauch, Essen, and Dieter Zündorf, Essen-Heisingen, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Division of Ser. No. 161,211, July 9, 1971, Pat. No. 3,801,513. This application Feb. 21, 1974, Ser. No. 444,381

Claims priority, application Germany, Apr. 23, 1971, 2119829

The portion of the term of this patent subsequent to Apr. 2, 1991, has been disclaimed.

Int. Cl.² C01B *13/00*
U.S. Cl. 252—445 **21 Claims**

1. In a process for the production of a carbon-containing molecular sieve, the step of contacting particulate coke having pores of a first effective size with a carbonaceous gaseous substance when said coke has a temperature in excess of about 600°C, said carbonaceous substance splitting off carbon at said temperature, and said carbon being at least partially deposited in said pores to thereby reduce the effective size of said pores from said first effective size to a smaller second effective size.

3,979,331
CATALYST FOR ALKYLATING AROMATIC HYDROCARBONS

George E. Stridde, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 503,985, Sept. 6, 1974. This application Dec. 6, 1974, Ser. No. 530,092

The portion of the term of this patent subsequent to June 22, 1992, has been disclaimed.

Int. Cl.² B01J *27/06, 29/00, 29/06*
U.S. Cl. 252—441 **5 Claims**

1. A catalyst comprising a synthetic hectorite-type clay containing a metallic cation having a Pauling electronegativity greater than 1.0 in cation exchange positions on the surface of said clay, said catalyst having the following structural formula:

$$[\,(M_{6-x}^{2+}\,Li_x^{+})^{VI}\,Si_8\,O_{20}(OH)_{4-y}\,F_y\,]\,(x\text{-}z)\,R^z$$

where

$0.33 \leq x \leq 1$

$0 \leq y \leq 4$

M is one or more divalent cations having an ionic radius not greater than 0.75 A, provided that M is less than 95 mole percent Mg, and

R is at least one of said metallic cations having a Pauling electronegativity greater than 1.0 of valence z.

3,979,332
HIGH TEMPERATURE METHANATION WITH MOLTEN SALT-BASED CATALYST SYSTEMS

Thomas E. Kiovsky, and Milton M. Wald, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 3, 1975, Ser. No. 546,371
Int. Cl.² B01J *27/08, 27/10, 27/20, 27/22*
U.S. Cl. 252—441 **19 Claims**

1. A molten metal salt-based catalyst system which is active in promoting methanation at reaction temperatures above 500°C comprising a molten metal salt carrier selected from the class consisting of the halides and carbonates of alkali metals and alkaline earth metals and the halides of zinc, copper, manganese, cadmium, tin and iron, and mixtures thereof, melting below 1000°C; said molten salt having dispersed therein one or more catalytically active forms of iron selected from the class consisting of finely divided elemental iron, iron oxides, iron carbides or mixtures thereof.

8. A molten metal salt-based catalyst system which is active in promoting methanation at reaction temperatures above 500°C comprising a molten iron halide carrier, said iron halide carrier having a minor amount of an alkali metal halide selected from the class consisting of sodium chloride and potassium chloride added thereto as a melting point depressant whereby the melting point of the resulting carrier is below 1000°C; said resulting iron halide carrier having dispersed therein one or more catalytically active metals selected from the class consisting of iron, molybdenum, manganese, nickel, cobalt, zinc, titanium, silver, copper and thorium in the form of finely divided elemental metals, metal oxides, metal carbides, or mixtures thereof.

3,979,333
ACTIVATING GROUP VIII METAL/ALUMINA CATALYSTS WITH HYDROGEN HALIDE/HALOSILANE/ORGANIC HALIDE

John W. Myers, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 3, 1975, Ser. No. 546,820
Int. Cl.² B01J *27/08, 27/10*
U.S. Cl. 252—441 **12 Claims**

1. A method for activating an alumina supported Pt, Ir, Os, Ru, Rh, or Pd metal catalyst which comprises:

heating said catalyst at a temperature within the range of 500° to 1600° F.;

contacting said catalyst at said temperature of 500° to 1600° F. with a dry activating gas comprising a hydrogen halide selected from the group consisting of HCl and HBr, a halosilane selected from the group consisting of chlorosilanes and bromosilanes, and an organic halide selected from the group consisting of chlorinated paraffins and brominated paraffins for a time sufficient to impart a halide content to the catalyst and to increase the activity of the catalyst, the weight ratio of said halosilane to said organic halide being within the range of 0.1:1 to 10:1; and

thereafter cooling said thus-contacted catalyst.

3,979,334
MANUFACTURE OF SPHEROIDAL ALUMINA PARTICLES

Richard K. Lee, Palatine, and John C. Foley, Waukegan, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 16, 1975, Ser. No. 568,765
Int. Cl.^{2} B01J *37/00*

U.S. Cl. 252—448 **10 Claims**

1. A method of manufacturing spheroidal alumina particles which comprises:

a. commingling an acidic alumina hydrosol with an ammonia precursor at below gelation temperature and forming a mixture comprising from about 6 to 10 wt. % aluminum and from about 1:1 to about 1.5:1 weight ratio of aluminum to the acid anion content thereof, said precursor being hydrolyzable to ammonia with increasing temperature, and aging the mixture with stirring at a temperature of from 2° to about 25°C. for a period of from about 1 to about 4 hours;

b. dispersing the aged mixture as droplets in a hot oil bath and forming hydrogel spheres therein;

c. aging said spheres at an elevated temperature effecting decomposition of the residual ammonia precursor contained therein; and

d. washing, drying and calcining the aged spheres.

3,979,335
PROCESS FOR THE PREPARATION OF SYNTHETIC ZEOLITES

Georgy Anatolievich Golovko, Pushkin, bulvar A.Tolstogo, 16, kv. 29, Leningrad; Boris Alexandrovich Lipkind, ulitsa Burevestnika, 9, kv. 3; Albina Timofeevna Slepneva, ulitsa L.Tolstogo, 5, kv. 50, both of, Gorky; Alexandr Semenovich Leontiev, ulitsa Gagarina, 13, kv. 13, Salavat, Bashkirskaya ASSR; Vladimir Mikhailovich Masla, ulitsa Michurinskaya, 111, kv. 54, Tambov; Elena Nikolaevna Berezovskaya, ulitsa Engelsa, 13, kv. 67, Gorky; Valentin Alexandrovich Burylov, ulitsa Kuibysheva, 7, kv. 69, Gorky; Alexandr Mikhailovich Zubkov, ulitsa Geroev Kosmosa, 7, kv. 148, Gorky; Olga Alexeevna Konakova, ulitsa Nevzorovoi, 39, kv. 8, Gorky; Alexandr Ivanovich Judaev, ulitsa Pushkina, 22, kv. 4, Salavat, Bashkirskaya ASSR; Valentin Nikolaevich Pavlychev, ulitsa Chapaeva, 9, kv. 7, both of Salavat, Bashkirskaya ASSR; Jury Yakovlevich Ignatov, ulitsa Kolomenskaya, 33/40, kv. 89, and Evgeny Alexandrovich Kharitonov, ulitsa Petra Lavrova, 21, kv. 5, both of Leningrad, all of U.S.S.R.

Filed Dec. 27, 1974, Ser. No. 537,110
Int. Cl.^{2} B01J *29/06*

U.S. Cl. 252—455 Z **10 Claims**

1. A process for the preparation of synthetic zeolite pellets of high mechanical strength and dynamic activity comprising mixing zeolite powder of a particle size not exceeding 5 mcm with a natural clay binder of a particle size of 250–500 A; wetting the resulting mixture with water and pelletizing the same; and calcining the resulting pellets at 600°–700°C.

3,979,336
CATALYST FOR DISSOCIATION OF AMMONIA AND METHOD OF PREPARING SAME

Evgeny Zinovievich Golosman, ulitsa L. Tolstogo, 46/1, kv. 1; Viktor Stanislavovich Sobolevsky, ulitsa Moskovskaya, 2/14, kv. 5; Viktor Petrovich Lytkin, ulitsa Trudovye rezervy, 70b, kv. 95; Nikolai Nikitovich Axenov, ulitsa Druzhby, 19a, kv. 26; Alexandra Ivanovna Golovkova, ulitsa Komsomolskaya, 6, kv. 35, all of Novomoskovsk, Tulskoi oblasti; Yakov Anatolievich Peker, ulitsa Admirala Lazareva, 12, kv. 20; Dmitry Ivanovich Zinchenko, prospekt Mira, 9, kv. 54, both of Lipetsk, and Sergei Ivanovich Ruzinsky, poselok 25-letia Khimkombinata, ulitsa Azotchikov, 4, Novomoskovsk, Tulskoi oblasti, all of U.S.S.R.

Filed Dec. 10, 1974, Ser. No. 531,282
Int. Cl.^{2} B01J *29/06, 29/10;* **C01B** *2/02*

U.S. Cl. 252—455 R **2 Claims**

1. A catalyst for dissociation of ammonia consisting of oxides of iron, aluminium oxide, calcium oxide, silicon dioxide, and magnesium oxide, said components being present in the catalyst in the following quantities, in percent by weight:

iron oxides	85 – 52.6
aluminium oxide	12 – 45
calcium oxide	1.35 – 2
silicon dioxide	0.35 – 0.4
potassium oxide	0.5 – 0.6.

3,979,337
CATALYST FOR REDUCING NITROGEN OXIDES

Kazuhide Miyazaki, Tanashi, and Kiyomi Abe, Kokubunji, both of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Japan

Filed Mar. 21, 1974, Ser. No. 453,286
Claims priority, application Japan, June 15, 1973, 48-66972
Int. Cl.^{2} B01J *21/04, 23/72, 23/74*

U.S. Cl. 252—466 J **2 Claims**

1. A catalyst prepared by impregnating a heatresistant carrier with a solution of an aliphatic monocarboxylate or an aliphatic tricarboxylate of the metals (1) iron, (2) at least one of nickel and cobalt and (3) copper, converting the thus impregnated monocarboxylate or tricarboxylates of said metals to the corresponding metal hydroxides with an alkaline solution and reducing said metal hydroxides with a reducing gas to the corresponding metals, said metals being contained in the ratio by weight of 60–40:20–30:20–30 respectively.

3,979,338
9-[9,12-EPOXY-ETHYL]-4-METHYL TRICYCLO[6.2.1.0^{2,7}]UNDEC-4-ENE AND 9-[9,12-EPOXY-ETHYL]-5-METHYL TRICYCLO[6.2.1.0^{1,7}]UNDEC-4-ENE ODOR-MODIFYING AGENTS

Erling Sundt, Pinchat-Geneva, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

Division of Ser. No. 528,669, Dec. 2, 1974, Pat. No. 3,953,534. This application Dec. 2, 1975, Ser. No. 637,056
Claims priority, application Switzerland, Oct. 11, 1971, 14784/71; May 19, 1972, 7456/72
Int. Cl.^{2} C11B *9/00*

U.S. Cl. 252—522 **1 Claim**

1. A perfume composition comprising as one of its active ingredients at least one compound selected from the group consisting essentially of 9-[9,12-epoxy-ethyl]-4methyl-tricyclo[6.2.1.0^{2,7}]undec-4-ene and 9-[9,12-epoxy-ethyl]-5-methyl-tricylco[6.2.1.0^{2,7}]undec-4-ene in admixture with a suitable carrier.

3,979,339
HARD SURFACE CLEANING COMPOSITIONS

Gene W. Claybaugh, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 18, 1975, Ser. No. 559,460
Int. Cl.^{2} C11D *3/37*

U.S. Cl. 252—524 **5 Claims**

1. A method for removing soil from hard surfaces, the method comprising:

a. contacting a surface with an aqueous solution containing

1. from about 50 ppm to about 1000 ppm of a surfactant selected from the group consisting of anionic, nonionic, ampholytic, zwitterionic surfactants, and mixtures thereof;
2. from about 100 ppm to about 20,000 ppm of a builder selected from the group consisting of organic and inorganic builders and mixtures thereof;
3. from about 2 ppm to about 1000 ppm of a water soluble or dispersible nonionizing polymeric material selected from the group consisting of polyvinyl alcohols having a degree of hydrolysis of from about 60% to about 100% and a degree of polymerization of from about 100 to about 7000; and polyvinyl pyrrolidones having a degree of polymerization of from about 50 to about 6000; and mixtures thereof; and

b. oscillating the solution across the hard surface to remove the soil thereon.

3,979,340
OLEFIN SULFONATE DETERGENT COMPOSITIONS

Stephen Cajetan Klisch, Somerset, and Charles Andrew Martin, Morris Plains, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Apr. 9, 1973, Ser. No. 348,873
Int. Cl.^{2} C11D *1/655*

U.S. Cl. 252—548 **4 Claims**

1. A liquid detergent composition having reduced gelling tendency which consists essentially of 25 to 35% by weight of a mixture of the sodium salt of a sulfonated alpha olefin containing about 14 to 16 carbon atoms and an ammonium salt of an ethoxylated alcohol sulfate containing an alkyl group having an average of about 12 to 15 carbon atoms and from 1 to 5 ethenoxy groups, the weight ratio of olefin sulfonate to alcohol sulfate being about 1.1:1, and 1% to 10% by weight of a C_{12}–C_{14} alkanoic acid diethanolamide in 30% to 90% by weight of an aqueous medium containing from 1% to 10% by weight of ethanol, said composition containing at least 15 mole per cent of ammonium cations.

3,979,341
UREA FORMALDEHYDE FOAM

Marcel Widmann, West Hill, Canada, assignor to Borden Products Limited, West Hill, Canada

Filed May 28, 1974, Ser. No. 473,759
Int. Cl.^{2} C08J *9/30;* **C08L** *61/24*

U.S. Cl. 260—2.5 F **10 Claims**

5. A flame-retardant, intumescent foam which has thermal and sound insulating properties prepared from a mixture of (a) an aqueous urea-formaldehyde resin solution and (b) an aqueous foaming agent solution containing an acid curing agent, the resin solution comprising a condensation product of urea and formaldehyde in the ratio of 1.0 to 2.4 mols of formaldehyde per mol of urea; from 6.5 to 500 mmols of a foam charring agent selected from ethylene glycol and polyalkylene glycols containing from 2 to 8 carbon atoms in the alkylene moiety and having a molecular weight up to 200, glycerine, pentaerythrytol, sugars and mixtures thereof; from 0.3 to 1.2 mmols of a component to provide uniform cell size in the foam selected from water-soluble alkaline earth metal salts; from 3 to 310 mmols of a foam hydrolysis resistance component selected from dicyandiamide, guanylurea, calcium cyanamide, guanidine derivatives, hexamethylene tetramine; and from 2 to 30 mmols of a foam aging component selected from water-soluble alkali metal halogens.

3,979,342
MANUFACTURE OF VESICULATED POLYMER GRANULES

Andrejs Baidins, and Edward William Gillow, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del. Continuation-in-part of Ser. No. 382,175, July 24, 1973. This application Sept. 19, 1974, Ser. No. 507,550

Int. Cl.^{2} C08J *9/28*

U.S. Cl. 260—2.5 N **3 Claims**

1. In a process for preparing vesiculated crosslinked polyester granules by polymerizing the oil phase of a water-in-oil-in-water emulsion formed from (a) a polymerizable water-immiscible oil phase composed of an ethylenically unsaturated monomer and a polyester obtained from the condensation of one or more polyhydric alcohols and one or more polycarboxylic acids, at least one of said alcohols or acids being unsaturated, (b) an aqueous phase, containing a base having a dissociation exponent of less than 8 in which said oil phase is dispersed to from a water-in-oil-in-water emulsion, and (c) distributed in at least one of said phases a free-radical polymerization initiator with or without a polymerization promoter,

wherein the improvement comprises effecting the polymerization of said oil phase essentially instantaneously and substantially immediately following the formation of said water-in-oil-in-water emulsion by

i. contacting said oil phase at a temperature from 10° to 40°C. with said aqueous phase at a temperature from 65° to 95°C.

said oil phase containing a free-radical polymerization initiator capable of activation at a temperature from 65° to 95°C. in the presence of water,

said aqueous phase containing in addition to said base at least one emulsion stabilizing agent selected from the group consisting of surface active agents and nonflocculating polymeric thickeners,

ii. recovering the product thereby formed as an aqueous slurry of said vesiculated cross-linked polyester granules.

3,979,343
SURFACE COATING COMPOSITIONS CONTAINING PIGMENT COATED WITH A POLYMERIC ORGANIC POLYOL

Thomas Graham, Clitheroe; Michael James Yates Foley, clayton-Le-Dale, near Blackburn, and David Reid, Blackburn, all of England, assignors to Reed International Limited, London, England

Filed Sept. 5, 1973, Ser. No. 394,493
Claims priority, application United Kingdom, Sept. 22, 1972, 44052/72
Int. Cl.^{2} C09D *3/14, 3/20, 3/18*

U.S. Cl. 260—16 **13 Claims**

1. A surface coating composition which comprises (a) a pigment coated with up to 5% by weight based on the weight of the pigment of a hydrophilic agent which is a polymeric organic polyol, (b) a binder composition comprising from 5% to 95% by weight of either an oil-modified alkyd resin having a hydroxyl value of from 90 to 270 or a polymerised fatty acid ester having a hydroxyl value of from 70 to 220 and from 95% to 5% by weight of an alkyd resin having a hydroxyl value below 60, and (c) a volatile substantially water-immiscible organic solvent, the proportions of the components (a), (b) and (c) being such that an applicator used to apply said coating composition may be readily cleaned in a dilute aqueous detergent solution.

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VULCANIZABLE SILICON TERMINATED POLYURETHANE POLYMER COMPOSITION HAVING IMPROVED CURE SPEED

Earle Ruskin Bryant, Adrian, Mich., and Joseph August Weis, Toledo, Ohio, assignors to Inmont Corporation, New York, N.Y.

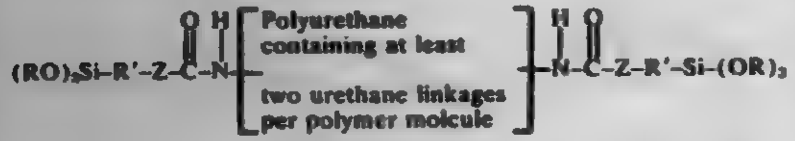
Filed Nov. 19, 1974, Ser. No. 525,145

Int. Cl.² C08G *18/30*

U.S. Cl. 260—18 TN **13 Claims**

1. A sealant composition comprising a prepolymer which is a blend of:

a. a silicon terminated vulcanizable polyurethane polymer of the formula



$$(RO)_3Si-R'-Z-\overset{O}{\overset{\|}{C}}-\overset{H}{\overset{|}{N}}-\left[\begin{array}{l}\text{Polyurethane containing at least}\\ \text{two urethane linkages per polymer molcule}\end{array}\right]-\overset{H}{\overset{|}{N}}-\overset{O}{\overset{\|}{C}}-Z-R'-Si-(OR)_3$$

wherein R is a lower alkyl radical of from 1 to 6 carbon atoms; wherein R′ is a divalent bridging radical selected from the groups consisting of a divalent hydrocarbon radical, a divalent hydrocarbon ether radical and a divalent hydrocarbon amino radical; and wherein Z is a member selected from the group consisting of —S and —NR″, where R″ is H or a lower alkyl radical of from 1 to 6 carbon atoms.

with

b. a small amount of N-beta aminoethyl, gamma aminopropyl trimethoxy silane.

3,979,345

FRIABLE COMPOSITION AND PROCESS

James E. Yates, Ponca City, Okla., and Wilfred M. Pinto, Mahtomedi, Minn., assignors to Continental Oil Company, Ponca City, Okla.

Division of Ser. No. 465,789, May 1, 1974, Pat. No. 3,883,363. This application Feb. 10, 1975, Ser. No. 548,960

Int. Cl.² C08L *93/00*

U.S. Cl. 260—23 XA **5 Claims**

1. In an improved process for the extrusion processing of a thermo plastic polymer for formulation using extrusion aids, the improvement comprising utilizing an extrusion aid prepared by mixing a paraffinic hydrocarbon wax and calcium salt of a fatty acid while heating to a temperature of at least 150°C and thereafter cooling to recover a solid, glass-like, friable composition, said paraffinic hydrocarbon wax having a drop melting point of at least 110°F, an oil content of not greater than 50 percent by weight and a needle penetration value at 77°F in the range of 1 mm to 20 mm, and said fatty acid being a $C_{18}-C_{24}$ aliphatic hydrocarbon monocarboxylic acid or mixtures thereof.

3,979,346

EMULSIFIERS FOR PREPARING AQUEOUS DISPERSIONS OF ALKYD RESINS

Bertram Zückert, and Wolfgang Schmut, both of Graz, Austria, assignors to Vianova-Kunstharz A.G., Vienna, Austria

Filed Oct. 31, 1974, Ser. No. 519,628

Int. Cl.² C08L *91/00*

U.S. Cl. 260—23 CP **27 Claims**

1. An alkyd resin dispersion dispersed in water containing 0.5 to 3 percent by weight of ammonia and as a dispersing aid, an emulsifier combination of (A) at least one non-ionic emulsifier, the hydrophobic part containing two or more radicals of a member of the group consisting of unsaturated fatty acids; unsaturated fatty alcohols, and mixtures thereof, with an iodine number of from about 130 to 200, and the hydrophilic part contains a member of the group consisting of polyethylene glycol chains, monomethoxypolyethylene glycol chains, and mixtures thereof, with 6 to 100 ethylene oxide units; and (B) at least one anionic emulsifier, the hydrophobic part containing two or more radicals of a member of the group consisting of unsaturated fatty acids; unsaturated fatty alcohols, and mixtures thereof, with an iodine number of from about 130 to 200, and the hydrophilic part contains carboxyl groups, at least 50 percent of said carboxyl groups being dissociated by the ammonia utilized, the amounts of and ratios of (A) and (B) being sufficient to disperse said alkyd resin in water and said ammonia.

3,979,347

LUBRICANT CONTAINING POLY(VINYL CHLORIDE) MOLDING COMPOSITION

Walter Brotz, Gersthofen, and Fred Mader, Nordendorf, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 370,240, June 15, 1973, abandoned, which is a continuation-in-part of Ser. No. 322,137, Jan. 9, 1973, abandoned. This application Sept. 3, 1974, Ser. No. 502,556

Int. Cl.² C08L *27/06, 91/06;* D01F *1/02*

U.S. Cl. 260—28.5 D **2 Claims**

1. A molding composition consisting of 100 parts by weight poly(vinyl chloride) and from 0.05 to 2.0 parts by weight as a lubricant of an oxidation product of polyethylene or a copolymer of ethylene and an α-olefin having from 3 to 8 carbon atoms, which polyethylene or ethylene and α-olefin copolymer have a molecular weight of 10,000 to 1,000,000, said oxidation product being prepared by treatment of a dispersion of said homopolymer or copolymer with oxygen or an oxygen-containing gas in the melt in the presence of a liquid dispersing agent inert to oxygen while constantly and thoroughly mixing the liquids under a pressure of from zero to 100 atomspheres gauge; said oxidation product having an acid number of from 30 to 150, a saponification number of from 40 to 220 and a dicarboxylic acid content of from 20 to 80 weight %.

3,979,348

IONIC POLYMERS FROM ACRYLAMIDE LATEX POLYMERS

Edward G. Ballweber, Glenwood, and Kenneth G. Phillips, River Forest, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 479,941, June 17, 1974, abandoned, which is a continuation-in-part of Ser. No. 379,860, July 16, 1973, abandoned. This application Feb. 20, 1975, Ser. No. 551,467

Int. Cl.² C08L *61/20*

U.S. Cl. 260—29.4 UA **12 Claims**

1. A method for the preparation of a stable water in oil emulsion of finely divided, cationically modified acrylamide polymer which comprises the steps of:

A. Preparing an aqueous solution of formaldehyde and a secondary amine containing 2 to 8 carbon atoms with the molar ratio of formaldehyde to secondary amine containing 2 to 8 carbon atoms being from 10:1 to 1:10; to provide a formaldehyde secondary amine adduct and,

B. Adding the formaldehyde secondary amine adduct prepared in Step A to a water in oil emulsion of finely divided acrylamide polymer, said water in oil emulsion of a finely divided acrylamide polymer comprising in percentages by weight:

a. 10 to 50% acrylamide polymer,
b. 25 to 85% water,
c. 5 to 40% of a hydrophobic liquid, and
d. 0.1 to 21% of a water in oil emulsifying agent, said acrylamide polymer being characterized as having a molecular weight of from 10,000 to 25,000,000 and having a particle size of from 2 millimicrons up to about 5 microns, with the molar ratio of formaldehyde secondary amine adduct to acrylamide polymer of from 10:.1 to .1:10; and then,

C. Mixing the formaldehyde secondary amine adduct and said water in oil emulsion of finely divided acrylamide polymer for a period of time sufficient to produce a stable water in oil emulsion of a finely divided cationically modified acrylamide polymer.

3,979,349

DISPERSIONS OF WATER-SOLUBLE POLYMERS AND METHODS FOR MAKING AND USING THE SAME

Herbert Fink, Bickenbach; Horst Pennewiss, Darmstadt-Neu-Kranichstein; Hermann Plainer, Darmstadt; Hans Trabitzsch, Seeheim; Josef Frieser, Darmstadt-Weiterstadt, and Juergen Masanek, Pfungstadt, all of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Filed May 1, 1974, Ser. No. 466,083

Claims priority, application Germany, May 7, 1973, 2322883

Int. Cl.² C08L *33/08*

U.S. Cl. 260—29.6 RW **12 Claims**

1. A polymer dispersion comprising

A. 10 to 70 parts by weight of a continuous liquid organic phase, immiscible or only partially miscible with water, having dissolved therein from 2 to 28 percent, by weight of phase (A), of a water-in-oil dispersing agent which has an HLB-value below 6 at a pH above 4 and an HLB-value above 8 at a pH below 2, has a molecular weight above 10,000, and which is a copolymer of
  1. 10 to 50 percent, by weight of said copolymer, of a vinyl or vinylidene monomer having a basic nitrogen atom, and
  2. 90 to 50 percent, by weight of said copolymer, of
  a. an acrylic acid ester or methacrylic acid ester of an alcohol having from 6 to 20 carbon atoms; or
  b. a mixture of at least one monomer as in (a) with up to an equal amount by weight of at least one different water-insoluble vinyl or vinylidene monomer;

B. 90 to 30 parts by weight of an aqueous phase, finely-divided in phase (A), comprising
  1. 5 to 75 percent, by weight of phase (B) of a water-soluble polymer dissolved in or swollen with
  2. 95 to 25 percent, by weight of phase (B), of water; and

C. a water-soluble acid in an amount at least equivalent to the basic nitrogen atoms in (A)(1); said phases (A) and (B) together making up 100 parts by weight and having at most a small density difference.

3,979,350

α,β-UNSATURATED SCHIFF-BASE CHAIN EXTENSION REACTIONS FOR POLYIMIDES AND POLYAMIDE-IMIDES

Roland A. E. Winter, Armonk, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 26, 1973, Ser. No. 427,976

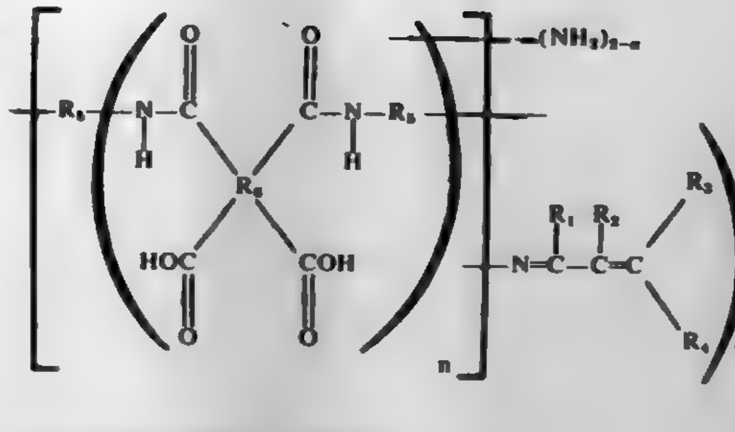
Int. Cl.² C08G *73/06, 73/12, 73/14*

U.S. Cl. 260—30.2 **11 Claims**

1. A composition of matter consisting essentially of

a. a prepolymer selected from

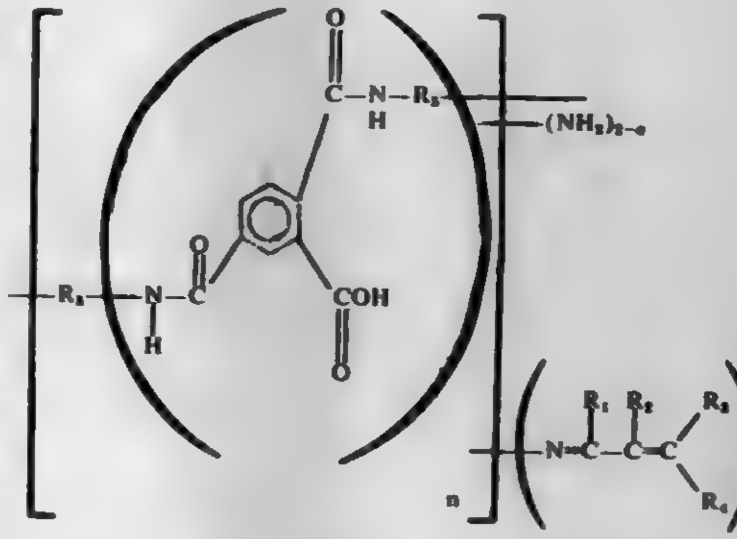
1. a polyamide-acid of the formula



II

its corresponding polyimide,

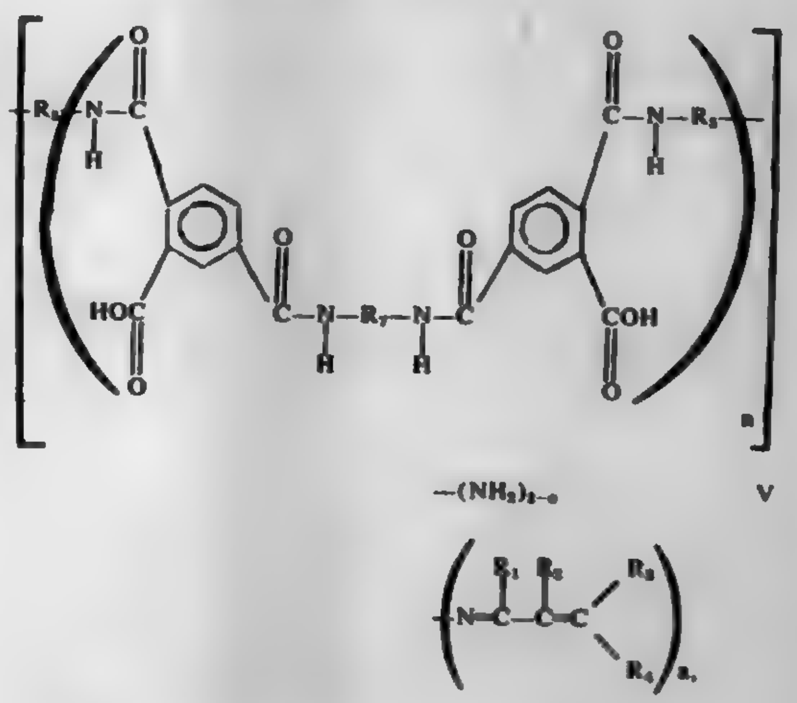
2. a polyamide-amide acid of the formula



IV

its corresponding polyamide-imide,

3. a polyamide-amide acid of the formula



V

and its corresponding polyamide-imide,

wherein

n is a number from 1 to 20,

a is a number from 0.1 to 2,

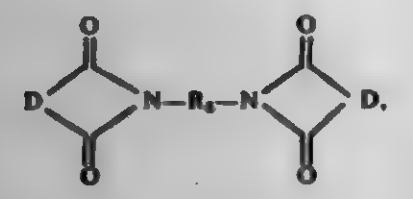
R_1, R_2, R_3 and R_4 are independently hydrogen or a monovalent aliphatic, cycloaliphatic, or aromatic radical and

R_5 and R_7 are independently a divalent organic radical containing from 2 to 30 carbon atoms and selected from aromatic, aliphatic, alkylaromatic, and cycloaliphatic radicals, and radicals with hetero-atom containing bridging groups where the heteroatom in the bridge is selected from oxygen, sulfur, nitrogen, phosphorus and silicon, and

R_6 is a tetravalent aliphatic, cycloaliphatic, aromatic or heterocyclic radical containing at least 2 carbon atoms, or a combination of aromatic and aliphatic radicals, and

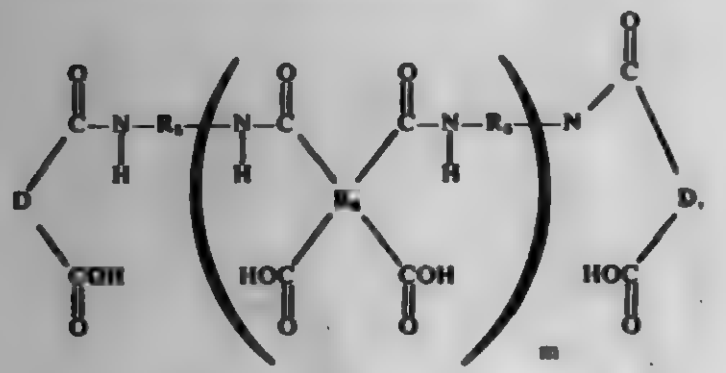
b. from about 1 to 10 mole equivalents per mole equivalent of (a) of a bis-dienophile selected from

1. a compound of the formula



XII

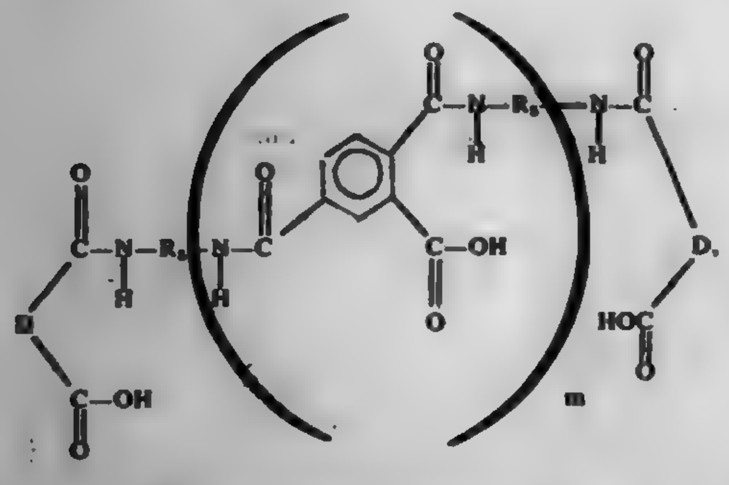
2. a polyamide-acid of the formula



XIII

its corresponding polyimide,

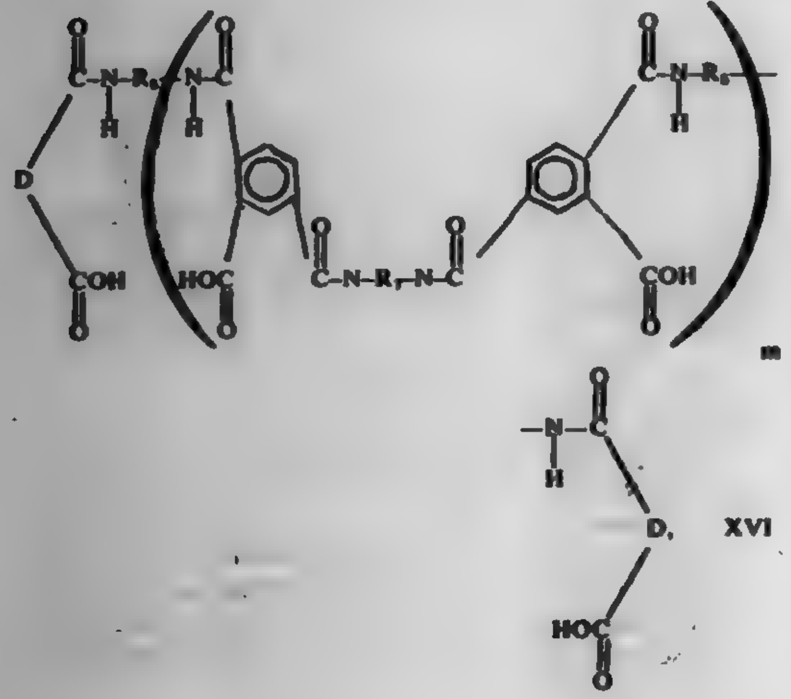
3. a polyamide-amide acid of the formula



XV

it corresponding polyamide-imide, and

4. a polyamide-amide acid of the formula



XVI

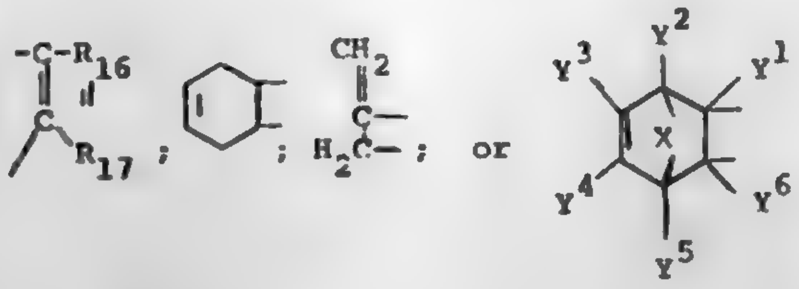
and its corresponding polyamide-imide,

wherein

R_5, R_6 and R_7 are as defined above,

m is a number from 1 to 20, and

D is a divalent radical containing olefinic unsaturation having the formula



wherein

R_{16} is hydrogen, methyl, bromo or chloro;

R_{17} is hydrogen, bromo or chloro;

Y^1–Y^6 inclusive is selected from hydrogen, bromine, chlorine, nitro, phenyl, alkyl of from 1 to 6 carbon atoms; and

X is carbonyl, oxygen, sulfur, chloro or bromo substituted methylene, alkylidene of from 1 to 6 carbon atoms, and benzylidene.

3,979,351
PROTECTIVE COATING MATERIAL

Jagdish S. Sekhon, Fountain Valley, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.

Continuation-in-part of Ser. No. 327,069, Jan. 26, 1973, abandoned. This application Sept. 19, 1973, Ser. No. 398,652

Int. Cl.² C08K *3/08, 3/30, 5/07*

U.S. Cl. 260—32.8 R **13 Claims**

1. A coating material comprising a mixture of: powdered metallic substance from the group consisting of aluminum and molybdenum disulfide, phenol-formaldehyde resin and metallic chromate in a carrier selected from the group consisting of lower alkyl alcohols, methyl ethyl ketone and petroleum distillate from the group consisting of xylene and toluene, and mixtures thereof, said material, upon application to a surface, drying to form a coating which is tough, adherent, smooth and corrosion resistant.

3,979,352
AQUEOUS BASE-SOLUBLE RESIN COMPOSITIONS

John W. Brady, Grand Island; Franklin D. Strickland, Buffalo, and Chester C. Longwith, Tonawanda, all of N.Y., assignors to Shanco Plastics & Chemicals Inc., Tonawanda, N.Y.

Filed July 30, 1973, Ser. No. 384,033

Int. Cl.² C08K *5/05;* **C08F** *220/06*

U.S. Cl. 260—33.4 R **9 Claims**

1. An aqueous base-soluble solid resin having an acid number of 120 to 185, which is the reaction product polymer of a reaction mix comprising about 20 to 70 mole percent of at least one carboxyl-free polymerizable ethylenically unsaturated monomer, about 15 to 60 mole percent of at least one carboxyl-substituted polymerizable ethylenically unsaturated monomer of the formula $CH_2{=}CR^2COOH$, wherein R^2 represents hydrogen or methyl, as a solvent for the reaction mixture, which is retained in the resin, a mixture of saturated alcohols of normal boiling points above about 175°C., which mixture contains about 30 to 60 weight percent of water insoluble liquid alcohol and about 40 to 70 weight percent of water soluble alcohol, the mole percentage of the solvent alcohols being about 10 to 20, and about 0.3 to 1 mole percent of an organic free radical-generating polymerization initiator, the number average molecular weight of the resin corresponding to about 600 to 4,000 at 10 mole percent content of solvent in the reaction mix, and the water insoluble alcohol having a boiling point above 175°C. being a source of such alcohol in the resin.

3,979,353
DIAZONIUM SALT COMPOSITION FOR FORMING THERMOPARTICULATING COATING

James D. B. Smith, Turtle Creek, and David C. Phillips, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 15, 1975, Ser. No. 568,224

Int. Cl.² C08K *5/01;* **C08L** *63/00;* **G01N** *31/00*

U.S. Cl. 260—33.6 EP **21 Claims**

1. A composition comprising about 20 to about 250 phr of at least one diazonium salt solid and stable at 50°C and a solution of a resinous carrier curable and stable at 60°C and unreactive with said diazonium salt, where the amount of solvent in said solution is about 25 to about 75% (by weight based on said resinous carrier).

3,979,354
NON-POLLUTING, ANTIFOULING COMPOSITION AND METHOD

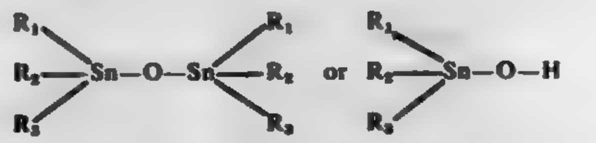
Edward J. Dyckman, Laurel; Jean A. Montemarano, Annapolis; Eugene C. Fischer, Arnold, and Robert R. Ressler, Annapolis, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 31, 1974, Ser. No. 438,313

Int. Cl.² C08G *51/04, 30/10*

U.S. Cl. 260—37 EP **35 Claims**

1. A nonpolluting, antifouling composition consisting essentially of a 1,2 epoxy polymer and a curing agent for the epoxy polymer, wherein said curing agent comprises an active hydrogen containing compound capable of crosslinking the epoxy polymer, said compound having as a substituent a carboxylic acid group which is chemically bonded to an organo-tin compound selected from the group consisting of tin oxides and tin hydroxides of the formula:



wherein R_1, R_2 and R_3 are selected from the group consisting of propyl, butyl, phenyl and benzyl, and R_1, R_2 and R_3 are the same or different, and wherein said curing agent acts to crosslink the epoxy polymer.

3,979,355
ARSONIUM LATENT CATALYSTS FOR CURING EPOXY RESINS

James D. B. Smith, Turtle Creek, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 13, 1974, Ser. No. 442,266

Int. Cl.² C08G *51/04*

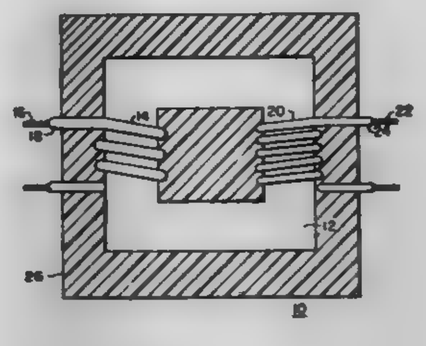
U.S. Cl. 260—37 EP **23 Claims**

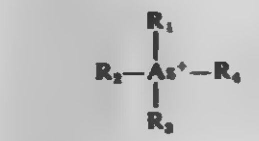
1. A resinous composition suitable for insulating electrical members, comprising by weight:

A. about 100 parts of an epoxy resin containing more than one 1,2 epoxy group per molecule,

B. about 55 to 165 parts of an organic acid anhydride selected from the group consisting of monofunctional anhydrides and polyfunctional anhydrides effective as a curing agent for epoxy resins, and

C. about 0.04 to 0.50 parts of a latent catalyst consisting essentially of a quaternary organic arsonium compound having the structural formula:





$$\begin{matrix} & R_1 & & \\ & | & & \\ R_2— & As^+ & —R_4 & X^- \\ & | & & \\ & R_3 & & \end{matrix}$$

where R_1, R_2, R_3 and R_4 are selected from the group consisting of alkyl and aryl radicals having 1 to 21 carbon atoms and X is a halogen, radical.

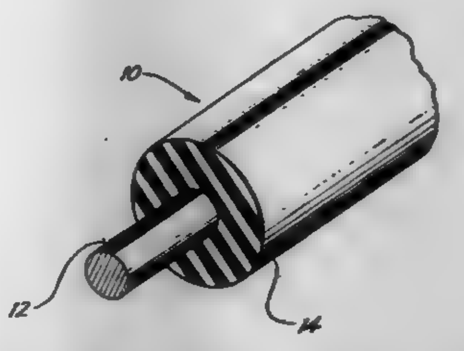
3,979,356
POLYMERIC COMPOSITION AND INSULATED PRODUCTS

Robert B. Walters, Oxford, Conn., assignor to General Electric Company, New York, N.Y.

Division of Ser. No. 390,618, May 30, 1972, Pat. No. 3,900,681. This application May 21, 1975, Ser. No. 579,389

Int. Cl.² C08K *3/12*

U.S. Cl. 260—42.26 **15 Claims**



1. A polymeric composition resistant to flow and dripping at flame temperatures, comprising the cross-link cured product of the following ingredients, in relative parts by weight: 100 parts of ethylene-vinyl acetate copolymer comprising about 70 to 95 parts by weight of ethylene and about 30 to 5 parts by weight of vinyl acetate; about 25 to 150 parts of hydrated alumina; about 2 to 25 parts of silicone elastomer having a viscosity in excess of about 1 million centipoise; and about 2 to 10 parts of an organo tertiary peroxide curing agent.

3,979,357
LARGE VOID-FREE POLYETHYLENE

Ival O. Salyer, Dayton, and Charles J. North, West Carrollton, both of Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

Division of Ser. No. 425,894, Dec. 13, 1973, Pat. No. 3,929,939, which is a continuation of Ser. No. 219,498, Jan. 20, 1972, abandoned. This application Apr. 4, 1975, Ser. No. 565,165

Int. Cl.² C08K *3/38*

U.S. Cl. 260—42.46 **1 Claim**

1. A composite material which comprises 50 to 75 weight percent high density polyethylene pellets having a size range of about 1/16 inch to ¼ inch in a matrix of 25 to 50 weight percent low density polyethylene, and which further comprises from 1 to 10 weight percent boron.

3,979,358
HEAT RESISTANT RUBBERY POLYMER COMPOSITION

Shiyuji Nishibata, Hisai; Kazumasa Hirose, Yokkaichi; Kunihara Harada, Yokohama, and Tokuro Fukumori, Mie, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

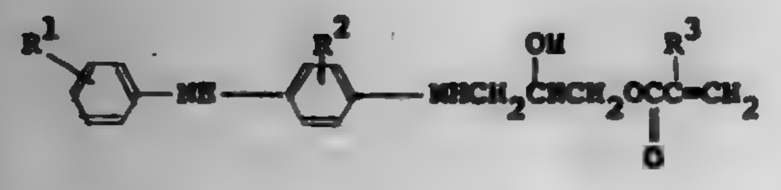
Filed Oct. 11, 1974, Ser. No. 514,214

Claims priority, application Japan, Oct. 15, 1973, 48-115510

Int. Cl.² C08J *3/20*

U.S. Cl. 260—45.75 N **7 Claims**

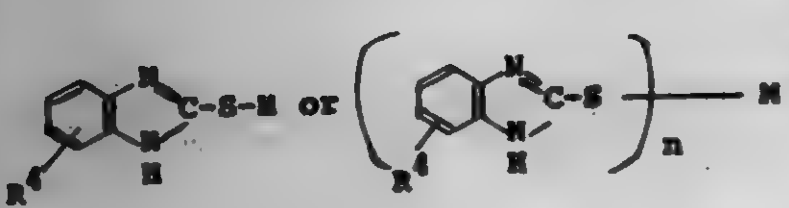
1. A heat resistant rubbery polymer composition which comprises a rubbery polymer and, incorporated therein, at least one member selected from the group consisting of phenylenediamine compounds represented by the following general formula (I)



(I)

wherein R¹ and R² stand for a hydrogen, fluorine, chlorine or bromine atom or a hydrocarbon residue having 1 to 12 carbon atoms, and R³ stands for a hydrogen atom or a hydrocarbon residue having 1 to 4 carbon atoms,

and at least one member selected from the group consisting of mercaptobenzo-1,3-diazole and mercaptobenzo-1,3-diazole salts represented by the following general formula (II)



(II)

wherein R⁴ stands for a hydrogen, fluorine, chlorine or bromine atom or a hydrocarbon residue having 1 to 12 carbon atoms, M is a metal of the group II or VIII of the Periodic Table, and n is 2 or 3, compounds I and II each being present in an amount effective to prevent degradation of the rubbery polymer.

3,979,359
CARBOFUNCTIONAL SULFUR AND CARBOXYLATE BRIDGED TIN COMPOUNDS

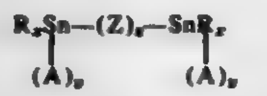
Thomas G. Kugele, and Arthur F. Koeniger, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Chemicals, Inc., Reading, Ohio

Filed Nov. 15, 1974, Ser. No. 524,271

Int. Cl.² C08J *3/20*

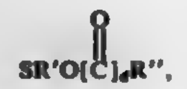
U.S. Cl. 260—45.75 S **55 Claims**

1. A sulfur containing organotin compound having the formula (1):



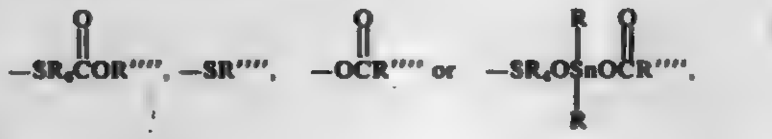
$$R_xSn\underset{(A)_z}{|}—(Z)_y—SnR_x\underset{(A)_z}{|}$$

where R is a monovalent alkyl radical of 1 to 8 carbon atoms, A is



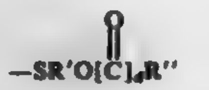
$$SR'O[\overset{\overset{O}{\|}}{C}]_dR'',$$

halogen of atomic weight 35 to 127,



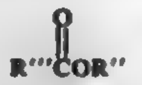
$$—SR_6\overset{\overset{O}{\|}}{C}OR'''',\ —SR'''',\ —O\overset{\overset{O}{\|}}{C}R''''\text{ or }—SR_6O\underset{R}{\overset{R}{Sn}}O\overset{\overset{O}{\|}}{C}R'''',$$

the A groups are the same or different, with the proviso that at least one



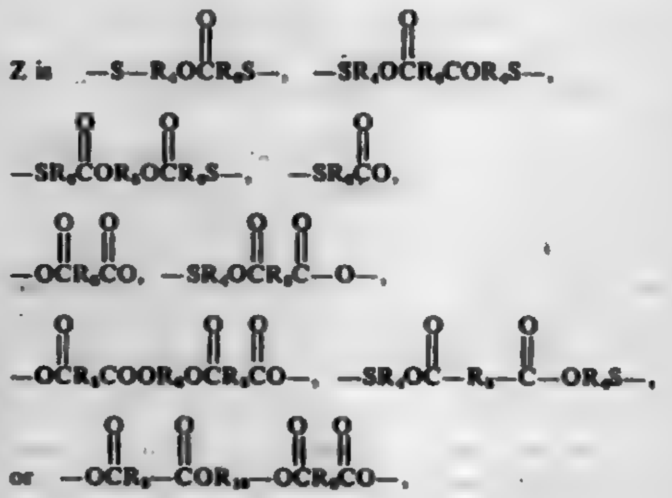
$$—SR'O[\overset{\overset{O}{\|}}{C}]_dR''$$

is in the molecule, d is 0 or 1, each R′ when d is 0 is alkylene of 1 to 10 carbon atoms; each R′ when d is 1 is alkylene of 2 to 10 carbon atoms, each R″ is hydrogen, alkyl of 1 to 20 carbon atoms, ethylenically unsaturated aliphatic hydrocarbyl having 1 to 3 ethylenic double bonds and 2 to 19 carbon atoms, halo or hydroxy alkyl of 2 to 19 carbon atoms, halo or hydroxy alkenyl of 2 to 19, cycloalkyl of 5 to 6 carbon atoms, benzyl, phenyl, alkylphenyl, halophenyl,



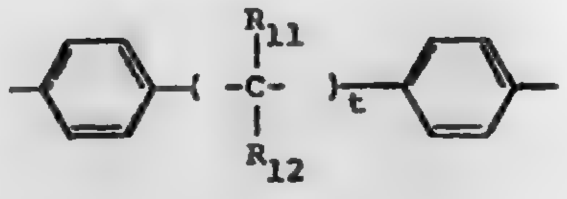
$$R'''\overset{\overset{O}{\|}}{C}OR''$$

where R‴ is alkylene of 2 to 10 carbon atoms, R⁗ is alkyl of 1 to 20 carbon atoms, alkenyl of 2 to 18 carbon atoms, halo or hydroxy alkyl of 2 to 20 carbon atoms, halo or hydroxy alkenyl of 2 to 20 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, benzyl, phenyl or halophenyl, x is 1 or 2, y is 1 or 2 and z is 1 or 2, the total of $x+y+z$ is 4,



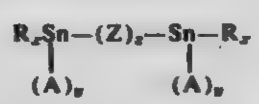
$$Z\text{ is }—S—R_6O\overset{\overset{O}{\|}}{C}R_6S—,\ —SR_6O\overset{\overset{O}{\|}}{C}R_6COR_6S—,$$
$$—SR_6\overset{\overset{O}{\|}}{C}OR_5O\overset{\overset{O}{\|}}{C}R_6S—,\ —SR_6\overset{\overset{O}{\|}}{C}O,$$
$$—O\overset{\overset{O}{\|}}{C}R_6\overset{\overset{O}{\|}}{C}O,\ —SR_6O\overset{\overset{O}{\|}}{C}R_8\overset{\overset{O}{\|}}{C}—O—,$$
$$—O\overset{\overset{O}{\|}}{C}R_4COOR_6O\overset{\overset{O}{\|}}{C}R_4\overset{\overset{O}{\|}}{C}O—,\ —SR_6O\overset{\overset{O}{\|}}{C}—R_9—\overset{\overset{O}{\|}}{C}—OR_6S—,$$
$$\text{or }—O\overset{\overset{O}{\|}}{C}R_9—\overset{\overset{O}{\|}}{C}OR_{10}—O\overset{\overset{O}{\|}}{C}R_8\overset{\overset{O}{\|}}{C}O—,$$

where R_4 is arylene, —CH=CH—, alkylene of 2 to 10 carbon atoms, R_5 is nothing, alkylene of 1 to 8 carbon atoms, phenylene or —CH=CH—, R_8 is alkylene of 1 to 10 carbon atoms, —CH=CH— or arylene, R_9 is a residue of a dicarboxylic acid from which the two carboxyl groups have been removed, R_{10} is arylene or



where t is 0 to 1

and R_{11} and R_{12} are H or alkyl, or (2) an overbased compound prepared by reacting a dialkyltin oxide of alkylstannoic acid with a compound of the formula:



$$R_xSn\underset{(A)_z}{|}—(Z)_y—Sn\underset{(A)_z}{|}—R_x$$

54. A halogen-containing polymer composition containing a compound according to claim 1 in an amount effective to heat stabilize the polymer.

3,979,360
COMPOSITIONS STABILIZED WITH BENZOYLOXYBENZAMIDES

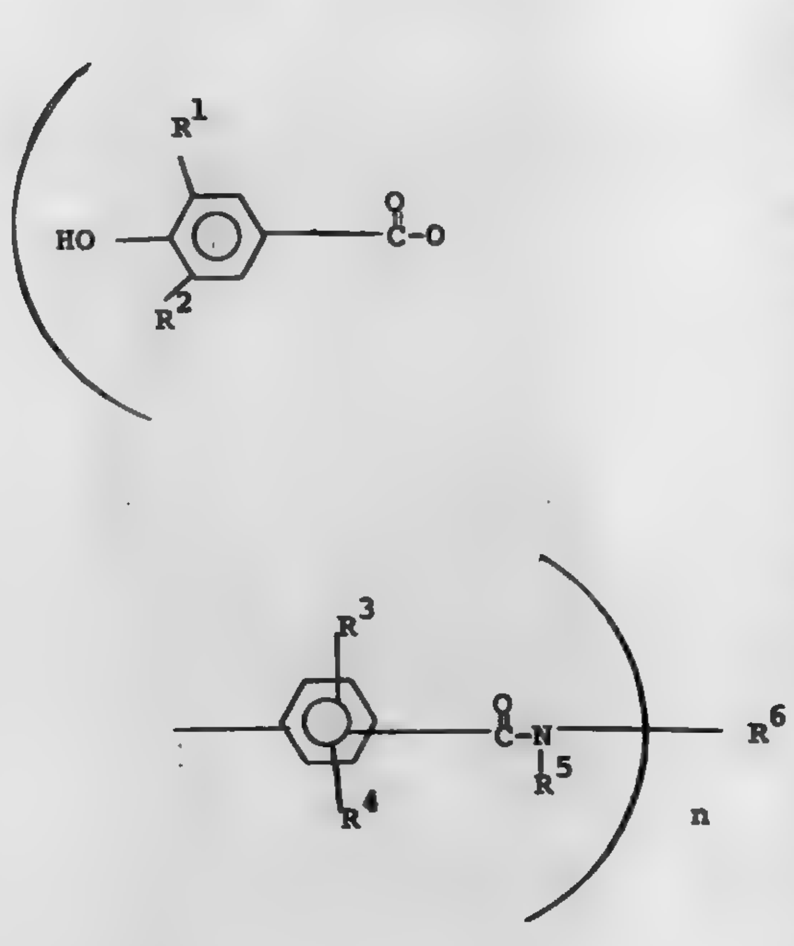
John D. Spivack, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 318,325, Dec. 26, 1972, Pat. No. 3,880,910. This application Feb. 24, 1975, Ser. No. 552,479

Int. Cl.² C08J *3/20*

U.S. Cl. 260—45.85 B **15 Claims**

1. A composition of matter stabilized against degradation which comprises an organic material subject to oxidative and ultraviolet light degradation containing from about 0.01 to about 5.% by weight of a stabilizing compound of the formula



wherein

R¹ and R² are (lower)alkyl or (lower)cycloalkyl groups,

R³, R⁴ and R⁵ are independently hydrogen, (lower)alkyl or (lower)cycloalkyl,

R⁶ is an alkyl group having up to 24 carbon atoms when n is 1 and an alkylene group having up to 10 carbon atoms when n is 2 to 6, and

n is an integer from 1 to 6.

3,979,361
2-AMINOMETHYL-6-TRIHALO-METHYLPHENOLS

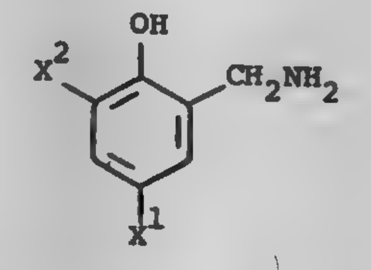
Everett M. Schultz, Ambler, and Edward J. Cragoe, Jr., Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 444,200, Feb. 20, 1974, abandoned, which is a continuation-in-part of Ser. No. 120,730, March 3, 1971, Pat. No. 3,794,734. This application Aug. 1, 1975, Ser. No. 600,990

Int. Cl.² C07C *87/28*

U.S. Cl. 260—570.9 **2 Claims**

1. A compound of the formula:



wherein X¹ is C_{1-7} lower alkyl or cycloalkyl containing 5 to 6 carbon atoms; and X² is trifluoromethyl; or the nontoxic pharmaceutically acceptable salts thereof.

3,979,362
PROCESS FOR THE PRODUCTION OF SILICO-AMINO COMPOUNDS AND THEIR CONDENSATION PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 71,628, Sept. 11, 1970, abandoned. This application Mar. 17, 1975, Ser. No. 559,313

Int. Cl.² C08G *12/26*; C08K *3/84*; C08G *12/04*, *12/08*

U.S. Cl. 260—67.6 R **6 Claims**

1. The process for the production of silico-amino resinous condensation products by the following steps:

a. mixing silico-formic acid with an amino compound selected from the group consisting of urea, thiourea, melamine, aniline, guanidine, saccharin, propyl urea, butyl urea, benzene and toluene sulfonamides, ammeline, dicyandiamide, aliphatic diamines, other alkyl-substituted ureas and mixtures thereof in a ratio of 0.5 to 2 mols of silico-formic acid to one mol of the amino compound;

b. adding an aldehyde selected from the group consisting of an aqueous solution of formaldehyde, formaldehyde, acetaldehyde, butyraldehyde, chloral, acrolein, furfural, hexamethylene tetramine and mixtures thereof in a ratio of 1 to 3 mols to one mol of amino compound;

c. adjusting the pH to a pH of 4 to 5 with an acid catalyst selected from the group consisting of sulfuric acid, hydrochloric acid, formic acid, acetic acid, tartaric acid, oxalic acid, aromatic sulfonic acid, acid salts, acid esters such as acid alkyl phosphates and mixtures thereof;

d. heating said mixture to 60° to 100°C while agitating for 20 to 40 minutes; thereby

e. producing a silico-amino resinous condensation product.

3,979,363
METHOD OF PRODUCING POLYURETHANE FILAMENTS

Wiprecht Eberius, Elsenfeld; Gerhard Wick, Obernburg; Heinz Grotjahn, Rollfeld, and Eckart Jacobs, Obernburg, all of Germany, assignors to Akzo N.V., Arnhem, Netherlands
Filed Nov. 7, 1973, Ser. No. 413,552
Claims priority, application Germany, Nov. 18, 1972, 2256664
Int. Cl.² C08F *18/24;* **D01F** *6/00*
U.S. Cl. 260—77.5 AT **23 Claims**

1. A method of producing a filamentary polyurethane of improved chemical resistance and physical properties which comprises:

preforming an elastomeric filamentary polyurethane which contains at least about 100 up to about 700 milliequivalents/kg. of terminal primary or secondary amino groups or a mixture thereof; and

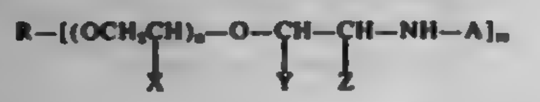
treating the preformed filamentary polyurethane with an organic polyisocyanate.

3,979,364
POLYURETHANE ELASTOMERS HAVING IMPROVED SAG RESISTANCE

Richard Lee Rowton, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.
Filed Sept. 23, 1974, Ser. No. 508,455
Int. Cl.² C08G *18/38*
U.S. Cl. 260—77.5 AM **13 Claims**

1. In a polyurethane elastomer composition prepared by admixing and reacting an organic polyisocyanate compound having free isocyanate moieties, a polyether polyol compound and a selected urethane catalyst, the improvement which comprises:

adding to said admixture from about 1 to about 50 equivalents per 100 equivalents of said polyether polyol of a polyoxyalkylene polyamine of the formula:



$$R-[(OCH_2\underset{X}{C}H)_n-O-\underset{Y}{C}H-\underset{Z}{C}H-NH-A]_m$$

wherein R is the nucleus of an oxyalkylation-susceptible saturated polyhydric alcohol containing 2 to 12 carbon atoms and 2 to 8 hydroxyl groups and R consists of hydrogen and carbon, Z is an alkyl group containing 1 to 18 carbon atoms, X and Y independently are hydrogen or Z, A is cyano-loweralkyl of 1 to 2 carbon atoms or hydrogen, n has an average value of 0 to 50 and m is an integer of 2 to 8 corresponding to the number of hydroxyl groups originally present in the polyhydric alcohol.

3,979,365
PROCESS FOR PRODUCING THERMOSETTING RESINS

Goro Tanaka; Shinichi Toyoda, and Toshikazu Narahara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan
Filed Aug. 28, 1974, Ser. No. 501,363
Claims priority, application Japan, Aug. 31, 1973, 48-97142
Int. Cl.² C08G *18/00, 18/18, 18/20, 18/22*
U.S. Cl. 260—77.5 NC **19 Claims**

1. A process for producing a thermosetting resin which comprises blending 1 equivalent of a polyoxazolidone prepolymer terminated by two vicinal epoxy groups and containing at least two oxazolidone rings with at least 1 equivalent of a polyfunctional isocyanate compound, adding 0.01 to 10% by weight of a catalyst which forms isocyanurate rings and oxazolidone rings based on the total amount of the polyoxazolidone prepolymer and the isocyanate compound, and then heating to polymerize the resultant composition by forming isocyanurate rings and oxazolidone rings.

3,979,366
VINYL CHLORIDE SUSPENSION POLYMERIZATION

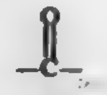
Peter A. Schwab, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Filed June 12, 1975, Ser. No. 586,474
Int. Cl.² C08F *218/14;* **C08G** *63/00;* **C08F** *214/00, 114/02*
U.S. Cl. 526—345 **3 Claims**

1. An improved method for the production polyvinyl chloride homopolymer by suspension polymerization of vinyl chloride monomer, the improvement comprising carrying out the entire polymerization in the presence of about 300 to 500 parts per million of a chain-extending agent selected from the group consisting of diallyl maleate, triallyl isocyanurate, and diallyl phthalate while using elevated temperatures and reduced polymerization times.

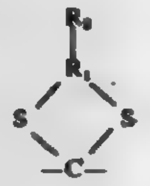
3,979,367
POLYKETONE DERIVATIVE

Thomas E. Kiovsky, and Richard C. Kromer, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.
Filed June 13, 1975, Ser. No. 587,199
Int. Cl.² C08F *28/00;* **C08G** *2/00, 4/00*
U.S. Cl. 260—79.5 C **7 Claims**

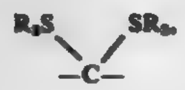
1. The thermoplastic polymer characterized by random distribution along the polymer chain of *x* units of



y units of $-CH_2-CH_2-$ and *z* units of



or



where

a. R_1 is an alkyl group of from 1 to 4 carbon atoms, R_2 is selected from the group consisting of hdyrogen and alkyl, aryl and alkenyl groups of from 1 to 20 carbon atoms, and R_3 is selected from the group consisting of alkyl, aryl and alkenyl groups of from 1 to 20 carbon atoms;
b. *x*, *y* and *z* are integers;
c. *y* has a value of from about 150 to about 10,000;
d. the ratio of *x* to *y* varies from about 25:100 to about 100:100; and
e. the ratio of *z* to *x* varies from about 2:100 to about 25:100.

3,979,368
SUPER-HALOGENATED UNSATURATED POLYESTERS AND PROCESS FOR THEIR MANUFACTURE

Pierre Malfroid, Brussels, Belgium, assignor to Solvay & Cie, Brussels, Belgium
Filed Sept. 28, 1973, Ser. No. 401,806
Claims priority, application Luxemburg, Nov. 10, 1972, 66454
Int. Cl.² C08G *63/68*
U.S. Cl. 526—11.2 **8 Claims**

1. Unsaturated halogenated polyesters having an average molecular weight of between 300 and 3,000 and a halogen content, in addition to the halogen content provided by the halogen of the monomers incorporated into the polymeric chain, of between 1 and 35% by weight which are obtained by copolymerizing (1) an α-epihalohydrin selected from the group consisting of epichlorohydrin, epibromohydrin and their mixtures with (2) an organic anhydride selected from the group consisting of maleic anhydride and mixtures thereof with another cyclic organic anhydride selected from the group consisting of succinic anhydride, glutoric anhydride, citraconic anhydride, itaconic anhydride, tetrahydrophthalic anhydride, methylnadic anhydride, phthalic anhydride, dichloromaleic anhydride, tetrabromophthalic anhydride and chlorendic anhydride wherein not more than one mol of said another cyclic organic anhydride is used per mol of maleic anhydride in the presence of a catalyst consisting essentially of titanium tetrachloride or titanium tetrabromide, the molar ratio of the α-epihalohydrin and the organic anhydride being between 1:1 and 2:1 and the molar ratio of the titanium tetrachloride or titanium tetrabromide and the sum of epihalohydrin and organic anhydride being between 0.001 and 0.1.

3,979,369
METHOD FOR CROSS-LINKING RUBBER WITH POLYSULFIDES

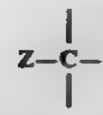
Chester Draper Trivette, Jr., Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.
Division of Ser. No. 200,595, Nov. 19, 1971, Pat. No. 3,869,435. This application Sept. 20, 1974, Ser. No. 507,763
Int. Cl.² C08C *11/60, 11/54, 11/66;* **C08D** *9/00*
U.S. Cl. 260—79.5 C **42 Claims**

1. The method of cross-linking which comprises incorporating into diene rubber a cross-linking amount of

$(AccS\text{-}S_x)_nR\text{-}S_x\text{-}SAcc$

where AccS is the same or different accelerating moiety, *x* is 1, 2, 3 or 4, *n* is 1, 2 or 3 and R is an organic radical of 1 to 24 carbon atoms of valence *n* + 1 selected from the group consisting of

a. divalent radical of the formula $(X)_{n'}$ where *n'* is 1 to 24, each X is the same or different and is



$$Z-\overset{|}{\underset{|}{C}}-Z'$$

where Z and Z' independently are hydrogen, alkyl, cycloalkyl, benzyl or phenyl,

b. divalent radical of the formula

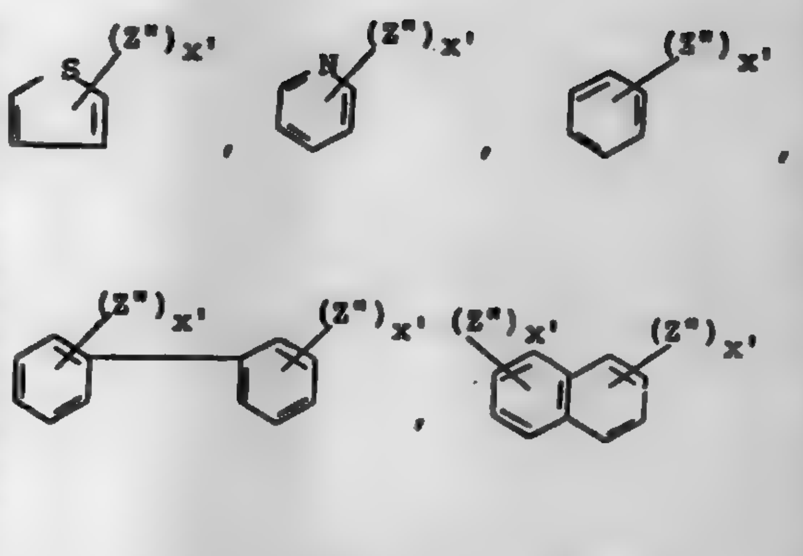
$-(X)_{n''}-Y-(X)_{n''}-[Y-(X)_{n''}-]_m$

where each *n''* independently is 1 to 23, *m* is zero, 1 or 2, X has the same meaning as before and Y is oxygen, sulfur, $-SO_2-$, HN<, C_6H_5N<, lower alkyl-N<, —C(O)O—, divalent cyclic radical of group (c) below or divalent aromatic radical of group (e) below,

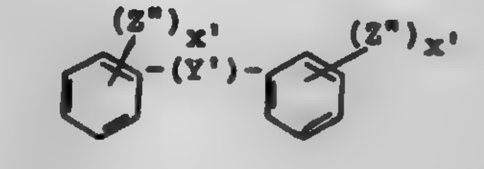
c. divalent cyclic radical each valence of which is on a ring carbon atom of an aliphatic ring said radical being the radical derived from removal of hydrogen from carbon in monocyclic, bi(monocyclic), bicyclic or tricyclic hydrocarbon or said hydrocarbon having up to two ring carbon atoms replaced by oxygen,

d. divalent acyclic olefinic unsaturated radical,

e. divalent aromatic radical selected from the group consisting of anthrylene and radicals derived by removal of hydrogen from two ring carbon atoms of a compound of the formula



and



where each Z'' independently is hydrogen, lower alkyl, hydroxy, lower alkoxy, acetyl, phenyl, chloro or nitro, Y' is oxygen, sulfur, $-SO_2-$, —CO—, lower alkylene or lower alkylidene and *x'* is 1 to 4,

f. combination of the formula -T-T'- where one valence is linked to cyclic carbon and the other to acyclic carbon, T being selected from the group consisting of (a), (b), (c), (d) and (e) and T' being selected from a different member of the same group,

g. straight and branched chain alkylene substituted by one or more radicals selected from the group consisting of oxo, hydroxy, alkoxy, hydroxysubstituted alkoxy, alkoxysubstituted alkoxy, carboxy, carboxy substituted alkoxy, carboalkoxy and acyloxy,

h. trivalent radical selected from the group consisting of radical derived by removal of one hydrogen from a radical of group (a), (b), (c), (d), (e), (f) or (g), radical of the formula

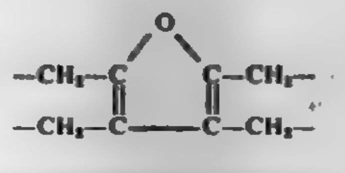
$-A'-OCH_2CH(OA'-)CH_2OA'-$

where A' is lower alkylene and radical of the formula

$A\text{-}C(A'OOCA'\text{-})_3$

where A is lower alkyl and A' independently is lower alkylene,

i. tetravalent radical selected from the group consisting of a radical derived by removal of two hydrogen atoms from a radical of group (a), (b), (c), (d), (e), (f) or (g), radical of the formula

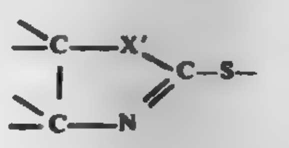


and radical of the formula

$C(A'OOCA'-)_4$

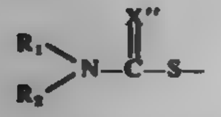
where A' is independently lower alkylene; and the accelerating moiety is selected from the group consisting of

1. radical of the formula



where the unsatisfied valences on the vicinal carbon atoms are satisfied independently by hydrogen, lower alkyl, benzyl, acetyl, carboalkoxy, phenyl, by one on each carbon together forming a double bond or by said carbon atoms being members of an unsubstituted aromatic or alicyclic ring, or aromatic ring substituted by a member of the group consisting of lower alkyl, halo, nitro, hydroxy, carboalkoxy, acetyl, lower alkoxy and phenyl and X′ is S, O, or NH,

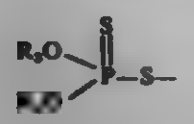
2. radical of the formula



$$\begin{array}{l}R_1\\R_2\end{array}\!\!>N-\overset{\overset{X''}{\|}}{C}-S-$$

where R_1 and R_2 independently are hydrogen, alkyl, cycloalkyl, aralkyl, phenyl or substituted phenyl or R_1 and R_2 along with the nitrogen atom form a heterocycle of 4–8 carbon atoms, and X″ is O or S,

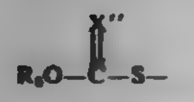
3. radical of the formula



$$\begin{array}{l}R_3O\\R_4O\end{array}\!\!>\overset{\overset{S}{\|}}{P}-S-$$

where R_3 and R_4 independently are alkyl, cycloalkyl, aralkyl, phenyl or alkyl substituted phenyl,

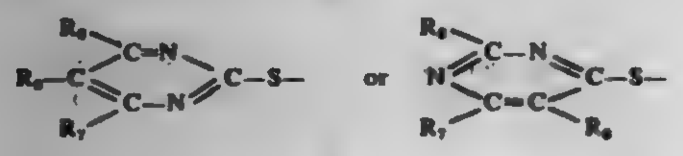
4. radical of the formula



$$R_5O-\overset{\overset{X''}{\|}}{C}-S-$$

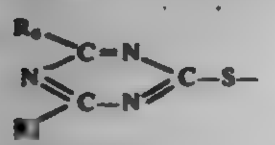
where R_5 is alkyl, cycloalkyl, aralkyl, phenyl and substituted phenyl and X″ is O or S,

5. radical of the formula



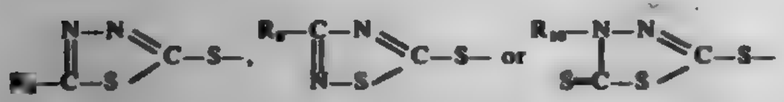
where R_6, R_7 and R_8 independently are hydrogen, lower alkyl, lower alkoxy, phenyl, nitro, chloro, lower alkylthio, lower alkylamino, lower dialkylamino, lower dialkenylamino, heterocyclic amino or R_7 and R_8 along with the adjacent carbon atoms to which they are attached form ortho arylene; and the corresponding dihydro and tetrahydro radicals,

6. radical of the formula



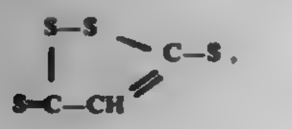
where R_6 and R_7 are independent and independently have the same meaning as before,

7. radical of the formula

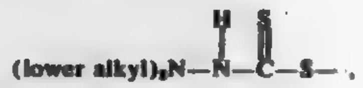


where R_9 is acetamido, lower alkyl, phenyl, chloro or bromo, and R_{10} is lower alkyl or phenyl,

8. radical of the formula

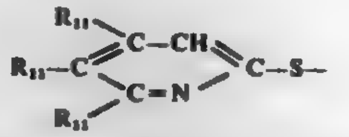


9. radical of the formula



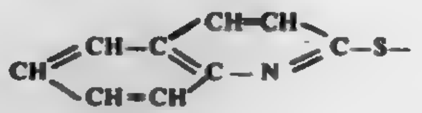
$$(\text{lower alkyl})_2N-\overset{\overset{H}{|}}{N}-\overset{\overset{S}{\|}}{C}-S-,$$

10. radical of the formula



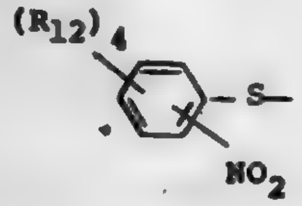
where each R_{11} independently is hydrogen or lower alkyl,

11. radical of the formula



and

12. radical of the formula



where independently each R_{12} is hydrogen, alkyl, chloro, nitro, carboalkoxy, carboxy or acetyl; with the proviso that when the accelerating moiety is selected from the group consisting of (1), (5), (6), (7), (8), (10) and (11) R cannot be (b) and when the accelerating moiety is (1), (3) or (12) each Acc is different, and effecting cross-linking of the rubber.

3,979,370
METHOD FOR SIMULTANEOUS ADDITION OF NON-COMPATIBLE SUBSTANCES TO A MIXING ZONE

Edwin F. Peters, Winfield, and James L. Jezl, St. Charles, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 16, 1975, Ser. No. 568,599
Int. Cl.² C08J *3/00, 3/20;* C08F *10/02, 10/06*
U.S. Cl. 526—348 7 Claims

1. A method for introducing a plurality of non-compatible substances comprising water, a liquid hydrocarbon and polymer additives into a molten polymer following catalytic polymerization comprising:

a. forming a stable dispersion in which the non-compatible substances are incorporated; and
b. injecting the dispersion into the polymer melt with mixing.

3,979,371
POLYMERIC LIMONENE EPOXIDE AND PROCESS FOR PREPARING THE SAME

Erwin Richard Ruckel, Darien, Conn., assignor to Arizona Chemical Company, Wayne, N.J.

Filed Jan. 24, 1975, Ser. No. 543,761
Int. Cl.² C08F *124/00*
U.S. Cl. 526—273 6 Claims

1. A process for the preparation of a homopolymer which comprises the steps of: contacting monomeric limonene 1,2-mono epoxide dissolved in an inert polar solvent at a temperature ranging between −20°C. and −150°C. in the presence of an inorganic, non-metallic Lewis acid, fluoride catalyst, and thereafter recovering resultant polymer.

3,979,372
PREPARATION OF TITANIUM TRICHLORIDE POLYMERIZATION CATALYST COMPONENT

Herman Th. van der Bend, and Willem Sjardijn, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 30, 1974, Ser. No. 537,519
Claims priority, application United Kingdom, Jan. 3, 1974, 278/74
Int. Cl.² C08F *4/64, 110/06;* B01J *31/02;* C01G *23/02*
U.S. Cl. 526—351 7 Claims

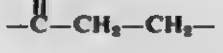
1. In the process for the preparation of gamma-activated $TiCl_3$, useful as a catalyst component in the stereoregular polymerization of alpha-monoolefins, which comprises the reduction of $TiCl_4$ to a beta-$TiCl_3$ composition by reaction with trialkylaluminum compound or a dialkyl-aluminum hydride at a temperature between −110° and −50°C and heating the so-produced $TiCl_3$ at a temperature in the range from above 80°C to 225°C for a sufficient time to substantially convert said beta to gamma-$TiCl_3$; the improvement which comprises washing the $TiCl_3$ composition with an aliphatic hydrocarbon and separating the washed $TiCl_3$ from the hydrocarbon, both the washing and separation being carried out at a temperature in the range from 40° to 200°C, and repeating the washing and separation until the hydrocarbon separated from the $TiCl_3$ is substantially free from dissolved aluminum compounds, wherein said heating may be conducted in the course of said washing treatment.

3,979,373
POLYMERIC FURAN DERIVATIVE

Thomas E. Kiovsky, and Richard C. Kromer, both of Houston, Tex., Assignors to Shell Oil Company, Houston, Tex.

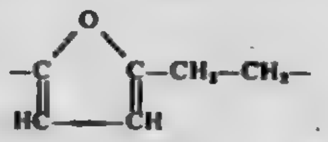
Filed June 13, 1975, Ser. No. 587,001
Int. Cl.² C08F *110/02;* C08G *2/00, 4/00*
U.S. Cl. 526—12 7 Claims

1. The thermoplastic polymer characterized by random distribution along the polymer chain of *n* units of



$$-\overset{\overset{O}{\|}}{C}-CH_2-CH_2-$$

and *m* units of



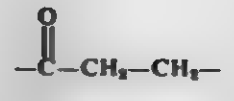
wherein *n* and *m* are both integers, *n* has a value of from about 150 to about 10,000, and the ratio of *m* to *n* varies from about 2:100 to about 25:100.

3,979,374
POLYMERIC PYRROLLIC DERIVATIVE

Thomas E. Kiovsky, and Richard C. Kromer, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

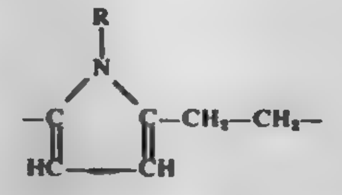
Filed June 13, 1975, Ser. No. 587,198
Int. Cl.² C08F *110/02;* C08G *4/00, 12/00*
U.S. Cl. 526—12 10 Claims

1. The thermoplastic polymer characterized by random distribution along the polymer chain of *n* units of



$$-\overset{\overset{O}{\|}}{C}-CH_2-CH_2-$$

and *m* units of

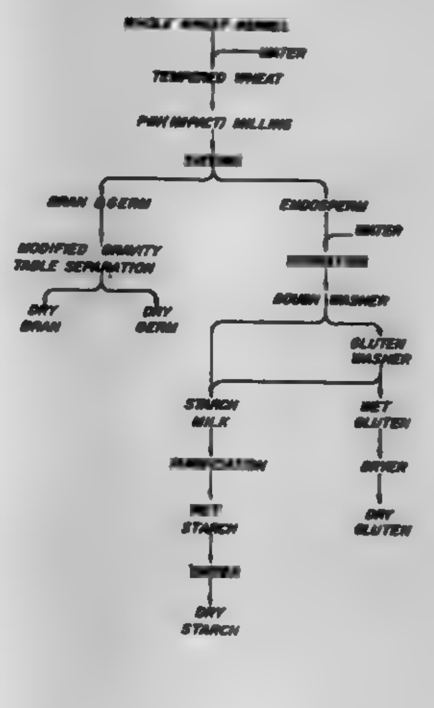


where R is selected from the group consisting of alkyl, aryl, and alkenyl groups of from 1 to 20 carbon atoms and wherein *n* and *m* are both integers, *n* has a value of from about 150 to about 10,000, and the ratio of *m* to *n* varies from about 2:100 to about 25:100.

3,979,375
FRACTIONATION OF THE WHOLE WHEAT KERNEL BY PIN MILLING

Ganta V. Rao; Wayne E. Henry, and David L. Hammond, all of Hutchinson, Kans., assignors to Far-Mar-Co., Inc., Hutchinson, Kans.

Filed May 7, 1974, Ser. No. 467,803
Int. Cl.² A23J *1/12*
U.S. Cl. 260—112 G 15 Claims



1. A process for fractionating the whole wheat kernel into its components comprising the steps of:

a. tempering whole wheat kernels in water to a moisture content, by weight, in the range from 14 to 22%;
b. pin milling the tempered whole wheat kernels into bran, germ and endosperm particles, said bran and germ particles being larger than said endosperm particles;
c. separating the bran and germ particles from the endosperm particles;
d. hydrating said separated endosperm particles in an additional quantity of water ranging from 65 to 75% by weight of said endosperm particles to be hydrated and in an amount just sufficient to achieve a saturation moisture content and agitating the endosperm particles and water to form a thick, dough-like mass; and
e. mechanically working the dough-like mass in the presence of water to wash the non-gluten endosperm components for the gluten.

3,979,376

4-GUANYLAZO-4-DEOXYRIFAMYCIN SV DERIVATIVES

Nicola Maggi, Cusano (Milan), and Piero Sensi, Milan, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

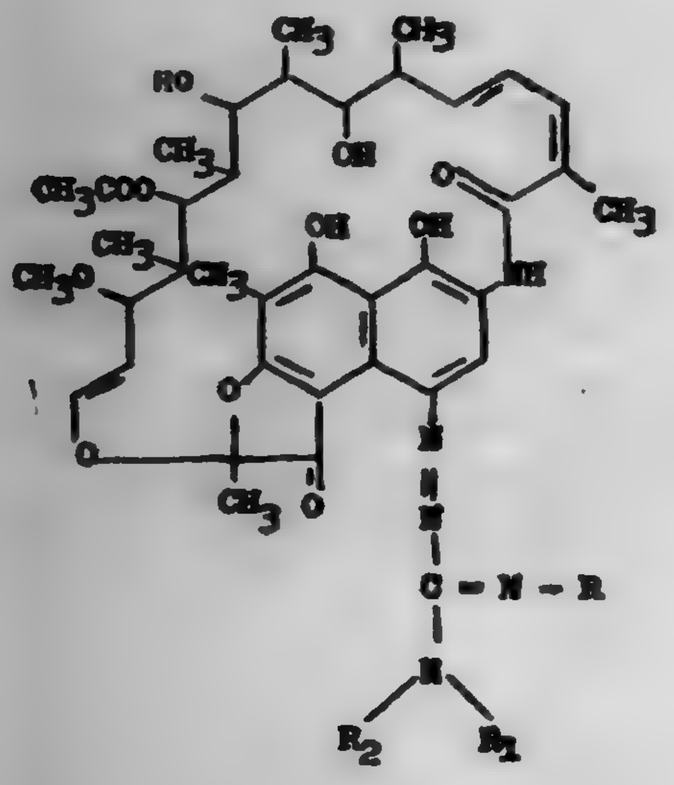
Filed Feb. 18, 1971, Ser. No. 116,601

Claims priority, application Italy, Feb. 23, 1970, 20973/70

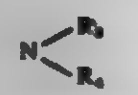
Int. Cl.² A61K *31/655*; A61L *13/00*; C07C *107/04*

U.S. Cl. 260—152 **9 Claims**

1. A rifamycin SV derivative corresponding to the formula:



wherein R represents $-(CH_2)_n-A$ wherein *n* represents the integer 2 or 3, A represents hydroxy or



where R_3 and R_4 individually represent hydrogen, lower alkyl, lower alkylamino-lower alkyl, di-lower alkylamino-lower alkyl or cyclohexyl or together with the nitrogen atom to which they are attached represent pyrrolidyl; R_1 represents hydrogen or, taken with R, represents ethylene to complete with the nitrogen atoms to which they are attached imidazolyl; R_2 represents hydrogen or, when the nitrogen atom to which it is attached is a part of imidazolyl, lower alkyl.

3,979,377

YELLOW AZO PIGMENT AND PROCESS OF PREPARATION FROM DICHLOROANILINE AND BARBITURIC ACID

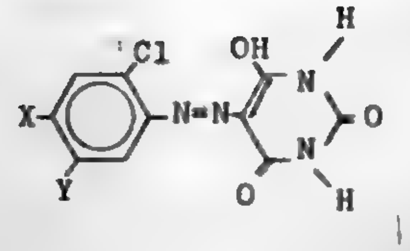
Edward Ephraim Jaffe, Union, N.J.; William Joseph Marshall, Wilmington, Del., and Ernest Anton Stefancsik, Flemington, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 8, 1974, Ser. No. 495,804

Int. Cl.² C09B 62/24; 29/36

U.S. Cl. 260—154 **4 Claims**

1. A yellow azo pigment of the formula



where X is selected from the group consisting of hydrogen and chlorine, Y is selected from the group consisting of hydrogen and chlorine and only one of X and Y can be hydrogen.

3,979,378

WATER-SOLUBLE AZO DYES HAVING A SUBSTITUTED 2-HYDROXYPYRIDONE (6) COUPLING COMPONENT

Gerhard Gnad; Günther Lamm, and Johannes Dehnert, all of Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

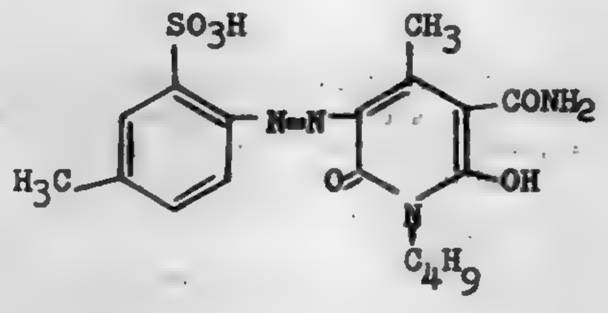
Filed Jan. 27, 1971, Ser. No. 110,249

Claims priority, application Germany, Jan. 31, 1970, 2004487

Int. Cl.² C09B *29/36*; D06P *3/24*

U.S. Cl. 260—156 **2 Claims**

1. The compound of the formula



3,979,379

PROCESS FOR PRODUCING 1,3,5,7-TETRAALKANOYL-1,3,5,7-OCTAHYDROTETRAZOCINES

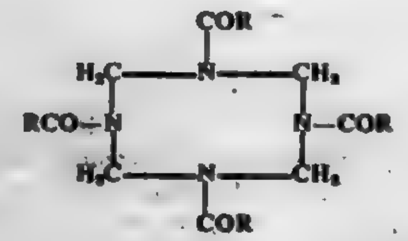
Victor I. Siele, Succasunna, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 25, 1975, Ser. No. 571,877

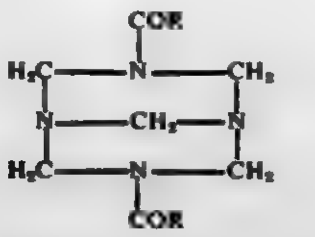
Int. Cl.² C07D *257/02*

U.S. Cl. 260—239 BC **8 Claims**

1. In the process for producing a 1,3,5,7-tetraalkanoyl-1,3,5,7-octahydrotetrazocine of the formula



wherein R is an alkyl group of 1 to 6 carbon atoms, which comprises reacting a 1,5-dialkanoyl-1,3,5,7-tetraazabicyclo (3,3,1) nonane of the formula



wherein R in both cases is the same and has the foregoing definition, with an alkanoyl chloride and an alkanoic acid anhydride of the formulas, resp.

$RCOCl$ and $(RCO)_2O$

wherein R in both cases is the same and has the foregoing definition, in the presence of an organic diluent, wherein the improvement comprises carrying out said reaction in the presence of an alkanoic acid salt of the formula RCOOMe, wherein R has the foregoing definition and Me is an alkali metal.

3,979,380

DERIVATIVES OF IMIDAZOLIDIN-2-ONES AND -2-THIONES

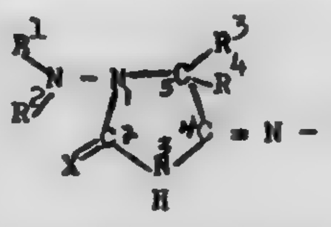
Amedeo Failli, Montreal, and Manfred Gotz, Hudson, both of Canada, assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 301,413, Oct. 27, 1972, Pat. No. 3,904,629, which is a division of Ser. No. 55,952, July 17, 1970, Pat. No. 3,707,472. This application June 9, 1975, Ser. No. 585,019

Int. Cl.² C07D *401/04*, *403/04*

U.S. Cl. 260—239.7 **4 Claims**

1. A compound selected from those of the formula



in which R^1 and R^2 together with the nitrogen atom to which they are attached form an azepino ring; R^3 is selected from the group which consists of hydrogen and lower alkyl; R^4 is lower alkyl; R^5 is selected from the group which consists of cycloalkyl having 5-6 carbon atoms; X is selected from the group which consists of oxygen and sulfur; or acid addition salts thereof with pharmacologically acceptable acids.

2. The hydrochloric salt of 4-cyclohexylimino-5-isopropyl-1-piperidinoimidazolidin-2-one, as claimed in Claim 1.

3,979,381

THIOPYRANO[4,3-c]PYRAZOLES

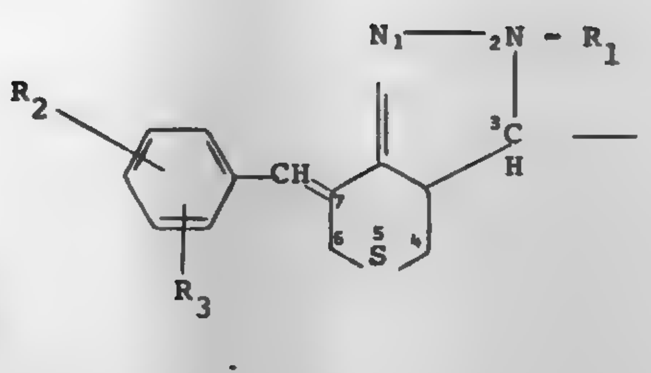
George C. Rovnyak, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

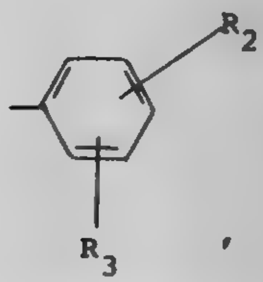
Filed Aug. 11, 1975, Ser. No. 603,580

Int. Cl.² C07D *231/54*, *495/02*

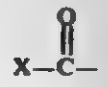
U.S. Cl. 260—240 A **28 Claims**

1. A compound having the formula



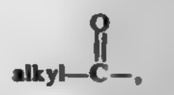


or a pharmaceutically acceptable acid addition salt thereof, or a 5-oxide or 5,5-dioxide thereof, wherein R_1 is hydrogen, alkyl, aryl, arylalkyl, or



$$X-\overset{O}{\overset{\|}{C}}-$$

wherein X is alkyl or aryl; and R_2 and R_3 are the same or different and are hydrogen, alkyl, hydroxy, alkoxy, alkylthio, alkylsulfinyl, trifluoromethyl, halogen,



$$\text{alkyl}-\overset{O}{\overset{\|}{C}}-,$$

cyano, nitro or dialkylamino; wherein the terms alkyl and alkoxy refer to groups having 1 to 8 carbon atoms and the term aryl refers to phenyl or phenyl monosubstituted with an alkyl, alkoxy, halogen, or trifluoromethyl group.

3,979,382

DICHLOROCYANURATE SILVER COMPLEXES

Francisco Martinez-Alvarez; Antonio Gamero Briones, both of Barcelona, and Enrique Dominguez Buron, Badalona, all of Spain, assignors to Sociedad Anonima Cros, Barcelona, Spain

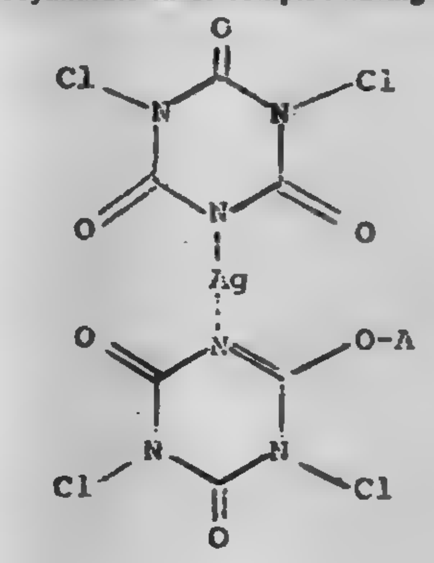
Filed Nov. 11, 1974, Ser. No. 522,894

Claims priority, application Spain, Nov. 15, 1973, 420561

Int. Cl.² C07D *251/36*

U.S. Cl. 260—242 **7 Claims**

1. A chlorocyanurate silver complex having the formula



I

wherein A is sodium or potassium.

3,979,383
PURIFICATION PROCESS FOR 7-AMINOCEPHALOSPORINS

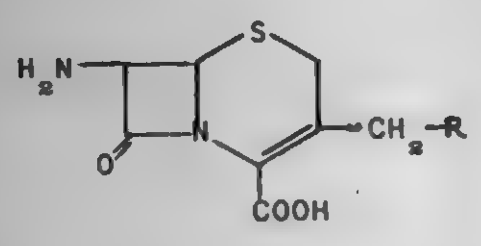
Gene M. Wild, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 7, 1975, Ser. No. 556,508

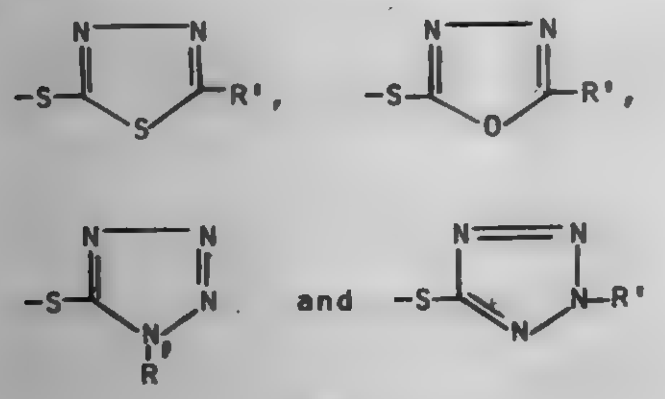
Int. Cl.² C07D *501/12*

U.S. Cl. 260—243 C **5 Claims**

1. The process for purifying a cephalosporin nucleus compound of the formula



wherein R is a heterocyclic ring selected from the group consisting of



wherein R′ is C_1–C_4 alkyl, which comprises adsorbing said nucleus from an aqueous solution thereof at a pH between 6.5 and 8.5 on the polyacrylic quaternary methylammoniun anion exchange resin Amberlite IRA 458; eluting said resin with phosphate buffer at a pH between 7.5 and 9.0 acidifying the eluate to a pH of between 3.5 and 5.5; and separating said nucleus in a purified form from said acidified eluate.

3,979,384
C-3 SUBSTITUTED CEPHALOSPORINS

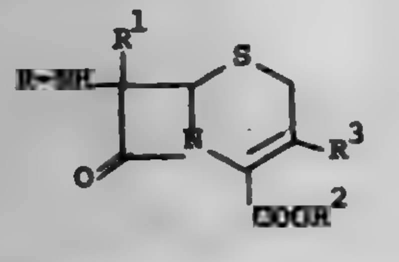
Raymond A. Firestone, Fanwood; John L. Fahey, Matawan, and Burton G. Christensen, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 20, 1975, Ser. No. 560,660

Int. Cl.² C07D *501/24*

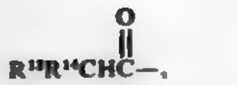
U.S. Cl. 260—243 C **7 Claims**

1. A compound of the formula:



wherein

R is an acyl radical of the formula



$R^{13}R^{14}CHC(=O)-$,

wherein

- R^{13} is hydrogen; halo selected from the group consisting of fluoro, chloro and bromo; amino; lower alkyl amino, wherein the lower alkyl has 1 to 6 carbon atoms; guanidino; phenyl; halophenyl; phosphono; sulfamino; N-lower alkyl sulfamino wherein the lower alkyl has 1 or 2 carbon atoms; hydroxy; (1H)-tetrazolyl; sulfo; carboxy; sulfamyl; N-lower alkyl sulfamyl wherein the lower alkyl contains from 1 to 2 carbon atoms; and azide;
- R^{14} is alkyl having 1 to 6 carbon atoms; substituted alkyl having 1 to 6 carbon atoms, wherein the substituent is amino; carboxy; alkene having 2 to 4 carbon atoms; phenyl; substituted phenyl wherein the substituent is halo, aminomethyl, carboxylmethyl, carboamidomethyl, hydroxy, nitro, guanidino, guanidinomethyl, methoxy, or methyl; 5-membered monocyclicheterocycle having one oxygen, one sulfur, one oxygen and two nitrogens, one sulfur and one nitrogen, one sulfur and two nitrogens, or four nitrogens in the ring selected from the group consisting of furyl, thienyl, thiazolyl, isothiazolyl, oxadiazolyl, thiadiazolyl and tetrazolyl; substituted 5-membered monocyclicheterocycle wherein the substituent is nitro, halo, methoxy or methyl; lower alkylthio wherein the lower alkyl has 1 to 4 carbon atoms; lower alkenethio wherein the alkene has 1 to 4 carbon atoms; substituted lower alkene thio wherein the substituent is halo; phenylthio; carboxy or cyano;
- R^1 is hydrogen or methoxy;
- R^2 is hydrogen or a protecting group selected from methyl, trichloroethyl, tert-butyl, benzoylmethyl, p-methoxybenzyl, benzyl, benzhydryl, methoxymethyl or a pharmaceutically acceptable salt;
- R^3 is selected from the group consisting of nitrile imine of the formula $-C\equiv N^{+}-N^{-}-R^{4}$, wherein R^4 is lower alkyl having 1 to 6 carbon atoms, phenylsufonyl, p-toluenesulfonyl; nitrile oxide of the formula $-C\equiv N^{+}-O^{-}$; diazomethyl of the formula $-CH^{-}-N^{+}\equiv N$; azomethine imine of the formula $-CH=NR^{+5}-NR^{-6}$, wherein R^5 is hydrogen, lower alkyl having 1 to 6 carbon atoms and R^6 is hydrogen, phenylacetyl and azomethine oxide of the formula $-CH=NR^{+7}-O,^{-}$ wherein R^7 is lower alkyl having 1 to 6 carbon atoms.

3,979,385
1-AMINOALKANE-1,1-DIPHOSPHONIC ACIDS AND THEIR SALTS

Klaus Wollmann; Walter Ploger, both of Hilden, and Karl-Heinz Worms, Dusseldorf-Holthausen, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

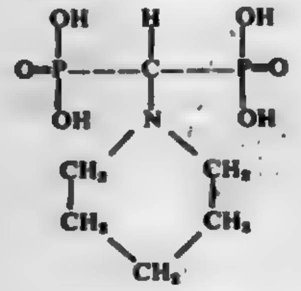
Division of Ser. No. 90,454, Nov. 17, 1970, Pat. No. 3,846,420. This application May 31, 1974, Ser. No. 475,207

Claims priority, application Germany, Nov. 19, 1969, 1955123

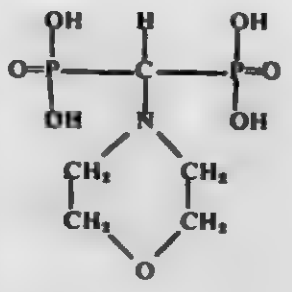
Int. Cl.² C07D *295/04*

U.S. Cl. 260—247 **2 Claims**

1. Piperidinomethane-1,1-diphosphonic acid of the formula



2. Morpholinomethane-1,1-diphosphonic acid of the formula



3,979,386
IMINOISOINDOLINE PIGMENTS AND PROCESSES FOR THE PREPARATION THEREOF

Jost von der Crone; André Pugin, both of Riehen, and Rudolf Mory, Dornach, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

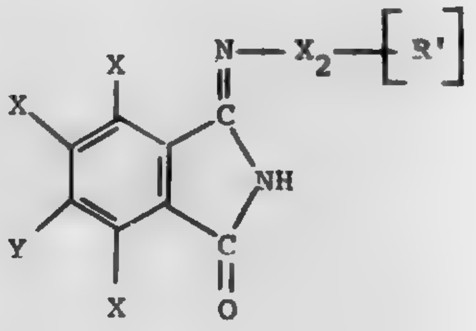
Filed May 22, 1974, Ser. No. 472,401

Claims priority, application Switzerland, May 29, 1973, 7718/73; May 29, 1973, 7719/73

Int. Cl.² C07D *401/12, 403/12, 413/12, 417/12*

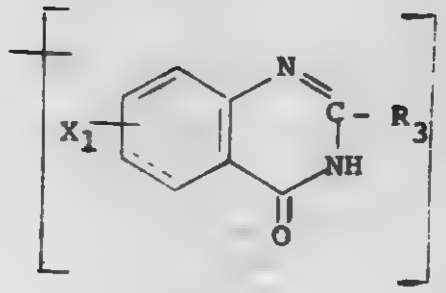
U.S. Cl. 260—256.4 Q **9 Claims**

1. An iminoisoindolinone of the formula

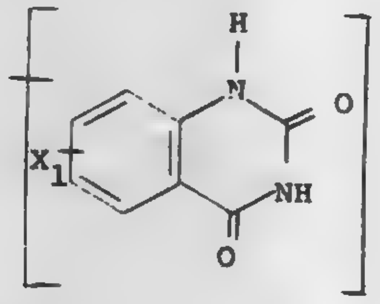


wherein

R′ represents



or



- X represent halogen atoms,
- Y represents a halogen atom, alkoxy of 1–4 carbon atoms, phenoxy, chlorophenoxy, methylphenoxy,, or alkylthio of 1 or 2 carbon atoms;
- X_1 represents a hydrogen atom or a halogen atom, alkyl or alkoxy having 1–4 carbon atoms or phenoxy,
- X_2 represents a direct bond, phenyl, phenylazo, phenylazophenylene, or benzoylamino, and
- R_3 represents a H-atom, alkyl having 1–4 carbon atoms, unsubstituted phenyl or phenyl having one substituent selected from the group consisting of chloro, alkyl of 1–4 carbons, or alkoxy having 1–4 carbons, which unsubstituted or substituted phenyl can be bound by a direct bond to the imino group of the isoindoline.

3,979,387
4,5-DIHYDROTETRAZOLO(1,5-A)QUINOXALINES

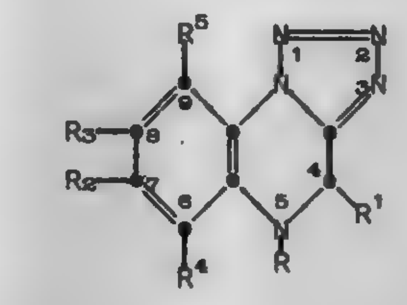
Barry A. Dreikorn, and Thomas D. Thibault, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed June 10, 1975, Ser. No. 585,533

Int. Cl.² C07D *487/04*

U.S. Cl. 260—250 Q **6 Claims**

1. A compound of the formula:



wherein

- R and R^1 independently represent hydrogen, ethyl or methyl;
- R^2, R^3, R^4 and R^5 independently represent ethyl, methyl, chloro, fluoro, bromo or hydrogen; provided that at least four of R, R^1, R^2, R^3, R^4 and R^5 represent hydrogen.

3,979,388
THIADIAZOLYLTETRAHYDROPYRIMIDINONES

John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

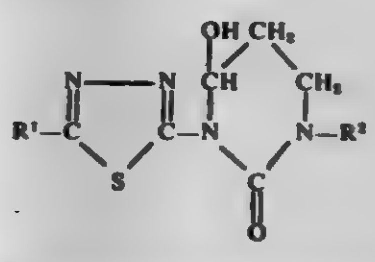
Filed Sept. 11, 1974, Ser. No. 505,118

The portion of the term of this patent subsequent to Aug. 26, 1992, has been disclaimed.

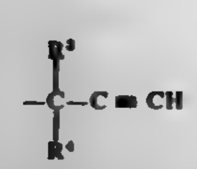
Int. Cl.² C07D *417/00*

U.S. Cl. 260—256.5 R **8 Claims**

1. A compound of the formula



wherein R^1 is selected from the group consisting of alkyl of up to 4 carbon atoms, lower alkenyl, lower chloroalkyl, trifluoromethyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl and lower alkylsulfinyl; and R^2 is selected from the group consisting of lower alkyl, lower alkenyl, lower chloroalkyl, lower bromoalkyl and



$$-\overset{R^3}{\underset{R^4}{C}}-C\equiv CH$$

wherein R^3 and R^4 are selected from the group consisting of hydrogen and alkyl of up to 3 carbon atoms.

3,979,389
SULPHONATED COUMARIN DERIVATIVES

Werner Koch, Oberwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

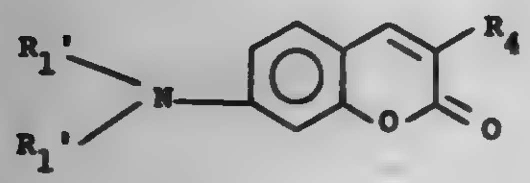
Filed Oct. 15, 1974, Ser. No. 514,608

Claims priority, application Switzerland, Oct. 17, 1973, 14712/73

Int. Cl.² C07D *239/72*

U.S. Cl. 260—256.5 R 12 Claims

1. A compound of the formula Ia,

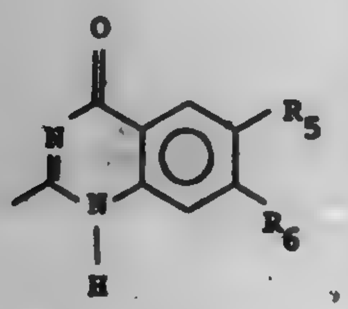


Ia

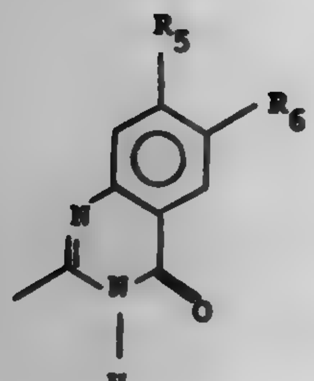
in which,

each R_1', which may be the same or different, is (C_{1-4}) alkyl or (C_{2-3}) alkyl substituted by chloro or cyano,

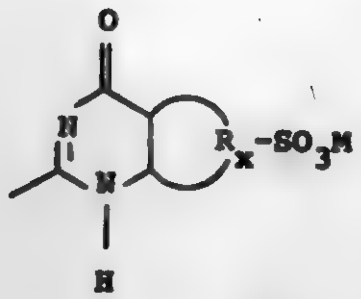
R_4 is a radical of formula (c), (d), (e) or (f),



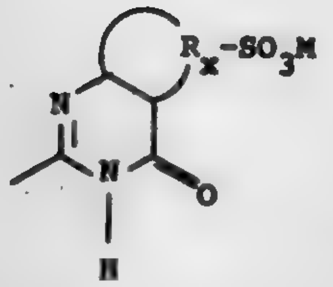
(c) ,



(d) ,



(e) ,



(f)

in which,

one of R_5 and R_6 is $-SO_3M$, where M is a hydrogen ion or a cation equivalent, and the other is hydrogen, chloro, bromo, (C_{1-4}) alkyl, (C_{1-4}) alkoxy, (C_{1-4}) alkylcarbonyl or (C_{1-4}) alkylcarbonylamino, and

R_x is the atoms necessary to form a condensed further unsubstituted 1,2- or 2,3-naphthalene ring in which the SO_3M group is bound to the ring remote from the coumarin nucleus.

3,979,390
BUTYROPHENONE DERIVATIVES AND PRODUCTION THEREOF

Kikuo Sasajima, Toyonaka; Keiichi Ono; Masaru Nakao, both of Osaka; Isamu Maruyama, Minoo; Masaharu Takayama, Toyonaka; Shigenari Katayama, Takarazuka; Junki Katsube, Toyonaka; Shigeho Inaba, Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

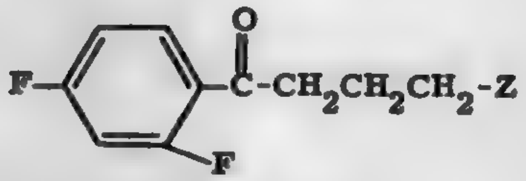
Filed Mar. 16, 1973, Ser. No. 341,858

Claims priority, application Japan, Mar. 18, 1972, 47-27610

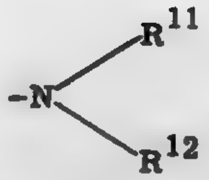
Int. Cl.² C07D *295/10*

U.S. Cl. 260—268 R 6 Claims

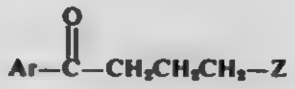
1. A process for producing butyrophenone derivatives and their acid addition salts, which comprises reacting a compound of the formula:



with a secondary amine of the formula:

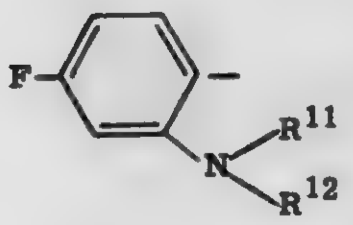


wherein R^{11} and R^{12} are each hydrogen, C_1-C_8 alkyl, hydroxy-substituted C_1-C_8 alkyl, C_1-C_4 alkoxy substituted C_1-C_8 alkyl, di(C_1-C_4 alkyl) amino-substituted C_1-C_8 alkyl, C_3-C_7 cycloalkyl or optionally substituted aralkyl, at least one of R^{11} and R^{12} being an optionally substituted benzyl group, to give an intermediate compound of the formula:

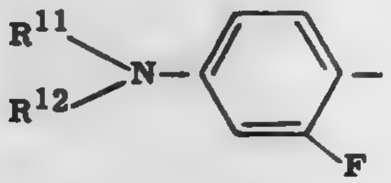


$$Ar-\overset{O}{\overset{\|}{C}}-CH_2CH_2CH_2-Z$$

wherein Ar is a group of either one of the formulas:

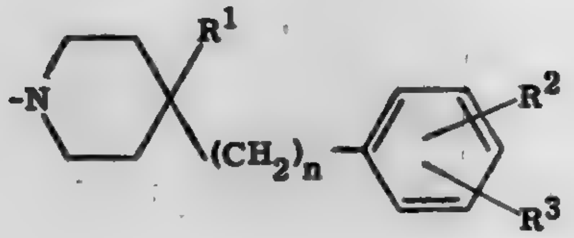


and

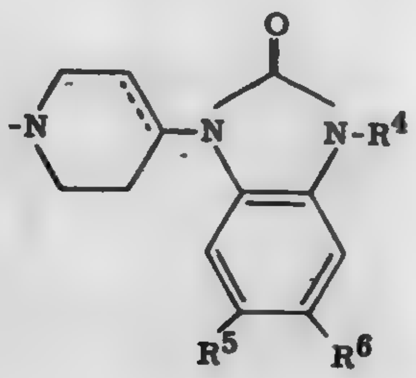


;

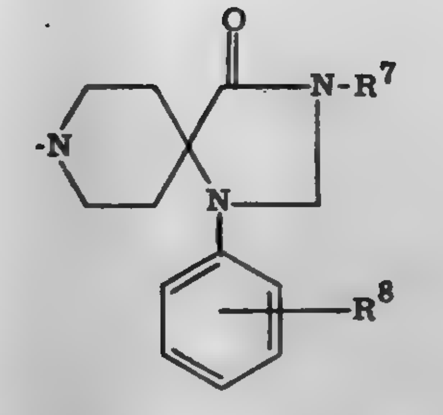
Z is a secondary amino group of either one of the formulas:



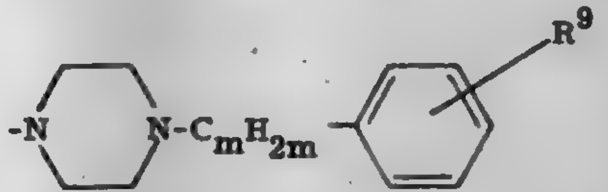
wherein R^1 is hydrogen or hydroxyl, R^2 and R^3 are each hydrogen, halogen, C_1-C_4 alkyl, C_1-C_4 alkoxy or trifluoromethyl and n is a integer of 0 or 1;



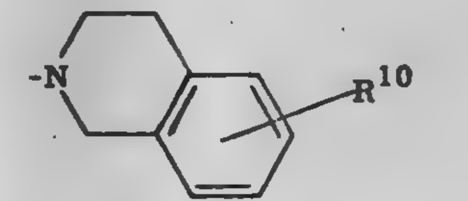
wherein R^4 is hydrogen or C_1-C_4 alkyl, R^5 and R^6 are each hydrogen, halogen or C_1-C_4 alkyl and the dotted line is an optional bond between the carbon atoms at the 3- and 4-positions of the piperidine ring,



wherein R^7 is hydrogen or C_1-C_4 alkyl and R^8 is hydrogen, halogen, C_1-C_4 or C_1-C_4 alkoxy,



wherein R^9 is hydrogen, halogen, C_1-C_4 alkyl, C_1-C_4 alkoxy or trifluoromethyl and m is an integer of 0, 1 or 2, and



wherein R^{10} is hydrogen, halogen, hydroxyl, C_1-C_4 alkyl or C_1-C_4 alkoxy; and thereafter

hydrogenating said intermediate compound to give the corresponding compound wherein the optionally substituted benzyl group is eliminated.

3,979,391
1,2,3,4-TETRAHYDROCARBAZOLES

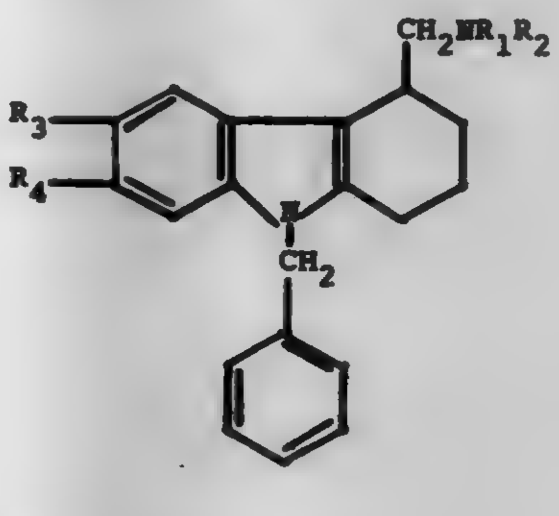
Ernest John Alexander, East Greenbush, and Aram Mooradian, Schodack, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 308,674, Nov. 22, 1972, Pat. No. 3,939,177. This application Aug. 4, 1975, Ser. No. 601,492

Int. Cl.² C07D *209/86*, *401/04*

U.S. Cl. 260—268 TR 16 Claims

1. 4-$R_1R_2NCH_2$-9-benzyl-6-R_3-7-R_4-1,2,3,4-tetrahydrocarbazole having the formula:



wherein

NR_1R_2 is 1-pyrrolidyl or 1-piperidyl;

and

R_3 and R_4 are each hydrogen, lower-alkyl, or lower-alkoxy.

3,979,392

METHOD OF SEPARATING LIQUID DROPS FROM A GAS STREAM

Tomoki Eguchi; Kenji Akitsune; Michio Unoki; Jinichi Kataoka; Toshiki Kato, and Atsuhiko Hiai, all of Takaishi, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Aug. 19, 1974, Ser. No. 498,719

Claims priority, application Japan, Aug. 22, 1973, 48-93284

Int. Cl.^{2} C07D *251/62*; C07C *126/00*

U.S. Cl. 260—249.7 A **6 Claims**

1. In a method for separating liquid drops selected from the group consisting of urea, thermal decomposition products of urea, and mixtures thereof with residual melamine contained in the waste gas from a melamine recovery process wherein a melamine synthesis effluent gas obtained by thermal decomposition of urea or the thermal decomposition products thereof is mixed with waste gas whereby said effluent gas is cooled to separate melamine therefrom by crystallization, the remaining gas is washed with molten urea or a molten mixture of urea and the thermal decomposition products thereof to recover unreacted urea, unreacted thermal decomposition products of urea and residual melamine therefrom, and at least a portion of the resultant waste gas is separated from liquid drops contained therein and then recirculated for mixing with said effluent gas, the improvement which comprises colliding said resultant waste gas containing said liquid drops against a separator surface and providing said surface with a downwardly flowing film of a liquid selected from the group consisting of molten urea, a molten mixture of urea and the thermal decomposition products of urea and molten mixtures thereof with melamine, thereby separating said liquid drops from said waste gas without adherence of solidified liquid drops on said separator surface.

3,979,393

IMIDYL- AND ISOIMIDYL-PHTHALIC ANHYDRIDES, PROCESS FOR THEIR MANUFACTURE AND THEIR USE FOR CURING EPOXIDE RESINS

Vratislav Kvita, Muttenz; Roland Darms, Therwil, and Gerd Greber, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

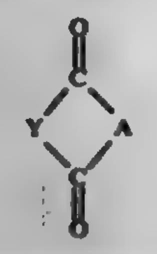
Filed Dec. 9, 1974, Ser. No. 531,030

Claims priority, application Switzerland, Dec. 20, 1973, 17903/73

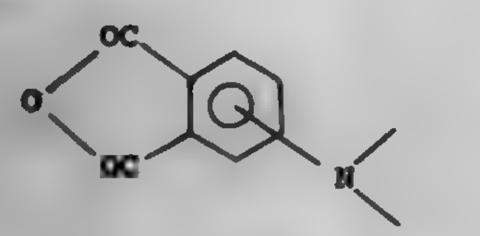
Int. Cl.^{2} C07D *405/04*, *405/10*

U.S. Cl. 260—281 G **1 Claim**

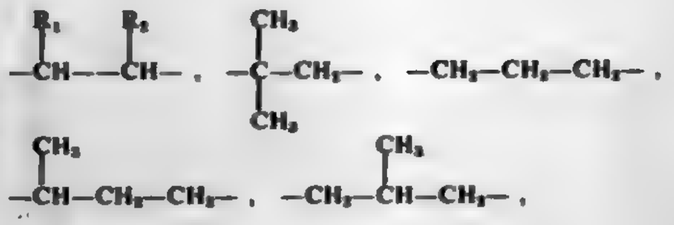
1. Imidyl-phthalic anhydrides of the formula



wherein Y represents the divalent radical

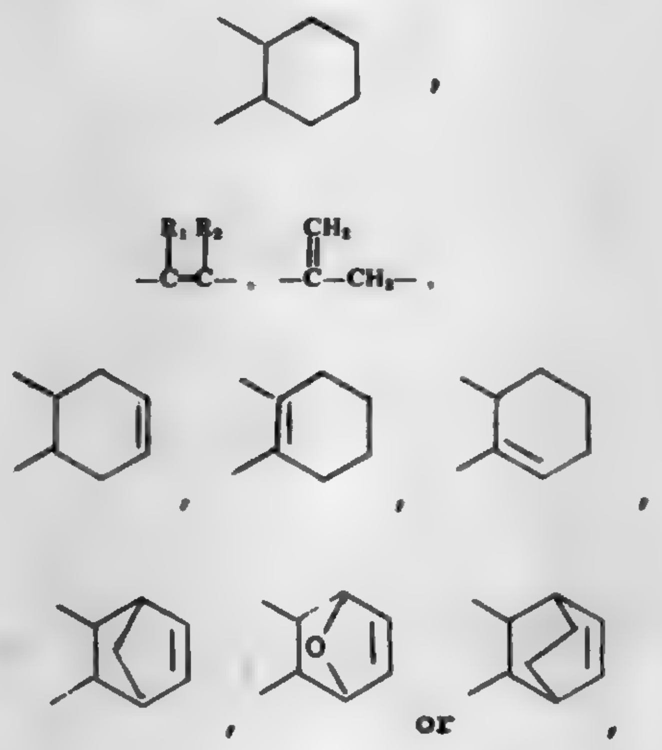


and A represents a divalent radical selected from the group consisting of



$$-\overset{R_1}{\overset{|}{C}}H-\overset{R_2}{\overset{|}{C}}H-,\quad -\overset{CH_3}{\underset{CH_3}{\overset{|}{\underset{|}{C}}}}-CH_2-,\quad -CH_2-CH_2-CH_2-,$$

$$-\overset{CH_3}{\overset{|}{C}}H-CH_2-CH_2-,\quad -CH_2-\overset{CH_3}{\overset{|}{C}}H-CH_2-,$$



R$_1$ and R$_2$ independently of one another denote hydrogen, chlorine, bromine or methyl.

3,979,394

DUPLO QUINOLINE COMPOUNDS

Wilhelmus Janssens, Aarschot; Johannes Josephus Vanheertum, Halle-Zandhoven; Albert Lucien Poot, Kontich, and Robert Joseph Pollet, Vremde, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

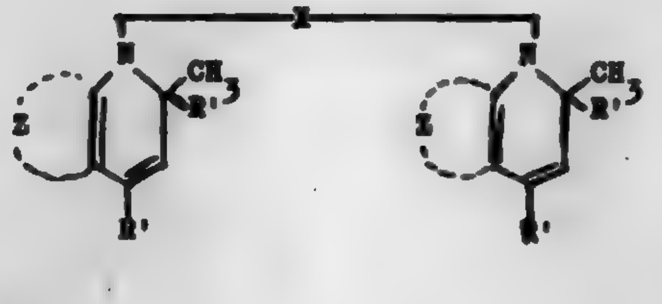
Division of Ser. No. 206,872, Dec. 10, 1971, Pat. No. 3,832,171. This application Mar. 5, 1974, Ser. No. 448,267

Claims priority, application United Kingdom, Dec. 11, 1970, 59094/70

Int. Cl.^{2} C07D *215/02*

U.S. Cl. 260—283 BZ **2 Claims**

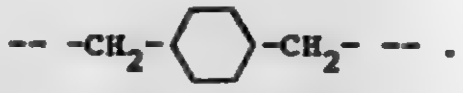
1. A chemical compound corresponding to the following formula:



wherein:

Z represents the necessary atoms to close and adjacent benzene or fluorene nucleus or,

R′ represents (C$_1$-C$_4$) alkyl, and
X represents CH$_2$-CH$_2$ or



3,979,395

PROCESS FOR THE PREPARATION OF VINCAMINE AND OTHER INDOLE ALKALOIDS

Ida Taccone, Voghera (Pavia), Italy, assignor to Buskine S.A., Fribourg, Switzerland

Filed Aug. 6, 1975, Ser. No. 602,520

Claims priority, application Switzerland, Aug. 9, 1974, 10940/74

Int. Cl.^{2} C07D *471/22*

U.S. Cl. 260—293.53 **8 Claims**

1. A method for the preparation of vincamine and similar indole alkaloids, starting from tabersonine or vincadifformine, characterized in that the starting compound, as a solution in a polar solvent, is added, in the ratio of 1:1 to 1:5 by weight of the starting alkaloid, with an inorganic or organic salt, soluble in the reaction medium, of a metal selected among Cu, Fe and Co, said metal being at the highest valence state thereof, the reaction being carried out in the presence of oxygen, at a temperature of between 10° and 50°C and for a time of between 5 and 15 days.

3,979,396

SYNTHESIS OF BIOTIN

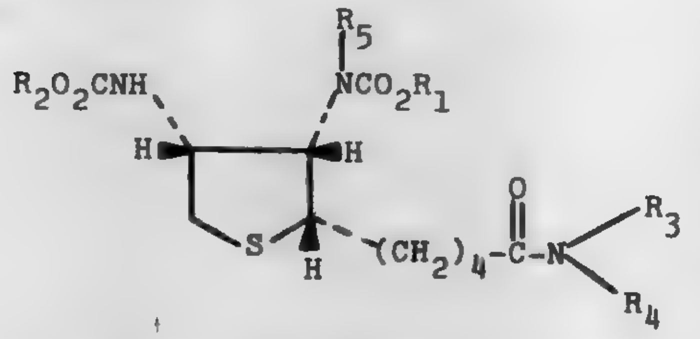
Pasquale Nicholas Confalone, Bloomfield; Milan Radoje Uskokovic, Upper Montclair, and Giacomo Pizzolato, Belleville, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 3, 1973, Ser. No. 420,811

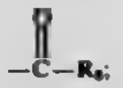
Int. Cl.^{2} C07D *405/00*

U.S. Cl. 260—293.68 **7 Claims**

1. A compound of the formula:



wherein R$_1$ is lower alkyl; R$_2$ is aliphatic hydrocarbyl; R$_3$ and R$_4$ may be taken together with the nitrogen atom to form a piperidide ring; R$_5$ is hydrogen or



$$-\overset{O}{\overset{\|}{C}}-R_6;$$

and R$_6$ is lower alkyl.

3,979,397

PHARMACEUTICALLY EFFECTIVE NOVEL 3,4-DIHYDRO-1,2- AND 1,3-THIOZOLO [4,3a] ISOQUINOLINES AND A PROCESS FOR PREPARING SAME

Kalman Harsanyi; Kalman Takacs; Pal Kiss, all of Budapest; Laszlo Szekeres; Gyula Papp, both of Szeged, and Eva Benedek, Gyor, all of Hungary, assignors to Chinoin Pharmaceutical and Chemical Works Ltd., Budapest, Hungary

Filed May 28, 1974, Ser. No. 473,918

Claims priority, application Hungary, May 30, 1973, CI1381

Int. Cl.^{2} C07D *513/04*

U.S. Cl. 260—288 CF **1 Claim**

1. 1-cyano-3-imino-3,4,5,6-tetrahydro-8,9-dimethoxy-1,3-thiazolo [4,3-a] isoquinoline.

3,979,398

SULPHOXIDES

George Raymond White, Harpenden, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

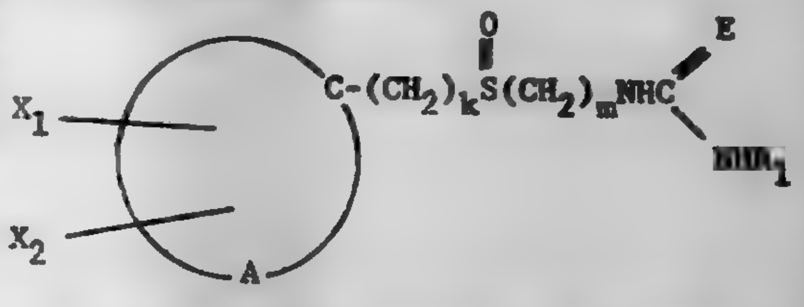
Division of Ser. No. 436,285, Jan. 24, 1974, Pat. No. 3,932,443. This application Oct. 30, 1975, Ser. No. 627,418

Claims priority, application United Kingdom, Feb. 8, 1973, 6153/73; Oct. 23, 1973, 49257/73

Int. Cl.^{2} C07D *213/34*

U.S. Cl. 260—294.8 F **12 Claims**

1. A compound of the formula:



wherein A is such that the heterocyclic nucleus formed is a pyridine ring; X$_1$ and X$_2$, which may be the same or different are hydrogen, lower alkyl, trifluoromethyl, hydroxyl, halogen, amino, or X$_1$ may with X$_2$ and at least two of the atoms comprising A form a further ring; *k* is 0 to 2 and *m* is 2 or 3 provided that the sum of *k* and *m* is 3 or 4; E is oxygen, sulphur or NR$_2$; R$_1$ is hydrogen, lower alkyl, benzoyl or dimethylaminomethyl; and R$_2$ is hydrogen, nitro, cyano, alkanesulphonyl having 1 to 3 carbon atoms, benzenesulfonyl, halobenzenesulfonyl or toluenesulfonyl.

3,979,399

AMINO DERIVATIVES OF PYRAZOLOPYRIDINE CARBOXAMIDES

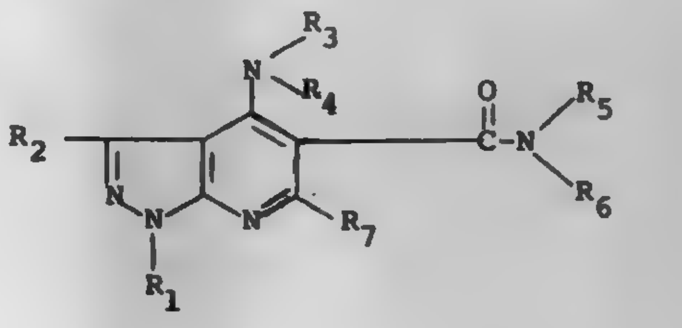
Hans Hoehn, and Theodor Denzel, both of Tegernheim, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 489,636, July 18, 1974, abandoned, which is a division of Ser. No. 306,967, Nov. 15, 1972, Pat. No. 3,840,546. This application Mar. 25, 1975, Ser. No. 561,743

Int. Cl.^{2} C07D *471/04*

U.S. Cl. 260—295.5 B **4 Claims**

1. A compound of the formula

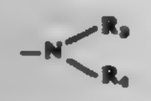


wherein

r_1 is selected from the group consisting of hydrogen, lower alkyl, phenyl, phenyl-lower alkyl, and cycloalkyl of 3 to 7 carbon atoms;

R_2 is selected from the group consisting of hydrogen, lower alkyl, and phenyl;

the basic nitrogen group



$$-N\begin{matrix}R_3\\R_4\end{matrix}$$

is selected from the group consisting of

acyclic amino groups wherein R_3 and R_4 are each selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkanoyl, phenyl, substituted phenyl, phenyl-lower alkyl, di-lower alkyl amino-lower alkyl, benzoyl, substituted benzoyl, phenyl-lower alkanoyl, substituted phenyllower alkanoyl, lower alkane sulfonyl, benzenesulfonyl, and substituted benzenesulfonyl and

R_5 is alkoxy lower alkyl or dialkoxy lower alkyl;

R_6 is hydrogen or lower alkyl;

R_7 is selected from the group consisting of hydrogen, lower alkyl, and phenyl;

wherein lower alkyl and lower alkenyl refer to hydrocarbon groups having 1 to 8 carbon atoms;

wherein lower alkanoyl refers to acyl radicals of acids having the formula $C_nH_{2n+1}COOH$ wherein *n* must be 7 or less;

wherein substituted phenyl, substituted benzoyl, and substituted benzenesulfonyl refers to the respective moieties substituted with one or two substituents selected from the group consisting of lower alkyl, halogen, trifluoromethyl, amino, and carboxy;

and physiologically acceptable acid-addition salts thereof.

3,979,400

PRODUCTION OF PYRIDYL KETONES

William H. Rieger, and Ernest W. Crowe, both of Indianapolis, Ind., assignors to Reilly Tar & Chemical Corporation, Indianapolis, Ind.

Filed Dec. 11, 1974, Ser. No. 531,555

Int. Cl.² C07D *213/50*

U.S. Cl. 260—297 R **20 Claims**

1. The method of producing a pyridyl ketone from a substituted pyridine containing at least one substituent which is a lower alkyl group having from 2 to 8 carbon atoms or an arylmethylene group, connected to a carbon of the pyridine nucleus by a methylene radical of such group, which comprised the steps of

heating the substituted pyridine to an elevated reaction temperature of from about 100° C. to about 300° C.,

without the addition of carboxylic acid;

with or without the addition of a minor proportion of an inert vapor pressure additive,

with a catalytic amount, not exceeding about 5% by weight of the pyridine, of an inorganic oxidation catalyst, or without any catalyst,

maintaining the reaction mixture at a pressure sufficient to maintain liquid phase conditions and cause oxygen-containing gas to go into solution in the liquid phase,

mixing a supply of air or other oxygen-containing gas with the heated mixture so as to cause the said methylene group of said substituent in a substantial portion of the substituted pyridine to be oxidized to a carbonyl group,

and separating the pyridyl ketone thus formed from the resulting mixture.

3,979,401

POLYFUNCTIONAL ALIPHATIC AND CYCLOALIPHATIC CYCLIC NITRILE SULFITES AND CARBONATES

Emmett H. Burk, Jr., Glenwood, Ill., and Donald D. Carlos, Middletown, Ky., assignors to Atlantic Richfield Company, Los Angeles, Calif.

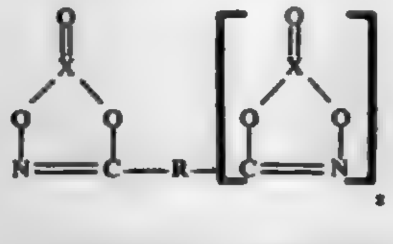
Continuation of Ser. No. 134,043, April 14, 1971, abandoned, which is a continuation-in-part of Ser. No. 713,997, March 18, 1968, abandoned, which is a continuation-in-part of Ser. No. 502,327, Oct. 22, 1965, abandoned, and Ser. No. 502,464, Oct. 22, 1965, abandoned. This application Feb. 27, 1974, Ser. No. 442,706

Int. Cl.² C07D *291/04*

U.S. Cl. 260—301 **6 Claims**

1. A compound selected from the group consisting of: malonodi(nitrile carbonate); malonodi(nitrile sulfite); succinodi(nitrile carbonate); succinodi(nitrile sulfite); glutarodi(nitrile carbonate); glutarodi(nitrile sulfite); adipodi(nitrile carbonate); adipodi(nitrile sulfite); pimelodi(nitrile carbonate); pimelodi(nitrile sulfite); suberodi(nitrile carbonate); suberodi(nitrile sulfite); azelaodi(nitrile carbonate); cetylmalonodi(nitrile carbonate); cetylmalonodi(nitrile sulfite); thapsodi(nitrile carbonate); thapsodi(nitrile sulfite); japanodi(nitrile carbonate); japanodi(nitrile sulfite); cyclohexyldi(-nitrile carbonate); cyclohexyldi(nitrile sulfite); 4-bromo-1,6-hexanedi(nitrile carbonate); 4-bromo-1,6-hexanedi(nitrile sulfite); 2-chloro-1,9-nonanedi(nitrile carbonate); 2-chloro-1,9-nonanedi(nitrile sulfite).

5. Compositions of matter having the structural formula:



wherein R is an unsubstituted straight chain aliphatic hydrocarbon of 1 to 30 carbon atoms, X is sulfur or carbon, and no two cyclic nitrile functional groups are attached to the same carbon atom.

3,979,402

THIAZOLE DERIVATIVES

Robert Anthony Newberry, Portsmouth, and Brian John Bushell, Southampton, both of England, assignors to John Wyeth & Brother, Maidenhead, England

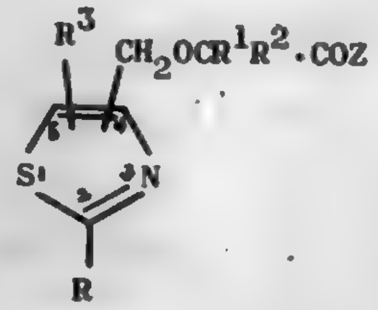
Filed Feb. 24, 1975, Ser. No. 552,097

Claims priority, application United Kingdom, Feb. 27, 1974, 8870/74

Int. Cl.² C07D *277/22*

U.S. Cl. 260—302 R **5 Claims**

1. A compound having the formula:



wherein R represents phenyl or phenyl mono-substituted by a halogen, lower alkyl, lower alkoxy, nitro, amino, methylene dioxy, or trifluoromethyl group; R^1 and R^2 independently represent hydrogen or lower alkyl; R^3 represents hydrogen or lower alkyl; and —COZ represents the amide group, the carboxylic acid group or the ammonium or a pharmaceutically acceptable alkali metal or alkaline earth metal salt thereof, or an ester group of formula $-COOR^4$, wherein R^4 represents a lower alkyl, phenyl lower alkyl, or phenyl radical; said lower alkyl, lower alkoxy, or phenyl lower alkyl groups having an alkyl chain of from 1 to 6 carbon atoms.

3,979,403

PROCESS FOR THE PREPARATION OF 3-TRICHLOROMETHYL-5-CHLORO-1,2,4-THIADIAZOLE

Philip M. Pivawer, Hamden, and Douglas A. Farmer, Jr., West Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 465,773, May 1, 1974, abandoned. This application Mar. 31, 1975, Ser. No. 561,765

Int. Cl.² C07D *285/08*

U.S. Cl. 260—302 D **10 Claims**

1. In a process for preparing 3-trichloromethyl-5-chloro-1,2,4-thiadiazole wherein trichloroacetamidine or its hydrochloride is reacted with trichloromethanesulfenyl chloride in the presence of an inert immiscible organic solvent and the resulting adduct cyclized, the improvement which comprises:

reacting trichloromethanesulfenyl chloride with a 1 to 25% molar excess of trichloroacetamidine at a temperature in the range of −20°C. to 50°C. while adding a base selected from the group consisting of an alkali metal hydroxide, carbonate or bicarbonate at a rate sufficient to maintain the pH of the reaction mixture within the range of 5–10, said molar excess being at least as great as the value of the expression (1.01 – 1.075) (moles PCMM) + 2(moles S_2Cl_2 per mole PCMM) wherein PCMM represents trichloromethanesulfenyl chloride.

3,979,404

2-SUBSTITUTED-1,2,4-THIADIAZOLO-[2,3-A]-IMIDAZOLES

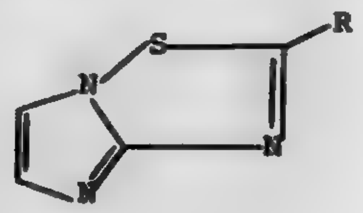
Colin C. Beard, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 403,473, Oct. 4, 1973, Pat. No. 3,901,903. This application Jan. 10, 1975, Ser. No. 540,023

Int. Cl.² C07D *417/14*

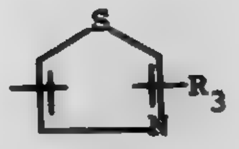
U.S. Cl. 260—306.8 F **11 Claims**

1. A compound represented by the formula:

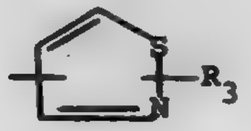


I

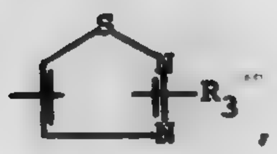
wherein R is



,

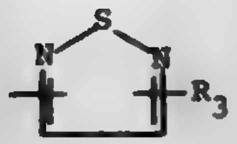


,



,

and



in which R_3 is hydrogen, lower alkoxy, halo, nitro, or lower alkyl; and the pharmaceutically acceptable salts thereof.

3,979,405

2-OXAZOLINE DERIVATIVES

István Tibor Tóth; Pál Bite; György Magyar; Eszter Diszler; József Borsy; Andrea Maderspach; István Polgári; Sándor Elek, and István Elekes, all of Budapest, Hungary, assignors to Gyogyszer- es Vegyeszeti Termekek Gyara RT., Budapest, Hungary

Filed Oct. 16, 1973, Ser. No. 406,784

Claims priority, application Hungary, Oct. 20, 1972, GO1222

Int. Cl.² C07D *263/14*

U.S. Cl. 260—307 F **5 Claims**

1. 2-[(p-chlorophenoxy-isopropyl]-4-methyl-4-hydroxymethyl-2-oxazoline.

4. 2- [4-(4′-chlorophenoxy-phenoxy]-isopropyl -4,4-bis-hydroxymethyl-2-oxazoline.

3,979,406

POLYMERIZABLE ESTERS CONTAINING OXAZOLIDINONE STRUCTURES

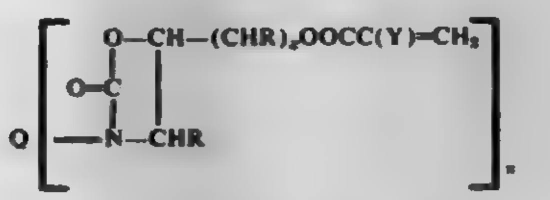
Gaetano D'Alelio, 2011 E. Cedar St., South Bend, Ind. 46617

Continuation-in-part of Ser. No. 325,921, Jan. 22, 1973, abandoned, which is a continuation-in-part of Ser. No. 150,812, June 7, 1971, abandoned, which is a continuation of Ser. No. 778,826, Nov. 25, 1968, abandoned. This application Jan. 2, 1975, Ser. No. 538,173

Int. Cl.² C07D *263/06*

U.S. Cl. 260—307 C **10 Claims**

1. A polymerizable polyoxazolidinone compound having the formula



wherein

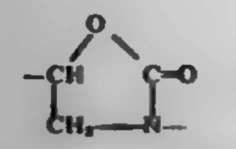
n is an integer having a value of at least 2 and no more than 12,

Y represents H, CH_3 or CN,

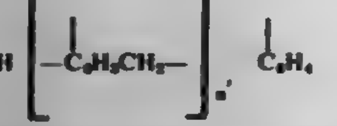
R has no more than 10 carbon atoms and represents hydrogen, or alkyl, cycloalkyl, phenyl, naphthyl, and alkylated phenyl in which the total number of carbon atoms in the alkyl groups does not exceed 4, except that in the $(CHR)_x$ no more than one R represents anything other than hydrogen,

x is an integer having a value of 1 to 8, and

Q is a polyvalent organic moiety of 2–83 carbon atoms consisting of alkylene, phenylene, xylylene, tolylene, naphthylene, diphenylene, $CH(C_6H_4-)_3$, $CH_2(C_6H_4-)_2$, or chloro derivatives thereof in which the chlorine atoms are attached directly to an aromatic nucleus, or —Q′Z-Q′— wherein Z is the divalent —O—, —O—Q′—O—, —C(O)—, —C(O)O—, —S—, —S—Q′—S—, $-SO_2-$, —NHC(O)O—, or



and Q′ is phenylene, tolylene, xylylene, naphthylene or alkylene of 2–20 carbon atoms;



$$H\left[-\overset{|}{C}_6H_3CH_2-\right]_{n'}\overset{|}{C}_6H_4$$

wherein n' is 2–12;

$-C_6H_3(CH_3)NHC(O)O[CH_2C(CH_3)O]_n$

$(O)CNHC_6H_3(CH_3)-$ wherein n is 2–12;

$C_3H_5O_3[-CH(CH_3)CH_2OCH(CH_3)CH_2-]_3$;

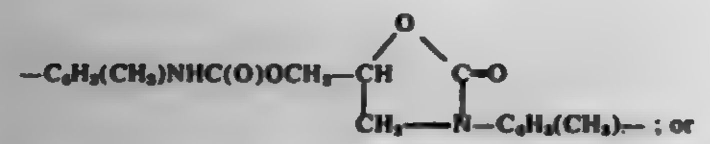
$C[-CH_2O(CH_2CH_2O)_4-]_4$;

$C(CH_3)_2[C_6H_4OCH_2CH_2OOCNHC_6H_4-]_2$;

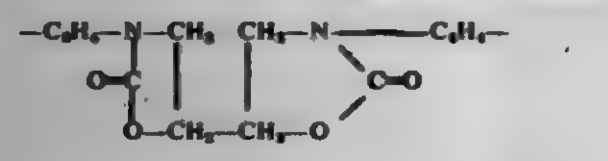
$CH_3COOCH_2CH_2OOCNH(CH_2)_6-$

$CH_3COOCH_2CH_2OOCNH(CH_2)_6-$;

$-C_6H_3(CH_2(CH_3)NHC(O)[OCH_2C\text{-}H_2O(O)CCH{=}CHC(O)]_3OCH_2CH_2(O)OCNHC_6H_3-(CH_3)$;



; or



3,979,407

CHROMONE DERIVATIVES

Mervyn Evan Peel, London, England, assignor to Allen & Hanburys Limited, London, England

Filed June 29, 1971, Ser. No. 158,055

Claims priority, application United Kingdom, July 31, 1970, 37114/70

Int. Cl.² C07D *405/14*

U.S. Cl. 260—308 D 1 Claim

1. 5,5′-[(2-Hydroxytrimethylene)dioxy]bis[2(1H-tetrazol-5-yl)chromone] or a non-toxic pharmaceutically acceptable salt thereof.

3,979,408

3-(PYRROL-1-YL)AMINO-4,5-DIHYDRO-1H-IMIDAZOLE DERIVATIVES

Aldo Trani, Milan, Italy, assignor to Gruppo Lepetit S.p.A., Milan, Italy

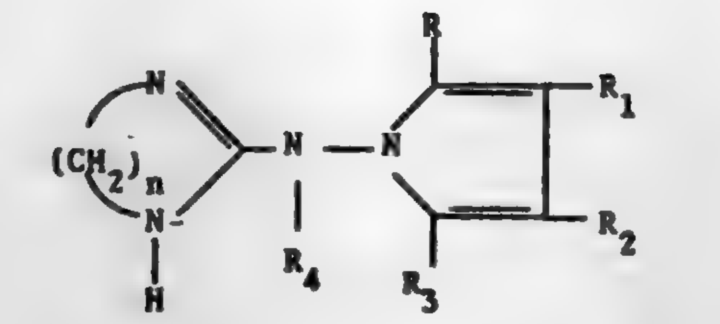
Filed May 24, 1974, Ser, No. 473,038

Claims priority, application United Kingdom, May 25, 1973, 25129/73

Int. Cl.² C07D *49/34*

U.S. Cl. 260—309.6 3 Claims

1. A compound of the formula



II

wherein R, R_1, R_2, R_3 may be the same or different and are independently selected from the class consisting of hydrogen, lower alkyl, carbo-lower alkoxy, phenyl, substituted phenyl, R_4 represents hydrogen or lower alkyl, n is 2, and a pharmaceutically acceptable acid addition salt thereof.

3,979,409

NOVEL PROCESS FOR THE PREPARATION OF 3,5-DIPHENYL-4-PYRAZOLOL AND CERTAIN DERIVATIVES THEREOF

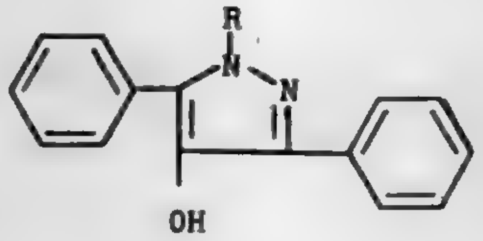
Barrington Cross, Rocky Hill, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 20, 1975, Ser. No. 624,156

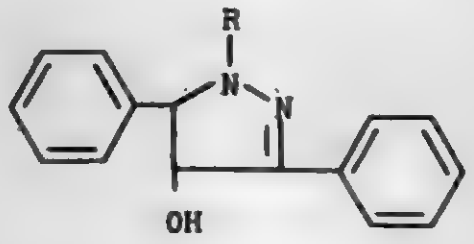
Int. Cl.² C07D *231/18*

U.S. Cl. 260—310 R 7 Claims

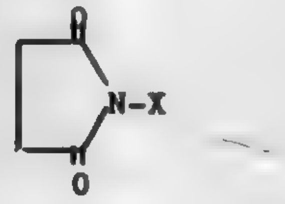
1. A method for the preparation of a compound of the formula:



wherein R is selected from the group consisting of hydrogen and C_1–C_6 alkyl comprising the steps of: reacting a molar equivalent of a compound of the formula:



wherein R is as defined above, with a 1 to 1.2 molar equivalent of a compound of the formula:



wherein X is bromine or chlorine, in the presence of an inert chlorinated hydrocarbon solvent at a temperature ranging between about 20° and 100°C, and recovering said 3,5-diphenylpyrazol-4-ol in good yield.

3,979,410

INTERMEDIATE α-ACYL-β-DIALKYLAMINO-2-NITROSTYRENES

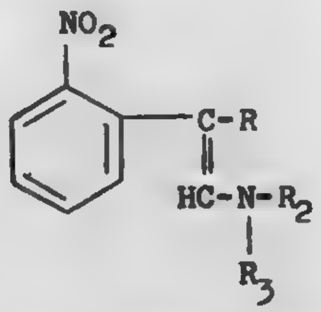
Rodney Ian Fryer, North Caldwell, and Edward Ernest Garcia, West Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 435,050, Jan. 21, 1974, Pat. No. 3,931,225. This application Sept. 22, 1975, Ser. No. 615,436

Int. Cl.² C07D *209/48*

U.S. Cl. 260—326 N 4 Claims

1. A compound of the formula



wherein R is lower alkanoyl, halo-lower alkanoyl, phthalimido-lower alkanoyl, benzoyl or benzoyl substituted by one to three members selected from the group consisting of halogen, lower alkyl, and lower alkoxy, and R_2 and R_3, independently, are lower alkyl or when taken together, are lower alkylene.

3,979,411

2-TRIFLUOROMETHYLIMINO-BENZO-HETEROCYCLIC COMPOUNDS

Gerhard Buttner, Cologne; Erich Klauke, Odenthal-Hahnenberg; Paul-Ernst Frohberger, Leverkusen, and Ingeborg Hammann, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

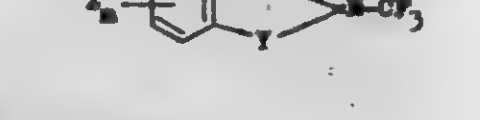
Division of Ser. No. 344,800, March 26, 1973, Pat. No. 3,884,931. This application Jan. 30, 1975, Ser. No. 545,657

Claims priority, application Germany, Apr. 15, 1972, 2218329

Int. Cl.² C07D *317/66, 339/06, 327/04*

U.S. Cl. 260—327 M 6 Claims

1. A 2-trifluoromethylimino benzoheterocyclic compound with five-members in the heterocyclic ring of the formula



(I)

in which

X is oxygen or sulfur,

Y is oxygen or sulfur and

m is an integer from 0 to 4.

3,979,412

PROCESS FOR PRODUCING 3-ANILINO-5-PYRAZOLONES

Atsuaki Arai, Minami-ashigara; Daijiro Nishio, Odawara; Mitsugu Tanaka, Minami-ashigara; Yoshikazu Fujita, and Hisao Suzuki, both of Odawara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 30, 1974, Ser. No. 519,310

Claims priority, application Japan, Oct. 30, 1973, 48-121959

Int. Cl.² C07D *231/52*

U.S. Cl. 260—310 A 5 Claims

1. In a process wherein a β-anilino -β-alkoxyacrylate is reacted with a hydrazine in an amount of 0.5 to 2.5 moles per mole of said β-anilino-β-alkoxyacrylate to produce a 3-anilino-5-pyrazolone, the improvement comprising carrying out said reaction in the presence of 0.1 to 10 moles per mole of said β-anilino-β-alkoxyacrylate of a compound having a pKa of 8 up to 14, said compound selected from the group consisting of phenol, o-chlorophenol, m-chlorophenol, p-chlorophenol, o-cresol, m-cresol, p-cresol, o-fluorophenol, m-fluorophenol, p-fluorophenol, o-bromophenol, m-bromophenol, p-bromophenol, 2,3-dimethylphenol, 2,4-dimethylphenol, 2,5-dimethylphenol, 2,6-dimethylphenol, 3,4-dimethylphenol, 3,5-dimethylphenol, 2,3,5-trimethylphenol, 2,4,6-trimethylphenol, o-methoxyphenol, m-methoxyphenol, p-methoxyphenol, tertbutylphenol, hydroquinone, catechol, resorcinol, methylhydroquinone, tertbutylhydroquinone, n-octylhydroquinone, 2,5-ditert-butylhydroquinone, naphthol, boric acid and mixtures thereof.

3,979,413

POLYCYCLIC DYESTUFFS

Helmut Seidler, Bonn-Bad Godesberg; Klaus Wunderlich, Leverkusen; Hans-Samuel Bien, Burscheid, and Heinrich Leister, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

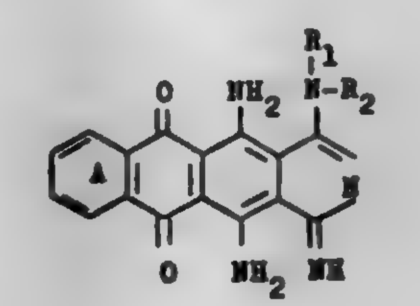
Filed Oct. 17, 1974, Ser. No. 515,470

Claims priority, application Germany, Oct. 26, 1973, 2353706

Int. Cl.² C07D *209/44*

U.S. Cl. 260—326.1 8 Claims

1. A compound of the formula



wherein

- R_1 and R_2 are C_1–C_6-alkyl, cyclohexyl, C_1–C_4- alkylcyclohexyl, halocyclohexyl, hydroxycyclohexyl, phenyl-C_1–C_4- alkyl, halophenyl-C_1–C_4-alkyl, C_1–C_4-alklyphenyl-C_1–C_4-alkyl, C_1–C_4-alkoxyphenyl, C_1–C_4-hdroxyalkylphenyl, hydroxyphenyl, or C_1–C_6-alkyl substituted by halogen, hyroxy, cyano, C_1–C_4-alkoxy, —COOH, or C_1–C_4-alkylcarbonyl; and
- A is unsubstituted as shown in the above formula or is substituted by halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, or nitro.

3,979,414

DISUBSTITUTED XANTHONE CARBOXYLIC ACID COMPOUNDS

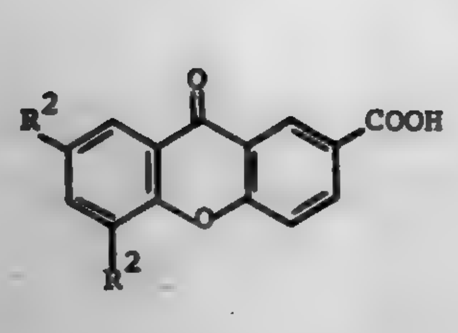
Jurg R. Pfister, Los Altos; Ian T. Harrison, and John H. Fried, both of Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 558,023, March 13, 1975, which is a division of Ser. No. 431,794, Jan. 8, 1974, Pat. No. 3,894,049, which is a continuation-in-part of Ser. No. 259,852, June 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 217,287, Jan. 12, 1972, Pat. No. 3,849,565. This application Dec. 4, 1975, Ser. No. 637,558

Int. Cl.² C07D *311/86*

U.S. Cl. 260—335 5 Claims

1. A compound selected from those represented by the following formula:



and the pharmaceutically acceptable, non-toxic alkyl or glycerol esters, amides, and salts thereof;

wherein

one R^2 group is selected from lower alkyl and the other R_2 group is selected from lower alkanoyl.

3,979,415

METHOD OF PREPARATION OF SULFONATED, DIALKYL-SUBSTITUTED BENZODIOXOLES

David R. McCoy, and Mahmoud S. Kablaoui, both of Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 483,598, June 27, 1974, abandoned. This application Apr. 28, 1975, Ser. No. 572,552

Int. Cl.² C07D *317/46*

U.S. Cl. 260—340.5 9 Claims

1. A method of preparing a sulfonated ketal of a 1,2-dihydroxybenzene which comprises reacting a 1,2-dihydroxybenzene with an aliphatic ketone containing from 5 to about 30 carbon atoms therein in the presence of phosphorous pentoxide as the acid catalyst and a drying agent selected from the group consisting of a molecular sieve and an acid anhydride at a temperature in the range of from 50° to 150°C., for a period of 1 to 5 hours, extracting the formed ketal from said reaction products, sulfonating said extracted ketal with fuming sulfuric acid in the mole ratio of 1 mole of said ketal to 5 to 10 moles of sulfuric acid at 50° to 150°C., for 1 to 15 minutes, cooling said resulting reaction mixture and recovering the formed reaction product therefrom.

3,979,416

PREPARATION OF AMINOPHTHALIC ANHYDRIDES

Gaetano F. D'Alelio, 2011 E. Cedar St., South Bend, Ind. 46617

Continuation of Ser. No. 370,286, June 15, 1973, abandoned. This application July 25, 1975, Ser. No. 598,929

Int. Cl.² C07D *307/893*

U.S. Cl. 260—346.3 10 Claims

1. In the process of preparing aminophthalic anhydride of the formula $H_2NC_6H_nY_{3-n}(CO)_2O$, in which Y represents F, Br or Cl, and *n* represents an integer having a value of 0 to 3, by hydrogenating catalytically a nitrophthalic anhydride $O_2NC_6H_nY_{3-n}(CO)_2O$ at a temperature of about 0°C to about 27°C in a non-reactive water-soluble organic solvent, the improvement for producing high purity, high yield of aminophthalic anhydride comprising the steps of mixing the resultant aminophthalic anhydride solution with water refrigerated to a temperature of about −30° to 20°C, and recovering the precipitated aminophthalic anhydride.

3,979,417

1'H-ANDROSTA(16,17)CYCLOPENTENE-3-ONES

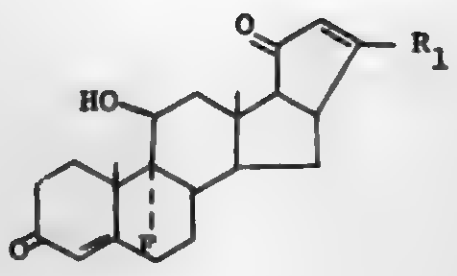
Ravi K. Varma, Belle Mead, and Christopher M. Cimarusti, Hamilton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 7, 1975, Ser. No. 630,121

Int. Cl.² C07J *5/00*

U.S. Cl. 260—397.45 6 Claims

1. A steroid having the formula



or a 1,2-dehydro derivative thereof, wherein R_1 is phenyl, naphthyl, or phenyl or naphthyl substituted with one or two alkyl, alkoxy, halogen, or dialkylamino groups.

3,979,418

SILOXY SUBSTITUTED ARYLMERCAPTANS

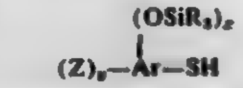
Francis J. Bajer, Depew, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Division of Ser. No. 401,316, Sept. 27, 1973, Pat. No. 3,939,210. This application Nov. 20, 1975, Ser. No. 633,750

Int. Cl.² C07F *7/18*

U.S. Cl. 260—448.8 R 3 Claims

1. A compound of the structure



$$(Z)_y\!-\!\overset{(OSiR_3)_x}{\overset{|}{Ar}}\!-\!SH$$

wherein Ar is mono, di, tri or poly atomic aryl; each Z is independently selected from the group consisting of hyrocarbon, halogen or hydrogen; R is a monovalent hydrocarbon radical and the sum of X and Y is the total remaining substitutable positions of Ar.

3,979,419

CYANO-ETHER POLYSILOXANE-POLYOXYALKYLENE COPOLYMERS

Bela Prokai, Mahopac, and Bernard Kanner, West Nyack, both of N.Y., assignors to Union Carbide Corp, New York, N.Y.

Filed Dec. 27, 1974, Ser. No. 536,884

Int. Cl.² C07F *7/10, 7/18*

U.S. Cl. 260—448.8 R 39 Claims

1. Organosilicone compositions which comprise polysiloxane-polyoxyalkylene copolymers containing monofunctional siloxy units and difunctional siloxy units, an average of between about 2 and about 20 silicon-bonded cyano-bearing ether groups for every two moles of monofunctional units, said cyano-bearing ether groups having the formula, $-(0)_q$-R'OR''CN, wherein *q* is zero or one, R' is bivalent alkylene of 3 to 8 carbon atoms and R'' is bivalent alkylene of 2 to 4 carbon atoms, and an average of between about 2 and about 30 silicon-bonded, organic-capped polyoxyalkylene blocks for every two moles of monofunctional units, the polyoxyalkylene content of said copolymers being constituted of at least 75 weight percent of oxyethylene units, said monofunctional units having at least two alkyls bonded to the respective silicon atoms thereof and the difunctional units having at least one alkyl bonded to the respective silicon atoms thereof, the remaining organic group bonded to silicon of the respective monofunctional and difunctional siloxy units being alkyl, said cyanobearing ether group or said polyoxyalkylene block.

3,979,420

CYANO-ETHER POLYSILOXANE-POLYOXYALKYLENE COPOLYMERS

Bela Prokai, Mahopac, and Bernard Kanner, West Nyack, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 27, 1974, Ser. No. 536,885

Int. Cl.² C07F *7/10, 7/18*

U.S. Cl. 260—448.8 R 35 Claims

1. Organosilicone compositions which comprise polysiloxane-polyoxyalkylene copolymers containing monofunctional siloxy units, and for every two moles of said monofunctional units, an average of between about 10 and about 200 difunctional dialkylsiloxy units, an average of between about 2 and about 100 silicon-bonded cyano-bearing ether groups having the formula, $-(O)_q$R'OR''CN, wherein *q* is zero or one, R' is bivalent alkylene of 3 to 8 carbon atoms and R'' is bivalent alylene of 2 to 4 carbon atoms, and an average of between about 2 and about 30 siliconbonded, organic-capped polyoxyalkylene blocks, the polyoxyalkylene content of said copolymers being constituted of between about 20 and about 65 weight percent of oxyethylene units, said monofunctional siloxy units having at least two alkyls bonded to the respective silicon atoms thereof, the remaining group bonded to the respective silicon atoms of said monofunctional units being alkyl, said cyano-bearing ether group or said polyoxyalkylene block, said copolymers additionally containing difunctional monoalkylsiloxy respective in which the remaining group bonded to the repective silicon atoms thereof is said cyanobearing group or said polyoxyalkylene block.

3,979,421

REACTION PRODUCTS CONTAINING FREE ISOCYANATO GROUPS

Wilfried Zecher, Cologne-Stammheim, and Rudolf Merten, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

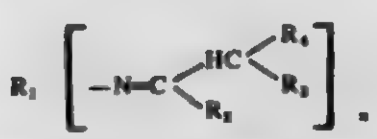
Filed May 10, 1968, Ser. No. 728,349

Claims priority, application Germany, May 12, 1967, 52393

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 P 4 Claims

1. A process for the preparation of an isocyanato-containing reaction product which comprises reacting at a temperature of from about −30° to about 250°C. in the absence of moisture, a Schiff's base having the formula



wherein R_1 is an n-functional radical and represents C_1 to C_{36} alkyl, C_5 to C_{10} cycloalkyl, up to C_{14} aryl or aralkyl containing up to 3 aryl radicals substituted by C_1 to C_5 alkyl;

R_2 represents C_1 to C_{36} alkyl, C_5 to C_{10} cycloalkyl, up to C_{14} aryl or aralkyl containing up to 3 aryl radicals substituted by C_1 to C_5 alkyl;

R_3 and R_4 represent hydrogen, C_1 to C_{36} alkyl, C_5 to C_{10} cycloalkyl, up to C_{14} aryl or aralkyl containing up to 3 aryl radicals substituted by C_1 to C_5 alkyl;

The radicals R_2 and R_3 may join together to form a 5 to 7 membered cycloaliphatic ring; and

n represents an integer of from 1 to 3;

with from about 1 to about 10 mols per equivalent of Schiff's base of a compound selected from the group consisting of diisocyanates and triisocyanates.

3,979,422

CYCLOALIPHATIC KETONES, PROCESS FOR MAKING SAME AND ODORANT AND FLAVORING COMPOSITIONS CONTAINING SAME

Hanspeter Schenk, Zumikon, and Trudi Sigg-Grütter, Winterthur, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 404,582, Oct. 9, 1973, Pat. No. 3,900,520. This application May 9, 1975, Ser. No. 575,907

Claims priority, application Switzerland, Oct. 17, 1972, 15189/72

Int. Cl.² C07C *153/07*

U.S. Cl. 260—455 R 1 Claim

1. 4-[1,1,3-Trimethyl-3-cyclohexen-2-yl]-2-acetylmercapto-butanone 4.

3,979,423

14-DESOXY-14-TOSYLOXYACETOXY-MUTILIN

Kurt Riedl, Kufstein, Austria, assignor to Biochemie Gesellschaft m.b.H., Vienna, Austria

Division of Ser. No. 261,335, June 9, 1972, abandoned, which is a continuation-in-part of Ser. No. 57,761, July 23, 1970, abandoned. This application Nov. 15, 1973, Ser. No. 416,246

Claims priority, application Austria, July 25, 1969, 7223/69

Int. Cl.² C07C *143/68*

U.S. Cl. 260—456 P 1 Claim

1. 14-Desoxy-14-tosyloxyacetoxy-mutilin.

3,979,424

PESTICIDAL CYCLOPROPANE DERIVATIVES

Robert J. G. Searle, Rodmersham Green, near Sittingbourne, and Roger E. Woodall, Borden, near Sittingbourne, both of England, assignors to Shell Oil Company, Houston, Tex.

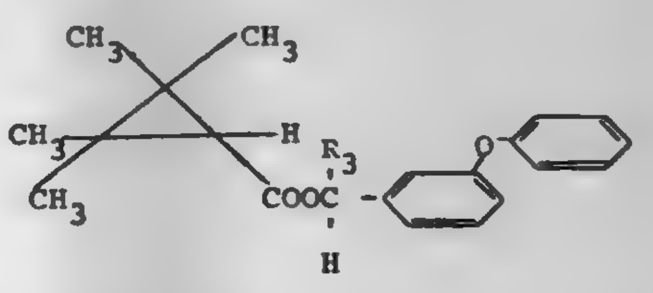
Filed Feb. 15, 1974, Ser. No. 442,992

Claims priority, application United Kingdom, Feb. 16, 1973, 7685/73

Int. Cl.² C07C *69/74*

U.S. Cl. 260—468 H 3 Claims

1. A compound of the formula



wherein R_3 is ethynyl or allyl.

3,979,425

PROCESS FOR THE PREPARATION OF UNSATURATED ALDEHYDES

George Hermann Büchi; Hans Wüest, both of Mattapan, Mass.; Günther Ohloff, Bernex, Geneva, and Hugo Strickler, Onex, Geneva, both of Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

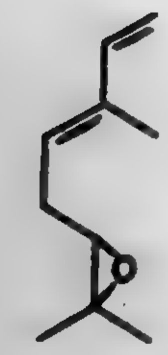
Division of Ser. No. 736,267, June 12, 1968. This application Sept. 8, 1975, Ser. No. 611,261

Claims priority, application Switzerland, June 15, 1967, 8529/67; Dec. 14, 1967, 17568/67

Int. Cl.² C07D *303/04*

U.S. Cl. 260—348 R 1 Claim

1. A compound selected from the group consisting of cis- and trans-epoxyocimene of the formula



3,979,426
RADIATION-SENSITIVE DIACRYLATES

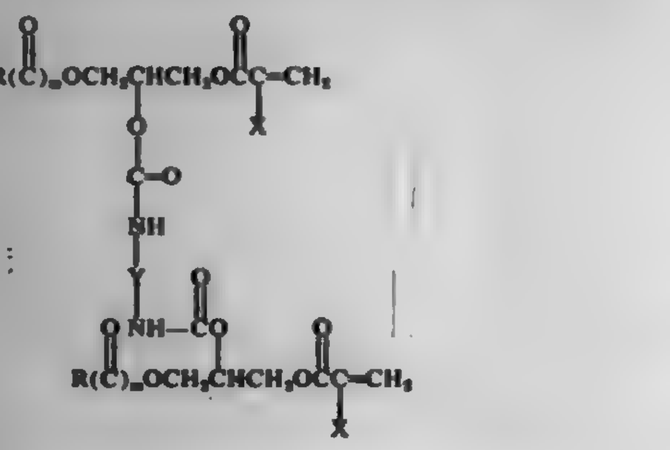
Robert Demajistre, Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 171,321, Aug. 12, 1971, abandoned. This application Feb. 5, 1973, Ser. No. 329,914

Int. Cl.² C07C *125/06*

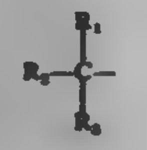
U.S. Cl. 260—404.5 **6 Claims**

1. A compound represented by the general formula:



wherein

a. R is selected from the group consisting of n-octyl, isooctyl, 2-ethylhexyl, decyl, dodecyl, tetradecyl, eicosyl and tertiary alkyl of the formula



$$R_2-\overset{R_1}{\underset{R_3}{C}}-$$

wherein R_1, R_2 and R_3 are alkyl groups containing 1 to 5 carbon atoms;

b. Y is a divalent hydrocarbon radical containing from 6 to 16 carbon atoms;

c. X is hydrogen or methyl; and

d. *m* is 0 to 1.

3,979,427
CONVERSION OF NITROSO COMPOUNDS TO ISOCYANATES

Gerhard F. Ottmann, Wuppertal-Elberfeld, Germany; David F. Gavin, Cheshire, and Eberafried H. Kober, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 21, 1969, Ser. No. 792,833

Int. Cl.² C07C *118/06*

U.S. Cl. 260—453 PC **1 Claim**

1. In the process for preparing an aromatic isocyanate by reacting a carbocyclic aromatic nitroso compound with carbon monoxide at an elevated temperature and elevated pressure in the presence of a catalyst, the improvement which comprises employing as said catalyst a mixture of rhodium trichloride and cobalt iodide.

3,979,428
PHENYLACETIC ACIDS

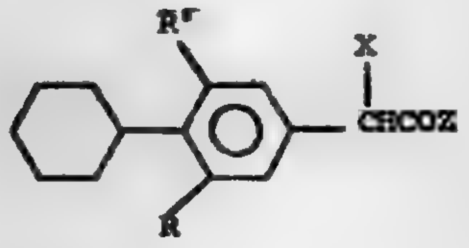
Julius Diamond, Lafayette Hill, and Norman Julian Santora, Roslyn, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Continuation of Ser. No. 423,542, Dec. 10, 1973, abandoned, which is a division of Ser. No. 152,451, June 11, 1971, Pat. No. 3,821,267, which is a continuation-in-part of Ser. No. 34,870, May 5, 1970, Pat. No. 3,864,384. This application June 24, 1975, Ser. No. 589,748

Int. Cl.² C07C *155/02*

U.S. Cl. 260—455 A **5 Claims**

1. A compound of the formula



where

R is halo or nitro;

R′ is hydrogen, chloro, bromo, or nitro;

X is carbamylthio, loweralkylcarbamylthio, or diloweralkylcarbamylthio; and

Z is —OH, or

—OM where M is an alkali, alkaline earth or aluminum metal or an ammonium salt.

3,979,429
PARA-AMINO-β-CYANO-BIS-STYRYL COMPOUNDS

Ulrich Zirngibl, Oberwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

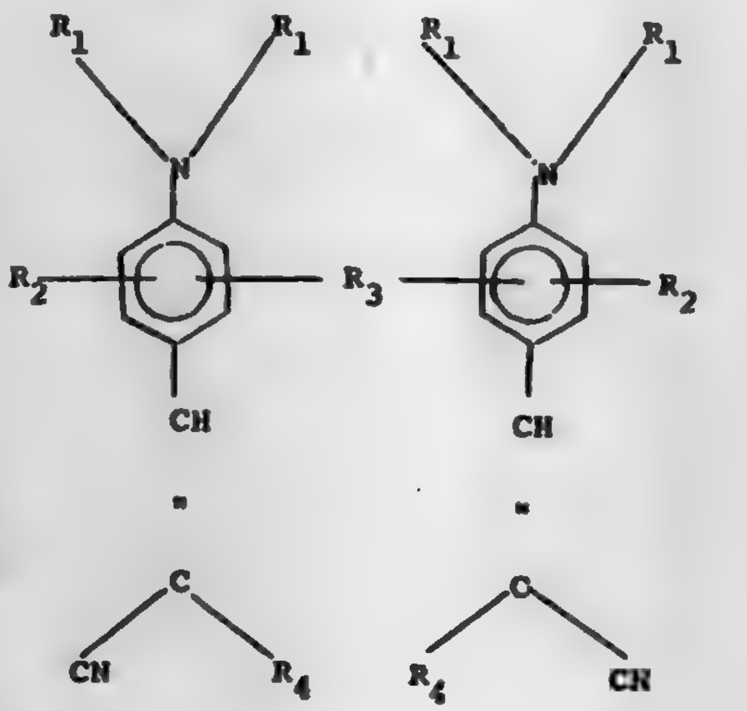
Filed May 8, 1975, Ser. No. 575,617

Claims priority, application Switzerland, May 14, 1974, 6581/74

Int. Cl.² C07C *121/78, 143/68;* C07D *295/00*

U.S. Cl. 260—463 **24 Claims**

1. A compound of formula I,



I

in which each

R_1, independently, signifies (C_{1-6}) alkyl which is unsubstituted or monosubstituted by halogen, cyano, hydroxyl, alkoxy, phenyl, phenoxy or acyloxy,

each

R_2, independently, signifies hydrogen, halogen, (C_{1-6}) alkyl or (C_{1-6}) alkoxy,

R_3 signifies a divalent radical of formula $-R_5-R_7-R_5-R_7-R_6-R_7-R_5-R_7-R_5-$ or $R_5-R_7-R_6-R_7-R_5-$

in which R_6 signifies a direct bond or a divalent radical of formula $-O-$, $-S-$, $-NR_8-$, $-CO-$, $-O-CO-$, $-O-CO-O-$, $-SO_2-$, $-NR_8-$ $-CO-NR_8-$ or $NR_8-SO_2-NR_8$,

R_4 signifies cyano or acyl,

each

R_5, independently, signifies a divalent radical of formula $-NR_8-CO-$, $-NR_8-CO-O-$, $-O-SO_2-$, $-NR_8-SO_2-$, $-O-SO_2-NR_8-$ or has one of the significances given for R_6, any unsymmetrical divalent radical as R_5 and R_6 being linked either way round,

each

R_7, independently, signifies (C_{1-6}) alkylene or alkylidene, of up to 6 carbon atoms which alkylene and alkylidene radicals are unsubstituted or monosubstituted by halogen, cyano, hydroxyl, (C_{1-6}) alkoxy, phenyl, phenoxy or acyloxy,

each

R_8, independently, signifies hydrogen, (C_{1-6}) alkyl or, when the chain contains any two R_8 attached to nitrogen atoms which are joined by an ethylene radical as R_7, the two symbols R_8, together with the nitrogen atoms and R_7 may join to form a piperazine ring, and

R_9 signifies (C_{1-6}) alkylcarbonyl or (C_{1-6}) alkoxycarbonyl,

any acyl group as R_4 or as part of an aryloxy group being of the formula $R-Y$ or $R'-Z$

in which

R signifies (C_{1-6}) alkyl,

Y signifies $-O-CO-$, $-SO_2-$ or $-O-SO_2-$,

R′ signifies hydrogen or (C_{1-6}) alkyl and

Z signifies $-CO-$, $-NR'-CO-$ or $-NR''-SO_2-$ in which R″ has one of the significances of R′,

which molecule is free from acetal groups.

3,979,430
SOLVOLYTIC PROCESS FOR THE PREPARATION OF 2-(5H-DIBENZO[a,d]CYCLOHEPTEN-5-ON-2-YL)ACETIC, PROPIONIC AND BUTYRIC ACIDS

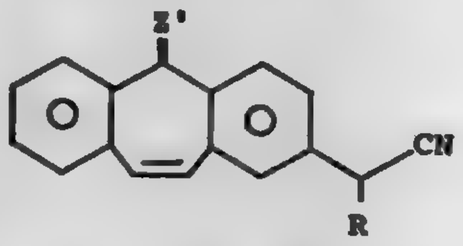
Peter H. Nelson; Karl G. Untch, both of Los Altos, and James P. Dunn, Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Sept. 8, 1975, Ser. No. 611,057

Int. Cl.² C07C *121/66*

U.S. Cl. 260—465 K **3 Claims**

1. A compound represented by the formula



wherein R is hydrogen, methyl or ethyl and Z′ is oxo.

3,979,431
PROCESS FOR PREPARING NITROAROMATIC NITRILES

Ralph House, El Sobrante, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sept. 17, 1975, Ser. No. 614,278

Int. Cl.² C07C *121/52, 121/60*

U.S. Cl. 260—465 R **4 Claims**

1. A process for preparing nitroaromatic nitriles which comprises reacting an aromatic carbocyclic nitrile with a nitrating agent comprising from about 20% to about 30% nitric acid and from about 70% to about 80% sulfuric acid at a temperature of at least 35°C and a nitrating agent-to-nitrile molar ratio of at least 3.5:1.

3,979,432
PREPARATION OF NITRILES

Hugh J. Hagemeyer, Jr., and Jerry D. Holmes, both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 481,711, June 21, 1974, abandoned. This application Oct. 6, 1975, Ser. No. 620,099

Int. Cl.² C07C *120/08*

U.S. Cl. 260—465.2 **5 Claims**

1. Improved process for the production of an aliphatic nitrile which comprises reacting over a supported catalyst gaseous ammonia with an aliphatic carboxylic acid selected from acetic acid, propionic acid, n-butyric acid, isobutyric acid, pentanoic acid or hexanoic acid at a ratio of ammonia to acid of about 1/1 to 1.15/1.0 to form a product composed of about 40 to 50 percent aliphatic nitrile, about 0.5 to 3 percent ketone, about 6 to 10 percent ammonium carboxylate salt, and the remainder being water, cooling the product to 50°C. and distilling the product at a head temperature at or slightly above the boiling point of the nitrile-water azeotrope to separate the aliphatic nitrile from the other products, the improvement comprising adding a portion of the aliphatic carboxylic acid normally fed directly to the nitrile reactor to the effluent stream from the reactor but before distillation at a ratio in the range of from about 1 mole of said aliphatic carboxylic acid portion to 1 mole ammonium carboxylate to about 4 moles of said aliphatic carboxylic acid portion to 1 mole ammonium carboxylate whereby no additional acid is added to the process and whereby less than 1 percent ammonia based on the ammonium carboxylate fed into the distillation column with the effluent stream escapes from the distillation column and whereby the acid portion fed to the reactor effluent is recycled to the reactor from the distillation system.

3,979,433
1,6-DI-O-(2-ISOCYANO-3-METHYLCROTONYL)-D-MANNITOL COMPOUNDS

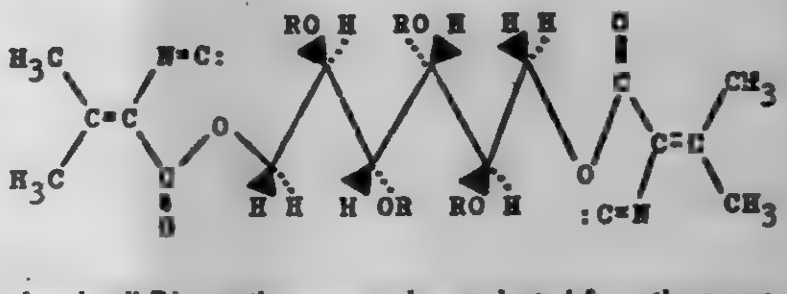
Gary G. Marconi, and Marvin M. Hoehn, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed July 18, 1972, Ser. No. 597,112

Int. Cl.² C07C *121/38;* C12D *9/00*

U.S. Cl. 260—465.4 **5 Claims**

1. A 1,6-di-0-(2-isocyano-3-methylcrotonyl)-D-mannitol compound of the formula



wherein all R's are the same and are selected from the group consisting of hydrogen, acetyl, propionyl and butyryl.

3,979,434

BENZOBICYCLOALKANE AMINES

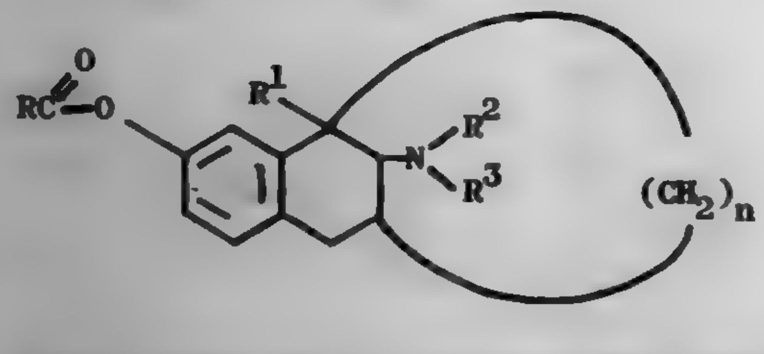
Meier E. Freed, Paoli, and John R. Potoski, Spring City, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 421,375, Dec. 3, 1973, which is a division of Ser. No. 262,849, June 14, 1972, Pat. No. 3,836,670, which is a continuation-in-part of Ser. No. 200,517, Nov. 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 94,983, Dec. 3, 1970, abandoned. This application Feb. 26, 1975, Ser. No. 553,406

Int. Cl.^{2} C07C *93/26*

U.S. Cl. 260—468 H 7 Claims

1. A compound of the formula:



wherein R is alkyl of from 1 to 6 carbon atoms either straight chain, branched or concatenated to form a carbocyclic ring; phenyl; or phenyl substituted by lower alkyl of from 1 to 4 carbon atoms; R^1 is lower alkyl, lower alkenyl, or phen(lower-)alkyl; R^2 is hydrogen, or lower alkyl; R^3 is hydrogen, lower alkyl, alkenyl, or alkynyl; and *n* is an integer of from 2 to 6 and the pharmaceutically non-toxic addition salts thereof.

3,979,435

8β,12α-17-PHENYL-18,19,20-TRINOR-PGF$_{2\alpha}$ COMPOUNDS

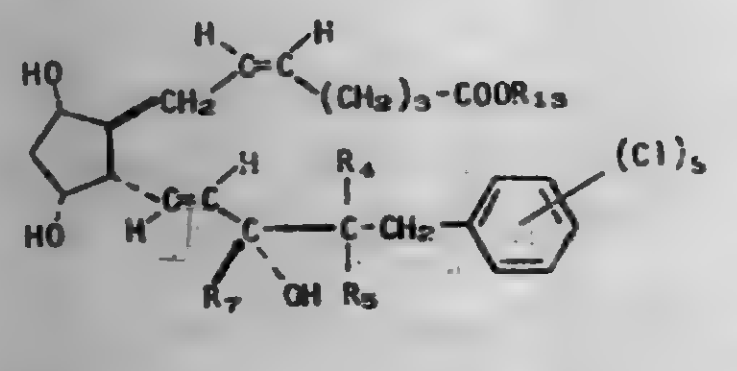
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 374,405, June 28, 1973, which is a continuation-in-part of Ser. No. 289,317, Sept. 15, 1972, abandoned. This application Oct. 29, 1974, Ser. No. 518,696

Int. Cl.^{2} C07C *65/22, 65/14*

U.S. Cl. 260—473 A 6 Claims

1. An optically active compound of the formula



wherein

R_4, R_5, and R_7 are hydrogen or methyl, being the same or different;

wherein R_{13} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; and

wherein *s* is zero, one, 2, or 3; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_{13} is hydrogen.

3,979,436

OXIDATION RESISTANT POLYMERIC COMPOSITIONS

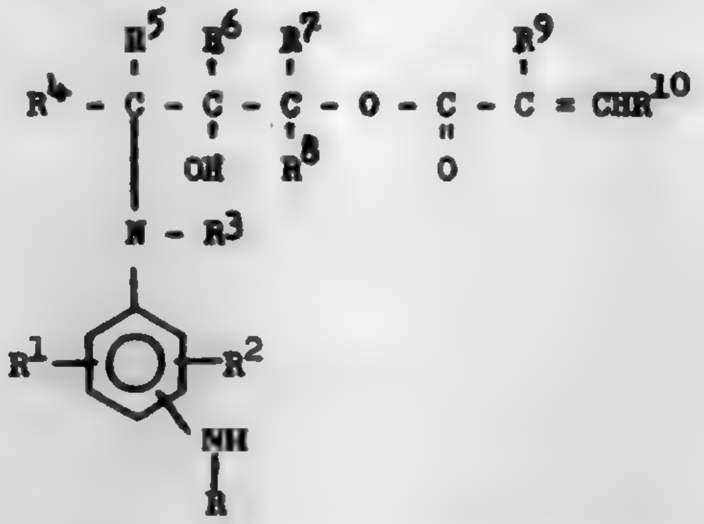
Carl R. Parks, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 153,446, June 15, 1971, Pat. No. 3,817,916. This application Mar. 13, 1974, Ser. No. 450,696

Int. Cl.^{2} C07C *69/54*

U.S. Cl. 260—486 R 6 Claims

1. A composition of matter comprised of at least one compound selected from the group consisting of compounds having the following structural formula:



wherein R is selected from the group consisting of alkyl radicals having 1 to 12 carbon atoms, cycloalkyl radicals having 5 to 12 carbon atoms, aralkyl radicals having 7 to 24 carbon atoms and aryl radicals having 6 to 24 carbon atoms wherein R^1 and R^2 are selected from the group consisting of hydrogen and alkyl groups having 1 to 4 carbon atoms and wherein R^3 is selected from the group consisting of hydrogen, alkyl radicals having 1 to 12 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms, and aralkyl radicals having 7 to 24 carbon atoms, wherein R^4, R^5, R^6, R^7 and R^8 are selected from the group consisting of hydrogen and alkyl radicals having from 1 to 4 carbon atoms, and wherein R^9 and R^{10} are selected from the group consisting of hydrogen and alkyl radicals having from 1 to 4 carbon atoms.

3,979,437

SUBSTITUTED PHENOXYBENZOIC ACIDS AND DERIVATIVES THEREOF

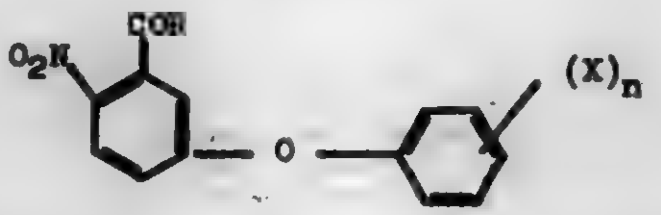
Robert J. Theissen, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 398,610, Sept. 19, 1973, Pat. No. 3,941,830, which is a continuation of Ser. No. 114,712, Feb. 11, 1971, Pat. No. 3,784,635, which is a continuation-in-part of Ser. No. 819,412, April 25, 1969, Pat. No. 3,652,645. This application Sept. 29, 1975, Ser. No. 617,569

Int. Cl.^{2} C07C 79/46

U.S. Cl. 260—471 R 2 Claims

1. A compound having the formula:



R is hydroxy, alkoxy of 1 to 4 carbon atoms, or phenoxy; X is halogen or trifluoromethyl and at least one X is halogen and another is trifluoromethyl; and *n* is 2 to 5.

3,979,438

8β,12α-17-PHENYL-18,19,20-TRINOR-PGE$_2$ COMPOUNDS

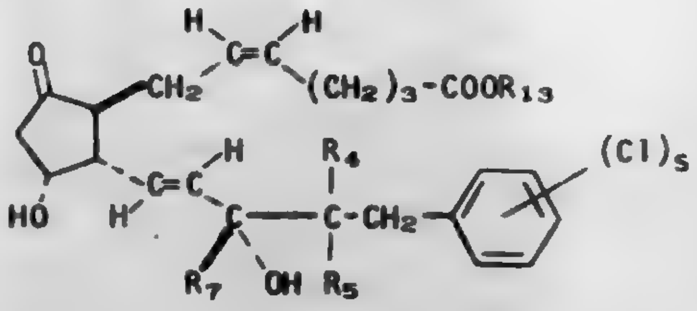
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 374,405, June 28, 1973, which is a continuation-in-part of Ser. No. 289,317, Sept. 15, 1972, abandoned. This application Oct. 29, 1974, Ser. No. 518,920

Int. Cl.^{2} C07C *65/22, 65/14*

U.S. Cl. 260—473 A 6 Claims

1. An optically active compound of the formula



wherein R_4, R_5, and R_7 are hydrogen or methyl, being the same or different;

wherein R_{13} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; and

wherein *s* is zero, one, 2, or 3; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_{13} is hydrogen.

3,979,439

8β,12α-17-PHENYL-18,19,20 TRINOR PGF$_{2\beta}$ COMPOUNDS

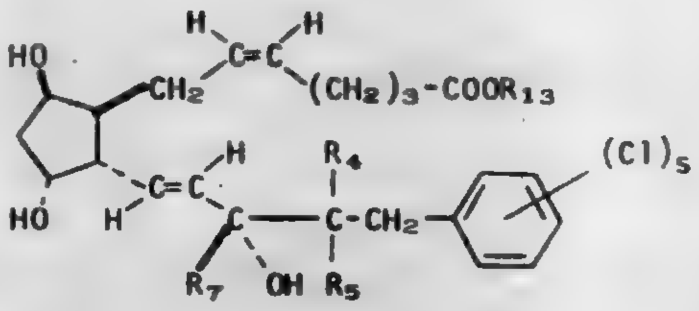
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 374,405, June 28, 1973, which is a continuation-in-part of Ser. No. 289,317, Sept. 15, 1972, abandoned. This application Oct. 29, 1974, Ser. No. 518,691

Int. Cl.^{2} C07C *65/22, 65/14*

U.S. Cl. 260—473 A 6 Claims

1. An optically active compound of the formula



wherein R_4, R_5, and R_7 are hydrogen or methyl, being the same or different;

wherein R_{13} is hydrogen, alkyl of 1 to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with 1, 2, or 3 chloro or alkyl of 1 to 4 carbon atoms, inclusive; and

wherein *s* is zero, 1, 2, or 3; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_{13} is hydrogen.

3,979,440

PHENACYL-TYPE ESTERS OF PHENYL-SUBSTITUTED PGE-TYPE COMPOUNDS

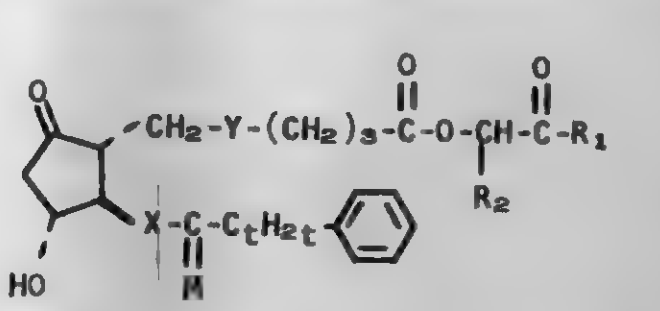
Walter Morozowich, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 497,244, Aug. 14, 1974. This application Sept. 9, 1975, Ser. No. 611,798

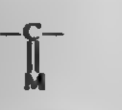
Int. Cl.^{2} C07C *69/76, 69/95*

U.S. Cl. 260—473 A 10 Claims

1. An optically active compound of the formula:

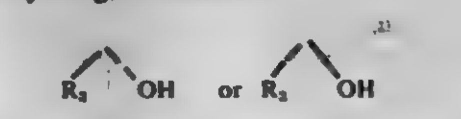


wherein the moiety $-C_tH_{2t}-$ represents a valence bond or alkylene of one to 10 carbon atoms, inclusive, with one to 7 carbon atoms, inclusive, between



$$-\underset{\underset{M}{\|}}{C}-$$

and the phenyl ring; wherein M is



wherein R_3 is hydrogen or methyl; wherein R_1 is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl; wherein R_2 is hydrogen or benzoyl; and wherein (a) X is $-CH_2CH_2-$ or trans-CH=CH- and Y is $-CH_2CH_2-$, or (b) X is trans-CH=CH- and Y is cis-CH=CH-.

3,979,441

OIL-SOLUBLE POLYMERS OF N-3-AMINOALKYL ACRYLAMIDES, AND LUBRICANTS CONTAINING THEM

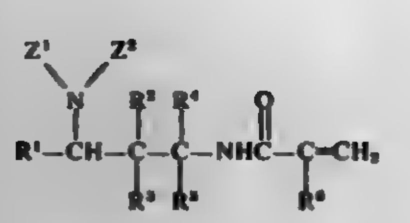
Donald Irvin Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Continuation-in-part of Ser. Nos. 237,871, March 24, 1972, Pat. No. 3,856,689, and Ser. No. 203,853, Dec. 1, 1971, Pat. No. 3,883,491, said Ser. No. 237,871, is a continuation-in-part of Ser. No. 832,412, June 11, 1969, Pat. No. 3,666,810, said Ser. No. 203,853, is a division of Ser. No. 832,412,. This application Mar. 27, 1974, Ser. No. 455,162

Int. Cl.^{2} C07C *101/24*

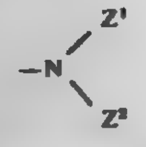
U.S. Cl. 260—482 R 7 Claims

1. An oil-soluble interpolymer comprising (A) at least about 50% by weight of units derived from a polymerizable alkyl ester of an unsaturated acid in which the alkyl group contains at least about 8 carbon atoms, said interpolymer also containing (B) units derived from a monomer of the formula



wherein each of R^1, R^2 and R^3 is hydrogen or a hydrocarbon or substituted hydrocarbon radical; each of R^4 and R^5 is a hydrocarbon or substituted hydrocarbon radical; R^6 is hydrogen or a lower alkyl or substituted lower alkyl radical; Z^1 is hydrogen or a hydrocarbon or substituted hydrocarbon radical and Z^2 is hydrogen or an alkyl, cycloalkyl or substituted alkyl or cycloalkyl radical,

or



is a monocyclic or bicyclic heterocyclic radical in which the only hetero-atoms are nitrogen or nitrogen and oxygen.

3,979,442

DIESTER-AMINE ADDUCTS AND PROCESS FOR THEIR MANUFACTURE

Paul Schafer, Riehen; Jutta Ibrahim, Neuallschwil, and Hanspeter Gysin, Muttenz, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

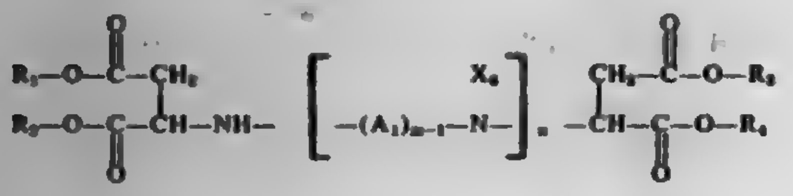
Filed Aug. 15, 1973, Ser. No. 388,525

Claims priority, application Switzerland, Aug. 21, 1972, 12348/72

Int. Cl.² C07C *101/26*

U.S. Cl. 260—482 P **3 Claims**

1. Diester-amine adducts of the formula



wherein

A_1 denotes alkylene with 2 or 3 carbon atoms or 2-hydroxy-n-propylene,

m is 2,

n is an integer from 1 to 4,

R_1, R_2, R_3 and R_4 each denote alkyl or alkenyl with 12 to 22 carbon atoms, and

X_0 denotes hydrogen or alkyl with 1 or 2 carbon atoms, these adducts being in the form of free bases, acid salts or quaternary ammonium salts.

3,979,443

PROCESS FOR THE PREPARATION OF ESTERS OF MALEIC ACID WITH MONOHYDRIC ALCOHOLS

Andrew K. Schwartz, Jr., and Steve D. Cooley, both of Houston, Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Aug. 25, 1972, Ser. No. 283,716

The portion of the term of this patent subsequent to Jan. 21, 1992, has been disclaimed.

Int. Cl.² C07C *69/60*

U.S. Cl. 260—485 R **7 Claims**

1. A process for the preparation of esters of monohydric alcohol with maleic acid which comprises

a. forming maleic anhydride by oxidizing a hydrocarbon which is a precursor of maleic anhydride in a maleic anhydride reactor to form a reactor effluent comprising gaseous maleic anhydride

b. scrubbing said reactor effluent with water to produce an aqueous solution of about 35 to 45 weight percent maleic acid, fumaric acid and at least 40 percent by weight of water

c. in a first stage reacting and dehydrating said aqueous solution of maleic acid and fumaric acid with a primary monohydric alcohol having from 4 to 8 carbon atoms in a distillation column with solvent water being taken off overhead and a mixture comprising diesters and monoesters of maleic acid and esters of fumaric acid and said alcohol being taken off as a bottoms

d. in a second stage reacting the said mixture from step (c) under conditions causing boiling and under a pressure of at least 25 p.s.i.g. to esterify substantially all of said acid.

3,979,444

4-ARYLCYCLOHEXYLAMINES

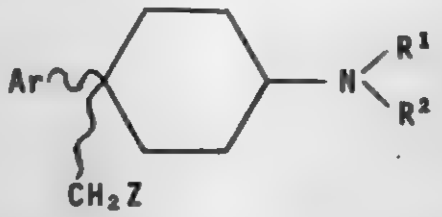
Daniel Lednicer, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed May 28, 1974, Ser. No. 474,037

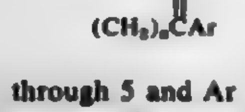
Int. Cl.² C07C *93/18*

U.S. Cl. 260—490 **25 Claims**

1. A compound of the formula



wherein Ar is an aromatic ring selected from the group consisting of phenyl and naphthyl each of which has from zero through three substituents independently selected from the group consisting of fluorine, chlorine, bromine, lower alkyl of one through three carbon atoms, lower alkoxy of one through three carbon atoms, and lower alkylthio of one through three carbon atoms; Z is selected from the group consisting of hydrogen, hydroxy and loweralkanoyloxy of one through four carbon atoms; ~ is a generic expression denoting cis and trans stereoconfiguration and mixtures thereof, with the proviso that when the stereoconfirguration of the linkage connecting the cyclohexane ring and CH_2Z is cis to the amino group, the linkage connecting the cyclohexane and Ar rings is always trans, and vice versa; R^1 is selected from the group consisting of hydrogen and lower alkyl of one through three carbon atoms; R^2 is



$$(CH_2)_n\overset{O}{\overset{\|}{C}}Ar$$

wherein *n* is 2 through 5 and Ar has the same meaning as above and a pharmacologically acceptable acid addition salt thereof.

3,979,445

PROCESS FOR PRODUCING AMINO G ACID AND AMINO J ACID FROM TOBIAS ACID

Lawrence James Ross, Martinsville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sept. 19, 1975, Ser. No. 615,135

Int. Cl.² C07C *143/60*

U.S. Cl. 260—508 **5 Claims**

1. A process for the preparation of 2-amino-6,8-naphthalenedisulfonic acid and 2-amino-5,7-naphthalenedisulfonic acid comprising the steps of: (1) heating a solution of 2-amino-1-naphthalenesulfonic acid in 100% sulfuric acid at a temperature of from about 80°C. to about 150°C. to effect rearrangement of the 2-amino-1-naphthalene sulfonic acid to the corresponding 6- or 8-naphthalenesulfonic acid, (2) sulfonating the reaction product from step 1 with sulfur trioxide at a temperature of from about 90°C. to about 150°C. to produce a reaction product comprising 2-amino-6,8-naphthalenedisulfonic acid and 2-amino-1,5,7-naphthalenetrisulfonic acid and (3) hydrolyzing the reaction product of step 2 to convert the 2-amino-1,5,7-naphthalenetrisulfonic acid to 2-amino-5,7-naphthalenedisulfonic acid.

3,979,446

PROSTAGLANDIN INTERMEDIATE

Donald P. Strike, St. Davids; Wenling Kao, Devon, and Richard L. Fenichel, Wyncote, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 446,835, Feb. 28, 1974, Pat. No. 3,919,302. This application Apr. 11, 1975, Ser. No. 567,449

Int. Cl.² C07C *177/00*

U.S. Cl. 260—514 D **1 Claim**

1. The compound which is 7-[5α-hydroxy-3α-methyl-2β-(3-oxo-trans-1-octenyl) -1α-cyclopentyl]-cis-5-heptenoic acid.

3,979,447

γ-GLUTAMYL-4-NITROANILIDE COMPOUNDS

Erich Bernt, Munich; Wolfgang Gruber, Garatshausen; Erich Haid; Fritz Stahler, both of Tutzing; August Wilhelm Wahlefeld, Weilheim, and Gunter Weimann, Tutzing, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim, Germany

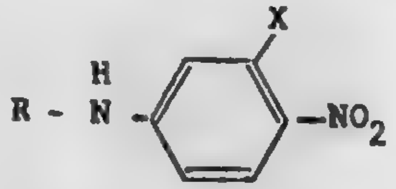
Filed Nov. 27, 1973, Ser. No. 419,455

Claims priority, application Germany, Dec. 5, 1972, 2259512; July 3, 1973, 2333798

Int. Cl.² C07C *103/50*

U.S. Cl. 260—518 R **8 Claims**

1. γ-Glutamyl-4-nitroanilide compound of the formula



wherein R is a γ-glutamyl radical and X is carboxyl or carboxyalhyl containing up to 6 carbon atoms; and alkali, alkaline earth, and ammonium salts thereof.

3,979,448

PROCESSES FOR THE CONTINUOUS PRODUCTION OF AROMATIC CARBOXYLIC ACIDS BY OXIDATION WITH NITRIC ACID OF AROMATIC COMPOUNDS CONTAINING OXIDIZABLE ACYCLIC SUBSTITUENTS

Kurt Handrick, Essen; Anton Benning, Saarbrucken; Dietrich George, Essen, and Jürgen Schlegel, Iddensen, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Filed June 11, 1974, Ser. No. 478,395

Claims priority, application Germany, June 19, 1973, 2331082

Int. Cl.² C07C *51/33*

U.S. Cl. 260—524 N **1 Claim**

1. In a process for the continuous production of pyromellitic acid by reaction of durene with nitric acid, the improvement which comprises passing a reaction mixture consisting of durene and nitric acid having a concentration between 10 and 11% by weight of nitric acid through a series of seven consecutively interconnected vertical reactor columns in each of which the ratio of the weight of the reaction mixture containing the dilute nitric acid to the weight of durene is continuously maintained at at least 50:1, the nitric acid concentration in each of the reactor columns is maintained at the originally preselected concentration by the addition of amounts of more-concentrated nitric acid thereto while aliquot portions of durene are continuously introduced into each of the reactor columns to maintain the preselected ratio of nitric acid to durene, the first six of the said reactor columns being maintained at a temperature of 170°C and the final seventh column being maintained at a temperature of 200°C, and continuously discharging the reaction mixture containing between 10 and 20% by weight of pyromellitic acid thus produced from the final reactor column.

3,979,449

PREPARATION OF AN ASPARAGINE OR A GLUTAMINE

Pierre Hirsbrunner, Corseaux, and Raymond Bertholet, Aigle, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausaunne, Switzerland

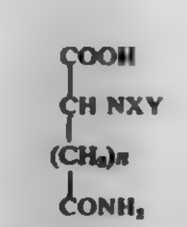
Filed June 19, 1975, Ser. No. 588,181

Claims priority, application Switzerland, July 11, 1974, 9572/74; Sept. 18, 1974, 12673/74

Int. Cl.² C07C *99/00*

U.S. Cl. 260—534 E **11 Claims**

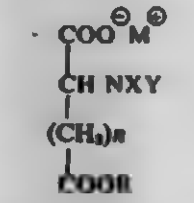
1. A process for the preparation of compounds of the general formula



$$\begin{array}{l} COOH \\ | \\ CH\ NXY \\ | \\ (CH_2)n \\ | \\ CONH_2 \end{array}$$

(I)

(in which *n* is an integer equal to 1 or 2 and X and Y which may be the same or different are hydrogen atoms or organic groups, except that when *n*=2 not more than one of X and Y may represent a hydrogen atom) in which a compound of the general formula



$$\begin{array}{l} COO^{\ominus}M^{\oplus} \\ | \\ CH\ NXY \\ | \\ (CH_2)n \\ | \\ COOR \end{array}$$

(II)

(in which $M^{\oplus}$ represents a cation, R represents an aliphatic group containing 1 to 3 carbon atoms and X, Y and *n* have the meanings given above) is reacted with ammonia in an aqueous medium and thereafter the compound of formula (I) is liberated by acidification of the reaction medium.

3,979,450

METHOD FOR PREPARING DICARBOXYLIC ACIDS

Jury Leonidovich Moskovich, Moskovsky prospekt, 1, kv. 14; Jury Nikolaevich Juriev, Liteiny prospekt, 46, kv. 17; Viktor Karlovich Tsyskovsky, Kanal Griboedova, 22, kv. 6; Ljudmila Vasilievna Berezova, prospekt Obukhovskoi Oborony, 104, kv. 7; Nokhum Davidovich Glichenok, ulitsa Ordzhonikidze 11/39, kv. 50, all of Leningrad; Vladimir Avgustovich Yanshevsky, ulitsa Kommunisticheskaya, 7, kv. 28, Novokuibyshevsk; Dmitry Vasilievich Mushenko, Bolsheokhtinsky prospekt, 10, kv. 18, Leningrad; Evgeny Semenovich Zelikman, Novo-Litovskaya ulitsa, 5, Kv. 116, Leningrad; Rufina Alexandrovna Filippova, ulitsa, Uspenskogo, 3, Kv. 19, Novokuibyshevsk; Vladimir Leonidovich Klimenko, ulitsa, Lomonosova, 12, Kv. 29, Leningrad, and Valerian Mikhailovich Sobolev, naberezhnaya Maxima Gorkogo, 46-50, kv. 185, Moscow, all of U.S.S.R.

Filed Feb. 8, 1973, Ser. No. 330,637

Int. Cl.² C07C *51/26*

U.S. Cl. 260—537 P **11 Claims**

1. A method for preparing dicarboxylic acids, comprising ozonolyzing a cycloolefin reactant with ozonized air in a lower alkanoic acid medium at a temperature of from 20° to 40°C to form an ozonolyzate; treating the ozonolyzate with an aqueous solution of hydrogen peroxide having a concentration of from 20 to 30 percent of said hydrogen peroxide; passing the ob-

tained mixture through a solid acid catalyst which is a cation exchange resin having a polystyrene matrix cross-linked wih divinylbenzene and containing sulfonic acid groups, said cation exchange resin being in the H-form at a temperature of from 30° to 60°C at a space velocity of from 2 to 4 $hours^{-1}$; heat-treating the cartalyzed product to a temperature of from 50° to 80°C and at a space velocity of from 0.3 to 0.5 $hour^{-1}$; and thermally degrading the heat-treated catalyzed product at a temperature of from 90° to 110°C.

3,979,451

PROCESS FOR THE PRODUCTION OF THIOPHOSGENE

Gerhard Meyer; Helmut Magerlein, both of Obernburg, and Hans-Dieter Rupp, Kassel-Bettenhausen, all of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed May 22, 1974, Ser. No. 472,090

Claims priority, application Germany, May 24, 1973, 2326396

Int. Cl.² C07C *145/00*

U.S. Cl. 260—543 H **5 Claims**

1. In a process for the production of thiophosgene wherein trichloromethanesulfenyl chloride is reduced by reaction with hydrogen sulfide at an elevated temperature and in contact with silica gel, the improvement which comprises conduction the reaction at a temperature of at least about 110°C. up to about 150°C. with a molar ratio of hydrogen sulfide to trichloromethanesulfenyl chloride of about 1.5:1. to 4:1.

3,979,452

THIOFORMAMIDE IMPROVED PROCESS

Eugene H. Axelrod, Old Bridge, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 384,544, Aug. 10, 1973, abandoned, which is a continuation-in-part of Ser. No. 210,222, Dec. 20, 1971, abandoned. This application Sept. 23, 1974, Ser. No. 508,789

Int. Cl.² C07C *153/057*

U.S. Cl. 260—551 S **6 Claims**

1. An improved process for the preparation of thioformamide wherein hydrogen cyanide and hydrogen sulfide are combined in the presence of a basic catalyst, the improvement comprising employing an insoluble tertiary amine anion exchange resin in an organic solvent at from −40° to 100°C. as a catalyst for the reaction.

3,979,453

3-CYANAMINO-2,6-DINITROANILINES

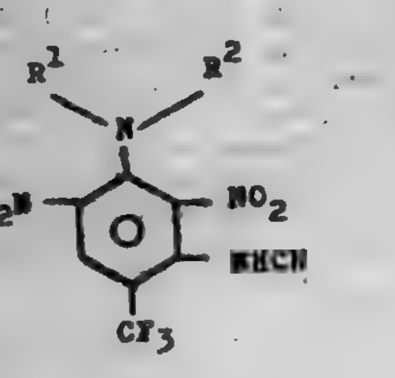
Joseph A. Yahner, New Palestine, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed June 23, 1975, Ser. No. 589,313

Int. Cl.² C07C *125/08*

U.S. Cl. 260—551 C **6 Claims**

1. A compound of the formula:



wherein

R^1 is hydrogen C_1–C_4 nontertiary alkyl, C_3–C_4 alkenyl, chloro C_2–C_3 alkyl, chloro C_3–C_4 alkenyl or cyclopropylmethyl; and

R^2 is C_1–C_7 nontertiary alkyl, C_3–C_4 alkenyl, chloro C_2–C_3 alkyl, chloro C_3–C_4 alkenyl or cyclopropylmethyl;

and the triethylamine, pyridine and alkali metal salts thereof.

3,979,454

PROCESS FOR THE PRODUCTION OF ALKYL SULPHONIC ACID HYDROXY ALKYL AMIDES

Hermann Perrey; Harry Welz; Ralf Lange; Hans Rudolph, and Hans Jürgen Rosenkranz, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 17, 1975, Ser. No. 559,283

Claims priority, application Germany, Mar. 29, 1974, 2415330

Int. Cl.² C07C *143/74*

U.S. Cl. 260—556 A **10 Claims**

1. In the known process for the production of alkyl sulphonic acid hydroxy alkyl amides by reacting alkyl sulphonic acid chlorides and hydroxy alkyl amines in the presence of acid binding agents the improvement comprising using an aqueous alkali hydroxide solution as acid-binding agent, applying the three components in such a ratio, that 0.8 to 1.2 moles of alkali hydroxide and 1 to 1.3 moles of hydroxy alkyl amine are used per mole of sulphonic acid chloride, and carrying out the reaction by adding the alkyl sulphonic acid chloride to the hydroxy alkyl amine and adding to the mixture thus obtained the aqueous alkali hydroxide solution at such a rate that the pH-value of the reaction mixture does not exceed pH 10.

3,979,455

PREPARATION OF DIOXYIMINO-CYCLOALKANONES AND RELATED INTERMEDIATES

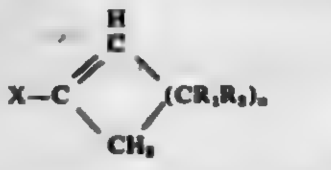
Roger G. Duranleau, Ardonia, N.Y., and Dennis R. Taylor, Temple City, Calif., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 13, 1974, Ser. No. 532,358

Int. Cl.² C07C *131/02*

U.S. Cl. 260—566 A **9 Claims**

1. A process of producing a 2,6-dioximino-1-cycloalkanone product by reacting an enamine corresponding to the formula:



wherein X is a secondary amino radical selected from the group consisting of morpholino, N-alkyl anilino wherein said alkyl radicals contain from 1 to 6 carbon atoms, pyrrolidino; piperidino and pyrazolino; each of R_1 and R_2 is hydrogen or lower alkyl radical containing from 1 to 6 carbon atoms, and n is an integer of from 2 to 15 carbon atoms; with nitrosyl chloride in an inert organic solvent selected from the group consisting of chloroform and alkanols containing 1 to 4 carbon atoms, until a 2,6-dioxininocycloalkylidene-containing quaternary ammonium adduct of said amine is formed and hydrolyzing said adduct to the desired 2,6-dioximino-1-cycloalkanone.

3,979,456

PHENOXYALKYLAMINES, PROCESS FOR THEIR PREPARATION AND APPLICATIONS THEREOF

Henri Pinhas, Paris, France, assignor to Laboratoires Laroche Navarron, Levallois, France

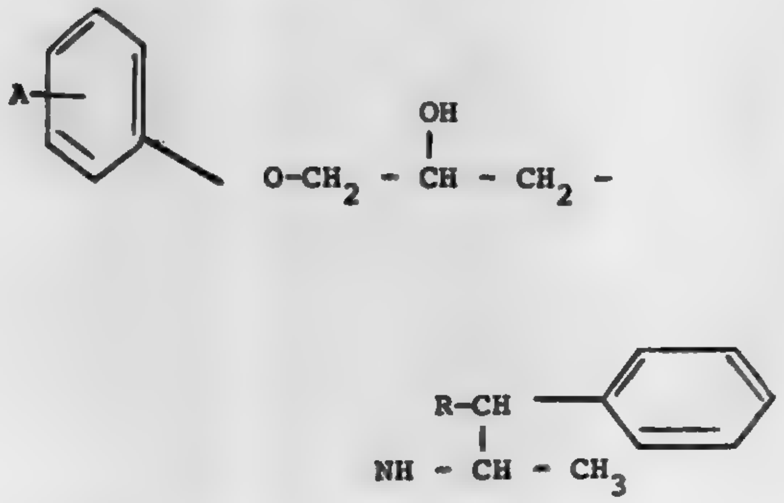
Division of Ser. No. 210,107, Dec. 20, 1971, Pat. No. 3,873,620. This application Jan. 20, 1975, Ser. No. 542,227

Claims priority, application France, Dec. 28, 1970, 70.46875

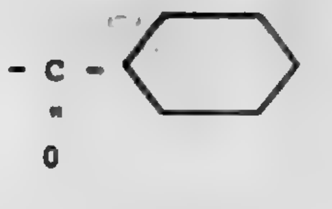
Int. Cl.² C07C *93/06*

U.S. Cl. 260—570.7 **3 Claims**

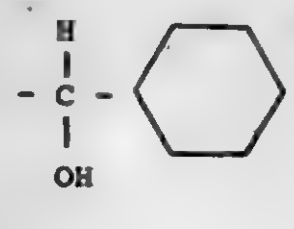
1. A compound selected from the group consisting of phenoxyalkylamines of formula:



in which R is selected from the group consisting of hydrogen and hydroxy and A is selected from the group consisting of the radicals



and



and their non-toxic acid addition salts.

3,979,457

PROCESS FOR PRODUCTION OF (+)-2-AMINO-1-BUTANOL

Chiyuki Fujii; Moreshi Yasui, and Yoshiaki Ishimathu, all of Machida, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 30, 1974, Ser. No. 510,194

Claims priority, application Japan, Sept. 28, 1973, 48-108975

Int. Cl.² C07C *89/00, 91/02*

U.S. Cl. 260—584 R **13 Claims**

1. A process for producing (+)-2-amino-1-butanol which comprises

1. optically resolving an N-acyl-DL-2-aminobutyric acid in an aqueous solution using the action of an acylase to obtain (A) an aqueous solution predominantly comprising L-2-aminobutyric acid and a small amount of an N-acyl-D-2-aminobutyric acid and (B) an aqueous solution predominantly comprising an N-acyl-D-2-aminobutyric acid and a small amount of L-2-aminobutyric acid,
2. isolating crystalline L-2-aminobutyric acid from said solution (A) and to obtain a solution (C) from which said L-2-aminobutyric acid has been isolated,
3. esterifying said crystalline L-2-aminobutyric acid to form an L-2-aminobutyric acid ester,
4. reducing the L-2-aminobutyric acid ester to form (+)-2-amino-1-butanol, said reducing occurring in the presence of Raney nickel in an amount higher than about 50% by weight or platinum in an amount higher than about 10% by weight based on the amount of said L-2-aminobutyric acid ester at temperatures of ambient temperature to about 70°C and a hydrogen pressure below about 70 Kg/cm^2
5. combining said solution (B) and said solution (C) to form a solution (D),
6. crystallizing said N-acyl-D-2-aminobutyric acid from said solution (D) to obtain crystals comprising predominantly said N-acyl-D-2-aminobutyric acid and a small amount of said L-2-aminobutyric acid, and
7. racemizing said crystals comprising predominantly said N-acyl-D-2-aminobutyric acid to obtain an N-acyl-DL-2-aminobutyric acid for recycle to step (1).

3,979,458

PRODUCTION OF UNSATURATED CARBOCYCLIC KETONES

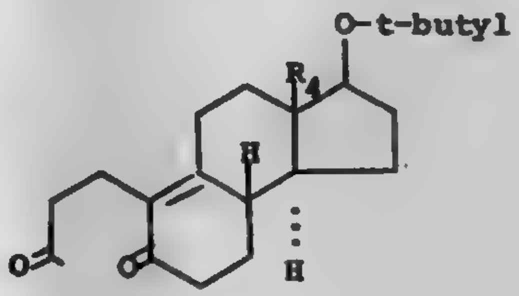
John H. Fried, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama

Division of Ser. No. 747,465, July 25, 1968, Pat. No. 3,880,884, which is a continuation-in-part of Ser. No. 687,502, Dec. 4, 1967, Pat. No. 3,639,428. This application Jan. 10, 1975, Ser. No. 540,015

Int. Cl.² C07C *49/00*

U.S. Cl. 260—586 E **1 Claim**

1. A compound of the formula



wherein R_4 is lower alkyl having from 1 to 6 carbon atoms.

3,979,459

SUBSTITUTED 4-PHENYL BENZOPHENONES

John Brewster Rose, Letchworth, England, assignor to Imperial Chemical Industries Limited, London, England

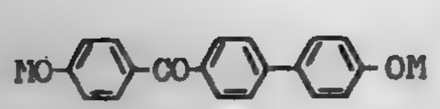
Filed May 7, 1974, Ser. No. 467,797

Claims priority, application United Kingdom, May 25, 1973, 25203/73; Mar. 14, 1974, 11442/74

Int. Cl.² C07C *49/80, 49/82*

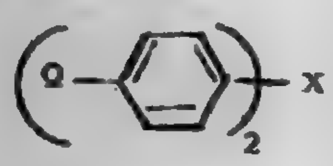
U.S. Cl. 260—591 **3 Claims**

1. A compound of the formula

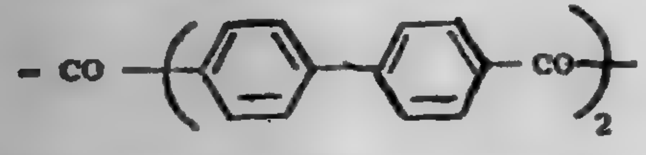


where M is hydrogen or alkali metal.

2. A compound of the formula

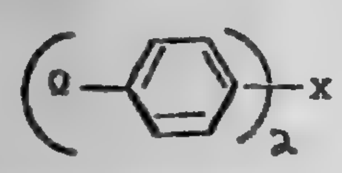


where X is a group having the formula

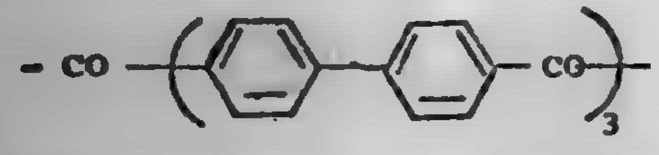


and Q is a fluorine, chlorine or bromine atom, a hydroxyl group or alkali metal salt thereof and may be the same or different.

3. A compound of the formula



where X is a group having the formula



and Q is a fluorine, chlorine or bromine atom, a hydroxyl group or alkali metal salt thereof and may be the same or different.

3,979,460

PROCESS FOR THE PREPARATION OF AN ORGANOMERCAPTOPHENOL FROM SULFUR, A 2,6-DISUBSTITUTED PHENOL, AND AN ACTIVATED OLEFIN OR AN EPOXY COMPOUND

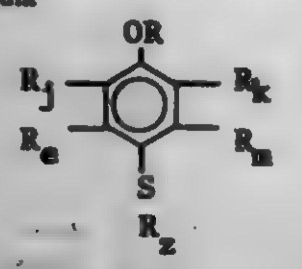
Allan S. Hay, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed July 1, 1974, Ser. No. 484,996

Int. Cl.^{2} C07C *149/36*

U.S. Cl. 260—609 F 10 Claims

1. A composition of matter comprising an organomercaptophenol of the formula



wherein independently each R_j and R_k is a monovalent substituent selected from the group consisting of hydrocarbon and hydrocarbonoxy radicals, each R_e and R_m is a monovalent substituent selected from the group consisting of hydrogen, hydrocarbon and hydrocarbonoxy radicals, and R_z is a hydroxy substituted monovalent acyclic or cyclic hydrocarbon radical, and R is selected from hydrogen and R_z radicals.

3,979,461

PROCESS FOR THE PREPARATION OF METHYL TERT-BUTYL ETHER

Francesco Ancillotti, San Donato Milanese; Gianni Oriani, and Ermanno Pescarollo, both of Milan, all of Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Filed May 21, 1975, Ser. No. 579,692

Claims priority, application Italy, May 21, 1974, 23009/74

Int. Cl.^{2} C07C *41/06, 41/10*

U.S. Cl. 260—614 A 2 Claims

1. In a process of preparing methyl tert-butyl ether by reacting isobutylene with methanol, the improvement which comprises carrying out said reaction in two stages by feeding a hydrocarbon stream containing isobutylene and methanol to a primary reaction zone at a temperature in the range of from 50° to 90°C and at a pressure in the range of from 10 to 30 atmospheres wherein the isobutylene partially reacts with the methanol in the presence of a catalyst consisting of an acid ion exchange resin to form methyl tert-butyl ether, separating said methyl tert-butyl ether by distillation from the residue of isobutylene and methanol and all other hydrocarbons in the feed stream, feeding said residue and other hydrocarbons to a secondary reaction zone where the residue of isobutylene and methanol are caused to react in the liquid phase in the temperature range of from 60° to 100°C and in the pressure range of from 15 to 40 atmospheres in the presence of a catalyst consisting of an acid ion exchange resin to form additional methyl tert-butyl ether, and then recovering said additional methyl tert-butyl ether by distillation to leave a balance of said other hydrocarbons practically free from isobutylene.

3,979,462

CONDENSATION RESINS OF PHENOLS AND α,α'-DIHYDROXY-DIISOPROPYL BENZENES

Heinrich Krimm; Hans-Josef Buysch, both of Krefeld-Bockum, and Dieter Freitag, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Continuation of Ser. No. 461,092, April 15, 1974, abandoned. This application Dec. 2, 1975, Ser. No. 636,921

Claims priority, application Germany, Apr. 19, 1973, 2320008

Int. Cl.^{2} C07C *39/12*

U.S. Cl. 260—619 B 5 Claims

1. A product produced by the process which comprises reacting phenol with a mixture of α,α'-dihydroxy-m-diisopropyl benzene and α,α'-dihydroxy-p-diisopropyl benzene, said dihydroxy compounds being in a molar ratio of between 7:3 and 3:7, in the presence of a catalytic amount of an acid catalyst selected from the group consisting of phosphoric acid, o-phosphoric acid, m-phosphoric acid, pyrophosphoric acid, phosphorous acid and hypophosphorous acid at a temperature of between about 70 and 270°C.

3,979,463

FLUOROALIPHATIC PHENOLS

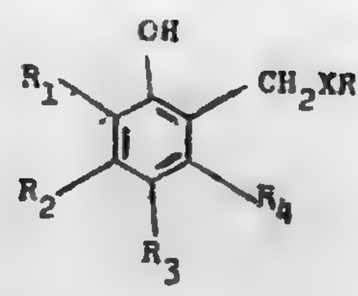
Leland S. Endres, San Luis Obispo, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 84,508, Oct. 27, 1970, abandoned. This application Mar. 18, 1974, Ser. No. 451,920

Int. Cl.^{2} C07C *39/26*

U.S. Cl. 260—623 D 7 Claims

1. A compound having the formula



wherein X is —CHClCH$_2$—, —CH=CH—, or —CH$_2$—CH$_2$—; R_f is a perfluoroalkyl having from 3 to 20 carbon atoms; R_1, R_2, R_3, and R_4 are selected from the class consisting of methyl, ethyl, methoxy, phenyl, phenoxy, hydrogen, and halogen and R_1 and R_3 can be —CH$_2$XR$_f$.

3,979,464

METHYLATION OF 2,6-XYLENOL TO PRODUCE 2,3,6-TRIMETHYLPHENOL

Bruce E. Leach, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Aug. 25, 1975, Ser. No. 607,732

Int. Cl.^{2} C07C *39/06*

U.S. Cl. 260—621 R 8 Claims

1. In a process for the liquid phase methylation of 2,6-xylenol to form 2,3,6-trimethylphenol in contact with alumina catalysts, the improvement comprising:

a. contacting 2,6-xylenol with methanol in liquid phase,
b. at a temperature of from about 300°C to about 390°C,
c. at a pressure at from about 350 psig to about 500 psig,
d. at a liquid hourly space velocity of from about 1 to about 15 while in contact with an alumina catalyst derived from aluminum alkoxide hydrolysis.

3,979,465

PROCESS FOR THE PRODUCTION OF LOWER ALIPHATIC ALCOHOLS

Günter Strehlke, Rheinkamp-Baerl, and Günther Osterburg, Homberg, both of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

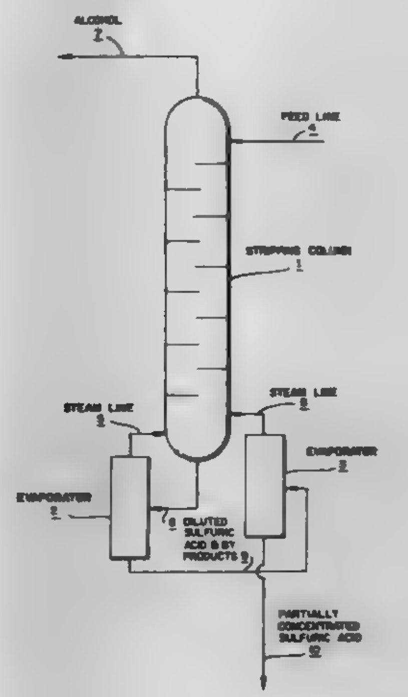
Filed Jan. 7, 1974, Ser. No. 431,177

Claims priority, application Germany, Jan. 13, 1973, 2301632

Int. Cl.^{2} C07C *29/06*

U.S. Cl. 260—639 R 7 Claims

1. A process for the production of a lower aliphatic alcohol comprising reacting an olefin having from 2 to 4 carbon atoms with sulfuric acid of a concentration greater than 70 percent in a reaction vessel to form an ester reaction product, adding water to said product to form a dilute ester reaction product and promote hydrolysis, steam stripping said dilute ester reaction product in a stripping column to remove a lower aliphatic alcohol overhead leaving a dilute sulfuric acid solution containing less than about 45 percent sulfuric acid, concentrating said dilute sulfuric acid solution in a first stage evaporator employing indirect heat exchange means to an intermediate solution containing from about 55 to 65 percent sulfuric acid, recycling the steam generated in the first stage evaporator to said steam stripping step, further concentrating said intermediate sulfuric acid solution in a second stage direct heat evaporator employing an immersion-burner to form a concentrated sulfuric acid solution containing at least 70 percent sulfuric acid and recycling said concentrated sulfuric acid solution to said reaction vessel.



3,979,466

PROCESS FOR CONDENSATION OF ALCOHOLS

James E. Yates, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Division of Ser. No. 367,689, June 6, 1973, Pat. No. 3,860,664. This application Sept. 19, 1974, Ser. No. 507,304

Int. Cl.^{2} C07C *29/00*

U.S. Cl. 260—642 C 5 Claims

1. A process for producing higher molecular weight hydrocarbon alcohols by forming a reaction mixture comprised of at least one lower molecular weight alkanol having a methylene group adjacent the hydroxylated carbon atom, an alkali catalyst and a catalytic amount of a palladium (II) alkyl carboxylate wherein the alkyl group has 1 to 17 carbon atoms, said palladium compound being mixed with alkanol prior to dissolution of the alkali catalyst therein with the reaction mixture being formed at temperatures below that necessary to effect condensation of the alkanol, and heating the reaction mixture from about 80°C to about 300°C to effect condensation of the alkanol, while simultaneously removing water as it forms, wherein the alkali catalyst is at least one catalyst selected from the group consisting of alkali metal, alkali metal hydroxide, alkali metal oxide, alkali metal bisulfite or alkali metal alcoholate.

3,979,467

PROCESS FOR THE NITRATION OF HALOAROMATICS

Ignatius Schumacher, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed May 9, 1973, Ser. No. 358,566

Int. Cl.^{2} C07C *79/12*

U.S. Cl. 260—646 8 Claims

1. In a process for the preparation of a nitro- and halo-substituted aromatic compound wherein a halogenated aromatic compound is contacted with a nitrating agent, the improvement which comprises carrying out the nitration in the presence of a phosphorus compound, the phosphorus compound being present in an amount sufficient to produce an ortho-directive effect.

3,979,468

4′-CHLORO-4-ETHYNYLBIPHENYL AND METHOD OF PREPARING SAME

Colin Frederick Webb, and Barry John Price, both of London, England, assignors to Allen & Hanburys Limited, London, England

Filed Jan. 16, 1975, Ser. No. 541,393

Claims priority, application United Kingdom, Jan. 31, 1974, 4531/74

Int. Cl.² C07C *25/26*

U.S. Cl. 260—649 DP **3 Claims**

1. 4′-chloro-4-ethynylbiphenyl.

2. A process for the preparation of 4′-chloro-4-ethynylbiphenyl which comprises treating β,4′-dichloro-4-biphenylacrolein with a base.

3,979,469

POLYFLUOROALKYL IODIDES, PROCESS FOR THEIR MANUFACTURE, AND THEIR USE

Horst Jäger, Bettingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

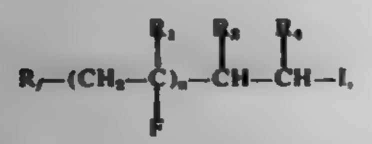
Filed Dec. 14, 1973, Ser. No. 425,011

Claims priority, application Switzerland, Dec. 21, 1972, 18662/72; Feb. 23, 1973, 2653/73

Int. Cl.² C07C *19/08*, *25/14*

U.S. Cl. 260—653 **8 Claims**

1. Polyfluoroalkyl iodides of the formula



$$R_f-(CH_2-\overset{R_1}{\underset{F}{C}})_n-\overset{R_3}{CH}-\overset{R_4}{CH}-I,$$

wherein R_f represents fluorinated alkyl of 3 to 18 carbon atoms, R_1 represents hydrogen or fluorine, R_3 and R_4 each independently represents hydrogen, alkyl with 1 to 4 carbon atoms and *n* is a whole number from 1 to 3.

3,979,470

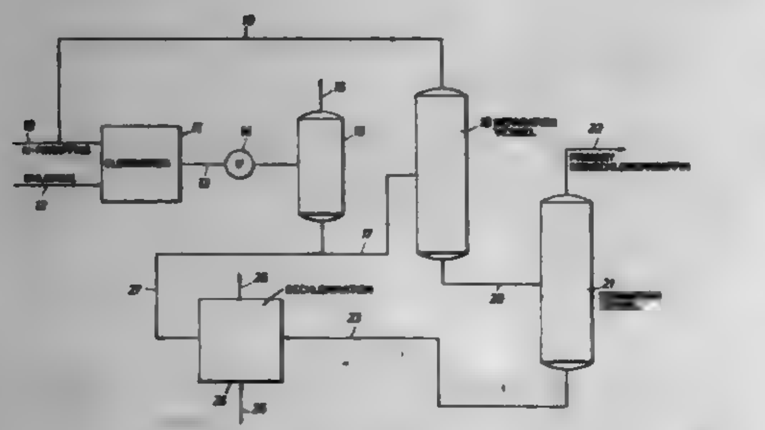
PROCESS FOR THE PRODUCTION OF PRIMARY NORMAL MONOCHLOROPARAFFINS

Bernhard E. Firnhaber, Somerville; Robert E. Chute, Clinton, both of N.J., and Brian H. Carter, Helsby, England, assignors to Pullman Incorporated, Chicago, Ill.

Filed Sept. 24, 1973, Ser. No. 400,459

Int. Cl.² C07C *17/02*

U.S. Cl. 260—658 R **7 Claims**



1. A process for the production of primary normal monochloroparaffins from a C_8 to C_{18} normal paraffin which comprises:

- chlorinating said normal paraffin and the corresponding secondary chloroparaffin using a free-radical mechanism and conditions to optimize the substitution in the primary position of said paraffins to form a product containing unreacted normal paraffin, primary monochloroparaffin, secondary chloroparaffin and polychlorinated compounds;
- separating said product whereby said normal paraffin and corresponding secondary chloroparaffin are separated from the primary monochloroparaffin and polychlorinated compounds;
- recycling said normal paraffin and corresponding secondary chloroparaffin to said chlorination step;
- separating said polychlorinated compounds from said primary monochloroparaffin and recovering said primary monochloroparaffin;
- dechlorinating said polychlorinated compounds with hydrogen in the presence of a noble metal at temperatures of 250° to 500°F. and pressures of 25 to 75 atmospheres to convert said polychlorinated compounds to paraffin, primary monochloroparaffin, secondary monochlorparaffin and hydrogen chloride;
- separating said hydrogen chloride from said mixture of paraffin, primary normal monochloroparaffin and secondary monochlorparaffin; and
- combining said mixture with said product formed in said chlorinating step prior to separation of said product whereby the primary normal monochloroparaffin may be recovered.

3,979,471

PROCESS FOR SYNTHESIZING ETHYLENIC COMPOUNDS

Marc Julia, Paris, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

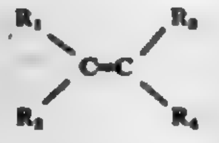
Filed Aug. 2, 1974, Ser. No. 494,430

Claims priority, application France, Aug. 10, 1973, 73.29329

Int. Cl.² C07C *1/22*, *1/24*

U.S. Cl. 260—666 A **11 Claims**

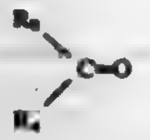
1. A process for preparing ethylenic compounds with the formula:



wherein:

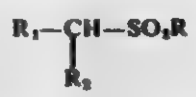
- R_1 and R_3 are selected from the group consisting of hydrogen and CH_3;
- R_2 is selected from the group consisting of hydrogen, aromatic hydrocarbon radical, and a saturated or unsaturated, linear or branched aliphatic hydrocarbon;
- R_4 is selected from the group consisting of phenyl and a saturated or unsaturated linear or branched aliphatic hydrocarbon, where R_2 and R_4 may be joined to form a ring structure;

which comprises the steps of reacting in the presence of a basic agent selected from the oxides, hydroxides, amides, hydrides and alcoholates of an alkali metal



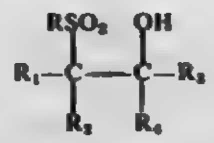
(A)

wherein R_2 and R_4 are as set forth above and



$$R_1-\underset{R_2}{CH}-SO_2R \qquad (B)$$

wherein R_1 and R_2 are as set forth above and R is selected from the group consisting of alkyl, aryl and cycloalkyl to form an alcohol sulphone of the formula:



$$R_1-\overset{RSO_2}{\underset{R_2}{C}}-\overset{OH}{\underset{R_4}{C}}-R_3 \qquad (C)$$

which sulphone is treated with an alkali metal amalgam reducing agent.

3,979,472

PROCESS FOR MANUFACTURING HYDROCARBONS

Stephen A. Butter, East Windsor, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 28, 1975, Ser. No. 563,241

Int. Cl.² C07C *1/20*

U.S. Cl. 260—668 R **11 Claims**

1. A process for producing hydrocarbons which comprises: contacting, under conversion conditions, a feed consisting essentially of one or more lower monohydric alcohol having up to four carbon atoms, the ethers derived therefrom, or mixtures of said alcohols and ethers, with a catalyst comprising an intimate admixture of an oxide of antimony and a crystalline aluminosilicate zeolite having a silica to alumina ratio of at least about 12 and a constraint index from 1 to 12, said antimony oxide constituting at least 1% by weight of said admixture, whereby is formed a mixture comprising light olefins, monocyclic aromatic hydrocarbons, and water; and, recovering said hydrocarbons.

3,979,473

PROCESS FOR THE COLOR STABILIZATION OF INDENE

George S. Li, Aurora, and Gerald P. Coffey, Cleveland Heights, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Dec. 23, 1974, Ser. No. 535,490

Int. Cl.² C07C *7/18*

U.S. Cl. 260—674 R **4 Claims**

1. A process for the stabilization of indene against color formation consisting of adding to the indene an insoluble solid stabilizer selected from the group consisting of aluminum sulfate and zinc chloride in a concentration from about 0.001 to 2.5 percent by weight based on indene, and subsequently separating the stabilizer from the stabilized product.

3,979,474

PROCESS FOR SEPARATING ISOBUTYLENE FROM C_4 HYDROCARBON MIXTURES

Willy Zerrweck, Marl, Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Dec. 13, 1974, Ser. No. 532,674

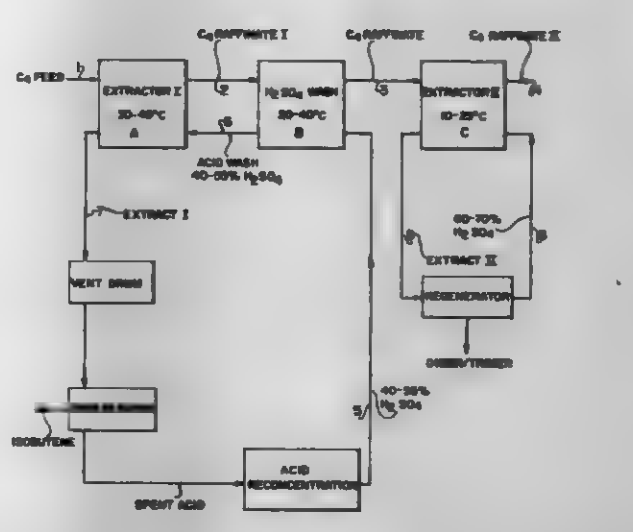
Claims priority, application Germany, Dec. 14, 1973, 2362115

Int. Cl.² C07C *11/08*

U.S. Cl. 260—677 S **9 Claims**

1. In the process of selectively extracting isobutylene from a hydrocarbon mixture of C_4 hydrocarbons comprising olefins and paraffins in addition to said isobutylene by reacting said hydrocarbon mixture with a first aqueous solution of sulfuric acid to convert said isobutylene to tertiary butyl alcohol soluble in said first aqueous solution, separating said first aqueous solution from a raffinate comprising the remaining hydrocarbon mixture and entrained tertiary butyl alcohol and regenerating said tertiary butyl alcohol in said first aqueous solution to isobutylene, the improvement comprising:

- a. extracting said hydrocarbon mixture in a first stage at a temperature between about 30° and 45°C with said first aqueous solution having about 40 – 55 percent by weight sulfuric acid and separating a first raffinate and a first extract comprising tertiary butyl alcohol; and
- b. extracting said first raffinate after separating the entrained tertiary butyl alcohol by washing with aqueous sulfuric acid at a temperature between 20° and 40°C in a second stage at a temperature between 10° and 25°C with a second aqueous solution having about 60 – 70 percent by weight sulfuric acid and separating a second raffinate comprising remaining hydrocarbon substantially free of isobutylene and a second extract which is regenerated to recover dimers and trimers of isobutylene.



3,979,475

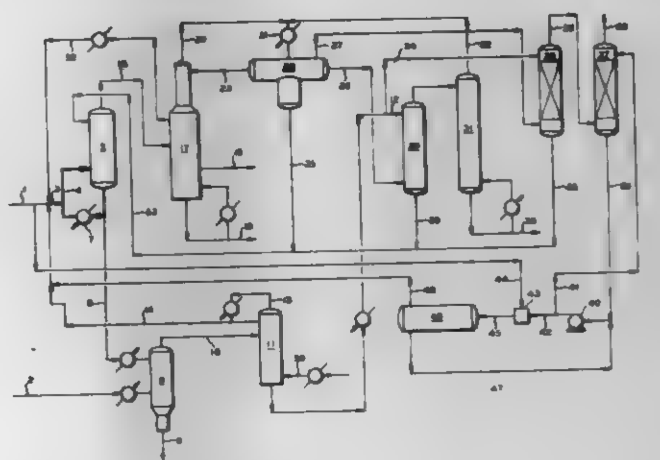
RECOVERY OF HF AND ETHYL FLUORIDE FROM ALKYLATION OF ISOPARAFFIN WITH OLEFINS IN PRESENCE OF HF CATALYST

Cecil O. Carter, Wann, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 10, 1974, Ser. No. 531,490

Int. Cl.² C07C *3/54*

U.S. Cl. 260—683.42 **4 Claims**



1. In the alkylation of an isoparaffin and an olefin in the presence of a catalyst and ethyl fluoride thereby obtaining an alkylate stream which is fractionated to produce an overhead comprising propane and ethyl fluoride, the method of:

1. condensing said overhead thereby obtaining:
   - a. a liquid stream comprising propane and ethyl fluoride, and
   - b. a vent gas stream comprising propane and ethyl fluoride;
2. contacting said liquid stream with a first lean hydrogen fluoride stream thereby removing ethyl fluoride into the hydrogen fluoride;

3. recovering propane substantially free of ethyl fluoride from said liquid stream;
4. contacting said vent gas with a second lean hydrogen fluoride stream thereby removing ethyl fluoride into the hydrogen fluoride;
5. further treating the vent gas from step (4) with a liquid that will absorb hydrogen fluoride, said liquid chosen from among water, and mixtures comprising hydrogen fluoride with a preponderance of water;
6. recovering a vent gas substantially free of ethyl fluoride and hydrogen fluoride.

3,979,476
HYDROCARBON CONVERSION CATALYST AND PROCESS

Jacob D. Kemp, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 324,924, Jan. 19, 1973, abandoned, which is a continuation-in-part of Ser. No. 268,296, July 3, 1972, abandoned. This application Nov. 25, 1974, Ser. No. 326,668

The portion of the term of this patent subsequent to Dec. 3, 1991, has been disclaimed.

Int. Cl.² C07C *3/54*

U.S. Cl. 260—683.47 **3 Claims**

1. A process for alkylating an isoparaffinic hydrocarbon with an olefinic hydrocarbon which comprises contacting a mixture of said isoparaffinic hydrocarbon and said olefinic hydrocarbon, at alkylation conditions including a temperature of about −80°F to 150°F, with a catalytic composition comprising hydrogen fluoride-antimony pentafluoride on a fluorided alumina support, said support having a fluorine content of at least about 60 weight percent and a pore volume of about 0.05 cc to about 0.7 cc per gram.

3,979,477
COMPOSITION OF EPOXIDE RESINS, POLYCARBOXYLIC ACID ANHYDRIDES AND POLYESTER-DICARBOXYLIC ACIDS

Rolf Schmid, Gelterkinden; Friedrich Lohse, Oberwil; Willy Fatzer, Bottmingen, and Hans Batzer, Arlesheim, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 6, 1974, Ser. No. 530,330

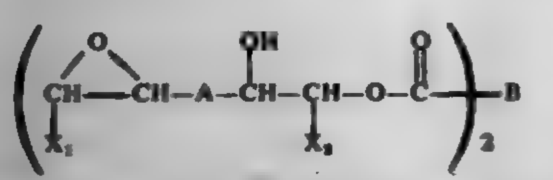
Claims priority, application Switzerland, Dec. 19, 1973, 17809/73

Int. Cl.² C08L *63/00*

U.S. Cl. 260—835 **14 Claims**

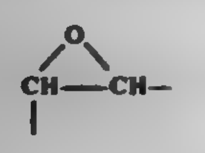
1. A curable epoxide resin composition of epoxide resin, polycaboxylic acid anhydride and polyester-dicarboxylic acid, characterised in that it comprises

a. at least 60 per cent by weight, based on the total amount of epoxide resin, of adducts, containing epoxide groups, of the formula I

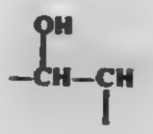


(I)

wherein X_1 and X_2 each denote hydrogen or methyl and A denotes the radical, obtained by removal of the 1,2-epoxyethyl groups, of a diglycidyl compound, or wherein A together with X_1 and/or X_2 and with inclusion of the grouping



and/or

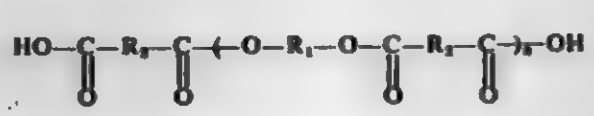


$$-\overset{\overset{OH}{|}}{CH}-\underset{|}{CH}$$

denotes the cycloaliphatic ring or the cycloaliphataic ring system of a partially reacted cycloaliphatic or cycloaliphatic-aliphatic diepoxide compound, B denotes a long-chain polyester radical consisting essentially of unsubstituted or substituted alkylene and/or alkenylene chains alternating with carboxylic acid ester groups, and the quotient Z/Q, wherein Z is the number of carbon atoms present in the recurring structural element of the radical B and Q is the number of oxygen bridges present in the recurring structural element of the radical B, has to be at least 4 and furthermore the total number of carbon atoms present in the radical B is at least 50,

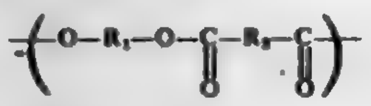
b. polycarboxylic acid anhydrides in an amount of 0.2–0.8 mol per 1 equivalent of epoxide group, and

c. polyester-dicarboxylic acids of the formula II



$$HO-\underset{\underset{O}{\|}}{C}-R_2-\underset{\underset{O}{\|}}{C}\left(-O-R_1-O-\underset{\underset{O}{\|}}{C}-R_2-\underset{\underset{O}{\|}}{C}\right)_n-OH \qquad (II)$$

wherein R_1 and R_2 denote divalent aliphatic, araliphatic, cycloaliphatic, cycloaliphatic-aliphatic, aromatic or heterocyclic-aliphatic radicals, wherein at least one of the two radicals R_1 or R_2 must contain a carbocyclic or heterocyclic ring or a carbocyclic or heterocyclic ring system and not more than 4 methylene groups are present per ring in the structural element of the formula



$$-\left(O-R_1-O-\underset{\underset{O}{\|}}{C}-R_2-\underset{\underset{O}{\|}}{C}\right)-$$

and *n* denotes a number from 1 to 30 in an amount of 0.8–0.2 equivalent of carboxyl groups per 1 equivalent of epoxide group.

3,979,478
CATALYSIS OF AMINO RESIN CROSS-LINKING REACTIONS WITH HIGH MOLECULAR WEIGHT SULFONIC ACIDS

Lawrence V. Gallacher, East Norwalk, Conn., assignor to King Industries, Inc., Norwalk, Conn.

Filed May 1, 1974, Ser. No. 466,079

Int. Cl.² C08G *12/12, 12/32;* **C08L** *61/32*

U.S. Cl. 260—850 **23 Claims**

1. A composition comprising a convertible amino resin, a catalytically effective amount of a polyalkylaromatic polysulfonic acid having a molecular weight of at least about 500 and a polyfunctional co-reactant capable of combining with said amino resin during conversion to its cured state.

3,979,479
BLOCK COPOLYMERS

Pierino Radici, Turate (Como); Gaudenzio Bianchi, Fagnano Olona (Varese); Daniele Colombo, Castellanza (Varese), and Paolo Colombo, Saronno (Varese), all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Dec. 16, 1974, Ser. No. 533,267

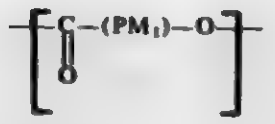
Claims priority, application Italy, Dec. 28, 1973, 32344/73

Int. Cl.² C08L *77/02*

U.S. Cl. 260—857 F **14 Claims**

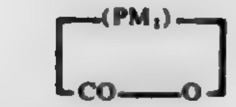
1. A block copolymer of the structure HO—D—A—B—D—H wherein:

A is a polylactonic block consisting of recurring units:

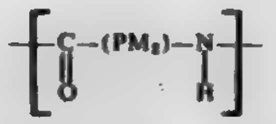


$$-\left[\underset{\underset{O}{\|}}{C}-(PM_1)-O\right]-$$

obtainable from at least one monomeric lactone of the formula:

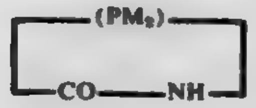


B is a polylactamic block consisting of recurring units:



$$-\left[\underset{\underset{O}{\|}}{C}-(PM_2)-\underset{\underset{H}{|}}{N}\right]-$$

obtainable from at least one monomeric lactam of the formula:



D is a polyoxymethylene block consisting of recurring units

$\left[CH_2O\right]$,

wherein PM_1 and PM_2 are linear polymethylene chains having from 2 to 13 and 3 to 13 carbon atoms, respectively, nonsubstituted or having at least one hydrogen atom replaced by a radical selected from the group consisting of alkyl, alkylaryl, aryl and cycloalkyl radicals; the said blocks D being present in a proportion of from 5 to 99.9% by weight in the said block copolymer, the group —A—B— having a molecular weight of from 1,000 to 50,000, and the block A being present in said group —A—B— in a proportion of from 1 to 89 percent by weight, said block copolymer HO—D—A—B'D—H being formed by reacting a block copolymer A—B, wherein A and B are as defined above, with anhydrous monomeric formaldehyde, the copolymer A—B being from 1.9 to 89 percent by weight of the total weight of copolymer A—B and said formaldehyde.

3,979,480
PROCESS FOR THE POLYMERIZATION OF FORMALDEHYDE

Pierino Radici, Turate (Como); Daniele Colombo, Castellanza (Varese), and Paolo Colombo, Saronno (Varese), all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Dec. 16, 1974, Ser. No. 533,268

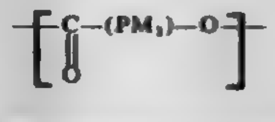
Claims priority, application Italy, Dec. 28, 1973, 32347/73

Int. Cl.² C08L *77/02*

U.S. Cl. 260—857 F **11 Claims**

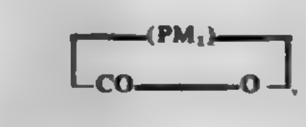
1. A method for preparing a polyoxymethylene, comprising the step of supplying anhydrous monomeric formaldehyde to a reaction medium comprising an organic diluent which is a liquid and non-solvent for the polyoxymethylene under the reaction conditions and inert towards the other constituents of the reaction medium, and comprising from 0.001 to 0.5 percent by weight of a catalyst based upon the polyoxymethylene, dispersed in said medium, said catalyst having a molecular weight of from 1,000 to 50,000, containing block A in a proportion of from 1 to 89 weight percent, and consisting of a block copolymer carrying ionic couples on its macromolecular chain, said block copolymer being defined by the general structure A-B in which:

A is a polylactonic block consisting of recurring units:

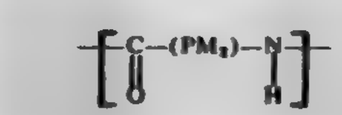


$$-\left[\underset{\underset{O}{\|}}{C}-(PM_1)-O\right]-$$

obtainable from at least one monomeric lactone of the general formula:

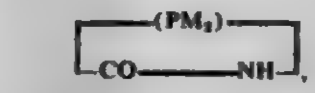


B is a polylactam block consisting of recurring units:



$$-\left[\underset{\underset{O}{\|}}{C}-(PM_2)-\underset{\underset{H}{|}}{N}\right]-$$

obtainable from at least one monomeric lactam of the general formula:



wherein PM_1 and PM_2 are polymethylene chains having from 2 to 13 and 3 to 13 carbon atoms, respctively, non-substituted or having at least one hydrogen atom replaced by a radical selected from the group consisting of alkyl, aryl, alkylaryl and cycloalkyl radicals.

3,979,481
STABILIZATION OF ACETAL POLYMERS

Pierino Radici, Turate (Como); Gaudenzio Bianchi, Fagnano Olona (Varese), and Paolo Colombo, Saronno (Varese), all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Dec. 16, 1974, Ser. No. 533,269

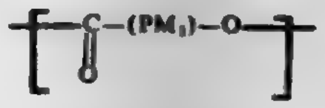
Claims priority, application Italy, Dec. 28, 1973, 32345/73

Int. Cl.² C08L *77/02*

U.S. Cl. 260—857 F **7 Claims**

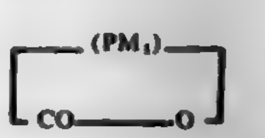
1. A stabilized composition comprising an acetal polymer having terminal ester, ether or urethane groups and from 0.02 to 12 parts by weight to 100 parts by weight of an acetal polymer of a block copolymer having a molecular weight of from 1,000 to 50,000 and having the general structure R—D—A—B—D—R, wherein

A is a polylactonic block consisting of recurring units

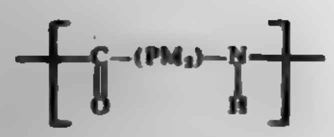


$$-\left[\underset{\underset{O}{\|}}{C}-(PM_1)-O\right]-$$

obtainable from at least one monomeric lactone of the formula:

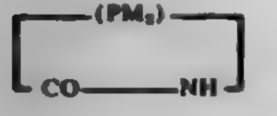


B is a polylactamic block consisting of recurring units



$$-\!\left[\begin{matrix}\mathrm{C}-(\mathrm{PM_1})-\mathrm{N}\\ \|\qquad\qquad\quad |\\ \mathrm{O}\qquad\qquad\quad \mathrm{R}\end{matrix}\right]\!-$$

obtainable from at least one monomeric lactam of the formula:



D is a polyoxymethylene block consisting of recurring units

$$-\!\left[\mathrm{CH_2O}\right]\!-$$

R is a terminal group selected from the class consisting of ester, ether and urethane groups,

wherein PM_1 and PM_2 are linear polymethylene chains having from 2 to 13 and 3 to 13 carbon atoms, respectively, non-substituted or having at least one hydrogen atom replaced by a radical selected from the group consisting of alkyl, aryl, cycloalkyl and aryl alkyl radicals, the blocks D being present in the said copolymer in a proportion of from 5 to 90 percent by weight and the weight ratio of the blocks B to A ranging from 1:1 to 99:1.

3,979,482

PROCESS FOR THE DEGRADATION OF HIGH POLYMER SUBSTANCES

Tsutomu Kagiya, Kyoto; Kunihiko Miyoshi, Takatsuki, and Katsuo Takemoto, Kyoto, all of Japan, assignors to Tsutomu Kagiya, Kyoto; Shinetsu Chemical Company and Tekkosha Co., Ltd., both of Tokyo, all of, Japan

Division of Ser. No. 361,792, March 18, 1973, abandoned. This application Nov. 29, 1974, Ser. No. 528,081

Int. Cl.² C08J *3/20*

U.S. Cl. 260—897 C **36 Claims**

1. A process for degrading a polymer composition, consisting essentially of the steps of:

1. impregnating a polymer composition consisting essentially of a blend of
   - A. polyethylene, and
   - B. from about 5 to about 50 parts by weight, per 100 parts by weight of (A), of chlorinated polyethylene, said chlorinated polyethylene containing from about 10% to about 50% of chlorine atoms, based on the sum of the hydrogen and chlorine atoms thereof,

with

   - C. from about 0.1 to about 10% by weight, based on the weight of (A), of a halogenated carbonyl compound selected from the group consisting of halogen-substituted ketones, halogen-substituted aldehydes, halogen-containing polyketone copolymers and halogen-containing polymers of an unsaturated ketone obtained by bond opening of the unsaturated bonds of the ketone, wherein said halogen is selected from the group consisting of chlorine, bromine and iodine, and mixtures thereof, and
2. exposing the impregnated polymer composition from step (1) to ultraviolet irradiation or sunlight, in the presence of oxygen or a gas containing oxygen.

3,979,483

ASYMMETRIC OS-DIALKYL-O-[(METHOXYPHENYL)-VINYL]-THIOPHOSPHATES

Alexis A. Oswald, Mountainside, and Paul L. Valint, Woodbridge, both of N.J., assignors to Ciba-Geigy AG, Basel, Switzerland

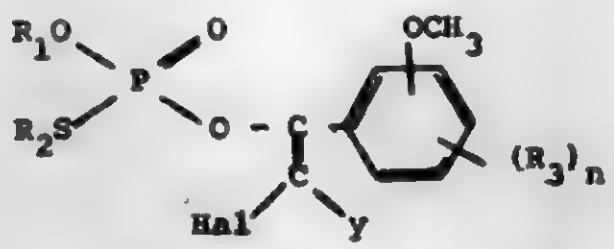
Division of Ser. No. 373,723, June 26, 1973, Pat. No. 3,878,268. This application Feb. 26, 1975, Ser. No. 553,335

Claims priority, application Switzerland, June 27, 1972, 9609/72

Int. Cl.² C07F *9/165*; A01N *9/36*

U.S. Cl. 260—951 **10 Claims**

1. A compound of the formula



wherein R_1 is methyl or ethyl; R_2 is propyl or butyl; each R_3 is hydrogen, chlorine or bromine; *n* is 1 or 2; *y* is hydrogen or chlorine; and Hal is chlorine or bromine.

3,979,484

O,S-DIALKYL-O-(1-METHOXYPHENYL-2-HALOVINYL)-DITHIOPHOSPHATES

Ernst Beriger, and Jozef Drabek, both of Allschwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

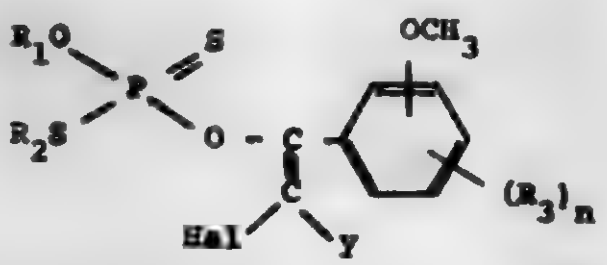
Division of Ser. No. 373,825, June 26, 1973, Pat. No. 3,879,499. This application Feb. 26, 1975, Ser. No. 553,336

Claims priority, application Switzerland, June 27, 1972, 9609/72; May 16, 1973, 7060/73

Int. Cl.² C07F *9/165*; A01N *9/36*

U.S. Cl. 260—951 **10 Claims**

1. A compound of the formula



wherein R_1 is methyl or ethyl; R_2 is n-propyl, n-butyl, isobutyl or sec.butyl; each R_3 is hydrogen, chlorine or bromine; *n* is 1 or 2; y is hydrogen or chlorine; and Hal is chlorine or bromine.

3,979,485

PORTABLE HUMIDIFIER

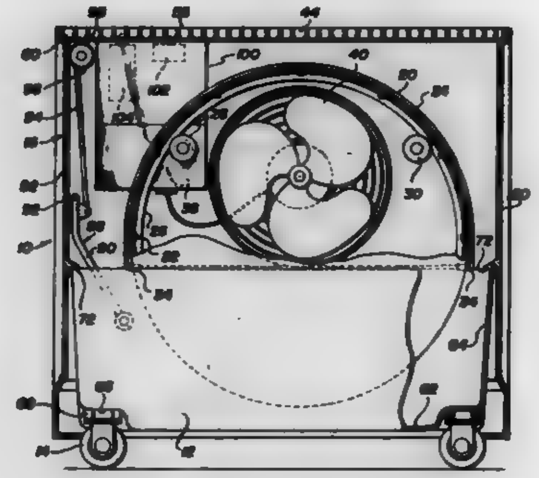
Kip J. Hoeg, Concord, Mich., assignor to McGraw-Edison Company, Elgin, Ill.

Continuation of Ser. No. 412,710, Nov. 5, 1973, abandoned. This application Feb. 21, 1975, Ser. No. 579,383

Int. Cl.² B01F *3/04*

U.S. Cl. 261—30 **4 Claims**

1. A portable humidifier, in combination comprising a water container, case, and humidifying mechanism; said container being watertight and having a bottom wall and upstanding side walls and having means on the bottom wall adapted to rest on a supporting surface; said case having downwardly extended side walls defining an open bottom interior larger than the container and thereby being adapted to be vertically lowered to telescoping relation with the container for virtually hiding same or to be vertically lifted from the container, cooperating ledge means between the container and case operable for supporting the case on the container in the telescoped relation whereat the lower edges of the case side walls are disposed closely adjacent but spaced above the supporting surface, said ledge means including inwardly formed projections from the case side walls at intermediate locations spaced from the lower edges thereof which projections are adapted to overlie and butt against the top edge of the container side walls, said case further having spaced apart inlet and outlet openings communicating with the interior; and the humidifying mechanism being supported by the case and having fan means for moving air successively through the inlet and outlet openings and further having means exposed to the moving air between the inlet and outlet openings and having means extending into the water in the container wetting the air exposed means, and whereby said case is supported on the container and said humidifying mechanism is supported by the case and further whereby the case and the humidifying mechanism supported thereon can be readily separated from the container merely by lifting said case vertically from the container.



3,979,486

PROCESS FOR CONTROLLING THE BALLISTIC CHARACTERISTICS OF DOUBLE-BASE PROPELLANTS

Michel A. Herchin, Saint Medard En Jalles, and Jacques H. Blandin, Pontailler Sur Saone, both of France, assignors to Societe Nationale des Poudres et Explosifs, France

Filed July 27, 1973, Ser. No. 383,394

Int. Cl.² C06B *21/00*

U.S. Cl. 264—3 B **6 Claims**

1. The process of preparing a double-base propellant composition in which the position of the plateau is shifted towards lower speeds and pressures, which consists of manufacturing granules of a base powder, the essential component of which is nitrocellulose, a portion of said nitrocellulose having a nitrogen content higher than 12.6%, and a second portion having a nitrogen content at most equal to 12.6%, in a proportion at the most 60% of the nitrocellulose of higher nitrogen content, the average nitrogen content of the granules being greater than 12.6%, the two samples of nitrocellulose differing only in the nitrogen content, and gelatinizing said granules with an explosive oil.

3,979,487

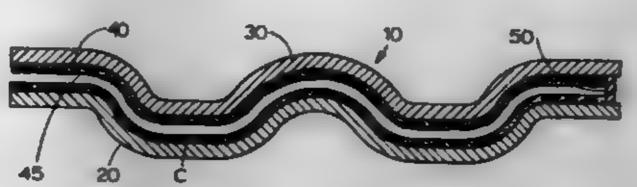
PROCESS FOR MANUFACTURING A FOAMED RESIN ARTICLE HAVING A FLOCKED THREE DIMENSIONAL SURFACE DESIGN

William H. Squier, Taylors, and William E. Poteat, Greer, both of S.C., assignors to M. Lowenstein & Sons, Inc., New York, N.Y.

Division of Ser. No. 294,353, Oct. 2, 1972, Pat. No. 3,852,146, which is a continuation-in-part of Ser. No. 272,340, July 17, 1972. This application Apr. 19, 1974, Ser. No. 462,438

Int. Cl.² B29C *27/14*; B29D *27/04*

U.S. Cl. 264—24 **17 Claims**



1. A process for producing a shaped foamed resin article having a three dimensional surface design along at least a portion of the surface of same comprising the steps of:

- a. providing a master mold, said mold having a plurality of matched sections, said sections having cavities therein that cooperate to define the contour of said shaped article;
- b. producing an exact reverse replica of the surface of an item whose three dimensional surface characteristics are to be imparted to at least a portion of the surface of said shaped article, said surface replica being produced by casting a room temperature vulcanizable polymer over the surface of a model of said item, permitting the polymer to vulcanize and removing the model;
- c. securing the reverse surface replica within and along the contour of such of said cavities as are desired to impart the three dimensional surface characteristics of said item to the predetermined surface of said article;
- d. casting a foam resin producing reaction mixture into certain of said mold sections;
- e. bringing all of said mold sections into registry;
- f. permitting said mixture to react and form said foam resin in conformity with said cavities and said reverse replica to produce a unitary foam resin article;
- g. removing said shaped, unitary foam resin article from said mold;
- h. applying adhesive over said replica surface of said produced foam resin article; and
- i. applying flock fibers over said surface where said adhesive has been applied to bond said fibers to said article and simulate surface characteristics of said item from which the reverse replica was made.

3,979,488

PROCESS OF CONTINUOUSLY BLENDING, MOLDING AND CURING HEAT CURABLE POLYMERIC COMPOUNDS

Milton Sharples Greenhalgh, Bridgeport, and Ray Clarence Lever, Fairfield, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Dec. 20, 1973, Ser. No. 426,964

Int. Cl.² B29F *1/08*

U.S. Cl. 264—40.7 **14 Claims**

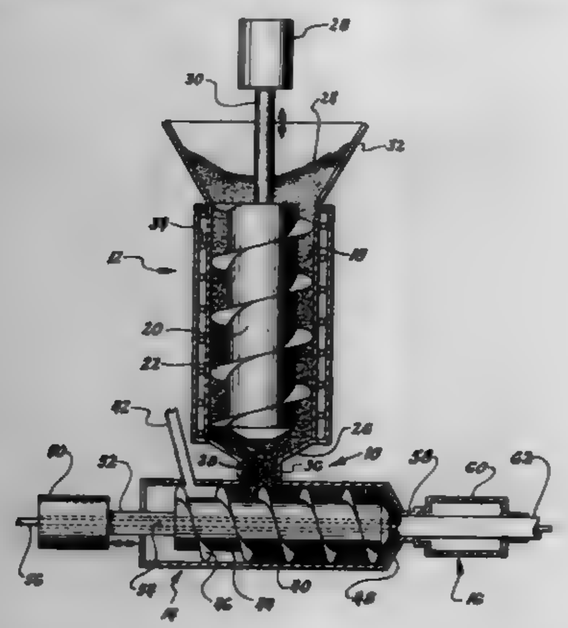
1. A process of continuously molding to shape and curing an ethylene-containing polymer and a heat-activated organic peroxide curing agent to a thermoset condition, comprising the steps of:

- a. continuously advancing a mass of an ethylene-containing polymer and a heat-activated organic peroxide curing agent through a preceding extruder comprising a barrel containing a rotatable screw and therein progressively mixing and fluxing said continuously advancing mass of ethylene-containing polymer and curing agent by mechanically working with the extruder screw rotating at about 20 to about 40 revolutions per minute, and heating said mass to a temperature of not higher than about 250°F;

b. continuously advancing the mass of ethylene-containing polymer and curing agent progressively from said preceding extruder to a subsequent extruder comprising a barrel and rotatable screw;

c. continuously advancing the mass of ethylene-containing polymer and curing agent through the subsequent extruder and therein progressively further mixing and fluxing said continuously advancing mass to a homogeneous melt and heating its mass uniformly therethrough up to at least about 350°F by vigorous mechanical working with the rotatable screw rotating at about 300 to about 400 revolutions per minute; and,

d. continuously and directly advancing said homogeneous molten mass of ethylene-containing polymer and curing agent heated to at least about 350°F, progressively through a forming die and thereby molding it to shape and completing the cure of the shaped polymeric compound to a thermoset condition.



3,979,489

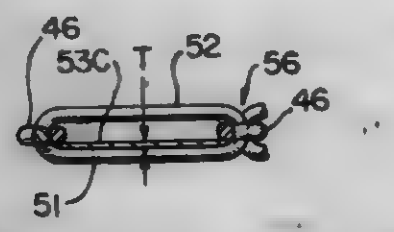
METHOD OF MAKING CARPET UNDERLAY

George R. Sprague, Dyersburg, Tenn., assignor to Colonial Rubber Works, Inc., Dyersburg, Tenn.

Division of Ser. No. 380,429, July 18, 1973. This application June 26, 1975, Ser. No. 590,663

Int. Cl.^{2} B29D *27/00*

U.S. Cl. 264—51 3 Claims



1. A method of making carpet underlay comprising the steps of forming an endless conveyor means of heat resistor wire-like mesh material having openings with heat resistant elongated flat strips inserted therein, forming a sheet of elastomeric material, depositing said sheet on said mesh material, heating said sheet to soften it and to cause it to droop around said mesh material, forming a plurality of U-shaped channels in the upper surface of said sheet as a result of said droop, limiting said droop on the lower surface of said sheet by means of said strips, further utilizing said strips to prevent said sheet from passing completely through said openings in said mesh material and simultaneously expanding and curing said formed sheet.

3,979,490

METHOD FOR THE MANUFACTURE OF TUBULAR BODIES OF SEMICONDUCTOR MATERIAL

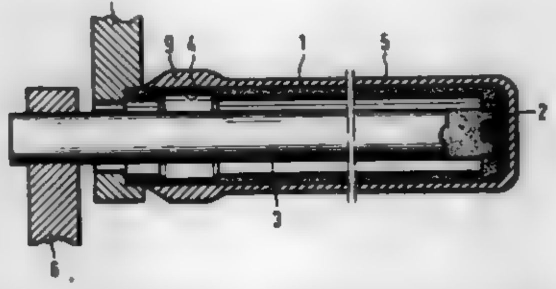
Wolfgang Dietze, Munich; Konrad Reuschel, Vaterstetten, and Andreas Kasper, Garching-Hochbruck, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich, Erlangen, Germany

Continuation of Ser. No. 205,492, Dec. 7, 1971, abandoned. This application Nov. 19, 1973, Ser. No. 417,380

Claims priority, application Germany, Dec. 9, 1970, 2060651

Int. Cl.^{2} B01J *17/30, 17/32*

U.S. Cl. 264—81 9 Claims



1. Method of producing a tubular shaped body of silicon semiconductor material and concurrently provide said tubular shaped body with an annular reinforcement, the steps of: heating by electrical means a rod or tube-shaped carrier body of carbon in the presence of reaction gases selected from the groups consisting of H_2 and $SiHCl_3$, or H_2 and $SiCl_4$, for the precipitation of said semiconductor material to temperature sufficient to cause precipitation out of said reaction gases of a layer of semiconductor material on the surface of the carrier body; simultaneously therewith, heating by electrical means, a surface of at least one annular zone, disposed about the periphery of the carrier body to a temperature different to that of the remainder of the carrier body to cause more rapid precipitation out on the surface of said annular zone of the carrier body to form an annular reinforcement of greater wall thickness than the tubular shaped body; and separating the tubular shaped body of semiconductor having an annular reinforcement from the carrier body.

3,979,491

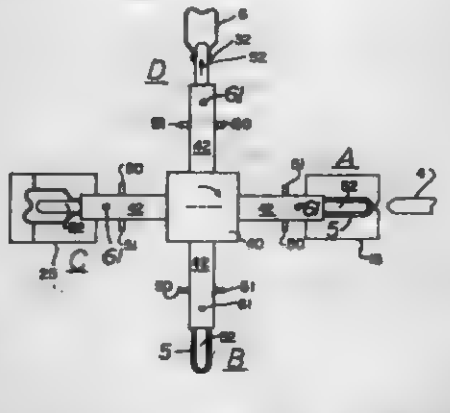
PROCESS FOR THE MANUFACTURE OF AN ORIENTED CONTAINER

Fred J. Zavasnik, Bolingbrook, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Nov. 24, 1971, Ser. No. 201,823

Int. Cl.^{2} B29C *17/07*

U.S. Cl. 264—97 2 Claims



1. A process for making a hollow article of thermoplastic material which comprises

a. injecting a thermoplastic material having a nitrile monomer content of at least 60% into an injection mold about a core to form a parison;

b. cooling the interior wall of the parison to a temperature just above its glass transition temperature and the exterior wall to a temperature below the glass transition temperature;

c. permitting the exterior wall to reheat to a temperature above the glass transition temperature by heat transfer from the interior of the parison; and

d. expanding the parison into a hollow article.

3,979,492

PROCESS FOR PRODUCING FIBERBOARD

Richard D. Sundie, Montvale, and Walter L. Pennie, Morristown, both of N.J., assignors to Allied Chemical Corporation, Morris Township, N.J.

Division of Ser. No. 431,535, Jan. 7, 1974, which is a division of Ser. No. 210,160, Dec. 20, 1971, Pat. No. 3,891,590. This application Dec. 6, 1974, Ser. No. 530,313

Int. Cl.^{2} B29J *5/04*

U.S. Cl. 264—119 8 Claims

1. A process for producing fiberboard comprising:

A. impregnating fibrous material in which the fibers have width and thickness shorter in extent than their length with a curable amino resin, said resin being prepared by:
  1. mixing the following ingredients to form component I:
    a. from about 15 to about 25 weight percent urea;
    b. from about 30 to about 70 weight percent formaldehyde;
    c. from about 4.5 to about 10 weight percent melamine;
    d. from about 10 to about 30 weight percent water;
    e. from about 0.05 to about 4.0 weight percent stabilizer, said stabilizer comprising a buffering agent which maintains the pH of the composition within the range from about 4.0 to about 7.5;
  2. mixing the following ingredients to form component II:
    a. from about 35 to about 50 weight percent urea;
    b. from about 45 to about 65 weight percent water; and
    c. from about 0.5 to about 3.0 weight percent catalyst which promotes the reaction of urea, melamine and formaldehyde; and
  3. mixing together from about 40 to about 60 parts of component I with correspondingly from about 60 to about 40 parts of component II to form the curable amino resin;

B. forming the impregnated fibrous material into a mat; and

C. compressing the mat to a desired thickness between pressing platens maintained at a temperature above 280°F. and at a pressure above 500 psi, until the resin becomes intimately bonded to the fibrous material thereby forming the fiberboard.

3,979,493

METHOD FOR PRODUCING GLASS FIBER REINFORCING MEMBERS

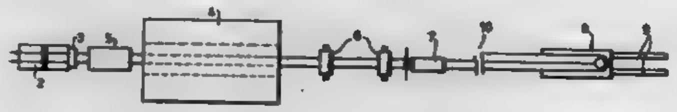
Neil McIver Cameron, Southport; Kenneth Cyril Thatcher, Billinge, and Frederick Paul Mallinder, Southport, all of England, assignors to Fibreglass Limited, St. Helens, England

Filed Aug. 15, 1974, Ser. No. 497,756

Claims priority, application United Kingdom, Jan. 7, 1974, 649/74

Int. Cl.^{2} B29G *7/00*

U.S. Cl. 264—145 6 Claims



1. In a method for producing glass fiber reinforcing straps with an anchorage point at least at one end comprising continuously passing resin-impregnated glass fiber rovings through a die to shape the rovings into a ribbon, and subsequent curing of the resin on passage of the shaped ribbon through a curing oven, the improvement comprising surrounding the ribbon prior to curing at selected discrete locations along its length by casings which travel with the ribbon through the curing oven, the casings serving to prevent or inhibit curing in said discrete locations so that the ribbon emerges from the oven with cured lengths of ribbon separated from one another by uncured portions, the casings being positioned so as to produce desired lengths of cured ribbon separated by desired lengths of uncured ribbon, cutting the ribbon after it leaves the curing oven to form individual straps having uncured portions between their ends so that a double strap can be formed by bending the strap back on itself at the uncured portion, thus forming an anchorage area for each strap at the uncured portion and then curing the uncured portions while formed as said anchorage area in a curing oven.

3,979,494

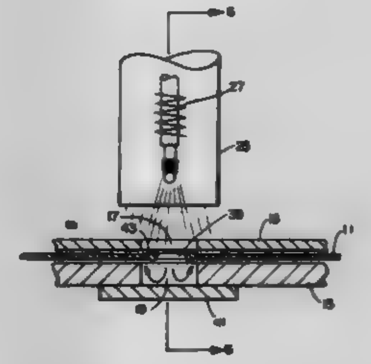
METHOD OF PERFORATING THERMOPLASTIC FILM

Alvin E. Ericson, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 446,060, Feb. 26, 1974. This application July 3, 1975, Ser. No. 593,130

Int. Cl.^{2} B29F *5/00;* B29D *7/20*

U.S. Cl. 264—154 2 Claims



1. A method of making an apexed hole having a varying thickness hole edge perimeter of melted and rehardened plastic in a thermoplastic film sheet material comprising the steps of;

masking the thermoplastic film sheet material with a heat resistant masking template having an opening therein of a size and apexed shape substantially congruent with a preselected size and apexed shape of the hole being formed;

disposing the thermoplastic film sheet material and the masking template on a backing template having an opening therein of a size and shape substantially similar to the size and shape of the opening in the masking template, the opening in the masking template and the opening in the backing template being juxtaposed in substantially concentric alignment;

directing a stream of gas heated to a temperature sufficient to effect rapid melting of the thermoplastic film material into impingement on the masking template and the thermoplastic film sheet material between the openings in the masking template and the backing template for a time sufficient to melt through the thermoplastic film sheet material between said openings, the concentric centerline of said stream being offset epicentrically from the concentric centerline of the juxtaposed openings in the masking and backing templates towards the apex of the hole being formed;

removing the stream of gas from impingement on the masking template; and

removing the thermoplastic film sheet material from the templates after the melted thermoplastic film material has at least partially rehardened.

3,979,495

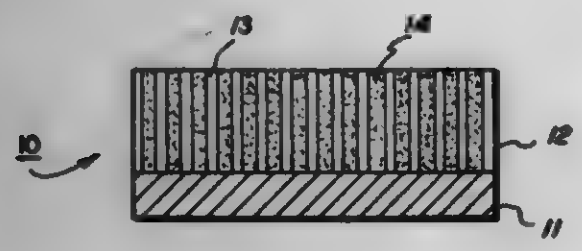
METHOD OF MAKING A PHOTORECEPTOR

Peter F. Erhardt, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 27, 1974, Ser. No. 527,664

Int. Cl.^{2} B29D *7/18*

U.S. Cl. 264—158 **2 Claims**



1. The method of making a photoconductive layer for use in a xerographic process, said layer having plural photoconductive paths oriented substantially perpendicular to a surface of said layer, said method consisting essentially of:

a. preparing a photoconductive block copolymer by anionic copolymerization of a polynuclear condensed aromatic vinyl compound selected from the group consisting of 3-vinylpyrene, 2-vinylanthracene, 2-propenyl-2-anthracene and 2-vinyl-N-alkyl carbazoles with a monomer selected from the group consisting of 1,3-butadiene, 1,3-pentadiene (piperyline), 2-methyl-1,3-butadiene (isoprene), 2,3-dimethyl-1,3-butadiene and cyclic octamethyl tetrasiloxane; and b) extruding and cooling a melt of said copolymer to form an extrusion having lamellae of at least two phases, one phase being photoconductive and the other phase being elastomeric, said lamellae being disposed in a direction lying substantially parallel to the direction of extrusion, and cutting said extrusion transversely to form said layer.

3,979,496

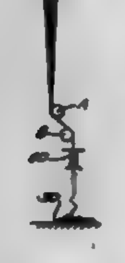
METHOD OF IMPARTING LATENT CRIMP IN POLYOLEFIN SYNTHETIC FIBERS

Eckhard C. A. Schwarz, 115 N. Park Ave., Neenah, Wis. 54956

Continuation-in-part of Ser. No. 434,314, Jan. 17, 1974, Pat. No. 3,949,041. This application Jan. 9, 1976, Ser. No. 647,829

Int. Cl.^{2} D01D *5/22*

U.S. Cl. 264—168 **11 Claims**



1. A method of forming latent crimp in synthetic thermoplastic addition polymers such as polyethylene and polypropylene, comprising the steps of:

A. Heating discrete spaced zones on one side of molecularly orientable filaments, to a temperature from about 100°to about 280°C for a time in seconds which is equal to X times denier per filament, where X is a value which falls within the range of 0.001 to 0.00001 and wherein the centers of said zones are spaced from 2 to 50 times the filament thickness, said heating of said zones being effected by guiding the filaments about a rotating heated grooved roll having circumferentially spaced lands generally parallel to the roll axis with the lands spaced 2 to 50 times the thickness of the filament;

B. Subsequently subjecting said filaments to molecular orientation by stretching them to a percent stretch which is at least (0.006/birefringence) − 0.5, by guiding the filaments at a first velocity rate over the grooved roll and drawing the filaments away from the grooved roll at a faster second rate.

3,979,497

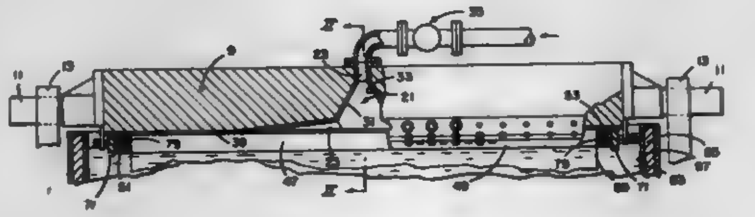
FILM EXTRUSION METHOD

Daniel J. Ryan, Chester, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jan. 14, 1974, Ser. No. 433,424

Int. Cl.^{2} D01F *2/00*

U.S. Cl. 264—187 **8 Claims**



1. A method for making a film in which beam formation along opposite longitudinal edges thereof is at least minimized including the steps of extruding a generally flat stream of coagulable solution through an elongated orifice and into a setting bath within which bath the extruded stream is coagulated into a film, imparting a concave contour along each of the opposite longitudinal edges of the stream of coagulable solution immediately prior to and during its passage through the elongated orifice, during the coagulation thereof advancing the extruded stream through the setting bath at a speed which is greater than the velocity at which the coagulable solution is extruded through the elongated orifice, and allowing the contoured edges of the extruded stream to freely reshape themselves into a generally rounded contour under the influence of interfacial surface tension forces acting upon such stream coagulable solution as it enters into and passes through the setting bath.

3,979,498

RECOVERY OF CESIUM AND PALLADIUM FROM NUCLEAR REACTOR FUEL PROCESSING WASTE

David O. Campbell, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Aug. 6, 1975, Ser. No. 602,503

Int. Cl.^{2} C01B *9/02;* **C01D** *17/00;* **C01G** *55/00*

U.S. Cl. 423—2 **3 Claims**

1. A method of recovering fission product Cs and Pd values from nitric acid fission product waste solution containing said Cs and Pd values and other fission product metal values, said solution resulting from reprocessing irradiated nuclear fuel, said method comprising oxidizing Pd ions present in said solution to Pd^{+4}, contacting said solution with a source of chloride ions capable of causing the precipitation of said Cs and Pd values as Cs_2PdCl_6, and recovering the resulting precipitate.

3,979,499

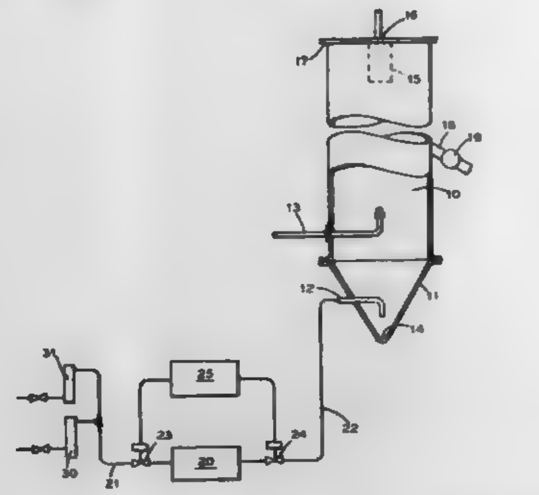
METHOD FOR REDUCING URANIUM TETRAFLUORIDE

Henry M. Heidt, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.

Continuation of Ser. No. 17,682, March 9, 1970, abandoned. This application Feb. 22, 1974, Ser. No. 444,624

Int. Cl.^{2} C01G *43/00*

U.S. Cl. 423—253 **3 Claims**



1. A process for the treatment of uranium hexafluoride which comprises the steps of passing of a flow of gaseous uranium hexafluoride to a reaction zone, passing a pulsed flow of a gaseous reactant medium comprising nitrogen and steam into the reaction zone to maintain a zone temperature of 450° to 600°F and a pressure slightly above atmospheric to enable the uranium hexafluoride to initially form only from said gases fine solid particles containing substantially only UO_2F_2, continuing the treatment of the uranium hexafluoride within said reaction zone to increase the size of the formed fine particles and to accumulate further fine particles in the reaction zone, and adjusting the rate of pulsed flow of reactant medium to the reaction zone by increasing the pressure of the reactant medium to a maximum pressure about twice atmospheric while simultaneously reducing the frequency of the pulsed flow in accordance with the amount of solid particles therein.

3,979,500

PREPARATION OF FINELY-DIVIDED REFRACTORY POWDERS OF GROUPS III-V METAL BORIDES, CARBIDES, NITRIDES, SILICIDES AND SULFIDES

Robert S. Sheppard, Doylestown, and Franklin E. Groening, Akron, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 356,544, May 2, 1973, abandoned. This application May 12, 1975, Ser. No. 576,835

Int. Cl.^{2} C01B *35/04, 21/06, 31/30, 33/06*

U.S. Cl. 423—289 **16 Claims**

1. In the process of producing finely-divided refractory powder selected from the group consisting of borides, carbides, silicides, nitrides and sulfides of a metal selected from groups III-V of the Periodic Chart of the Elements by vapor phase reaction in a reactor of a halide of the selected metal and a source of boron, carbon, silicon, nitrogen or sulfur respectively as reactants, wherein the reactants are introduced into a principal reactant mixing zone of the reactor through reactant inlet assembly means and reacted to produce a finely-divided powdery product and wherein powdery product tends to accumulate and grow on exposed surfaces of the reactant inlet assembly means that are exposed to said reactants, the improvement which comprises projecting a stream of hydrogen gas into the principal reactant mixing zone, introducing said reactants and substantially anhydrous hydrogen halide into the principal reactant mixing zone, said hydrogen halide being introduced in amounts sufficient to retard growth of powdery product on said exposed surfaces, the halide portion of said hydrogen halide corresponding to the halide of the selected metal, reacting said reactants out of contact with exposed surfaces of the reactor, and removing the powdery product from the reactor.

3,979,501

METHOD AND APPARATUS FOR CONVERTING NITROGEN DIOXIDE TO NITRIC OXIDE

Quade R. Stahl, Springfield, Va., assignor to Meloy Laboratories, Inc., Springfield, Va.

Filed Mar. 28, 1975, Ser. No. 562,819

Int. Cl.^{2} C01B *21/24*

U.S. Cl. 423—405 **3 Claims**

1. A method of converting nitrogen dioxide or the like in a gas to nitric oxide without significant conversion of ammonia, which comprises passing said gas over a copper-containing catalyst maintained at a temperature within the range of about 220°C to about 240°C.

3,979,502

METHOD OF ELIMINATING CHLOROACETYLENES PRESENT IN HYDROGEN CHLORIDE GAS

Yves Correia, and Francois Muller, both of Saint-Auban, France, assignors to Rhone-Progil, Courbevoie, France

Filed Nov. 25, 1974, Ser. No. 526,748

Claims priority, application France, Nov. 27, 1973, 73.42140

Int. Cl.^{2} C01B *7/08*

U.S. Cl. 423—488 **5 Claims**

1. A method of eliminating monochloroacetylene and dichloroacetylene in an impure hydrogen chloride gas containing same and other gaseous contaminants essentially comprising the steps of:

a. subjecting the chloroacetylenes to a hydrochlorination reaction by passing the impure hydrogen chloride gas through a bed of active carbon at a temperature from 50° – 250°C, and wherein the quantities of chloroacetylenes is not more than 2% by weight of the hydrogen chloride gas and the total percentage of impurities by weight is less than 5% of the weight of the hydrogen chloride gas, and in which the active carbon has a surface over of 700 – 1600 m^2, and for a sufficient period of time until the hydrogen chloride gas leaving the reactor is essentially complete free of the said chloroacetylenes;

b. recovering the purified hydrogen chloride gas.

3,979,503

METHOD AND APPARATUS FOR PROCESSING FLUID MATERIALS PARTICULARLY IN THE PREPARATION OF SAMPLES FOR RADIOACTIVE ISOTOPE TRACER STUDIES

Nilio H. Kaartinen, Turku, Finland, assignor to Packard Instrument Company, Inc., Downers Grove, Ill.

Continuation of Ser. No. 728,939, May 14, 1968, abandoned. This application Aug. 2, 1972, Ser. No. 277,261

The portion of the term of this patent subsequent to Dec. 23, 1986, has been disclaimed.

Int. Cl.^{2} C01B *5/02, 31/20;* **C09K** *11/04*

U.S. Cl. 423—580 **17 Claims**

1. A method of preparing isotope-containing samples for use in studies utilizing radioactive isotopes, said method comprising the steps of

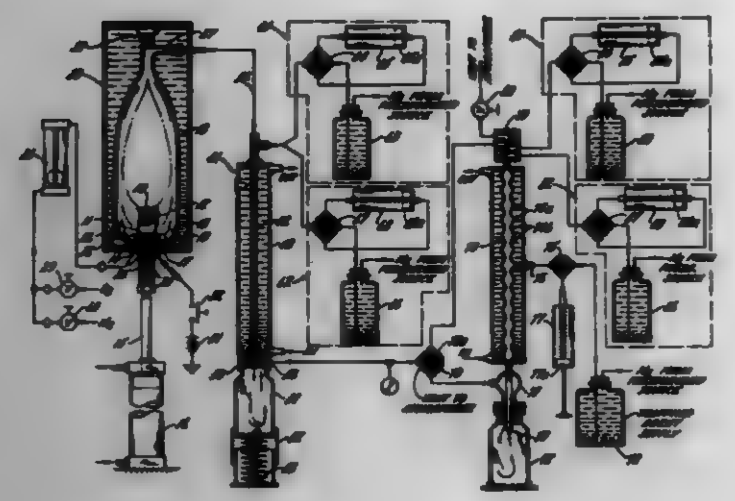
a. combusting a sample of material containing the isotope tritium in a combustion chamber to produce combustion products containing tritiated water vapor,

b. continuously exhausting the tritiated water vapor from said combustion chamber during the combustion of said material,

c. continuously cooling the exhausted combustion products in a heat exchanger to convert the tritiated water vapor to a liquid during the combustion of said material,

d. continuously removing said isotope-containing liquid from said heat exchanger during the combustion of said material and transferring said liquid to a sample collec-

tion vessel to provide a liquid sample containing the recovered isotope for use in studies utilizing radioactive isotopes,



e. and purging said combustion chamber and heat exchanger between the combustion of successive isotope-containing samples.

3,979,504
CALCINING METHOD FOR ALUMINA

William C. Ziegenhain; David V. Perchey, both of Ponca City, and Ralph T. Ferrell, Norman, all of Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 355,627, April 30, 1973, which is a continuation-in-part of Ser. No. 261,477, June 9, 1972, abandoned. This application Jan. 6, 1975, Ser. No. 538,991

Int. Cl.² C01F *7/00*

U.S. Cl. 423—628 **5 Claims**

1. In a process for producing a low-density, high-porosity, high-surface area product alumina from an aqueous alumina slurry containing up to about 32 weight percent Al_2O_3 and produced by:

a. hydrolyzing aluminum alkoxides with an effective amount of water to form an organic reaction product and an aqueous alumina slurry; and,

b. thereafter separating the aqueous alumina slurry from the organic reaction product in the absence of steam stripping.

wherein said aqueous alumina slurry is contacted with an organic solvent selected for the group consisting of ethanol, propanol, isopropanol, butanol, isobutanol and tertiary butanol in an amount sufficient to produce a product alumina having a loose bulk density from about 7.5 to about 25 lb/ft³, a surface area from about 275 to about 400 m²/g and a pore volume from about 1 to about 2.75 cc/g, to form a solvent-aqueous alumina mixture; said mixture is dried and said dried alumina is calcined and said product alumina is recovered, the improvement comprising

a. calcining said dried alumina at a temperature in excess of at least 500°F in an inert atmosphere selected from the group consisting of nitrogen, argon, helium, hydrogen, carbon monoxide, and mixtures thereof;

b. cooling the calcined alumina to a temperature below about 300°F in the presence of said inert atmosphere; and

recovering said product alumina, said product alumina being substantially white and extrudable.

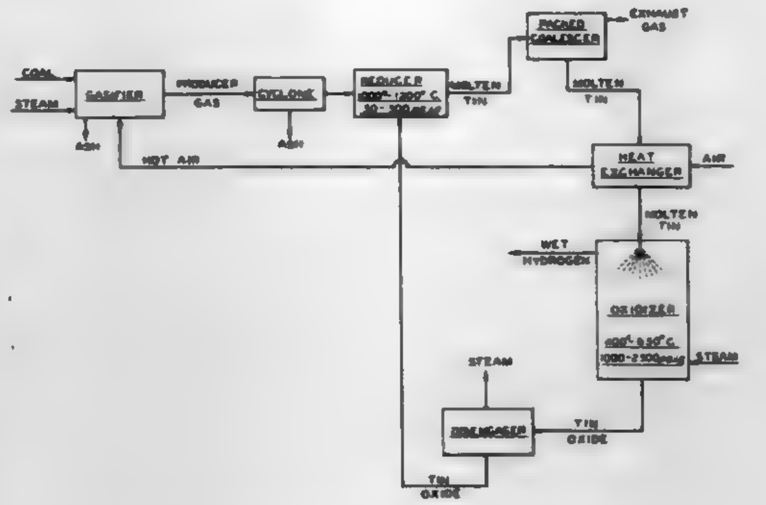
3,979,505
METHOD FOR MAKING HYDROGEN

Walter H. Seitzer, West Chester, Pa., assignor to Sun Ventures, Inc., St. Davids, Pa.

Filed Sept. 3, 1974, Ser. No. 502,476

Int. Cl.² C01B *1/02, 1/08*

U.S. Cl. 423—657 **5 Claims**



1. A process for manufacturing hydrogen which comprises reducing SnO_2 in a reducing zone at about 1000° to about 1200°C. with a reducing gas to form molten tin, feeding the molten tin as a spray into an oxidizer zone containing steam maintained at about 400° to about 650°C. and at a about 1000 to about 2500 psig, whereby the reaction of the tin with the steam forms hydrogen and tin oxide, separating hydrogen product under pressure and recycling the tin oxide to the reducing zone.

3,979,506
RADIOACTIVE COMPOUNDS FOR LABELING PROTEINS

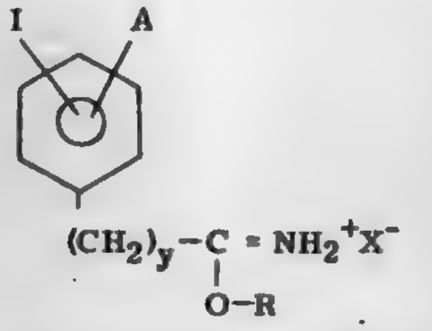
Paul K. Smith, Rockford, Ill., assignor to Pierce Chemical Company, Rockford, Ill.

Filed Oct. 11, 1974, Ser. No. 514,139

Int. Cl.² A61K *43/00;* C07C *119/00, 122/00*

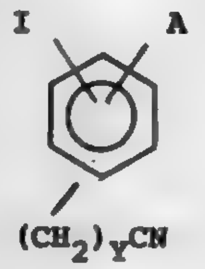
U.S. Cl. 424—1 **11 Claims**

1. A compound having the structural formula



wherein I is a radioactive isotope; A is hydroxy or an alkoxy group; y is an integer; R is an alkyl group; and X is a halogen.

5. A compound having the structural formula



wherein I is a radioactive isotope; A is hydroxy or an alkoxy group and y is an integer.

3,979,507
DIAGNOSTIC SYSTEM FOR ORGAN ABNORMALITIES

Albert Leroy Baker, Matteson, Ill., assignor to Wilson Pharmaceutical & Chemical Corporation, Chicago, Ill.

Filed Nov. 23, 1973, Ser. No. 418,618

Int. Cl.² A61K *43/00, 39/00;* G01T *1/16*

U.S. Cl. 424—1.5 **12 Claims**

1. A method of diagnosing a patent for an abnormal condition of a specific organ which comprises taking a sample of blood from said patient, adding to a soluble fraction of said blood a diagnostic material with respect to said specific organ and measuring any reaction product resulting from said addition, said diagnostic material comprising antibodies to at least one antigen normally present in the tissue of said specific organ of a healthy human and substantially free of any antibodies to all antigens present in the blood of a healthy human.

3,979,508
COMPOSITIONS AND METHODS THEREWITH FOR PENICILLIN HYPERSENSITIVITY DETECTION

Mark A. Stahmann, Madison, and Sudhakar S. Wagle, Mequon, both of Wis., assignors to Kremers-Urban Company, Milwaukee, Wis.

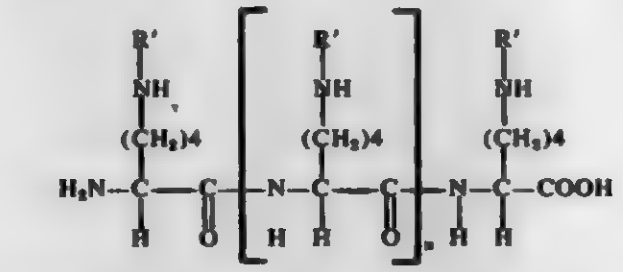
Division of Ser. No. 274,325, July 24, 1972, Pat. No. 3,867,365, which is a continuation-in-part of Ser. No. 61,514, Aug. 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 656,323, July 27, 1967, abandoned. This application Jan. 10, 1975, Ser. No. 539,987

Int. Cl.² A61K *29/00, 31/43, 37/02*

U.S. Cl. 424—9 **22 Claims**

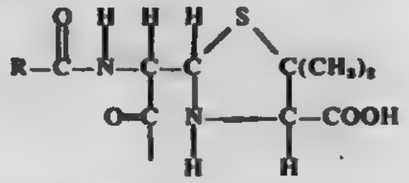
1. A composition useful for eliciting cutaneous responses in persons with penicillin hypersensitivity, comprising at least one

water soluble penicilloyl-polylysine conjugate represented by the formula:



wherein: *n* is an integer from about 10 to about 100; and

R' is selected from the class consisting of H and the penicilloyl substituents represented by the formula:



wherein R is selected from the group consisting of benzyl, allylthiomethyl, phenoxyethyl, phenoxymethyl, 2,6-dimethoxyphenyl, 5-methyl-3-phenyl-4-isoxazolyl, 2-ethoxy-1-naphtyhyl, and alpha-aminobenzyl, and in which at least 40% of said R' groups are the penicilloyl substituents;

wherein said conjugate has an optical rotation corrected for the contributions of said polylysine in said conjugate yielding a specific rotation in excess of $[\alpha]_D^{25} + 100°$ for 1×10^{-3} M penicilloyl groups contained in the conjugate;

said conjugate is free from penamaldate and penicillenate groups;

said conjugate is soluble in water without succinylation;

said conjugate, in an effective amount, contained in a suitable pharmaceutical carrier for intra-cutaneous testing.

12. The method of detecting penicillin hypersensitivity which comprises applying to a patient the composition of claim 1 by a scratch test technique or intracutaneous injection.

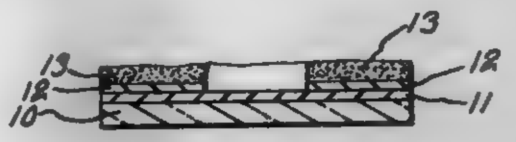
3,979,509
OPAQUE LAYER METHOD FOR DETECTING BIOLOGICAL PARTICLES

Ivar Giaever, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 3, 1974, Ser. No. 503,030

Int. Cl.² G01N *33/16, 21/04*

U.S. Cl. 424—12 **29 Claims**



1. A diagnostic method for detecting the presence or absence of select biological particles in a liquid sample comprising the steps of

contacting surface area of a substrate with first biological particles, said first biological particles being specific to the select biological particles and being disposed as a first layer coating said surface area,

contacting the coated surface area of said substrate with the liquid sample for a preselected period of time,

depositing a porous, opaque layer of particles over said surface area so processed, said particles being nonreactive with the substrate member, the first biological particles, the sample liquid and the cleaving agent solution to be subsequently employed,

contacting the surface area as modified by the preceding steps with a cleaving agent solution, said said solution being capable of selectively destroying such bonding as may exist between said first biological particles and select biological particles, and

examining said porous, opaque layer to determine whether said porous, opaque layer is intact or has a portion thereof removed, the latter being indicative of the presence of select biological particles in the liquid sample.

3,979,510
ALUMINUM-ZIRCONIUM ANTI-PERSPIRANT SYSTEMS WITH COMPLEX ALUMINUM BUFFERS

Andrew M. Rubino, New Providence, N.J., assignor to Armour Pharmaceutical Company, Phoenix, Ariz.

Continuation-in-part of Ser. Nos. 418,712, Nov. 23, 1973, and Ser. No. 431,639, Jan. 8, 1974, and Ser. No. 433,931, Jan. 16, 1974. This application June 7, 1974, Ser. No. 477,544

Int. Cl.² A61K *7/32*

U.S. Cl. 424—47 **17 Claims**

1. An astringent, water soluble complex formed by reacting the following components (a), (b) and (c) in aqueous medium:

a. a basic aluminum compound selected from the group having the general empirical formula:

$Al_2(OH)_{6-nx}A_x$

wherein *x* may vary from greater than 0 to less than 6, 6—*nx* is greater than or equal to 0, *n* is the valence of A, and A is selected from the group consisting of halide, nitrate, sulfamate, sulfate and mixture thereof;

b. a zirconium compound selected from trioxodizirconium salts and the group having the general empirical formula:

$ZrO(OH)_{2-nz}B_z$

wherein *z* may vary from 0.9 to 2, *n* is the valence of B, 2—nz is greater than or equal to 0, and B is selected from the group consisting of halide, nitrate, sulfamate, sulfate and mixture thereof; and

c. a complex aluminum buffer compound selected from the group consisting of hydrated magnesium aluminate, hydrated magnesium aluminum sulfate, and the co-dried or co-precipitated reaction product of aluminum hydroxide with a carbonate selected from the group consisting of magnesium carbonate, calcium carbonate, sodium carbonate and mixtures thereof;

said basic aluminum and zirconium compounds being present in such amounts as to yield an Al/Zr mole ratio of about 10:1 to 1:10, and said buffer compound being present in such an amount that the pH of a 5 to 15 weight percent (based on the oxides of Al and Zr) aqueous solution of the complex is at least about 3.

3,979,511
INHIBITORS OF REVERSE TRANSCRIPTASE ENZYMES

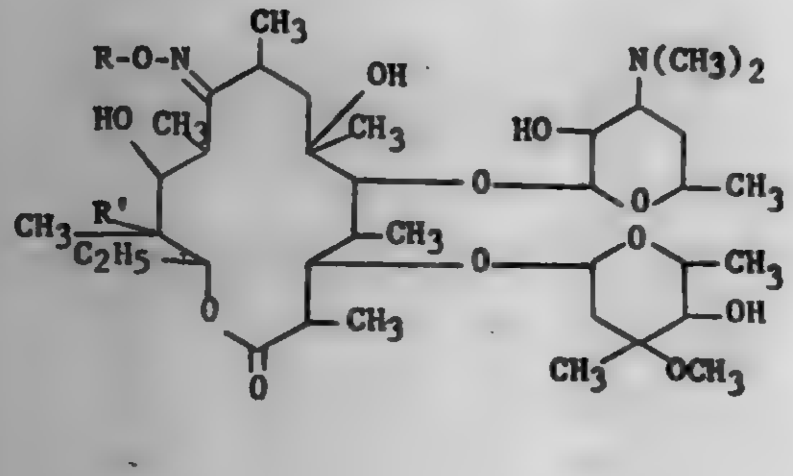
Paul P. Hung; Nathan L. Shipkowitz, both of Waukegan, and Anne Mary Von Esch, North Chicago, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed May 23, 1974, Ser. No. 472,564

Int. Cl.² A61K *31/71*

U.S. Cl. 424—181 **6 Claims**

1. A method for inhibiting the activity of reverse transcriptase in Rous sarcoma viruses in an animal which comprises administering to an animal being infected with said virus an effective amount for inhibiting said enzyme of a compound of the formula



wherein R¹ is hydrogen or hydroxyl and R is C_1-C_8 alkyl, cyclohexyl, phenyl, benzyl and 3,4 dichlorobenzyl.

3,979,512
S-(AMIDOCARBONYL)-METHYL-O-ALKYL-MONOTHIOPHOSPHORIC ACID ESTER AMIDES

Claus Stölzer, Wuppertal-Vohwinkel; Ingeborg Hammann, Cologne, and Günter Unterstenhöfer, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

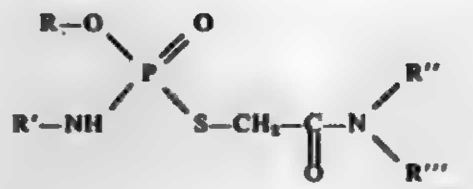
Division of Ser. No. 385,001, Aug. 2, 1973, Pat. No. 3,907,938. This application Mar. 24, 1975, Ser. No. 561,589

Claims priority, application Germany, Aug. 16, 1972, 2240032

Int. Cl.² C07D *295/10*

U.S. Cl. 424—200 **7 Claims**

1. An S-(amidocarbonyl)-methylmonothiophosphoric acid ester amide of the formula



(I)

in which

R and R' each independently is alkyl of 1 to 6 carbon atoms, and

R'' and R''' conjointly with the nitrogen atom to which they are attached form a piperidino, morpholino, thiazolino or diazolino ring.

5. An insecticidal or acaricidal composition comprising an insecticidally or acaricidally effective amount of a compound according to claim 1 in admixture with a diluent.

3,979,513
1'-SUBSTITUTED-9,10-DIHYDROANTHRACENE-9-SPIRO-4'-PIPERIDINE DERIVATIVES

Ronald Hilson Begg Galt, and Alasdair Thomas Glen, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

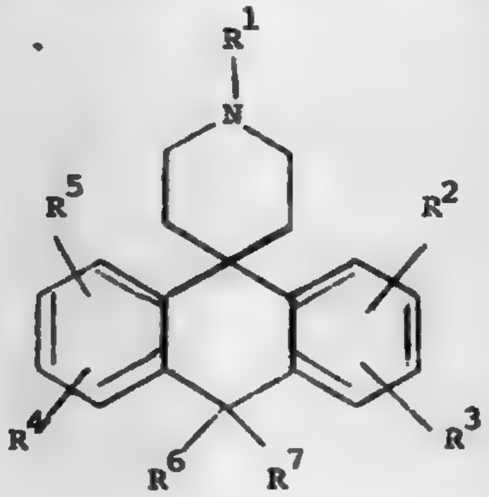
Filed Jan. 16, 1975, Ser. No. 541,693

Claims priority, application United Kingdom, Feb. 4, 1974, 5018/74

Int. Cl.² C07D *221/20*

U.S. Cl. 424—267 **10 Claims**

1. A dihydroanthrancene derivative of the formula:-



wherein

R¹ is selected from the group consisting of
- 1. hydrogen;
- 2. alkyl of 1 to 10 carbons;
- 3. alkenyl of 3 to 8 carbons wherein the double bond it contains is separated from the nitrogen atom of the spiropiperidine ring by at least one carbon;
- 4. cycloalkylalkyl of 4 to 7 carbons, optionally substituted in the cycloalkyl nucleus by an aryl of 6 to 10 carbons or by one or two alkyls of 1 to 3 carbons;
- 5. arylalkyl of 4 to 10 carbons, optionally substituted in the aryl nucleus by one to three halogens or alkyls of 1 to 3 carbons;
- 6. hydroxyalkyl of 2 to 5 carbons wherein the oxygen atom it contains is separated from the nitrogen atom of the spiropiperidine ring by at least two carbons; and
- 7. dialkylaminoalkyl of 4 to 8 carbons wherein the nitrogen atom it contains is separated from the nitrogen atom of the spiropiperidine ring by at least two carbons;

R², R³, R⁴ and R⁵, which may be the same or different, are selected from the group consisting of
- 8. hydrogen;
- 9. halogen;

- 10. alkyl of 1 to 5 carbons;
- 11. haloalkyl of 1 to 5 carbons;
- 12. alkoxy of 1 to 5 carbons;
- 13. hydroxy;
- 14. alkanoyloxy of 1 to 5 carbons;
- 15. aroyloxy of 7 to 10 carbons, optionally substituted in the aryl nucleus by one to three halogens or alkyls of 1 to 3 carbons; and
- 16. hydroxyalkyl of 1 to 5 carbons;

R⁶ is selected from the group consisting of
- 17. hydrogen;
- 18. alkyl of 1 to 3 carbons;
- 19. alkylthio of 1 to 3 carbons;
- 20. alkanoyloxy of 1 to 3 carbons; and
- 21. hydroxy;

and R⁷ is selected from the group consisting of
- 22. hydrogen; and
- 23. alkyl of 1 to 3 carbons;

or R⁶ and R⁷ together stand for
- 24. oxygen or
- 25. methylene;

and the pharmaceutically-acceptable acid-addition salts thereof.

10. A method of relieving or preventing pain in warm-blooded animals including man which comprises administering an analgesically-effective amount of a compound of claim 1.

3,979,514
PROCESS FOR INTERRUPTING PREGNANCY WITH SULFONAMIDOAMINOPHENE INTERCEPTIVE AGENTS

Duane G. Gallo, and William T. Comer, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

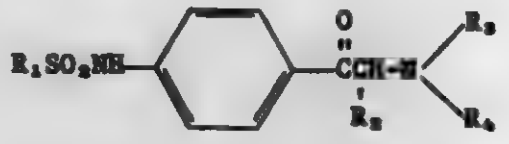
Filed Aug. 26, 1974, Ser. No. 500,809

The portion of the term of this patent subsequent to July 6, 1993, has been disclaimed.

Int. Cl.² A61K *31/33*

U.S. Cl. 424—244 **14 Claims**

1. A process for interrupting pregnancy in a pregnant female mammal capable of resorbing an implanted fertilized ovum comprising orally or parenterally administrating to said mammal an interceptive agent during the interceptive stage in an effective dose to cause resorption of said implanted fertilized ovum and said interceptive agent is an aminoketone of the formula



or a pharmaceutically acceptable acid addition salt thereof wherein

R_1 is methyl or ethyl;

R_2 is alkyl of 1 to 3 carbon atoms inclusive,

R_3 is hydrogen, lower alkyl of 1 to 4 carbon atoms inclusive or benzyl;

R_4 is lower alkyl of 1 to 5 carbon atoms inclusive; aralkyl up to 15 carbon atoms inclusive, haloaralkyl up to 15 carbon atoms inclusive; alkyl, 2-propynyl, adamantyl, cycloalkyl of 3 to 6 carbon atoms inclusive; and

R_3 and R_4 taken together with nitrogen represents morpholino, thiomorpholino, hexahydro-1H-azepinyl or pyrrolidinyl.

3,979,515
NOVEL DIBENZO(B,F)AZEPINES AS THYMOANALEPTICS

André Allais, Les Lilas, and Andre Poittevin, Vaires sur Marne, both of France, assignors to Roussel-UCLAF, Paris, France

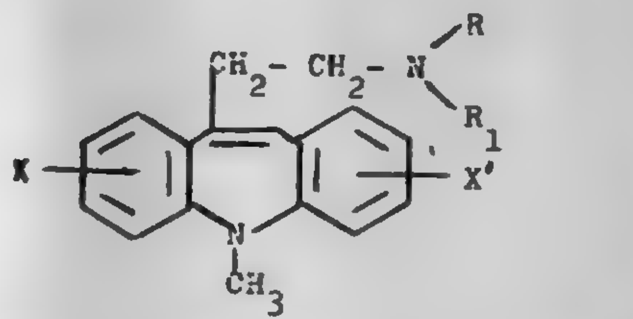
Division of Ser. No. 40,410, May 25, 1970, abandoned. This application Dec. 18, 1974, Ser. No. 533,846

Claims priority, application France, May 28, 1969, 69.17373

Int. Cl.² A61K *31/33*; C07D *9/00*; C07F *9/00*

U.S. Cl. 424—244 **10 Claims**

2. A method of inducing thymoanaleptic activity in warm-blooded animals which comprises administering to warm-blooded animals an amount effective to induce thymoanaleptic activity of a compound selected from the group consisting of 5-methyl-10-(β-alkylaminoethyl) dibenzo (*b,f*) azepine of the formula



wherein R is lower alkyl, R_1 is selected from the group consisting of hydrogen and lower alkyl and X and X' are selected from the group consisting of hydrogen and halogen and its non-toxic, pharmaceutically acceptable acid addition salt.

3,979,516
ANTI-INFLAMMATORY
3-AMINO-5,6-DIARYL-1,2,4-TRIAZINES

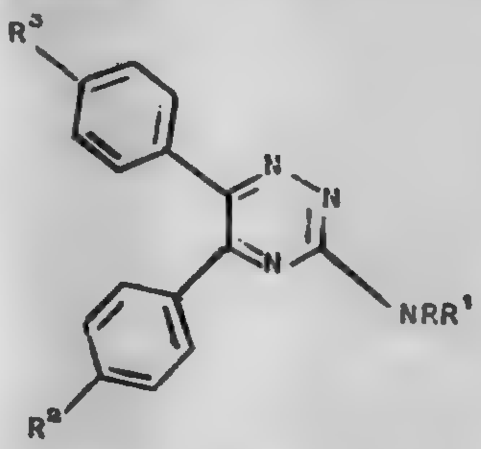
William B. Lacefield, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 438,158, Jan. 31, 1974. This application June 23, 1975, Ser. No. 589,737

Int. Cl.² A61K *31/53*, *31/535*

U.S. Cl. 424—249 **9 Claims**

1. The method of treating inflammation in a warm-blooded animal which comprises orally administering to said animal between 1.0 mg./kg. to 150 mg./kg. of body weight a compound of the formula:



wherein

R and R¹, when taken separately are hydrogen,

C_1–C_3 alkyl or $-CH_2CH(OH)$-R⁴, R⁴ being hydrogen, methyl or ethyl;

R and R¹, when taken together with the nitrogen atom to which they are attached, are selected from the heterocyclic group consisting of
- 1. 4-(β-hydroxyethyl)piperazino,

2. 4-hydroxypiperidino
3. 4-methylpiperazino
4. piperidino and
5. pyrrolidino;

R^2 and R^3 are independently C$_1$–C$_3$ alkoxy, dimethylamino, fluoro or methylsulfinyl; and a pharmaceutically acceptable acid addition salt thereof; subject to the limitations [illegible]

1. when one of R and R^1 is hydrogen, the other is —CH(OH)-R^4;
2. when R^2 is fluoro, R^3 is C$_1$–C$_3$ alkoxy; and
3. when R^3 is fluoro, R^2 is C$_1$–C$_3$ alkoxy or dimethylamino.

3,979,517
CHEMOSTERILIZATION IXODIDES

Roger Williams Addor, Pennington, and Sidney Kantor, Trenton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 225,278, Feb. 10, 1972, abandoned. This application June 27, 1974, Ser. No. 483,484

Int. Cl.^{2} A01N *9/12*

U.S. Cl. 424—277 4 Claims

1. A method for protecting warm-blooded animals against attack by Ixodides comprising, topically treating said warm-blooded animals with an amount effective for chemosterilizing Ixodides of a compound which is 2-(4-chloro-2-methylphenyl)imino-1,3-dithietane; 2-(2-methyl-4-bromophenylimino)-1,3-dithietane; 2-(2-methylphenylimino)-1,3-dithietane; 2-(2,5-dimethylphenylimino)-1,3-dithietane; 2-(2,4,5-trimethylphenylimino)-1,3-dithietane; 2-(2-methyl-3-chlorophenylimino)-1,3-dithietane; 2-(2,4-dimethylphenylimino)-1,3-dithietane; 2(2,4-dichlorophenylimino)-1,3-dithietane; 2-(2-methoxyphenylimino)-1,3-dithietane; 2-(2-chlorophenylimino)-1,3-dithietane; 2-(2,6-diethylphenylimino)-1,3-dithietane; 2(2-bromo-4-methylphenylimino)-1,3-dithietane or 2-(2-chloro-4-methylphenylimino)-1,3-dithietane.

3,979,518
FUNGICIDAL ALKOXY SUBSTITUTED 2-CYANOACETAMIDE DERIVATIVES

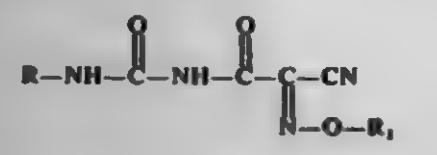
Hein Louis Klopping, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 11, 1975, Ser. No. 612,547

Int. Cl.^{2} A01N *9/20;* C07C *121/417*

U.S. Cl. 424—304 5 Claims

1. A compound of the formula



$$R-NH-\overset{O}{\overset{\|}{C}}-NH-\overset{O}{\overset{\|}{C}}-\underset{N-O-R_1}{\underset{\|}{C}}-CN$$

wherein R is CH$_3$OCH$_2$— or CH$_3$O(CH$_2$)$_2$— and R$_1$ is alkyl of 1 or 2 carbons.

3. A composition useful for inhibiting fungus disease in plants consisting essentially of a fungus inhibiting amount of a compound of claim 1.

3,979,519
INSECTICIDAL ESTERS

Nazim Punja, Wokingham, England, assignor to Imperial Chemical Industries Limited, London, England

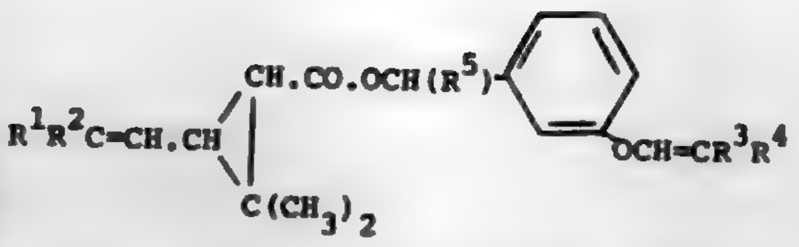
Filed Dec. 5, 1975, Ser. No. 638,282

Claims priority, application United Kingdom, Dec. 5, 1974, [illegible]

Int. Cl.^{2} A01N *9/20, 9/24;* C07C *69/74, 121/75*

U.S. Cl. 424—304 14 Claims

1. A compound of formula:



wherein R^1 and R^2 represent halogen radicals or lower alkyl groups; R^3 and R^4 represent halogen radicals; and R^5 represents a hydrogen atom or the cyano radical.

12. An insecticidal composition for use in agriculture or horticulture comprising as an active ingredient a compound according to claim 1 in association with an agriculturally or horticulturally acceptable diluent.

3,979,520
PREPARATION OF RAPIDLY RESORBABLE GLIBENCLAMIDE

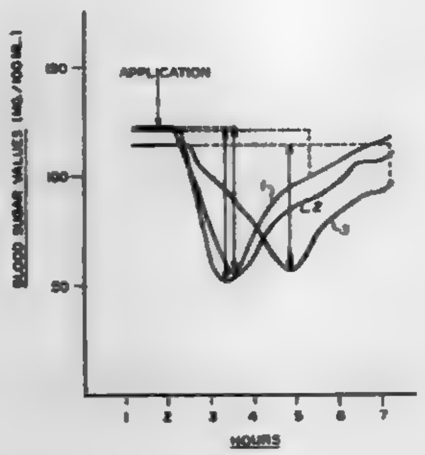
Werner Rothe, Hockenheim; Helmut Heinemann, Heidelberg; Felix Helmut Schmidt, Mannheim-Seckenheim, and Günter Betzien, Mannheim, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim, Germany

Filed Sept. 20, 1974, Ser. No. 508,001

Claims priority, application Germany, Sept. 26, 1973, 2348334

Int. Cl.^{2} A61K *31/17*

U.S. Cl. 424—321 5 Claims



1. A process for the preparation of a blood sugar-lowering composition comprising dissolving glibenclamide in a water-miscible organic solvent, combining said solution with water to precipitate out the glibenclamide with a surface area of about 3 to 10 m^2/g, and combining the precipitated material with about 2 to 100 times its weight of a pharmacologically acceptable dispersion agent.

3,979,521
METHOD FOR THE MANUFACTURE OF FRUIT WINES FROM FRUIT JUICES OF LOW SUGAR CONTENT

Yasuhiro Sakaguchi, Yokohama; Kiyoshi Ishii, and Katumi Kojima, both of Ohimachi, all of Japan, assignors to Daicel Ltd., Osaka, Japan

Filed May 23, 1975, Ser. No. 580,295

Claims priority, application Japan, May 28, 1974, 49-60019

Int. Cl.^{2} C12G *1/00*

U.S. Cl. 426—15 7 Claims

1. A method of manufacturing fruit wine, starting with a crude fruit juice containing from about 9 to about 20 percent by weight of sugars and containing hydroxycarboxylic acids and amino acids, which comprises the steps of:

flowing said crude fruit juice in contact with a semi-permeable separation membrane and thereby removing water and from 10 to 60 percent by weight of said hydroxycarboxylic acids and amino acids from said crude fruit juice, and recovering a concentrated fruit juice containing from about 20 to about 40 percent by weight of said sugars constituting essentially all of the sugars originally present in the crude fruit juice, said concentrated fruit juice also containing the remainder of said hydroxycarboxylic acids and amino acids; inoculating said concentrated fruit juice with a wine-making yeast; fermenting said inoculated concentrated fruit juice to transform same into a fruit wine and aging said wine.

3,979,522
BIOCHEMICAL PROCESS FOR THE SYNTHESIS OF PROTEIN FROM CELLULOSE AND STARCH-CONTAINING PLANTS

Henry L. Scott, 204 E. Houghton, Tuscola, Ill. 61953

Filed Aug. 13, 1975, Ser. No. 604,239

Int. Cl.^{2} A21D *2/00*

U.S. Cl. 426—18 11 Claims

1. A biochemical process for the synthesis of protein from cellulose and starch-containing plants, said plants including a compound containing a CN$^-$ radical, which comprises hydrolyzing the starch therein to sugars, substantially removing said CN$^-$ compound, introducing a food yeast to the mixture and aerobically growing the food yeast on the sugars while introducing ammonia into the mixture during growth of the yeast, said CN$^-$ compound being removed prior to growing the yeast.

3,979,523
REDUCED CALORIE BREAD AND METHOD OF MAKING SAME

Stanley T. Titcomb, Portchester, and Arthur A. Juers, Baldwin, both of N.Y., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed July 30, 1974, Ser. No. 494,011

Int. Cl.^{2} A20D *2/00*

U.S. Cl. 426—19 5 Claims

1. A reduced calorie white enriched bread having fewer calories compared to conventional white enriched bread equal in size and volume, the bread consisting essentially of about 10 parts by weight of wheat gluten, about 5–6 parts by weight of brown sugar, and 22–25 parts by weight of an alpha-cellulose per 100 parts by weight of wheat flour.

3,979,524
METHOD OF COLD STERILIZATION AND PRESERVATION OF FOOD PRODUCTS USING DIMETHYL DICARBONATE

Peter D. Bayne, Shorewood, Wis., assignor to Logica International Corporation, Milwaukee, Wis.

Division of Ser. No. 526,529, Nov. 25, 1974, Pat. No. 3,936,269. This application Jan. 30, 1976, Ser. No. 653,657

Int. Cl.^{2} A23B *4/08, 7/14;* A23L *3/34, 3/36*

U.S. Cl. 426—305 9 Claims

1. A method of cold sterilizing and preserving a perishable food product during shipment and storage, comprising the steps of applying a coating of liquid dimethyl dicarbonate to the outer surface of the food product, cooling the coating to a temperature below 16°C to solidify the coating, said coating acting to protect the food product from spoilage during shipment and storage, and thereafter washing the coating from the food product prior to usage.

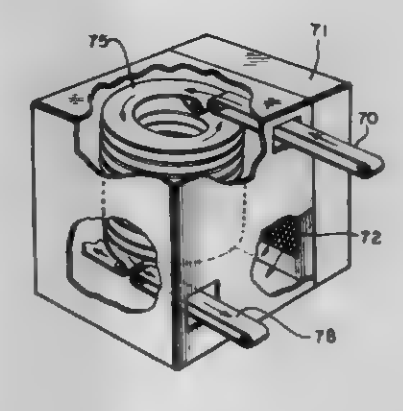
3,979,525
PROCESS FOR RETARDING MOLD GROWTH IN PARTIALLY BAKED PIZZA CRUSTS AND ARTICLES PRODUCED THEREBY

Robert F. Plemons, Danville, Ill.; Charles H. Staff, Omaha, Nebr., and J. F. Ross Cameron, Costa Mesa, Calif., assignors to Fairmont Foods Company, Culver City, Calif.

Continuation-in-part of Ser. No. 353,698, April 23, 1973, abandoned. This application May 7, 1975, Ser. No. 575,439

Int. Cl.^{2} A21D *13/00*

U.S. Cl. 426—321 20 Claims



1. A method for increasing the shelf life at room or lower temperatures of partially baked pizza crusts by retarding the growth of viable mold spores on the surfaces of the partially baked pizza crusts, which comprises:

a. partially baking the pizza crusts at a temperature and for a time sufficient to reduce the moisture content of the pizza crusts to between 25% and 50% by weight and to reduce the water activity of the pizza crusts to not greater than 0.96;

b. cooling the partially baked pizza crusts to a temperature below ambient;

c. treating substantially the entire surface of the cooled, partially baked pizza crusts, contaminated on at least some surfaces thereof with viable mold spores, with from 0.001 to 0.02 ml of ethyl alcohol per sq cm of crust surface; and

d. packaging the alcohol treated, partially baked pizza crusts within a period of time following said ethyl alcohol treatment so that vaporization of significant amounts of alcohol prior to packaging is prevented.

3,979,526
METHOD OF MANUFACTURING WHIPPING CREAM

Masao Suzuki; Mitunobu Teshiba, both of Akishima, and Fumio Hara, Hinode, all of Japan, assignors to The Glico Kyodo Nyugyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1974, Ser. No. 438,289

Claims priority, application Japan, Mar. 10, 1973, 48-28394

Int. Cl.^{2} A23C *13/12*

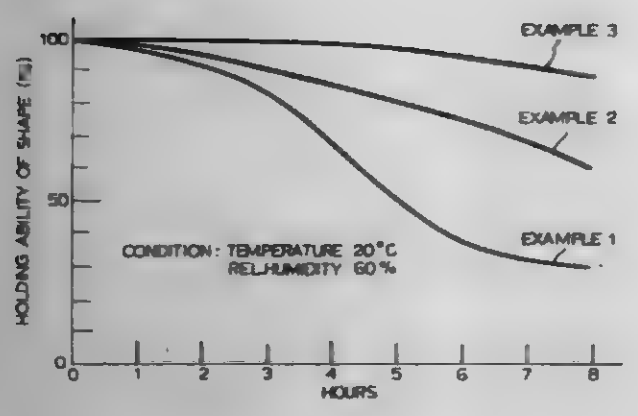
U.S. Cl. 426—570 7 Claims

1. A method of preparing whipping cream comprising the steps of

A. at least partially removing material having molecular weights less than 10,000 from animal milk using a semi-permeable membrane or a molecular sieve, until there remains a non-fat solids content of between 14.5 to 30 weight percent;

B. homogeneously mixing 50 to 70 parts by weight of the animal milk remaining after removal of said materials therefrom in step (A), and 50 to 15 parts by weight of oil or fat; and

C. emulsifying the homogeneous mixture of step (B).



3,979,527
PREPARATION OF HOP OIL

Derek Roy James Laws, and John Anthony Pickett, both of Nutfield, England, assignors to Brewing Patents Limited, England

Filed Apr. 29, 1975, Ser. No. 572,703

Claims priority, application United Kingdom, June 11, 1974, 25944/74; Oct. 8, 1974, 43642/74

Int. Cl.² C12C *3/00*

U.S. Cl. 426—592 **16 Claims**

1. A method for the production of hop oil which comprises steam distilling hop oil in admixture with water from hops under vacuum at a temperature not exceeding 50°C for a period of time sufficient to extract not more than 50% of the total hop oil present in the hops and collecting the distillate at a temperature not exceeding −20°C, thereby substantially reducing undesired hydrocarbons and sulphur containing compounds present in said hop oil.

3,979,528
PRESSURE FIXATION OF COFFEE GRINDER GAS

James P. Mahlmann, Wayne, N.J., assignor to General Foods Corporation, White Plains, N.Y.

Filed May 20, 1974, Ser. No. 471,630

Int. Cl.² A23F *1/04*

U.S. Cl. 426—594 **3 Claims**

1. A method for aromatizing soluble coffee comprising the steps of:

- a. condensing, as a frost, an aroma-containing gas which has a high carbon dioxide content,
- b. placing the aroma-containing frost in a pressure vessel,
- c. placing liquid glyceride in the vessel at a level of one gram of glyceride to 0.5 to 6 grams of aroma frost, isolating the pressure vessel and increasing the temperature within the vessel to a temperature of about 70°–75°F such that the pressure within the vessel increases to above 100 psia and a liquid CO_2 phase which contains aroma is formed,
- d. removing the glyceride from the vessel and combining it with coffee solids.

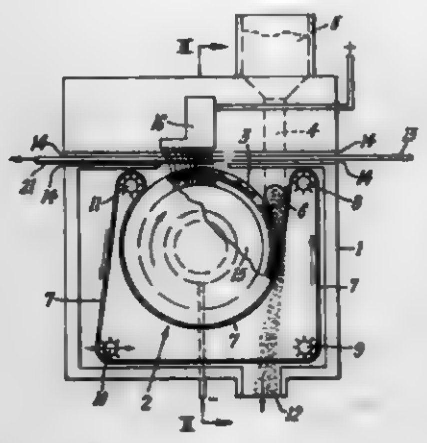
3,979,529
ELECTROSTATIC APPLICATION OF THERMOPLASTIC ADHESIVE

Hans W. Rebentisch, Frankfurt, and Gerhard W. Steinmeyer, Hunoldstal, Trusus, both of Germany, assignors to USM Corporation, Boston, Mass.

Division of Ser. No. 392,034, Aug. 27, 1973, Pat. No. 3,881,447. This application Jan. 16, 1975, Ser. No. 541,652

Int. Cl.² B05D *1/06*

U.S. Cl. 427—25 **4 Claims**



1. A method of applying a powder-melt adhesive in the form of a strip to a backing material, which strip is to be subsequently used to adhere the backing, comprising the steps of:

depositing the powder-melt adhesive onto a moving member having an electrode integral therewith;

providing a stationary electrode along the path of said moving member downstream of the point of adhesive deposit and in spaced relation with the powder melt adhesive on the member;

feeding the backing through the space between said stationary electrode and the powder-melt adhesive;

continuously applying a voltage of predetermined polarity to the integral electrode at least during the travel of said moving member from the point of depositing the powder-melt adhesive on the member to the point of positioning of the powder-melt material proximate the stationary electrode; and

applying a voltage of opposite polarity to the stationary electrode such that, from the point of deposit of the powder-melt adhesive on the member to a point proximate the stationary electrode the powder melt adhesive is subjected to a substantially constant high tension field and the adhesive is subjected to a reversal of polarization when proximate the stationary electrode to extract the adhesive from the member and draw the adhesive from the member to the backing.

3,979,530
POLYESTER FIBER-VACUUM IMPREGNATED EPOXY RESIN INSULATION SYSTEM FOR HIGH VOLTAGE TRANSFORMERS

Alfred W. Schwider, Pacific Palisades; John Burnham, Los Angeles, and Robert S. Buritz, Pacific Palisades, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 15, 1974, Ser. No. 461,071

Int. Cl.² H02K *15/12*

U.S. Cl. 427—104 **3 Claims**

1. A process for making a polyester-filled epoxy resin electrical insulation system comprised of epoxy-impregnated chopped polyester fibers which includes the steps of applying a porous fiber mat to an electrical device to be insulated, vacuum baking said fibers at 100 to 110°C for at least 16 hours and then placing said device into a suitable impregnation container heated to 90° to 110°C, wherein said impregnation chamber is evacuated to a pressure of 30 μHg or less, said epoxy resin is heated to 75° ± 5°C and degassed at a pressure of 700 μHg or less prior to addition of a nonstoichiometric hardener, comprised of a mixture of menthane diamine, metaphenylene diamine, and benzyldimethylamine, said hardener is added to said resin at 75 ± 5°C mixed thoroughly and degassed thereby forming a curable resin system, said resin system is introduced into said impregnation chamber whereby all fibers to be impregnated are completely covered by said resin system, said impregnated fibers are removed from said

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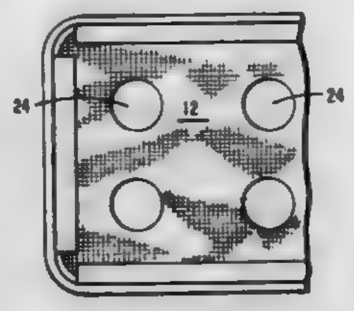
3,979,531
FLUIDIZED BED TOP SURFACE STABILIZATION MECHANISM

Arthur D. Heller, Horseheads, N.Y., assignor to Dart Industries Inc., Los Angeles, Calif.

Continuation of Ser. No. 272,700, July 17, 1972, abandoned. This application May 22, 1974, Ser. No. 472,006

Int. Cl.² B05D *1/12, 1/24*

U.S. Cl. 427—185 **2 Claims**



1. In a method of coating an article by means of a fluidized bed coating technique wherein a fluidization chamber is utilized having impervious side walls, a gas pervious distributor plate adapted to support a bed of pulverulent coating materials, an open top, and having means for passing fluidizing gases upwardly through said gas distributor plate to fluidize said pulverulent materials, the improvement comprising:

- a. providing a generally horizontally disposed means of a generally perforate configuration and including at least one enlarged opening therein of sufficient size to accommodate the passage of an article therethrough for total or partial immersion in said fluidized bed,
- b. positioning said horizontally disposed means and controlling the pulverulent coating materials and the fluidizing gases in a manner such that said horizontally disposed means will engage only the upper most surface of the fluidized pulverulent coating materials, said horizontally disposed means and said pulverulent coating materials being below the top of the impervious side walls of said fluidization chamber,
- c. emersing an article in said fluidized bed by inserting it through said enlarged opening for a time sufficient to coat said article and then withdrawing it from said opening.

3,979,532
PROCESS FOR THE MANUFACTURE OF ARTIFICIAL LEATHER AND PRODUCT MADE THEREBY

Eduard Mück, Otrokovice; Josef Horak, Gottwaldov, both of Czechoslovakia; Jaroslav Strachota, deceased, late of Veseli nad Moravou, Czechoslovakia (by Vera Strachotova, legal representative); Jiri Boleslav, Gottwaldov, Czechoslovakia; Lubomir Grygera, Gottwaldov, Czechoslovakia; Ladislav Bogdanovicz, Hradiste, Czechoslovakia, and Otto Hvezda, Otrokovice, Czechoslovakia, assignors to Statni vyzkumny ustav kozedelny, Czechoslovakia

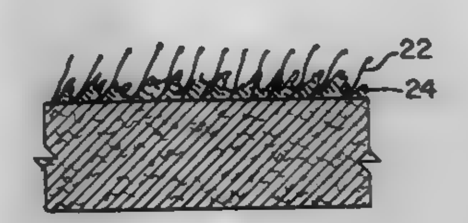
Continuation-in-part of Ser. No. 238,603, March 27, 1972, abandoned. This application Aug. 30, 1973, Ser. No. 393,199

Claims priority, application Czechoslovakia, Apr. 30, 1971, 3150-71

Int. Cl.² B05D *5/00;* **D06C** *11/00*

U.S. Cl. 427—245 **13 Claims**

1. A process for the manufacture of artificial leather and for imparting a napped, or nubuck grain finish thereto comprising the steps of providing a backing member comprising a matrix of crossing strands of fibers, contacting at least one side of said backing member with a polymeric system comprising a mixture of a heat-reactive latex and a carboxylated latex, the latter being self-cross-linkable at a more rapid rate than the former under application of heat, at a temperature in a range of about 60°C. to about 135°C., subjecting said contacted backing member to a temperature within said range for a period of time to effect sequential cross-linking of said carboxylated latex about the points of crossing of said strands and of said heat-reactive latex about said cross-linked carboxylated latex and drying of the contacted backing member, and thereafter buffing said one side in two steps, the direction of the second buffing step being shifted an angle of 180° from the first buffing step thereby mechanically altering said one side of the dried backing member to provide an irregular leather-like surface thereto consisting of elongated fibers from said backing member and shorter villi of said cross-linked, heat-reactive latex.



13. An artificial leather comprising a fabric base having crossing strands of fibers, wherein a carboxylated latex is cross-linked at the intersection of said crossing strands to bind the fabric together, and a heat-reactive latex is cross-linked about said cross-linked, carboxylated latex, and having elongated fibers from said base and shorter villi of said cross-linked, heat-reactive latex extending from the plane of said fabric to provide an irregular leather-like surface having a napped finish.

3,979,533
α,α'-BIS-(PHOSPHONO)DICARBOXYLIC ACID DERIVATIVES

Jerry P. Moreau; Leon H. Chance; Gordon J. Boudreaux, all of New Orleans, and George L. Drake, Jr., Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 311,609, Dec. 4, 1972, Pat. No. 3,933,944. This application Oct. 30, 1975, Ser. No. 627,326

Int. Cl.² C07F *9/40;* **B05D** *3/02*

U.S. Cl. 427—390 **2 Claims**

1. A process for imparting to cotton and other cellulosic textiles the properties of wrinkle resistance and flame retardance, the process comprising:

- a. mixing 1 mole of $\alpha\alpha'$-bis(diethylphosphono)adipamide with about 5 moles of formaldehyde while maintaining the pH greater than 7 with aqueous sodium carbonate and the temperature at about 75°C until the amide compound is completely dissolved,
- b. diluting the mixture with water to obtain a 20% concentration, based on the initial weight of the amide,
- c. adding about 2% of $Zn(NO_3)_2.6H_2O$ catalyst to the dilute solution of (b),
- d. impregnating a cellulosic fabric to a wet pickup of about 75% with the solution of (c),
- e. drying the impregnated fabric for about 5 minutes at about 85°C, and
- f. curing the wet impregnated fabric for about 7 minutes at about 160°C.

3,979,534

PROTECTIVE COATINGS FOR DISPERSION STRENGTHENED NICKEL-CHROMIUM/ALLOYS

John R. Rairden, III, Niskayuna, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed July 26, 1974, Ser. No. 492,070

Int. Cl.^{2} B05D *1/38*; C23C *11/00*

U.S. Cl. 427—405 **5 Claims**

1. A method of improving the high temperature oxidation resistance of a thoria dispersion strengthened nickel-chromium alloy body comprising, in sequence the steps of:
   a. physical vapor deposition of a first coating consisting essentially of cobalt to a surface of said body,
   b. heat treating the coated body to a temperature sufficient to diffuse at least a portion of the first coating into the surface of said body, and
   c. subjecting the coated body to a pack cementation vapor deposition to form a second coating comprising aluminum on said body, said second coating being substantially nonporous and adherent to said body.

3,979,535

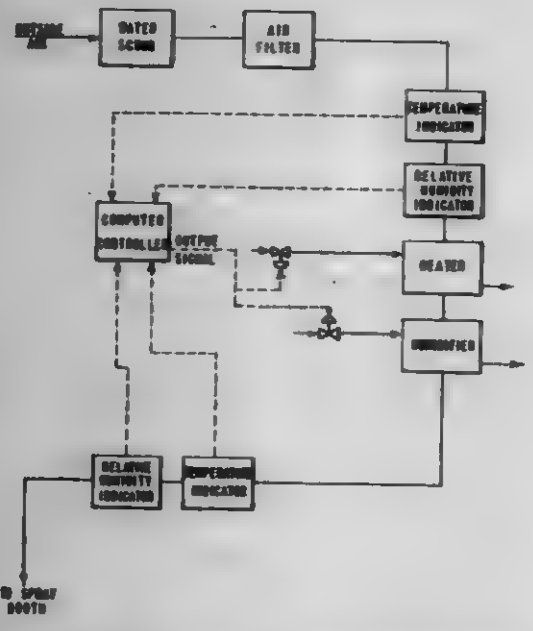
PROCESS FOR THE SPRAY APPLICATION OF AQUEOUS PAINTS BY CONTROLLING THE TEMPERATURE OF THE AIR IN THE PAINT SPRAY ZONE

Tirunilleyi S. Govindan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 384,360, July 31, 1973, abandoned. This application July 30, 1975, Ser. No. 600,365

Int. Cl.^{2} B05D *1/02*

U.S. Cl. 427—422 **10 Claims**



1. In a process for applying an aqueous dispersion or solution paint to a substrate by air-spraying the paint with a spray gun utilizing atomizing air at a flow rate of 5–40 cubic feet per minute and at an air pressure of 30–95 pounds per square inch at the spray gun and a paint flow rate of 5–30 ounces per minute which forms an air atomized paint spray which is applied to the substrate and baked at about 75° to 200°C. to form a uniform finish on the substrate, the improvement in use therewith comprising:

spraying the atomized paint in an air atmosphere that is controlled by the addition of steam or water at a temperature of 15°–40°C. and at such a relative humidity that the air has a driving force value in the range of 0.002 to 0.004 humidity units which is constantly maintained at a set value within this range, thereby providing an atmosphere for initally drying the aqueous paint during the spraying at a uniform rate to provide a finish that has a uniform appearance after being baked;

wherein the paint is an aqueous thermosetting acrylic enamel in which the film-forming constituents of the enamel comprise:
   1. an acrylic polymer of styrene, methyl methacrylate or a mixture thereof, an alkyl acrylate or an alkyl methacrylate having 2–12 carbon atoms in the alkyl group, optionally a hydroxy alkyl acrylate or a hydroxy alkyl methacrylate and an α,β-unsaturated carboxylic acid; and
   2. a water soluble or water-dispersible cross-linking agent.

3,979,536

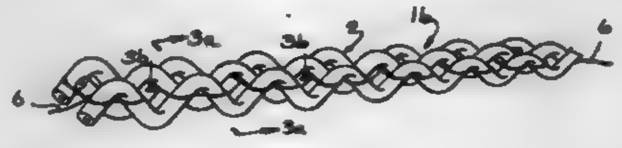
ZERO DEGREE BELTED TIRES, AND HIGH "SOFT STRETCH" BELT-FORMING TAPES THEREFOR

James J. Neville, Kinnelon; Wesley Ferrell, Wayne, and Daniel Shichman, Cedar Grove, all of N.J., assignors to Uniroyal Inc., New York, N.Y.

Division of Ser. No. 160,675, July 8, 1971, Pat. No. 3,956,546. This application Jan. 17, 1975, Ser. No. 542,024

Int. Cl.^{2} B29H *17/00*

U.S. Cl. 428—43 **73 Claims**



1. A high soft stretch tape of reinforcing cord for a molded elastomeric article intended to undergo an expansion of at least about 20% after incorporation of the tape therein, comprising:

I. a first subtape including
   A. at least one reinforcing cord,
      1. said cord having a multiplicity of undulations therein
      2. which in any given straight length of said first subtape are substantially planar,
      3. whereby said first subtape can be elongated, without any stretching of said cord thereof, by straightening of the latter to remove said undulations therefrom, and
      4. said cord being locally weakened at a multiplicity of longitudinally spaced portions thereof, and
   B. relatively weak tying means
      1. acting on said cord and
      2. releasably holding the same in the undulating state thereof,
      3. said tying means being constructed
         a. to hold said cord against straightening out under moderate forces such as are applied to said first subtape in normal handling thereof
         b. but to yield and permit said cord to straighten out under appreciably higher forces such as are applied to said first subtape when the same is incorporated in said article and the latter undergoes an expansion;

II. and at least one additional substantially identical subtape disposed in side by side abutting relation with said first subtape,
   A. the plane of said undulations of said cord of each additional subtape being substantially parallel to the plane of said undulations of said cord of said first subtape,
   B. at least one of each two adjacent subtapes being provided on the cord thereof abutting against the other of such two adjacent subtapes with a coating of a tacky substance to enable such subtapes to adhere to each other so as to form a composite tape having a higher number of component cords, and
   C. said weakened portions in each of said abutting cords being out of lateral alignment with the weakened portions of the other of said abutting cords;

III. the magnitude of said undulations of said cord in each subtape being predetermined to provide a composite tape stretch ratio, defined as the ratio of the length of each cord when unstretched but fully straight to the length of the composite tape when said cords are undulated, which is at least about 1.2, which is no greater than substantially equal to the expansion ratio of said article, defined as the ratio of a given dimension of said article after the same is expanded to the corresponding dimension of said article before the same is expanded, and which is no smaller than said expansion ratio less approximately the capability of said cords to elongate by strain, by partial untwisting, and by rupture at said weakened portions.

3,979,537

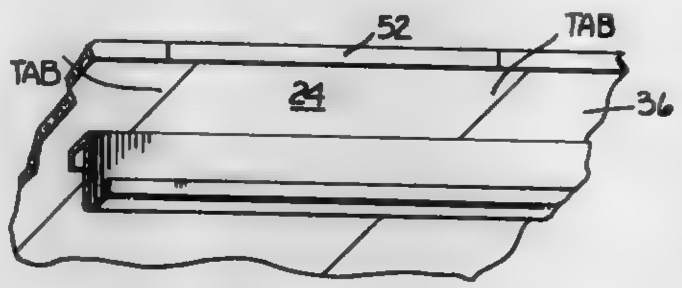
INSULATING MATERIAL AND METHODS OF MANUFACTURE

Richard Lloyd Troyer, Maumee, Ohio, assignor to Johns-Manville Corporation, Denver, Colo.

Continuation of Ser. No. 407,322, Oct. 17, 1973, abandoned, which is a continuation of Ser. No. 130,345, April 1, 1971, abandoned. This application June 30, 1975, Ser. No. 591,584

Int. Cl.^{2} E04B *1/62*; B32B *3/10*

U.S. Cl. 428—61 **4 Claims**



1. A continuous insulating layer having at least one finished seam free of adhesive, staples, or other fastening means, which seam provides a vapor barrier, said layer being supported by supports 4–6 feet apart and running transversely of said seam, said layer and seam comprising:
   a. a longitudinal edge of a first resilient blanket of fibers comprised of glass bonded together and having a density in the range of about 1–2 lbs/cu. ft., said blanket being faced on the major face adjacent to said supports with a flexible vapor impervious facing sheet having an edge that essentially coincides with said longitudinal edge to form a first panel, said panel being semi-rigid to have minor sag when so supported, and
   b. a longitudinal edge of a second resilient blanket having the major surface adjacent to said supports faced with a vapor impervious facing to form a second panel having essentially the same characteristics as said first panel, said facing on said second blanket extending beyond said longitudinal edge to form a tab, the first and second blankets being butted together along said longitudinal edges such that the tab overlaps the facing on said first resilient blanket to form said seam, strip reinforcement means adhered to said tab and located on that portion of the tab contacting the facing on the adjoining blanket to provide the tab with greater resistance to sagging than the remainder of the insulating layer resulting in the tab being pulled closer against the facing of the adjacent panel to form said sealed seam, the width of said strip reinforcement means being greater than the width of said tab so that said strip reinforcement means overlaps a portion of said second resilient blanket.

3,979,538

FLOCKED WEB AND METHOD OF PRODUCING SAME

Charles M. Gilman, Gilman; Bruce R. Borgersen, North Franklin, and Lawrence M. Gilman, Gilman, all of Conn., assignors to The Gilman Brothers Company, Gilman, Conn.

Filed Feb. 13, 1975, Ser. No. 549,467

Int. Cl.^{2} B32B *3/26*

U.S. Cl. 428—90 **11 Claims**

10. A flocked web comprising a porous cloth fabric substrate, a collapsed porous foam layer superimposed on and adherent to a face of said substrate, a plurality of closely spaced resin dots adherent to said foam layer, and flock fibers extending from and anchored to said dots.

3,979,539

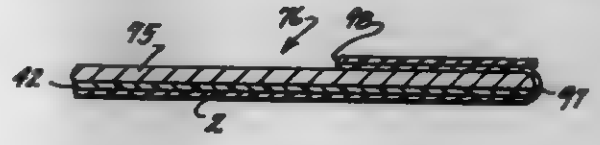
SHEET MOLDING COMPOUND

Richard L. Jeansen, Watertown, Wis., assignor to Menasha Corporation, Neenah, Wis.

Division of Ser. No. 329,524, Feb. 5, 1973, Pat. No. 3,874,973. This application Jan. 20, 1975, Ser. No. 542,125

Int. Cl.^{2} B32B *3/04*

U.S. Cl. 428—126 **3 Claims**



1. A composite sheet molding structure, comprising a film of plastic sheet material, a mixture of a relatively viscous uncured thermosetting resin and a finely divided fibrous material disposed as a layer on said film, said film having a side portion folded over the layer in a generally S-shaped fold extending substantially the length of the sheet and providing a first folded portion overlaying and in contiguous relation to said layer and a second folded portion overlaying and in contiguous relation to said first folded portion, said first folded portion serving as a dam to prevent said resin from being ejected from the side edges of the structure when said structure is subjected to pressure, and said second folded portion comprising a projecting tab to failicate removal of said film from said layer.

3,979,540

IONOMER RESIN SUBSTRATES COATED WITH AN EPOXY PRIMER AND FINISHED WITH AN ACRYLIC COATING

Walter K. Moffett, Birmingham, Mich., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 22, 1975, Ser. No. 643,394

Int. Cl.^{2} B32B *3/26*

U.S. Cl. 428—159 **15 Claims**

1. A coated, flexible substrate consisting essentially of
   a. a layer of a foamed ionomer resin or of a foamed polyolefin resin,
   b. a top layer of an ionomer resin firmly adhered to said foamed layer,
   c. an epoxy primer layer firmly adhered to the top layer and
   d. an acrylic coating layer in firm adherence to the primer layer.

3,979,541

THIN BASE SELF-TRACKING RECORDING TAPE

Robert I. Desourdis, 265 Gay Road, Warrenton, Va. 22186

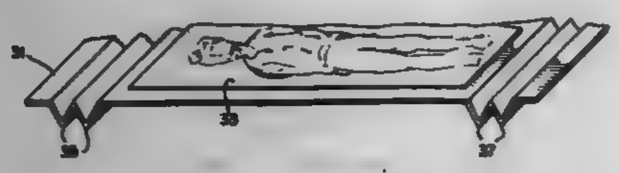
Division of Ser. No. 332,288, Feb. 14, 1973, Pat. No. 3,893,181. This application Feb. 27, 1975, Ser. No. 553,614

Int. Cl.^{2} B32B *3/28*; B05D *5/12*

U.S. Cl. 428—181 **9 Claims**

1. A thin base recording tape capable of being stored in interlocked layers comprising:

an accordian pleated flexible substrate having a photosensitive or magnetic coating on at least one side thereof, said substrate with said coating on at least one side thereof being accordian pleated in such a manner that said tape has a plurality of V-shaped grooves formed on both sides thereof, said plurality of grooves on one side of said tape being separated from each other by the V-shaped projections formed by said V-shaped grooves formed in other side of said tape, said V-shaped grooves and said V-shaped projections being so dimensioned relative to each other that said V-shaped projections and said V-shaped grooves will interlock with each other when said tape is folded over on itself.



2. A thin base recording tape as defined in claim 1 wherein a storage reel is provided and said thin base recording tape is wound on said reel, said V-shaped projections interlocking with said V-shaped grooves of each preceding layer to lock said thin base tape on said reel.

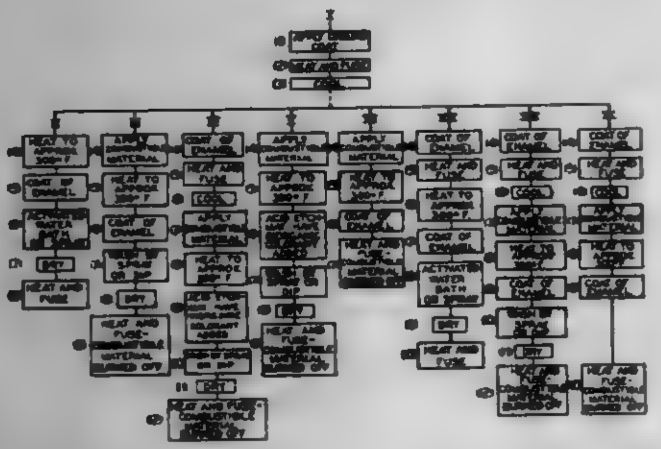
3,979,542
DECORATIVE PORCELAIN ENAMEL SURFACE AND METHOD FOR MAKING

John C. Perantoni, and Myron E. Ullman, Jr., both of Canfield, Ohio, assignors to American Standard, Inc., New York, N.Y.

Filed Sept. 26, 1974, Ser. No. 509,324

Int. Cl.^{2} B32B *15/04;* B28B *21/44*

U.S. Cl. 428—204 1 Claim



1. An article having a decorative fused and vitrified porcelain enamel finish on a metal panel, said finish at least two layers comprising:

a ground coat consisting of porcelain enamel paste in water having a first color applied to said metal panel over the entire surface thereof and fused by heating to fusing temperature and a porcelain enamel finish coat fused to said ground coat of a different color than said first color and distributed on said ground coat in randomly spaced areas to provide a variegated pattern resembling marble,

said finish coat consisting of porcelain enamel paste in water and inorganic colorant unevenly distributed after fusing to produce a fired finish coating having areas of differing thicknesses over said ground coat to thereby provide a variegated pattern of non-uniform thickness.

3,979,543
ARTICLE HAVING A POLY(ARYLENE SULFIDE) COATING AND METHOD OF PRODUCING

David E. Higbee, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 369,608, June 13, 1973, Pat. No. 3,894,983. This application May 14, 1975, Ser. No. 577,494

Int. Cl.^{2} B32B *19/02*

U.S. Cl. 428—331 10 Claims

1. A coated article comprising a substrate having a coating bonded thereto of a composition comprising a normally solid poly(arylene sulfide) and from about 0.3 percent to about 4 percent by weight, based on the weight of poly(arylene sulfide), of a finely divided siliceous material having a particle size less than about 10 microns.

7. The method of producing a glossy poly(arylene sulfide) coating of substantially uniform thickness comprising:

covering the surface of the article to be coated with a slurry containing poly(arylene sulfide) and from about 0.3 to about 4 weight percent of a finely divided siliceous material having a particle size less than about 10 microns, based on the weight of poly(arylene sulfide); and

curing the thus-covered surface in oxygen-containing atmosphere at a temperature within the range of about 500° F. to about 900° F. for a period of time within the range of about 5 minutes to about 12 hours.

3,979,544
FLOCK OF SYNTHETIC FIBERS FOR ELECTROSTATIC FLOCKING

Joachim Kolbe, Leverkusen; Otto Schneider, Cologne; Ernst Gutschik, and Dieter Brokmeier, both of Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 9, 1975, Ser. No. 584,846

Claims priority, application Germany, July 2, 1974, 2431847; Nov. 28, 1974, 2456309

Int. Cl.^{2} B32B *9/00, 27/00;* D02G *3/00*

U.S. Cl. 428—361 5 Claims

1. Synthetic fiber flock selected from the group consisting of viscose-, polyacrylonitrile-, polyester-, and polyamide fibers, containing a mineral tanning agent selected from the group consisting of zirconium sulfate, $Zr(OH)_2SO_4+SiO_2\cdot H_2O+Na_2SO_4$ and $ZrOCL_2$.

3,979,545
SYNTHETIC FIBER IMPREGNATED WITH FLAME RETARDANT COMPOSITIONS CONTAINING HALOGEN CONTAINING AMIDES

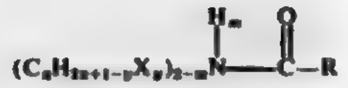
Harry Braus, Cincinnati, Ohio, and Jay R. Woltermann, Memphis, Tenn., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Sept. 12, 1974, Ser. No. 505,287

Int. Cl.^{2} B32B *9/00;* D02G *3/00*

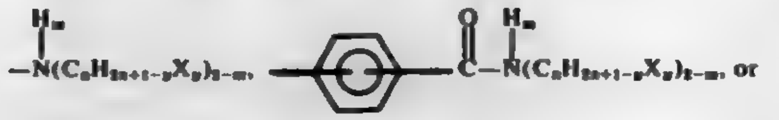
U.S. Cl. 428—392 4 Claims

1. A synthetic fiber of improved flame resistance which comprises said synthetic fiber impregnated with an effective flame resistant amount of a halogen containing amide of the formula

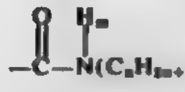


$$(C_nH_{2n+1-y}X_y)_{2-m}\overset{H_m}{\overset{|}{N}}-\overset{O}{\overset{\|}{C}}-R$$

wherein R is lower alkoxy, lower alkoxy carbonyl,



$$-\overset{H_m}{\overset{|}{N}}(C_nH_{2n+1-y}X_y)_{2-m},\quad -\!\!\bigcirc\!\!-\overset{O}{\overset{\|}{C}}-\overset{H_m}{\overset{|}{N}}(C_nH_{2n+1-y}X_y)_{2-m},\ \text{or}$$



$$-\overset{O}{\overset{\|}{C}}-\overset{H_m}{\overset{|}{N}}(C_nH_{2n+1-y}X_y)_{2-m};$$

X is chlorine or bromine; *m* is 0 or 1; *n* is 1–6; and *y* is 1–13.

3,979,546
ALKOXYSILOXANOL MODIFIED SURFACES

Richard Newton Lewis, Tecumseh, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

Division of Ser. No. 214,406, Dec. 30, 1971, Pat. No. 3,799,962. This application Jan. 21, 1974, Ser. No. 435,151

Int. Cl.^{2} B32B *27/00;* D02G *3/00*

U.S. Cl. 428—394 4 Claims

1. A method of modifying the surfaces of reinforcing agents, selected from the group consisting of siliceous fillers and fibrous materials which comprises contacting the surfaces of said reinforcing agents wih an alpha-alkoxyomega-siloxanol of the formula $R'O(R_2SiO)_xH$, in which R is selected from the group consisting of hydrocarbon radicals, halogenated hydrocarbon radicals and cyanoalkyl radicals having up to 8 carbon atoms, R' is the radical of an alcohol having up to 20 carbon atoms and *x* is an integer of from 2 to 10 and thereafter heating the reinforcing agents to a temperature of from 50° to 200°C.

3,979,547
PAINT FOR USE ON RUBBERS

Durward Thomas Roberts, Jr., Akron, and Frederick Carl Weissert, Bolivar, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 20, 1975, Ser. No. 560,265

Int. Cl.^{2} C08L *75/04*

U.S. Cl. 428—423 7 Claims

1. In a cured rubber surface to which is adhered a solid coating of a polyurethane prepolymer derived from a polyol and an isocyanate, which prepolymer is cured with an amine curing agent and contains an adhesion promoter, the improvement in which in the coating, there is 3 to 10 parts of a polystyrene-polybutadiene-polystyrene block copolymer to prevent the coating from orange-peeling.

3,979,548
POLYURETHANE COATED SAFETY GLASS

Wolfgang Schäfer, and Helmer Raedisch, both of Aachen, Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Nov. 12, 1974, Ser. No. 523,016

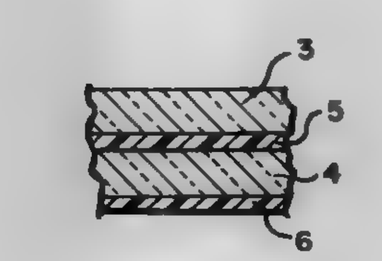
Claims priority, application France, Nov. 16, 1973, 73.40621

Int. Cl.^{2} B32B *27/40*

U.S. Cl. 428—425 2 Claims

1. A safety window comprising at least one glass sheet having bonded thereto an adherent solid transparent layer of a scratch-resistant polyurethane formed by curing a liquid mixture containing (1) a polyglycol ether resulting from the condensation of propylene oxide with trimethylolpropane and containing about 10.5–12% by weight free hydroxyls together with (2) a biuret of 1,6-hexamethylene diisocyanate having about 21–22% by weight isocyanate groups, the weight of said biuret being between about 0.9 and 1.1 times the weight of said polyglycol ether.

2. A safety glass laminate of a plurality of solid glass sheets having disposed between adjacent sheets an adherent, transparent solid interlayer of polyvinylbutyral and having bonded to at least one outer glass sheet of this laminate an adherent solid transparent layer of scratch-resistant polyurethane formed by curing a liquid mixture containing (1) a polyglycol ether resulting from the condensation of propylene oxide with trimethylolpropane and containing about 10.5–12.0% by weight free hydroxyls together with (2) a biuret of 1,6-hexamethylene diisocyanate having about 21–22% by weight isocyanate groups, the weight of said biuret being between about 0.9 and 1.1 times the weight of said polyglycol ether.



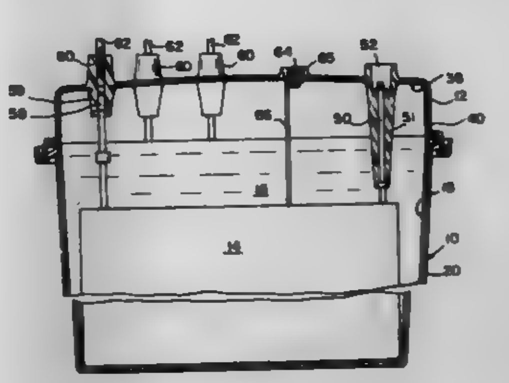
3,979,549
COMPOSITE OF METAL AND THERMOSET PLASTIC

Robert E. Wilkinson, Lafayette, Ind., assignor to Rostone Corporation, Lafayette, Ind.

Division of Ser. No. 292,188, Sept. 25, 1972, Pat. No. 3,844,030. This application July 8, 1974, Ser. No. 486,664

Int. Cl.^{2} H01B *1/04;* B32B *27/40, 27/36*

U.S. Cl. 428—450 6 Claims



1. An integrally bonded composite comprising a metal substrate having a surface, a thermoset elastomer layer bonded to said surface over an extended area thereof and containing an organosilane coupling agent for bonding said layer to an ethylenically-unsaturated thermosetting resin composition molded and cured in place against said layer, and a body of fiber-reinforced thermoset ethylenically-unsaturated resin composition molded and cured in place under heat and pressure against said elastomer layer and chemically bonded thereto by said coupling agent.

3,979,550

PRE-PRINTED LATENT IMAGE SPIRIT DUPLICATING MASTERS

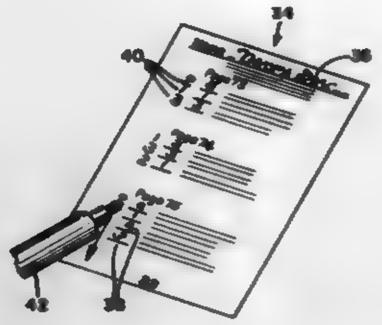
Irving Panken, Dayton, Ohio, assignor to The Maxer Corporation, Dayton, Ohio

Continuation of Ser. No. 434,559, Jan. 18, 1974, abandoned. This application Dec. 10, 1975, Ser. No. 639,351

Int. Cl.² B41M *5/04*

U.S. Cl. 428—480 **18 Claims**

1. A pre-printed spirit duplicating master comprising a sheet having reverse printed on the backside thereof by means of a printing technique selected from the group consisting of offset, rotogravure, letterpress, stencilling, or aniline printing, a visible image spirit duplicating ink in one area and a latent image spirit duplicating ink in another area, both said visible and latent inks, when contacted with an alcohol or spirit wetted copy paper, being capable of transfer to said copy paper to impart corresponding visible and latent images thereon, said corresponding latent image being capable of development into a second visible image by application of a color developer thereto, said latent image spirit duplicating ink containing a color former selected from the group consisting of dithiooxamide and derivatives thereof and a carrier vehicle therefor, said latent image ink being resistant to changes in temperature and humidity, capable of producing at least 100 acceptable copies and capable of making copies with little or no loss of intensity in the developed image after being stored for a period of at least up to 1 year.



ELECTRICAL

3,979,551

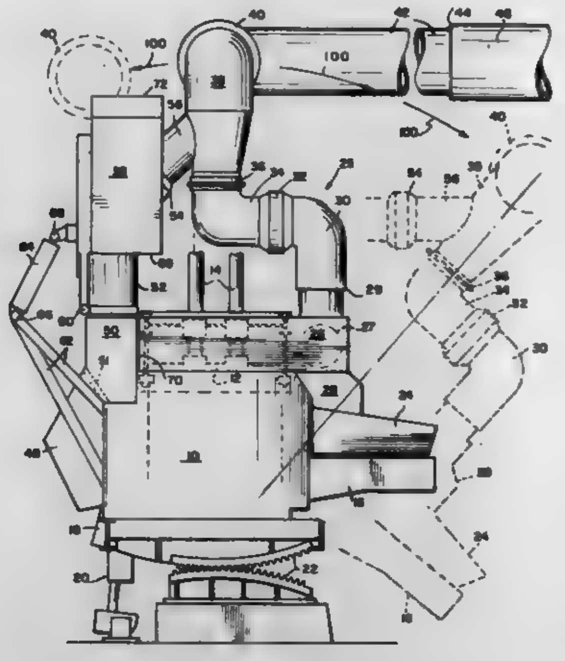
ARC FURNACE FUMES CONTROL SYSTEM

Robert C. Overmyer, and Pramodh Nijhawan, both of Indianapolis, Ind., assignors to Hawley Manufacturing Corporation, Indianapolis, Ind.

Filed Sept. 24, 1975, Ser. No. 616,155

Int. Cl.² F27D *17/00*

U.S. Cl. 13—10 **14 Claims**



1. A fumes control system for an electric arc furnace comprising a crucible providing an upwardly directed mouth, a roof covering said mouth, said roof being movable into an opening position away from said mouth, a plurality of arc electrodes extending downwardly through said roof, said crucible having at least one pouring spout opening therein and being tiltable for tapping and for removing slag therefrom, said control system comprising exhaust means, first hood means for collecting fumes generated during furnace operations from said roof, first conduit means for connecting said first hood means to said exhaust means, said first hood means being movable with said roof to expose said mouth, said first conduit means providing for such movement of said first hood means, and charging hood means for covering said mouth when said first hood means and said roof are moved away from said mouth, said charging hood means having a use position covering said mouth and a storage position away from said mouth, means for supporting said charging hood means for movement between said positions, second conduit means for connecting said charging hood means to said exhaust means when said charging hood means is in said use position, and said charging hood means having an opening therein through which said crucible is charged with metal to be melted.

3,979,552

COOLANT DISPLACEMENT MATERIAL

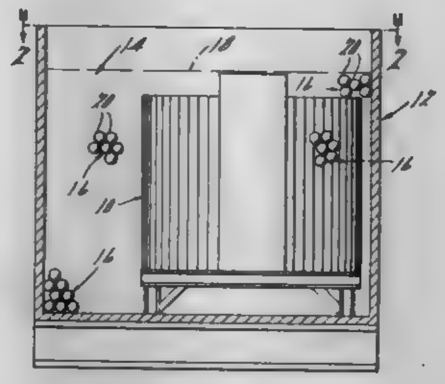
John L. Fisher, Lexington, Ky., assignor to Kuhlman Corporation, Troy, Mich.

Filed Mar. 11, 1974, Ser. No. 449,639

Int. Cl.² H01F *27/12*

U.S. Cl. 174—15 R **11 Claims**

1. In combination with a transformer and a tank for containing a coolant liquid for cooling the transformer, cooling means within said tank comprising a coolant liquid and a plurality of members having at least one closed void therein, said members being spherical and constructed of a material which is substantially chemically inert with respect to said coolant liquid and which has a good dielectric characteristic to avoid dielectric breakdown in the high voltage environment of said transformer, said closed void being filled with an inert gas, the ratio of the volume of said material and the volume of said one or more closed voids in each of said members being established to provide a specific gravity of between 1.0 and 1.8, and said spherical members providing venturi-like flow passages for providing increased flow velocities of said coolant liquid to enhance thermal transfer from said transformer to said coolant liquid, being unresilient, and having a diameter between ½ inches and 1½ inches.



3,979,553

SPACER-DAMPERS FOR POWER TRANSMISSION LINES

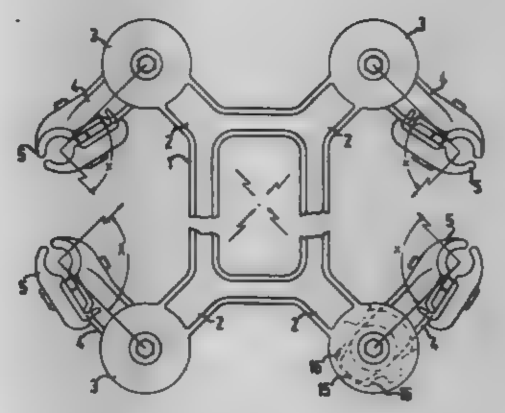
Thomas John Smart, Oadby, England, assignor to Dunlop Limited, London, England

Filed Dec. 9, 1974, Ser. No. 531,073

Claims priority, application United Kingdom, Dec. 13, 1973, 57940/73

Int. Cl.² H02G *7/14, 7/12*

U.S. Cl. 174—42 **9 Claims**



1. A spacer-damper for an overhead power transmission line having at least three subconductors per bundle, comprising:

a. a rigid frame means;

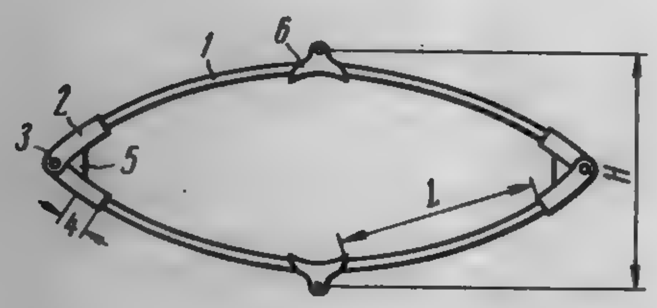
b. a plurality of rigid arm means for supporting, respectively, the subconductors, each of said rigid arm means having, at one end, a clamp means for attachment to a respective subconductor, said rigid arm means being spaced apart from one another, at least two of said arm means extending in the rest position of the spacer-damper so that, for each of said two arm means, a line between said clamp means and the other end of said arm means is in a direction extending generally perpendicular to a plane including the axis of the rigid frame means and the center line of a respective clamp means; said rigid frame means providing attachment points at which said other end of each said arm means is attached; and

c. a plurality of resilient damping means for damping movement of the respective subconductors in said plane, in a vertical direction and in a horizontal direction, each of said resilient damping means being located between said other end of one of said arm means and said frame means at one of said attachment points and having a pivotal axis lying parallel to the axis of the clamp means.

3,979,554
SUSPENSION INSULATOR

Leonid Nikolaevich Fesik, ulitsa Furmanova, 1, kv. 61; Lev Federovich Kovtun, ulitsa Zhukovskogo, 4a, kv. 11; Igor Georgievich Lindenbaum, ulitsa Poligonnaya, 22, kv. 48, and Mikhail Mikhailovich Konjuchenko, ulitsa Juria Savchenko, 37, kv. 6, all of Dnepropetrovsk, U.S.S.R.

Filed June 30, 1975, Ser. No. 592,072
Int. Cl.² H01B *17/02*
U.S. Cl. 174—177 2 Claims

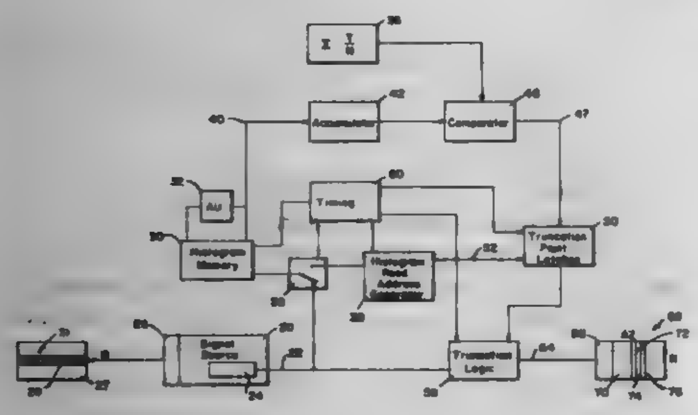


1. A suspension insulator for insulating wires of a power transmission line suspended from cross-arms of line supports, comprising two straight insulation members of elastic material arched and joined together so that their convex sides face outwardly, the ends of said members being rigidly interconnected by metal end-pieces for maintaining the insulation members in an arched condition in the form of a spring suspension, clamp means provided at the middle of one of said members for attaching the insulator to a cross-arm of a power line support and clamp means provided at the middle of the other of said members for attaching a power transmission line to the insulator.

3,979,555
HISTOGRAM EQUALIZATION SYSTEM FOR DISPLAY IMPROVEMENT

Eugene W. Opittek, Santa Ana; David J. Ketcham, Lakewood, and Edward J. Dragavon, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 27, 1975, Ser. No. 582,478
Int. Cl.² H04N *3/00*
U.S. Cl. 178—6.8 10 Claims

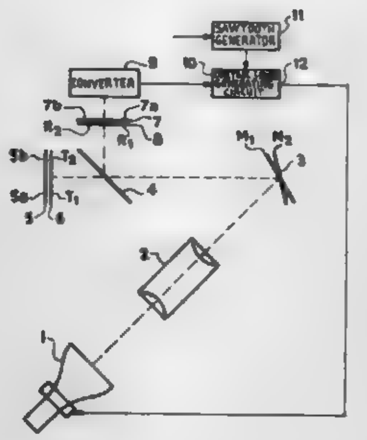


1. A system responsive to a signal source of amplitude data of a first number of bits to develop a truncated signal having a second and lesser number of bits comprising:
- a histogram memory addressable with the value of said amplitude data for storing at each address the number of address occurrences during a first period,
- read address generator means coupled to said histogram memory for applying sequential addresses thereto during a second period,
- accumulating means coupled to said histogram memory for accumulating the number of occurrences read from said memory, during said second period,
- comparator means coupled to said accumulator means for responding when the accumulated occurrences equals a predetermined value equal to a selected fraction of the signals addressing said memory during said first period,
- truncation point latch means coupled to said comparator and to said read address generator for storing the truncation points; and
- truncation logic means coupled to said signal source and to said truncation point latch means for developing truncated signals of said second number of bits.

3,979,556
SCANNING CONTROL ARRANGEMENT FOR A TELECINE SYSTEM USING A FLYING SPOT TUBE

Serge Vidal, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 29, 1974, Ser. No. 437,662
Claims priority, application France, Feb. 2, 1973, 73.03715
Int. Cl.² H04N *3/36*
U.S. Cl. 178—7.2 8 Claims



1. An arrangement for controlling the vertical deflection of the spot in a flying spot tube having vertical deflection means, in order to effect correct optical scanning, line by line, of a surface within a fixed frame, said arangement comprising: stationary marker zones located for being scanned by an image of said spot during said optical scanning, said marker zones being designed for supplying, when scanned by said image of said spot, optical marker signals which are characteristic of the position, in the vertical scanning direction, of the line being scanned within said fixed frame; a converter for converting said marker signals into electrical signals; a reference signal generator; a circuit for receiving the signals from said converter and from said reference signal generator and for delivering an error signal characteristic of said position; and means coupled to said circuit and to said vertical deflection means for correcting said vertical deflection as a function of said position.

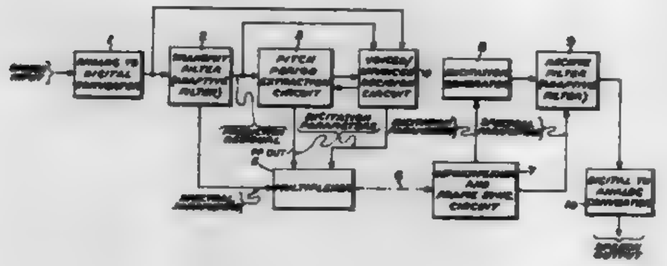
3,979,557
SPEECH PROCESSOR SYSTEM FOR PITCH PERIOD EXTRACTION USING PREDICTION FILTERS

Richard J. Schulman, Englishtown, and Mark J. Schneider, Nutley, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Continuation-in-part of Ser. No. 485,487, July 3, 1974, abandoned. This application July 3, 1975, Ser. No. 593,138
Int. Cl.² G10L *1/00*
U.S. Cl. 179—1 SA 12 Claims

1. A digital pitch period extraction circuit for a digital vocoder having a digital adaptive filter providing a multiple fit digital prediction residual for each sample, said extraction circuit comprising:

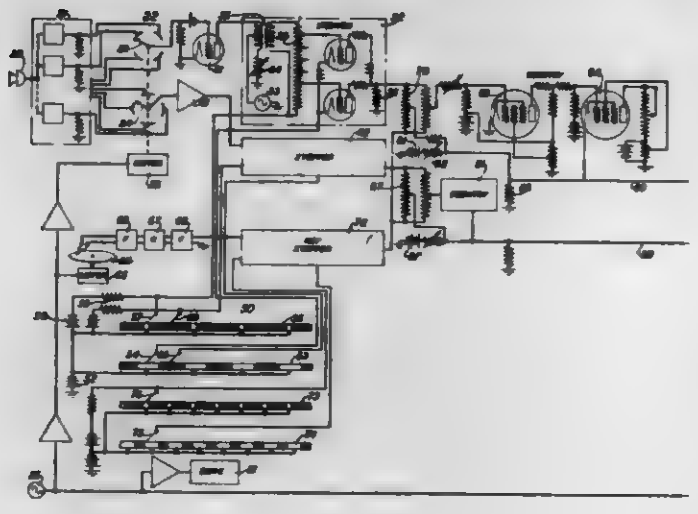
- a squarer coupled to said adaptive filter to square said residual;
- a digital low pass filter coupled to said squarer to low pass filter said squared residual; and logic circuitry coupled to said low pass filter to locate sharp pitch peaks in the output signal of said low pass filter and to determine the time separation between two adjacent pitch peaks to provide therefrom an output signal equal to the pitch period, said circuitry having a time moving search window and a time varying amplitude threshold level to locate said pitch peaks.


ANALOG TO DIGITAL CONVERTER
PITCH PERIOD EXTRACTION CIRCUIT
DIGITAL TO ANALOG CONVERTER

3,979,558
SIGNALING SYSTEM

Eugene Peterson, New York, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 30, 1944, Ser. No. 542,922
Int. Cl.² H04K *1/04*
U.S. Cl. 179—1.5 R 12 Claims

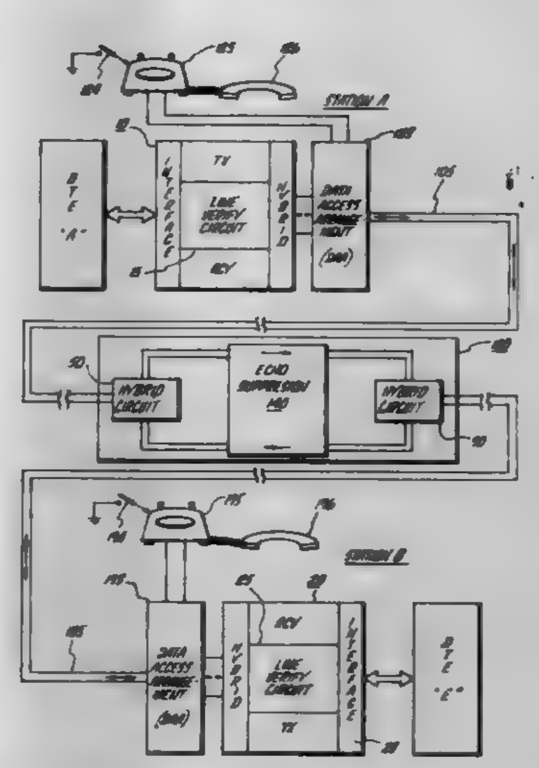


1. In a speech privacy transmission system, means for analyzing speech currents into component frequency band currents in a plurality of separate circuits, a corresponding plurality of separate transmission channels, a common keying circuit having an input side and an output side for keying each of said frequency band currents in succession, distributor means for connecting the input side of said keying circuit to each of said plurality of separate circuits in rotation to enable the frequency band currents therein to be keyed in succession, and distributor means for connecting the output side of said keying circuit to each of said plurality of transmission circuits in rotation to enable the keyed currents to be individually transmitted over said respective channels.

3,979,559
DATA MODEM HAVING LINE VERIFICATION AND AUTOMATIC DISCONNECT FEATURES

Charles William Roedel, Miami Shores, Fla.; Richard Berysiewicz, Smithtown, N.Y.; Richard Tan So, and Larry Wayne Swan, both of Miami, Fla., assignors to Milgo Electronics Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 438,386, Jan. 31, 1974, Pat. No. 3,927,265. This application Sept. 2, 1975, Ser. No. 609,596
Int. Cl.² H04M *11/06*
U.S. Cl. 179—2 DP 14 Claims



1. Line verification circuitry for first and second data sets adapted for connection together through a telephone line which includes echo suppressors that are capable of being disabled by a first unique signal so that data provided by data terminal equipment can be transmitted between said first and second data sets after said data sets assume a data set ready condition, said verification circuitry comprising:
- means at said first data set for emitting said first unique signal;
- means at said second data set, responsive to receipt of said first signal for emitting a second unique signal;
- means at said second data set including a first delay means for delivering a data set ready signal a predetermined period of time after emission of said second unique signal; and
- means at said first data set, responsive to receipt of said second unique signal from said second data set for delivering a data set ready signal.

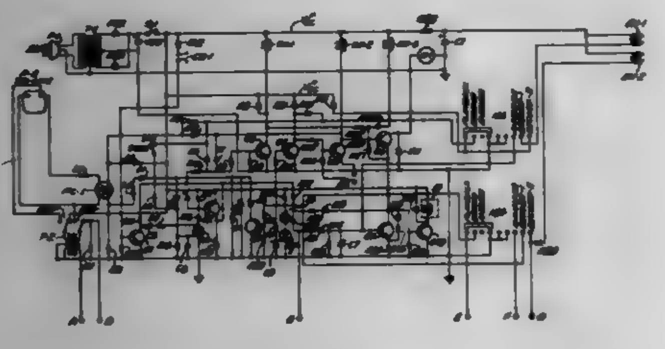
3,979,560
TELEPHONE ANSWERING SYSTEM WITH RING DETECTOR

James R. Darwood, Cerritos, Calif., assignor to T.A.D. Avanti, Inc., Paramount, Calif.

Continuation-in-part of Ser. No. 482,452, June 24, 1974, abandoned. This application Mar. 10, 1975, Ser. No. 556,649
Int. Cl.² H04M *11/10*
U.S. Cl. 179—6 R 3 Claims

1. In a telephone answering system which includes, input circuit means to be coupled to a telephone line to respond to telephone messages received over the telephone line, a message magnetic tape recording means, and control circuit means responsive to a predetermined voltage level to activate the announcement magnetic tape storage means and cause a recorded announcement to be transmitted to a calling party during a first time interval (T-1), and for switching the system into a message receiving mode at the end of the first time

interval to permit a message from the calling party to be recorded on the message recording tape, the combination of: ring-detecting means coupled to said input circuit means and responsive to ring signals received over the telephone line to produce a voltage pulse in response to each such ring signal; resistance-capacitive integrating means coupled to the ring-detecting means for integrating the voltage pulses produced thereby until the predetermined voltage level is reached so as to cause the announcement storage means to be activated



after a first predetermined number of ring signals have been received over the telephone line; and further circuit means responsive to the first activation of the announcement storage means by the integrating means to change the capacitive value of the integrating means, so that the integrating means cuases each subsequent activation of the announcement storage means to occur after a second predetermined number of ring signals, less than said first predetermined number have been received over the telephone line.

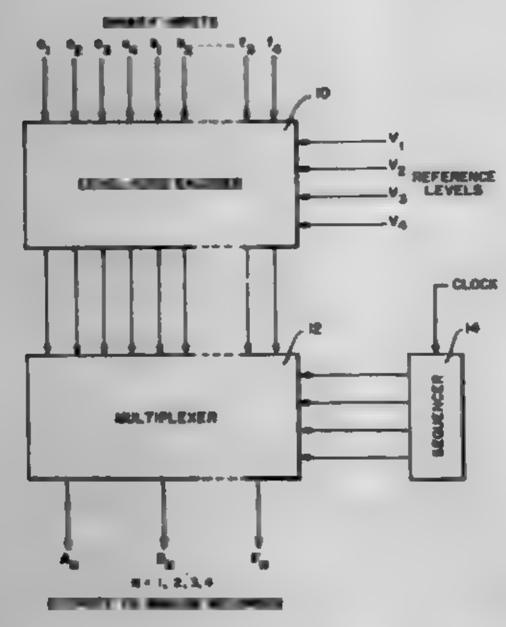
3,979,561
LEVEL-CODE ENCODED MULTIPLEXER

Francis E. Hinkle, and David F. Rohde, both of Austin, Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 6, 1975, Ser. No. 574,998

Int. Cl.² H04J *7/00*

U.S. Cl. 179—15 A **2 Claims**



1. A system for multiplexing a plurality of digital signals from separate sources onto a few analog channels comprising:

means for encoding digital signals from different sources so as to associate signals from each source with a respectively unique analog reference level representing digital "one" and to associate signals from all sources with a common zero ground level for a digital "zero;" and

sequencing means for multiplexing said signals to their respective channels.

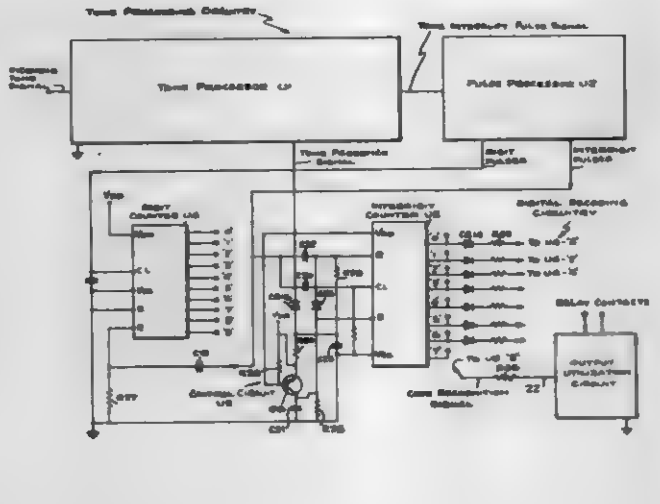
3,979,562
DECODER

Dale E. Rice, 15734 Parthenia St., Sepulveda, Calif. 91343

Filed Nov. 29, 1974, Ser. No. 528,421

Int. Cl.² H04M *1/50*

U.S. Cl. 179—84 VF **20 Claims**



1. Detection apparatus for indicating when a semiconductor digital counter has been advanced to a count at which a then energized one of its output conductors is connected to a current accepting source of bilevel voltage, said apparatus comprising:

a semi-conductor digital counter capable of being sequentially advanced through a plurality of counts, said digital counter having a plurality of output conductors which are selectively energized in a configuration representing the then attained count of said counter, each of said conductors having a bilevel voltage thereon which is at a first level when said output conductor is energized, said digital counter drawing substantial current from its main operating voltage supply only when such current is withdrawn from said counter through one of its said output conductors;

means for connecting each of said plurality of output conductors of said digital counter to a corresponding source of bilevel voltage, each said source of bilevel voltage being capable of withdrawing substantial current from an energized output conductor of said digital counter when the output voltage of said source is at the second of said bilevel voltages;

supply voltage means for supplying to the digital counter its main operating supply voltage;

detection circuit means coupled to said supply voltage means, said detection circuit means including a switching circuit means, said further including apparatus responsive to substantial current flow from said supply voltage means to said digital counter for changing the state of said switching circuit means; and

count means for incrementally advancing said digital counter to sequentially energize selected conductors of its output conductors in a configuration representing the attained count of said counter,

whereby the changed state of said switching circuit means indicates that said counter has been advanced to a count at which a then energized one of its output conductors is connected to a current accepting source of bilevel voltage.

3,979,563
COMMUNICATION SYSTEMS OF KEY TELEPHONE SYSTEMS

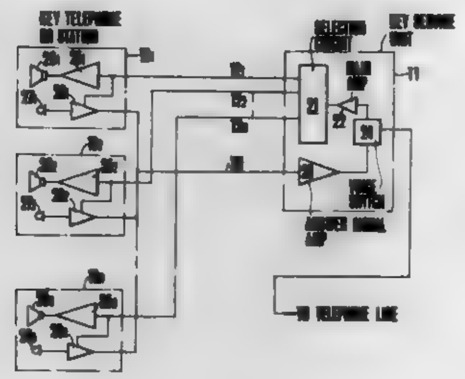
Gunzo Kita, and Kouichi Ohyama, both of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1975, Ser. No. 557,909

Claims priority, application Japan, Mar. 19, 1974, 49-30639

Int. Cl.² H04M *1/60*

U.S. Cl. 179—99 **8 Claims**



1. A communication system for a key telephone system wherein a key telephone is selected by a key service unit and electric power is supplied through a signal line for performing an independent call, the key service unit comprising a voice switch adapted to switch between transmission and reception of speech, each key telephone comprising a loudspeaker, a loudspeaker amplifier and answer signal sending means comprising a microphone and a microphone amplifier, the answer signal sending means being rendered operative by the power supplied from said signal line, a single common answer signal line commonly connected to the outputs of respective answer signal sending means so that when a particular key telephone is called the voice switch operates to switch between the transmission and reception of the speech in response to a call signal and an answer signal permitting the selected key telephone to perform a hand-free communication, a selection circuit disposed between the voice switch and the loudspeaker amplifier, said microphone amplifier being disposed between the microphone and the voice switch, the selection circuit enabling one signal line to select the key telephone, start the loudspeaker amplifier and start the microphone amplifier.

3,979,564
4-CHANNEL STEREO RECORDING AND REPRODUCING METHOD

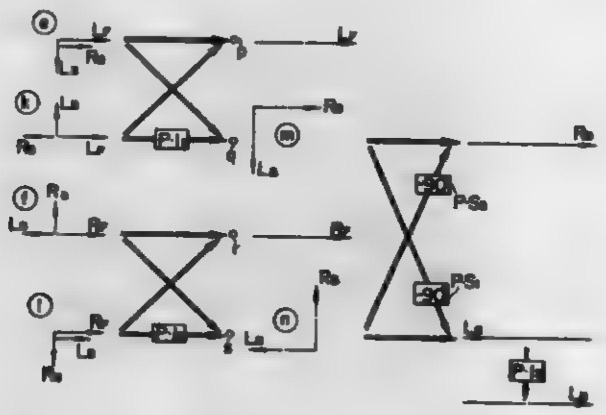
Mayumi Cho, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 8, 1973, Ser. No. 339,466

Claims priority, application Japan, Mar. 9, 1972, 47-24514

Int. Cl.² G11B *3/74;* H04N *5/00;* H03G *3/24*

U.S. Cl. 179—100.4 ST **8 Claims**



1. A method of recording and reproducing a four channel stereo signal on a record comprising:

a. generating four related audio signals;

b. matrixing said four audio signals to produce a first main channel audio signal composed of at least three of said four related audio signals in a first predetermined phase and amplitude relationship, a first sub-channel audio signal composed of at least two of said four related audio signals in a second predetermined phase and amplitude relationship, a second main channel audio signal composed of at least three of said four related audio signals in a third predetermined phase and amplitude relationship, and a second sub-channel audio signal composed of at least two of said four related audio signals in a fourth predetermined phase and amplitude relationship,

c. frequency modulating a carrier wave with said first sub-channel audio signal;

d. frequency modulating a carrier wave with said second sub-channel audio signal;

e. recording said first main channel audio signal and said carrier modulated by said first sub-channel audio signal on a first recording surface of said record;

f. recording said second main channel audio signal and said carrier modulated by said second sub-channel audio signal on a second recording surface of said record;

g. reproducing said first and second main channel audio signals and said first and second sub-channel audio signals to produce four separate audio signals capable of being applied to a matrix or discrete stereophonic reproducing system for providing said four channel stereo signal.

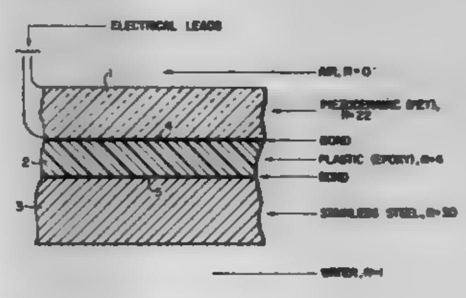
3,979,565
METAL ENCLOSED TRANSDUCER ASSEMBLY

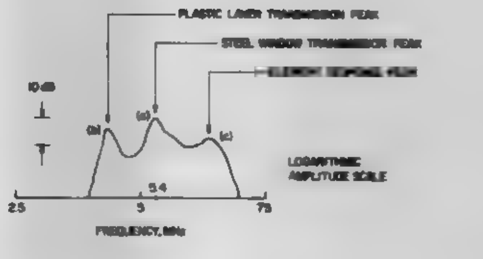
James L. McShane, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 11, 1975, Ser. No. 603,708

Int. Cl.² H04R *17/10*

U.S. Cl. 179—110 A **22 Claims**





1. A transducer for the transmission of acoustic energy substantially at given frequency through a transmitting medium, comprising:

a piezoelectric member having a front and a back face;

a metallic capsule having a front window interposed between said transmitting medium and said front face; and

a plastic material interposed between said piezoelectric member and said capsule and forming a plastic layer between said front face and said window; wherein said piezoelectric member, said plastic layer and said capsule window have thicknesses which are substantially equal to the half wavelength of the acoustic wave at said frequency therethrough, each of said thicknesses defining a corresponding peak frequency, wherein each peak frequency is slightly different from the two others, the central frequency being the one of said front window, whereby a broadened frequency response characteristic is otained about said given frequency.

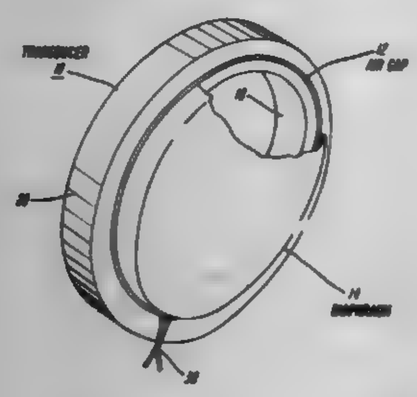
3,979,566
ELECTROMAGNETIC TRANSDUCER

Erazm Alfred Willy, 1254 Rte. 104, Apt. 1C, Ontario, N.Y. 14519

Filed Dec. 12, 1973, Ser. No. 424,001

Int. Cl.² H04R *7/18*

U.S. Cl. 179—115.5 ES **41 Claims**



1. An electroacoustic transducer comprising:
a diaphragm;
tubular shaped current conduction means secured to said diaphragm along a peripheral edge thereof;
concentric tubular shaped open ended magnetic flux translative elements providing at least one tubular shaped air gap therebetween for receiving said current conduction means, and
permanent magnet means mounted between said elements so that said elements concentric magnetic flux from said permanent magnet means through said air gap.

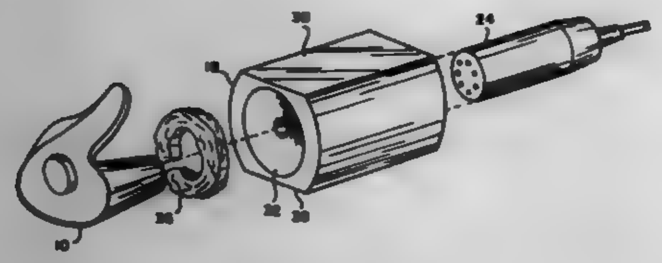
3,979,567
MICROPHONE COUPLER FOR HEARING AID HAVING INVERTED CONICAL END CONFIGURATION

George Joseph Frye, 12175 SW. Douglas, Portland, Oreg. 97225

Filed Feb. 18, 1975, Ser. No. 550,196

Int. Cl.² H04R *29/00*

U.S. Cl. 179—175.1 A **5 Claims**



1. A microphone coupler for coupling a microphone and an ear mold of variable shape of hearing aid to test the operational characteristics of the hearing aid, said ear mold having a transmitting end, comprising:
a body member having a cavity means of predetermined volume therein and a bore extending from one end of said body member to said cavity means and being in communication therewith, said bore adapted to receive the microphone therein;
means for retaining the microphone in predetermined position in said bore;
surface means in the other end of said body member having an inverted conical configuration and having an aperture no greater than the outside diameter of the transmitting end of the ear mold for receiving thereagainst a transmitting end of the ear mold, said other end having a hole therein providing communication between the transmitting end of the ear mold and said cavity means; and
means for acoustically sealingly maintaining the transmitting end of the ear mold against said surface means.

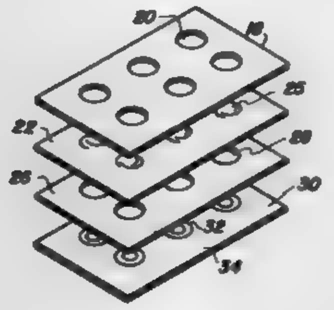
3,979,568
KEYBOARD SWITCH ASSEMBLY HAVING RAISED CONTACTS SUPPORTED BY HELICLINE LEGS ON A COMMON CONDUCTIVE SHEET

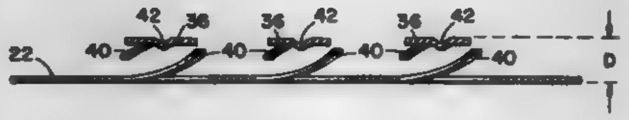
Wendell C. Johnson, Topanga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 23, 1974, Ser. No. 508,482

Int. Cl.² H01H *13/26, 1/06*

U.S. Cl. 200—5 A **39 Claims**





34. A keyboard switching device for effecting a switching action when a key is depressed comprising:
a plurality of switch actuating means,
a metallic member having a plurality of switching members formed as integral parts thereof, at least some of said plurality of switching members including a forceable movable, substantially planar contact area portion supported above a substantially planar supporting surface portion by a plurality of non-planar support legs,
a plurality of contact regions positioned adjacent said metallic member, at least some of said contact regions having at least a portion thereof in operative alignment with different ones of said switch actuating means and with different ones of said contact area portions, and
means for normally separating said metallic number from said plurality of contact regions but permitting each of said aligned contact area portions to be forced toward its aligned contact region when a force is applied to its aligned switch actuating means to thereby effect a switching action,
each of said contact area portions retaining its substantially planar shape while effecting its related switching action.

36. A keyboard switching device for effecting a switching action when a key is depressed comprising:
a plurality of switch actuating means,
an insulating member supporting on a surface thereof a plurality of separate bodies of metallic material, at least some of said bodies having at least one contact member formed as an integral part thereof, each of said contact members including a supporting surface situated substantially in a first plane, and a forceably moveable substantially planar contact area portion supported out of said first plane by a plurality of non-planar support legs,
a plurality of contact regions positioned adjacent another surface of said insulating member, some of said contact regions having at least a portion in operative alignment with different ones of said switch actuating means and with different ones of said contact area portions,
said insulating means having a plurality of apertures therein for permitting each of said contact area portions to be forced toward its aligned contact region when a force is applied to its aligned switch actuating means to thereby effect a switching action.

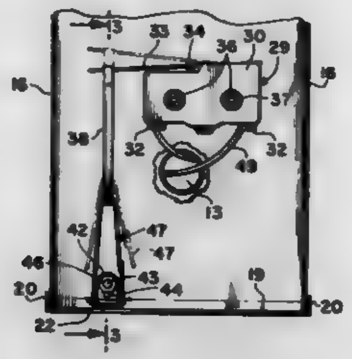
3,979,569
WATER LEVEL SENSING DEVICE HAVING RUPTURABLE HYGROSCOPIC-TYPE SWITCH ACTUATOR

Michael Bilgrei, 111-20 73rd Ave., Forest Hills, N.Y. 11375

Filed July 28, 1975, Ser. No. 599,479

Int. Cl.² H01H *35/18*

U.S. Cl. 200—61.04 **6 Claims**



1. A water level sensing device comprising a housing having a bottom opening therein, a microswitch disposed in said housing and including a horizontally extending actuating arm swingable between advanced depressed and raised retracted positions and resiliently urged to its retracted position, a loop formed of a material having relatively low wet and relatively high dry strengths, and means for supporting said loop in said housing in a vertically extending position between said actuating arm and an underlying point to retain said arm in its advanced position, the stress of said actuating arm being imparted to said loop and exceeding the wet strength and being less than the dry strength of said loop whereby to rupture said loop when wet, and effect the switch actuating retraction of said actuating arm only with the rupture of said loop.

3,979,570
SWITCHING APPARATUS

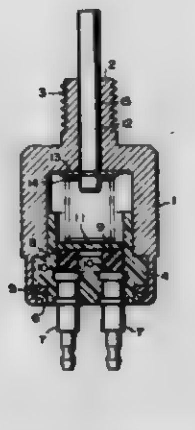
Masayoshi Hyodo, Toyota, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Japan

Filed May 14, 1974, Ser. No. 469,712

Claims priority, application Japan, May 16, 1973, 48-58022[U]; May 16, 1973, 48-58023[U]

Int. Cl.² H01H *35/38*

U.S. Cl. 200—264 **4 Claims**



1. A switching apparatus comprising:
a switch casing,
a plurality of terminals connected to an electric circuit,
a holder of electrical insulating material fixedly supporting at least one of said terminals,
at least one contact element of conductive elastomeric material disposed to be engageable with said terminals,
a movable member for imparting a compressing force to said contact element,
and actuating means disposed in said switch casing for actuating said movable member,
said holder being firmly secured to said switch casing,
said actuating means comprising a fluid-operated actuator including a fluid passage and a fluid reserving space formed in said switch casing for communication with a source of fluid pressure,
said contact element being normally compressed by the force of a spring so that said contact element is electrically conductive when said fluid-operated actuator is not in operation,
and said diaphragm acting to release said contact elememt from the compressed state through a slider against the force of said spring when said fluid operated actuator is placed in operation.

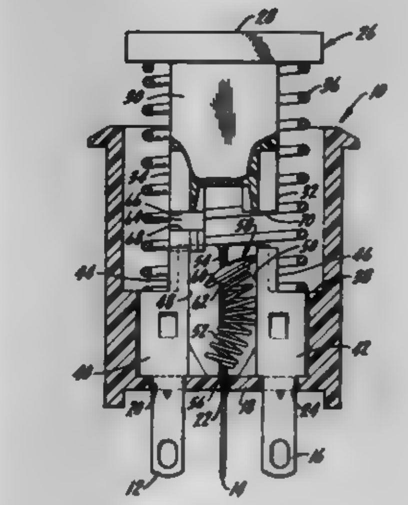
3,979,571
BUCKLED SPRING SWITCH MECHANISM WITH LATCHING PUSHBUTTON

Peter J. Van Benschoten, Rancho Santa Fe, Calif., assignor to Oak Industries Inc., Crystal Lake, Ill.

Filed Dec. 9, 1974, Ser. No. 531,038

Int. Cl.² H01H *1/20*

U.S. Cl. 200—328 **8 Claims**



1. In a switching mechanism, a housing, at least two terminals partly positioned within said housing, an actuator mounted for reciprocal movement within said housing, return spring means positioned within said housing and normally biasing said actuator outwardly of said housing,
coil spring means pivotally mounted under endwise buckling pressure between spaced portions of one of said terminals, a slider positioned in one end of said coil spring means and bearing against one of said spaced terminal portions, said slider being positioned for mechanical contact by said actuator for pivotally moving said coil spring means, about said spaced terminal portions, into and out of electrical contact with the other terminal, cooperating means on said slider and actuator for latching said actuator in an inward position when said actuator has caused said coil spring means to be in electrical contact with said other therminal.

3,979,572

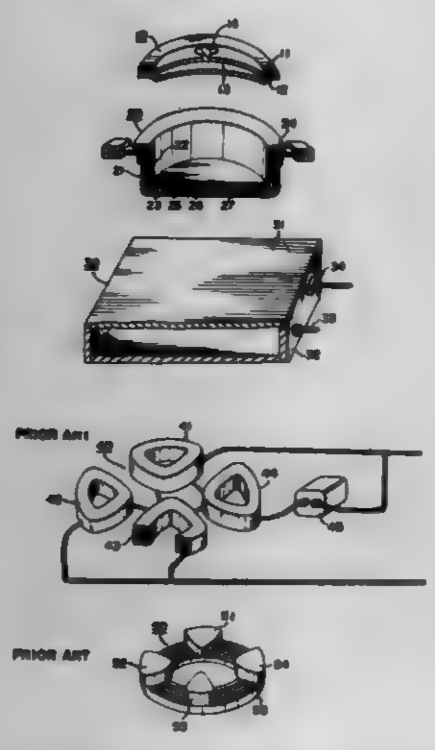
INDUCTION HEATING APPARATUS

Toshio Ito; Masahiro Hibino, and Tetsuya Kohya, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 29, 1974, Ser. No. 518,731

Int. Cl.² H05B ***5/04***

U.S. Cl. 219—10.49 18 Claims



1. Induction heating apparatus comprising:
an inner member for holding material to be heated,
an outer member of non-magnetic high electrically resistive material joined to the inner member,
a planar magnetic member joined to the inner member,
a planar non-magnetic high electrically conductive member joined to the magnetic planar member to be disposed between the magnetic planar member and the outer member,
a thermally insulative space between the outer member and the inner member and between the outer member and the planar non-magnetic high electrically conductive member,
an exciter excited by a 60 cps power source to generate an alternating magnetic field and to form a magnetic circuit through the outer member, the planar magnetic member and the planar non-magnetic high electrically conductive member,
the outer member being of stainless steel with a diameter of 15–25 cm. and a thickness of 0.3–0.5 mm.,
the inner member being of stainless steel with a thickness of 0.4–0.7 mm.,
the planar magnetic member being an iron plate with a thickness greater than 2.6 mm.,
the planar non-magnetic high electrically conductive member being aluminum with a thickness of 0.3–2.7 mm.

3,979,573

MICROWAVE OVEN DOOR HINGE

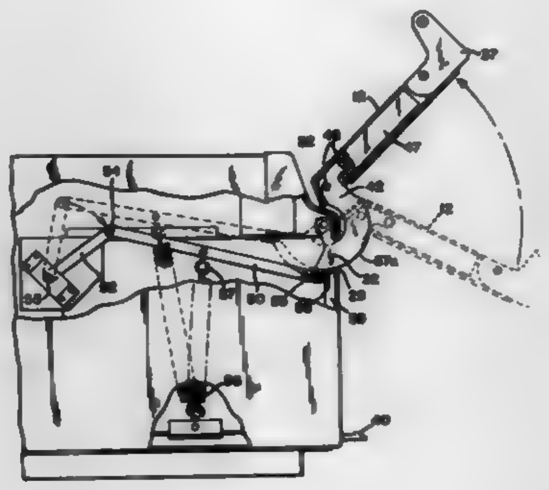
Richard H. Burns, and William J. Walthour, both of Troy, Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Feb. 14, 1975, Ser. No. 549,965

Int. Cl.² H05B ***9/06***

U.S. Cl. 219—10.55 D 7 Claims

1. In a microwave oven which includes a cabinet defined by side, top, bottom, rear walls, and a front wall with a substantially vertically arranged aperture therein defining a plane, said walls defining a heating cavity accessible through said aperture, and a source of microwave energy coupled to the interior of said cavity, the improvement comprising:
a cavity closing door movable in an arcuate path about an axis adjacent to the upper portion of said door between a closed lower position covering said aperture and an open upper position above said aperture,
pivotal supporting means pivotally mounted behind said front wall at a point which is above said door when said door is in its closed lower position and including connecting arm means extending through the plane of said front wall and rigidly attached to said door, and
a rearwardly recessed surface above said aperture to permit the arcuate path of said door between said closed lower position and said open upper position substantially to exceed 90°.



3,979,574

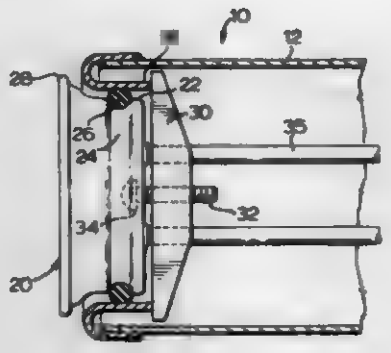
TANK TYPE ENGINE HEATER

Richard Haig John Rynard, Toronto, Canada, assignor to Canadian General Electric Company Limited, Toronto, Canada

Filed Mar. 31, 1975, Ser. No. 563,711

Int. Cl.² H05B ***3/82;*** **F02N** ***17/06;*** **F24H** ***1/10***

U.S. Cl. 219—208 4 Claims



1. In a tank heater comprising a shell having liquid inlet and outlet conduits and having an opening therein adapted to be closed by a closure means including a closure member, said closure member having an electric immersion heating element dependent therefrom to project into said shell, said closure member comprising a plug having an annular wall portion, an O ring sealing member girdling said annular wall portion, and means to retain said closure member in its closed position, the improvement wherein said closure means includes an annulus having a U-shaped wall, the outer leg thereof being circumferentially connected in sealed relation to said opening, the inner leg thereof extending inwardly of said opening and being spaced from the inner surface of said shell, said O ring sealing member engaging said inner leg when said closure member is inserted into said annulus.

3,979,575

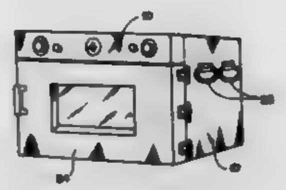
PORTABLE ELECTRIC OVEN

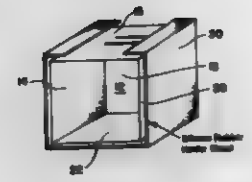
Werner H. Maahs, Milwaukee, Wis., assignor to M & M Enterprises, Inc., Milwaukee, Wis.

Filed May 29, 1975, Ser. No. 581,786

Int. Cl.² F27D ***11/02***

U.S. Cl. 219—407 2 Claims





1. An electric oven comprising: a plurality of external wall members; a plurality of internal wall members forming an internal oven compartment; a door closing said oven compartment; a sheet of insulating material formed of silicone rubber wrapped around the internal wall members having a width corresponding substantially to the width of the wall members of the internal wall members and extending as a single layer substantially around the internal wall members forming the oven compartment between the internal and external wall members; and bare electrical resistance wires embedded in the silicone rubber sheet and around said internal wall members and having electrical leads for connection to an electrical energizing source for heating the oven compartment.

3,979,576

ELECTRIC HEATING ELEMENT CONTROL CIRCUIT

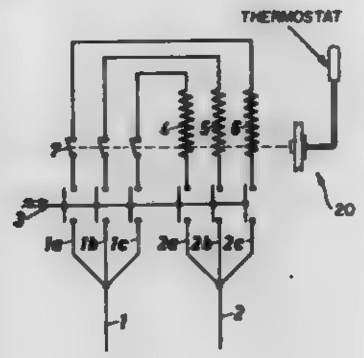
Sven-Olof Jansson, Svarvaregatan 6, Halmstad, Sweden (30250)

Filed May 28, 1974, Ser. No. 474,077

Claims priority, application Sweden, June 14, 1973, 7308360

Int. Cl.² H05B ***1/02***

U.S. Cl. 219—489 2 Claims



1. An electric heating circuit for connecting an electric heating apparatus, to a source of power comprising a plurality of heating elements, an alternating current electric network having at least one phase, each phase of the network being evenly divided into a number of part leads, the total number of part leads being twice the number of heating elements; said part leads being arranged into two series of part leads each comprising as many part leads as the number of heating elements in the apparatus; a first switch means being arranged simultaneously to close and open all part leads of both of said series; each separate part lead of a first one of said series being connected to one separate terminal pole of a respective one of the said heating elements; a second multipolar switch being disposed in said first series of part leads, said second switch being controlled by a thermostat and adapted to open at least one of the separate part leads of the said first series, thereby disconnecting at least one associated heating element in response to impulses from the thermostat; each separate part lead of the second series of part leads being directly connected to the corresponding other terminal pole of a respective one of the heating elements.

3,979,577

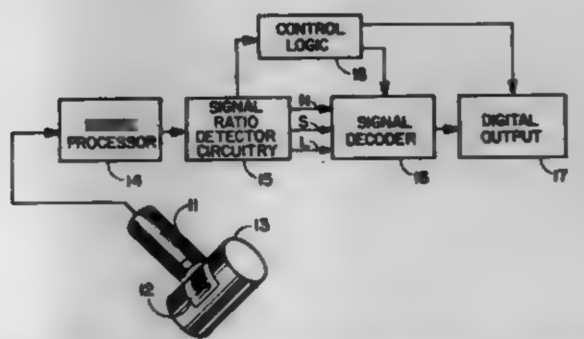
CODE RECOGNITION RECORD MEDIUM AND TECHNIQUE

Lawrence Seligman, Sherborn, Mass., assignor to Data General Corporation, Southboro, Mass.

Filed Dec. 5, 1973, Ser. No. 421,884

Int. Cl.² G02B ***5/14;*** **G06K** ***7/10***

U.S. Cl. 235—61.12 N 7 Claims



1. In a record medium for storing at least one of a plurality of characters scannable in a reading direction, each character formed by a maximum of seven abutting equal sized modules of information where each module is coded to have one or the other of the values of a two-level code consisting of at least six consecutive transitional occurrences between the two levels where not more than two modules of the same level are arranged consecutively, the improvement comprising:
each character arranged in a configuration so that two consecutive ones of said modules of a first level are not immediately followed by the two consecutive ones of said modules of the second level,
alternate ones of said transitional occurrences defining four distances where the ratios of overlapping ones of said distances represent not more than one of three preselected values enabling each character to be uniquely identified, and
each of said plurality of characters being formed by said maximum of seven abutting equal sized modules in a manner to permit no more than four changes of said code values within each of said plurality of characters.

3,979,578

ACCESS CONTROLLER AND SYSTEM

Ira J. McCullough, 5820 S. Alameda St., Los Angeles, Calif. 90024; Albert J. Lee, 7419 Ruffner St., Van Nuys, Calif. 91406, and John G. Sullivan, 1034 - 17th St. Apt. 102, Santa Monica, Calif. 90403

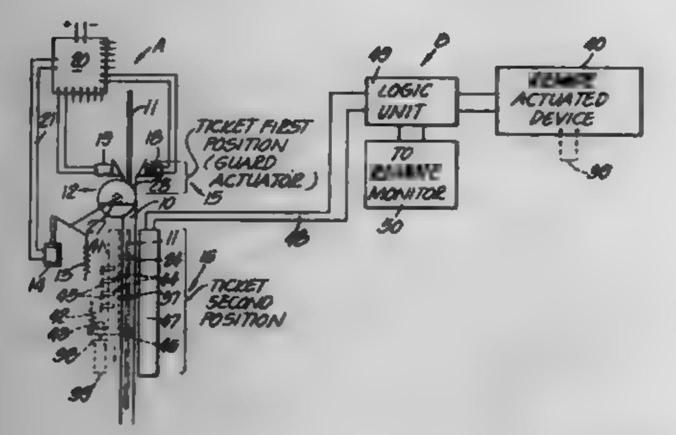
Filed June 23, 1975, Ser. No. 589,244

Int. Cl.² G06K ***7/04, 19/06***

U.S. Cl. 235—61.11 E 12 Claims

1. In a controller having an opening for receiving a key-coded identification member such as a ticket, card, and the like, means for guarding said opening against the reception of foreign objects which might jam the opening and prevent reception of an identification member, the improvement comprising:

a. guard means in an approach path of movement, of the identification member, passing through said opening, said guard means being rotatably supported for movement to opened and closed positions with respect to said opening, and being normally motivated towards said closed position, said guard means in said closed position presenting an abutment surface such that pressure forces applied thereagainst by an inserted identification number tends to force the guard means in a closing direction; and



b. actuator means operable to move said guard means from a closed position to an opened position in response to sensing means activated by the presence of a properly key-coded portion of said identifying member in said approach path ahead of said guard means.

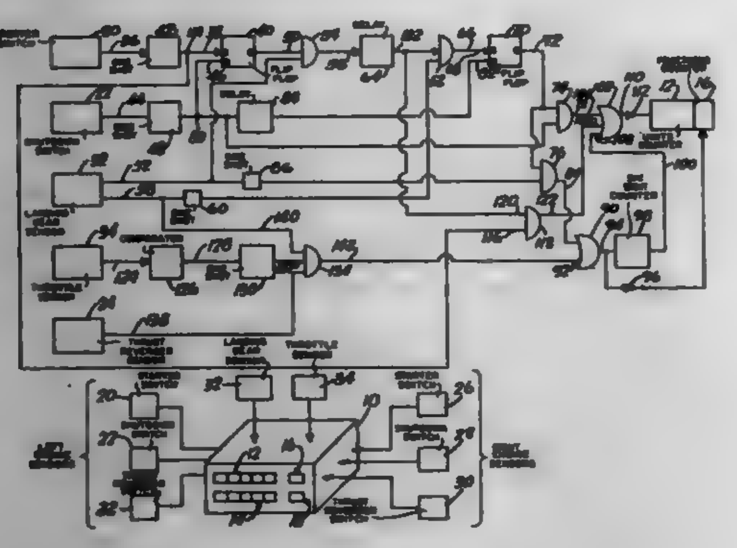
3,979,579
AIRCRAFT ENGINE FATIGUE CYCLE RECORDER

Joseph Kleinpeter, Center Moriches, N.Y., assignor to Lawrence Peska Associates, Inc., N.Y., a part interest

Filed May 19, 1975, Ser. No. 579,037

Int. Cl.² G06G 7/78

U.S. Cl. 235—150.2 3 Claims



3. In a multi-engine aircraft, counter means for individually displaying stress cycles undergone by each engine, means for individually sensing the starting, shutdown, and thrust reversal of each engine, means for sensing the status of the aircraft landing gear, means for sensing the throttle setting for the engines and logic means responsive to said various sensing means for deriving a count of stress cycles individually for each engine and means responsive to said deriving means for individually indexing said counter means.

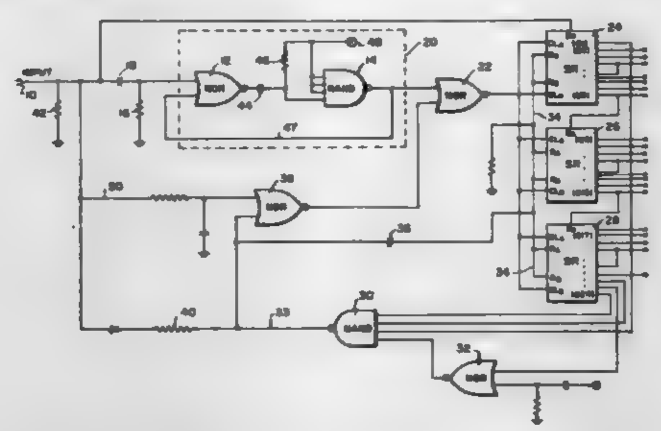
3,979,580
FUNCTION SELECTOR

Thomas W. Crilly, Silver Spring, and Michael C. Gariazzo, Bowie, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 15, 1975, Ser. No. 568,236

Int. Cl.² G06G 7/26; F42B 5/08

U.S. Cl. 235—150.53 7 Claims



1. A function selector for receiving coded information for programming a firing mechanism comprising:

a monostable multivibrator for receiving an input signal and supplying output signals;

an inverter coupled to the output of said multivibrator for receiving said output signals;

shift register means coupled to the output of said inverter for receiving output signals from said inverter, said shift register further coupled directly to said input signal; and

logic means coupled to said shift register means for detecting an incorrect code in said shift register means to reset said shift register means.

3,979,581
METHOD AND ARRANGEMENT FOR DETERMINING THE MASS OF TOBACCO OR THE LIKE A MATERIAL BY CAPACITANCE AND ATTENUATION MEASUREMENTS IN A RESONANT HIGH FREQUENCY OSCILLATOR CIRCUIT

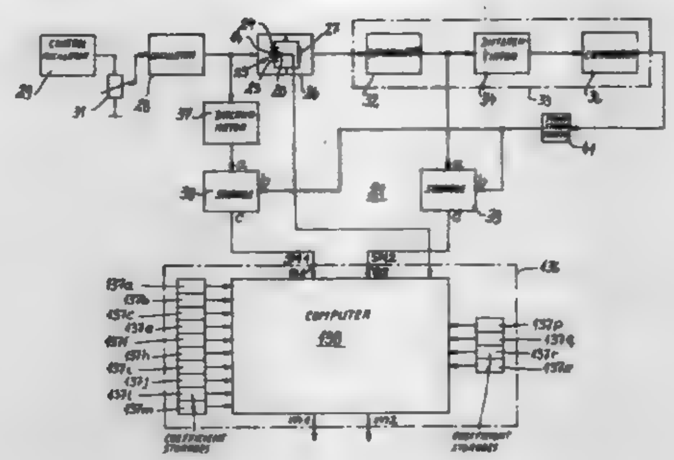
Joachim Reuland, Hamburg, Germany, assignor to Hauni-Werke Korber & Co., KG, Hamburg, Germany

Filed Feb. 24, 1975, Ser. No. 552,047

Claims priority, application Germany, Feb. 26, 1974, 2409102

Int. Cl.² G01R 27/26; G06F 15/20

U.S. Cl. 235—151.33 33 Claims



20. Apparatus for determining the mass of a material which constitutes at least a part of the dielectric of a capacitor in a high-frequency oscillator circuit, comprising first measuring means coupled to said oscillator circuit and arranged to furnish a capacitance signal corresponding to the capacitance of said capacitor; second measuring means coupled to said oscillator circuit and arranged to furnish an attenuation signal corresponding to the attenuation of said oscillator circuit; and computing means for providing a third signal which is indicative of the mass of said material, said computing means being connected to said first and second measuring means and including storage means for storing a plurality of constants, said third signal being a function of said capacitance signal, said attenuation signal and said constants.

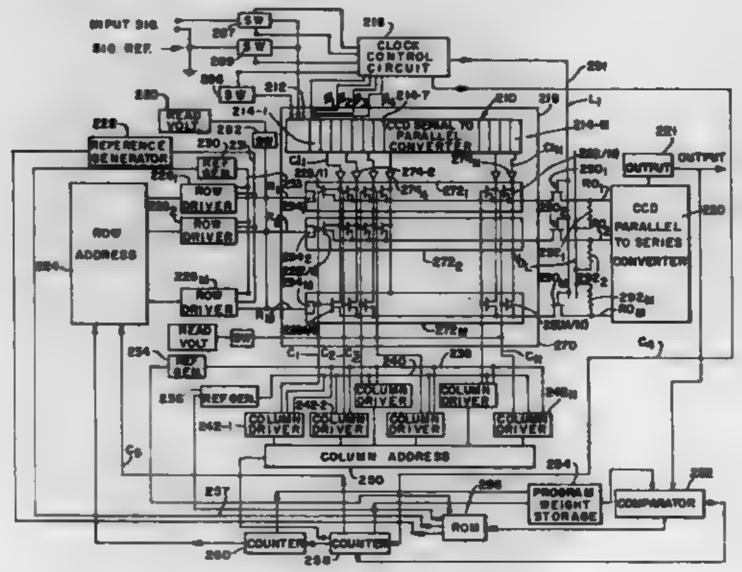
3,979,582
DISCRETE ANALOG PROCESSING SYSTEM INCLUDING A MATRIX OF MEMORY ELEMENTS

James H. Mims, Linthicum Heights, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 17, 1974, Ser. No. 506,906

Int. Cl.² G11C 11/40; H03K 5/159

U.S. Cl. 235—193 24 Claims



1. A discrete analog signal processing system for processing an input signal in accordance with a pattern of weighting factors, said system comprising:

a. a matrix of memory elements disposed in rows and columns, each of said memory elements capable of storing an analog weighting factor of the pattern and responsive to a portion of the input signal applied thereto for providing an element output indicative of the product of the stored weighting factor and the input signal portion, said matrix further comprising first sets of row and column conductors coupled to the corresponding memory elements of said matrix;

b. first converter means comprising a plurality of stages coupled to corresponding column conductors and responsive to the input signal for disposing sequentially a portion of the input signal at each of its stages, whereby a signal portion is applied through its corresponding column conductor to those memory elements of that column;

c. second converter means comprising a plurality of stages coupled to corresponding row conductors of said matrix, for summing and storing the element outputs of those memory elements of that row and operative to sequentially read out the plurality of summed row signals; and

d. programming generator means for applying conductance programming signals to each of said memory devices for storing therein a weighting factor in accordance with the pattern of weighting factors.

3,979,583
PHOTOFLASH FILTER

John J. McCan, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 26, 1974, Ser. No. 492,055

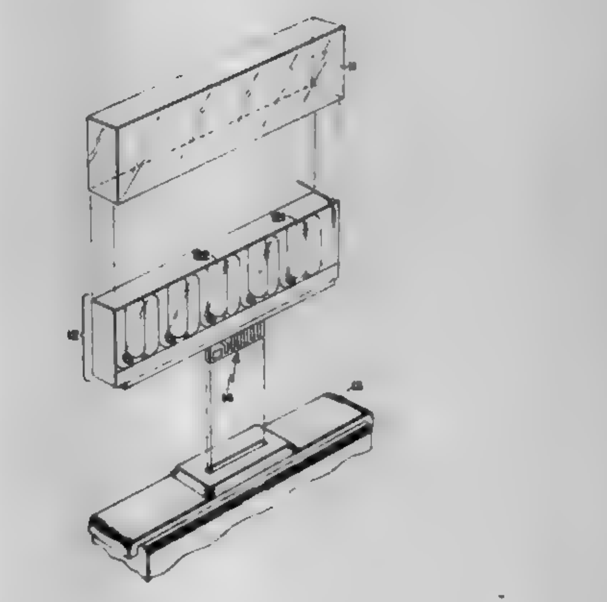
Int. Cl.² G03B 15/02

U.S. Cl. 240—1.3 4 Claims

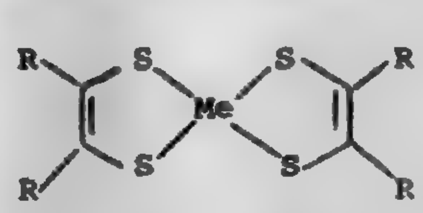
1. Illumination apparatus for use in photography comprising:

a photoflash lamp which emits radiant energy having a distribution of wavelengths ranging from less than 400 nm to greater than 700 nm;

a filter element associated with said photoflash lamp for filtering out the photographically superfluous radiation emitted by said photoflash lamp, said filter element comprising at least one material providing a maximum absorption of infrared radiation of wavelengths greater than 700 nm while providing maximum transmission of radiation in the visible region of the spectrum;



said filter element being fabricated from an organic plastomeric material which is substantially transparent to radiation in said visible region, said filter element including either (a) the combination of 1,4,5,8-tetrakismethylamino-anthraquinone together with 1,4-bis(sec-buty) amino-anthraquinone or (b) the combination of 1,4,5,8-tetrakismethylamino-anthraquinone together with a dithio-metal complex of the formula:



wherein Me is Ni or Pt; and all R's represent the same substituted or unsubstituted phenyl group;

said filter element absorbing at least 10% of the total radiation having wavelengths between 700 nm and 2,000 nm.

3,979,584
MODULAR CHANDELIER

George Fossati, 337 E. Palisades Blvd., Palisades, N.J. 07650

Filed Jan. 22, 1975, Ser. No. 543,152

Int. Cl.² F21S 1/06, 3/06

U.S. Cl. 240—78 F 9 Claims

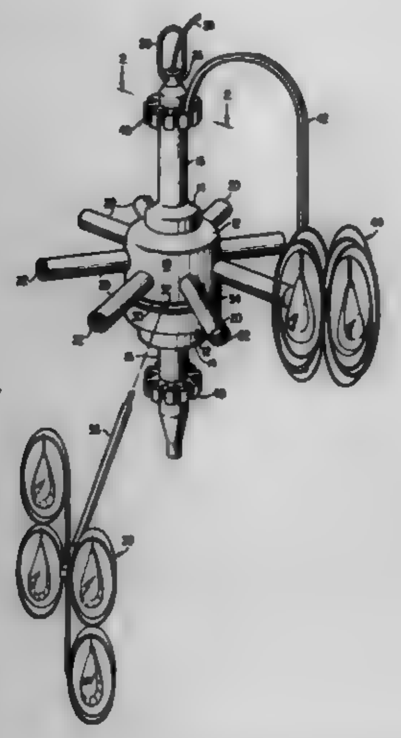
7. In a chandelier,

a support arm having two pairs of faces;

a first pair of pins extending outwardly from one of the pairs of faces of said support arm and occupying a first plane along the axis of said support arm;

a second pair of pins extending outwardly from the other of the pairs of faces of said support arm and occupying a second plane along the axis of said support arm; and

a connector ring having on its periphery at least one opening including three separate channels angularly spaced from one another by ninety degrees, the opposing pair of channels being sloped inwardly toward the center of said ring to receive one of said pairs of pins in locking relationship while one pin of the other of said pairs of pins occupies the remaining channel.



3,979,585

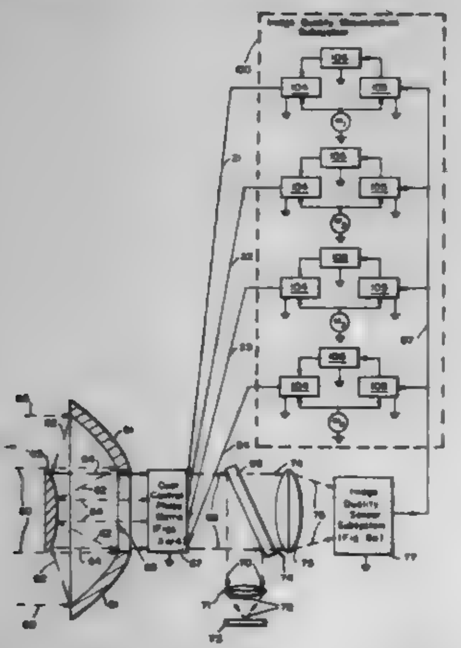
ADAPTIVE IMAGING TELESCOPE WITH CAMERA-COMPUTER TRANSFORM IMAGE QUALITY SENSING AND ELECTRO-OPTIC PHASE SHIFTING

Thomas R. O'Meara, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed June 24, 1974, Ser. No. 482,175

Int. Cl.² G01J *1/20*

U.S. Cl. 250—201 7 Claims



1. In an adaptive imaging telescope for detecting an optical image received by the telescope, comprising in combination:

an electro-optic phase shifter, including a planar crystal having two major surfaces and a plurality of electrodes attached to the major surfaces, which phase shifter is positioned substantially at the optical image plane of the telescope aperture, responsive to the optical image;

first means optically coupled to the phase shifter, comprising a video camera responsive to light from the optical image, an analog to digital converter electrically connected to the output of the video camera, a transform processor connected to the output of the converter, and digital computation means electrically connected to the output of the processor; and

second means, electrically coupling the first means and phase shifter, for providing phase modulation of the optical image.

3,979,586

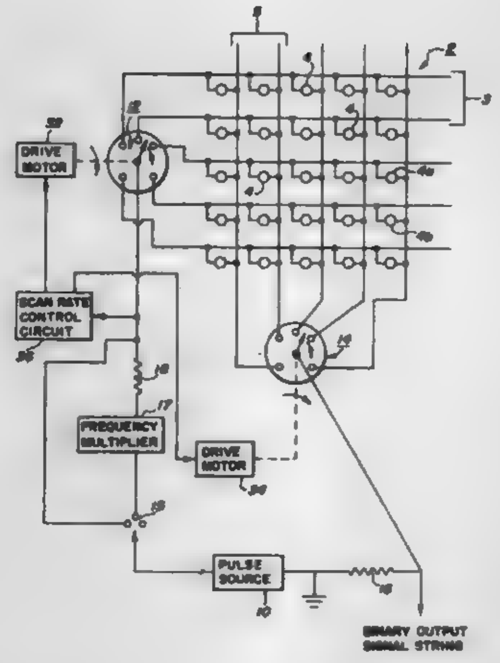
NON-CRYSTALLINE DEVICE MEMORY ARRAY

David D. Thornburg, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 9, 1974, Ser. No. 530,897

Int. Cl.² H01J *39/12*

U.S. Cl. 250—209 5 Claims



1. A memory array comprising a matrix of non-crystalline, semiconductor threshold switching devices each having a V-I characteristic comprised of a high resistance state region and an abrupt transition to a low resistance state region and including means to heat at least a portion of said array,

first means for switching at least one of said threshold switching devices to its low resistance state,

second means for sampling each of said threshold switching devices of said matrix with voltage pulses having a magnitude and repetition rate sufficient to maintain said switched threshold switching device in its low resistance state without switching any other of said threshold switching devices to its low resistance state, and

third means for interrupting said voltage pulses from said second means to allow said switched threshold switching device to revert to its high resistance state.

3,979,587

COMPONENT FOR LIGHT DETECTION AND EMISSION

Baudoin de Cremoux, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 27, 1975, Ser. No. 580,756

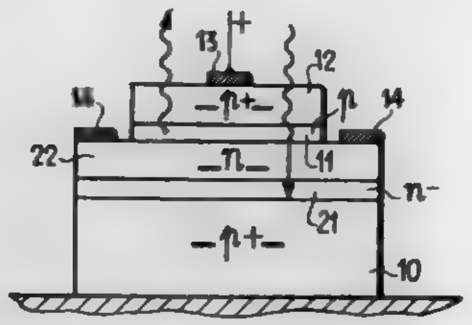
Claims priority, application France, May 28, 1974, 74.18461

Int. Cl.² H01J *39/12*

U.S. Cl. 250—211 J 12 Claims

1. A solid-state light emitter and receiver component comprising superimposed upon one and the same substrate an electroluminescent diode and a photodiode, said electroluminescent diode and said photodiode operating respectively in a

first and in a second light frequency band, said electroluminescent diode being transparent vis-a-vis said second light frequency band, and means for alternately rendering said electroluminescent conducting and said photodiode blocked.



3,979,588

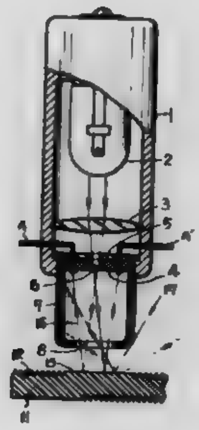
LIGHT PROJECTING AND ABSORBING APPARATUS IN A SYSTEM FOR SELECTING AUTOMATICALLY DESIRED MUSIC IN PHONOGRAPHIC PLAYER

Jang Hwan Park, 537, Naechungri, Oedongmyon, Wolsung, Kyung Sang Buk-Do, South Korea

Continuation-in-part of Ser. No. 384,108, July 30, 1973, abandoned. This application Nov. 13, 1974, Ser. No. 523,422

Int. Cl.² H01J *5/16*; G11B *7/06*

U.S. Cl. 250—239 1 Claim



1. A detecting unit for an automatic tune selection system of a phonographic record player comprising a light projector adapted to project light rays from a light source onto a portion of a face of a record disc and a CdS photoelectric element adapted to be impinged upon by the reflections of said light rays, a cylindrical casing housing said light projector and said photoelectric element, a light barrel shield fixed to the lower end portion of said casing and extending downwardly therefrom and having a constricted aperture formed on the lower end thereof, said photoelectric element being secured in said casing downwardly from said light source and upwardly from said constricted aperture, a light shield disc disposed on top of and in abutting relationship with said photoelectric element, said photoelectric element and light shield disc having a passage bore formed through the centers thereof providing a passage for said light rays of said light source which are projected therethrough, said constricted aperture forming a passage for both outgoing light rays of said light source and incoming reflections of said light rays reflected from a portion of the face of said record disc, the constricted aperture having a diameter which is substantially smaller than the diameter of said photoelectric element and also smaller than the inner diameter of said casing as well as the diameter of said light shield barrel, thereby forming a limited passage for the exclusive reception of sharp angled reflections of said light rays of said light source.

3,979,589

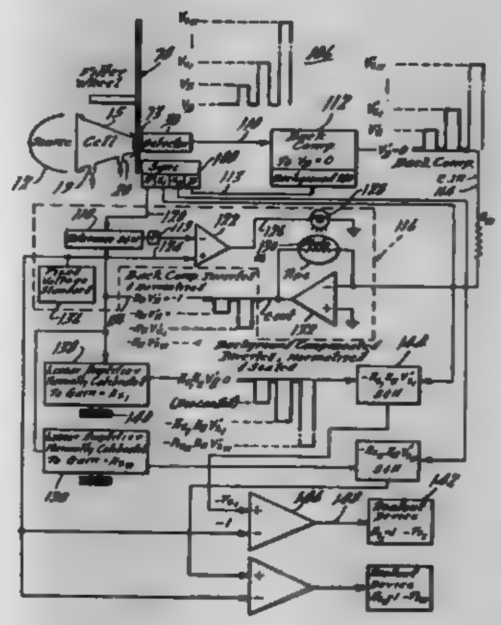
METHOD AND SYSTEM FOR THE INFRARED ANALYSIS OF GASES

Stanley R. Sternberg, Ypsilanti; James E. Young, Detroit, and John W. Lennington, Ypsilanti, all of Mich., assignors to Finn Bergishagen; John S. Abbott; Kenneth A. Hutchinson; James E. Young; John W. Lennington and Stanley R. Sternberg, all of Union Lake, Mich.

Division of Ser. No. 420,305, Nov. 29, 1973, Pat. No. 3,887,473, which is a division of Ser. No. 281,958, Aug. 18, 1972, Pat. No. 3,790,798, which is a continuation-in-part of Ser. No. 178,260, Sept. 7, 1971, Pat. No. 3,790,797, which is a continuation-in-part of Ser. No. 809,752, March 24, 1969, abandoned. This application Mar. 31, 1975, Ser. No. 563,709

Int. Cl.² G01D *18/00*

U.S. Cl. 250—252 28 Claims



1. A spectrophotometer having chamber means for containing a fluid for analysis, indicating means for indicating the concentration of a component of said fluid, and an adjustable calibration control for setting said indicating means to a zero indication while a substantially nonabsorbing fluid is contained in said chamber comprising:

means providing a component signal which is related to the concentration of said component of said fluid;

means providing a reference signal;

means for providing a component ratio signal representative of the ratio of said component signal with respect to said reference signal including adjustment means receiving said component signal and said reference signal for adjusting said reference signal so that said reference signal represents a predetermined standard value, said adjustment means adjusting said component signal an amount correlative to said adjustment of said reference signal to provide said component ratio signal;

means for reducing said component ratio signal an amount representative of said standard value to provide a reduced component ratio signal; and

means associated with said adjustable calibration control and said indicating means for adjusting said reduced component ratio signal and providing for the indication thereof by said indicating means in a manner so that said indication indicates zero when said substantially nonabsorbing fluid is in said chamber, said adjustable calibration control and said means associated with said adjustable calibration control being adapted to be invariant when said fluid having said component is analyzed so that said indicating means indicates the concentration of said component in said fluid.

3,979,590

ELECTRON MICROSCOPE COMPRISING AN ENERGY ANALYZER

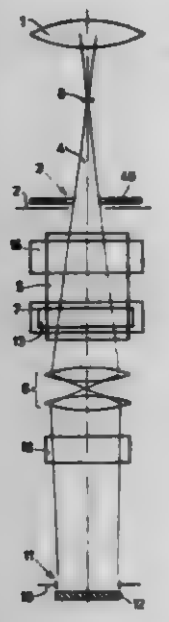
Willem Hendrik Jan Andersen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 28, 1975, Ser. No. 562,965

Claims priority, application Netherlands, Apr. 1, 1974, 7404363

Int. Cl.^{2} H01J *37/26*

U.S. Cl. 250—305 5 Claims



1. An electron microscope comprising an electron source, electron-optical lens system to form an electron beam having a cross-over section, a dispersing energy analyzer including a Wien filter for which the cross-over section acts as an object, said filter being operable for dispersing in a transverse direction with respect to the axial direction of the beam the electrons having velocities deviating from a preselected velocity; a four-pole lens system located at the output of said filter to increase the dispersion in said transverse direction, deflection means for moving the beam in said transverse direction, an output screen located in an image plane and having an elongate slot extending in said transverse direction, and an electron detector located behind the slot.

3,979,591

METHOD AND APPARATUS FOR TRANSFERRING A PATTERN ON AN OVERLYING WEB BY LASER BURNING INTO AN UNDERLYING WEB

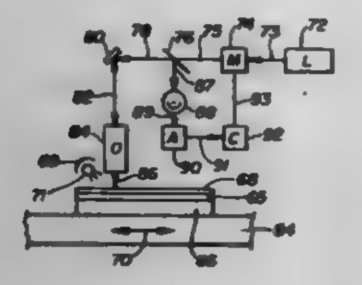
Daniel Silverman, 5969 S. Birmingham St., Tulsa, Okla. 74105

Continuation-in-part of Ser. No. 262,290, June 13, 1972, Pat. No. 3,832,547. This application Aug. 20, 1974, Ser. No. 498,954

The portion of the term of this patent subsequent to Aug. 27, 1991, has been disclaimed.

Int. Cl.^{2} G03C *5/16*

U.S. Cl. 250—317 22 Claims



1. A system for directly transferring a micropattern of microperforations in a first metal web to an underlying second web, comprising:

- a. a master record web comprising a first metal layer carrying a first micropattern of microperforations, said first metal layer composed of a first metal, of a first thickness of a first thermal characteristic;
- b. a facsimile record web comprising a second layer, said second layer composed of a second material, of a second thickness of a second thermal characteristic;
- c. means to place said master web superimposed in contiguous relation on top of said facsimile record so that each web remains in fixed relation with respect to the other web;
- d. optical means to focus a continuous beam of laser radiation of a selected constant level of intensity and to direct said beam onto the surface of said master web, and means to relatively move said beam of laser radiation over substantially the entire area of said micropattern on said master web in a plurality of parallel paths, at a selected velocity; and wherein
- e. said first metal has a higher melting point than the melting point of said second material;

whereby said focussed beam will penetrate said microperforations in said first metal layer and irradiate said second layer below, and will burn microperforations in said second layer in a second micropattern which is identical to said first micropattern.

3,979,592

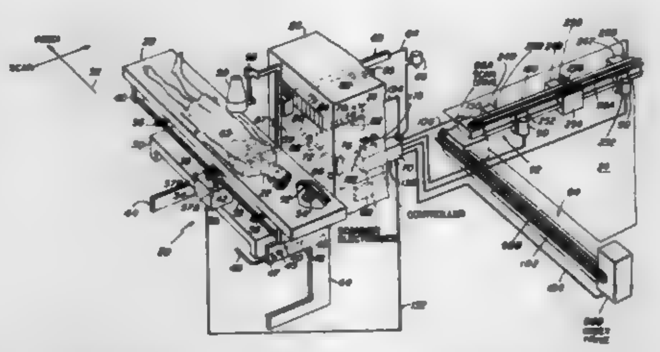
LARGE AREA RADIOGRAPHIC SCANNER

Edward J. Doherty, III, Halifax, and David W. Morrison, Burlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 373,058, June 25, 1973, abandoned. This application Apr. 17, 1975, Ser. No. 569,024

Int. Cl.^{2} G01T *1/16*

U.S. Cl. 250—363 S 5 Claims



1. A radiographic display system comprising:

a radiation detector assembly;

means for scanning said radiation detector assembly in a prescribed format which includes a scanning along a first axis and a scanning along a second axis normal thereto, said detector scanning means comprising means for sensing the position of said detector;

means for supporting a subject emitting radiation spaced from said radiation detector assembly;

means coupled to said radiation detector assembly for producing an image, said image producing means comprising recording means and means for scanning said recording means;

means coupled between said detector scanning means and said image producing means for signaling said image producing means to scan in a format similar to said format of said detector scanning, said signaling means including means for altering the relative sizes of said detector scanning format and said image scanning format; and

means for positioning said subject support means concurrently with a portion of a scanning of said detector scan format, said support positioning means comprising means for sensing the position of said subject support and means responsive to each of said sensing means for positioning said support.

3,979,593

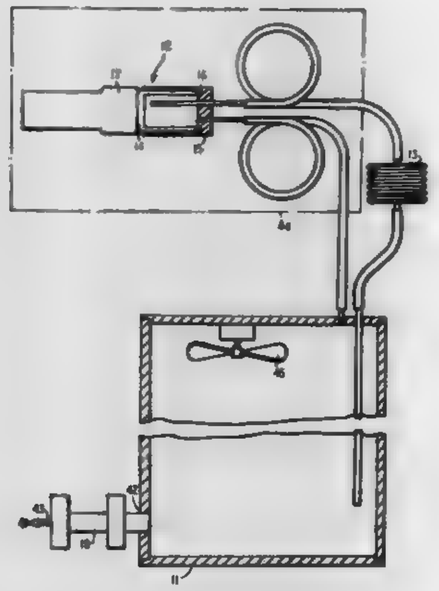
DETECTOR FOR MEASURING A RADIOISOTOPE TRACER GAS

Walter Thomas Spragg, Sutherland, and Brian William Seatonberry, San Souci, both of Australia, assignors to Australian Atomic Energy Commission, Coogee, Australia

Continuation-in-part of Ser. No. 344,034, March 22, 1973, Pat. No. 3,866,057. This application Aug. 19, 1974, Ser. No. 498,869

Int. Cl.^{2} G01T *1/20*

U.S. Cl. 250—364 1 Claim



1. A beta radioactivity detector comprising a hollow body section of radiation opaque material with an aperture therein, a piece of phosphor light-conductive material located in sealing engagement in the aperture to form a gas-tight fixed volume enclosure, a gas inlet and outlet to the enclosure and a photomultiplier tube with a window mounted against the phosphor light-conductive material in the aperture, whereby the beta activity of a gas in the enclosure causes light generation in the phosphor said light being conducted to the photomultiplier tube, said enclosure comprising a light transparent or translucent phosphor cup of plastics material having a base and at least one side wall, said plastics cup being inserted in a substantially gas tight manner within a metal cup to define said enclosure, the base of the plastics cup forming in combination said aperture closure and said phosphor light-conductive material.

3,979,594

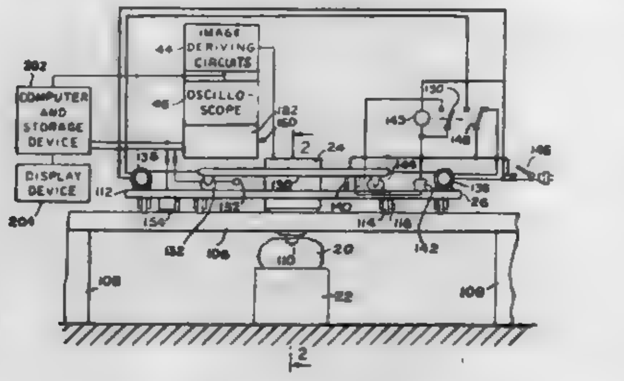
TOMOGRAPHIC GAMMA RAY APPARATUS AND METHOD

Hal O. Anger, 1771 Highland Place, Berkeley, Calif. 94709

Continuation of Ser. No. 794,327, Jan. 27, 1969, which is a continuation-in-part of Ser. No. 646,804, June 15, 1967, abandoned. This application Mar. 23, 1972, Ser. No. 237,521

Int. Cl. G01t *1/16*

U.S. Cl. 250—369 53 Claims



1. An apparatus for obtaining a radiation distribution readout of radiating sources located at different depths in a subject, by a single scan of the subject, said apparatus comprising:

- a. a radiation image forming first means for producing images of said sources wherein the relative positions of the images of sources on a plurality of selected different planes within said subject will vary with changes in the relative positions of said first means and said subject during said scan;
- b. image detecting second means converting said images, and producing a plurality of first outputs giving information as to the positions of said images;
- c. third means for changing the relative positions of said first means and said subject for examining said subject from a plurality of relative positions, said third means including means for providing a plurality of second outputs during said scan having information as to said relative positions; and
- d. image deriving fourth means for modifying at least one of said first and second outputs and for combining said first and second outputs as modified to provide a plurality of readouts of said radiating sources having a preferential focusing effect for those of said sources located on said plurality of selected planes in the subject.

3,979,595

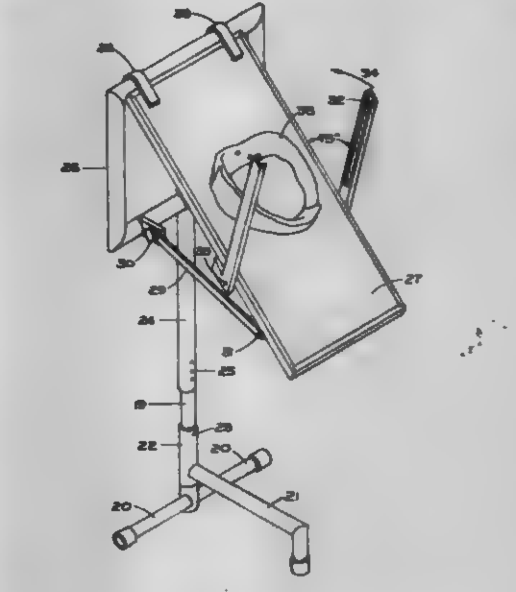
KNEE SUPPORT AND CASSETTE HOLDER FOR AXIAL X-RAYS OF THE KNEES

Alan C. Merchant, 23415 Camino Hermoso, Los Altos Hills, Calif. 94022

Filed Apr. 9, 1975, Ser. No. 557,800

Int. Cl.^{2} G01N *21/00, 23/00;* H01J *37/20*

U.S. Cl. 250—451 5 Claims



1. An x-ray film cassette and leg holder comprising:

- A. A knee support frame;
- B. A leg support member hingedly secured to said frame for supporting legs over the end of an x-ray table; and
- C. An x-ray film cassette holder secured to said leg support member for maintaining a cassette in a plane perpendicular to the central x-ray beam aimed down at an angle toward the knee caps.

3,979,596

CORONAMETRIC INSTRUMENT FOR AEROSOL MEASUREMENTS

Glenn E. Shaw, and Charles S. Dechr, both of Fairbanks, Alaska, assignors to The United States of America as represented by the Administrator of the Environmental Protection Agency, Washington, D.C.

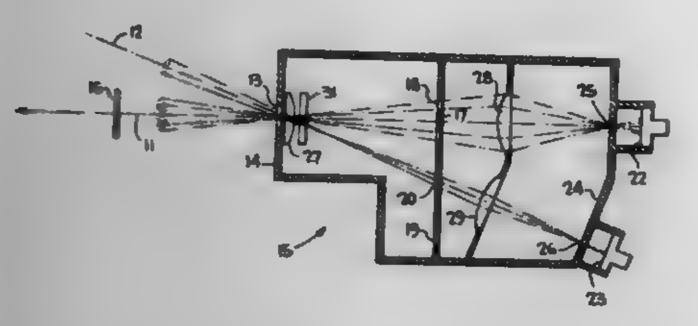
Filed Oct. 24, 1975, Ser. No. 625,790

Int. Cl.^{2} G01N *21/26, 21/06*

U.S. Cl. 250—*575* 15 Claims

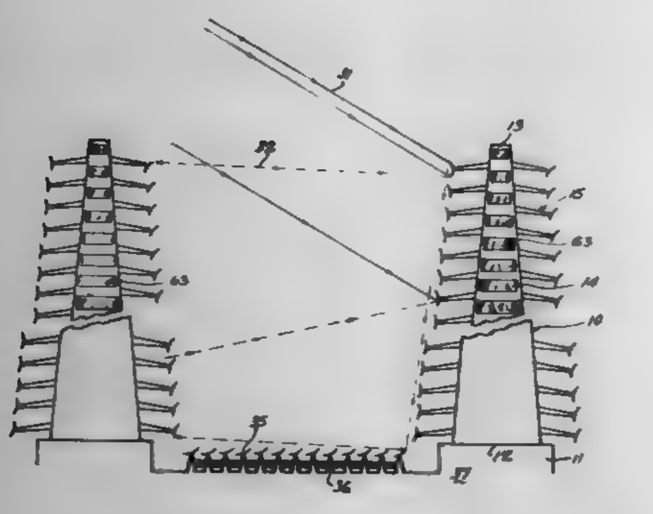
1. A coronametric instrument responsive to first and second fields of view slightly removed from the sun comprising a first

optical axis adapted to be pointed at the center of the sun, a second optical axis slightly angularly displaced from the first axis and adapted to be pointed at the center of the second field of view, said first and second axes having an intersection point, means forming an entrance aperture at the intersection point, first and second image planes respectively on said first and second axes, both of said image planes being behind the entrance aperture, occulting disc means on the first axis for blocking the direct rays of the sun from falling onto the first image plane, and a lens system for respectively imaging first and second fields of view on the first and second image planes.



3,979,597
SOLAR POWER PLANT

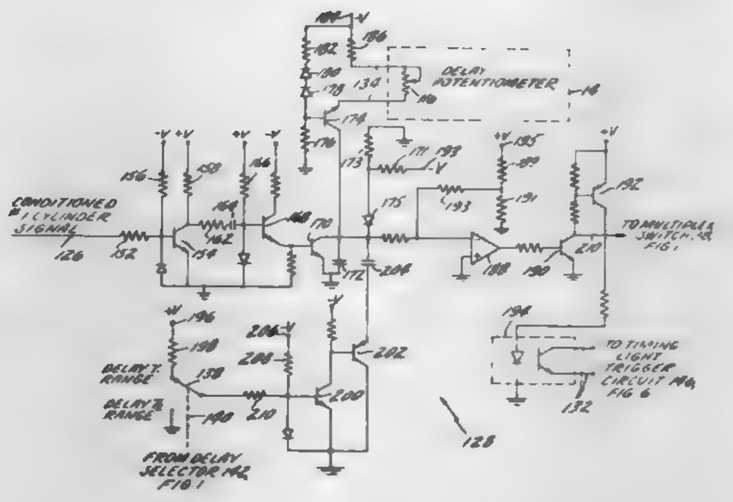
Ernest R. Drucker, 86 Saginaw Crescent, Ottawa, Canada (K2E 5N7)
Continuation-in-part of Ser. No. 447,361, March 5, 1974. This application Mar. 10, 1975, Ser. No. 557,181
Int. Cl.² F24J *3/02*; F03G *7/04*
U.S. Cl. 290—55 7 Claims



1. A solar energy powerplant comprising a group of seven or more vertical towers open at both ends, said towers being mounted on a base structure in an equally spaced configuration with a single central tower surrounded by at least six towers, a plurality of vertically spaced, radially projecting heating chambers mounted externally on each tower, said chamber projecting from the tower a distance at least equal to the radius of the tower, with the chamber at each level being divided into a series of segment-shaped compartments separated by radial divider walls, each said segment-shaped compartment having an inlet for ambient air and an outlet into the tower for heated air, tiltable concave mirrors mounted on the outermost edges of the segment-shaped compartments and wind-powered impellers mounted in at least the upper half of each tower in vertically spaced locations in association with said heating chambers, said impellers being adapted to drive electrical generating units.

3,979,598
DUAL RANGE ADJUSTABLE DELAY CIRCUIT

Richard F. Lach, Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Mar. 26, 1975, Ser. No. 562,075
Int. Cl.² H03K *17/28*
U.S. Cl. 307—294 2 Claims


DELAY POTENTIOMETER
CONDITIONED CYLINDER SIGNAL
TO MULTIPLE SWITCH
DELAY I RANGE
DELAY II RANGE
FROM DELAY SELECTOR FIG 1
TO TIMING LIGHT TRIGGER CIRCUIT FIG 6
128
132

1. A circuit for adjusting the delay between a pulsed input signal and the output from said circuit within two selectable delay ranges, comprising

means for differentiating said input signal and producing a differentiated signal,

a normally nonconducting first transistor,

a first capacitor connected with said first transistor,

a variable current source including an adjustable resistor,

means connecting said variable current source to supply current to said first transistor and to said first capacitor, said first capacitor being charged by said variable current source when said first transistor is nonconducting,

a comparator,

means connecting said first capacitor to said comparator whereby said comparator produces a first voltage output when said capacitor is charged to a predetermined voltage,

means connecting said differentiated signal with said first transistor, said differentiated signal causing conduction of said first transistor and discharge of said first capacitor therethrough, discharge of said first capacitor reducing the voltage on said first capacitor below said predetermined voltage whereby said comparator produces a second voltage output, said first transistor returning to its nonconducting state upon termination of said differentiated signal and permitting said first capacitor to charge to said predetermined voltage whereby said comparator produces said first voltage output,

and means including a selectively gated on-off switch for connecting a second comparator in parallel with said first capacitor, thereby to provide said circuit with two delay ranges, the longer one of sad ranges being provided when said switch is gated on.

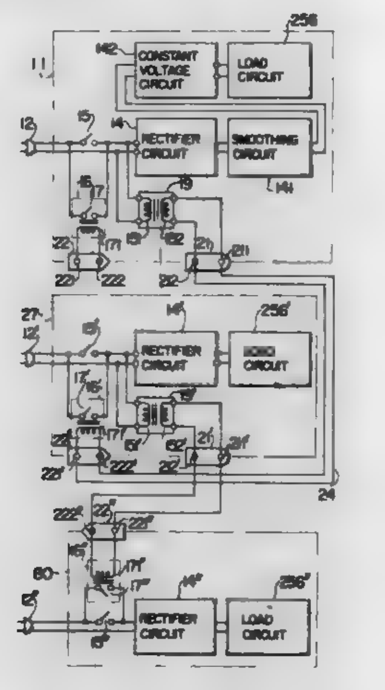
3,979,599
OPERATIVELY INTERLOCKED ELECTRONIC SYSTEM

Yoshio Amemiya, Yokohama, Japan, assignor to Hitachi, Ltd., Japan
Filed May 5, 1975, Ser. No. 574,454
Claims priority, application Japan, May 10, 1974, 49-52033
Int. Cl.² H02J *3/00*
U.S. Cl. 307—29 5 Claims

1. An operatively-interlocked electronic system comprising:

a first electronic apparatus including a first AC power supply, a rectifier circuit to which electric power is supplied from said first AC power supply, a first load circuit to which the output of said rectifier circuit is applied, a manual power switch inserted in the line connecting said first AC power supply to said first load circuit through said rectifier circuit, and a first generator circuit connected to said first AC power supply for decreasing the voltage of said AC power supply and generating a control signal;

a second electronic apparatus including a second power supply, a secoond load circuit and a first automatic switch inserted between said second power supply and said second load circuit;

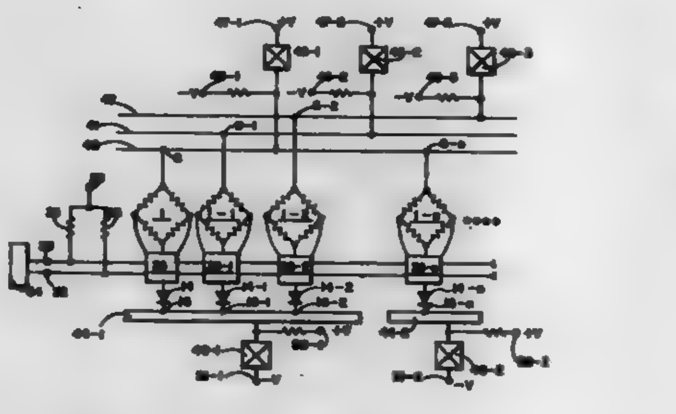


means for applying the output signal from said signal generator circuit to said first automatic switch when said manual power switch is closed; and

means for supplying electric power from said second power supply to said second load circuit by closing said first automatic switch in response to said control signal.

3,979,600
SENSE CIRCUIT ARRANGEMENT

Oliver D. Bohning, Placentia, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Nov. 14, 1974, Ser. No. 523,598
Int. Cl.² G01R *17/10*
U.S. Cl. 307—125 12 Claims



1. A sense circuit including

a bridge arrangement comprised of first impedance means,

the impedance of said bridge arrangement adapted to change in response to a condition to be sensed,

first source means connected to energize said bridge arrangement,

second source means,

third source means,

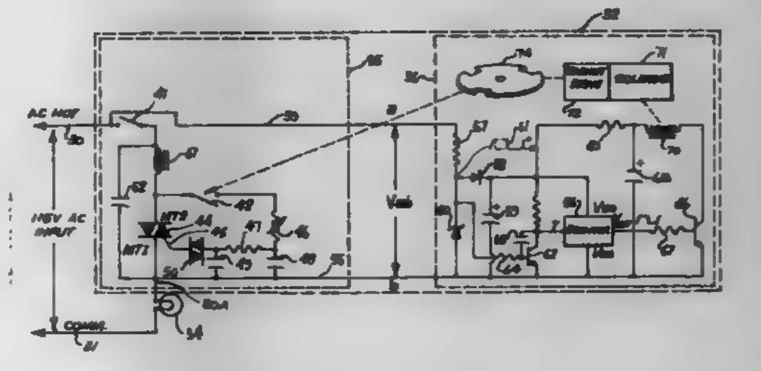
a differential amplifier connected between said bridge arrangement and said second source means to receive a signal from said bridge arrangement in response to a change in the impedance of said first impedance means,

second impedance means electrically connected between said third source means and said differential amplifier so as to provide a signal related to the signal received by said differential amplifier, and

output terminal means connected to said differential amplifier and said second impedance means to provide a signal in response to the operation of said differential amplifier to thereby indicate a change in the impedance of said bridge arrangement.

3,979,601
COMBINATION DIMMER AND TIMER SWITCH MECHANISM

Robert C. Franklin, 914 Bicknell Road, Los Gatos, Calif. 95030
Filed Feb. 10, 1975, Ser. No. 548,876
Int. Cl.² H01H *7/00*
U.S. Cl. 307—141 8 Claims



1. A combination for controlling power flow from an electrical power source through an electrical circuit to an electrical powered device, said combination comprising:

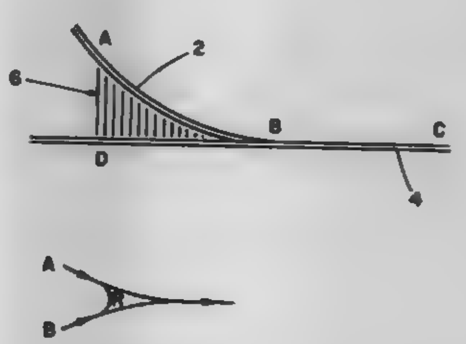
a dimmer control connected in the circuit for regulating the magnitude of power flow to the device;

a secondary on-off switch for interrupting power flow from the dimmer control to the device;

an electrical timer circuit with means for actuating said secondary switch according to a predetermined timed sequence, said electrical timer circuit including input power terminals connected across said dimmer control for utilization of the voltage drop thereacross for energizing the electrical timer circuit.

3,979,602
RESISTIVE NEURISTOR JUNCTIONS

Stanley A. Reible, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.
Filed Sept. 30, 1974, Ser. No. 510,646
Int. Cl.² H03K *19/08*
U.S. Cl. 307—201 11 Claims



1. A junction for coupling one neuristor line to another comprising a relatively high resistance path for coupling one neuristor line to another at a point of first juncture and a relatively low resistance path for coupling said one neuristor line to said another at a point of second juncture.

3,979,603

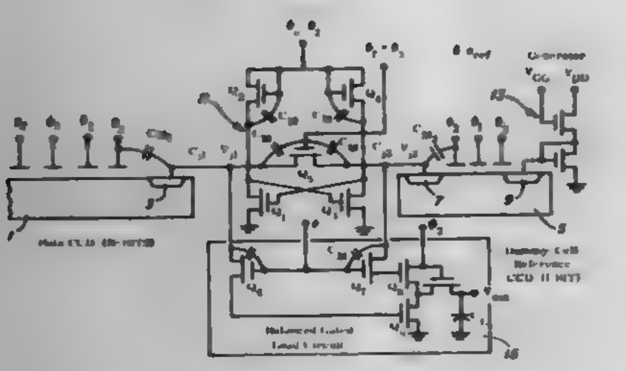
REGENERATIVE CHARGE DETECTOR FOR CHARGED COUPLED DEVICES

William Milton Gosney, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 22, 1974, Ser. No. 499,717

Int. Cl.² H03K *5/18, 5/20, 3/286*; H01L *29/78*

U.S. Cl. 307—221 D **7 Claims**



1. In a charge coupled device shift register including a plurality of stages; each having a plurality of transfer electrodes, means for applying multi-phase clock signals to said electrodes to shift data signals along said shift register, data output means for said shift register adjacent a selected electrode of one of said stages, said selected transfer electrode connected for application of a predetermined phase clock signal thereto; regenerative charge detector means comprising in combination:

bi-stable circuit means comprising a pair of cross-coupled inverter stages connected between a first voltage supply line, and a second voltage supply line comprising a fixed supply voltage line, said bi-stable circuit having first and second nodes;

said output means of said shift register connected to said first node;

means for precharging the first and second nodes to a reference voltage set by a value $V_{out} = V_{in}$ on an output voltage(V_{out}) versus input voltage (V_{in}) transfer characteristic of said inverter stages;

transmission means including a one stage charge coupled device connected between said second node and a voltage source for generating a voltage equal to said reference voltage value, said one stage charge coupled device including a like plurality of transfer electrodes as a stage of said shift register, and means for applying said multiphase clock signals to the transfer electrodes of said one stage CCD for operation thereof in synchronism with said shift register.

said transmission means controllable by said clock signals for applying a voltage equal to said reference voltage to said second node during said predetermined clock signal phase;

means for applying, following said precharging step, the said predetermined phase clock signal to each of said selected transfer electrode, said first supply line and said transmission means, for transferring a data signal to the output means of said shift register to cause regenerative imbalance between the voltages at said first and second nodes in a sense corresponding to the level of said transferred data signal compared with that of said reference voltage.

3,979,604

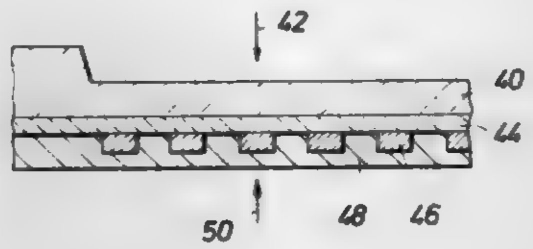
INFRARED CHARGE-COUPLED IMAGER

Robert T. Bate, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 388,845, Aug. 16, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,520

Int. Cl.² H01L *31/10*

U.S. Cl. 307—221 D **10 Claims**



1. An infrared detecting device comprising charge coupled device shift register means having a radiation illumination surface, said shift register means including a semiconductor substrate;

an electrically insulating layer on one surface of said substrate;

a plurality of conductive spaced apart charge transfer electrodes disposed on said insulating layer to define optical resolution elements of said shift register means;

infrared energy absorption means adapted to absorb infrared energy having a wavelength sufficiently long that the semiconductor material of said substrate is substantially transparent to said radiation overlying said electrode means in cooperative relation with said illumination surface and comprising an insulative layer having a thickness sufficient for absorbing said pattern of infrared energy to generate a corresponding spatial thermal pattern in said layer thereby causing a corresponding pattern of electrical charge integration at said optical resolution elements of said shift register means; and

means for exposing said illumination surface to a spatially varying pattern of infrared radiation for transmission to the infrared absorption means substantially in the absence of radiation having a wavelength which is absorbed by the semiconductor material of said substrate.

3,979,605

INTEGRATING CIRCUIT FOR SEPARATING A WIDE PULSE FROM A NARROW PULSE

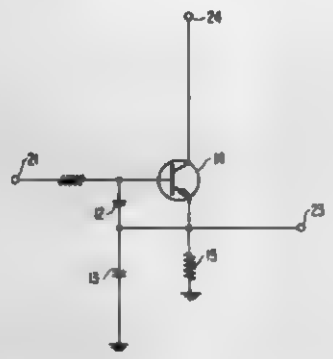
Hirokazu Fukaya, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Mar. 14, 1975, Ser. No. 558,602

Claims priority, application Japan, Mar. 14, 1974, 49-29416

Int. Cl.² G06G *7/12*; H03K *5/20*

U.S. Cl. 307—229 **4 Claims**



1. An integrating circuit comprising:

a transistor having an emitter, a base and a collector

a first resistor having its one terminal connected to the base of said transistor,

an input terminal connected to the other terminal of said first resistor,

a power supply terminal connected to the collector of said transistor,

a fixed potential terminal connected to a constant potential,

a first capacitor connected between the base and the emitter of said transistor,

a second resistor connected between the emitter of said transistor and said fixed potential terminal,

a second capacitor connected in parallel with said second resistor, and

an output terminal coupled to the emitter of said transistor.

3,979,606

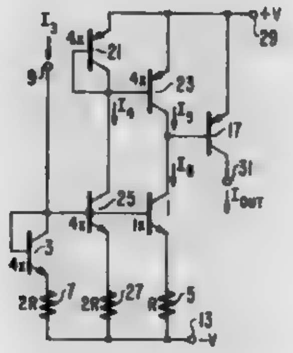
CURRENT LEVEL DETECTOR

Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 5, 1975, Ser. No. 610,672

Int. Cl.² H03K *5/20*

U.S. Cl. 307—235 T **24 Claims**



1. A signal current level detector comprising, in combination:

a current sink controlled by said signal current for demanding a current in one proportion to said signal current when the latter is smaller than a given value, and in a second proportion to said signal current when the latter is greater than said given value;

a current source controlled by said signal current, for supplying a current to said current sink in at least one proportion to said signal current;

an auxiliary current source responsive to said current sink demanding more current than said current source can supply, for providing at least a portion of the additional current demanded by said current sink; and

means for producing an output signal in response to operation of said auxiliary current source.

3,979,607

ELECTRICAL CIRCUIT

Howard Raymond Beelitz, Princeton, and Donald Ray Presler, Somerville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 23, 1975, Ser. No. 625,039

Int. Cl.² H03K *5/08, 19/08*

U.S. Cl. 307—237 **9 Claims**

1. The combination comprising:

an output point and first and second points of operating potential;

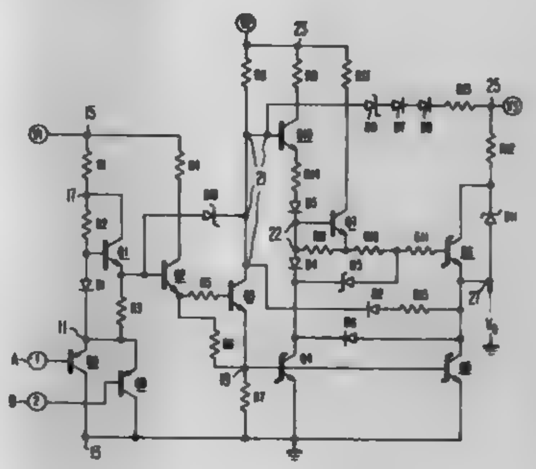
a first transistor connected at its collector to said output point and at its emitter to said first point;

a second transistor having its collector-to-emitter path connected between said output point and said second point;

a third transistor connected at its base and emitter, by negligible impedance means to the base and emitter, respectively, of said first transistor; and means coupling the collector of said third transistor to the base of said second transistor;

means for supplying a turn on current to the bases of said first and third transistors;

collector current limiting impedance means connected between the collector of said third transistor and a point of fixed potential; and



a unidirectional conducting means connected between said output point and the collector of said third transistor poled to enable the third transistor to conduct current between said output point and said first point in the same direction as said first transistor, and said unidirectional conducting means, when conducting a current, turning off said second transistor.

3,979,608

SOLID STATE BINARY LOGIC SIGNAL SOURCE FOR ELECTRONIC TIMEPIECE OR THE LIKE

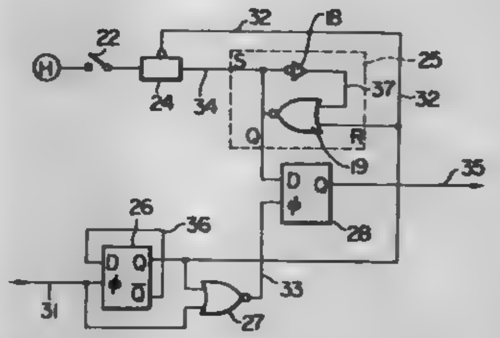
Fukuo Sekiya, Tokorezawa, and Shigeru Morokawa, Higashiyamato, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Nov. 11, 1975, Ser. No. 630,821

Claims priority, application Japan, Nov. 14, 1974, 49-131257

Int. Cl.² H03K *17/60*

U.S. Cl. 307—247 A **8 Claims**



1. In combination with a switch having a pair of contacts, one of which is connected to a voltage source:

first means providing pulses having predetermined lengths of active and inactive periods;

a solid state switching device responsive to the inactive period of the pulses to provide a conduction path;

second means providing pulses, the triggering edges of which occurring within the inactive periods of the pulses from the first means;

a flip-flop having a set input terminal connected to the other contact of the switch via the conduction path of the solid state switching device, a reset input terminal connected to the first means to reset the flip-flop during the active periods of the pulses therefrom; and

a D flip-flop having a data input terminal connected to the output of the first mentioned flip-flop and a clock input terminal connected to the second means to trigger the D flip-flop at the triggering edges of the pulses therefrom.

3,979,609
STATION FINDER CIRCUIT FOR TWO DIRECTIONS

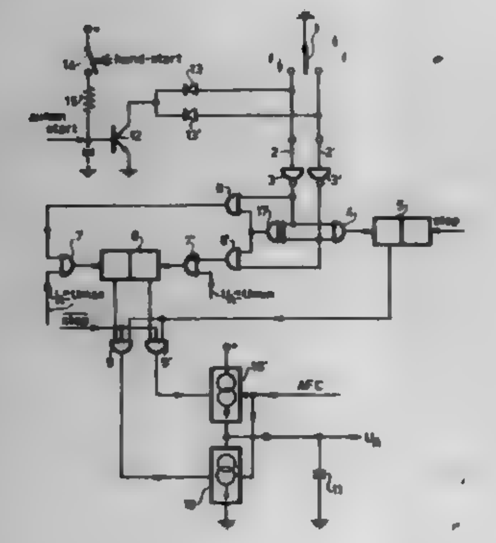
Udo Schiffhof, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 11, 1974, Ser. No. 531,713

Claims priority, application Germany, Dec. 20, 1973, 2363349

Int. Cl.^{2} H03K *17/16, 19/32*

U.S. Cl. 307—247 R 5 Claims



1. A search tuning circuit for two search directions comprising a starting signal memory having a starting signal input, a search direction signal memory having first and second operating signal inputs, first and second starting signal inputs, each starting signal input being coupled to said starting signal input of said starting signal memory and to said first and second search direction signal inputs of said search direction signal memory, said circuit being responsive to an operating signal at an operating signal input to write a search direction signal for a certain search direction and a starting signal in the corresponding memories, said circuit further including a gating circuit intermediate said (1) first and second operating signal inputs and (2) said starting signal and (3) search direction signal inputs of said starting signal memory and said (4) search direction signal memory, said gating circuit including means which in case of simultaneous presence of operating signals at said first and second operating signal inputs only a starting signal occurs at the starting signal input of said starting signal memory without a search direction signal being generated.

3,979,610
POWER REGULATOR CIRCUIT

Robert Gordon, Palm Beach Gardens, Fla., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Jan. 27, 1975, Ser. No. 544,247

Int. Cl.^{2} H03K *17/00*

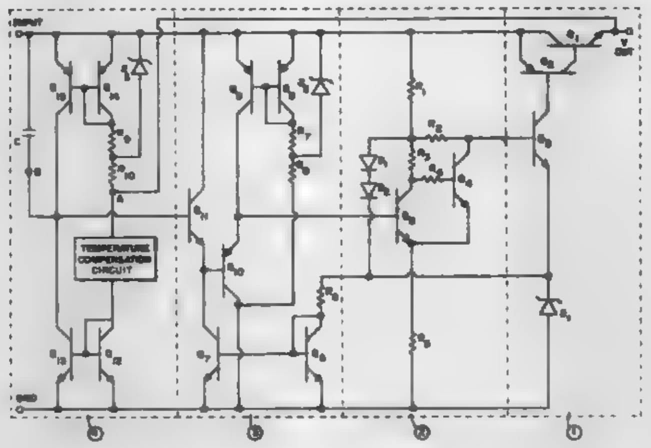
U.S. Cl. 307—297 4 Claims

1. A monolithic integrable power regulator circuit for supplying an effective constant voltage to instrument gauges comprising:

a switching amplifier having an output voltage which corresponds to said effective constant voltage;

a trigger circuit for driving said switching amplifier;

means responsive to said output voltage for triggering said switching amplifier ON when said output voltage has a first predetermined value for a first predetermined duration and for triggering said switching amplifier OFF when said output voltage has a second predetermined value for a second predetermined duration; and



buffer means coupled between said responsive means and said trigger circuit.

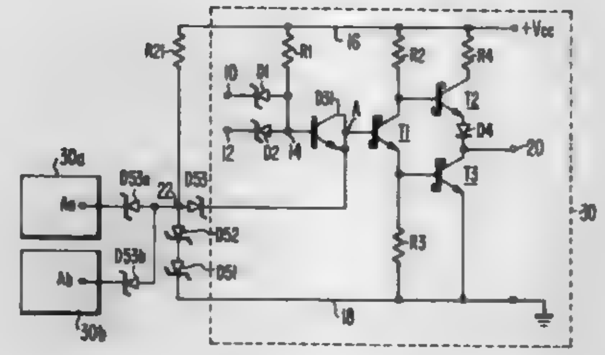
3,979,611
TRANSISTOR SWITCHING CIRCUIT

Michael Ian Payne, Dunellen, and Bhadrik Subodhchandra Dalal, Piscataway, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 6, 1975, Ser. No. 547,634

Int. Cl.^{2} H03K *17/00*

U.S. Cl. 307—300 8 Claims



1. In a circuit including a transistor whose emitter is coupled to a point of fixed potential and a PN junction, which exhibits capacitance when reverse biased, connected between a first node and the base of said transistor and being poled so that its forward direction is the same as the forward direction of the base-to-emitter region of said transistor, and wherein in response to a turn-off signal transition at said first node, having sufficient amplitude and polarity to reverse bias said PN junction, said transition is coupled through the capacitance of said PN junction to the base of said transistor and turns it off;

the improvement comprising:

a source of potential; and

a unidirectional conducting means, connected between said source of potential and the base of said transistor, poled in a direction to couple said potential source to said base through a relatively low impedance in response to said turn-off signal transition, for preventing the forward bias between the base-and-emitter of said transistor from decreasing below a predetermined level, where said predetermined level is less than the turn-on point of said transistor; and said unidirectional conducting means being rendered non-conductive and isolating said base from said source of potential in response to a turn-on signal at said first node.

3,979,612
V-GROOVE ISOLATED INTEGRATED CIRCUIT MEMORY WITH INTEGRAL PINCHED RESISTORS

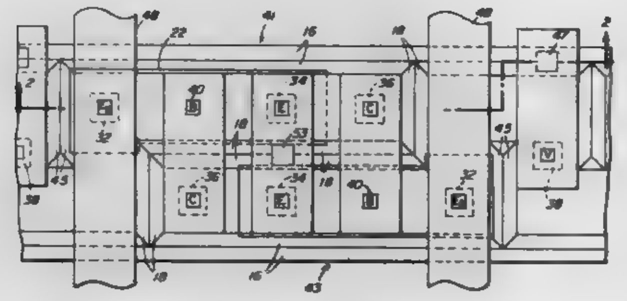
John L. Mudge, Los Altos; Jerry W. Zimmer, Mountain View, and Keith G. Taft, Ben Lomond, all of Calif., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 418,152, Nov. 21, 1973, abandoned, which is a division of Ser. No. 242,534, April 10, 1972, Pat. No. 3,818,289. This application Apr. 10, 1975, Ser. No. 566,889

The portion of the term of this patent subsequent to June 18, 1991, has been disclaimed.

Int. Cl.^{2} H01L *27/04*

U.S. Cl. 307—303 7 Claims



1. An integrated circuit comprising:

a semiconductor substrate;

a layer of semiconductor material supported on said substrate having a surface lying in the [100] crystallographic plane;

a plurality of active elements formed in said layer;

each of said active elements having emitter base junctions extending along said [100] surface;

resistive elements connected directly to collector portions of said active elements directly through said semiconductor layer with the major portions of said resistive elements lying between said substrate and base to collector junction regions of said active elements;

isolation regions extending through said layer along [111] crystallographic surfaces, separating at least portions of said active semiconductor elements, and defining the major portions of the peripheries of said resistive elements;

means producing a substantially constant voltage bias across a plurality of said active elements connected in series through said layer; and

at least one of said junctions in said layer forming an emitter base junction of a transistor whose collector junction is formed between said substrate and said layer.

3,979,613
MULTI-TERMINAL CONTROLLED-INVERSION SEMICONDUCTOR DEVICES

Harry Kroger, Sudbury, and Horst A. R. Wegener, Carlisle, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed June 18, 1975, Ser. No. 587,939

Int. Cl.^{2} H03K *3/353*

U.S. Cl. 307—304 24 Claims

1. Controlled inversion semiconductor circuit means comprising:

semiconductor body means having first and second spaced surface means,

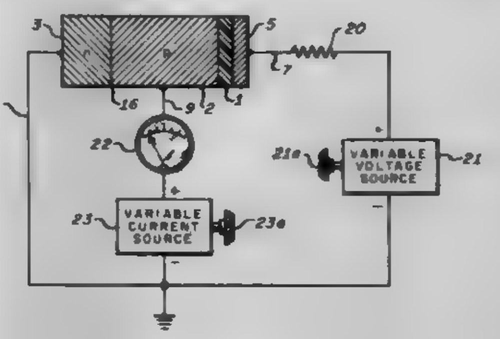
non-linear resistive layer means affixed to said first surface means,

conductive layer means affixed to said non-linear resistive layer means opposite said semiconductor body means,

first electrical signal source means for applying a first control signal between said conductive layer means and said second surface means,

minority carrier generator means within said semiconductor body means for generating an inversion layer within said semiconductor body means at said non-linear resistive layer means when said first control voltage reaches a predetermined threshold value,

said non-linear resistive layer means tending to prevent formation of said inversion layer when said first control signal remains below said predetermined threshold value,



second electrical signal source means for applying a second control signal between said second surface means and ohmic contact means disposed on said semiconductor body means between said minority carrier generator means and said non-linear resistive layer means for further controlling the supply of minority carriers reaching said inversion layer, and

utilization means in series relation with said first electrical signal source means and said conductive layer means.

3,979,614
DT CUT, CONTOUR MODE PIEZOELECTRIC CRYSTAL

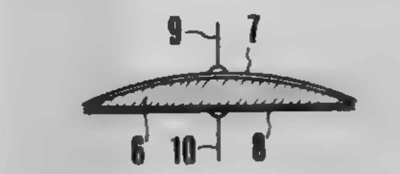
Satoshi Toyoda, Tokyo, Japan, assignor to Kinsekisha Laboratory, Ltd., Tokyo, Japan

Filed Oct. 21, 1974, Ser. No. 516,440

Claims priority, application Japan, Oct. 24, 1973, 48-115582

Int. Cl.^{2} H01L *41/04*

U.S. Cl. 310—9.5 3 Claims



1. In a crystal element wherein said crystal element is formed with DT-cut angle in a circular shape for generating vibrations in the contour mode, characterized in that the thickness of said crystal element is gradually decreased from the center toward the periphery thereof, electrodes being applied to the surfaces of said element opposed to each other, supporting and power conductors being connected to the center of said electrodes.

3,979,615
FIELD ASSEMBLY FOR ELECTRIC MOTORS

Nelson Edward Neff, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 5, 1975, Ser. No. 547,322

Int. Cl.^{2} H02K *11/00*

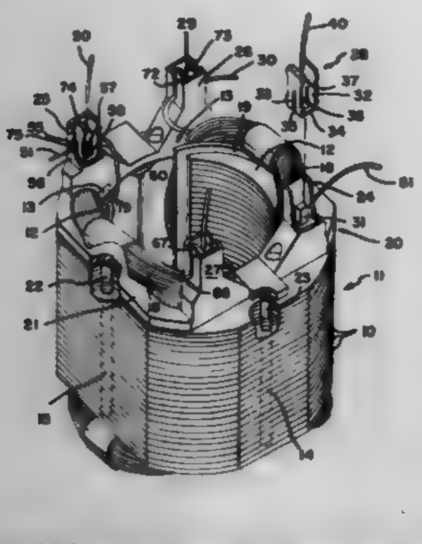
U.S. Cl. 310—71 18 Claims

1. An assembly comprising an iron core formed of a stack of annular laminations each having at least two lamination alignment holes therein and at least one coil wound thereon with at least one coil wire end, and connector means constructed to connect said coil ends to external conductors with said connector means comprising:

a unitary, insulative housing comprising a base having a shape similar to at least a portion of the annular laminations of said iron core and mounted concentrically upon one end of said stack of laminations, and extending around said one end at least the angular distance between adjacent lamination alignment holes;

at least one contact means;

said insulative housing further comprising at least one contact retaining means constructed to retain one of said contact means; and



appendages on said housing base for securing said housing base to said at least two lamination alignment holes in said laminations and to align said housing with respect to said iron core;

each of said contact means constructed to secure and make electrical contact with at least one coil end and at least one external conductor.

3,979,616

UNIPOLAR ROTARY STEP MOTOR

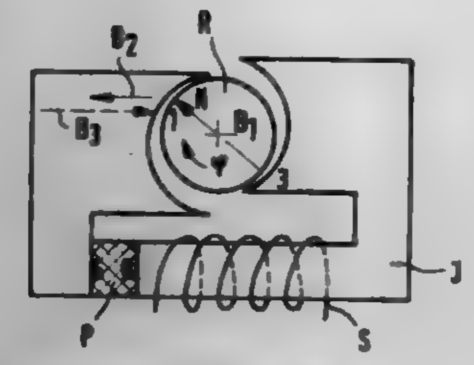
Helmut Stechmann, Schwenningen, Germany, assignor to Kienzle Uhrenfabriken GmbH, Schwenningen, Germany

Filed Feb. 13, 1974, Ser. No. 442,286

Claims priority, application Germany, Feb. 19, 1973, 2308053; Dec. 8, 1973, 2361217

Int. Cl.^{2} H02K *37/00*

U.S. Cl. 310—49 R 1 Claim



1. A rotary step motor comprising:

a stator defining an air gap with opposed poles at said air gap,

a rotor supported for rotation in said stator air gap, said rotor comprising a permanent magnet means and with the air gap between each pole and the rotor decreasing in the direction of rotor rotation,

a control coil for said stator for magnetizing said stator with one polarity of magnetization in response to each of a succession of unidirectional pulses applied to said control coil,

said stator defining adjacent said air gap a recess for receiving a further permanent magnet means for magnetizing said stator with a polarity of magnetization opposite to that provided by said control coil,

said magnetization provided by said control coil when energized by one of said unidirectional pulses being greater than that provided by said further permanent magnet means,

whereby the application and also the removal of each of a plurality of said unidirectional pulses to said control coil produces a predetermined amount of rotation of said rotor.

3,979,617

ELECTRICAL ROTARY SPEED SIGNAL GENERATOR

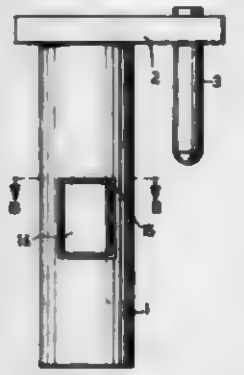
Dieter-Helmut Thom, Ketsch, Germany, assignor to Teldix GmbH, Heidelberg, Germany

Filed Sept. 2, 1975, Ser. No. 609,513

Claims priority, application Germany, Sept. 13, 1974, 2443862

Int. Cl.^{2} H02K *21/26*

U.S. Cl. 310—168 11 Claims



1. An electrical rotary speed signal generator for producing an electrical signal which represents the angular speed of two components, one of which is rotatable with respect to the other, said generator comprising a rotor for mounting on the rotary component, a stator for mounting on the stationary component opposite a part of said rotor, means in said stator for detecting rotary movement of said rotor and for providing an output signal representative of the angular speed thereof, a non-metallic housing for said stator for insertion with said stator into a bore in the stationary component and at least two peripherally spaced high strength bearing bodies for said non metallic housing adapted for engagement with the wall of the bore in the stationary component with at least one of said two bearing bodies being radially elastically flexible for producing frictional adhesion between said stator and said bore.

3,979,618

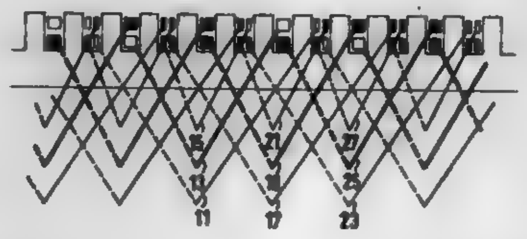
TWO LAYER WINDING FOR ELECTRIC MACHINES

Herbert Auinger, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 356,298, May 2, 1973, abandoned. This application Dec. 11, 1974, Ser. No. 531,697

Int. Cl.^{2} H02L *3/00*

U.S. Cl. 310—198 11 Claims



1. A two layer cord winding for an electric machine having a plurality of slots for receiving windings, each of said slots being of the same depth, sized to accommodate two slot layers of full coils and being equally spaced, comprising, for each phase circuit in the machine, a first plurality of full coils having a number of turns which fills a slot layer and a second plurality of half coils with a reduced number of turns said first and second pluralities filling all slots in such a manner that each half coil placed in a slot layer having the rest of its volume occupied by a half coil of a different circuit.

3,979,619

PERMANENT MAGNET FIELD STRUCTURE FOR DYNAMOELECTRIC MACHINES

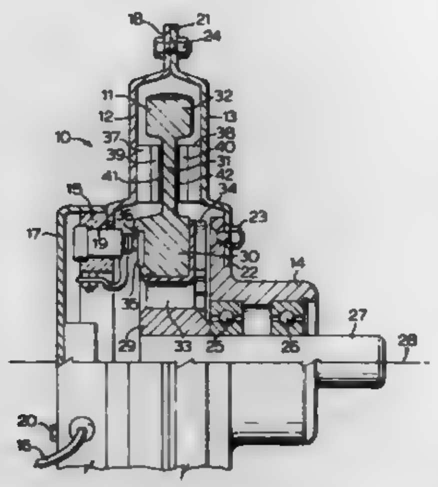
Eric Whiteley, Peterborough, Canada, assignor to Canadian General Electric Co., Ltd., Toronto, Canada

Filed Aug. 30, 1974, Ser. No. 502,007

Claims priority, application Canada, Sept. 24, 1973, 181935

Int. Cl.^{2} H02K *1/22*

U.S. Cl. 310—268 12 Claims



1. A discoidal type dynamoelectric machine comprising at least two relatively rotatable members separated by an axial gap; means defining at least one closed magnetic flux path included in said members and said gap; an electric winding linked electromagnetically with said path; and a mosaic of at least one layer of two or more unit permanent magnets per layer mounted on one of said relatively rotatable members and located in said path for producing magnetic flux therein oriented axially in said gap.

3,979,620

SEGMENTAL DISCOIDAL WINDING STRUCTURE FOR DYNAMOELECTRIC MACHINES

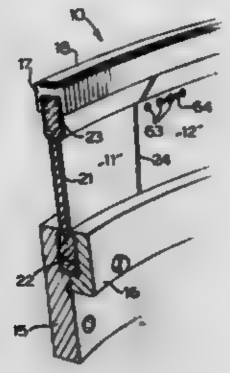
Eric Whiteley, Peterborough, Canada, assignor to Canadian General Electric Co., Ltd., Toronto, Canada

Filed Mar. 11, 1975, Ser. No. 557,425

Claims priority, application Canada, July 3, 1974, 203913

Int. Cl.^{2} H02K *1/22*

U.S. Cl. 310—268 6 Claims



1. A discoidal winding structure for use in an axial gap dynamoelectric machine consisting essentially of a plurality discrete winding segments each having multiple complete coils overlapped in a circular array, interconnected electrically and bonded together with a bonding medium to provide a rigid segmental structure; means for securing said segments together in a unitary discoidal winding structure having an annular disc portion containing the coil sides and ring portions on the inner and outer edges of the disc portion containing the coil end-heads and coil end conductors; means for interconnecting said segments electrically; each one of said segments containing a fractional number of the winding coils and having surfaces mating with complementary surfaces on the adjoining segments, and each one of said surfaces being located at a segment end coil such that said end coils assume the same relative positions in the discoidal winding structure as the other coils.

3,979,621

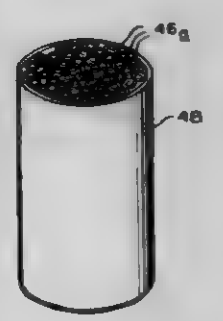
MICROCHANNEL PLATES

Colin K. Yates, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed June 4, 1969, Ser. No. 832,552

Int. Cl.^{2} H01J *43/04*

U.S. Cl. 313—105 CM 5 Claims



1. A channel plate comprising:

a web structure of glass having a multiplicity of juxtaposed channels extending through said structure from one face to another face thereof, said channels having inner walls formed of lead-containing glass each surrounded by and fused to a matrix glass having a higher softening point than that of said lead-containing glass; and

a rim of solid glass extending around and fused to said web structure.

3,979,622

HEADLIGHT AND INCANDESCENT LAMP FOR ANTI-DAZZLE BEAM

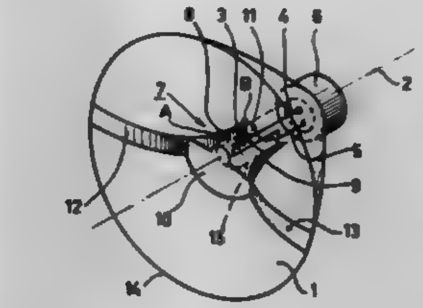
Johannes Rijnders, Boxtel, and Harry William Jelle Iedema, The Hague, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 1, 1974, Ser. No. 465,887

Claims priority, application Netherlands, May 1, 1973, 7306006

Int. Cl.^{2} H01K *1/26, 1/32, 7/02*

U.S. Cl. 313—117 8 Claims



1. A lamp which comprises a reflector formed as a paraboloid of revolution within which a helically wound filament for a beam is disposed with the axis thereof parallel to the reflector axis, a cap disposed about a radial sector of said filament, said cap having first and second curvilinear edges, said edges lying in the first and second planes, said first and second planes intersecting at the axis of said filament, the distance from at least one of the edges of the cap to the axis of the filament measured in a first plane which passes through the end of the filament remote from the rear end of the reflector and which extends transversely to the axis of the filament, is larger than the distance from the edge of the cap to the axis of the filament measured in any other plane which extends transversely to the axis of the filament and is disposed between

said first plane and the rear end of the reflector, at least one of the edges of the cap has a curved shape whose centers of curvature are situated on the side of the cap edge remote from the filament.

3,979,623
INDICATOR DISPLAY TUBE

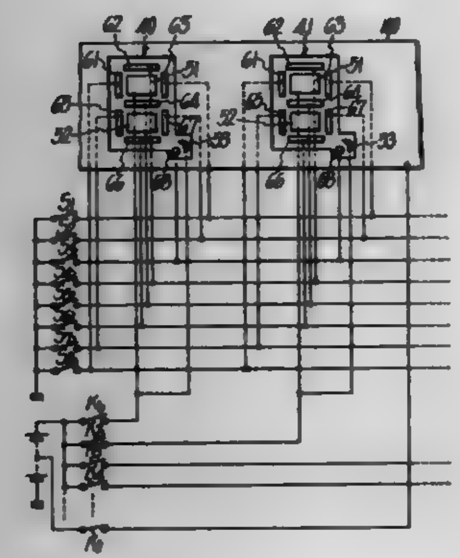
Yuzuru Yanagisawa, Fujisawa; Akio Ohgoshi, Akira Nakayama; Akira Nakayama, Tokyo, and Shoichi Muramoto, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 177,990, Sept. 7, 1971, abandoned. This application June 4, 1973, Ser. No. 365,334

Claims priority, application Japan, Sept. 11, 1970, 45-80378

Int. Cl.² H01J *61/68*

U.S. Cl. 313—190 **4 Claims**



1. An indicator display tube comprising:
a plate of an insulating material;
a plurality of interconnecting leads formed on said plate;
a first insulating layer formed on said plate over said plurality of interconnecting leads with windows aligned with said interconnecting leads;
a plurality of indicator units formed on said first insulating layer and each consisting of a number of strip conductive coplanar anode and cathode segments and a plurality of selecting leads on said first insulating layer coplanar with said indicator units and said selecting leads connected to corresponding ones of said interconnecting leads through said windows respectively;
a planar barrier electrode means of electrically conductive material formed on said first insulating layer and formed with openings in which said associated strip conductive anode and cathode segments of said indicator units are mouted and said barrier electrode means coplanar with said anode and cathode segments;
a second insulating layer formed on said selecting leads;
a transparent cover attached to said plate and forming an envelope for enclosing said indicator units and barrier electrode means; and
an ionizable gas sealed in said envelope.

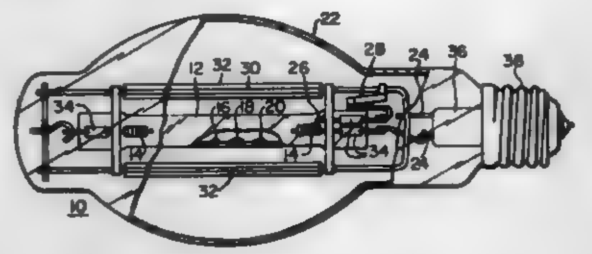
3,979,624
HIGH-EFFICIENCY DISCHARGE LAMP WHICH INCORPORATES A SMALL MOLAR EXCESS OF ALKALI METAL HALIDE AS COMPARED TO SCANDIUM HALIDE

Chi-sheng Liu, Monroeville; Chikara Hirayama, Murrysville; Robert J. Zollweg, Monroeville, and Ronald A. Madia, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 29, 1975, Ser. No. 572,809

Int. Cl.² H01J *61/18*

U.S. Cl. 313—229 **8 Claims**



1. An arc-discharge device comprising a sealed elongated light-transmitting arc tube envelope which encloses a predetermined volume, electrical lead-in conductors sealed through said envelope and electrically connected to electrodes which are operatively positioned proximate the ends of said envelope and spaced apart a predetermined distance within said envelope, and a discharge-sustaining filling enclosed by said envelope and having the following as essential constituents: mercury in predetermined amount as required to provide a mercury-vapor pressure in said envelope of from one to ten atmospheres as calculated on the basis of mercury being fully vaporized as the sole discharge-sustaining constituent with an average mercury vapor temperature of 2000°K; a small charge of inert ionizable starting gas; alkali metal halide of sodium iodide or sodium bromide or lithium iodide or lithium bromide or any mixtures thereof; scandium halide of scandium iodide or scandium bromide or any mixtures thereof, wherein the molar ratio of said alkali metal halide to said scandium halide is from about 1.7:1 to about 5:1; and said alkali metal halide plus said scandium halide is present in said arc tube envelope in total amount of at least about 0.1 mg/mm of spacing between said electrodes.

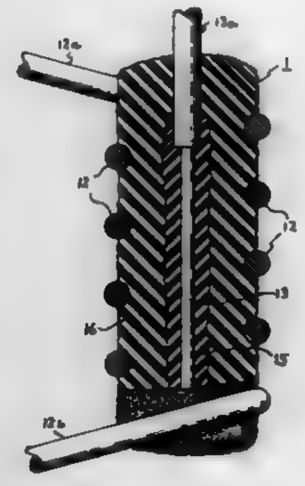
3,979,625
CERAMIC SPACED SENSOR ASSEMBLY FOR A GAS LEAK DETECTOR

John A. Roberts, Lynnfield, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed June 10, 1975, Ser. No. 585,643

Int. Cl.² H01J *27/00*

U.S. Cl. 313—230 **9 Claims**



1. A sensor assembly for a halogenated gas leak detector comprising a helical heater coil formed of platinum wire having a thickness in a range of 1 to 3 mils, an elongated electrode positioned within said coil substantially parallel to the longitudinal axis thereof, said electrode being formed of platinum wire having a diameter in the range of 0.5 mil to 2 mils, a coating of cured porous ceramic material deposited on the portion of said electrode disposed within the coil to stiffen and insulate the electrode, an alkali metal salt selected from the class including rubidium carbonate and sodium carbonate being disposed in the pores of said ceramic material, and a block of cured porous cement formed tightly around the coating on said central electrode and around at least the innermost 120 arcuate degrees of the surface of each turn of said coil thereby to position the electrode and coil and the respective turns of the coil in fixed relationship to one another, said coil and electrode being connectable to a source of electric energy for applying a voltage across the gap between the coil and electrode and for supplying heating current to the coil.

3,979,626
ELECTROSTATIC FOCUSING ARRANGEMENTS

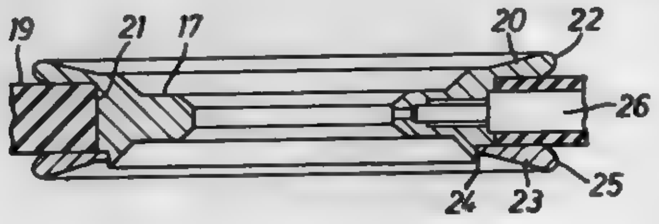
Michael Curzon Green, London, England, assignor to Emi-Varian Limited, Hayes, England

Filed Mar. 27, 1975, Ser. No. 562,789

Claims priority, application United Kingdom, Apr. 2, 1974, 14486/74

Int. Cl.² H01J *1/53*

U.S. Cl. 313—240 **5 Claims**



1. An electron beam discharge tube having electron beam focusing means including first and second appertured co-operative electrodes, in operation of the tube maintained at a potential difference, and an insulating means, an extremity of the insulating means in contact with the second, apertured, beam focusing electrode, supporting the electrode in the tube electrically insulated from the first electrode, said second electrode having an extension of a conductive shield over the insulating means adjacent said extremity in contact with the second electrode and thereby shielding said insulating means against breakdown under said potential difference.

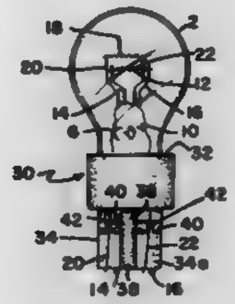
3,979,627
ELECTRIC LAMP WITH INSULATING BASE

Stephen J. Leadvaro, Salem; Paul E. Gates, Danvers, and Stephen F. Kimball, Georgetown, all of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Apr. 28, 1975, Ser. No. 572,609

Int. Cl.² H01J *5/48, 5/50*

U.S. Cl. 313—318 **10 Claims**



1. An electric lamp comprising, in combination:
an hermetically sealed, light-transmitting envelope containing a pair of filaments and having a sealed portion at one end;
an insulating base member having a cavity that is larger than the sealed end portion of said envelope, a depending wedge-lock portion having opposed substantially flat sides with locating means, including a transverse lock-in means, disposed thereon, and four channels passing through said wedge-lock portion and communicating with said cavity, said sealed end portion of the envelope being secured within said base cavity; and
a respective pair of lead-in wires connected to each of said filaments, whereby four lead-in wires extend through the sealed end portion of said envelope and into the four respective channels in said base member, each of said lead-in wires having a terminal portion extending outwardly from the end of the wedge-lock portion of said base member, the terminal portions of a first pair of said lead-in wires being bent around the end of said wedge-lock portion and extending alongside and approximately parallel to one of the flat sides thereof and terminating past the transverse lock-in means thereon, and the terminal portions of a second pair of said lead-in wires being bent around the end of said wedge-lock portion and extending alongside and approximately parallel to the other of the flat sides thereof and terminating past the transverse lock-in means thereon.

3,979,628
METHOD OF MANUFACTURING AN ELECTRODE PROVIDED WITH CONNECTION

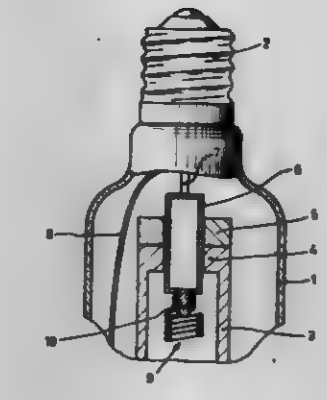
Johannes Jacobus Franciscus Geytenbeek, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 25, 1974, Ser. No. 509,140

Claims priority, application Netherlands, Oct. 4, 1973, 7313627

Int. Cl.² H01J *5/50*

U.S. Cl. 313—331 **3 Claims**



1. A method of manufacturing a lamp having a generally helical electrode having a first melting point and an electrical connection conductor which comprises: providing a connection conductor having an elongated body of material having a second melting point lower than said first melting point, said body being formed for interfering engagement with the interior of said helix; positioning said elongated body within at least several turns of said helix; heating said connection conductor at the area of said several turns to a temperature intermediate said first melting point and said second melting point so that said connection conductor flows along the extent of the turns of the helical electrode engaging said body.

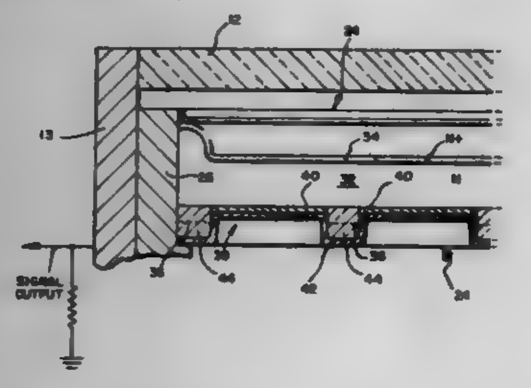
3,979,629
SEMICONDUCTOR WITH SURFACE INSULATOR HAVING IMMOBILE CHARGES

Hermann Statz, Wayland, and Wolfgang M. Feist, Burlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 365,927, June 1, 1973, abandoned. This application Feb. 5, 1975, Ser. No. 547,161

Int. Cl.^{2} H01J *29/45, 31/38*

U.S. Cl. 313—367 **5 Claims**



1. A camera tube comprising:
an evacuated envelope;
an electron gun and a target structure supported within said envelope;
said target structure comprising a member of semiconductor material;
a plurality of junction regions formed on the side of said member facing said gun; and
first regions of insulating material disposed on said member of semiconductor material between said junction regions, said first regions of insulating material having immobile charges with a density in the range of 10^{13} to 10^{14} charges per square centimeter therein for inhibiting conduction through said member of semiconductor material between adjacent junction regions, and said first regions of insulating material being separated from said member of semiconductor material by second regions of insulating material.

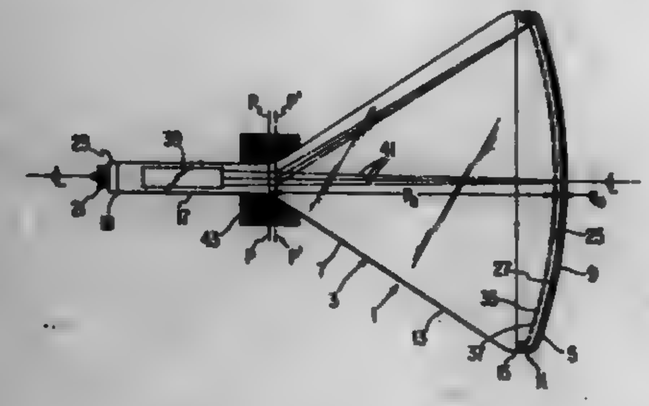
3,979,630
SHADOW MASK COLOR PICTURE TUBE HAVING NON-REFLECTIVE MATERIAL BETWEEN ELONGATED PHOSPHOR AREAS AND POSITIVE TOLERANCE

David Dale Van Ormer, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 168,484, Aug. 2, 1971, which is a continuation of Ser. No. 827,573, May 26, 1969, abandoned. This application Nov. 10, 1975, Ser. No. 630,596

Int. Cl.^{2} H01J *29/32, 31/20*

U.S. Cl. 313—408 **4 Claims**



1. In a color picture tube of the shadow mask type comprising an evacuated envelope including a transparent faceplate, a mosaic screen located on an inner surface of said faceplate, a multiapertured shadow mask mounted adjacent to but spaced from said screen, and means for generating and projecting electrons along a plurality of convergent paths through said mask and to said screen; said screen comprising a color phosphor layer comprising a multiplicity of spaced-apart color phosphor elements disposed in groups of different color light emitting elements, each group having the same number of elements as the number of said convergent paths, the elements of each group being respectively aligned with said convergent paths through one of the apertures of said mask; said screen further comprising a matrix layer of light absorbing material filling the entire space between said phosphor elements and having holes through which said elements are exposed through said faceplate;
the improvement comprising, said shadow mask including a multiplicity of spaced parallel elongated apertures in the form of slits;
said matrix layer including a multiplicity of spaced parallel elongated opaque elements forming elongated holes therebetween in which elongated color phosphor elements are located, the size of each of said matrix holes being larger than the size of the respective electron spot produced on said screen during operation of said tube and the light transmission of said faceplate being greater than 41%.

3,979,631
CATHODE RAY TUBE WITH ELECTROSTATIC MULTIPOLE FOCUSING LENS

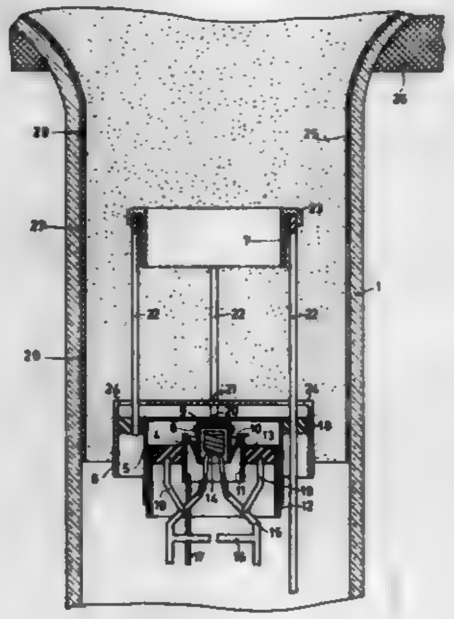
Robert Franciscus Laurentius Maria van der Ven, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 10, 1975, Ser. No. 566,732

Claims priority, application Netherlands, Apr. 25, 1974, 7405552

Int. Cl.^{2} H01J *29/02, 29/58, 29/62*

U.S. Cl. 313—450 **8 Claims**



1. A cathode ray tube comprising within an evaculated envelope, means to generate an electron beam propagating along an axis, focusing means to focus said electron beam to a spot on a target arranged substantially at right angles to the axis, an electrically conductive coating provided on the interior of said envelope and surrounding said focusing means, said focusing means including a focusing electrode facing the target and a plurality of axially arranged, electrically conductive elongate members supporting said focusing electrode and being electrically connected thereto, said members in combination with said coating constituting an electrostatic multipole lens cooperating with said focusing electrode.

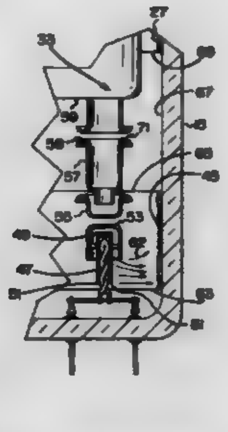
3,979,632
CATHODE RAY TUBE HAVING SURFACE CHARGE INHIBITING MEANS THEREIN

Everett A. Gunning, Lock Haven, Pa., and Charles H. Rehkopf, Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed July 17, 1974, Ser. No. 489,137

Int. Cl.^{2} H01J *29/06, 31/00*

U.S. Cl. 313—479 **1 Claim**



1. An improvement in a cathode ray tube having an envelope with a cathodoluminescent screen formed on the viewing panel portion, a conductive coating disposed on the funnel and upper neck portions, and a related multi-electrode electron generating assembly including at least one cathode, and associated control (G1), acceleration (G2), and focusing (G3) electrodes sequentially positioned in the neck portion in a manner to beam electrons to said screen, said improvement being neck surface charge inhibiting means comprising:
a definitive circumferential band of substantially roughened insulative oxide material disposed as an isolated area on the interior surface of said neck portion, said band being comprised of at least one material selected from the group consisting essentially of chromic oxide, ferric oxide, and a mixture of chromic-ferric oxides; the location of said band being substantially to the rear of said neck portion associated with substantially the cathode region of said electron generating assembly and oriented in a position to intercept metallic vaporization effused substantially from the cathode in the direction of the wall of said neck portion during tube processing and conditioning, the lower boundary of said band being in a plane beneath the open end of said cathode, and the upper boundary in a plane substantially in the region of said focusing electrode (G3) but rearward of the forward end thereof, said roughened insulative band effecting a discontinuous surface condition thereby providing a deterrent to the build-up of a deleterious negative surface charge on said neck portion emanating from substantially said cathode region.

3,979,633
DIRECTIONAL GETTER ATTACHED TO MULTI-APERTURED MEMBER

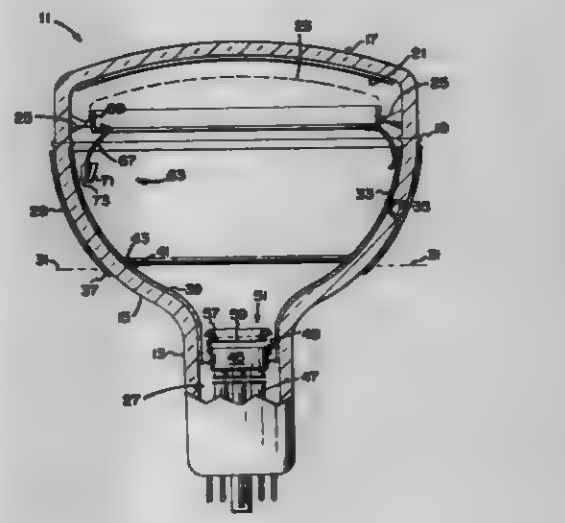
Charles A. Davis, Auburn, and Harry E. Smithgall, Seneca Falls, both of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Continuation of Ser. No. 510,118, Sept. 27, 1974, abandoned. This application Oct. 15, 1975, Ser. No. 622,497

Int. Cl.^{2} H01J *29/07, 29/84, 31/00*

U.S. Cl. 313—481 **2 Claims**

1. Means for effecting improved internal arc suppression in a cathode ray tube having an envelope formed of a sealed integration of neck, funnel and panel portions providing an enclosure for structural components including a multi-electrode electron generating assembly located in said neck portion in a manner to project at least one electron beam to traverse a multi-apertured member and impinge a cathodoluminescent screen disposed on the interior surface of said panel, the funnel portion having a low resistive electrical conductive coating disposed on the forward portion of the interior surface thereof and a high resistive electrical conductive coating interiorly disposed rearward therefrom to effect a substantially common electrical potential between the low resistive coating and the electron generating assembly while limiting the current and providing an arc suppression influence in the region of the electron generating assembly, said arc suppression improvement comprising: at least one getter element formed of a closed-loop open-channel structure positioned on a peripheral portion of said apertured member and oriented to disperse the getter effusion toward the interior of the funnel, said at least one getter element having a diffusion director in the form of a leaflike shield attached substantially to one side of the open getter channel in a manner to angularly shield the channel and direct the effusion therefrom toward substantially the apertured member and panel area, said getter element having a backing member to prevent rearward effusion of said getter material toward the coated sidewall of the funnel.



3,979,634
TRAVELLING-WAVE TUBE WITH AN IMPROVED ELECTRON GUN

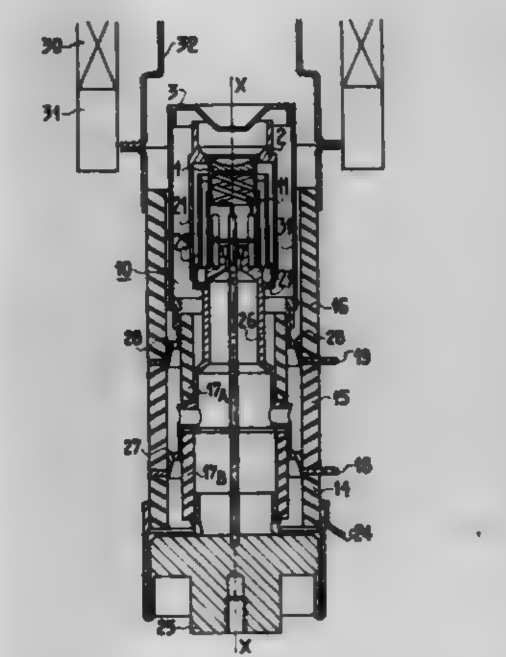
André Jaillet; André Pelletier, and Jean-Pierre Thieulent, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 7, 1974, Ser. No. 521,885

Claims priority, application France, Nov. 13, 1973, 73.40299

Int. Cl.^{2} H01J *25/34*

U.S. Cl. 315—3.5 **2 Claims**



1. A travelling-wave tube comprising a vacuum casing terminating at one end in an electron collector and secured in

vacuum-tight manner at the other end to a socket closed by a tube base, the socket being made up of cylinders of insulating material stacked on top one another in axial alignment with interposition of metal washers, whose external diameter is substantially flush with said insulating cylinders, and which are used as contacts for the sources which energize the tube in operation, said tube further comprising an electron gun disposed in said socket, which gun is comprised of a cathode and electrodes cooperating with said cathode to produce an electron beam which travels axially along said axis and is collected by said collector, said cathode and electrodes have extensions of cylindrical shape and are mounted in insulated relation by spacers of cylindrical shape in axial alignment around said axis and located inside said insulating cylinders, and wherein said cathode and electrode cylindrical extensions are provided with frusto-conical portions, acting as springs, resting by their external surface against said washers in order to insure an electrical contact between said cathode and electrodes and said washers.

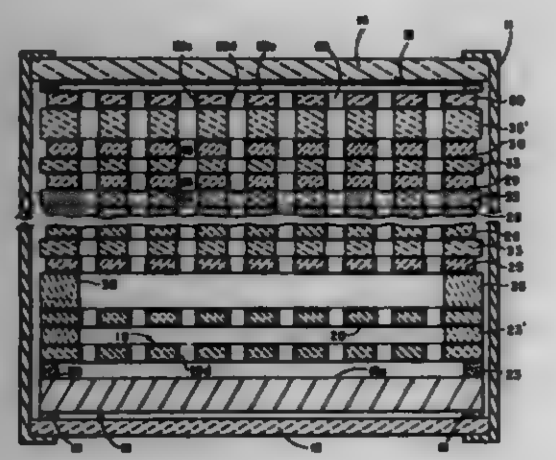
3,979,635
CHARGED PARTICLE BEAM SCANNING DEVICE

Warner Curtis Scott, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 5, 1975, Ser. No. 547,141

Int. Cl.² H01J *29/41*

U.S. Cl. 315—12 R 14 Claims



1. A charged particle beam scanning device comprising:
- a source of charged particles,
- an area target,
- at least one input buffer plate, a plurality of control plates, and at least one output buffer plate, said input buffer plate, said control plates, and said output buffer plate sandwiched between said source and said target, each of said control plates and buffer plates having a plurality of apertures formed therein,
- corresponding apertures of said control plates being aligned to form beam channels between the source and the target, said control plates each having a plurality of electrodes on at least one of the surfaces thereof, said electrodes on each of said surfaces being electrically insulated from each other,
- a plurality of first spacer means having a predetermined thickness sandwiched between said control plates electrically isolating said control plates,
- second spacer means anomalously thicker than said first spacer means sandwiched between said first and second buffer plates and said control plates electrically isolating said first and second buffer plates from said control plates,
- means for providing positive D.C. potentials to said buffer plates providing lensing of said charged particles from said source to said target, and
- means for selectively providing potentials to the electrodes on said control plates to selectively direct said charged particles to said target.

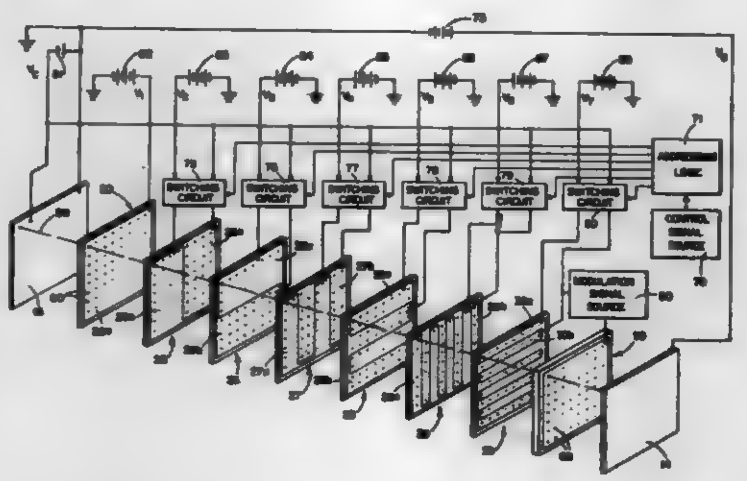
3,979,636
CHARGED PARTICLE BEAM SCANNING DEVICE

John E. Gunther, Lavon, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 21, 1974, Ser. No. 526,032

Int. Cl.² H01J *29/41*

U.S. Cl. 315—12 R 13 Claims



1. A charged particle beam scanning device comprising:
- an area source of charged particles for providing a uniform flow of charged particles over a predetermined area, said area source including elongated charged particle generating means for generating charged particles, a first electrode having a negative potential positioned behind said generating means, and a second electrode having a positive potential interdigitated with said first electrode, said first electrode divided into a plurality of segments,
- an area target,
- a plurality of control plates sandwiched between said source and said target for controlling the flow of charged particles therebetween, each of said control plates having a plurality of apertures formed therein, corresponding apertures of said control plates being aligned to form charged particles beam channels between the source and the target, said control plates each having a plurality of electrodes on at least one of the surfaces thereof, said electrodes on each of said surfaces being electrically insulated from each other,
- means for providing potentials to at least one of the electrodes of each successive control plate to focus said charged particles through selected control plate apertures,
- and means for providing a cutoff potential to the remaining electrodes of said control plates,
- whereby a beam of charged particles is focused by said focusing potentials through the channels formed by said selected apertures.

3,979,637
MICROCHANNEL PLATES AND METHOD OF MAKING SAME

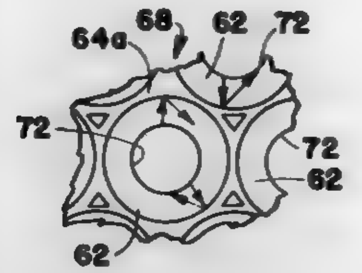
Walter P. Siegmund, Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Filed Nov. 8, 1971, Ser. No. 199,816

Int. Cl.² H01J *29/41*

U.S. Cl. 315—12 R 8 Claims

1. A multichannelled structure comprising;
- a plate formed of at least two differently characterized glasses intimately bonded together by fusion;
- a first of said glasses being at least partially conductive to electrical energy and comprising a multiplicity of individually spaced apart parallel tubular components each of substantial wall thickness, the opening internally of each tubular component forming a channel through said plate; and
- a second of said glasses being an electrical insulating glass, said second glass comprising the structure of a web of interconnected sections, one section encircling each tubular component with substantially less thickness of glass than said wall thickness of said tubular component in each case.



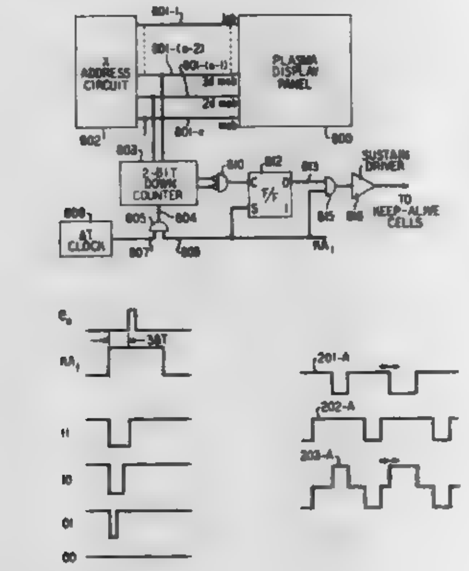
3,979,638
PLASMA PANEL WITH DYNAMIC KEEP-ALIVE OPERATION

Peter Dinh-Tuan Ngo, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 15, 1974, Ser. No. 460,757

Int. Cl.² H05B *37/00*

U.S. Cl. 315—169 TV 20 Claims



1. A display system comprising
- a panel of gas discharge display sites,
- means operative for applying addressing signals to selected ones of said sites,
- one or more preconditioning sources external to said sites, each of said sources being activatable to provide preconditioning flux at each of said sites to facilitate gas discharges thereat,
- means operative for activating one or more ones of said sources in a time relation with respect to the operation of said applying means, and
- means for varying said time relation as a function of the positions of said selected ones of said sites with respect to the positions of said one or more ones of said sources.

3,979,639
CORRECT EXPOSURE ANNUNCIATOR CIRCUIT

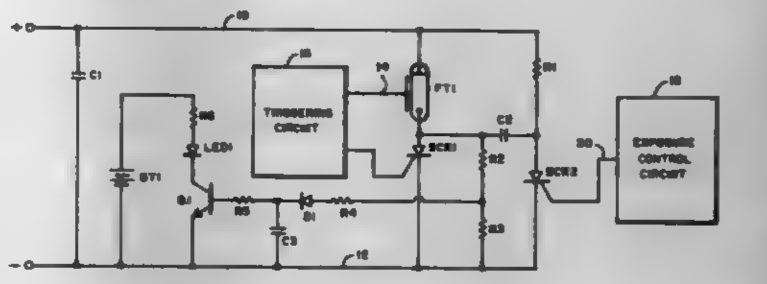
James R. Adams, Jr., Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 11, 1975, Ser. No. 603,564

Int. Cl.² H05B *41/32*; G01J *1/16*

U.S. Cl. 315—241 P 14 Claims

1. Electronic flash apparatus comprising:
- first control signal generating means for generating a first control signal;
- second control signal generating means for generating a second control signal;
- light producing means for producing light in response to the first control signal;
- terminating means for terminating the light in response to the second control signal, the terminating means including terminating capacitor means which is discharged during the termination of the light;
- terminating capacitor charging means for charging the terminating capacitor means;



- third control signal generating means for receiving a charging signal indicative of the charging of the terminating capacitor means and producing a third control signal; and
- annunciator means for providing, in response to the third control signal, an indication that the terminating means has terminated the light.

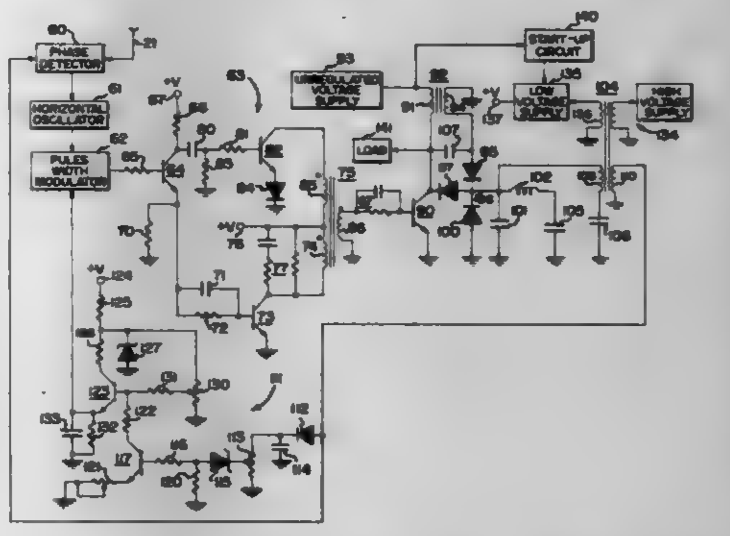
3,979,640
HORIZONTAL DEFLECTION SYSTEM

Martin Fischman, Seneca Falls, and Jesse H. L'Hommedieu, Waterloo, both of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed July 30, 1975, Ser. No. 600,403

Int. Cl.² H01J *29/70*, *29/72*

U.S. Cl. 315—387 10 Claims



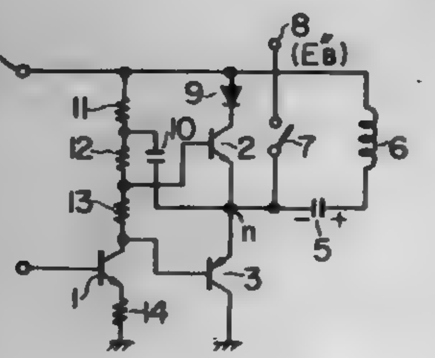
1. In a television receiver having a signal receiver, a video channel connected thereto, and a cathode ray tube connected to said video channel, a self-regulating horizontal deflection system comprising:
- a horizontal deflection winding associated with said cathode ray tube for electron beam deflection therein;
- a horizontal output stage connected to said deflection winding for providing a deflection signal thereto;
- a source of unregulated voltage connected to said horizontal output stage;
- feedback means connected to said horizontal output stage for providing a signal indicative of the magnitude of said unregulated voltage;
- pulse width modulating means connected to said video channel and to said feedback means for providing a pulse signal synchronized with a composite video signal from said video channel and wherein the pulses are width modulated in accordance with the signal from said feedback means;

- a transformer having an output winding connected to said horizontal output stage and first and second input windings;
- a driver transistor connected to said pulse width modulating means and to said first input winding for applying the width modulated pulses to said first input winding with an amplitude and shape sufficient to drive said horizontal output stage to provide said deflection signal to said horizontal output winding, the width modulation of the pulses compensating for variations of said unregulated voltage; and
- a semiconductor switch connected to said pulse width modulating means and to said second input winding for initiating retrace of the electron beam deflection by switching said horizontal output stage.

3,979,641
VERTICAL DEFLECTION OUTPUT CIRCUITRY FOR TELEVISION RECEIVER

Yoshihiro Arakawa; Akio Nakashima; Shunji Iwabuchi, and Kenji Ando, all of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed May 28, 1974, Ser. No. 474,025
Claims priority, application Japan, May 28, 1973, 48-59496
Int. Cl.² H01J *29/70*
U.S. Cl. 315—397 **8 Claims**

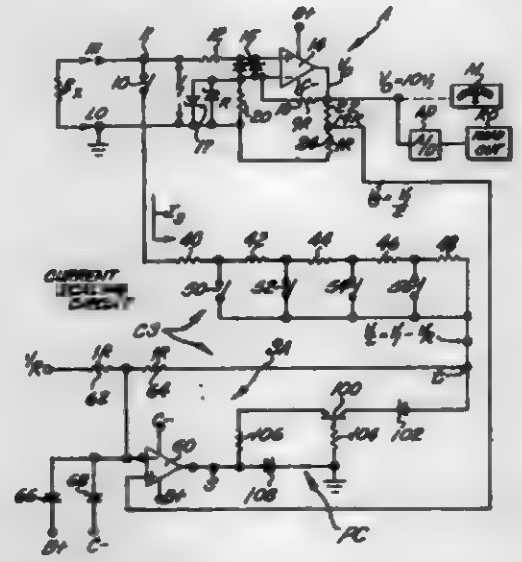


1. In a vertical deflection output circuitry including a single-ended push-pull circuit comprising two output transistors, a first series circuit including a deflection coil and a capacitor, a first power source, and an excitation circuit for alternatively making said two transistors conductive in a scan period, the collector-emitter circuits of said two transistors being connected in series with the same direction of current flow thereby to form a second series circuit, the output of said excitation circuit being coupled to the respective bases of said two transistors, said first series circuit being connected between the emitter and the collector of one of said two transistors, and said first power source being connected across said second series circuit, the improvement which a diode is connected in series to the collector-emitter circuit of one of said two transistors which conducts in a first half of the scan period, with the same direction of current flow as that of said collector-emitter circuit, thereby to form a third series circuit, said first series circuit is connected in parallel with one of said third series circuit and the other output transistor which conducts in the latter half of the scan period, and a second power source for supplying a voltage higher than that of said first power source is connected through a switch means between the junction point of said two output transistors and the junction point of said other output transistor and said first power source, said switch means being closed during the retrace period and open during the scan period.

3,979,642
ELECTRONIC PROTECTIVE CIRCUIT

Pieter G. Cath, Cleveland, and Robert J. Erdman, Twinsburg, both of Ohio, assignors to Keithley Instruments, Inc., Hudson, Ohio

Division of Ser. No. 428,744, Dec. 27, 1973, Pat. No. 3,875,506. This application Sept. 20, 1974, Ser. No. 507,674
Int. Cl.² H02H *3/00*
U.S. Cl. 317—16 **13 Claims**

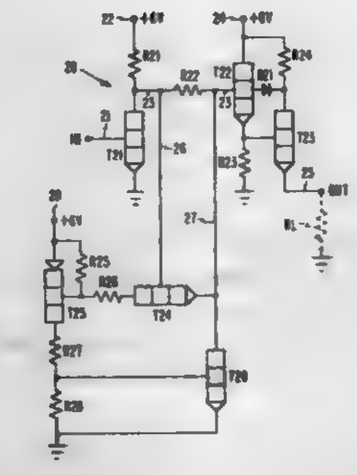


1. An electronic protective circuit for an electrical circuit including an amplifier having an input circuit and an output circuit, said output circuit being connected in a series circuit to an output terminal point, voltage limiting means for limiting the magnitude of the voltage across said input circuit of said amplifier to a given maximum voltage level when an overvoltage is applied to said terminal point, substantially all of said overvoltage being applied between said amplifier input circuit and said terminal point, and current limiting means interposed between said amplifier output and said terminal point for limiting the current flow through said series circuit to a given maximum current level and including semiconductor means having a first current path defined by two electrodes thereof connected in said series circuit between said amplifier output circuit and said terminal point and an impedance connected in said series circuit between said amplifier output circuit and said semiconductor means to thereby limit the current flow through said series circuit.

3,979,643
LOGIC DRIVER CIRCUIT WITH OUTPUT PROTECTION

Rafael Pelc, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 3, 1975, Ser. No. 546,486
Int. Cl.² H02H *7/20*
U.S. Cl. 317—16 **6 Claims**



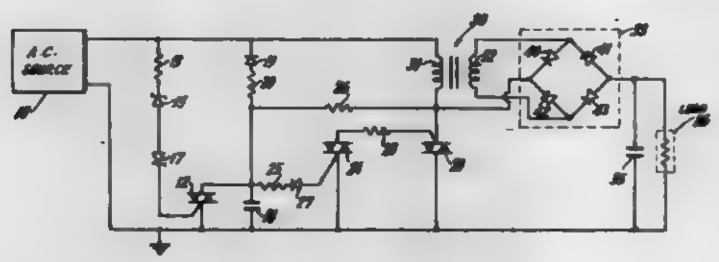
1. A driver for increasing the level of a logic signal, said driver comprising:

- an input circuit responsive to a low-level input logic signal for producing drive current on a drive line;
- an output circuit coupled to said drive line for producing a voltage indicative of said drive current;
- a sensor transistor having a base and an emitter coupled across said resistor and adapted to conduct when said drive current exceeds a predetermined amount;
- a control transistor coupled to said sensor transistor and to said drive line and adapted to conduct when said sensor transistor conducts, so as to shunt said drive current away from said output circuit for cutting off said output circuit when said drive current exceeds said predetermined amount; and
- a latch transistor coupled to said sensor and to said control transistor but separate from said output circuit, for maintaining conduction of said contol transistor as long as said low-level input signal is present.

3,979,644
OVERVOLTAGE PROTECTION ARRANGEMENT

Norman Everhart, 74 Highspire Road, Richboro, Pa. 18954

Filed Jan. 23, 1975, Ser. No. 543,452
Int. Cl.² H02H *9/04*
U.S. Cl. 317—20 **26 Claims**



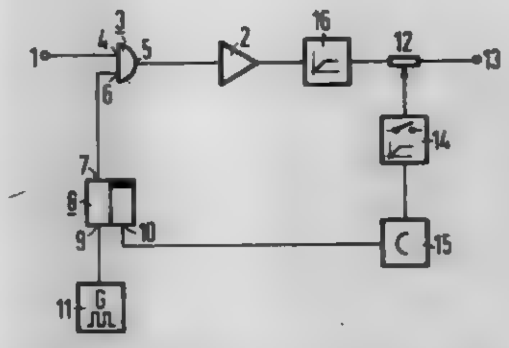
1. In combination in overvoltage protective circuitry, first and second circuit points adapted for receiving an AC potential, a transformer having primary and secondary windings, a first terminal of said transformer primary winding connected to said first AC receiving circuit point, a bidirectionally conducting controlled switch for connecting a second terminal of said transformer primary winding to said second AC voltage receiving circuit point, a first capacitor and unidirectional conducting means serially connected between said AC receiving circuit points, means connecting said first capacitor to said bidirectionally conducting controlled switch for controlling said switch, overvoltage responsive controlled switching means connected in parallel with said capacitor, and voltage responsive threshold triggering means connected to the gate terminal of said overvoltage responsive switching means and one of said AC potential receiving circuit points.

3,979,645
PROTECTIVE CIRCUIT FOR SHORT-CIRCUIT AND OVERLOAD PROTECTION OF A POWER CIRCUIT

Ernst Wittenzellner, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 20, 1974, Ser. No. 525,556
Claims priority, application Germany, Dec. 5, 1973, 2360678
Int. Cl.² H02H *7/20*
U.S. Cl. 317—33 R **6 Claims**

1. A circuit arrangement for short circuit and overload protection of a power circuit having a final stage, comprising an AND gate, the output of which forms the input of such final stage, with one input of said gate forming the input to the final stage, an overload sensor operatively connected to the output of the final stage, a bistable flip-flop circuit having an output connected to a second input of said AND gate, operative to control transmission from said first gate input to said stage input, in dependence upon said flip-flop, the latter having a pair of inputs, a pulse generator operatively connected to supply pulses to a first input of said flip-flop, and means responsive to predetermine results at said sensor operatively connected to the second input of said flip-flop circuit for triggering the same in the presence of an overload, or short circuit, whereby said input to the final stage is disconnected,

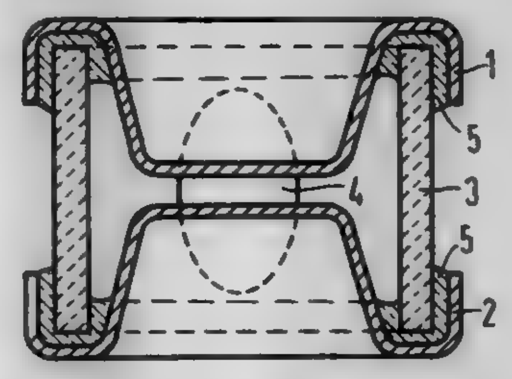


the pulse-interval ratio of said pulse generator being so determined that the net power loss in the event of a short circuit remains below a value damaging to said final stage.

3,979,646
SURGE VOLTAGE ARRESTER

Gerhard Peche; Gerhard Lange, and Dieter Grueneberg, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 9, 1974, Ser. No. 513,349
Claims priority, application Germany, June 28, 1974, 2431236
Int. Cl.² H02H *3/22*
U.S. Cl. 317—62 **12 Claims**



7. In a surge voltage arrester of the type having a gas-tight housing wherein a pair of discharge electrodes are arranged with their active electrode surfaces facing each other and spaced apart in a tubular insulating body, and at least one ignition electrode is carried by the insulating body over a portion of the length thereof, the improvement wherein:

- the ignition electrode is carried on the inner surface of the insulating body and defines at least the envelope of a surface which has a normal that is perpendicular to the longitudinal axis of the surge voltage arrester, the width of the ignition electrode in the region of the active surfaces of the discharge electrodes being approximately equal to the widths of the active surfaces.

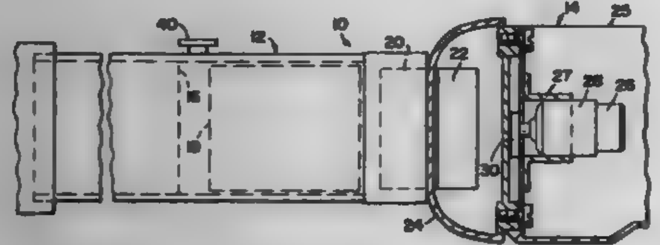
3,979,647
INDUCTIVELY COUPLED LOCK

Robert Richard Perron, Beverly, and John Thomas Fowler, Winchester, both of Mass., assignors to The Eastern Company, Naugatuck, Conn.

Filed June 11, 1975, Ser. No. 586,019
Int. Cl.² E05B *47/06*
U.S. Cl. 317—134 **3 Claims**

1. An electronic lock system comprising, in combination: key means including generating means for generating a plurality of electrical signals, first inductor means electrically connected to said generating means; lock means including second inductor means positioned to inductively couple with said first inductor means when said key means is in predetermined spatial relation to said lock means, signal distinguishing means

electrically connected in circuit of said lock means and disposed to receive signals from said generating means, whereby a predetermined electrical signal is distinguished from said plurality of electrical signals from said generating means,



motor means electrically connected in driven relation to said signal distinguishing means, lock lug means connected in movable, driven relation to said motor means, whereby activation of said motor means causes movement of said lock lug means between a locked and unlocked position.

3,979,648

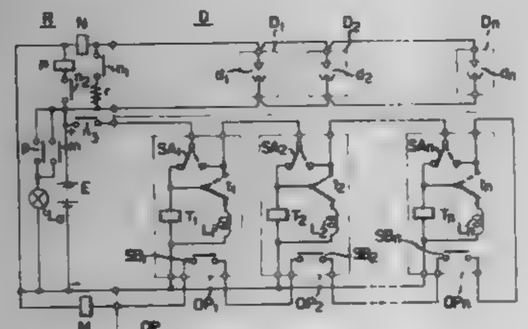
SYSTEM FOR OPERATING FIRE PREVENTION DEVICES

Shigeru Toyoshima, Nishinomiya; Mamoru Honda, Kashiwa; Katsuya Nakamura, Tokyo, and Katsuhisa Seki, Ohmiya, all of Japan, assignors to Nohmi Bosai Kogyo Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1975, Ser. No. 556,713

Int. Cl.^{2} H01H *47/14*

U.S. Cl. 317—139 **2 Claims**



1. A system for operating fire prevention devices comprising a plurality of fire prevention device operators each comprising an actuator coil adapted to be energized in response to the operation of a fire detector directly or through another operator that has already been operated, means for deenergizing said energized actuator coil and energizing an actuator coil in another operator upon the completion of the operation of said fire prevention device associated with said energized actuator coil, means for deenergizing said energized actuator coil and energizing the actuator coil in said other operator when said fire prevention device associated with said energized actuator coil fails to complete its operation within a predetermined time, and an indication device which intermittently operates in response to the operation of said fire detectors and which continuously operates when all of said fire prevention devices complete their operations, said indication device operable by means disposed in the respective fire prevention devices.

3,979,649

REMOTE SEARCHLIGHT CONTROL SYSTEM

Gerald C. Persha, 1912 W. 12 Mile Road, Royal Oak, Mich. 48073

Filed Aug. 9, 1974, Ser. No. 496,080

Int. Cl.^{2} H02P *7/20*

U.S. Cl. 318—17 **10 Claims**

1. In an electric motor positioned lamp having at least two modes of operation, the improvement comprising:

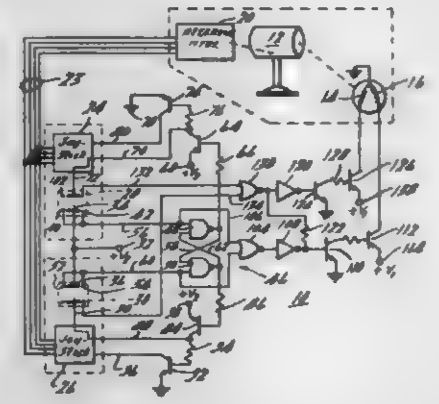
a control system for said lamp for controlling the aiming direction of the lamp including the azimuth and altitude of said lamp and at least two modes of operation from at least two space separated locations comprising first and second aiming direction control switches and first and second mode control switches,

circuit means interconnecting said control switches and said lamp for controlling the application of energy to said direction control switches and the lamps including means for disabling one of said first and second control switches upon the actuation of one or the other of said first and second control switches,

said interconnecting circuit means including a source of electrical energy,

means for applying said electrical energy to said direction control switches, and

first and second switch means connected between said source of power and each respective direction control switch,



the actuation of said one or the other of said first and second control switches energizing one of said switch means to apply said electrical energy to said other direction control switch and disable the other of said switch means to disconnect said electrical energy from said one direction switch,

said interconnecting circuit means further including bi-stable circuit means connected to said first and second mode control switches, and

mode output circuit means connected to said lamp for controlling the application of electrical energy to said lamp in one of two modes of operation,

said bi-stable circuit means enabling one of said output circuit means and disabling the other of said output circuit means in response to the actuation of said one of the other of said first and second control switches.

3,979,650

ENERGY CONVERSION APPARATUS FOR SUPPLYING VARIABLE VOLTAGE DIRECT CURRENT POWER TO AN ELECTRICALLY PROPELLED VEHICLE

Will B. Jamison, Bethel Park, and John F. Burr, Pittsburgh, both of Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.

Filed Dec. 4, 1974, Ser. No. 529,504

Int. Cl.^{2} H02K *7/02*

U.S. Cl. 318—150 **8 Claims**

1. In an energy conversion apparatus for supplying variable voltage direct current power to an electrically powered vehicle having a flywheel mounted on the vehicle,

power means for supplying mechanical energy to said flywheel to be stored by said flywheel, and

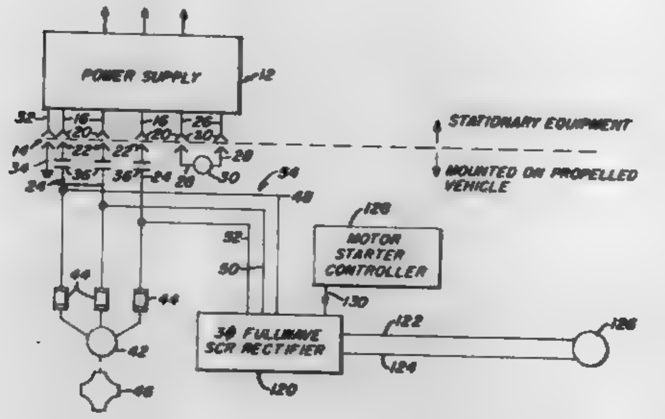
electrical generating means mounted on the vehicle and drivingly connected to said flywheel for transforming the stored mechanical energy of said flywheel to alternating current power,

the improvement comprising,

a direct current powered motor provided on the vehicle,

rectifying means connecting said electrical generating means to said motor for converting said alternating current power to direct current power to be supplied to said motor, and

controller means provided on the vehicle and connected to said rectifying means for controlling said rectifying means to supply direct current power to said motor at a preselected voltage, and



operator controllable means for actuating said controller means to control the voltage of the rectified current conducted from said rectifying means to said motor and thereby control the speed of said motor.

3,979,651

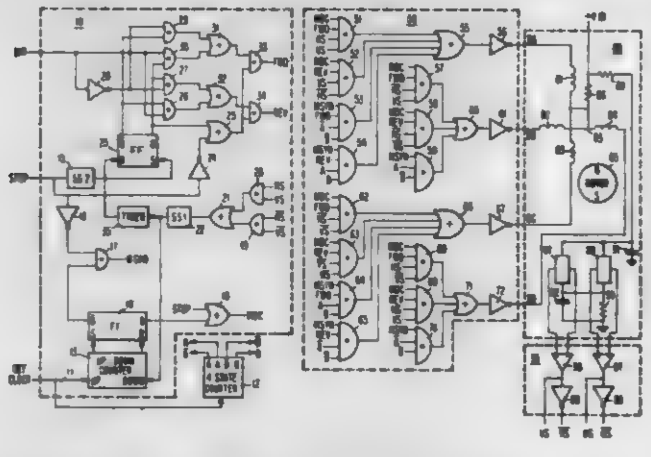
DIRECT CURRENT AND SYNCHRONOUS MOTOR SYSTEM

Charles Ronald Bringol, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,638

Int. Cl.^{2} H02K *29/00*

U.S. Cl. 318—138 **14 Claims**



1. A motor control system for a motor having at least two stator windings angularly disposed about a rotor, comprising:

direct current means for generating position signals indicative of the position of said rotor relative to said windings;

a source of reference pulses having a frequency corresponding to a desired angular velocity of said rotor;

comparison means connected to said generating means and to said reference pulses for providing a first signal when the angular velocity of said rotor is equal to said desired angular velocity, and a second signal when the angular velocity of said rotor is less than said desired angular velocity;

logic means connected to said comparison means and to said generating means for driving said motor in a direct current mode by sequentially applying, in response to said second signal, direct current pulses to said stator windings according to the position of said rotor, said logic means driving said motor in a synchronous mode by sequentially driving, in response to said first signal, said windings with pulses of a predetermined duration at said frequency of said reference pulses; and

said comparison means and said logic means enabling repeated automatic transition from said direct current mode to said synchronous mode and from said synchronous mode to said direct current mode.

3,979,652

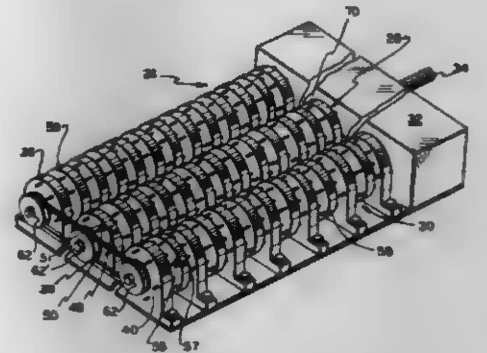
ELECTROMAGNETIC MOTOR UTILIZING ATTRACTION AND REPULSION FORCES

Charles E. Faxon, 1269 E. 1st. South No. 3, Salt Lake City, Utah 84102

Filed Aug. 25, 1975, Ser. No. 607,357

Int. Cl.^{2} H02K *37/00*

U.S. Cl. 318—254 **5 Claims**



1. An electric motor for providing rotary drive power from a source of electrical power, comprising:

a plurality of rotatably mounted shafts;

gearing means for interconnecting said shafts together to drive an output shaft;

a plurality of rotors supported on each of said shafts, each of said rotors including a multiplicity of magnetic means polarly disposed parallel to the axes of rotation of said shafts;

a plurality of stators each fixed in stationary relationship in combination with one of said rotors, each of said stators including a multiplicity of electromagnets having pole pieces therein, said electromagnets affixed in said stators to dispose said pole pieces in parallel relationship to the magnetic means of a related rotor, said pole pieces and said magnetic means of each of said stator and rotor combinations being offset in relationship to the pole pieces and magnetic means of each other stator and rotor combination to provide a staggered drive relationship between the stator and rotor combinations;

a plurality of switching means, one being coupled to each of said shafts for supplying electrical current to said electromagnets in phase synchronization with the position of the rotors of each of said stator and rotor combinations whereby to propel said shafts;

means for keying the rotors supported by alternate shafts to said shafts so that said alternate shafts are driven by said rotors, the remaining rotors being free wheeling on their respective shafts; and

means for mechanically coupling adjacent shafts so that the said driven shafts drive adjacent shafts in the same direction.

3,979,653

VELOCITY-CHANGE CONTROL SYSTEM AND METHOD FOR NUMERICAL CONTROL MACHINES

Hymie Cutler, 16230 Santa Rosa, Detroit, Mich. 48221

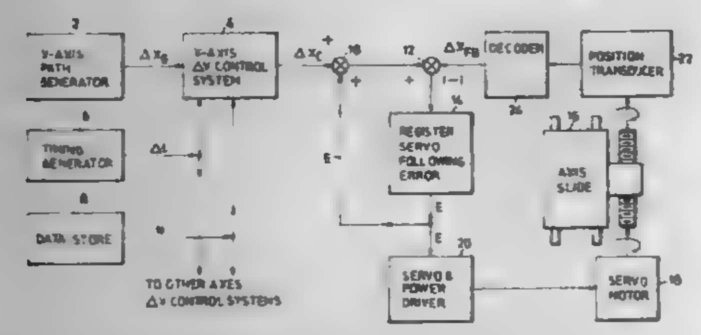
Filed Sept. 27, 1973, Ser. No. 401,293

Int. Cl.^{2} G05B *19/24*

U.S. Cl. 318—571 **19 Claims**

1. Apparatus for moving a movable member in accordance with a programmed path and velocity, enabling the programming of rapid velocity changes, during both acceleration and deceleration, with reduced path errors, comprising: first digital generating means generating a series of program electrical pulses representing a first trace corresponding to the programmed path and velocity of movement of the movable member; second digital generating means generating, from said program electrical pulses, a series of command electrical pulses representing a second trace corresponding to the programmed path and velocity of the first trace but lagging same by a lag which varies with variations in the programmed path

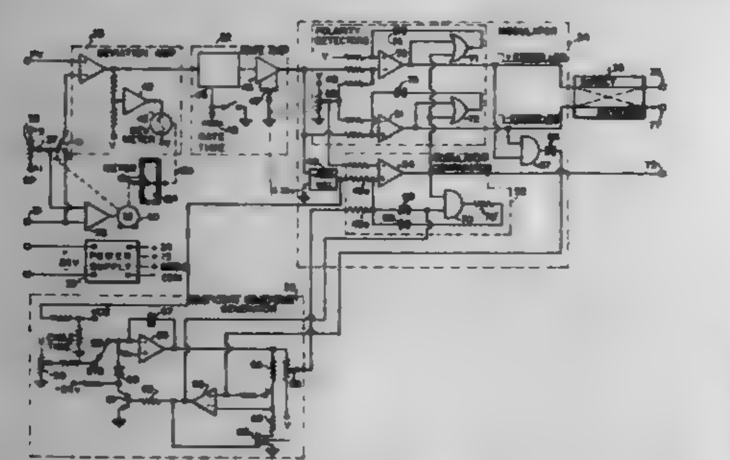
velocity during both acceleration and deceleration; and drive control means controlling the movement of the movable member in accordance with said series of command electrical pulses.



3,979,654
PROCESS CONTROL SYSTEM USING A TWO WIRE REMOTE CONTROL SYSTEM

Eugene H. Guicheteau, Audubon, and Justin O. Johnson, Jr., Levittown, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 13, 1974, Ser. No. 469,339
Int. Cl.² G05B *11/28*
U.S. Cl. 318—599 **20 Claims**

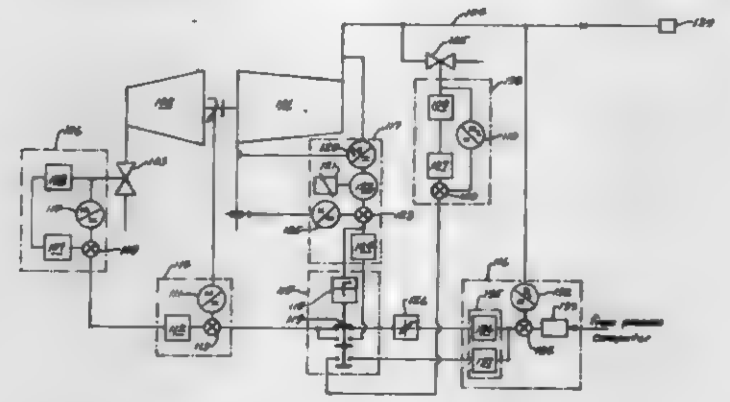


1. In a process control system having means to produce a signal that is variable in accordance with changes in a process and provided with a control means that is operative in a sense and to an extent for adjustment of said process to bring said process-variable signal into accord with a set point signal, the rate of said adjustment varying in accordance with the extent of deviation of said process variable and set point signals, a circuit comprising, a controller remote from said control means for comparing said process-variable and set point signals to produce at a pair of output terminals a d-c time-proportioned signal of one polarity when said process variable signal is less than said set point signal and of the opposite polarity when said process variable signal is greater than said set point signal, duration of said d-c signal being variable in accordance with the extent of deviation of said process-variable from set point signals, a power relay located adjacent said control means and operative selectively to control said control means for actuation to effect adjustment of said process in one direction or the other, said power relay having a pair of reversely connected optical isolators, each having a light emitting element and an individually associated light sensitive element adapted to be illuminated thereby when the associated light emitting element is energized, said control means including means responsive to the selective illumination of said light sensitive elements to produce a first trigger signal output in response to illumination of one of said light sensitive elements and a second trigger signal output in response to illumination of the other of the light sensitive elements, first and second semi-conductor switch means, means selectively to apply said first trigger signal to the gate of one of said semi-conductor switch means and the second trigger signal to the gate of the other semi-conductor switch means, means connecting said semi-conductor switch means and said control means to a source of electrical power for energization in a first sense when said first semi-conductor switch means is fired and for energization in the opposite sense when said second one of said semi-conductor switch means is fired, and a two-wire transmission line connecting the said controller and said power-relay for applying said time-proportioned signals to said optical isolators, whereby said d-c time-proportioned signals selectively energize the light emitting element of one or the other said optical isolators depending upon their polarity.

3,979,655
CONTROL SYSTEM FOR CONTROLLING A DYNAMIC COMPRESSOR

Alexander Rutshtein, and Naum Staroselsky, both of West Des Moines, Iowa, assignors to Compressor Controls Corporation, Des Moines, Iowa

Filed Mar. 31, 1975, Ser. No. 563,662
Int. Cl.² G05B *1/02*
U.S. Cl. 318—609 **1 Claim**



1. Control apparatus for controlling the operation of a controlled object comprising a dynamic compressor, a turbine driver of said compressor having a control member for changing the torque output of the turbine, a pipeline connecting said compressor to a user of gas, a suction flow differential device installed upstream from the suction port of the compressor, and fluid relief means for releasing compressed gas from said pipeline, the improvement comprising:

a control loop for controlling the position of said turbine control member, said control loop including an actuator for the turbine control member, a transmitter for indicating the position of said turbine control member, means for developing a signal responsive to a difference between the actual and the required position of said turbine control member and a proportional-plus-integral controller of the position for said turbine control member; said proportional-plus-integral controller being connected directly to said actuator, the proportional-plus-integral controller and the actuator together having a negative feedback which includes said position transmitter;

a speed control loop for controlling the speed of rotation of the compressor, said speed control loop developing the set point for the position loop of the turbine control member; said speed control loop including a speed transmitter, means for developing a signal responsive to the difference between the actual and the required speed, and a speed controller having a transfer function which represents the sum of the transfer function of a proportional-plus-integral component and the product of the transfer functions of an integral component and an aperiodic component; said speed controller being connected directly to the controlled object, said controlled object including the position loop of the turbine control member, the control member itself and the turbine; the output signal of said controlled object corresponding to the speed of rotation and both the speed controller and the

related controlled object together having a negative feedback which includes the speed transmitter;

a control loop for controlling the position of the fluid relief means which is connected to said pipeline; said position control loop including:

an actuator for said fluid relief means, a transmitter for indicating the position of this fluid relief means, means for developing a signal, which signal is responsive to a difference between the actual and the required position of said first fluid relief means, and a proportional-plus-integral controller of position of said fluid relief means, the last said proportional-plus-integral controller being connected directly to the actuator of said fluid relief means and said last proportional-plus-integral controller and the actuator together having a negative feedback which includes said position transmitter of the fluid relief means;

a control loop of minimum output of the compressor, this minimum output control loop limiting the minimum suction flow differential according to surge protection conditions and said minimum output control loop also developing the set point for the speed loop; said minimum output control loop including:

a transmitter emitting a signal corresponding to the pressure differential across the compressor, means for multiplying the pressure differential signal by a constant coefficient, and therefore developing a signal corresponding to the required minimum suction flow differential, said means for measuring the flow differential in the suction port, means for developing a signal responsive to a difference between the actual and the required flow differential in the suction port, and a minimum flow differential controller; the transfer function of said minimum flow differential controller being the product of a transfer function of a proportional-plus-integral component and a transfer function of an aperiodic component; said minimum flow differential controller being connected to a controlled object, the last said controlled object comprising the closed speed control loop with its corresponding controlled object and the compressor; the output signal of the minimum output control loop corresponding to the suction flow differential and the minimum flow differential controller and the related controlled object together having a negative feedback which includes a suction flow differential transmitter;

a pressure control loop for controlling the discharge pressure and developing the set points for the speed control loop and also for the control loop for controlling the position of the fluid relief means; said pressure control loop including a set point device, a transmitter of discharge pressure, means for developing a signal responsive to the difference between the actual and required discharge pressure, and a pressure controller; said pressure controller comprising two channels having a common input; the first channel developing the set point for the speed control loop, and the second channel developing the set point for the loop controlling position of said fluid relief means; said first channel being a proportional-plus-integral component; said first channel being connected to a controlled object, the last said controlled object comprising the speed control loop with its corresponding controlled object and the compressor; the output signal of said controlled object of the first channel of the pressure loop corresponding to the discharge pressure, and the first channel of the pressure controller and the related controlled object together having a negative feedback which includes a discharge pressure transmitter; the transfer function of said second channel representing the sum of the transfer function of a proportional-plus-integral component and the product of the transfer function of an integral component and an aperiodic component; said second channel being connected to a controlled object; said controlled object being related to the second channel comprising the control loop of the position of the fluid relief means, said fluid relief means itself, and the delivery network; the output signal of the respective controlled object of said second channel corresponding to the discharge pressure, and the second channel and the said controlled object together having a negative feedback which includes a discharge pressure transmitter;

nonlinear means for saturating the set point for the closed speed control loop, said set point being developed by the first channel of the discharge pressure controller;

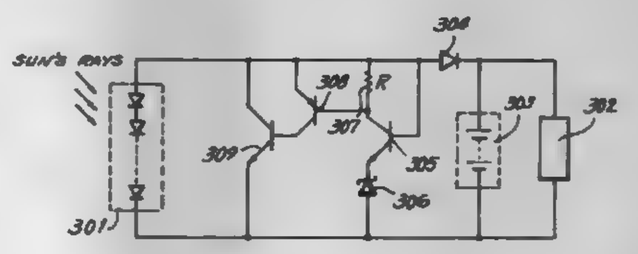
a distributing means for connecting the output signals of the pressure or of the minimum output control loops, depending upon the pressure differential across the compressor, to the speed control loop or to the control loop for controlling the position of said fluid relief means;

said distributive means connecting the input of the speed control loop to the output of the first channel of the pressure controller until the suction flow differential reaches its minimum admissible magnitude corresponding to the actual pressure differential across the compressor, at which time said input of the speed control loop is switches to the output of the minimum output control loop, and the output of the second channel of the pressure controller is connected to the control loop for controlling the position of said fluid relief means.

3,979,656
BATTERY CHARGING CIRCUIT

Shuji Takeda, and Tsutomu Otake, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 26, 1974, Ser. No. 536,714
Claims priority, application Japan, Dec. 25, 1973, 49-4004
Int. Cl.² H02J *7/00*; G04C *3/00*
U.S. Cl. 320—2 **5 Claims**



1. In a battery charging circuit having a solar energy source series-coupled to a secondary battery for applying a charging current thereto, the improvement comprising voltage detecting means coupled in parallel with said battery for detecting the state of charge of same, said detecting means including a constant voltage element and a detecting transistor including a control electrode referenced to said secondary battery potential for detecting the state thereof, and first and second current path electrodes coupled in series with said constant voltage element, and by-pass means including a first control electrode coupled to the detecting means and second and third current path electrodes connected in parallel with said battery for defining a by-pass current path for said charging current applied to said battery to prevent same from being overcharged, said by-pass means in response to the state of charge of said battery as detected at said first control electrode from said voltage detecting means, preventing the conduction of current in the current path defined by the second and third electrodes until said battery is charged to a predetermined voltage determined by the constant voltage element and thereafter permitting conduction of current in the current path defined by said by-pass means second and third electrodes, whereby the battery is by-passed when fully charged.

3,979,657

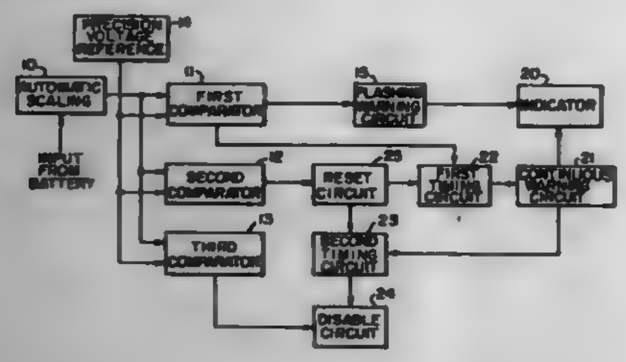
BATTERY MONITOR WITH AUTOMATIC SCALE AND RECYCLE PREVENTS

Daniel S. Yorksie, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 360,698, May 15, 1973, abandoned. This application Aug. 22, 1975, Ser. No. 607,010

Int. Cl.² H01M *10/48*

U.S. Cl. 320—13 **9 Claims**



1. A circuit for monitoring the terminal voltage of an electrical energy source for an electrically powered vehicle, comprising in combination: (a) automatic scaling means for monitoring the terminal voltage of said energy source and adjusting an attenuator to a range appropriate for the energy source being monitored to produce a first signal, said first signal having a predetermined relationship to the terminal voltage of said energy source, said scaling means also including a filter to assure that said range changing means does not respond to rapid changes in the terminal voltage of said energy source; (b) comparator and timing means for comparing the magnitude of said first signal to a reference signal to determine if said first signal decreases below a first predetermined level and remains below a second predetermined level for a predetermined time interval to generate and initiate disable signal; and (c) first disable means for disabling a selected operative function of said vehicle in response to said initiate disable signal.

3,979,658

AUTOMATIC ELECTRIC BATTERY CHARGING APPARATUS

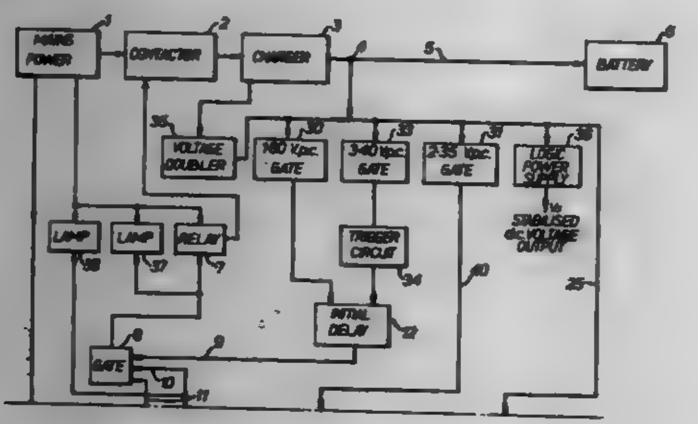
George William Foster, Bolton, England, assignor to Chloride Group Limited, London, England

Filed Feb. 25, 1975, Ser. No. 552,759

Claims priority, application United Kingdom, Feb. 26, 1974, 8591/74

Int. Cl.² H02J *7/04*

U.S. Cl. 320—23 **18 Claims**



1. Automatic electric battery charging apparatus of the taper charge type for supplying a direct charging current to battery terminals from a.c. supply terminals, comprising: means for generating a control signal representative of the difference between a first signal dependent on the battery voltage and a second signal dependent on the a.c. supply voltage; and terminating means responsive to the rate of rise of said control signal for initiating the termination of a phase of the charge when the rate of rise of said control signal falls below a predetermined value.

3,979,659

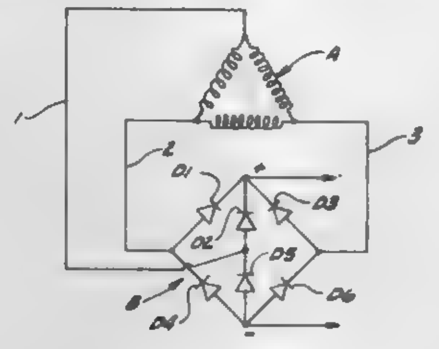
AUTOMOTIVE ALTERNATOR RECTIFIER BRIDGES

Peter F. Lynch, Jr., Attleboro; Richard G. Delagi, Sharon, both of Mass., and Richard E. Haley, Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 30, 1975, Ser. No. 545,644

Int. Cl.² H02M *7/155*

U.S. Cl. 321—8 R **9 Claims**



1. An automotive alternator rectifier bridge comprising a pair of generally flat heat-conducting laminated bases each having a central layer of aluminum with layers of copper bonded to the opposite surfaces thereof, a plurality of first diodes each having its cathode solder-connected to one surface of one of the bases, a plurality of second diodes each having its anode solder-connected to one surface of the other of said bases, each of said diodes being constituted by a discrete semiconductor chip having a metallic layer in ohmic contact with one face thereof and each diode being secured to one of said bases by having its metallic layer soldered to the laminated base and electrical conductors solder-connected to the anodes of the first diodes and to the cathodes of said second diodes and extending generally parallel to the bases for connection to automotive alternator terminals.

3,979,660

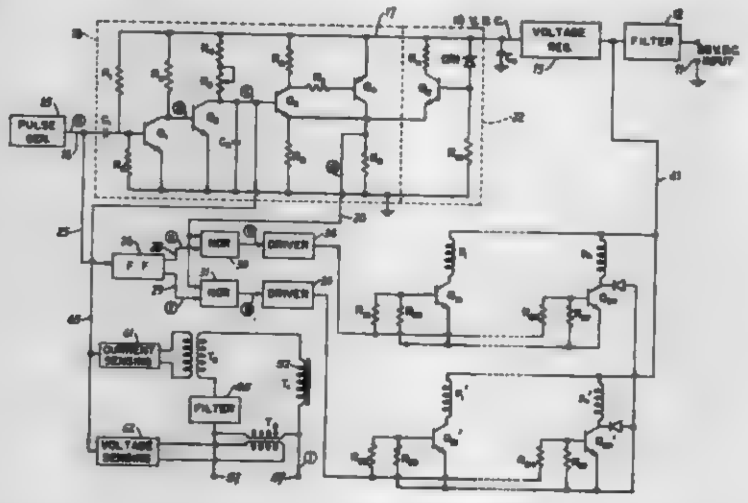
START-UP CIRCUIT FOR STATIC INVERTER

Thomas W. Moore, Dayton, Ohio, assignor to AMF Incorporated, White Plains, N.Y.

Filed July 25, 1975, Ser. No. 599,148

Int. Cl.² H02M *1/18*

U.S. Cl. 321—11 **12 Claims**



9. In a static inverter having switching devices which are selectively operable in response to control pulses to produce an a.c. output, improved means for limiting the duration of said control pulses on initial application of a source of supply to the inverter, comprising

- pulse generating for generating pulses at a predetermined rate,
- monostable circuit means responsive to said pulses for producing output control pulses at said predetermined rate,
- said monostable circuit including
- a charging circuit,
- means coupling said charging circuit to said pulse generating means for discharging said charging circuit upon occurrence of each pulse,
- said charging circuit charging up to at least a given potential in the periods between discharges,
- a controllable conduction semiconductor device having a control electrode and second and third electrodes,
- said control electrode being coupled to said charging circuit,
- a second controllable conduction semiconductor device connected in emitter follower circuit configuration between the conductors of said supply source,
- the second electrodes of the two devices being connected in parallel and the third electrodes of said devices being coupled to the supply source,
- means including means coupled to the control electrode of the second device for maintaining the second device nonconductive until a predetermined time after the first pulse output of said pulse generating means,
- said last named means providing subsequently to the predetermined time after said first pulse output a bias for producing current flow in the emitter follower conduction device that biases the second electrode of the first conduction device to cause conduction of the second device only when the charging circuit is charged to at least said given potential.

3,979,661

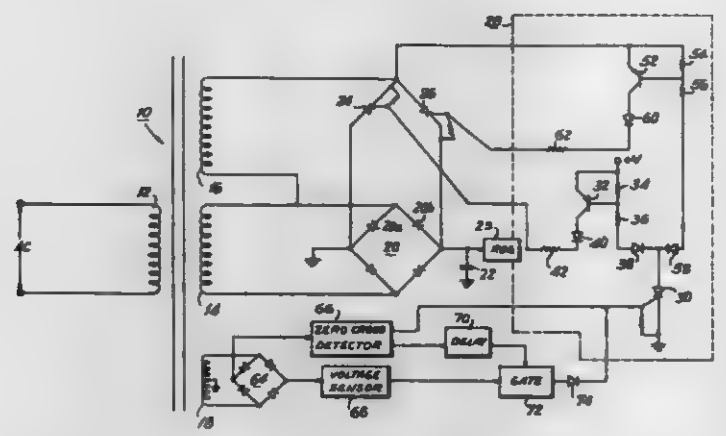
POWER SUPPLY APPARATUS HAVING AN OUTPUT VOLTAGE WITHIN A LIMITED RANGE REGARDLESS OF INPUT VOLTAGE VARIATIONS AND HAVING MINIMAL POWER DISSIPATION

Bjorn J. Matz, Forest Hills, N.Y., assignor to Dictaphone Corporation, Rye, N.Y.

Filed Dec. 30, 1974, Ser. No. 537,455

Int. Cl.² H02P *13/24;* G05F *5/00*

U.S. Cl. 321—18 **8 Claims**



1. Power supply apparatus for supplying a substantially constant regulated voltage regardless of the variations of an input AC supply voltage, with minimal power dissipation, comprising:

- a transformer having a primary winding for receiving said input AC supply voltage and plural secondary windings;
- input voltage detecting means for detecting the amplitude of said input AC supply voltage and for producing a control signal as a function thereof;
- rectifier means connected to one of said secondary windings for rectifying the voltage produced by said one secondary winding;
- switch means connected to the remaining secondary windings for selectively connecting said remaining secondary windings in series with said one secondary winding to correspondingly change the level of said rectified voltage;
- switch control means coupled to said switch means and responsive to said control signal for selectively actuating said switch means when the amplitude of said input AC supply voltage crosses a threshold level; and
- voltage regulating means supplied with said rectified voltage for producing a regulated voltage proportional thereto.

3,979,662

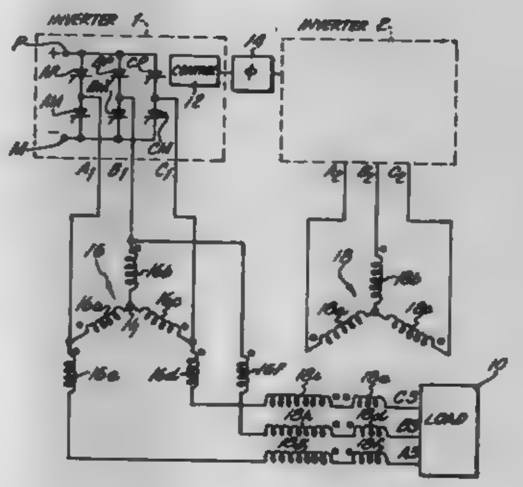
PARALLELING OF INVERTERS FOR LOW HARMONICS

Frank N. Klein, Kenosha, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 5, 1975, Ser. No. 574,771

Int. Cl.² H02M *7/515*

U.S. Cl. 321—27 MS **18 Claims**



1. A method for connecting first and second switchingtype three-phase inverters to supply electrical power to a common load comprising the steps of:

- establishing a phase relationship of the voltages of the second inverter with respect to the voltage of the first inverter,
- transforming the voltage of one phase of said second inverter by isolation transformer means to produce a first isolated voltage substantially equal in amplitude to the voltage of a first phase of said first inverter and differing in phase therefrom by a first predetermined angle less than 90°,
- transforming the voltage of at least one phase voltage selected from the other two phases of said second inverter by isolation transformer means to produce at least a second isolated voltage smaller in amplitude than said voltage of said first phase of said first inverter and differing in phase from said first isolated voltage by a second predetermined angle,
- transforming the voltage of at least one phase voltage selected from the other two phases of said first inverter by isolation transformer means to produce at least a third isolated voltage substantially equal in amplitude to said second isolated voltage and differing in phase from said first phase voltage of said first inverter by said second predetermined angle but in an opposite sense of leading or lagging than the sense with which said second isolated voltage differs from said first isolated voltage,
- producing a voltage for driving one phase of said common load by connecting together in series circuit arrangement said first phase voltage of said first inverter, said first isolated voltage, at least said second isolated voltage, and at least said third isolated voltage, and
- repeating the foregoing steps symmetrically for the other two phases to provide three-phase electrical power for said common load.

3,979,663
CONSTANT CURRENT SOURCE

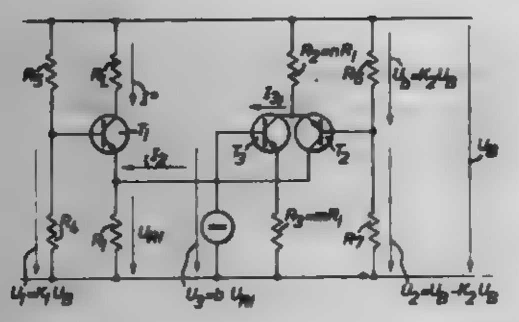
Dieter Herchner, Heilbronn, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Jan. 29, 1975, Ser. No. 545,294

Claims priority, application Germany, Feb. 23, 1974, 2408755

Int. Cl.² G05F *1/56*

U.S. Cl. 323—4 **7 Claims**



1. A constant current source with a current independent of the supply voltage and the temperature, comprising: first and second complementary transistors with the emitter of said first transistor being connected via an emitter resistance R_1, across which, in operation, a voltage U_{R1} drops, to one pole of a direct voltage supply U_B, the emitter of said second transistor being connected via an emitter resistance $R_2 = nR_1$ to the other pole of said direct voltage supply U_B, the collector of said first transistor being connected via a load resistance R_L to said other pole for said direct voltage supply U_B, and the collector of said second transistor being connected to the emitter of said first transistor; a further transistor T_3 through which a part of the current is removed from one of said first and second transistors, the emitter of said further transistion being connected via an emitter resistance $R_3 = mR_1$ to a terminal of said direct voltage supply, and the collector of said further transistor being connected to one of the emitters and collectors of said first and second transistors; and means for applying in operation the following direct voltages with assigned indices

$$U_1 = K_1U_B,\ U_2 = U_B - K_2U_B,\ U_3 = bU_{R1},$$

to the bases of said first, said second and said further transistors respectively; and wherein the circuit is so dimensioned that the following interrelationships between the constants k_1, k_2, n, m, b apply:

$$K_2 = nK_1,\ 1/n = 1+1/b,\ m=b,$$

whereby a voltage and temperature independent collector current I^* for said first transistor is achieved.

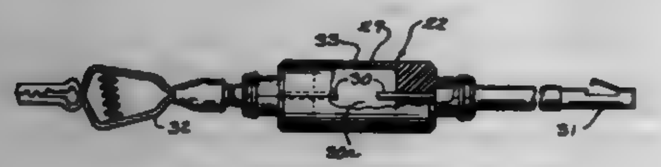
3,979,664
CAPACITOR DISCHARGE IGNITION TESTING APPARATUS EMPLOYING VISUAL SPARK GAP INDICATOR

Mark Harris, Brownsville, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 346,158, March 29, 1973, Pat. No. 3,891,917. This application Mar. 3, 1975, Ser. No. 554,747

Int. Cl.² G05F *1/16*

U.S. Cl. 324—17 **4 Claims**



1. A spark gap unit for an ignition testing apparatus providing on site testing of capacitor discharge ignition systems for internal combustion engines comprising a pair of spark gap electrodes mounted in spaced relation and having input power connection means, an enclosing housing enclosing the ends of the electrodes and the gap therebetween, said housing providing an essentially fluid tight enclosure, said housing including a small passageway means permitting a restricted fluid interchange between the inside and outside of the housing and restricting the propagation of a spark from between the electrodes outwardly of the housing while permitting the escape of gases from within the housing.

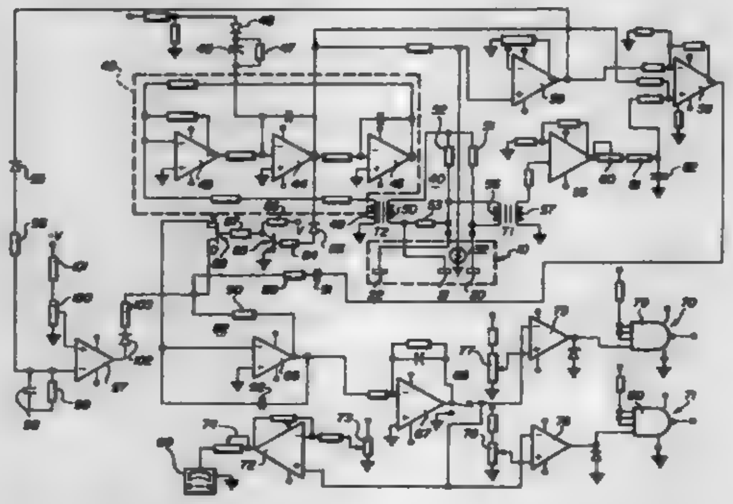
3,979,665
CONDUCTIVITY MONITORING SYSTEM

Wendell V. Ebling, Libertyville, Ill.; Herbert Goldsmith, Rockville, and Rodolfo R. Rodriquez, Columbia, both of Md., assignors to Baxter Laboratories, Inc., Deerfield, Ill.

Filed Feb. 5, 1975, Ser. No. 547,319

Int. Cl.² G01N *27/42*

U.S. Cl. 324—30 R **2 Claims**



1. In a conductivity monitoring system for monitoring the conductivity of a fluid flowing into and through a conductivity cell including electrode means within the conductivity cell for providing an output signal representative of the conductivity of said fluid, temperature sensing means disposed within said conductivity cell for providing an output signal representative of the temperature of said fluid flowing into and through said conductivity cell, indicator means, coupling means including summing means responsive to said output signals from said electrode means and said temperature sensing means to provide a temperature compensated conductivity output signal to said indicator means, the improvement comprising an arrangement for indicating a failure of said temperature sensing means, said arrangement comprising voltage sensing means for sensing the input to said summing means from said temperature sensing means, said voltage sensing means being responsive to the detection of a pre-established signal level and being operable to superimpose a signal on said output signal to said indicator means to operate the latter such that an indication of failure of said temperature sensing device is provided.

3,979,666
METHOD AND APPARATUS FOR EVALUATING PROPERTIES OF CARBON FIBERS USING CAPACITANCE SENSING

Alexander F. MacLean, Durham, N.H., and Ilmar L. Kalnin, Millington, N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 326,711, Jan. 26, 1973, Pat. No. 3,864,626. This application Oct. 1, 1974, Ser. No. 511,008

Int. Cl.² G01R *27/26*

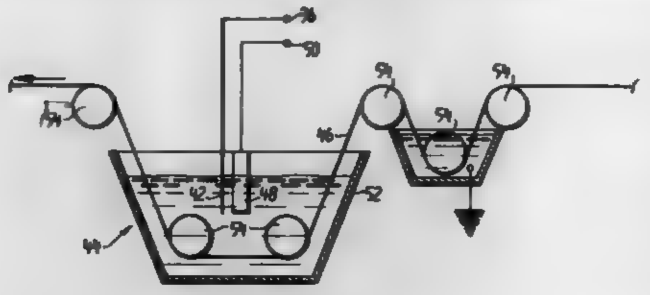
U.S. Cl. 324—61 R **20 Claims**

1. A method for controlling the manufacturing process of a carbonaceous fibrous material containing at least about 90 percent carbon by weight comprising the steps of:

a. providing an electrolyte and a counter electrode in contact with the electrolyte;

b. disposing the carbonaceous fibrous material being manufactured in contact with the electrolyte at a predetermined distance from the counter electrode;

c. applying an electrical potential of known amplitude between the counter electrode and the carbonaceous fibrous material through a reference capacitor having a known value;



d. sensing the amplitude of an output potential across the reference capacitor;

e. evaluating a physical property of the carbonaceous fibrous material as a function of the sensed amplitude; and,

f. controlling a process condition in response to the evaluation.

3,979,667
ELECTRICAL INDICATORS

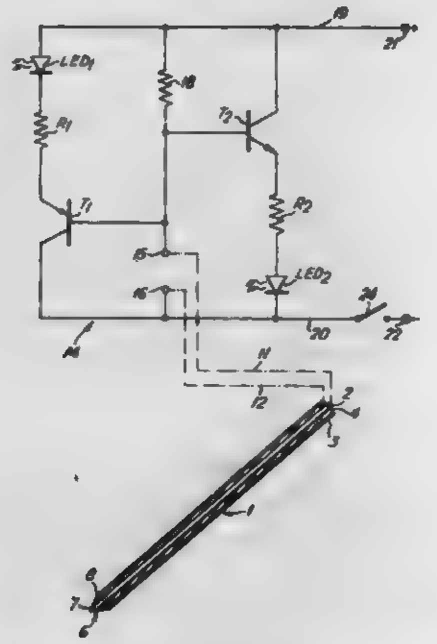
Nigel W. Cornes, Hatfield, England, assignor to Diplex Limited, England

Filed Dec. 13, 1974, Ser. No. 532,672

Claims priority, application United Kingdom, Jan. 2, 1974, 156/74

Int. Cl.² G01R *27/20*

U.S. Cl. 324—65 R **2 Claims**



1. In a domestic soil-moisture indicator including a probe comprising a pair of insulated electrodes, said electrodes having spaced ends for insertion in soil whose moisture content is to be measured, whereby said soil constitutes a variable resistance between said electrodes, the improvement which comprises a control circuit including a source of electric power, a fixed resistor connected in series with said variable resistance to constitute a voltage divider across said source of supply, said voltage divider having a division point, a pair of light-emitting devices, a complementary pair of emitter-following transistors, said transistors each being connected in series with a respective light-emitting device in opposite senses across said source of supply and connections to said transistors from said division point of said voltage divider, whereby the total illumination emitted by said light-emitting devices is controlled to be substantially constant and, at one end of the scale of values of said variable resistance, one of said devices is fully on and the other said device is off, while at the other end of the scale said one device is off and said other device is fully on, the brightness of said two devices varying between these extremes for intermediate values.

3,979,668
DEVICE FOR TESTING ANY LEAKAGE OF VACUUM-TIGHT GLASS SEALS

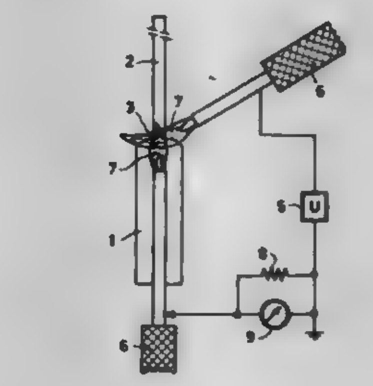
Helmut Samulowitz, Verlautenheide, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 17, 1974, Ser. No. 489,372

Claims priority, application Germany, July 27, 1973, 2336192

Int. Cl.² G01N *27/70*

U.S. Cl. 324—71 R **1 Claim**



1. A device for testing any leakage of vacuum-tight glass seals by means of electrodes which are connected to a high voltage source, said electrodes being arranged on either side of the glass seal, which electrodes produce an electric breakdown through the glass seal in the case of leakage wherein at least one of the high voltage electrodes is a burner and a jet of burning gas from said burner, said burner being connected to said high voltage source wherein said seal is between an open lamp envelope and an exhaust tube and wherein an outer electrode and an inner electrode are burning jets of gas.

3,979,669
PARTICLE ANALYZING SYSTEM

Thomas J. Godin, West Hollywood, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

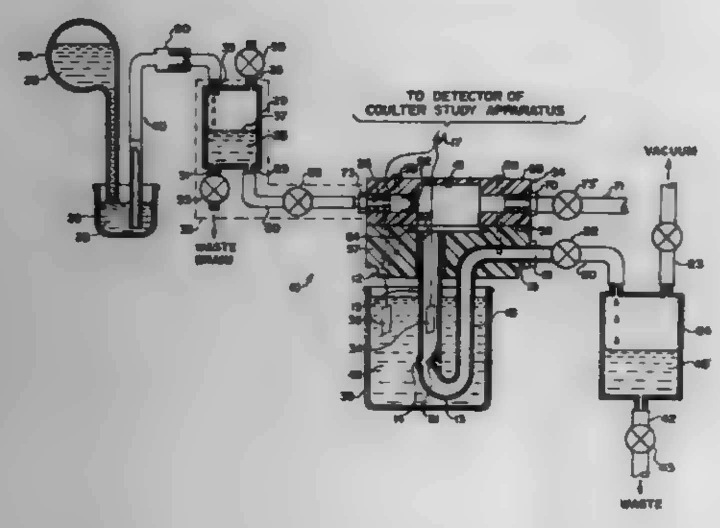
Continuation-in-part of Ser. No. 400,986, Sept. 26, 1973, Pat. No. 3,902,115. This application June 24, 1975, Ser. No. 589,936

Int. Cl.² G01N *27/00*

U.S. Cl. 324—71 CP **17 Claims**

1. A particle-free electrolyte supply system for particle measuring apparatus in which an aperture retaining member is provided in a vessel for containing a body of particulate liquid suspension to be analyzed, the member having an aperture to permit passage of the suspension from the vessel into the member, the apparatus including a first electrode in the vessel and a second electrode in the member to establish an electrical field in the aperture between the vessel and the member, means including electrical leads connected to the electrodes and adapted to extend connections to a detector to respond to electrical measuring signals produced across the electrodes with passage of particles through said aperture, the member having an inlet chamber for introduction of particle free electrolyte, an outlet chamber in fluid communication with the inlet chamber, an electrolyte isolator and first conduit for fluid communication between the isolator and inlet chamber, an electrolyte supply and second conduit for fluid communication between the supply and isolator, a waste container in fluid communication with the outlet chamber, and fluid moving means connected to the waste container, said system

comprising, a first restriction in the first conduit and a second restriction in the second conduit, whereby the fluid moving means will cause the electrolyte to pass from the supply to the isolator but the volume of electrolyte in the isolator will be established and maintained constant.



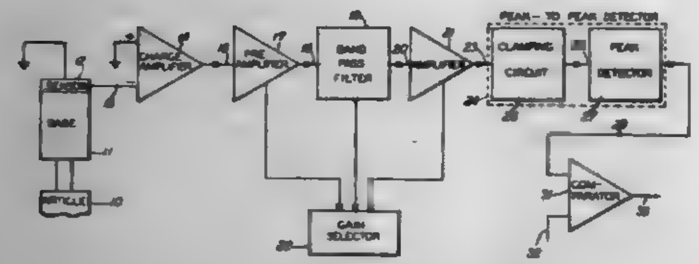
3,979,670
APPARATUS FOR DETECTING AND MEASURING PEAK-TO-PEAK VALUES IN ELECTRICAL SIGNALS

Sotirios John Vahaviolos, East Windsor Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 389,414, Aug. 17, 1973, Pat. No. 3,924,456. This application Jan. 29, 1975, Ser. No. 545,068

Int. Cl.² G01R *19/16*

U.S. Cl. 324—103 P **9 Claims**



1. Apparatus for detecting and measuring peak-to-peak values in an electrical input signal comprising a group of positive-going peaks and a group of negative-going peaks, the apparatus comprising:

a clamping circuit for referencing one of said group of peaks to a predetermined d.c. voltage level, comprising:
an operational amplifier having an inverting input for receiving the input signal, a non-inverting input, and an output terminal; and
a first network, connected to said inverting input, to reference one of the groups of peaks of the input signal to said predetermined d.c. voltage; and
a peak detecting and measuring circuit connected to said clamping circuit for providing an electrical output signal indicative of the magnitude of the other unreferenced peaks with respect to said predetermined d.c. voltage level.

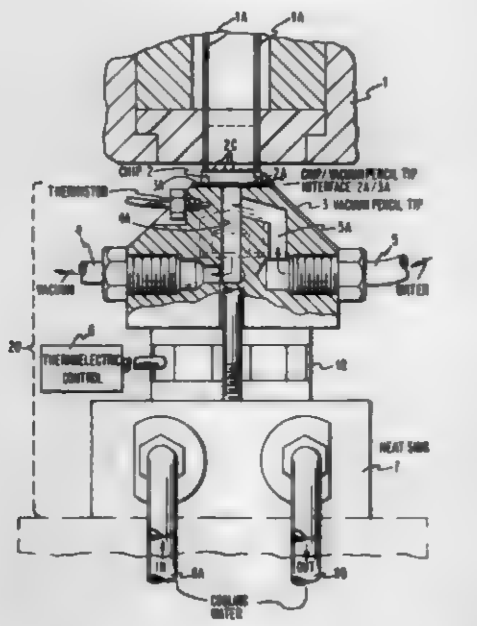
3,979,671
TEST FIXTURE FOR USE IN A HIGH SPEED ELECTRONIC SEMICONDUCTOR CHIP TEST SYSTEM

Robert G. Mecker, Wappingers Falls; William J. Scanlon, Hopewell Junction, and Zvi Segal, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 6, 1975, Ser. No. 555,766

Int. Cl.² G01R *31/26*

U.S. Cl. 324—158 F **4 Claims**



1. In a high speed electronic system for testing monolithic semiconductor chips fabricated by large scale integration techniques, wherein said semiconductor chips have a first substantially planar surface and a second substantially planar surface containing an array of conductive pads thereon,

a probe structure for contacting said conductive pads on said chip, positioning apparatus for positioning said chip with respect to said probe structure, said position apparatus including:
a precision controllable vacuum chuck having a vacuum pencil tip terminating in a planar surface for engaging said first planar surface of said chip;
wherein the improvement comprises, said chip positioning apparatus including further means for introducing a controlled amount of a liquid between the interface of the planar surface of said vacuum chuck and said first planar surface of said semiconductor chip under test, whereby the thermal contact resistance at the chip/vacuum chuck interface is reduced.

3,979,672
TRANSISTOR TESTING CIRCUIT

Hugh Arnoldi, Londonderry, N.H., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 12, 1975, Ser. No. 612,738

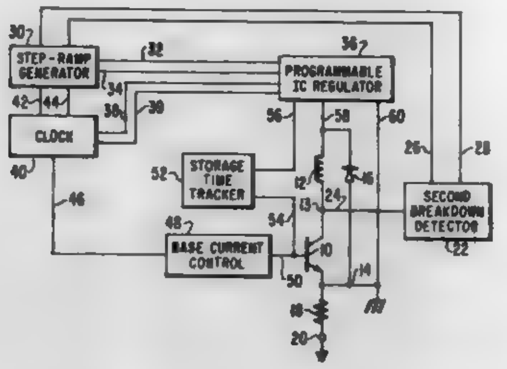
Int. Cl.² G01R *31/26*

U.S. Cl. 324—158 T **12 Claims**

1. A test circuit for a bipolar transistor, said transistor having collector and emitter electrodes defining a conduction path therebetween and a control electrode comprising, in combination:

energy storage means connected in series with said path to form a series circuit;
means for applying successively larger currents to said series circuit;
means for applying a forward bias to said control electrode while applying said successively larger currents;
means, after each application of a current to said series circuit, for concurrently interrupting the flow of said current and changing the bias applied to said control electrode from a forward to a reverse bias;

means responsive to the voltage across said energy storage means when said current is interrupted for providing a low impedance path across said series circuit in a direction to permit current flow from said energy storage means through said conduction path and said low impedance path back to said energy storage means; and
means for indicating a rapid decrease in the voltage between the collector and emitter electrodes of said transistor while said reverse bias is present.



3,979,673
RADIATING TELECOMMUNICATION SYSTEMS SWITCHING

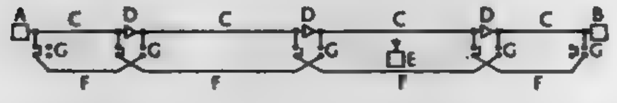
David James Reginald Martin, Leatherhead, England, assignor to Coal Industry (Patents) Limited, London, England

Filed June 12, 1975, Ser. No. 586,245

Claims priority, application United Kingdom, Aug. 7, 1974, 34806/74

Int. Cl.² H04B 7/26

U.S. Cl. 325—2 **8 Claims**



1. A telecommunication system comprising a base station, a main radiating transmission line connected at one end to the base station, a plurality of repeaters spaced along the length of the line and connected thereto, a further length of radiating transmission line parallel to the main line and divided into sections substantially equivalent in length to the lengths of the main line between the base station and a first repeater and between repeaters, and switching means associated with each repeater and the base station; the switching means being adapted to connect different sections of the further line to lengths of the main line.

3,979,674
RADIATING TELECOMMUNICATION SYSTEMS

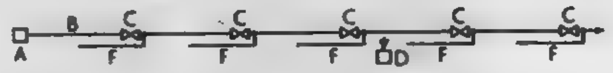
David James Reginald Martin, Leatherhead, England, assignor to Coal Industry (Patents) Limited, London, England

Filed June 12, 1975, Ser. No. 586,280

Claims priority, application United Kingdom, Aug. 7, 1974, 34805/74

Int. Cl.² H04B *7/26*

U.S. Cl. 325—4 **10 Claims**



1. A telecommunication system including a base station and a mobile station, a radiating transmission line having at least one repeater along its length, and the base station being arranged through the line to transmit signals to and to receive signals from the mobile station, and a further length of radiating transmission line connected to the said radiating transmission line adjacent the repeater on one side thereof and extending substantially in parallel with the said radiating transmission line on the other side of the repeater.

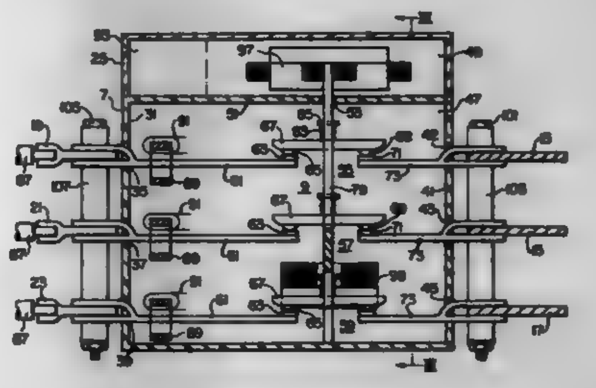
3,979,675
CIRCUIT INTERRUPTER

Alfred E. Maier, Beaver Falls, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 7, 1975, Ser. No. 565,500

Int. Cl.² H01H *77/10*

U.S. Cl. 335—16 **6 Claims**



1. A circuit interrupter comprising a circuit breaker and an electrically insulating housing having an access opeining therein, a cover for the opening, at least two sets of circuit breaker structures within the housing and comprising sets of pairs of movable and stationary contacts, means for opening and closing the contacts and comprising a crossbar for each pair of movable contacts and a connecting element, the sets of contacts being disposed in a stacked arrangement, the crossbars being mounted on the connecting element in spaced positions, the movable contacts being mounted on the crossbars, the connecting element being operable to move the crossbars simultaneously between open and closed positions, a first conductor leading to one of each pair of stationary contacts, a second conductor leading to the other of each pair of stationary contacts, the first conductors being in stacked spaced relation and extending through the housing, the second conductors being in stacked spaced relation and extending through the housing, and means responsive to a current overload for moving the connecting element to the open position and comprising a slot motor including a body of laminated sheets of magnetic material having a slot in which one crossbar is disposed for generating a magnetic flux in the body which flux is sufficient to lift the cross bar along the slot so as to move the movable contacts to the open position.

3,979,676
DELTA MODULATION APPARATUS

Mario Poma, Guelph, Canada, assignor to International Standard Electric Corporation, New York, N.Y.

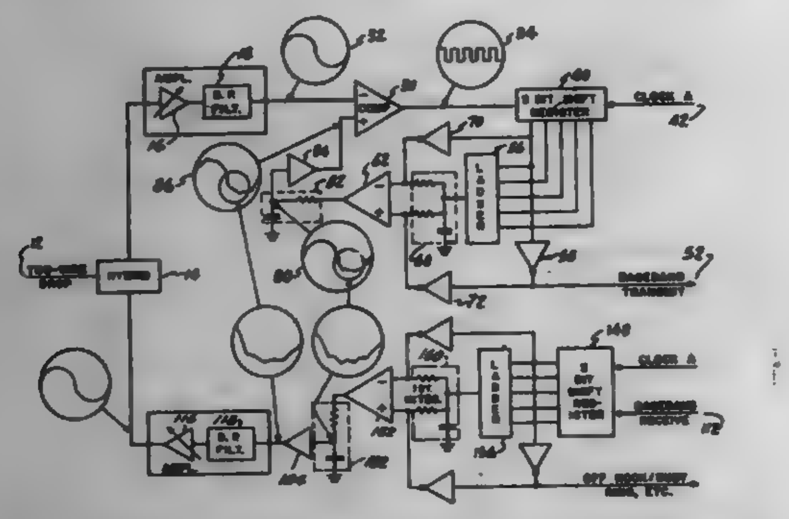
Filed Oct. 21, 1974, Ser. No. 516,252

Int. Cl.² H04B *1/00*

U.S. Cl. 325—38 B **3 Claims**

1. A continuously variable sloped delta modulator for voice frequency signals comprising: a source of analog input signals within the voice frequency range, said modulator including a comparator for producing binary signals derived from said analog input signals, means coupling said source to one input of said comparator, a network for reconstructing an analog based on said binary signals, and a feedback path between said network and a second input to said comparator for comparison with said analog input signal to produce a modulator output signal, said reconstructing network including, a multiple bit shift register for storing successive binary signals received from said comparator, a first output from said register indicative of the binary signal most recently received by said register from said comparator, an output signal path from said

modulator for transmitting an output indicative of said most recently received binary signal, a multiple input ladder attenuator network receptive of successive signals in parallel clocked from said shift register, said attenuator network operative to sum and weight signals received from said register and for delivering successive signals for feedback, first means for integrating successive signals received from said attenuator network, second integrating means productive of an amplitude envelope signal based on the slope of the signal received from the first integrating means, and a first and a second bypass path coupling said register first output path into said feedback path bypassing said attenuator network.



3,979,677

SYSTEM FOR AUTOMATIC EQUALIZATION

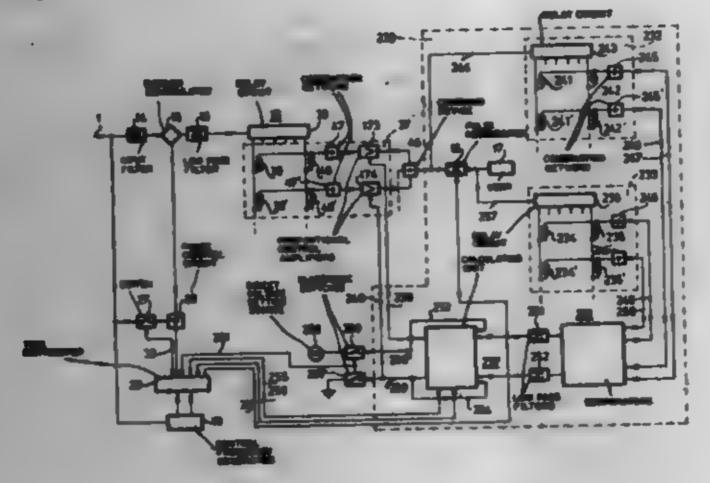
Felix Bogdanserjanz, Winterthur, Switzerland, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 3, 1975, Ser. No. 564,657

Claims priority, application Netherlands, Apr. 25, 1974, 7405553

Int. Cl.² H04B *1/00*

U.S. Cl. 325—42 11 Claims



1. System for equalizing the transfer characteristic of a transmission band associated with a transmission path and allotted to the transmission of information signals, which characteristic is constituted by an amplitude-frequency characteristic and a phase-frequency characteristic, which system is arranged for the transmission of information pulses, the system comprising:

a. a first frequency analyzer connected to the transmission path for splitting up the transmission band into a first number of frequency sub-bands, the first frequency analyzer comprising a first delay circuit receiving said information signals from said transmission path and a plurality of parallel arranged output channels connected to said first delay circuit, each of the output channels incorporating a first sub-bandpass filter and a first additional sub-bandpass filter, said first sub-bandpass and first additional sub-bandpass filters having the same pass band but a constant mutual phase shift at least over the pass band of said filters, the first sub-bandpass and additional sub-bandpass filters being constituted by connecting each of the output channels through a first plurality of weighting networks to points of different time delay in the first delay circuit, while the first number of frequency sub-bands are derived from the parallel arranged output channels;

b. the first and additional sub-bandpass filters in the output channels of the frequency analyzer jointly providing an uninterrupted pass region without rejectareas;

c. a first output channel of the first frequency analyzer being provided with a phase control circuit and a second output channel of the frequency analyzer being provided with an amplitude control circuit, said phase and amplitude control circuits each controlled by a separate control voltage;

d. a control voltage generator for generating the separate control voltages for controlling the phase and amplitude control circuits incorporated in the output channels of the first frequency analyzer, which control voltage generator comprises a plurality of comparators fed by frequency components of at least one spectrum component of an incoming adjusting signal which is split up into its frequency components in the first frequency analyzer, the generator further comprising a local reference source for the phase and amplitude reference of the adjusting signal split up into its frequency components, the control voltages for the different phase and amplitude control circuits being derived from the outputs of the comparators;

e. a system output circuit comprising a combination device connected to the phase and amplitude control circuits in the output channels and a succeeding pulse regenerator connected to an output of said combination device, the system for equalizing the transfer characteristic of a transmission band being characterized in that in the control voltage generator the local reference source is constituted by the pulse regenerator which by pulse regeneration of the information pulses provides the local reference signal, and in that the frequency components of the adjusting signal form the information signal which is derived by applying the outputs of the phase and amplitude control circuits to the combination device, bypassing the pulse regenerator, and for generating the control voltages for the phase and amplitude control circuits the different comparators in the control voltage generator have applied to them a second frequency sub-band and a second associated additional frequency sub-band of the adjusting signal, a first frequency selective means connected to said combining device including a second delay circuit for providing said second frequency sub-band and second associated additional frequency sub-band, a third frequency sub-band and a third associated additional frequency sub-band of the local reference signal being applied to the comparators in the control voltage generator, said third frequency sub-band and third associated additional frequency sub-band being in the same frequency range as said second frequency sub-band and second associated additional frequency sub-band, second frequency selective means connected to said combining device and including a third delay circuit having the same time delay as said second delay circuit for providing said third frequency sub-band and third associated additional frequency sub-band, said second frequency selective means being arranged as a second frequency analyzer having second frequency sub-bandpass filters and second associated additional frequency sub-bandpass filters by connecting a second plurality of weighting networks to points having a different time delay in the third delay circuit, the output circuits of the comparators each are connected to said phase and amplitude control circuits through mean-value devices for feedback control of the phase and amplitude control circuits in the equalizing system.

3,979,678

PULSE RADAR APPARATUS

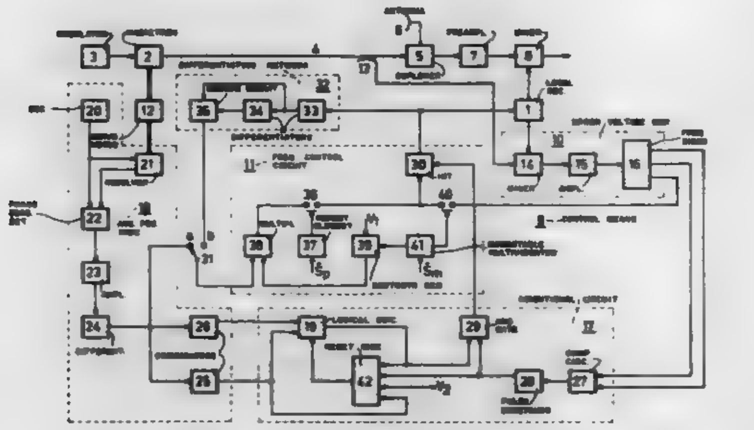
Bernhardus Walter Antonius Burgers, and Wilhelmus Antonius Teulings, both of Haaksbergen, Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Sept. 18, 1974, Ser. No. 507,365

Claims priority, application Netherlands, Sept. 21, 1973, 7313021

Int. Cl.² H04B *1/04*

U.S. Cl. 325—184 8 Claims



1. Pulse radar apparatus comprising: a tunable local oscillator; a servomotor; a continuously tunable transmitting device controlled by said servomotor to generate and transmit r.f. pulse signals at a momentary frequecy f_x in a sequence of defined interpulse periods; control means to fine tune said local oscillator operating at a momentary frequency f_l to a frequency f_{lo} which is mixed with the momentary transmitter frequency f_x to produce a difference frequency f_o, fixed in sign and magnitude, said control means including an error voltage generating means coupled to said local oscillator and to said transmitting device to generate an error voltage proportional to the frequency difference $\Delta f - f_o$ where $\Delta f = (f_x - f_l)$, a frequency control circuit to control tuning of said local oscillator, and means for producing a setting voltage corresponding to the momentary change of the transmitter frequency

$$\frac{df_x}{dt};$$

switching means operable to apply said setting voltage and said error voltage to said frequency control circuit; an angular position indicator coupled to the rotor of said servomotor; a conditional circuit which in response to the output from said position indicator delivers a switching signal to said switching means during a period when the transmitting device is operative in a frequency range $(f_l + f_o)$, to adjust said frequency control circuit during a first time interval T_1 at the end of each interpulse period to the setting voltage and, during a second time interval T_2 at the beginning of each interpulse period, to said error voltage.

3,979,679

FM DEMODULATOR HAVING SQUELCH CIRCUIT USING BUCKET BRIGADE DELAY LINE

John A. Bush, Sunol; Drew R. Lance, Saratoga, and John E. Altstatt, Palo Alto, all of Calif., assignors to California Microwave, Inc., Sunnyvale, Calif.

Filed June 30, 1975, Ser. No. 591,533

Int. Cl.² H04B *1/10*

U.S. Cl. 325—348 8 Claims

1. In an FM-receiver including a demodulator for demodulating audio signals from a frequency-modulated carrier transmission and a squelch circuit for coupling the demodulated audio signals to a receiver output terminal, an improved squelch circuit comprising:

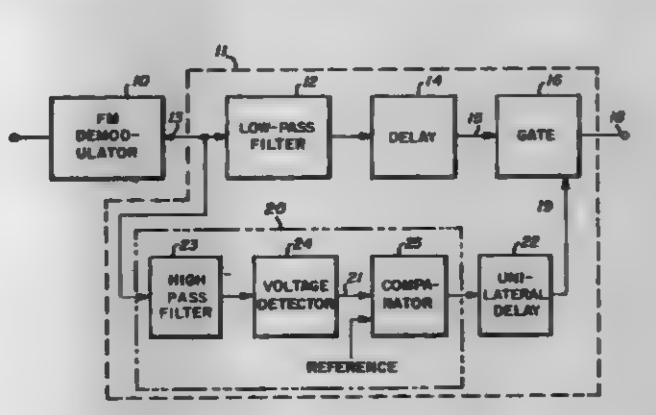
first filter means coupled to the output of the demodulator and having a first pass band for passing the demodulated audio signals and for rejecting noise signals having frequencies outside of said first pass band;

first delay means for delaying the filtered audio signals for a first predetermined period of time;

noise detector means coupled to the output of the demodulator for distinguishing between the noise level of said noise signals when a transmission is being received and the noise level of said noise signals when no transmission is being received, and for developing a control signal when a transmission is being received, said control signal being a binary signal having a leading edge and a trailing edge;

second delay means for delaying the leading edge of said control signal for a second predetermined period of time, said second period of time being less than said first period of time; and

gate means for coupling said filtered audio signals to the receiver output terminal in response to the delayed control signal.



3,979,680

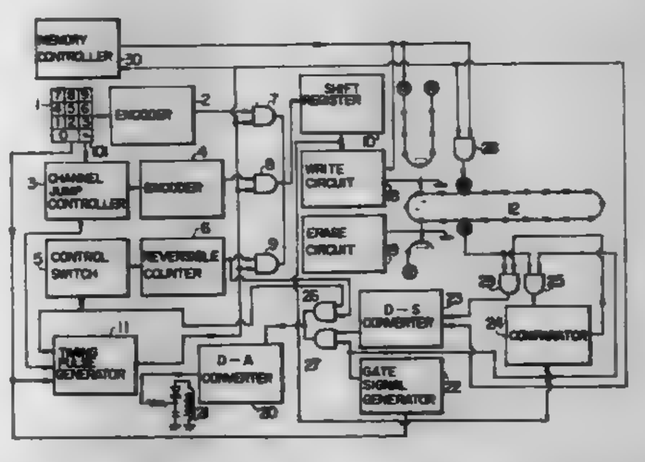
CHANNEL SELECTOR

Yoichi Sakamoto, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 15, 1973, Ser. No. 416,118

Int. Cl.² H04B *1/26*

U.S. Cl. 325—464 10 Claims



1. In a channel selector having a tuning circuit employing a variable reactance element,

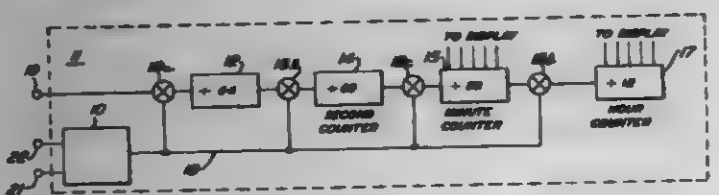
memorization means comprising:

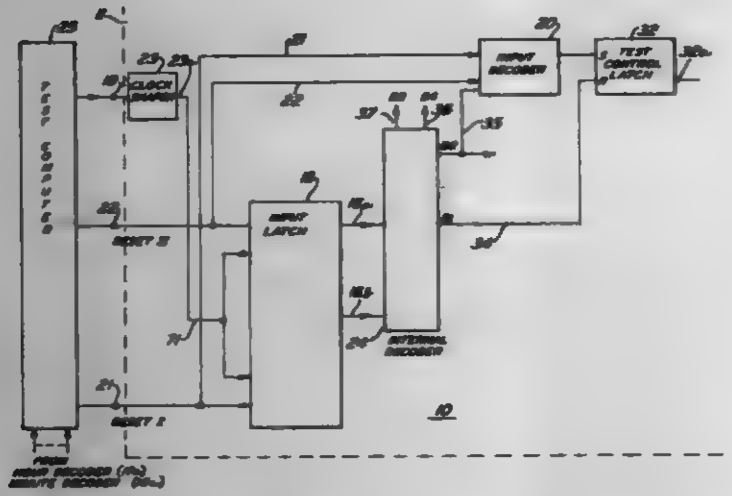
first means for producing first coded signals representing channel numbers corresponding to said channels respectively,

second means for producing second coded signals representing voltages respectively corresponding to said first coded signals, said second coded signals being coupled to the reactance element of said tuning circuit for tuning said circuit to a selected channel, and

means for including a non-volatile memory for permanently storing therein both first and second coded signals; and
channel selection means comprising:
read-out means coupled to said non-volatile memory for reading out from said memory a desired second coded signal in response to the selected first coded signal, and
means for converting the read-out second coded signal into said corresponding voltages for application thereof to said reactance element, said channel selector memorizing electrical signals corresponding to tuning channels in said non-volatile memory, channel selection thereafter being effected by tuning said tuning circuit to a desired one of said channels by reading out said memorized signals.

3,979,681
SYSTEM AND METHOD FOR DECODING RESET SIGNALS OF A TIMEPIECE FOR PROVIDING INTERNAL CONTROL
Edward H. Arnold, King of Prussia, Pa., assignor to Solid State Scientific, Inc., Montgomeryville, Pa.
Filed Nov. 27, 1974, Ser. No. 527,831
Int. Cl.² H03K *21/32;* G04C *3/00;* G04B *19/30*
U.S. Cl. 328—48 16 Claims

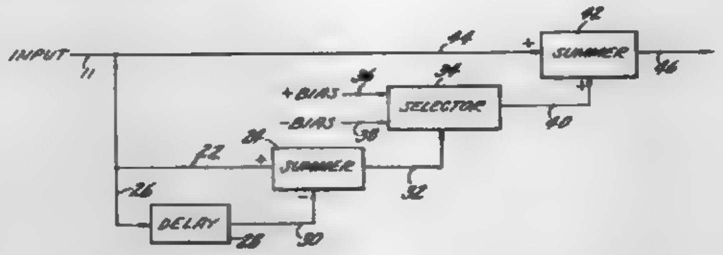




1. A solid state timing device responsive to reset signals and having a chain of series connected counters with clock pulses being applied to the beginning of the chain comprising
reset means coupled to predetermined ones of said counters for resetting selected ones of said counters upon application of predetermined reset signals; and
decoder means connected to said reset means but independent of said resetting of said counters for detecting the state of reset signals during a predetermined time duration for producing a control signal,
control means connected to said decoder means for providing predetermined internal control of said solid state timing device only upon application of said control signal.

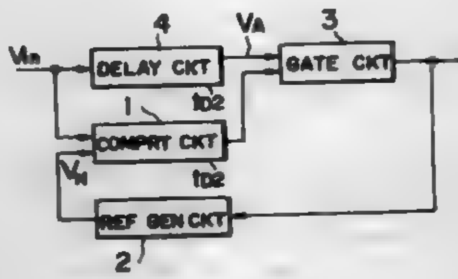
7. A method of producing a control signal in a timing system responsive to reset signals and having a chain of series connected counters with clock pulses being applied to the beginning of the chain which comprises the steps of
a. resetting selected ones of said counters upon application of predetermined reset signals,
b. detecting and decoding the state of selected reset signals during a predetermined time duration for producing a control signal independent of resetting selected ones of the counters, and
c. providing predetermined internal control of the timing system only upon production of the control signal.

3,979,682
HYSTERESIS COMPENSATOR FOR CONTROL SYSTEMS
Thomas R. Warwick, Jupiter, Fla., assignor to United Technologies Corporation, Hartford, Conn.
Filed Dec. 11, 1974, Ser. No. 531,635
Int. Cl.² H03K *17/10*
U.S. Cl. 328—162 4 Claims



1. In a control in which a control signal for a controlled device is produced in response to changes in an input signal, a time lag occurring in the response of said controlled device to changes in said input signal due to hysteresis in said control system, the improvement comprising:
an integrator, said input signal being connected to the input of said integrator, the output of said integrator changing in a direction determined by the polarity of said input signal;
a first source of a fixed bias signal having a first polarity and a second source of a fixed bias signal having a polarity opposite to said first polarity;
summing means having a pair of inputs and providing an output signal as a function of the summation of signals applied to its inputs, one of said inputs being connected to the output of said integrator; and
selector means connected to said input signal and responsive to the polarity thereof for connecting a corresponding one of said bias signal sources to the other input of said summing means, whereby the output of said summing means will be increased in value over the output of said integrator by the magnitude of said bias signals in response to a positive input signal and the output of said summing means will be decreased below the value of the output of said integrator by the magnitude of said bias signals in response to a negative input signal.

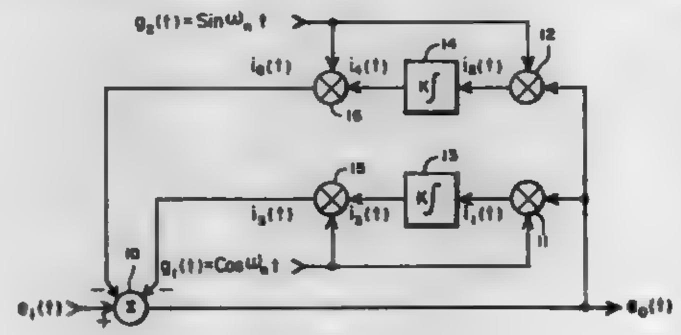
3,979,683
NOISE ELIMINATOR CIRCUIT
Tsuneo Ikeda, Oume, Japan, assignor to Hitachi, Ltd., Japan
Filed Jan. 6, 1975, Ser. No. 538,577
Claims priority, application Japan, Jan. 9, 1974, 49-5341
Int. Cl.² H04B *1/10*
U.S. Cl. 328—165 13 Claims



1. In a noise eliminator circuit comprising:
an input terminal to which an input signal from which a noise signal is to be removed is applied;
an output terminal;

first means, coupled to said input terminal, for detecting the existence of noise in said input signal; and
second means, coupled to said first means, for removing said noise from said input signal and coupling the resulting signal to said output terminal;
the improvement comprising
third means, coupled between said input terminal and said second means, for delaying the application of said input signal to said second means.

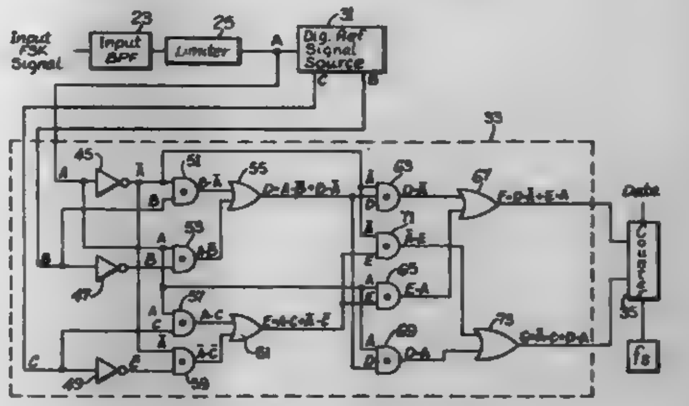
3,979,684
FEEDBACK FILTER SYSTEM
William F. Acker, 14241 82nd Ave. N., Seminole, Fla. 33542
Filed June 24, 1975, Ser. No. 589,980
Int. Cl.² H03H *7/10*
U.S. Cl. 328—167 19 Claims



1. A feedback filtering system for filtering frequencies in an input signal, said filtering system comprising:
a first summing means to receive said input signal and to receive a first cancellation signal, said summing means being capable of combining said input signal and said first cancellation signal to form a first combined signal serving as a first filter signal;
a first translating means to receive said first filter signal, said first translating means being capable of translating said first filter signal in frequency by effective multiplication of said first filter signal with a periodic first tone selection signal to thereby provide a first intermediate signal;
a second translating means to also receive said first filter signal, said second translating means being capable of translating said first filter signal in frequency by effective multiplication of said first filter signal with a periodic second tone selection signal to thereby provide a second intermediate signal;
a third translating means to receive a third intermediate signal obtained from said first intermediate signal, said third translating means for translating said third intermediate signal in frequency by effective multiplication of said third intermediate signal with a periodic third tone selection signal to thereby provide a fifth intermediate signal, and
a fourth translating means to receive a fourth intermediate signal obtained from said second intermediate signal, said fourth translating means for translating said fourth intermediate signal in frequency by effective multiplication of said fourth intermediate signal with a periodic fourth tone selection signal to thereby provide a sixth intermediate signal, said first cancellation signal being obtained from said sixth intermediate signal.

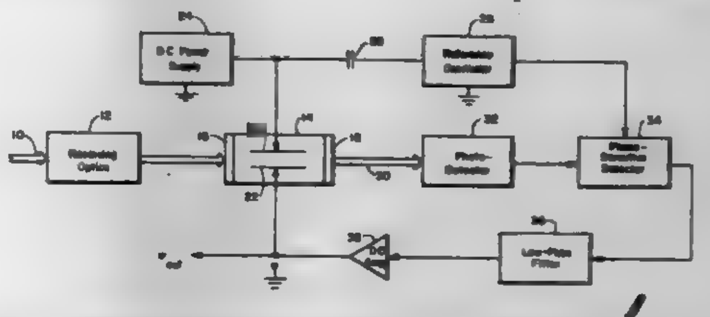
3,979,685
FREQUENCY SHIFT KEY DEMODULATOR
David M. Motley, Santa Ana; King Y. Cheng, Tustin, and Richard W. Middlestead, El Toro, all of Calif., assignors to Hycom Incorporated, Irvine, Calif.
Filed Sept. 16, 1974, Ser. No. 506,209
Int. Cl.² H03D *3/00;* H04L *27/14*
U.S. Cl. 329—105 16 Claims

15. A frequency shift key demodulator adapted to receive an analog signal having at least first and second frequencies comprising:
first means responsive to the analog signal for providing a first direction signal which includes a plurality of first pulses defining a first pulse train which occurs in response to the first frequency whereby the first pulse train provides an indication of the first frequency;



second means responsive to the analog signal for providing a second direction signal which includes a plurality of second pulses defining a second pulse train which occurs in response to the second frequency whereby the second pulse train provides an indication of the second frequency;
said first pulse train being different from said second pulse train; and
means responsive to said first and second pulses for indicating said first and second frequencies.

3,979,686
OPTICAL FREQUENCY MODULATION DEMODULATOR
Richard L. Abrams, Pacific Palisades, and Thomas A. Nussmeier, Thousand Oaks, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Sept. 8, 1975, Ser. No. 611,059
Int. Cl.² G02F *2/00*
U.S. Cl. 329—110 4 Claims



1. An optical frequency modulation demodulator for providing a signal indicative of the frequency modulation on a laser beam which is frequency modulated relative to a carrier frequency comprising:
a Stark-effect cell disposed in the path of said laser beam and containing a gas having an absorption resonance in the vicinity of said carrier frequency, the center frequency of said absorption resonance varying linearly as a function of the voltage applied to said Stark-effect cell in accordance with a predetermined frequency versus voltage characteristic;
means for applying a dc signal to said Stark-effect cell to adjust the center frequency of said absorption resonance to a value near said carrier frequency;
means for applying an alternating reference signal at a dither frequency higher than the highest frequency to be demodulated to said Stark-effect cell to vary the center frequency of said absorption resonance at said dither frequency and thereby amplitude modulate said laser beam such that the amplitude of the fundamental amplitude modulation component is indicative of the magni-

tude of the frequency difference between the instantaneous frequency of said laser beam and the average center frequency of said absorption resonance, and the phase of said fundamental amplitude modulation component is indicative of the polarity of said frequency difference;

means for producing an electrical signal corresponding to the amplitude modulation on said laser beam;

means for producing from said reference signal and said electrical signal an error signal indicative of the magnitude and polarity of said frequency difference;

low-pass filter means having an upper cutoff frequency less than said dither frequency but not less than the highest frequency to be demodulated for processing said error signal; and

means for applying the output signal from said low-pass filter means to said Stark-effect cell to cause the center frequency of said absorption resonance to track the instantaneous frequency of said laser beam and for providing an electrical output signal having an amplitude proportional to the frequency difference between said instantaneous frequency and said carrier frequency as determined by said frequency versus voltage characteristic.

3,979,687

LINE AMPLIFIER

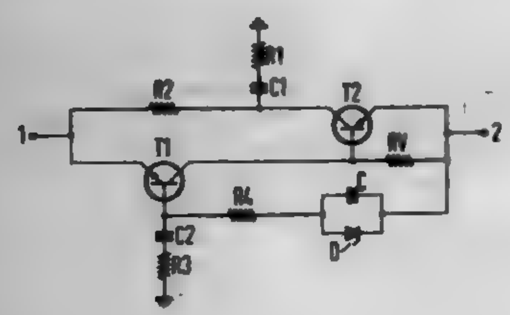
Otmar E. Ringelhaan, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sept. 5, 1975, Ser. No. 610,759

Claims priority, application Germany, Sept. 20, 1974, 2445135

Int. Cl.² H03F 3/189

U.S. Cl. 330—17 6 Claims



3. A remote line amplifier for use in transmission lines, comprising:

signal and feed current input and output terminals,

a first transistor of a first conductivity type and a second transistor of the opposite conductivity type with the collector of said first transistor connected to the base of said second transistor,

a first impedance connected between ground and the collector of said second transistor,

a second impedance connected between said input terminal and the collector of said second transistor,

a third impedance connected between ground and the base of said first transistor,

a fourth impedance with one side connected to the base of said first transistor,

a Zener diode and a capacitor connected in parallel and connected between said fourth impedance and said output terminal,

a resistor connected between said output terminal and the base of said second transistor,

said output terminal connected to the emitter of said second transistor,

said input terminal connected to the emitter of said first transistor,

and the ratio of said second impedance to said first impedance equal to the desired amplification factor and the ratio of said fourth impedance to said third impedance equal to the desired amplification factor minus 1.

3,979,688

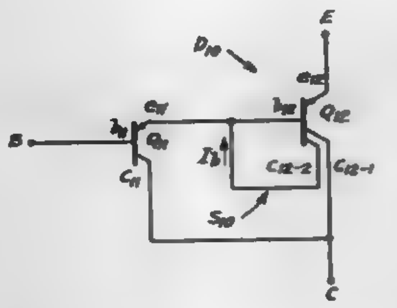
TRANSISTOR AMPLIFIER OF THE DARLINGTON TYPE WITH INTERNAL BIAS PROVIDING LOW OFFSET VOLTAGE AND OFFSET CURRENT DRIFT

Modesto A. Maidique, Lexington, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 470,213, May 15, 1974, abandoned. This application Oct. 6, 1975, Ser. No. 619,600

Int. Cl.² H03F 3/45

U.S. Cl. 330—30 D 12 Claims



1. In a transistor amplifier of the Darlington type in which two successive transistors are connected with their collectors in common and with the emitter of the first transistor supplying current to the base of the second transistor to thereby form a three terminal device in which a first terminal provides a connection to apply an input signal to the base of the first transistor, and in which a second terminal at the common connection of the collectors of said transistors and a third terminal at the emitter of the second transistor provide connections to apply the output current of the device, the improvement which comprises:

transistor means having base and emitter portions connected in common with the base and emitter of the second transistor, and having a collector portion connected to the emitter of the first transistor to direct through the first transistor a bias current which is a predetermined fraction of the collector current of the second transistor, and

the input impedance between the first and third terminals of the device being that presented by the base-to-emitter impedance of the first transistor operated at the bias current level determined by said transistor means, in series with the impedance presented between the emitter of the first transistor and the third terminal;

whereby the three terminal device will present a substantial input impedance to a signal source connected to said first terminal to avoid loading the source and to minimize the amount of current needed to drive the device, and at the same time will provide a highly predictable relationship between input voltage at said first terminal and output current through said second and third terminals.

3,979,689

DIFFERENTIAL AMPLIFIER CIRCUIT

Otto Heinrich Schade, Jr., N. Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 29, 1975, Ser. No. 545,091

Int. Cl.² H03F 3/45

U.S. Cl. 330—30 D 14 Claims

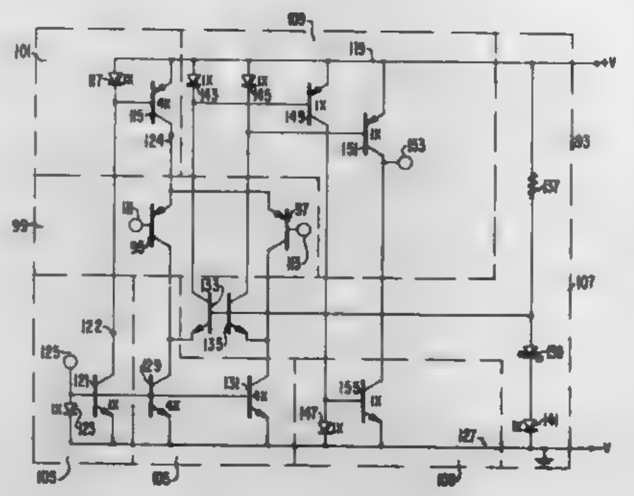
9. A differential amplifier comprising, in combination:

first and second terminals across which an operating voltage may be applied;

first and second transistors, each having base, emitter and collector electrodes, connected to one another at their emitter electrodes;

two signal input terminals, one coupled to each base electrode;

a current source, and first and second current sinks, said source coupling said emitter electrodes to said first terminal, said first current sink coupling one of said collector electrodes to said second terminal, and said second current sink coupling the other of said collector electrodes to said second terminal, said two current sinks demanding together a total current which is substantially more than is available from said current source;



means coupled to said collector electrodes for maintaining said collector electrodes at a voltage level between that at said first terminal and that at said second terminal; and

means coupled to said collector electrodes for supplying the additional current demanded by said two current sinks.

3,979,690

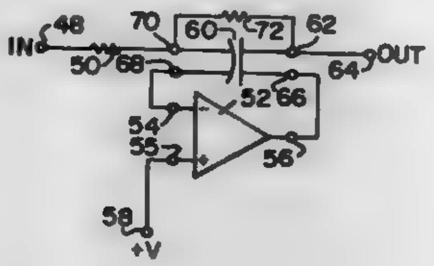
FAILSAFE CONTROLLED GAIN INVERTING AMPLIFIER APPARATUS

Thomas C. Matty, North Huntingdon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 29, 1975, Ser. No. 572,814

Int. Cl.² H03F 1/36

U.S. Cl. 330—107 12 Claims



1. In an inverting amplifier apparatus having an input signal terminal and an output signal terminal and having a failsafe controlled gain in relation to predetermined failure modes, the combination comprising:

amplifier means having first and second inputs and an output;

a feedback impedance including a four terminal capacitor, with two terminals of that capacitor being connected between said first amplifier input and said output such that said gain decreases linearly over a known range of frequencies;

an input impedance connected between said input signal terminal and a third terminal of said four terminal capacitor; and

with said output signal terminal being connected to the fourth terminal of said capacitor.

3,979,691

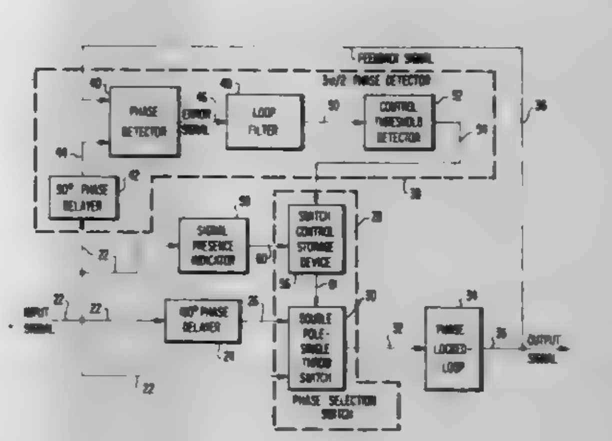
ACQUISITION PROCESS IN A PHASE-LOCKED-LOOP BY SWITCHED PHASE MEANS

Layton Balliet, Huntsville, Ala., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1975, Ser. No. 591,385

Int. Cl.² H03B 3/04

U.S. Cl. 331—1 A 3 Claims



1. A phase-locked-loop circuit configuration for improving the acquisition process comprising:

3π/2 phase detector means for comparing the phase between an input signal and a feedback signal providing at its output a threshold step signal proportional thereto;

signal presence indicator means driven by said input signal for generating an indicator step signal when an input signal is present;

180° phase delayer means driven by said input signal for delaying said input signal by substantially 180°;

phase selection switch means driven by said input signal, said threshold step signal from said 3π/2 phase detector means and said delayed input signal from 180° phase delayer means for providing at its output a selected signal of the correct phase;

phase-locked-loop means driven by said correct selected phase signal from said phase selector switch means for generating an output signal proportional in phase and frequency to said input signal, and for generating said feedback signal;

said phase-locked-loop means tracking said input signal locking up at a stable null π/2, and eliminating the statistical nature of said acquisition process and decreasing the lock-up-time of said phase-locked-loop.

3,979,692

APPARATUS FOR PHASE KEYING IN FREQUENCY AND PHASE VOLTAGE CONTROLLED OSCILLATOR WITH AN INCOMING SIGNAL HAVING A T PERIOD, AND PHASE CODED OF THE BIPHASE PCM TYPE OR PSK TYPE

Jean-Charles Benoist, Le Chesnay; Francois Bitsch, Fourqueux, and Gerard Rene Joseph Tarel, Ramonville-Saintagne, all of France, assignors to Electronique Marcel Dassault, Paris, France

Filed Aug. 4, 1975, Ser. No. 601,446

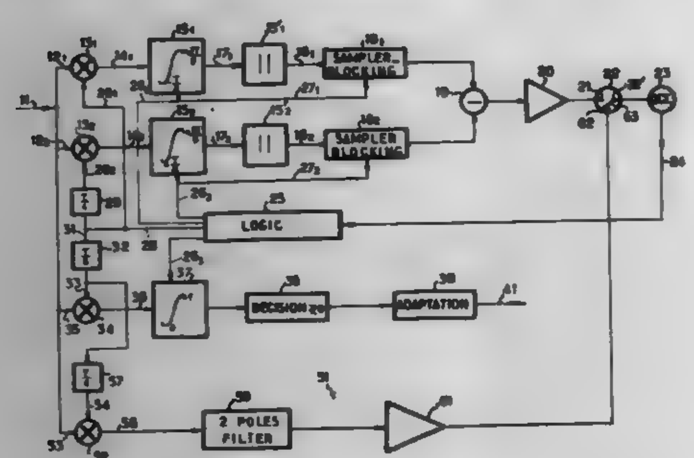
Claims priority, application France, Aug. 6, 1974, 74.27339

Int. Cl.² H03B 3/04

U.S. Cl. 331—1 A 5 Claims

1. Apparatus for phase keying in frequency and phase voltage controlled oscillator with an incoming signal having a T period, and phase coded, of the biphase PCM type or PSK type comprising a circuit loop for phase controlling said oscillator with logic circuitry and first and second conductive paths having first and second integrators respectively, the integration time of each of said first and second integrators being equal to the period T of the incoming signal, the limits of integration time of said first integrator being −T/8 and +7T/8

and that of said second integrator being +T/8 and +9T/8, and a delay element interposed between the logic circuitry and

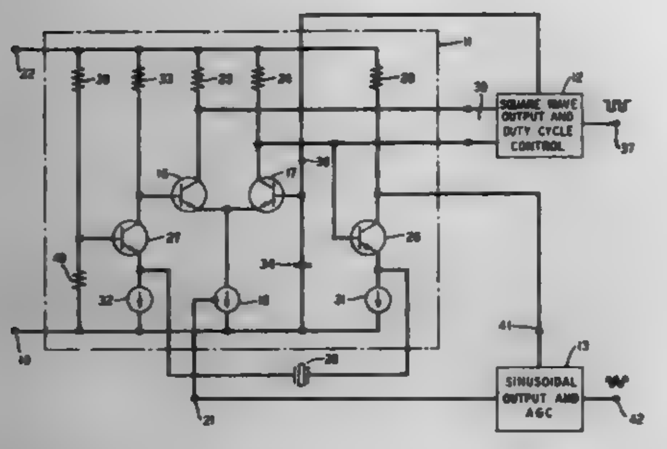


said second conductive path for introducing retardation time of T/4.

3,979,693
CRYSTAL-CONTROLLED OSCILLATOR HAVING SINUSOIDAL AND SQUARE-WAVE OUTPUT SIGNALS

Veikko Reynold Saari, Spring Lake Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 29, 1975, Ser. No. 609,163
Int. Cl.^{2} H03B *5/36*; H03K *3/26*
U.S. Cl. 331—61 19 Claims

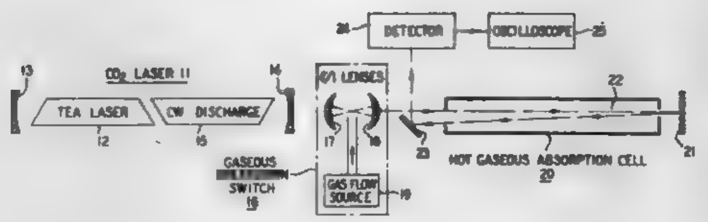

SQUARE WAVE OUTPUT AND DUTY CYCLE CONTROL
SINUSOIDAL OUTPUT AND AGC

1. A crystal-controlled oscillator circuit comprising:
an oscillator stage including a differential amplifier circuit having first and second input terminals and first and second output terminals, said differential amplifier including means responsive to an applied gain control signal for controlling the gain of said amplifier and means for connecting a piezoelectric crystal in a substantially zero phase shift feedback path between one of said amplifier output terminals and one of said amplifier input terminals;
means responsive to the output signal of said oscillator stage for supplying a square-wave output signal to an output terminal; and
duty cycle control means responsive to the output signal of said oscillator stage for supplying a direct current control signal to said differential amplifier circuit of said oscillator stage, said direct current control signal controlling the bias current of said oscillator stage differential amplifier to maintain the duty cycle of said square-wave output signal at substantially 50%.

3,979,694
SHORT LASER PULSE GENERATION BY GAS BREAKDOWN SWITCHING AND HIGHLY SELECTIVE SPECTRAL FILTERING

Julius Goldhar, Boston, Mass., and Eli Yablonovitch, Shrewsbury, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 3, 1974, Ser. No. 485,361
Int. Cl.^{2} H01S *3/101*
U.S. Cl. 331—94.5 M 4 Claims

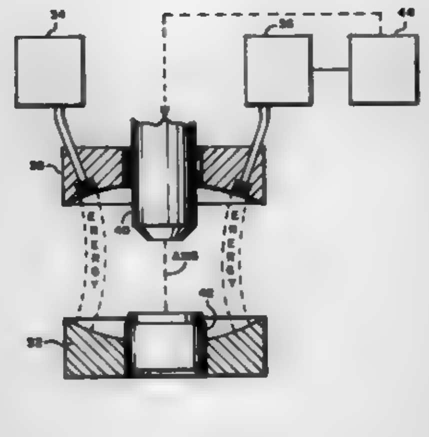


1. Pulse generating apparatus comprising means for generating radiation that has at least a pulsed component and that is capable of producing breakdown in a gaseous medium, means including focusing means and said gaseous medium in tandem with said generating means for producing said breakdown in a step-wise fashion, thereby producing upper and lower sidebands of said radiation, and means in tandem with said gaseous medium for transmitting both sidebands of said radiation yielded by said breakdown and for blocking the residual radiation of said generating means.

3,979,695
HIGH ORDER BEAM MODE RESONATOR

Clifford W. Erickson, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 20, 1974, Ser. No. 534,996
Int. Cl.^{2} H01S *3/08*
U.S. Cl. 331—94.5 C 16 Claims

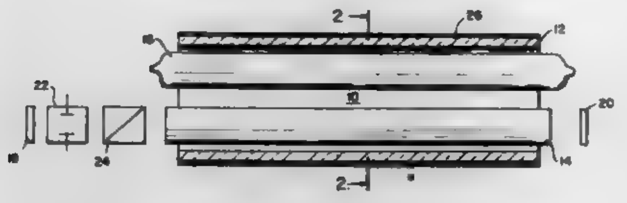


1. Apparatus for producing beam modes, the apparatus comprising:
beam resonant cavity means comprising concave curved surfaces separated from one another along an axis; and
energy source means for introducing coherent wave energy having a wavelength between about 0.1 mm and about 10 cm into the beam resonant cavity means through a position not on the axis.

3,979,696
LASER PUMPING CAVITY WITH POLYCRYSTALLINE POWDER COATING

William W. Buchman, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed June 30, 1975, Ser. No. 591,263
Int. Cl.^{2} H01S *3/091*
U.S. Cl. 331—94.5 P 14 Claims

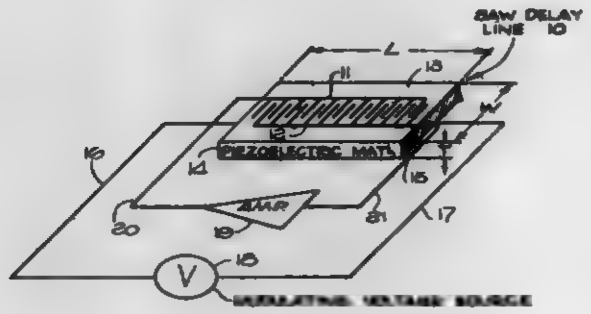


1. A laser pumping arrangement comprising:
a rod of laser material, a light source optically coupled to said rod for emitting pumping radiation to establish population inversion in said laser material between a pair of energy levels such that said rod emits laser radiation at a lasing wavelength corresponding to the energy difference between said energy levels;
a housing member laterally surrounding said rod and said light source; and
a coating on a lateral surface of said housing member, said coating including a polycrystalline powder absorptive of radiation at said lasing wavelength and having a thickness sufficient to provide a high diffuse reflectivity for said pumping radiation.

3,979,697
FREQUENCY MODULATED SAW OSCILLATOR

Thomas H. Donahue, North Hollywood, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 3, 1975, Ser. No. 628,082
Int. Cl.^{2} H03B *5/32*
U.S. Cl. 331—107 A 10 Claims

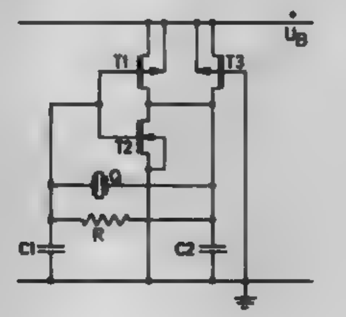


1. An oscillator comprising:
an amplifier including a positive feedback path;
a surface acoustic wave device including a piezoelectric substrate and two sets of interdigital fingers affixed to said substrate, the circuit between said two finger sets being connected within said feedback path, said device thereby operating as the frequency determining element of said oscillator;
and means for applying an electric field gradient through said substrate substantially parallel to the direction of acoustic wave propagation, thereby to vary the effective length of said substrate and, as a result, the frequency of oscillation.

3,979,698
CRYSTAL OSCILLATOR CIRCUIT

Wolfgang Gollinger, Gundelfingen, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 510,928, Oct. 1, 1974, abandoned.
This application Sept. 8, 1975, Ser. No. 611,051
Claims priority, application Germany, Oct. 19, 1973, 2352421
Int. Cl.^{2} H03B *5/36*
U.S. Cl. 331—116 R 4 Claims



1. A crystal oscillator circuit comprising:
a supply voltage source having a ground terminal and a voltage supply terminal;
a p-channel insulated-gate field effect transistor having a source electrode, a drain electrode, a gate electrode and a substrate terminal;
a n-channel insulated-gate field effect transistor having a source electrode, a drain electrode, a gate electrode and a substrate terminal;
said p-channel and said n-channel transistors having their drain electrode-source electrode paths directly coupled in series with each other and between said ground terminal and said voltage supply terminal;
first means to connect said gate electrodes of said p-channel and said n-channel transistors together;
second means to connect said substrate terminal of said p-channel transistor to said voltage supply terminal;
third means to connect said substrate terminal of said n-channel transistor to said ground terminal;
a crystal having two terminals, one of said two terminals being coupled to said first means and the other of said two terminals being coupled to said drain electrode junction of said series connected drain electrode-source electrode paths;
a resistor coupled in parallel with said crystal;
a first capacitor connected between said one of said two terminals and said ground terminal;
a second capacitor connected between the other of said two terminals and said ground terminal; and one additional insulated-gate field effect transistor having a source electrode, a drain electrode, a gate electrode and substrate terminal;
said additional transistor having its drain electrode-source electrode path directly coupled in parallel with said drain electrode-source electrode path of one of said p-channel and said n-channel transistors;
said additional transistor being of the same channel type as said one of said p-channel and said n-channel transistors having its gate electrode coupled to the appropriate one of said voltage supply and ground terminals and its substrate terminal coupled identical to said one of said p-channel and said n-channel transistors.

3,979,699

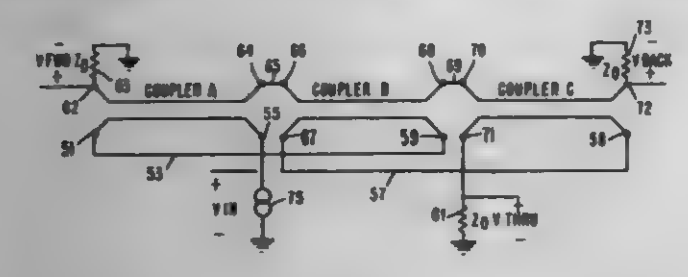
DIRECTIONAL COUPLER CASCADING FOR SIGNAL ENHANCEMENT

Edward S. Cagliane, Poughkeepsie, and Howard H. Nick, LaGrangeville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,254

Int. Cl.^{2} H01P *5/18*

U.S. Cl. 333—10 6 Claims



1. In a data transmission system of the type using directional couplers to couple information to a two way transmission line wherein said couplers are connected to enhance the desired backward coupled signal and minimize the parasitic forward coupled signal comprising;

at least three directional couplers having fixed equal electrical characteristics and each having an input terminal, a backward coupled signal output terminal, a thru terminal and a forward coupled signal terminal;

signal input means connected to said input terminal of the first directional coupler of said at least three directional couplers;

a first minimum delay means connecting the thru terminal of each of said directional couplers except the last one to said input terminal of the succeeding directional coupler;

a second minimum delay means connecting the backward coupled signal terminal of each of said directional couplers except the last one to the forward coupled signal terminal of the succeeding directional coupler; and

means for terminating said forward coupled signal terminal of said first coupler and the thru terminal and the backward coupled signal output terminal of the last coupler in a characteristic impedance of the line to which said terminals are connected, the backward coupled signal of each directional coupler arriving simultaneously at said backward coupled signal output terminal to produce an enhanced backward coupled signal at the backward coupled signal output terminal of the last coupler of said plurality of couplers and said parasitic forward coupled signals arriving at said forward terminal of the first directional coupler out of coincidence thereby minimizing said parasitic forward coupled signal.

3,979,700

VIDEO PROCESSOR

John C. Groce, Woodland Hills, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 1, 1974, Ser. No. 493,673

Int. Cl.^{2} H03H *9/26*, *9/32*, *9/30*; G11C *11/22*

U.S. Cl. 333—30 R 10 Claims

1. A video signal processor comprising:

a piezoelectric substrate having at least one elongated dimension;

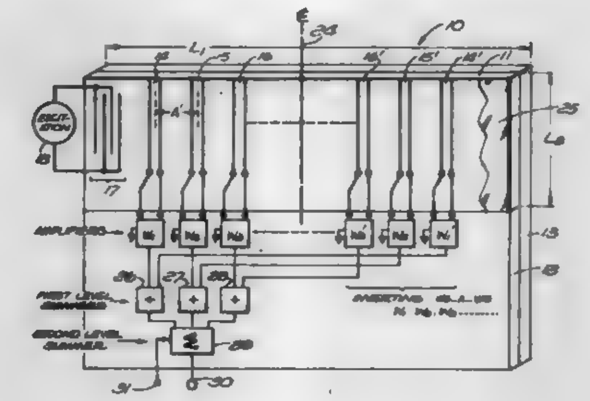
first means for launching a surface acoustic wave along a surface of said piezoelectric substrate, said first means being responsive to an input signal representative of a video signal train;

second means comprising a plurality N of interdigital electrode sensor pairs substantially uniformly distributed along the surface of said piezoelectric substrate so as to each receive an electric signal as said surface acoustic wave progresses, said sensor pairs being contained within said elongated dimension over a sensing length equal to the distance traveled by the leading edge of said surface wave over the duration of said video signal train;

third means comprising N/2 first summation circuits, each of said summation circuits being connected to sum the signal generated at a discrete one of said pair sensors in the first half of said N sensor pairs with that generated by a corresponding sensor pair spaced by the same number of said pairs from the center of said plurality of N sensor pairs within the second half of said sensor pairs;

fourth means within said third means for inverting the polarity of the detected signal from each of said sensor pairs in said second half of said N sensor pairs before application to said first summation circuits;

and fifth means comprising a second summation circuit connected to sum the outputs of said first summation circuits to provide an output signal.



3,979,701

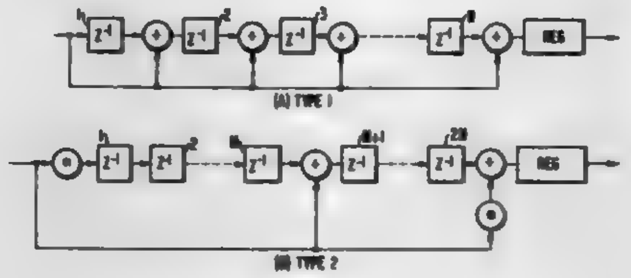
NON-RECURSIVE DIGITAL FILTER EMPLOYING SIMPLE COEFFICIENTS

Atsushi Tomozawa, Gaithersburg, Md., assignor to Communications Satellite Corporation (Comsat), Washington, D.C.

Filed June 17, 1975, Ser. No. 587,774

Int. Cl.^{2} H03H *7/28*

U.S. Cl. 333—70 T 6 Claims



1. A non-recursive digital filter comprising:

a. a first section of N delay elements, the coefficient value of all the taps of said delay elements being one;

b. a second section of 2M delay elements, the coefficient value of all the taps of said delay elements being an integer power of two;

c. said first section utilized for forming the desired loss characteristics of said filter and said second section utilized for shaping the passband of said filter; and

d. said first and second sections operably coupled such that the resulting grouping has a tap coefficient of an integer power of two.

3,979,702

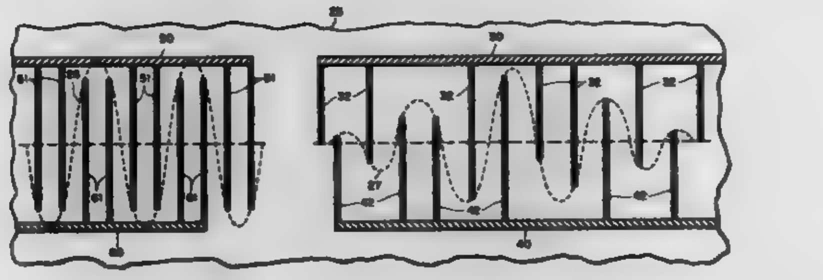
APPARATUS AND METHOD FOR OVERSAMPLED TRANSDUCERS IN ACOUSTIC SURFACE WAVE DEVICES

Bill J. Hunsinger, Mahomet, and Jerry H. Peppler, Fort Wayne, both of Ind., assignors to The Magnavox Company, Fort Wayne, Ind.

Filed Apr. 8, 1974, Ser. No. 458,940

Int. Cl.^{2} H03H *7/10*

U.S. Cl. 333—72 10 Claims



1. A electro-acoustic device for producing a predetermined frequency response comprising:

an acoustic-wave propagating medium;

a first electro-acoustic transducer coupled to said medium, said first transducer including at least a pair of overlapping sampling electrode sets, said first transducer having an average sampling frequency by said first transducer electrodes which is greater than two times a design center frequency of said predetermined frequency response; and

a second electro-acoustic transducer coupled to said medium, said second transducer including at least a pair of overlapping electrode sets, said second transducer having an average sampling frequency by said second transducer electrodes which is greater than two times said design center frequency, and different from the average sampling frequency of said first electro-acoustic transducer.

3,979,703

WAVEGUIDE SWITCH

George Frederick Craven, Bushey Heath, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 12, 1974, Ser. No. 531,944

Claims priority, application United Kingdom, Feb. 7, 1974, 5675/74

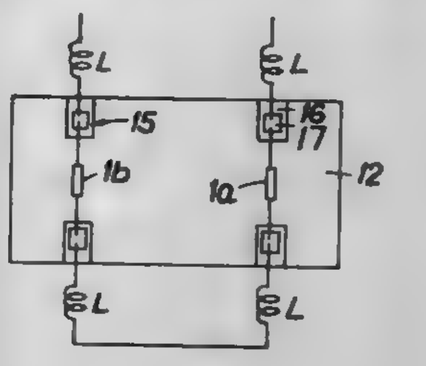
Int. Cl.^{2} H01P *1/15*

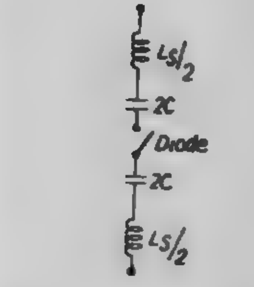
U.S. Cl. 333—98 S 2 Claims

1. A waveguide switch comprising:

a waveguide; and

a first PIN diode across the full height of said waveguide having terminal connections within said waveguide, said terminal connections providing relatively low inductance and relatively high capacitance such that when the diode is ON, the combination of said diode and said terminal connections in series resonant within the frequency band of operation, said first PIN diode and said terminal connections transversely displaced from the waveguide center line.





3,979,704

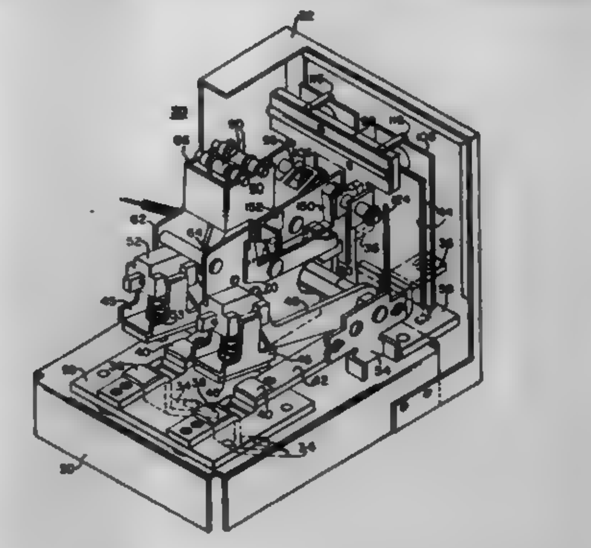
CIRCUIT BREAKER HAVING MEMBERS COATED WITH PHOSPHATE-CHROMATE PROTECTIVE LAYERS

Richard D. Buckley, and John Hilke, both of Athens, Ga., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 23, 1975, Ser. No. 580,507

Int. Cl.^{2} H01H *75/00*

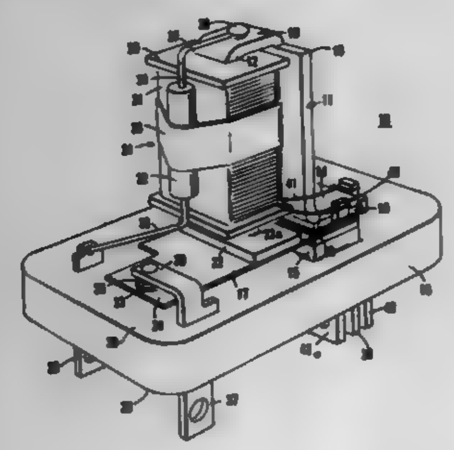
U.S. Cl. 335—6 10 Claims



1. A transformer, having a housing, with a circuit breaker switchable between an open position wherein the electrical connections through the transformer are open and a closed position wherein the electrical connections through the transformer are closed disposed within the housing and immersed in an insulating liquid dielectric; the circuit breaker comprising metallic sensing, tripping and supporting members, wherein a plurality of said members are coated with a dual protective film comprising a first phosphate layer selected from the group consisting of zinc phosphate and iron phosphate about 0.00001 to about 0.0004 inch thick, covered by an outside layer comprising a chromate selected from the group consisting of zinc chromate, zinc dichromate and mixtures thereof about 0.00001 to about 0.0004 inch thick, said

protective film being resistant to the contacting liquid dielectric.

3,979,705
AUTOMOTIVE RELAY OF THE HOLD-IN TYPE
Rodney Hayden, Stoney Creek, Canada, assignor to TRW Inc., Cleveland, Ohio
Filed Apr. 3, 1975, Ser. No. 564,589
Claims priority, application Canada, May 13, 1974, 199703
Int. Cl.² H01H *1/66, 51/00*
U.S. Cl. 335—151 **3 Claims**



1. An automotive relay structure of the hold-in type comprising: a relay unit having a ferrous core and a relay winding on said core; a movable armature fastened to said core and carrying a movable core part and having a relay contact on the free end thereof; an insulate base rigidly supporting said relay unit on one face of said base; at least five rigid terminal members extending from said face through said base to provide male terminal members extending beyond the other surface of said base; one of said terminal members being a load terminal carrying a stationary contact disposed in normally open, spaced relationship to said movable contact on the free end of said armature, another of said terminals being a battery terminal which is connected to said armature, another of said terminals being a switch terminal connected to one end of said relay winding and to an external switch; a normally open flux responsive reed switch having current and flux conducting leads extending therefrom, one of said leads being rigidly connected to still another of said terminals which is an ignition terminal, and the other of said leads being connected to said switch terminal; and means supporting said reed switch within the influence of a magnetic field generated by said relay winding whereby a momentary closing of an external switch connects said switch terminal to said ignition terminal which energizes the coil and effects a closing of said relay armature contact and said load contact, and simultaneous closure of said reed switch responsive to flux generated by the relay winding thereby simultaneously connecting the reed switch between said ignition terminal and said switch terminal through said reed switch contacts until the battery is disconnected from said ignition terminal or ground removed.

3,979,706
SHIELDED INDUCTANCE COIL WITH TRIMMER
Thomas A. Jennings, Glenside, Pa., assignor to Hull Corporation, Hatboro, Pa.
Continuation of Ser. No. 434,905, Jan. 21, 1974, abandoned. This application June 26, 1975, Ser. No. 590,621
Int. Cl.² H01F *21/06*
U.S. Cl. 336—83 **2 Claims**

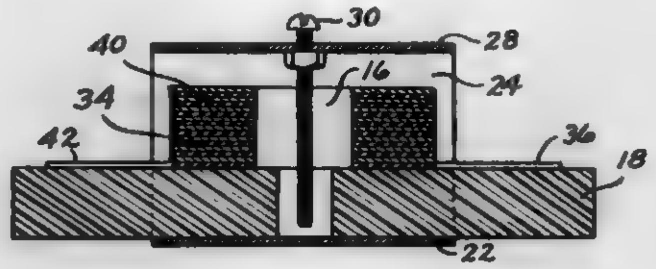
1. A shielded and trimmable microelectronic inductance coil, comprising:

a. a substrate of dielectric material having an opening therethrough,

b. a plurality of overlapping coaxial turns of electrically conductive metal films, the turns being separated electrically from each other by interposed films of dielectric material, the metal and dielectric films being bonded together as an integrated, one-piece unit forming an inductance coil having a central opening therethrough,

c. the coil being mounted on one surface of the substrate with said openings in axial alignment,

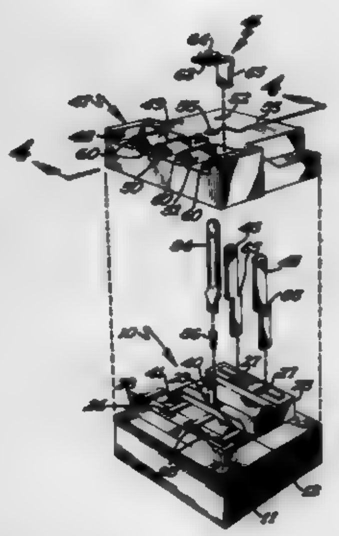
d. a pair of electric terminals extending laterally from the ends of the metal film of the coil and supported on said one surface of the substrate,



e. a shield of magnetic metal secured to the substrate and extending in a loop around the substrate and coil in spaced relation to the latter for shielding the coil from extraneous magnetic fields and for shielding other circuit components from stray magnetic fields of the coil, and

f. a rod of magnetic metal mounted in engagement with the side of the shield overlying the coil opposite the substrate for movement through the aligned openings in the coil and substrate, for varying the spacing between the inner end of the rod and the confronting opposite side of the shield exposed through the opening in the substrate.

3,979,707
POWER-PACK ASSEMBLY
Luther T. Prince, Jr., Minneapolis, Minn., assignor to Ault Incorporated, Minneapolis, Minn.
Filed Feb. 7, 1975, Ser. No. 547,781
Int. Cl.² H01F *15/10*
U.S. Cl. 336—107 **14 Claims**



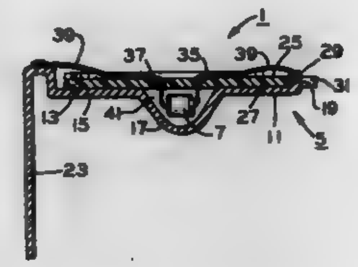
1. In a power-pack assembly of the type having a bobbin, at least primary and secondary windings wound on said bobbin, core means carried by said bobbin, input and output terminals electrically connected to said windings and core grounding terminal means, the improvement comprising:

solderless connection means including electrically conductive clip means secured to said bobbin and mechanically and electrically engaging said input and output terminals and means electrically connected to one of said windings;

means securing said core-grounding terminal means to said bobbin; and

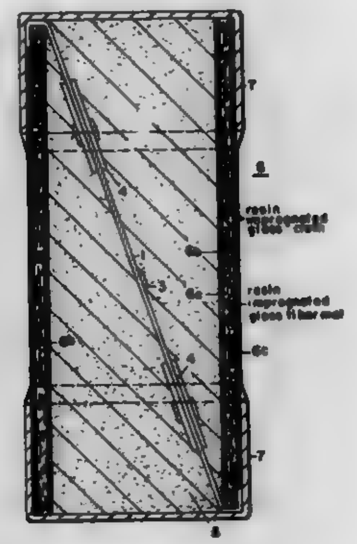
electrically conductive means resiliently engaging said core-grounding terminal means and said core.

3,979,708
THERMOSTAT AND ANTICIPATOR THEREFOR
Paige W. Thompson, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.
Filed Nov. 4, 1974, Ser. No. 520,876
Int. Cl.² H01H *61/02*
U.S. Cl. 337—107 **26 Claims**



1. In an anticipator for controlling the cycle rate of a thermostat ahd having means for transferring heat supplied thereto; the combination therewith comprising an NTCR enclosed within the heat transferring means in heat transfer relation therewith and operable generally for supplying the heat to the heat transferring means, the resistance of the NTCR varying as a function of its temperature wherein the NTCR is adapted to be responsive to current applied thereto to attain an operating temperature appreciably in excess of that of the ambient in which the anticipator may be located.

3,979,709
ELECTRIC FUSE HAVING A MULTIPLY CASING OF A SYNTHETIC - RESIN GLASS-CLOTH LAMINATE
Daniel P. Healey, Jr., Merrimacport, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Filed May 22, 1975, Ser. No. 579,972
Int. Cl.² H01H *85/02*
U.S. Cl. 337—186 **22 Claims**


7
resin impregnated glass cloth
resin impregnated glass fiber mat

1. An electric fuse comprising:

a. a fusible element;

b. an arc-quenching means surrounding said fusible element;

c. a casing of synthetic-resin-glass-cloth laminate housing said fusible element and said arc-quenching means;

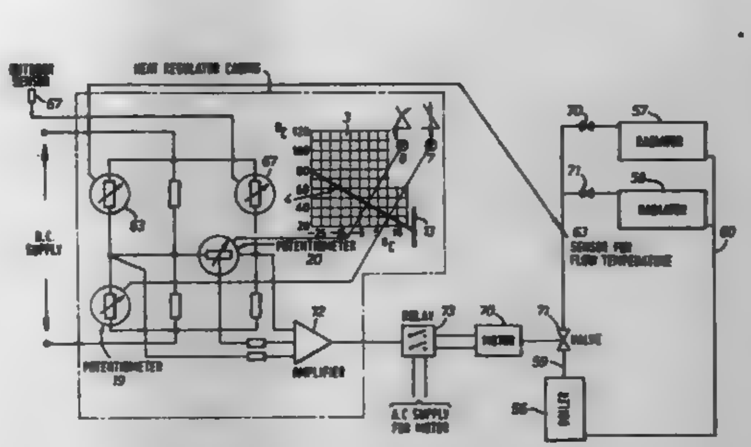
d. a pair of terminal elements arranged on the ends of, and supported by, said casing and conductively interconnected by said fusible element;

e. said casing including a first ply formed of glass fiber mat material having non-uniformly oriented fibers, said casing further including a second and a third ply arranged on opposite sides of said first ply and sandwiching said first ply, said second ply and said third ply each being of woven glass fiber fabric and each said second and said third ply forming an overlap extending in a direction longitudinally of said casing, said overlap of said second ply and said overlap of said third ply being angularly displaced relative to each other;

f. said casing further including a thermosetting resin integrating said first ply, said second ply and said third ply into a laminate; and

g. the glass fiber density of said laminate being locally increased at the region of said overlap of said second ply and at the region of said overlap of said third ply to such an extent that the wall thickness of said casing is virtually uniform along the entire periphery thereof.

3,979,710
APPARATUS FOR ADJUSTING AND INDICATING THE OPERATING CURVE OF A WEATHER-RESPONSIVE HEATING REGULATOR
Aksel Jespersen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Continuation-in-part of Ser. No. 198,159, Nov. 12, 1971, abandoned. This application Feb. 18, 1975, Ser. No. 550,187
Claims priority, application Germany, Nov. 16, 1970, 2056253
Int. Cl.² H01C *10/00*
U.S. Cl. 338—91 **5 Claims**



1. A heat regulating unit for controlling the supply rate of a boiler fluid having a predetermined temperature in accordance with the outdoor temperature to in effect maintain a selected predetermined ratio between said temperatures, comprising, a casing, a coordinate system marked on said casing which represents the relationship between said outdoor temperature and said boiler fluid temperature, a pointer for said coordinate system which represents the characteristic operating curve for said relationship, electric bridge circuit means mounted partially in said casing having two branches for receiving temperature responsive variable resistance resistors for sensing the outdoor temperature and the boiler fluid temperature, first and second potentiometers for the other two branches of said bridge mounted in said casing, first and second slide members mounted for sliding movement in said casing, said pointer being pivotally mounted on said first slide member for translatory movement therewith and pivotal movement relative thereto, said first and second potentiometers having control means operably attached to said slide members with said first potentiometer being controlled in accordance with the indicated level of said pointer and said second potentiometer being controlled in accordance with the slope of said pointer, and means for adjustably positioning said slide members to move said pointer to a desired position which results in imparting desired settings to said potentiometers.

3,979,711

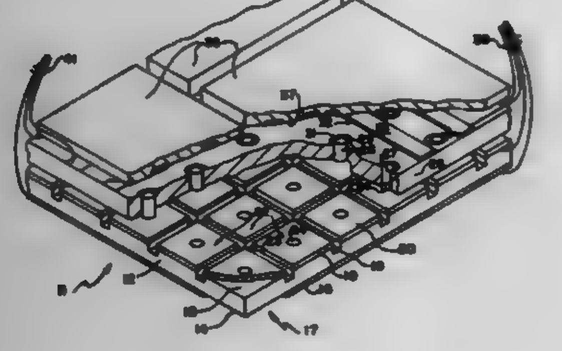
ULTRASONIC TRANSDUCER ARRAY AND IMAGING SYSTEM

Maxwell G. Maginness, Palo Alto; James D. Meindl, Los Altos, and James D. Plummer, Mountain View, all of Calif., assignors to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed June 17, 1974, Ser. No. 480,609

Int. Cl.^{2} G01S *9/66;* H04R *17/00*

U.S. Cl. 340—1 R 4 Claims



1. In an ultrasonic transducer array, a relatively thin wafer of piezoelectric material having planar, substantially parallel top and bottom surfaces, a relatively thin conductive layer formed on said bottom surface, said outermost surface of said layer forming a major face capable of bidirectionally transmitting and receiving ultrasonic energy, a relatively thin additional conductive layer formed on said top surface having a grid of isolation grooves formed therein extending from the surface of said additional layer through said wafer top surface and into said wafer to a depth intermediate said wafer top and bottom surfaces to define a plurality of isolated portions in said wafer, a plurality of isolated portions of said additional conductive layer being carried by said top surface of said isolated portions of said wafer, and a contact area formed in the upper surface of each of said portions of said additional conductive layer.

3. The transducer array of claim 1 together with means connected to the first named conductive layer and to the contact areas of the isolated portions of the additional conductive layer for bi-directionally providing and receiving electrical energy across the transducer elements formed thereby.

3,979,712

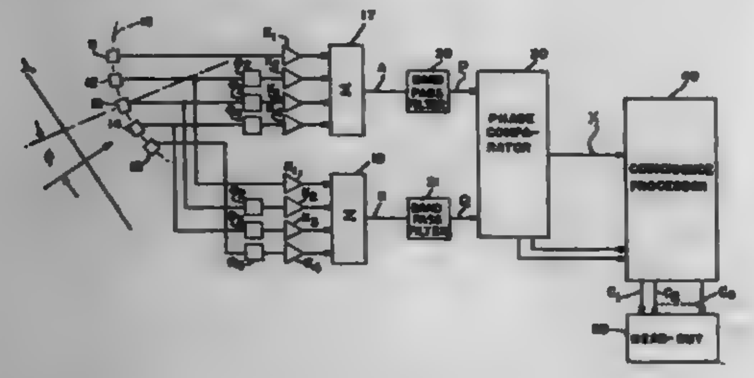
SENSOR ARRAY ACOUSTIC DETECTION SYSTEM

Kurt L. Ettenhofer, Swarthmore; Richard L. Thomas, Furlong, and John L. Harris, Ivyland, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 5, 1971, Ser. No. 197,185

Int. Cl.^{2} G01S *3/80*

U.S. Cl. 340—6 R 5 Claims



1. An acoustic detection system for detecting the presence and the propagation path of a coherent acoustic signal emanating from a stationary source against random background signals comprising, in combination:

- sensor means for detecting the acoustic and background signals and producing output signals indicative of the azimuths thereof relative to a reference plane;
- filter means connected to receive said sensor means output signals for producing output signals indicative of a predetermined narrow-band frequency spectrum thereof;
- phase detection means connected to receive pairs of said filter means output signals for producing an output signal in serial binary form whose pulse width is indicative of the azimuth of said acoustic signal;
- sorting means connected to receive said phase detection means output signal for counting the number of pulses within widths corresponding to predetermined sectors of azimuth;
- threshold means connected to said sorting means for enabling a sorting means output signal when said aximuths accumulated within any one sector exceed a predetermined number; and
- readout means connected to receive said sorting means output signal for displaying the sector exceeding said predetermined number.

3,979,713

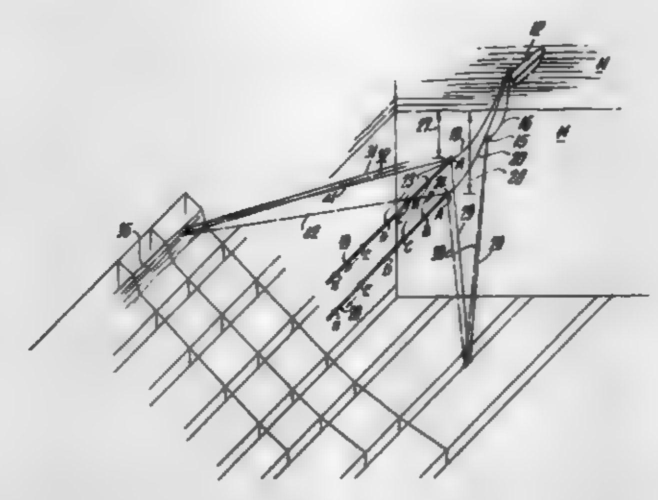
METHOD OF MARINE REFLECTION-TYPE SEISMIC EXPLORATION

Alvin L. Parrack, Bellaire, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Aug. 19, 1974, Ser. No. 498,787

Int. Cl.^{2} G01V *1/00;* H04B *13/00;* H04R *15/00*

U.S. Cl. 340—7 R 7 Claims



1. In marine reflection-type seismic exploration, a method for improving the character of recorded data developed from seismic detectors located in a body of water, comprising

- creating a source of seismic energy in said body of water,
- locating two of said detectors spaced vertically apart at corresponding horizontal positions in said body of water,
- subtracting all the signals generated by one of said detectors from all the signals generated by the other of said detectors in order to cancel horizontally travelling seismic energy arriving simultaneously while reinforcing vertically travelling energy arriving about ½ cycle out of phase.

3,979,714

TWO-RECEIVER, VARIABLE-DENSITY LOGGING SYSTEM

Joseph Zemanek, Jr., Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

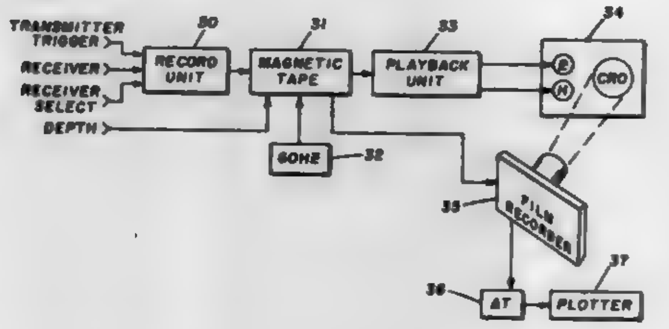
Filed July 17, 1974, Ser. No. 489,203

Int. Cl.^{2} G01V *1/34, 1/40*

U.S. Cl. 340—15.5 DS 8 Claims

1. A method of determining the interval velocity of acoustic pulses that are generated by a transmitter within a borehole and travel through the formation surrounding the borehole to a pair of receivers located at spaced-apart, axial positions within the borehole, comprising the steps of:

a. moving the transmitter and the pair of receivers through the borehole,
b. triggering the sweep of a cathode-ray oscilloscope in response to each acoustic pulse,
c. intensity modulating alternate sweeps of the cathode-ray oscilloscope with signals received from alternate receivers,



d. reproducing each sweep of the cathode-ray oscilloscope to produce a pair of variable-density curves representing the traveltime arrivals of the acoustic pulses at the pair of receivers,
e. digitizing said pair of variable-density curves at a plurality of selected points along said curves, and
f. subtracting the digitized values of each curve at each of said plurality of points to obtain the traveltime of the acoustic pulses between the pair of receivers at each of the selected points along said curves.

3,979,715

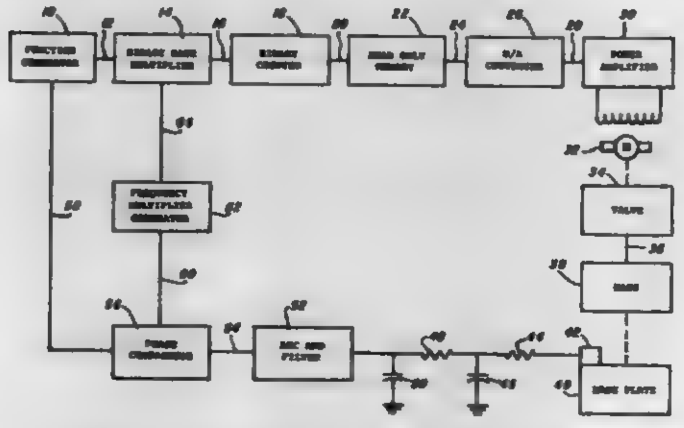
METHOD AND SYSTEM FOR ACHIEVING VIBRATOR PHASE LOCK

Alferd Gene Hufstedler, Dallas; Ronald Ray Weaver, Houston, and Billy Ray Slater, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 28, 1974, Ser. No. 501,410

Int. Cl.^{2} G01V *1/14*

U.S. Cl. 340—15.5 TD 17 Claims



1. A method for achieving a desired phase relationship between a reference signal and a feedback signal representing the baseplate motion of a swept frequency seismic source comprising:

a. measuring the degree and sense of any existing phase error between said reference signal and said feedback signal,
b. when said source is operating in an upsweep mode, and for any measured phase error falling within a range of phase errors having an extent greater than 180°, making a phase correction by slowing down the baseplate drive, and
c. when said source is operating in a downsweep mode, and for any measured phase error falling within a range of phase errors having an extent greater than 180°, making a phase correction by speeding up the baseplate drive.

3,979,716

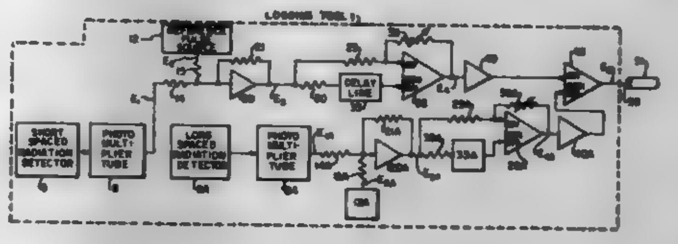
MEANS AND METHOD FOR TRANSMITTING A HIGH COUNT RATE PULSE SIGNAL OVER A COMMON WELL LOGGING CABLE

Robert W. Pitts, Jr., and Houston A. Whatley, Jr., both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Aug. 28, 1974, Ser. No. 501,376

Int. Cl.^{2} G01V *1/40, 5/00*

U.S. Cl. 340—18 P 27 Claims



1. A well logging system for providing an output corresponding to a condition sensed in a borehole, comprising a logging instrument including sensing means for sensing the condition and providing data pulses of one polarity, corresponding in number and peak amplitude to the sensed condition, means connected to said sensing means for delaying each data pulse for a predetermined time interval to provide a corresponding delayed data pulse, pulse means connected to the delaying means and to the sensing means for providing a pair of pulses for each data pulse and corresponding thereto in accordance with the data pulse and its corresponding delayed data pulse, one pulse of each pair of pulses being of one polarity while the other pulse starts upon completion of the one pulse and is of an opposite polarity, a transmission system comprising a cable connected to said logging instrument; said logging instrument further includes means for applying the pairs of pulses from said pulse means to one end of said transmission system; and surface electronics adjacent to the borehole comprises means coupled to the other end of said transmission system for receiving said pulses transmitted by way of the cable, and means connected to the receiving means for providing the output corresponding to said sensed condition in accordance with the received pulses from the receiving means.

16. A method for preparing pulses for transmission over a well logging cable, comprising providing a pair of output pulses which comprises the steps of receiving pulses, delaying the received pulses for a predetermined time interval, providing a pair of pulses for each received pulse in accordance with the received pulse and the corresponding delayed received pulse in a manner so that one pulse of the pair of pulses has one polarity while the other pulse starts upon completion of the one pulse and has an opposite polarity, and applying the pair of pulses to the well logging cable.

3,979,717

HELICOPTER WARNING SYSTEM

Ronald E. Barnum, Trumbull; Franklin A. Tefft, Killingworth, and Louis S. Cotton, Monroe, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

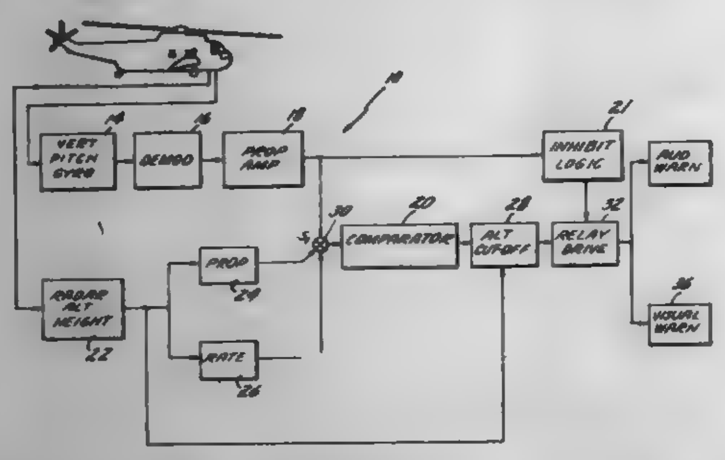
Continuation-in-part of Ser. No. 476,126, June 3, 1974, abandoned. This application Mar. 18, 1975, Ser. No. 559,452

Int. Cl.^{2} G01C *5/00*

U.S. Cl. 340—27 R 6 Claims

1. For a helicopter of the type that includes a tail stabilizer or tail skid, means for providing a warning signal solely when the tail is in a position that it might contact the ground, and for avoiding the signal when the helicopter lands normally, said means including a first operational amplifier providing a first voltage signal that is proportional to helicopter altitude, a second operational amplifier for providing a second voltage signal that is proportional to a helicopter attitude, a voltage comparator responsive to said first and second voltage signals, audio or visual warning means responsive to said comparator for being actuated whenever the voltage of said first voltage

signal is equal to and opposite in polarity from said second voltage signal, and a third operational amplifier responsive to the rate of descent of said helicopter for producing a bias voltage on said first voltage signal.



3,979,718

METHOD OF DRIVING A PLASMA DISPLAY PANEL

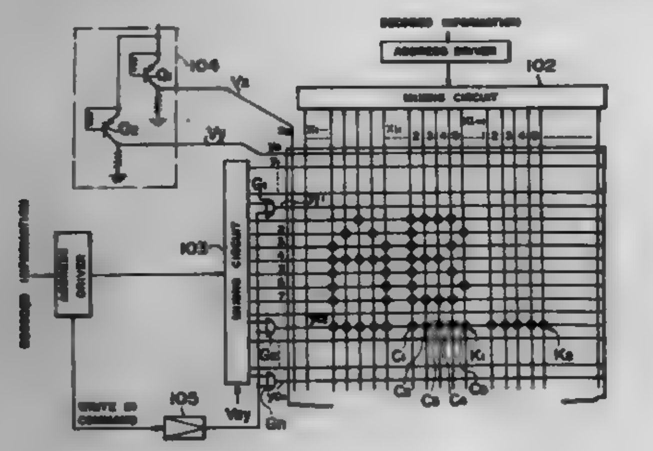
Shozo Umeda, Kakogawa; Tadatsugu Hirose, Akashi, and Shizuo Andoh, Kobe, all of Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Continuation of Ser. No. 317,643, Dec. 22, 1972. This application Jan. 10, 1975, Ser. No. 539,969

Claims priority, application Japan, Dec. 23, 1971, 46-104041

Int. Cl.² G06F *3/14*

U.S. Cl. 340—324 M 10 Claims



1. A method of driving a plasma display panel having first and second pluralities of electrodes disposed to traverse each other in matrix form and each being covered with a dielectric layer whereby a plurality of display discharge points are formed across a confined discharge gas between said dielectric layers, a cursor indicating line being formed of selected discharge points associated with a third plurality of electrodes, wherein said method comprises the steps of:

a. applying a sustain voltage of substantially square wave form to said first, second and third pluralities of electrodes;
b. applying a write signal to selected ones of said first and second pluralities of electrodes defining selected display discharge points;
c. applying a priming pulse coincident in timing with said write signal to said third plurality of electrodes associated with said cursor indicating line establishing discharge across the cursor indicating discharge points at substantially the same timing as discharge is established by the writing signal across said selected display discharge points and
d. continuing to apply said sustain voltage after said priming pulse and said write signal terminate, to maintain said discharge at said cursor indicating discharge points and said selected display discharge points.

3,979,719

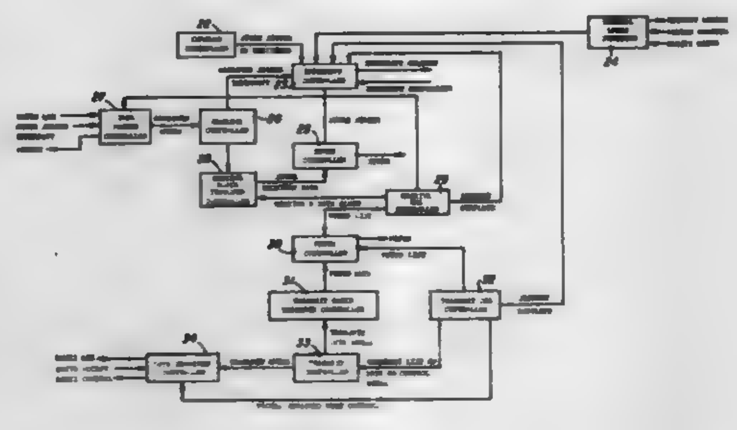
MULTIPLE BLOCK BINARY SYNCHRONOUS DUPLEX COMMUNICATIONS SYSTEM AND ITS METHOD OF OPERATION

John R. Tooley; Larry D. Scott, and Hatcher E. Chalkley, all of Austin, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 347,252, April 2, 1973, abandoned. This application Mar. 3, 1975, Ser. No. 554,817

Int. Cl.² G08C *25/00*

U.S. Cl. 340—146.1 BA 5 Claims



1. In a communications system in which a first and a second station, each having a transmitter and receiver portion, simultaneously transmits and receives blocks of data, a method of controlling the stations including the steps of:

a. continuously transmitting blocks of data including a respective identification code for each block of data from each station to the other station;
b. checking the received blocks of data at the receiving portion of each station to determine if the received blocks of data contain errors;
c. acknowledging receipt of those blocks determined to be correctly received;
d. storing at each station the identification codes of those blocks of received data which contain an error;
e. transmitting the identification code of the blocks of received data which contain errors from the receiving portion of each station to the transmitting portion of the other station when the transmitting portion of the other station becomes available without interrupting the flow of blocks of data in either direction; and
f. retransmitting from each of the transmitting portion to each of the opposite receiving portions only those blocks of data which contained errors as indicated by the identification codes received from the receiving portions.

3,979,720

APPARATUS FOR MONITORING A REDUNDANT MULTI-CHANNEL ANALOG SYSTEM

Daniel Lass, Erlangen; Herrmann Waldmann, Weiher, Landkreis Erlangen, and Josef Wolf, Erlangen-Bruck, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 30, 1975, Ser. No. 572,954

Claims priority, application Germany, May 22, 1974, 2424826

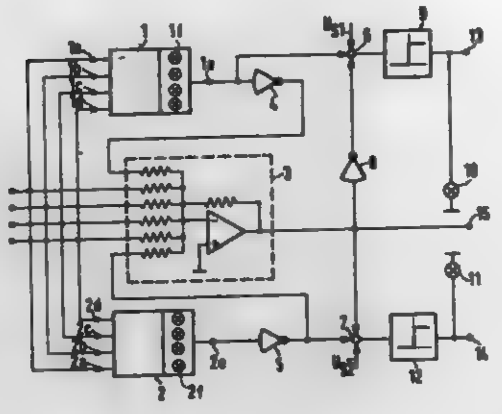
Int. Cl.² G05B *1/02, 23/02*

U.S. Cl. 340—146.1 BE 8 Claims

1. Apparatus for monitoring a redundant multi-channel analog system and for the forming of an undisturbed mean value signal comprising:

a. a maximum value selection device having as inputs all redundant channels and providing an output corresponding to the input channel having the maximum value;
b. a minimum value selection device having as inputs all redundant channels and providing output corresponding to the channel having the minimum value;

c. first and second means for respectively inverting the outputs of said minimum value selection device and said maximum value selection device;



d. a mean value former having as inputs all of said redundant channels and the outputs of said first and second means, said mean value former including means to add all of said input signals and to divide the result by a number which is two less than the number of redundant channels.

3,979,721

PULSE CODE MODULATION RECORDING AND REPRODUCING APPARATUS

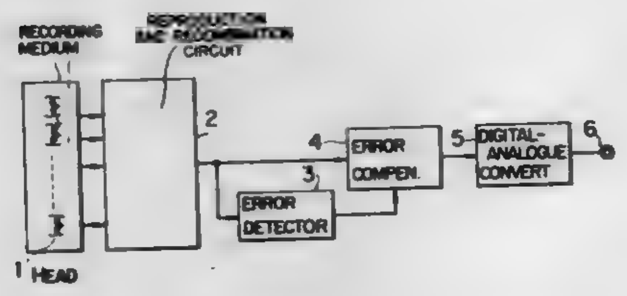
Masuo Umemoto, Tokyo; Kouichi Tomatsuri, Yokohama, and Yasunori Kanazawa, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 21, 1975, Ser. No. 560,882

Claims priority, application Japan, Apr. 1, 1974, 49-35648

Int. Cl.² G11B *27/36;* H03K *5/18*

U.S. Cl. 340—146.1 F 4 Claims



1. A PCM recording and reproducing apparatus in which pulse coded information is recorded on a recording medium in a frame distribution system, comprising:

a. a recording medium having a plurality of tracks along which the pulse coded information is recorded in the frame distribution system;
b. a plurality of heads to be confronted with said corresponding tracks;
c. a recombination circuit for rearranging the output signals from said respective heads into the time serial fashion of the signal;
d. an error detecting circuit for detecting a frame including at least one word having an error in the output signal of said recombination circuit;
e. a compensating circuit for compensating the output signal from said recombination circuit by the use of the output signal of said error detecting circuit, and
f. a digital to analogue converter for converting the compensated output signal of said recombination circuit into an analogue signal.

3,979,722

AUTOMATIC CHARACTER RECOGNITION DEVICE EMPLOYING DYNAMIC PROGRAMMING

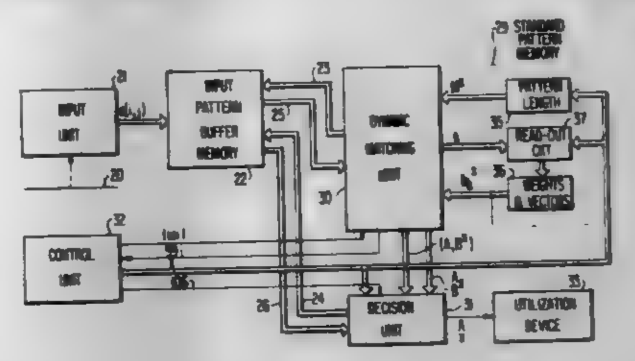
Hiroaki Sakoe, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed May 30, 1975, Ser. No. 582,520

Claims priority, application Japan, May 31, 1974, 49-62240; Sept. 9, 1974, 49-104174

Int. Cl.² G06K *9/00*

U.S. Cl. 340—146.3 AE 8 Claims



1. A device for automatically recognizing an input pattern of one of a predetermined number of sorts by comparing said input pattern successively with standard patterns of at least said predetermined number of sorts, said input pattern being specifiable by two-dimensional array of meshes of different optical characteristics, each of said standard patterns being given by a series of fundamental vectors, which comprises:

an input pattern buffer memory means for memorizing input electric signals representative of said optical characteristics;
a standard pattern memory means for memorizing standard electric signals representative of the directions and predetermined minima and maxima of magnitudes of vectors of the standard patterns;
a dynamic matching means responsive to said input and standard electric signals for finding an extremum of degrees of coincidence between said input pattern and a plurality of line patterns derived from each of said standard patterns by varying the magnitudes between the predetermined minima and maxima to produce first electric signals representative of similarity measures defined by the extremum degrees of coincidence between said input pattern and the line patterns derived from the respective standard patterns and second electric signals representative of specific line patterns for which said extremum degrees of coincidence are found; and
a decision means comprising, in turn, first means for memorizing feature electric signals representative of a predetermined feature common to the line patterns derivable from each of said standard patterns, second means for comparing said first signals with one another, third means responsive to said input, second, and feature electric signals for judging whether or not said input pattern has said predetermined feature, and fourth means responsive to results of the comparison and judgement carried out by said second and third means for producing an output electric signal representative of a result of recognition of said input pattern.

3,979,723

DIGITAL DATA COMMUNICATION NETWORK AND CONTROL SYSTEM THEREFOR

David Robert Hughes, and Alexander Poliachuk-Sawtschenko, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

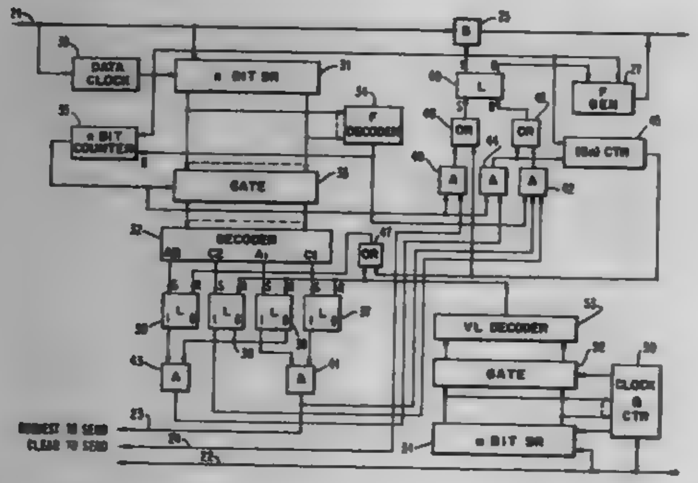
Filed Oct. 29, 1975, Ser. No. 626,802

Int. Cl.² H04Q *9/00;* H04L *5/14;* H04J *3/06;* H04L *5/16*

U.S. Cl. 340—147 R 6 Claims

1. A communications network for providing half-duplex data communication between a central control station and a plurality of groups of remote terminal stations comprising:

- a first simplex communication channel connected to said central station for receiving and conveying signals therefrom;
- a second simplex communication connected to said central station for conveying signals thereto;
- a plurality of remote control units, one for each of said groups connected in parallel to said first and second simplex communications channels and to a plurality of serially connected terminals and comprising;
  - first means for receiving signals from said first simplex communication channel and selectively transmitting signals from said series connected terminals to said second simplex communication channel,
  - second means for detecting a first control signal directed to a single selected control unit and responsive thereto for causing said first means to transmit signals from said terminals,



  - third means responsive to the received signals from the central station for detecting a general address recognizable by all devices connected to said network,
  - fourth means responsive to the received signals from the central station for detecting a second control signal,
  - fifth means responsive to said second and fourth means when a remote control unit is selected for interrupting the signal path between said first means and the series connected terminals and transmitting predetermined signals to said terminals during a first predetermined period of time, and
  - sixth means responsive to said third means when a remote control unit is not selected for interrupting the signal path between the first means and the series connected terminals and transmitting said predetermined signals to said series connected terminals during a second predetermined period of time.

3,979,724

SEISMIC METHOD FOR DETERMINING THE POSITION OF THE BOTTOM OF A LONG PIPE IN A DEEP BOREHOLE

Daniel Silverman, 5969 S. Birmingham, and John R. Bailey, 3169 E. 38 Place, both of Tulsa, Okla. 74105

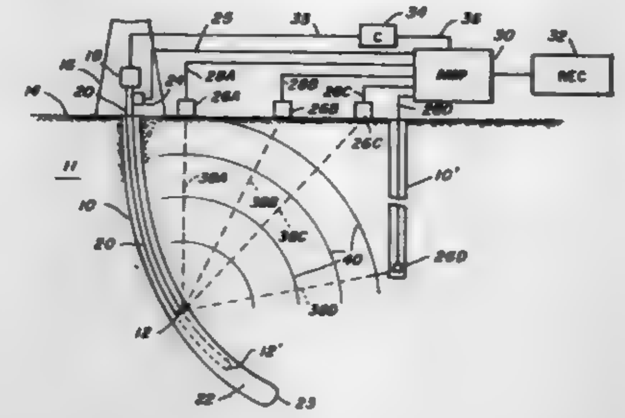
Filed June 3, 1974, Ser. No. 475,581

Int. Cl.² G01V *1/40*

U.S. Cl. 340—15.5 BH **16 Claims**

1. The method of determining the position in the earth of the bottom of a drill pipe in a deep borehole, the length of the drill pipe being known, said drill pipe is filled and borehole at least partially filled with liquid;

- a. placing a plurality of geophones in the earth in known positions in a selected multi-dimensional array with respect to the expected position of said bottom of said drill pipe, said geophones adapted to detect and transduce seismic waves in the earth to corresponding electrical signals, and amplifying and recording said transduced signals;
- b. near the surface of the earth generating a shock wave in said liquid filled drill pipe and determining the time of generation, whereby said shock wave will travel down to the bottom of said drill pipe and will expand into the liquid in the bottom of said borehole and into the earth in the form of an expanding seismic wave;



- c. recording as a function of time the said amplified transduced signals and determining the times of arrival of said seismic wave at each of said plurality of geophones and
- d. determining the position of said bottom of said drill pipe.

3,979,725

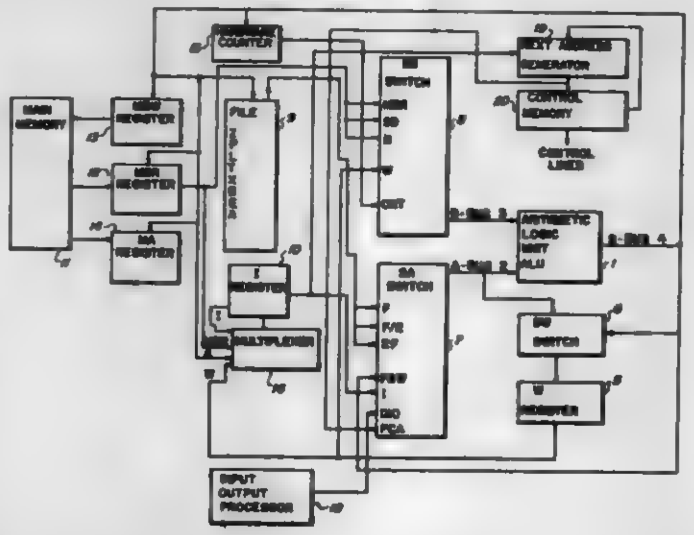
MULTI-WAY PROGRAM BRANCHING CIRCUITS

Charles P. Disparte; Warren L. Hall, Jr., both of Palos Verdes Peninsula; Kenneth N. Isaac, Tustin, and C. Howard Mock, Palos Verdes Peninsula, all of Calif., assignors to Xerox Corporation, Rochester, N.Y.

Filed Aug. 6, 1973, Ser. No. 385,949

Int. Cl.² G06F *9/00*

U.S. Cl. 340—172.5 **13 Claims**



1. In a digital computer controlled by a program stored in main memory, apparatus for providing multi-way branching comprising:

- a plurality of addressable devices for storing random main memory location addresses,
- logic means coupled to said devices and controlled by said program for selecting and enabling one of said plurality of devices,
- a data register loaded under program control with a data field, the bits of said data field being coupled from the output lines of said data register to said plurality of devices for addressing said devices, and
- branch means under control of said program and coupled to said main memory location address output of said enabled device for forcing a program branch to the main memory location thus selected.

3,979,726

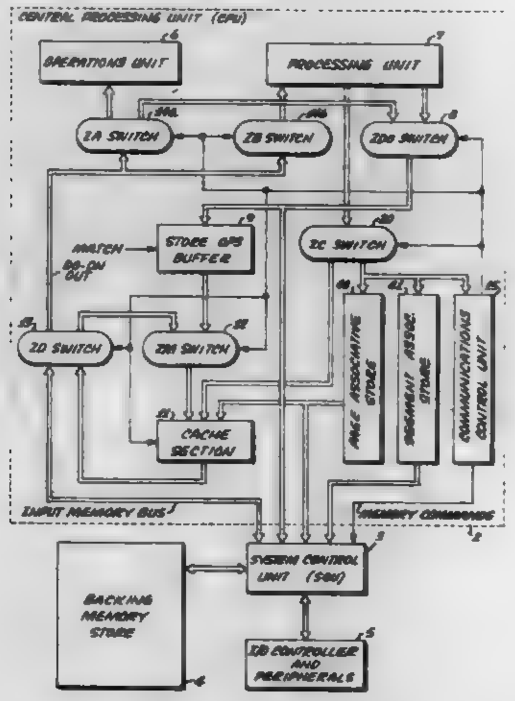
APPARATUS FOR SELECTIVELY CLEARING A CACHE STORE IN A PROCESSOR HAVING SEGMENTATION AND PAGING

Ronald Edwin Lange, Phoenix; Riley H. Dobberstein, Scottsdale, both of Ariz., and Steven Hugh Webber, Groton, Mass., assignors to Honeywell Information Systems, Inc., Phoenix, Ariz.

Filed Apr. 10, 1974, Ser. No. 459,504

Int. Cl.² G06F *13/00*

U.S. Cl. 340—172.5 **8 Claims**



1. In a virtual memory data processing system including a backing memory store into which data words of k bits can be written and subsequently read, the absolute address of a data word being its actual address in the backing store, the data words being arranged into pages of not more than *j* data words per page, and the pages of data words being organized into segments;

- a central processing unit operatively connected to the backing memory store to receive data words from the backing store, said processing unit including means responsive to the receipt of an instruction data word from the memory store for decoding the instruction to produce control signals; a page associative store; circuit means responsive to control signals for storing in the page associative store the base address of each page of data words stored in the backing memory store; a segment associative store; circuit means responsive to control signals for storing in the segment associative store the address in the page associative store of the base address of each segment stored in the backing store; circuit means responsive to control signals for applying a given page and a given segment address to the page and segment associative stores; said page and segment associative stores responsive to a given page and a given segment address being applied to them respectively producing the base address in the backing memory store of the page designated by the given segment and page address; a communication control unit; circuit means for applying control signals, the base address of a page from the page associative store, and a relative address of a data word in the page to the communication control unit; said unit in response thereto producing the absolute address of the data word in the backing store;
- a cache section in said central processing unit; said cache section including a set associative tag directory having storage elements; the storage elements of said tag directory being organized into *n* columns with each column having *m* blocks, said tag directory adapted to store in each block the tag portion of the absolute addresses of *i* data words; a cache store, said cache store having storage elements, said storage elements being organized into *m* times *n* blocks, each block of the cache store being mapped to a block of the tag directory; each block of the cache store adapted to store *i* data words, the high order portion of the absolute addresses of the *i* data words being the tag, the intermediate order portion being the column number of the tag directory in which the tag is stored; circuit means responsive to control signals for storing the tag portion of *i* data words received from the backing memory store into a block in a column of the tag directory corresponding to the intermediate order portion of the absolute address of said *i* data words, and for storing said *i* data words into the block in the cache store mapped to the block and column into which the tag of said *i* data words is stored; comparator circuits, circuit means for applying the tag portion of the absolute address of a given data word to the comparator circuits and the tags stored in the blocks of the column corresponding to the intermediate order portion of said given word, said comparator circuits producing a comparison signal if the tag of said given word is identical to a tag stored in a block in the corresponding column of the directory; said comparison signal signifying that the given data word is stored in the block in the cache store mapped to the block in the tag directory storing the identical tag; and if no comparison signal is produced the given data word is not stored in the cache store; the improvements comprising:
- *n* addressable storage units; one storage unit associated with each of the *n* columns of the tag directory; each of said storage units having storage elements, each storage element having two states, *p* storage elements for storing *p* pointer signals where *p* is defined by the equation, $2^p = m$, the pointer signals stored in a storage unit designating the block in the corresponding column of the tag directory into which a tag is to be written, and *m* storage elements for storing full/empty status signals, one for each block of the corresponding column of the tag directory, each of said *m* storage elements denoting in the second of its two states that a tag is stored in the corresponding block of the tag directory and that data words having an absolute address the higher order bits of which are the tag and the intermediate order of bits the column number in which the tag is stored, are stored in the corresponding block in the cache store, and in its first stage that a tag is not so stored;
- a binary counter circuit for incrementing by one pointer signal applied to it, circuit means for applying the pointer signals of the addressable storage unit to the binary counter circuit responsive to a tag being written into a block designated by the pointer signals in the column of the tag directory with which an addressable storage unit is associated;
- circuit means for applying the incremented pointer signals to the associated storage unit for storage by the pointer signal storage elements; circuit means responsive to a tag being written into a block in a column of the tag directory for placing the corresponding storage element of status signals of the corresponding addressable storage unit into its second state; and circuit means responsive to a clear associative memory page control signal from the means for decoding an instruction and the tag portion of the absolute address of the page to be cleared being applied to said circuit means for causing the tag directory to compare the tag stored in each block of the tag directory with the tag of the page to be cleared and for placing all storage elements of status signals of the addressable storage units whose tags are identical with the tag of the page to be cleared into their first state, whereby all data words of a given page stored in the cache store are effectively cleared from the cache store.

3,979,727
MEMORY ACCESS CONTROL CIRCUIT

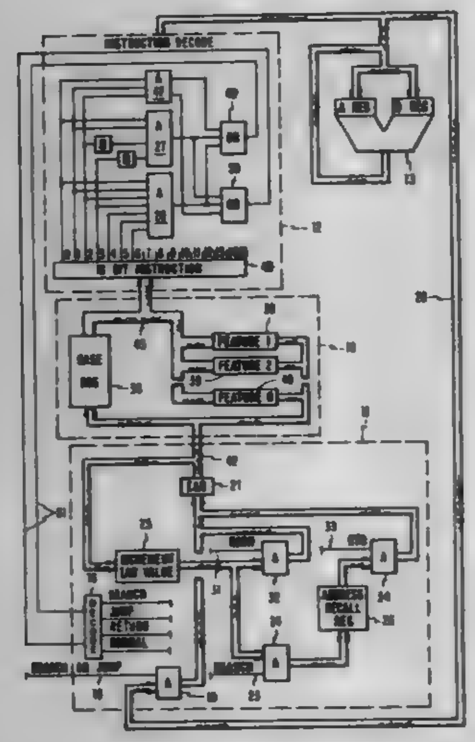
Brittain Norman Catron; Eugene Francis Dumstorff; Phillip Christian Schloss, and Larry Lloyd Schroeder, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 267,731, June 29, 1972, abandoned. This application Sept. 7, 1973, Ser. No. 395,335

Claims priority, application Canada, Apr. 24, 1973, 170059

Int. Cl.^{2} G06F *9/20, 9/16,-11/12*

U.S. Cl. 340—172.5 2 Claims



1. A microprogrammed processor for a data handling device including a read only control store and an execution register for receiving and storing the output of said control store in response to an address and comprising:

- address means including an instruction address register connected to said control store for supplying an address to said control store and including next address identifying means for identifying the next address to be gated to said instruction address register,
- said next address identifying means including means for incrementing the current address and means for storing such incremented address upon command in an address recall register, said next address identifying means further including means for gating to said address register said incremented address stored during a prior processor instruction cycle,
- said next address identifying means further including decode means operatively connected to the output of said execution register for selecting the next address to be gated to said instruction address register from the group including the said incremented current address, a new address, and said prior stored incremented address,
- logic means connected to the output of predetermined bit positions of said execution register for determining the next address operation and outputting a binary signal indicative of such operation,
- said logic means including circuit means connected to the output of said execution register to cause an output from said circuit means indicative of zero logic levels at all execution register bit positions to override the output of said logic means and produce a signal at the output of said logic means indicative of the operation which gates said prior stored incremented address to the instruction address register.

3,979,728
ARRAY PROCESSORS

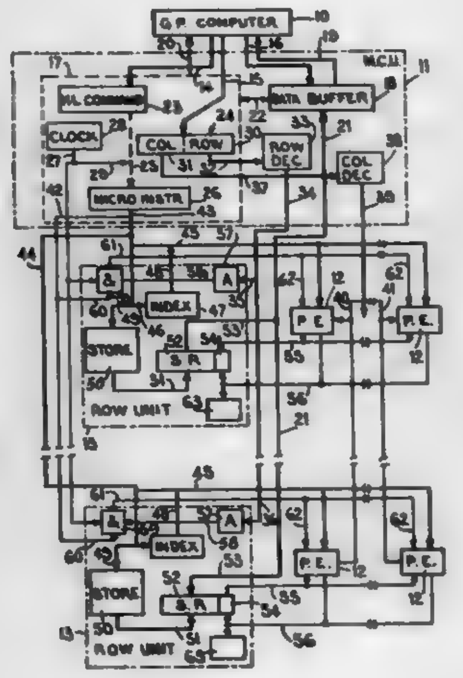
Stewart Fiddian Reddaway, Baldock, England, assignor to International Computers Limited, Stevenage, England

Filed Apr. 1, 1974, Ser. No. 456,829

Claims priority, application United Kingdom, Apr. 13, 1973, 17809/73

Int. Cl.^{2} G06F *15/16*

U.S. Cl. 340—172.5 15 Claims



1. Array processing apparatus comprising:

- a general purpose sequential computer;
- an array of interconnected processing elements each having:
  - a multi-bit memory the individual bits of which are independently addressable,
  - an arithmetic unit, connected to said multi-bit memory, which unit has at least two separate single-bit input channels, at least one single-bit output channel and arithmetic means for performing a binary operation on separate single bits input one by each of the said channels and outputting a bit representing the result of the said operation on the said output channel, and
- input means for receiving micro commands for controlling the operation of a processing element; and
- main control means for controlling the mode of operation of the processing elements and the operations performed by said processing elements including: means for receiving high-level instructions from the general-purpose sequential computer, a writable microprogram storage means,
- means for retrieving a sequence of microinstructions from a microprogram held in said writable storage means,
- means for deriving a plurality of microcommands from each retrieved microinstruction, and
- distribution means for distributing to the input means of each processing element at least some of the microcommands derived by the control means.

3,979,729
MICROPROGRAM UNIT FOR A DATA PROCESSOR

John Richard Eaton, 14, Sandown Road, Haslingden, Lancashire, and Derek William Ashcroft, 10, Sandown Drive, Sale, Cheshire, both of England

Filed July 12, 1974, Ser. No. 488,091

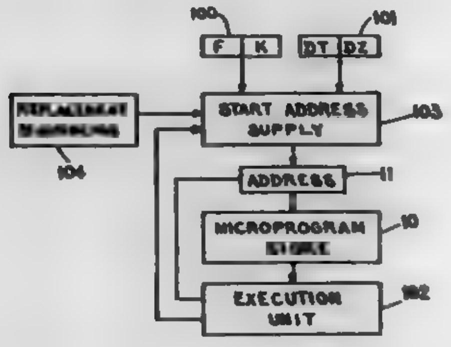
Claims priority, application United Kingdom, July 18, 1973, 34216/73

Int. Cl.^{2} G06F *9/16*

U.S. Cl. 340—172.5 3 Claims

1. A microprogram unit for a data processor, comprising:

- a. an instruction register for receiving an input instruction;
- b. a first writable random access store containing a plurality of values;
- c. means for applying the instruction in said instruction register to said first store to address the first store to read out one of said values therefrom;
- d. a second writable random access store containing a plurality of microprogram start addresses;
- e. means for applying said value read from the first store and which value represents an address in said second store to said second store to address the second store to read out one of said microprogram start addresses therefrom;



- f. a microprogram address register;
- g. means for writing said microprogram start address read from said second store into said microprogram address register;
- h. a third writable random access store containing a plurality of microprogram instructions; and
- i. means for applying the microprogram start address in said microprogram address register to said third store to address the third store to read out one of said microprogram instructions therefrom.

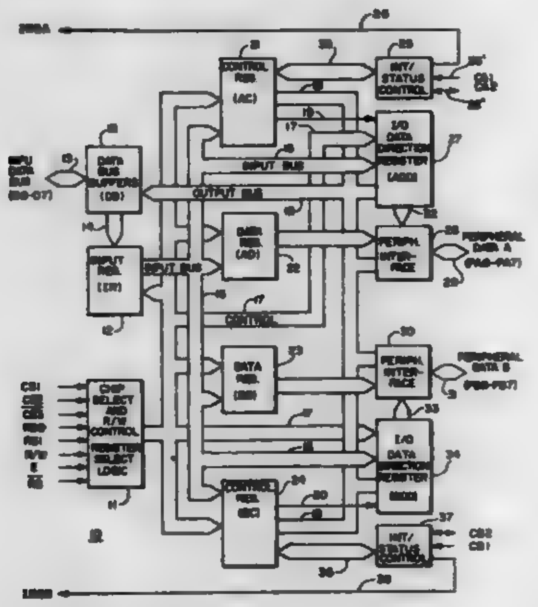
3,979,730
INTERFACE ADAPTOR HAVING CONTROL REGISTER

Thomas H. Bennett, Scottsdale; Earl F. Carlow, Scottsdale, and Michael F. Wiles, Phoenix, all of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed Oct. 30, 1974, Ser. No. 519,131

Int. Cl.^{2} G06F *3/00*

U.S. Cl. 340—172.5 12 Claims



1. In an interface circuit coupled to a data bus and a peripheral data bus, said data bus and said peripheral data bus being bidirectional, circuitry comprising control register means coupled to said data bus and said peripheral data bus for controlling, under program control by a separate processor, a direction of data on a conductor of said peripheral data bus irrespectively of a direction of data on another conductor of said peripheral data bus.

3,979,731
METHOD OF AND SYSTEM FOR RATIONALIZING THE OPERATION OF OPEN-PIT MINES

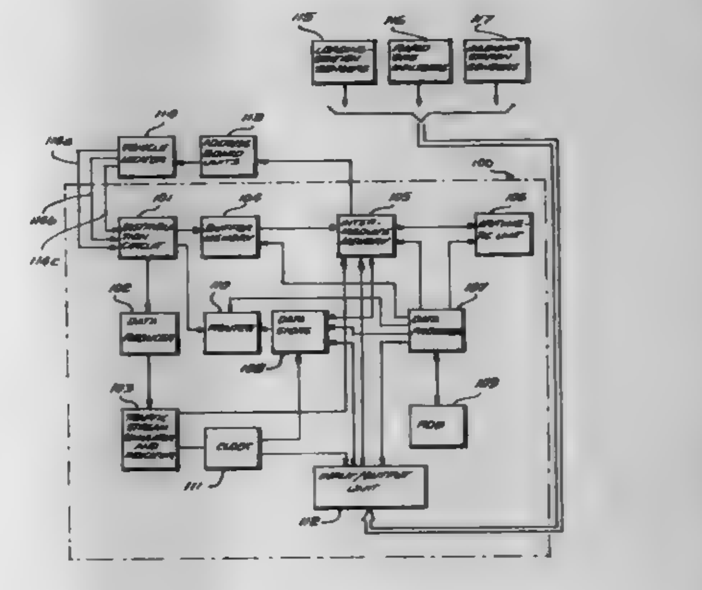
Nicolay Delchev Naplatanov; Vasil Stoyanov Sgurev; Peter Anguelov Petrov; Zdravko Alexandrov Nicolov; Alexander Ivanov Ganchev, and Stefan Petrov Trendafilov, all of Sofia, Bulgaria, assignors to Institute Po Technicheska Kibernetika pri Ban, Sofia, Bulgaria

Continuation-in-part of Ser. No. 444,704, Feb. 22, 1974, abandoned, which is a continuation of Ser. No. 193,280, Oct. 28, 1971, abandoned. This application Feb. 11, 1975, Ser. No. 549,103

Claims priority, application Bulgaria, Oct. 29, 1970, 15952

Int. Cl.^{2} G06F *7/00*

U.S. Cl. 340—172.5 10 Claims

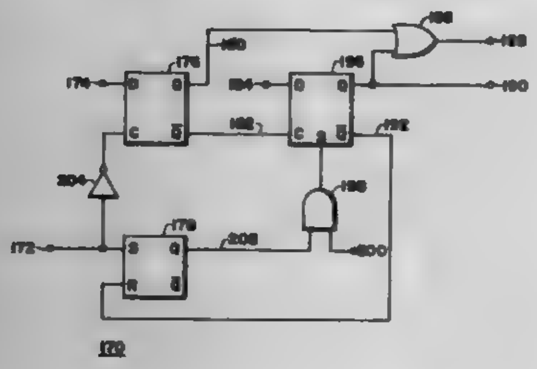


1. A method of rationalizing the operation of an open-pit mine with a plurality of loading stations adjacent respective excavation sites and at least one unloading station at a processing site served by a fleet of vehicles for the transport of excavated material from said loading stations to said unloading station, the excavated material containing high-value and low-value constituents in varying proportions, comprising the steps of

- a. establishing production quotas for high-value and low-value constituents to be processed during a predetermined operating period;
- b. measuring during said operating period, at each excavation site, the relative proportions of high-value and low-value constituents in the excavated material;
- c. classifying said loading stations in a high-yield group and a low-yield group on the basis of the measurements carried out in step (b);
- d. continuously calculating during said operating period a first and a second ratio representing the amounts of produced high-value and low-value constituents in proportion to their respective production quotas as established in step (a);
- e. comparing said first and second ratios with each other; and
- f. routing available vehicles to said loading stations on the basis of the comparison made in step (e), with preference given to the high-yield group upon said second ratio exceeding said first ratio and to the low-yield group upon said first ratio exceeding said second ratio.

3,979,732
ASYNCHRONOUS STATUS INTERLOCK CIRCUIT FOR INTERFACE ADAPTOR

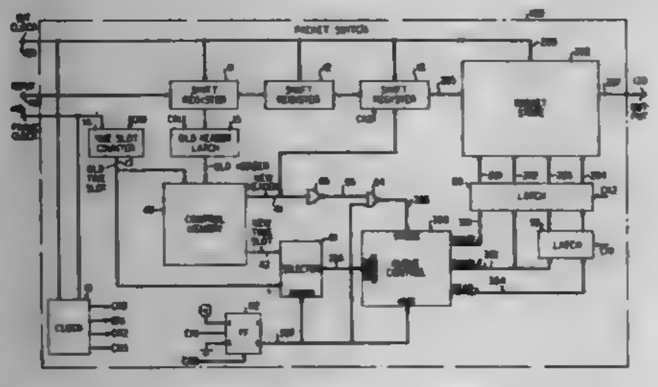
Edward C. Hepworth, Apache Junction, and Rodney J. Means, Tempe, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.
Filed Feb. 18, 1975, Ser. No. 550,883
Int. Cl.^{2} H03K *5/20, 5/153*
U.S. Cl. 340—172.5 11 Claims



4. An asynchronous status interlock circuit comprising:
a peripheral status input conductor for conducting a status change signal;
a read status conductor for conducting a read status signal;
a read data conductor for conducting a read data signal representative of a read data operation; and
first clocked storage circuit means coupled to said peripheral status input conductor for inhibiting said status change signal during said read status signal while storing a prior state representative of a prior status change signal;
second storage means coupled to an output of said first storage means for storing information representative of said status change signal after said read status signal has occurred; and
third storage circuit means coupled to said read data conductor and said first clocked storage circuit means and said second storage circuit means for storing information indicative of whether said read status signal has occurred conditioned on the event that said second storage means has been reset responsive to said read data signal.

3,979,733
DIGITAL DATA COMMUNICATIONS SYSTEM PACKET SWITCH

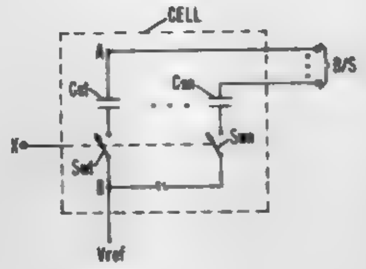
Alexander Gibson Fraser, Bernardsville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 9, 1975, Ser. No. 575,937
Int. Cl.^{2} H04J *3/08, 6/00*
U.S. Cl. 340—172.5 14 Claims



1. In a data communication system, a packet switch for routing a packet of data through said communications system, said packet switch including a packet store having a plurality of queues for storing respective packets of data, and characterized in that said packet switch comprises:
an input terminal adapted for receiving an input frame of data, said input frame including a first plurality of time slots, an input frame time slot having a packet of data;
an output terminal adapted for transmitting an output frame of data, said output frame including a second plurality of time slots, an output frame time slot for inserting a packet of data;
means including a control memory for extending a packet received at said input terminal through said packet store to said output terminal;
said control memory including means for controlling the transfer of a packet from a first time slot of said input frame to a second time slot of said output frame, each time slot having a predetermined identification and each packet having a header for routing said transfer;
said transfer controlling means responsive to said first time slot identification and said header of said packet including first means for providing a second packet header for said packet and second means for providing an output signal corresponding to said second time slot identification.

3,979,734
MULTIPLE EMITTER CHARGE STORAGE MEMORY CELL

Wilbur David Pricer, Burlington, and James Earl Selleck, Middlebury, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 16, 1975, Ser. No. 587,528
Int. Cl.^{2} G11C *11/40*
U.S. Cl. 340—173 CA 25 Claims

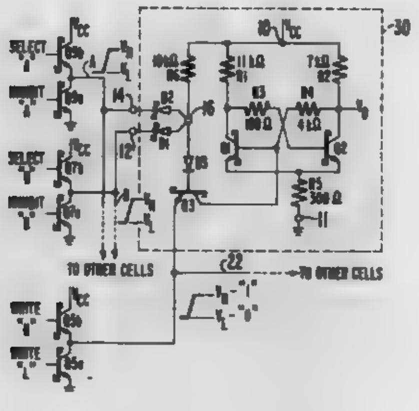


1. An information storage system including a plurality of addressable memory cells, each of said memory cells comprising:
a plurality of two terminal capacitive storage elements;
a plurality of bit/sense means coupling one terminal of each of said capacitive storage elements independently to an information input and output means; and
switching means, responsive to a memory cell accessing signal, for unconditionally causing the other terminal of each of said capactive storage elements to be simultaneously coupled to a predetermined reference potential.

3,979,735
INFORMATION STORAGE CIRCUIT

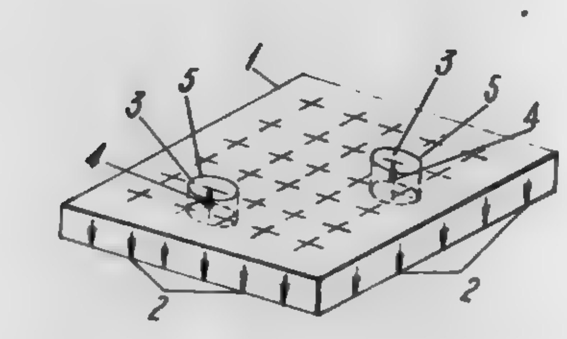
Michael Ian Payne, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.
Continuation of Ser. No. 424,421, Dec. 13, 1973, abandoned. This application Mar. 10, 1975, Ser. No. 556,933
Int. Cl.^{2} G11C *11/40, 7/00*
U.S. Cl. 340—173 FF 8 Claims

1. In combination with a bistable circuit comprising first and second cross-coupled transistors having their collectors connected to a first point of operating potential and having their emitters connected in common to a first node, where the bistable circuit is set to one of two binary conditions by the turn on of two non-saturating transistors having their collector-to-emitter paths connected in series between the base of one of said two cross-coupled transistors and a second point of operating potential, said two non-saturating transistors, when turned on, clamping the potential between the base of said one cross-coupled transistor and said second point to V_S volts, where V_S is the sum of the minimum collector-to-emitter voltage drops of said two non-saturating transistors, the improvement comprising:
a resistor, connected between a point common to the emitters of said two cross-coupled transistors and said second point of potential for carrying the current that flows through the two cross-coupled transistors and developing a voltage drop (V_R) across said resistor, whereby the minimum potential that must be applied between the base of said one transistor and said second point to turn on or maintain conduction of said one transistor must equal, or exceed, V_R plus the base-to-emitter voltage drop (V_{BE}) of said one of said two cross-coupled transistors; and wherein the minimum value of said resistor is such that the sum of V_R and V_{BE} is greater than V_S, and the maximum value of said resistor is such that V_R plus the minimum collector-to-emitter voltage drop of either one of said two cross-coupled transistors is equal to, or less than, V_S.



3,979,736
CIRCULAR MAGNETIC DOMAIN DEVICES

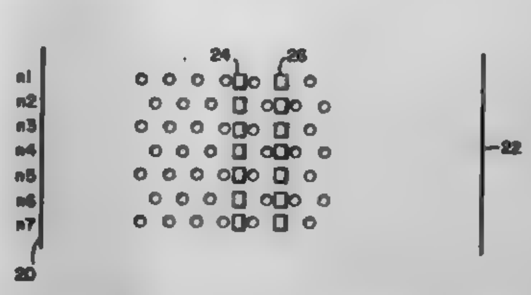
Anthony Marsh, Blisworth, England, assignor to Plessey Handel und Investments A.G., Beeston Nottingham, England
Continuation-in-part of Ser. No. 293,755, Sept. 29, 1973, abandoned. This application July 18, 1974, Ser. No. 489,816
Claims priority, application United Kingdom, Oct. 7, 1971, 46623/71
Int. Cl.^{2} G11C *11/14*
U.S. Cl. 340—174 TF 20 Claims



1. A circular magnetic domain device which includes a layer of polycrystalline or amorphous uniaxial magnetic material formed on a surface of a substrate, the layer having a single unique easy magnetisation direction substantially normal to a major surface thereof, and crystallites of a diameter that is at least one order of magnitude less than the width of a wall of circular magnetic domains that are to be generated in and caused to propagate in, the layer, the maximum diameter of said crystallites not being greater than 0.01 μm.

3,979,737
BISTABLE MAGNETIC BUBBLE DOMAIN DEVICES

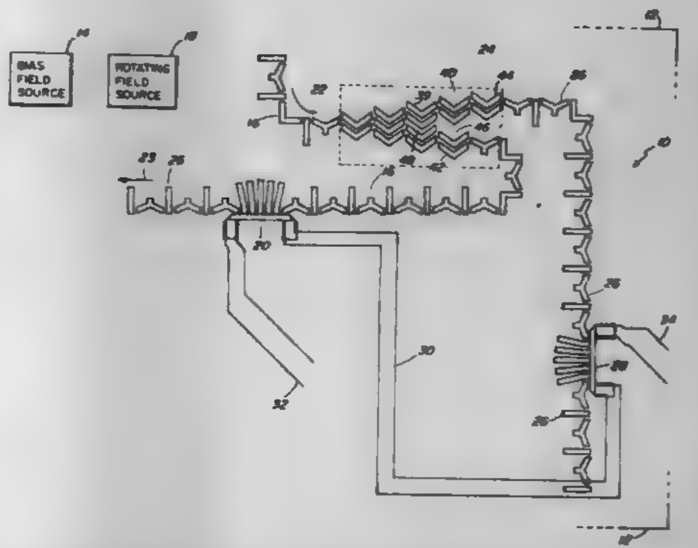
Aleksander I. Braginski, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 20, 1974, Ser. No. 508,003
Int. Cl.^{2} G11C *11/14, 11/42*
U.S. Cl. 340—174 TF 12 Claims



1. A device suitable for use in a computer memory or the like comprising a film capable of supporting a densely packed hexagonal array of bistable magnetic bubble domains, writing means for externally altering the state of the individual bubble domains, reading means for sensing and distinguishing the state of the bubble domains, magnetic bubble domain propagating means for repetitively passing the array in proximity to said reading and writing means.

3,979,738
COMPOUND DETECTOR FOR MAGNETIC DOMAIN MEMORY DEVICES

Alfred E. Feuersanger, Framingham, and Charles Brecher, Lexington, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.
Filed Mar. 12, 1975, Ser. No. 557,854
Int. Cl.^{2} G11C *11/14*
U.S. Cl. 340—174 TF 9 Claims



3. In a magnetic domain memory device of the type having a magnetic domain sustaining platelet, a bias field source, a domain propagation overlay pattern including a domain propagation track, a rotating magnetic field source, and a first domain detector disposed in the track, an improvement including:
a. domain splitting means, disposed along the propagation track, for splitting each bubble domain entering therein into a pair of domains before the domain reaches the first detector, one of the resulting domains continuing along the propagation track toward the first detector,
b. an auxiliary propagation track extending from the domain splitting means and defining a path for the other domain,
c. a second domain detector disposed along the auxiliary track for detecting the other domain, the difference in time for each of the pair of domains to reach their respective detectors being less than the time for one rotation of the rotating magnetic field, and

d. means for combining the output signal from both detectors to produce an enhanced detector output signal, the combining means including coincidence logic circuitry receiving the detector outputs to enhance the reliability of the domain detectors.

3,979,739
APPARATUS FOR THE DETECTION OF VIBRATION IN ROTATING MACHINERY

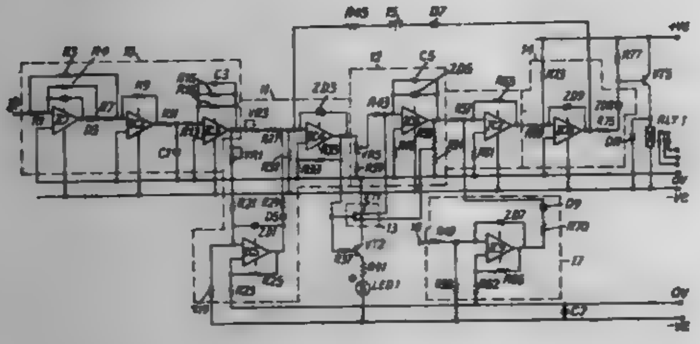
Donald Jack Birchall, c/o D J Birchall Limited, Chiswick Ave., Mildenhall, Suffolk, England

Filed May 7, 1975, Ser. No. 575,312

Claims priority, application United Kingdom, May 7, 1974, 20159/74

Int. Cl.² G08B *21/00*

U.S. Cl. 340—261 6 Claims



1. Apparatus for the detection of vibration in rotating machinery, said apparatus comprising means for generating an electrical amplitude signal indicative of the vibration amplitude of a machine under test, a comparator connected to receive the amplitude signal and operative to generate an output signal representative of a logical 1 if the amplitude signal is above a predetermined level, the comparator giving no output signal, this condition being representative of a logical 0, if the amplitude signal is below said predetermined level; an integrator connected to integrate logical 1 output signals of the comparator when present; and a further comparator connected to the integrator output and effective to give an output when the integrator output exceeds a further predetermined level, an output from the further comparator thus being representative that the amplitude signal has persisted above the first-mentioned predetermined level for a predetermined time.

3,979,740
MONITORING SYSTEM

John Egan Forbat, Weybridge; John Robert Digby, Fleet, and Timothy Alan Roper, Guildford, all of England, assignors to Inertia Switch Limited, Hartley Witney, England

Filed June 10, 1974, Ser. No. 477,941

Claims priority, application United Kingdom, Nov. 6, 1973, 51675/73

Int. Cl.² G01D *21/04*; G08B *13/00*

U.S. Cl. 340—276 36 Claims

1. A monitoring system comprising:

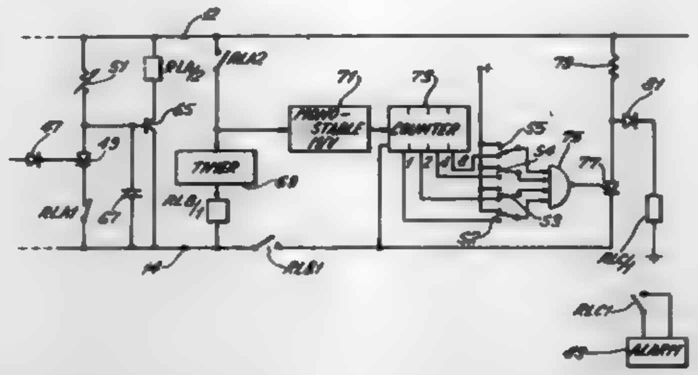
a sensor circuit including at least one set of contacts connected in series between terminal means, said terminal means being connectible to a source of current;

output means connected to the sensor circuit for providing, in use, a first output signal in response to actuation of said set of contacts;

pulse generating means responsive to a said first output signal for providing a first output pulse;

timing means responsive to said first output pulse for timing a counting interval and including means for varying the length of said counting interval; and

counting means actuable by said timing means for counting the output pulses only during said counting interval and for providing a further output signal when the number of output pulses counted in said counting interval equals or exceeds a predetermined value.



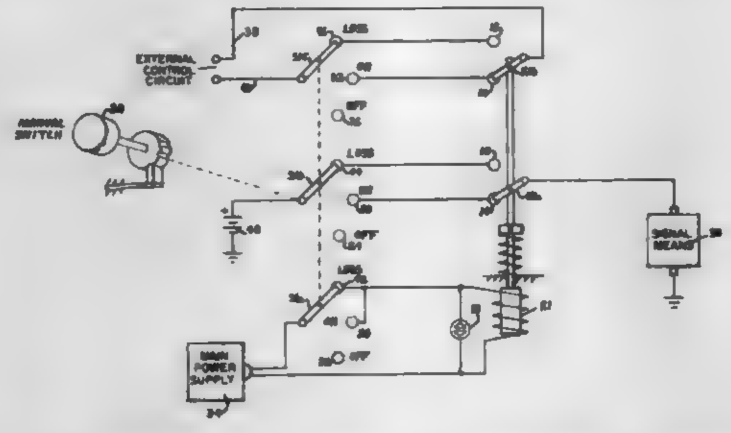
3,979,741
POWER LOSS ALARM SYSTEM

John H. Harshbarger, Xenia, Ohio, assignor to Visual Information Institute, Inc., Xenia, Ohio

Filed June 2, 1975, Ser. No. 583,198

Int. Cl.² G08B *21/00*

U.S. Cl. 340—248 B 6 Claims



1. In a system for monitoring a main source of electric power; a relay having a coil supplied by the main source of power and having at least one blade, a second source of electric power, a manual switch having at least one blade, each blade having at least two operative positions and closing on respective contacts in said positions, each contact pertaining to the manual switch blade being connected to a respective contact of the relay blade, said second source of power being connected to one of said blades, signalling means having a voltage sensitive control terminal, said terminal being connected to the other of said blades, said manual switch including a second blade interposed between said main source and said coil, said manual switch blades having a further OFF position wherein the circuit between said main source and said relay coil and between said second source and said terminal of said signalling means are interrupted.

3,979,742
APPARATUS FOR GENERATING GRAPHICAL CONFIGURATIONS

Edwin R. Kolb, Chatham Township, N.J., and Robert M. Horvath, Quincy, Ill., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed Sept. 29, 1972, Ser. No. 293,679

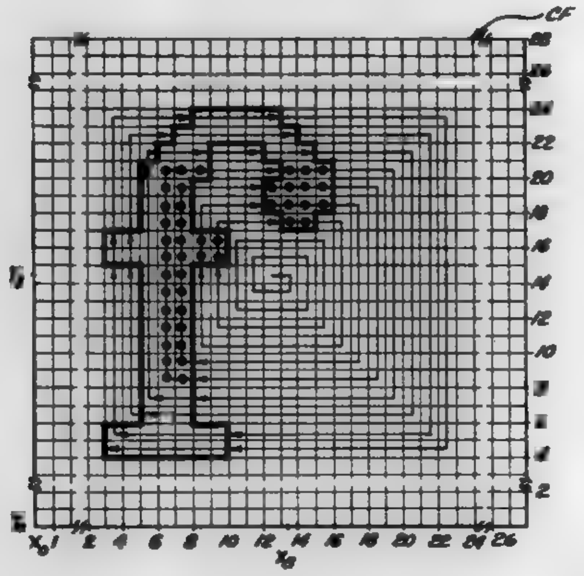
The portion of the term of this patent subsequent to Nov. 7, 1991, has been disclaimed.

Int. Cl.² G06K *15/20*

U.S. Cl. 340—324 AD 12 Claims

1. Apparatus for forming graphical configurations on an energy responsive surface with an energy beam and comprising: path segment length command means including means for

providing a series of sets coded command signals with each said set of coded command signals defining the length of an associated path segment of a path to be traced on said surface by said beam; beam control means including means for controlling deflection of said beam to trace a nonlinear predetermined scan path on said energy responsive surface from a preselected starting location thereon, said path having at least one portion which at least partially circumscribes a second portion of said path, said path being comprised of a plurality of successive path segments of length dependent upon associated successive said sets of coded command signals such that alternate ones of said segments are inside and outside of the surface area of a configuration to be formed on said surface, and beam exposure means for alternately blanking and unblanking of said beam such that said beam is blanked while tracing a said outside segment and is unblanked while tracing a said inside segment.



3,979,743
DISPLAYS

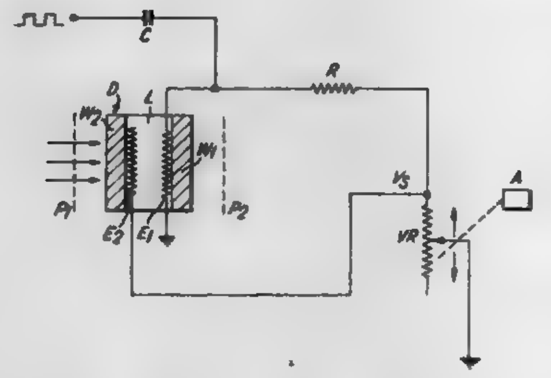
William Thomas Moore, London, England, assignor to The Rank Organisation Limited, London, England

Filed Feb. 20, 1975, Ser. No. 551,420

Claims priority, application United Kingdom, Feb. 20, 1974, 7670/74

Int. Cl.² G01R *13/40*

U.S. Cl. 340—324 R 13 Claims



1. A display device comprising a liquid crystal cell having two parallel flat transparent cell walls, a liquid crystal material contained between said walls, electrodes disposed inwardly of said cell walls and means for applying a potential difference between said electrodes, the liquid crystal material undergoing transition from the homogeneous state to the homeotropic state when the potential difference applied between said electrodes exceeds a predetermined switching threshold, wherein the improvement consists in

a. an alternating current source,

b. means to said alternating current source for applying an alternating voltage along one of said electrodes to establish an alternating potential gradient along said electrode,

c. a potentiometric device connected to said alternating current source and to the other electrode to apply thereto a variable alternating potential intermediate the extremes of the potential gradient applied to said one electrode, such that,

d. at a region within the cell dependent upon the magnitude of said potential, the potential difference between the electrodes is less than the switching threshold of the liquid crystal material, while the said potential difference is greater than the said threshold outside this region, whereby the liquid crystal is in a homogeneous state in said region and in a homeotropic state outside said region, the cell providing a visual display of said region when light is directed into the cell under conditions in which the emergent light is modified in dependence upon the state of the liquid crystal.

3,979,744
CIRCUIT ARRANGEMENT FOR THE DIGITAL CONTROL OF OPERATING FUNCTIONS VIA SENSOR ELECTRODES, ESPECIALLY IN RADIO AND TELEVISION RECEIVERS

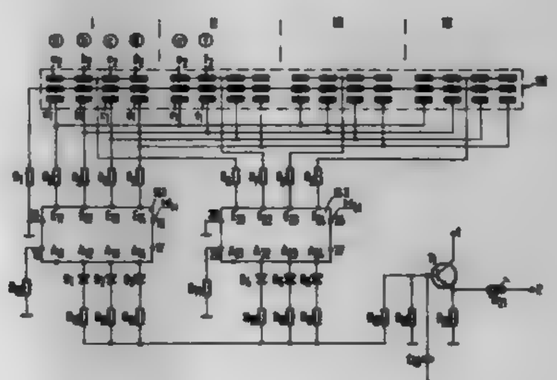
Wolfgang Schroder, Pforzheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 13, 1974, Ser. No. 497,169

Claims priority, application Germany, Sept. 14, 1973, 2346293

Int. Cl.² H04Q *3/42*

U.S. Cl. 340—324 R 12 Claims



1. A circuit arrangement for the digital control of operating functions via sensor contacts, for use in radio and television receivers comprising:

a supply voltage;

a reference voltage;

at least two groups of bistable electronic switches, one for fine adjustment and one for coarse adjustment, each group having a first output capable of being coupled to said reference voltage via a first input associated only with said output, each of said groups having a common control input;

first and second resistors coupled to the second input of said at least two groups, the voltage drop across said first and second resistors caused by a transient current in one of the bistable switches whereby the outputs of all other switches are disconnected from said reference voltage;

a plurality of resistors coupled at one end to the outputs of the bistable switches in said at least two groups and coupled at their output to a common point;

a plurality of decoupling diodes, each coupled between the output of a bistable switch and one of said plurality of resistors; and

a sensor control panel comprising sensor electrodes coupled to the input terminals of the bistable switches, said sensor electrodes divided into groups wherein the sensor electrodes occupying the same position in each group are coupled together.

3,979,745

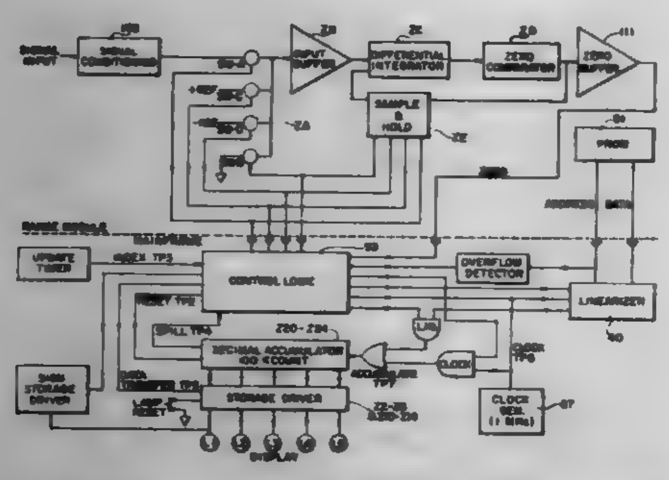
SYSTEM AND METHOD FOR LINEARIZING ANALOG MEASUREMENTS DURING ANALOG-TO-DIGITAL CONVERSION

Allen J. Bishop, Fort Worth, Tex., assignor to Westronics, Inc., Fort Worth, Tex.

Filed Feb. 22, 1974, Ser. No. 444,953

Int. Cl.² H03K *13/02*

U.S. Cl. 340—347 NT 8 Claims



1. Apparatus for producing an accurate measurement of the engineering units of interest represented by the output signal of an analog transducer having a non-linear output function, comprising:

an analog-to-digital converter for producing a digital output comprising a quantity of constant frequency pulses representative of the magnitude of the output signal of said analog transducer,

storage means for storing a plurality of data functions, each of which is a function of the rate of change of the slope of the non-linear output function of said analog transducer within a different segment of a given range of the non-linear output function of said analog transducer,

means responsive to said constant frequency pulses and responsive to said data functions stored for converting said constant frequency pulses to output pulses whose frequency changes linearly within each segment at a rate dependent upon the corresponding data function, and

means for accumulating said output pulses for the production of an accurate measurement of the engineering units of interest represented by the analog transducer output signal.

3,979,746

HIGH-SPEED MANCHESTER CODE DEMODULATOR

Bobby R. Jarrett, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 28, 1975, Ser. No. 573,222

Int. Cl.² H03K *13/00;* G11B *5/09*

U.S. Cl. 340—347 DD 1 Claim

1. A demodulator for decoding the Manchester code at bit rates approaching one gigahertz comprising:

a high speed transition marker which receives the Manchester code and generates a pulse representative of the detected zero crossings of both information and phase bits of the Manchester data comprising:

a first NOR logic gate receiving at an input thereof the Manchester code and generating at outputs thereof an OR output and a NOR output; means to delay and invert the NOR output of said first gate;

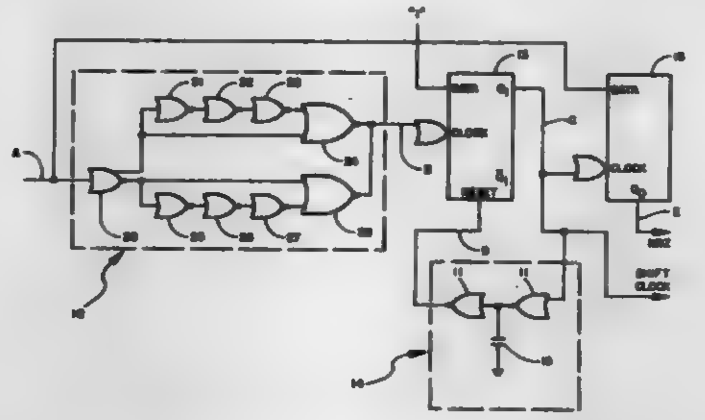
a second NOR gate receiving at an input thereof the NOR output of said first gate, at another input the delayed and inverted NOR output of said first gate; means to delay and invert the OR output of said first gate;

a third NOR gate receiving at one input the OR output of said first gate and at another input the delayed and inverted OR output of said first gate; and a wire-ORed connection of said outputs of said second and third NOR gates;

a high speed edge triggered flip-flop having a clock input, a reset input which overrides the clock input, an ouput and data inputs wired such that when the output signal of said transition marker is presented to the clock input of the flip-flop, the flip-flop is triggered and the output goes high or stays high unless locked out by the reset;

time delay means connected between said flip-flop ouput and said reset input whereby the flip-flop output pulse width is less than one half the Manchester bit period and is equal to the time of the delay means and the time of the propagation delay from the reset to the output of said flip-flop, and whereby the flip-flop output down time is equal to the time of the delay means and the time of the propagation delay from the reset to the output and the time of the propagation delay from the clock to the output of said flip-flop and the time till the next clock input pulse, and whereby the reset input is held high by the flip-flop output at the point in time corresponding to the occurrence of the phase pulses of the transition marker thereby locking out said phase clock input pulses; and

means to strobe the Manchester code input with the output of said flip-flop such that a conversion from Manchester to NRZ is obtained.



3,979,747

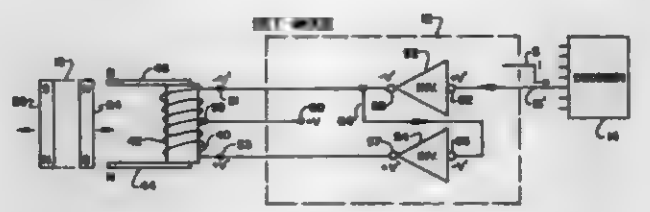
CONTROL CIRCUIT FOR A CHARACTER SEGMENT DISPLAY ASSEMBLY

Domenic Candida, Massapequa, N.Y., assignor to Veraltron Corporation, Great Neck, N.Y.

Filed June 2, 1975, Ser. No. 583,026

Int. Cl.² G08B *5/00*

U.S. Cl. 340—373 7 Claims



1. In a character segment display assembly of the type having a rotatable member, carrying a flag for display at a window of a stationary mask said rotating member having a bipolar permanent magnet with an N and an S pole spaced apart and a stationary electromagnetic coil wound on a magnetic core and disposed in fixed position adjacent said rotating member, said core having a pair of spaced magnetizable members defining magnetic poles of opposite polarity whereby electrical energization of said coil will polarize said magnetic poles of said core to attract one of said permanently magnetized poles of said rotatable member; the improvement which comprises:

said coil comprising a bifilar winding having a center tap;

a source of constant positive voltage connected to said center tap;

a first voltage invertor having an output connected to one end of said coil and an input arranged to receive signal voltage pulses; and

a second voltage invertor having an output connected to the other end of said coil and an input connected to the output of said first invertor.

3,979,748

PULSE RADAR APPARATUS

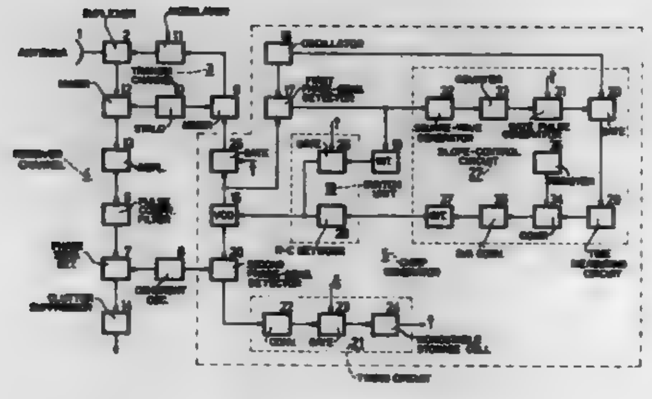
Bernard Gellekink, Ootmarsum, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Feb. 14, 1975, Ser. No. 549,771

Claims priority, application Netherlands, Feb. 28, 1974, 7402687

Int. Cl.² G01S *9/233, 9/42*

U.S. Cl. 343—7.7 2 Claims



1. A pulse radar apparatus comprising, in the transmitter signal channel, a generator circuit to generate linear F.M. pulses of relatively long duration, and, in the receiver signal channel, means to compress radar return signals into output pulses of relatively short duration, means for phase detecting said short output pulses, a coherent oscillator controlling said phase detecting means, and means for the elimination of stationarytarget signals, said generator circuit including voltage controlled oscillating means, a fixed frequency oscillating means to generate a constant reference signal, first phase detecting means having one input coupled to the output of said voltage-controller oscillating means and another input to said fixed frequency oscillating means, to produce a first control signal; second phase detecting means coupled to the output of said voltage-controlled oscillating means and controlled by said coherent oscillator to produce a second control signal; a slope-control circuit supplied with said first control signal and with said reference signal to produce an output signal which is determined by the length of a period for generating a given number of periodic variations of said first control signal during the time interval when the second control signal exceeds a predetermined value; a timing circuit controlled by said second control signal and having means to produce a timing signal during the time interval when the second control signal exceeds the predetermined value, and switching means which, in the absence of said timing signal, apply said first control voltage to the input of said voltage controlled oscillating means and, in the presence of said timing signal, gradually replace the first control voltage with the output signal from the slope control circuit.

3,979,749

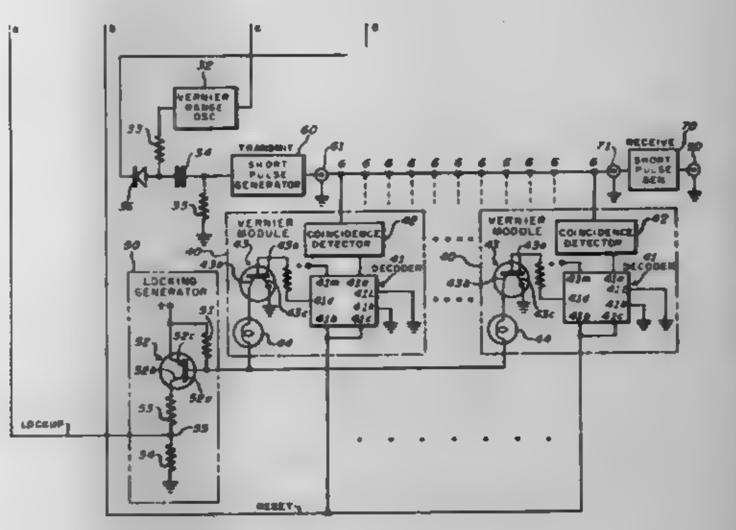
RANGE READOUT APPARATUS

Gerald F. Ross, Lexington, and Kenneth W. Robbins, Wilmington, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,317

Int. Cl.² G01S *9/06*

U.S. Cl. 343—13 R 13 Claims



13. A method of measuring range comprising the steps of:

establishing a multiplicity of incremental time delays, each of which corresponds to one of a predetermined multiplicity of coarse range increments each having equal coarse range intervals within which a fine range measurement is to be made;

transmitting a pulsed signal;

selecting one of said time delays when said pulsed signal is transmitted;

triggering a first short pulse at a time after said transmission of said pulsed signal that is essentially equal to said selected time delay;

receiving echo pulses of said pulsed signal;

triggering a second short pulse in response to said reception of each of said echo pulses;

coupling said first and second short pulses to opposite ends of a transmission line the electrical length of which is essentially equal to a coarse range increment and containing taps with electrical spacing therebetween corresponding to a fine range increment; and

determining the fine range increment within said coarse range increment for said selected coarse range interval by noting the tap on said transmission line at which said first and second short pulses coalesce.

3,979,750

OPTICAL PUMP POWER DISTRIBUTION FEED

Bob L. Smith, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

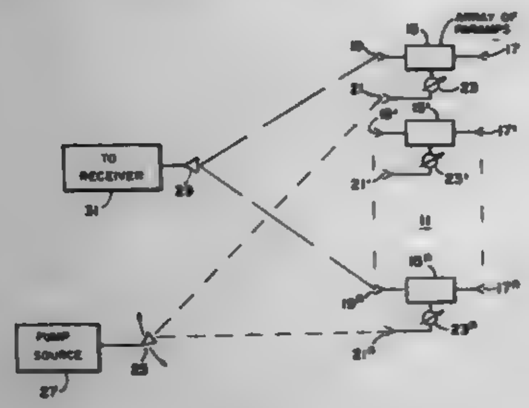
Filed June 20, 1975, Ser. No. 588,917

Int. Cl.² H04B *7/00*

U.S. Cl. 343—100 SA 4 Claims

1. A system comprising a plurality of receiver antenna elements in an array; a plurality of parametric amplifiers each having an input terminal, output terminal and a pump feed terminal; a source of pump power being connected to said pump feed terminals; said plurality of receiver array antenna elements being connected to said input terminals; said source of pump power having its phase input to the pump feed terminals changeable so as to cause steering of the output of the

parametric amplifiers; a plurality of pump feed horns having their outputs connected to the pump feed terminals; a pump horn connected to said source of pump power; and said pump horn spatially feeding said plurality of feed horns.



3,979,751
TRANSMISSION DEVICE OF A RADIOGRAPHIC NAVIGATION SYSTEM

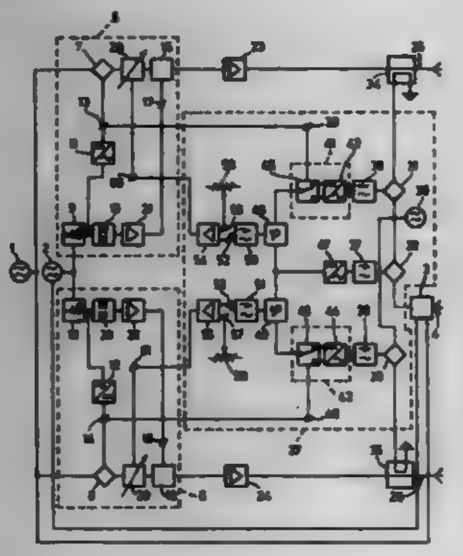
Frederik Louis van den Berg, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 2, 1975, Ser. No. 574,103

Claims priority, application Netherlands, May 7, 1974, 7406082

Int. Cl.² G01S *1/44*

U.S. Cl. 343—106 R 5 Claims



1. A transmission device of a radiographic navigation system for azimuth determination, in which the transmission device generates a rotating directional beam pattern and a static, omnidirectional phase reference beam pattern, comprising a carrier wave generator and a modulation signal generator, two double sideband modulators which are connected to the two generators and which serve to generate, for the benefit of the rotating directional beam pattern, two double sideband signals having a modulation which is phase-shifted 90° with respect to each other and a suppressed carrier wave, two transistorized power amplifiers, each of which is coupled to one of the modulators, and a phase reference signal generator which is coupled to the carrier wave generator and the modulation signal generator for generating a phase reference signal for the benefit of the static beam pattern, a phase comparison device including a mixing signal generator and three mixing devices which are coupled thereto, each mixing device being coupled to an output of the power amplifiers and the phase reference signal generator for transposing the carrier wave frequencies of the double sideband signals and the phase reference signal to a lower frequency, two modulation eliminators which are provided with control inputs and each of which is coupled to an output of the mixing devices which supply the frequency-transposed double sideband signals, the control inputs being coupled to the modulation signal generator for eliminating the frequency-transposed double sideband signals, and two phase discriminators, each of which is coupled to one of the modulation eliminators, both phase discriminators being coupled, via a modulation eliminator, to the mixing device which supplies the frequency-transposed phase reference signal, and two phase shifters which have control inputs and which are each included in one of the signal paths of the double sideband signals, the control inputs being coupled to the phase discriminators for controlling the phase of the double sideband signals under the control of control signal supplied by the phase discriminators.

3,979,752
PULSE-TYPE RADAR WITH MODULATED CARRIER FREQUENCY

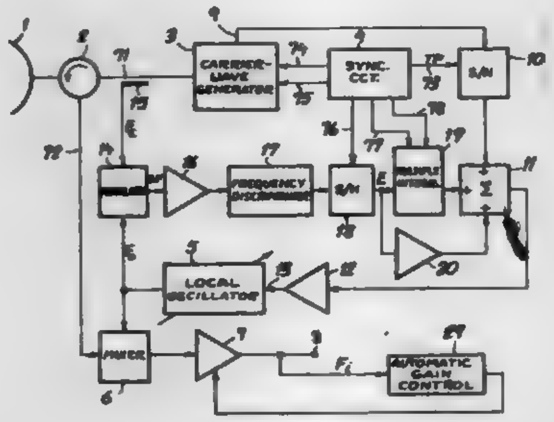
Jean-Claude Charlot, Paris, France, assignor to Thomson-CSF, Paris, France

Filed July 11, 1975, Ser. No. 595,083

Claims priority, application France, July 12, 1974, 74.24365

Int. Cl.² G01S *9/23*

U.S. Cl. 343—17.2 R 10 Claims



1. In a radar system, in combination:

a generator of periodic bursts of carrier frequency separated by pulse periods of predetermined duration, said generator having an outgoing channel for the transmission of said bursts of carrier frequency;

frequency-varying means in said generator for changing said carrier frequency from one pulse period to the next;

an incoming channel for the reception of echoes of said carrier frequency reflected by a target;

synchronizing means connected to said frequency-varying means for establishing a repetitive modulation pattern for said carrier frequency having a whole number of repetition periods in a program cycle of n pulse periods;

a local oscillator having an operating frequency variable in a range offset from the range of said carrier frequencies by a predetermined intermediate frequency, said incoming channel including mixer means connected to said local oscillator for heterodyning said operating frequency with received echoes to produce an output signal of said intermediate frequency for delivery to a utilization circuit;

modulating means with input connections to said outgoing channel and to said local oscillator for deriving a difference frequency from said operating frequency and said carrier frequency;

discriminating means connected to said modulating means for converting said difference frequency into a feedback signal having a predetermined mean value upon said difference frequency equaling said intermediate frequency;

multiple integrating means connected to said discriminating means for simultaneously storing feedback signals from different pulse periods over a plurality of program cycles; and

control means for said local oscillator connected to said multiple integrating means for individually changing said operating frequency during each pulse period according to the stored feedback signal thereof to make said difference frequency substantially equal to said intermediate frequency.

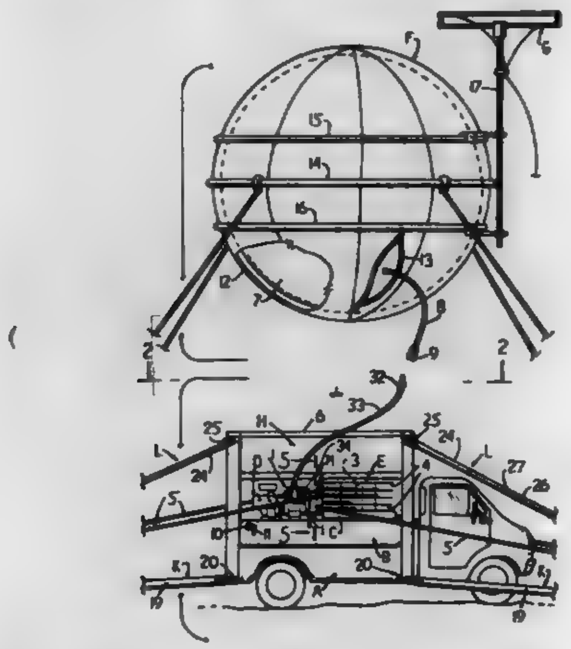
3,979,753
PORTABLE BALLOON ANTENNA SUPPORT STRUCTURE

Lawrence E. Underwood, 24296 Hesperian Blvd., Hayward, Calif. 94545

Filed Apr. 11, 1975, Ser. No. 567,095

Int. Cl.² H01Q *1/28*

U.S. Cl. 343—706 4 Claims



1. In combination:

a. a vehicle movable over the ground;

b. a storage tank in the vehicle for holding a lighter than air gas under compression;

c. a compartment in the vehicle for holding a balloon when deflated;

d. a winch in the vehicle and carrying a plurality of drums with guy lines leading from the drums and attached to the balloon, the balloon having a tube connectible to a valve-controlled outlet for said storage tank for feeding the compressed gas into the balloon for inflating it; and

e. poles pivotally secured to both sides of the vehicle and swingable from inoperative to operative positions and carrying pulleys at their outer ends around which the guy lines are passed, the poles spacing the pulleys so that the guy lines will hold the inflated balloon in a desired position above the vehicle, the balloon supporting an electron wave receiving device at a desired height.

3,979,754
RADIO FREQUENCY ARRAY ANTENNA EMPLOYING STACKED PARALLEL PLATE LENSES

Donald H. Archer, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 11, 1975, Ser. No. 567,330

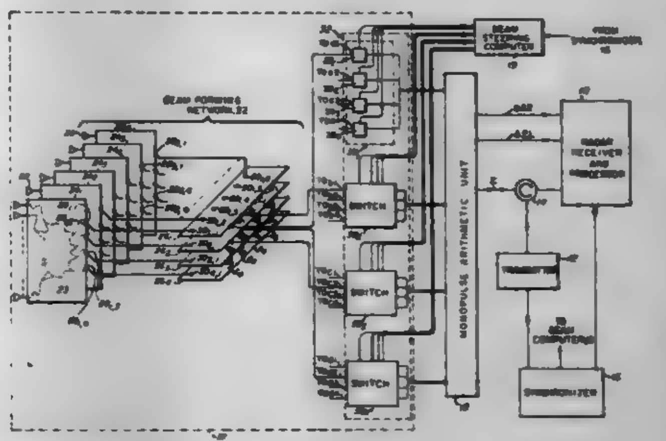
Int. Cl.² H01Q *3/26*

U.S. Cl. 343—754 2 Claims

1. An antenna array in a monopulse radar for forming, simultaneously, a desired set of overlapping directional beams, each one of such beams having a substantially circular cross section, such array comprising:

a. a first set of parallel plate radio frequency lenses, each one of such lenses including a first plurality of feedports and a second plurality of output ports, each one of such feedports in each one of such parallel plate radio frequency lenses being coupled through a different electrical path to all of the output ports in the corresponding lens, the lengths of the different electrical paths from each one of the feedports to the output ports being selected to form a first set of overlapping energy distributions corresponding in number to the desired set of directional beams;

b. a second set of parallel plate radio frequency lenses, the number of such lenses in such second set being equal to the number of output ports in each one of the parallel plate lenses in the first set thereof, each one of the parallel plate radio frequency lenses in such second set having a third plurality of input ports equal in number to the number of parallel plate radio frequency lenses in the first set and a fourth plurality of output ports, each one of the third and fourth plurality of input and output ports being



coupled through a different electrical path to form a second set of overlapping energy distributions corresponding in number to the desired set of directional beams;

c. means for interconnecting, through predetermined length paths, one of the output ports in the first set of parallel plate radio frequency lenses to a corresponding one of the input ports in the second set of parallel plate radio frequency lenses; and

d. means for connecting each one of the output ports in the second set of parallel plate radio frequency lenses to a different antenna element.

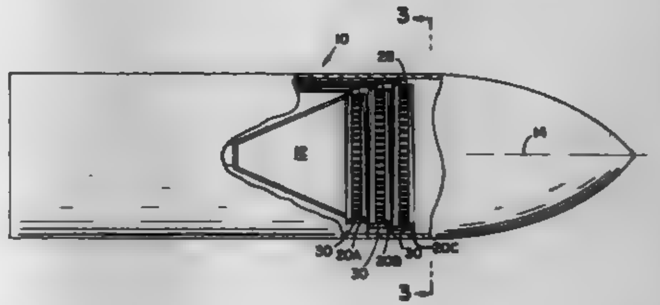
3,979,755
ROTATING LENS ANTENNA SEEKER-HEAD

Roger W. Sandoz, Fairfield, and Myron M. Rosenthal, Wayne, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 17, 1974, Ser. No. 533,563

Int. Cl.² H01Q *19/08*

U.S. Cl. 343—754 5 Claims



1. In a radar system wherein a beam of microwave energy is transmitted from an antenna through a radome, the improvement comprising: a plurality of rotatable lenses disposed in parallel within said radome between said antenna and said radome for redirecting microwave energy impinging thereon, said plurality of rotatable lenses are first, second, and third wedges disposed in respective parallel planes across the beam path of said antenna with said first wedge being positioned between said second and third wedges, said first wedge being constantly rotatable for providing a conical scan pattern, and said second and third wedges being rotatable to adjustably offset the antenna beam a predetermined distance from the antenna boresight.

3,979,756

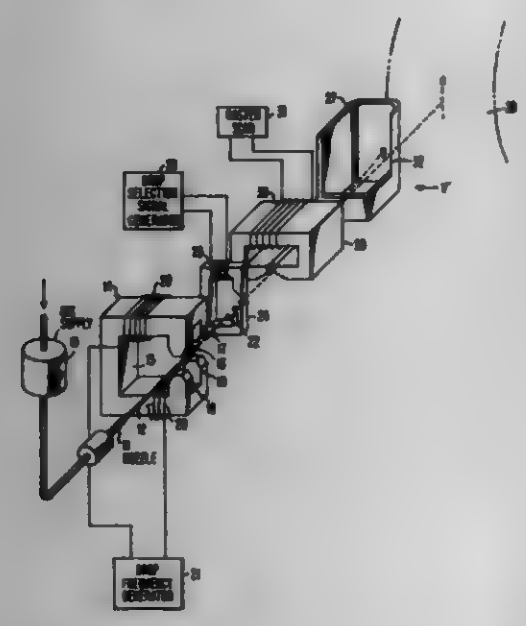
METHOD AND APPARATUS FOR MERGING SATELLITES IN AN INK JET PRINTING SYSTEM

Edward F. Helinski, Johnson City, and Jack L. Zable, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1974, Ser. No. 534,043

Int. Cl.² G01D *15/18*

U.S. Cl. 346—1 **15 Claims**



1. In an ink drop forming system of the type having means for supplying magnetic ink under pressure to a nozzle or the like to cause a continuous jet stream of magnetic ink to flow from said nozzle and magnetic transducer means for applying periodic perturbations at plural spaced locations along said stream in advance of drop breakoff, a method of controlling the merging of satellites comprising

making the spacing between said spaced location different from the wavelength of the perturbations.

3,979,757

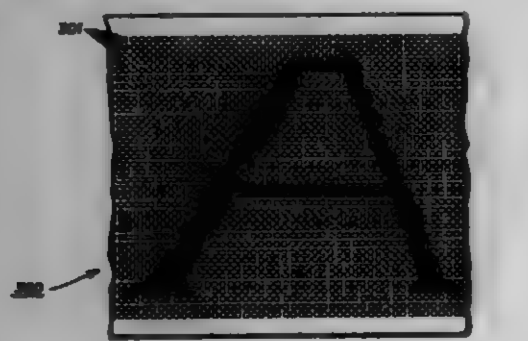
ELECTROSTATIC DISPLAY SYSTEM WITH TONER APPLIED TO HEAD

Jack S. Kilby, 7723 Midbury, Dallas, Tex. 75230, and Jay W. Lathrop, 211 Lark Circle, Clemson, S.C. 29631

Division of Ser. No. 352,729, April 19, 1973, abandoned. This application Jan. 15, 1975, Ser. No. 541,239

Int. Cl.² G03G *15/08, 15/04*

U.S. Cl. 346—74 ES **48 Claims**



1. A system for producing an image of charged particles, comprising in combination:

an imaging head having an array of discretely chargeable electrode areas positioned and charged to receive and attract in an image pattern particles charged opposite the charge on said chargeable electrode areas,

individual circuit means associated with each discretely chargeable electrode area for selectively establishing at least one of two different electrical charges on the respective discretely chargeable electrode areas wherein the interconnections between said circuit means and said electrode areas are buried below the surface defined by said electrode areas so that an effective particle attracting field will be established only at said electrode areas and not by said circuit means,

means for applying directly to the surface of said imaging head a uniformly distributed supply of charged particles which are attracted to the charges on the head to collect in accordance with a non-uniform image pattern for transfer therefrom in said non-uniform image pattern,

means for transferring the particle image from the plates to a surface, and

means for fixing the image on the surface.

3,979,758

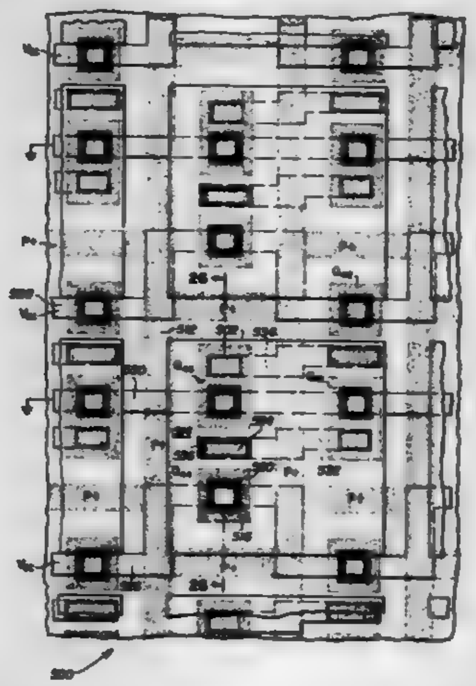
ELECTROSTATIC HEAD WITH TONER ATTRACTING PLATES

Jack S. Kilby, 7723 Midbury, Dallas, Tex. 75230, and Jay W. Lathrop, 211 Lark Circle, Clemson, S.C. 29631

Continuation of Ser. No. 352,729, April 19, 1973, abandoned. This application Jan. 20, 1975, Ser. No. 542,286

Int. Cl.² G03G *15/16, 15/044*

U.S. Cl. 346—74 EH **32 Claims**



1. A system for producing an image of charged particles, comprising in combination:

an imaging semiconductor substrate having a two dimensional array of discretely chargeable surface electrode areas in the form of spaced segments and positioned when selectively charged temporarily to receive and attract in an image pattern particles charged opposite the charges on said areas, and

individual circuit means including active devices formed in said substrate electrically remote from said surface but associated with each discretely chargeable electrode area for selectively establishing at least two different electrical charges on the respective discretely chargeable electrode areas.

3,979,759

PROCESS AND APPARATUS FOR ELECTROGRAPHIC RECORDING UTILIZING CONTACT LIQUID

Walter Simm, Leverkusen, Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Germany

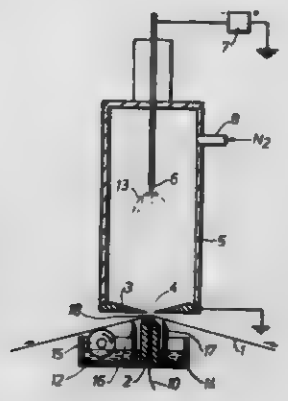
Filed Apr. 29, 1975, Ser. No. 572,932

Claims priority, application Germany, May 14, 1974, 2423245

Int. Cl.² G03G *15/044;* G01D *15/06*

U.S. Cl. 346—74 ES **11 Claims**

1. An electrographic process for the production of charge images on a moving insulating recording strip material, said recording strip material being capable of being charged by a discharge current produced by a voltage between a corona discharge electrode and a recording electrode, imagewise charging of recording strip material by the action of the corona discharge current while moving across the record electrode, comprising the steps of producing a corona discharge from a discharge electrode, directing part of the corona discharge to a surface of the strip and subjecting the strip to the



action of the discharge current while moving across the recording electrode, passing said part of the discharge current to said surface through an elongated gap defined by a diaphragm, producing an electric field between the recording electrode and the diaphragm and intensifying the contact of the more remote surface of the recording material and the recording electrode by applying a conducting liquid having a conductivity in the range of 10^{-4} to 10^{-9} Ω^{-1} cm^{-1}.

3,979,760

ELECTROSTATIC RECORDING APPARATUS WITH AUXILIARY ELECTRODES

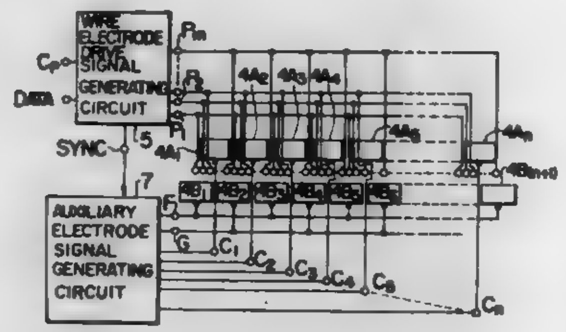
Masaharu Tadauchi, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 4, 1975, Ser. No. 555,280

Claims priority, application Japan, Mar. 6, 1974, 49-25195

Int. Cl.² G03G *15/044;* G01D *15/06*

U.S. Cl. 346—74 EE **3 Claims**


WIRE ELECTRODE DRIVE SIGNAL GENERATING CIRCUIT
Cp
DATA
SYNC
5
7
Pm
P2
P1
4A1
4A2
4A3
4A4
4A5
4An
4B(n+1)
AUXILIARY ELECTRODE SIGNAL GENERATING CIRCUIT
F
G
C1
C2
C3
C4
C5
Cn

1. An electrostatic recording apparatus comprising:

a wire electrode row including a multiplicity of wire electrodes which are continuously arranged substantially in a row and are divided into a plurality of wire electrode blocks each having the same number of wire electrodes;

a pair of first and second auxiliary electrode rows provided respectively along both sides of and opposite to the wire electrode row, the auxiliary electrodes of the first auxiliary electrode row being arranged in a zigzag form relative to those of the second auxiliary electrode row and each of the auxiliary electrodes having approximately the same length as that of each of the wire electrode blocks;

a driving circuit for simultaneously driving the corresponding same-numbered wire electrodes of the respective wire electrode blocks, the driving of the wire electrodes in each of the wire electrode blocks being carried out in accordance with the numbered order thereof within a respective wire electrode block; and

a scanning circuit for scanning a selected auxiliary electrode of one of the first and second auxiliary electrode rows in cooperation with a first selected auxiliary electrode of the other of the first and second auxiliary electrode rows and subsequently in cooperation with a second selected auxiliary electrode of the other of the first and second auxiliary electrode rows.

3,979,761

AUTO-PROCESS CAMERA

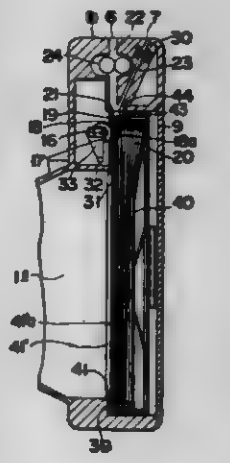
Yoshio Asano, Hyogo, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 5, 1974, Ser. No. 458,361

Claims priority, application Japan, Apr. 5, 1973, 48-39015

Int. Cl.² G03B *17/50*

U.S. Cl. 354—86 **9 Claims**



1. In an auto-process camera having a light-proof chamber for retention of a cassette containing a plurality of film monosheets and a light-proof protective board, in a main camera body, said cassette having a front wall formed with an opening through which a foremost monosheet is exposed, the improvements comprising:

a. a first passage through said main camera body into said chamber for removal of said protective board and film monosheets from said cassette;

b. a second passage through said main camera body into said chamber for reinsertion of said protective board into said cassette, said first and second passages having a common inner opening to said chamber;

c. processing rolls disposed in said first passage to effect processing and removal of said monosheets and protective board;

d. forwarding means in said main camera body adjacent the front wall of said cassette, said means frictionally engaging said foremost monosheet or protective board, said forwarding means being selectably actuable to forward said monosheet or protective board from said cassette to said processing rolls;

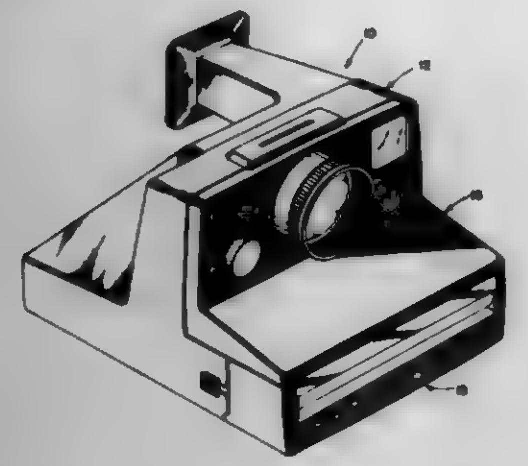
e. pushing means in said main camera body adjacent said forwarding means, said pushing means selectably actuable to move said monosheets in said cassette toward the rear thereof; and

f. drive means in said main camera body for driving one of said processing rolls, said forwarding means and said pushing means;

whereby, said protective board may be removed from said cassette to permit exposure of said film monosheets and subsequently reinserted into said cassette while said cassette is still in said main camera body.

3,979,762
MODULAR PHOTOGRAPHIC SYSTEM

Donald H. Hendry, Rockland; Andrew S. Ivester, Charlestown, and Bruce K. Johnson, Andover, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Mar. 3, 1975, Ser. No. 554,770
Int. Cl.² G03B *17/02*
U.S. Cl. 354—288 37 Claims

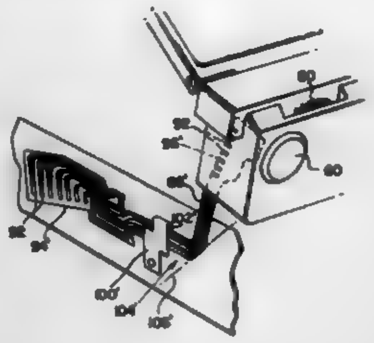


1. A modular photographic camera comprising:
a plurality of modules each of which is adapted to perform a predetermined function, said plurality of modules including a viewfinder module having an optical axis and a shutter module including an objective lens assembly;
means for supporting said plurality of modules;
means for connecting said modules to said supporting means to define an operational system assembly having an optical axis coincident with the optical axis of said objective lens assembly;
a housing including a plurality of walls defining a chamber having an opening through which said operational system assembly may be inserted into said chamber, said housing including means cooperable with said operational system assembly during its insertion into said chamber for locating and supporting said operational system assembly within said chamber;
closure means connectable to said housing to close said chamber opening and substantially complete the enclosure of said operational system assembly when disposed within said chamber, said closure means including means for receiving and supporting at least part of said viewfinder module such that the optical axis of said viewfinder module is aligned, in part, with the optical axis of said objective lens assembly of said operational system assembly when said closure means is connected to said housing and said operational system assembly is disposed within said chamber; and
means for connecting said closure means to said housing.

3,979,763
CIRCUIT BOARD ARRANGEMENT FOR COLLAPSIBLE CAMERA APPARATUS

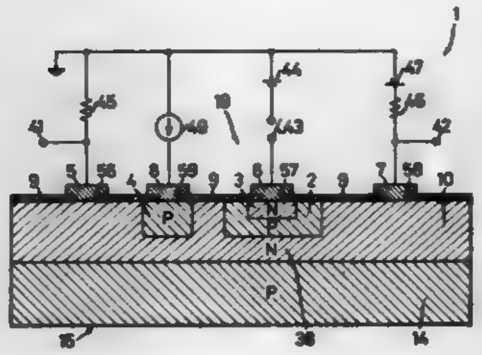
Loring K. Mills, Hampton, N.H., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Aug. 5, 1974, Ser. No. 494,472
Int. Cl.² G03B *17/04*; H02G *15/08*
U.S. Cl. 354—187 5 Claims

1. A collapsible camera apparatus comprising:
a first body section having a first substantially planar surface associated therewith;
a second body section having a second substantially planar surface associated therewith;
means for pivotally connecting said first and second body sections such that said first substantially planar surface is disposed for pivotal motion about an axis orthogonal to said second substantially planar surface; and
a flexible circuit board including a flexible substantially planar insulating support member defining spaced apart first and second terminal portions in respective juxtaposed relation with respect to said first and second planar surfaces and interconnected by an elongated portion, said first and second terminal portions respectively including a plurality of spaced apart conductive pads in overlying relation thereto and interconnected respectively by a plurality of spaced apart conductive runs overlying said elongated portion, said flexible circuit board additionally being angularly and permanently prefolded about a single prefold line extending across said elongated portion with that part of said elongated portion extending from said prefold line to said first terminal portion assuming a gradual flexed condition over substantially the entire length thereof so that pivotal movement of the first planar surface about its axis orthogonal to the second planar surface operates to alter said flexed condition in a gradual manner only in the area of said elongated portion intermediate said prefold line and first terminal portion without any substantial flexing taking place about said prefold line.



3,979,764
CONTROLLED FADING SWITCHING CIRCUIT

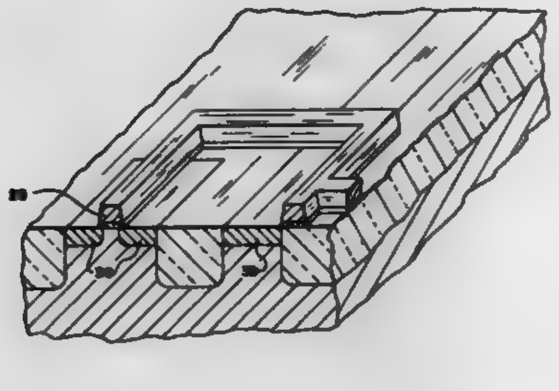
Michio Arai, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed July 23, 1974, Ser. No. 491,117
Claims priority, application Japan, July 24, 1973, 48-83372
Int. Cl.² H01L *29/80*, *29/74*, *29/747*, *27/02*
U.S. Cl. 357—22 8 Claims



1. A semiconductor switch comprising a semiconductor channel region of first impurity type having a planar surface and having source and drain regions therein, a gate region of second impurity type extending partially into said channel region from said planar surface between said source and drain regions to form a junction with a portion of said channel region, an auxiliary region of the first impurity type extending partially into said gate region and forming a junction therewith, a gate bias source, a switch connecting said gate bias source to said auxiliary region to forwardly bias the junction between said auxiliary region and said gate region and reversely bias the junction between said gate region and said channel region, whereby when said switch is closed a depletion region is formed at least partially across said channel region which increases the source to drain resistance, an emitter region of the second impurity type extending partially into said channel region from said planar surface, a current source connected to said emitter region which is poled to cause minority carriers to be injected into said depletion region for neutralizing stored charges therein to decrease the source to drain resistance for effecting a fade time, and a channel region biasing circuit connected between said source and drain regions having an input terminal at said source and an output terminal at said drain.

3,979,765
SILICON GATE MOS DEVICE AND METHOD

Warren L. Brand, Saratoga, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.
Filed Mar. 7, 1974, Ser. No. 448,893
Int. Cl.² H01L *29/78*, *27/02*, *29/04*, *27/12*
U.S. Cl. 357—23 9 Claims

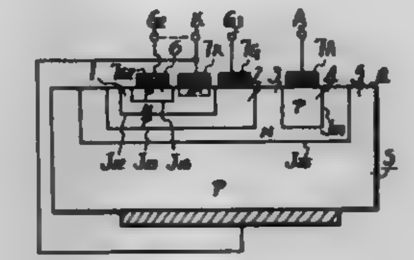


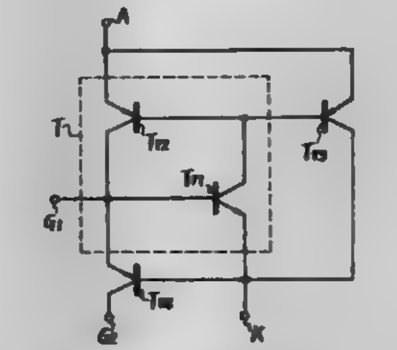
1. In an MOS semiconductor device, a semiconductor body of first conductivity type having a planar surface, said body having spaced grooves therein opening through said surface, insulating material filling said grooves and extending to the planar surface of said body to form in combination with said body surface a continuous planar surface substantially free of physical step heights, spaced source and drain regions of second conductivity type formed in the body and extending to the surface in areas between said grooves filled with insulating material and providing a channel region therebetween, a relatively thin insulating layer formed on said surface and having a portion of relatively uniform thickness overlying the channel region, said thin insulating layer having substantially planar top and bottom surfaces, a layer of semiconductor material formed on a portion of said insulating layer, the bottom of said semiconductor layer having a planar surface, said semiconductor layer being delineated to form gate electrode portions overlying said channel region and further portions providing an interconnecting layer of uniform topography, a protective layer formed on said insulating layer and said layer of semiconductor material, and lead means formed on said protective layer and extending through said protective layer to contact said source and drain regions and said semiconductor layer.

3,979,766
SEMICONDUCTOR DEVICE

Tadaharu Tsuyuki, Isehara, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed June 19, 1974, Ser. No. 480,748
Claims priority, application Japan, June 21, 1973, 48-70069
Int. Cl.² H01L *29/00*
U.S. Cl. 357—37 4 Claims

1. A semiconductor device comprising:
a first region of a first conductivity type;
a second region of a second and opposite conductivity type adjacent said first region;
a third region of the first conductivity type adjacent said second region;
a fourth region of the second conductivity type adjacent said third region;
a fifth region of the second conductivity type formed as a substrate surrounding said third region, said third region serving to isolate said fifth region from said second and fourth regions, said fifth region being electrically connected to said first region; and

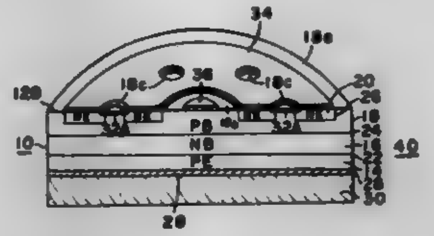




a sixth region of second conductivity P type adjacent said first region and isolated from said second region by said first region, said sixth region having a control gate electrode attached for controlling a thyristor formed by said first, second, third and fourth regions;
whereby said first, second, third, and fourth regions form a thyristor device, and said fourth, third, and fifth regions constitute a vertical third transistor for heavy currents.

3,979,767
MULTILAYER P-N JUNCTION SEMICONDUCTOR SWITCHING DEVICE HAVING A LOW RESISTANCE PATH ACROSS SAID P-N JUNCTION

Josuke Nakata, and Ryuji Denda, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 264,547, June 20, 1972, abandoned. This application Sept. 20, 1973, Ser. No. 399,047
Claims priority, application Japan, June 24, 1971, 46-45958
Int. Cl.² H01L *29/74*, *23/48*, *29/06*, *27/02*
U.S. Cl. 357—38 7 Claims



1. A semiconductor switching device comprising:
a first semiconductor layer,
a second semiconductor layer engaging said first semiconductor layer and forming a first P-N junction therebetween,
a third semiconductor layer engaging said second semiconductor layer and forming a second P-N junction therebetween,

a fourth semiconductor layer engaging said third seiconductor layer and forming a third P-N junction therebetween,

an additional semiconductor layer extending across at least a portion of said third P-N junction for providing an electrically resistive path thereacross, said additional layer comprising a metal selected from the group consisting of Al, Ni, Pt, Co, Cu, Mo and Ti,

a first main electrode forming a contact with said first semiconductor layer,

a second main electrode forming a physical and electrical contact with said fourth semiconductor layer without forming a physical contact with said third semiconductor layer.

3,979,768
SEMICONDUCTOR ELEMENT HAVING SURFACE COATING COMPRISING SILICON NITRIDE AND SILICON OXIDE FILMS

Ichiro Takei, Kodaira; Katsuyoshi Sasaki, Fujisawa, and Sumio Nishida, Kodaira, all of Japan, assignors to Hitachi, Ltd., Japan

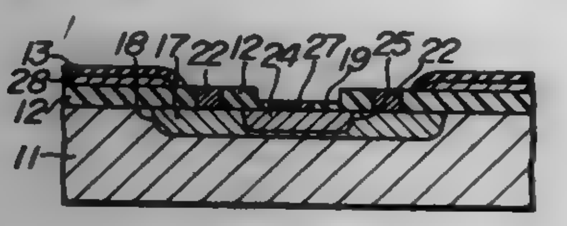
Filed Mar. 17, 1967, Ser. No. 623,903

Claims priority, application Japan, Mar. 23, 1966, 41-17613

The portion of the term of this patent subsequent to Dec. 16, 1986, has been disclaimed.

Int. Cl.² H01L *29/34*

U.S. Cl. 357—54 11 Claims



1. A semiconductor device comprising a semiconductor substrate of a first conductivity type; a first insulating film consisting essentially of silicon nitride, said first insulating film being formed in contact with the major surface of said semiconductor substrate and having a first hole exposing a part of said major surface of said substrate; a diffused semiconductor region of a second conductivity type opposite to said first conductivity type formed in said major surface and forming a PN junction with said substrate, the end portion of said PN junction wholly extending to the major surface and being covered with said first insulating film; and an insulating oxide film formed in said first hole to cover said diffused semiconductor region and having a second hole exposing a part of said diffused semiconductor region.

3,979,769
GATE MODULATED BIPOLAR TRANSISTOR

Douglas E. Houston; Surinder Krishna, both of Ballston Lake, and Bantval Jayant Baliga, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 16, 1974, Ser. No. 515,164

Int. Cl.² H01L *29/72, 29/66*

U.S. Cl. 357—57 12 Claims

1. A gate modulated bipolar transistor including:

an emitter region, at least one collector region and at least one gate region integral with a base region;

a first region of a first type conductivity as the base region;

a second region having a second type conductivity as the emitter region;

the first region having two opposed major surfaces;

the second region having two opposed major surfaces;

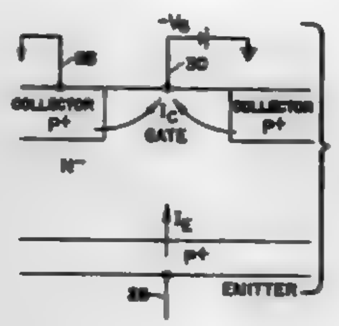
the major opposed surfaces being the top and bottom surfaces of the respective regions;

the top surface of the second region being coextensive and contiguous with the bottom surface of the first region;

a first P-N junction between the top surface of the second region and the bottom surface of the first region;

at least one first ohmic electrical contact centrally, disposed upon the top surface of the first region;

at least two spaced third regions having second type conductivity as collector regions disposed in a portion of the top surface of the first region wherein the first ohmic contact is centrally disposed therebetween and each region having a selected surface opposed to a selective surface of the other thereby defining the gate region of the device;



a second P-N junction between each third and first regions;

a second ohmic electrical contact affixed to the bottom surface of the second region; and

a third ohmic electrical contact affixed to each of the third regions, and wherein

when a variable voltage source, operating between predetermined limits, is connected to the first ohmic contact to drive the gate region and a reverse bias is applied to the collector via the third contacts, an increase in the gate-collector reverse bias decreases the emitter and collector currents and the transistor functions as a negative resistance element, the magnitude of which is modulated by the variable voltage source.

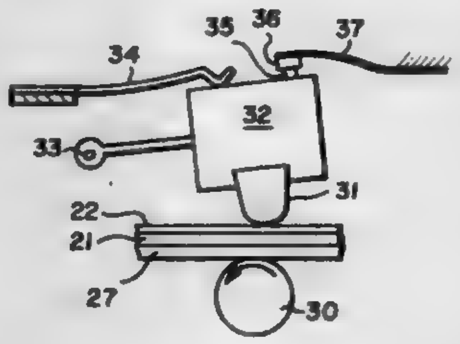
3,979,770
SYSTEM FOR PREVENTING ERASURE OF AUDIO RECORDINGS

Albert F. Wild, Rochester, N.Y., assignor to Tapecon, Inc., Rochester, N.Y.

Filed May 23, 1975, Ser. No. 580,149

Int. Cl.² G11B *15/04, 19/04*

U.S. Cl. 360—60 16 Claims



1. In a system for recording onto and playing back from a magnetic recording strip extending along a face surface of a card or photograph and including a recorder having a slot and a magnetic head adjacent said slot for tracking said magnetic strip, an improvement preventing recording over any selected portion of said magnetic strip, said improvement comprising:

a. material secured to said card or photograph and extending along said card or photograph for a length equal to the length of said selected portion of said magnetic strip;

b. said material substantially thickening said card or photograph in the region of said material;

c. means in said recorder for detecting the presence of said material on said card or photograph for said length of said material; and

d. means in said recorder responsive to said detecting means for disabling the record mode of said recorder to prevent recording over said selected portion of said magnetic strip.

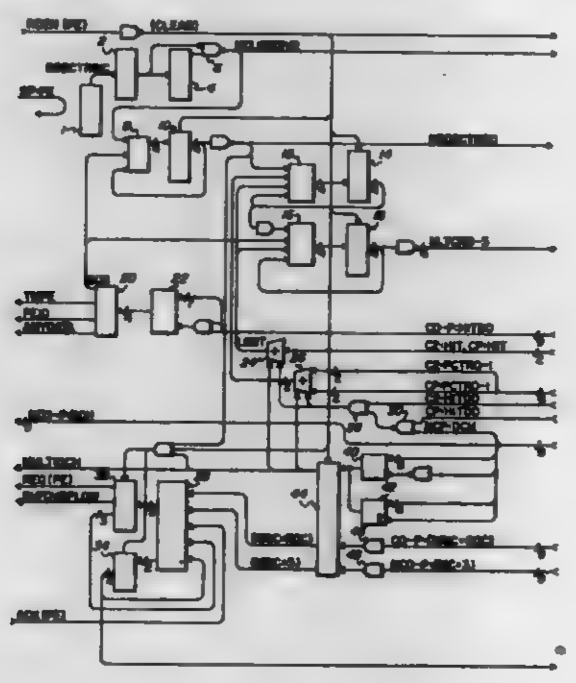
3,979,771
MAGNETIC TAPE PHASE ENCODED DATA READ CIRCUIT

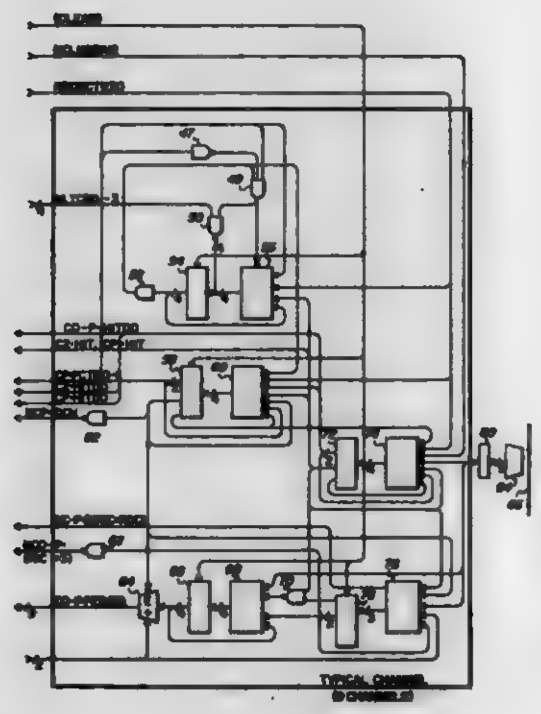
William Devere Taggart, Jr., Torrance, and Franklin Satoshi Itami, Manhattan Beach, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 19, 1975, Ser. No. 559,635

Int. Cl.² G11B *5/09*

U.S. Cl. 360—51 8 Claims





1. A digital circuit for reading phase encoded data from a magnetic tape comprising:

a read head for reading data bits and phasing bits which comprise phase encoded data from said magnetic tape,

a phase lock loop circuit for generating from said data bits and electronic window defining that portion of each data bit cycle during which a data will be read by said read head, said phase lock loop circuit comprising:

a. digital counter means for receiving said data bits and for counting a number of time intervals between said data bits, and

b. decoder means for receiving said digital counter means output and producing an electronic window therefrom, and

logic means for producing as an output each bit received by said logic means from said read head during the time defined by said window, and for inhibiting the output of each bit received during the time interval between windows.

3,979,772
AUTOMATIC TAPE LOADING TYPE RECORDING AND/OR REPRODUCING APPARATUS

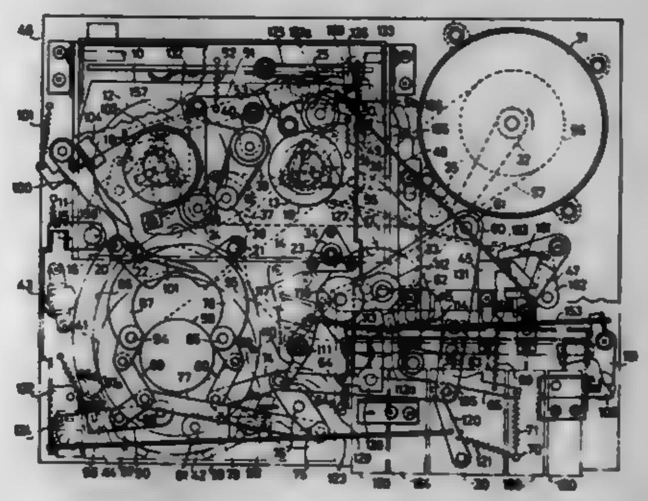
Hiroyuki Umeda, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Continuation of Ser. No. 441,306, Feb. 11, 1974, abandoned. This application Sept. 11, 1975, Ser. No. 612,332

Claims priority, application Japan, Feb. 12, 1973, 48-17171; Feb. 12, 1973, 48-17172; Feb. 12, 1973, 48-17173; Feb. 14, 1973, 48-17498; Feb. 13, 1973, 48-17621; Feb. 15, 1973, 48-18615; Feb. 19, 1973, 48-19945; Feb. 15, 1973, 48-19863[U]

Int. Cl.² G11B *23/04, 15/66*

U.S. Cl. 360—85 22 Claims



1. An automatic tape loading type recording and/or reproducing apparatus comprising: a cylindrical tape guide structure means having at least one transducer such as a rotating head; tape drawing and guiding means for drawing a tape-shaped recording medium out of a tape accommodating casing structure and for wrapping said tape in contact with a specific arcuate section of said cylindrical tape guide structure; a single driving power source means such as a motor; a rotating body driven in rotation by said driving power source means; an eccentric rotating structure having a center of eccentric rotation and a circular periphery, the radial distance between the periphery and the center of rotation varying gradually and proportionally between a minimum and a maximum according to the angular positions thereof, said rotating structure pressing said periphery against said rotating body and being driven in eccentric rotation responsive to power transmitted thereto from said rotating body, said eccentric rotating structure displacing the center of eccentric rotation with respect to said rotating body according to the rotational angular position thereof; means for transmitting the displacement of the center of eccentric rotation to said tape drawing and guiding means, said transmitting means operating responsive to the displacement of said center of eccentric rotation in one direction as a result of an initial one half revolution of said eccentric rotating structure for causing said tape drawing and guiding means to draw said recording medium from said tape accommodating casing structure and to cause the same to be brought into contact with said cylindrical tape guide structure, and said transmitting means operating responsive to the displacement of said center of eccentric rotation in an opposite direction responsive to the succeeding one half revolution of said eccentric rotating structure for causing said tape drawing and guiding means to separate said recording medium from

the tape guide structure and to return the same to be accommodated within said casing structure; and operating means for moving said center of eccentric rotation back and forth in opposite directions at the end position in one direction, said operating means holding said eccentric rotating structure in a position where it no longer presses against said rotating body thereby ending the transmission of rotational power from said rotating body to said eccentric rotating structure.

3,979,773
MAGNETIC RECORDING AND REPRODUCING APPARATUS

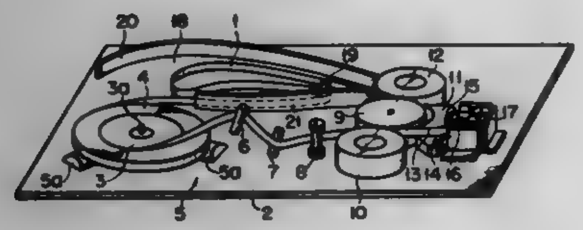
Norikazu Sawazaki, Yokohama; Hiroyuki Tsukamoto, Kawasaki, and Motoi Yagi, Zushi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 22, 1974, Ser. No. 462,712

Claims priority, application Japan, Apr. 28, 1973, 48-47352; Apr. 28, 1973, 48-47354

Int. Cl.² G11B *5/55, 15/60, 23/06*

U.S. Cl. 360—106 10 Claims



1. A magnetic recording and reproducing apparatus comprising:

a substrate for rotatably supporting an endless magnetic tape roll,

the tape having a length of less than 300 meters,

driving means comprising a driving capstan and at least one pinch roll in contact with the capstan through the magnetic tape to run the tape,

a plurality of rubber rolls rotatably mounted on the substrate and arranged in the radial direction of the tape roll to support the underside thereof to apply to the tape roll a force against a centrifugal force generated on the tape roll rotated by the driving means.

a magnetic head,

an electric circuit for supplying frequency modulated video signals to the magnetic head and for receiving frequency modulated video signals from the magnetic head.

3,979,774
DIGITAL CONTROL SYSTEM AND METHOD FOR THE SYNCHRONIZATION OF AUDIO-VISUAL EQUIPMENT

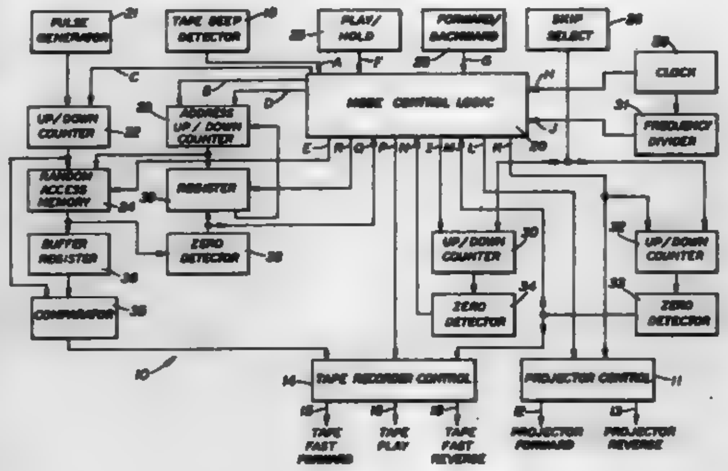
Chun-Fu Chen, North Canton, and Duane O. Hague, Jr., Fairborn, both of Ohio, assignors to The University of Akron, Akron, Ohio

Filed Mar. 13, 1974, Ser. No. 450,897

Int. Cl.² G03B *31/00;* G11B *31/00*

U.S. Cl. 360—80 10 Claims

9. A method for the synchronization of audio-visual equipment for presenting a plurality of visual representations coordinated with a like plurality of sound narrations carried by a continous media comprising the steps of: generating a series of pulses as the continuous media carrying said sound narration passes through the audio-visual equipment, counting each consecutive visual representation passing through the audio-visual equipment, providing a pulse identification for each consecutive sound narration, and storing, in a means having consecutive locations for each said consecutive visual representation, the pulse identification for each consecutive sound narration thereby correlating each said visual representation with a said pulse identification.



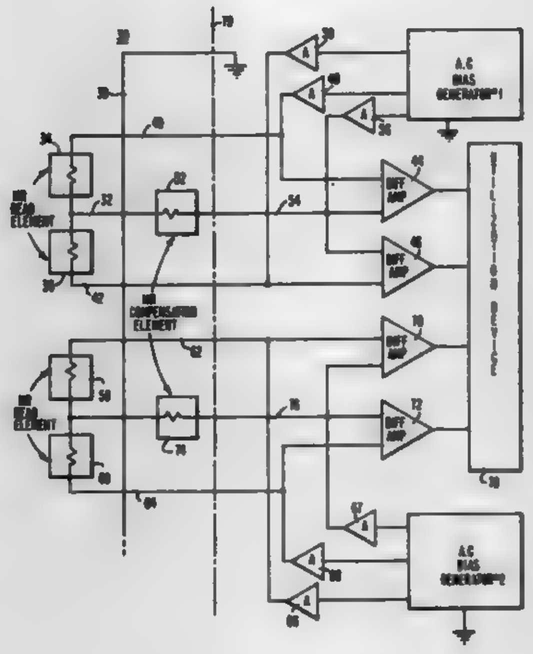
3,979,775
MAGNETORESISTIVE MULTITRANSDUCER ASSEMBLY WITH COMPENSATION ELEMENTS FOR THERMAL DRIFT AND BIAS BALANCING

Theodore Albert Schwarz, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 8, 1975, Ser. No. 611,466

Int. Cl.² G11B *5/30, 5/20*

U.S. Cl. 360—113 12 Claims



1. A head assembly for sensing magnetically recorded information from a medium comprising:

a plurality of magnetoresistive elements sensing the magnetically recorded information and providing information signals from each indicative of a resistance of each element

a compensating element, providing a reference signal indicative of its resistance

a return bias and signal path conductor means providing one input to each element; and

conductor means for supplying a bias current to each element and for providing said information signals and said reference signal, whereby difference signals can be derived by differentially sensing said information signals with said reference signal.

DESIGN PATENTS

GRANTED SEPTEMBER 7, 1976

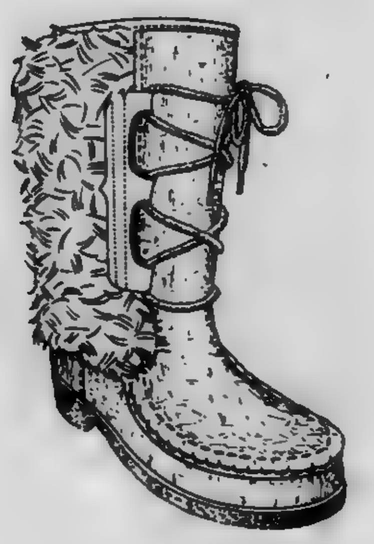
ERRATA

For CLASS	See PATENT NO.
025–056	241,333
025–056	241,334
025–085	241,335
025–085	241,336
025–085	241,337
025–085	241,338
025–074	241,339
026–005 R	241,340
026–001 A	241,341
011–004	241,364
011–079	241,365
011–081	241,366
015–128	241,369
016–083	241,371
016–042	241,372
016–026	241,373
015–069	241,376

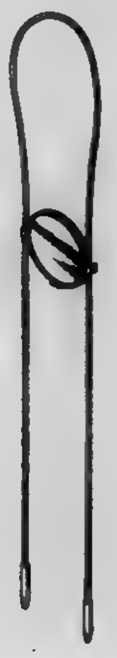
DESIGNS

SEPTEMBER 7, 1976

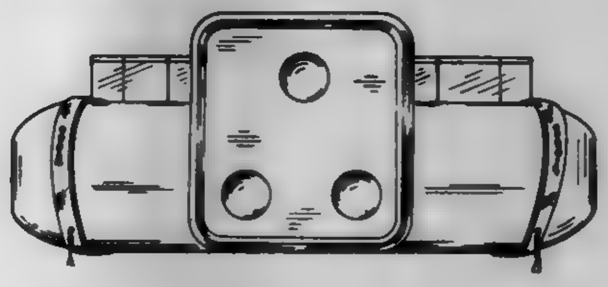
241,283
BOOT
James F. Summa, Naugatuck, and John R. White, Woodbridge, Conn., assignors to Uniroyal, Inc.
Filed Apr. 17, 1975, Ser. No. 569,126
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—272



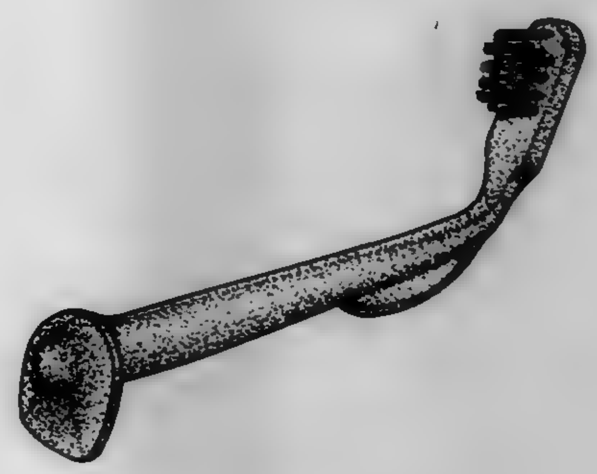
241,284
TIE
John P. Johnston, Tamuning, Territory of Guam (Coty Towers Suite 301, 731 Amana St., Honolulu, Hawaii 96814)
Filed Aug. 21, 1974, Ser. No. 499,318
Term of patent 14 years
Int. Cl. D2—*05*
U.S. Cl. D2—352



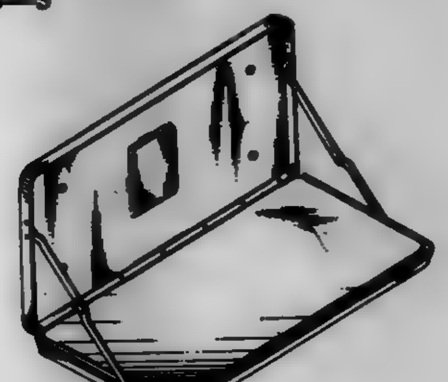
241,285
FISHERMAN'S BELT
Leonard Troutman, 511 S. 55 West Ave., Tulsa, Okla. 74107
Filed May 9, 1975, Ser. No. 576,006
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—381



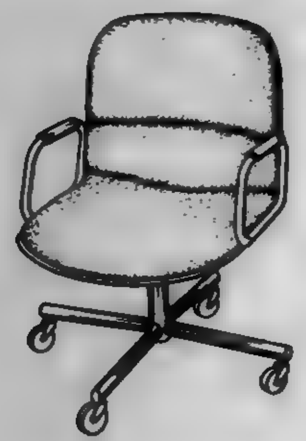
241,286
TOOTHBRUSH
Calvin B. Hadley, 204 Lynn, Waynesville, Mo. 65583
Filed June 19, 1975, Ser. No. 588,411
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25



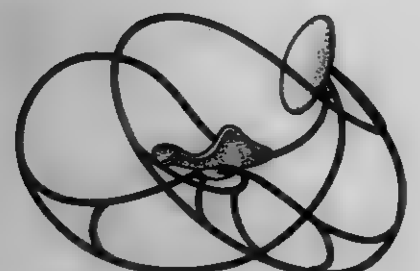
241,287
CLOSABLE DRESSING TABLE FOR AN INFANT
Daniel Murray Earle, Charlotte, and Leonard James Howell, Locust, N.C., assignors to Enkay Products, Inc.
Filed Apr. 28, 1975, Ser. No. 572,501
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—5



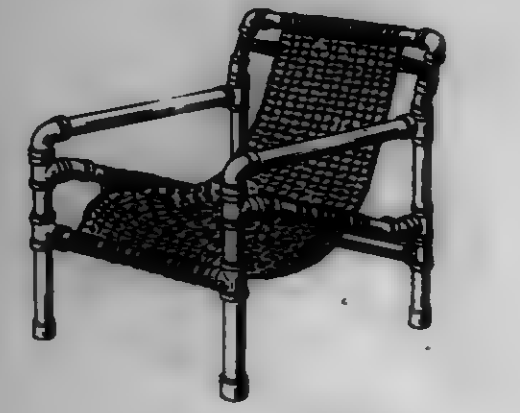
241,288
CHAIR
William H. Tacke, Wyoming, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed Jan. 2, 1974, Ser. No. 429,063
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31



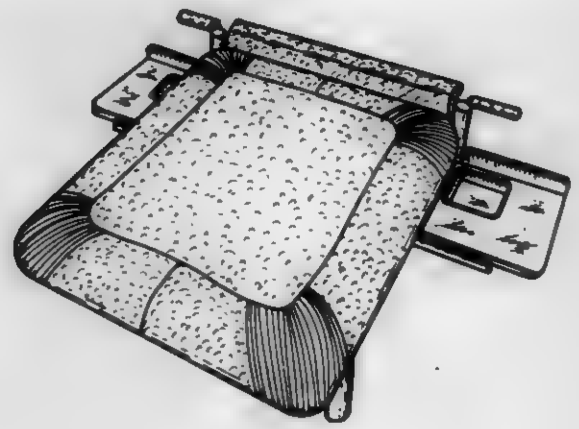
241,289
ROCKING CHAIR
William Ayton Lishman, R.R. 1, Blackstock, Ontario, Canada
Filed Apr. 7, 1975, Ser. No. 565,833
Claims priority, application Canada Nov. 5, 1974
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—49



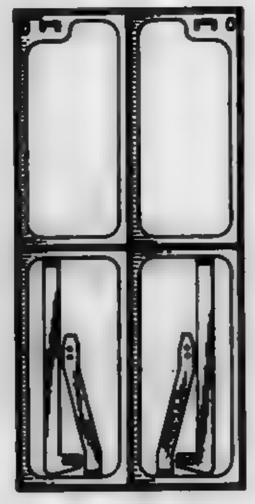
241,290
CHAIR
Ted A. Walker, Fresno, Calif.
(1320 N. Hunter, No. 8, Stockton, Calif. 95202)
Filed Mar. 31, 1975, Ser. No. 563,855
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73

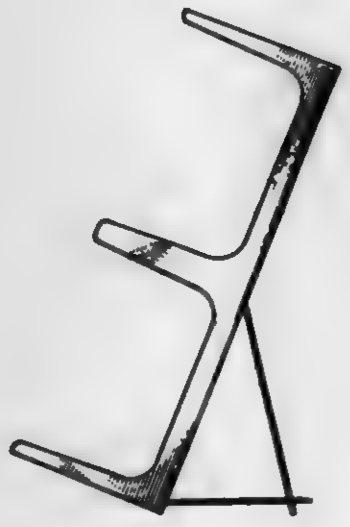


241,291
BED
Giovanni Offredi, Milan, Italy, assignor to Fratelli Saporiti, Besnate, Varese, Italy
Filed Mar. 18, 1974, Ser. No. 452,415
Claims priority, application Italy Sept. 21, 1973
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—80

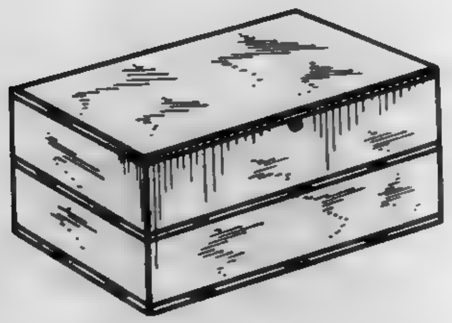


241,292
ADVERTISING DISPLAY EASEL
Donald P. Weiss, Kinnelon, N.J., assignor to Advertising Displays Corporation, Englewood Cliffs, N.J.
Filed Sept. 10, 1975, Ser. No. 611,870
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—85

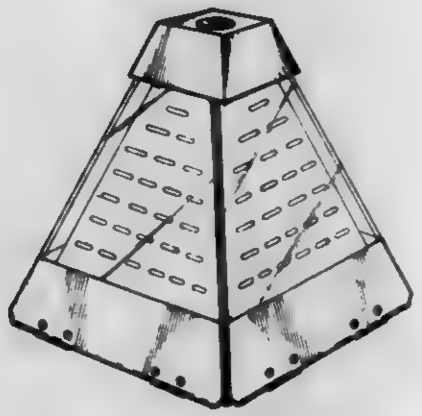


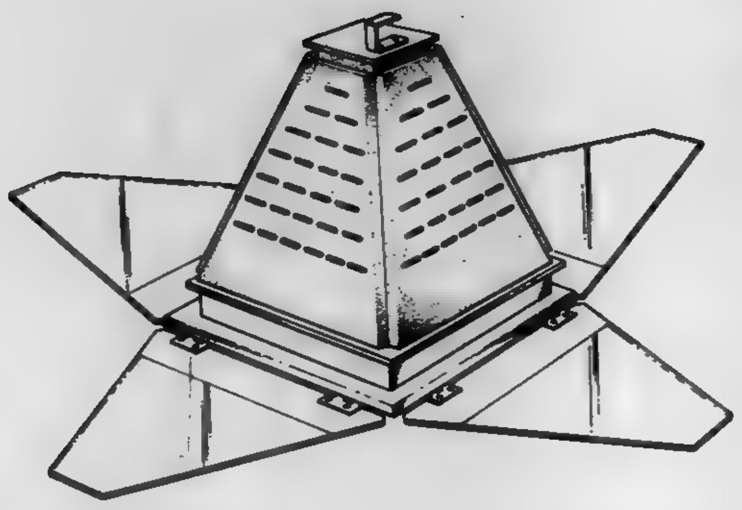


241,293
CABINET
Victorio Introini, Gallarate, Italy, assignor to Fratelli Saporiti, Besnate, Varese, Italy
Filed Mar. 18, 1974, Ser. No. 452,413
Claims priority, application Italy Sept. 21, 1973
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—165

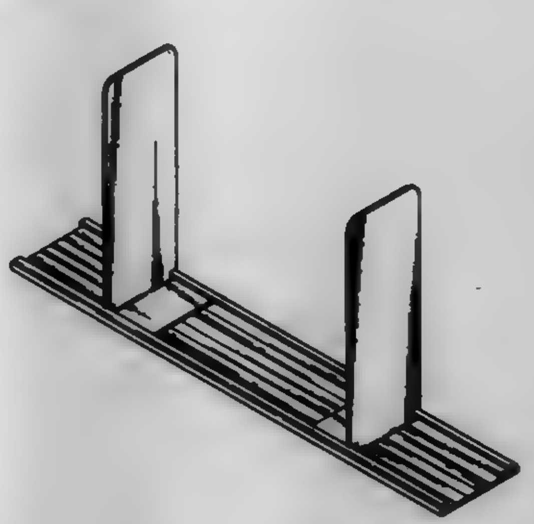


241,294
JEWELRY DISPLAY CASE
Earl Zimbler, New York, N.Y., assignor to Jewelcor Incorporated, New York, N.Y.
Filed Sept. 4, 1975, Ser. No. 610,497
Term of patent 14 years
Int. Cl. D6—*04*; D20—*02*
U.S. Cl. D6—173

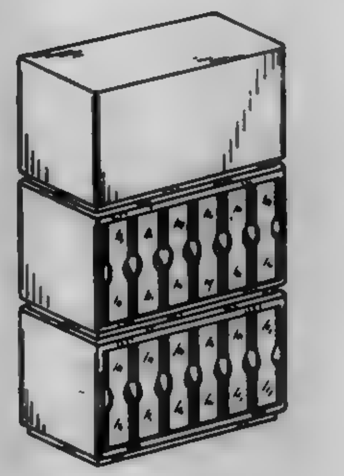




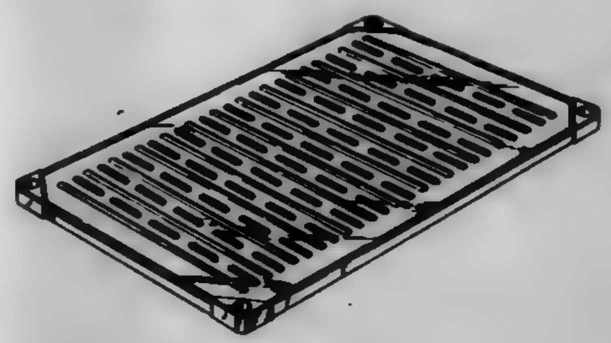
241,295
ADJUSTABLE BOOK RACK
Leonard Eatin, Wayland, Mass., assignor to Opus, Incorporated, Boston, Mass.
Filed Oct. 9, 1974, Ser. No. 513,456
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—184



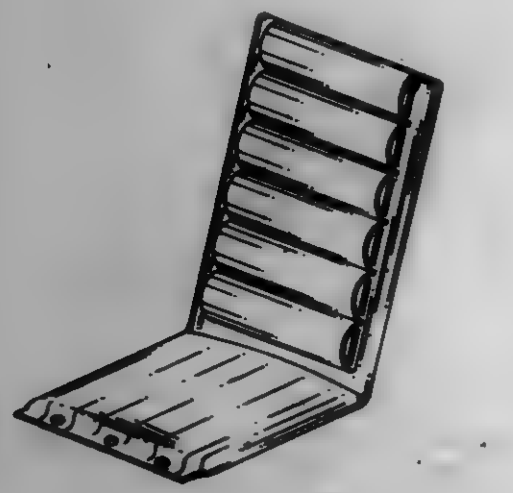
241,296
COMBINED STORAGE AND DISPLAY UNIT FOR SMALL ARTICLES
Mario Cobelli, Milan, Italy, assignor to Multibrev Anstalt, Vaduz, Liechtenstein
Filed Aug. 14, 1975, Ser. No. 604,661
Claims priority, application Switzerland Feb. 19, 1975
Term of patent 7 years
Int. Cl. D6—*04*; D20—*02*
U.S. Cl. D6—188



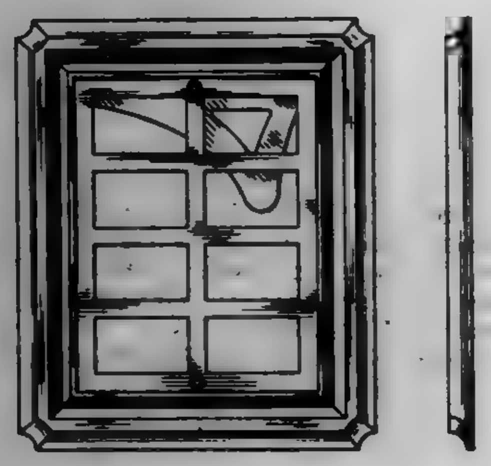
241,297
SHELF OR SIMILAR ARTICLE
Louis Maslow, deceased, late of Dallas, Pa., by Frances Maslow, Dallas, and Richard Maslow, Wilkes-Barre, Pa., executors, assignors to Metropolitan Wire Goods Corporation, Wilkes-Barre, Pa.
Filed Mar. 11, 1975, Ser. No. 557,292
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—191



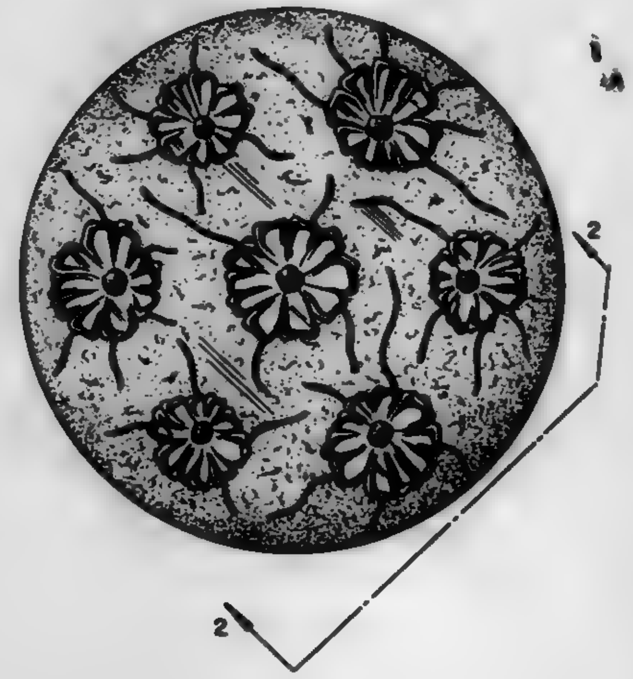
241,298
BACK SUPPORT CUSHION
Billy E. Kirby, 938 Vinecrest Lane,
Richardson, Tex. 75080
Filed Oct. 29, 1974, Ser. No. 518,550
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201



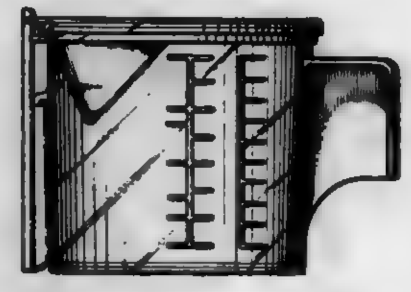
241,299
PICTURE FRAME
Louis M. Ohls, Tulsa, Okla., assignor to
Travis World, Inc.
Filed Sept. 26, 1974, Ser. No. 509,798
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—235



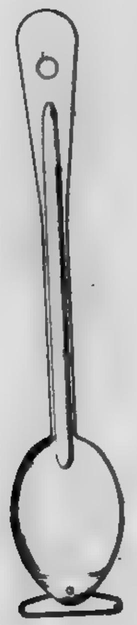
241,300
PLATE OR SIMILAR ARTICLE
Frank J. Benes, Lancaster, Ohio, assignor to Anchor
Hocking Corporation, Lancaster, Ohio
Original design application July 18, 1973, Ser. No. 380,272, now Patent No. 237,031. Divided and this application Dec. 6, 1974, Ser. No. 530,126
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—28



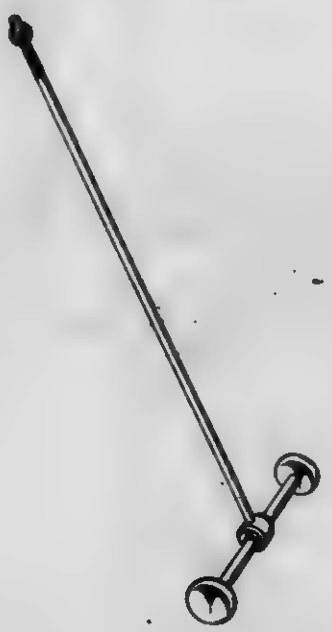
241,301
COMBINED MEASURING-SIFTER CUP AND WALL MOUNTABLE BRACKET THEREFOR
Janet Ellen Harris, P.O. Box 2819,
West Palm Beach, Fla. 33402
Filed Apr. 29, 1974, Ser. No. 464,962
Term of patent 14 years
Int. Cl. D7—*04*; D10—*04*
U.S. Cl. D7—50



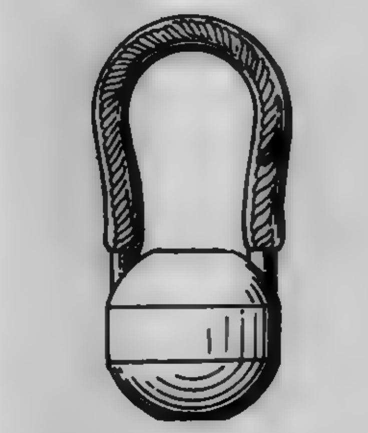
241,302
COMBINED STIRRING AND SCRAPING SPOON
Robert E. Scigliano, 176 Vinal St.,
Revere, Mass. 02151
Filed Dec. 17, 1974, Ser. No. 533,635
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—148



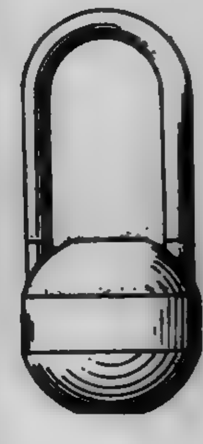
241,303
MAGNETIZED FLOOR ROLLING METAL OBJECT PICK-UP TOOL
Dan Sandel, 17000 Cotter Place, Encino, Calif. 91316
Filed Aug. 14, 1975, Ser. No. 604,660
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



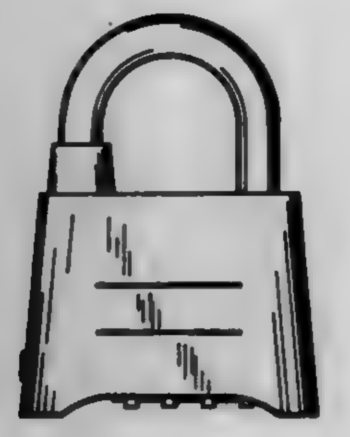
241,304
SHACKLE LOCK
Paul F. Sander, Plainview, N.Y., assignor to
I. O. Prague Corporation, Plainview, N.Y.
Filed Feb. 19, 1974, Ser. No. 443,371
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—114



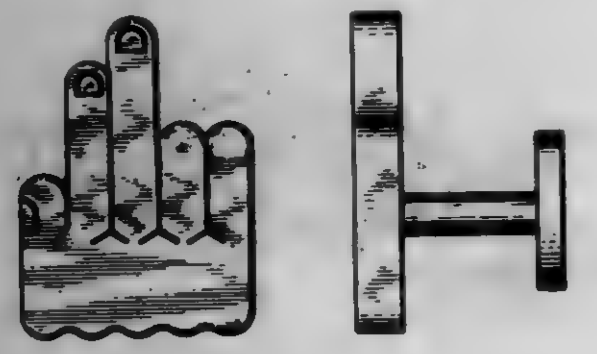
241,305
PADLOCK
Paul F. Sander, Plainview, N.Y., assignor to
I. O. Prague Corporation, Plainview, N.Y.
Filed Feb. 19, 1974, Ser. No. 443,372
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—114



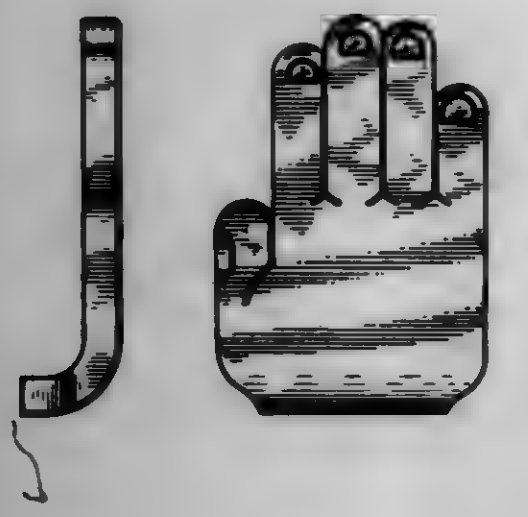
241,306
TAPERED BODY PADLOCK
Daniel J. Foote, Wauwatosa, Wis., assignor to Master Lock Company, Milwaukee, Wis.
Filed Dec. 8, 1975, Ser. No. 638,808
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—114



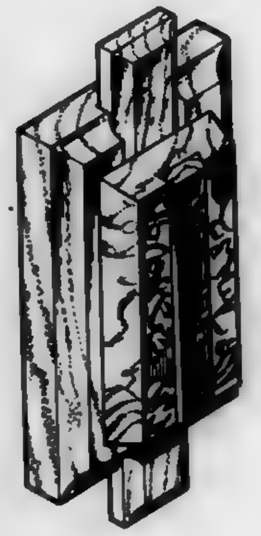
241,307
DOOR HANDLE
Christopher J. Hoskins, 7205 S. Exchange, Chicago, Ill. 60649
Filed June 20, 1975, Ser. No. 588,594
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—146



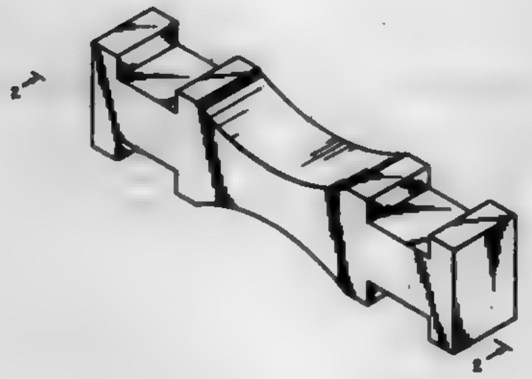
241,308
PULL PLATE FOR A DOOR
Christopher J. Hoskins, 7205 S. Exchange, Chicago, Ill. 60649
Filed June 20, 1975, Ser. No. 588,777
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—146



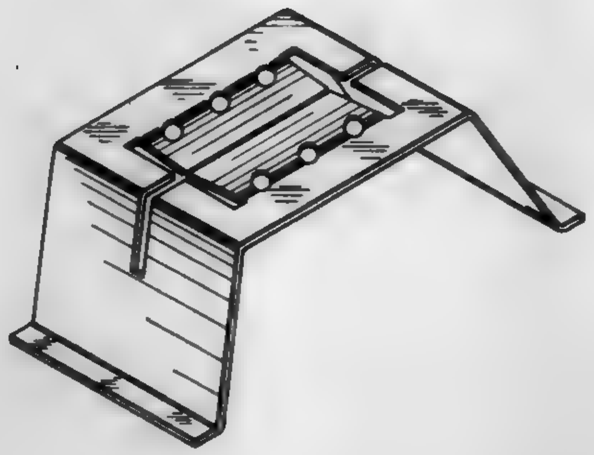
241,309
LIGHT SWITCH COVER
Ellen G. Barr, 469 Cypress Ave., Apt. 3, Half Moon Bay, Calif. 94019
Filed June 6, 1975, Ser. No. 584,636
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—179



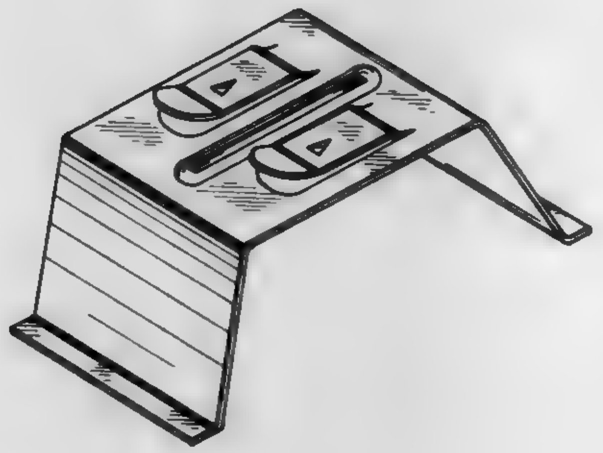
241,310
PIPE SUPPORT MODULE
Alex W. Bolt, 1408 Richmond 255, Houston, Tex. 77006
Filed Apr. 19, 1974, Ser. No. 462,399
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235



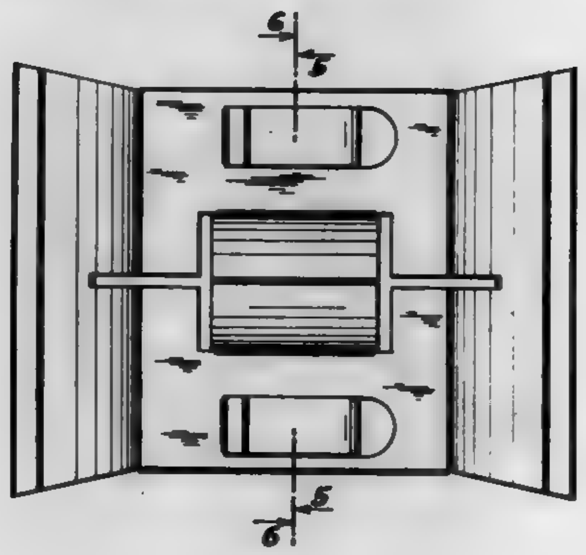
241,311
SIGN HOLDER OR THE LIKE
David L. McLintock, Jacksonville, Fla., and Duff Porter III, Portsmouth, Va., assignors to Simple Signman Systems, Inc., Jacksonville, Fla.
Filed June 2, 1975, Ser. No. 583,417
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—245



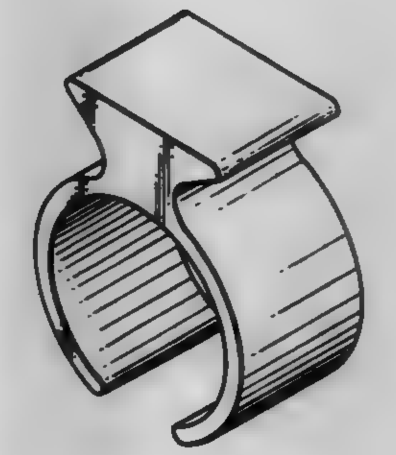
241,312
SIGN HOLDER OR THE LIKE
David L. McLintock, Jacksonville, Fla., and Duff Porter III, Portsmouth, Va., assignors to Simple Signman Systems, Inc., Jacksonville, Fla.
Filed June 2, 1975, Ser. No. 583,416
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—245



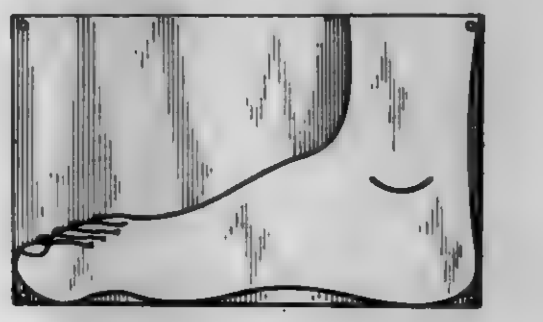
241,313
SIGN HOLDER OR THE LIKE
David L. McLintock, Jacksonville, Fla., assignor to Simple Signman Systems, Inc., Jacksonville, Fla.
Filed Dec. 15, 1975, Ser. No. 640,951
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—245



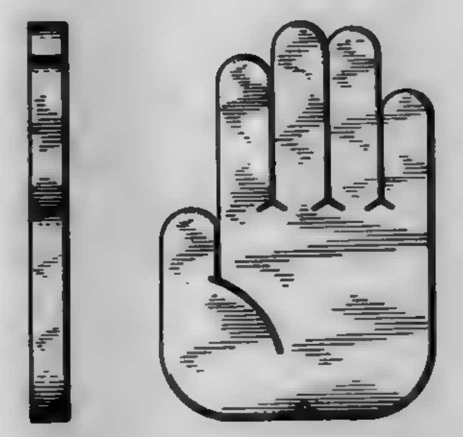
241,314
RESTRAINER TO MAINTAIN THE INOPERATIVE CONDITION OF A PULL-TYPE CIRCUIT BREAKER
Norman L. Hug, Cypress, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.
Filed Sept. 11, 1975, Ser. No. 612,377
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—246



241,315
KICK PLATE FOR A DOOR
Christopher J. Hoskins, 7205 S. Exchange, Chicago, Ill. 60649
Filed June 20, 1975, Ser. No. 588,658
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—263

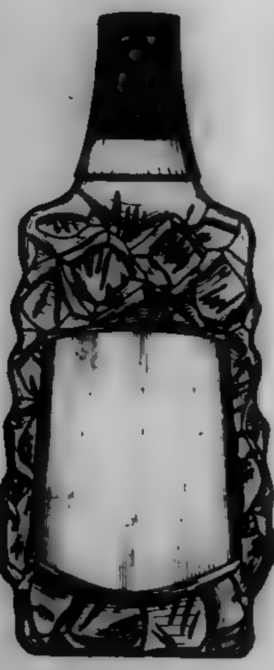


241,316
PUSH PLATE FOR A DOOR
Christopher J. Hoskins, 7205 S. Exchange Chicago, Ill. 60649
Filed June 20, 1975, Ser. No. 588,659
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—263



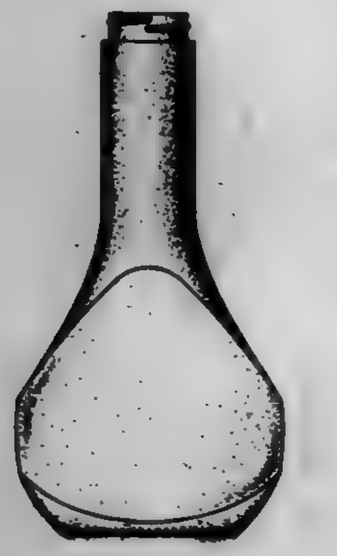
241,317
BOTTLE OR SIMILAR ARTICLE

Rogers F. Brachman, Wheaton, Ill., assignor to Borden, Inc., Columbus, Ohio
Filed May 7, 1973, Ser. No. 358,114
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—64



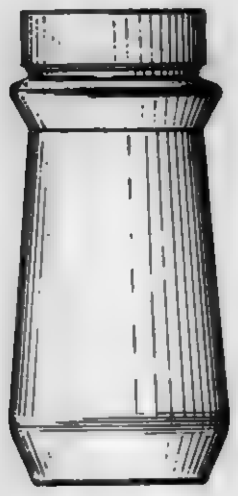
241,318
BOTTLE OR SIMILAR ARTICLE

John Wayne Lewman, Blue Springs, Mo., assignor to Ethyl Development Corporation, Kansas City, Mo.
Filed Apr. 24, 1975, Ser. No. 571,319
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—113



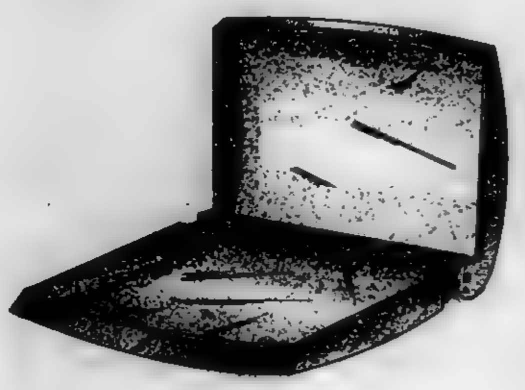
241,319
COMBINED JAR AND CAP

Bruce Hefkey, Bolton, Ontario, Alan Preston Darling, Toronto, Ontario, and Edward R. B. Dyke, Shelburne, Ontario, Canada, assignors to General Foods, Limited
Filed Sept. 16, 1974, Ser. No. 506,390
Claims priority, application Canada Mar. 14, 1974
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—131



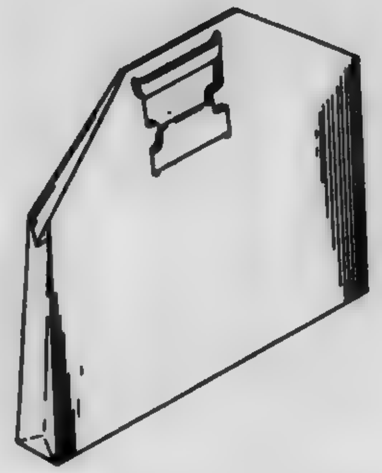
241,320
HINGED BOX

Donald K. Takacs, Wheaton, Ill., assignor to Richardson-Merrell Inc., Wilton, Conn.
Filed Jan. 7, 1975, Ser. No. 539,113
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—231



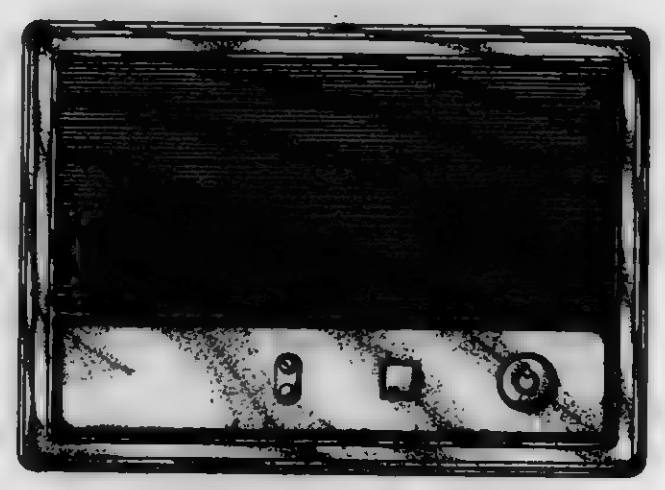
241,321
CARRIER BAG

Richard E. Paige, New York, N.Y., assignor to APL Corporation, Great Neck, N.Y.
Filed Jan. 30, 1975, Ser. No. 545,445
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—249



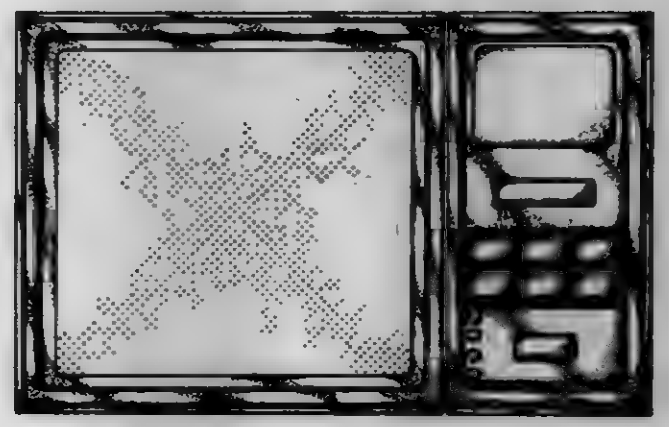
241,322
SECURITY CONSOLE

Walton E. Sparks, Lexington, and Richard K. Weiss, Mansfield, Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Apr. 29, 1975, Ser. No. 572,811
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



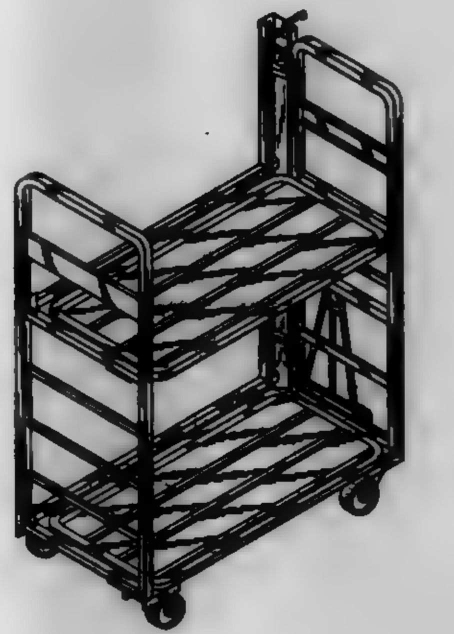
241,323
SECURITY CONSOLE

Walton E. Sparks, Lexington, and Richard K. Weiss, Mansfield, Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Apr. 29, 1975, Ser. No. 572,812
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



241,324
NESTING CART

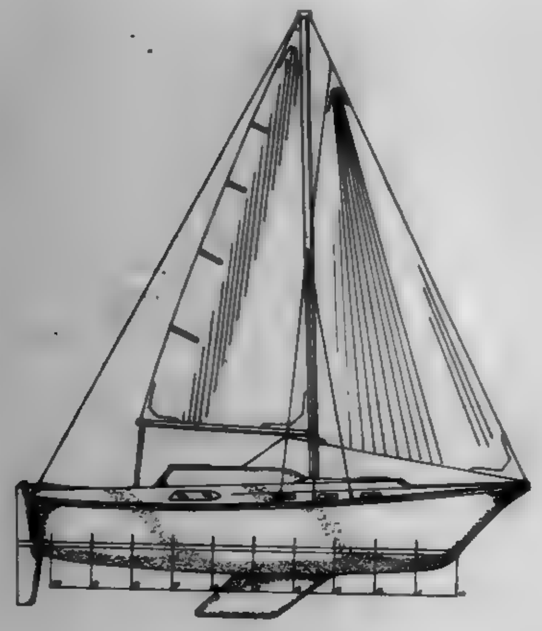
Leonard E. Wright, Paradise Valley, Ariz., assignor to Tradewinds Industries, Inc., Liberal, Kans.
Filed Jan. 31, 1975, Ser. No. 545,813
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—29



241,325

SAILBOAT

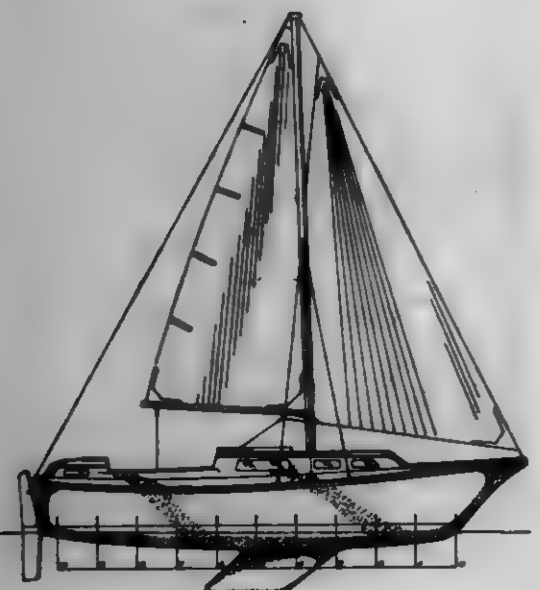
William I. B. Crealock, 1401 Forest Ave.,
Carlsbad, Calif. 92008
Filed June 23, 1975, Ser. No. 589,617
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—64



241,326

SAILBOAT

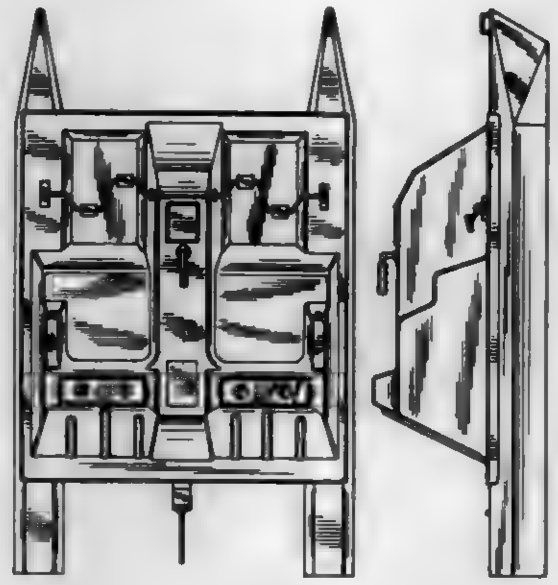
William I. B. Crealock, 1401 Forest Ave.,
Carlsbad, Calif. 92008
Filed June 23, 1975, Ser. No. 589,691
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—64



241,327

WATER BIKE

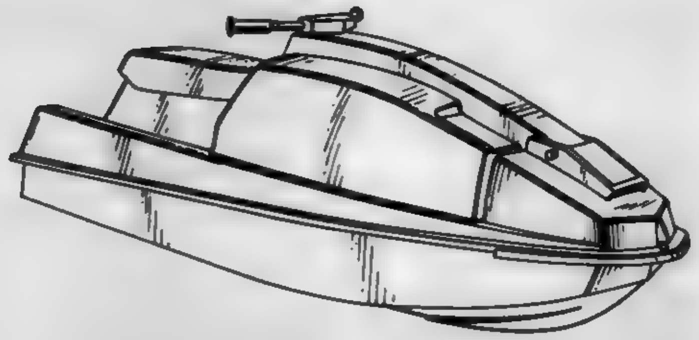
Richard B. Compton, 2901 119th Ave. NW.,
Coon Rapids, Minn. 55433
Filed July 17, 1975, Ser. No. 596,958
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—68



241,328

BOAT

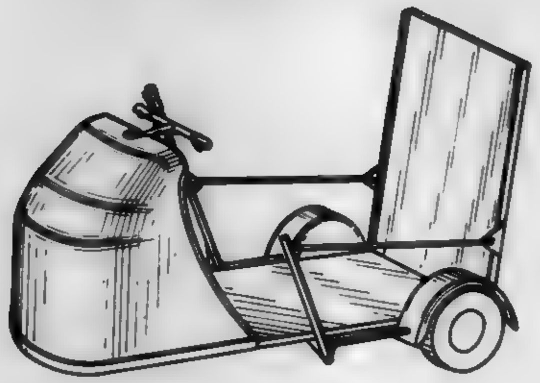
Hiroshi Naito and Masaharu Nobori, Akashi, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Hyogo-ken, Japan
Filed Dec. 9, 1975, Ser. No. 639,041
Claims priority, application Japan June 16, 1975
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—69



241,329

SELF-PROPELLED VEHICLE

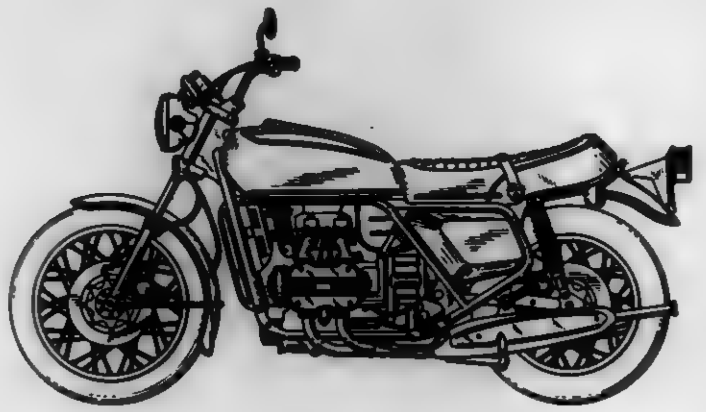
Larry G. Forster, General Delivery, and Bobby Dean Clark, Lakeside Resort, both of Shoshoni, Wyo. 82649
Filed July 7, 1975, Ser. No. 593,324
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—85



241,330

MOTORCYCLE

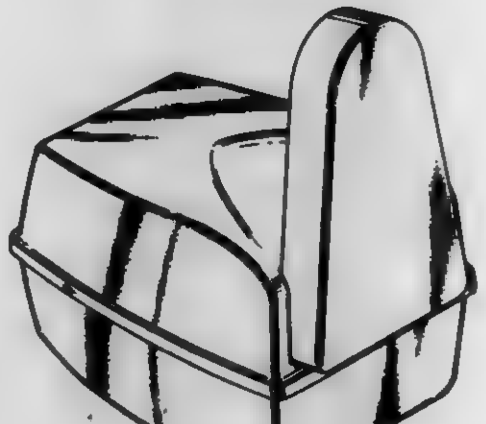
Minoru Morioka, Niiza, Tetsuo Ogishima, Shiki, and Koji Nakano, Oimachi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 23, 1974, Ser. No. 517,428
Claims priority, application Japan Apr. 30, 1974
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110



241,331

COMBINED MOTORCYCLE CARRIER TRUNK AND BACK REST

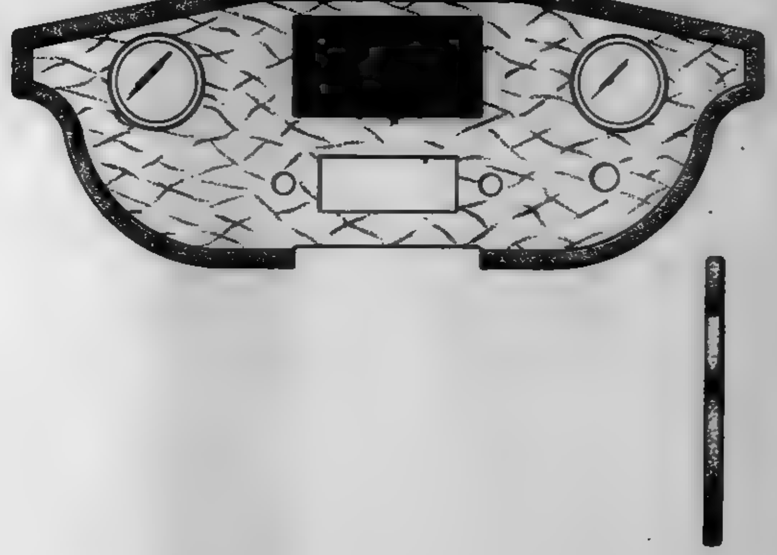
Roy D. Mattson and Ross B. Mattson, Lake Elmo, Minn., assignors to Accessory Research Engineering, St. Paul, Minn.
Filed Mar. 24, 1975, Ser. No. 561,334
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—158



241,332

MOTORCYCLE DASH PANEL

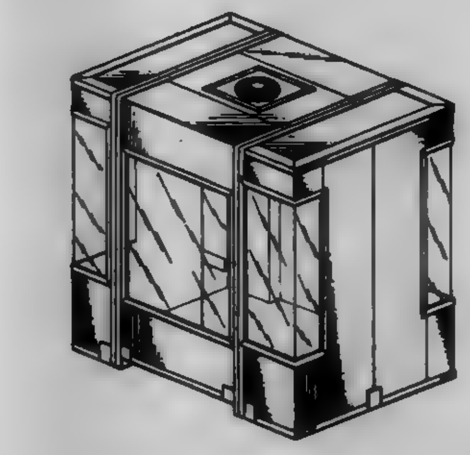
Roy R. Gordon, 508 Lakelawn, Aurora, Ill. 60506
Filed July 29, 1974, Ser. No. 492,699
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—192



241,333

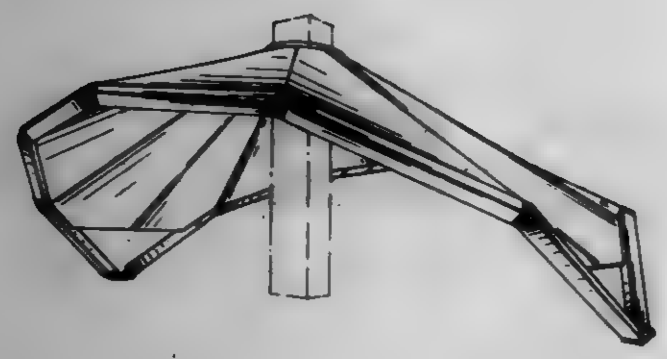
NOISE REDUCING ENCLOSURE FOR A COLD HEADER OR THE LIKE

Richard T. Wheeler, 20 Hemlock Drive,
Vernon, Conn. 06066
Filed Feb. 28, 1974, Ser. No. 446,814
Term of patent 14 years
Int. Cl. D6—*99*; D25—*99*
U.S. Cl. D25—16



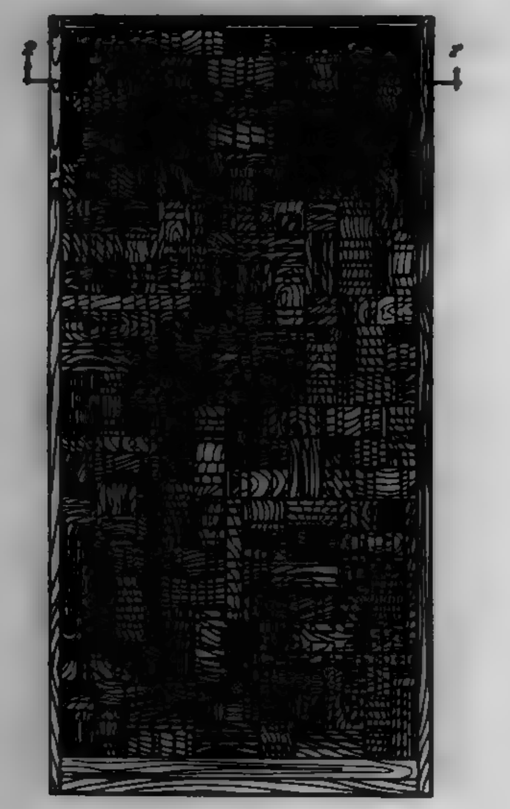
241,334
ROOF STRUCTURE
Peter Howard, New York, N.Y., assignor to Imero
Florentino Associates, Inc., New York, N.Y.
Filed Nov. 22, 1974, Ser. No. 526,386
Term of patent 14 years
Int. Cl. D25—*03*

U.S. Cl. D25—56



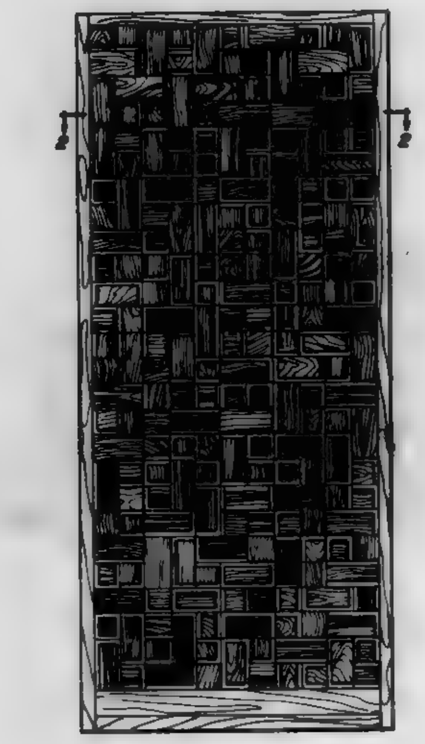
241,335
DECORATIVE PANEL OR THE LIKE
Barbara J. Bogan, P.O. Box 26208,
Albuquerque, N. Mex. 87125
Filed Feb. 1, 1974, Ser. No. 438,548
Term of patent 14 years
Int. Cl. D25—*01, 02*

U.S. Cl. D25—85



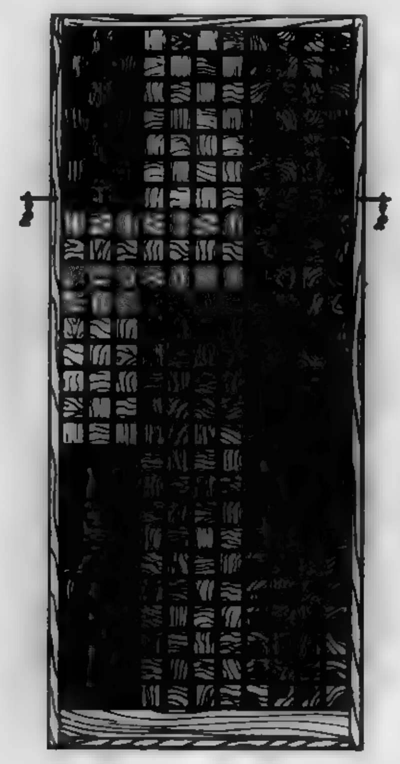
241,336
DECORATIVE PANEL OR THE LIKE
Barbara J. Bogan, P.O. Box 26208,
Albuquerque, N. Mex. 87125
Filed Feb. 4, 1974, Ser. No. 439,358
Term of patent 14 years
Int. Cl. D25—*01, 02*

U.S. Cl. D25—85



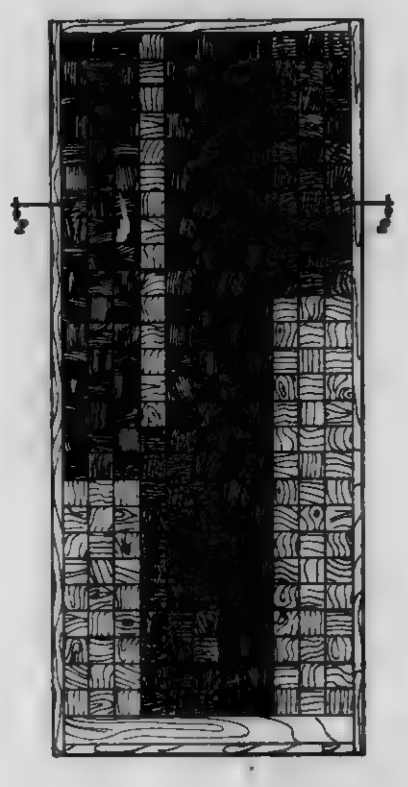
241,337
DECORATIVE PANEL OR THE LIKE
Robert T. Bogan, P.O. Box 26208,
Albuquerque, N. Mex. 87125
Filed Feb. 4, 1974, Ser. No. 439,359
Term of patent 14 years
Int. Cl. D25—*01, 02*

U.S. Cl. D25—85



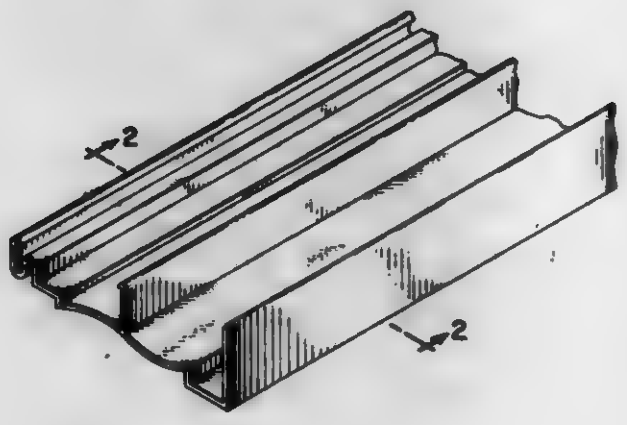
241,338
DECORATIVE PANEL OR THE LIKE
Robert T. Bogan, P.O. Box 26208,
Albuquerque, N. Mex. 87125
Filed Feb. 6, 1974, Ser. No. 439,885
Term of patent 14 years
Int. Cl. D25—*01, 02*

U.S. Cl. D25—85



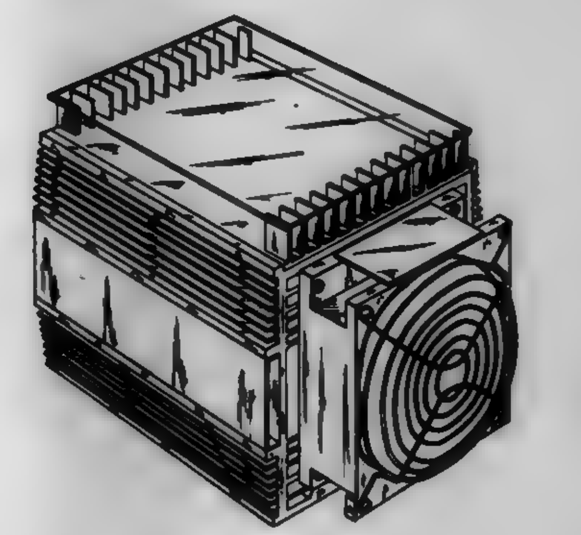
241,339
WINDOW TRIM
Joseph N. La Borde, Baton Rouge, La., assignor to
Ethyl Corporation, Richmond, Va.
Continuation of design applications Ser. No. 382,727, July 26, 1973, and Ser. No. 433,303, Jan. 14, 1974, both now abandoned. This application June 19, 1975, Ser. No. 588,327
Term of patent 14 years
Int. Cl. D25—*01*

U.S. Cl. D25—74



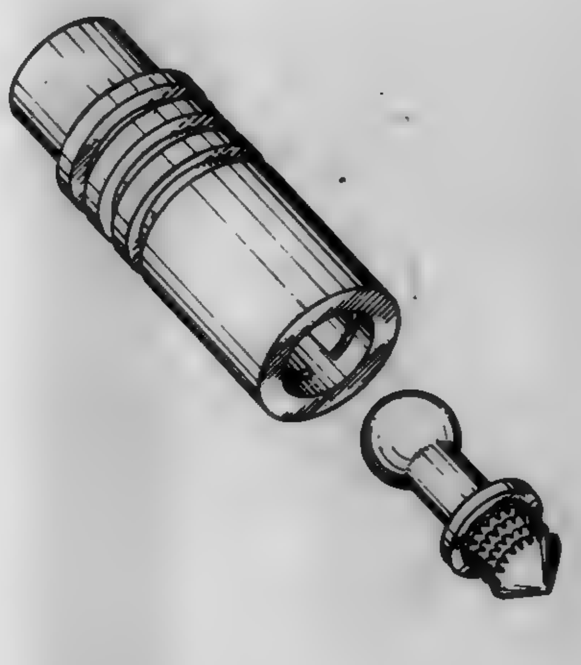
241,340
SOLID STATE DC SERVO CONTROLLER
Donald H. Jones, Kenneth R. Wyman, and Joseph A. Russo, Pittsburgh, Pa., assignors to Control Systems Research, Inc., Pittsburgh, Pa.
Filed Nov. 7, 1973, Ser. No. 413,597
Term of patent 14 years
Int. Cl. D13—*03*

U.S. Cl. D26—5 R



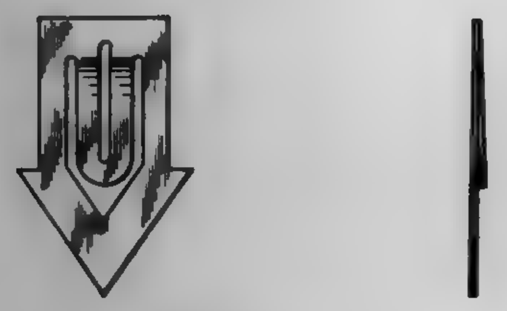
241,341
ELECTRICAL CONNECTOR
Robert Frederick Oxley, 8 Rue Pedro-Meylan,
Geneva 1208, Switzerland
Filed Feb. 25, 1975, Ser. No. 553,033
Claims priority, application Great Britain Aug. 29, 1974
Term of patent 14 years
Int. Cl. D13—*03*

U.S. Cl. D26—1 A



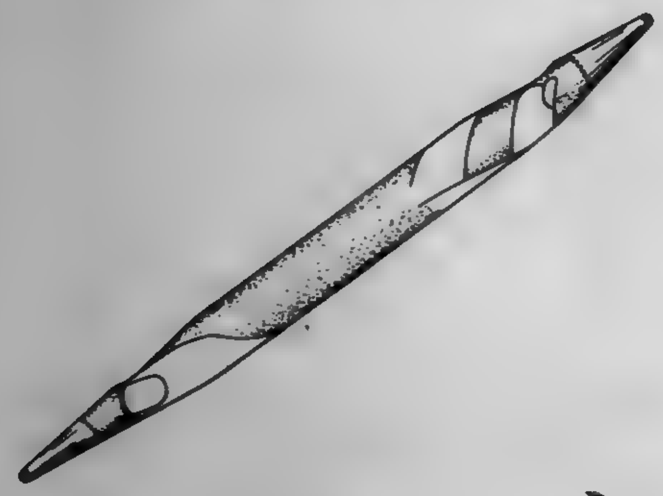
241,342
BOOKMARK

William A. Carroll, Warwick, R.I., assignor to
Lillian Vernon Corporation
Filed Apr. 28, 1975, Ser. No. 572,618
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—34



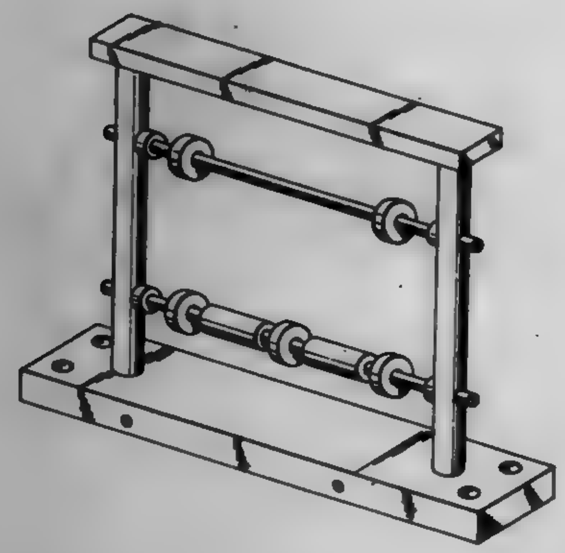
241,343
WRITING INSTRUCTION IMPLEMENT

Margaret L. Harmon, 3837 N. New Jersey St.,
Indianapolis, Ind. 46205
Filed Apr. 21, 1975, Ser. No. 569,866
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—59



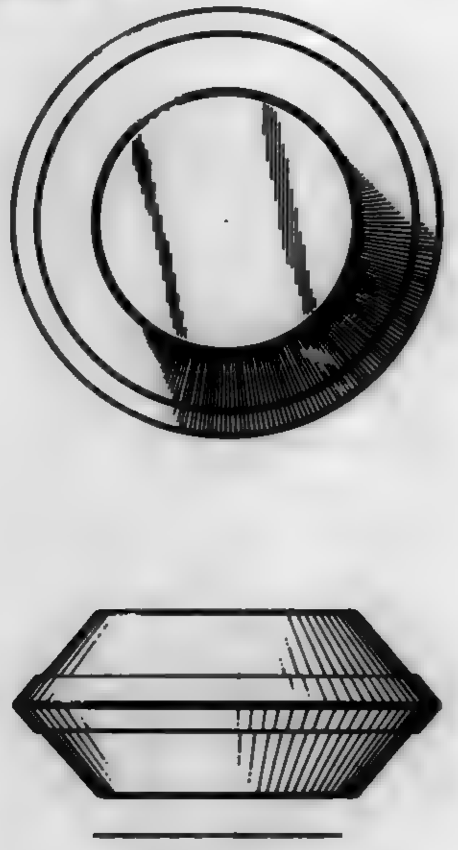
241,344
HOLDER FOR CLERICAL ARTICLES OR THE LIKE

John P. Gidos, P.O. Box 205, Ludlow, Pa. 16333
Filed Oct. 24, 1973, Ser. No. 409,156
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—77



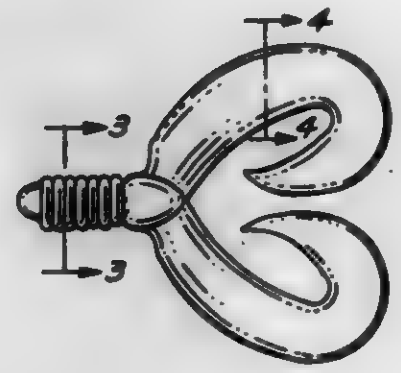
241,345
PAPERWEIGHT

Lilly D. Struchen and Harry B. Young, both of 1218
Cota Ave., Torrance, Calif. 90501
Filed Jan. 10, 1975, Ser. No. 540,303
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—96



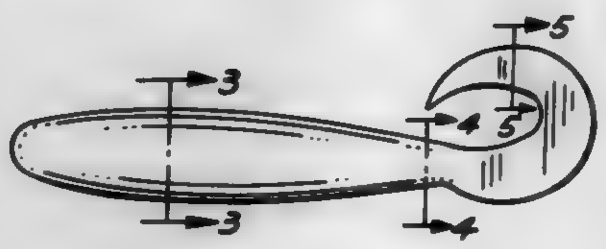
241,346
FISHING LURE

Robert G. Carver, Athens, La.
(P.O. Box 741, Minden, La. 71055)
Filed Apr. 7, 1975, Ser. No. 565,586
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



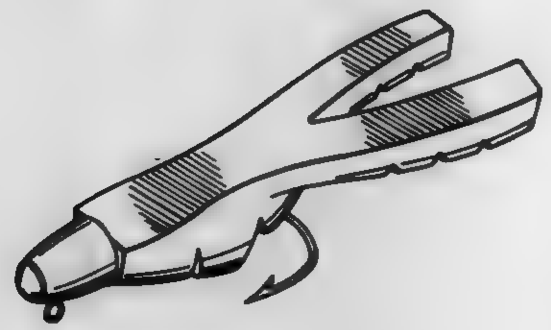
241,347
FISHING LURE

Wilmer J. Robinson, 1313 Violet St.,
Bossier City, La. 71010
Filed May 22, 1975, Ser. No. 579,927
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



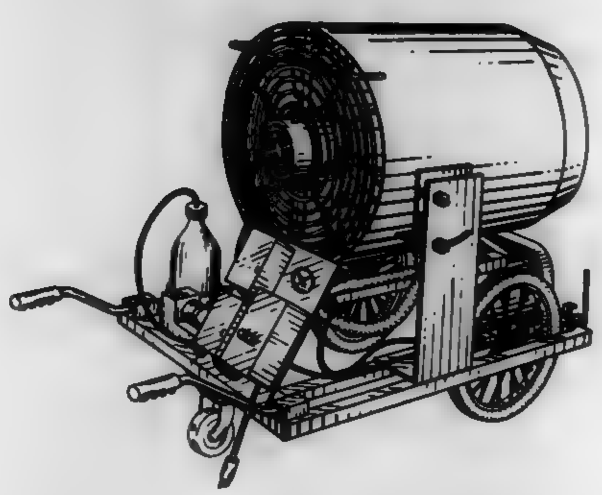
241,348
FISHING LURE

Ray A. Jones, 745 Broadview St., Spring Valley, Calif. 92077, and Emory D. Richards, 567 Cardiff, San Diego, Calif. 92114
Filed Oct. 9, 1975, Ser. No. 621,223
Term of patent 7 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



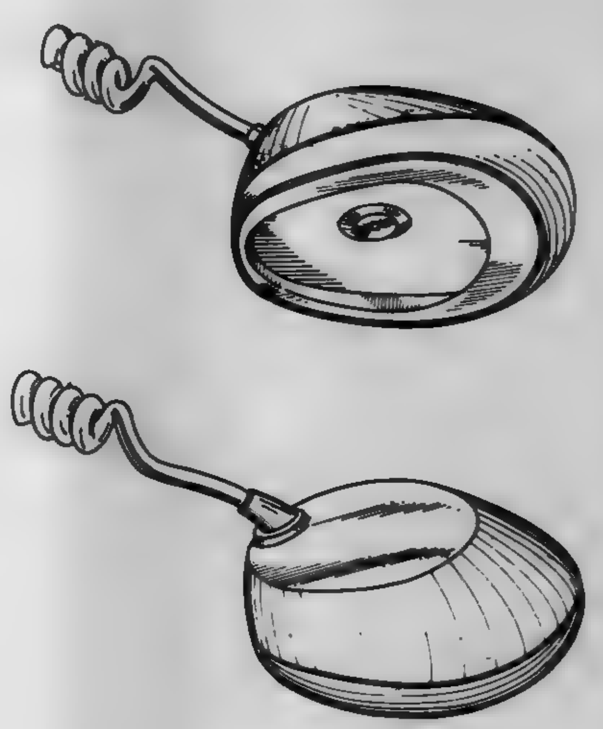
241,349
CHEMICAL SPRAYER

James G. Parke, San Antonio, Tex., assignor to Micro-Gen Equipment Corp., San Antonio, Tex.
Filed Mar. 31, 1975, Ser. No. 563,669
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—18



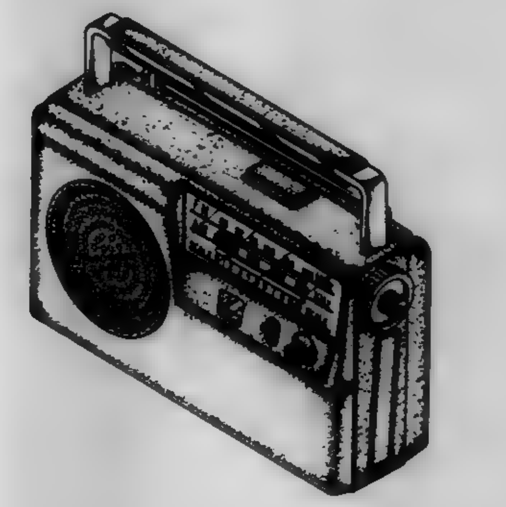
241,350
TELEPHONE RECEIVER OR SIMILAR ARTICLE

Tonis Kao, Munich, and Herbert Kramer, Furstenfeldbruck, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
No Drawing. Filed July 29, 1974, Ser. No. 492,925
Claims priority, application Germany Jan. 29, 1974
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

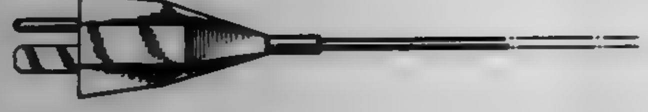


241,351
COMBINED TAPE RECORDER AND RADIO RECEIVER

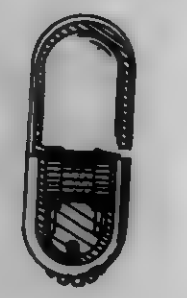
Takemi Ebata, Kyoto, and Shinzi Makino, Hirakata, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Apr. 15, 1975, Ser. No. 568,373
Claims priority, application Japan Oct. 18, 1974
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D26—14 B



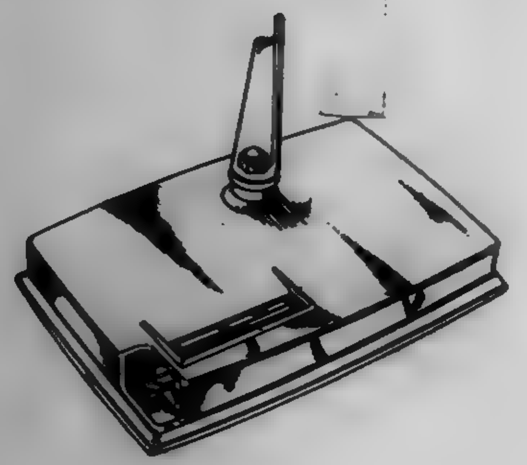
241,352
ELECTRICAL PLUG
Higenia Acosta, 332 E. 14th St.,
New York, N.Y. 10003
Filed Oct. 16, 1975, Ser. No. 623,062
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 B



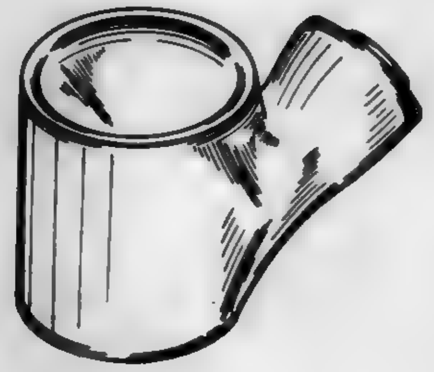
241,353
CIGARETTE LIGHTER
Pierre Marie Francois Martin, 74 Rue St. Lazare,
Paris, France
Filed July 10, 1974, Ser. No. 487,180
Claims priority, application France Jan. 10, 1974
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



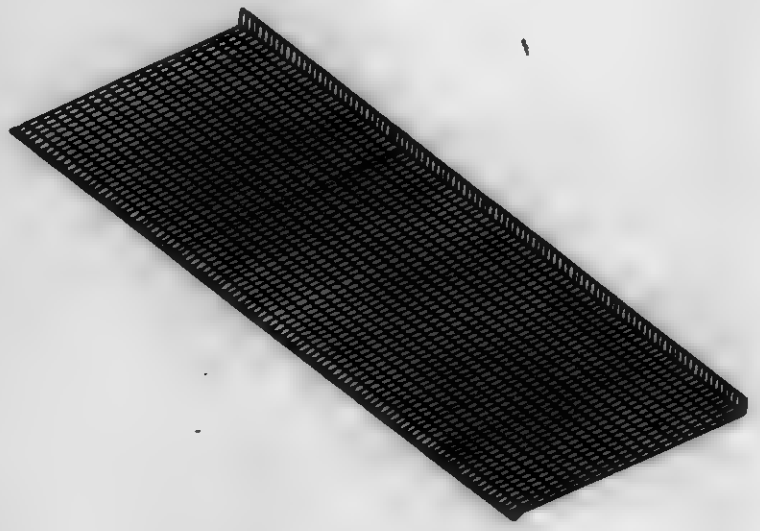
241,354
CIGARETTE MAKING MACHINE
Arnold Kastner, 10220 Armand La Vergne,
Montreal, Quebec, Canada
Filed Nov. 7, 1974, Ser. No. 521,631
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—51



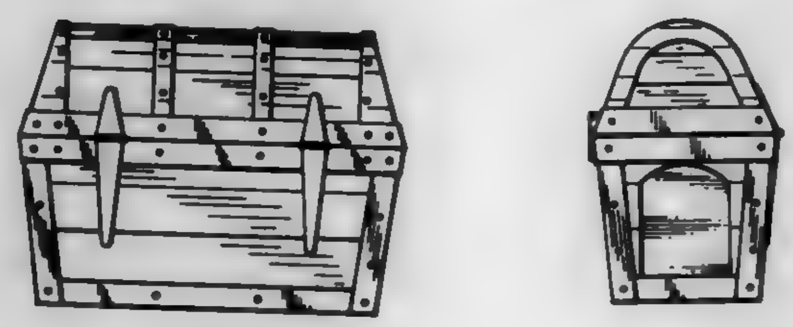
241,355
PIPE
Louis J. Fenster, Panorama City, Calif., assignor to
Ceraml-Tex Co.
Filed Apr. 14, 1975, Ser. No. 567,984
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—3



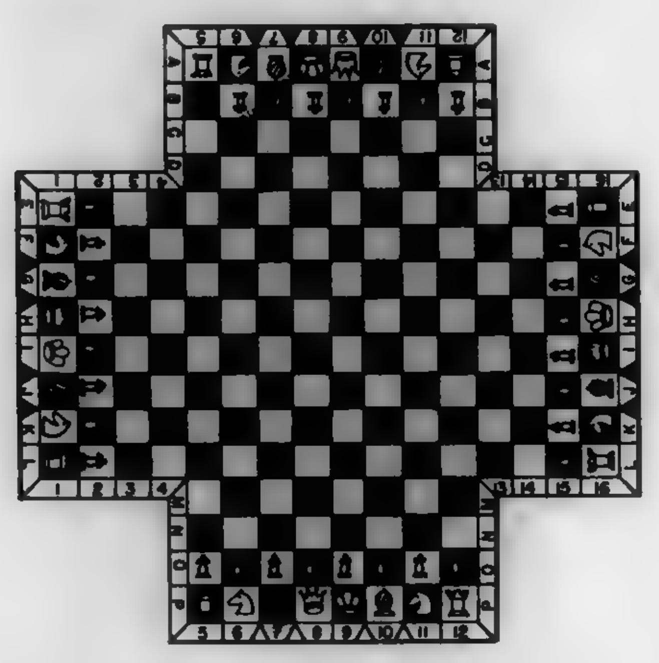
241,356
LAY CYCLE POULTRY CAGE BOTTOM
Gerald L. Kitson, 9709 Belding Road,
Rockford, Mich. 49341
Filed Oct. 23, 1973, Ser. No. 409,019
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



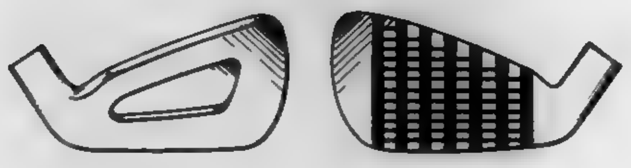
241,357
ANIMAL SHELTER
Harry L. Long, 1211 Cherrystone,
Norman, Okla. 73069
Filed Mar. 24, 1975, Ser. No. 561,051
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



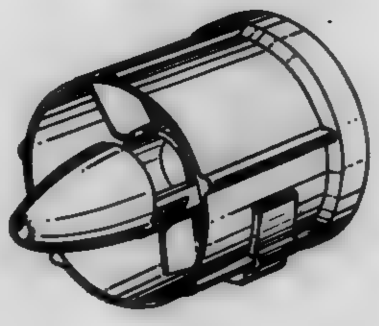
241,358
CHESS GAME BOARD
John A. Benson, Jr., Alta Loma, Calif. 91701
Filed Apr. 30, 1974, Ser. No. 465,567
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



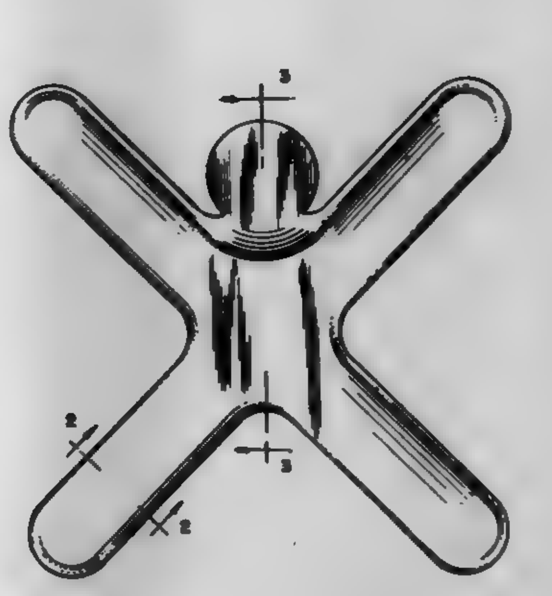
241,359
GOLF CLUB HEAD
David L. Taylor, 380 W. Carmel Valley Road,
Carmel Valley, Calif. 93924
Filed Dec. 4, 1974, Ser. No. 529,470
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



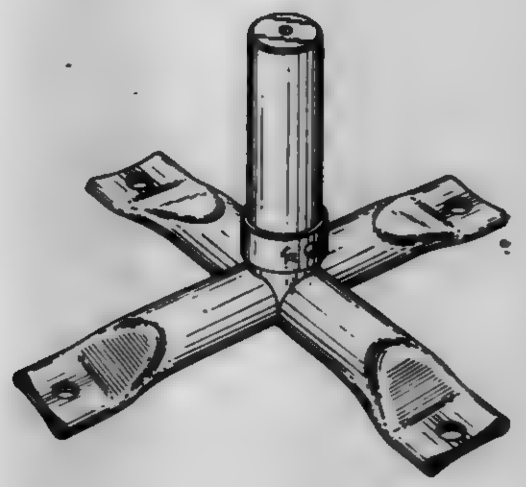
241,360
TOY JET ENGINE
James J. Scozzafava, P.O. Box 40152,
Washington, D.C. 20015
Filed Dec. 23, 1974, Ser. No. 536,937
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HR



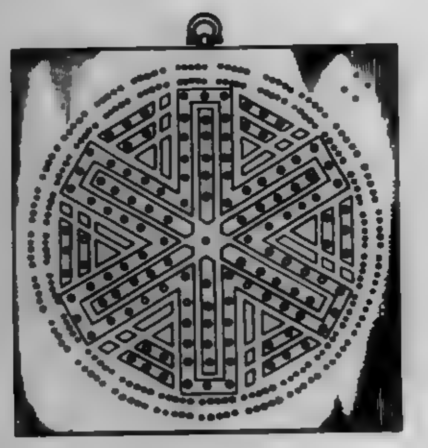
241,361
BOOMERANG
Richard P. Crew, 1635A Walea St.,
Wahiawa, Oahu, Hawaii 96786
Filed Jan. 9, 1975, Ser. No. 539,777
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 PP



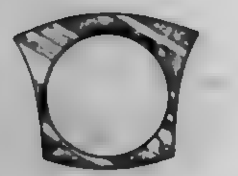
241,362
PLAYGROUND EQUIPMENT BASE
Ronald L. Ewers, 796 Anderson Road, Litchfield, Mich. 49252, and William F. McCombs, 4145 Parklawn Ave., Edina, Minn. 55435
Filed Mar. 3, 1975, Ser. No. 554,412
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 L

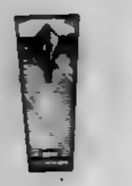


241,363
MULTIPURPOSE GAME BOARD
Jean W. Chamberlin, 1340 Placer Ave.,
Ontario, Calif. 91764
Filed May 1, 1975, Ser. No. 573,539
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS

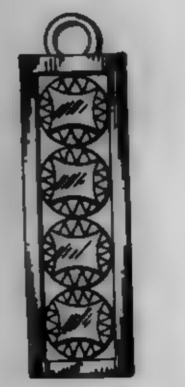


241,364
BRACELET
Alfred Joseph Durante, Forest Hills, N.Y., assignor to
Cartier, Inc., New York, N.Y.
Filed Apr. 24, 1974, Ser. No. 463,596
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—4

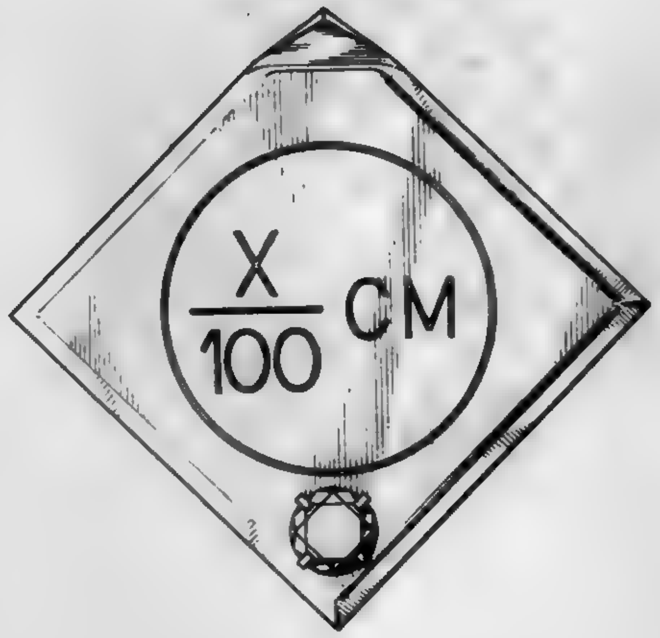




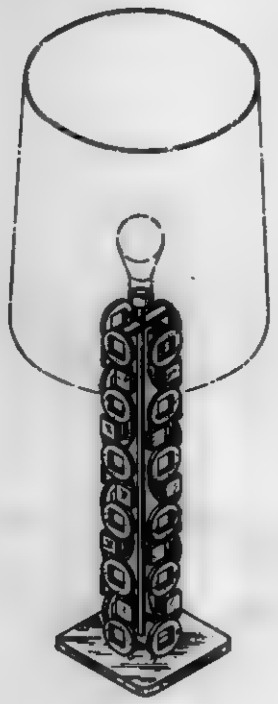
241,365
DIAMOND PENDANT
Alfred Joseph Durante, Forest Hills, N.Y., assignor to
Cartier, Inc., New York, N.Y.
Filed Mar. 3, 1975, Ser. No. 554,517
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—79



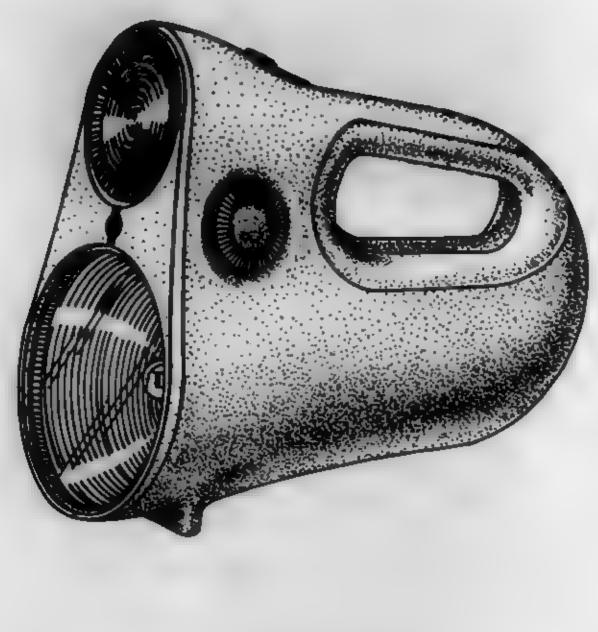
241,366
CHAIN SUSPENDABLE MEDALLION
Guy Augis, Lyon, France, assignor to
A. Augis Medailles, Lyon, France
Filed Apr. 3, 1975, Ser. No. 564,905
Claims priority, application France Oct. 8, 1974
Term of patent 3½ years
Int. Cl. D11—*01*
U.S. Cl. D11—81



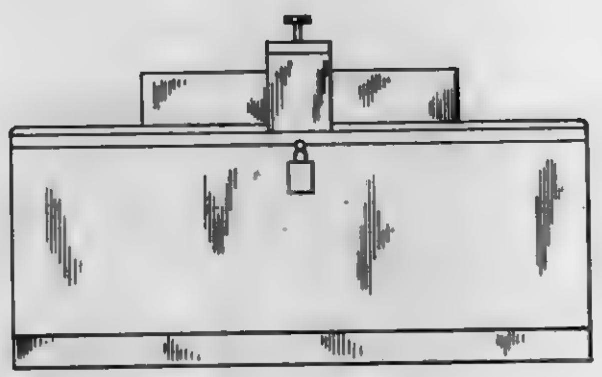
241,367
TABLE LAMP BASE
David T. Emmel, 2301 SE. 8th Court,
Pompano Beach, Fla. 33062
Filed Dec. 30, 1974, Ser. No. 537,783
Term of patent 7 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 R

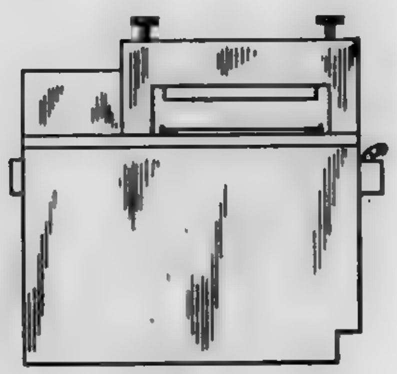


241,368
COMBINED PORTABLE ELECTRIC LANTERN AND RADIO RECEIVER
Kimio Takano and Yasuo Nagamatsu, Fukuoka, Japan,
assignors to Matsushita Electrical Industrial Co., Ltd.,
Kadoma-shi, Osaka, Japan
Filed Apr. 8, 1975, Ser. No. 566,586
Term of patent 14 years
Int. Cl. D14—*03;* D26—*02*
U.S. Cl. D48—24 A

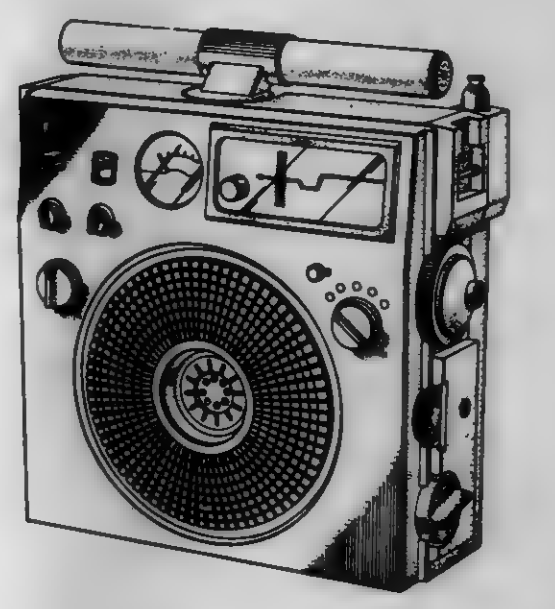


241,369
DIE CUTTING APPARATUS
Henry H. Jenkins, 864 W. Hacienda Drive,
Corona, Calif. 92625
Filed July 10, 1975, Ser. No. 594,657
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—128

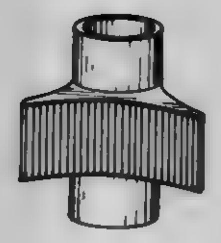


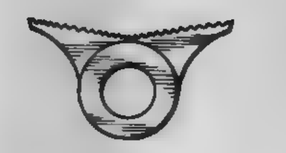


241,370
RADIO RECEIVER
Toshimasa Akazawa and Kazumasa Takenaka, Osaka,
Japan, assignors to Matsushita Electric Industrial Co.,
Ltd., Kadoma-shi, Osaka, Japan
Filed Nov. 7, 1974, Ser. No. 521,807
Claims priority, application Japan June 25, 1974
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

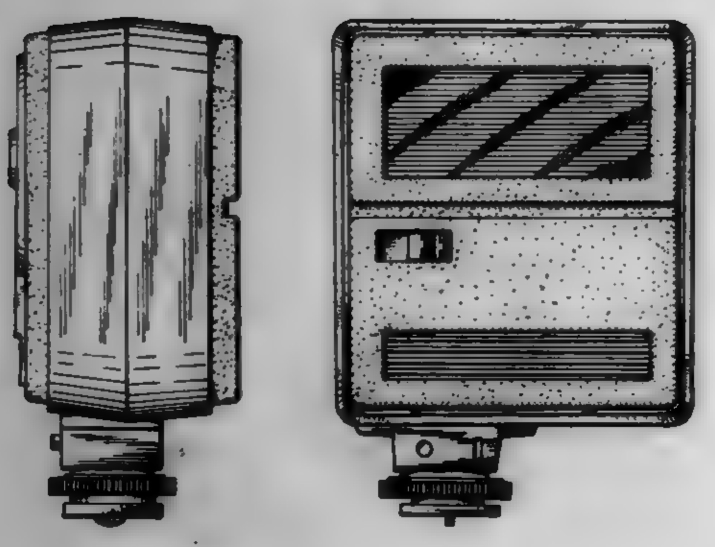


241,371
BINOCULAR ADJUSTMENT KNOB
Claus O. Huckenbeck, Sherman Oaks, Calif., assignor to
Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Apr. 30, 1975, Ser. No. 573,582
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—83

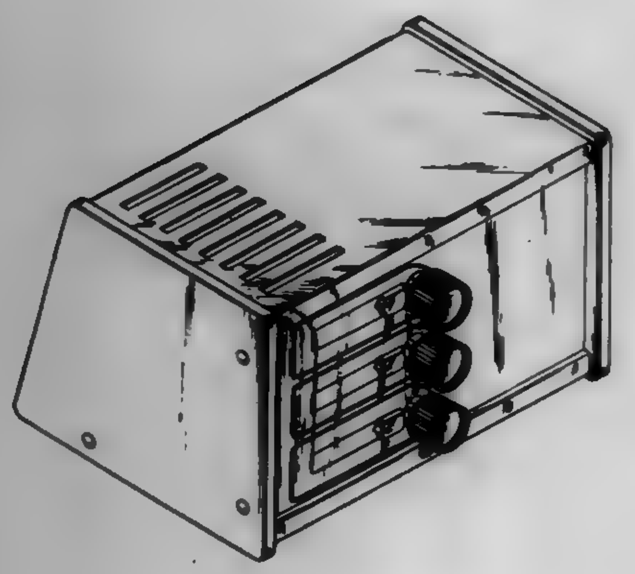




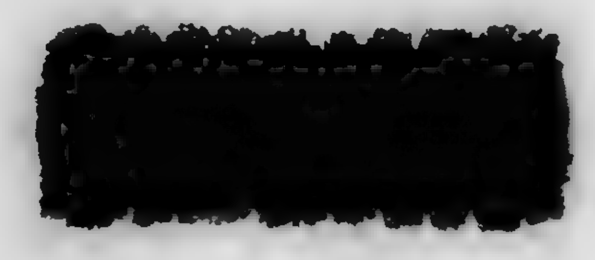
241,372
PHOTO-FLASH UNIT
Masakazu Tomatsuri, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed May 13, 1974, Ser. No. 469,469
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D16—42



241,373
LIGHT SOURCE FOR PHOTOGRAPHIC ENLARGERS
Robert A. Fieder, Englewood Cliffs, and John M. Kupiec, Demarest, N.J., assignors to Berkey Photo, Inc., Woodside, N.Y.
Filed Jan. 10, 1975, Ser. No. 540,230
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—26

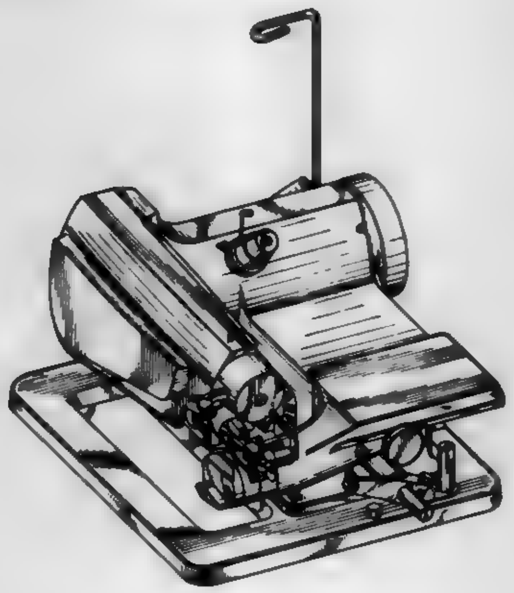


241,374
PAINT ROLLER
Kiyoshi Hori, Suita-shi, Osaka, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan
Filed Mar. 31, 1975, Ser. No. 563,834
Claims priority, application Japan Sept. 30, 1974
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D64—18

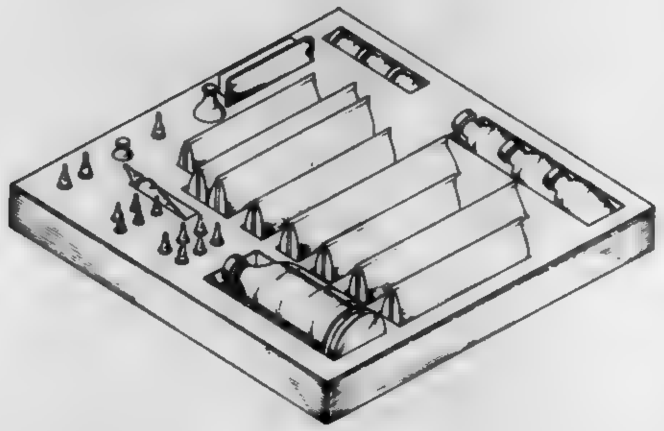


241,375
PAINT ROLLER
Kiyoshi Hori, Suita, Osaka, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan
Filed Mar. 31, 1975, Ser. No. 563,836
Claims priority, application Japan Sept. 30, 1974
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D64—18

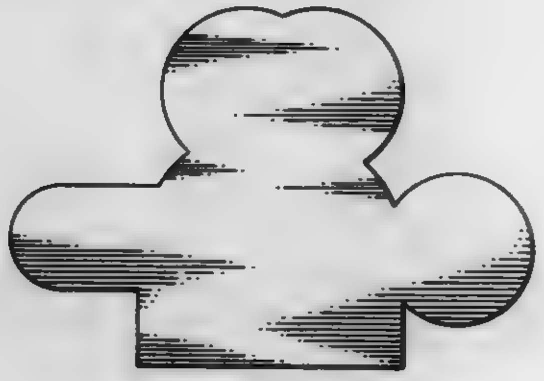
241,376
SEWING MACHINE
Kousuke Yuyama, Tokyo, Japan, assignor to Juki Co., Ltd., Tokyo, Japan
Filed Feb. 8, 1974, Ser. No. 440,802
Claims priority, application Japan Aug. 10, 1973
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—69



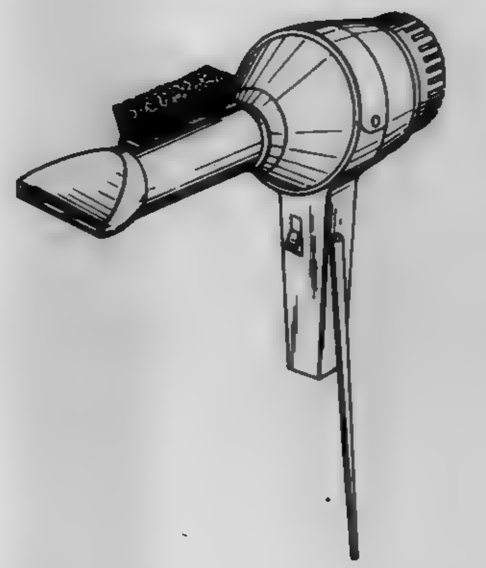
241,377
KIT OF PHARMACEUTICAL PRODUCTS
Jerry D. Whitacre, Los Alamitos, Calif., assignor to HMO International, Los Angeles, Calif.
Filed Jan. 21, 1974, Ser. No. 435,371
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 U



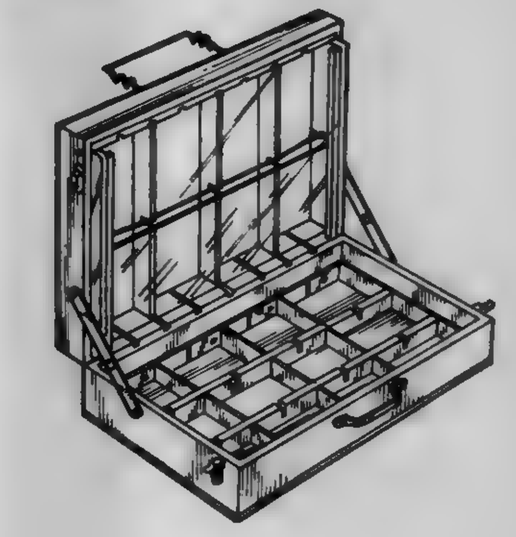
241,378
X-RAY GONADAL SHIELD PLATE
William Burger, 48 Roland Road, Jamestown, N.Y. 14701
Filed Mar. 10, 1975, Ser. No. 556,657
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—1 H

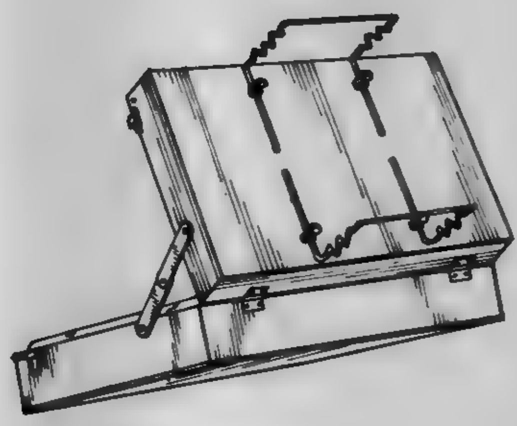


241,379
HAIR GROOMER
Siegfried Müller, Max Reger-Weg 3, 7737 Bad Durrheim, Germany
Filed Mar. 20, 1975, Ser. No. 560,493
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



241,380
PORTABLE DISPLAY CASE
Leo Graviner, 1 Woodhue Court, Baltimore, Md. 21207
Filed July 2, 1974, Ser. No. 485,241
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R

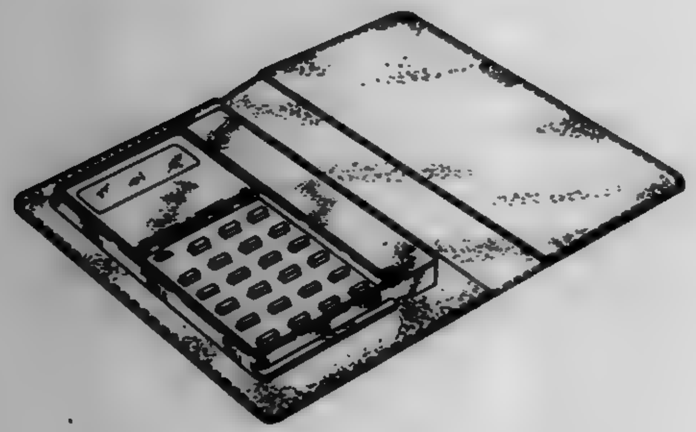




241,381
COMBINED CHECKBOOK WALLET AND ELECTRONIC CALCULATOR

Gary E. Garnier, San Jose, Calif., assignor to National Semiconductor Corporation
Filed Feb. 21, 1975, Ser. No. 551,916
Term of patent 14 years
Int. Cl. D3—*01*

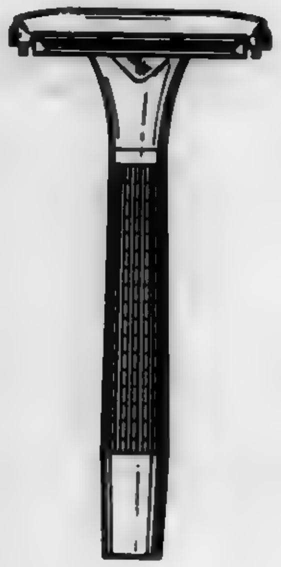
U.S. Cl. D87—3 A



241,382
SAFETY RAZOR

Graham R. Jones, Widdrington, Morpeth, Northumberland, England, assignor to Wilkinson Sword Limited
Filed Nov. 8, 1974, Ser. No. 522,107
Claims priority, application Great Britain May 11, 1974
Term of patent 14 years
Int. Cl. D28—*03*

U.S. Cl. D95—3 A



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TO WHOM
PATENTS WERE ISSUED ON THE 7TH DAY OF SEPTEMBER, 1976

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Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., to Olinkraft, Inc. Bulk material container. 3,979,045, Cl. 229-23.00R.
Bandyopadhyay, Pratip; and Rhoades, Vaughan W., to Cities Service Company. In situ combustion process for multi-stratum reservoirs. 3,978,920, Cl. 166-258.000.
Bangerskis, Karlis I.: *See—*
  Harvey, Walter W.; Randlett, Myron R.; and Bangerskis, Karlis I., 3,979,275.
Bardin, Robert; and Toulouze, Andre, to Rhone-Poulenc S.A. Membrane support-plates for fluid separating apparatus and apparatus using such support-plates. 3,979,297, Cl. 210-232.000.
Bardsley, Charles E., to Agritec, Co. Polyurethane plant growth medium. 3,979,198, Cl. 71-1.000.
Bardsley, Frank Baxter: *See—*
  Neville, Richard Ernest Gartside; and Bardsley, Frank Baxter, 3,978,987.
Barker, George E.; Cohen, Stephen C.; O'Brien, John L.; and Milgrom, Jack, to Van Straaten Chemical Company. Metal cold forming process and lubricant composition therefor. 3,978,702, Cl. 72-42.000.
Barnes, Miles J., to Food Automation Service Techniques, Inc. Multi-product cooking computer. 3,979,056, Cl. 235-92.0MT.
Barnum, Ronald E.; Tefft, Franklin A.; and Cotton, Louis S., to United Technologies Corporation. Helicopter warning system. 3,979,717, Cl. 340-27.00R.
Barnum, Thomas G., to Bradley Corporation. Flow control cam. 3,978,890, Cl. 137-636.400.
Barrett, Donald F.: *See—*
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  Dettling, Joseph R.; and Barry, John P., 3,979,052.
Barton, Serge P.; and Berry, William R., to Westinghouse Electric Corporation. Temperature measuring device having a deformable temperature sensing head thereof. 3,979,229, Cl. 136-232.000.
Bartzsch, Henning, to Kali-Chemie Aktiengesellschaft. Pelleted sulfur compositions and processes for their production. 3,979,316, Cl. 252-189.000.
Bascou, Jacques, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Luggage boot lid lock for motor vehicle. 3,979,144, Cl. 292-216.000.
BASF Aktiengesellschaft: *See—*
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Basile, Giampiero: *See—*
  Montiglio, Ugo; Basile, Giampiero; Aspes, Pierfrancesco; and Gallinotti, Elio, 3,979,310.
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Bastgen, Wendell, to Albert Klein KG. Filter. 3,979,296, Cl. 210-324.000.
Bate, Robert T., to Texas Instruments Incorporated. Infrared charge-coupled imager. 3,979,604, Cl. 307-221.00D.
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Baugh, Hilton. Drafting system and apparatus. 3,978,587, Cl. 33-77.000.
Baxter Laboratories, Inc.: *See—*
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Bayer Aktiengesellschaft: *See—*
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  Kolbe, Joachim; Schneider, Otto; Gutschik, Ernst; and Brokmeier, Dieter, 3,979,544.
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Beard, Walter C., to Aerosol Techniques Incorporated. Cleaning and scrubbing tool. 3,979,163, Cl. 401-139.000.
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Belart, Juan, to ITT Industries, Inc. Servo-power-assisted hydraulic brake-actuating arrangement. 3,978,669, Cl. 60-549.000.
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Benoist, Jean-Charles; Bitsch, Francois; and Tarel, Gerard Rene Joseph, to Electronique Marcel Dassault. Apparatus for phase keying in frequency and phase voltage controlled oscillator with an incoming signal having a T period, and phase coded of the biphase PCM type or PSK type. 3,979,692, Cl. 331-1.00A.
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Beny, Janos: *See—*
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Berg, Robert M. Beach cleaning apparatus. 3,979,146, Cl. 294-55.000.
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Bernard, Derek John Charles: *See*—
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Bishop, Allen J., to Westronics, Inc. System and method for linearizing analog measurements during analog-to-digital conversion. 3,979,745, Cl. 340-347.0NT.
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  Roberts, Melvin F., 3,979,221.
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Boiko, Georgy Alexandrovich: *See*—
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Bothwell, Peter William. Head and chest protectors for example for motor cyclists. 3,978,525, Cl. 2-424.000.
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Braginski, Aleksander I., to Westinghouse Electric Corporation. Bistable magnetic bubble domain devices. 3,979,737, Cl. 340-174.0TF.
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Brecher, Charles: *See*—
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Buckley, Richard D.; and Hilko, John, to Westinghouse Electric Corporation. Circuit breaker having members coated with phosphate-chromate protective layers. 3,979,704, Cl. 335-6.000.
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Burdorf, Donald L., to BASF Aktiengesellschaft. Air guide for tape transports. 3,979,037, Cl. 226-97.000.
Burgers, Bernhardus Walter Antonius; and Teulings, Wilhelmus Antonius, to Hollandse Signaalapparaten B.V. Pulse radar apparatus. 3,979,678, Cl. 325-184.000.
Buritz, Robert S.: *See*—
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Burk, Emmett H., Jr.; and Carlos, Donald D., to Atlantic Richfield Company. Polyfunctional aliphatic and cycloaliphatic cyclic nitrile sulfites and carbonates. 3,979,401, Cl. 260-301.000.
Burke, Roger A.; and Somogyi, Bela, to Hughes Aircraft Company. Solderless contact for electronic watch. 3,978,653, Cl. 58-23.00R.
Burklund, Vernon D.: *See*—
  Miller, Ray A.; Dillinger, Robert B.; Stone, W. James; and Burklund, Vernon D., 3,979,089.
Burnham, John: *See*—
  Schwider, Alfred W.; Burnham, John; and Buritz, Robert S., 3,979,530.
Burnight, Thomas R.; and Holtkamp, Donald A., to Clark Equipment Company. Mechanical piston retention for free wheeling. 3,978,771, Cl. 91-491.000.
Burns, Richard H.; and Walthour, William J., to Hobart Corporation. Microwave oven door hinge. 3,979,573, Cl. 219-10.55D.
Buron, Enrique Dominguez: *See*—
  Martinez-Alvarez, Francisco; Briones, Antonio Gamero; and Buron, Enrique Dominguez, 3,979,382.
Burr, John F.: *See*—
  Jamison, Will B.; and Burr, John F., 3,979,650.
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  Smith, Jack R.; and Burrows, Leonard H., 3,978,659.
Burylov, Valentin Alexandrovich: *See*—
  Golovko, Georgy Anatolievich; Lipkind, Boris Alexandrovich; Slepneva, Albina Timofeevna; Leontiev, Alexandr Semenovich; Mazin, Vladimir Mikhailovich; Berezovskaya, Elena Nikolaevna; Burylov, Valentin Alexandrovich; Zubkov, Alexandr Mikhailovich; Konakova, Olga Alexeevna; Judaev, Alexandr Ivanovich; Pavlychev, Valentin Nikolaevich; Ignatov, Jury Yakovlevich; and Kharitonov, Evgeny Alexandrovich, 3,979,335.
Bush, John A.; Lance, Drew R.; and Altstatt, John E., to California Microwave, Inc. FM demodulator having squelch circuit using bucket brigade delay line. 3,979,679, Cl. 325-348.000.
Bushell, Brian John: *See*—
  Newberry, Robert Anthony; and Bushell, Brian John, 3,979,402.
Buskine S.A.: *See*—
  Taccone, Ida, 3,979,395.
Butter, Stephen A., to Mobil Oil Corporation. Process for manufacturing hydrocarbons. 3,979,472, Cl. 260-668.00R.
Buttner, Gerhard; Klauke, Erich; Frohberger, Paul-Ernst; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. 2-Trifluoromethylimino-benzo-heterocyclic compounds. 3,979,411, Cl. 260-327.00M.
Buysch, Hans-Josef: *See*—
  Krimm, Heinrich; Buysch, Hans-Josef; and Freitag, Dieter, 3,979,462.
Buzhinsky, Igor Mikhailovich: *See*—
  Alexeev, Nikolai Efimovich; Buzhinsky, Igor Mikhailovich; Zhabotinsky, Mark Efremovich; Izyneev, Anatoly Andreevich; Koryagina, Elizaveta Ivanovna; Kravchenko, Valery Borisovich; Rudnitsky, Jury Petrovich; Gapontsev, Valentin Pavlovich; and Tsapkin, Vadim Vasilievich, 3,979,322.
Bykowski, Michael J.; and Ewing, Lloyd, to Water Pollution Control Corporation. Filtration method. 3,979,289, Cl. 210-79.000.
Byron Jackson, Inc.: *See*—
  Howard, James A., 3,978,993.
C. Reichert Optische Werke AG: *See*—
  Lechner, Gunther; and Pauliny, Ferdinand, 3,978,686.
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  Zachman, Neil J., 3,978,744.
Caldwell, Edward N., to Robertshaw Controls Company. Valve construction and improved parts for the same or the like. 3,979,129, Cl. 277-110.000.
California Microwave, Inc.: *See*—
  Bush, John A.; Lance, Drew R.; and Altstatt, John E., 3,979,679.
Calvert, Neil S.: *See*—
  Fulton, Robert J.; Calvert, Neil S.; and Valler, Joseph W., 3,979,033.
Calzadilla, Elio A., to Fasca Inc. Modified evaporator for automobile air conditioning systems. 3,978,687, Cl. 62-525.000.
Cameron, J. F. Ross: *See*—
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Cameron, Neil McIver; Thatcher, Kenneth Cyril; and Maltinder, Frederick Paul, to Fibreglass Limited. Method for producing glass fiber reinforcing members. 3,979,493, Cl. 264-145.000.

Campbell, David O., to United States of America, Energy Research and Development Administration. Recovery of cesium and palladium from nuclear reactor fuel processing waste. 3,979,498, Cl. 423-2.000.
Campbell, Thomas C.: *See*—
DuBell, Thomas L.; Campbell, Thomas C.; and Thompson, James L., 3,978,662.
Campoli, Ralph F.; Steiner, Edwin G.; Purtilo, Dennis L.; and Lynch, Thomas A., to United States of America, Army. Projectile-to-cartridge case attachment. 3,978,792, Cl. 102-38.000.
Camsco, Inc.: *See*—
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Canadian General Electric Company Limited: *See*—
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Whiteley, Eric, 3,979,620.
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Canney, Robert S., to General Electric Company. End cap for primary windings. 3,978,548, Cl. 16-109.000.
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Cantone, Thomas: *See*—
Rasoulinejad, Seyd M., 3,978,600.
Cappel, Bert; Schuhmann, Siegfried; and Wolf, Klaus, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Ink metering assembly for printing press. 3,978,788, Cl. 101-363.000.
Captain International Industries, Inc.: *See*—
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Caragliano, Edward S.; and Nick, Howard H., to International Business Machines Corporation. Directional coupler cascading for signal enhancement. 3,979,699, Cl. 333-10.000.
Card & Co., Inc.: *See*—
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Card, Roy T.; and Hill, Rodney E., to Card & Co., Inc. Needle bar foot construction for multiple needle skip-stitch tufting machine. 3,978,800, Cl. 112-79.00R.
Carlos, Donald D.: *See*—
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Carlow, Earl F.: *See*—
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Caron, LaVerne Andrew: *See*—
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Carrara, Marcel Vincent, to General Electric Company. Continuous casting apparatus with an articulative sealing connection. 3,978,815, [illegible]
Carrier Corporation: *See*—
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Sood, Vijay K.; and Streifert, Keith L., 3,979,155.
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Dauwalder, Fred R., 3,978,935.
Day, Ralph R., 3,978,769.
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Ream, Michael D., 3,978,946.
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Cath, Pieter G.; and Erdman, Robert J., to Keithley Instruments, Inc. Electronic protective circuit. 3,979,642, Cl. 317-16.000.
Catron, Brittain Norman; Dumstorff, Eugene Francis; Schloss, Phillip Christian; and Schroeder, Larry Lloyd, to International Business Machines Corporation. Memory access control circuit. 3,979,727, Cl. 340-172.500.
Catron, H. Wayne. Display frame with retractable garment support. 3,978,601, Cl. 40-322.000.
Caveng, Jean-Claude: *See*—
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Ceccaldi, Maurice; and Roubeau, Pierre, to Commissariat a l'Energie Atomique. Windowless cryostatic device for low-temperature spectrometry. 3,979,325, Cl. 250-352.000.
Cecchetti, Claudio. Game board structure. 3,979,119, Cl. 273-121.00R.
Celanese Corporation: *See*—
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Centre Technique du Bois: *See*—
Heron, Pierre D., 3,979,075.
Cessna Aircraft Company, The: *See*—
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Chaikin, Saul W., to Xidex Corporation. Vesicular image transfer process. 3,979,211, Cl. 96-29.00R.
Chalkley, Hatcher E.: *See*—
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Charbonnages de France: *See*—
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Charlot, Jean-Claude, to Thomson-CSF. Pulse-type radar with modulated carrier frequency. 3,979,752, Cl. 343-17.20R.
Chase Brass and Copper Co., Inc.: *See*—
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Chase-Shawmut Company, The: *See*—
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Chatterton, James. Dry foam producing apparatus. 3,979,326, Cl. 252-359.00E.
Chauvin, Raymond, to Charbonnages de France; and Houilleres du Bassin du Nord et du Pasde-Calais. Apparatus for the manufacture of light granulates. 3,979,168, Cl. 425-6.000.
Checki, Angelo Daniel, Jr.; and Frey, Anton Griswold, to RCA Corporation. Automatic assembly of semiconductor devices. 3,978,579, Cl. 29-589.000.
Chemische Werke Huls Aktiengesellschaft: *See*—
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Chemsoil Corporation: *See*—
Collins, Dwight D.; and Lauer, Fred W., Jr., 3,979,199.
Chen, Chun-Fu; and Hague, Duane O., Jr., to University of Akron, The. Digital control system and method for the synchronization of audio-visual equipment. 3,979,774, Cl. 360-80.000.
Cheng, Dah Yu, to International Power Technology. Parallel-compound dual-fluid heat engine. 3,978,661, Cl. 60-39.550.
Cheng, King Y.: *See*—
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Chesluk, Ralph P.: *See*—
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Child, Terence Frederick, to Lever Brothers Company. Detergent compositions. 3,979,314, Cl. 252-140.000.
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Cho, Mayumi, to Pioneer Electronic Corporation. 4-Channel stereo recording and reproducing method. 3,979,564, Cl. 179-100.4ST.
Choate, Paul V.: *See*—
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Chrepta, Metro M.; and Jacobs, Harold, to United States of America, Army. Method of producing semiconductor devices with minority charge carriers having a long lifetime and devices produced thereby. 3,979,272, Cl. 204-192.000.
Christensen, Burton G.: *See*—
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Ciba-Geigy Corporation: *See*—
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Kvita, Vratislav; Darms, Roland; and Greber, Gerd, 3,979,393.
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Okamoto, Shouichi, 3,978,745.
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Clampitt, Richard L., to Phillips Petroleum Company. Process for the production of fluids from subterranean formations. 3,978,928, Cl. 166-274.000.
Clancy, David, to Colgate-Palmolive Company. Method and apparatus for the packaging of moist articles. 3,978,636, Cl. 53-21.0FW.
Clark, Burton P.: *See*—
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Chichester, Willard L.; and Holtkamp, Donald A., 3,978,937.
Clark, Gary E.; and Miller, Art J., to Sun Electric Corporation. System for maintaining a diesel engine. 3,978,721, Cl. 73-119.00A.
Clark, Herbert D., to Universal Oil Products Company. Corrosion inhibitor compositions. 3,979,311, Cl. 252-82.000.
Clark, Pauline Carlisle, to Lawrence Peska Associates, Inc., a part interest. Anti-skid attachment for shoes. 3,978,595, Cl. 36-7.700.
Clark, Robert C., to United States of America, Navy. Method for dispersing glass fibers for the preparation of glass filter media. 3,979,253, Cl. 162-145.000.
Clark, Samuel H., to Raymond Lee Organization, Inc., The, a part interest. Rotor tiller with attachment therefor. 3,978,929, Cl. 172-42.000.
Claybaugh, Gene W., to Procter & Gamble Company, The. Hard surface cleaning compositions. 3,979,339, Cl. 252-524.000.
Clemente, A. Harry; and Clemente, Alfredo A., to Jumpan Corporation. Hot pan handling device. 3,979,145, Cl. 294-32.000.
Clemente, Alfredo A.: *See*—
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Martin, David James Reginald, 3,979,674.
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Cobaugh, Robert Franklin; Coller, James Ray; and Taylor, Attalee Snarr, to AMP Incorporated. Apparatus for applying solder rings to terminal posts. 3,978,569, Cl. 29-203.0DS.
Codina, Anthony E. Push-pull type exercising device. 3,979,114, Cl. 272-126.000.
Coffey, Gerald P.: *See*—
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Coffman, Leon M. Masonry block cutter. 3,978,842, Cl. 125-23.00R.
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Cobaugh, Robert Franklin; Coller, James Ray; and Taylor, Attalee Snarr, 3,978,569.
Collins, Dwight D.; and Lauer, Fred W., Jr., to Chemsoil Corporation. Treatment of phosphate rock in soil to provide fertilizer and gypsum. 3,979,199, Cl. 71-40.000.
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Radici, Pierino; Colombo, Daniele; and Colombo, Paolo, 3,979,480.
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Confalone, Pasquale Nicholas; Uskokovic, Milan Radoje; and Pizzolato, Giacomo, to Hoffmann-La Roche Inc. Synthesis of biotin. 3,979,396, Cl. 260-293.680.
Connelly, Tim R.: *See*—
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Cornelius, Gail, to R. M. Wade & Co. Mover unit for irrigation line. 3,978,882, Cl. 137-344.000.
Cornes, Nigel W., to Diplex Limited. Electrical indicators. 3,979,667, Cl. 324-65.00R.
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Cotton Incorporated: *See*—
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Cotton, Louis S.: *See*—
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Courtepatte, Lawrence Alvin; and Currie, Kenneth Wilbur. Apparatus for measuring two dimensions of an object and combining the measured values to obtain single value. 3,978,589, Cl. 33-143.00R.
Couttet, Andre; Dubois, Jean Claude; and Zann, Annie, to Thomson-CSF. Mixture of liquid crystals exhibiting positive dielectric anisotropy and a wide mesomorphic range. 3,979,321, Cl. 252-299.000.
Cowan, Gerald De G.: *See*—
Cowan, John Vincent; Cowan, Gerald De G.; and Cowan, John Gerald, 3,978,712.
Cowan, John Gerald: *See*—
Cowan, John Vincent; Cowan, Gerald De G.; and Cowan, John Gerald, 3,978,712.
Cowan, John Vincent; Cowan, Gerald De G.; and Cowan, John Gerald, to Scanning Systems, Inc. Method and apparatus for testing wear, size and residual stress conditions. 3,978,712, Cl. 73-67.50R.
Cowie, George Raymond, to Fisons Limited. Sleeves. 3,979,130, Cl. 277-208.000.
Cowley, William E., to Vermont American Corporation. Drill pack holder. 3,978,984, Cl. 206-379.000.
Cox, Bruce M., to Halliburton Company. Method and apparatus for monitoring and controlling the composition of flammable gas mixtures. 3,978,877, Cl. 137-90.000.
Cragoe, Edward J., Jr.: *See*—
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Crall, Frederick William; and Caron, LaVerne Andrew, to Chrysler Corporation. Engine control circuit for providing a programmed control function. 3,978,833, Cl. 123-117.00R.
Craven, George Frederick, to International Standard Electric Corporation. Waveguide switch. 3,979,703, Cl. 333-98.00S.
Crawford, Wheeler C.: *See*—
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Crep, John Anthony, to Howmedica, Inc. Bone and joint prosthesis. 3,978,528, Cl. 3-1.910.

- Crilly, Thomas W.; and Gariazzo, Michael C., to United States of America, Navy. Function selector. 3,979,580, Cl. 235-150.530.
- Cross, Barrington, to American Cyanamid Company. Novel process for the preparation of 3,5-diphenyl-4-pyrazolol and certain derivatives thereof. 3,979,409, Cl. 260-310.00R.
- Crossley, Jack; and Wilson, David Henry, to Manesty Machines, Ltd. Hard-gelatin capsule filling machines. 3,978,640, Cl. 53-37.000.
- Crowe, Ernest W.: *See—*
  - Rieger, William H.; and Crowe, Ernest W., 3,979,400.
- Crowe, Norman P.: *See—*
  - Lloyd, Allen H.; Molitor, Edwin A.; Honnert, Quentin E.; Porter, Ronald H.; and Crowe, Norman P., 3,978,973.
  - Stapp, Willis J.; Crowe, Norman P.; and Molitor, Edwin A., 3,978,785.
- Crown, Marlyn Dale; and Finley, Carl Eugene, to Olin Corporation. Regulator valve diaphragm and valve assembly including the same. 3,978,880, Cl. 137-315.000.
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  Yen, David H.; Connelly, Tim R.; and Lee, John J., 3,978,848.
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Firnhaber, Bernhard E.; Chute, Robert E.; and Carter, Brian H., to Pullman Incorporated. Process for the production of primary normal monochloroparaffins. 3,979,470, Cl. 260-658.00R.
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Forbat, John Egon; Digby, John Robert; and Roper, Timothy Alan, to Inertia Switch Limited. Monitoring system. 3,979,740, Cl. 340-276.000.

Forbes, Sheila M.; and Upton, Arthur W. J., to Westinghouse Canada Limited. Variable load gas turbine. 3,978,658, Cl. 60-39.270.
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Ford, George Alan, to Walker-Neer Manufacturing Co., Inc. Injection sub for dual tube drilling. 3,978,923, Cl. 166-224.00R.
Forte, Anthony D., to Union Special Corporation. Ball bearing looper drive. 3,978,801, Cl. 112-176.000.
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Gagnebin, Gustave, to Hermes Precisa International S.A. Typewriter tabulator. 3,978,967, Cl. 197-177.000.
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- Gellekink, Bernard, to Hollandse Signaalapparaten B.V. Pulse radar apparatus. 3,979,748, Cl. 343-7.700.
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- George, Richard Alexander, to Pye of Cambridge Ltd. Apparatus and method for atomic spectroscopy. 3,979,162, Cl. 356-85.000.
- Gerhold, Clarence G., to Universal Oil Products Company. Continuous liquid extraction process with periodic flow of the denser stream. 3,979,281, Cl. 208-311.000.
- Geytenbeek, Johannes Jacobus Franciscus, to U.S. Philips Corporation. Method of manufacturing an electrode provided with connection. 3,979,628, Cl. 313-331.000.
- Ghezzo, Mario, to General Electric Company. Method of etching indium tin oxide. 3,979,240, Cl. 156-8.000.
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- Godin, Thomas J., to Coulter Electronics, Inc. Particle analyzing system. 3,979,669, Cl. 324-71.0CP.
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- Hitachi Metals, Ltd.: *See—*
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- Hobbensiefken, Dean; and Signa, Michael A. Transmission shift control. 3,978,739, Cl. 74-473.00R.
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- Hodgson, R. W.; and Rands, Steve A. Multi-directional aerosol valve for use on an aerosol container. 3,979,029, Cl. 222-402.170.
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- Hoebrechts, Albert G.: *See—*
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  - Schmidt, Hartmut; Neumann, Jurgen; and Arneth, Reinhold, 3,978,986.
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  - Fryer, Rodney Ian; and Garcia, Edward Ernest, 3,979,410.
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- Holcomb, Burton V. Impression trays. 3,978,585, Cl. 32-17.000.
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  - Erickson, Clifford W., 3,979,695.
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- Howe, Ronald D. Collapsible watercraft. 3,978,536, Cl. 9-2.00C.
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- Hughes, John D.; and Klingensmith, Al W., to White-Westinghouse Corporation. Vapor saving ambient air intake system for a dry cleaner. 3,978,694, Cl. 68-18.00R.
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- Hung, Paul P.; Shipkowitz, Nathan L.; and Von Esch, Anne Mary, to Abbott Laboratories. Inhibitors of reverse transcriptase enzymes. 3,979,511, Cl. 424-181.000.
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- Hunziker, Paul, to Hoffmann-La Roche Inc. Compositions and methods for the determination of oxidizing agents. 3,979,262, Cl. 195-103.50R.
- Huot, Tommy J. Tire carrier for stock racks. 3,979,035, Cl. [illegible]
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- Ikeda, Koichi; and Ikeda, Hideo, to Nissan Motor Co., Ltd. Heat-insulated exhaust pipe. 3,979,246, Cl. 156-187.000.
- Ikeda, Tsuneo, to Hitachi, Ltd. Noise eliminator circuit. 3,979,683, Cl. [illegible]
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- Inmont Corporation: *See—*
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- Jacobs, Martin E., to United States of America, Energy Research and Development Administration. Circuit for monitoring temperature of high-voltage equipment. 3,978,729, Cl. 73-359.00R.
- Jaffe, Edward Ephraim; Marshall, William Joseph; and Stefancsik, Ernest Anton, to Du Pont de Nemours, E. I., and Company. Yellow azo pigment and process of preparation from dichloroaniline and barbituric acid. 3,979,377, Cl. 260-154.000.
- Jager, Horst, to Ciba-Geigy Corporation. Polyfluoroalkyl iodides, process for their manufacture, and their use. 3,979,469, Cl. 260-653.000.
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- Janson, Sven-Olof. Electric heating element control circuit. 3,979,576, Cl. 219-489.000.
- Janssen, Jos M., to JMJ Werkzeugmaschinen GmbH fuer Feinbearbeitung. Machine for surface-, plane-parallel-, and plain lapping. 3,978,621, Cl. 51-111.00R.
- Janssens, Wilhelmus; Vanheertum, Johannes Josephus; Poot, Albert Lucien; and Pollet, Robert Joseph, to AGFA-GEVAERT N.V. Duplo quinoline compounds. 3,979,394, Cl. 260-283.0BZ.
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- Jaques, Michael J. Steel tape and wire puller. 3,979,106, Cl. 254-134.3FT.
- Jarrett, Bobby R., to United States of America, Navy. High-speed Manchester code demodulator. 3,979,746, Cl. 340-347.0DD.
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- Jenaer Glaswerk Schott & Gen.: *See—*
  - Scheidler, Herwig; and Kristen, Klaus, 3,978,633.
- Jenkins, Cecil: *See—*
  - Woolslayer, Homer J.; and Jenkins, Cecil, 3,978,994.
- Jenkins, Philip Peter; and Lewis, Stanley, to Coal Industry (Patents) Limited. Mine roof support equipment. 3,978,675, Cl. 61-45.00F.
- Jennings, Thomas A., to Hull Corporation. Shielded inductance coil with trimmer. 3,979,706, Cl. 336-83.000.
- Jespersen, Aksel, to Danfoss A/S. Apparatus for adjusting and indicating the operating curve of a weather-responsive heating regulator. 3,979,710, Cl. 338-91.000.
- Jezl, James L.: *See—*
  - Peters, Edwin F.; and Jezl, James L., 3,979,370.
- Jimenez, Ramon. Portable window-attached emergency descent mechanism. 3,978,942, Cl. 182-75.000.
- JMJ Werkzeugmaschinen GmbH fuer Feinbearbeitung: *See—*
  - Janssen, Jos M., 3,978,621.
- Johan, Bela; Szemler, Laszlo; Szontagh, Tamas; Kuti, Laszlo; Simonovits, Emilia; Bekes nee Erdos, Judit; Szekely, Denes; Kiss, Janos; Kovacs nee Komoroczy, Erzsebet; and Hargitai nee Franyo, Aniko, to Richter Gedeon Vegyeszeti Gyar Rt. Process for the production of fermentation broth with increased vitamin B_{12} content by synchronizing the bacterium population. 3,979,259, Cl. 195-28.0VB.
- John J. McMullen Associates, Inc.: *See—*
  - Cuneo, Joseph J.; and Mertl, Ivan, 3,978,808.
- John Wyeth & Brother: *See—*
  - Newberry, Robert Anthony; and Bushell, Brian John, 3,979,402.
- Johns-Manville Corporation: *See—*
  - Troyer, Richard Lloyd, 3,979,537.
- Johnson, Bruce K.: *See—*
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- Johnson, James E.: *See—*
  - Ruhl, Robert C.; and Johnson, James E., 3,979,084.
- Johnson, James S.: *See—*
  - Brickner, David R.; and Johnson, James S., 3,979,090.
- Johnson, Joseph L.; and Guidry, Shelby L., to Schlumberger Technology Corporation. Gas storage well safety valve apparatus. 3,978,922, Cl. 166-224.00A.
- Johnson, Justin O., Jr.: *See—*
  - Guicheteau, Eugene H.; and Johnson, Justin O., Jr., 3,979,654.
- Johnson Matthey & Co., Limited: *See—*
  - Cooper, Barry John, 3,979,329.
- Johnson, Wendell C., to Xerox Corporation. Keyboard switch assembly having raised contacts supported by helicline legs on a common conductive sheet. 3,979,568, Cl. 200-5.00A.
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  - Richardson, Robert L.; and Johnston, Norris, 3,978,588.
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- Jones, Robert J.: *See—*
  - Epina, August P.; Olmsted, Dennis R.; Platter, Sanford; Jones, Robert J.; and Marion, Jack L., 3,978,546.
- Jones, Ronald E.: *See—*
  - Kolaian, Jack H.; Jones, Ronald E.; Crawford, Wheeler C.; and Cummings, William M., 3,979,307.
- Jones, Walter C. Elastic storage tank. 3,978,901, Cl. 150-.500.
- Jordan, William F. L. Fry and Richard E., executors: *See—*
  - Smith, Luther B., deceased, 3,978,864.
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- Joseph, James B.: *See—*
  - Johnson, William T., Jr.; and Joseph, James B., 3,978,757.
- Joshi, Madhukar Laxman: *See—*
  - Bhattacharyya, Arup; Joshi, Madhukar Laxman; Kroll, Charles Thomas; and Silverman, Ronald, 3,978,577.
- Judaev, Alexandr Ivanovich: *See—*
  - Golovko, Georgy Anatolievich; Lipkind, Boris Alexandrovich; Slepneva, Albina Timofeevna; Leontiev, Alexandr Semenovich; Mazin, Vladimir Mikhailovich; Berezovskaya, Elena Nikolaevna; Burylov, Valentin Alexandrovich; Zubkov, Alexandr Mikhailovich; Konakova, Olga Alexeevna; Judaev, Alexandr Ivanovich; Pavlychev, Valentin Nikolaevich; Ignatov, Jury Yakovlevich; and Kharitonov, Evgeny Alexandrovich, 3,979,335.
- Juers, Arthur A.: *See—*
  - Titcomb, Stanley T.; and Juers, Arthur A., 3,979,523.
- Juillard, Yves, to Societe Alsacienne de Constructions Mecaniques de Mulhouse. Rapier looms. 3,978,898, Cl. 139-449.000.
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- Jumpan Corporation: *See—*
  - Clemente, A. Harry; and Clemente, Alfredo A., 3,979,145.
- Juntgen, Harald: *See—*
  - Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,979,330.
- Jurasek, Stanley J., to Eagle-Picher Industries, Inc. Rigid container. 3,979,006, Cl. 220-19.000.
- Juriev, Jury Nikolaevich: *See—*
  - Moskovich, Jury Leonidovich; Juriev, Jury Nikolaevich; Tsyskovsky, Viktor Karlovich; Berezova, Ljudmila Vasilievna; Gilchenok, Nokhum Davidovich; Yanshevsky, Vladimir Avgustovich; Mushenko, Dmitry Vasilievich; Zelikman, Evgeny Semenovich; Filippova, Rufina Alexandrovna; Klimenko, Vladimir Leonidovich; and Sobolev, Valerian Mikhailovich, 3,979,450.

Justice, Henry Wayne, to RCA Corporation. Etchant for silicon nitride and borosilicate glasses and method of using the etchant. 3,979,238, Cl. 156-3.000.

Kaartinen, Niilo H., to Packard Instrument Company, Inc. Method and apparatus for processing fluid materials particularly in the preparation of samples for radioactive isotope tracer studies. 3,979,503, Cl. [illegible]

Kabiaoui, Mahmoud S.: *See*—
- McCoy, David R.; and Kabiaoui, Mahmoud S., 3,979,415.

Kabushiki Kaisha Daikin Seisakusho: *See*—
- Akita, Minoru, 3,978,954.

Kabushiki Kaisha Seikosha: *See*—
- Inoue, Souichi; Kato, Katsumi; and Marumo, Yoshiharu, 3,978,750.

Kabushiki Kaisha Suwa Seikosha: *See*—
- Koike, Kenichi; and Kawamura, Yoshikazu, 3,978,654.
- Naito, Okito, 3,978,649.
- Takeda, Shuji; and Otake, Tsutomu, 3,979,656.
- Yoshino, Masahito, 3,978,651.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
- Hyodo, Masayoshi, 3,979,570.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
- Araki, Hidejiro; and Otani, Susumu, 3,978,552.

Kaelin, Joseph Richard. Clarification plant. 3,979,294, Cl. 210-195.00S.

Kagiya, Tsutomu; Miyoshi, Kunihiko; and Takemoto, Katsuo, to Kagiya, Tsutomu; Shinetsu Chemical Company; and Tekkosha Co., Ltd. Process for the degradation of high polymer substances. 3,979,482, Cl. 260-897.00C.

Kagoura, Tetsuro, to Yoshida Kogyo Kabushiki Kaisha. Sliding-out sash windows having pivotal supports. 3,978,615, Cl. 49-251.000.

Kaiser Aluminum & Chemical Corporation: *See*—
- Walker, Charles E., 3,979,009.

Kaiser Glass Fiber Corporation: *See*—
- Strickland, Edward T., 3,979,195.

Kaiser, Leo; and Nothiger, Otto, to Ciba-Geigy Corporation. Process for the continuous level processing of poly-acrylonitrile in the hydrated condition. 3,979,176, Cl. 8-177.00R.

Kali-Chemie Aktiengesellschaft: *See*—
- Bartzsch, Henning, 3,979,316.

Kalniv, Ilmar L.: *See*—
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Kameda, Shinya; Nagashima, Shunzaburo; and Obi, Mikio, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Steam supply control device. 3,978,889, Cl. 137-630.140.

Kamenkovich, Anatoly Samoilovich: *See*—
- Glagovsky, Boris Aronovich; Kamenkovich, Anatoly Samoilovich; Lysanov, Vladislav Sergeevich; Moskovenko, Igor Borisovich; Roitshtein, Garri Shmilevich; Slavina, Ljudmila Yakovlevna; Feldgun, Leon Izrailevich; Frenkel, Larisa Ruvimovna; Khait, Alexandr Lazarevich; Shashkina, Galina Alexandrovna; Yashin, Veniamin Alexandrovich; Kremen, Zinovy Illich; and Muzykant, Yakov Abramovich, 3,978,711.

Kamensky, Veniamin Viktorovich: *See*—
- Sudnishnikov, Boris Vasilievich; Kamensky, Veniamin Viktorovich; Varsello, Eduard Petrovich; Tupitsin, Sergei Konstantinovich; and Nazarov, Boris Vladimirovich, 3,978,931.

Kamp, Ewald Albert, to Union Carbide Corporation. Conveyor with metallic mesh belt distortion compensating means. 3,978,976, Cl. 198-817.000.

Kanazawa, Yasunori: *See*—
- Umemoto, Masuo; Tomatsuri, Kouichi; and Kanazawa, Yasunori, 3,979,721.

Kaneyama, Kiyoshi; Nakamura, Masashi; and Murakami, Takanobu, to Nippon Kokan Kabushiki Kaisha. Clamping mechanism for line-up of pipes. 3,979,041, Cl. 228-49.000.

Kang, Kenneth Suk; and McNeely, William H., to Merck & Co., Inc. Oil well drilling fluid. 3,979,303, Cl. 252-8.50C.

Kanner, Bernard: *See*—
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- Prokai, Bela; and Kanner, Bernard, 3,979,420.

Kantor, Sidney: *See*—
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- Nakagawa, Yunosuke; Sugiura, Shigetsugu; Matsunaga, Kinjiro; and Ito, Yoshio, 3,979,312.
- Nakagawa, Yunosuke; Sugiura, Shigetsugu; Matsunaga, Kinjiro; and Ito, Yoshio, 3,979,313.
- Tokiwa, Fumikatsu; and Kobayashi, Takehiko, 3,979,318.

Kao, Wenling: *See*—
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Karabedian, James A., to Owens-Illinois, Inc. Container with improved heat-shrunk cellular sleeve. 3,979,000, Cl. 215-12.00R.

Karlsson, Ingemar, to Aktiebolaget Svenska Flaktfabriken. Arrangement at transport of web or sheet material. 3,979,038, Cl. 226-97.000.

Kasper, Andreas: *See*—
- Dietze, Wolfgang; Reuschel, Konrad; and Kasper, Andreas, 3,979,490.

Katalkherman, Mark Lvovich: *See*—
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- Inoue, Souichi; Kato, Katsumi; and Marumo, Yoshiharu, 3,978,750.

Kato, Toshiki: *See*—
- Eguchi, Tomoki; Akitsune, Kenji; Unoki, Michio; Kataoka, Jinichi; Kato, Toshiki; and Hisi, Atsuhiko, 3,979,392.

Katsube, Junki: *See*—
- Sasajima, Kikuo; Ono, Keiichi; Nakao, Masaru; Maruyama, Isamu; Takayama, Masaharu; Katayama, Shigenari; Katsube, Junki; Inaba, Shigeho; and Yamamoto, Hisao, 3,979,390.

Kattan, Abraham; and Gwyn, John E., to Shell Oil Company. Vapor recovery and disposal system. 3,979,175, Cl. 431-5.000.

Katz, Murray; and Kaufman, Arthur, to United Technologies Corporation. Method for catalyzing a fuel cell electrode and an electrode so produced. 3,979,227, Cl. 427-115.000.

Katz, Ronald; Aronson, Aaron; and Turek, Clarence, to Specialized Electronics Corporation. Electronic navigational computer. 3,979,057, Cl. 235-156.000.

Katz, Ronald. C.; Aronson, Aaron; and Turek, Clarence, to Specialized Electronics Corporation. Operator prompting system for stored program calculator. 3,979,058, Cl. 235-156.000.

Kaufman, Arthur: *See*—
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Kaulins, Edward, to Timex Corporation. Formed contact spring for electro-mechanical watches. 3,978,652, Cl. 58-23.00D.

Kausche, Robert, to Sulzer Brothers Limited. Chimney for exhaust gas having means for throttling a flow of exhaust gas. 3,978,776, Cl. 98-58.000.

Kawamura, Yoshikazu: *See*—
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Keefe, Donald J., to United States of America, Energy Research and Development Administration. Monitoring circuit for reactor safety systems. 3,979,256, Cl. 176-22.000.

Keijzer, Johan H.; and Maes, Gery O., to Monroe Belgium N.V. Vehicle suspension system. 3,979,134, Cl. 280-710.000.

Keith, Claude R.: *See*—
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Keith, Garland B.: *See*—
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Kelley, Robert D.: *See*—
- Gardner, Richard H.; and Kelley, Robert D., 3,978,945.

Kelley, Robert F. Transparent cover with connecting devices for motorcycles and riders. 3,979,147, Cl. 296-78.100.

Kelly, Kenneth W.; and Peterson, Wayne A., to Caterpillar Tractor Co. Vehicle speed control apparatus and method. 3,978,666, Cl. 60-127.000.

Kemp, Jacob D., to Chevron Research Company. Hydrocarbon conversion catalyst and process. 3,979,476, Cl. 260-683.470.

Kennecott Copper Corporation: *See*—
- Harvey, Walter W.; Randlett, Myron R.; and Bangerskis, Karlis I., 3,979,275.

Kerr, Robert M. Outboard motor repair stand with lockable worm gear shaft. 3,979,111, Cl. 269-76.000.

Ketcham, David J.: *See*—
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Keystone Consolidated Industries, Inc.: *See*—
- Glass, Dwight W., 3,978,700.

Khaidurov, Efim Leontievich; and Razorenov, Vladimir Alexandrovich. Compensator for sporting firearms. 3,978,762, Cl. 89-14.00C.

Khait, Alexandr Lazarevich: *See*—
- Glagovsky, Boris Aronovich; Kamenkovich, Anatoly Samoilovich; Lysanov, Vladislav Sergeevich; Moskovenko, Igor Borisovich; Roitshtein, Garri Shmilevich; Slavina, Ljudmila Yakovlevna; Feldgun, Leon Izrailevich; Frenkel, Larisa Ruvimovna; Khait, Alexandr Lazarevich; Shashkina, Galina Alexandrovna; Yashin, Veniamin Alexandrovich; Kremen, Zinovy Illich; and Muzykant, Yakov Abramovich, 3,978,711.

Kharitonov, Evgeny Alexandrovich: *See*—
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Kienzle Uhrenfabriken GmbH: *See*—
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Kilby, Jack S.; and Lathrop, Jay W. Electrostatic display system with toner applied to head. 3,979,757, Cl. 346-74.0ES.

Kilby, Jack S.; and Lathrop, Jay W. Electrostatic head with toner attracting plates. 3,979,758, Cl. 346-74.0EH.

Kimball, Stephen F.: *See*—
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King Industries, Inc.: *See*—
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Kinsekisha Laboratory, Ltd.: *See*—
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Kiovsky, Thomas E.; and Wald, Milton M., to Shell Oil Company. High temperature methanation with molten salt-based catalyst systems. 3,979,332, Cl. 252-441.000.

Kiovsky, Thomas E.; and Kromer, Richard C., to Shell Oil Company. Polyketone derivative. 3,979,367, Cl. 260-79.50C.

Kiovsky, Thomas E.; and Kromer, Richard C., to Shell Oil Company. Polymeric furan derivative. 3,979,373, Cl. 526-12.000.

Kiovsky, Thomas E.; and Kromer, Richard C., to Shell Oil Company. Polymeric pyrrollic derivative. 3,979,374, Cl. 526-12.000.

Kirby, William Everett; and Seymour, David Jackson, to Wharton Shipping Corporation. Vessel with flooded hold for transport of barges. 3,978,806, Cl. 114-43.5VC.

Kircher, Everett F. Method and apparatus for making artificial snow. 3,979,061, Cl. 239-2.00S.

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Kiss, Janos: *See*—
- Johan, Bela; Szemler, Laszlo; Szontagh, Tamas; Kuti, Laszlo; Simonovits, Emilia; Bekes nee Erdos, Judit; Szekely, Denes; Kiss, Janos; Kovacs nee Komoroczy, Erzsebet; and Hargitai nee Franyo, Aniko, 3,979,259.

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- Harsanyi, Kalman; Takacs, Kalman; Kiss, Pal; Szekeres, Laszlo; Papp, Gyula; and Benedek, Eva, 3,979,397.

Kita, Gunzo; and Ohyama, Kouichi, to Iwatsu Electric Co., Ltd. Communication systems of key telephone systems. 3,979,563, Cl. 179-99.000.

Kitanippon Dyeing & Finishing Co., Ltd.: *See*—
- Ito, Shyogo; and Mizutani, Hiroshi, 3,978,696.

Kitano, Kazuaki: *See*—
- Nakao, Yoshio; Kitano, Kazuaki; Kintaka, Kazuhiko; Suzuki, Shigeru; Katamoto, Kazuyoshi; and Nara, Kiyoshi, 3,979,260.

Kjelgaard, William L.; and Anderson, Paul M., to Research Corporation. Method and apparatus for the adiabatic expansion of liquid anhydrous ammonia. 3,978,681, Cl. 62-51.000.

Klaassen, William P., to Teer, Wickwire & Company. Grinding wheel coolant nozzle. 3,978,625, Cl. 51-267.000.

Klauke, Erich: *See*—
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Klaus, Elmer E.; and Lai, Chun W., to Research Corporation. Method of die casting metals. 3,978,908, Cl. 164-72.000.

Klein, Frank N., to Eaton Corporation. Paralleling of inverters for low harmonics. 3,979,662, Cl. 321-27.0MS.

Kleinpeter, Joseph, to Lawrence Peska Associates, Inc., a part interest. Aircraft engine fatigue cycle recorder. 3,979,579, Cl. 235-150.200.

Klem, Stanley J., to SCM Corporation. Ribbon cartridge for automatic typewriter function. 3,978,965, Cl. 197-151.000.

Klimenko, Vladimir Leonidovich: *See*—
- Moskovich, Jury Leonidovich; Juriev, Jury Nikolaevich; Tsyakovsky, Viktor Karlovich; Berezova, Ljudmila Vasilievna; Gilchenok, Nokhum Davidovich; Yanshevsky, Vladimir Avgustovich; Mushenko, Dmitry Vasilievich; Zelikman, Evgeny Semenovich; Filippova, Rufina Alexandrovna; Klimenko, Vladimir Leonidovich; and Sobolev, Valerian Mikhailovich, 3,979,450.

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Klisch, Stephen Cajetan; and Martin, Charles Andrew, to Colgate-Palmolive Company. Olefin sulfonate detergent compositions. 3,979,340, Cl. 252-548.000.

Klitz, Ronald J., to J. I. Case Company. Fast hoist control system. 3,978,998, Cl. 214-132.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
- Schleiermacher, Herbert, 3,978,840.

Klopping, Hein Louis, to Du Pont de Nemours, E. I., and Company. Fungicidal alkoxy substituted 2-cyanoacetamide derivatives. 3,979,518, Cl. 424-304.000.

Knoblauch, Karl: *See*—
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Knodler, Dietheim; and Irion, Leonhard, to Siemens Aktiengesellschaft. Boiling-water reactor. 3,979,257, Cl. 176-54.000.

Knopp, Ronald Henry: *See*—
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Kobayashi, Takehiko: *See*—
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Kobe Steel Ltd.: *See*—
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Kober, Ehernfried H.: *See*—
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Koch, Werner, to Sandoz Ltd. Sulphonated coumarin derivatives. 3,979,389, Cl. 260-256.50R.

Kochanneck, Uwe. Storage installation with automatic pick-up device. 3,978,991, Cl. 214-1.0BT.

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Kohler Company: *See*—
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Kohner, Inc.: *See*—
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Kohya, Tetsuya: *See*—
- Ito, Toshio; Hibino, Masahiro; and Kohya, Tetsuya, 3,979,572.

Koike, Kenichi; and Kawamura, Yoshikazu, to Kabushiki Kaisha Suwa Seikosha. Motion transformer. 3,978,654, Cl. 58-23.00D.

Kojima, Katumi: *See*—
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Kolaian, Jack H.; Jones, Ronald E.; Crawford, Wheeler C.; and Cummings, William M., to Texaco Inc. Fabric softener composition. 3,979,307, Cl. 252-8.750.

Kolb, Edwin R.; and Horvath, Robert M., to Harris-Intertype Corporation. Apparatus for generating graphical configurations. 3,979,742, Cl. 340-324.0AD.

Kolbe, Joachim; Schneider, Otto; Gutschik, Ernst; and Brokmeier, Dieter, to Bayer Aktiengesellschaft. Flock of synthetic fibers for electrostatic flocking. 3,979,544, Cl. 428-361.000.

Konakova, Olga Alexeevna: *See*—
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Madden, William M., to United Technologies Corporation. Cooling liner for an exhaust nozzle. 3,979,065, Cl. 239-127.300.
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  Tate, Jack F.; Shupe, Russell D.; and Maddox, Jim, Jr., 3,979,315.
Mader, Fred: *See—*
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Maderspach, Andrea: *See—*
  Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 3,979,405.
Madia, Ronald A.: *See—*
  Liu, Chi-sheng; Hirayama, Chikara; Zollweg, Robert J.; and Madia, Ronald A., 3,979,624.
Maeda, Hiroaki: *See—*
  Miyao, Takayuki; Maeda, Hiroaki; and Sato, Masanori, 3,978,772.
Maeda, Kazuo; and Matsui, Bunya, to Fujitsu Ltd. Method of etching films of silicon nitride and silicon dioxide. 3,979,241, Cl. 156-13.000.
Maeda, Kazuo: *See—*
  Uehara, Minoru; Maeda, Kazuo; Fujii, Shoji; and Nishio, Hiromu, 3,978,467.
Maes, Gery O.: *See—*
  Keijzer, Johan H.; and Maes, Gery O., 3,979,134.
Magerlein, Helmut: *See—*
  Meyer, Gerhard; Magerlein, Helmut; and Rupp, Hans-Dieter, 3,979,451.
Maggi, Nicola; and Sensi, Piero, to Gruppo Lepetit S.p.A. 4-Guanylazo-4-deoxyrifamycin SV derivatives. 3,979,376, Cl. 260-112.000.
Maginness, Maxwell G.; Meindl, James D.; and Plummer, James D., to Leland Stanford Junior University, The Board of Trustees of. Ultrasonic transducer array and imaging system. 3,979,711, Cl. 340-1.00R.
Magirus-Deutz Aktiengesellschaft: *See—*
  Wagner, Gerhard, 3,978,812.
Magnatex Limited: *See—*
  Tomlin, Robert Derrick, 3,978,543.
Magnavox Company, The: *See—*
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Magyar, Gyorgy: *See—*
  Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 3,979,405.
Mahlmann, James P., to General Foods Corporation. Pressure fixation of coffee grinder gas. 3,979,528, Cl. 426-594.000.
Maidique, Modesto A., to Analog Devices, Inc. Transistor amplifier of the Darlington type with internal bias providing low offset voltage and offset current drift. 3,979,688, Cl. 330-30.00D.
Maier, Alfred E., to Westinghouse Electric Corporation. Circuit interrupter. 3,979,675, Cl. 335-16.000.
Malfroid, Pierre, to Solvay & Cie. Super-halogenated unsaturated polyesters and process for their manufacture. 3,979,368, Cl. 526-11.200.
Mallinder, Frederick Paul: *See—*
  Cameron, Neil McIver; Thatcher, Kenneth Cyril; and Mallinder, Frederick Paul, 3,979,493.
Malo, Lowell L., to ACF Industries, Incorporated. Box car antipilferage device for plug doors. 3,978,618, Cl. 49-449.000.
Mandrin, Charles; and Ergenc, Mehmet Sahabettin, to Sulzer Brothers Limited. Process and apparatus for evaporating and heating liquified natural gas. 3,978,663, Cl. 60-39.670.
Manesty Machines, Ltd.: *See—*
  Crossley, Jack; and Wilson, David Henry, 3,978,640.
Marchetti, Michael J., to Sperry Rand Corporation. Battery operated appliance. 3,979,228, Cl. 429-99.000.
Marconi, Gary G.; and Hoehn, Marvin M., to Eli Lilly and Company. 1,6-Di-O-(2-isocyano-3-methylcrotonyl)-D-mannitol compounds. 3,979,433, Cl. 260-465.400.
Marino, Thomas; Kreeft, John; and Stanislaw, Peter, to Morrison Machine Co. Drive means for cylindrical screen printer. 3,978,787, Cl. 101-115.000.
Marinsky, Georgy Sergeevich: *See—*
  Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Boiko, Georgy Alexandrovich; Kumysh, Ilya Iosifovich; Puzrin, Leonid Gustavovich; Kovalev, Viktor Alexandrovich; Marinsky, Georgy Sergeevich; Beloglazov, Alexandr Petrovich; Siry, Pavel Osipovich; Sopozhnikov, Alexandr Ivanovich; Nosanov, Valentin Alexandrovich; Babinovich, Volf Iudovich; Popov, Lev Vasilievich; Shelkov, Sergei Mikhailovich; Strukov, Vladimir Nikolaevich; and Babich, Boris Markovich, 3,979,101.
Marion, Jack L.: *See—*
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Markijohn, Darrell W.: *See—*
  Conrow, Jonathan M.; Radzykewycz, Myron; and Markijohn, Darrell W., 3,978,971.
Markley, Finley W., to United States of America, Energy Research and Development Administration. Folded membrane dialyzer with mechanically sealed edges. 3,979,295, Cl. 210-321.00B.
Marritt, Clifford Russell: *See—*
  Williams, Robert Ernest; and Marritt, Clifford Russell, 3,978,969.
Marsh, Anthony, to Plessey Handel und Investments A.G. Circular magnetic domain devices. 3,979,736, Cl. 340-174.0TF.
Marsh, Arthur H.: *See—*
  Gagnon, Forrest W.; and Marsh, Arthur H., 3,979,091.
Marshall, William Joseph: *See—*
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Martin, Charles Andrew: *See—*
  Klisch, Stephen Cajetan; and Martin, Charles Andrew, 3,979,340.
Martin, David James Reginald, to Coal Industry (Patents) Limited. Radiating telecommunication systems switching. 3,979,673, Cl. 325-2.000.
Martin, David James Reginald, to Coal Industry (Patents) Limited. Radiating telecommunication systems. 3,979,674, Cl. 325-4.000.
Martin, Wayne. Window frame apparatus for vehicles. 3,979,148, Cl. 296-137.00B.
Martinez-Alvarez, Francisco; Briones, Antonio Gamero; and Buron, Enrique Dominguez, to Sociedad Anonima Cros. Dichlorocyanurate silver complexes. 3,979,382, Cl. 260-242.000.
Marumo, Yoshiharu: *See—*
  Inoue, Souichi; Kato, Katsumi; and Marumo, Yoshiharu, 3,978,750.
Maruniak, Adam, to Meto-Plast Corporation. Floating fish grip. 3,978,605, Cl. 43-5.000.
Maruyama, Isamu: *See—*
  Sasajima, Kikuo; Ono, Keiichi; Nakao, Masaru; Maruyama, Isamu; Takayama, Masaharu; Katayama, Shigenari; Katsube, Junki; Inaba, Shigeho; and Yamamoto, Hisao, 3,979,390.
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  Fink, Herbert; Pennewiss, Horst; Plainer, Hermann; Trabitzsch, Hans; Frieser, Josef; and Masanek, Juergen, 3,979,349.
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Masuda Manufacturing Co., Ltd.: *See—*
  Masuda, Masao, 3,978,556.
Masuda, Masao, to Masuda Manufacturing Co., Ltd. Processing system for woven, knit or similar shaped materials. 3,978,556, Cl. 68-62.000.
Matchick, John T. Stride-box. 3,979,116, Cl. 273-26.00R.
Mathis, Cleo D. Backflow safety valve for therapy pools. 3,978,886, Cl. 137-565.000.
Matsui, Bunya: *See—*
  Maeda, Kazuo; and Matsui, Bunya, 3,979,241.
Matsunaga, Kinjiro: *See—*
  Nakagawa, Yunosuke; Sugiura, Shigetsugu; Matsunaga, Kinjiro; and Ito, Yoshio, 3,979,312.
  Nakagawa, Yunosuke; Sugiura, Shigetsugu; Matsunaga, Kinjiro; and Ito, Yoshio, 3,979,313.
Matsushita Electric Industrial Co., Ltd.: *See—*
  Fukai, Masakazu; Asai, Komei; Nagata, Seiichi; Tatsuta, Hiroshi; and Mori, Koshiro, 3,979,319.
  Sakamoto, Yoichi, 3,979,680.
Matthey Rustenburg Refiners (Proprietary): *See—*
  MacGregor, John James, 3,979,207.
Matty, Thomas C., to Westinghouse Electric Corporation. Failsafe controlled gain inverting amplifier apparatus. 3,979,690, Cl. 330-107.000.
Matz, Bjorn J., to Dictaphone Corporation. Power supply apparatus having an output voltage within a limited range regardless of input voltage variations and having minimal power dissipation. 3,979,661, Cl. 321-18.000.
Mauriello, Francis G., to Diamond Crystal Salt Company. Method and apparatus for making packet assemblies. 3,978,637, Cl. 53-28.000.
Mayer, John W. Ambidextrous scissors. 3,978,584, Cl. 30-256.000.
Mayo, Terence William: *See—*
  Mack, Roy; and Mayo, Terence William, 3,978,634.
Maytag Company, The: *See—*
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Maytham, Walter J., to Speed Systems, Inc. Cable insulation stripping tool. 3,978,582, Cl. 30-90.100.
Mazer Corporation, The: *See—*
  Panken, Irving, 3,979,550.
Mazin, Vladimir Mikhailovich: *See—*
  Golovko, Georgy Anatolievich; Lipkind, Boris Alexandrovich; Slepneva, Albina Timofeevna; Leontiev, Alexandr Semenovich; Mazin, Vladimir Mikhailovich; Berezovskaya, Elena Nikolaevna; Burylov, Valentin Alexandrovich; Zubkov, Alexandr Mikhailovich; Konakova, Olga Alexeevna; Judaev, Alexandr Ivanovich; Pavlychev, Valentin Nikolaevich; Ignatov, Jury Yakovlevich; and Kharitonov, Evgeny Alexandrovich, 3,979,335.
Mazur, Robert G.; Gruber, Gilbert A.; and Stephenson, Robert C., to Solid State Measurements, Inc. Lapping and polishing apparatus. 3,978,622, Cl. 51-119.000.

McCallister, Robert A., to Foster Wheeler Energy Corporation. Partial oxidation carbon removal process. 3,979,188, Cl. 48-215.000.
McCan, John J., to Polaroid Corporation. Photoflash filter. 3,979,583, Cl. 240-1.300.
McCloskey, Thomas H.: *See—*
  LaCoste, Bernard L.; and McCloskey, Thomas H., 3,979,104.
McConnaughay, Esther L., executrix: *See—*
  Spahr, John; McConnaughay, Kenneth E., deceased; and McConnaughay, Esther L., executrix, 3,979,323.
McConnaughay, Kenneth E., deceased: *See—*
  Spahr, John; McConnaughay, Kenneth E., deceased; and McConnaughay, Esther L., executrix, 3,979,323.
McCormick, Joseph B., to United States of America, Army. Rocket catapult. 3,979,088, Cl. 244-122.0AB.
McCoy, David R.; and Kablaoui, Mahmoud S., to Texaco Inc. Method of preparation of sulfonated, dialkyl-substituted benzodioxoles. 3,979,415, Cl. 260-340.500.
McCullough, Ira J.; Lee, Albert J.; and Sullivan, John G. Access controller and system. 3,979,578, Cl. 235-61.11E.
McDill, Richard T.: *See—*
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McDonald, Daniel McLean. Record players. 3,979,127, Cl. 274-10.00R.
McGillick, Raymond, to Lawrence Peska Associates, Inc., a part interest. Time clock. 3,978,655, Cl. 58-126.00R.
McGraw-Edison Company: *See—*
  Hoag, Kip J., 3,979,485.
McIntyre, Howard L., to Armstrong Cork Company. Secondary headbox for overlay application in board formation. 3,979,254, Cl. 162-299.000.
McLennan, William S.; and Potts, George C., deceased (by Potts, Mary P., executrix), to United States of America, Army. Muzzle-expellable cartridge. 3,978,793, Cl. 102-38.000.
McLeroy, David: *See—*
  Primich, Theodore; Strilich, David A.; and McLeroy, David, 3,978,703.
McNally, William J.: *See—*
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McNeal, James Clifton: *See—*
  Olson, Wallace Fred; and McNeal, James Clifton, 3,978,933.
McNeely, William H.: *See—*
  Kang, Kenneth Suk; and McNeely, William H., 3,979,303.
McPhee, Charles J., to American Hospital Supply Corporation. System with filter for administrating parenteral liquids. 3,978,857, Cl. 128-214.00R.
McRae, Wayne A.; and Reed, Philip B., to Ionics Lyo Products Company. Polyurethane foam surgical dressing. 3,978,855, Cl. 128-156.000.
McShane, James L., to Westinghouse Electric Corporation. Metal enclosed transducer assembly. 3,979,565, Cl. 179-110.00A.
Mead Corporation, The: *See—*
  Duncan, Richard K., 3,978,982.
Mead Johnson & Company: *See—*
  Gallo, Duane G.; and Comer, William T., 3,979,514.
Mead, Theodore C.; McDill, Richard T.; Chesluk, Ralph P.; and Odell, Norman R., to Texaco Inc. Lubricant compositions with improved viscosity index. 3,979,308, Cl. 252-32.500.
Meaden Screw Products Company: *See—*
  Meaden, Thomas F.; and Fieberg, George W., 3,978,752.
  Meaden, Thomas F.; and Fieberg, George W., 3,978,753.
Meaden, Thomas F.; and Fieberg, George W., to Meaden Screw Products Company. Intermittent perforator wheel. 3,978,752, Cl. 83-678.000.
Meaden, Thomas F.; and Fieberg, George W., to Meaden Screw Products Company. Adjustable perforator wheel. 3,978,753, Cl. 83-678.000.
Means, Rodney J.: *See—*
  Hepworth, Edward C.; and Means, Rodney J., 3,979,732.
Medovar, Boris Izrailevich: *See—*
  Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Boiko, Georgy Alexandrovich; Kumysh, Ilya Iosifovich; Puzrin, Leonid Gustavovich; Kovalev, Viktor Alexandrovich; Marinsky, Georgy Sergeevich; Beloglazov, Alexandr Petrovich; Siry, Pavel Osipovich; Sopozhnikov, Alexandr Ivanovich; Nosanov, Valentin Alexandrovich; Babinovich, Volf Iudovich; Popov, Lev Vasilievich; Shelkov, Sergei Mikhailovich; Strukov, Vladimir Nikolaevich; and Babich, Boris Markovich, 3,979,101.
Meeker, Robert G.; Scanlon, William J.; and Segal, Zvi, to International Business Machines Corporation. Test fixture for use in a high speed electronic semiconductor chip test system. 3,979,671, Cl. 324-158.00F.
Meggs, Daniel H.: *See—*
  Rose, Bernard R.; Meggs, Daniel H.; and Beny, Janos, 3,978,598.
Megumi, Naomitsu, to Tokyo Plywood Kabushiki Kaisha; and Megumi, Naomitsu. Structural unit body having a pipe incorporated therein and a structure assembled therefrom. 3,978,916, Cl. 165-49.000.
Meindl, James D.: *See—*
  Maginness, Maxwell G.; Meindl, James D.; and Plummer, James D., 3,979,711.
Mellinger, John C.; and McNally, William J., to Maytag Company, The. Coin authenticating slide mechanism. 3,978,960, Cl. 194-55.000.
Meloy Laboratories, Inc.: *See—*
  Stahl, Quade R., 3,979,501.
Menasha Corporation: *See—*
  Frater, James J., 3,979,016.
  Jeanson, Richard L., 3,979,539.
Mencacci, Samuel A.; and Niemann, Gary O., to FMC Corporation. Carbonated beverage filler. 3,978,900, Cl. 141-11.000.
Merchant, Alan C. Knee support and cassette holder for axial X-rays of the knees. 3,979,595, Cl. 250-451.000.
Merck & Co., Inc.: *See—*
  Axelrod, Eugene H., 3,979,452.
  Firestone, Raymond A.; Fahey, John L.; and Christensen, Burton G., 3,979,384.
  Kang, Kenneth Suk; and McNeely, William H., 3,979,303.
  Schultz, Everett M.; and Cragoe, Edward J., Jr., 3,979,361.
Meritzis, Athanassios N. Vehicle propelled by reciprocating occupant motion. 3,979,135, Cl. 280-226.00R.
Merkel, Rudolf; Schnell, Friedrich; and Weber, Ewald, to Werkzeugmaschinenfabrik Adolf Waldrich Coburg. Device for ending the feed movement of a grinding wheel. 3,978,624, Cl. 51-165.920.
Mersereau, Emory P.: *See—*
  Trifunovic, Alexander L.; Hills, William H.; Borgman, Milton H.; and Mersereau, Emory P., 3,978,561.
Merten, Rudolf: *See—*
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Metal Buildings Insulation, Inc.: *See—*
  Bondra, John, Jr.; and Ruhling, William R., 3,979,245.
Metallgesellschaft Aktiengesellschaft: *See—*
  Pockrandt, Gunther, 3,979,328.
Metcalfe, Trevor Hatfield; Scott, Geoffrey; Thompson, Paul Michael; and Wilford, Ernest, to Associated Weavers Limited. Carpet printing apparatus. 3,978,692, Cl. 68-5.00D.
Meto-Plast Corporation: *See—*
  Maruniak, Adam, 3,978,605.
Meyer, Gerhard; Magerlein, Helmut; and Rupp, Hans-Dieter, to Akzona Incorporated. Process for the production of thiophosgene. 3,979,451, Cl. 260-543.00H.
Mezey, Sandor, to Egyesult Izzolampa ES Villamossagi RT. Apparatus for arranging, separating and positioning of items being conveyed. 3,978,979, Cl. 198-394.000.
Michel, Walter A. Heart beat waveform monitoring apparatus. 3,978,856, Cl. 128-2.06A.
Michelbrink, Bernhard; and Goeke, Manfred, to Babcock & Wilcox Limited. Apparatus for independent adjustment of the tension of conveyor chains. 3,978,977, Cl. 198-816.000.
Microbyx Corporation: *See—*
  Bucalo, Louis, 3,979,263.
Middelhoek, Servaas; and Baan, Diederich J., to Billiton Research B.V. Process for the preparation of magnesium. 3,979,206, Cl. 75-67.00R.
Middlestead, Richard W.: *See—*
  Motley, David M.; Cheng, King Y.; and Middlestead, Richard W., 3,979,685.
Mielke, Lloyd N., to United States of America, Agriculture. Apparatus and method for obtaining undisturbed soil core samples. 3,978,932, Cl. 175-249.000.
Mibos, Harry N. Bee feeder. 3,978,534, Cl. 6-5.000.
Milgo Electronics Corporation: *See—*
  Roedel, Charles William; Borysiewicz, Richard; So, Richard Tan; and Swan, Larry Wayne, 3,979,559.
Milgrom, Jack: *See—*
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Miller, Art J.: *See—*
  Clark, Gary E.; and Miller, Art J., 3,978,721.
Miller, Donald Leroy, to Facet Enterprises, Inc. Resilient connection between inner and outer poles on electromagnetic clutch. 3,978,953, Cl. 192-84.00C.
Miller, Ray A.; Dillinger, Robert B.; Stone, W. James; and Burklund, Vernon D., to United States of America, Navy. Vertical sensing and control system. 3,979,089, Cl. 244-122.0AD.
Miller, Roy W.; and Varda, Eugene L., to Pullman Incorporated. Door tripping device for railway hopper car. 3,978,997, Cl. 214-63.000.
Miller, Samuel, Jr. Spring clip fastened panel and frame assembly. 3,978,554, Cl. 24-73.00B.
Milliot, Henri: *See—*
  Arnaud, Henri; Hublin, Martial; Devaux, Georges; Lambert, Claude; and Milliot, Henri, 3,978,834.
Mills, Justin W., Jr., to Lif-O-Gen, Inc. Demand regulator. 3,978,854, Cl. 128-142.200.
Mills, Loring K., to Polaroid Corporation. Circuit board arrangement for collapsible camera apparatus. 3,979,763, Cl. 354-187.000.
Mims, James H., to Westinghouse Electric Corporation. Discrete analog processing system including a matrix of memory elements. 3,979,582, Cl. 235-193.000.
Minnesota Mining and Manufacturing Company: *See—*
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  Endres, Leland S., 3,979,463.
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  Orlando, Daniel; and Misurek, Chester, 3,978,571.
Mitchell, William Leroy; and Yee, John W. Periscope rear view helmet and helmet adapter. 3,978,526, Cl. 2-422.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
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- Mitsubishi Rayon Co., Ltd.: *See—*
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- Mitsui Mining & Smelting Co., Ltd.: *See—*
  - Miyazaki, Kazuhide; and Abe, Kiyomi, 3,979,337.
- Mitsui Toatsu Chemicals, Incorporated: *See—*
  - Eguchi, Tomoki; Akitsune, Kenji; Unoki, Michio; Kataoka, Jinichi; Kato, Toshiki; and Hiai, Atsuhiko, 3,979,392.
- Miura, Yoshihiko, to Yuko Shindosho Company Limited. Method of making a pin plug. 3,978,581, Cl. 29-630.00A.
- Miyamae, Toshiaki. Motorized fishing reel. 3,979,081, Cl. 242-84.10A.
- Miyamoto, Akira: *See—*
  - Yamashita, Makoto; Kushida, Masagoro; Niitsuma, Fumio; Enomoto, Masao; and Miyamoto, Akira, 3,979,158.
- Miyao, Takayuki; Maeda, Hiroaki; and Sato, Masanori, to Aisin Seiki Kabushiki Kaisha. Piston shoe for fluid pressure pump motor. 3,978,772, Cl. 92-158.000.
- Miyazaki, Isamu: *See—*
  - Inagawa, Mitsugu; and Miyazaki, Isamu, 3,978,893.
- Miyazaki, Kazuhide; and Abe, Kiyomi, to Mitsui Mining & Smelting Co., Ltd. Catalyst for reducing nitrogen oxides. 3,979,337, Cl. 252-466.00J.
- Miyazawa, Yoshihide: *See—*
  - Ozutsumi, Minoru; Ohnishi, Yoshitake; Miyazawa, Yoshihide; and Gonda, Michihiro, 3,979,320.
- Miyoshi, Kunihiko: *See—*
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- Mizuma, Katsuhisa, to Neturen Company Ltd. Steel rod for prestressing concrete. 3,979,186, Cl. 29-183.500.
- Mizutani, Hiroshi: *See—*
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- Mobil Oil Corporation: *See—*
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  - Sether, Walter H., 3,978,638.
  - Theissen, Robert J., 3,979,437.
  - Yan, Tsoung-Yuan, 3,979,279.
  - Zemanek, Joseph, Jr., 3,979,714.
- Mochizuki, Mitsuo. Door closer hinge. 3,978,551, Cl. 16-189.000.
- Mock, C. Howard: *See—*
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- Modersohn, Charles W., to Warner Electric Brake & Clutch Company. Clutch brake unit. 3,978,947, Cl. 192-12.0BA.
- Modiano, Guido. Apparatus for separating bundled bars. 3,979,018, Cl. 221-10.000.
- Moehlenpah, Walter G. Apparatus for fabricating wood structures. 3,978,783, Cl. 100-53.000.
- Moffett, Walter K., to Du Pont de Nemours, E. I., and Company. Ionomer resin substrates coated with an epoxy primer and finished with an acrylic coating. 3,979,540, Cl. 428-159.000.
- Molins Limited: *See—*
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- Molitor, Edwin A.: *See—*
  - Lloyd, Allen H.; Molitor, Edwin A.; Honnert, Quentin E.; Porter, Ronald H.; and Crowe, Norman P., 3,978,973.
  - Stapp, Willis J.; Crowe, Norman P.; and Molitor, Edwin A., 3,978,785.
- Monde, Hirao: *See—*
  - Ohashi, Katsuaki; and Monde, Hirao, 3,979,079.
- Monnet, Bernard Leon, to Billion S.A. Apparatus for injection molding articles composed of a material in which are embedded masses of one or more other materials. 3,979,170, Cl. 425-130.000.
- Monroe Belgium N.V.: *See—*
  - Keijzer, Johan H.; and Maes, Gery O., 3,979,134.
  - van den Berg, Johan H.; van Eekelen, Alex H.; and Hoebrechts, Albert G., 3,978,544.
  - van Eekelen, Alex H. A. M.; Hoebrechts, Albert J. G.; and van den Berg, Johan H., 3,978,542.
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  - Herber, John F., 3,979,324.
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  - Schumacher, Ignatius, 3,979,467.
  - Trivette, Chester Draper, Jr., 3,979,369.
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- Monsanto Research Corporation: *See—*
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- Montedison S.p.A.: *See—*
  - Montiglio, Ugo; Basile, Giampiero; Aspes, Pierfrancesco; and Gallinotti, Elio, 3,979,310.
- Montemarano, Jean A.: *See—*
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- Montiglio, Ugo; Basile, Giampiero; Aspes, Pierfrancesco; and Gallinotti, Elio, to Montedison S.p.A. Process for preparing ferromagnetic chromium dioxide. 3,979,310, Cl. 252-62.510.
- Mooradian, Aram: *See—*
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- Moore Business Forms, Inc.: *See—*
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- Moore, William C.; and Newman, Richard W., to Welch Allyn, Inc. Medical diagnostic instruments. 3,978,850, Cl. 128-9.000.
- Moore, William Thomas, to Rank Organisation Limited, The. Displays. 3,979,743, Cl. 340-324.00R.
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  - Morey, Norval K.; and Smith, Leward N., 3,979,152.
- Morcom, William R.; and Sanders, Thomas J., to Harris Corporation. Device isolation in integrated circuits. 3,979,237, Cl. 156-3.000.
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- Morel, Jean Alexandre. Sweeping and lifting device for gathering cut grass and the like. 3,978,545, Cl. 15-83.000.
- Morey, Norval K.; and Smith, Leward N., to Morbark Industries, Inc. Particulate material handling apparatus. 3,979,152, Cl. 302-17.000.
- Mori, Koshiro: *See—*
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- Morishita, Yasomatsu, to Ryobi, Ltd. Fishing spinning-reel spool mounting and demounting device. 3,979,082, Cl. 242-84.20R.
- Morokawa, Shigeru: *See—*
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  - Sekiya, Fukuo; and Morokawa, Shigeru, 3,979,608.
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- Morris, William E., to Spec-Co Industries, Inc. Foldable trailer. 3,979,133, Cl. 280-42.000.
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- Morrison, Marshal, to Stryker Corporation. Surgical cutting device. 3,978,862, Cl. 128-317.000.
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- Morrison, Robert D., to Morrison Medical Products Company. Ankle hitch. 3,978,853, Cl. 128-84.00R.
- Morrissey, Jack D.; and Frank, Robert G., to PPG Industries, Inc. Conveying glass sheets of different curvatures. 3,978,974, Cl 198-782.000.
- Morrow, Edward Lucas; and Colatosti, Peter Edward, to Olin Corporation. Shell deflector-catcher. 3,978,602, Cl. 42-1.00T.
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- Motley, David M.; Cheng, King Y.; and Middlestead, Richard W., to Hycom Incorporated. Frequency shift key demodulator. 3,979,685, Cl. 329-105.000.
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  - Hepworth, Edward C.; and Means, Rodney J., 3,979,732.
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- Mudge, John L.; Zimmer, Jerry W.; and Taft, Keith G., to Raytheon Company. V-groove isolated integrated circuit memory with integral pinched resistors. 3,979,612, Cl. 307-303.000.
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- Muenchinger, Herman M., to Research Engineering & Manufacturing, Inc. Self-thread forming threaded fasteners and blanks for making same. 3,978,760, Cl. 85-47.000.
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  - Stapp, Willis J.; Crowe, Norman P.; and Molitor, Edwin A., 3,978,785.
- Mulzet, Alfred Paul; and Sirico, James Louis, to International Business Machines Corporation. Positioning apparatus. 3,978,992, Cl. 214-1.0BB.
- Munn, Robert; and Tiso, Albert, to George Hantscho Company, Inc. Sheet stacking and interleaving apparatus. 3,979,112, Cl. 270-58.000.
- Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, to Bergwerksverband GmbH. Carbon containing molecular sieves. 3,979,330, Cl. 252-445.000.
- Murabito, Frank. Safety for revolvers. 3,978,603, Cl. 42-66.000.
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- Murasaki, Ryuichi, to Yoshida Kogyo Kabushiki Kaisha. Driving mechanism for selvage forming knitting needle in shuttleless loom. 3,978,895, Cl. 139-431.000.
- Murphy, James C., to Fairchild Camera and Instrument Corporation. Method for packaging semiconductor devices. 3,978,578, Cl. 29-577.000.
- Murphy, Joseph P., to Avco Corporation. Gas turbine engine air inlets having particle separators. 3,978,656, Cl. 60-39.09P.
- Mushenko, Dmitry Vasilievich: *See—*
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- Nagano, Tamio. Axially and radially rigid support plate for diaphragm clutch. 3,978,955, Cl. 192-89.00B.
- Nagasaki, Katsumi; Seto, Yoshito; and Yamasaki, Hiroyuki, to Kubota, Ltd. Method and apparatus for removing slag. 3,979,108, Cl. 266-201.000.
- Nagashima, Shunzaburo: *See—*
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- Nakagawa, Yunosuke; Sugiura, Shigetsugu; Matsunaga, Kinjiro; and Ito, Yoshio, to Kao Soap Co., Ltd.; and Nippon Peroxide Co., Ltd. Detergent composition containing novel bleaching agent. 3,979,312, Cl. 252-99.000.
- Nakagawa, Yunosuke; Sugiura, Shigetsugu; Matsunaga, Kinjiro; and Ito, Yoshio, to Kao Soap Co., Ltd.; and Nippon Peroxide Co., Ltd. Bleaching composition. 3,979,313, Cl. 252-99.000.
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- Nakayama, Akira: *See—*
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- Naplatanov, Nicolay Delchev; Sgurov, Vasil Stoyanov; Petrov, Peter Anguelov; Nicolov, Zdravko Alexandrov; Ganchev, Alexander Ivanov; and Trendafilov, Stefan Petrov, to Institute Po Technicheska Kibernetika pri Ban. Method of and system for rationalizing the operation of open-pit mines. 3,979,731, Cl. 340-172.500.
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- Nelson, Peter H.; Untch, Karl G.; and Dunn, James P., to Syntex (U.S.A.) Inc. Solvolytic process for the preparation of 2-(5H-dibenzo[a,d]cyclohepten-5-on-2-yl)acetic, propionic and butyric acids. 3,979,430, Cl. 260-465.00K.
- Nett, Louis A. Ventilating apparatus. 3,978,777, Cl. 98-115.00K.
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- Neville, James J.; Ferrell, Wesley; and Shichman, Daniel, to Uniroyal Inc. Zero degree belted tires, and high "soft stretch" belt-forming tapes therefor. 3,979,536, Cl. 428-43.000.

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Ointer, George K. D-C power supply and ignition system. 3,978,838, Cl. 123-148.0CA.

Okada, Hiroshi: *See*—
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Pivawer, Philip M.; and Farmer, Douglas A., Jr., 3,979,403.

Olin, John F.; and Hamm, Philip C., to Monsanto Company. Meta-bifunctional benzenes and herbicidal compositions. 3,979,202, Cl. 71-98.000.

Olinkraft, Inc.: *See*—
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Olson, Wallace Fred; and McNeal, James Clifton, to Smith International, Inc. Bit-adjacent stabilizer and steel. 3,978,933, Cl. 175-325.000.

Oltrogge, Victor Conrad. Tailgate unloader. 3,978,996, Cl. 214-17.00D.

O'Meara, Thomas R., to Hughes Aircraft Company. Adaptive imaging telescope with camera-computer transform image quality sensing and electro-optic phase shifting. 3,979,585, Cl. 250-201.000.

OMEGA Louis Brandt & Frere S.A.: *See*—
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Ono, Keiichi: *See*—
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Ono, Zensuke, to Izumi Jiko Co., Ltd. Lock assembly. 3,978,698, Cl. 70-165.000.

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Oosterling, Pieter Adriaan; and Hooftman, Johannes Phillippus, to H. Vissers B.V. Device for spreading distributable material comprising a reciprocatorily swinging pipe-shaped distributor. 3,979,072, Cl. 239-689.000.

Opittek, Eugene W.; Ketcham, David J.; and Dragavon, Edward J., to Hughes Aircraft Company. Histogram equalization system for display improvement. 3,979,555, Cl. 178-6.800.

Oriani, Gianni: *See*—
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Osterburg, Gunther: *See*—
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O'Toole, Francis Charles; and Comeau, Charles Philip, to Captain International Industries, Inc. Article dispensing apparatus. 3,979,017, Cl. 221-7.000.

Ottmann, Gerhard F.; Gavin, David F.; and Kober, Ehernfried H., to Olin Corporation. Conversion of nitroso compounds to isocyanates. 3,979,427, Cl. 260-453.0PC.

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Outokumpu Oy: *See*—
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Overmyer, Robert C.; and Nijhawan, Pramodh, to Hawley Manufacturing Corporation. Arc furnace fumes control system. 3,979,551, Cl. 13-10.000.

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Ozutsumi, Minoru; Ohnishi, Yoshitake; Miyazawa, Yoshihide; and Gonda, Michihiro, to Hodogaya Chemical Co., Ltd.; and Nippon Electric Company, Ltd. Liquid crystal composition. 3,979,320, Cl. 252-299.000.

Paap, Hans J.; Arnold, Dan M.; and Smith, Michael P., to Texaco Inc. Three frequency modulated combination thermal neutron lifetime log and porosity. 3,979,300, Cl. 250-265.000.

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Panzera, Carlino; and Krutenat, Richard Carroll, to United Technologies Corporation. Method of forming aluminide coatings on nickel-, cobalt-, and iron-base alloys. 3,979,273, Cl. 204-192.000.

Papalardo, William A. Peeling utensil. 3,978,583, Cl. 30-123.500.

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Parker, Robert W.; and Ooms, Bertus, to United Technologies Corporation. Gas turbine engine diffuser. 3,978,664, Cl. 60-39.690.

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Parrack, Alvin L., to Texaco Inc. Method of marine reflection-type seismic exploration. 3,979,713, Cl. 340-7.00R.

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Payne, Michael Ian; and Dalal, Bhadrik Subodhchandra, to RCA Corporation. Transistor switching circuit. 3,979,611, Cl. 307-300.000.

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Pearce, Larry N.; Neumann, Arthur E.; and Wyssling, Ralph K., to Cotton Incorporated. Method and apparatus for the manufacture of a thin sheet orifice plate. 3,978,705, Cl. 72-325.000.

Peche, Gerhard; Lange, Gerhard; and Grueneberg, Dieter, to Siemens Aktiengesellschaft. Surge voltage arrester. 3,979,646, Cl. 317-62.000.

Peck, Bernard W.; and Horist, Larry P. Disposable pick-up container for animal litter. 3,978,540, Cl. 15-104.800.

Peel, Mervyn Evan, to Allen & Hanburys Limited. Chromone derivatives. 3,979,407, Cl. 260-308.00D.

Peker, Yakov Anatolievich: *See*—
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Penney, Carl M., to General Electric Company. Laser generation of ultrasonic waves for nondestructive testing. 3,978,713, Cl. 73-67.700.

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Perrey, Hermann; Welz, Harry; Lange, Ralf; Rudolph, Hans; and Rosenkranz, Hans Jurgen, to Bayer Aktiengesellschaft. Process for the production of alkyl sulphonic acid hydroxy alkyl amides. 3,979,454, Cl. 260-556.00A.

Perron, Robert Richard; and Fowler, John Thomas, to Eastern Company, The. Inductively coupled lock. 3,979,647, Cl. 317-134.000.

Perry, Robert H.; and Woods, David H., to Westinghouse Electric Corporation. Sequential occupancy release control method and apparatus for train vehicles. 3,979,092, Cl. 246-34.00R.

Persha, Gerald C. Remote searchlight control system. 3,979,649, Cl. 318-17.000.

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Peters, John E.; and Pagliaro, Vincent A., to Printing Developments, Inc. Laminated lithographic printing plate. 3,979,212, Cl. [illegible]
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Petersen, Jorgen Hartvig, to Danfoss A/S. Device for regulating the combustion air of a furnace, especially with oil- or gasburner and blower for heating installations. 3,978,883, Cl. 137-489.500.
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Phillips, William A., to Granco Equipment, Inc. Rotary ceramic heat exchanger mounting. 3,978,914, Cl. 165-7.000.
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Pyle, Arnold S. Drill guide. 3,979,165, Cl. 408-14.000.
Quaker Oats Company, The: *See—*
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Query, Grady W. Insecticide spray system. 3,979,063, Cl. 239-70.000.
R. J. Reynolds Tobacco Company: *See—*
  Cook, Lawrence C., 3,978,866.
R. M. Wade & Co.: *See—*
  Cornelius, Gail, 3,978,882.
Rabinovich, Volf Iudovich; Kriger, Jury Nikolaevich; Svitenko, Igor Alexandrovich; Sapunov, Viktor Evgenievich; and Filippov, Vyacheslav Vasilievich. Method of electroslag remelting by melting main and additional electrodes and machine for effecting said method. 3,978,907, Cl. 164-52.000.
Radici, Pierino; Bianchi, Gaudenzio; Colombo, Daniele; and Colombo, Paolo, to Societa' Italiana Resine S.I.R. S.p.A. Block copolymers. 3,979,479, Cl. 260-857.00F.
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Radzykewycz, Myron: *See—*
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Rairden, John R., III, to General Electric Company. Protective coatings for dispersion strengthened nickel-chromium/alloys. 3,979,534, Cl. 427-405.000.
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Rao, Ganta V.; Henry, Wayne E.; and Hammond, David L., to Far-Mar-Co., Inc. Fractionation of the whole wheat kernel by pin milling. 3,979,375, Cl. 260-112.00G.
Rapistan, Incorporated: *See—*
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Raschke, Curt Robert, to Addressograph Multigraph Corporation. Copy and reusable master making system apparatus for preparing a permanent image. 3,978,786, Cl. 101-114.000.
Rasoulinejad, Seyd M., to Lawrence Peska Associates, Inc.; and Cantone, Thomas, part interest to each. Photo-light frame. 3,978,600, Cl. 40-152.200.
Rastas, Jussi Kalevi: *See—*
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Ratajski, Michel, to OMEGA Louis Brandt & Frere S.A. Apparatus for determining the degree of gas impermeability for watch cases and the like articles. 3,978,710, Cl. 73-49.300.
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Ream, Michael D., to Caterpillar Tractor Co. Parking brake system with transmission interlock. 3,978,946, Cl. 192-4.00A.
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Renner, Theodor; Falkenberg, Dieter; Rittmayer, Gerhard; and Grubmuller, Georg, to Siemens Aktiengesellschaft. Thermal generator with parallel circuits. 3,979,226, Cl. 136-208.000.
Repay, Laszlo N.; Young, Thomas A.; and Amberik, Andrew A., to Tenna Corporation. Electrically adjustable vehicle accessory. 3,978,735, Cl. 74-89.150.
Resch, Reinhard: *See—*
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Reuland, Joachim, to Hauni-Werke Korber & Co., KG. Method and arrangement for determining the mass of tobacco or the like by capacitance and attenuation measurements in a resonant high frequency oscillator circuit. 3,979,581, Cl. 235-151.330.

Reuschel, Konrad: *See—*
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Rice, Dale E. Decoder. 3,979,562, Cl. 179-84.0VF.

Richardson, Robert L.; and Johnston, Norris. Magnetic wire line marking, erasing and detecting method and apparatus. 3,978,588, Cl. 33-120.100.

Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
  Johan, Bela; Szemler, Laszlo; Szontagh, Tamas; Kuti, Laszlo; Simonovits, Emilia; Bekes nee Erdos, Judit; Szekely, Denes; Kiss, Janos; Kovacs nee Komoroczy, Erzsebet; and Hargitai nee Franyo, Aniko, 3,979,259.

Riebock, William D.; and Graves, Delbert B., to Newell Companies, Inc. Knotless master carrier. 3,978,904, Cl. 160-345.000.

Riedl, Kurt, to Biochemie Gesellschaft m.b.H. 14-Desoxy-14-tosyloxyacetoxy-mutilin. 3,979,423, Cl. 260-456.00P.

Rieger, William H.; and Crowe, Ernest W., to Reilly Tar & Chemical Corporation. Production of pyridyl ketones. 3,979,400, Cl. 260-297.00R.

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Riggs, Royal W. Fishhook and worm lure combination. 3,978,606, Cl. 43-42.240.

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Rindelaub, Frank A. E.: *See—*
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Robert Hain Associates, Inc.: *See—*
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  Caldwell, Edward N., 3,979,129.

Robinson, Robert K.; and Whitener, Philip C., to Boeing Company, The. Cryogenic tank and aircraft structural interface. 3,979,005, Cl. 220-9.00LG.

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Rodgers, Aubrey; and Widner, Rayburn K., to United States of America, Army. Electrofluid converter. 3,979,102, Cl. 251-11.000.

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Roedel, Charles William; Borysiewicz, Richard; So, Richard Tan; and Swan, Larry Wayne, to Milgo Electronics Corporation. Data modem having line verification and automatic disconnect features. 3,979,559, Cl. 179-2.0DP.

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Roget, Jean: *See—*
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Ross, Gerald F.; and Robbins, Kenneth W., to Sperry Rand Corporation. Range readout apparatus. 3,979,749, Cl. 343-13.00R.

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Rostone Corporation: *See—*
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Rovnyak, George C., to E. R. Squibb & Sons, Inc. Thiopyrano[4,3-c] pyrazoles. 3,979,381, Cl. 260-240.00A.

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Rowton, Richard Lee, to Jefferson Chemical Company, Inc. Polyurethane elastomers having improved sag resistance. 3,979,364, Cl. 260-77.5AM.

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Rudnitsky, Jury Petrovich: *See—*
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Rudolph, Hans. Resilient supply and exhaust valve. 3,978,878, Cl. 137-102.000.

Rudolph, Hans: *See—*
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Ruhl, Robert C.; and Johnson, James E., to Chase Brass and Copper Co., Inc., by said Robert C. Ruhl. Apparatus for level winding tubing. 3,979,084, Cl. 242-158.00F.

Ruhling, William R.: *See—*
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Ruland, Dieter, to Bayer Aktiengesellschaft. Pressure filter with continuously or intermittently movable filter cloth. 3,979,299, Cl. 210-387.000.

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Rutshtein, Alexander; and Staroselsky, Naum, to Compressor Controls Corporation. Control system for controlling a dynamic compressor. 3,979,655, Cl. 318-609.000.

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Ryobi, Ltd.: *See—*
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S.A.E.S. Getters S.p.A.: *See—*
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Saint-Gobain Industries: *See—*
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Saipem S.p.A.: *See—*
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Sakaguchi, Yasuhiro; Ishii, Kiyoshi; and Kojima, Katumi, to Daicel Ltd. Method for the manufacture of fruit wines from fruit juices of low sugar content. 3,979,521, Cl. 426-15.000.

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Sakata, Yoshihiro: *See—*
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Sakoe, Hiroaki, to Nippon Electric Company, Ltd. Automatic character recognition device employing dynamic programming. 3,979,722, Cl. 340-146.3AE.

Sales, Edward Bernard: *See—*
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Saloom, Joseph T., to Wheatland Tube Company. U-shaped screw transfer means in immersion coating apparatus. 3,978,816, Cl. 118-426.000.

Salyer, Ival O.; and North, Charles J., to Monsanto Research Corporation. Large void-free polyethylene. 3,979,357, Cl. 260-42.460.

Samulowitz, Helmut, to U.S. Philips Corporation. Device for testing any leakage of vacuum-tight glass seals. 3,979,668, Cl. 324-71.00R.

Sandco Ltd.: *See—*
  Boman, Karl Gunnar, 3,979,030.

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Sanders, Thomas J.: *See—*
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Sandoz Ltd.: *See—*
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  Zirngibl, Ulrich, 3,979,429.

Sandoz, Roger W.; and Rosenthal, Myron M., to United States of America, Army. Rotating lens antenna seeker-head. 3,979,755, Cl. 343-754.000.

Santora, Norman Julian: *See—*
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Sasajima, Kikuo; Ono, Keiichi; Nakao, Masaru; Maruyama, Isamu; Takayama, Masaharu; Katayama, Shigenari; Katsube, Junki; Inaba, Shigeho; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Butyrophenone derivatives and production thereof. 3,979,390, Cl. 260-268.00R.

Sasaki, Katsuyoshi: *See—*
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Sato, Masanori: *See—*
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Saunders Archery Company: *See—*
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Saunders, Charles A.; and Saunders, Thomas A., to Saunders Archery Company. Marksmanship target including pivoting target arms. 3,979,118, Cl. 273-102.10R.

Saunders, Thomas A.: *See—*
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Sausse, Andre: *See—*
  Granger, Alain; and Sausse, Andre, 3,979,284.

Sawazaki, Norikazu; Tsukamoto, Hiroyuki; and Yagi, Motoi, to Tokyo Shibaura Electric Co., Ltd. Magnetic recording and reproducing apparatus. 3,979,773, Cl. 360-106.000.

Sayles, David C., to United States of America, Army. Anti-erosive, solid rocket double-base propellant compositions. 3,979,236, Cl. 149-19.800.

Scaduto, John R. Internal and external cutting tool. 3,978,765, Cl. 90-24.00R.

Scanlon, William J.: *See—*
  Meeker, Robert G.; Scanlon, William J.; and Segal, Zvi, 3,979,671.

Scanning Systems, Inc.: *See—*
  Cowan, John Vincent; Cowan, Gerald De G.; and Cowan, John Gerald, 3,978,712.

Schaar, Charles H., to Colgate-Palmolive Company. Disposable diaper with end flap means and method. 3,978,861, Cl. 128-287.000.

Schade, Otto Heinrich, Jr., to RCA Corporation. Differential amplifier circuit. 3,979,689, Cl. 330-30.00D.

Schafer, Paul; Ibrahim, Jutta; and Gysin, Hanspeter, to Ciba-Geigy Corporation. Diester-amine adducts and process for their manufacture. 3,979,442, Cl. 260-482.00P.

Schafer, Wolfgang; and Raedisch, Helmer, to Saint-Gobain Industries. Polyurethane coated safety glass. 3,979,548, Cl. 428-425.000.

Schatz, Anton: *See—*
  Feneberg, Paul; and Schatz, Anton, 3,978,620.

Scheidler, Herwig; and Kristen, Klaus, to Jenaer Glaswerk Schott & Gen. Building element. 3,978,633, Cl. 52-400.000.

Scheiner, Gloria. Crib including reflective surface. 3,978,532, Cl. 5-93.00R.

Schenk, Hanspeter; and Sigg-Grutter, Trudi, to Givaudan Corporation. Cycloaliphatic ketones, process for making same and odorant and flavoring compositions containing same. 3,979,422, Cl. 260-455.00R.

Scherer, Fridolin, to BBC Brown Boveri & Company Limited. Vacuum-tight metal-ceramic soldered joint. 3,979,187, Cl. 29-195.000.

Schillhof, Udo, to U.S. Philips Corporation. Station finder circuit for two directions. 3,979,609, Cl. 307-247.00R.

Schlaefli, George Thomas: *See—*
  Kay'Triniak, Edward Joseph, 3,978,699.

Schleede, Stephen C., to A & H Engineering Corporation. Method of disposing of liquid waste. 3,978,673, Cl. 61-35.000.

Schlegel, Jurgen: *See—*
  Handrick, Kurt; Benning, Anton; George, Dietrich; and Schlegel, Jurgen, 3,979,448.

Schleicher, Roger W. Auxiliary handle for a beverage can. 3,979,011, Cl. 220-94.00R.

Schleiermacher, Herbert, to Klockner-Humboldt-Deutz Aktiengesellschaft. Cylinder head with welded-on cylinder and method of making said welded unit. 3,978,840, Cl. 123-193.0CH.

Schloss, Phillip Christian: *See—*
  Catron, Brittain Norman; Dumstorff, Eugene Francis; Schloss, Phillip Christian; and Schroeder, Larry Lloyd, 3,979,727.

Schlumberger Technology Corporation: *See—*
  Johnson, Joseph L.; and Guidry, Shelby L., 3,978,922.
  Trouiller, Jean-Claude, 3,978,939.

Schmid, Reinhold, to W. Schlafhorst & Co. Dust removing apparatus for the needles of a warp knitting machine. 3,978,691, Cl. 66-168.000.

Schmid, Rolf; Lohse, Friedrich; Fatzer, Willy; and Batzer, Hans, to Ciba-Geigy Corporation. Composition of epoxide resins, polycarboxylic acid anhydridesand polyester-dicarboxylic acids. 3,979,477, Cl. 260-835.000.

Schmidlin, Fred W.: *See—*
  Hauser, Oscar G.; and Schmidlin, Fred W., 3,978,817.

Schmidt, Felix Helmut: *See—*
  Rothe, Werner; Heinemann, Helmut; Schmidt, Felix Helmut; and Betzien, Gunter, 3,979,520.

Schmidt, Hartmut; Neumann, Jurgen; and Arneth, Reinhold, to Hoechst Aktiengesellschaft. Process and apparatus for separating aspherical particles from spherical particles. 3,978,986, Cl. 209-112.000.

Schmidt, Jacob, Jr.: *See—*
  Schmidt, Jacob, Sr.; and Schmidt, Jacob, Jr., 3,978,874.

Schmidt, Jacob, Sr.; and Schmidt, Jacob, Jr. Heat sensitive film shrinking machine. 3,978,874, Cl. 134-107.000.

Schmit, Joseph L.: *See—*
  Hager, Robert J.; Schmit, Joseph L.; Scott, M. Walter; and Stelzer, Ernest L., 3,979,232.

Schmut, Wolfgang: *See—*
  Zuckert, Bertram; and Schmut, Wolfgang, 3,979,346.

Schneider, Joseph R.: *See—*
  Fehmi, Lester G.; and Schneider, Joseph R., 3,978,847.

Schneider, Mark J.: *See—*
  Schulman, Richard J.; and Schneider, Mark J., 3,979,557.

Schneider, Otto: *See—*
  Kolbe, Joachim; Schneider, Otto; Gutschik, Ernst; and Brokmeier, Dieter, 3,979,544.

Schneidinger, Carl, to Daugherty, Jon; Sarno, Jay J.; and Schneidinger, Carl. Amusement ride power. 3,978,934, Cl. 180-2.000.

Schnell, Friedrich: *See—*
  Merkel, Rudolf; Schnell, Friedrich; and Weber, Ewald, 3,978,624.

Schoffmann, Rudolf, to Allis-Chalmers Corporation. Mold with convex sidewalls for continuous casting machines. 3,978,909, Cl. 164-273.00R.

Schol, Klaas; Compen, Johannes Maria Azalina Antonius; and van den Heuvel, Reinier Maria, to U.S. Philips Corporation. Method of manufacturing an electric discharge tube having an oxide cathode. 3,978,563, Cl. 29-25.170.

Scholtz, Heinz, to Patentanwalte Dr.-Ing. Held. Suspension clamp for electrical overhead lines. 3,979,095, Cl. 248-63.000.

Schorsch, Ronald W. Electronic dynamometer. 3,978,718, Cl. 73-117.300.

Schott, Manfred: *See*—
Heitmann, Hans-Gunter; and Schott, Manfred, 3,979,288.

Schreiber, Edward T. Energy producer using dual fuels. 3,978,821, Cl. [redacted]

Schroder, Theodor, to Titan Verpackungs System GmbH. Closure for a steel band or strap placed around one or more articles and method and device for making said closure. 3,978,899, Cl. 140-93.200.

Schroder, Wolfgang, to International Standard Electric Corporation. Circuit arrangement for the digital control of operating functions via sensor electrodes, especially in radio and television receivers. 3,979,744, Cl. 340-324.00R.

Schroeder, Larry Lloyd: *See*—
Catron, Brittain Norman; Dumstorff, Eugene Francis; Schloss, Phillip Christian; and Schroeder, Larry Lloyd, 3,979,727.

Schroeder, Rondon L., to Continental Oil Company. Earth drilling mechanisms. 3,978,930, Cl. 175-94.000.

Schuhmann, Siegfried: *See*—
Cappel, Bert; Schuhmann, Siegfried; and Wolf, Klaus, 3,978,788.

Schukey, Jurgen. Heat engine. 3,978,680, Cl. 62-6.000.

Schuller, Walter: *See*—
Fiedler, Horst; Schuller, Walter; and Distel, Manfred, 3,979,010.

Schulman, Richard J.; and Schneider, Mark J., to International Telephone and Telegraph Corporation. Speech processor system for pitch period extraction using prediction filters. 3,979,557, Cl. 179-1.0SA.

Schulte, Harry R., to United States of America, Navy. Push plug. 3,979,013, Cl. 220-234.000.

Schultz, Everett M.; and Cragoe, Edward J., Jr., to Merck & Co., Inc. 2-Aminomethyl-6-trihalo-methylphenols. 3,979,361, Cl. [redacted]

Schumacher, Ignatius, to Monsanto Company. Process for the nitration of haloaromatics. 3,979,467, Cl. 260-646.000.

Schuurink, Fredrik A. Dryer in particular for laundry. 3,978,592, Cl. [redacted]

Schwab, Peter A., to Continental Oil Company. Vinyl chloride suspension polymerization. 3,979,366, Cl. 526-345.000.

Schwartz, Andrew K., Jr.; and Cooley, Stone D., to Petro-Tex Chemical Corporation. Process for the preparation of esters of maleic acid with monohydric alcohols. 3,979,443, Cl. 260-485.00R.

Schwartz, Theodore F. Bicycle drive means. 3,978,936, Cl. [redacted]

Schwarz, Eckhard C. A. Method of imparting latent crimp in polyolefin synthetic fibers. 3,979,496, Cl. 264-168.000.

Schwarz, Theodore Albert, to International Business Machines Corporation. Magnetoresistive multitransducer assembly with compensation elements for thermal drift and bias balancing. 3,979,775, Cl. [redacted]

Schweiger, Fritz; and Glahe, Erwin, to Hochtemperatur-Kernkraftwerke GmbH (HKG) Gemeinsames Europaisches Unternehmen. Nuclear reactor. 3,979,258, Cl. 176-86.00R.

Schweitzer, Raymond L.: *See*—
Pool, Eldert B.; and Schweitzer, Raymond L., 3,979,105.

Schwider, Alfred W.; Burnham, John; and Buritz, Robert S., to Hughes Aircraft Company. Polyester fiber-vacuum impregnated epoxy resin insulation system for high voltage transformers. 3,979,530, Cl. 427-104.000.

SCM Corporation: *See*—
Klem, Stanley J., 3,978,965.

Scodino, Ambrogio, to Saipem S.p.A. Self-locking plug apparatus for sealing and recovering a pipeline laid on a deep submerged bed. 3,978,892, Cl. 138-89.000.

Scott, Geoffrey: *See*—
Metcalfe, Trevor Hatfield; Scott, Geoffrey; Thompson, Paul Michael; and Wilford, Ernest, 3,978,692.

Scott, Henry L. Biochemical process for the synthesis of protein from cellulose and starch-containing plants. 3,979,522, Cl. 426-18.000.

Scott, Larry D.: *See*—
Tooley, John R.; Scott, Larry D.; and Chalkley, Hatcher E., 3,979,719.

Scott, M. Walter: *See*—
Hager, Robert J.; Schmit, Joseph L.; Scott, M. Walter; and Stelzer, Ernest L., 3,979,232.

Scott, Norman H., to Universal Oil Products Company. Heat exchange and flow control system for series flow reactors. 3,979,183, Cl. [redacted]

Scott, Warner Curtis, to Texas Instruments Incorporated. Charged particle beam scanning device. 3,979,635, Cl. 315-12.00R.

Searle, Robert J. G.; and Woodall, Roger E., to Shell Oil Company. Pesticidal cyclopropane derivatives. 3,979,424, Cl. 260-468.00H.

Seatonberry, Brian William: *See*—
Spragg, Walter Thomas; and Seatonberry, Brian William, 3,979,593.

Seay, Glenn E.: *See*—
Lomley, Virgil F.; Seay, Glenn E.; and Ritter, Perry B., 3,978,791.

SEBEC Societe d'Exploitation de Brevets d'Emballage Cosmetique S.A.: *See*—
Frydlender, Charles, 3,978,568.

Segal, Zvi: *See*—
Meeker, Robert G.; Scanlon, William J.; and Segal, Zvi, 3,979,671.

Seidler, Helmut; Wunderlich, Klaus; Bien, Hans-Samuel; and Leister, Heinrich, to Bayer Aktiengesellschaft. Polycyclic dyestuffs. 3,979,413, Cl. 260-326.100.

Seitzer, Walter H., to Sun Ventures, Inc. Method for making hydrogen. 3,979,505, Cl. 423-657.000.

Sekhon, Jagdish S., to Hi-Shear Corporation. Protective coating material. 3,979,351, Cl. 260-32.80R.

Seki, Katsuhisa: *See*—
Toyoshima, Shigeru; Honda, Mamoru; Nakamura, Katsuya; and Seki, Katsuhisa, 3,979,648.

Sekiya, Fukuo; and Morokawa, Shigeru, to Citizen Watch Co., Ltd. Solid state binary logic signal source for electronic timepiece or the like. 3,979,608, Cl. 307-247.00A.

Seko, Kiyoshi: *See*—
Sogo, Yukio; Ido, Kazuo; Seko, Kiyoshi; and Takahashi, Hiroshi, 3,979,172.

Seligman, Lawrence, to Data General Corporation. Code recognition record medium and technique. 3,979,577, Cl. 235-61.12N.

Selleck, James Earl: *See*—
Pricer, Wilbur David; and Selleck, James Earl, 3,979,734.

Selling, Hendrak Johannes; Van Lingen, Hendrik; and Han, Njo Hong, to Nederlande Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid Handle En Verkeer. Method for the manufacture of voluminous blended yarns and fabrics and knittings to be manufactured from them. 3,979,177, Cl. 8-115.700.

Selzer, Robert J., to International Harvester Company. Adjustable steering column. 3,978,740, Cl. 74-493.000.

Sensi, Piero: *See*—
Maggi, Nicola; and Sensi, Piero, 3,979,376.

Senturion Sciences, Inc.: *See*—
Silverman, Daniel; and Bailey, John R., 3,979,140.

Sether, Walter H., to Mobil Oil Corporation. Package construction of articles with shrink film. 3,978,638, Cl. 53-30.00S.

Seto, Yoshito: *See*—
Nagasaki, Katsumi; Seto, Yoshito; and Yamasaki, Hiroyuki, 3,979,108.

Severijns, Adrianus Petrus; and Staas, Frans Adrianus, to U.S. Philips Corporation. Refrigeration method and apparatus by converting ^{4}He to A superfluid. 3,978,682, Cl. 62-113.000.

Seymour, David Jackson: *See*—
Kirby, William Everett; and Seymour, David Jackson, 3,978,806.

Sgurov, Vasil Stoyanov: *See*—
Naplatanov, Nicolay Delchev; Sgurov, Vasil Stoyanov; Petrov, Peter Anguelov; Nicolov, Zdravko Alexandrov; Ganchev, Alexander Ivanov; and Trendafilov, Stefan Petrov, 3,979,731.

Sham Progetti S.p.A.: *See*—
Ancillotti, Francesco; Oriani, Gianni; and Pescarollo, Ermanno, 3,979,461.

Shamlian, Ralph B., to Farallon Industries, Inc. Swim fin including means for maintaining foot and leg in fixed relationship. 3,978,537, Cl. 9-309.000.

Shanco Plastics & Chemicals Inc.: *See*—
Brady, John W.; Strickland, Franklin D.; and Longwith, Chester C., 3,979,352.

Shashkina, Galina Alexandrovna: *See*—
Glagovsky, Boris Aronovich; Kamenkovich, Anatoly Samoilovich; Lysanov, Vladislav Sergeevich; Moskovenko, Igor Borisovich; Roitshtein, Garri Shmilevich; Slavina, Ljudmila Yakovlevna; Feldgun, Leon Izrailevich; Frenkel, Larisa Ruvimovna; Khait, Alexandr Lazarevich; Shashkina, Galina Alexandrovna; Yashin, Veniamin Alexandrovich; Kremen, Zinovy Illich; and Muzykant, Yakov Abramovich, 3,978,711.

Shaw, Glenn E.; and Doehr, Charles S., to United States of America, Environmental Protection Agency. Coronametric instrument for aerosol measurements. 3,979,596, Cl. 250-575.000.

Shelkov, Sergei Mikhailovich: *See*—
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Boiko, Georgy Alexandrovich; Kumysh, Ilya Iosifovich; Puzrin, Leonid Gustavovich; Kovalev, Viktor Alexandrovich; Marinsky, Georgy Sergeevich; Beloglazov, Alexandr Petrovich; Siry, Pavel Osipovich; Sopozhnikov, Alexandr Ivanovich; Nosanov, Valentin Alexandrovich; Babinovich, Volf Iudovich; Popov, Lev Vasilievich; Shelkov, Sergei Mikhailovich; Strukov, Vladimir Nikolaevich; and Babich, Boris Markovich, 3,979,101.

Shell Oil Company: *See*—
Kattan, Abraham; and Gwyn, John E., 3,979,175.
Kiovsky, Thomas E.; and Wald, Milton M., 3,979,332.
Kiovsky, Thomas E.; and Kromer, Richard C., 3,979,367.
Kiovsky, Thomas E.; and Kromer, Richard C., 3,979,373.
Kiovsky, Thomas E.; and Kromer, Richard C., 3,979,374.
Searle, Robert J. G.; and Woodall, Roger E., 3,979,424.
van der Bend, Herman Th.; and Sjardijn, Willem, 3,979,372.

Sheppard, Robert S.; and Groening, Franklin E., to PPG Industries, Inc. Preparation of finely-divided refractory powders of groups III-V metal borides, carbides, nitrides, silicides and sulfides. 3,979,500, Cl. [redacted]

Shibata, Kunio: *See*—
Kosaka, Kenzo; Horikawa, Toshio; Uchida, Minoru; Morioka, Shin; Shibata, Kunio; and Takahashi, Eizi, 3,978,647.

Shichman, Daniel: *See*—
Neville, James J.; Ferrell, Wesley; and Shichman, Daniel, 3,979,536.

Shiel, Leslie Edward: *See*—
Emblem, Harold Garton; and Shiel, Leslie Edward, 3,979,215.

Shih, Hsing-Hua, to Westinghouse Electric Corporation. Fluid current meter. 3,978,726, Cl. 73-189.000.

Shinetsu Chemical Company: *See*—
Kagiya, Tsutomu; Miyoshi, Kunihiko; and Takemoto, Katsuo, 3,979,482.

Shipkowitz, Nathan L.: *See*—
Hung, Paul P.; Shipkowitz, Nathan L.; and Von Esch, Anne Mary, 3,979,511.

Shraiber, David Solomonovich; Golodaev, Boris Glebovich; Palkin, Boris Alexandrovich; Zakharov, Leonid Mikhailovich; Genkin, Mikhail Abramovich; Filippov, Dmitry Alexandrovich; and Razumovsky, Anatoly Fedorovich. Method of ultrasonic echo flaw detection and device for effecting same. 3,978,714, Cl. 73-67.80S.

Shuffman, Rose: *See*—
Ross, Sigmund L., 3,978,921.

Shupe, Russell D.: *See*—
Tate, Jack F.; Shupe, Russell D.; and Maddox, Jim, Jr., 3,979,315.

Siebert, Curt August. Speaker enclosure. 3,978,941, Cl. 181-151.000.

Siegmund, Walter P., to American Optical Corporation. Microchannel plates and method of making same. 3,979,637, Cl. 315-12.00R.

Siele, Victor I., to United States of America, Army. Process for producing 1,3,5,7-tetraalkanoyl-1,3,5,7-octahydrotetrazocines. 3,979,379, Cl. 260-239.0BC.

Siemens Aktiengesellschaft: *See*—
Auinger, Herbert, 3,979,618.
Dietze, Wolfgang; Reuschel, Konrad; and Kasper, Andreas, 3,979,490.
Gussefeld, Horst, 3,978,734.
Knodler, Dietheim; and Irion, Leonhard, 3,979,257.
Lass, Daniel; Waldmann, Herrmann; and Wolf, Josef, 3,979,720.
Peche, Gerhard; Lange, Gerhard; and Gruenberg, Dieter, 3,979,646.
Renner, Theodor; Falkenberg, Dieter; Rittmayer, Gerhard; and Grubmuller, Georg, 3,979,226.
Ringelhaan, Otmar E., 3,979,687.
Strasser, Karl, 3,979,224.
Vorbach, Guenther; and Mueller, Wolfgang Peter, 3,979,036.
Wittenzellner, Ernst, 3,979,645.

Sigg-Grutter, Trudi: *See*—
Schenk, Hanspeter; and Sigg-Grutter, Trudi, 3,979,422.

Sightar Incorporated: *See*—
Johnson, William T., Jr.; and Joseph, James B., 3,978,757.

SIGMA Instruments, Inc.: *See*—
Beling, Thomas E.; Morin, John O.; and Yanikoski, Florian F., 3,978,690.

Signa, Michael A.: *See*—
Hobbensiefken, Dean; and Signa, Michael A., 3,978,739.

Signetics Corporation: *See*—
Brand, Warren L., 3,979,765.

Sikich, Jack. Corona discharge apparatus. 3,979,193, Cl. 55-123.000.

Silverman, Daniel; and Bailey, John R., to Senturion Sciences, Inc. Seismic method for logging position of a deep borehole in the earth. 3,979,140, Cl. 181-120.000.

Silverman, Daniel. Method and apparatus for transferring a pattern on an overlying web by laser burning into an underlying web. 3,979,591, Cl. 250-317.000.

Silverman, Daniel; and Bailey, John R. Seismic method for determining the position of the bottom of a long pipe in a deep borehole. 3,979,724, Cl. 340-15.5BH.

Silverman, Ronald: *See*—
Bhattacharyya, Arup; Joshi, Madhukar Laxman; Kroll, Charles Thomas; and Silverman, Ronald, 3,978,577.

Simeth, Claus: *See*—
Bruckner, Carl-Heinz; and Simeth, Claus, 3,979,115.

Simm, Walter, to AGFA-Gevaert, A.G. Process and apparatus for electrographic recording utilizing contact liquid. 3,979,759, Cl. 346-74.0ES.

Simon, Michael, to Maschinenfabrik Augsburg-Nurnberg AG. LPG burning internal combustion engine, especially Otto engine. 3,978,823, Cl. 123-1.00A.

Simonovits, Emilia: *See*—
Johan, Bela; Szemler, Laszlo; Szontagh, Tamas; Kuti, Laszlo; Simonovits, Emilia; Bekes nee Erdos, Judit; Szekely, Denes; Kiss, Janos; Kovacs nee Komoroczy, Erzsebet; and Hargitai nee Franyo, Aniko, 3,979,259.

Singer Company, The: *See*—
Rogers, Howard David, 3,978,688.

Sirico, James Louis: *See*—
Mulzet, Alfred Paul; and Sirico, James Louis, 3,978,992.

Siry, Pavel Osipovich: *See*—
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Boiko, Georgy Alexandrovich; Kumysh, Ilya Iosifovich; Puzrin, Leonid Gustavovich; Kovalev, Viktor Alexandrovich; Marinsky, Georgy Sergeevich; Beloglazov, Alexandr Petrovich; Siry, Pavel Osipovich; Sopozhnikov, Alexandr Ivanovich; Nosanov, Valentin Alexandrovich; Babinovich, Volf Iudovich; Popov, Lev Vasilievich; Shelkov, Sergei Mikhailovich; Strukov, Vladimir Nikolaevich; and Babich, Boris Markovich, 3,979,101.

Sjardijn, Willem: *See*—
van der Bend, Herman Th.; and Sjardijn, Willem, 3,979,372.

Slaney, Patrick John: *See*—
Hadden, Stephen Clow; Hulls, Leonard Robin; Slaney, Patrick John; and Sutphin, Eldon Marvin, Jr., 3,978,719.

Slany, Erich Hans. Dish washing machine. 3,978,875, Cl. 134-112.000.

Slater, Billy Ray: *See*—
Hufstedler, Alferd Gene; Weaver, Ronald Ray; and Slater, Billy Ray, 3,979,715.

Slavina, Ljudmila Yakovlevna: *See*—
Glagovsky, Boris Aronovich; Kamenkovich, Anatoly Samoilovich; Lysanov, Vladislav Sergeevich; Moskovenko, Igor Borisovich; Roitshtein, Garri Shmilevich; Slavina, Ljudmila Yakovlevna; Feldgun, Leon Izrailevich; Frenkel, Larisa Ruvimovna; Khait, Alexandr Lazarevich; Shashkina, Galina Alexandrovna; Yashin, Veniamin Alexandrovich; Kremen, Zinovy Illich; and Muzykant, Yakov Abramovich, 3,978,711.

Slepneva, Albina Timofeevna: *See*—
Golovko, Georgy Anatolievich; Lipkind, Boris Alexandrovich; Slepneva, Albina Timofeevna; Leontiev, Alexandr Semenovich; Mazin, Vladimir Mikhailovich; Berezovskaya, Elena Nikolaevna; Burylov, Valentin Alexandrovich; Zubkov, Alexandr Mikhailovich; Konakova, Olga Alexeevna; Judaev, Alexandr Ivanovich; Pavlychev, Valentin Nikolaevich; Ignatov, Jury Yakovlevich; and Kharitonov, Evgeny Alexandrovich, 3,979,335.

Smart, Thomas John, to Dunlop Limited. Spacer-dampers for power transmission lines. 3,979,553, Cl. 174-42.000.

Smarte Carte, Inc.: *See*—
Muellner, James M., 3,978,959.

Smith, Bob L., to United States of America, Army. Optical pump power distribution feed. 3,979,750, Cl. 343-100.0SA.

Smith, Edward Earl, to Geode Industries, Inc. Apparatus for vibratory polishing of stones and the like. 3,978,623, Cl. 51-163.100.

Smith International, Inc.: *See*—
Olson, Wallace Fred; and McNeal, James Clifton, 3,978,933.

Smith, Jack R.; and Burrows, Leonard H., to Westinghouse Electric Corporation. Bumpless transfer in shifting control command between the primary and backup control systems of a gas turbine power plant. 3,978,659, Cl. 60-39.28R.

Smith, James D. B.; and Phillips, David C., to Westinghouse Electric Corporation. Diazonium salt composition for forming thermoparticulating coating. 3,979,353, Cl. 260-33.6EP.

Smith, James D. B., to Westinghouse Electric Corporation. Arsonium latent catalysts for curing epoxy resins. 3,979,355, Cl. 260-37.0EP.

Smith, John William, to Babcock & Wilcox Company, The. Vapor generator. 3,978,822, Cl. 122-510.000.

Smith, Joseph E. Trigger inhibiting mechanism. 3,978,604, Cl. 42-70.00E.

Smith Kline & French Laboratories Limited: *See*—
White, George Raymond, 3,979,398.

Smith, Leward N.: *See*—
Morey, Norval K.; and Smith, Leward N., 3,979,152.

Smith, Luther B., deceased (by Jordan, William F. L. Fry and Richard E., executors), to L. B. Smith Estates, Inc. Electrotherapeutic treatment head. 3,978,864, Cl. 128-404.000.

Smith, Michael P.: *See*—
Paap, Hans J.; Arnold, Dan M.; and Smith, Michael P., 3,979,300.

Smith, Oliver Wendell: *See*—
Trecker, David John; Borden, George Wayne; and Smith, Oliver Wendell, 3,979,270.

Smith, Paul H., to Colorflo Limited. Fluid injector. 3,979,028, Cl. [redacted]

Smith, Paul K., to Pierce Chemical Company. Radioactive compounds for labeling proteins. 3,979,506, Cl. 424-1.000.

Smith, Stanley W.; and Bregoli, Lawrence J., to United Technologies Corporation. Nitrogen dioxide regenerative fuel cell. 3,979,225, Cl. 429-17.000.

Smithers, James P., to Armour and Company. Method and machine for packing strips of material. 3,978,642, Cl. 53-159.000.

Smithgall, Harry E.: *See*—
Davis, Charles A.; and Smithgall, Harry E., 3,979,633.

Smiths Industries Limited: *See*—
Anderson, Edward W., 3,978,730.

Snavely, Benjamin H.: *See*—
Stoltzfus, David D.; and Snavely, Benjamin H., 3,979,076.

Snow Brand Milk Products Co., Ltd.: *See*—
Sogo, Yukio; Ido, Kazuo; Seko, Kiyoshi; and Takahashi, Hiroshi, 3,979,172.

Snyder, Francis H., Jr. Roller traveller device. 3,978,809, Cl. 114-204.000.

Snyder, William B., Jr., to United States of America, Energy Research and Development Administration. Ductile tungsten-nickel alloy and method for making same. 3,979,209, Cl. 75-227.000.

Snyder, William B., Jr.: *See*—
Northcutt, Walter G., Jr.; and Snyder, William B., Jr., 3,979,234.

So, Richard Tan: *See*—
Roedel, Charles William; Borysiewicz, Richard; So, Richard Tan; and Swan, Larry Wayne, 3,979,559.

Sobel, P. Brav. Massaging apparatus. 3,978,851, Cl. 128-49.000.

Sobolev, Valerian Mikhailovich: *See*—
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Soler Font, Eduardo. Winding machine. 3,978,564, Cl. 29-33.00F.
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Stevenson, Thomas E.; and Cohen, Kenneth W., to Bailey Meter Company. Pneumatic pressure regulator. 3,978,876, Cl. 137-84.000.
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- **Varma, Ravi K.; and Cimarusti, Christopher M.,** to E. R. Squibb & Sons, Inc. 1 H-androsta(16,17)cyclopentene-3-ones. 3,979,417, Cl. 260-397.450.
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- **Von Esch, Anne Mary:** *See—*
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- **Wahlefeld, August Wilhelm:** *See—*
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- **Walters, Robert B.,** to General Electric Company. Polymeric composition and insulated products. 3,979,356, Cl. 260-42.260.
- **Walthour, William J.:** *See—*
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Yen, David H.; Connelly, Tim R.; and Lee, John J., to Filac Corporation. Monitoring apparatus and method for blood pressure and heart rate. 3,978,848, Cl. 128-2.05M.
Yonkers, Robert A., to Bissell, Inc. Floor sweeper with auxiliary rotary brushes. 3,978,539, Cl. 15-42.000.
Yorksie, Daniel S., to Westinghouse Electric Corporation. Battery monitor with automatic scale and recycle prevents. 3,979,657, Cl. 320-13.000.
Yoshida Kogyo Kabushiki Kaisha: *See*—
  Kagoura, Tetsuro, 3,978,615.
  Murasaki, Ryuichi, 3,978,895.
Yoshikawa, Eiji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Control device for a vacuum advancer. 3,978,831, Cl. 123-117.00A.
Yoshino, Masahito, to Kabushiki Kaisha Suwa Seikosha. Step motor for quartz crystal electronic timepiece. 3,978,651, Cl. 58-23.00D.
Yoshioka, Hideaki. Oil hydraulic motor. 3,978,665, Cl. 60-325.000.

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  Helinski, Edward F.; and Zable, Jack L., 3,979,756.
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Zandstra, Lawrence, to Rowe International Inc. Ticket vendor. 3,978,958, Cl. 194-2.000.
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Zavasnik, Fred J., to Continental Can Company, Inc. Process for the manufacture of an oriented container. 3,979,491, Cl. 264-97.000.
Zecher, Wilfried; and Merten, Rudolf, to Bayer Aktiengesellschaft. Reaction products containing free isocyanato groups. 3,979,421, Cl. 260-453.00P.
Zelikman, Evgeny Semenovich: *See*—
  Moskovich, Jury Leonidovich; Juriev, Jury Nikolaevich; Tsyskovsky, Viktor Karlovich; Berezova, Ljudmila Vasilievna; Gilchenok, Nokhum Davidovich; Yanshevsky, Vladimir Avgustovich; Mushenko, Dmitry Vasilievich; Zelikman, Evgeny Semenovich; Filippova, Rufina Alexandrovna; Klimenko, Vladimir Leonidovich; and Sobolev, Valerian Mikhailovich, 3,979,450.
Zemanek, Joseph, Jr., to Mobil Oil Corporation. Two-receiver, variable-density logging system. 3,979,714, Cl. 340-15.5DS.
Zenith Radio Corporation: *See*—
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Ziegenhain, William C.; Porchey, David V.; and Ferrell, Ralph T., to Continental Oil Company. Calcining method for alumina. 3,979,504, Cl. 423-628.000.
Zieger, Claus D., to Interbath, Inc. Mounting arrangement for hand-held shower head. 3,979,096, Cl. 248-75.000.
Zimmer, Jerry W.: *See*—
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Zirngibl, Ulrich, to Sandoz Ltd. Para-amino-β-cyano-bis-styryl compounds. 3,979,429, Cl. 260-463.000.
Zollinger, Howard A.; and Lubbers, LeRoy, to Rapistan, Incorporated. Mobile tier picking apparatus for a warehousing system. 3,978,995, Cl. 214-16.40A.
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Zucchinelli, Mario, to S.A.E.S. Getters S.p.A. Getter device. 3,979,166, Cl. 417-48.000.
Zuckert, Bertram; and Schmut, Wolfgang, to Vianova-Kunstharz A.G. Emulsifiers for preparing aqueous dispersions of alkyd resins. 3,979,346, Cl. 260-23.0CP.
Zumalt, Michael D.; Hofmann, Neil R.; and Bassett, Melvin C., to United States of America, Army. Chemical detection of nitrogen containing compounds. 3,979,182, Cl. 23-232.00R.
Zundorf, Dieter: *See*—
  Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,979,330.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF SEPTEMBER, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Baker, Cole H.; Geis, James D.; Gluz, Harry; and Troll, John H., to Kaye Thermometer Corporation. Automatic thermometer calibration system. Re. 28,954, Cl. 73-1.00F.
Drelich, Arthur H.; and Lukacs, George J., to Johnson & Johnson. Synthetic resin compositions and methods of utilizing the same. Re. 28,957, Cl. 427-331.000.
Geis, James D.: *See*—
    Baker, Cole H.; Geis, James D.; Gluz, Harry; and Troll, John H., Re. 28,954.
Gluz, Harry: *See*—
    Baker, Cole H.; Geis, James D.; Gluz, Harry; and Troll, John H., Re. 28,954.
Horizons Research Incorporated: *See*—
    Wainer, Eugene, Re. 28,956.
International Business Machines Corporation: *See*—
    Zafiropulo, Pietro Alois; and Zihlmann, Franz Xaver, Re. 28,958.
International Harvester Company: *See*—
    Rubenstein, Raymond D., Re. 28,953.
Johnson & Johnson: *See*—
    Drelich, Arthur H.; and Lukacs, George J., Re. 28,957.
Kaye Thermometer Corporation: *See*—
    Baker, Cole H.; Geis, James D.; Gluz, Harry; and Troll, John H., Re. 28,954.
Lukacs, George J.: *See*—
    Drelich, Arthur H.; and Lukacs, George J., Re. 28,957.
Rubenstein, Raymond D., to International Harvester Company. Hydrostatic transmission check valves with automatic unloading. Re. 28,953, Cl. 60-464.000.
Stanberry, William R., Jr.: *See*—
    Stanberry, William R., Sr.; and Stanberry, William R., Jr., Re. 28,955.
Stanberry, William R., Sr.; and Stanberry, William R., Jr. Hydrofoil vehicle. Re. 28,955, Cl. 115-70.000.
Troll, John H.: *See*—
    Baker, Cole H.; Geis, James D.; Gluz, Harry; and Troll, John H., Re. 28,954.
Wainer, Eugene, to Horizons Research Incorporated. Latent image photographic system. Re. 28,956, Cl. 96-48.0HD.
Zafiropulo, Pietro Alois; and Zihlmann, Franz Xaver, to International Business Machines Corporation. Synchronous disconnection and rearrangement. Re. 28,958, Cl. 340-147.0SC.
Zihlmann, Franz Xaver: *See*—
    Zafiropulo, Pietro Alois; and Zihlmann, Franz Xaver, Re. 28,958.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 7TH DAY OF SEPTEMBER, 1976

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687.

Bradley, Richard, J. M. Farber, and L. A. Testa. Compositions for the stabilization of flame retardant styrenic polymers. T950,002, 9-7-76, Cl. 260—45.75.
Chasanov, Martin G.: *See*—
    Leibowitz, Leonard, and Chasanov. T950,006.
Cole, Raymond T.: *See*—
    Sahil, Muhammad S., and Cole. T950,009.
Du Pont de Nemours, E. I., and Co.: *See*—
    Sahil, Muhammad S., and Cole. T950,009.
Farber, Joseph M.: *See*—
    Bradley, Richard, Farber, and Testa. T950,002.
Firestone Tire & Rubber Co., The: *See*—
    Oziomek, James. T950,007.
Hercules Inc.: *See*—
    Weldy, Winfred E. T950,008.
Hicks, Gordon C., and G. H. Megar, to Tennessee Valley Authority. Production of solid ammonium polyphosphate by controlled cooling. T950,011, 9-7-76, Cl. 71—34.
Hogan, Stephen J., and D. R. Vander Molen, to Whirlpool Corp. Low voltage protector. T950,010, 9-7-76, Cl. 317—31.
Hollander, Edward R., Jr. Parison comprised of mating portions. T950,005, 9-7-76, Cl. 428—35.
International Business Machines Corp.: *See*—
    Tuttle, Robert A. T950,004.
Leibowitz, Leonard, and M. G. Chasanov, to United States of America, Energy Research and Development Administration. Method for reducing noxious gas content of automobile exhaust. T950,006, 9-7-76, Cl. 204—177.
Megar, George H.: *See*—
    Hicks, Gordon C., and Megar. T950,011.
Myers, Edwin D., to Tennessee Valley Authority. Bag filtering method for hygroscopic particulates. T950,001, 9-7-76, Cl. 55—96.
Oziomek, James, to The Firestone Tire & Rubber Co. Base-catalyzed cyclization of polybutadiene. T950,007, 9-7-76, Cl. 526—21.
Sahil, Muhammad S., and R. T. Cole, to E. I. du Pont de Nemours and Co. Cheese wrapping material and method. T950,009, 9-7-76, Cl. 428—341.
Sloan, Cephas H. Process for preparing protective fibrous packaging forms. T950,003, 9-7-76, Cl. 264—271.
Tennessee Valley Authority: *See*—
    Hicks, Gordon C., and Megar. T950,011.
    Myers, Edwin D. T950,001.
Testa, Lawrence A.: *See*—
    Bradley, Richard, Farber, and Testa. T950,002.
Tuttle, Robert A., to International Business Machines Corp. Collector clamp circuit. T950,004, 9-7-76, Cl. 321—26.
United States of America, Energy Research and Development Administration: *See*—
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Vander Molen, Donald R.: *See*—
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Weldy, Winfred E., to Hercules Inc. Modifying aramids. T950,008, 9-7-76, Cl. 428—395.
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Accessory Research Engineering: *See*—
    Mattson, Roy D., and Mattson. 241,331.
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Advertising Displays Corp.: *See*—
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Berkey Photo, Inc.: *See*—
    Flieder, Robert A., and Kupiec. 241,373.
Bogan, Barbara J. Decorative panel or the like. 241,335, 9-7-76, Cl. D25—85.

Bogan, Barbara J. Decorative panel or the like. 241,336, 9-7-76, Cl. D25—85.
Bogan, Robert T. Decorative panel or the like. 241,337, 9-7-76, Cl. D25—85.
Bogan, Robert T. Decorative panel of the like. 241,338, 9-7-76, Cl. D25—85.
Bolt, Alex W. Pipe support module. 241,310, 9-7-76, Cl. D8—235.
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- Sandel, Dan. Magnetized floor rolling metal object pick-up tool. 241,303, 9–7–76, Cl. D8—14.
- Sander, Paul F., to I. O. Prague, Corp. Shackle lock. 241,304, 9–7–76, Cl. D8—114.
- Sander, Paul F., to I. O. Prague, Corp. Padlock. 241,305, 9–7–76, Cl. D8—114.
- Scigliano, Robert E. Combined stirring and scraping spoon. 241,302, 9–7–76, Cl. D7—148.
- Scozzafava, James J. Toy jet engine. 241,360, 9–7–76, Cl. D34—15.
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- Tackle, William H., to Steelcase Inc. Chair. 241,288, 9–7–76, Cl. D6—31.
- Takacs, Donald K., to Richardson-Merrell Inc. Hinged box. 241,320, 9–7–76, Cl. D9—231.
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- Travis World, Inc.: *See*—
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    - Sparks, Walton E., and Weiss. 241,323.
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- Whitacre, Jerry D., to HMO International. Kit of pharmaceutical products. 241,377, 9–7–76, Cl. D83—1.
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- Zimbler, Earl, to Jewelcor Inc. Jewelry display case. 241,294, 9–7–76, Cl. D6—173.

CLASSIFICATION OF PATENTS

ISSUED SEPTEMBER 7, 1976

NOTE.—First number, class; second number, subclass; third number, patent number

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424	3,978,525
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81R	3,978,531
93R	3,978,532
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177R	3,979,176
185	3,979,178
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309	3,978,537
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27E	3,978,538
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CLASS 15	
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104.8	3,978,540
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306A	3,978,546
345	3,978,547
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129	3,978,549
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80R	3,978,552
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204R	3,978,571
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126.5	3,978,588
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CLASS 43	
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131	3,978,607
CLASS 46	
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55	3,978,614
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366	3,978,616
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119	3,978,622
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267	3,978,625
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160	3,978,643
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131	3,979,189
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327	3,978,666
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158	3,978,696
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165	3,978,698
232	3,978,699
339	3,978,700
CLASS 71	
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86	3,979,200
91	3,979,201
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131	3,978,703
303	3,978,704
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67.5R	3,978,712
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212	3,978,728
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869	3,978,743
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67R	3,979,206
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58B	3,978,767
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106	3,978,820
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46R	3,978,827
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214R	3,978,857
237	3,978,858
272	3,978,859
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112	3,978,875
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233	3,979,229
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102	3,978,878
115	3,978,879
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318	3,978,881
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495	3,978,884
560	3,978,885
565	3,978,886
624.15	3,978,887
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630.14	3,978,889
636.4	3,978,890
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89	3,978,892

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71	3,979,242
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435	3,979,251
512	3,979,252
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72	3,978,908
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261	3,978,925
267	3,978,926
273	3,978,927
294	3,978,928
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15R	3,979,552
42	3,979,553
177	3,979,554
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249	3,978,932
325	3,978,933
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22	3,979,256
54	3,979,257
86R	3,979,258
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6.8	3,979,555
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463	3,978,971
601	3,978,978
617	3,978,976
782	3,978,974
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CLASS 200	
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130	3,979,267
140	3,979,268
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321B	3,979,295
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113	3,978,988
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CLASS 214	
1BB	3,978,992
1BT	3,978,991
2.5	3,978,994
16.4A	3,978,995
17D	3,978,996
22.5	3,978,993
63	3,978,997
152	3,978,998
314	3,978,999
CLASS 215	
12R	3,979,000
217	3,979,001
256	3,979,002
	3,979,003
341	3,979,004
CLASS 219	
10.49	3,979,572
10.55D	3,979,573
208	3,979,574
407	3,979,575
489	3,979,576
CLASS 220	
9LG	3,979,005
19	3,979,006
23	3,979,007
65	3,979,008
66	3,979,009
86R	3,979,010
94R	3,979,011
231	3,979,012
234	3,979,013
240	3,979,014
307	3,979,015
315	3,979,016
CLASS 221	
7	3,979,017
10	3,979,018
45	3,979,019
63	3,979,020
CLASS 222	
1	3,979,021
25	3,979,022
61	3,979,023
67	3,979,024
95	3,979,025
187	3,979,026
193	3,979,027
389	3,979,028
402.17	3,979,029
415	3,979,030
592	3,979,031
593	3,979,032
604	3,979,033
CLASS 224	
5W	3,979,034
42.24	3,979,035
CLASS 226	
83	3,979,036
97	3,979,037
	3,979,038
CLASS 227	
60	3,979,039
113	3,979,040
CLASS 228	
49	3,979,041
183	3,979,042
205	3,979,043
CLASS 229	
17R	3,979,044
23R	3,979,045
37R	3,979,046
44CB	3,979,047
48T	3,979,048
60	3,979,049
66	3,979,050
72	3,979,051
CLASS 232	
43.1	3,979,052
43.2	3,979,053
	3,979,054
CLASS 235	
61.11E	3,979,578
61.12N	3,979,577
92MT	3,979,056
92WT	3,979,055
150.2	3,979,579
150.53	3,979,580
151.33	3,979,581
156	3,979,057
	3,979,058
193	3,979,582
CLASS 236	
46R	3,979,059
	3,979,060
CLASS 239	
2S	3,979,061
11	3,979,062
70	3,979,063
107	3,979,064
127.3	3,979,065
152	3,979,066
265.35	3,979,067
284R	3,979,068
400	3,979,069
542	3,979,070
653	3,979,071
689	3,979,072
CLASS 240	
1.3	3,979,583
78F	3,979,584
CLASS 241	
5	3,979,073
30	3,979,074
93	3,979,075
101.2	3,979,076
101.7	3,979,077
191	3,979,078
CLASS 242	
75.2	3,979,079
78.6	3,979,080
84.1A	3,979,081
84.2R	3,979,082
107.4R	3,979,083
158F	3,979,084
CLASS 244	
3.15	3,979,085
3.19	3,979,086
54	3,979,087
122AB	3,979,088
122AD	3,979,089
175	3,979,090
CLASS 246	
8	3,979,091
34R	3,979,092
CLASS 248	
56	3,979,093
60	3,979,094
63	3,979,095
75	3,979,096
211	3,979,097
247	3,979,098
418	3,979,099
CLASS 249	
48	3,979,100
97	3,979,101
CLASS 250	
201	3,979,585
209	3,979,586
211J	3,979,587
239	3,979,588
252	3,979,589
265	3,979,300
305	3,979,590
317	3,979,591
352	3,979,325
363S	3,979,592
364	3,979,593
451	3,979,595
569	3,979,594
575	3,979,596
CLASS 251	
11	3,979,102
97	3,979,103
121	3,979,105
214	3,979,104
CLASS 252	
1	3,979,301
2	3,979,302
8.5C	3,979,303
	3,979,304
	3,979,305
8.6	3,979,306
8.75	3,979,307
32.5	3,979,308
	3,979,309
62.51	3,979,310
82	3,979,311
99	3,979,312
	3,979,313
140	3,979,314
170	3,979,317
180	3,979,315
186	3,979,318
189	3,979,316
299	3,979,319
	3,979,320
	3,979,321
301.6P	3,979,322
311.5	3,979,323
359E	3,979,326
364	3,979,324
	3,979,327
373	3,979,328
422	3,979,329
441	3,979,331
	3,979,332
	3,979,333
445	3,979,330
448	3,979,334
455R	3,979,336
455Z	3,979,335
466J	3,979,337
522	3,979,338
524	3,979,339
548	3,979,340
CLASS 254	
18	3,978,576
134.3FT	3,979,106
CLASS 259	
10	3,979,107
CLASS 260	
2.5F	3,979,341
2.5N	3,979,342
16	3,979,343
18TN	3,979,344
23CP	3,979,346
23XA	3,979,345
23H	3,979,180
28.5D	3,979,347
29.4UA	3,979,348
29.6RW	3,979,349
30.2	3,979,350
32.8R	3,979,351
33.4R	3,979,352
33.6EP	3,979,353
37EP	3,979,354
	3,979,355
42.26	3,979,356
42.46	3,979,357
45.75N	3,979,358
45.75S	3,979,359
45.85B	3,979,360
67.6R	3,979,362
77.5AM	3,979,364
77.5AT	3,979,363
77.5NC	3,979,365
79.5C	3,979,367
	3,979,369
112G	3,979,375
152	3,979,376
154	3,979,377
156	3,979,378
239BC	3,979,379
239.7	3,979,380
240A	3,979,381
242	3,979,382
243C	3,979,383
245	3,979,384
245.5B	3,979,399
247	3,979,385
249.7A	3,979,392
250Q	3,979,387
256.4Q	3,979,386
256.5R	3,979,388
	3,979,389
268TR	3,979,391
268R	3,979,390
281G	3,979,393
283BZ	3,979,394
288CF	3,979,397
293.53	3,979,395
293.68	3,979,396
294.8F	3,979,398
297R	3,979,400
301	3,979,401
302D	3,979,403
302R	3,979,402
306.5F	3,979,404
307C	3,979,406
307F	3,979,405
308D	3,979,407
309.6	3,979,408
310A	3,979,412
310R	3,979,409
326N	3,979,410
326.1	3,979,413
327M	3,979,411
335	3,979,414
340.5	3,979,415
346.3	3,979,416
348R	3,979,425
397.45	3,979,417
404.5	3,979,426
448.8R	3,979,418
	3,979,419
	3,979,420
453PC	3,979,427
453P	3,979,421
455A	3,979,428
455R	3,979,422
456P	3,979,423
463	3,979,429
465K	3,979,430
465R	3,979,431
465.2	3,979,432
465.4	3,979,433
468H	3,979,424
	3,979,434
471R	3,979,437
473A	3,979,435
	3,979,438
	3,979,439
	3,979,440
482P	3,979,442
482R	3,979,441
485H	3,979,443
486R	3,979,436
488	3,979,444
508	3,979,445
514D	3,979,446
518R	3,979,447
524N	3,979,448
534E	3,979,449
537P	3,979,450
543H	3,979,451
551C	3,979,453
551S	3,979,452
556A	3,979,454
566A	3,979,455
570.7	3,979,456
570.9	3,979,361
584R	3,979,457
586E	3,979,458
591	3,979,459
609F	3,979,460
614A	3,979,461
619B	3,979,462
621H	3,979,464
623D	3,979,463
639R	3,979,465
642C	3,979,466
646	3,979,467
649DP	3,979,468
653	3,979,469
658R	3,979,470
666A	3,979,471
668R	3,979,472
674R	3,979,473
677B	3,979,474
683.42	3,979,475
683.47	3,979,476
835	3,979,477
850	3,979,478
857F	3,979,479
	3,979,480
	3,979,481
897C	3,979,482
951	3,979,483
	3,979,484
CLASS 261	
30	3,979,485
CLASS 264	
1B	3,979,486
24	3,979,487
40.7	3,979,488
51	3,979,489
81	3,979,490
97	3,979,491
119	3,979,492
145	3,979,493
154	3,979,494
158	3,979,495
168	3,979,496
187	3,979,497
CLASS 266	
201	3,979,108
CLASS 267	
64R	3,979,109
140	3,979,110
CLASS 269	
76	3,979,111
CLASS 270	
58	3,979,112
CLASS 271	
261	3,979,115
CLASS 272	
73	3,979,113
126	3,979,114
CLASS 273	
26R	3,979,116
102B	3,979,117
102.1R	3,979,118
121R	3,979,119
127B	3,979,120

134AD	3,979,121
171	3,979,122
	3,979,123
166A	3,979,124
	3,979,125
218	3,979,126
CLASS 274	
10R	3,979,127
CLASS 277	
75	3,979,128
110	3,979,129
208	3,979,130
CLASS 280	
42	3,979,133
226R	3,979,135
278	3,979,136
402	3,979,137
478R	3,979,138
614	3,979,132
615	3,979,131
710	3,979,134
751	3,979,139
CLASS 282	
27.5	3,979,141
CLASS 285	
235	3,979,142
243	3,979,143
CLASS 290	
55	3,979,597
CLASS 292	
216	3,979,144
CLASS 294	
32	3,979,145
55	3,979,146
CLASS 296	
78.1	3,979,147
137B	3,979,148
CLASS 297	
232	3,979,149
410	3,979,150
CLASS 299	
31	3,979,151
CLASS 302	
17	3,979,152
CLASS 303	
6R	3,979,153
CLASS 305	
21	3,979,154
CLASS 307	
29	3,979,599
125	3,979,600
141	3,979,601
201	3,979,602
221D	3,979,603
	3,979,604
229	3,979,605
235T	3,979,606
237	3,979,607
247A	3,979,608
247R	3,979,609
294	3,979,598
297	3,979,610
300	3,979,611
303	3,979,612
304	3,979,613
CLASS 308	
15	3,979,155
CLASS 310	
9.5	3,979,614
49R	3,979,616
71	3,979,615
168	3,979,617
198	3,979,618
268	3,979,619
	3,979,620
CLASS 312	
196	3,979,156
CLASS 313	
105CM	3,979,621
117	3,979,622
190	3,979,623
229	3,979,624
230	3,979,625
240	3,979,626
318	3,979,627
331	3,979,628
367	3,979,629
408	3,979,630
450	3,979,631
479	3,979,632
481	3,979,633
CLASS 315	
3.5	3,979,634
128	3,979,635
	3,979,636
	3,979,637
169TV	3,979,638
241P	3,979,639
387	3,979,640
387	3,979,641
CLASS 317	
16	3,979,642
	3,979,643
20	3,979,644
33R	3,979,645
62	3,979,646
134	3,979,647
139	3,979,648
CLASS 318	
17	3,979,649
138	3,979,651
150	3,979,650
254	3,979,652
571	3,979,653
599	3,979,654
609	3,979,655
CLASS 319	
2	3,979,656
13	3,979,657
23	3,979,658
CLASS 321	
8R	3,979,659
11	3,979,660
18	3,979,661
27MS	3,979,662
CLASS 323	
4	3,979,663
CLASS 324	
17	3,979,664
30R	3,979,665
61R	3,979,666
65R	3,979,667
71CP	3,979,669
71R	3,979,668
103P	3,979,670
158F	3,979,671
158T	3,979,672
CLASS 325	
2	3,979,673
4	3,979,674
38B	3,979,676
42	3,979,677
184	3,979,678
348	3,979,679
464	3,979,680
CLASS 328	
48	3,979,681
162	3,979,682
165	3,979,683
167	3,979,684
CLASS 329	
105	3,979,685
110	3,979,686
CLASS 330	
17	3,979,687
30D	3,979,688
	3,979,689
107	3,979,690
CLASS 331	
1A	3,979,691
	3,979,692
61	3,979,693
94.5C	3,979,695
94.5M	3,979,694
94.5P	3,979,696
107A	3,979,697
116R	3,979,698
CLASS 333	
10	3,979,699
30R	3,979,700
70T	3,979,701
72	3,979,702
98S	3,979,703
CLASS 335	
6	3,979,704
16	3,979,675
151	3,979,705
CLASS 336	
83	3,979,706
107	3,979,707
CLASS 337	
	3,979,708
186	3,979,709
CLASS 338	
91	3,979,710
CLASS 339	
145T	3,979,157
CLASS 340	
1R	3,979,711
6R	3,979,712
7R	3,979,713
15.5BH	3,979,724
15.5DS	3,979,714
15.5TD	3,979,715
18P	3,979,716
27R	3,979,717
146.1BA	3,979,719
146.1BE	3,979,720
146.1F	3,979,721
146.3AE	3,979,722
147SC	Re.28,958
147R	3,979,723
172.5	3,979,725
	3,979,726
	3,979,727
	3,979,728
	3,979,729
	3,979,730
	3,979,731
	3,979,732
	3,979,733
173CA	3,979,734
173FF	3,979,735
174TF	3,979,736
	3,979,737
	3,979,738
248B	3,979,741
261	3,979,739
276	3,979,740
324AD	3,979,742
324M	3,979,718
324R	3,979,743
	3,979,744
347DD	3,979,746
347NT	3,979,745
375	3,979,747
CLASS 343	
7.7	3,979,748
13R	3,979,749
17.2R	3,979,752
100SA	3,979,750
106R	3,979,751
706	3,979,753
754	3,979,754
	3,979,755
CLASS 346	
1	3,979,756
74EE	3,979,760
74EH	3,979,758
74ES	3,979,757
	3,979,759
CLASS 350	
302	3,979,158
CLASS 352	
136	3,979,159
CLASS 353	
63	3,979,160
CLASS 354	
86	3,979,761
187	3,979,763
288	3,979,762
CLASS 355	
133	3,979,161
CLASS 356	
85	3,979,162
CLASS 357	
22	3,979,764
23	3,979,765
37	3,979,766
38	3,979,767
54	3,979,768
57	3,979,769
CLASS 360	
51	3,979,771
66	3,979,770
80	3,979,774
85	3,979,772
106	3,979,773
113	3,979,775
CLASS 401	
139	3,979,163
CLASS 403	
28	3,979,164
CLASS 408	
14	3,979,165
CLASS 417	
45	3,979,166
CLASS 418	
61B	3,979,167
CLASS 423	
2	3,979,498
253	3,979,499
289	3,979,500
405	3,979,501
488	3,979,502
580	3,979,503
628	3,979,504
657	3,979,505
CLASS 424	
1	3,979,506
1.5	3,979,507
9	3,979,508
12	3,979,509
47	3,979,510
181	3,979,511
230	3,979,512
244	3,979,514
	3,979,515
249	3,979,516
267	3,979,513
277	3,979,517
304	3,979,518
	3,979,519
321	3,979,520
CLASS 425	
8	3,979,168
12	3,979,169
64	3,979,171
104	3,979,172
110	3,979,170
216	3,979,173
292	3,979,174
CLASS 426	
15	3,979,521
18	3,979,522
19	3,979,523
105	3,979,524
321	3,979,525
570	3,979,526
592	3,979,527
594	3,979,528
CLASS 427	
25	3,979,529
104	3,979,530
115	3,979,227
185	3,979,531
243	3,979,532
331	Re.28,957
390	3,979,533
405	3,979,534
422	3,979,535
CLASS 428	
43	3,979,536
81	3,979,537
90	3,979,538
126	3,979,539
159	3,979,540
181	3,979,541
204	3,979,542
331	3,979,543
361	3,979,544
392	3,979,545
394	3,979,546
423	3,979,547
425	3,979,548
450	3,979,549
488	3,979,550
CLASS 429	
17	3,979,225
18	3,979,224
81	3,979,222
99	3,979,228
CLASS 431	
5	3,979,175
CLASS 526	
11.2	3,979,368
12	3,979,373
	3,979,374
273	3,979,371
345	3,979,366
348	3,979,370
351	3,979,372

CLASSIFICATION OF DESIGNS

D2—	272	241,283
	352	241,284
	381	241,285
D4—	25	241,286
D6—	5	241,287
	31	241,288
	49	241,289
	73	241,290
	80	241,291
	85	241,292
	165	241,293
	173	241,294
	184	241,295
	188	241,296
	191	241,297
	201	241,298
	235	241,299
D7—	28	241,300
	50	241,301
	148	241,302
D8—	14	241,303
	114	241,304
		241,305
		241,306
	146	241,307
		241,308
	179	241,309
	235	241,310
	245	241,311
		241,312
		241,313
	246	241,314
	263	241,315
		241,316
D9—	64	241,317
	113	241,318
	131	241,319
	231	241,320
	249	241,321
D10—	106	241,322
		241,323
D11—	4	241,364
	79	241,365
	81	241,366
D12—	29	241,324
	64	241,325
		241,326
	68	241,327
	69	241,328
	85	241,329
	110	241,330
	158	241,331
	192	241,332
D15—	69	241,376
	128	241,369
D16—	26	241,373
	42	241,372
	83	241,371
D19—	34	241,342
	59	241,343
	77	241,344
	96	241,345
D22—	27	241,346
		241,347
		241,348
D23—	11	241,349
D25—	16	241,333
	56	241,334
	74	241,339
	85	241,335
		241,336
		241,337
		241,338
D26—	1A	241,341
	1R	241,340
	14A	241,350
D27—	3	241,355
	43	241,353
	51	241,354
D30—	1	241,357
	20	241,356
D34—	5GH	241,359
	55	241,358
		241,363
	L	241,362
	[illegible]	241,360
	PP	241,361
D48—	20R	241,367
	24A	241,368
D56—	4B	241,370
D64—	18	241,374
		241,375
D83—	1R	241,378
	U	241,377
D86—	16F	241,379
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The 5th Annual Inventor's Day Exposition will be held on Saturday and Sunday, February 5 and 6, 1977 at the Patent and Trademark Office in Arlington, Virginia.

Limited space is available for appropriate display and demonstration of patented materials, devices or methods. Such limited space dictates early consideration by prospective participants. No application can be considered after December 1, 1976.

Other than electricity and alloted space—floor, wall or table top—all expenses associated with each exhibit are to be borne by the exhibitor. Arrangements for delivery, return, setup, and teardown as well as individual exhibit personnel are the exhibitor's responsibility. Neither the Patent and Trademark Office, nor individual employees, can accept a collect shipment or provide storage.

The Patent and Trademark Office has established a committee which will select the items to be exhibited and allot available space. Suitability for dynamic demonstration and current public interests are prime considerations in selecting exhibits.

Inventors or firms interested in participating in this public exhibit are urged to contact the National Inventor's Day Committee of the Patent and Trademark Office (phone 703 557–3428). Communications should be directed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231. Attn: Oscar Mastin, Office of Information Services.

I. J. ROTKIN,
Chairman.

June 14, 1976.

Patent Suits

Notices under 35 U.S.C. 290: Patent Act of 1952

3,273,000, J. Malin, MAGNETICALLY OPERATED SWITCH, filed Dec. 3, 1971, D.C., E.D.N.Y. (Brooklyn) Doc. 71–C–1562, *Alarm Device Mfg. Co., etc. v. Alarm Prod. Intl. Inc. and Orlando Tresorras.* Same, filed Feb. 13, 1974, D.C., S.D.N.Y., Doc. 74–C–711, *Pittway Corporation v. Trine Manufacturing Corp.* Defendant's motion for summary judgment in patent infringement action is granted and complaint is dismissed, July 30, 1974.

3,275,316, G. V. Cleary, Jr., INSERT FOR NEWSPAPERS, filed Dec. 29, 1975, D.C., N.D. Ill. (Chicago) Doc. 75c4385, *Free Standing Stuffer, Inc. v. Investors Diversified Services, Inc.* Same, filed Mar. 2, 1976, D.C., N.D. Ill. (Chicago) Doc. 76c770, *Free Standing Stuffer, Inc. v. Lane Bryant, Inc. and CT Corporation System.*

3,276,947, A. Silverman, SURGICAL BREAST PAD, filed Oct. 30, 1975, D.C., N.D. Ill. (Chicago) Doc. 75c3665, *Silveco Products, Inc. v. Sears, Roebuck and Co.*

3,327,745, Meece and Dew, TREE CUTTER DEVICE, filed Oct. 2, 1968, D.C., N.D. Fla. (Tallahassee) Doc. TCA 1443, *Harrington Manufacturing Company, Inc. v. Idas B. White.* Judgment entered in favor of plaintiff and against defendant, Mar. 15, 1974.

3,345,272, Gordon and Lafferty, 2-POLYMETHYLALLYL-5,9-DIMETHYL-6,7-BENZOMORPHANS AND DERIVATIVES, filed Dec. 10, 1974, D.C. Del. (Wilmington) Doc. 74–266, *SmithKline Corporation v. Sterling Drug Inc.*

3,354,069, H. Koretsky, ELECTRODEPOSITION OF NICKEL-IRON MAGNETIC ALLOY FILMS, filed Dec. 26, 1974, D.C., S.D.N.Y., Doc. 74–C–5666. *M & T Chemicals, Inc. v. International Business Machines Corp.* Same, filed Jan. 15, 1975, D.C. (District of Columbia) Doc. 75–0062, *M & T Chemicals, Inc. v. C. Marshall Dann, Commissioner of Patents et al.* Cause dismissed without prejudice pursuant to Rule 41(a)(1) F.R.C.P. per counsel for plaintiff, Jan. 29, 1975.

3,361,363, C. Jacuzzi, LIQUID AND PASTE DISPENSER, filed Jan. 20, 1975, D.C., N.D. Ill. (Chicago) Doc. 75c192, *Jacuzzi Bros., Inc. v. agent % CT Corporation System*, Same, filed May 7, 1975, D.C., C.D. Calif. (Los Angeles) Doc. CV 75–853–FW, *Plant Industries, Inc. v. Jacuzzi Brothers, Inc.*

3,362,979, F. E. Bentley, MIXTURES OF METHYLENE-BRIDGED POLYPHENYL POLYISOCYANATES, filed July 18, 1974, D.C., S.D. Tex. (Houston) Doc. 74–H–978, *Allied Chemical Corp. v. Jefferson Chemical Co., Inc.* Complaint dismissed, Aug. 22, 1975.

3,375,679, W. F. Heisel, REFRIGERATOR-FREEZER CONSTRUCTION, filed Nov. 8, 1974, D.C. Iowa (Cedar Rapids) Doc. C–74–58, *Amana Refrigeration, Inc. v. Fedders Corporation.* Stipulation of dismissal, Sept. 22, 1975.

3,381,451, J. Gray, APPARATUS FOR FORMING A CLOSURE ON THE END OF A CYLINDRICAL CONTAINER, filed Jan. 28, 1972, D.C. (District of Columbia) Doc. 186–72, *Tupak of America Inc. et al v. Trend-Pak of Canada Limited et al.*

3,396,460, J. D. Wetmore, METHOD OF MAKING A CONNECTION, filed Apr. 21, 1971, D.C., N.D. Calif. (San Francisco) Doc. C71–764, *Raychem Corp. v. Sigmaform Corp.* Ordered said patent is invalid as to claims 1–5. Final judgment entered in favor of defendant. Decision has been appealed, Feb. 20, 1976.

3,401,774, S. Levine, DISPLAY PACKAGE FOR COSMETICS, filed Feb. 20, 1973, D.C., S.D. Fla. (Miami) Doc. 73–276–C–PF, *Del Laboratories, Inc. v. Federated Department Stores, Inc.* Judgment, defendant is hereby permanently enjoined from contributing to or inducing the infringement of claims 2 ad 3 of said patent, Nov. 20, 1973.

3,491,376, D. P. Shiley, HEART VALVE WITH SEPARATE SUTURING RING SUB-ASSEMBLY, filed Mar. 29, 1974, D.C. Minn. (Minneapolis) Doc. 4–74–C–172, *Donald P. Shiley v. Medical Incorporated, The Regents of the University of Minnesota and Washington Scientific Industries Inc.*

3,515,939, J. G. Trump, DUST PRECIPITATOR, filed Apr. 19, 1976, D.C., W.D. Pa. (Pittsburgh) Doc. 76–515, *Westinghouse Electric Corporation and High Voltage Engineering Corp. v. ITE Imperial Corporation.*

3,616,553, F. H. Holland, ELEVATING BELT LOADER AND EXCAVATION APPARATUS, filed Jan. 17, 1974, D.C., W.D. Okla. (Oklahoma City) Doc. 74–73–B, *Francis H. Holland v. CMI Corporation and Bill Swisher.* Filed consent judgment, that claims 7, 8 and 9 of said patent are valid. Defendant's counterclaim dismissed with prejudice. All other relief prayed for not specifically granted is dismissed, Apr. 19, 1976.

3,689,921, F. M. Berry, METHOD AND APPARATUS FOR DIGITALLY DETERMINING THE SPEED OF A MOVING OBJECT; **3,936,824**, Aker, Geist and Kittle, METHOD AND APPARATUS FOR DIGITALLY MEASURING SPEED, filed Apr. 8, 1976, D.C. Colo. (Denver) Doc. 76–382, *Kustom Electronics, Inc. v. CMI, Inc. et al.*

3,732,913, W. A. Wrono, ROLL-UP SLATTED SHADE ASSEMBLY; **3,853,166**, same, SLATTED SHADE ASSEMBLY HAVING STORM BAR MEANS; **3,853,168**, same, ROLL-UP SHADE CONSTRUCTION AND METHOD OF ERECTING SAME, filed Apr. 9, 1976, D.C., S.D. Fla. (Fort Lauderdale) Doc. FL–76–6161–C–PF, *Wrono Enterprise Corp. v. Rolladen, Inc.*

3,853,166. (See 3,732,913.)

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D. 237,579, G. Cyren, FORK OR SIMILAR ARTICLE, filed Dec. 9, 1975, D.C., S.D.N.Y., Doc. 75–C–6175, *Dansk International Designs, Ltd. v. Stanley Roberts Inc.*

PATENT NOTICES

Certificates of Correction for the Week of Sept. 14, 1976

Re. 28,680
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Disclaimers

3,472,234.—*Henry N. Tachick*, Pittsfield, Mass. BODY ORGAN ELECTRODE. Patent dated Oct. 14, 1969. Disclaimer filed Aug. 9, 1976, by the assignee, *General Electric Company.*

Hereby enters this disclaimer to claims 1 and 3 of said patent.

3,601,734.—*John Chesney*, Roselle Park, N.J. HIGH Q TUNABLE IF TRANSFORMER COIL ASSEMBLY. Patent dated Aug. 24, 1971. Disclaimer filed Dec. 17, 1973, by the assignee, *General Instrument Corporation.*

Hereby enters this disclaimer to claim 1 of said patent.

3,789,278.—*Ronald E. Bingham* and *Thomas F. Cecil*, Lexington, Ky., *Guido Galli*, Saratoga, Calif., and *Gereon E. Poquette*, Versailles, Ky. CORONA CHARGING DEVICE. Patent dated Jan. 29, 1974. Disclaimer filed July 12, 1976, by the assignee, *International Business Machines Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 12 and 13 of said patent.

3,867,579.—*John Robert Colton*, Freehold, and *Henry Mann*, Holmdel, N.J. SYNCHRONIZATION APPARATUS FOR A TIME DIVISION SWITCHING SYSTEM. Patent dated Feb. 18, 1975. Disclaimer filed Aug. 4, 1976, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to claim 1 of said patent.

3,951,550.—*E. Paul Slick*, Fort Wayne, Ind. DIRECTION-SENSING VIRTUAL APERTURE RADIATION DETECTOR. Patent dated Apr. 20, 1976. Disclaimer filed Aug. 5, 1976, by the assignee, *The Magnavox Company.*

Hereby enters this disclaimer to claim 8 of said patent.

3,963,854.—*Eliot Patrick Fowler*, Studland, England. SHIELDED CABLES. Patent dated June 15, 1976. Disclaimer filed July 19, 1976, by the assignee, *United Kingdom Atomic Energy Authority.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,964,031.—*Sargent Sheffield Eaton, Jr.*, Phillipsburg, N.J. MEMORY CELL. Patent dated June 15, 1976. Disclaimer filed Aug. 4, 1976, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claims 1, 2, 5, 6, 7 and 8 of said patent.

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,098,964, L. R. Hetzler, TRANSISTOR REGULATOR FOR GENERATORS, Interference No. 98,598, decided Apr. 21, 1976. claims 9, 10 and 18.

Patent No. 3,552,533, J. Nitz and G. R. Graham, CARBONIZED FRICTION ARTICLE, Interference No. 98,083, decided Feb. 21, 1975, claim 13.

Patent No. 3,558,980, D. A. Florance, L. P. Nordholm and S. Foldes, AUTOMATIC GROUND FAULT CIRCUIT INTERRUPTER, Interference No. 99,163, decided May 12, 1976, claims 1, 4, 7 and 8.

Patent No. 3,560,764, J. J. McDowell, PULSE POWERED DATA STORAGE CELL, Interference No. 98,190, decided Mar. 31, 1976. claims 1, 2, 3, 4, 5 and 6.

Patent No. 3,585,442, A. Krusche and H. Rohmann, FLASHLAMP CIRCUIT HAVING AUTOMATIC LIGHT TERMINATION MEANS, Interference No. 97,979, decided May 7, 1976, claims 1, 2, 3, 5, 7, 8 and 9.

Patent No. 3,586,646, H. Corte, E. Meier and H. Seifert, CATION EXCHANGER WITH SPONGE STRUCTURE, Interference No. 98,110, decided June 27, 1975, claims 1, 2, 3, 5, 9, 11, 12, 13 and 15.

Patent No. 3.588.567. G. K. MacLean and R. J. Pekosh, SEGMENTED ELECTRON SHIELD FOR COLOR PICTURE TUBE, Interference No. 98,530, decided Apr. 29, 1975, claim 1.

Patent No. 3,614,232, E. S. Mathisen, PATTERN DEFECT SENSING USING ERROR FREE BLOCKING SPACIAL FILTER, Interference No. 98,232, decided Apr. 14, 1976, claims 1, 2 and 3.

Patent No. 3.621.447, J. W. Taylor and R. E. Pace, DEEP SUBMERGENCE ELECTRICAL ASSEMBLY, Interference No. 98,167, decided Oct. 6, 1975, claim 1.

Patent No. 3,625.912, G. G. Vincent and T. E. Anderson, POLYIMIDE LACQUERS, Interference No. 98,820, decided June 7, 1976, claims 1, 2. 3, 4, 5, 7, 8 and 10.

Patent No. 3,666.478, M. Groh and A. Oetiker, PHOTOGRAPHIC MATERIAL CONTAINING ALIPHATIC PERFLUORO COMPOUNDS, Interference No. 98,760, decided June 25, 1976, claims 1 and 3.

Patent No. 3,678.141, R. T. Metcalfe and H. D. Crandon, PROCESS FOR COLORING EPOXY PLASTIC EYEGLASS FRAMES AND PARTS THEREOF, Interference No. 98,188, decided May 15, 1975, claim 1.

Patent No. 3,737,567, S. Kratomi, STEROSCOPIC APPARATUS HAVING LIQUID CRYSTAL FILTER VIEWER, Interference No. 98.928, decided June 25, 1976, claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 14, 18, 20, 27, 28 and 29.

Patent No. 3.761.430, J. M. Witzel, COMPOSITION COMPRISING A POLYIMIDE REACTION PRODUCT AND FILLED COMPOSITION MADE THEREFROM, Interference No. 99,015, decided June 7, 1976, claims 1, 2 and 5.

Patent No. 3.782.233, H. W. Helm, ROTATABLE CUTTER MECHANISM FOR CUTTING DIFFERENT LENGTH NOTCHES IN A MOVING WEB, Interferences No. 98,849, decided May 12, 1976, claims 1, 2, 3, 4, 5 and 6.

Patent No. 3,789,506, R. B. Johns, DENTAL HANDPIECES, Interference No. 99,045, decided June 28, 1976, claims 1, 2 and 3.

Patent No. 3,806,623, S. Yamada, SINGLE NOTE SELECTING STORAGE CIRCUIT, Interference No. 99,041, decided June 25, 1976, claim 1.

Patent No. 3,835.782, G. L. Griffith and D. W. Edwards, PRODUCT AND METHOD. Interference No. 98.828, decided May 18, 1976, claims 10, 11, 14, 15, 16, 17, 18, 19 and 23.

Patent No. 3,860.586, E. E. Kilbourn, W. D. Weir and H. E. Carley, DERIVATIVES OF 4-(2-AMINOPHENYL)-3-THIOALLOPHANIC ACID, Interference No. 99,112, decided May 18, 1976, claims 1 and 6.

National Technical Information Service

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Requests for licensing information on a particular invention should be directed to the address cited for the agency-[illegible]

DOUGLAS J. CAMPION,
Patent Program Coordinator.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Mgmt. Branch General Services Division, Federal Bldg., Agricultural Research Service, Hyattsville, Md. 20782

Patent application 665,588. Doctoring Apparatus and System. Filed Mar. 10, 1976. PC $3.50/MF $2.25.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, Washington, D.C. 20314

Patent application 509,200. Impedance Standard Apparatus. Filed Sept. 25, 1974. PC $3.50/MF $2.25.

Patent application 525,337. Boron Coated With Ammonium Perchlorate. Filed Nov. 20, 1974. PC $3.50/MF $2.25.

Patent application 638.210. Debris Catcher for Thrust Termination Ports. Filed Dec. 5, 1975. PC $3.50/MF $2.25.

Patent application 642,048. Toroidal Tail Structure for Tethered Aeroform Balloon. Filed Dec. 18, 1975. PC $3.50/MF $2.25.

Patent application 642.525. Aircraft Seat Cushion. Filed Dec. 19, 1975. PC $3.50/MF $2.25.

Patent application 647,528. Holographic High Resolution Contact Printer. Filed Jan. 8, 1976. PC $3.50/MF $2.25.

Patent application 647,530. Flat Layup Venting. Filed Jan. 8, 1976. PC $3.50/MF $2.25.

Patent application 649,108. Variable Orifice Gas Metering Assembly for Aircraft Bomb Rack Gas System. Filed Jan. 14, 1976. PC $3.50/MF $2.25.

Patent application 649,761. Flexible Recording Head Mountting Assembly. Filed Jan. 16, 1976. PC $3.50/MF $2.25.

Patent application 649.765. Nozzle Ejection System. Filed Jan. 16, 1976. PC $4.00/MF $2.25.

Patent 3.933.572. Method for Growing Crystals. Filed Dec. 11, 1973. Patented Jan. 20, 1976. Not available NTIS.

Patent 3,933,573. Aluminum Nitride Single Crystal Growth From a Molten Mixture With Calcium Nitride. Filed Mar. 25, 1975. Patented Jan. 20, 1976. Not available NTIS.

Patent 3,935.479. Dynamic Damping Apparatus. Filed Dec. 20, 1974. Patented Jan. 27, 1976. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Mgmt. Branch General Services Division, Federal Bldg., Agricultural Research Service, Hyattsville, Md. 20782

Patent application 545,291. Process for Making Animal Feed Blocks From Whey. Filed Jan. 30, 1975. PC $3.50/MF $2.25.

Patent application 604,857. Composite Silver Forming Assembly. Filed Aug. 14, 1975. PC $3.50/MF $2.25.

Patent application 610.472. Vaccine Production Process. Filed Sept. 4, 1975. PC $3.50/MF $2.25.

Patent application 616,212. Insect Antenna Vibrating Frequency Modulator and Resonating Maserlike IR Emitter. Filed Sept. 24, 1975. PC $3.50/MF $2.25.

Patent application 629,479. New Holding Device for Tensile Testing Fabrics. Filed Nov. 5, 1975. PC $3.50/MF $2.25.

Patent application 633,086. Self-Cleaning Open-End Yarn Spinning Apparatus. Filed Nov. 18, 1975. PC $3.50/MF $2.25.

Patent application 647,244. Fiber Blending, Subdividing, and Distributing System. Filed Jan. 7, 1976. PC $3.50/MF $2.25.

Patent application 656,031. Retracting Tooth Processing Cylinder Apparatus. Filed Feb. 6, 1976. PC $3.50/MF $2.25.

Patent application 665,586. Apparatus and Method for Treating Waste Products. Filed Mar. 10, 1976. PC $3.50/MF $2.25.

Patent 3.403.172. Hard, High-Melting Waxes From Long-Chain N-Allylamides. Filed Jan. 8, 1964. Patented Sept. 24, 1968. Not available NTIS.

Patent 3,405,149. Direct Cleavage of Epoxides to Produce Aldehydes. Filed Mar. 24, 1965. Patented Oct. 8, 1968. Not available NTIS.

Patent 3,408.373. Alpha-Sulfo Branched Chain Fatty Acids and Method for Preparing Them. Filed Aug. 11, 1964. Patented Oct. 29, 1968. Not available NTIS.

U.S. DEPARTMENT OF TRANSPORTATION
Patent Counsel, 400 7th St. SW.,
Washington, D.C. 20590

Patent 3.760,415. Microwave Crash Sensor for Automobiles. Filed Dec. 23, 1971. Patented Sept. 18, 1973. Not available NTIS.

Patent 3,786,458. Non-Contacting Angular Position Detector. Filed Mar. 1, 1972. Patented Jan. 15, 1974. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20014

Patent application 660,349. Birefringent Crystal Thermometer. Filed Feb. 23, 1976. PC $3.50/MF $2.25.

Patent 3,915,017. Portable Ultrasonic Radiometer. Filed Aug. 30, 1973. Patented Oct. 28, 1975. Not available NTIS.

Patent 3,915,651. Direct Digital Control Pipette. Filed Sept. 22, 1972. Patented Oct. 28, 1975. Not available NTIS.

Patent 3,939,823. Esophageal Transducer. Filed Jan. 28, 1975. Patented Feb. 24, 1976. Not available NTIS.

Patent 3,941,356. Method and Apparatus for Continuous Mixing of Blood Plasma and Additives. Filed Nov. 13, 1974. Patented Mar. 2, 1976. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18 & C Sts. NW.,
Washington, D.C. 20240

Patent application 647,309. Steelmaking by the Electroslag Process Using Prereduced Iron Ore Pellets. Filed Jan. 8, 1976. PC $3.50/MF $2.25.

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Washington, D.C. 20545

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Assistant General Counsel for Administration
Washington, D.C. 20230

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Tennessee Valley Authority

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AF/JACP, Washington, D.C. 20314

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U.S. Department of Agriculture

Research Agreements and Patent Mgmt. Branch, General
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Patent 3.375,281. Process for the Preparation of Stearone. Filed May 13, 1966. Patented Mar. 26, 1968. Not available NTIS.

Patent 3.379,093. Radiation Sample Cells. Filed June 10, 1964. Patented Apr. 23, 1968. Not available NTIS.

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Patent 3,408,209. Process for Manufacturing Rapidly Rehydratable Dehydrated Fruits and Vegetables of High Density. Filed Mar. 8, 1965. Patented Oct. 29, 1968. Not available NTIS.

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Patent 3,437,642. Method of Producing Resins From Nonterminal Epoxy Phenolic Esters. File June 14, 1966. Patented Apr. 8, 1969. Not available NTIS.

Patent 3,450,541. Rapid Quantatative Removal of Natural Sterols From Lipids. Filed June 29, 1966. Patented June 17, 1969. Not available NTIS.

Patent 3,456,576. Automatic Explosive Puffing Apparatus. Filed Feb. 27, 1967. Patented July 22, 1969. Not available NTIS.

Patent 3,463,851. Insect Chemosterilants Derived From Boron. Filed Nov. 23, 1966. Patented Aug. 26, 1969. Not available NTIS.

Patent 3.485.868. Attractants for Yellow Jackets (Vespula spp.: Vespidae). Filed Dec. 29, 1966. Patented Dec. 23, 1969. Not available NTIS.

Patent 3,492,403. Production of Lactation by Nonsedative Phenothiazine Derivatives. Filed Dec. 9, 1965. Patented Jan. 27, 1970. Not available NTIS.

Patent 3,533,935. Liquid Zone Electrophoresis Apparatus. Filed Mar. 20, 1968. Patented Oct. 13, 1970. Not available NTIS.

Patent 3,563,982. Insect Control Process With Synthetic Hormones. Filed Jan. 2, 1969. Patented Feb. 16, 1971. Not available NTIS.

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Patent 3,625,296. Mechanical Soil Sampler. Filed Dec. 30, 1969. Patented Dec. 7, 1971. Not available NTIS.

Patent 3,666,105. Apparatus for Continuous Liquid-Solid Phase Chromatography. Filed Aug. 4, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,672,862. Rhizobitoxine as a Post-Emergent Herbicide. Filed Dec. 12, 1969. Patented June 27, 1972. Not available NTIS.

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Patent 3,944,415. Removing Heavy Metal Ions From Water. Filed Mar. 5, 1975. Patented Mar. 16, 1976. Not available NTIS.

Patent 3,946,047. Alkylcinnamylphenols as Mosquito Larvicides. Filed Feb. 27, 1975. Patented Mar. 23, 1976. Not available NTIS.

Patent 3,949,093. Process for Improving Quality of Protein-Fortified Baked Goods. Filed Apr. 2, 1973. Patented Apr. 6, 1976. Not available NTIS.

U.S. Department of Health, Education & Welfare

National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20014

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Patent 3,914,424. Method for Treating P–388 or L–1210 Leukemia Strains. Filed Feb. 22, 1974. Patented Oct. 21, 1975. Not available NTIS.

U.S. Department of the Interior

Branch of Patents, 18 & C Sts. NW.,
Washington, D.C. 20240

Patent application 661,465. Electric-Optic Measurement of Voltage on High-Voltage Power Lines. Filed Feb. 26, 1976. PC $4.00/MF $2.25.

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U.S. Department of the Navy

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 643,713. Smoke Marker. Filed Dec. 23, 1975. PC $3.50/MF $2.25.

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Patent 3,898,448. Spiral Scan Generator. Filed Sept. 26, 1973. Patented Aug. 5, 1975. Not available NTIS.

Patent 3,906,861. Fuze Sterilization System. Filed Jan. 21, 1974. Patented Sept. 23, 1975. Not available NTIS.

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National Aeronautics and Space Administration

Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

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Patent application 652,948. Liquid-Cooled Brassiere. Filed Jan. 27, 1976. PC $3.50/MF $2.25.

Patent application 657,995. A Device for Tensioning Test Specimens Within an Hermetically Sealed Chamber. Filed Feb. 13, 1976. PC $3.50/MF $2.25.

Patent application 657,996. Two-Dimensional Radiant Energy Array Computers and Computing Devices. Filed Feb. 13, 1976. PC $5.00/MF $2.25.

Patent application 657,997. Two-Dimensional Radiant Energy Array Computers and Computing Devices. Filed Feb. 13, 1976. PC $4.50/MF $2.25.

Patent application 658,133. Acoustic Energy Shaping. Filed Feb. 13, 1976. PC $3.50/MF $2.25.

Patent application 658,449. Multiple Rate Digital Command Detection System With Range Clean-Up Capability. Filed Feb. 17, 1976. PC $4.00/MF $2.25.

Patent application 659.882. Method of Forming Metal Hydride Films. Filed Feb. 20, 1976. PC $3.50/MF $2.25.

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Patent application 662,176. Method of Locating Persons in Distress. Filed Feb. 27, 1976. PC $3.50/MF $2.25.

Patent 3,806,834. Stark-Effect Modulation of CO_2 Laser With NH_2D. Patented Apr. 23, 1974. Not available NTIS.

Patent 3,829,839. Priority Interrupt System. Patented Aug. 13, 1974. Not available NTIS.

Patent 3,860,393. Automated System for Identifying Traces of Organic Chemical Compounds in Aqueous Solutions. Patented Jan. 14, 1975. Not available NTIS.

Patent 3,894,887. Hydrogen-Bromine Secondary Battery. Patented July 15, 1975. Not available NTIS.

Patent 3,912,999. Zinc-Halide Battery With Molten Electrolyte. Patented Oct. 14, 1975. Not available NTIS.

Patent 3,920,416. Hydrogen-Rich Gas Generator. Patented Nov. 18, 1975. Not available NTIS.

Patent 3,929,305. Heat Exchanger System and Method. Patented Dec. 30, 1975. Not available NTIS.

Patent 3,931,462. Stack Plume Visualization System. Patented Jan. 6, 1976. Not available NTIS.

Patent 3,937,055. Method of Peening and Portable Peening Gun. Patented Feb. 10, 1976. Not available NTIS.

Patent 3,937.387. Method of Fluxless Brazing and Diffusion Bonding of Aluminum Containing Components. Patented Feb. 10, 1976. Not available NTIS.

Patent 3,937,555. Holographic Motion Picture Camera With Doppler Shift Compensation. Patented Feb. 10, 1976. Not available NTIS.

Patent 3,937,945. Apparatus for Simulating Optical Transmission Links. Patented Feb. 10, 1976. Not available NTIS.

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Patent 3.938,182. Automatic Character Skew and Spacing Checking Network. Patented Feb. 10, 1976. Not available NTIS.

Patent 3.938,188. Analog to Digital Converter. Patented Feb. 10, 1976. Not available NTIS.

Patent 3,938,367. Sampler of Gas Borne Particles. Patented Feb. 17, 1976. Not available NTIS.

Patent 3,938,373. Method and Apparatus for Tensile Testing of Metal Foil. Patented Feb. 17, 1976. Not available NTIS.

Patent 3,938,956. Modulated Hydrogen Ion Flame Detector. Patented Feb 17, 1976. Not available NTIS.

Patent 3,939,048. Process for Making Anhydrous Metal Halides. Patented Feb. 17, 1976. Not available NTIS.

Patent 3,939.439. Diffused Waveguiding Capillary Tube With Distributed Feedback for a Gas Laser. Patented Feb. 17, 1976. Not available NTIS.

Patent 3,940,621. Heat Transfer Device. Patented Feb. 24, 1976. Not available NTIS.

U.S. Department of the Air Force

AF/JACP, Washington, D.C. 20314

Patent 3,933,034. Hydrostatic Stress Gauge System. Filed Mar. 25, 1974. Patented Jan. 20, 1976. Not available NTIS.

Patent 3,933,615. Fluid Flow Stripping and Plating System. Filed June 9, 1969. Patented Jan. 20, 1976. Not available NTIS.

Patent 3,934,846. Device to Reduce Flow Induced Pressure Oscillations in Open Cavities. Filed Oct. 8, 1974. Patented Jan. 27, 1976. Not available NTIS.

U.S. Department of Agriculture

Research Agreements and Patent Mgmt. Branch, General
Services Division, Federal Bldg., Agricultural Research
Service, Hyattsville, Md. 20782

Patent application 598,493. In-Field Boll Weevil Trap. Filed July 23, 1975. PC $3.50/MF $2.25.

Patent application 604,851. Chicken Coop Lifting Device. Filed Aug. 14, 1975. PC $3.50/MF $2.25.

Patent application 604,853. Improved Durable Press Treatment by Addition of Sodium Dihydrogen Phosphate to Aluminum Sulfate Catalyst. Filed Aug. 14, 1975. PC $3.50/MF $2.25.

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Patent application 615,015. 2,4,6-Tris(Carbamoylmethylamino)-1,3,5-s-Triazine. Filed Sept. 19, 1975. PC $3.50/MF $2.25.

Patent application 615,034. Process for Producing Gelled and Textured Cottonseed Protein Products. Filed Sept. 19, 1975. PC $3.50/MF $2.25.

Patent application 615,035. Air Dropped Bait Dispensers for Attracting and Killing the Cotton Boll Weevil. Filed Sept. 19, 1975. PC $3.50/MF $2.25.

Patent application 615,039. Centrifugal Filtration Tube for Removal of the Mother Liquor From the Crystals in the Purification of a Chemical Compound by Recrystallization. Filed Sept. 19, 1975. PC $3.50/MF $2.25.

Patent application 618,188. Flame Retardant Blend Materials. Filed Sept. 30, 1975. PC $3.50/MF $2.25.

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Patent application 625,722. Cellulose Reagents Incorporating t-Amino Group. Filed Oct. 23, 1975. PC $3.50/MF $2.25.

Patent application 627,325. Milk-Like Products From Peanuts. Filed Oct. 30, 1975. PC $3.50/MF $2.25.

Patent application 629,478. Flame Retarded Textiles Via Deposition of Polymers From Oligomeric Vinylphosphonate and Polyamino Compounds. Filed Nov. 5, 1975. PC $3.50/MF $2.25.

Patent application 633,067. Durable-Press Properties in Cotton Containing Fabrics Via Polymeric N-Methylol Reagents. Filed Nov. 18, 1975. PC $3.50/MF $2.25.

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Patent application 656,033. Aluminum Chlorhydroxide-Phosphoric Acid Catalyst System for Flash Cure Treatments to Give Improved Durable-Press Properties in Cellulose Containing Textiles. Filed Feb. 6, 1976. PC $3.50/MF $2.25.

Patent application 656,038. A Single-Treatment Process for Imparting Durable Soil-Release Properties to Cotton and Cotton-Polyester Blend Fabrics of Several Constructions and Compositions. Filed Feb. 6, 1976. PC $4.00/MF $2.25.

Patent application 660,882. Imparting Paramagnetic Susceptibility to Cotton Fibers. Filed Feb. 4, 1976. PC $3.50/MF $2.25.

Patent 3,877,818. Photo-Optical Method for Determining Fat Content in Meat. Filed Jan. 28, 1974. Patented Apr. 15, 1975. Not available NTIS.

Patent 3,902,224. Fiber Distribution and Ribbon Forming System. Filed Oct. 10, 1973. Patented Sept. 2, 1975. Not available NTIS.

Patent 3,914,106. Process for Treating Organic Textiles With Flame Retardant Polymers Made From Hydroxymethylphosphorus Compounds and Guanazoles. Filed Jan. 31, 1973. Patented Oct. 21, 1975. Not available NTIS.

Patent 3,926,709. Glassy Materials From Plumbites and Cellulosics. Filed Aug. 22, 1974. Patented Dec. 16, 1975. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE

National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20014

Patent application 663,127. Laminated Carbon-Containing Silicone Rubber Membrane for Use in Membrane Artificial Lung. Filed Mar. 1, 1976. PC $4.00/MF $2.25.

Patent 3,914,400. Stable Antigen-Erythrocytes for Measuring Antibodies Against Toxoplasma Organism. Filed May 21, 1973. Patented Oct. 21, 1975. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th & G Sts. NW.,
Washington, D.C. 20240

Patent application 652,347. Receiver System for Locating Transmitters. Filed Jan. 26, 1976. PC $3.50/MF $2.25.

Patent application 657,894. Electrodeposition of Copper. Filed Feb. 13, 1976. PC $3.50/MF $2.25.

Patent application 660,192. Undervoltage Release With Electrical Reset for Circuit Breaker. Filed Feb. 23, 1976. PC $3.50/MF $2.25.

Patent application 660,942. Desorption of Gold From Activated Carbon. Filed Feb. 24, 1976. PC $3.50/MF $2.25.

Patent 3,940,265. Recovery of Lead From Battery Scrap. Filed June 25, 1975. Patented Feb. 24, 1976. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent 2,996,946. Optical Device Including Gating Circuits, Adjustable in Time and Duration. Filed Jan. 20, 1956. Patented Aug. 22, 1961. Not available NTIS.

Patent 3,783,258. FFT Processor Utilizing Variable Length Shift Registers. Filed Nov. 3, 1971. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,866,234. Shaped Ceramic Dielectric Antenna Lens. Filed Dec. 26, 1973. Patented Feb. 11, 1975. Not available NTIS.

Patent 3,909,297. Lithium-Chloride Battery Design. Filed May 10, 1968. Patented Sept. 30, 1975. Not available NTIS.

Patent 3,910,190. Hand-Held Signaling Device Having Manual Firing Means. Filed Apr. 22, 1974. Patented Oct. 7, 1975. Not available NTIS.

Patent 3,913,094. Count Sequence Test Set for a Disc Type Digital Encoder. Filed Mar. 20, 1974. Patented Oct. 14, 1975. Not available NTIS.

Patent 3,917,412. Advanced Helmet Tracker Using Lateral Photodetection and Light-Emitting Diodes. Filed Apr. 11, 1972. Patented Nov. 4, 1975. Not available NTIS.

Patent 3,931,589. Perforated Wall Hollow-Cathode Ion Laser. Filed Mar. 21, 1974. Patented Jan. 6, 1976. Not available NTIS.

TENNESSEE VALLEY AUTHORITY

Division of Law
Muscle Shoals, Ala. 35660

Patent 3,928,015. Manufacture of Urea-Ammonium Sulfate From Sulfuric Acid, Ammonia, and Urea. Filed June 9, 1975. Patented Dec. 23, 1975. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

Patent application 390,049. Hydrogen Rich Gas Generator. Filed Aug. 20, 1973. PC $3.50/MF $2.25.

Patent application 462,424. Improved Method of Making Reinforced Composite Structures. Filed Apr. 19, 1974. PC $3.50/MF $2.25.

Patent application 553,687. Improved Hydrogen-Rich Gas Generator. Filed Dec. 27, 1975. PC $3.50/MF $2.25.

Patent application 643,895. Insulation for Piping. Filed Dec. 23, 1975. PC $3.50/MF $2.25.

Patent application 645,500. Method and Apparatus for Controlling the Contrast of a Photographic Transparency. Filed Dec. 30, 1975. PC $3.50/MF $2.25.

Patent application 645,503. Pyrolysis System and Process. Filed Dec. 30, 1975. PC $3.50/MF $2.25.

Patent application 645,510. Pseudo Noise Code and Data Transmission Method and Apparatus. Filed Dec. 30, 1975. PC $4.00/MF $2.25.

Patent application 645,571. Miniature Biaxial Strain Transducer. Filed Dec. 30, 1975. PC $3.50/MF $2.25.

Patent 3,924,068. Low Distortion Receiver for Bi-Level Baseband PCM Waveforms. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,924,176. Magnetometer Using Superconducting Rotating Body. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,924,183. Frequency Measurement by Coincidence Detection With Standard Frequency. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,924,267. Scan Converting Video Tape Recorder. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,928,708. Transparent Fire Resistant Polymeric Structures. Patented Dec. 23, 1975. Not available NTIS.

Patent 3,929,364. Clock Setter. Patented Dec. 30, 1975. Not available NTIS.

Patent 3,930,628. Deploy/Release System. Patented Jan. 6, 1976. Not available NTIS.

Patent 3,931,132. Utilization of Oxygen Difluoride for Syntheses of Fluoropolymers. Patented Jan. 6, 1976. Not available NTIS.

Patent 3,931,447. Fused Silicide Coatings Containing Discrete Particles for Protecting Niobium Alloys. Patented Jan. 6, 1976. Not available NTIS.

Patent 3,931,456. High Voltage Distributor. Patented Jan. 6, 1976. Not available NTIS.

Patent 3,931,516. Moving Particle Composition Analyzer. Patented Jan. 6. 1976. Not available NTIS.

Patent 3,931,532. Thermoelectric Power System. Patented Jan. 6, 1976. Not available NTIS.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 14, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-9-76
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-2-76
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-1-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-17-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-2-76
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-21-75
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	11-6-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-3-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-13-76
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-3-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	[illegible]
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-10-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-18-76
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-22-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	8-7-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	2-2-76

Expiration of patents: The patents within the range of numbers indicated below expire during August 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,897,500 to 2,901,748 inclusive
Plant Patents	Numbers 1,856 to 1,860 inclusive

REISSUES

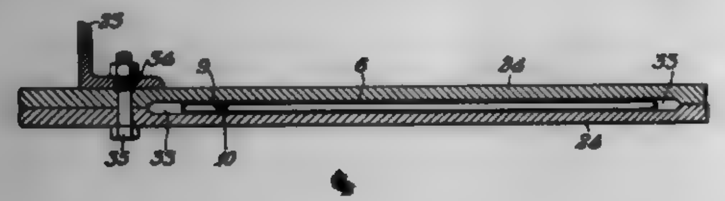
SEPTEMBER 14, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,959
APPARATUS AND METHOD FOR MANUFACTURING TUBING FOR RECLOSABLE BAGS

Kakuji Naito, 23-1, 5-chome, Ayase, Adachi, Tokyo, Japan
Original No. 3,543,379, dated Dec. 1, 1970, Ser. No. 662,344, Aug. 22, 1967. Division of Ser. No. 89,540, Feb. 15, 1961, Pat. No. 3,340,116. Application for reissue Sept. 30, 1975, Ser. No. 618,142

Int. Cl.² B23P *11/02*
U.S. Cl. 29—450 **11 Claims**



1. A mechanism for joining rib and groove shaped plastic interlocking mating profiles within a continuous tube of plastic material wherein the profiles are constructed so that the rib is interlockingly received within the groove profiles when the profiles are pressed together, comprising,
means for advancing the tube axially along a path,
joining means applying opposed forces to the outer surfaces of the tube forcing the profiles together, and
aligning means in advance of said joining means aligning the opposed profiles so that the rib profile is in registry with the groove profile.

2. A mechanism for joining rib and groove shaped plastic interlocking mating profiles within a continuous tube of plastic material wherein the profiles are constructed so that the rib is interlockingly received within the groove profiles when the profiles are pressed together, comprising,
means for advancing the tube axially along a path,
opposed pressing means applying forces to the outer surface of the tube for forcing the profiles together, and
a guiding means by which the profiles are aligned so that the rib profile is in registry with the groove profile being located within the tube ahead of said pressing means.

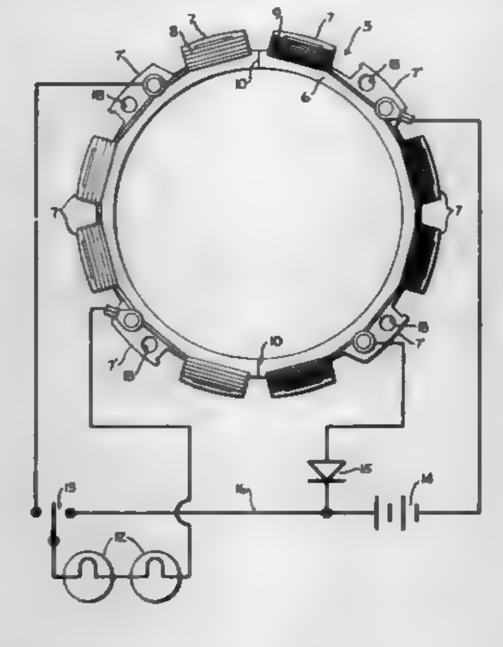
Re. 28,960
METHOD OF MASS PRODUCING ALTERNATOR STATORS FOR SMALL ENGINES

Paul A. Tharman, Milwaukee, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.
Original No. 3,824,682, dated July 23, 1974, Ser. No. 382,700, July 26, 1973. Application for reissue Dec. 7, 1975, Ser. No. 638,725

Int. Cl.² H02K *15/02*
U.S. Cl. 29—596 **4 Claims**

1. The method of mass producing alternator stators intended to be installed on small engines for cooperation with permanent magnets carried by their flywheels, to enable certain of such engines to be equipped with a type of alternating current source suitable for powering load circuits such as headlights, others to be equipped with a type of alternating current source suitable, when rectified, for unregulated battery charging, and still others to be equipped with both types of alternating current sources, said method being characterized by:

A. manufacturing a plurality of identical substantially annular stator core rings, each having an even number of circumferentially spaced pole teeth and being symmetrical to a diametral line;
B. winding on the pole teeth of each of a certain number of said rings two sets of windings of wire of one gage, said sets of windings being at opposite sides of said diametral line, each being wholly at its side of said line, and the two sets being identical to one another;
C. similarly winding on each of the remainder of said rings two identical sets of windings of wire of another gage; and

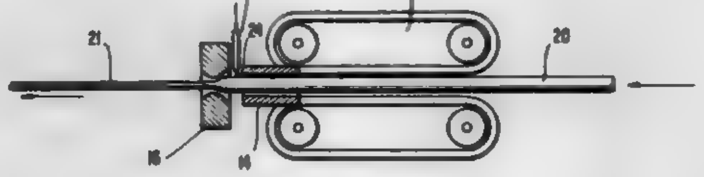


D. cutting all of said stator rings in half on said diametral line.

Re. 28,961
METHOD AND APPARATUS FOR MANUFACTURING SOFT METAL SHEATHS FOR ELECTRICAL WIRES

Akiyoshi Tsukamoto; Hiroyuki Kumamaru; Koichiro Matsuno, and Mahito Ishikawa, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Original No. 3,874,076, dated Apr. 1, 1975, Ser. No. 374,151, June 27, 1973. Continuation of Ser. No. 128,297, March 26, 1971, abandoned. Application for reissue Oct. 17, 1975, Ser. No. 623,220
Claims priority, application Japan, Mar. 26, 1970, 45-25497

Int. Cl.² H01B *13/22*
U.S. Cl. 29—624 **1 Claim**

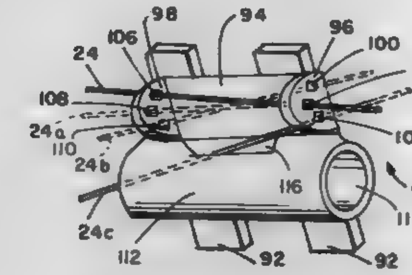


1. In a method of continuously manufacturing a soft metal sheath electric cable by moving a soft metal tape longitudinally in unison with a core and wrapping said tape about said core, the improvement comprising the steps of, in sequence:
surface cleaning said soft metal tape whose width is in excess of that needed to laterally envelope the cable core,
cutting off both side edges of said tape to reduce the width of said tape to a dimension such that the side edges will exactly abut when laterally wrapped about the core and to provide abutting side edges which are oxide free,
bending said tape into an arc in cross section by passing said tape through opposed concave and convex wear resistant plastic rollers,
butting said oxide free tape side edges together by passing said arc-shaped tape through a wear resistant plastic cylindrical shaping tool and a wear resistant plastic forming die having a circular opening therein,
seam welding the butting oxide free side edges,
extracting the tube from said forming die and pushing the tube through a reducing die under lubrication by means of a capstan positioned upstream of the reducing die and downstream of the forming die to uniformly radially inwardly reduce the tube to mechanically couple the soft metal tube to the outer surface of the cable core with true circular cross section provided thereby.

Re. 28,962
BUCCAL END TUBE

Melvin Wallshein, 8645 Bay Parkway, Brooklyn, N.Y. 11214
Original No. 3,874,080, dated Apr. 1, 1975, Ser. No. 337,897, Mar. 5, 1973. Application for reissue June 9, 1975, Ser. No. 584,752

Int. Cl.² A61C *7/00*
U.S. Cl. 32—14 A **23 Claims**



1. A buccal end tube device for selectively orienting and orthodontic arch wire relative to a tooth, the device comprising two spaced tabs, each of said tabs being provided with arch wire positioning means in the form of at least one aperture, [said] at least one [apertures in] *of said tabs having at least two apertures* [said tabs being] spaced from each other in the buccal-lingual direction [and], *said tabs being* adapted to receive spaced portions of the arch wire, whereby the arch wire may be disposed in a predetermined orientation within a buccal-lingual plane by positioning the arch wire in said at least one aperture in each of said two spaced tabs and maintained in the selected orientation against the action of external forces applied both to the arch wire and to the buccal end tube device.

Re. 28,963
DETERMINATION OF RESIDUAL OIL IN A FORMATION

Walter H. Fertl, Ponca City, Okla., and Edward B. Reynolds, Spring, Tex., assignors to Continental Oil Company, Ponca City, Okla.
Original No. 3,878,890, dated Apr. 22, 1975, Ser. No. 420,189, Nov. 28, 1973. Application for reissue Nov. 21, 1975, Ser. No. 634,020

Int. Cl.² E21B *49/00*
U.S. Cl. 166—252 **7 Claims**

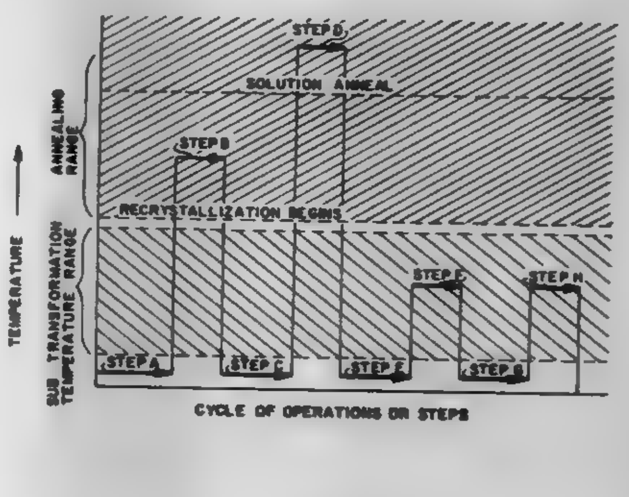
1. A method for determining the residual oil in an oil bearing formation penetrated by the bore hole of a well comprising the steps of:

a. logging said formation to obtain logging data measurements of the relative quantities of residual oil and formation water present in the formation;
b. injecting into said formation, through said borehole, a sufficient amount of an oil miscible solution, to displace substantially all of the residual oil in said formation surrounding said borehole to a distance exceeding the radius of investigation of the logging means providing the logging data;
c. injecting into said formation through said borehole a sufficient amount of water to displace substantially all of said oil miscible solution and cause said formation being tested to be substantially 100 percent water saturated; and
d. logging for a second time said formation to obtain logging data measurements; and,
e. comparing the logging data measurements of said second log with the logging data measurements of said first log to determine the amount of residual oil in said formation, *wherein said logging data measurements are obtained by employing a reservoir property logging means selected from the group consisting of resistivity log means, sonic log means and density log means.*

Re. 28,964
ULTRAHIGH STRENGTH STEELS

John Nunes, Libertyville, Ill., and Albert D. Martin, Groton, Mass., assignors to Brunswick Corporation, Skokie, Ill.
Original No. 3,698,963, dated Oct. 17, 1972, Ser. No. 73,962, Sept. 21, 1970. Application for reissue Sept. 12, 1974, Ser. No. 505,528

Int. Cl.² C21D *7/02*
U.S. Cl. 148—12 E **17 Claims**



1. A high strength stainless steel material having a composition by weight consisting essentially of .15% maximum carbon, 1.5% maximum silicon, 2% maximum manganese, about 17% to about 19% chromium, about 7to about 10% nickel, minor amounts of other metals, and the balance constituent iron, and characterized in that said material has a tensile strength in excess of 400,000 p.s.i.

PLANT PATENTS

GRANTED SEPTEMBER 14, 1976

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,949
PLUM TREE
Roy Lester Sumrald, 452 E. Merritt,
Tulare, Calif. 93274
Filed Aug. 15, 1975, Ser. No. 604,909
Int. Cl.^{2} A01H *5/03*

U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of plum substantially as described and illustrated, and having as a principal distinguishing characteristic its ripening to maturity approximately 12 to 15 days subsequent to the Casselman (unpatented) plum tree and more than six weeks earlier than the Roysum (patented) plum tree.

3,950
CHRYSANTHEMUM PLANT
Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed Aug. 27, 1975, Ser. No. 608,257
Int. Cl.^{2} A01H *5/00*

U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct cultivar of chrysanthemum plant known by the cultivar name Palisade and particularly characterized as to uniqueness by the combined characteristics of standard (disbud) to decorative (spray) inflorescence type; semi-incurve (disbud) to flat (spray) inflorescence form; white inflorescence color; diameter across face of inflorescence from 3.5 to 4.5 inches (spray) and from 5.0 to 6.5 inches (disbud) at maturity; uniform nine week (disbud) and ten week (spray) flowering response; tall plant height; upright branching pattern; good shipping durability; and high gradeout (Society of American Florists Standards).

3,951
ALMOND TREE
Joseph Pavcik, 1187 Stanley Ave., Chico, Calif. 95926
Filed Oct. 14, 1975, Ser. No. 622,027
Int. Cl.^{2} A01H *5/03*

U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond tree, substantially as illustrated and described, particularly characterized by a tree having a branching habit generally like the Nonpareil, but with fruit wood which is thick and similar to the Drake; by a blooming period close to the Nonpareil and hence an excellent pollinator therefor; by a harvest period substantially with the Nonpareil but with a much heavier crop; and by nuts having shells and kernels of generally the same shape and color as the Davey, the nuts having a soft, well-sealed shell.

3,952
NECTARINE TREE
John H. Enns, 39572 Road 64, Dinuba, Calif. 93618
Filed Nov. 20, 1975, Ser. No. 633,946
Int. Cl.^{2} A01H *5/03*

U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, which is of medium to large size, vigorous, of open vase form, spreading, stocky of trunk and branches, foliated with lanceolate leaves having a finely serrated margin, and bearing medium size, early ripening, semi-clingstone fruit having yellow skin substantially overspread with red, and yellow flesh; the variety being particularly characterized, in comparison to the Mayred, by larger average fruit size and by ripening about three days earlier.

PATENTS

GRANTED SEPTEMBER 14, 1976

ERRATA

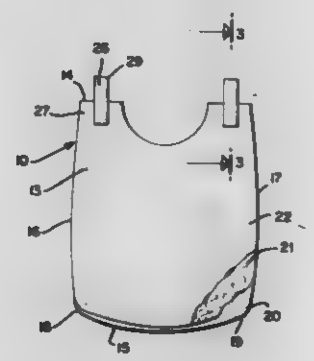
For CLASS	See PATENT NO.
037–012	3,979,794
173–008	3,979,944
084–001.25	3,979,996
096–061 R	3,980,006
198–782	3,980,170
223–088	3,980,228
241–084	3,980,235
250–223 R	3,980,267
292–319	3,980,337
425–455 R	3,980,418
425–459	3,980,419
029–090 R	3,980,442
029–096	3,980,443
429–207	3,980,495
429–103	3,980,496
429–145	3,980,497
429–064	3,980,498
204–295	3,980,499
429–054	3,980,500
429–060	3,980,501
250–223 R	3,980,567
250–276	3,980,568
248–037.3	3,980,608
264–045.3	3,980,613
526–154	3,980,623
526–173	3,980,624
526–067	3,980,625
526–297	3,980,626
526–328	3,980,627
526–064	3,980,628
526–020	3,980,629
428–483	3,980,696
235–054 F	3,980,864
235–146	3,980,869
340–173 R	3,980,935
325–030	3,980,945

PATENTS

GRANTED SEPTEMBER 14, 1976

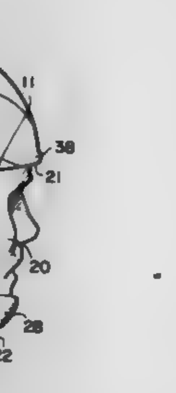
GENERAL AND MECHANICAL

3,979,776
DISPOSABLE BIB
Nancy K. Gruenwald, Libertyville, Ill., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed May 5, 1975, Ser. No. 574,762
Int. Cl.² A41B *13/10*
U.S. Cl. 2—49 R **5 Claims**



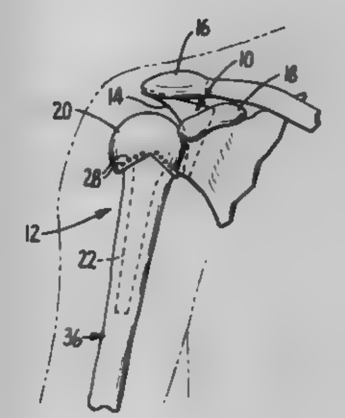
1. A disposable bib, which comprises an elongated substantially rectangularly shaped sheet formed from three layers, a middle portion of an upper edge of said sheet having a u-shaped cutout therein, said three layers consisting of a thermoplastic back layer formed from a film, a middle cellulosic absorbent wadding layer, and a front layer formed from a paper like material, a lower edge of said thermoplastic layer extending below the lower edges of said front and middle layers, said middle layer joined to said front and back by adhesive means, and an adhesive tab member affixed onto said paper like layer at an upper right and left corners of said sheet, each said tab member extending beyond the top edge of said sheet.

3,979,777
SWIM HELMET
Frank M. Gregg, Philadelphia, Pa., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Jan. 29, 1975, Ser. No. 544,866
Int. Cl.² A42B *1/12*
U.S. Cl. 2—68 **3 Claims**



1. A swim helmet adapted to be worn on a person's head, which comprises a rounded top portion having downwardly extending sidewalls, a downwardly extending rearwall, an open front face, said helmet conforming to a curvative of said person's head, said sidewalls extending downwardly to form lobe portions covering the ears of said person, each said lobe portion having an outward extension forming an oblong recess on an interior surface of each said lobe portion of said helmet, a bottom marginal edge of said rearwall, said sidewall and a forward portion of said rounded top covering a hairline of said person, a chin strap member detachably communicating with each said lobe portion, and a pair of oblong shaped foamed rubber members, each said member having a central opening therethrough, one said member disposed within each said oblong recess forming a water tight seal with said ears.

3,979,778
SHOULDER PROSTHESIS
Jerome H. Stroot, 2645 Ocean Ave., San Francisco, Calif. 94132
Filed Jan. 14, 1976, Ser. No. 648,876
Int. Cl.² A61F *1/24*
U.S. Cl. 3—1.91 **4 Claims**



1. A total shoulder prosthesis comprising in combination:

a. a humeral component having a spherical end and means for fastening said humeral component to a decapitated humerus,

b. a glenoid component including a socket adapted to replace a normal glenoid cavity and means for attaching said glenoid component between the spine of the acromion and the coracoid process wherein;

c. the radius of curvature of said socket is greater than the radius of curvature of said spherical end whereby the fulcrum point of the prosthesis moves as the humeral component moves with respect to the glenoid component.

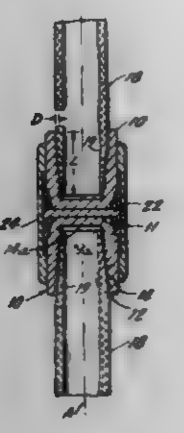
3,979,779
CERAMIC IMPLANT
Anton Zeibig, Ottensoos, and Helmut Locke, Ruckersdorf, both of Germany, assignors to Rosenthal Technik AG, Selb, Germany
Filed May 21, 1975, Ser. No. 579,381
Claims priority, application Germany, Nov. 15, 1974, 2454181
Int. Cl.² A61F *1/24*
U.S. Cl. 3—1.91 **16 Claims**

1. An implant for forming a permanent connection to a bone stump having a cortical periphery resected to have a generally truncated conical exterior surface, said implant comprising:

a ceramic sleeve of generally cylindrical shape having first and second end surfaces;

said sleeve having a recess converging into said first end surface, said recess having a generally truncated conical interior surface adapted to frictionally engage said resected bone stump cortical periphery; and

means formed on said recess interior surface for further frictionally engaging said cortical periphery, whereby



new bone growth on said bone stump is enhanced to further join said sleeve to said bone stump.

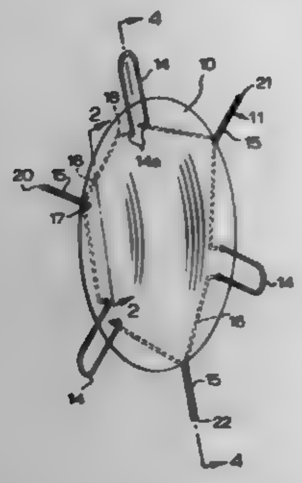
3,979,780
INTRAOCULAR LENS AND SUPPORTING SYSTEM THEREFOR

Vivien Boniuk, New York, N.Y., assignor to Revlon, Inc., New York, N.Y.

Filed Apr. 7, 1975, Ser. No. 565,505

Int. Cl.^{2} A61F *1/16, 1/24*

U.S. Cl. 3—13 12 Claims



1. In an artificial intraocular lens of the type intended for placement in the anterior chamber of the eye between the cornea and the iris the enable the eye to focus images upon the retina, said lens being supported by means of inert, resilient, wire-like supporting members extending both radially outwards of the lens, the improvement wherein said supporting members have portions which extend through apertures in the lens, said supporting member portions being inter-connected, and wherein the clearance between said apertures and said supporting member portions is substantial, so that the lens is held by the supporting members without any rigid connection between the supporting members and the lens, whereby aqueous humour is able to freely pass through the apertures when the lens is in place.

3,979,781
NOZZLE ATTACHMENT FOR TOILET BOWL

Jean-Charles Jolicoeur, 740, rue Nicolle, Charlesbourg, Quebec 7, Quebec, Canada

Filed May 9, 1975, Ser. No. 576,085

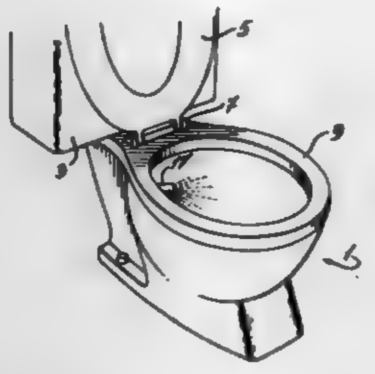
Claims priority, application Canada, May 10, 1974, 199748

Int. Cl.^{2} A47K *17/00*

U.S. Cl. 4—1 5 Claims

1. A nozzle attachment, for use in wetting toilet paper, in combination with a closet bowl formed at the top with a flushing rim defining a water passageway; said nozzle attachment mounted on said rim; said nozzle attachment comprising:

a water catching portion extending in, at least partially across and substantially transverse to said passageway;



a nozzle portion outside said passageway and

bore means interconnecting said water catching portion and said nozzle;

wherein said water catching portion is formed to capture water flowing into said passageway and deflect it into said bore means to allow it to flow through said nozzle portion.

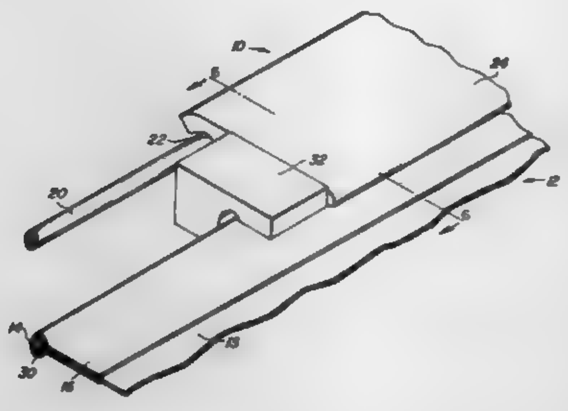
3,979,782
SWIMMING POOL COVER

Joe H. Lamb, 3500 Hillside Lane, Salt Lake City, Utah 84109

Filed Oct. 6, 1975, Ser. No. 619,708

Int. Cl.^{2} E04H *3/16, 3/18;* F16L *21/02*

U.S. Cl. 4—172.14 9 Claims



1. A protective swimming pool covering apparatus including a flexible impervious cover sheet having a beaded longitudinal side edge, a means for extending and retracting said cover sheet over said swimming pool, a slideway means fixed to the longitudinal margins of said swimming pool, said slideway means having a first channel for slideably holding said beaded longitudinal side edge therein, said channeled slideway means having a longitudinal groove centrally cut herein, and a channeled guide means adapted with an interlocking member for fitting into said longitudinal groove and thereby maintain said channels of said slideway means and said guide means in aligned registry with each other.

3,979,783
CRIB OR YOUTHBED

Aaron D. Spencer, 69 Farlow Road, Newton, Mass. 02158

Continuation-in-part of Ser. No. 431,709, Jan. 8, 1974, Pat. No., 3,879,773. This application Mar. 20, 1975, Ser. No. 560,200

Int. Cl.^{2} A47D *9/00*

U.S. Cl. 5—100 2 Claims

1. A knockdown crib of prefabricated subassemblies comprising in combination:

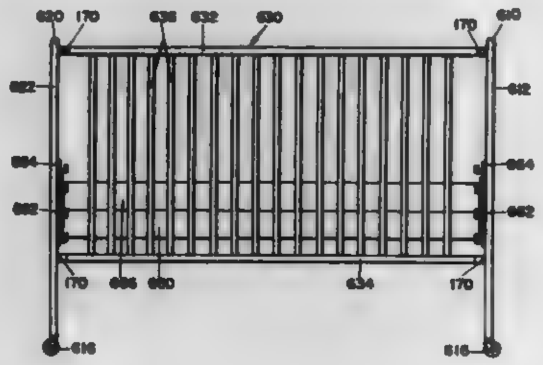
a headboard subassembly consisting of a panel with opposite vertically extending end walls,

a footboard subassembly consisting of a panel with opposite vertically extending end walls,

a pair of side subassemblies each consisting of a panel with opposite vertically extending end walls,

slip joint coupling means fixed to each of the end walls of each of the subassemblies,

the subassemblies being arrangeable in erected fashion with the headboard and footboard subassemblies disposed in



spaced parallelism as to each other and separated by the pair of side subassemblies disposed in spaced parallelism as to each other and with the coupling means of each end wall of each subassembly being intercoupled with the coupling means of the end wall of the respective adjacent subassembly, the coupling means for slip-jointing each end wall of each headboard and footboard subassembly and respective adjacent end wall of each side subassembly including mating complemental half-parts in each of the end walls and latch means on one of the half-parts.

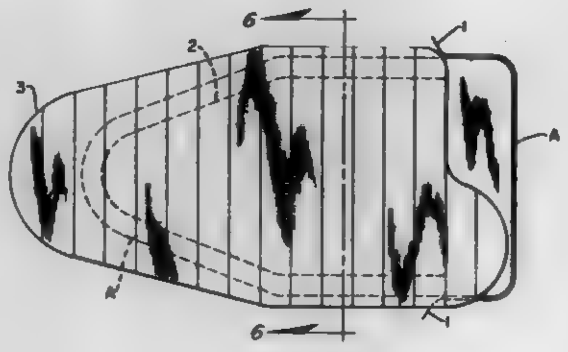
3,979,784
ADAPTOR

Richard A. Boothe, Box 4996, Aspen, Colo. 81611

Continuation of Ser. No. 374,699, Nov. 26, 1973, abandoned. This application Oct. 2, 1975, Ser. No. 618,766

Int. Cl.^{2} A47G *9/00*

U.S. Cl. 5—343 6 Claims



1. An adaptor pad for use with a sleeping bag of the type having at least one generally rectangular panel portion provided with removable fasteners extending at least along opposite longitudinal edges, said adaptor pad comprising:

a body portion having longitudinal edges on opposite sides thereof and opposite end edges, said body portion dimensioned to be of a length slightly less than the length of said panel portions and of a width less than the width of the panel portion,

removable fastener means on the undersurface of said body portion spaced inwardly but adjacent to opposite side longitudinal edges thereof whereby to removably fasten the removable fasteners on the opposite longitudinal edges of said panel portion to the undersurface of said body portion to cover said adaptor pad with the opposite longitudinal edges of said panel portion folded over the opposite longitudinal edges and end edge of said body portion.

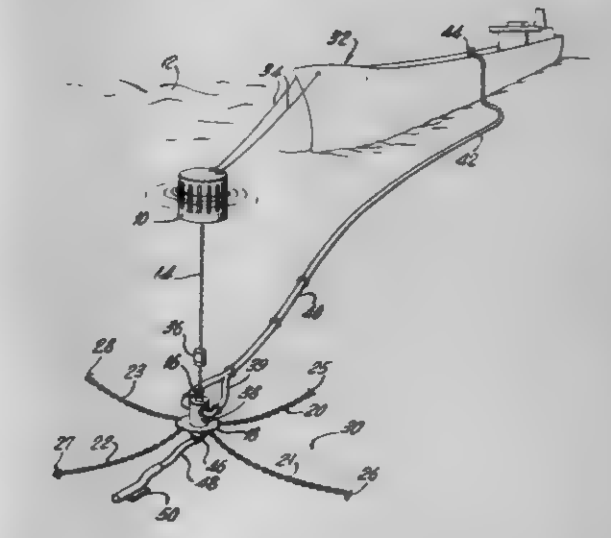
3,979,785
COMBINED CATENARY AND SINGLE ANCHOR LEG MOORING SYSTEM

John F. Flory, Morris Township, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 9, 1974, Ser. No. 496,306

Int. Cl.^{2} B63B *21/52*

U.S. Cl. 9—8 P 7 Claims



1. A system for mooring and loading or unloading a vessel at an offshore site comprising:

a mooring buoy for receiving a mooring load and mooring said vessel directly thereto floating on the sea surface;

single anchor leg means carrying a mooring load when said vessel is moored to said mooring buoy attached to said buoy and extending downward therefrom;

anchor hub means suspended from said single anchor leg means at a predetermined distance below said sea surface and having a weight greater than the weight of the water displaced such that said hub means exerts tension on said single anchor leg means;

a plurality of anchor legs extending radially outward and downward from said hub means to anchor points on the sea floor;

a cargo transfer swivel assembly rotatably mounted on said hub and operably connected to cargo piping in said hub;

first cargo hose operably connected to said cargo piping and adapted for connection to a submarine pipeline manifold; and

second cargo hose operably connected to said cargo transfer swivel assembly and extending to said sea surface where it may be picked up by a vessel moored to said mooring buoy.

3,979,786
COMBINED SHOE TREE AND SHOE DEODORIZER

Frank Vierra, and Joyce Vierra, both of Maxwell, Calif., assignors to The Raymond Lee Organization, Inc., a part interest

Filed Apr. 4, 1975, Ser. No. 565,062

Int. Cl.^{2} A43D *3/14;* B05B *1/32;* B65D *83/14*

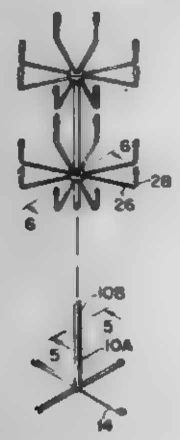
U.S. Cl. 12—128 B 4 Claims

1. A combined shoe tree and shoe deodorizer comprising:

at least one vertical tube closed at its top end and having a first hole in the side wall adjacent the top end, said tube being filled with gaseous deodorizer under pressure;

a hollow vertical cylinder having a second hole in its side wall, the cylinder having a closed top end and an open lower end, the top end of the tube extending axially into the cylinder through the lower open end thereof, said cylinder being vertically slidable upwardly and downwardly with respect to the tube, whereby said holes can be moved into and out of alignment, said deodorizer escaping from the tube interior to the outside through the holes, when aligned and otherwise being confined within the tube; and

spring means disposed within the cylinder between the top end of the cylinder and the top end of the tube, said means normally biasing the cylinder in a position relative to the tube at which the second hole is out of alignment with and disposed above the first hole, said cylinder, when a shoe engages the cylinder and tube in such manner that the cylinder is disposed within the toe of the shoe, being moved downward because the weight of the shoe overcomes the normal bias until the second hole is out of alignment with and disposed below the first hole.



3,979,787
METHOD OF SUPPORTING BRIDGE STRUCTURES AND LIKE HEAVY-WEIGHT RIGID STRUCTURES UPON DISPLACEMENT THEREOF

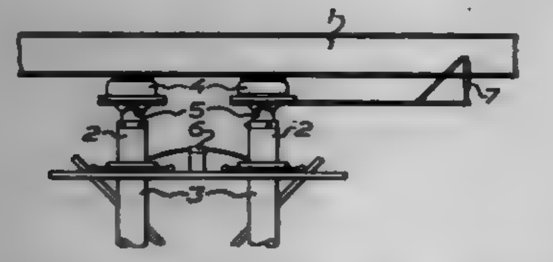
Nils Harald Ahlgren, Skyttevagen 22 F, 133 00 Saltsjobaden, Sweden

Continuation of Ser. No. 295,152, Oct. 5, 1972, abandoned. This application Jan. 2, 1975, Ser. No. 537,937

Claims priority, application Switzerland, Oct. 8, 1971, 13744/71

Int. Cl.^{2} E01D *19/02*

U.S. Cl. 14—75 4 Claims



1. An apparatus for supporting a heavy structure during substantially horizontal displacement thereof, at more locations than those required to give statically determined bearing forces therefor, said apparatus including:

at least one group of support means disposed beneath said structure, where each said group of support means comprises:

a plurality of means, one at the upper end of each of said support means, for allowing said structure to slide substantially horizontally relative to said support means; each of said means at the upper ends of said support means being adjustably connected thereto in such a manner that angular positioning of said means at the upper ends of said support means is permitted about at least two axes;

equalization means connecting each of said plurality of support means in said group to each other support means in said group and to a source of pressure;

means operatively connected to said source of pressure for adjusting the support forces applied to said structure by each of said plurality of support means so that the bearing force of the weight of said structure is uniformly distributed in said group of support means independently of any variations in height between the surfaces of said structure which are in contact with said means at the upper ends of said support means;

actuating means operatively connected to at least one of said means at the upper ends of said support means and to said structure for causing angular adjustment of said means at the upper ends of said support means at least about a substantially vertical axis.

3,979,788
MOBILE MACHINE FOR CLEANING SWIMMING POOLS

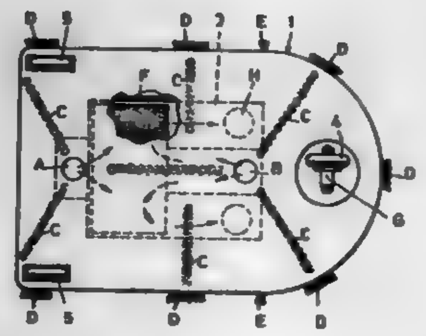
Benedikt Strausak, Burgdorf, Switzerland, assignor to Bieri Pumpenbau A.G., Munsingen, Switzerland

Filed July 3, 1975, Ser. No. 592,926

Claims priority, application Switzerland, July 5, 1974, 9389/74; Apr. 21, 1975, 6603/75

Int. Cl.^{2} E04H *3/20*

U.S. Cl. 15—1.7 11 Claims



1. A mobile machine for cleaning swimming pools and the like by suction removal of sediment from the pool bottom comprising a mobile housing having a water turbine between inlet and outlet chambers, at least two pool-bottom-engaging free-running wheels positioned at one end of the underside of said housing, at least one pool-bottom-engaging drive wheel driven by said turbine positioned at the opposite end of the underside of said housing, said turbine adapted to be driven to rotate said drive wheel by a suction applied to a hose connected between an external circulating pump and an outlet coupling pipe on said housing communicating with said outlet chamber, said machine having at least one suction nozzle on the underside of said housing communicating with said inlet chamber, said turbine being adapted to be powered by said pump via said suction line and thereby effective to draw water into said suction nozzle and discharge it through said coupling pipe into said suction hose, said drive wheel being carried on a steering support swivelably mounted on the underside of said housing, said steering support being swivable about a steering axis disposed substantially at a right angle to the axis of rotation of said drive wheel, separate power transmitting connections from said turbine to said drive wheel and to said steering support for simultaneously continuously positively rotating said drive wheel about it said axis of rotation while continuously positively swiveling said steering support about its said steering axis for automatically moving said machine in different directions across said pool bottom and ensuring self-steering of said machine while removing sediment from said pool bottom.

3,979,789
DUST CONTROL FOR POWER FLOOR TREATING APPARATUS

Ralph C. Peabody, Brooklyn Center, and Robert D. Hennessey, Golden Valley, both of Minn., assignors to Tennant Company, Minneapolis, Minn.

Continuation-in-part of Ser. No. 341,973, March 16, 1973, Pat. No. 3,892,003. This application Dec. 10, 1973, Ser. No. 423,294

Int. Cl.^{2} A47L *5/30, 9/10*

U.S. Cl. 15—349 9 Claims

1. Floor maintenance apparatus having a floor treating means including rotary brush means operatively coupled thereto and comprising, in combination:

a. a frame structure having support wheels coupled thereto, housing means coupled to said frame and defining a brush receiving enclosure with said enclosure having walls including a pair of opposed side walls arranged laterally of said enclosure, a solid debris receiving chamber in communication with said brush receiving enclosure, and a source of rotary power mounted on said frame and having a powered output shaft;

b. rotary brush suspension means coupled to said frame for journaled support of said rotary brush therewithin, said brush suspension means including first and second generally longitudinally extending laterally disposed support arms secured to said frame and being disposed adjacent said opposed side walls;

c. drive means coupled to said powered output shaft for imparting rotary motion to said rotary brush;

d. solid-air separation chamber means being provided to remove dust from dust-ladened air, and vacuum means in communication with said separation chamber and interposed between said separation chamber and ambient, conduit means extending between a port formed in said separation chamber and said vacuum means for establishing fluid communication between said separation chamber and said vacuum means, said solid-air separation chamber means being in communication with said brush receiving enclosure through a fluid receiving port formed in a wall of said brush receiving enclosure;

e. said brush receiving enclosure generally comprising an enclosed sector having generally closed ends and transverse walls and including a top wall and said opposed side walls with a bottom opening to define a work surface exposing opening, a solid debris transferring opening formed in one of said transverse walls for transfer of solid debris from said brush receiving enclosure to said solid debris receiving chamber disposed adjacent said solid debris transferring opening, a pair of spaced apart baffles disposed adjacent one of said transverse walls and extending generally parallel to the axis of said rotary brush, said baffles extending inwardly from said transverse walls and being arranged in close running clearance with the periphery of said rotary brush and being disposed between said fluid receiving port and said work surface exposing opening.

3,979,790
TOTALLY ENCLOSED DOOR CHECK

Ralph F. Chiarappa, Schaumburg, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed Oct. 6, 1975, Ser. No. 619,725

Int. Cl.^{2} E05F *3/12*

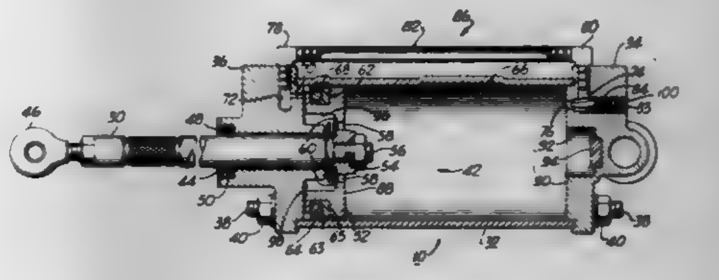
U.S. Cl. 16—84 7 Claims

4. An apparatus using compressible fluid for checking the motion of an element comprising

a hollow housing having a cavity therein containing a quantity of compressible fluid,

a movable element having first and second sides slidably mounted within said cavity and attached to said element so as to move within said cavity and against said fluid as said element moves,

a passage placing said sides of said element in continuous fluid communication and variable orifice means in said passage for controlling the flow rate of said fluid in said passage whereby as said element moves in a given direction, fluid in front of said element in the direction of movement continuously flows to the other side of said member such that said orifice means controls the magnitude of a vacuum on said other side of said element created by the movement of said element thereby controlling the compression of said fluid in front of said element and the resistance to the movement of said element.



3,979,791
WINDOW HINGES

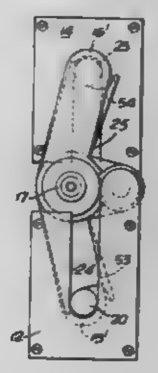
Robert Frederick Dura Collin, Hook Norton, England, assignor to Alcan Booth Industries Limited, London, England

Filed July 7, 1975, Ser. No. 593,378

Claims priority, application United Kingdom, May 22, 1974, 22967/74

Int. Cl.^{2} E05D *5/06*

U.S. Cl. 16—135 7 Claims



1. A hinge for windows comprising:

a. first and second hinge members,

b. a common pivot member hingedly converting said first and second hinge members,

c. friction brake means associated with said common pivot member, and

d. means operative to increase the frictional resistance of the friction brake means to pivotal movement of said first and second hinge members after an initial relative movement of said hinge members about said common pivot member, said friction brake means comprising:

a plurality of friction brake pads coaxially mounted on said common pivot member between said first and second hinge members and in operative frictional engagement therewith;

at least one brake leaf positioned between two of said brake pads and pivotable about said common pivot member, and

means coupling said brake leaf to one of said first and second hinge members with a lost-motion connection permitting initial pivotal movement of said one hinge member before it moves said brake leaf coupled thereto about said common pivot member.

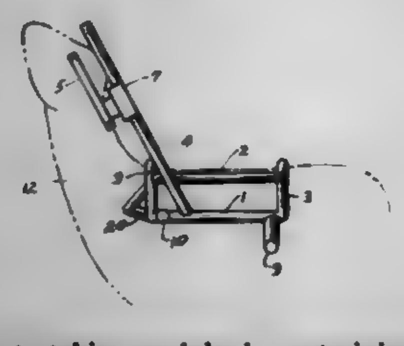
3,979,792
ANIMAL HOLD DOWN/NECK STRETCHER FOR KOSHER SLAUGHTER ON A DOUBLE-RAIL ANIMAL SUPPORT SYSTEM

Ralph P. Prince, Storrs; Paul E. Belanger, Mansfield Center; Walter Giger, Jr., Wethersfield, and David H. Johnson, Storrs, all of Conn., assignors to Council of Livestock Protection, Inc., New York, N.Y.

Filed Oct. 1, 1975, Ser. No. 618,466

Int. Cl.^{2} A22B *3/12*

U.S. Cl. 17—1 A **1 Claim**



1. In a neck stretching and body restraining frame for slaughtering animals, comprising a pair of parallel inner bars, a pair of parallel outer bars; circularly shaped cross bars interconnecting said inner and outer bars; a pair of parallel holder bars extending at an angle from one end of said interconnected outer bars; a neck restraining means comprising flexible double strips connected between said parallel holder bars to hold the neck of said animal; and outwardly extending bearings attached to said outer bars for movably holding said frame on the back of said animal during the slaughter operation; the improvement comprising

a pair of shoulder braces comprising a triangular shaped bars having one end connected to the inner bar and the other end connected to the outer bar with the triangular shaped part extending outwardly from said frame toward the end where said neck restraining means is located.

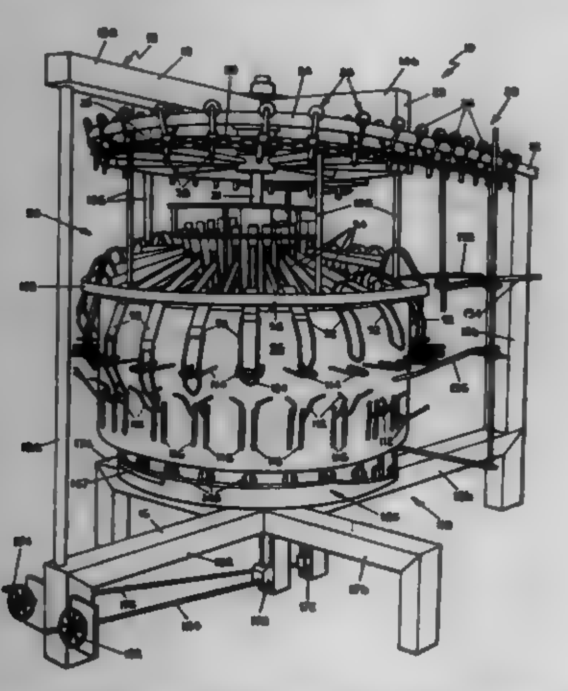
3,979,793
POULTRY EVISCERATING APPARATUS

Jacobus E. Hazenbroek, Numansdorp, Netherlands, assignor to Barker International, Inc., Marietta, Ga.

Filed Apr. 12, 1974, Ser. No. 460,282

Int. Cl.^{2} A22C *21/06*

U.S. Cl. 17—11 **35 Claims**



1. Eviscerating apparatus for poultry, fowl, and the like, said fowl typically having a visceral body cavity with a compound curvature, comprising conveyor means for conveying at least one fowl through a predetermined path; a support; holding means spaced from said support for holding the fowl in a predetermined position substantially fixed with respect to at least a portion of said conveying means during such conveyance; a viscera removal member moveable with said fowl; and means on said support for supporting and moving said viscera removal member through a cut in the vent of the fowl for removing the viscera during conveyance of the fowl, said supporting and moving means including pivot support means on said support movable in registry with said holding means along said predetermined path and providing at least a pair of spaced pivot axes for pivotally supporting said viscera removal member for movement in a path having a compound curvature with respect to said holding means, said pivot axes being spaced at different distances from said support on one side of said holding means, and actuating means for pivoting said viscera removal member about said two pivot axes whereby said viscera removal member follows a generally compound, arcuate path into the body cavity of the fowl, around the viscera thereof and thereafter withdraws said viscera through the abdominal cut.

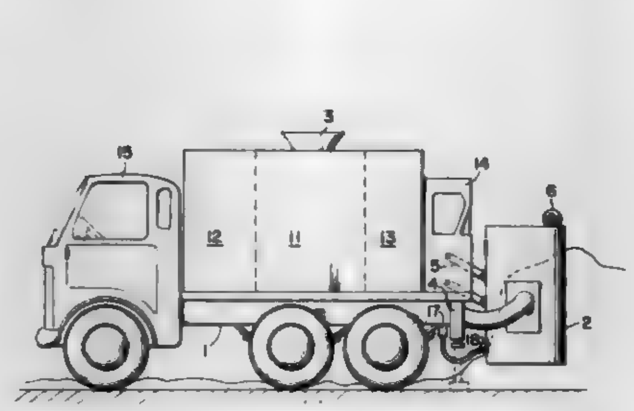
3,979,794
SNOW REMOVAL DEVICE

George M. Brown, Queens Village, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Mar. 24, 1975, Ser. No. 561,643

Int. Cl.^{2} E01H *5/10, 5/00*

U.S. Cl. 37—12 **2 Claims**



1. A snow removal device comprising a vehicle supporting a steam generating means, a water tank having an upwardly positioned opening to receive snow and/or ice and/or water, a water pumping means, and a pivotably mounted snow handling container; said snow handling container comprising a pair of elongated right and left hand semi-cylindrical chambers pivotably connected together by longitudinal hinge means along a vertical longitudinal hinge axis, each chamber being formed with an exterior wall and an interior wall connected by opposite end walls, each chamber further including a half circular top wall portion and a half circular bottom wall portion, and hydraulically operated means to pivot said chambers about said longitudinal hinge means from an open position in which to receive snow to a closed mating position forming an enclosed hollow cylinder in which to completely enclose, transport, and/or melt the received snow, and additional hydraulic means for selectively, pivotably positioning said snow handling container between an unloading position above the water tank opening and a lower working snow enclosing position, said hydraulic means maintaining said longitudinal hinge means of the snow handling container in a generally vertical plane at all times; said steam generating means communicating with said chambers by flexible tubing to provide steam vapor into said chambers; and said water pumping means being arranged to pump water from melted snow from the interior of the enclosed hollow cylinder into said water tank.

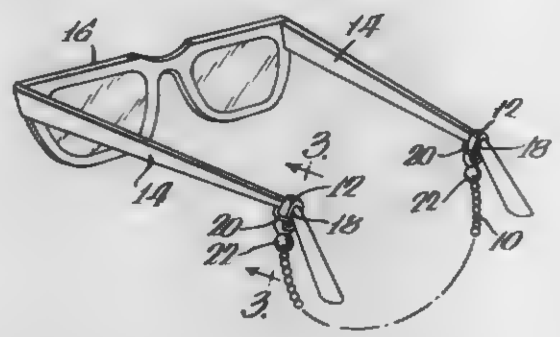
3,979,795
DECORATIVE EYEGLASS HOLDER

Suren V. Seron, Joliet, Ill., assignor to Seron Manufacturing Company, Joliet, Ill.

Filed Feb. 7, 1975, Ser. No. 547,986

Int. Cl.^{2} A44B *21/00;* G02C *3/00*

U.S. Cl. 24—3 C **9 Claims**



1. A decorative eyeglass holder of the type for suspending eyeglasses from the neck of the wearer when they are not in use having a long band; a pair of one-piece clasps interlinked by said band, each having a slot extending through a flexible head portion to receive an eyeglass temple, a neck portion for engaging said band, and an annular recess intermediate said head and neck portions; a substantially hollow clamp clampingly engaging said recess and encompassing said neck portion and coacting therewith for fastening the band and clasp together.

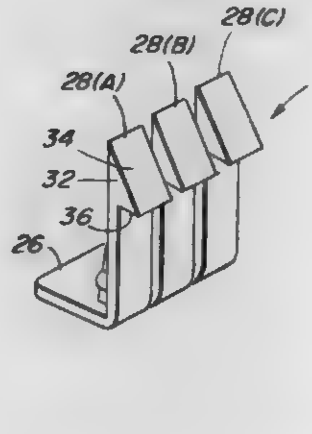
3,979,796
PANEL MOUNTING CLIP

Paul M. MacDonald, Scituate, Mass., assignor to P. X. Industries, Inc., Rockland, Mass.

Filed Jan. 22, 1976, Ser. No. 651,343

Int. Cl.^{2} A44B *21/00*

U.S. Cl. 24—73 PF **5 Claims**



1. A clip for mounting a panel over an opening in a frame or the like, comprising

a. a flat flange base adapted to be fastened to the inner face of said panel, and
b. a plurality of resilient parallel prongs extending perpendicularly from said flange,
c. each of said prongs being formed at its free end with a head having a smooth frame-engaging surface adapted to deflect said prong as said panel is being mounted, each head also being formed with a shoulder perpendicular to said prong and adapted to engage an inner edge of said frame,
d. the distance between each shoulder and said flange being different for each prong.

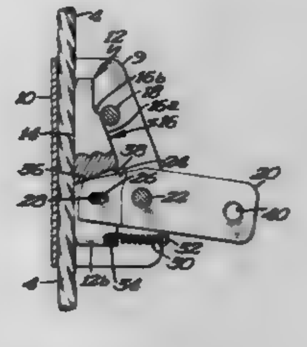
3,979,797
SAFETY DEVICE FOR LADDER CLIMBERS

Daniel L. Stember, Red Wing, Minn., assignor to D.B. Enterprises, Inc., Red Wing, Minn.

Filed May 9, 1974, Ser. No. 468,568

Int. Cl.^{2} F16G *11/00;* A62B *1/16*

U.S. Cl. 24—134 R **12 Claims**



1. An improved safety device adapted to be secured to a person working at an elevated level and having means to releasably engage an elongated, vertically extending safety carrier such as a cable or rod, if the person falls, comprising:

a clamping bracket having an elongated clamping surface on one end thereof constructed and arranged to bear against one side of an elongated safety carrier on which said bracket is adapted to be slidably mounted in an upright position with said clamping surface extending generally parallel to the safety carrier;

a wedge plate shiftably supported on said bracket and having an elongated clamping side extending substantially parallel to said clamping surface of said bracket in spaced apart relation thereto for the extension of an elongated safety carrier therebetween;

an inclined cam guide surface on said wedge plate angling upwardly and outwardly in a direction away from said clamping side of said wedge plate; and

an actuating arm pivotally connected adjacent its inner end to said clamping bracket for pivotal movement about a substantially horizontal axis and having an inner end portion engaging said wedge plate, said inner end portion of said actuating arm having a camming surface thereon normally bearing against the bottom end of said inclined guide surface of said wedge plate, whereby the downward pivotal movement of the outer end of said actuating arm in response to a weight load thereon will cause its inner end to pivot upwardly, with the result that said camming surface thereon will revolve against said inclined guide surface and thereby urge said wedge plate upwardly and inwardly towards said clamping surface of said bracket to clamp an elongated safety carrier therebetween.

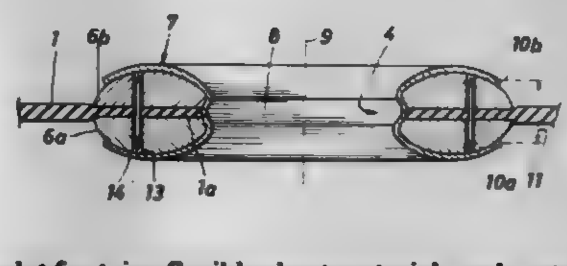
3,979,798
EYELET

Hans H. Meyer, Gittertor 14, 3327 Salzgitter-Bad, Germany

Filed Mar. 29, 1974, Ser. No. 456,308

Int. Cl.^{2} A43C *5/00*

U.S. Cl. 24—141 **6 Claims**



1. An eyelet for tying flexible sheet material, such as tarpaulin-type sails under high tensile forces comprising a pair of annular complementary clamping halves mutually reversed outer walls and mutually opposite inner flat surfaces for receiving the flexible material between them, a metal jacket binding overlapping the two clamping halves and pressing

them together, said clamping halves having a plurality of axially aligned holes extending completely through said outer walls and inner flat surfaces uniformly arranged about their central axis and a separable rigid non flexible anchoring pin extending through each of said holes, said pins having needle-like pointed ends penetrating the flexible material, and extending to the inner surface of said jacket adjacent each of the clamping halves.

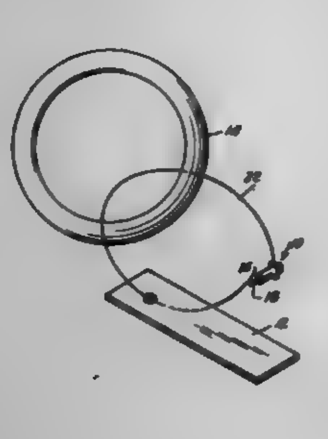
3,979,799
INTERLOCKING ATTACHMENT DEVICE

Francis G. Merser, Framingham Center; Philip A. Kooistra, Northbridge, and Gordon B. Lankton, West Bolyston, all of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 467,917, May 8, 1974, abandoned. This application Jan. 20, 1975, Ser. No. 542,620

Int. Cl.² A44B *9/00*; B65D *55/06*

U.S. Cl. 24—159 FP **18 Claims**



1. An attachment device comprising
1. a filament,
2. a unitary hollow body member connected to said filament adjacent one end thereof, said body member comprising
   - i. a sidewall defining a hollow interior for said body member,
   - ii. an end wall having an aperture therethrough leading into said hollow interior, said hollow interior having a greater width than said aperture,
   - iii. a sealed end wall opposed to said apertured end wall and connected thereto by said sidewall, and
   - iv. a flange projecting ouwardly from said sidewall and configured and dimensioned to dispose an appreciable fraction of its mass and exposed surface area substantially outwardly of said sidewall, thereby to function as a heat sink and to permit heat sealing of said end wall without heat deformation of said apertured end wall and the portion of said sidewall adjacent thereto, and
3. a normally at least partially laterally oriented bar resiliently connected to said filament adjacent the other end thereof, said bar having
   - i. a length greater than the maximum width of said aperture, and
   - ii. a thickness such that when said bar is oriented in a direction generally parallel to said filament, said bar and said filament are passable axially through said aperture and receivable in said hollow interior; and when said bar within said hollow interior is oriented in a direction other than essentially parallel to the axis of said aperture, said bar is engageable by said apertured end wall to maintain said bar within said hollow interior.

3,979,800
BUCKLE

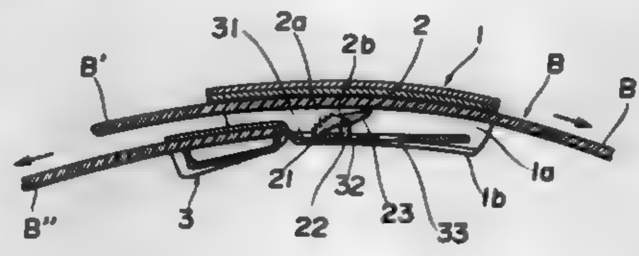
Kengo Masuda, c/o Masuda Manufacturing Co., Ltd., No. 23-1, Higashi-ueno 4 chome, Taito, Tokyo, Japan

Filed Nov. 7, 1975, Ser. No. 630,062

Claims priority, application Japan, Sept. 10, 1975, 50-124794

Int. Cl.² A44B *11/12*

U.S. Cl. 24—191 **2 Claims**



1. A buckle for use with a belt, comprising: a main body having a tubular shape of a generally rectangular cross section; first means pivotally mounted on said main body in relation transversely bridging between opposite side walls of said main body for upwardly urging said belt inserted through said main body, said means comprising three wings radially directed from the axis thereof, a foremost one of which has an outer surface thereof formed with a plurality of transverse teeth; and second means having one end portion thereof slidably inserted through between a bottom portion of said main body and said first means, and having the other end thereof adapted to be connected with a tail end of said belt, said second means having a portion near said end portion formed with three transverse elongated openings arranged in juxtaposition which openings have such sizes as to receive associated ones of said wings respectively; whereby when said second means are slided into said main body, said first means are forwardly pivoted with the wings thereof disengageably engaged by said openings by urging force of said openings against respective ones of said wings, to bring said belt inserted through said main body into a freely movable state, and when said second means are slided outwardly with respect to said main body, said first means are pivoted rearwardly in a similar manner to that of said forward pivotal movement to urge said toothed surface against said belt thus fastening the belt with respect to the buckle.

3,979,801
FASTENING DEVICE TO BE USED FOR DOING-UP A BRASSIERE

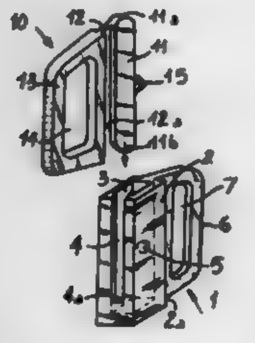
Georges Tareau, 123, rue La Fayette, Paris 10e, France

Filed Mar. 13, 1975, Ser. No. 557,918

Claims priority, application France, Nov. 15, 1974, 74.37818

Int. Cl.² A44B *21/00*

U.S. Cl. 24—201 BN **2 Claims**



1. Fastening device for a brassiere and the like consisting of two elements, one of said two elements comprising at least a recess and the other of said two elements comprising at least a solid volume for penetrating into the recess upon fastening the device, each of said two elements further comprising an integral connecting ring attached to a portion of the brassiere and the like, wherein said rings are of the same size, the first of said elements is in the form of a hollow volume having a longitudinal slot of a length less than the depth of the recess receiving the solid volume of the second one of the two elements, said solid volume having a size slightly smaller than that of the recess and being connected to its corresponding connecting ring by a thin plane portion, said thin plane portion being engageable in said slot and having a height enabling said solid volume to be engaged in the recess of the hollow volume, and locking means integral with said solid volume and said hollow volume respectively for releasably holding said solid volume in said hollow volume, wherein the longitudinal axes of said elements are disposed substantially normal to any pull exerted by the fastened portions of said brassiere and the like, wherein said two elements are respectively identical and symmetrical, each of said two elements comprising a male and female element enabling junction of two portions of the brassiere.

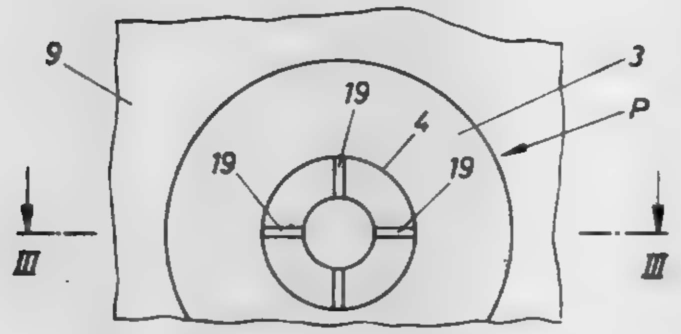
3,979,802
SNAP FASTENER

Heinz Bertram Bongartz, Hilden; Gunter Wolfertz, Wuppertal-Barmen; Reimund Stanik, Wuppertal-Beyenburg, and Gottfried Kraft, Moschede, all of Germany, assignors to Firma Schaeffer-Homberg GmbH, Wuppertal-Barmen, Germany

Filed Mar. 21, 1974, Ser. No. 453,299

Int. Cl.² A44B *17/00*

U.S. Cl. 24—213 R **2 Claims**



1. A snap-fastener assembly, especially for convertible cuffs and other fabric parts to be joined in a variable manner, said assembly comprising:
- at least one decorative knob having a male projection;
- at least one snap-fastener member affixed to a fabric part and formed with a female socket on one side of the respective part and a male projection on the opposite side thereof, said female socket including a plate having a central opening for receiving the said male projection, and said male projection being integral with a plate member with said member having integral claws on its edges penetrating through said fabric part and bent over the edge of said female socket; and
- at least one further snap-fastener member fixed to another fabric part adapted to be connected to the first-mentioned fabric part, said further member being formed on one side of said further part with a respective female socket, said socket being releasably engageable interchangeably with any of said projections.

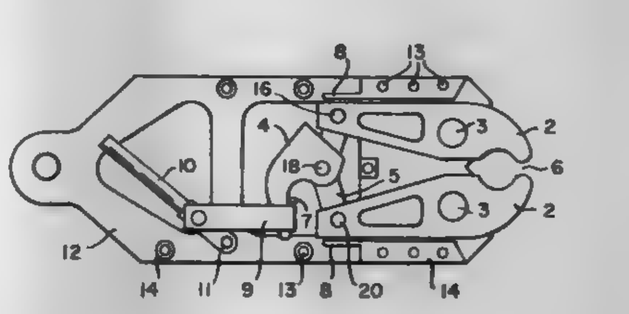
3,979,803
QUICK RELEASE LATCH

George E. Clarke, Lexington Park, and Joseph G. Hoeg, California, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 2, 1973, Ser. No. 412,078

Int. Cl.² A44B *21/00*; B64D *17/38*

U.S. Cl. 24—248 D **7 Claims**



1. A quick release latch comprising:
- a side plate;
- two jaws, pivotally mounted on said side plate, one end of said jaws cooperating to form a variable throat;
- linkage means, pivotally connected to the other end of each jaw at a pivot point on each jaw, for spreading apart and pulling together the other ends of the jaws to close and open said throat,
- said linkage means comprising a master toggle link pivotally connected to the other end of one jaw, and a slave toggle link having a first and second end, the first end being pivotally connected to the other end of the second jaw and the second end being pivotally connected to said master toggle link at a third pivot point, whereby when said linkage means is moved such that said pivot points are on the same line, the center line, the throat opening is closed;
- stop means mounted on said linkage means for preventing said jaws from opening when said linkage means is in a first position,
- said stop means comprising a pin mounted on said master toggle link for engaging said slave toggle link when said linkage means is moved into said first position; and
- means for moving said linkage means into and out of said first position.

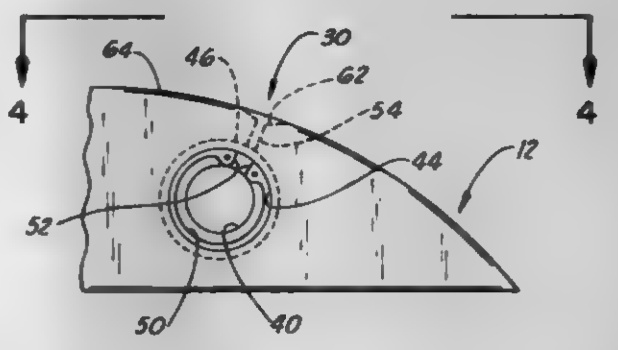
3,979,804
SNAP RING GROOVE VENTS

Eugene C. McCormick, P. O. Box 706, Wellington, Kans. 67152

Filed Dec. 24, 1974, Ser. No. 536,214

Int. Cl.² F16C *3/00*; A44B *21/00*

U.S. Cl. 24—256 **6 Claims**



5. In a housing or the like subjected to vibration in use and having an aperture constructed, shaped and adapted to mount a machine part therein, the housing and the machine part further subjected to fluid lubrication during the operation thereof, an improvement comprising:

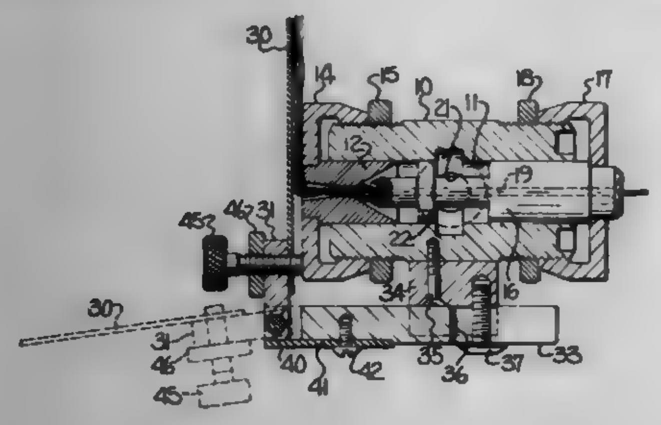
a. a snap ring to hold the machine part in place in the aperture;
b. a snap ring groove in the periphery of the aperture for receiving said snap ring; and
c. a conduit in said housing, having an inlet and an outlet, said inlet communicably connected with the peripheral portion of said snap ring groove, said outlet communicably connected with an exterior portion of the housing;
d. said conduit constructed and adapted to pass fluid lubricant with foreign particles suspended therein from said snap ring groove to the exterior portion of said housing keeping said snap ring and said snap ring groove clean and keeping said snap ring in place in said snap ring groove during the vibration of the housing.

3,979,805

RESILIENTLY SUPPORTED BAFFLE FOR YARN TEXTURING AIR JET

Walter A. Hoffsommer, Ridley Park, Pa.; Richard J. Poiney, New Castle, Del., and Samuel T. Price, Kennedyville, Md., assignors to Enterprise Machine and Development Corporation, New Castle, Del.

Filed Mar. 20, 1975, Ser. No. 560,549
Int. Cl.^{2} D02G *1/16*
U.S. Cl. 28—1.4 **9 Claims**



1. In a yarn texturing air jet of the type including an elongate housing having a central bore therethrough, an entrance opening at one end and an exit orifice at the other end for directing yarn through said central bore in said housing, a turbulence chamber in said central bore, and means for directing pressurized air into said turbulence chamber and outwardly through said exit orifice to impart crimps, curls and loops to the yarn passing through said turbulence chamber, the combination therewith of means for increasing the turbulence of air in said turbulence chamber and enhancing the crimps, curls and loops imparted to the yarn, said means comprising
a. a resonant baffle including a substantially planar face extending transversely across and spaced a predetermined distance from said exit orifice,
b. means hingedly supporting said resonant baffle for movement toward and away from said exit orifice, and
c. resilient means normally maintaining said resonant baffle said predetermined distance from said exit orifice.

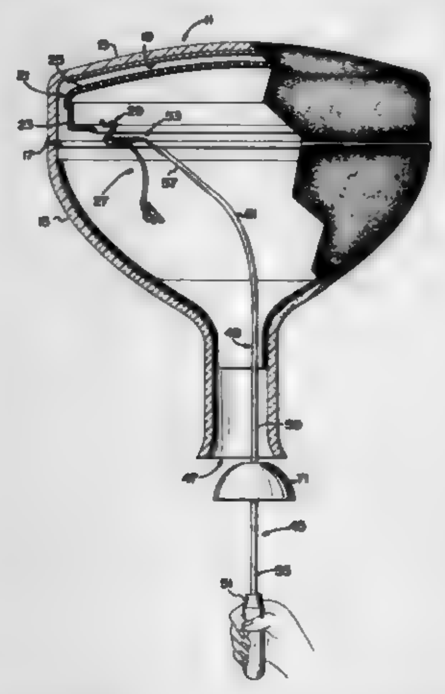
3,979,806

MEANS FOR POSITIONING AN EFFUSIVE STRUCTURE IN A CATHODE RAY TUBE

Harold Santford Woodard, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed July 2, 1975, Ser. No. 592,645
Int. Cl.^{2} H01J *9/02*
U.S. Cl. 29—25.19 **2 Claims**

1. A device for transporting an effusive structure through the open neck of a cathode ray tube envelope and subsequently effecting positioning of said structure on the frame of a screen-related aperture member located within said envelope, said effusive structure including a configuratively formed clip means having a resilient frame-engagement portion and an integral substantially planar base portion extending from an acutely angled bend thereof, said base portion. having symmetrically affixed thereto one end of a longitudinal supporting member whereupon a container of effusive material is terminally oriented, said positioning device comprising:
a substantially rigid rod-like body member having first and second opposed ends, and evidencing an arcuate bend proximal to the second end thereof;
a hand grip member attached to the first end of said rod-like member;
a head member having a substantially planar surface positioned on the second end of said body member, said head member being formed to accommodate the temporary retention of the base portion of said effusive structure, said head member having a leading edge whereat shaped guide means formed as spaced apart laterally oriented directing elements are oriented on said planar surface to accept sliding engagement of said base portion whereupon the acutely angled bend thereof is seated against said leading edge, rearward of said guide means is a pair of resilient retention means oriented on said planar surface to make pressured contact with said base portion, said leading edge effecting pressured contact against the acutely angled bend of the base portion of said clip means to accomplish retentive gripping of the resilient engagement portion of said clip means onto said frame consummating affixed positioning of said effusive structure thereon; and
stop means located on said body member relative to said hand grip, said stop being shaped to cooperate with said neck opening to prevent said head member from contacting the apertured portion of said screen-related member.



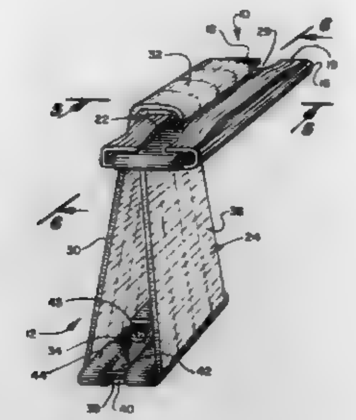
3,979,807

TUFTING ASSEMBLY FOR UPHOLSTERED FURNITURE

Allan Hubbs, Huntington Station, and Bert Weiss, Northport, both of N.Y., assignors to Endura Manufacturing Corporation, Farmingdale, N.Y.

Filed June 23, 1975, Ser. No. 589,203
Int. Cl.^{2} B68G *7/08*
U.S. Cl. 29—91.4 **5 Claims**

1. A furniture tufting means for securing an upholstered cushion to a support comprising:
a clip made of pliable material and having an elongated channel shaped body formed with a rectangular bottom wall and two rectangular side walls each having a width about one half that of said bottom wall, and a flat tongue substantially as long as said bottom wall and said side walls and narrower than said bottom wall to fit between said side walls when said tongue is positioned over said bottom wall; and
a flexible tape having both end sections wound around said tongue and extending around both of said side walls of said clip, and wherein said side walls of said clip are folded over said tongue substantially parallel to each other with adjacent edges slightly spaced apart, said two end sections of said tape extending around said walls and said bottom wall, so that said tape sections are secured between said tongue and said bottom wall and between said tongue and said side walls of said clip.

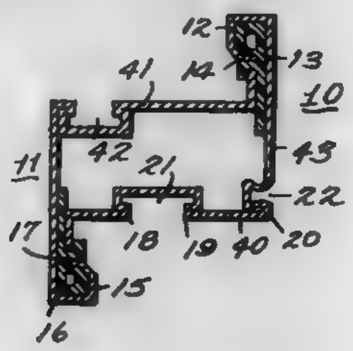


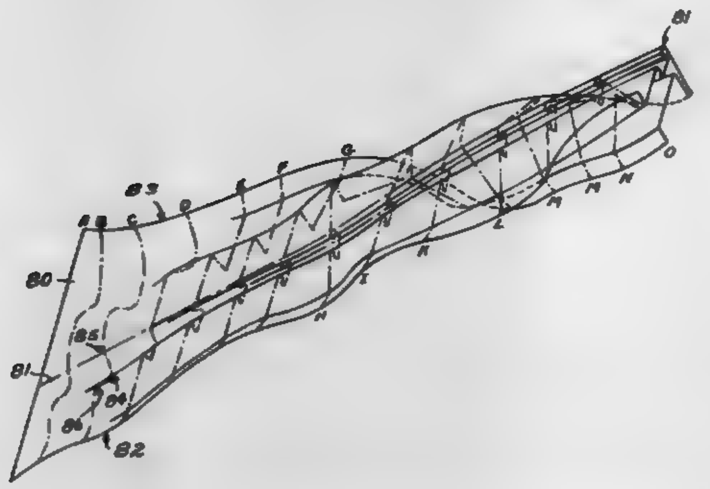
3,979,808

METHOD OF CONTINUOUSLY PROCESSING METAL BANDS INTO HOLLOW RAILS

Raimund Falkner, Roppen, Austria, and Heinz Grune, Solingen, Germany, assignors to Rapena Patent- und Verwaltungs AG, Liechtenstein, Liechtenstein

Continuation of Ser. No. 485,278, July 2, 1974, abandoned, which is a continuation of Ser. No. 324,214, Jan. 16, 1973, abandoned. This application Oct. 10, 1975, Ser. No. 621,560
Claims priority, application Switzerland, Jan. 19, 1972, 759/72; Oct. 6, 1972, 14674/72; Oct. 31, 1972, 15842/72
Int. Cl.^{2} B23P *17/00*
U.S. Cl. 29—155 R **13 Claims**





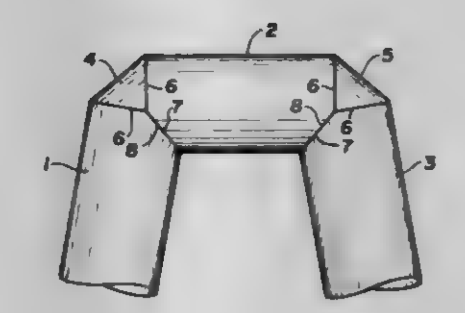
13. A method of continuously processing two bands of material by pairs of forming rolls into two profiled rails and connecting their lateral longitudinal borders, inserting strips of insulating material between the lateral borders of the rails and producing folded welts to make a hollow rail, the said bands of material being simultaneously passed between rotating pairs of forming rolls while first being corrugated in various areas to facilitate the subsequent profiling operations, characterized in that the corrugations are increased until their enveloping lines transversely to the band of material are longer than the enveloping line of the longitudinal profile contemplated in the area involved, a directrix is determined on at least one of said bands of material, said directrix coinciding with a marked longitudinal edge of the completely profiled rail, the first area of said one band of material extending from one outside edge to said directrix is largely held in its initial position during successive forming steps while the second area extending from the other outside edge ot the said directrix is twisted about said directrix relative to its initial position during said consecutive forming steps so that the said other outside edge performs a swinging motion, and the border tensile stress is reduced.

3,979,809

PIPE ELBOW AND METHOD OF MAKING SAME

Johann Friedrich Schneider, Roemerstrasse 33, Bad Homburg, Germany D-638

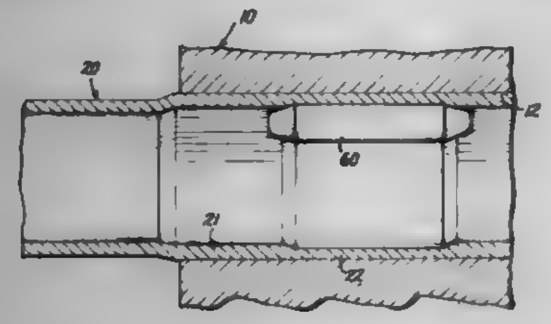
Continuation-in-part of Ser. No. 530,365, Dec. 6, 1974, abandoned. This application Oct. 6, 1975, Ser. No. 620,158
Claims priority, application Germany, Dec. 24, 1973, 2364552
Int. Cl.^{2} B21D *53/00*; B23P *15/26*
U.S. Cl. 29—157 A **3 Claims**



1. A method of manufacturing a pipe elbow from a straight pipe having a longitudinal central axis, comprising making a first cut at a right angle to said central axis into the straight pipe from one side thereof to a point located off center relative to said central axis and closer to the opposite side of the pipe than to the side where the first cut begins, further cutting the straight pipe from the opposite side toward said point at such an acute angle that second and third cuts result each having the same depth as said first cut whereby the three cuts form a Y-configuration the arms and leg of which all have the same length, and whereby a wedge segment results between the arms of the Y-configuration, removing said wedge segment, joining the arms of the Y-configuration, inserting said wedge segment in the opening resulting from said joining and further joining the wedge segment to the edges which previously formed the leg of the Y-configuration, whereby waste is completely avoided.

3,979,810
METHOD OF HERMETICALLY SWAGING TUBES INTO TUBE PLATES

Herbert Krips, Bochum-Langendreer, and Miroslav Podhorsky, Bochum-Linden, both of Germany, assignors to Balcke-Durr Aktiengesellschaft, Ratingen, Germany
Continuation-in-part of Ser. No. 595,428, July 14, 1975. This application Dec. 1, 1975, Ser. No. 636,742
Claims priority, application Germany, Nov. 30, 1974, 2456811; June 27, 1975, 2528739
Int. Cl.² B21D *39/06*; B23P *15/26*
U.S. Cl. 29—157.4 **9 Claims**

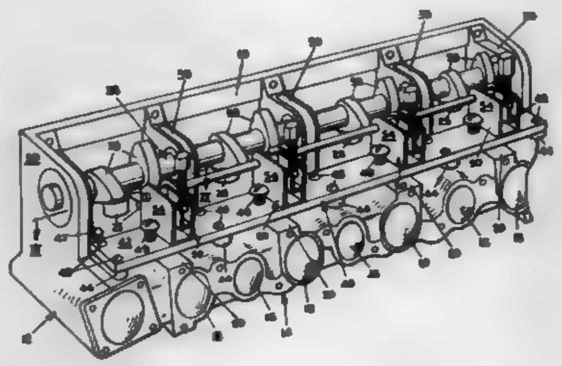


1. A method of hermetically swaging tubes into the bores of tube plates, which method is partilularly suited for the attachment of straight heat exchanger tubes to two rigidly spaced tube plates having bores which are several times longer than wide and whose diameter defines with the outer tube diameter an assembly clearance, said method comprising the steps of:
positioning a tube in a tube plate bore in such a way that its major length portion extends from the inner side of the tube plate and its outer extremity is substantially in alignment with the outer side of the tube plate;
inserting into the tube from its outer extremity an expansion-swaging core comprising means for sealingly defining with the tube wall an annular pressure space of predetermined axial length within which expansion-swaging is to take place;
locating the inner axial limit of said pressure space in the immediate vicinity of the inner edge of the tube plate bore;
expansion-swaging the tube against the surrounding bore surface within the length of the annular pressure space, by injecting into said space a pressure medium under very high pressure, so that the tube is radially deformed into intimate hermetic contact with the bore surface;
removing the expansion-swaging core; and
roll-swaging at least a portion of the previously expansion-swaged tube portion, by radially compressing the tube wall and by thereby displacing some of the tube material inwardly away from the roll-swaged length portion, thereby reducing any tensile stress on the tube that may have been created as a result of the expansion-swaging operation.

3,979,811
OVERHEAD CAMSHAFT AND VALVE TRAIN INSERTION AND REMOVAL TOOLS

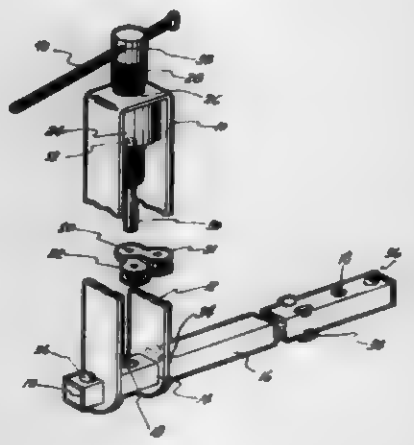
James A. Kammeraad, Holland, Mich., assignor to K-Line Industries, Inc., Holland, Mich.
Filed Oct. 11, 1974, Ser. No. 514,097
Int. Cl.² B23P *19/04*
U.S. Cl. 29—215 **15 Claims**

1. In an overhead cam shaft removal tool for an internal combustion engine, the tool being of the type including an elongated base for attachment to the cylinder head of the engine, means for attaching said base to the cylinder head, a support rod, means for mounting the support rod generally parallel to and spaced from said base, a plurality of rocker assemblies pivotally mounted on said support rod for depressing the valve assemblies, each of said assemblies including a pivotable rocker shoe and threaded means for pivoting said rocker shoe about a pivot axis, the improvement comprising: a rigid bar forming the base of said tool; a plurality of rigid attachment bracket means for securing said bar to the cylinder head, each of said bracket means being removably secured to the underside of said bar; a plurality of generally U-shaped rocker shoe support bracket means for supporting said rocker shoes, said rocker show bracket means being aligned along said bar, each of said rocker shoe support bracket means supporting one of said rocker shoes and including a base and a pair of upstanding support flanges extending upwardly from said base and integrally connected by said base, said support flanges being immediately adjacent either side of said rocker shoe and including aligned apertures for receiving said support rod therethrough; and securing means extending between said base of each of said U-shaped rocker shoe support bracket means and said bar for securing each of them atop said bar.



3,979,812
CHAIN BREAKER

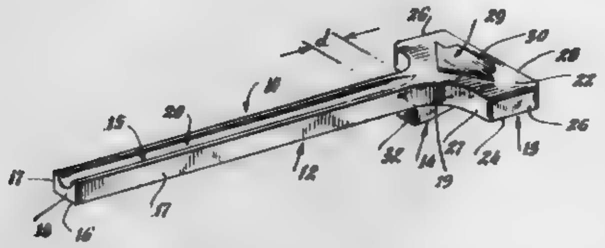
Frederick J. Kuenzig, 16 Bob White Way, Simsbury, Conn. 06070
Filed Oct. 7, 1974, Ser. No. 512,947
Int. Cl.² B23P *19/04*
U.S. Cl. 29—260 **16 Claims**



1. A chain breaker comprising
a lever bar,
a frame including a pair of opposing arms each having a bore extending therethrough for selectively receiving said lever bar,
said lever bar including a bore extending transversely therethrough for receiving a pin of a chain,
means for maintaining the received lever bar with said pin receiving bore at a predetermined orientation,
means for locating the received, oriented lever bar with the pin receiving bore thereof at a predetermined longitudinal position,
a push out screw including an extractor pin, and
support means secured to said frame for threadedly receiving said push out screw with said extractor pin in coaxial relation with the oriented and longitudinally positioned pin receiving bore of said received lever bar.

3,979,813
SHAVER ASSEMBLY TOOL

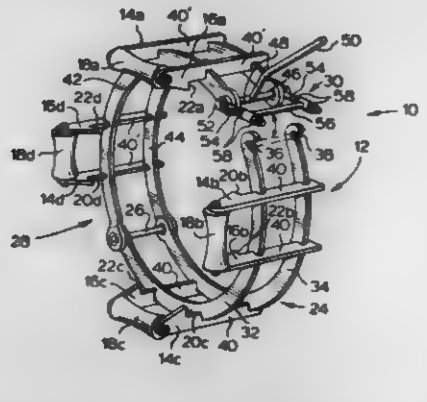
Edward J. Vrabel, Stratford, Conn., assignor to Sperry Rand Corporation, Bridgeport, Conn.
Filed Oct. 12, 1972, Ser. No. 297,029
Int. Cl.² B25B *27/00*
U.S. Cl. 29—270 **2 Claims**



1. An assembly tool for assembling an inner cutter to an outer cutter of an electric dry shaver wherein the inner cutter is spring biased against the outer cutter to maintain the teeth of the cutters in hair shearing contact, the tool comprising,
a. a body portion which is adapted to seat on one of said cutters and engage the other cutter to space all of the teeth of each cutter from each other during assembly of the cutters to prevent damaging contact therebetween, and
b. a handle portion for manipulating the body portion in the assembling of the inner cutter and the outer cutter, said handle portion having a first shoulder which engages the inner cutter to facilitate movement of the inner cutter into the outer cutter, and having a second shoulder spaced from said first shoulder which engages the outer cutter to permit the inner cutter to move a limited distance within the outer cutter.

3,979,814
PIPE FITTING DEVICE

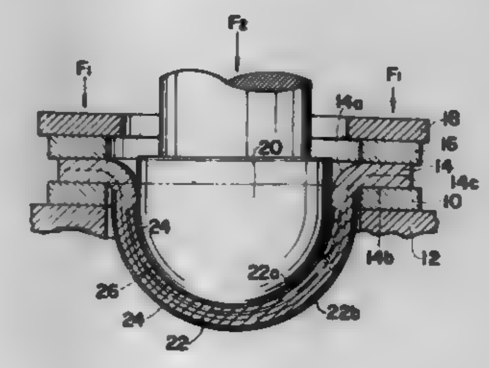
Bernard Lajoie, R.R. 3, and Marcel Lajoie, R.R. 1, both of Sombra, Ontario, Canada
Filed Nov. 21, 1975, Ser. No. 634,011
Int. Cl.² B25B *27/14*
U.S. Cl. 29—272 **4 Claims**



1. A pipe fitting device for use in inserting a cylindrical coated pipe into a cylindrical outer casing of the type used in pipelines, the pipe fitting comprising:
first and second half rings having respective first and second ends;
means pivotally connecting the half rings to one another at said first ends of the half rings;
a locking assembly coupled to said second ends of the half rings for releasably connecting these ends to one another to fit the device over an end of the outer casing substantially concentrically about the longitudinal axis of the outer casing;
the half rings defining at least three circumferentially spaced radial stops, each of the stops extending inwardly to engage said end of the outer casing for thereby locating the device axially of the outer casing; and
at least three transverse rollers coupled to the half rings and spaced axially from said radial stops for engagement with the coated pipe on assembly of the device on the outer casing to guide the coated pipe as this pipe is moved axially into the outer casing.

3,979,815
METHOD OF SHAPING SHEET METAL OF INFERIOR FORMABILITY

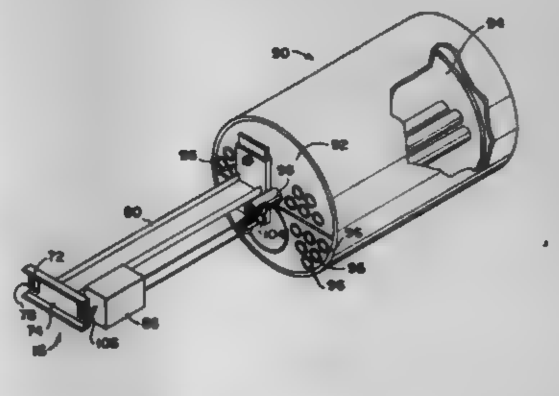
Megumi Nakanose, Kokubunji; Tsuneo Kakimi, and Michiyoshi Shiraishi, both of Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed July 11, 1975, Ser. No. 595,244
Claims priority, application Japan, July 22, 1974, 49-83905
Int. Cl.² B23P *17/00*
U.S. Cl. 29—423 **8 Claims**



1. A method of shaping a sheet metal of a comparatively inferior formability, comprising the steps of:
enclosing a blank of the sheet metal in an air-tight sealed holder of another metal surpassing the sheet metal in formability, said holder including a top plate and a bottom plate arranged parallel to the top and bottom end faces respectively of said blank, said holder also including a frame surrounding the side of said blank and connecting said top and bottom plates, said frame having a height greater than the thickness of said blank and a cross-sectional area larger than the end face area of said blank to thereby have a space in said holder around said blank;
filling said space with a filler capable of being in a liquid phase at least at an elevated temperature;
heating the assembly of said holder, blank, and filler to a temperature above said elevated temperature; and
exerting a load on said top plate of the heated assembly so that said load is transmitted to said blank.

3,979,816
BOILER TUBE EXTRACTOR AND METHOD

Bernard S. Green, 3431 Ridge Ave., Philadelphia, Pa. 19132
Filed Jan. 17, 1975, Ser. No. 541,975
Int. Cl.² B23P *19/02*
U.S. Cl. 29—427 **9 Claims**



8. A method for extracting a boiler tube from between two boiler tube sheets which support a plurality of boiler tubes comprising the steps of withdrawing the end of the tube to be

extracted from one of the boiler tube sheets, providing a coupling element on said end of said tube, mounting an elongated member on said tube sheet by inserting a portion of one end thereof into at least one boiler tube adjacent the tube which is to be extracted, said elongated member being at least as long as the tube which is to be extracted, connecting an actuable pulling member between said coupling element on said end of said tube and the end of said elongated member remote from said coupling element, and actuating said pulling member to extract said tube from said tube sheet.

3,979,817

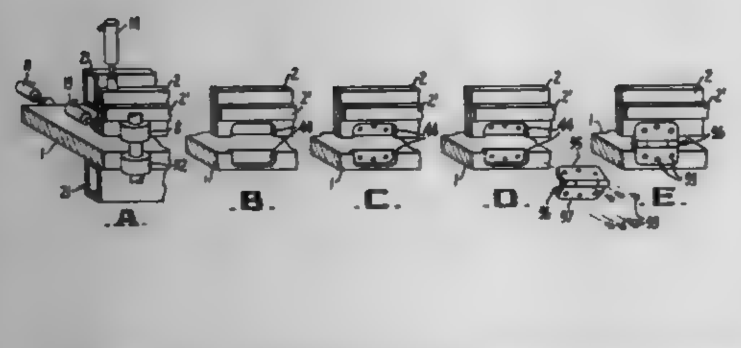
DOOR HINGE APPLYING METHOD

Edward G. Cheak, Chico, Calif., assignor to Norfield Manufacturing Co., Chico, Calif.

Filed Nov. 4, 1974, Ser. No. 520,200

Int. Cl.² B27M *1/08*; B27C *5/02*, *3/00*

U.S. Cl. 29—434 3 Claims



1. A method of connecting, by a pair of butt hinges each having two butts and each of which has a plurality of screw holes arranged in a predetermined pattern, a door of rectangular outline having opposite ends and a flat butt-receiving surface defining one of its edges extending between said ends with a hinge jamb having a flat butt-receiving surface extending longitudinally thereof, comprising the steps of:

a. positioning and holding said door and jamb stationary in a predetermined location with said jamb spaced from and along said edge parallel therewith and with said surfaces coplanar and facing the same direction; then

b. simultaneously forming hinge-receiving mortises for the butts of said pair of hinges in said surfaces with the mortises in said door being for one of the butts of said pair of hinges and the mortises in said jamb being for the other butts of said pair, said routing forming a flat base surface in each mortise and an open side along the adjacent sides of said door and jamb and a shoulder extending around said base surface having the outline of the butt to be received therein; then

c. simultaneously drilling a plurality of screw holes in said base surfaces in the pattern of the screw holes in the butts to be received therein; then

d. simultaneously positioning the butts of said hinges in the mortises in said door and jamb with the butts of each hinge partially flexed away from said surfaces at the connection between the butts and progressively seating said butts against said base surfaces until the edges of said butts are substantially against said shoulders; and then

e. simultaneously holding said butts firmly seated in said mortises and simultaneously driving screws through all of the screw holes in the butts of said pair of hinges and into the screw holes in said base surfaces on said door and jamb, one screw for each of said screw holes, for securing said hinges to said door and jamb;

f. performing the foregoing steps in rapid succession from separate stations at fixed points adjacent said butt-receiving surfaces while said door and jamb are held stationary.

3,979,818

METHOD OF THERMALLY INSULATING PIPE

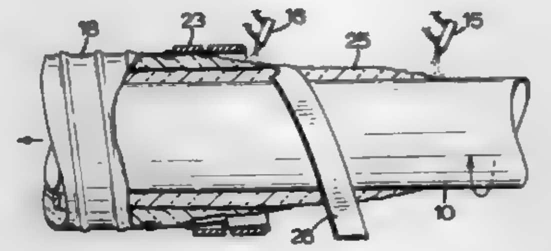
Steve W. Groch, and Harold F. Jarvis, both of Moffat, Canada, assignors to Shaw Pipe Industries Ltd., Rexdale, Canada

Continuation of Ser. No. 257,844, May 30, 1972, Pat. No. 3,877,136. This application Oct. 11, 1974, Ser. No. 514,223

The portion of the term of this patent subsequent to Apr. 15, 1992, has been disclaimed.

Int. Cl.² B21D *39/00*; B23P *19/04*

U.S. Cl. 29—455 R 9 Claims



1. A method of thermally insulating pipe, which comprises rotating the pipe at a uniform speed about a substantially horizontal axis while frothing a plastic foam mix onto the surface of the pipe progressively along its length, simultaneously forming a self-supporting and shape-retaining metal tube of larger dimeter than the pipe by continuously feeding a metal strip having parallel edges in a direction transverse to said axis, and continuously coiling the strip along a helical path while joining together the edges of adjacent convolutions of the strip to form a moistureproof helical seam, the tube being progressively extended coaxially with the pipe and progressively enveloping the surface of the pipe to define therewith an annular space, and maintaining the pipe at a temperature at which the mix constituents will react to form a foamed mass enveloping the pipe and filling the annular space between the pipe surface and the tube.

3,979,819

MACHINE TOOL WITH A TURRET HEAD FOR MULTIPLE SPINDLE UNITS AND AUTOMATIC TOOL CHANGING APPARATUS

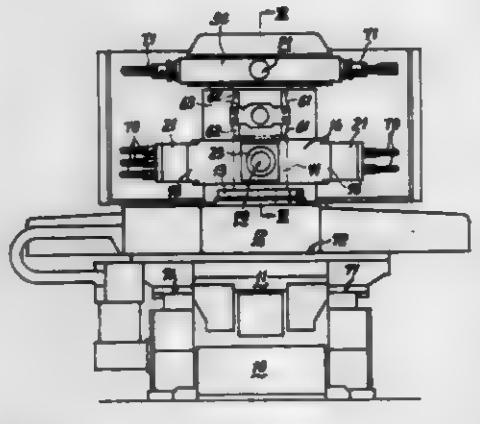
Kenzi Nomura, Aichi; Yozi Kamiya, Anjo, and Kengo Yoshioka, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed July 19, 1974, Ser. No. 489,882

Claims priority, application Japan, July 28, 1973, 48-85128

Int. Cl.² B23Q *3/157*

U.S. Cl. 29—568 5 Claims



1. A machine tool comprising:

a slide member slidable relative to a workpiece;

a turret head rotatably mounted upon said slide member and radially provided with a plurality of tool support stations on the periphery thereof;

index means for selectively rotating said turret head to index one of said tool support stations into an operating position confronting the workpiece;

a single tool spindle radially supported on at least one of said tool support stations and adapted to removably support a single tool;

a plurality of multiple spindle units attached on said tool support stations with the exception of said at least one tool support station, each of said spindle units having plural tool spindles for simultaneously machining plural portions of said workpiece and in input shaft for simultaneously rotating said plural tool spindles;

spindle drive means for rotating one of said single tool spindle and said input shaft of said multiple spindle unit selectively positioned at said operation position;

tool storage magazine means disposed above said turret head for removably storing a plurality of single tools and being indexably mounted for selectively presenting one of said single tools to a changing position disposed in parallel with said single tool disposed at said at least one of said stations;

tool changing means for interchanging two of said single tools between said tool changing position and said operating position including two tool grippers for simultaneously exchanging a single tool supported on said at least one station and positioned at said operating station with a tool of said magazine means presented to said changing position;

an upstanding column mounted upon said slide member and upon which said tool storage magazine means and said tool changing means are mounted, and about which said turret head is indexable;

annular coupling members fixed respectively to said turret head and said slide member in co-axial alignment with said upstanding column, with circular arrays of gear teeth engageable with each other;

an annular flange provided on the upper surface of said turret head in co-axial alignment with said upstanding column;

hanger bracket means shiftable in the vertical direction and engageable with said annular flange above said annular coupling members for facilitating raising and lowering of said turret head independently of said magazine means; and

power actuator means provided upon said upstanding column and connected with said hanger bracket for shifting said turret head in said vertical direction so as to selectively connect and disconnect said turret head with and from said slide member through said annular coupling members.

3,979,820

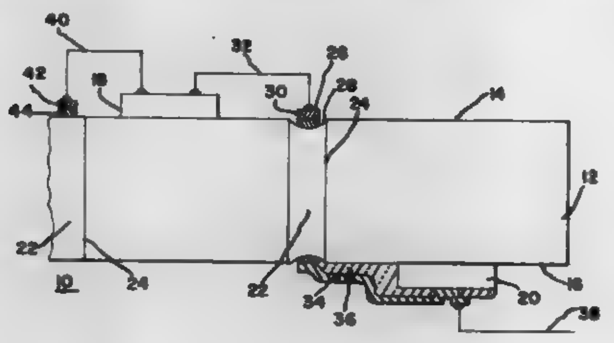
DEEP DIODE LEAD THROUGHS

Thomas R. Anthony, and Harvey E. Cline, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 411,295, Oct. 30, 1974, abandoned. This application Jan. 30, 1975, Ser. No. 545,496

Int. Cl.² B01J *17/00*

U.S. Cl. 29—577 41 Claims



1. A process for making an electrically conductive lead through region in a semiconductor device comprising the process steps of:

a. selecting a body of semiconductor material so that the body has two major opposed surfaces, at least one of the major surfaces having a preferred planar crystal structure orientation which is one selected from the group consisting of (100), (110) and (111), a vertical axis which is substantially aligned in parallel with a first preferred crystal axis of the material of the body, a preferred level of resistivity, and a preferred type of conductivity;

b. vapor depositing at least one mass of a selective metal on a selective portion of the major surface of the body of semiconductor material having the preferred planar crystal structure orientation;

c. heating the body and each mass of metal to an elevated temperature sufficient to form a melt of metal-rich semiconductor material of the body for each mass, the melt comprising the vapor deposited metal and a portion of the material of the body in contact therewith;

d. establishing a temperature gradient in the body substantially parallel with the vertical axis and the first preferred crystal axis of the body

e. migrating each melt of metal-rich semiconductor material through the body at a predetermined elevated temperature along a path substantially parallel with the established temperature gradient in the direction of the higher temperature of the temperature gradient from the one major surface to, and terminating in, the other of the two major opposed surfaces to form in situ a region of recrystallized semiconductor material of the body having two opposed end surfaces, each being coextensive with a respective one of the two opposed major surfaces and having a predetermined level of concentration of the metal of the melt distributed substantially uniformly throughout the entire region as determined by the solid solubility limit of that metal in that semiconductor material at that predetermined elevated temperature of migration, the metal comprising at least one dopant impurity material therein to impart thereto a predetermined second and opposite type conductivity than that of the material of the body and a predetermined level of resistivity to the region sufficient to render it electrically conductive, and

f. forming a P-N junction at the contiguous surfaces of the material of each region of recrystallized semiconductor material and that of the body.

3,979,821

METHOD OF MANUFACTURING RARE EARTH PERMANENT MAGNET ROTOR

Samuel Noodleman, Blacksburg, Va., assignor to Kollmorgen Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 576,125, May 9, 1975, which is a continuation-in-part of Ser. No. 502,213, Aug. 30, 1974, Pat. No. 3,937,993, which is a continuation-in-part of Ser. No. 471,313, May 20, 1974, Pat. No. 3,876,892, which is a continuation-in-part of Ser. No. 383,883, July 30, 1973, Pat. No. 3,819,964. This application June 16, 1975, Ser. No. 586,909

Int. Cl.² H02K *15/02*

U.S. Cl. 29—598 10 Claims

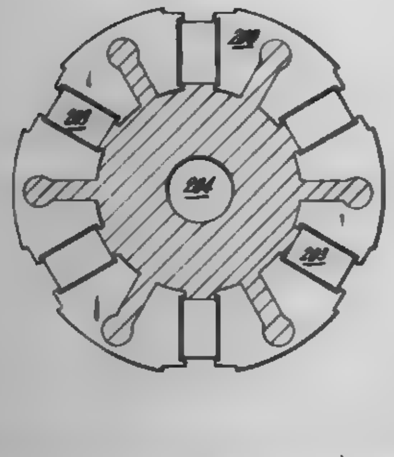
1. A method of manufacturing a cast, rare earth permanent magnet rotor comprising the steps of:

a. assembling a stack of rotor laminations of ferrous material, said laminations having first and second sets of openings;

b. inserting pieces of virgin rare earth magnet material in said first set of openings in said laminations;

c. pouring non-ferrous casting material into said second set of openings in said laminations so as to form a rough-cast rotor assembly;

d. machining said rough-cast rotor assembly to form a rotor assembly having discrete pole pieces; and then



e. magnetizing said pieces of virgin rare earth magnet material.

3,979,822
PROCESS OF MANUFACTURING AN ELECTRIC MOTOR

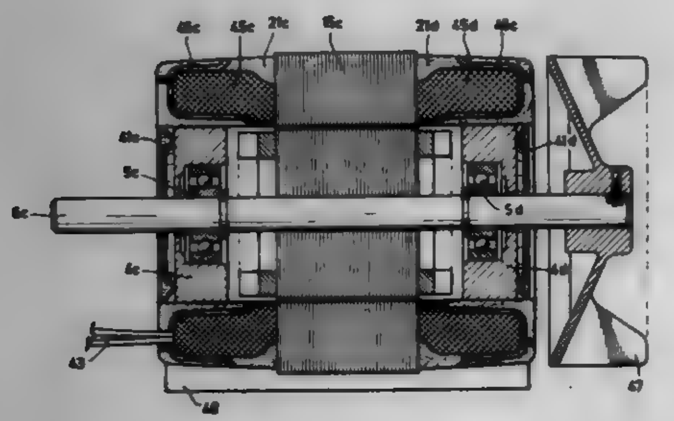
Richard Hahn, Sücherstrasse 54, 7061 Baltmannsweiler Kreis Esslingen, Germany

Filed Feb. 19, 1975, Ser. No. 550,987

Claims priority, application Germany, Feb. 23, 1974, 2408782; Feb. 26, 1974, 2409212

Int. Cl.² H02K *15/14*

U.S. Cl. 29—596 **3 Claims**



1. A process for the manufacture of an electric motor, particularly a squirrel cage motor, comprising the steps of

providing a split casing mould having a hollow space dimensioned to receive the stator and stator winding portions and a central mandrel-shaped core and to leave voids around the winding portions;

placing a support cuff over each of the winding portions which protrude axially from the stator so that portions of the support cuff lie radially inwardly and outwardly of the winding portions;

inserting the core through the support cuffs and the stator;

placing the assembly including the stator, the windings, the support cuffs and the core into the mould and closing the mould so that those portions of the support cuff lying radially outwardly of the winding portions are pressed radially inward against the winding portions;

filling the voids around the winding portions with curable electrically insulating casting material, and

curing the material.

3,979,823
METHOD OF MANUFACTURING A RESISTOR HAVING A LOW TEMPERATURE COEFFICIENT

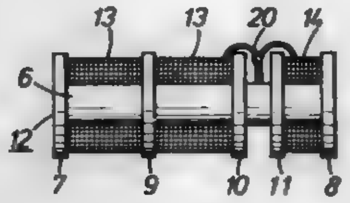
Isao Hayasaka, Kounosu, Japan, assignor to Takeda Riken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 544,451, Jan. 27, 1975. This application Dec. 29, 1975, Ser. No. 645,110

Claims priority, application Japan, Jan. 30, 1974, 49-12457

Int. Cl.² H01C *17/00*

U.S. Cl. 29—610 R **2 Claims**



1. A method of manufacturing a resistor with low temperature coefficient comprising the steps of providing a main resistor having a low temperature coefficient α_1 and a resistance of $R_0 + \Delta R$ which is by ΔR greater than an intended resistance R_0, removing a portion of the main resistor which corresponds to a resistance of

$$R_0 \frac{\alpha_1}{\alpha_2} + \Delta R$$

and subsequently connecting with the main resistor an auxiliary resistor having a temperature coefficient α_2 which is of opposite polarity to that of α_1 and which is high in its absolute magnitude, said auxiliary resistor having a resistance of

$$R_0 \frac{\alpha_1}{\alpha_2} .$$

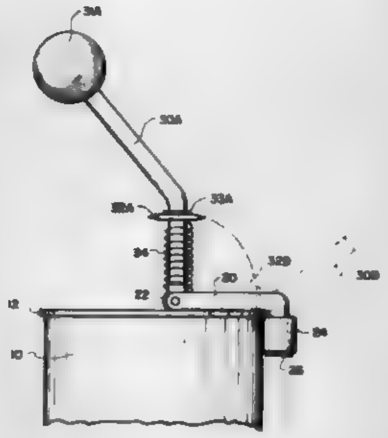
3,979,824
CAN OPENER

Raymond C. Dunaj, 601 Maple Ave., Neptune, N.J. 07753

Filed Feb. 17, 1976, Ser. No. 658,819

Int. Cl.² B67B *7/34*

U.S. Cl. 30—21.5 **8 Claims**



1. A can opener comprising:

a moveable main bracket positioned adjacent to and substantially parallel to the top lid of a can to be opened;

at least two guide rollers rotatably secured to the outer extremities of said main bracket, each of said guide rollers having one upper surface to engage the underside of the peripheral lip between said top lid and the side of said can, and another lateral surface to engage the side of said can just under said peripheral lip;

a cutter arm having one end pivoted at the inner extremity of said main bracket;

a handle attached to the other end of said cutter arm;

a cutting mechanism attached between said one end and said other end of said cutter arm;

said cutter arm having a first position pivoted upward with said cutting mechanism clear of said top lid of said can, and a second position pivoted downward with said cutting mechanism penetrating said top lid of said can on the inside of said peripheral lip between said guide rollers;

said handle being used for rotating said cutter arm, in said second position, around said peripheral lip of said can so that said cutting mechanism can cut through said top lid of said can along the inside of said peripheral lip to open said can.

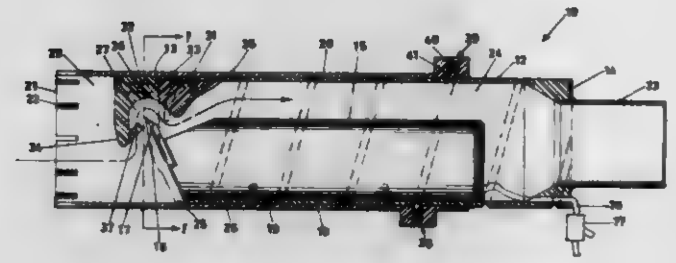
3,979,825
HAIR CUTTING AND TRIMMING DEVICE

John Hoegh Baumann, 38 Lakeview Ave., Kingston, Ontario, Canada

Filed Oct. 17, 1975, Ser. No. 623,318

Int. Cl.² B26B *19/20, 19/44*

U.S: Cl. 30—133 **7 Claims**



1. A hair cutting and trimming device comprising. an elongated, tubular housing having one open end and an opposite closed end, motor driven cutter means located within said housing, cutter blade means located at a forward end of said cutter means, means for supporting said cutter means axially of said housing, with said cutter forward end facing toward said open and of said housing, said cutter blade means being supplied with cutting teeth, said closed end of said housing being supplied with an opening, means for connecting said opening with a source of suction, said suction providing an air stream progressing from said open end, past said cutter blade means and towards said opening in said closed end, hair guide means located in said air stream, adjacent said cutting teeth, means for selectively varying the distance between said cutting teeth and said open end of said housing, hair length indicating means on said housing, a plurality of vacuum breaking slots located in rim of said open end, incremental control means for selective positioning of said cutting teeth relative to said open end, at least one suplementary extension tube detachably attachable to said open end of said housing, said extension tube having a free open end and a plurality of vacuum breaking slots in rim of said free open end, and descriptive hair style programing means co-operative with said means for selectively varying distance between said cutting teeth and said open end of said housing, said descriptive programming means containing illustrations of hair styles, supplied with a plurality of zones, each zone being marked to denote desired length of hair within said zone, said markings corresponding with said hair length indicating means on said housing.

3,979,826
SCISSORS

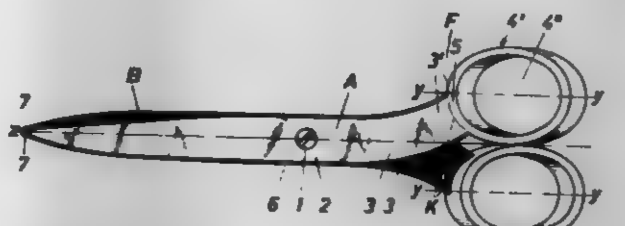
Ulf Koch, Solingen, Germany, assignor to J.A. Henckels Zwillingswerk Aktiengesellschaft, Solingen, Germany

Filed Feb. 25, 1976, Ser. No. 661,289

Claims priority, application Germany, Mar. 20, 1975, 2512187

Int. Cl.² B26B *13/12*

U.S. Cl. 30—341 **6 Claims**



1. A scissors with gripper eyes of elliptical periphery on scissor handles, comprising

two scissor members pivotally connected to each other and having handle portions, respectively,

gripper eyes, constituting sectional cuts of a hollow cylinder forming rings, said sectional cuts being inclined to the longitudinal axis of the cylinder,

said rings being secured to said handle portions, respectively, in inverted position with respect to each other.

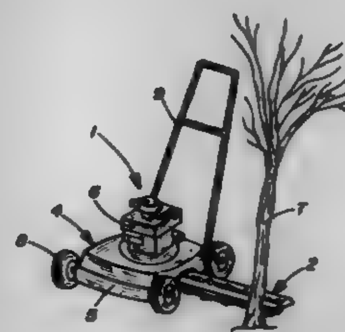
3,979,827
TREE CUTTING ATTACHMENT FOR POWER MOWERS OR THE LIKE

Ivan Anzur, 8484 Sumner Road, Chardon, Ohio 44024

Filed Feb. 28, 1975, Ser. No. 554,083

Int. Cl.² A01G *23/08;* **B27B** *17/02*

U.S. Cl. 30—379 **5 Claims**



1. A tree cutting attachment for rotary power mowers of the type having a generally vertically oriented drive shaft comprising,

adaptor means for interchangeable mounting said attachment on the frame of a rotary power mower,

said adaptor means including a generally flat plate arranged for mounting directly beneath and on the underside of the frame for positioning a cutting element in close proximity to the ground,

a chain saw assembly operably connected to said adaptor means and projecting outwardly from the side of the frame for cutting engagement with a tree,

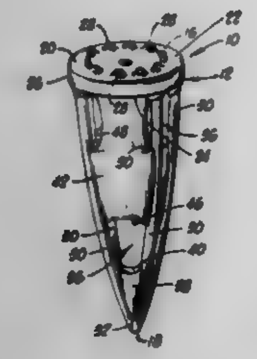
said chain saw assembly including a continuous cutting element movably mounted on a support arm for cutting engagement with said tree,

said chain saw assembly including a generally flat, elongated arm having one end connected to said plate and having its opposite end projecting outwardly from one side of the frame in the mounted position thereof,

a drive assembly attached to said plate and arranged for operable connection between the drive shaft of the power

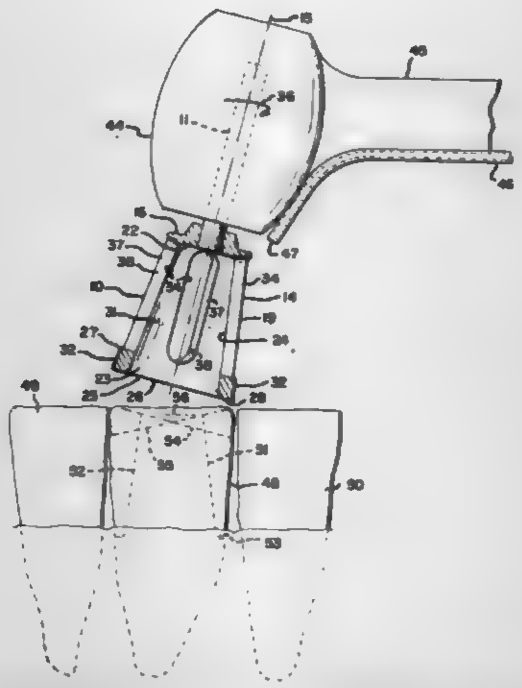
mower and said cutting element to impart movement to the cutting element for cutting through a tree,
said drive assembly including a driven shaft extending through said plate mounted for rotation about a generally vertical axis, and
said driven shaft being adapted for connection with the drive shaft of the power mower for driving the cutting element in a horizontal direction in the mounted position of said attachment.

3,979,828
DENTAL PROSTHETIC DEVICE AND PROSTHETIC DENTISTRY METHOD
Bill E. Taylor, 617 S. Quincy, Enid, Okla. 73701
Filed Sept. 20, 1974, Ser. No. 507,946
Int. Cl.² A61C *13/00*
U.S. Cl. 32—10 A **10 Claims**



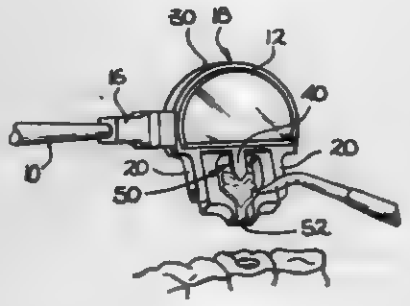
1. A dental prosthetic device having a portion insertable within a socket opening formed at an oral extraction site and utilizing a temporary crown or the like comprising:
a plate having an upper face, a lower face and an opening extending through a portion thereof;
at least two rods, one end of each rod connected to the plate and each rod extending a distance from the lower face of the plate;
means connecting the end portions of the rods, opposite the ends of the rods connected to the plates, the rods defining an open space between the plate and the means connecting the end portions of the rods, the rods and the means connecting the end portions of the rods being insertable within the socket opening formed at the extraction site and shaped to facilitate hard and soft tissue ingrowth during a healing period within a portion of the open space and about the rods for forming a mechanical interlock;
a crown, having an upper end and a lower end, the lower end of the crown being disposable on the upper face of the plate in one position of the dental prosthetic device and an opening extending through a portion of the crown intersecting the lower end thereof, the opening in the crown being alignable with the opening in the plate in the position of the dental prosthetic device of the crown connected to the plate;
a base, having an upper end, a lower end, and a threaded opening intersecting the upper end and extending a distance through a portion of the base, the upper end of the base connected to the lower face of the plate and the threaded opening in the base being alignable with the opening in the plate, the connection between the base and the plate sealing the threaded opening in the base from the open space defined via the rods, whereby the temporary crown is removable securable to the plate for holding the base, the plate, the rods and the means connecting the end portions of the rods in a relatively stationary position during the healing period; and
a fastener having a portion insertable through the opening in the crown, through the opening in the plate and threadedly engaging the threaded opening in the base, a portion of the fastener engaging a portion of the crown removably securing the crown to the plate.

3,979,829
APPARATUS FOR PREPARING A TOOTH STUMP FOR A CROWN
Albano Lemos, Winter Park, Fla., assignor to Bell Bur, Inc., Winter Park, Fla.
Filed Nov. 26, 1975, Ser. No. 635,609
Int. Cl.² A61C *3/02*
U.S. Cl. 32—49 **15 Claims**



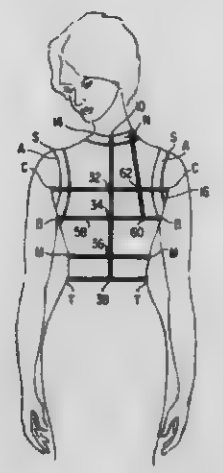
1. A rotary cutting tool for use in preparing a tooth stump for the mounting of a tooth crown thereon, said tool comprising an elongated shaft adapted for reception in a power driven dental drill chuck and for rotation about its longitudinal axis, said shaft having opposite ends, a rigid body having an axis of symmetry and being fixed to the shaft in coaxial arrangement with the longitudinal axis at one of said ends, said body having a base end axially offset from said one of said ends, and joined top and lateral walls with interior surfaces that define a frustoconical interior cavity with an opening to the body exterior at said base end, said lateral wall having an annular exterior surface that surrounds said opening at said base end, and said body having abrasive matter secured to the interior surfaces of the top and lateral walls and to said annular exterior surface.

3,979,830
DENTAL AMALGAM CARRIER
Robert C. McShirley, 6535 San Fernando Road, Glendale, Calif. 91201
Filed Nov. 24, 1975, Ser. No. 634,831
Int. Cl.² A61C *5/04*
U.S. Cl. 32—60 **11 Claims**



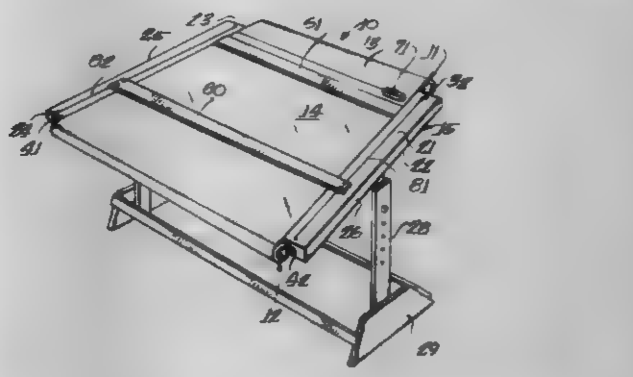
1. A dental instrument for carrying amalgam, or the like comprising:
a handle;
a frame member, rotatably coupled to said handle;
a bucket means for carrying amalgam, said bucket being coupled to said frame; and
a mirror disposed on said frame member adjacent to said bucket;
whereby said bucket may be filled with amalgam, or the like, and then rotated into a convenient position for filling a patient's cavity.

3,979,831
METHOD AND APPARATUS FOR ALTERING CLOTHING PATTERNS
Helene P. Lutz, 120 E. Market St., Rhinebeck, N.Y. 12572
Filed Nov. 22, 1974, Ser. No. 526,440
Int. Cl.² A41H *3/00*
U.S. Cl. 33—17 R **3 Claims**



1. A method of altering a garment pattern to suit an individual's figure, comprising the steps of:
determining on the individual the arm-cross points at which each of the individual's arms joins the body at the underarm when hanging at the individual's side;
marking the front and back portions of said garment pattern at points corresponding in location on said pattern portions to said arm-cross points on each side of the individual;
measuring an upper chest contour on the individual and establishing left and right upper side chest points thereon;
measuring an upper back contour on the individual and establishing left and right upper side back points thereon;
marking the front and back portions of said garment pattern at points corresponding in location on said pattern portions to said upper side chest and upper side back points on the individual;
marking extension lines of the side seam lines of each of said pattern portions, said extension lines extending into the pattern armholes;
marking each of said pattern portions on said extension line to define a reference point thereon at a distance above said arm-cross point corresponding on said pattern portion to the vertical distance from said arm-cross point to said upper chest or back contours on the individual;
marking a construction line on each of said pattern portions extending from said reference point toward the center of said pattern portion;
marking an upper chest contour line on said front pattern portion extending from the center front of said pattern portion through said upper side chest point and terminating with its outer end at said construction line, the length of said upper chest contour line being equal to that of the upper chest contour line measured on the individual;
marking an upper back contour line on said back pattern portion extending from the center back of said pattern portion through said upper side back point and terminating with its outer end at said construction line, the length of said upper back contour line being equal to that of the upper back contour line measured on the individual;
preparing at least one armhole template for the individual, said template having side and shoulder seam portions and front and back edge portions;
placing the side seam portion of said armhole template a distance below the arm-cross marks on each of said pattern portions to provide an allowance for ease;
placing the shoulder seam portion of said armhole template at the shoulder point of the shoulder point of each of said pattern portions; and
placing said edge portions of said armhole template at the outer ends of said upper chest and back contours, thereby defining an altered armhole for said pattern.

3,979,832
SLIDING SURFACE FOR A DRAFTING BOARD
Alejandro Arreguin, 1910 Convent St., Laredo, Tex. 78040
Continuation-in-part of Ser. No. 520,424, Nov. 4, 1974, abandoned. This application Feb. 13, 1976, Ser. No. 657,724
Int. Cl.² B43L *5/00*
U.S. Cl. 33—76 R **1 Claim**



1. A sliding surface device for use on a drafting board said drafting board having a flat top surface and opposed flat parallelly extending top and bottom edges, the sliding surface device comprising, in combination:
a first longitudinally elongated cylindrical roller having a spring disposed integrally therewith to spring bias the roller for rotation about its longitudinal axis in one direction;
a second longitudinally elongated cylindrical roller identical to said first roller and having a spring disposed integrally therewith to spring bias the roller for rotation about its longitudinal axis in a direction opposite to the direction of rotation of the first roller, said second roller being of an identical size, configuration and structure to said first roller;
a first pair of brackets adapted to be mounted to opposite ends of the top edge of the drafting board to engage and support opposite ends of the first roller in a position adjacent the drafting board top edge and extending parallel thereto;
a second pair of brackets adapted to be mounted to opposite ends of the bottom edge of the drafting board to support opposite ends of the second roller to position the second roller adjacent the bottom edge of the drafting board extending parallel thereto;
said first roller and said second roller being supported by said first pair of brackets and said second pair of brackets in tandem spaced apart parallel relationship;
a first sheet of flat thin flexible vinyl material extending the width of the first roller and having one end edge secured thereto with said sheet being rolled about the roller and terminating in a leading free end edge;
a second sheet of flat flexible thin polyester film type material extending the width of the second roller and having one end affixed permanently to the second roller with the sheet being rolled thereabout and extending outwardly therefrom and terminating in a leading free edge thereof, said second sheet being of the same width as said first sheet with said leading free edge of said second sheet

being disposed parallel to and immediately adjacent to said leading edge of said first sheet;

a plurality of transversely spaced apart longitudinally extending tape strips each having a coating of pressure sensitive adhesive on one surface thereof and positioned at spaced apart intervals overlapping the adjacent free edges of said first and second sheets and adhesively gripping the top surfaces of said first and second sheets to bridge the gap therebetween and secure said sheets together to define an overall sliding surface;

a flat rectangularly elongated strip of flexible material having a length overlapping the total length of each of said tape strips and having a width equal to the width of said first and second sheets of material, said strips having a flat top surface and a flat bottom surface;

an adhesive material disposed in a thin strip along the top edge of the bottom surface of said elongated strip to adhesively connect the strip of material transversely of said first sheet of material to define a flat member bridging said tape strips and said gaps between said first and said second sheets of material;

an elongated rectangularly shaped solid box-like pull member having a flat top surface and a flat bottom surface; and

an adhesive coating disposed completely along said bottom surface of said pull member permanently securing said pull member to said first sheet of material in a position immediately adjacent said flat member, said pull member projecting upwardly from the top surface of said sheet of material to be readily grasped in a hand of an individual utilizing the sliding surface device to effect simultaneous movement of said sheet of material along the top surface of the drafting board with said spring biased rollers retaining said first and second sheets of material continually taut in all positions thereof.

3,979,833

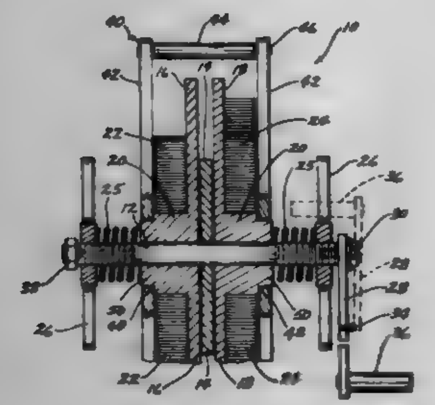
METHOD AND MEANS FOR ESTABLISHING THE CORNERS OF A MULTIPLE-SIDED LOT

Thomas B. Grundman, 513 Park Ave., Cherokee, Cherokee County, Iowa 51012

Filed Feb. 3, 1975, Ser. No. 546,387

Int. Cl.² G01B *3/02*

U.S. Cl. 33—138 **9 Claims**



1. A measuring device comprising,

a pair of tape reels mounted on a common axial shaft,

a length of measuring tape rolled on each reel,

means for turning said shaft, and

locking means for selectively locking either or both of said reels to said shaft for rotation therewith or independently thereof as said tapes are reeled in or out, said locking means including a clutch plate locked to said shaft and disposed between said pair of reels for rotation with said shaft, and individually selectively adjustable pressure means on said shaft for engagement with each of said reels to cause them to frictonally engage said clutch plate and thereby turn therewith.

3,979,834

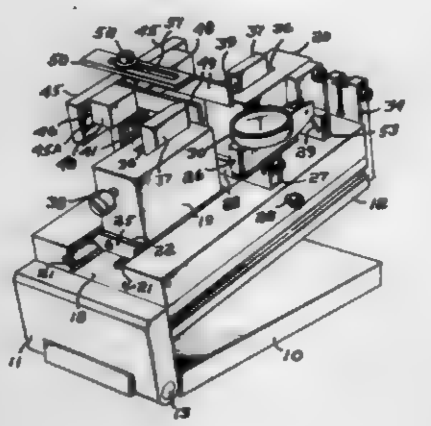
DEVICE FOR MEASURING THE PITCH DIAMETER OF GEARS

Richard A. Brookfield, 25 Drumlin Road, Newton, Mass. 12128

Filed Jan. 22, 1975, Ser. No. 543,158

Int. Cl.² G01B *5/08*

U.S. Cl. 33—147 M **15 Claims**



1. A device for use in measuring the pitch diameter of a gear, said device including a base, a slideway extending lengthwise of said base, a dial gauge attached to said base, a pair of slides movable along the slideway towards or away from each other, the proximate ends of the slides the front ends thereof, each slide having an upwardly opening socket extending into its front end, a pair of pins of a diameter appropriate for the ideal distance between the pitch lines of any two teeth of said gear, one pin in each socket and extending vertically therefrom, means to clamp each pin in its socket with the two pins in a common lengthwise plane, means to hold one slide against movement along the slideway with the pin thereof in a predetermined position relative to the gauge, means to support a gear over said slideway with diametrically opposed gear teeth protruding therefrom towards opposite ends of the slideway and in a plane above the open ends of the sockets and with one pair of gear teeth seated against the pin of the held slide and a diametrically opposed pair of teeth in a position to receive the other pair of gear teeth on appropriate movement of the other slide, means connected to said other slide and operable to actuate the gauge on such movement, each of said pin clamping means including a clamping member which and said socket include coacting portions of which one is a vertical, V-shaped, pin-receiving channel establishing said lengthwise plane and the other a V-shaped pin engaging and backing projection extending the full length of the pin and dimensioned to avoid contact with the gear teeth and means connecting said slideway to said base in a downwardly inclined position, said other slide free to slide along said slideway in a predetermined direction relative to the fixed slide to enable its pin to engage said diametrically opposed pair of gear teeth.

3,979,835

METHOD AND APPARATUS FOR MEASURING CARCASSES

Richard F. Sumption, Portsmouth, and Charles H. Wallace, Carrollton, both of Va., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Division of Ser. No. 551,879, Feb. 21, 1975, which is a continuation of Ser. No. 455,168, March 27, 1974, abandoned. This application Aug. 15, 1975, Ser. No. 604,972

Int. Cl.² G01B *5/18, 7/26*

U.S. Cl. 33—169 B **5 Claims**

1. A measuring tool for insertion into a body and producing a signal proportionate to the depth of insertion, comprising:

a tool body having a cavity therein;

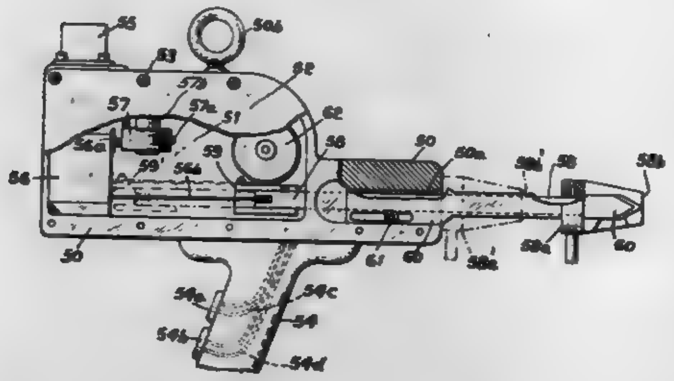
longitudinally extending insertion means mounted to said body;

a hand grip mounted to said body;

a transducer mounted in said cavity and having an extendable and retractable output cable;

spring means mounted in said cavity;

coupling means connected to said spring means and to said output cable, such that said spring means retains said output cable in a first extended position;



slide means longitudinally and slidably mounted on said insertion means and extending to said body and coupled to said coupling means; and

means on said tool positioned for being manually activated to indicate when said transducer signal is representative of the depth of insertion into said body by said insertion means, and said means is desirably activated when the said slide means is moved from the first extended position to a displaced positon corresponding to the depth of insertion.

3,979,836

METHOD AND APPARATUS FOR THE HIGH-FREQUENCY TREATMENT OF MOIST MATERIAL

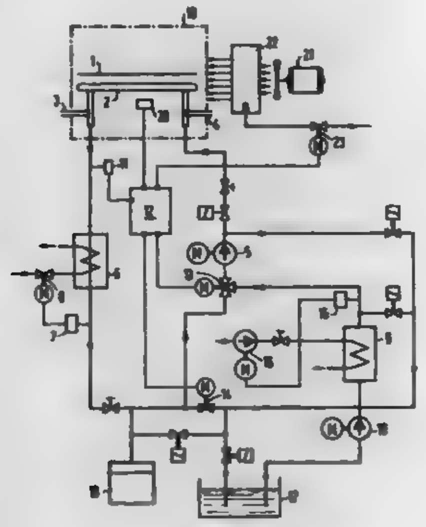
Hans-Christian Grassmann, An den Eichen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 17, 1975, Ser. No. 568,862

Claims priority, application Germany, May 3, 1974, 2421570

Int. Cl.² F26B *3/34*

U.S. Cl. 34—1 **14 Claims**



1. A method for use in the high-frequency treatment of a moist material in which the material is influenced by electrodes which are connected to current leads through which a heat carrier flows comprising the steps of:

heating the current leads prior to the high-frequency treatment;

cooling the current leads during the high-frequency treatment;

controlling the current lead temperature as a function of the temperature of the ambient atmosphere; and

said heating and cooling being carried out in such a manner that prior to said treatment and during said treatment the current leads are caused to have at least approximately the same surface temperature.

3,979,837

FOLIAGE AND FLORAL PRESERVATION AND MATERIAL THEREFOR

Dorothy M. Kanakis, 7008 Cliffbrook, Dallas, Tex. 75240

Filed Apr. 1, 1975, Ser. No. 563,961

Int. Cl.² F26B *5/16*

U.S. Cl. 34—9 **8 Claims**

1. A method of preserving a flower blossom comprising the step of embedding said flower blossom, in its natural state, in a container filled with ground rice hulls; said container being open to the atmosphere.

3,979,838

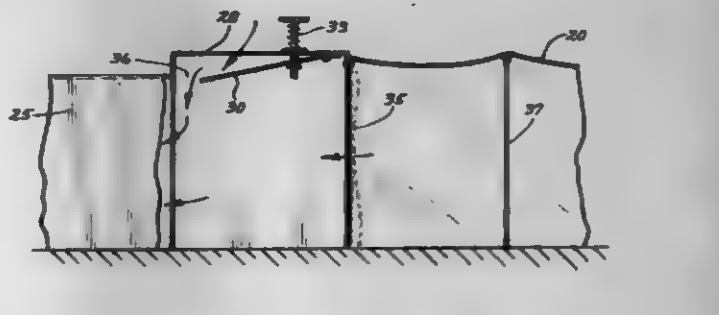
FAN MOTOR SAFETY FEATURE FOR GRAIN DRYING SYSTEM

Martin H. Tonn, Rte. No. 1, Amboy, Minn. 56010

Filed Sept. 29, 1975, Ser. No. 617,957

Int. Cl.² F26B *19/00*

U.S. Cl. 34—93 **5 Claims**



1. In a crop-drying system including a grain-confining bin having generally imperforate top and side walls, venting means at the top of said bin, and grain-supporting perforate base means adjacent the base of said bin, said imperforate side and top walls and said grain-supporting perforate base defining a grain-drying chamber, an air inlet chamber having an inlet port, impeller means within said inlet chamber for delivering drying air to a zone beneath said grain-supporting perforate base for passage through said drying chamber, drive means for said impeller means disposed in said drying air path, said system including solar energy extracting means for heating said drying air prior to passage through said drying bin, said solar energy extracting means comprising:

a. an elongated solar heating chamber having one end in direct communication with said air inlet chamber, and with the opposed remote end in communication with atmosphere, and comprising frame means with generally water-impermeable bottom, side and top walls, said walls being wrapped about said frame means and defining said solar heating chamber; and

b. said air inlet chamber having normally closed vent means therein for admission of air from ambience to said inlet chamber upon a clogging condition occurring at said inlet port.

3,979,839

DRUG INTERACTION SYSTEM

Paul Marie Michel Jean Blanie, 282, rue Saint Jacques, a Paris 5 eme, France

Filed Dec. 18, 1974, Ser. No. 533,819

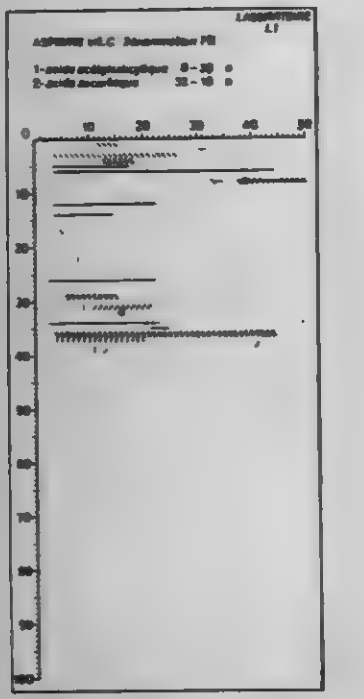
Claims priority, application France, Jan. 8, 1974, 74.00627; May 31, 1974, 74.18937; Aug. 30, 1974, 74.32797

Int. Cl.² G09B *23/28;* G06K *19/00*

U.S. Cl. 35—17 **42 Claims**

1. Device for determining the nature of relationships between on the one hand data peculiar to one unit or a group of separate units, and on the other hand data of another unit or another group of separate units pertaining to the same assembly, comprising a transparent support corresponding to each

unit or group of units, each support being arranged by means of a matrix of addresses, wherein on the support corresponding to each unit or groups of separate units are inscribed, at any address, corresponding to the data peculiar to the other units or group of separate units, one or more symbols distinctive of each nature of relationship between the data peculiar to the unit or groups of separate units corresponding to each support and the data peculiar to the other units or groups of units of the assembly, so that the symbols may be simultaneously read when superimposing the cards corresponding to the relationship to be studied.



3,979,840

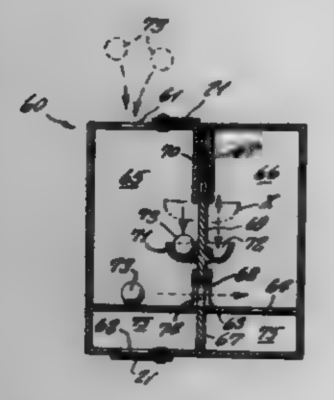
TEACHING AND MEASURING BOX

Burnel E. Waggener, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed May 12, 1975, Ser. No. 576,843

Int. Cl.^{2} G09B *19/00*; A63F *7/04*

U.S. Cl. 35—22 R **2 Claims**



1. In a teaching and measuring box, the combination of a wooden box member having a front side made of transparent plexiglass to allow observation thereinto, an upper and lower wall of said box each having an opening for passage of a reward article through said box, said openings being axially disaligned respective to each other, and a means for selectively closing said opening through said upper wall, including a vertically movable panel mounted in said box dividing said box into two spaces, in further combination with gravity actuated means for moving the panel from a closed position to a position providing communication between said spaces, said box additionally including at least one partition therewithin with an opening through said partition for passage of said reward therethrough, wherein the panel is spring biased to the closed position.

3,979,841

Patent Not Issued For This Number

3,979,842

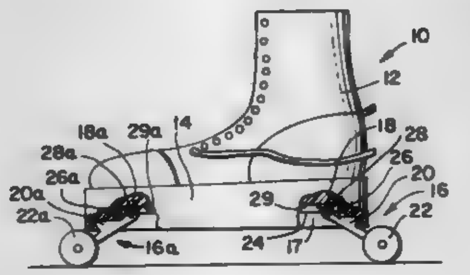
ATHLETIC SHOE EXERCISER

Genaro Texidor, New York, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Dec. 23, 1975, Ser. No. 643,776

Int. Cl.^{2} A43B *5/04*; A63C *17/00*

U.S. Cl. 36—115 **9 Claims**



1. An athletic shoe exerciser comprising:

a. an upper portion adapted to receive a foot;

b. a lower portion affixed to the underside of said upper portion, said lower portion comprising a wall circumscribing the underside of said upper portion and forming a cavity;

c. two pairs of rollers; and

d. erecting means for each pairs of said rollers pivotally affixed to the underside of said upper portion and adapted to be received within said cavity.

3,979,843

TRENCHING CHAIN WITH SCOOP MEMBERS

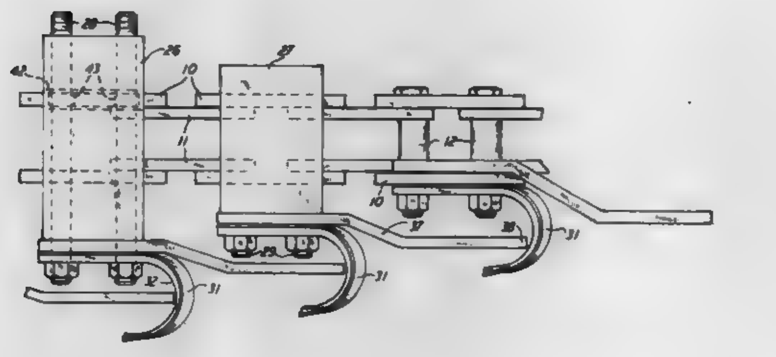
Roland Nielsen Nissen, Valley Center, Kans., assignor to J. I. Case Company, Racine, Wis.

Filed Nov. 26, 1975, Ser. No. 635,654

Int. Cl.^{2} E02F *5/06*

U.S. Cl. 37—86 **7 Claims**

1. A trenching chain with scoop members comprising a plurality of chain links pivotally connected together for longitudinal movement in the direction of the length of the chain, a plurality of link pivot connectors extending between said links for pivotally connecting said links together in an endless chain arrangement, a plurality of scoop teeth included in the chain and each having a shank portion affixed relative to said links and having a scoop portion extending from said shank portion and being curved relative to said shank portion to have a scoop surface faced in the longitudinal direction of the length of the chain disposed along an angle of at least sixty degrees relative to the chain longitudinal direction for engaging and dragging earth in the movement of the chain, said scoop teeth being staggered in their positions along the chain and relative to the opposite sides of the chain, and a plurality of tooth picks attached to said chain at locations therealong different from the locations of said shank portion on said chain for pivoting relative to said scoop teeth in response to the articulation of said chain, said tooth picks each extending to a limit adjacent said scoop surface for brushing material off said scoop surface when said chain is articulated.



3,979,844

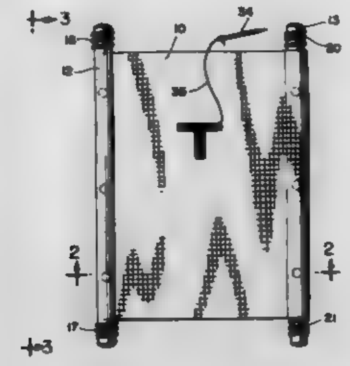
NEEDLEPOINTING APPARATUS AND METHOD

Ollie Nan Smith, 122 S. 7th St., Miamisburg, Ohio 45342

Filed July 24, 1975, Ser. No. 598,832

Int. Cl.^{2} D06C *3/08*

U.S. Cl. 38—102.91 **11 Claims**



1. In combination, a needlepointing apparatus and a piece of material to be needlepointed, the material having a pair of edge portions, the needlepointing apparatus having a first pair of elongated support members, one edge portion of the material being secured between the support members of the first pair, means for releasably holding the first pair of support members together, a second pair of elongated support members spaced from the first pair, the other edge portion of the material being secured between the support members of the second pair and the portion of the material extending between the two pairs of support members being supported, and means for releasably holding the second pair of support members together.

3,979,845

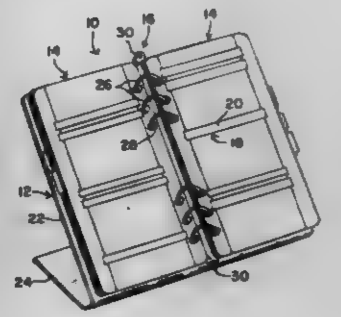
VISIBLE INDEX SYSTEMS

Alexander Patton Janssen, Charlottesville, Va., assignor to Datastrip Corporation, Charlottesville, Va.

Continuation of Ser. No. 403,986, Oct. 5, 1973, abandoned, which is a division of Ser. No. 188,743, Oct. 13, 1971, Pat. No. 3,778,914. This application Apr. 14, 1975, Ser. No. 567,852

Int. Cl.^{2} G09F *1/00*; B32B *3/10*

U.S. Cl. 40—64 R **11 Claims**



1. A visible index system, comprising: a panel; an elongated insert; means for detachably affixing said insert to said panel; an adhesive free label having an information receiving surface; a means for attaching said label to said insert, said last-mentioned means being an adhesive layer on the exposed surface of the insert whereby the desired information can be placed on said label and said label then attached to said insert; and panel support means which includes a support member and a plurality of loop-type retainers fixed to said support member in aligned, spaced apart relationship and at locations between and spaced from the sides of said member, there being apertures in said panel opposite one edge thereof in the same aligned and spaced relationship relative to each other as are the retainers and said retainers extending through said apertures, whereby said panel can be assembled on and selectively displaced from one side of the supporting member to the other to expose selected one of the labels fixed to the panel by the inserts to which the labels are attached.

3,979,846

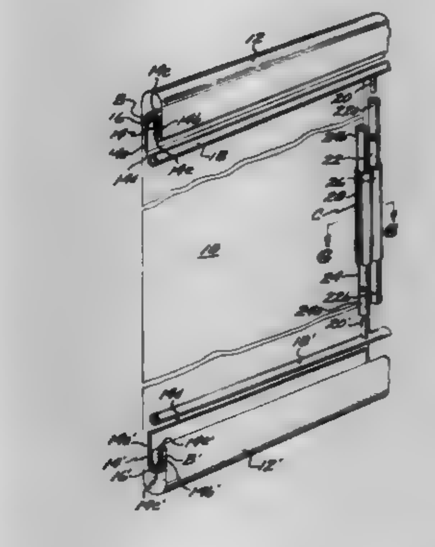
POSTER SUPPORTING DEVICE

Rosendo Euzarraga, Anaheim, Calif., assignor to Alpha Nova Development Corporation, Santa Ana, Calif.

Filed Mar. 27, 1975, Ser. No. 562,542

Int. Cl.^{2} G09F *1/10*

U.S. Cl. 40—125 G **9 Claims**



1. A device for use in maintaining a rectangular poster formed from a pliable sheet material and having upper and lower positionable edge portions in a configuration wherein those portions of said poster between said edge portions are held in a flat plane, said device sufficiently thin as to be hung on a wall in abutting contact therewith which device includes:

a. first elongate rigid means that removably engage said upper edge portion said first means includes:

an elongate frame piece of channel shaped transverse cross sections, said frame piece being of substantially the same length as the width of said poster, said frame piece being defined by first and second, laterally spaced flanges that have first and second longitudinal edges and said first edges being connected by an elongate web, with said first and second flanges and web defining an elongate space therebetween that is parallel to said portion of said poster between said edge portions when said device is in said second position; and

an elongate anchor piece that has a transverse cross section slightly greater than the width of said space, with said upper portion when extending over outer surfaces of said first flange, web and second flange and interior surface of said second flange being held in said frame piece when said anchor piece is inserted in said space to pressure and frictionally engage an interior surface of said first flange and that part of said end portion adjacent an interior surface of said second flange;

b. second elongate rigid means that removably engage said lower edge portion;

c. first and second elongate rigid members, each of which have first and second end portions;

d. third means for securing said first end portions to substantially the centers of said fist and second means and in a direction normal thereto, with said first and second members being of sufficient length that said second end portions overlap; and

e. fourth means for adjustably engaging said second end portions to permit said first and second means and said first and second members to be moved oppositely from a first to a second position where said portion of said portion between said edge portions is taut and disposed in said flat plane, said fourth means comprise first and second elongate resilient tubes having first and second bores therein of smaller transverse cross section than that of said second end portions of said first and second members, with said first and second tubes including first longitudinal sections that are joined to one another and second longitudinal sections in which slits are defined that extend the length thereof, which first and second tubes when the first and second bores therein are engaged by said second end portions of said elongate members frictionally grip the same to hold said device in said second position.

3,979,847

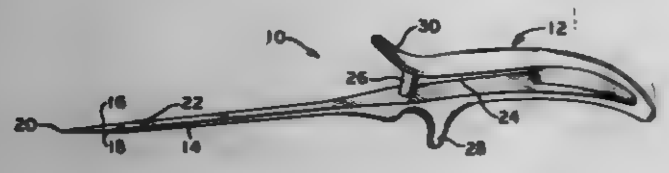
METHOD FOR INSTALLING IDENTIFICATION TAG AND TOOL THEREFOR

Jackson T. Schwindt, and Maurice Aaron Whitney, both of Cody, Wyo., assignors to Y-Tex Corporation, Cody, Wyo.

Filed Apr. 25, 1975, Ser. No. 571,768

Int. Cl.² G09F *3/00*

U.S. Cl. 40—301 13 Claims



1. An insertion tool for an animal identification tag or the like comprising: means defining a handle portion; means defining an elongated insertion portion extending outwardly from said handle portion, said insertion portion having an end portion with a flat top surface and opposed blunt edges converging to form a sharp piercing tip; and engagement means on said insertion portion for engaging a portion of an animal identification tag which is to be forced through the ear of an [illegible].

3,979,848

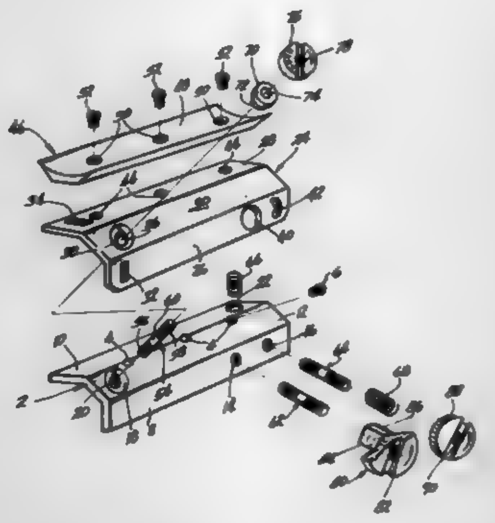
ADJUSTABLE BASE AND MOUNT FOR FIREARM OPTICAL SIGHT

William R. Ackerman, Jr., El Paso, Tex., assignor to W. R. Weaver Company, El Paso, Tex.

Filed Apr. 25, 1975, Ser. No. 572,494

Int. Cl.² F41G *1/38*

U.S. Cl. 42—1 S 11 Claims



1. A mounting assembly for securing a sighting device to a firearm, said mounting assembly being of the type having windage and elevation adjustment capabilities and comprising:

a. a first member adapted to be rigidly secured to the fire-[illegible]

b. a second member disposed adjacent to said first member and adapted to receive the sighting device;

c. means forming a first pivotal contact between said first and second members whereby said second member is pivotally movable with respect to said first member in a vertical direction about a horizontal pivot axis;

d. means forming a second pivotal contact between said first and second members whereby said second member is pivotally movable with respect to said first member in a horizontal direction about a vertical pivot axis;

e. windage and elevation adjustment means for moving said second member horizontally and vertically about said pivot axes; and

f. releasable locking means movable about an axis for selectively locking said second member against pivotal movement with respect to said first member, and releasing said second member for pivotal movement with respect to said first member, said last mentioned axis being substantially coplanar with said pivot axes so that actuation of said locking member does not impart a pivotal moment to said second member.

3,979,849

BOLT ACTION FOR REPEATING RIFLE

Jerry D. Haskins, P.O. Box 1401, Rifle, Colo. 81650

Filed June 3, 1974, Ser. No. 475,616

Int. Cl.² F41C *11/00, 21/00, 27/12*

U.S. Cl. 42—16 12 Claims

1. A bolt action for a rifle of the type which includes a barrel, a stock and a sear comprising:

an elongated receiver adapted for securement to the rifle stock and having:

an internally threaded forward receiver ring adapted for threadedly engaging one end of the rifle barrel, and having an inclined ramp at one side thereof offset from the central longitudinal axis of the receiver;

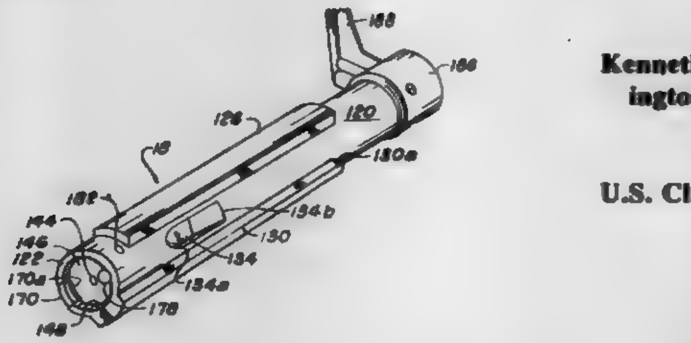
a rear receiver ring spaced axially along the receiver from the forward receiver ring;

a plurality of circumferentially spaced, radially inwardly extending arcuate locking lugs secured inside said rear

receiver ring and separated from each other by axially extending spaces;

a pair of spaced, elongated receiver rails extending between, and interconnecting, said forward and rear receiver rings, the space between said rails being aligned with said inclined ramp, and each of said rails having being relieved over a portion of the length thereof and adjacent the space therebetween;

an elongated hollow cylindrical bolt body slidably mounted in said receiver and rotatable about the longitudinal axis thereof and within the forward and rear rings of the receiver, and having a forward end and a rear end; and



at least three spaced, elongated, substantially parallel bolt rails secured to said bolt body and extending axially therealong, two of said bolt rails being of substantially equal length and terminating at points spaced from the forward and rear ends of the bolt body, and a third body rail extending to, and terminating flush with, the forward end of the bolt body, said bolt rails being dimensioned and positioned so that, in one status of the bolt body, said bolt rails are aligned to slide between said locking lugs in said axially extending spaces, and in a second status of the bolt body, to be aligned with and bear against, at one of their ends, said locking lugs.

3,979,850

SAFETY SYSTEM FOR HANDGUNS

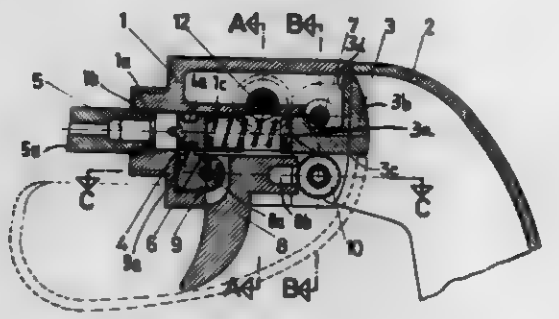
Alois Schiessl, Weissbach-Marzoll, and Rüdiger Van Acken, Mullheim, both of Germany, assignors to Firma Buck K.G., Germany

Filed Apr. 30, 1975, Ser. No. 573,023

Claims priority, application Germany, May 10, 1974, 2422663; Oct. 11, 1974, 2448586

Int. Cl.² F41C *3/02, 19/00, 23/00*

U.S. Cl. 42—71 P 16 Claims



1. In a handgun for firing projectiles, the handgun including a housing having a bore, a firing pin mounted in said bore, a spring in said bore behind the firing pin for biasing the firing pin, a trigger for releasing the firing pin, and a handle pivoted to the housing for swinging movement between a folded position wherein the handle covers the trigger and an unfolded position wherein the trigger is uncovered; the improvement comprising:

releasable locking means on said housing for locking said handle in its folded position, said locking means including a guide portion shiftably disposed in said bore;

said guide portion engaging a rear end of said spring and forming a guide for said spring rear end;

a pair of knobs projecting from opposite sides of said housing; and

a knob-biasing spring operably connected to both of said knobs to bias said knobs outwardly;

said knobs being biased inwardly by inside lateral walls of said handle when said handle is in its folded position, and being biased to an outward position by said knob-biasing spring when said handle is in its unfolded position to retain said handle in its unfolded position.

3,979,851

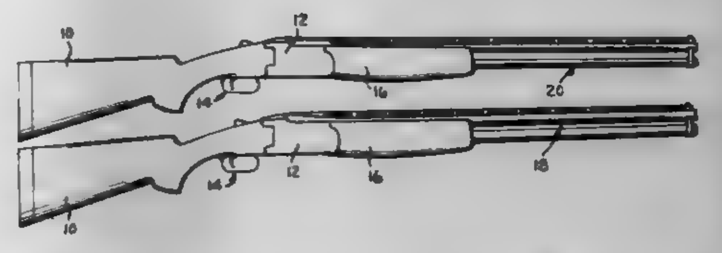
ALL GAUGE SKEET SET BARREL

Kenneth W. Soucy, Richfield Springs, N.Y., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Mar. 26, 1975, Ser. No. 562,167

Int. Cl.² F41C *21/06*

U.S. Cl. 42—77 16 Claims



1. In a firearm having a receiver in which a plurality of gun barrels of various bore diameters can be interchangeably mounted, a U-shaped fore-end of suitable dimensions to permit interchangeability of said barrels of various bore diameters including a standard barrel, said standard barrel being defined as the barrel with the maximum bore size which it is desired to mount interchangeably in said receiver and fore-end, said fore-end having a standard open-end portion which fits closely to the outside diameter of a section of the standard barrel, the improvement comprising a gun barrel having a smaller diameter bore than said standard barrel, the section of said barrel with the smaller diameter bore which is adjacent to said fore-end being of an oblong cross section which has its maximum horizontal dimension greater than the maximum vertical dimension so as to fit closely to the fore-end.

3,979,852

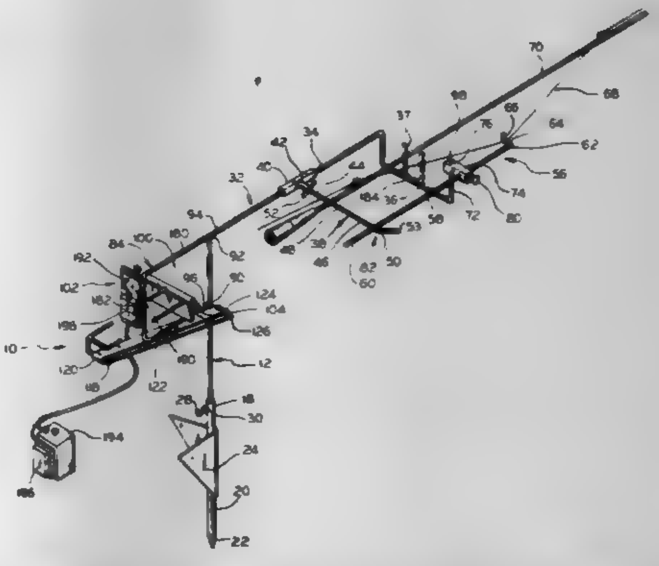
FISHING POLE MOUNTING DEVICE

Gilbert C. Johnson, 3538 Tompkins St., Gary, Ind. 46408

Filed Sept. 8, 1975, Ser. No. 611,172

Int. Cl.² A01K *97/12*

U.S. Cl. 43—16 9 Claims



1. A fishing rod mounting device for mounting a fishing rod equipped with handle for the rod, a reel adjacent the handle,

and a line wound the reel and threaded through eyelets along the rod for connection to fishing lures, said device comprising:
- a post including means for mounting same in an upright position,
- a holder frame fixed to said post and including a rectilinear slide portion extending crosswise of the post,
- said frame slide portion projecting forwardly of the post and having adjacent its projecting end portion a laterally extending bridge arm,
- said frame pivotally mounting a fishing rod handle receiving assembly defining a socket for receiving the handle of the fishing rod to mount the rod in its operative position in said assembly,
- said assembly being mounted for pivotal movement between a first position in which the fishing rod overlies said bridge arm and a second position in which said rod is disposed in upright relation,
- means for biasing said assembly to swing from said first to said second position,
- said frame slide portion mounting a swing arm thereon for pivotal movement with respect thereto,
- said swing arm defining a projecting end portion and being proportioned to rest on the fishing rod when the fishing rod is in its said operative position and overlies said rest arm,
- and an elongate release member pivotally mounted on said bridge arm for swinging movement about an upright axis disposed intermediate its ends,
- said release member hving its rearward end proportioned for engaging the upper side of said swing arm when the latter engages the rod and having its forward end shaped to define an upright abutment against which the fishing rod line may be placed when the fishing rod is disposed over said bridge arm,
- whereby when the fishing rod is in its said operative position and is disposed over said bridge arm with said swing arm resting on the rod and engaged by said rearward end of said release member, with the rod fishing line engaging said abutment, a predetermined pull on the line will swing said release member off said swing arm whereby said biasing means is operative to swing said assembly and the fishing rod carried thereby to said second position of same.

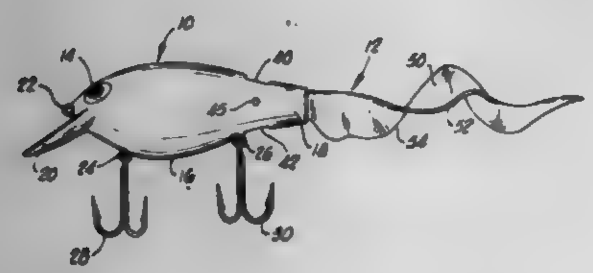
3,979,853
FISHING LURE

William D. Storm, and Gary D. Storm, both of Norman, Okla., assignors to Storm Plastics, Inc., Norman, Okla.

Filed Nov. 1, 1974, Ser. No. 519,850

Int. Cl.^{2} A01K *85/00*

U.S. Cl. 43—42.29 5 Claims



1. A fishing lure comprising:
- a rigid flotation body of generally fish-like configuration having a forward end and having a rear end, said body defining a T-shaped passageway in said rear end portion, with a first opening to said passageway in the rear end of said body, a second opening to said passageway in the upper side of said flotation body and a third opening to said passageway in the lower side of said flotation body; and
- an elongated, flexible resilient streamer element detachably connected to the rear end of said rigid flotation body by detachable positioning in said T-shaped passageway, said elongated, flexible resilient streamer element including an anchoring pad located at one end of said streamer element and positioned in said T-shaped passageway, and further including a pointed end at the opposite end of said streamer element from said anchoring pad, one of said second and third openings being dimensioned to facilitate inserting the pointed end of said resilient streamer element through said one opening and through said first opening and the pulling of said resilient streamer element through said one opening to draw the anchoring pad of said streamer element through said one opening into said T-shaped passageway.

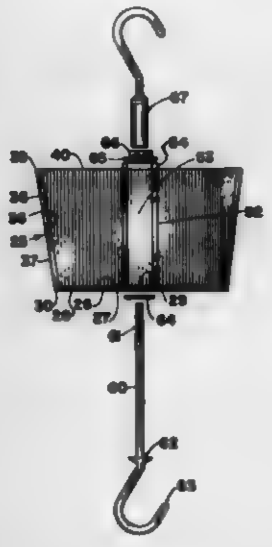
3,979,854
TRAP FOR CRAWLING INSECTS AND THE LIKE

Everett F. Perkins, 40850 Old Three Rivers Drive, Three Rivers, Calif. 93271

Filed May 27, 1975, Ser. No. 581,142

Int. Cl.^{2} A01M *1/10*

U.S. Cl. 43—121 1 Claim



1. A trap for crawling insects and the like comprising a bolt having a screw-threaded end portion, a fastener remote from said end portion and a flange disposed between the end portion and fastener; a receptacle received about the bolt in engagement with the flange and having a fluid reservoir facing away from said fastener; and a second fastener screw-threadably secured on the end portion of the bolt to capture the receptacle between said fasteners.

3,979,855
CONSTRUCTION TOY

Otto Schmidt, 16 Schwindstr.; Ulrich Supprian, 18 Schwindstr., both of Hamburg 52, Germany 2000, and Franz T. Villinger, 16 Hohenstaufenstr., Boertlingen, Germany 7321

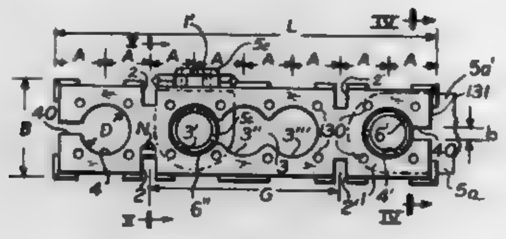
Continuation-in-part of Ser. No. 476,954, June 6, 1974, abandoned. This application Mar. 12, 1975, Ser. No. 557,778

Claims priority, application Germany, June 16, 1973, 2330755

Int. Cl.^{2} A63H *33/10*

U.S. Cl. 46—29 11 Claims

1. A construction toy comprising
- a plurality of flat members having flat sides formed with openings therein,
- separate coupling means for coupling said members and including resilient protrusions, releasably engaging in said openings of said members to be coupled,
- said members being formed with surface recesses in said flat sides arranged axially symmetrically with respect to said openings,
- said coupling means including projections complementary in shape to that of said surface recesses and engaging therein when said members are coupled by said coupling means,



- said projections constituting at least two pins complementary in arrangement to that of said surface recesses,
- said flat members having beveled edges, said beveled edges forming 45 degree angles with respect to said flat sides.

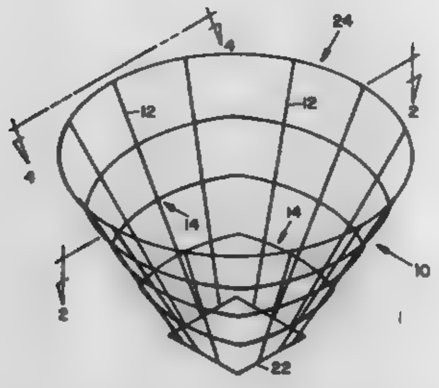
3,979,856
WIRE BASKET

James H. Belcher, 9432 Motsenbocker Road, Parker, Colo. 80134

Filed Apr. 7, 1975, Ser. No. 565,447

Int. Cl.^{2} A01G *23/04*

U.S. Cl. 47—37 16 Claims



1. A wire transplanting basket for retaining excavated earthen balls comprising:
- a plurality of generally divergent stakes; and
- a plurality of spaced wales connected to the stakes, each wale formed of a plurality of interconnected segments that have substantially the same curvature, the segments of successively spaced wales substantially aligned with each other and each having curvature focal points that converge more toward a common center than the curvature focal point segments of smaller antecedent wales.

3,979,857
RAZOR BLADE SHARPENER

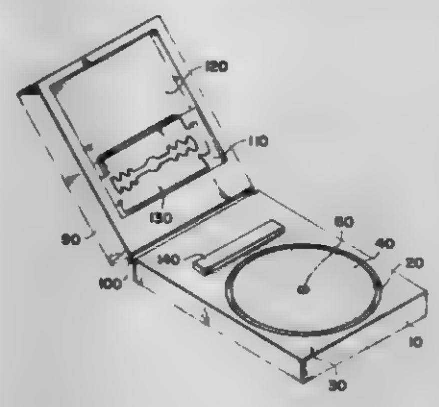
John R. Kobylarz, Wallington, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Sept. 15, 1975, Ser. No. 613,123

Int. Cl.^{2} B24B *3/50*

U.S. Cl. 51—109 BS 3 Claims

1. A device for sharpening razor blades, comprising:
- a flat rectangular base with a circular recess on its top surface and a hole extending downwardly through the base through the center of the recess;
- an axle located in the hole and extending into the recess and below the base;
- an abrasive disc attached at its center to the axle and rotating in the recess when the axle is rotated;
- a knob attached to the end of the axle below the base;
- a lid hingedly attached to the base in a manner that the base and lid form a rectangular box when closed together, the lid having a recess located in its bottom surface; and
- means cooperating with the recess in the lid to urge one side of one of the edges of a razor blade against the abrasive disc when the blade has been placed in the recess in the lid and the lid is closed together with the base.



3,979,858
CHEMICALLY ACCELERATED METAL FINISHING PROCESS

Donald E. Semones, Mentor, and William H. Safranek, Columbus, both of Ohio, assignors to International Lead Zinc Research Organization, Inc., New York, N.Y.

Filed July 24, 1975, Ser. No. 598,704

Int. Cl.^{2} E06B *7/28*

U.S. Cl. 51—316 16 Claims

1. A process for chemically accelerated finishing of metal workpieces consisting of zinc and zinc alloys comprising subjecting metal workpieces to agitation in a vibratory machine or a rotating barrel containing abrasive media while an aqueous accelerator solution of an aliphatic acid having from two to six carbon atoms is added to or flushed through the contents of the machine or barrel.

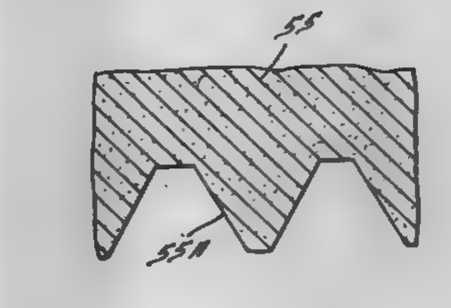
3,979,859
METHOD OF MAKING TOOTH GENERATING TOOL

Robert L. Miller, Warren, Mich., assignor to Ex-Cell-O Corporation, Highland Park, Mich.

Division of Ser. No. 443,497, Feb. 19, 1974, Pat. No. 3,902,349. This application Dec. 9, 1974, Ser. No. 530,662

Int. Cl.^{2} B24B *1/00*

U.S. Cl. 51—325 1 Claim



1. The method of forming teeth on a working face of an elongate, substantially rectangular tool body having a leading end and a trailing end whereby said working face is provided with a plurality of teeth divided into sections each containing a multiplicity of teeth adapted to pressure generate teeth in the periphery of a cylindrical workpiece, all of said tool teeth having a common pitch line, a first section of teeth between said leading end and said trailing end being fully conjugate to the teeth to be formed on said workpiece, a plurality of additional sections of teeth disposed between said first section of teeth and said leading end, each of said teeth in each of said sections including planar leading and trailing flank surface portions, each of said teeth in said additional sections including a planar top land, the top lands of the teeth in said additional sections being stepped in equal increments from section

to section and disposed in planes intermediate the top lands of the teeth in said first section and parallel to said pitch line, the root lines of the teeth in said additional sections being stepped in equal increments from section to section and disposed intermediate and parallel to the root line of the teeth in said first section and said pitch line, the tooth thickness of all of said teeth in all of said sections as measured on the pitch line thereof being constant from section to section from the teeth in said first section to said leading end, the distance between the teeth in successive sections as measured on the pitch line thereof being constant progressing from said leading end to said first section of teeth, which method comprises the steps of dressing the periphery of a forming wheel with a predetermined first tooth configuration complementary to the desired configuration of the teeth to be formed in said first section on said face of said body, rotating said forming wheel relative to said body and simultaneously advancing said forming wheel into said face to form said first section of teeth on said body, dressing the periphery of said forming wheel with a predetermined second tooth configuration complementary to the desired configuration of the teeth to be formed in a second additional section on said face of said body, indexing said body relative to said wheel, rotating said forming wheel relative to said body and simultaneously advancing said forming wheel into said second additional section of said face adjacent said first section to form said second additional section of teeth on said body, and dressing the periphery of said forming wheel with a predetermined third tooth configuration complementary to the desired configuration of teeth to be formed in a third additional section on said face of said body, indexing said body relative to said wheel, rotating said forming wheel relative to said body and simultaneously advancing said forming wheel into said third additional section of said face adjacent said second additional section to form said third additional section of teeth on said body.

3,979,860

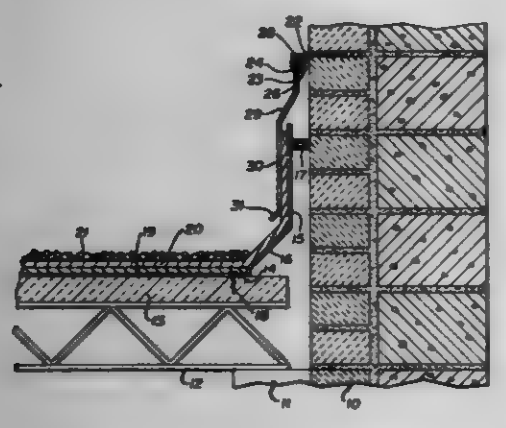
ROOF AND WALL SEAL AND CANT

Abraham H. Roth, and Dave Roth, both of Youngstown, Ohio, assignors to Roth Bros. Co. Inc., Youngstown, Ohio

Filed Feb. 13, 1975, Ser. No. 549,690

Int. Cl.^{2} E04D *1/36, 3/38*

U.S. Cl. 52—61 **6 Claims**



1. In a roof and wall seal and cant assembly for forming a weather tight vented closure between a flat roof, the roofing material thereon and an adjacent wall and having a longitudinally extending cant with a horizontal section and a vertical section, said horizontal section arranged to engage said roof, the improvement comprising a longitudinally extending horizontally disposed cross sectionally U-shaped flange formed in said vertical section inwardly of its upper edge and arranged to engage said wall so as to position said vertical section of said cant in spaced relationship to said wall whereby movement of said flat roof toward and away from said wall results in said cant pivoting on said flange, openings formed in said U-shaped flange to provide for ventilation therethrough, a hanger strip engaged in said wall, depending flanges on said hanger strip, at least one of which is distortable and a longitudinally extending outwardly offset skirt having a continuous hook formation on its uppermost edge engaged between said depending flanges and supported thereby with said offset skirt in front of and in overlapping relation to said vertical section of said cant, said cant arranged to receive roofing material on said horizontal and vertical sections thereof.

3,979,861

TWO-SHEET FOLDING WALL OR FOLDING DOOR OF LAMINAR ELEMENTS

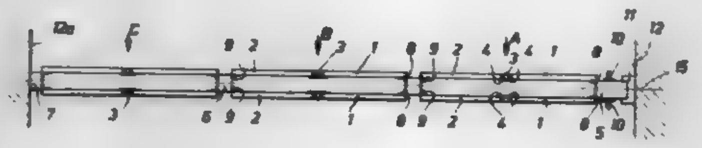
Klaus Fromme, Oldenburg; Bruno Schulz, Oberlethe, and Bernd Walther, Oldenburg, all of Germany, assignors to Firma Justin Huppe, Oldenburg, Germany

Filed Aug. 11, 1975, Ser. No. 603,615

Claims priority, application Germany, Aug. 14, 1974, 2438985

Int. Cl.^{2} E04B *1/344*

U.S. Cl. 52—71 **9 Claims**



1. A folding wall comprising a plurality of panel elements hinged, in pairs, along their inner edges to one another and being suspended from a ceiling runner for horizontal motion along the runner, a plurality of vertical mounting strips hinged to the panel elements, the panel elements forming one folding wall side lying in a single plane when the wall is in a closed condition, substantially horizontal brackets attached to at least one panel element of each panel element pair between two mounting strips, the horizontal brackets each including homologously inwardly offset bracket arms extending across a panel element hinge axis located between adjacent panel elements and the connecting mounting strip, the bracket arms further extending into the mounting strip area at an obtuse angle to the panel element when the door is closed, and spring means located between the free ends of facing brackets, the spring means exerting a torsional spring force on the brackets and on the elements around the hinge axes, a torsional spring fofce acting in a closing direction in a closed folding wall, and acting in an opening direction in an open folding wall.

3,979,862

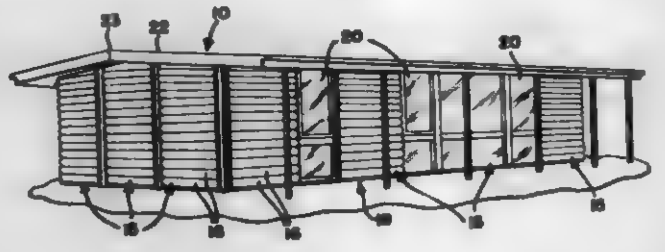
BUILDING STRUCTURE

Clive Gordon Hamilton, Brighton; John Norman Horley, Beaumaris, and Graham Moss, Knoxfield, all of Australia, assignors to Gibbs Bright & Co., Australia

Filed Mar. 21, 1975, Ser. No. 560,730

Int. Cl.^{2} E04B *1/10*

U.S. Cl. 52—90 **9 Claims**



1. In a building structure having a wall constructed of a set of superimposed substantially horizontal elongate timber members, each said elongate member having a transverse slot in at least one end, said transverse slots being arranged in vertical alignment, a rigid vertical element interengaged with said slots to hold said superimposed elongate members in position, and strips of compressible waterproof material sandwiched between said superimposed elongate members to form weather seals between them, the improvement comprising:

wedge elements driven into at least some of said slots and against said vertical element therein to wedge and fix the positions of the corresponding said elongate members on said vertical element to improve the seasonal stability of the structure and to prevent shrinkage or expansion movements of said elongate members from accumulating throughout said set of superimposed elongate members.

3,979,863

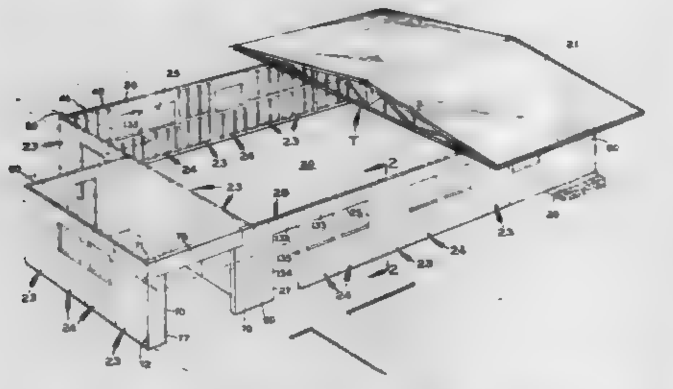
MODULAR PRECAST CONCRETE WALL PANELS IN BUILDING CONSTRUCTION

Julius Hurley, Hallandale, and Alex Sommers, North Miami Beach, both of Fla., assignors to Bearingwall Systems, Inc., Hollywood, Fla.

Filed May 30, 1975, Ser. No. 582,093

Int. Cl.^{2} E04C *1/10*

U.S. Cl. 52—92 **12 Claims**



1. In a building, a wall structure having a plurality of precast, reinforced concrete wall panels adjoining each other in succession, each of said wall panels having opposite peripheral sides and transverse bolt holes in each of said sides, with the bolt holes in the neighboring sides of adjoining panels registering with each other, and clamping bolt and nut assemblies at the registering bolt holes in adjoining panels for holding said panels together, the improvement wherein said bolt and nut assemblies are operatively coupled to the respective peripheral sides of the panels to apply compression to the concrete in said sides adjacent the respective bolt holes, and further comprising a rigid reinforcing framework embedded in each panel and comprising in each of said opposite peripheral sides of the panel:

- a pair of front and back rigid reinforcing rods embedded in said side of the panel and elongated lengthwise of said side, the rods of each pair passing respectively in front of and behind said bolt holes in that side;
- and means rigidly positioning said rods embedded in the respective sides of said panel to withstand the compression applied to the sides of the panels by the respective bolt and nut assemblies.

3,979,864

DEVICE FOR ASSEMBLING AND CONVEYING PREFABRICATED ELEMENTS FOR WALLS AND PARTITIONS OF BUILDINGS

Etienne Lucien Tillié, La-Colle-sur-Loud, France, assignor to Tramex S.A., Luxemburg, Luxemburg

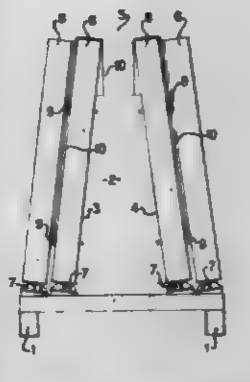
Filed Dec. 20, 1974, Ser. No. 534,704

Claims priority, application France, May 17, 1974, 74.17313

Int. Cl.^{2} E04G *21/14*

U.S. Cl. 52—122 **6 Claims**

1. A device for assembling and conveying in endwise juxtaposed and interconnected relation a plurality of prefabricated panel elements adapted for use as partitions and walls of buildings comprising: a frame having at least one longitudinally extending bed plate in the lower portion of said frame, each said bed plate having a substantially flat upper surface projecting at right angle to said inclined face of the frame and located so as to support the bottom ends of said panel elements thereon, a plurality of longitudinally spaced apertures formed in said bed plates extending through the upper surfaces thereof dimensioned to receive the lower ends of reinforcing members positioned between the adjacently juxtaposed panel elements; and means positionable in said apertures for selectively adjusting the horizontal disposition of the panel elements.



3,979,865

BUILDING CONSTRUCTION FORMED OF STACKABLE BUILDING CELLS

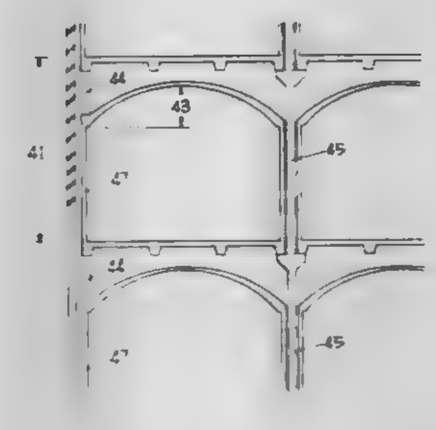
Phillip Handford Boot, Mosman, and Peter Edington Ellen, Turramurra, both of Australia, assignors to H.H. Boot & Sons Pty. Limited, Pymbler, Australia

Continuation-in-part of Ser. No. 358,802, May 9, 1973, abandoned. This application Nov. 11, 1974, Ser. No. 523,004

Claims priority, application Australia, Nov. 9, 1973, 5607/73

Int. Cl.^{2} E04H *1/04*

U.S. Cl. 52—236 **18 Claims**



1. A building comprising a plurality of structurally stable building cells, said cells being structured so that each forms at least part of a room of said building, each said cell comprising at least three planar, substantially vertical walls having an average thickness of about ¼ inch to about 2 inches except in minor areas of localized thickening, a substantially rectangular in plan, double continuous curved thin shell dome having substantially the structural action of a double curved thin-shelled dome, said dome being free of a major ridgeline, and extending from the tops of said walls and forming therewith an integral concrete structure, said roof having a rise to chord ratio not greater than 1:10 and not less than 1:60, the thickness of said roof being from about ¼ inch to about 2 inches except in minor areas of localized thickening, a continuous edge stiffening member joining said roof to the top of said walls, and serving to stiffen the edges of the roof to form, together with said walls and said roof, a structurally stable building cell, and a floor joined to the bottom of said walls, at least two of said cells being stacked one over the other in a stable generally vertical relationship.

3,979,866

NUCLEAR REACTORS

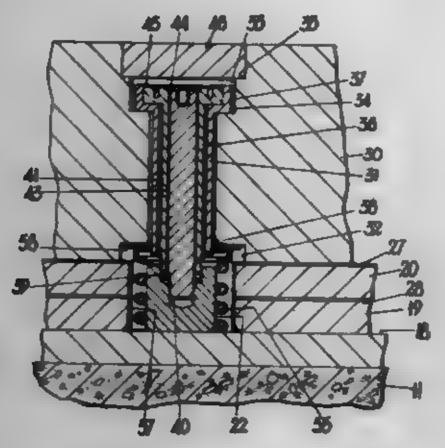
Robert Frank Prescott, Oadby, England, assignor to Nuclear Power Co. (Whetstone) Limited, Leicester, England

Filed Oct. 21, 1974, Ser. No. 516,358

Claims priority, application United Kingdom, Oct. 23, 1973, 49216/73; May 2, 1974, 19428/74

Int. Cl.^{2} E04G *11/04*; G21C *13/04*; E04B *2/06*

U.S. Cl. 52—249 14 Claims



1. A nuclear reactor containment vessel having an internal surface faced with a metal liner and having, disposed over the metal liner, thermal insulation which comprises a layer of ceramic bricks or tiles and at least one interposed layer of compressible porous thermally insulating material disposed between the bricks or tiles and the metal liner, there being also provided retention means constituted by studs, which are secured on the metal liner and project through the interposed layer, and by securing means by which the bricks or tiles are individually secured to the studs, and the studs and securing means being themselves insulated from the vessel interior by the said thermal insulation, wherein there are provided between the metal liner and the layer of bricks or tiles, in addition to the said interposed layer, resilient devices held in compression between the metal liner and the bricks or tiles and urging the bricks or tiles away from the metal liner.

3,979,867

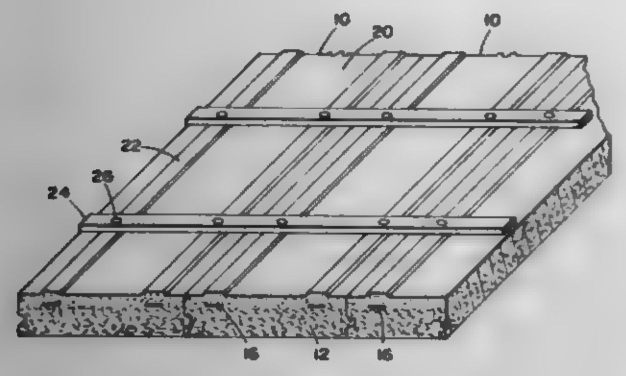
NAILABLE FOAM FACED BOARD

Gerard T. Sewinski, Lancaster, N.Y., assignor to National Gypsum Company, Buffalo, N.Y.

Filed June 20, 1975, Ser. No. 588,778

Int. Cl.^{2} E04C *1/00*

U.S. Cl. 52—309 8 Claims



1. In combination, a rigid structural board, a foamed-in-place layer of rigid plastic insulating foam adhered to one face of said board and an elongate thin fastener-retaining strip disposed along the interface of said board and said rigid foam, said strip being substantially thinner than said foam layer, said board having a sufficient degree of porosity at said interface whereby said foam, being foamed-in-place, has portions extending into the pores of said board, and an elongate thin ridge formed in the outer surface of said foam directly outward from the location of said fastener-retaining strip.

3,979,868

COMPOSITE CONCRETE AND STEEL FLOOR CONSTRUCTION

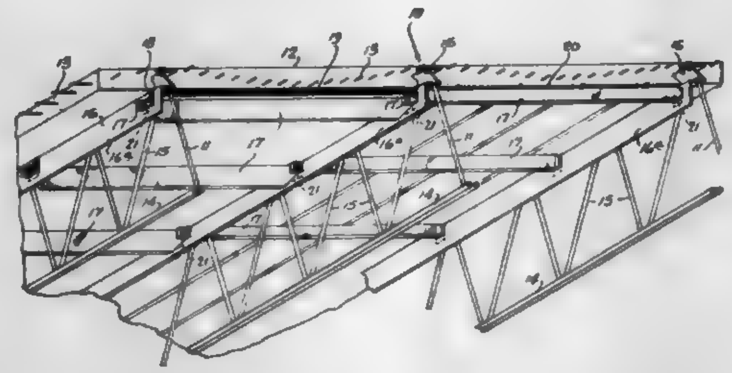
Ernest O. Butts, and John S. Hall, both of Ottawa, Canada, assignors to Hambro Structural Systems Ltd., Ottawa, Canada

Continuation of Ser. No. 274,416, July 24, 1972, abandoned, which is a division of Ser. No. 220,627, Jan. 25, 1972, Pat. No. 3,845,594, said Ser. No. 220,627, is a continuation-in-part of Ser. No. 872,017, Oct. 29, 1969, abandoned, and Ser. No. 145,758, May 21, 1971, Pat. No. 3,819,143. This application Oct. 30, 1974, Ser. No. 519,290

Claims priority, application Canada, Nov. 4, 1968, 34293; May 28, 1970, 84014; Mar. 16, 1971, 107895

Int. Cl.^{2} E04B *1/18*, *5/38*

U.S. Cl. 52—334 9 Claims



1. A composite steel and concrete floor construction comprising:

a poured concrete slab,

a plurality of separate laterally equally spaced, parallel disposed, and supported steel joists,

each said joist having top chord means only partially embedded in said slab and including a steel, smooth top chord having substantially S or Z cross sectional shape and continuously and uninterruptedly extending horizontally in the longitudinal direction of the respective joist for causing shear connecting composite action by transferring horizontal shear forces from said slab to said joists causing said slab and joists to act structurally as a composite member supporting loads, said horizontal shear force transfer being dependent only upon the continuous linear uninterrupted interface of the said concrete slab and said top chords, said shear interface existing only in the longitudinal direction of said top chords,

each said joist including a bottom chord and web means joining and vertically separating the respective top and bottom chords,

each of said top chords including top and lower portions generally horizontally disposed transversely relative to the respective web means and an intermediate portion extending obliquely between the respective top and lower portions in an operative connection between one edge of the said top portion and the opposite edge of said lower portion, said lower portion having a transverse cross section with a substantially flat bottom of substantial lateral length, said flat bottom being disposed generally horizontally both laterally and longitudinally relative to said web means, the top chord intermediate portion of all said joists extending in the same oblique direction,

each of said web means being operatively connected to the other edge of the respective top chord lower portion,

only each said top portion and each obliquely extending intermediate portion and a part only of each said top chord lower portion of each of the said steel joists being embedded in said slab,

the remainder of each of the said steel joists including all of the respective web means and the underside of each said lower portion of the top chords being unembedded in said slab and extending beneath the slab, and

reinforcing mesh supported upon the top portions of the top chords of all the said steel joists and hanging generally in a catenary shape therebetween and being fully embedded in said slab.

3,979,869

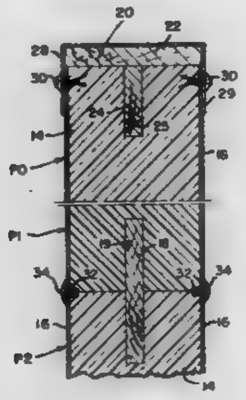
INSULATED DOOR CONSTRUCTION AND METHOD OF REPAIRING THE DOOR

Ernest W. Bechler, Yakima, Wash., assignor to Reese & Sons Insulation, Inc., Yakima, Wash.

Filed June 30, 1975, Ser. No. 591,442

Int. Cl.^{2} E02D *37/00*

U.S. Cl. 52—514 10 Claims



7. A lightweight, modular panel, insulated door comprising:

a plurality of modular panels, each having a rigid insulation foam core, a wooden structural border frame extending along free ends of each panel and protruding into the ends of the panel, face sheets on opposite sides of the foam core, end coverings covering the border frame and having opposite side flanges overlying each face sheet to a depth adequate to overlie the foam core, means for fastening the border frame, face sheets and end covering to the foam core, said fastening means including mechanical fasteners abutting against the outside surface of the flanges of the end coverings and extending through the face sheets and a substantial distance into the foam core, said fasteners being located at closely spaced intervals around the door, and means for joining adjacent panels to form a rigid integral door.

3,979,870

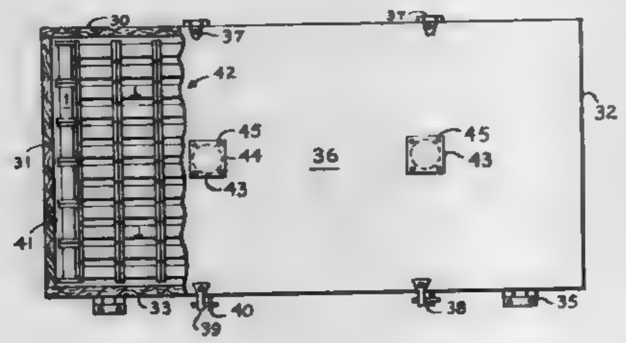
LIGHT-WEIGHT, INSULATED CONSTRUCTION ELEMENT AND WALL

Alvin Edward Moore, Manini Way, Diamondhead, Rte. 1, Bay St. Louis, Miss. 39520

Filed Jan. 24, 1975, Ser. No. 543,661

Int. Cl.^{2} E04C *1/06*, *1/16*

U.S. Cl. 52—577 10 Claims



1. As a light-weight article of commerce, an elongated, easily transportable wall element, adapted for assembly with other, similar elements in a desired structure and for receiving surfacing material after said assembly, the said wall element including:

at least one elongated row of cans, end-joined in a line, each of said cans consisting of a tube and a pair of end elements on opposite ends of the tube, at least one of said end elements being a closure for said tube; each adjacent pair of said end elements being adjoined;

thermally insulating material in said cans;

means fastening each adjacent pair of said end elements together, comprising adhesive tape around the adjoined elements, stiffening and strengthening said elongated row of cans against breaking apart; and

a matrix of shape-holding, plastic material, in which said cans are imbedded; two opposite surfaces of said matrix being shaped to substantially conform to opposite surfaces of said desired structure.

3,979,871

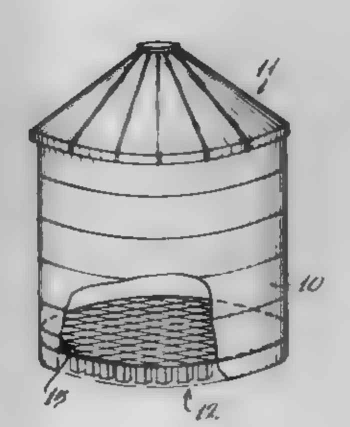
MODULAR FLOOR STRUCTURE

Eugene B. Pollock, 116 N. Mary St., Assumption, Ill. 62510

Filed Dec. 5, 1974, Ser. No. 529,962

Int. Cl.^{2} E04B *5/02*, *1/08*; E04C *2/08*

U.S. Cl. 52—270 14 Claims

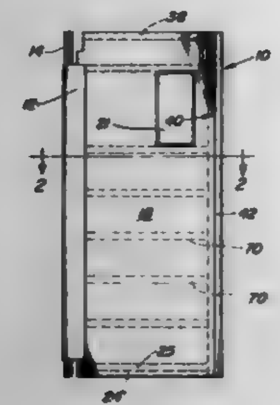


1. A floor structure of modular components for use in a building such as a grain storage bin or the like comprising a plurality of floor sections formed of planar material with there being a multiplicity of floor sections having different perimetric contours including a basic square floor section with all four edges of a modular length for assembly in overlapped relation to provide a major part of the floor surface and additional floor sections of a lesser area than the basic floor section and of differing contours with respect to each other and with each having at least one edge of said modular length for placement at the perimeter of the floor and with said one edge adjacent and overlapped with an edge of a basic floor section, support members for said floor sections positionable beneath overlapped parts of adjacent floor sections, and means defining aligned openings in said overlapped floor sections and a subjacent support member, and means extended through said openings to lock said floor sections to said support member, each of said support members comprising a pair of integral panels angularly related to each other and with a plurality of strengthening flanges extended therefrom, certain of said strengthening flanges extending at right angles from said panels to define a ground-engaging foot, and additional flanges at the opposite ends of said panels being overlapped and having said opening to receive said locking means.

3,979,872
YIELDABLE DOOR BODY

Henry R. Gilchrist, Burlington, and Hollis M. Berry, Lakeville, both of Mass., assignors to Eckel Industries, Inc., Cambridge, Mass.

Filed Mar. 2, 1972, Ser. No. 231,205
Int. Cl.² E04C *2/00;* **E06B** *3/00*
U.S. Cl. 52—624 **7 Claims**

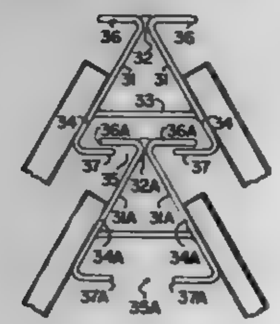


1. A door body comprising yieldable front and rear panels spaced apart, and a yieldable separator between said panels having two pairs of oppositely disposed sides spaced apart defining a closed rectangle, and having two dividers extending between and spaced respectively from said two pairs of said sides to thereby define four openings in said separator.

3,979,873
EXTENDING BOOM CONSTRUCTION

Manson Iver Coles, Winnipeg, Canada, assignor to Mancole Company Limited, Winnipeg, Canada

Filed Nov. 22, 1974, Ser. No. 526,302
Claims priority, application United Kingdom, Nov. 26, 1973, 54718/73
Int. Cl.² E04H *12/10*
U.S. Cl. 52—632 **10 Claims**

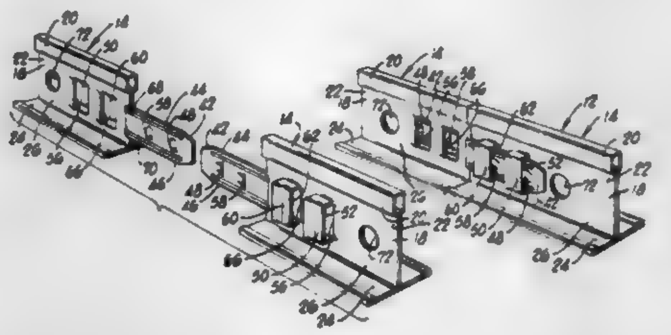


1. A telescopic tower construction comprising in combination a plurality of elongated sections telescopically engaged serially within one another, said sections including an outer section and at least one inner section slidably engaged within said outer section and adapted to be extended or retracted relative to the outer section, means to mount said inner section for extension and retraction relative to said outer section, each of said sections including at least three longitudinally extending sides and corner portions joining adjacent sides to define hollow sections, said means to mount said inner section relative to said outer section being situated in said corner portions, said last mentioned means including an elongated corner portion for each section, the corner portion of said outer section having an elongated slot formed therein, plate retainer means extending from the adjacent corner portions of said inner section and engaging through said slot to retain said inner section for extension and retraction relative to said outer section, said corner portion comprising a pair of Z shaped elongated plates lying side by side, one of said plates being reversed with respect to the other of said plates, each of said Z shaped plates having an upper and lower horizontal portion, said Z shaped plates being welded together longitudinally by adjacent upper horizontal portions thereof, with the lower horizontal portions lying spaced apart from one another thereby defining said elongated slot.

3,979,874
SUSPENDED CEILING SYSTEM AND RUNNER JOINTS THEREFOR

Ralph J. Cubbler, Jr., Oklahoma City, and Kyle E. Lucas, Stroud, both of Okla., assignors to Alabama Metal Industries Corporation, Birmingham, Ala.

Filed Nov. 24, 1972, Ser. No. 309,258
Int. Cl.² E04B *5/55;* **F16B** *7/22*
U.S. Cl. 52—664 **9 Claims**



1. In a grid system for supporting ceiling panels or the like of the type which includes a plurality of longitudinal beams in spaced parallel relation with each longitudinal beam including a plurality of main runners in aligned connection with each other, and a plurality of cross runners in parallel spaced relation normal to and interconnecting adjacent parallel longitudinal beams, each main runner including an intermediate elongated web portion having a longitudinally extending reinforcing bead portion along one longitudinal edge portion thereof and a longitudinally extending flange portion along the opposite edge portion thereof for supporting ceiling panels or the like, and each cross runner including an intermediate elongated web portion having a reinforcing bead portion extending along one edge portion thereof and a flange portion extending along the opposite edge portion thereof for supporting ceiling panels or the like, the improvement comprising:

a tongue portion integrally joined with and extending longitudinally from each end of the web portion of each main runner, each tongue portion being laterally offset with respect to the respective web portion a distance approximately equal to the thickness of the web portion and disposed wholly on the same side of the plane of the web portion, each tongue portion having substantially parallel upper and lower edge portions in substantial alignment with the longitudinal axis of the respective main runner;

a first detent means formed in each tongue portion a distance from the respective end of the web portion for connecting the respective main runner to a like main runner, each first detent means being struck out from the respective tongue portion in the same direction as the offset of the respective tongue portion relative to the respective web portion;

first guide loop means formed in each end portion of the web portion and spaced a distance from the respective end thereof for receiving the tongue portion of a like main runner therethrough, each first guide loop means being struck out from the respective web portion in the opposite direction from the offset of said respective tongue portion relative to the respective web portion and a distance approximately equal to at least twice the thickness of the respective web portion;

first detent engaging surface means formed on each first guide loop means distal from the respective end of the web portion of the respective main runner for engaging said first detent means of a like main runner and connecting the respective main runner and a like main runner in longitudinally aligned relation;

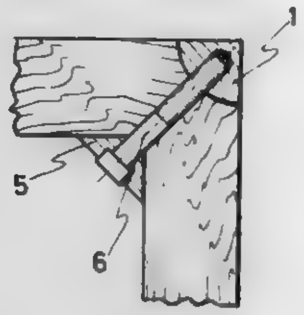
first web cam surface means struck out from each end portion of each web portion adjacent to the respective first detent engaging surface means and in the same direction as the offset of said tongue portion of the respective main runner for camming the tongue portion of a like main runner into alignment with the respective web portion of the respective main runner when said first web cam surface means is engaged by the tongue portion of the like main runner as the main runners are connected; and

first loop cam surface means struck out from each first guide loop means proximate to the respective end of the web portion of the respective main runner and in the opposite direction from the offset of said respective tongue portion of the respective main runner for camming the tongue portion of a like main runner toward the web portion of the respective main runner as the main runners are connected.

3,979,875
INTRODUCED IN SYSTEMS FOR COUPLING FURNITURE FORMING MODULES

Jose Gabriel Susperregui Asensio, Avda. del Generalisimo, 4 Irun-Guipuzcoa, Spain

Filed Apr. 18, 1974, Ser. No. 462,173
Claims priority, application Spain, Apr. 19, 1973, 413916
Int. Cl.² F16B *9/00*
U.S. Cl. 52—753 D **9 Claims**



1. A system for coupling together the panels of at least one furniture module of the type having rectangular panels joined along bevelled edges at a 90° angle to form a miter-like corner, said system comprising:

a number, equal to the number of modules to be coupled, of retaining member means for contacting the inner surfaces of said module panels at said corner;

a spherical component having a configuration formed by a number, equal to said number of modules to be coupled, of integral spherical quarters, said spherical component having a spherical surface for abutting complementary exterior surfaces of each of the module panels, at the respective miter-like corners thereof; and

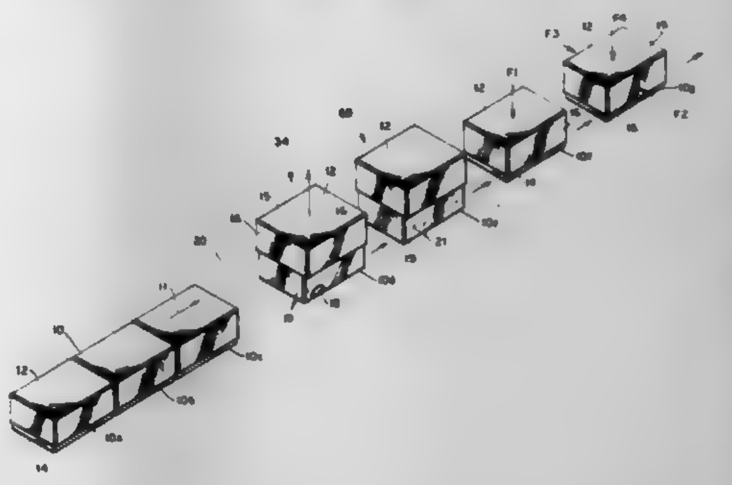
a number, equal to said number of modules to be coupled, of fastener means for extending through a respective said retaining member means, a respective miter-like corner, and into said spherical component, and for thereby coupling together said panels of said modules.

3,979,876
CARTON SEALER SYSTEM

Billy R. Moore, Vidalia; J. David Williams, Winder, and William O. Mitchell, Vidalia, all of Ga., assignors to Oxford Industries, Inc., Atlanta, Ga.

Filed May 28, 1975, Ser. No. 581,701
Int. Cl.² B65B *7/28, 51/02*
U.S. Cl. 53—38 **12 Claims**

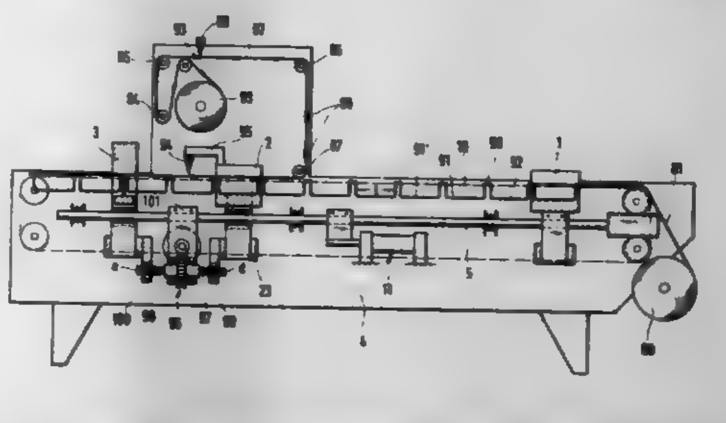
1. A method of progressively closing a series of loaded boxes of the type having a bottom section with a bottom wall and upwardly extending side walls and a top section with a top wall and downwardly extending side walls in overlapping telescoped relationship about the side walls of said bottom section as the boxes move along a laterally extending surface conveyor comprising separating the boxes from one another before each box is moved on the surface conveyor into a first work station, lifting the top section of each box upwardly a distance less than the height of the side walls of the bottom section or the height of the side walls of the top section and allowing the weight of the bottom section and the load in the box to telescopically expand the top and bottom sections at the first work station, applying adhesive to the outside surfaces of opposite side walls of the bottom section of each box at a second work station as each box moves through the second work station on the conveyor, moving the top section downwardly to telescopically contract the top and bottom sections together as each box moves through a third work station on the conveyor, and pressing the opposite side walls of the top section inwardly against the side walls of the bottom section to which adhesive was applied while simultaneously pressing down on the top wall of the top section of each box at a fourth work station.



3,979,877
VACUUM PACKAGING MACHINE WITH WEB REGISTRATION MEANS

Arthur Vetter, Gronenbach, Germany, assignor to Multivac Sepp Haggenmueller KG, Wolfertschwenden, Germany

Filed July 25, 1975, Ser. No. 598,977
Claims priority, application Germany, Aug. 1, 1974, 7426250[U]
Int. Cl.² B65B *41/18, 57/04*
U.S. Cl. 53—51 **18 Claims**



1. A vacuum packaging machine for producing sealed packages from a first packaging material web having marks spacedly printed thereon and a second packaging material web to be sealed with said first packaging material web, said machine including:

first feed means for conveying said second packaging material web through said machine in a predetermined feed direction; at least one work station having an upper processing unit and a lower processing unit, said upper and lower processing units being adapted to perform a reciprocating movement with respect to each other for engaging and processing said second packaging material web; second feed means for applying said first packaging material web to the processed second material web; drive means, positive coupling means coupled between said drive means and work station for reciprocating said work station, means for continuously coupling said drive means to drive said first feed means, whereby said work station moves in the same direction as and in synchronism with the feeding of said second web during an operating phase during which said work station engages said second web, and whereby said work station moves in a direction opposite to the feed direction of the web during a return phase in which said work station is disengaged from the web; and control means coupled to said drive means for controlling the amount of movement of said work station in the return phase in accordance with the spacing of said printing marks on said first packaging material web.

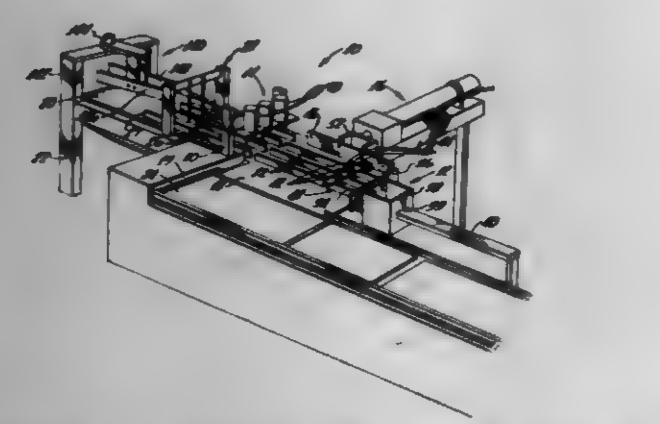
3,979,878
CONTAINER ACCUMULATING APPARATUS

Joseph C. Berney, 15164 Golden West Circle, Westminster, Calif. 92683

Filed Oct. 16, 1974, Ser. No. 515,297

Int. Cl.² B65B *57/14, 35/40*

U.S. Cl. 53—61 **4 Claims**



1. Apparatus for transferring containers from a process line to a packaging area, said apparatus comprising:

an accumulation station located at the end of said process line for receiving containers moving in a downstream direction from said process line;

a plurality of guide rails disposed over said accumulation station extending longitudinally in said downstream direction and spaced transversely to said downstream direction for establishing a plurality of longitudinal rows of containers side by side on said accumulation station by guiding both sides of each row;

means for retracting said guide rails horizontally, longitudinally in said downstream direction from said first position over said accumulation station in a second position longitudinally spaced in said downstream direction from said containers on said station; and

means for moving said rows of containers laternally transversely to said downstream direction as a unit to a location separate from said accumulation station.

4. Apparatus for transferring containers from a process line to a packaging area, said apparatus comprising:

an accumulation station located at the end of said process line for receiving containers from said process line;

a plurality of transversely spaced longitudinal guide rails at least a portion of which is positioned above said station for establishing a plurality of longitudinal rows of containers side by side on said station by guiding both sides of each row;

means for retracting said guide rails from between the rows of container;

a cross pusher means mounted adjacent one edge of said station for movement transversely across said station to transfer said rows of containers laterally transversely as a unit to a location separate from said accumulation station; a transverse alignment bar attached to said pusher means and disposed at the forward end of said rows of containers to maintain said rows as a unit when moved to said separate location; and

means responsive to the position of said containers for stopping longitudinal advancement of said rows of containers at said station is spaced relation from said alignment bar to avoid jamming.

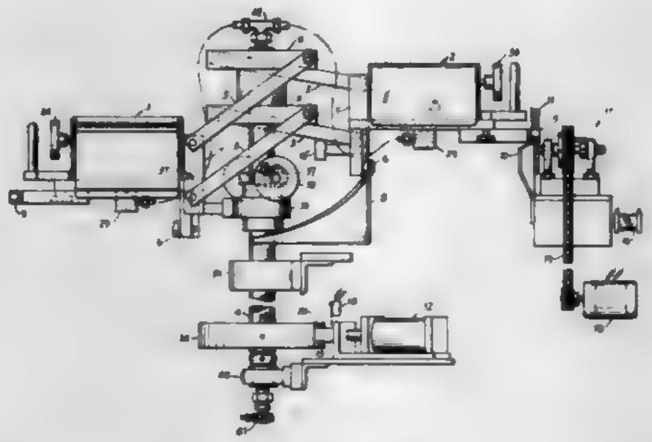
3,979,879
BAG SUPPLY APPARATUS

Robert E. Rademacher, Richmond, Va., assignor to AMF Incorporated, White Plains, N.Y.

Filed Nov. 11, 1975, Ser. No. 630,854

Int. Cl.² B65B *57/06, 43/58*

U.S. Cl. 53—67 **8 Claims**



1. A bag supply apparatus for providing a supply of bags to an article packaging apparatus, said bag supply apparatus being disposed in proximity to a bagging station of said packaging apparatus, providing individual bags on demand along in a predefined product flow line, including: individual spaced apart working and reserve supply magazines; said working magazine being disposed in the product flow line and said reserve magazine being outboard of said product flow line; each of said magazines being movable on advancing means, said advancing means being adapted to urge a depleted working magazine out of the product flow line and simultaneously urge a loaded reserve magazine into the product flow line; positioning means for positioning said working magazine to a level consistent with the product flow line, said positioning means being further defined by control means operable in response to sensing means disposed adjacent to said working magazine, for sensing the presence of bags in said working magazine at a predisposed operating height with respect to said product flow line as said working magazine moves upwardly at an incremental rate consistant with the supply of bags remaining in said magazine; said advancing means being acted upon by said sensing means during disengagement of said magazine positioning means from a fixed position to urge said depleted working magazine into an outboard position simultaneously with the introduction of a fully loaded reserve magazine into the product flow line; each of said magazines being further defined by body member means having an adjustable telescoping sections positionable in accordance with the length of bag being employed, said telescoping sections being disposed intermediate to a tail segment at one end and a lip segment at the opposite end; cam means connected to said body member for elevating and maintaining said magazine in a plane coincident with the line of travel of the product to be packaged, regardless of the total number of bags in said magazine at a given time; and tension means connected to said tail segment for maintaining the respective bag tail segments in a line consistant with said body member.

3,979,880
CONTROL FOR A SYSTEM OF MACHINES FOR PROCESSING PACKETS

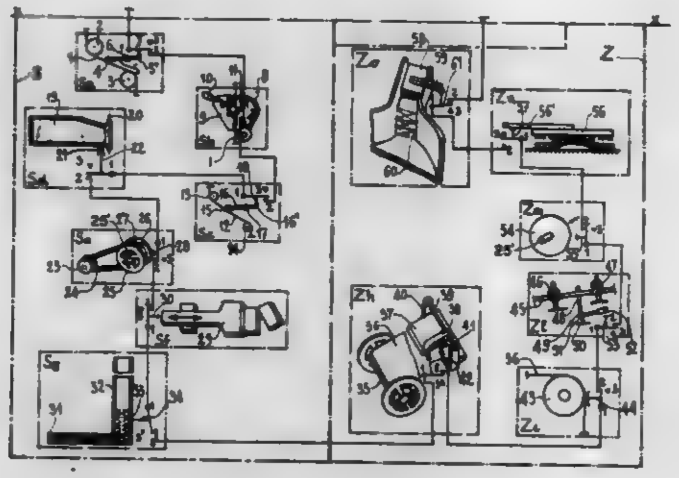
Enzo Seragnoli, Bologna, Italy, assignor to G. D. Societa per Azioni, Italy

Filed Mar. 17, 1975, Ser. No. 558,916

Claims priority, application Italy, Apr. 8, 1974, 3346/74

Int. Cl.² B65B *57/00*

U.S. Cl. 53—77 **5 Claims**



1. A motor control and follow-up system for a packeting, overwrapping and packet parcelling plant, comprising;

first motor protection contactors to normally activate motors of a first unit of packeting machines for making packets of articles such as cigarettes;

a second motor protection contactor to normally deactivate a motor of a second unit of machines for overwrapping the packets in overwrapping material and for parcelling the overwrapped packets in cartons; a packet storage magazine unit, interposed between the first and second units of machines;

a main contactor having an operating coil and having a plurality of contacts for controlling the several motor protection contactors and the magazine unit to activate that unit and the first unit of machines when the main contactor is deenergized and to activate the first and second units of machines and deactivate the magazine unit when the main contactor is energized; and

a circuit for selectively energizing and deenergizing the main contactor, comprising, normally closed control switches disposed in respective portions of the overwrapping and parcelling machines and in series with one another, means in the overwrapping and parcelling machines for opening one of the control switches upon any malfunction in one of the respective portions of those machines, an operating relay having a relay contact connected in series with the control switches, and a manually operable resetting pushbutton contact connected in series to the relay contact, the relay having an operating coil shunt connected to the series connection between the relay contact and the resetting pushbutton contact and being connected in series with the operating coil of the main contactor through a pair of the contacts of the main contactor, one of the contacts in the pair being normally open and the other, normally closed.

3,979,881
DEVICE FOR SEALING CIGARETTE PACKETS

Enzo Seragnoli, Bologna, Italy, assignor to G. D. Societa per Azioni, Bologna, Italy

Filed June 24, 1975, Ser. No. 589,878

Claims priority, application Italy, July 10, 1974, 3438/74

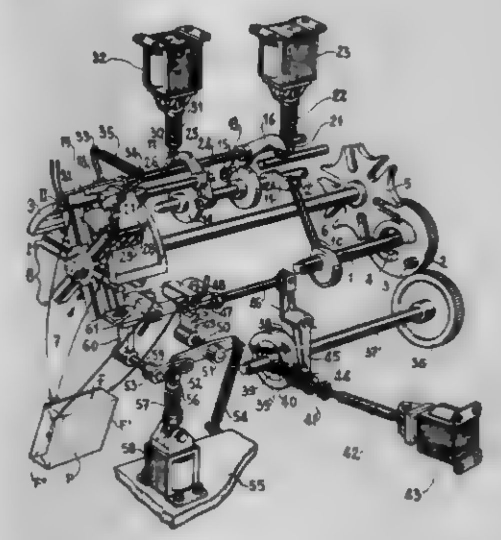
Int. Cl.² B65B *51/14*

U.S. Cl. 53—77 **8 Claims**

1. A device for sealing seams of thermoplastic overwraps on packets, comprising;

packet-transferring means movable along a path at a plurality of operating speed levels subject to periodic halts, receptive during each halt at a first station of a packet and of a sheet of thermoplastic material for overwrapping the packet in the sheet and for providing a seam of the sheet on the packet, and having a sealing station spaced from the first station along the path, for sealing the seam;

a sealing contrivance located in a position adjacent the sealing station and mounted for movement into and away from contact with the seam;



a support for the sealing contrivance, for supporting it in said position and for effecting said movement; and

a control cam having linkage for reciprocably shifting the support to effect said movement of the sealing contrivance during each halt of the transferring means, the cam having a plurality of cam surfaces corresponding to the plurality of speed levels, for effecting the shifting of the support so as to keep the time of contact of the sealing contrivances with the seam substantially constant regardless of the different operating speed levels of the packet-transferring means.

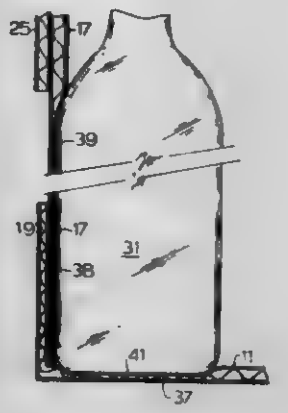
3,979,882
PACKAGING GLASS BOTTLES AND OTHER RIGID CONTAINERS

William J. Howe, Los Altos, Calif., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed Nov. 3, 1975, Ser. No. 628,129

Int. Cl.² B65B *5/06*

U.S. Cl. 53—24 **7 Claims**



1. A method of safely packaging rigid breakable containers in a carton without using inner partitions, employing a carton blank of corrugated or honeycomb material or the like having a bottom wall portion, a plurality of vertical wall portions, and a plurality of top wall portions, comprising the steps of:

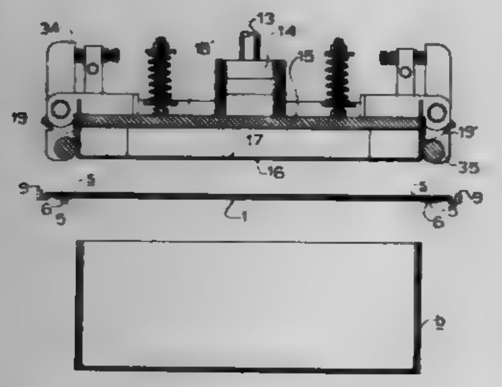
placing a plurality of containers on said bottom wall portion so as to occupy substantially fully the area thereof,

bringing said vertical wall portions to bear snugly against said containers and to squeeze the containers against each other, and then
applying sufficient force against said vertical wall portions so that they are indented by each of said containers that bear against them to form a pocket-like portion in said vertical wall,
folding down said top wall portions to a horizontal position,
securing all said wall portions together to hold said vertical wall portions while indented and snugly against said containers.

3,979,883
CONTAINER LID MOUNTING DEVICE

Constantine A. Patsaros, Godfrey, Ill., assignor to Bruce R. Schoenewels, Alton and Robert H. Schoenewels, Wood River, both of Ill., part interest to each

Filed June 5, 1975, Ser. No. 584,038
Int. Cl.² B65B *7/28*
U.S. Cl. 53—306 **6 Claims**



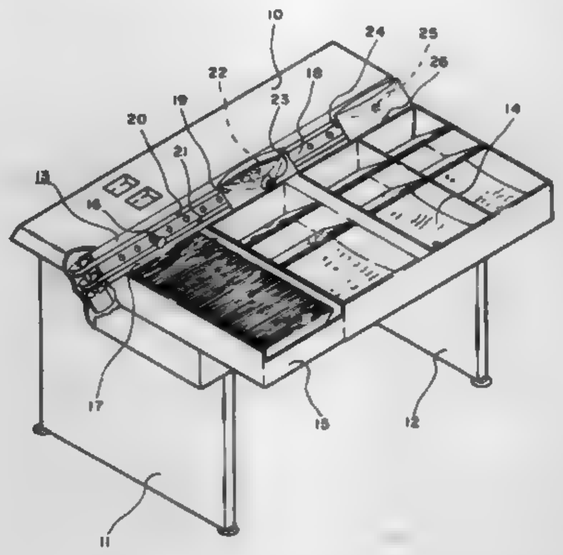
1. A device for mounting independently formed lids upon containers comprising means supporting a normally open top container in stationary position, means presenting a lid for closurewise disposition upon said container open top in elevated relationship thereto, a forming die provided above said lid, means effecting vertical reciprocal travel of said forming die toward and away from said container, whereby upon downward travel of said die said lid is moved into closurewise disposition upon said container open top with said container serving as a stationary die, said forming die comprising a platen guide having a flat bottom surface engageable with said lid upon downward travel of said forming die directing same onto said container, said platen guide having upstanding flanges from the marginal portions of said bottom surface, means interengaging upper portions of opposed flanges of said platen guide, a platen disposed within said platen guide beneath said flange interengaging means, resilient means interconnecting said platen and said means interengaging said flanges whereby said platen guide is urged downwardly of said platen, and forming members carried upon said platen for travel therewith, said forming members being disposed outwardly of said platen guide engaging marginal portions of said lid.

3,979,884
MAIL EXTRACTING AND SORTING DESK

Robert J. Russell, Philadelphia, Pa., assignor to Opex Corporation, Cherry Hill, N.J.

Filed Sept. 30, 1974, Ser. No. 510,778
Int. Cl.² B65B *43/30*
U.S. Cl. 53—381 R **9 Claims**

1. Apparatus facilitating extracting and sorting of the contents from envelopes which have been opened on one edge only comprising:
a feed hopper into which a plurality of envelopes to be processed are placed;
fully exposed conveyor means having a feed station and an opening station; and of configuration to convey an envelope with the opened edge positioned generally upwardly fully exposed along the length of the conveyor means;
a substantially flat and continuous work surface extending along and above the conveyor means between the feed station and the work station;
feed means for feeding mail from the feed hopper to the feed station of the conveyor means at predetermined times;

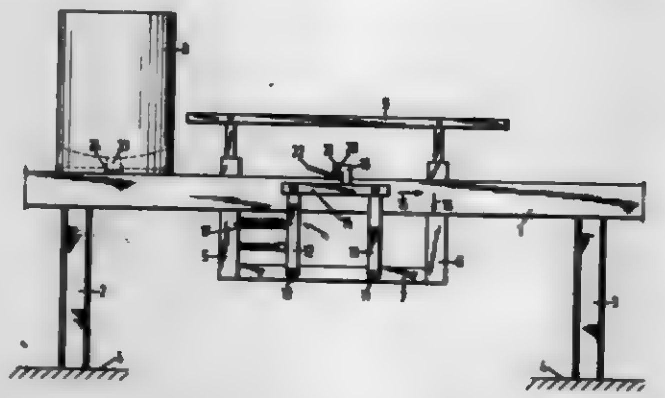


Conveyor indexing means operating the conveyor means to convey mail from the feed station to the work station at predetermined times; and
separating means at the opening station only for drawing the side panels of the envelope apart to expose the contents thereof for ease of removal.

3,979,885
CAP-LIFTER

Elbert Gravesteyn, Leiderdorp, Netherlands, assignor to Heineken Technisch Beheer B.V., Netherlands

Filed July 1, 1975, Ser. No. 592,110
Int. Cl.² B65B *43/40*
U.S. Cl. 53—381 R **3 Claims**

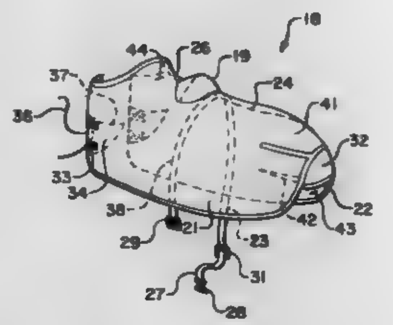


1. A cap lifter for removing caps or closures from container openings such as the bung hole closures of beer casks and the like wherein the opening is positioned in the downward position comprising a conveyor for transporting said containers, cap removing means for removing caps from said containers including a horizontal member disposed beneath said conveyor, a horizontal rod at the level of said conveyor and coupled by spaced parallel arms to said horizontal member, means for normally retaining said horizontal rod at the level of said conveyor and adapted to swivel downwardly upon engagement of a container opening as the latter is moved by the conveyor, a cap lifter carried by said horizontal rod and engaging the upper side of said cap whereupon forward displacement of the container moves the horizontal rod and cap lifter downwardly to remove said cap, the horizontal rod then returning to the upper position in preparation for engaging the cap of the next successive container.

3,979,886
SADDLE OVERLYING HORSE BLANKET

William Lay-Fayette Johnson, 1041 Sunset Road, Napa, Calif. 94558, and Carl William Lindell, 672 Santa Maria Road, El Sobrante, Calif. 94803

Filed Oct. 14, 1975, Ser. No. 621,864
Int. Cl.² B68C *5/00*
U.S. Cl. 54—79 **10 Claims**

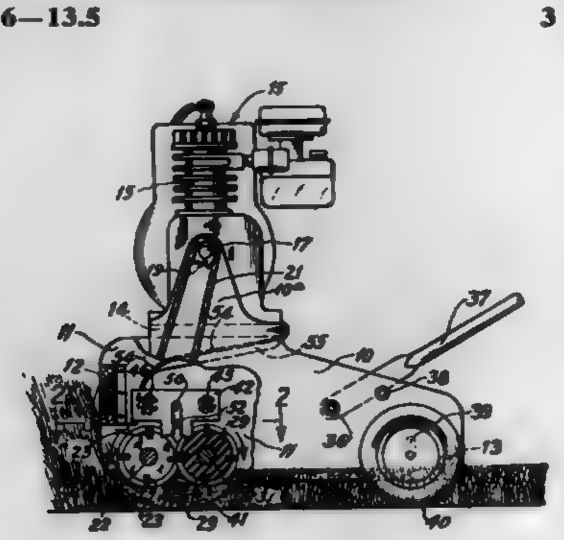


1. A blanket for placement over a horse's back overlying a saddle mounted thereon, comprising
a boot for overlying a horn on the saddle,
a neck portion adjacent to one side of said boot for overlying the horse's neck,
depending side portions formed to overlie said neck portion and joined on the other side of said boot for extending from the horse's chest to the horse's rump,
a surcingle having one end attached to one of said depending side portions and having a free end,
and means for fastening attached to the other of said depending side portions for receiving said free end of said surcingle, so that when said boot is positioned over the horn portion of the saddle on the horse's back and said means for fastening receives the free end of said surcingle, the horse and saddle are protected and the blanket is prevented from rotating or translating relative to the horse's back.

3,979,887
SPIRAL LAWN MOWERS

Ralph T. Stewart, 2042 Queen St., Winston-Salem, N.C. 27103

Filed Mar. 7, 1975, Ser. No. 556,316
Int. Cl.² A01D *55/20*
U.S. Cl. 56—13.5 **3 Claims**

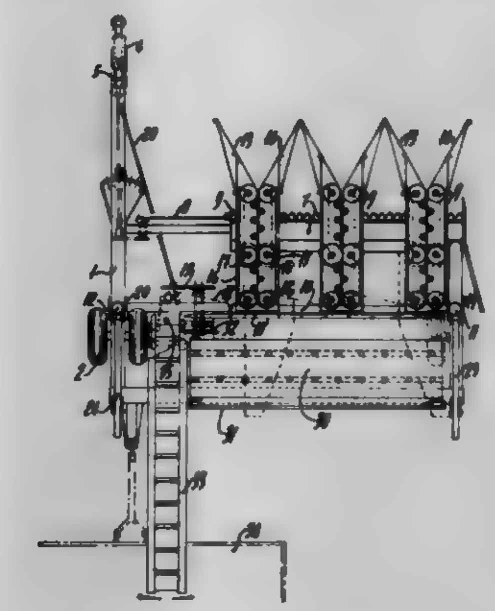


3. A lawn mower including a body with a handle and height-adjustable wheels connected to said body, the improvement comprising a pair of parallel, horizontally-aligned, cylindrical, spiral cutters rotatively mounted within said body, power means for driving said cutters, in both overlapping and coacting relationship, said cutters having opposite direction spirals, combined resilient and torsion means for urging said spirals together when said spirals are rotated.

3,979,888
MACHINE FOR CUTTING AND HARVESTING GRAMINACEOUS PLANTS

Adriano Peruzzo, Via Valsugana, 48, Curtarolo (Padova), Italy

Filed Dec. 26, 1974, Ser. No. 536,580
Int. Cl.² A01D *45/02*
U.S. Cl. 56—13.8 **12 Claims**

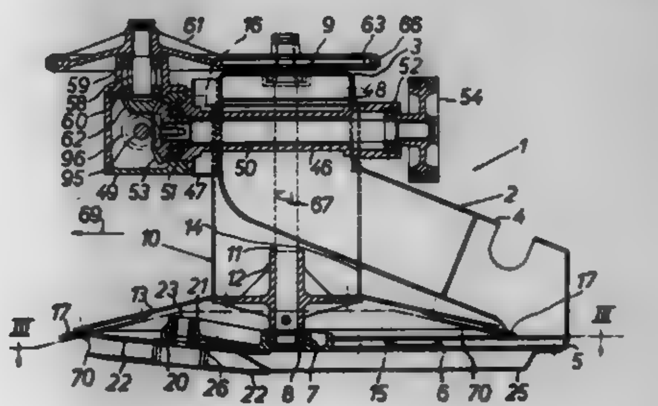


1. A machine for cutting the tops of plants into predetermined uniform lengths, comprising, a support structure, moving means for moving the support structure relative to the plants, first cutting means for cutting the plants from the ground at a first length, second cutting means for cutting the plants at an intermediate length, gripping and conveying means for gripping the plants and conveying them from the first cutting means to the second cutting means so that the plants can be cut at an intermediate length, third cutting means for cutting the tops of the plants into the predetermined uniform lengths, aligning and conveying means for receiving the plants from the gripping and conveying means and aligning the tops thereof and conveying the plants to the third cutting means.

3,979,889
FREELY ROTATABLE SHIELD FOR ROTARY MOWER

Marc G. Vansteelant, Zedelgem, Belgium, assignor to Clayson, N.V., Zedelgem, Belgium

Filed Apr. 17, 1975, Ser. No. 569,140
Claims priority, application United Kingdom, Apr. 24, 1974, 17866/74
Int. Cl.² A01D *45/02*
U.S. Cl. 56—53 **16 Claims**

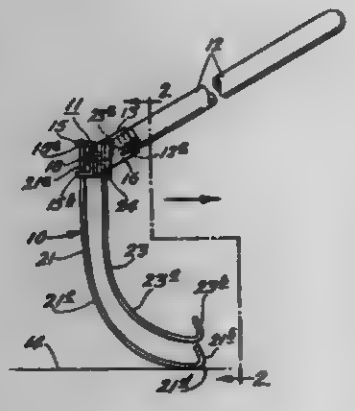


1. A crop harvester adapted to move in a crop field, comprising:
a frame having at least one forwardly-extending lower support means for contacting the ground surface so as to provide support for said frame on the ground surface;

a rotary mower unit on said frame;
first means on said lower support means of said frame for rotatably mounting said mower unit at its bottom end generally above said lower support means for mowing standing crop;
means for shielding the foremost end of said lower support means;
second means on said lower support means being located proximate to the foremost end thereof and forwardly of said first mounting means for freely-rotatably mounting said shielding means and disposing the same underneath a forward portion of said rotary mower unit; and
drive means for driving said rotary mower unit.

3,979,890
RAKE FOR GATHERING AND CONTAINING FALLEN FRUIT

John H. Schenk, Star Route, Box 100, Elberta, Ala. 36530
Filed Dec. 29, 1975, Ser. No. 644,525
Int. Cl.² A01D *51/00*
U.S. Cl. 56—328 R 5 Claims

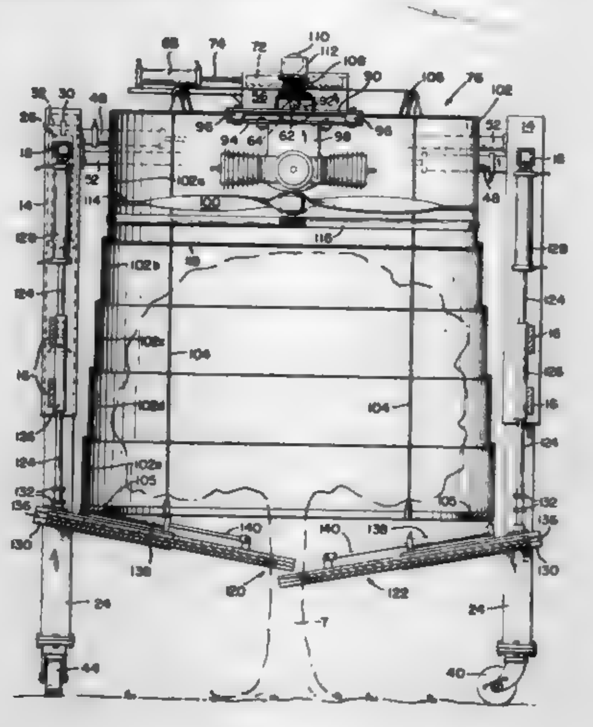


1. A rake for collecting fruit randomly distributed on the ground after falling from a tree, comprising: a head assembly including an elongated tine bar and an array of tines depending from said tine bar in spaced relation therealong, each tine in said array having a shank portion mounted to said tine bar, a concave curved portion below said shank portion, and an upturned tip portion turned toward said shank portion, said curved tines and upturned tips cooperating to form a hopper below said tine bar for containing fruit gathered by the tines as they move along the ground, said head assembly also including a pair of retainer tines located at opposite ends of said array of tines to prevent fruit gathered in said hopper from rolling transversely out of said hopper during raking while affording unloading of said fruit laterally from said hopper upon tilting of said tine bar, said retainer tines being similar in construction to said tines in said array and being located upwardly out of the profile of said tine array a distance corresponding substantially to the upward dimension of one of said tine array tips; an elongated handle projecting upwardly from said tine bar at an obtuse angle with respect to the shank portion of the tines; and means connecting said handle to said tine bar to enable said tines to be moved along the ground to gather fallen fruit.

3,979,891
PNEUMATIC FRUIT HARVESTER

Orvil D. Patton, 1114 Jefferson Ave., Yakima, Wash. 98902
Filed Mar. 7, 1975, Ser. No. 556,263
Int. Cl.² A01D *46/00*
*U.S. Cl. 56—328 R 16 Claims

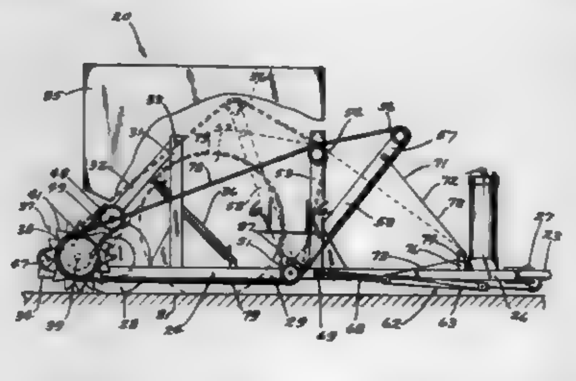
1. An apparatus for harvesting fruit from a tree, comprising:
a shroud enclosing the tree, said shroud having inlet means allowing air to enter said shroud beneath the branches of the tree;
a fruit catcher operatively associated with said shroud and positioned therebeneath so as to be disposed beneath the branches of the tree; and



powered means operatively associated with said shroud for removing air from said shroud above the tree, said powered means having sufficient air removing capacity to create an updraft in said shroud capable of shaking fruit loose from the tree.

3,979,892
MACHINE FOR FORMING LARGE ROUND BALES

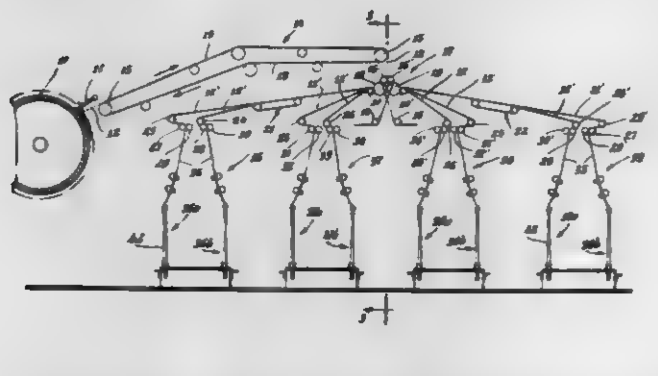
Joseph B. Kucera, Traer, Iowa, assignor to Rudolph L. Lowell, Des Moines, Iowa, a part interest
Filed Apr. 21, 1975, Ser. No. 569,990
Int. Cl.² A01D *75/00*
U.S. Cl. 56—341 13 Claims



1. A machine for forming a round bale of a windrowed fibrous material comprising:
a. a portable frame having a front end and a rear end and including a pair of transversely spaced side members,
b. a pair of transversely extended rollers rotatably supported at fixed positions on said portable frame, with a first one thereof extended between said side members and the second one thereof located upwardly from said first roller,
c. a third transversely extended roller,
d. means supporting said third roller on said portable frame for movement longitudinally of the portable frame in a path above said second roller,
e. a transversely extended pickup device positioned between said side members adjacent the rear ends thereof when a bale is being formed,
f. the second roller being supported above the ground surface at a height approximately equal to the distance between the pickup device and first roller when a bale is being formed,
g. means for yieldably urging the supporting means for said third roller toward the front end of said portable frame,
h. a continuous flexible means trained about said pickup device and said first and third rollers when a bale is to be formed, and about said three rollers when a bale has been formed, said flexible means having a lower run extended between the pickup device and said first roller, and
i. means for rotating said pickup device in a direction counter to the advance of said portable frame and along the windrowed material to gather material forwardly thereof for engagement by said lower run, with the engaged material being rolled and compacted on the ground surface within a bale-forming zone located between the pickup device and said first transverse roller and between said side members.

3,979,893
MECHANICAL SYSTEM AND METHOD FOR CONTINUOUS WORKING WOOLEN TYPE YARN FROM CARDS TO SPINNING FRAME

Edo Gelli, Via M. Caorsi, 52, and Giovanni Berti, Via Padova, 55, both of Prato, Italy
Filed Aug. 7, 1974, Ser. No. 495,431
Claims priority, application Italy, Aug. 6, 1973, 51872/73
Int. Cl.² D01H *1/00*
U.S. Cl. 57—50 9 Claims

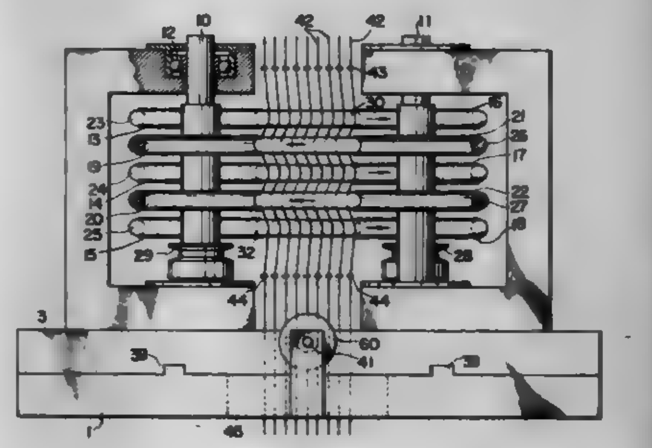


1. For use with a finisher card having a doffer and comb and one or more spinning frames having drafting rolls and spindles, a system for working woolen type yarns while moving the yarns from the finisher card to the spinning frames comprising:
a. a condenser head for receiving an undivided card web from the finisher card and for splitting the web into a number of parallel bands.
b. pairs of parallel elongated, rubbing rolls which rotate about and reciprocate along their longitudinal axis relative to one another, each of said pairs being located closely adjacent to the drafting rolls of an associated spinning frame and receiving and operating on at least one of the parallel bands produced by said condenser head to impart a false torsion to the band before the band is delivered to said closely adjacent drafting rolls of said associated spinning frame.

3,979,894
FALSE-TWISTING APPARATUS FOR PRODUCING CRIMPS IN FILAMENT YARNS

Isao Takai, Komatsu, Japan, assignor to Oda, Gosen Kogyo Kabushiki Kaisha, Komatsu, Japan
Continuation of Ser. No. 321,978, 01/08/73, abandoned. This application Jan. 15, 1975, Ser. No. 541,196
Claims priority, application Japan, Sept. 29, 1972, 47-97157
Int. Cl.² D02G *1/04*
U.S. Cl. 57—77.4 4 Claims

1. A false-twisting apparatus for producing crimps in filament yarns comprising:
a first pair of laterally spaced shafts one of which is an idler;
at least one first pair of laterally spaced pulleys respectively secured to said shafts;
at least one first endless belt entrained about said first pulleys;
first gearless means including a pulley-belt drive on the other of said first pair of shafts for driving said first endless belt to travel in a given direction around a given elongated circular path under tension;
said first endless belt having on one side of said path a straightly extending region between said first pulleys, said region presenting a yarn contact surface, rounded in transverse cross-section, on which the filament yarns are brought into contact at successive locations therealong as they are fed thereto;
a second pair of laterally spaced shafts disposed adjacent said first pair of shafts, one shaft of said second pair being an idler;
at least one second pair of laterally spaced pulleys respectively secured to said second pair of shafts at a height level different than said first pulley pair;
at least one second endless belt entrained about said second pulleys;
second gearless means including a pulley-belt drive on the other of said second pair of shafts for driving said second endless belt to travel in said given direction around its own given elongated circular path under tension at a location spaced vertically from the first belt;
said second endless belt having on the side of its own said circular path which generally faces toward and in the opposite direction as the said one side of said path for said first endless belt a straightly extending region between



said second pulleys, said region of this second belt being parallel with the straightly extending region of the first belt and presenting a yarn contact surface, rounded in transverse cross-section, on such side that this surface can be brought into pressure contact at successive locations therealong with the filament yarns which have passed the yarn contact surface of the straightly extending region of the first belt;
said first and second gearless means for driving said first and second endless belts being operative for positively driving two pulleys respectively from said first and second pairs and at opposite ends thereof for causing the said generally facing sides of both said belts to be in pulling tension at all times;
means for detecting the fluctuations in the tension of the filament yarns, said means being provided on the filament yarn outlet side of the apparatus;
inlet and outlet guide means for each filament yarn for guiding the filament yarns to traverse across each said yarn contact surface;
means for adjusting the positions of said inlet and outlet guide means of the filament yarns, said adjusting means being operatively associated with said tension fluctuation detecting means;
means for adjusting the magnitude of overlap between the

straightly extending regions of the first and the second belts, whereby increasing the overlap increases the lenghts along the filament yarns of contact of the filament yarns with the yarn contact surfaces; and

means for maintaining all said straightly extending regions parallel to each other throughout their lengths before, during and after said overlap adjustment.

3,979,895

PINCH RING FOR YARN BALLOONS

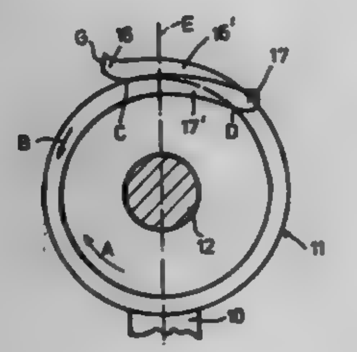
Peter Ehrler; Adolf Seidel, and Wolfgang Joos, all of Reutlingen, Germany, assignors to Institute fur Textil-und Faserforschung Stuttgart, Reutlingen, Germany

Filed Sept. 19, 1975, Ser. No. 614,972

Claims priority, application Germany, May 30, 1975, 2523939

Int. Cl.² D01H *13/04, 13/12*

U.S. Cl. 57—106 23 Claims



1. A guide and pinch ring for thread balloons in spinning and twisting machines, comprising:

a thread guide member with windings defining a helix having a single complete loop, said windings having different radii and smooth thread-guiding surfaces, the pitch of said helix being such that said thread-guiding surfaces of adjacent ones of said windings are separated by at least 10 mm;

whereby the thread which revolves in the interior of the ring engages and disengages said thread-guiding surfaces of the windings in a smooth and shock-free manner.

3,979,896

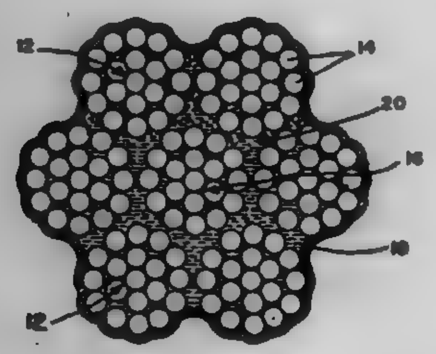
IMPREGNATED AND ENCAPSULATED WIRE ROPE AND CABLE

George J. Klett, Alexandria, Va.; William M. Capece, Philadelphia, and Martin J. Devine, Havertown, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 24, 1975, Ser. No. 552,085

Int. Cl.² D07B *1/16*

U.S. Cl. 57—149 13 Claims



8. A cable comprising:

a plurality of strands laid about a wire core, said strands intimately contacting each other and said wire core to thereby form a plurality of interstitial spaces among said strands and between said strands and said wire core;

a quantity of lubricant in substantially all of said plurality of interstitial spaces; and

a thermoplastic integument intimately and directly contacting substantially all exposed exterior surfaces of said strands and formed thereon by depositing thermoplastic material on said surfaces and thereafter curing said material.

3,979,897

METHOD FOR LOCATING CONDUCTOR BREAKS DURING THE TWO STAGE TWISTING OF A COMMUNICATIONS CABLE

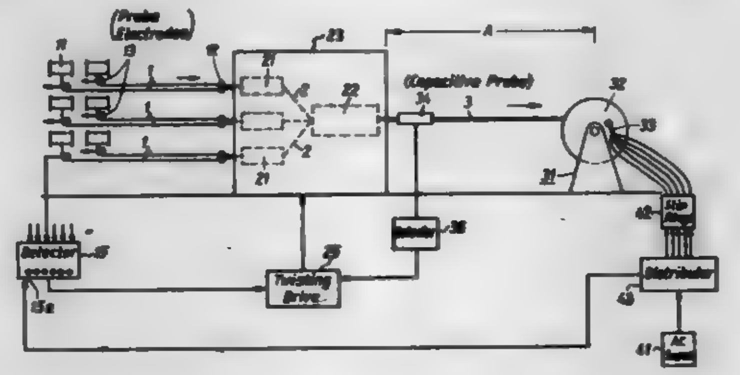
Dieter Vogelsberg, Berlin; Horst Reil, Neustadt, Coburg, and Peter Froscher, Berlin, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 23, 1975, Ser. No. 543,541

Claims priority, application Germany, Jan. 25, 1974, 2404094

Int. Cl.² H01B *13/04*; D07B *3/00*

U.S. Cl. 57—156 10 Claims



1. A method for testing the conductors in the wires of a communication cables while they are being twisted in a device in which the wires being twisted are pulled from stationary supply containers and after being twisted in two stages into a finished twisted base bundle are wound on to a take up reel and correcting localized faults comprising the steps of:

- a. applying an electric voltage to each conductor;
- b. detecting one of the voltage present on and current flowing through each wire to determine if it is within predetermined limits;
- c. providing a first output indication if said voltage or current in any wire falls outside that limit;
- d. slowing or stopping the twisting process in response to said first output indication;
- e. for the purpose of localizing the fault, leading the finished base bundle freely through air prior to being wound on the take up reel through a distance which is a multiple of the length of lay of the base bundle;
- f. applying a continuous *a–c* voltage to the conductor detected as being outside limits in step b);
- g. probing the base bundle in or ahead of the zone through which it is led through free air;
- h. stopping the twisting process completely when the fault is localized within said zone; and
- i. correcting said fault.

3,979,898

HANDLESS TIMEPIECE

Gunter Werres, In der Krumme 16, 6101 Weiterstadt, Germany

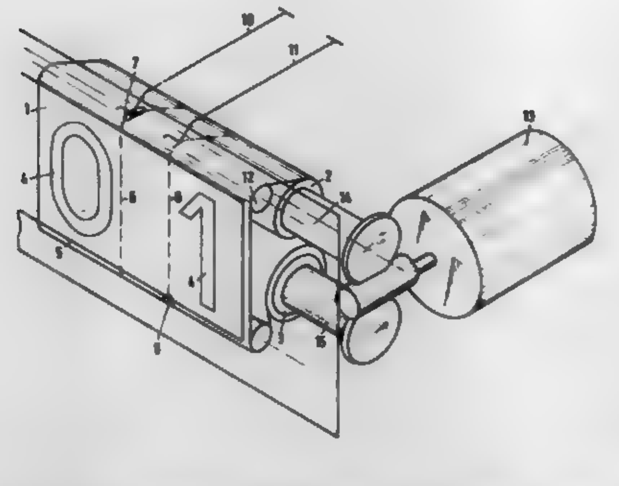
Filed May 14, 1975, Ser. No. 577,301

Int. Cl.² G04B *45/00*

U.S. Cl. 58—2 10 Claims

1. A handless timepiece comprising time indication means situated on at least one finite, driven belt, said time indication means comprising symbols arranged on said belt in a preset sequence and in which the belt is wound up on two rolls and said symbols caused to pass between said rolls at an indicator

window of the timepiece, and the belt drive comprising a motor driving the belt by said rollers so that the belt is alternatively taken up from one roll to the other one and remains stationary whenever the particular symbol to be indicated is situated behind the indicator window, further characterized in that the belt controlled by one of two stop-contacts stops and remains stationary only the moment each second symbol of said symbols appears behind the indicator window characterized in that a switch means is actuated at the respective end of the belt for reversing the direction of rotation of said drive motor to drive the belt, further characterized in that control pulses are generated by a vibrator quartz having a series-connected frequency divider, said frequency divider transmits said pulses via a transistorized driver stage to said switch means for the direction of rotation of said drive motor, said driver stage being connected to a selector switch within said switch means connecting in each give direction of rotation one of said two stop-contacts to the driver stage to control the drive motor.



3,979,899

DIGITAL DISPLAY TYPE ELECTRONIC TIME KEEPER

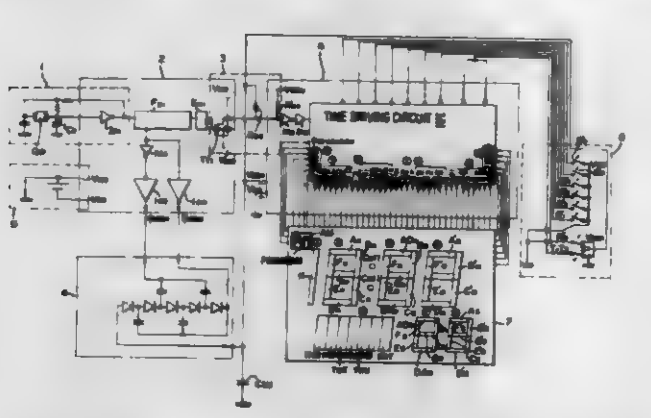
Masateru Yoshida, Itami, and Yoshio Nakao, Tanashi, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Citizen Watch Co., Ltd., both of Tokyo, Japan

Filed Apr. 1, 1975, Ser. No. 564,092

Claims priority, application Japan, Apr. 1, 1974, 49-36733

Int. Cl.² G04B *19/24*

U.S. Cl. 58—4 A 8 Claims



1. A digital display type electronic time keeper comprising:

a crystal oscillating circuit for generating a time standard signal,

a frequency division circuit for frequency dividing the time standard signal,

a time driving integrated circuit for counting the frequency divided time standard signal from the frequency division circuit and for decoding the counted frequency divided time standard signal,

a potential level matching device for matching the output of the frequency division circuit and the input of the time driving integrated circuit,

a display device driven by the decoded counted frequency divided time standard signal comprising a positive dielectric anistropy twisted effect type nematic liquid crystal,

a booster for driving the time driving integrated circuit and the display device from two phase signals from the frequency division circuit,

an outer operative switch for correcting the display device,

a power source for driving the crystal oscillating circuit and the frequency division circuit,

means connecting the input of the crystal oscillating circuit to a first output of the power source,

means connecting a second input of the frequency division circuit to a second output of the power source,

means connecting the output of the crystal oscillating circuit to a first input of the frequency division circuit,

means connecting a first output of the frequency division circuit to the input of the booster,

means connecting a first output of the booster to a second input of the time driving integrated circuit,

means connecting a second output of the booster to a second input of the display device,

means connecting a second output of the frequency division circuit to the input of the potential level matching device,

means connecting the output of the potential level matching device to a first input of the time driving integrated circuit,

means connecting the output of the outer operative switch to a third input of the time driving integrated circuit,

means connecting the output of the time driving integrated circuit to a first input of the display device,

the display device comprising seven separate segment type displays for hour and minute; a single display for selectively showing second or date by seven segment displays under the selective switching control of said outer operative switch; additional displays for week day, AM, PM; and a colon dot display which turns on and off for one second between the displays of hour and minute.

3,979,900

DEVICE FOR CONNECTING TWO PARTS OF A CLOCK

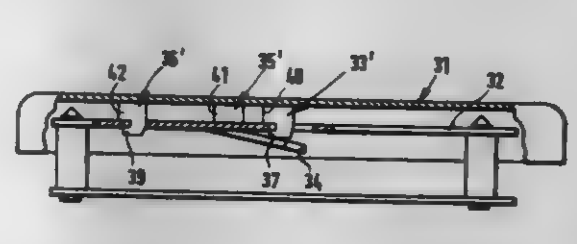
Helmut Dörflinger; Erich Ropertz, both of Niedereschach, and Bruno Ruf, Obereschach, all of Germany, assignors to Adolf Jerger KG, Niedereschach, Germany

Filed Feb. 24, 1975, Ser. No. 552,491

Claims priority, application Germany, Feb. 28, 1974, 747049[U]; Mar. 14, 1974, 748983[U]

Int. Cl.² G04B *29/00*

U.S. Cl. 58—52 R 16 Claims



1. A device for connecting a first part with a second part, wherein said first part defines a first plane, and wherein said second part defines a second plane, comprising at least one opening provided in said first part and located in said first plane, said opening being defined by flat wall portions of said first part, at least one locking element projecting from said second part, said projecting locking element having a stem extending substantially at right angles to said second plane and an end portion extending from said stem, said stem and end portion being adapted to be received in said opening for releasably engaging said flat wall portions by a sliding movement parallel to said flat wall portions, said device further comprising a resilient latch member normally located in said first plane defined by said first part, said resilient latch member being adapted to be deflected out of said first plane by said end portion of said projecting locking element into a first

position allowing said end portion to be introduced into said opening and to engage said flat wall portions, said resilient latch member resiliently moving back into a second position in abutting relationship with said projecting locking element so as to maintain said stem and end portion of the projecting locking element engaged with said flat wall portions, whereby a rigid locking but a resilient disengagement is provided.

3,979,901
CONSTRUCTION OF THE GEAR TRAIN FOR A TIMEPIECE

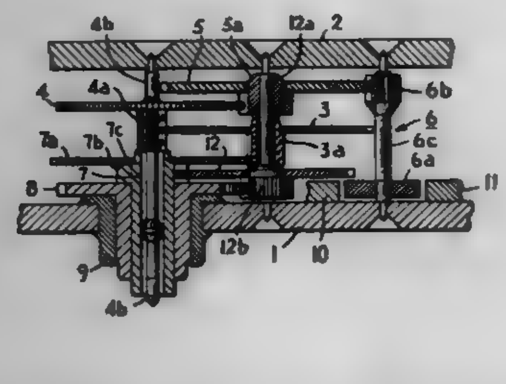
Yasuichi Nakagawa, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Feb. 26, 1975, Ser. No. 553,288

Claims priority, application Japan, Feb. 26, 1974, 49-22539

Int. Cl.² G04B *33/00*

U.S. Cl. 58—59 3 Claims



1. A construction of a gear train for a timepiece, comprising, in combination: a base plate and a gear train bearing plate disposed in spaced relationship; a rotor axle, common axle, and second hand axle rotatably mounted between said base plate and said gear train bearing plate; a rotor pinion and a magnet rotor mounted on said rotor axle; a fourth wheel mounted on said second hand axle; a minute wheel fixedly mounted on said common axle; and third and fourth wheels freely mounted on said common axle.

3,979,902
MOUNTING OF A CASE BAND AND A CRYSTAL BEZEL IN A WATCH

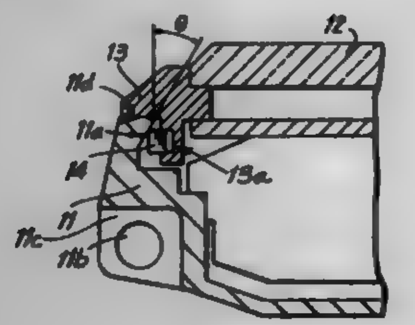
Tsutomu Miyasaka; Yoshiaki Fujimori, and Youjiro Okakura, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed May 20, 1975, Ser. No. 579,326

Claims priority, application Japan, May 22, 1974, 49-56613

Int. Cl.² G04B *39/00*

U.S. Cl. 58—91 7 Claims



1. A watch case construction comprising a first unit constituted by a case band, a second unit constituted by a bezel and a crystal secured to said bezel, a spring member secured to said bezel, said spring member including an elongated resilient element having a first portion secured to said bezel and a second portion bent away from said first portion, said case band including an upstanding rim having an outer peripheral surface and an inner surface with an inclined face, said second portion of the resilient element projecting outwardly and elastically engaging said inclined face to hold said units together.

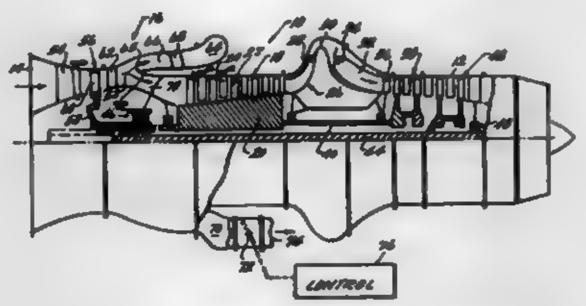
3,979,903
GAS TURBINE ENGINE WITH BOOSTER STAGE

Thomas Neil Hull, Jr., and Robert Evans Warren, both of Marblehead, Mass., assignors to General Electric Company, Lynn, Mass.

Filed Aug. 1, 1974, Ser. No. 493,506

Int. Cl.² F02C *7/04*; F02K *3/02*

U.S. Cl. 60—39.09 P 10 Claims



1. In a gas turbine engine having a compressor, combustor and compressor driving turbine operatively connected in a gas generator, together with a power turbine in downstream serial flow arrangement, there is also provided means for reducing the amount of extraneous matter which might otherwise enter the engine and improving the performance of the compressor, said means comprising:

a compressor booster stage drivably connected to the power turbine;

a particle separator having an inlet in downstream flow communication with the booster, said inlet having stationary turning vane means disposed therein for centrifuging the air exhausted from the booster, whereby a particle entrained in the airstream centrifuged by the turning vane means will have both tangential and axial velocity components;

collection chamber means for receiving the particles centrifuged by the turning vane means;

a row of variable angle inlet guide vanes in upstream serial flow relation to the booster stage;

a scavenge duct communicating with the collection chamber and terminating in a modulating flow control valve wherein the airflow exits from the particle collection chamber through the duct and modulating flow control valve;

wherein the inlet to the gas generator compressor is disposed downstream of the turning vane means so as to receive the centrifuged air flowing therefrom, and includes deswirl vane means for removing the circumferential velocity component of the airstream entering the gas generator compressor whereby the pressure rise imparted to the airflow through the booster stage increases the centrifuging effect of the separator as well as the power and performance of the engine, and

wherein the compressor booster stage is driven at a substantially uniform speed.

3,979,904
COMBINED CYCLE ELECTRIC POWER PLANT AND A GAS TURBINE HAVING IMPROVED LIQUID FUEL FLOW DETECTION

Milton M. Hobbs, Springfield, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 8, 1974, Ser. No. 495,701

Int. Cl.² F02C *7/26, 9/06, 9/08, 9/10*

U.S. Cl. 60—39.14 19 Claims

1. A fuel transfer system for a gas turbine combustor adapted to use first and second fuels, said gas turbine being rotatably coupled to drive an electric generator in a combined cycle power plant, said fuel transfer system comprising,

means to generate a fuel control signal,

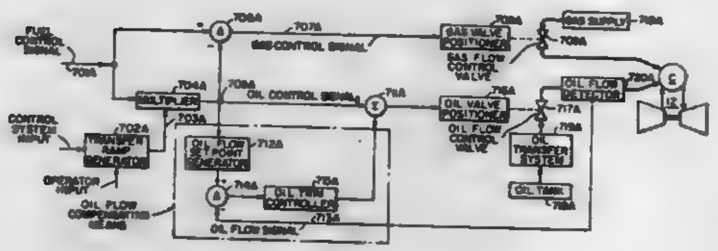
means to split the fuel control signal into first and second component signals having equal, but opposite, time rates of change, the sum of the first and second component signals being equal to the fuel control signal,

means to control a flow of the first fuel to the gas turbine combustor in accordance with the first component signal,

means to divide a flow of the second fuel into a plurality of separate, but equal flows, each such flow being conducted to a respective one of a plurality of nozzles of said gas turbine combustor,

means to detect the total flow of the second fuel to the plurality of gas turbine combustor nozzles and generate a signal representative of the detected total flow, and

means responsive to the second component signal and to the detected flow signal to control the flow of the second fuel to an inlet of said flow dividing means such that the power output that results when both the first and the second fuels flow to the combustor is dependent upon the level of the fuel control signal and independent of the relative levels of the flows of the first and second fuels.



3,979,905
THERMAL REACTOR

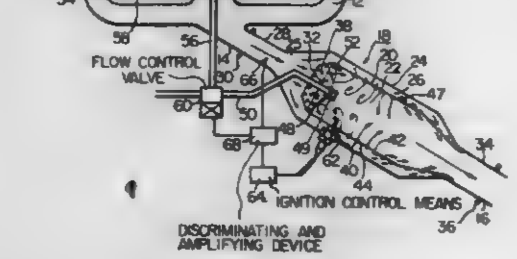
Kenji Masaki, Yokohama; Hatuo Nagaishi, Yokosuka, and Yoshio Ookubo, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 9, 1974, Ser. No. 496,185

Claims priority, application Japan, Aug. 17, 1973, 48-92286

Int. Cl.² F01N *3/14*

U.S. Cl. 60—289 6 Claims



1. A thermal reactor for after-burning burnable components contained in exhaust gases, comprising an outer hollow member defining a cavity therein and having an inlet end through which exhaust gases are admitted into said cavity, an inner hollow member located in said cavity and formed therein with a combustion chamber and fixedly connected at a rearward end to said outer hollow member, said cavity providing a clearance between said outer and inner hollow members which clearance surrounds said inner hollow member and communicates at a forward end with said inlet end and is closed at a rearward end by said outer and inner hollow members at a position connected to each other, said inner hollow member having a forward end wall closing a forward end of said combustion chamber and formed therethrough with a plurality of ports opening from said cavity into said combustion chamber to admit said exhaust gases in said cavity thereinto, and a main wall defining said combustion chamber together with said forward end wall to completely surround said combustion chamber and formed therethrough with a plurality of ports opening from said clearance into said combustion chamber to admit said exhaust gases in said clearance thereinto, secondary air supply means having an outlet port opening into said combustion chamber for supply of secondary air thereinto and combustion of burnable components in said exhaust gases therein, said inner hollow member being unobstructed at said rearward end to allow said exhaust gases in said combustion chamber to the outside thereof, and an outlet end which is connected to said outer and inner hollow members at said position connected to each other and communicates with said combustion chamber to allow said exhaust gases therefrom to the outside of said thermal reactor.

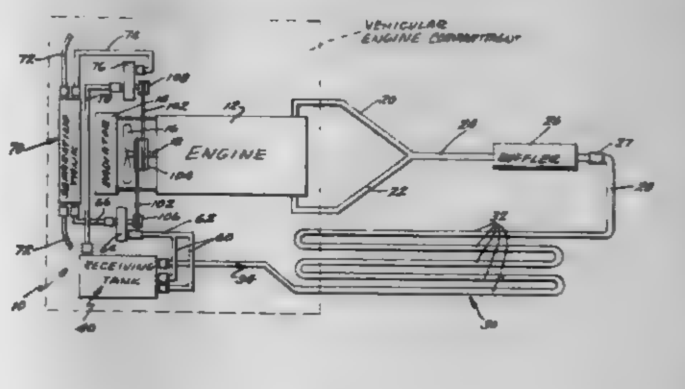
3,979,906
ANTI-POLLUTION EXHAUST SYSTEM FOR VEHICLES

George W. Staggs, 967 Pine, NW., Grand Rapids, Mich. 49504

Filed Aug. 2, 1974, Ser. No. 494,055

Int. Cl.² F01N *3/04*

U.S. Cl. 60—310 19 Claims



1. In combination with an internal combustion engine mounted in a vehicle, an anti-pollution exhaust system for said engine mounted on said vehicle comprising:

receiving tank means for holding a quantity of liquid including exhaust gas release means located below any quantity of liquid in said receiving tank means for inserting exhaust gases into said receiving tank means and for thoroughly mixing exhaust gases from said internal combustion engine with said liquid to form an exhaust-liquid mixture in said receiving tank;

separating tank means for holding a quantity of liquid and receiving said mixture from said receiving tank means including separating means for separating said liquid from said gases while leaving pollutants from said gases in said liquid in said separating tank means and vent means located above the liquid in the separating tank means for venting the separated, cleansed gases to the atmosphere;

means for allowing cooling air to flow against and through said separating tank means to cool any liquid and exhaust gas mixture in said separating tank means;

exhaust gas conduit means for conveying exhaust gases from said engine to said receiving tank means;

first fluid conduit means for conveying at least a portion of said exhaust-liquid mixture from said receiving tank means to said separating tank means;

second fluid conduit means for conveying fluid, and primarily said liquid, from said separating tank means back to said receiving tank means;

pump means for pumping fluid through said conduit means; and

means for driving said pump means with said engine; said first and second fluid conduit means and pump means adapted to recirculate the liquid in said system for re-use whereby said exhaust gases are continuously cleansed by said liquid as they exit the engine before being released to the atmosphere.

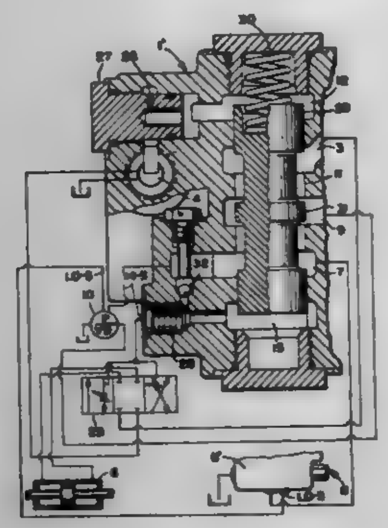
3,979,907
PRIORITY CONTROL VALVE

John C. Paul, Willoughby Hills, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Sept. 10, 1973, Ser. No. 395,970

Int. Cl.² F15B *15/18*

U.S. Cl. 60—422 **6 Claims**



1. A hydraulic system including a fluid pressure source, a priority circuit having a priority fluid motor and a closed center control valve therefor with a variable area orifice therein, and an auxiliary circuit having at least one auxiliary fluid motor and a closed center control valve therefor with a variable area meter-in orifice in the pressure feed path to said auxiliary fluid motor and having a port exposed to pressure downstream of said meter-in orifice via a check valve and communicated with a control for said fluid pressure source which senses the pressure drop across said meter-in orifice; a priority control valve comprising a housing having a bore intersected axially therealong by single inlet, priority circuit supply, and auxiliary circuit supply passages respectively communicated with said fluid pressure source, said priority circuit control valve, and said auxiliary circuit control valve; said inlet passage intersecting said bore axially between said priority circuit supply and auxiliary circuit supply passages; a spring biased priority valve spool movable in opposite directions in said bore and having an intermediate land to restrict flow from said inlet passage to said priority supply passage when moved in one direction and to said auxiliary supply passage when moved in the opposite direction in response to the pressure drop across said priority circuit control valve orifice being greater than or less than a predetermined value; said spool having its ends respectively exposed to pressure upstream and downstream of said priority control valve orifice; one end of said spool being communicated with said control for said fluid pressure source via a passage in said housing having a check valve therein; said priority circuit control valve orifice being a variable area meter-out orifice; and said housing having a return passage from the priority circuit control valve, the other end of said spool being exposed to downstream pressure in said return passage.

3,979,908
PRIORITY FLOW VALVE

Loren L. Alderson, Nickerson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.

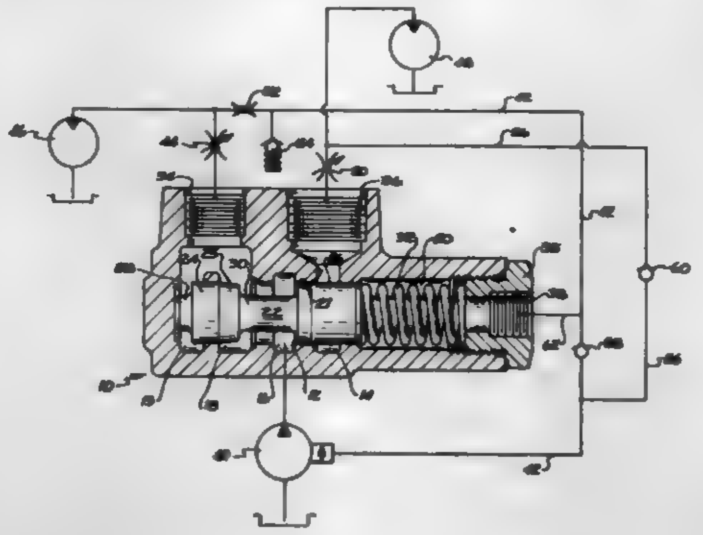
Filed Sept. 29, 1975, Ser. No. 615,134

Int. Cl.² F15B *11/20*

U.S. Cl. 60—422 **12 Claims**

1. In a hydraulic circuit having a variable displacement automatically controlled pump supplying a priority motor and at least one secondary motor, and a metering orifice means positioned in the priority flow path, the improvement comprising a priority flow valve including:

an inlet chamber connected to the pump discharge;
a priority outlet chamber connected to the priority motor;
a secondary outlet chamber connected to the secondary motor;
valve spool means positioned by a control servo with opposing chambers;
spring means urging said spool means in one direction;
a first sensing line connecting one opposing chamber of the control servo to the pressure downstream of said metering orifice and to the pump control;



a second sensing line connecting the other opposing servo chamber to the pressure upstream of the metering orifice; the valve spool means having a first position blocking inlet flow to the secondary outlet chamber while opening inlet flow to the priority outlet chamber, the spring means urging the valve spool means toward the first position; the valve spool means having a second position opening the inlet flow to the secondary outlet when the pressure in the second sensing line exceeds the combined force created by the spring means and the pressure in the first sensing line.

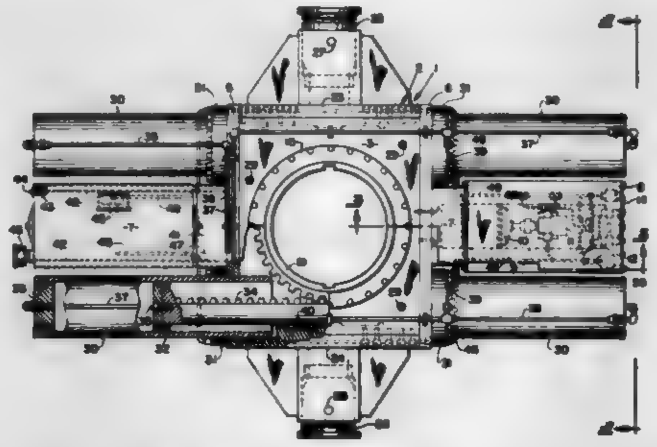
3,979,909
HYDRAULIC ACTUATOR

Kenneth Herbert Meyer, and William Elisa Heese, both of Akron, Ohio, assignors to HydraPower Inc., Wadsworth, Ohio

Filed Jan. 12, 1976, Ser. No. 648,496

Int. Cl.² F15B *21/00*

U.S. Cl. 60—458 **10 Claims**



1. A rotary hydraulic actuator comprising a gear housing having top and bottom plates, opposite end plates each carrying a pair of parallel laterally spaced apart hydraulic cylinders which open into the interior of said housing, and opposite side plates having oppositely extending and aligned trunnion mounting means, said plates defining a gear lubricant chamber; a gear in said housing journalled in said top and bottom plates; first and second conduit means cross-connecting diagonally opposite cylinders with each other; pistons reciprocable in respective opposite cylinders having a gear rack therebetween meshing with said gear to relatively rotate said housing and gear according to which of said first and second conduit means is a pressure supply line while the other of said first and second conduit means is a fluid return line; a tank extending longitudinally between the pair of cylinders carried by one of said plates; a hydraulic power system extending longitudinally between the pair of cylinders carried by the other one of said end plates; said power system comprising a pump and drive means therefor and directional control valve means and including conduit means for supply of fluid from said tank to said pump and for return of fluid from said directional control valve means to said tank, and other conduit means for communicating said directional control valve with the respective first and second conduit means, and for conducting fluid pressure delivered by said pump to said directional control valve means; said directional control valve means being operative to selectively supply fluid under pressure to either of said first or second conduit means while return fluid from the other of said first and second conduit means is returned to said tank via said directional control valve.

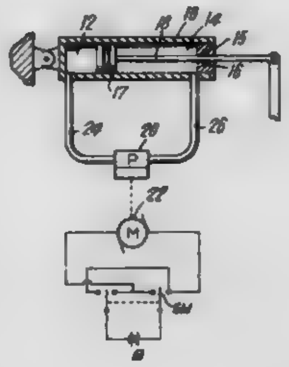
3,979,910
CLOSED CIRCUIT HYDRAULIC CONTROL SYSTEM

Urs Leuenberger, Ville d'Anjou, and Rodney Lash LeRoy, Pointe Claire, both of Canada, assignors to Canada Wire and Cable Limited, Toronto, Canada

Filed Apr. 16, 1973, Ser. No. 351,596

Int. Cl.² F16D *31/02*

U.S. Cl. 60—476 **7 Claims**



1. A closed circuit hydraulic control system comprising:
a. an hydraulic motor including a cylinder, a piston movable in said cylinder and a rod connected to one side of said piston, said cylinder having a blind end and a rod end through which said rod extends;
b. a reversible circulating pump having two ports for supplying fluid under pressure to said blind end and to said rod end respectively of said cylinder;
c. a first tubing defining a first closed path connecting the blind end of the cylinder to one port of the reversible pump;
d. a second flexible tubing defining a second closed path connecting the rod end of the cylinder to the other port of the reversible pump, said second flexible tubing having suitable elasticity and length for accommodating by expansion the volume of fluid displaced by said rod as the piston is moved towards the blind end of the cylinder, said displaced volume of fluid being up to 0.5 cu. in.

3,979,911
EXPANSION POWER PACK

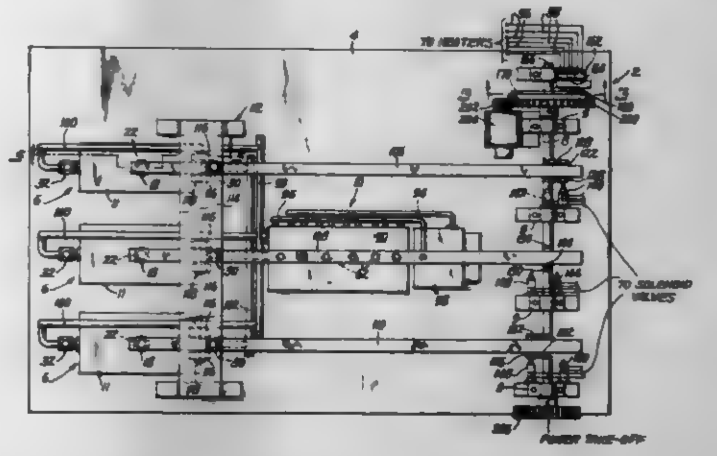
Joseph W. Mason, 3181 Magina Drive, Xenia, Ohio 45385

Filed May 8, 1975, Ser. No. 575,735

Int. Cl.² F03G *7/06*

U.S. Cl. 60—509 **19 Claims**

1. An expansion engine, including: a plurality of operating chambers for receiving operating liquid; heating element means within each of said operating chambers; cooling unit means separate from said operating chambers, and including liquid pumping means; conduit means and valve means connecting said cooling unit means with each of said operating chambers, and operable for transmitting cool starting operating liquid from said cooling unit means to each of said operating chambers, and heated operating liquid from each of said operating chambers to said cooling unit means; a cylinder on each of said operating chambers, and in communication therewith; a power piston received within each of said cylinders; a plurality of power arms, one for each of said operating chambers, each of said power arms being mounted on a fulcrum, and the driving end thereof being arranged to be engaged by the power piston of the operating chamber associated with the power arm; a crankshaft, said crankshaft having a plurality of crank arm means thereon, one for each of said power arms, and each of said crank arm means being operably connected with the driven end of its associated power arm; and control circuit means for operating said valve means and said heating element means in a preselected, timed sequence in response to rotational movement of said crankshaft.



3,979,912
BRAKE BOOSTER UTILIZING A PUMP OF A POWER STEERING DEVICE

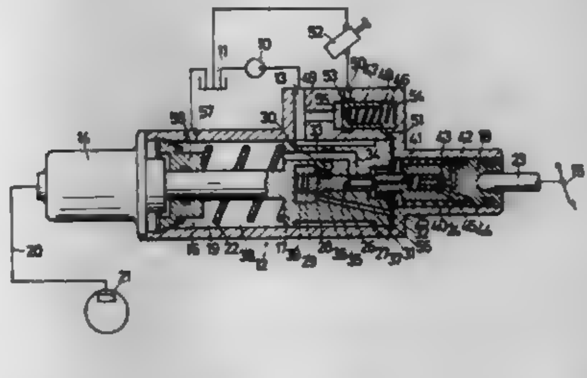
Hiromu Kuromitsu, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Japan

Filed Apr. 30, 1975, Ser. No. 572,942

Claims priority, application Japan, May 16, 1974, 49-54730

Int. Cl.² F15B *7/00*

U.S. Cl. 60—547 **7 Claims**



1. A brake booster utilizing a pump of a power steering device comprising:
a reservoir;
a source of fluid pressure;
a brake pedal to be actuated by means of a vehicle driver;
wheel brake cylinders;
said brake booster including a stepped cylinder, a power piston slidably disposed within said cylinder, a manual piston slidably disposed within said cylinder and operated by means of said brake pedal, an actuating chamber defined between said power piston and said manual piston and acting upon said power piston in accordance with the actuation of said manual piston, a valve member slidably disposed within said power piston and provided

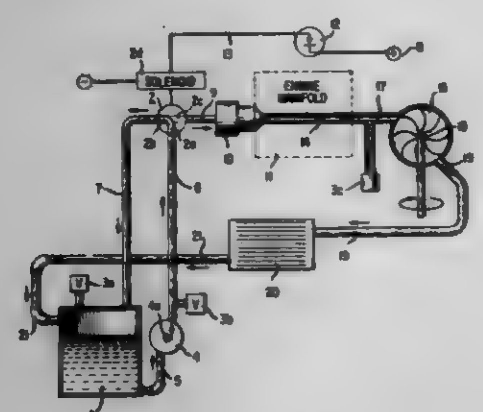
with a first valve cooperative with said power piston according to the movement of said manual piston for controlling the communication between an inlet port and said actuating chamber and a second valve cooperative with said manual piston for controlling the communication between an outlet port and said actuating chamber, said inlet port being directly fluidically connected to said pump and directly communicable with said first valve of said valve member, said outlet port being fluidically connected to said reservoir, a flow divider valve interposed between said inlet port and said power steering device for dividing the hydraulic fluid flow from said pump into said actuating chamber and to said power steering; and

a master cylinder operatively connected with said power piston for supplying the fluid pressure to said wheel brake cylinders,

thereby controlling the hydraulic fluid within said actuating chamber in accordance with said brake pedal by means of said first and second valves of said valve member.

3,979,913
METHOD AND SYSTEM FOR UTILIZING WASTE ENERGY FROM INTERNAL COMBUSTION ENGINES AS ANCILLARY POWER

Harold P. Yates, R.F.D. No. 2, Far Hills, N.J. 07931
Filed Jan. 20, 1975, Ser. No. 542,094
Int. Cl.² F01K *23/06, 23/14*
U.S. Cl. 60—618 **8 Claims**



1. A system for utilizing the heat build-up in an internal combustion engine having its basic power coupled to drive a vehicle, which comprises in combination:

an enclosure disposed to be heated by heat dissipated by said engine,

a source of water or water based liquid designed to circulate as a stream in a closed system including a reserve tank and a system of conduits under control of a three-way thermostatically actuated valve,

said valve having an intake orifice and normally-open and normally-closed exhaust orifices,

said intake orifice being connected to receive the outflow stream from said tank,

said normally-open exhaust orifice connected to return said stream to said tank,

said valve having heat sensor means adjacent said engine, disposed to open said normally-closed exhaust orifice at a preselected temperature,

means including a spray nozzle connected to said normally-closed orifice, and disposed upon the opening of said orifice to inject a fine spray of water or water based liquid into said enclosure under high pressure for continuously generating high pressure steam in said enclosure in response to heat dissipated by said engine,

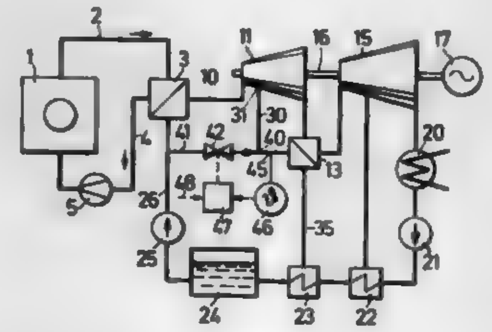
a turbine having a rotatable shaft,

means for directing said steam to drive said turbine to rotate, and

means for deriving power from the rotation of the shaft of said turbine for supplementing the basic power of said internal combustion engine.

3,979,914
PROCESS AND APPARATUS FOR SUPERHEATING PARTLY EXPANDED STEAM

Max Weber, Wiesendangen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed June 3, 1975, Ser. No. 583,286
Claims priority, application Switzerland, June 6, 1974, 7765/74
Int. Cl.² F01K *13/00, 17/00*
U.S. Cl. 60—644 **11 Claims**



1. A process of re-heating steam comprising the steps of partly expanding a flow of superheated steam in a steam turbine;

delivering the partly-expanded flow of steam to be reheated to a reheater;

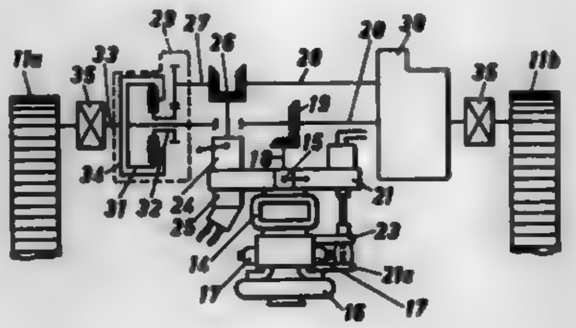
extracting a part of the superheated steam from an upstream portion of the steam turbine in a superheated condition;

cooling the extracted part of the superheated steam from the superheated condition to a saturated steam condition; and

then placing the saturated steam in heat exchange relation with the partly-expanded flow of steam in the re-heater for re-heating of the partly-expanded flow of steam.

3,979,915
POWER PLANT FOR A CRAWLER VEHICLE

Sven Olof Kronogård, Lomma, Sweden, assignor to United Turbine AB and Co., Kommanditbolag, Malmo, Sweden
Filed May 2, 1974, Ser. No. 466,501
Claims priority, application Sweden, May 22, 1973, 7307158
Int. Cl.² F02B *73/00;* **F02C** *3/10*
U.S. Cl. 60—718 **2 Claims**



1. A crawler vehicle supported by two driving tracks and carrying a power-operated, working tool, said vehicle further including:

a. a single prime mover consisting of a gas turbine including at least two turbine rotors operating upon separate shafts;
b. a variable-power, transmission means interconnecting said separate shafts;
c. means at each track for steering the vehicle by the addition or subtraction of power to the pertaining track;
d. a first power transfer means for connecting a first of said turbine rotor shafts with both driving tracks;

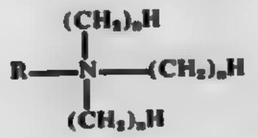
e. a second power transfer means for optionally connecting the second of said turbine rotor shafts with said track steering means, or with the power-operated tool; and
f. guide vanes at the inlet to at least one of said turbine rotors for determining the power distribution between said two turbine rotors.

3,979,916
PRODUCT AND METHOD FOR REDUCING WATER LOSS THROUGH SOIL BY SEEPAGE

Frank L. Califano, Hackensack; George Stepien, Jr., Montclair, both of N.J., and Thomas E. Russell, deceased, late of Whippany, N.J., by Florence P. Russell, executrix, assignors to The Flintkote Company, White Plains, N.Y.
Continuation-in-part of Ser. No. 457,969, Apr. 4, 1974, Pat. No. 3,891,586, is a division of Ser. No. 296,114, Oct. 10, 1972, Pat. No. 3,831,382. This application Apr. 9, 1975, Ser. No. 566,283
The portion of the term of this patent subsequent to Aug. 27, 1991, has been disclaimed.
Int. Cl.² E02B *5/02, 3/04*
U.S. Cl. 61—1 R **10 Claims**

1. A composition for reducing the loss of water through the permeable ground surface of a water containment body such as a reservoir, pond, canal and the like, comprising:

a. a 15 to 50% by weight aqueous, cationic emulsion of a petroleum asphalt having a softening point of 90°F. to 200°F. and a penetration at 77°F. of from 4 dmm to 205 dmm, ninety percent of the particles of which are less than about 10 microns in size;
b. a cationic emulsifier in from 0.1 to 0.5 percent by weight of said emulsion, said emulsifier consisting essentially of a compound selected from the group consisting of alkyl quaternary ammonium compounds of the formula



$$\mathrm{R{-}\overset{(CH_2)_nH}{\underset{(CH_2)_nH}{N}}{-}(CH_2)_nH}$$

where *n* is from 1 to 2 and R represents an aliphatic hydrocarbon containing from 8 to 22 carbon atoms;

c. a non-ionic surface active agent in from 1.5 to 2.9 percent by weight of said emulsion, selected from the group consisting of alkyl aryl polyester alcohols, polyethoxylated nonylphenols (average ethylene oxide content of 4–12 mols per mol of nonylphenol), benzyl ethers of octyl phenol and linear organic alcohols;
d. from 1.0 to 5.0 percent by weight of said emulsion of an elastomeric material; and
e. an acid in sufficient quantity to set the pH of said composition at from 3 to 7.

3,979,917
OMNIDIRECTIONAL DRILLING SYSTEM

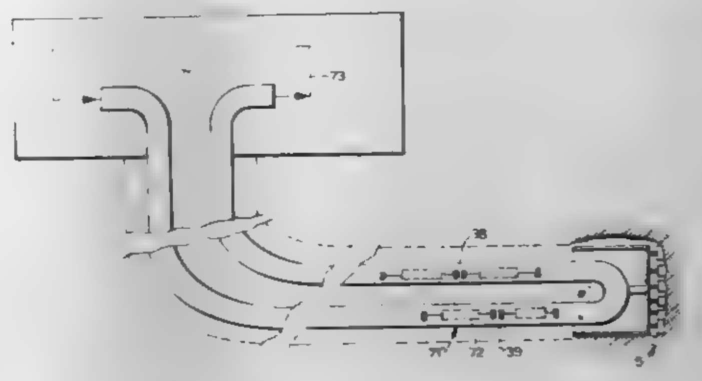
Paul A. Crafton, 11822 Charen Lane, Potomac, Md. 20854
Filed July 30, 1974, Ser. No. 493,142
Int. Cl.² E01G *3/00*
U.S. Cl. 61—42 **10 Claims**

1. A method of boring the earth comprising

advancing a boring unit of a first diameter through the earth to form a closed-periphery bore by loosening material from a work face;

treating the material loosened by said advancing boring unit to form a structural material thereof; and

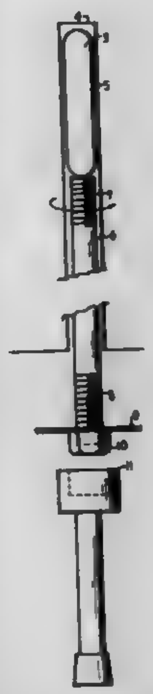
forming said structural material into a plurality of relatively



smaller permanent ducts behind the advancing boring unit.

3,979,918
ROCK BOLTS

Norman Brian Vidler, New Lambton Heights, Australia, assignor to The Titan Manufacturing Company Proprietary Limited, Australia
Filed Dec. 10, 1974, Ser. No. 531,383
Claims priority, application Australia, Dec. 17, 1973, 6009/73
Int. Cl.² E21D *21/00*
U.S. Cl. 61—45 B **4 Claims**



1. A method of installing a chemical anchor bolt assembly comprising the steps of:

a. forming a hole in a mine roof,
b. placing a container in the hole, the container having therein a chemical anchor resin,
c. locating at least a part of an elongate member in the hole, the elongate member having an external threaded portion at at least an end thereof remote from said part and the threaded portion having a nut located thereon and including means releasably holding said nut and said elongate member with respect to each other and thereby permitting rotation of the nut and elongate member substantially as a unitary member until a predetermined resistance torque between the clamping member and bolt is exceeded,
d. driving the nut to cause rupture of the container by the elongate member and thereby releasing the chemical anchor resin,
e. allowing the chemical anchor resin to set and secure the elongate member, and

f. applying an increased torque to the nut member, which increased torque is sufficient to overcome said predetermined resistance torque, and thereby permitting rotation of the nut with respect to the elongate member.

3,979,919

TUNNEL FRAMING FOR POURED CONCRETE

Guy Blondé, La Frette sur Seine, and Louis Lefebvre, St. Amand les Eaux, both of France, assignors to Societe Outinord-St-Amand, St. Amand les Eaux, France

Filed Dec. 30, 1974, Ser. No. 537,607

Claims priority, application France, Dec. 28, 1973, 73.47219; Jan. 30, 1974, 74.03711; Dec. 3, 1974, 74.39448

Int. Cl.^{2} E21D *15/14*

U.S. Cl. 61—45 C 15 Claims

1. A tunnel-type shuttering comprising a pair of opposing detachable half-shells, each in the form of a right-angled dihedron, each half-shell including a swingable horizontal panel and a vertical panel, said two panels of each half-shell being pivotally connected to each other along a horizontal joint, said horizontal panels having elongated distal edges disposed in opposing relation when the shuttering is assembled, said shuttering further including:

a. a clamping lock having its components disposed adjacent the distal edges of the horizontal panels, said clamping lock being operative to ensure that the opposing edges of the horizontal panels are flush with each other, when the shuttering is assembled,

b. axially adjustable braces connecting each horizontal panel to its vertical panel,

c. said braces each comprising pivotally connected, complementally interengagable frames and a locking device for maintaining the frames of the braces in co-axial alignment when the shuttering is assembled, said locking device being operable to unlock the frames and permit their pivotal separation during disassembly of the shuttering, and

d. axially adjustable horizontal bars removably fixed adjacent the bottoms of the vertical panels, said bars having means for modifying their length comprising

1. fine adjustment means and
2. a rapidly actuated, reversible shortening means.

3,979,920

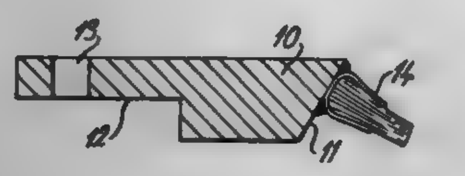
SEALING MEANS

Roy Patrick Burgess, Tunbridge Wells, and Alan James Cox, Rochester, both of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 312,868, Dec. 7, 1972, abandoned. This application Dec. 30, 1974, Ser. No. 537,320

Int. Cl.^{2} E01G *5/16*

U.S. Cl. 61—84 15 Claims



1. Sealing means for sealing passage of pressurized liquid between two surfaces comprising, flexible fibres, a mount for said fibres from which the fibres project in brush-like form, each fibre following substantially the same direction, said mount being fixed in substantially liquid-tight manner to one of said surfaces and arranged to permit said fibres to extend generally at an angle substantially less than 90° to at least said first surface, with a portion of the fibres lying substantially parallel to said second surface and said fibres being in contact with each other with a portion thereof contacting said second surface, the seal thus bridging the gap between said two surfaces.

3,979,921

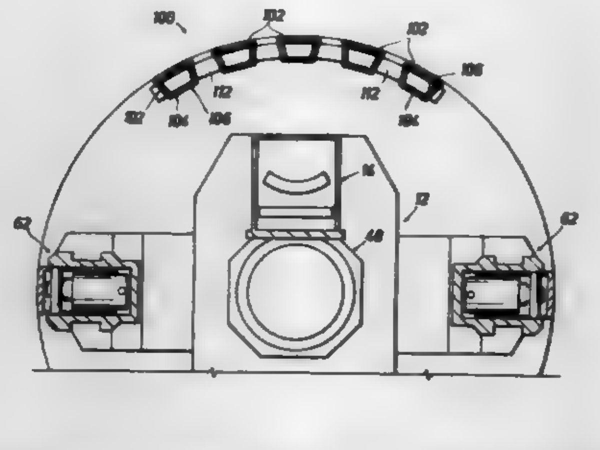
TUNNELING SHIELD

Douglas F. Winberg, Issaquah, Wash., and Norman D. Dyer, Beaumont, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 363,035, May 23, 1973, Pat. No. 3,870,368. This application Dec. 9, 1974, Ser. No. 531,040

Int. Cl.^{2} E21D *9/06*

U.S. Cl. 61—85 7 Claims



1. A tunneling shield for shielding the area of a tunnel between first and second tunnel machine assemblies which are longitudinally, relative to the axis of said tunnel, movable relative to each other comprising: a plurality of extendable and retractable support beams the longitudinal axes of which are substantially parallel with the axis of said tunnel, said support beams being disposed near the wall of said tunnel at circumferentially spaced intervals from each other.

3,979,922

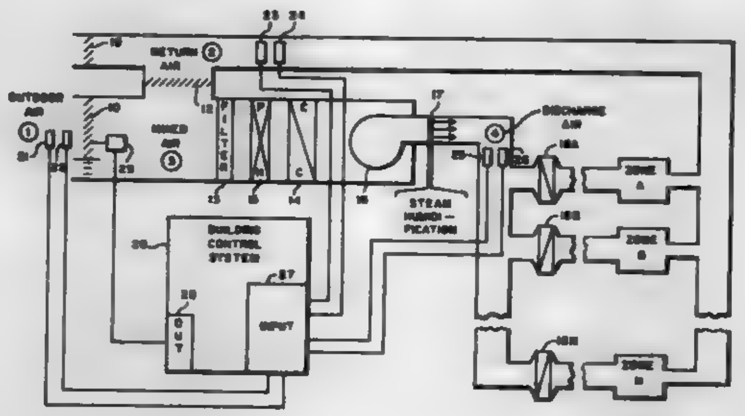
ENERGY CONSERVATION AIR CONDITIONING SYSTEM

Gideon Shavit, Highland Park, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 30, 1974, Ser. No. 537,301

Int. Cl.^{2} F24F *11/02*; G05D *27/00*

U.S. Cl. 62—97 18 Claims



1. In an air conditioning control system for establishing a desired set of conditions for the air discharged to at least one zone, said system requiring a total energy input to establish said set of conditions, said system having a source of return air and return air damper means, a source of outdoor air and outdoor air damper means, means for mixing return air and outdoor air, air treatment means for treating the mixed air and discharge means for discharging treated air to at least said zone, said system comprising:

first means generating a first output dependent upon the temperature of the outdoor air;

second means for generating a second output dependent upon the temperature of the return air;

third means for generating a third output dependent upon the temperature of said discharge air;

fourth means for generating a fourth output dependent upon the moisture content of said outdoor air;

fifth means for generating a fifth output dependent upon the moisture content of the return air;

sixth means for generating a sixth output dependent upon moisture content of said discharge air;

control means connected to said first, second, third, fourth, fifth and sixth means for generating an output dependent upon the first, second, third, fourth, fifth and sixth outputs indicative of the position of the outdoor air damper means requiring the lowest total energy input to support said desired conditions; and,

damper means positioning means connected to receive said output from said control means and adapted to operate said outside air damper to said position requiring the lowest total energy input.

3,979,923

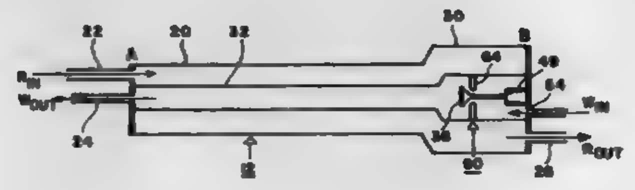
PREASSEMBLED REFRIGERANT SUBCOOLING UNIT

John H. Jennings, 9 Turtle Creek Drive, Tequesta, Fla. 33458

Filed Aug. 4, 1975, Ser. No. 601,646

Int. Cl.^{2} F25B *39/04*

U.S. Cl. 62—184 6 Claims



1. A refrigerant subcooling unit adapted to be installable in an existing refrigeration system for subcooling condensed refrigerant in the system to a temperature less than its saturated vaporization temperature, comprising:

heat exchanger means having a first and a second tube, said first tube having an inlet and an outlet forming a flow path for a liquid refrigerant, said second tube having an inlet and an outlet forming a flow path for a cooling medium, said first and second tubes arranged to provide a thermal path therebetween with said inlet of said second tube adjacent to said outlet of said first tube, whereby heat from the liquid refrigerant flowing through said first tube is conducted into the cooling medium flowing in said second tube; and

control valve means connected between said second tube and said second tube inlet, said control valve means arranged to be responsive to the temperature of the liquid refrigerant flowing through said outlet of said first tube, thereby controlling the flow of the cooling medium to the minimum necessary to reduce the liquid refrigerant temperature to such selected value.

3,979,924

NONREFLECTING JEWELS FOR TELEVISION BROADCASTING USE

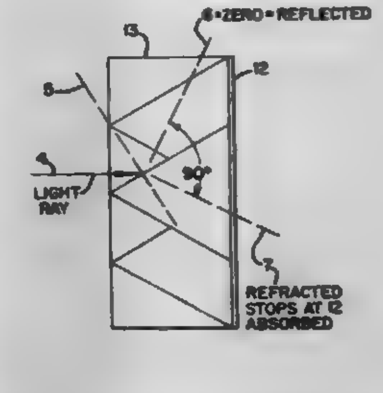
Eugene Falero Pereda, 11621 Hughes Ave., NE., Albuquerque, N. Mex. 87112

Filed Oct. 17, 1974, Ser. No. 515,462

Int. Cl.^{2} A44C *17/00*

U.S. Cl. 63—32 1 Claim

1. A jewel of light-transmitting, light-reflecting material comprising a generally flat bottom portion with cusps mounted thereon, said cusps projecting perpendicularly upwardly from said bottom portion and having light-reflecting surfaces which include means to greatly diminish the reflection by said surfaces of light which approaches said jewel frontally in a direction perpendicular to said flat bottom portion, said means comprising that the angle of said surfaces to said bottom is defined such that said perpendicularly approaching light strikes said surfaces at an angle which is substantially equal to Brewster's angle for the material of said cusps.



3,979,925

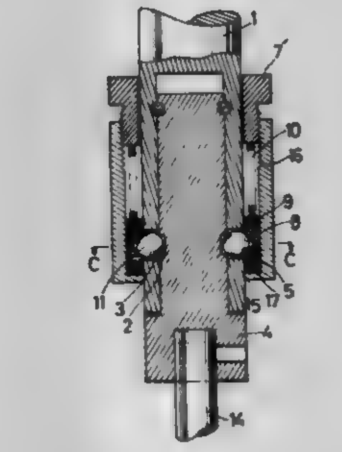
SHAFT-COUPLING DEVICE PREVENTABLE FROM OVER-TORQUE TRANSMISSION

Taizo Kato, 177-3, Minatoyamacho, Hyogoku, Kobe, Japan

Division of Ser. No. 291,600, Sept. 25, 1972, Pat. No. 3,827,260. This application Mar. 7, 1974, Ser. No. 449,094

Int. Cl.^{2} F16D *3/56*

U.S. Cl. 64—29 2 Claims



1. A shaft coupling device designed to prevent the transmitting of an over-torque, consisting essentially of:

a driving shaft having a co-axial cylindrical pipe end,

a driven shaft with a smaller outside diameter than the inside diameter of driving shaft pipe end, said driven shaft being inserted into and coupled rotatably with said driving shaft pipe end,

a pair of wedge rings having inclined side walls and located in adjacent relationship,

a cylinder having a bottom portion at one end and fitted co-axially around the outer circumference of said driving shaft,

at least one steel ball inserted between said driving shaft pipe end and the driven shaft and being urged inwardly by the wedge rings against the driven shaft,

with said wedge rings being urged toward the ball by at least one spring placed between the wedge ring and an adjustable nut engaging a screw-threaded end of the cylinder,

wherein said wedge rings are supported rotatably in contact with each ball inside said cylinder end,

whereby, in a state of normal torque transmission, each steel ball is so positioned as to engage both said driving shaft pipe end and said driven shaft,

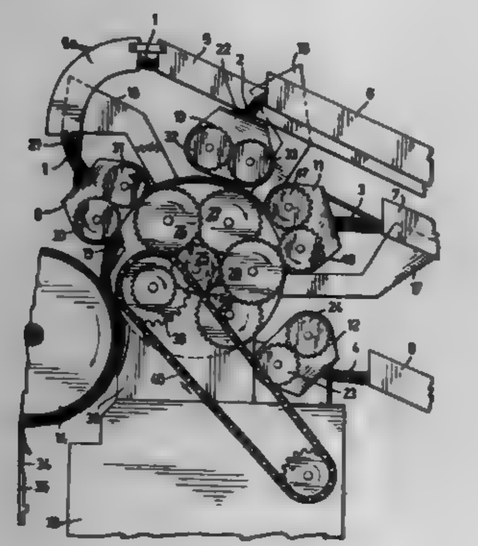
such that while said driven shaft is overloaded, each steel ball is forced to push said wedge rings apart from one another, and having another position such as to engage either one of the said driving shaft pipe end or said driven shaft.

wherein said driving shaft has a hole for each said steel ball, and through which each said steel ball is movable, and
wherein said driven shaft has a recess in which each steel ball is received for engagement therewith, and
said wedge rings are located between said driving shaft cylindrical pipe end and said cylinder.

3,979,926

FIBER FEEDING DEVICE FOR A PILE FABRIC KNITTING MACHINE

Per-Erik Fagerstedt, Ekenas, and Pekka Solin, Karjaa, both of Finland, assignors to Oy Lillja Pile AB, Finland
Filed Mar. 24, 1975, Ser. No. 561,402
Claims priority, application Finland, Apr. 1, 1974, 995/74
Int. Cl.² D04B *9/14*
U.S. Cl. 66—9 B 6 Claims



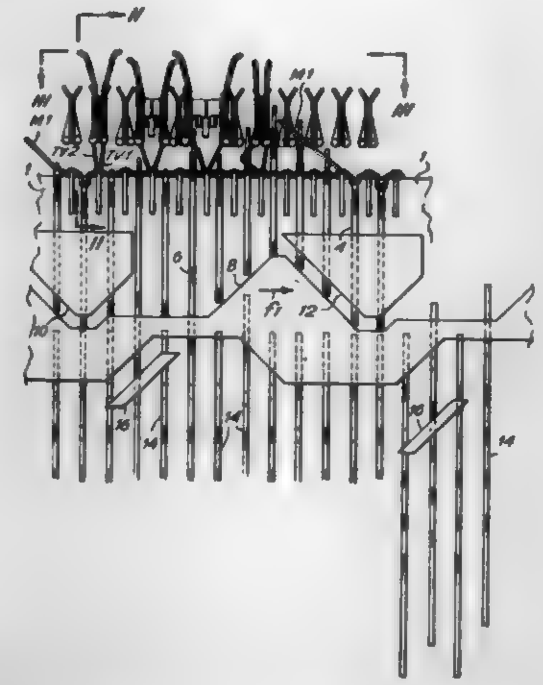
1. A fibre feeding device for a pile fabric knitting machine, wherein the fibre roving is fed through a pair of feed rollers onto a carding cylinder from which a doffer roll rotating at a speed higher than that of said cylinder takes the fibres and carries them to the needles of a needle cylinder, comprising
a first rotating driving means,
a plurality of second rotating driving means placed near the periphery of said carding cylinder and driven by said first rotating means,
a plurality of fibre feeding units pivotably mounted along the periphery of the carding cylinder, each unit comprising a pair of feed rollers, third rotating driving means corresponding to one of said plurality of second driving means for rotating the feed roller included in each fibre feeding unit and means for selectively moving each fibre feeding unit from a working position in which said third rotating driving means are driven by its corresponding second rotating driving means to feed fibres between the feed rolls onto the carding cylinder, to a rest position in which there is no driving contact between the second and the third driving means so that no feeding of fibres takes place, and back to said working position to enable the device to selectively feed and or mix different fibres.

3,979,927

KNITTING MACHINES

Giovanni Bossi, Via Labriola 25, Prato, Florence, Italy 50047
Filed June 6, 1975, Ser. No. 584,293
Claims priority, application Italy, June 12, 1974, 9477/74
Int. Cl.² D04B *9/12, 9/14, 9/16, 9/44*
U.S. Cl. 66—9 R 5 Claims

1. In a knitting machine
means defining a needle bed,
combined needles and jacks movable in the bed,
sinkers arranged to co-operate with the needles,
means defining guides for knitting yarn, and
means defining guides for weft-yarn,
the improvement wherein there is provided
means defining an additional bed,
a pair of yarn supply members slidably mounted on the additional bed and interdigitated with respect to a contiguous pair of needles,

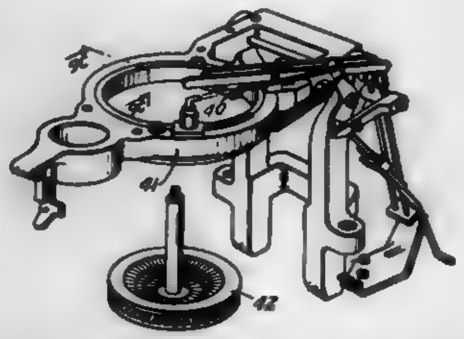


yarn guides mounted on the yarn supply members so arranged that the guides can move to the front of the needles,
wedge means mounted on the additional bed for resiliently diverging the individual members of each pair of yarn supply members, and
control means for controlling operation of said wedge means according to a required program.

3,979,928

HOSIERY-TYPE KNITTING MACHINES ADAPTED FOR THE PRODUCTION OF LARGE LOOSE STITCHES FROM HEAVY-DENIER YARN

Roy V. Atwater, P.O. Box 248, Yanceyville, N.C. 27379
Filed Feb. 26, 1975, Ser. No. 553,131
Int. Cl.² D04B *15/06*
U.S. Cl. 66—107 6 Claims

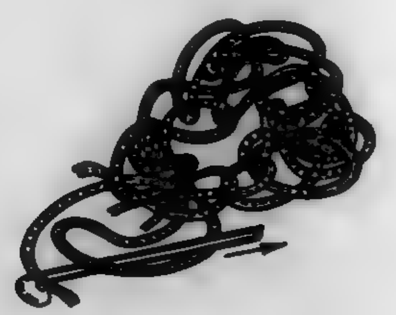


1. A circular knitting machine comprising a hosiery-machine needle cylinder from 3⅜ to 4 inches in diameter and carrying 300 to 469 needles, and adapted for the production of circular knitting slittable and joinable in the formation of outer garments and the like containing larger and looser knitted loops than those knitted by a corresponding hosiery machine and a sinker cap 0.060 to 0.100 of an inch less in diameter at its interior than that used in a corresponding hosiery machine, and sinker throw-in and sinker throw-out cams differing from those used in a corresponding hosiery machine to use this additional space for sinker movement, sinkers having bottom legs 0.030 to 0.075 of an inch shorter than those in a corresponding hosiery machine, cam arrangements including a stitch cam or cams which are 0.038 to 0.043 of an inch further withdrawn at the operative surface thereof than on those in a corresponding hosiery machine on a line such that the needles substantially maintain their vertical position until this line is reached and thereafter draw down the yarn rapidly to form a long stitch, and a throat plate from 0.015 to 0.030 of an inch less thick than that of a corresponding hosiery machine.

3,979,929

CLOTHING ARTICLE OR THE LIKE EMPLOYING CROCHETED MATERIAL

Angeline Lapi, Sprakers, N.Y., assignor to The Raymond Lee Organization, Inc., a part interest
Filed Apr. 2, 1975, Ser. No. 564,626
Int. Cl.² D04B *1/00*
U.S. Cl. 66—170 7 Claims

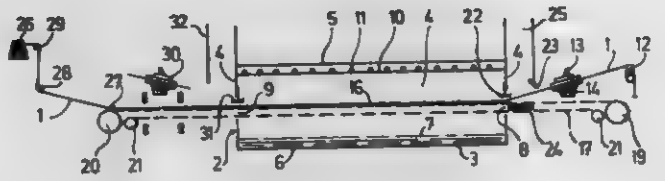


1. An article of clothing or the like employing crocheted material, said material having a pattern, said pattern employing a chain of loops having a last loop, the last loop having a first extension which passes to the right of the loop over the periphery thereof, said first extension turning back upon itself to form a second extension, said second extension passing rearwardly under the periphery of the loop and then forwardly over the periphery of the loop to pass over the first extension.

3,979,930

METHOD AND AN APPARATUS FOR TREATING TEXTILE MATERIALS

Pierre Schyns, Uccle, Belgium, assignor to Etablissements Callebaut-du Blicquy S.A., Forest, Belgium
Filed Oct. 8, 1974, Ser. No. 513,193
Claims priority, application Belgium, Oct. 9, 1973, 136481
Int. Cl.² D06B *3/04*
U.S. Cl. 68—5 E 4 Claims

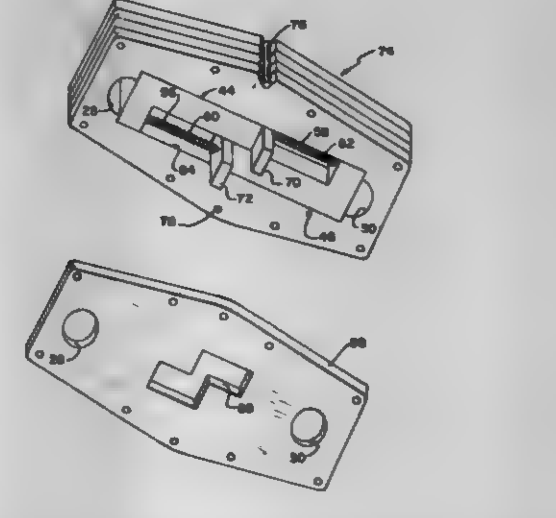


1. An apparatus for treating textile materials comprising:
a. a chamber defining a treatment space for treating the textile materials, said chamber having an inlet for introducing said textile materials to be treated and an outlet for extracting the treated textile materials;.
b. an endless perforated conveyor traversing said treatment chamber, extending through said inlet and said outlet for conveying said textile materials through said treatment chamber;
c. means for feeding at least one treatment agent into said treatment space;
d. a first nozzle arranged above said conveyor at the inlet to said treatment chamber and directed obliquely downwards and towards said inlet;
e. a second nozzle arranged above said conveyor in proximity to the outlet of said treatment chamber and directed obliquely downwards and towards said outlet;
f. means for feeding said first and second nozzles with gas under pressure;
g. means for feeding said textile materials into said first nozzle such that said textile materials are fed and projected onto said conveyor at said inlet through said first projecting nozzle and, wherein a gas shield is produced simultaneously with said feeding of textiles at said inlet by directing gas from said first nozzle to said inlet to prevent loss of treatment agent through said inlet from inside said treatment space; and
h. wherein said gas from said second nozzle is directed towards said outlet to form a gas shield at said outlet through said conveyor and said textile materials in order to prevent loss of treatment agent through said outlet from inside said treatment space.

3,979,931

PADLOCK WITH DOUBLE SHACKLE LOCK

Tsui Wai Man, 1535 Star House, Kowloon, Hong Kong
Filed May 8, 1975, Ser. No. 575,656
Int. Cl.² E05B *67/22*
U.S. Cl. 70—38 A 1 Claim

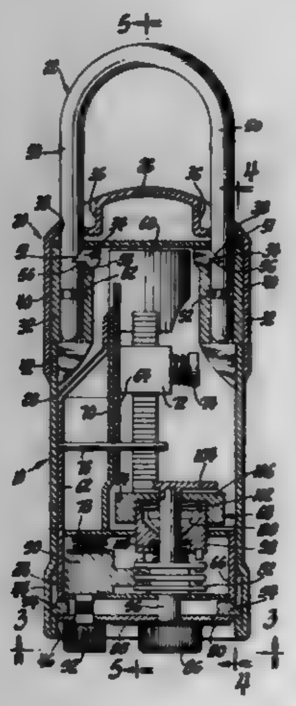


1. A padlock comprising the combination of a body having a pair of spaced openings, said body comprising a plurality of flat plates secured together to form a laminated construction, with a first group of the flat plates being formed with central openings which cooperate to define a cavity, and with a second group of the flat plates being mounted on opposite sides of said first group of plates for closing the cavity, fastener means for securing together said first and second groups of plates to form a sub-assembly which can be assembled separately from the remaining elements of the padlock, end plate means for securing said sub-assembly on the body, a U-shaped shackle having heel and toe ends slidably mounted for movement in respective ones of the spaced openings between a locked position wherein the ends are enclosed within the body and an unlocked position wherein the toe end is separated from the body, the sides of the heel and toe being formed with respective first and second notches, a key-operated lock barrel having an operating member mounted for selective rotation about an axis under the influence of a key, first and second lock plates captured within the closed cavity of the sub-assembly by the second group of plates to prevent unintended separation therefrom, with the lock plates being slidable within the cavity toward and away from respective heel and toe ends of the shackle, spring means for yieldably urging the lock plates into locking engagement with respective notches when the shackle ends are in the locked position, and cam means for simultaneously moving the lock plates out of engagement with respective notches responsive to rotation of the operating member, said cam means including a pair of

cams mounted on opposite sides of the axis for rotation with the operating member, and means forming cam follower surfaces on the first and second lock plates, said follower surfaces being positioned in register with the cams whereby rotation of the cams about the axis moves the cams against respective follower surfaces for linearly moving the locked plates outwardly toward respective notches.

3,979,932
ADJUSTABLE COMBINATION LOCK KEY SAFE

Paul E. Piche, 3698 Locust, Lake Orion, Mich. 48035
Filed May 19, 1975, Ser. No. 578,398
Int. Cl.² E05B *65/52*
U.S. Cl. 70—63 **10 Claims**

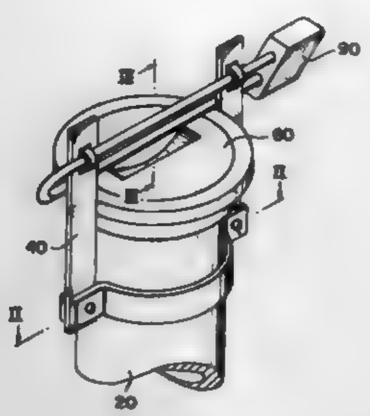


1. An adjustable combination lock safe which can be set to a plurality of discrete lock combinations to provide limited and variable access thereto comprising:
- telescoping inner and outer members defining in assembly relationship a compartment adapted to secure contents therewithin;
- shackle means releasably carried by the outer member for retaining the safe on a mounting member;
- first lock means carried by the inner member adapted to be actuated to lockingly engage the shackle means to prevent separation thereof;
- actuating means carried by the inner member operable upon telescopic insertion into the outer member to actuate the first lock means to effect locking engagement with the shackle means;
- second lock means lockingly engagable between the inner and outer members to prevent telescopic separation thereof;
- adjustable combination lock means operatively connected to the second lock means for unlocking the latter upon dialing a predetermined changeable code to permit separation of the members and thereby provide access to the contents therewithin.

3,979,933
FUEL TANK FILLER CAP LOCK

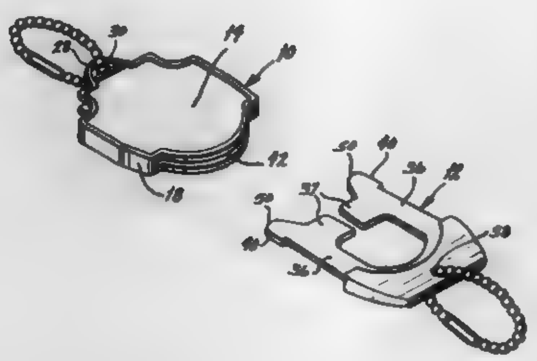
Jack Mehrhoff, Jersey City, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Sept. 15, 1975, Ser. No. 613,128
Int. Cl.² B65D *55/14*; E05B *65/02*
U.S. Cl. 70—164 **3 Claims**

1. A fuel tank filler cap lock, comprising:
- a clamp encircing a fuel tank filler pipe below the filler cap;
- two like diametrically opposed flat standards attached to the clamp and extending vertically upwardly from the clamp to a point above the filler cap; and
- a plurality of loops attached to the standards above the cap in a manner that the shackle of a conventional bicycle lock with a removable U-shaped shackle may be passed through the loops and thereby maintained to extend transversely between the standards directly above the cap, each standard having an upper loop on one side and a lower loop on the other side with corresponding loops on the standard being aligned to cause the shackle to straddle both sides of the standards.



3,979,934
SEPARABLE KEY HOLDER

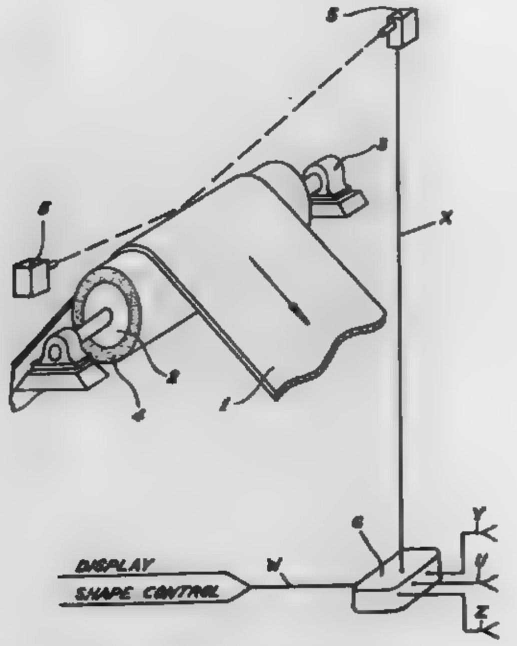
Robert L. Isenmann, St. Louis, Mo., assignor to Penn Corporation, Princeton, N.J.
Continuation-in-part of Ser. No. 507,727, Sept. 20, 1974, abandoned. This application May 14, 1975, Ser. No. 577,238
Int. Cl.² A47G *29/10*
U.S. Cl. 70—459 **6 Claims**



1. A releasable key ring connector comprising plug and socket members, the socket member comprising a slab-shaped elongated body with relatively wide front and back walls, relatively narrow side walls and relatively narrow first and second end walls, the first end wall having a large opening therein and the second end wall having two relatively small openings therein, a partition extending from the second end wall to adjacent the first end wall to form two body cavities between the first and second end walls, each cavity connecting the large opening to one of the small openings to permit passage between the large opening in the first end wall and one of the relatively small openings in the second end wall, each said body cavity decreasing in area between said large opening and the small opening to which it is connected, key supporting means on the end of the socket member adjacent the second end wall, the plug member having a resilient C-shaped body with detents at the end of each arm, the body being bifurcated to fit within said cavities with the detents positioned adjacent the openings in said second end wall when the plug is inserted in the socket and key supporting means on the plug member approximately equally remote from each of said detents.

3,979,935
STRIP SHAPE MEASURING DEVICE

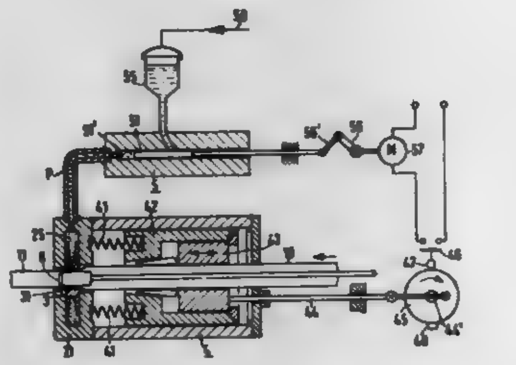
William John Edwards, Coal Point, and John Frederick Easey, Charlestown, both of Australia, assignors to John Lysaght (Australia) Limited, Sydney, Australia
Filed Feb. 7, 1975, Ser. No. 547,990
Claims priority, application Australia, Feb. 12, 1974, 6563/74
Int. Cl.² B21B *37/02*
U.S. Cl. 72—16 **8 Claims**



1. A method of determining stress variations in a strip of substantially flat material comprising the steps of:
- moving said strip of substantially flat material under tension of a deflection roll having a unitary compressible exterior extending continuously in a direction transverse to strip motion to cause the surface of said material passing over said roll to remain in compressive contact with the surface of said roll and compress said roll to a contour related to the stress distribution in said strip; and
- sensing the depth of compression of said deflection roll by optical scanning of the width of said strip of material along the contact surface of said deflection roll and said strip of material.

3,979,936
METHOD AND APPARATUS FOR SIZING NUCLEAR FUEL ROD CLADDING TUBES

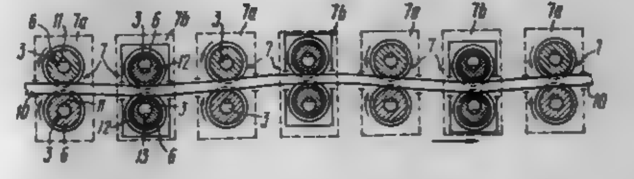
Köhler Ludwig, Nurnberg, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim, Germany
Filed Nov. 5, 1974, Ser. No. 521,144
Claims priority, application Germany, Nov. 7, 1973, 2355698
Int. Cl.² B21D *26/02*
U.S. Cl. 72—56 **3 Claims**



1. A method for reducing a metal cladding tube of a nuclear fuel rod, to an inside diameter substantially precisely fitting pellets of nuclear fuel contained in the cladding tube, comprising the step of encircling said tube with a fluid pressure chamber that embraces a short length of said tube and with said length containing an internal support having substantially the diameter of said pellets and with said chamber filled with a compressible fluid, forcing more of said compressible fluid into said chamber to obtain a fluid pressure in the chamber providing a fluid pressure on said tube causing initial yielding of said tube inwardly, and holding said fluid in said chamber so that by expansion of said fluid and with said tube yielding, said tube plastically deforms inwardly onto said internal support to provide said tube with said inside diameter; said pressure being applied by a high-pressure hydraulic pump having a cylinder connected by a pipe to said chamber and containing a piston which moves forwardly in said cylinder, said cylinder and said pipe and said chamber being filled with a substantially constant volume of compressible hydraulic liquid, and said piston being moved forwardly to a position providing said pressure compressing said fluid and causing said initial yielding of said tube, and said piston being then held substantially at said position until said hydraulic liquid expands to plastically deform said tube inwardly onto said internal support.

3,979,937
PAIRED-ROLL STRAIGHTENING MACHINE

Jury Lukich Semenenko, ulitsa Gogolya 1, kv. 30, and Nikolai Vasilievich Tumanov, ulitsa Simropolskaya, 23, kv. 5, both of Dnepropetrovsk, U.S.S.R.
Filed Apr. 7, 1975, Ser. No. 565,841
Int. Cl.² B21D *3/08*
U.S. Cl. 72—160 **6 Claims**



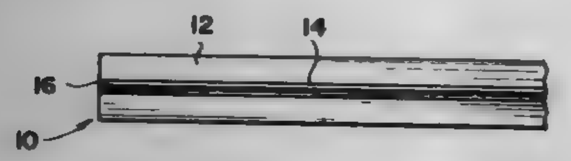
1. A paired-roll straightening machine comprising: a bed frame; stands stationarily installed on the bed frame in a row one after another; two driving shafts mounted in each of the stands one above the other; a roll positioned on each of the shafts so that the rolls of the shafts of one stand form a pair of rolls, while the rolls in each pair are installed one above the other to form a pass whose cross section corresponds to the cross section of an article being straightened, propelled through the passes of the roll pairs of all stands; some of the pairs of rolls are adapted for propelling the article; the remaining pairs of rolls are adapted for bending the article in at least one given plane during straightening; a drive provided for each roll of the bending pairs so that each roll of the bending pair is rocking in the given plane for bending the article during straightening; and means for rotating each of the shafts of the stands.

3,979,938
APPARATUS FOR BENDING THIN FLEXIBLE STRIPS

Clyde W. Thompson, Tulsa, Okla., assignor to Carolea Wheeler, Tulsa, Okla.
Filed May 8, 1975, Ser. No. 575,626
Int. Cl.² B21D *7/03*
U.S. Cl. 72—217 **4 Claims**

1. Apparatus for bending a thin flexible and narrow strip having a flat longitudinally extending base portion and a central longitudinally extending rib projecting upwardly from the base portion at right angles thereto, the upper edge of said rib being sharpened, said strip being of the type adapted to be attached to a printing cylinder and used for perforating or shearing paper sheets being printed, said apparatus being adapted to bend said strip at right angles to the base portion thereof to form a predetermined geometric shape for cutting said geometric shape in said paper sheets; comprising a hori-

zontally extending stationary die mounted on a supporting means; said stationary die having a continuous vertical edge conforming generally to said geometric shape and having a recess extending around a lower portion thereof, said recess extending inwardly into said stationary die a distance slightly less than one-half of the width of the base portion of said strip; a movable die member having an edge portion parallel with and movable towards a complementary shaped edge portion of said stationary die, said movable die member having a recess extending along a lower portion of the edge portion thereof, the recess in said movable die extending inwardly therein a distance slightly less than one-half of the width of the base portion of said strip and being opposite to the recess in the complementary portion of said stationary die; means for moving said movable die towards said stationary die so as to grasp a length of said strip therebetween with the rib portion thereof being gripped between the edge portion of the movable die and complementary portion of the stationary die and with the sides of the base portion thereof being received in the opposed recesses in the stationary die and the movable die; slide support means pivotally connected to the supporting means, said slide support means having mounted thereon a slide member adapted to be moved towards and away from said stationary die; a rotatable wheel rotatably mounted in said slide member on the side thereof towards said stationary die, said wheel having an annular recess therein extending inwardly into the wheel a distance slightly less than one-half the width of the base portion of said strip, the recess in said wheel being in alignment with the recess in said stationary die; means mounted on said slide support means for urging said slide member towards said stationary die so as to engage said wheel with the strip held between the stationary die and the movable die, the sides of the base portion of said strip being received in the opposed recesses in said wheel and said stationary die, whereby, when said slide support means is rotated around said stationary die, said strip will be bent around the vertical edge of the stationary die to form said predetermined geometric shape.



3,979,939
APPARATUS FOR THE MOUNTING AND REMOVAL OF THE ROLLERS OF A ROLL STAND

Cyril Pazderka, Meerbusch, Germany, assignor to G. Schwartz & Co., Dusseldorf, Germany

Filed May 12, 1975, Ser. No. 576,289

Claims priority, application Germany, May 21, 1974, 2424659

Int. Cl.² B21B *31/08*

U.S. Cl. 72—239 9 Claims

1. An apparatus for the insertion and removal of the rollers of a roll stand with a transfer car which is moveable in a direction of the rollers, the latter having mounting journals, comprising

means for inserting the rollers into the roll stand and withdrawing the rollers from the roll stand, respectively, from a side thereof in a horizontal position of the rollers, comprising

a coupling drive operatively disposed on said transfer car, said drive comprising at least two equally long carrier arms, including an inner carrier arm and an outer carrier arm operatively connected thereto, the latter having a front free end,

cycloid transmission means for operatively coupling said at least two carrier arms with each other,

clamping means being disposed on said front free end of said outer carrier arm for clamping said mounting journals of said rollers in a horizontal position of said rollers for horizontal movement thereof,

straight line guide means for said clamping means being disposed parallel to said cycloid transmission means on said carrier arms,

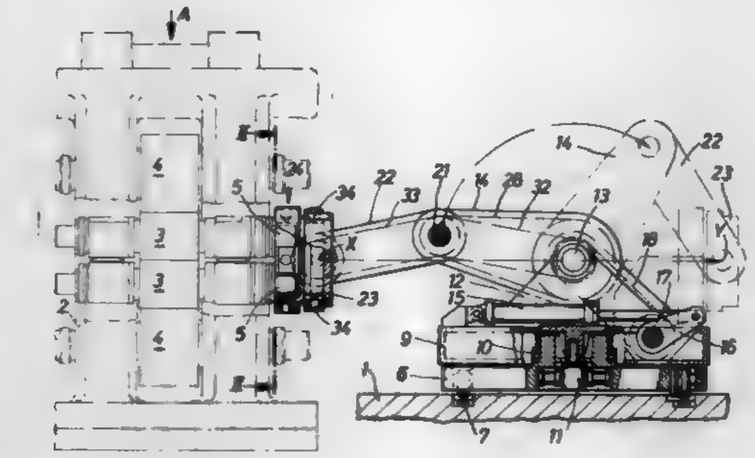
said coupling drive comprises,

two pairs of said carrier arms arranged spaced from each other and parallel to each other, and each of said pairs of carrier arms includes said inner carrier arm and said outer carrier arm,

pedestals spaced from each one another,

fixed axles secured in said pedestals, respectively, said fixed axles being separated from each other,

said inner carrier arms are supported on said fixed axles, respectively.



3,979,940
WIRE DRAWING MACHINERY

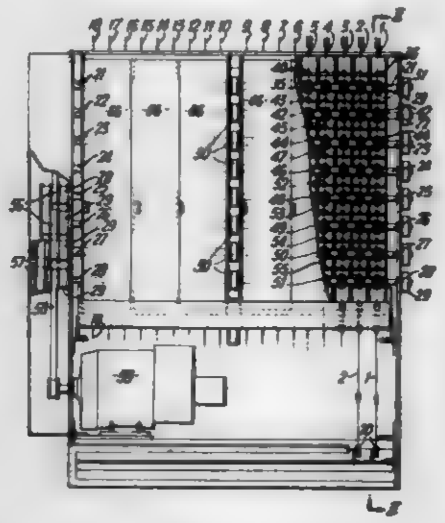
David Dutton, Warrington, and James Moss, Liverpool, both of England, assignors to British Insulated Callender's Cables Limited, London, England

Continuation-in-part of Ser. No. 407,049, Oct. 17, 1973, abandoned. This application Oct. 30, 1974, Ser. No. 519,287

Claims priority, application United Kingdom, Oct. 19, 1972, 48281/72

Int. Cl.² B21C *1/04, 1/12*

U.S. Cl. 72—279 3 Claims



1. In a machine for reducing the cross-section of at least four wires by drawing each of them through a respective series of dies of decreasing diameter defining a number of drawing stages which is the same for all the wires and is at least four, said machine comprising a corresponding series of individual capstans for drawing each said wire through its said series of dies and a plurality of drive shafts, one for each drawing stage, each said shaft supporting at spaced positions along its length and driving the capstans for said respective drawing stage, the improvement which comprises providing adjacent at least one of the ends of all said shafts interchangeable drive means coupling adjacent ones of said shafts and in which said interchangeable drive means of at least one adjcent pair of shafts comprises a toothed pulley mounted on each shaft of said pair, a timing belt engaging said toothed pulleys, and adjustable tensioning means for said belt, at least one said toothed pulley being exchangeable for a toothed pulley having a different number of teeth of the same pitch within the range of said tensioning means for the belt.

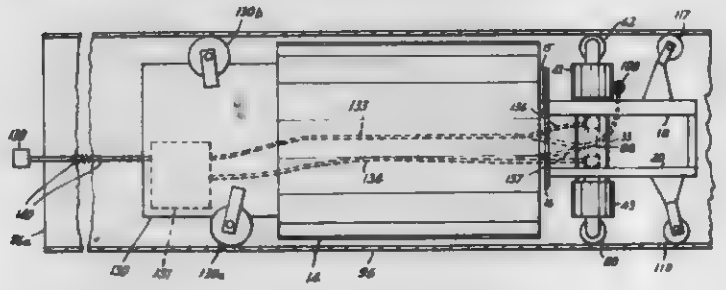
3,979,941
STEERING MEANS PARTICULARLY FOR INTERNAL PIPE BENDING MANDRELS

Marvin L. Auxer, Turtlegate, Tex., assignor to Mid-Continent Pipeline Equipment Company, Houston, Tex.

Filed July 1, 1975, Ser. No. 592,230

Int. Cl.² B21D *9/00*

U.S. Cl. 72—466 26 Claims



1. Steering apparatus for a traveling device disposed in a passage, comprising body means carried by said device transverse to the passage, movable means at opposite sides of said passage engaged with said body means and slidably movable thereon toward and away from the passage wall, wheel means for engaging the passage wall carried by each said movable means, at least one of said movable means also being rotatable about an axis parallel to the direction of sliding movement thereof to alter the direction of its said wheels to provide steering of said device, and drive means connected between said movable means for moving said movable means toward and away from the passage wall.

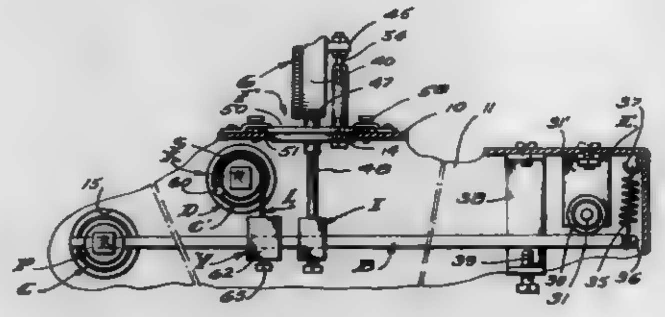
3,979,942
TORQUE TOOL TESTER

Bosko Grabovac, Mission Viejo, Calif., assignor to Consolidated Devices, Inc., City of Industry, Calif.

Filed Nov. 18, 1974, Ser. No. 524,552

Int. Cl.² G01L *25/00*

U.S. Cl. 73—1 C 7 Claims



1. A torque wrench tester of the character referred to comprising an elongate support structure having front and rear ends, an elongate primary input shaft with tool-engaging heads at its ends extending transverse of and rotatably carried by the front end portion of the support structure, an elongate deflection beam arranged within and extending longitudinally of the support structure and having a front end secured with the primary shaft, selectively longitudinally shiftable support means carried by the rear portion of the support structure above and in stopped engagement with the rear end of the beam, a dial indicator carried by the support structure above the central portion of the beam and having a vertically shiftable operating stem depending into engagement with the top of the beam to measure upward deflection of the beam upon the application of torsional forces on and through the primary shaft, an elongate secondary input shaft with tool-engaging heads at its ends extending transverse of and rotatably carried by the support structure and spaced above the beam and rearward of the primary shaft and drive means comprising a cable, anchoring means securing one end of the cable to the secondary shaft and coupling means securing the other end of the cable to the portion of the beam nearest thereto, said drive means operable to transmit torsional forces applied onto and through the secondary beam into upwardly directed lineal forces on said nearest portion of the beam, said coupling means being shiftable longitudinally of the shaft and including means to secure it in fixed position on said shaft.

3,979,943
BELT WEIGHING MACHINES

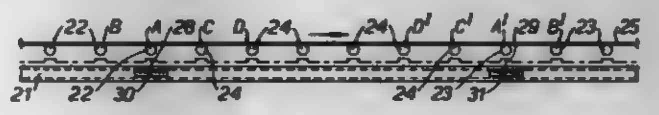
George Ernest Foster, Redcar, England, assigner to British Steel Corporation, London, England

Filed Nov. 3, 1975, Ser. No. 628,065

Claims priority, application United Kingdom, Nov. 4, 1974, 47527/74

Int. Cl.² G01G *23/00, 9/00*

U.S. Cl. 73—1 B 6 Claims



1. A method of installing or adjusting the performance of a belt weighing machine comprising a conveyor belt which is adapted to be driven over a series of idler rollers, one or more consecutive idler rollers being supported by a weight sensing system, which includes the steps of:

a. applying a test weight over the static belt to identify the length of the belt over which the weight is sensed, and

b. in the event that the weight is sensed on the entry side of the first entry threshold idler roller or on the exit side of the first exit threshold idler roller, moving away from the relevant threshold idler roller either the adjacent non-weighed idler roller or, optionally, where there are at least four weighed idler rollers, the next but one weighed idler roller, and then

c. repeating steps (a) and (b) until the weight is no longer significantly sensed on the entry side of the first entry threshold idler roller or on the exit side of the first exit threshold idler roller.

3,979,944
HYDRAULIC DRILL, IN PARTICULAR A ROCK DRILL

Pekka Salmi, and Rolf Strom, both of Tampere, Finland, assignors to Oy Tampella AB, Tampere, Finland

Filed Mar. 17, 1975, Ser. No. 558,805

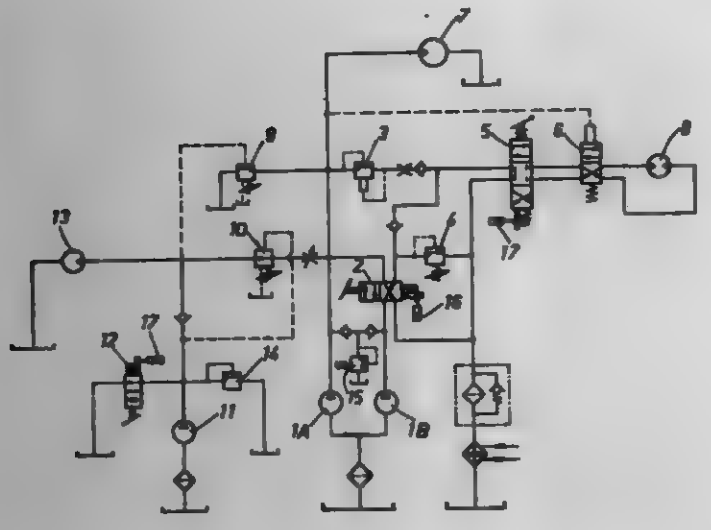
Claims priority, application Finland, Mar. 18, 1974, 811/74

Int. Cl.² E21C *5/00*

U.S. Cl. 173—8 11 Claims

1. Hydraulic drill, in particular a rock drill, comprising a partial circuit containing an impact unit (7) with pumps (1A, 1B) and valves, a partial circuit containing a rotation motor (13) with pump and valve, and a partial circuit containing a feed motor (8) with pump and valves, characterized by a first valve (9) which derives its control from the partial circuit containing the rotation motor (13) in such manner that when the pressure in said partial circuit increases to exceed a given limit pressure the valve (9) begins to release flow from the

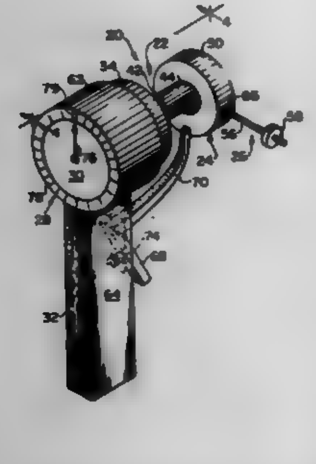
partial circuit containing the impact unit (7) and to lower the pressure therein, whereby the power of the impact unit (7) decreases; and by a second valve (10) which derives its control from the partial circuit containing the rotation motor (13)



in such manner that when the pressure in said partial circuit falls below a given limiting pressure the valve (10) begins to release flow from the partial circuit containing the impact unit (7) and to lower the pressure therein, whereby the power of the impact unit (7) decreases.

3,979,945
ECCENTRIC VISCOMETER FOR TESTING BIOLOGICAL AND OTHER FLUIDS

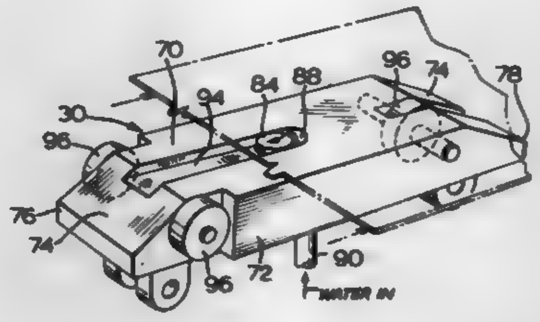
Louis Kopito, Brookline; Samuel R. Schuster, Wellesley, and Harold Kosasky, Brookline, all of Mass., assignors to Ovutime, Inc., Brookline, Mass.
Filed Apr. 30, 1975, Ser. No. 573,348
Int. Cl.² G01N *11/00, 33/16*
U.S. Cl. 73—60 14 Claims



1. A device for testing mucus from a boidly cavity, said device comprising an inner bearing element and an outer bearing element constrained for relative eccentric rotational motion with respect to each other, means for biasing said elements for said eccentric rotational motion, and means for indicating the occurrence of such motion, said inner bearing element and said outer bearing element having inner and outer, horizontally disposed, cylindrical bearing surfaces, said relative motion being a rotational movement about eccentric bearing surface axes that is related to both shear and displacement of said mucus.

3,979,946
ULTRASONIC PLATE INSPECTION SYSTEM

Harold Z. Cipywnyk, Burlington, Canada, assignor to The Steel Company of Canada, Limited, Hamilton, Canada
Filed May 27, 1975, Ser. No. 580,610
Claims priority, application Canada, June 10, 1974, 202015
Int. Cl.² G01N *29/04*
U.S. Cl. 73—71.5 US 16 Claims



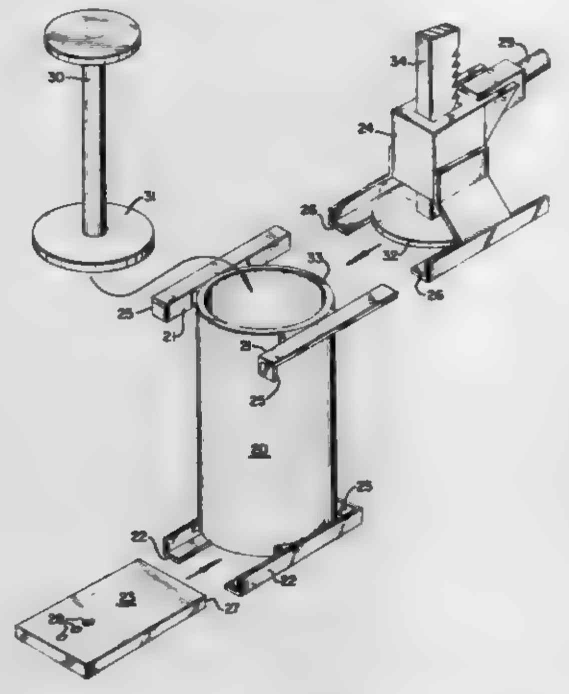
1. A shoe for ultrasonically testing hot, moving metal plate for faults, the shoe comprising:
- a body member having a surface adapted to be juxtaposed with respect to the metal plate,
- an ultrasonic probe member fixed in the body member and having a generating face parallel with and slightly recessed from said surface,
- the body member defining an internal cooling chamber encircling said probe member and having an outlet adjacent one portion of the periphery of the generating face of the probe member, the said portion being less than the full periphery,
- an inlet passageway in said body member for conveying cooling liquid to said cooling chamber,
- and a liquid exit and pre-cooling channel in said surface commencing at and communicating with said outlet of the cooling chamber, passing across said generating face, and extending away from the probe member in a direction remote from said outlet, whereby cooling liquid admitted to said cooling chamber through said inlet passageway can cool said probe member and then pass out of said outlet, across said generating face to permit transmission of the ultrasonic signal to the metal plate, and along the channel to cool the metal plate.

3,979,947
METHOD OF DETERMINING RELATIVE MOISTURE CONTENT OF EARTHY MATERIAL

Richard Parkinson, 13255 Woodcock Ave., Sylmar, Calif. 91342
Filed Apr. 14, 1975, Ser. No. 558,055
Int. Cl.² G01N *19/10*
U.S. Cl. 73—73 3 Claims

1. A method for determining the correct water content for compaction of earthy materials, comprising the steps of:
- a. Placing a sample of the material to be tested in a vertical first tube, closed at one end by a plate, such that the sample rests on the plate;
- b. inserting a second tube, with attached plates, of different sizes, at both ends, into the first tube, such that the smaller plate on the second tube contacts the sample;
- c. striking the larger plate on the second tube to compact the sample;
- d. reversing the position end-to-end of the second tube in the first tube;
- e. striking the smaller plate on the second tube to level the surface of the sample;
- f. twice repeating steps (a) through (e) so that those steps are performed a total of three times;
- g. removing the plate closing the said one end of first tube:

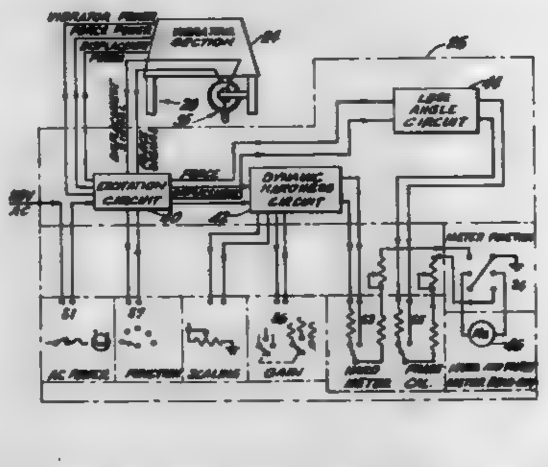
- h. placing the first tube in a substantially horizontal position;
- i. extracting the conditioned composite sample from the first tube with a ratchet-operated jack;
- j. evaluating the composite sample, whereby; if the sample breaks when extracted at the formed layers, is soft and porous, and the plate which closed the first tube is dry,



the sample is known to be too dry; if the sample breaks when extracted at random, is hard to the touch or a light blow, and and the plate which closed the first tube is damp, the sample is known to have optimum water content; if the sample breaks when extracted at random, is soft to the touch or plastic, and water is present on the plate which closed the first tube, the sample is known to be too wet.

3,979,948
APPARATUS FOR DETERMINING THE DYNAMIC COMPLEX HARDNESS OF RESILIENT ROLL COVERINGS

Harvey F. George, W. Hempstead; Charles G. Marrara, Franklin Square; Robert H. Oppenheimer, and David W. Cairns, both of Glen Cove, all of N.Y., assignors to Gravure Research Institute, Inc., Port Washington, N.Y.
Filed Sept. 8, 1975, Ser. No. 611,265
Int. Cl.² G01N *3/32*
U.S. Cl. 73—78 12 Claims



12. Apparatus for determining the dynamic complex hardness of gravure impression rolls for gravure printing, comprising:
- a housing for positioning directly on the gravure impression roll to be tested;
- an adjustable probe means depending from said housing, said adjustable probe means including a ring having a contact portion extending outwardly therefrom;
- vibrator circuit means for vibrating said probe ring to indent the gravure impression roll;
- displacement transducer means coupled to said probe ring for providing electrical signals proportional to the displacement (d) of said probe ring and therefore proportional to the displacement of the gravure impression roll;
- force transducer means coupled to said probe ring for providing electrical signals proportional to the force (F) encountered by said probe ring during displacement of the gravure impression roll, said force transducer means including a plurality of strain gauges mounted on said probe ring;
- excitation circuit means for energizing said force and displacement transducers and for receiving and conditioning the output signals from said force and displacement transducers;
- computer circuit means coupled to said excitation circuit means for receiving the conditioned output signals from said force and displacement transducers to provide a direct reading of the magnitude of the dynamic hardness

$$\left|\frac{F}{d}\right|$$

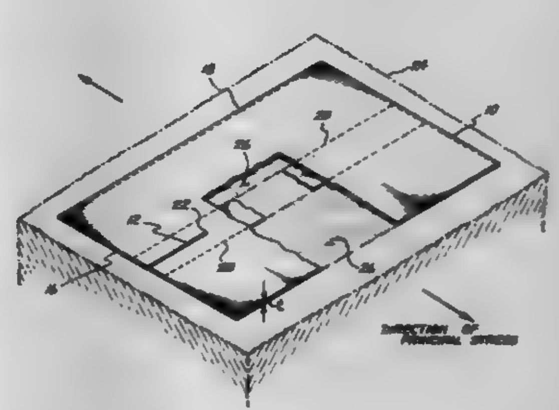
said computer circuit means including the first circuit means for providing the logarithmic ratio of the conditioned force and displacement output signals received from said excitation circuit means, and second circuit means for providing the anti-logarithm of the logarithmic ratio to provide a signal proportional to magnitude of the dynamic complex hardness

$$\left|\frac{F}{d}\right|$$

and
- phase angle circuit means coupled to said excitation circuit means for receiving the conditioned output force signals from said force and displacement transducers to provide a direct reading of the loss angle δ, said phase angle circuit means including multivibrator means for converting the conditioned force and displacement signals to square waves, and comparator means for comparing the square waves and providing an output pulse whose pulse width corresponds to the phase difference therebetween.

3,979,949
FATIGUE DAMAGE INDICATOR

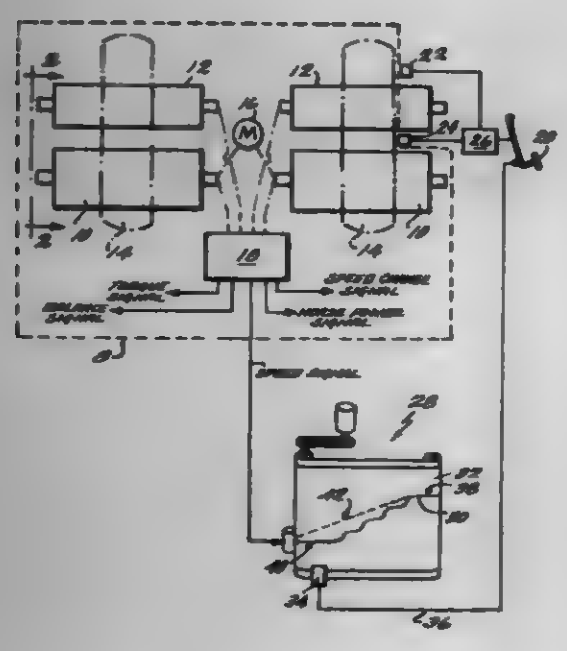
Howard Warren Smith, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed June 30, 1975, Ser. No. 591,915
Int. Cl.² G01B *5/30*
U.S. Cl. 73—88 R 7 Claims



7. A method for measuring accumulated fatigue damage and remaining fatigue life in a structure exposed to repeated stress comprising the steps of:

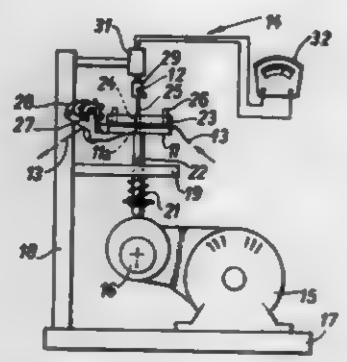
forming a gage having a metalic base of uniform thickness which base has a crack-initiating slit of a predetermined length therein;
attaching said gage to said structure but leaving unadhered a portion of said base, said portion containing said slit and having a uniform width no greater than approximately twice the said predetermined length of said slit, said gage being oriented such that the length of said slit is approximately perpendicular to the direction of principal stress in the structure;
exposing said structure to repeated stressing;
measuring the length of the slit; and
comparing the said measured length to length of the slit in a substantially identical gage in a substantially identical location on a substantially identical structure which has been fatigue tested to failure.

3,979,950
BRAKE TESTING METHOD
Lloyd R. Maxwell, Bradford Hills, Downingtown, Pa. 19335
Filed Mar. 6, 1975, Ser. No. 555,813
Int. Cl.² G01L *5/28*
U.S. Cl. 73—126 **17 Claims**



1. A method for testing an anti-skid brake system installed in a wheeled vehicle, said brake system including a driver-actuated brake pedal and a control system which in the normal operating mode prevents lock-up of the vehicle wheels during braking by releasing brake force in response to the sensing of a condition of a wheel indicative of imminent lock-up and by rapidly reapplying brake force in response to the disappearance of the condition, said method comprising: engaging the periphery of the wheel with a motor-driven roll; driving the roll up to a high speed corresponding to a typical high vehicle road speed thereby driving the wheel at a simulated high road speed; maintaining the motor drive to the wheel while actuating the vehicle brakes sufficient to decelerate the wheel relative to said driven roll to produce said condition which is indicative of wheel-lock-up to permit said control system, if operating in its normal mode, to repeatedly release and reapply brake force whereby said wheel and said roll under the influence of the motor drive will tend to accelerate during periods of released brake force; continuing to actuate the brakes to decelerate the wheel and roll, thereby overriding the motor in the aforesaid stepwise manner until a low simulated road speed of the vehicle wheel is reached; and generating a signal which varies with changes in the speed of the wheel whereby said singal indicates whether said control system has operated in its normal mode during the braking step.

3,979,951
TESTING FABRIC SEWING PROPERTIES
Dennis Lawrence Munden, 18, Adel Towers Court, Leeds 16, and Carol Anne Leeming, 9, Winfield Grove, Leeds 2, both of Yorkshire, England
Filed Oct. 25, 1974, Ser. No. 518,073
Claims priority, application United Kingdom, Oct. 27, 1973, 50291/73
Int. Cl.² G01L *5/00*; G01N *3/00*
U.S. Cl. 73—159 **13 Claims**

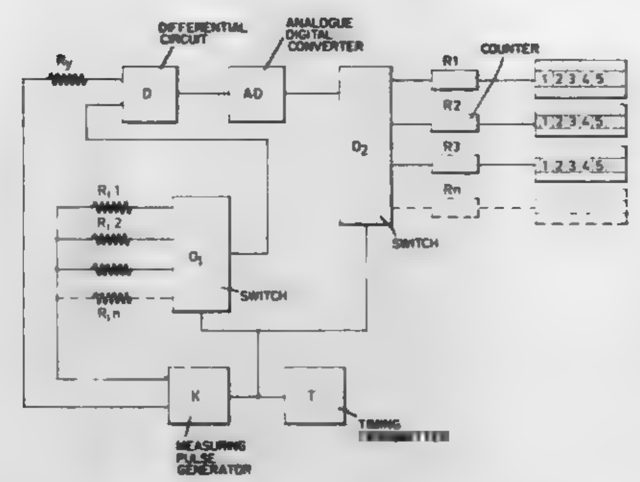


1. Apparatus for testing fabric sewing properties comprising:
a fabric support;
needle holding means, said support and said holding means being relatively movable;
means to effect relative movement of said support and said holding means to effect a plurality of needle penetrations of a test fabric in said support at spaced apart points in said test fabric;
discriminating means sensing single needle penetration forces in excess of a predetermined threshold level; and
indicating means for indicating the number of penetrations in which excessive penetration force was encountered relative to the total number of penetrations effected,
whereby the ratio, of the number of penetrations exhibiting an excessive force with respect to the total number of penetrations effected, is indicative of the sewability of the fabric, high ratio values thereby being indicative of fabrics which are difficult to sew.

3,979,952
DEVICE FOR MEASURING HEAT CONSUMPTION IN INDIVIDUAL APARTMENTS IN A CENTRALLY HEATED BUILDING
Josef Bornstein, Lidingo, and Stig Ingvar Karlsson, Karlskrona, both of Sweden, assignors to AB Svensk Varmematning CB-System
Filed July 10, 1975, Ser. No. 594,878
Claims priority, application Sweden, July 18, 1975, 7594038
Int. Cl.² G01K *17/00*
U.S. Cl. 73—193 R **3 Claims**

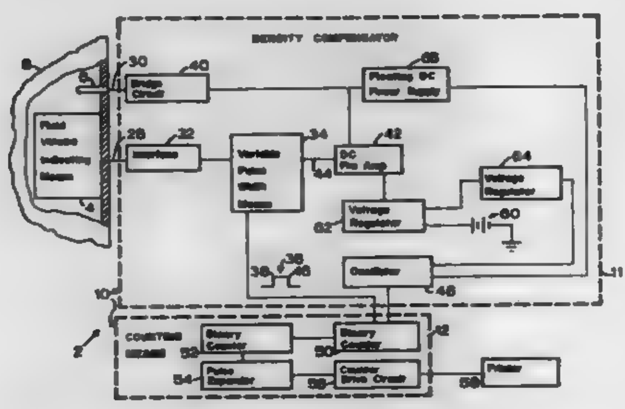
1. A device for measuring heat consumption in individual apartments in a centrally heated building, including:
at least one temperature transducer for measuring the representative air temperature inside each apartment,
another temperature transducer for measuring the air temperature outside said centrally heated building,
said inside and outside temperature transducers generating electrical pulses corresponding to the temperatures measured by each upon the receipt of electrical measuring pulses by each,
an electrical differential circuit connected to said inside and outside temperature transducers for converting said electrical pulses from said transducers to an electrical difference signal indicating the difference between inside and outside temperatures,

means integrating and recording said electrical difference signal from said differential circuit, and



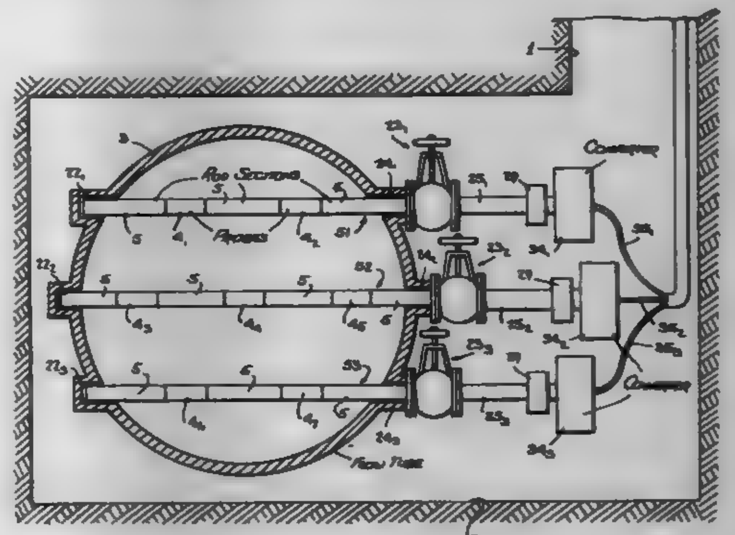
means to transmit measuring pulses at timed intervals simultaneously to said inside and outside temperature transducers with said measuring pulse being of short duration so as to prevent self heating of the transducers and consequential distortions of the true temperature readings.

3,979,953
MASS FLOW METER FOR CRYOGENIC FLUID
Douglas A. Johns, Lantana, and Gilbert Halverson, West Palm Beach, both of Fla., assignors to Scientific Instruments, Inc., Lake Worth, Fla.
Continuation of Ser. No. 454,261, March 25, 1974, abandoned, which is a continuation of Ser. No. 251,743, May 9, 1972, abandoned. This application May 12, 1975, Ser. No. 576,351
Int. Cl.² G01F *1/86*
U.S. Cl. 73—194 M **4 Claims**



1. A fluid temperature compensation meter comprising;
a fluid volume sensing means to produce a first output pulse signal for measuring the volume of the fluid to be measured,
a temperature sensor connected adjacent said fluid volume sensing means to produce a second output signal for measuring the temperature of the fluid to be measured,
a compensator connected to said fluid volume sensing means to provide a first input into said compensator and to said temperature sensor to provide an additional input to said compensator to correct the measured first input signal to provide liquid mass flow data, said compensator including an output,
a signaling means connected to said output of said compensator to indicate the mass of the fluid measured, and
said compensator including a variable pulse width generating means connected to said fluid volume sensing means to produce pulses in synchronism with said output pulse signal of said fluid volume sensing means and connected to said temperature sensor to control the width of said volume sensing means output pulses to provide density compensating envelope pulses.

3,979,954
KARMAN VORTEX FLOWMETER
Hirofumi Ide, Tokyo, and Tamotsu Kobayashi, Yokohama, both of Japan, assignors to Hokushin Electric Works, Ltd., Tokyo, Japan
Filed July 15, 1975, Ser. No. 596,016
Claims priority, application Japan, July 29, 1974, 49-87148
Int. Cl.² G01F *1/32*
U.S. Cl. 73—194 VS **9 Claims**

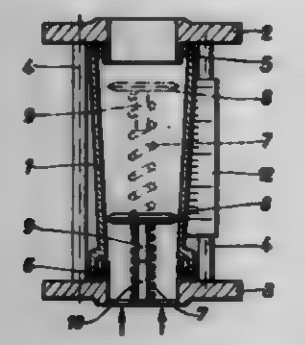


1. A Karman vortex flowmeter comprising:
A. a flow tube having a relatively large diameter through which is flowable a fluid to be metered, said tube being installable in a flow line whose structure is such as to give rise to considerable disturbances in the velocity profile of the fluid to be metered;
B. a multiplicity of rod-like vortex shedding units disposed within the tube in a parallel array lying in a transverse plane normal to the flow axis, each unit generating Karman vortices;
C. probes associated with each unit to detect the vortices produced thereby, each probe providing an electrical signal whose frequency depends on the periodicity of said vortices, each unit being formed by a series of rod sections which are intercoupled with the probes associated therewith, the probes being coaxially aligned with the sections; and
D. a signal output circuit coupled to the probes of the units and combining the signals thereof to produce an output signal that is substantially proportional to the flow rate of said fluid and is substantially insensitive to said disturbances in the velocity profile.

3,979,955
FLOWMETER
Fritz Schulte, Ludenscheid; Gerhard Clever, Nachrodt-Wiblingwerde, and Günter Kuhfs, Schalksmuhle, all of Germany, assignors to Ludwig Grefe GmbH, Ludenscheid, Germany
Filed Dec. 2, 1974, Ser. No. 528,896
Claims priority, application Germany, Dec. 3, 1973, 2360097
Int. Cl.² G01N *1/28*
U.S. Cl. 73—228 **1 Claim**

1. A flowmeter comprising:
an elongated housing formed with an annular inlet fitting at one end, an annular outlet fitting at the opposite end, and means connecting said fittings whereby said fittings are attachable to respective portions of a pipe line in which the flowmeter is insertable, said fittings having axially aligned openings adapted to be traversed by a fluid in said pipeline;

- a frustoconical measuring tube disposed within said housing and tapering from said outlet fitting toward said inlet fitting, said tube being of substantially uniform well thickness;
- a planar imperforate circular disk disposed within said tube and lying transverse to the axis thereof while being of a diameter greater than the smallest internal diameter of said tube, said disk contacting said tube with only line contact;



- a resilient element anchored to one of said fittings and bearing axially upon said disk for urging same toward the narrow end of said tube and the periphery thereof into engagement with a frustoconical wall of the tube at the narrow end thereof, said element being the sole means connecting said disk to said fittings; and
- a scale mounted along said tube and cooperating with said disk for indicating the flow rate of a fluid traversing said tube from said inlet fitting to said outlet fitting upon deflection of said disk by the flowing fluid.

3,979,956
LOW PRESSURE LOSS FLUID FLOW METER

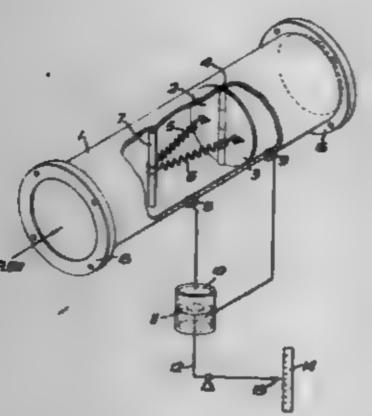
Arthur Joseph Bennett, Billingshurst, England, assignor to Gervase Instruments, Limited, Cranleigh, England

Filed July 16, 1975, Ser. No. 596,376

Claims priority, application United Kingdom, July 18, 1974, 31946/74

Int. Cl.^{2} G01F *1/28*

U.S. Cl. 73—228 **5 Claims**



1. A fluid flow meter comprising

- a flow tube having fluid flow input and fluid flow output means, said tube having a peripheral wall defining a generally circular flow cross section;
- a pair of generally semicircular movable vanes pivotally mounted within the flow tube about a common fixed diametral axis of said tube for pivotal movement towards the axial plane containing said common axis and downstream of said axis;
- biasing means coupled to said vanes for urging the latter to pivot against the fluid flow and in a direction so as to close the said tube, and
- fluid flow indicating means connected to said flow meter, said fluid flow indicating means serving to indicate the fluid flow through said flow tube.

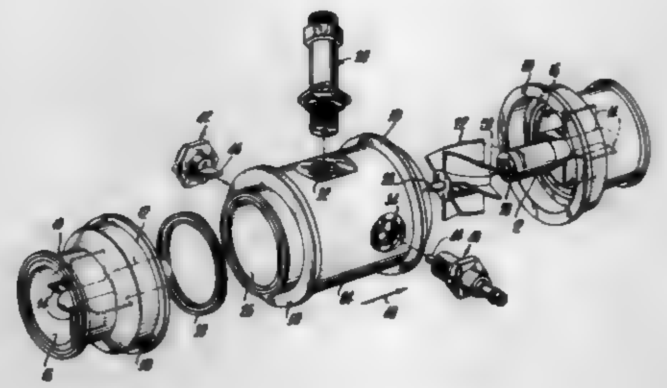
3,979,957
FLOW METER

Robert J. Rutgerson, Hopewell Junction, and Malcom J. Mills, Wappingers Falls, both of N.Y., assignors to Foss America, Inc., Fishkill, N.Y.

Filed Feb. 12, 1975, Ser. No. 549,104

Int. Cl.^{2} G01F *1/115*

U.S. Cl. 73—231 R **5 Claims**



1. A flow meter construction for use in producing an electrical output indicating the amount of flow therein comprising a pair of symmetrically and axially arranged separating end caps each including an end cap shell, an axially aligned bearing support assembly and vanes extending from said assembly to said end cap shell, a main body between said end caps defining therewithin an inner main body surface, said main body being axially aligned with said end caps and said main body surface defining with said end cap shells a continuous, cylindrical flow meter conduit, a magnetic rotor, supported by said assemblies and within said main body, whose rotation is responsive to flow through said flow meter conduit, a magnetic impulse counter probe for creating a magnetic field in the area of said rotor for generating pulses proportional to flow through said flow meter conduit and external clamping means for holding said end caps to said main body, the distance between said vanes and said rotor being greater than one-fourth the diameter of said flow meter conduit.

3,979,958
APPARATUS FOR DETERMINING INTERFACE LEVELS IN GROUND CAVITIES OR CONTAINERS CONTAINING LIQUID OR GEL-LIKE MATERIAL

Wladimir Janssen, Carignan, and Harley Corey Prime, St. Lambert, both of Canada, assignors to Canadian Industries, Ltd., Montreal, Canada

Filed Jan. 13, 1976, Ser. No. 648,787

Claims priority, application Canada, Jan. 31, 1975, 219129

Int. Cl.^{2} G01F *23/16*

U.S. Cl. 73—290 R **8 Claims**

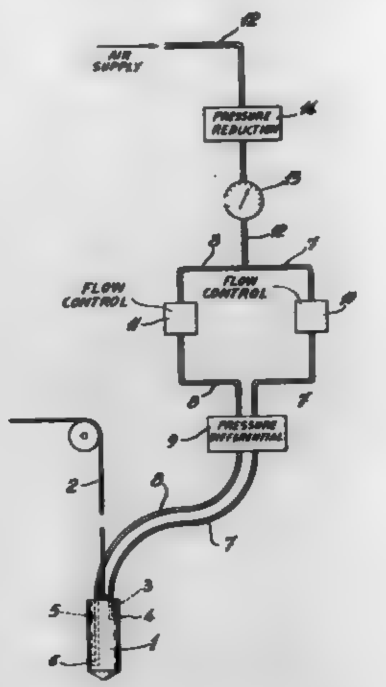
1. An apparatus for determining an interface level in cavities or containers containing liquid material comprising:

a. an elongated sensing element having a side wall annd being adapted for lowering into a liquid-containing cavity, said sensing element having two gas-conducting channels therethrough, said channels terminating in vertically spaced-apart exhaust ports in the said side wall;

b. separate gas conduit means adapted to deliver pressurized gas at a constant flow rate into each of said channels and through said exhaust ports;

c. pressure monitoring means associated with said gas conduits whereby any change or variation in gas pressure in or between said conduits caused by a restriction of gas flow from said exhaust ports may be sensed; and

d. means associated with said pressure monitoring means whereby a signal may be generated when a change or variation in gas pressure in or between said conduits occurs.



3,979,959
APPLIANCE FOR MEASURING PRESSURE

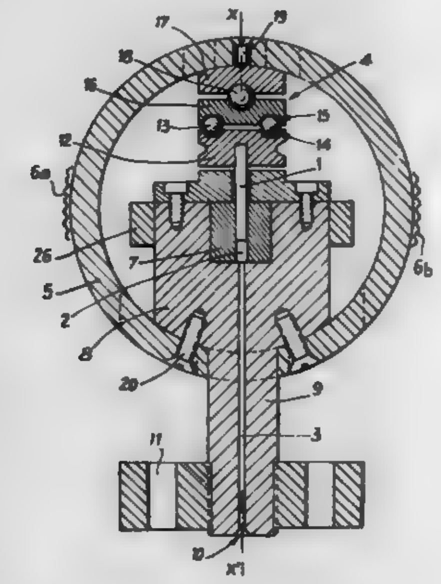
André Véron, Pau, France, assignor to Societe Nationale des Petroles d'Aquitaine, Paris, France

Filed June 6, 1975, Ser. No. 584,529

Claims priority, application France, June 19, 1974, 74.21212

Int. Cl.^{2} G01L *7/16, 9/04*

U.S. Cl. 73—419 **9 Claims**



1. An appliance for measuring hydrostatic pressure, said apparatus comprising

- a cylinder defining a bore and a lining fitted into said cylinder for maintaining the inner diameter of said cylinder at a constant value,
- a piston mounted for linear and rotational movement in said cylinder,
- passage means for connecting said cylinder bore to a pressure source so that the pressure of said source is exerted against said piston,
- a component made of a material having a known elasticity,
- said cylinder being positioned to bear against one part of said component, and said piston being positioned to apply against another part of said component at least a portion of the pressure exerted against said piston,
- and means for measuring the strain in said component resulting from the application of said pressure.

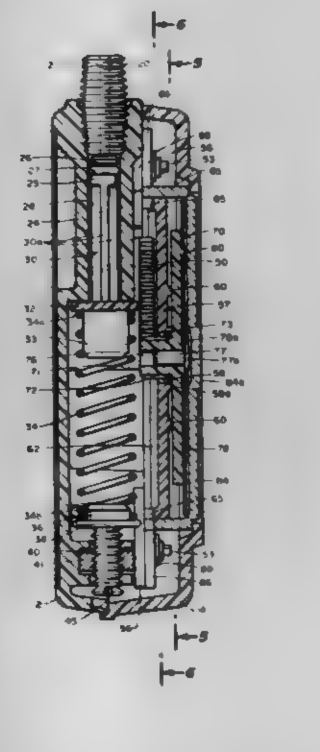
3,979,960
COMPRESSION TESTER

Edwin L. Schwartz, Los Angeles, Calif., assignor to Rite Autotronics Corporation, Los Angeles, Calif.

Filed Aug. 25, 1975, Ser. No. 607,120

Int. Cl.^{2} G01L *7/16*

U.S. Cl. 73—419 **9 Claims**



1. A compression tester for measuring the compression pressure in a cylinder comprising:

- a casing containing a cylinder connected by a passage to the pressure to be measured;
- a piston in said cylinder movable against a spring in response to pressure in said passage;
- a piston rod rigidly connected to said piston and a rack gear rigidly connected to said piston rod;
- guide means rigid with said casing;
- means rigid with said piston rod and guided by said guide means for guiding the movement of said rack gear;
- a rotatably supported dial means having an axial projection comprising a pinion gear in mesh with said rack gear; and
- a stationary index means carried by said casing for coaction with said dial means to measure pressure.

3,979,961
METHOD AND APPARATUS FOR PROPELLING AN OBJECT BY AN UNBALANCED CENTRIFUGAL FORCE WITH CONTINUOUS MOTION

Nicholas Joseph Schnur, 704 St. Agnes Lane, West Mifflin, Pa. 15122

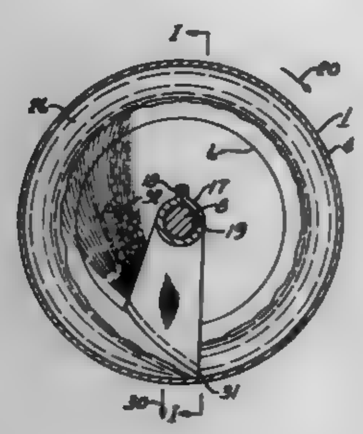
Filed Mar. 11, 1974, Ser. No. 450,060

Int. Cl.^{2} F16H *21/40*

U.S. Cl. 74—61 **9 Claims**

1. A continous motion propulsion apparatus comprising a moveable frame, annular channel means rotatably carried by said frame in a plane perpendicular to its axis of rotation about its center, a body of liquid contained within said channel means, drive means operable to rotate said channel means about its axis and thereby centrifugally distribute said liquid annularly therein, and deflection means positioned in said

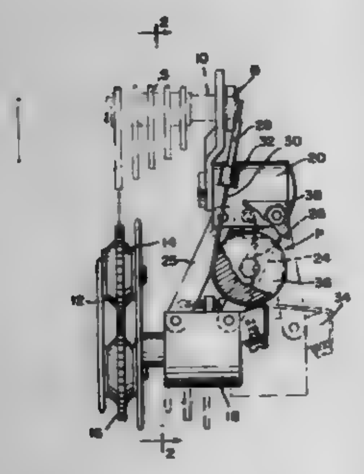
channel means to deflect said liquid contained therein inwardly at a predetermined position relative to an outside reference to create an unbalanced centrifugal force and thereby propel the apparatus with continuous motion.



3,979,962

BICYCLE GEAR SHIFT DERAILLEUR

Alex Kebsch, 8836 SE. 37th, Mercer Island, Wash. 98040
Filed Dec. 12, 1974, Ser. No. 531,908
Int. Cl.² F16H *7/22, 11/00*
U.S. Cl. 74—217 B 8 Claims



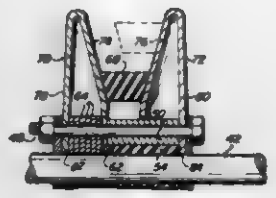
1. A derailleur mechanism for use with a free wheel of a bicycle for shifting a chain between sprockets of said free wheel, said mechanism comprising:

- a parallelogram having four pivotally interconnected links including a fixed link, an opposite link and two interlinks;
- means mounting said fixed link in said parallelogram in fixed position relative to the frame of said bicycle, each of said interlinks being connected to both said fixed link and said opposite link so as to enable said opposite link to move in a plane which is substantially parallel to the axis of the free wheel;
- guiding and tensioning sprockets supported by said opposite link for movement therewith;
- means for swinging said opposite link including a cable coupled to said parallelogram for swinging said opposite link in said plane; and
- guide means stationary with respect to said fixed link and having a curved cable engaging surface positioned adjacent said opposite link for guiding the cable into a path parallel to said opposite link thereby providing a substantially equal relationship between movement of the cable and movement of said opposite link.

3,979,963

ADJUSTABLE V BELT PULLEY

Adam D. Goettl, P.O. Box 1036, Phoenix, Ariz. 85016
Filed June 9, 1975, Ser. No. 585,390
Int. Cl.² F16H *55/52, 55/54, 55/49*
U.S. Cl. 74—230.3 6 Claims

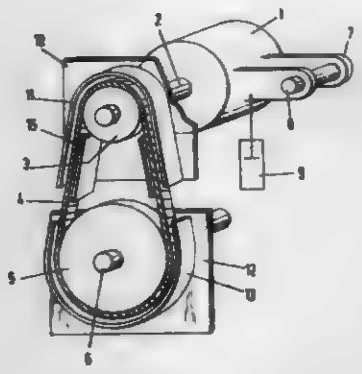


1. An adjustable V belt pulley comprising a pair of circular sheave members each having a concentric shaft receiving opening therein; each sheave member having an annular belt engaging face; said faces of said pair diverging from each other in a direction radially outward away from said shaft receiving openings; said sheave members having hub portions surrounding said shaft receiving openings; said hub portions having bolt receiving openings disposed in axially parallel relation to said shaft receiving openings; said hub portions having inner sides facing each other and having outer sides opposed to said inner sides; a sleeve secured between said hub portions; said sleeve having a bore of larger diameter than said shaft receiving openings; a resiliently compressible bushing in said bore; said bushing having a concentric bore substantially equal in diameter to said shaft receiving opening; a compression ring disposed in said bore and engaging one end of said compressible bushing; said sleeve having an end portion; said compression ring extending beyond said end portion when said compression ring is abuted to said compressible bushing; and bolts in said bolt receiving opening and adapted when tightened to force said hub portions together and to thereby force said compression ring to compress said compressible bushing around a shaft extending through said shaft receiving openings to thereby frictionally lock said sheave members on a shaft.

3,979,964

POWER TRANSMISSION DEVICES

Derek D. McCordall, Dunstable, England, assignor to Neil and Spencer Limited, England
Filed Apr. 21, 1975, Ser. No. 569,593
Claims priority, application United Kingdom, Apr. 27, 1974, 18555/74; Sept. 17, 1974, 40336/74
Int. Cl.² F16H *7/08, 7/12, 7/10*
U.S. Cl. 74—242.8 9 Claims

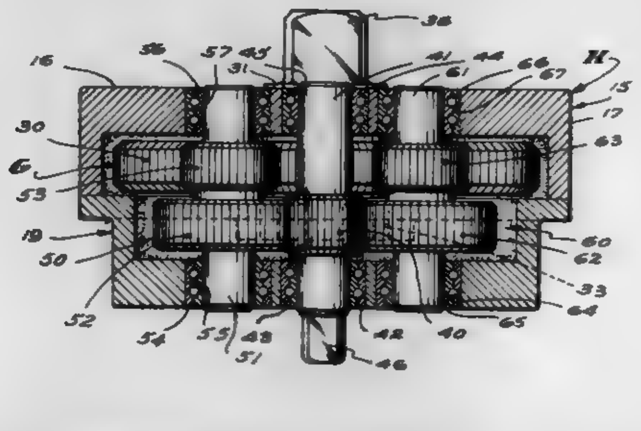


1. A drive system comprising a first pulley operably connected to drive a second pulley by a continuous stiff belt having a driving face which is wrapped around both of said pulleys, means for causing the belt to slacken relatively to the pulleys, and guide means which is elongate in the direction of said belt, at least a part of said guide means being movable from a first position in which the belt is tight and power is transmitted by the drive system, to a second position in which the belt is slack and power transmission is thus interrupted, the elongate guide means being adapted to bear upon at least one length of that face of the slackened belt generally opposed to the driving face, thereby shaping the slackened belt to prevent all contact, and consequently any frictional drag, of the slackened belt with at least one of said pulleys.

3,979,965

TORQUE MULTIPLIER TOOL

Ivan N. Vuceta, San Gabriel, Calif., assignor to Consolidated Devices, Inc., City of Industry, Calif.
Filed June 11, 1975, Ser. No. 586,076
Int. Cl.² F16H *57/00, 37/06;* B25B *17/00*
U.S. Cl. 74—410 5 Claims



1. A torque multiplier tool comprising a body, spaced parallel input and output shafts rotatably carried by the body, reaction means engaged with and adapted to hold the body against rotation about the axis of either of said shafts, an input pinion in the body of the input shaft, an output gear in the body on the output shaft and spaced from the drive pinion, a pair of idler units including shafts rotatably carried by the body on axes parallel with the axes of the input and output shafts and in circumferential and radial outward spaced relationship from the peripheries of the input pinion and output gear, each unit having a driven gear engaged with the input pinion and a drive pinion engaging the output gear, the angles of the input pinion and output gear between their related driven gears and drive pinions including a number of whole teeth plus one-half of one tooth of the said input pinion and output gear.

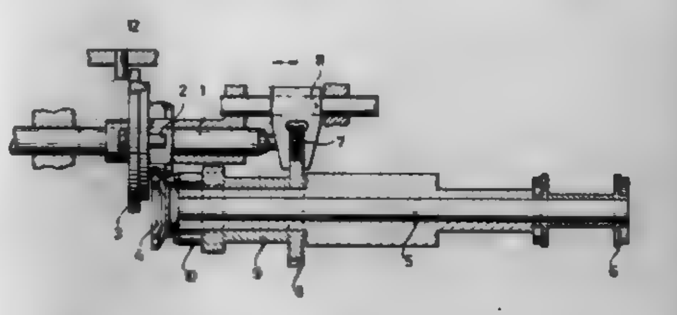
3,979,966

CLUTCH DEVICE FOR EITHER INTERMITTENT OR CONTINUOUS DRIVING OF PERFORATED FILM

Jan Jakob Kotte, Riethoven-Walik, Netherlands, assignor to Kinoton GmbH, Munich, Germany
Filed Aug. 4, 1975, Ser. No. 601,474
Claims priority, application Germany, Aug. 8, 1974, 2438282
Int. Cl.² F16H *55/04, 35/18, 27/04;* B23B *29/24*
U.S. Cl. 74—436 7 Claims

1. Clutch device for either intermittent or continuous driving of perforated information-bearing media in strip form, for example film in a cinematographic device, having a Geneva stop (Maltese cross) drive, the Geneva stop is connected via an output shaft to the sprocket engaging in the film perforations and is disengageable from the continuously rotarily driven pin disc producing intermittent drive with the clutch engaged, which disengagement is produced by axial displacement of either the Geneva stop or the pin disc, the combination comprising:

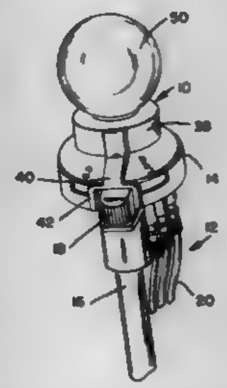
- a clutch plate running freely and being axially displaceable on the output shaft is driven continuously,
- clutch members formed at the clutch plate adjacent to the Geneva stop in sufficient distance from said Geneva stop but suitably projecting for engaging in the slots or recesses in the Geneva stop simultaneously with the clutch-engagement-interrupting displacing motion at a position of the Geneva stop which corresponds to the frame standstill.



3,979,967

SHIFT CONTROL DEVICE

Jesse Lee Dunlap, Fresno, Calif., assignor to California Traders, Fresno, Calif.
Filed July 30, 1975, Ser. No. 600,468
Int. Cl.² G05G *1/12, 5/02, 9/12*
U.S. Cl. 74—475 10 Claims



1. A manual shift control device adapted for installation on a control head having a lever movable to a plurality of control positions, said control device comprising:

- a central pin means adapted to be fixed to and extend upwardly from said control head;
- a sleeve member having a central bore forming a slidable fit with said pin means;
- a knob fixed to said sleeve member;
- means attached to and extending radially outwardly from said sleeve member and having means adapted to connect with said movable lever;
- means interconnecting said sleeve member and said pin means for controlling the limits and direction of movement of said knob and thus the movement of said lever to preselected positions.

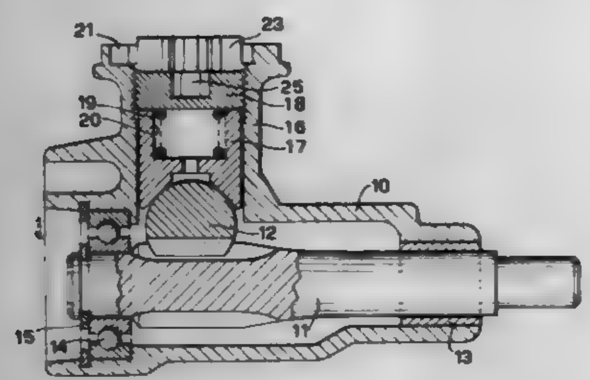
3,979,968

SLACK ADJUSTMENT AND TAKE-UP DEVICE FOR KINEMATIC COUPLINGS OF THE RACK AND PINION TYPE

Vittorio Ceccherini, Milan, Italy, assignor to Industria Napoletana Costruzione Autoveicoli Alfa Romeo Alfasud S.p.A., Naples, Italy
Filed May 21, 1975, Ser. No. 579,595
Claims priority, application Italy, June 11, 1974, 23864/74
Int. Cl.² B62D *1/20;* F16H *55/18, 1/04*
U.S. Cl. 74—498 4 Claims

1. Slack adjustment and take-up device for kinematic couplings of the rack and pinion type, and in particular for the

steering box of motor vehicles, in which a rotatably supported pinion engages with a rack guided in a translatory manner in the box, comprising a threaded member screwed into the box to thrust the rack on to the pinion, and provided with circumferential markings which form a vernier system with corresponding markings on the box, said vernier system consisting of a crown comprising notches, provided upperly on the threaded member, and a collar provided at the adjacent zone on the box and comprising a number of notches one greater than the number of notches on the crown.



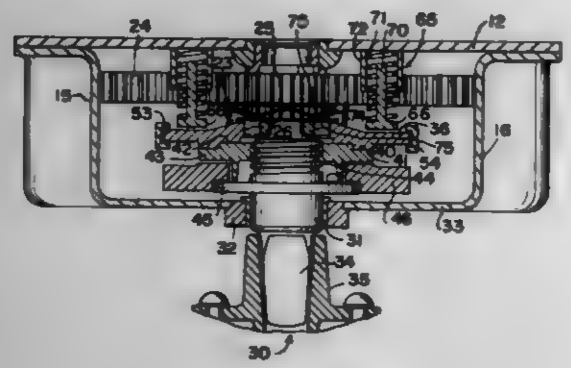
3,979,969
CONTROLLED RELEASE MECHANISM FOR RAILWAY HAND BRAKE

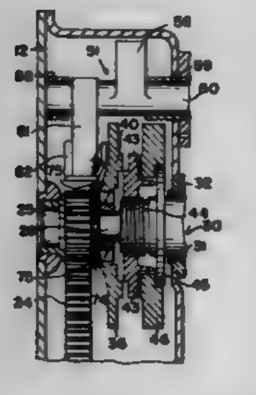
Raymond A. O'Brien, Forest Park, Ill., assignor to Cleveland Hardware & Forging Co., Cleveland, Ohio

Filed Aug. 26, 1974, Ser. No. 500,728

Int. Cl.² G05G *1/08*

U.S. Cl. 74—505 **5 Claims**





1. In a railway car hand brake mechanism including in combination; a housing, a chain winding drum and a main gear wheel rotatably mounted on said housing, a hand wheel shaft rotatably bearingly mounted on said housing substantially centrally and at one end of said shaft and having a hand wheel receiving section at the other end externally of said housing, a ratchet wheel intermediate the ends of said shaft and rotatable therewith, a pawl in said housing cooperating with said ratchet wheel to hold it against reverse rotation, a pinion freely rotatable on said shaft and engaging said main gear wheel and having a radially extending flange rotatable conjointly therewith, a disengageable driving connection between said flange and said ratchet wheel, a trip cam rotatably mounted in said housing, tripbar means operable by said trip cam for cooperating with said flange for moving it to disengage said driving connection and permit said pinion to rotate freely to release said main gear for rotation in a brake releasing direction accompanied by release of said chain winding drum and a chain wound thereon, and an improvement comprising energy absorbing means for slowing the rotation of said radially extending flange when said brake mechanism is released by rotation of said trip cam.

3,979,970
APPARATUS CAPABLE OF BEING AUTOMATICALLY UNCOUPLED FOR THE MANUAL OPERATION OF A ROTARY SHAFT, IN PARTICULAR A VALVE ACTUATING SHAFT

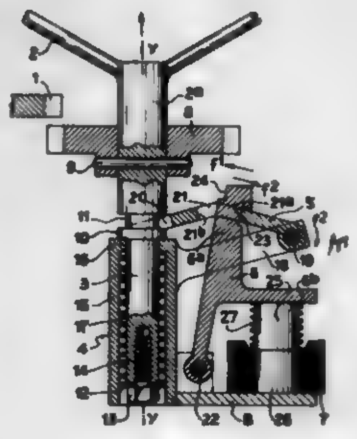
Michel Gabriel, Pont-a-Mousson, and Claude Maeder, Nancy, both of France, assignors to Pont-A-Mousson S.A., Nancy, France

Filed June 11, 1975, Ser. No. 585,892

Claims priority, application France, July 4, 1974, 74.23248

Int. Cl.² F16H *35/00*

U.S. Cl. 74—625 **7 Claims**



1. An apparatus capable of being automatically uncoupled for manually operating a rotary shaft, in particular a valve actuating shaft, which is connected to rotate with a first gear and is also operable by an electric, pneumatic or hydraulic drive device, said apparatus comprising a support, a rod mounted in the support, an operating handwheel and a second gear connected to rotate with the rod, the rod being axially movable relative to the support between a first position for coupling the apparatus in which the two gears interengage, and a second position for uncoupling the apparatus in which the two gears are disengaged from each other, elastically yieldable return means for biasing the rod to the second position, a first arm pivotably mounted relative to the support and having an end connected to move in translation with the rod as the arm pivots, a second arm pivotably mounted relative to the support and pivotable between a first position and a second position and combined with the first arm for locking the first arm respectively in the second position and first position of the first arm, and means responsive to said drive device and combined with the second arm for moving the second arm to its first position and second position when said drive device is put in action and out of action respectively.

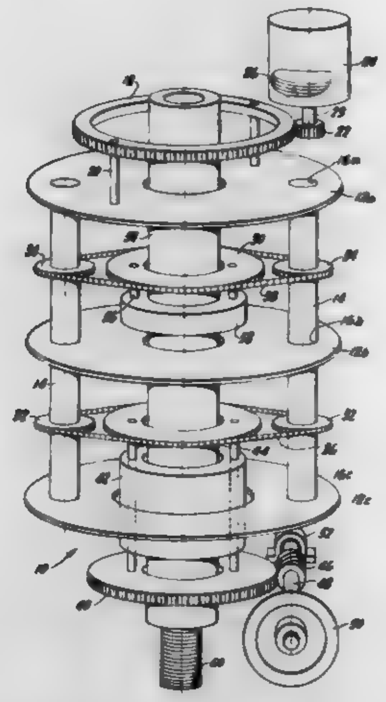
3,979,971
DIFFERENTIAL DRIVE

William A. Generke, and Hugh W. O'Connor, both of Scituate, Mass., assignors to Hills-McCanna Company, Carpentersville, Ill.

Filed Mar. 3, 1975, Ser. No. 554,688

Int. Cl.² F16H *33/00*

U.S. Cl. 74—626 **6 Claims**



1. A differential drive comprising:
a rotary input member rotatable about an axis;
a planetary shaft on said input member displaced from and parallel to said axis;
first and second planetary wheels rotatable together on said shaft;
first and second complementary wheels on said axis;
first and second motion transmitting means between said first planetary and complementary wheels and between said second planetary and complementary wheels, respectively;
said second complementary wheel being adapted to deliver a rotary output;
the rotary drive ratio between said first planetary and complementary wheels being nearly equal to but slightly different than that between said second planetary and complementary wheels;
first drive means for rotating said input member;
means locking said first drive means when not in operation; and
second drive means for rotating said first complementary wheel comprising:
a worm gear fixed to said first complementary wheel; and
a worm rotatably carried in stationary bearings to lock said worm gear when idle.

3,979,972
HYDROMECHANICAL TRANSMISSION

Toshimitsu Sakai, and Takayuki Miyao, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisin Seiki Kabushiki Kaisha, Kariya, both of Japan

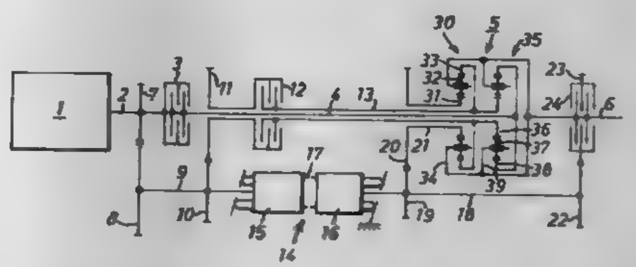
Filed Jan. 31, 1975, Ser. No. 545,904

Claims priority, application Japan, Feb. 6, 1974, 49-14442

Int. Cl.² F16H *47/04*

U.S. Cl. 74—687 **12 Claims**

1. A hydromechanical transmission comprising:
a transmission input shaft;
an output shaft;
a hydraulically controlled differential gear unit including a first planetary gear set drivingly connected to said output shaft for providing a low speed range drive power train between said input and output shafts and a second planetary gear set drivingly connected to said output shaft for providing a high speed range drive power train between said input and output shafts;
a first clutch interposed between said input shaft and the input member of said first planetary gear set by way of a speed reduction gear train for selectively connecting said input shaft to said first planetary gear set;
a second clutch interposed between said input shaft and the input member of said second planetary gear set for directly connecting said input shaft to said second planetary gear set on engagement thereof; and



a variable ratio hydrostatic drive unit including a first variable positive displacement pump-motor drivingly connected to said input shaft and a second fixed positive displacement pump-motor drivingly connected with a reaction element for said first and second planetary gear sets, said first and second pump-motors being hydraulically connected to each other; whereby on engagement of said first clutch, rotation speed of said input shaft is reduced by said speed reduction gear train and transmitted to said first planetary gear set to control the speed ratio of said output shaft in response to the operation of said hydrostatic drive unit, and on engagement of said second clutch, rotation torque of said input shaft is directly transmitted to said second planetary gear set to control the speed ratio of said output shaft in response to the operation of said hydrostatic drive unit.

3,979,973
STARTING DEVICE FOR HEAVY VEHICLES

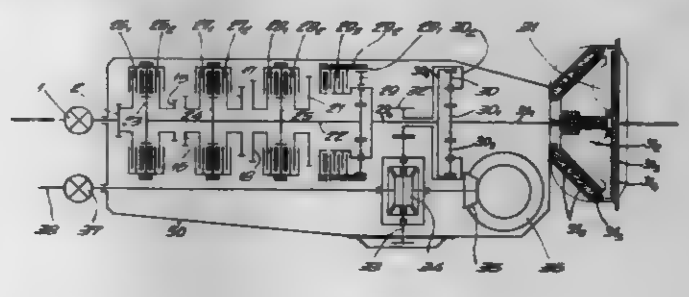
Hermann Klaue, 24, Tour D'Ivoire, 1820 Montreaux, Switzerland

Continuation-in-part of Ser. No. 202,773, Nov. 29, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 349,468

Claims priority, application Switzerland, Apr. 14, 1972, 5582/72; Nov. 30, 1972, 17469/72; Germany, Dec. 8, 1970, 2060337

Int. Cl.² F16H *37/00, 57/10*

U.S. Cl. 74—740 **9 Claims**



1. A vehicle comprising:
an engine comprising an engine-output shaft,
a transmission shiftable in steps by means of friction clutches and having an input shaft operatively connected to the engine-output shaft and an output shaft operatively connected to the driven wheels of the vehicle, the driving connections from the engine to the transmission and to the driven wheels defining a power transmission path,

a starting unit in said power transmission path comprising a planetary gear having at least three components, a first component, a third component located downstream from the first component, a third component located downstream from the first component in the power transmission path and a second component operatively engaged with at least one of the first and third components to effect drive between said first and third components,

a braking device having at least one braking member connected with saiad second component so as to either rotate therewith or hold it against rotation relative to a stationary structure, said braking member including at least one brake lamination and including brake rings with braking surfaces facing said brake lamination for the purpose of braking it, actuating means for actuating the braking device and coolant means for passing liquid coolant to the sides of the brake rings opposite from said braking surfaces so as to liquid cool the braking device,

and an actuating system for controlling operation of said braking device, said actuating system having means for providing a first mode of operation for holding the brake member fixed relative to the stationary structure so that power can be transmitted between said first and third components, and a second mode of operation for releasing the brake member relative to the stationary structure, and said actuating system including means for holding the brake lamination in sliding engagement with the braking surfaces of the brake rings during movement from the second mode to said first mode so as to suppress shocks produced during starting of the vehicle and shifting of the transmission,

said braking device being a hydraulically actuated brake having a pressure chamber and said brake laminations being movable axially under the pressure of fluid in the pressure chamber to engage the brake ring by means of pressure fluid in the pressure chamber, said actuating system comprising a hydraulic pressure line connected to said pressure chamber and maintaining a pressure therein during the first mode of operation so that the brake laminations are applied to the brake ring providing driving engagement between the first and third components to drive the wheel, said actuating system further comprising a pedal and a valve in said pressure line, which valve blocks the pressure line when the pedal is in operating position for said second mode of operation, relieving the pressure chamber so that the brake is released, and providing during the return movement of the pedal into inoperative position for starting operation the pressure chamber with increasing oil pressure via said valve providing said sliding braking of said brake laminations on said brake ring, and said actuating system further comprising a control means in said line and a lever with various positions corresponding to the speed ratios, the said control means being operable to briefly reduce the pressure in the pressure chamber during said first mode of operation when the lever is moved between the said two positions so that the brake is briefly released suppressing the shifting shocks.

3,979,974
PLANETARY TRANSMISSION

Noboru Murakami, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 420,842, Dec. 3, 1973, abandoned. This application July 21, 1975, Ser. No. 597,779

Claims priority, application Japan, Dec. 27, 1972, 48-2883; Dec. 27, 1972, 48-2884

Int. Cl.² B60K *41/18*

U.S. Cl. 74—759 **2 Claims**

1. In a planetary transmission having an input shaft and an output shaft, said transmission comprising:

a first intermediate shaft connected to said input shaft,

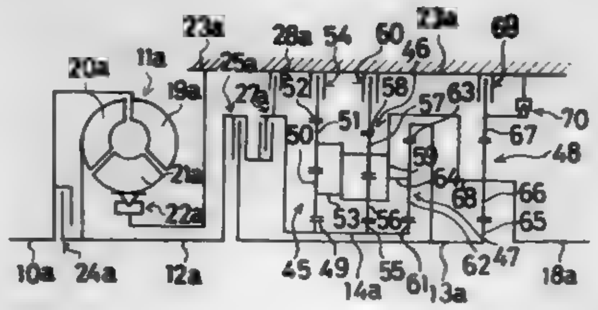
a second intermediate shaft,

a third intermediate shaft,

a first planetary gear set including a first sun gear rigidly connected to said third intermediate shaft, first pinions meshed with said first sun gear, second pinions meshed with said first pinions, a ring gear meshed with said second pinions, and a first carrier supporting said first and second pinions,

a second planetary gear set including a second sun gear rigidly connected to said third intermediate shaft, third pinions meshed with said second sun gear, a second ring gear meshed with said third pinions, and a second carrier carrying said third pinions and connected to said first carrier;

a third planetary gear set including a third sun gear secured to said second intermediate shaft and connected to said second ring gear, fourth pinions meshed with said third sun gear, a third ring gear meshed with said fourth pinions, and a third carrier carrying said fourth pinions and connected to said first and second carriers,



a fourth planetary gear set including a fourth sun gear secured to said third intermediate shaft, fifth pinions meshed with said fourth sun gear, sixth pinions meshed with said fifth pinions, a fourth ring gear meshed to said fifth pinions, and a fourth carrier carrying said fifth and sixth pinions, said fourth carrier being connected to said output shaft,

a first clutch positioned between said first and second intermediate shafts and for engaging therebetween during operation of first, second, third and fourth forward speeds;

a second clutch positioned between said first and third intermediate shafts and for engaging therebetween during operation of fourth forward and reverse speeds,

a first brake for anchoring said third intermediate shaft during operation of third forward speed;

a second brake for anchoring said ring gear of said first planetary gear set during operation of second forward speed;

a third brake for anchoring said ring gear of said third planetary gear set during operation of first forward and reverse speeds,.and

a fourth brake for anchoring said ring gear of said fourth planetary gear set.

3,979,975
INDEXING CLUTCH MECHANISM

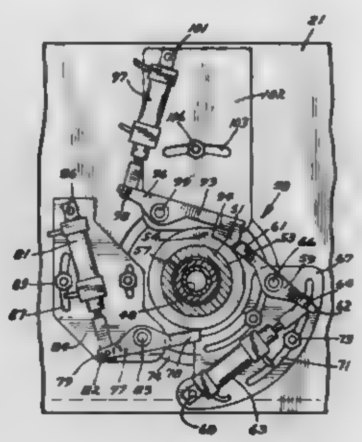
David A. Schulman, Hopkins, Minn., assignor to Possis Corporation, Minneapolis, Minn.

Filed July 2, 1975, Ser. No. 592,618

Int. Cl.² F16D *71/04*

U.S. Cl. 74—815 **46 Claims**

1. An apparatus for indexing an armature comprising: a clutch mechanism, drive means for transmitting power to the clutch mechanism, means for holding an armature in a selected rotational position, power transmitting means drivably connecting the clutch mechanism to the means for holding the armature whereby operation of the clutch mechanism will rotate the armature to a selected position, said clutch mechanism having a control member which can be held in selected fixed positions to release the drive of the clutch mechanism to thereby hold the armature in selected positions, actuator means movable to a first position into engagement with the control member to hold the control member in selected fixed positions and movable to a second position out of engagement with the control member whereby the clutch mechanism transmits power from the drive means to the power transmitting means, support means for supporting the actuator means, said support means being movable to selected adjusted positions, and means for adjusting the position of the support means relative to the control member to adjust the location of the actuator means relative to the control member thereby adjusting the selected fixed position in which the control member is held.



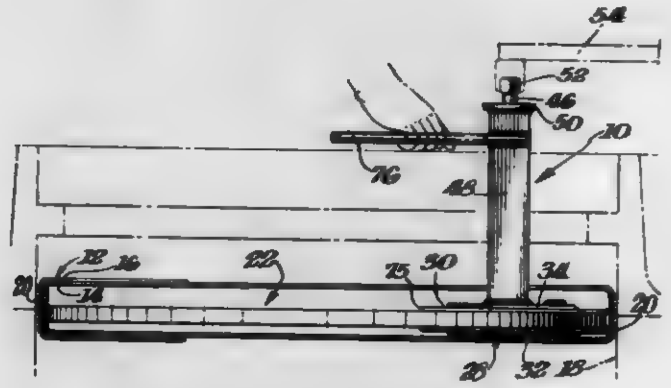
3,979,976
RING EXPANDER DEVICE

Samuel A. Campagna, Jr., Deptford, N.J., and Benjamin J. Campagna, Newark, Del., assignors to Benjamin J. Campagna, Newark, Del.

Filed Oct. 22, 1975, Ser. No. 624,948

Int. Cl.² B25B *13/54*

U.S. Cl. 81—3 R **10 Claims**



1. A device for expanding a ring-like support to increase the diameter thereof comprising a flexible expander band having overlapping end portions and forming a closed loop of variable diameter adapted to be positioned within a ring-like support to be expanded, motivating means fixed to one of the overlapping end portions of the flexible expander band and having a rotatable pinion gear, a gear rack associated with the other overlapping end portion of the flexible expander band for movement therewith and in meshing engagement with the rotatable pinion gear whereby rotation of the pinion gear shifts the overlapping end portions of the flexible expander band relative to one another to increase the diameter of the closed loop formed thereby.

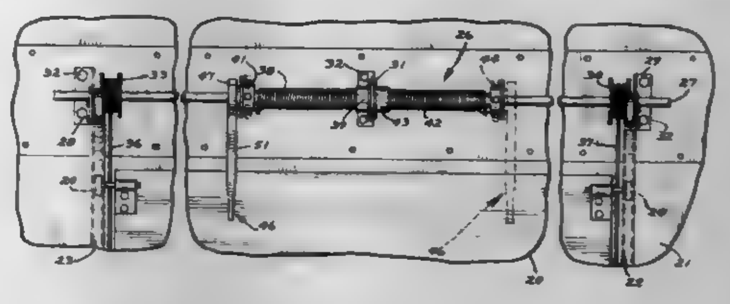
3,979,977
POWER TOOL

Edward Dorma, 4333 Grimes Ave. N., Minneapolis, Minn. 55422

Filed June 16, 1975, Ser. No. 587,422

Int. Cl.² B25B *17/00*

U.S. Cl. 81—57.13 **36 Claims**



1. An apparatus for applying rotational force to an object comprising: a casing, a rotatable drive member mounted on the casing, said drive member having a slot with an open end for accommodating a part, power transmitting means mounted on the casing for rotating the drive member, said power transmitting means adapted to be connected to a motor whereby on operation of the motor the power transmitting means rotates the drive member, and means connecting the drive member to the object whereby the object is rotated with the drive member, said means connecting the drive member to the object comprising a disc having a slot with an open end to accommodate a part, fastening means securing the disc to the drive member and locating the slot in the disc in side-by-side alignment with the slot in the drive member, and means mounted on the disc engageable with the object whereby rotation of the disc by the drive member will rotate the object.

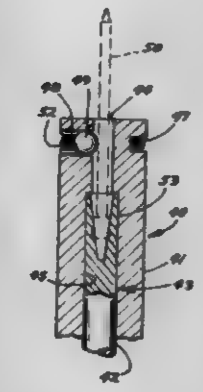
3,979,978
NAIL SETTING TOOL

Robert A. Smolik, 670 W. 7th St., St. Paul, Minn. 55102

Continuation-in-part of Ser. No. 470,013, May 15, 1974, abandoned. This application June 30, 1975, Ser. No. 591,518

Int. Cl.² B25B *13/04*

U.S. Cl. 81—120 **19 Claims**



1. A nail setting apparatus for the setting in a surface of a nail by rotating advancement of the nail of the type having a head at one end and a shank pointed at the opposite end, said nail setting apparatus including:

an electric powered hand drill having a rotatable jaw assembly and an electric motor connected to said jaw assembly for rapid rotation of the jaw assembly, said jaw assembly having a plurality of jaws movable toward each other to securely engage a shaft;

a tool body portion;

shaft means connected to and extending rearward from the body portion and engaged by the jaws of said drill for coaxial rotation of the jaws and the shaft means and the tool body portion;

said tool body portion defining an elongated cylindrical forward axial bore coaxial with the axis of rotation of the jaws and body portion and extending from the interior of the body portion to the forward end thereof;

gripping means located adjacent the interior end of said forward axial bore adapted to releasably grip the head of a nail and cause rotation of the nail with the tool body portion;

guide means on said body portion rotatable with said body portion and proximate the forward end thereof spaced from the gripping means sufficiently to linearly align said nail shank with the axis of rotation of the jaws and body portion;

said guide means including three radial bores intersecting said axial bore forward of the gripping means, three spherical balls, one spherical ball being located in each radial bore, and means to bias the spherical balls inward toward said axial bore to engage a portion of the shank of a nail when located in said axial bore whereby rapid rotation of said jaw assembly and manual pressure exerted on said hand drill is operative to advance a nail part way into a surface.

3,979,979

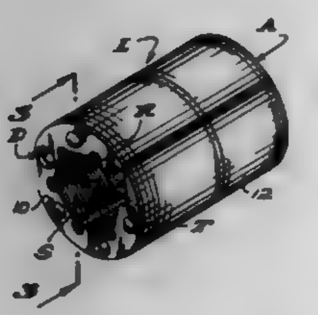
DRIVE SOCKET

Bosko Grabovac, Mission Viejo, Calif., assignor to Consolidated Devices, Inc., City of Industry, Calif.

Filed Nov. 7, 1975, Ser. No. 629,804

Int. Cl.² B25B *13/06;* B21K *5/16*

U.S. Cl. 81—121 R **9 Claims**



1. An elongate drive socket with front and rear end portions defining substantially axially forwardly and rearwardly disposed front and rear ends, said front end portion defining an elongate, central, forwardly opening central work receiving polygonal socket and said rear end portion defining an elongate, central, rearwardly opening drive tool receiving polygonal opening, said drive socket defined by a multiplicity of substantially flat radially extending laminates of sheet metal stock in intimate juxtaposition, said laminates having a plurality of axially aligned registering openings in radial and circumferential spaced relationship about the axis of the drive socket, elongate tie members engaged through said registering openings and having means at their ends in stopped engagement with the front and rear ends of the drive socket, the laminates defining the front and rear portions of the drive socket having central polygonal openings corresponding in configuration with the cross-section of the work receiving polygonal socket and drive tool receiving polygonal opening in their related portions of the drive socket.

3,979,980

APPARATUS AND PROCESS FOR PROTECTING MACHINERY

Robert E. Biester, Elmhurst, and Eugene T. Balciunas, Chicago, both of Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed Mar. 10, 1975, Ser. No. 556,769

Int. Cl.² B26D *5/28*

U.S. Cl. 83—13 **17 Claims**

1. An apparatus for protecting automatically a cyclical machine from damage due to jamming, the machine having an input for unprocessed stock and at least one output for processed stock comprising:

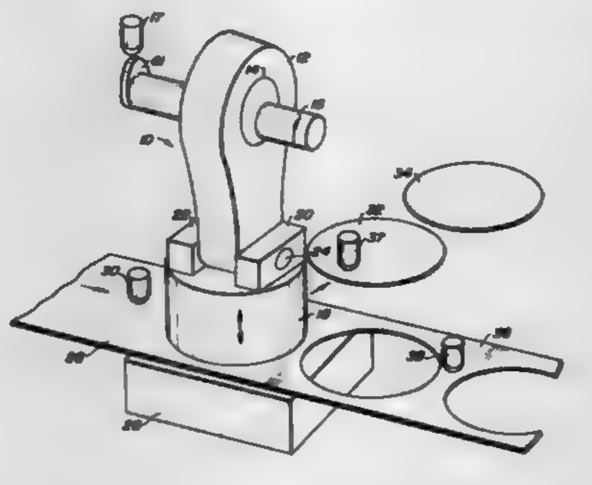
an input sensor which detects the presence of the unprocessed stock and generates a first electrical impulse in response thereto;

an output sensor which detects the presence of the processed stock and generates a second electrical impulse in response thereto;

timing means to coordinate the comparison of the first and second electrical impulses with the cycles of the machine;

means for comparing the first and second electrical impulses for a given piece of stock to determine that it is continuously moving through the machine and that the machine has not jammed, the means for comparing being operatively connected to the input sensor, output sensor and timing means;

means for stopping the machine if the means for comparing does not generate a proper signal, the means for stopping being operatively connected to the means for comparing.



13. A process for protecting automatically a cyclical machine which processes unprocessed stock having an input of unprocessed stock and at least one output of processed stock comprising:

sensing the presence of the unprocessed stock before entering the machine with a first sensor;

generating a first signal if stock is present;

storing the first signal in a memory;

monitoring the machine cycle;

sensing the presence of stock after it has been processed with a second sensor;

generating a second signal from the second sensor after a predetermined number of cycles;

comparing the signals from the first sensor and second sensor to determine the presence of input stock and processed stock in order to determine that stock is continuously moving through the machine and the machine has not jammed;

stopping the machine if the proper electrical impulses are not generated by the first and second sensor.

3,979,981

CRYOGENIC SHEARING OF METAL

John Bernard Lightstone, White Plains, N.Y., and Richard Benedict Mazzarella, Indianapolis, Ind., assignors to Union Carbide Corporation, New York, N.Y.

Filed May 20, 1974, Ser. No. 471,477

Int. Cl.² B26D *7/08*

U.S. Cl. 83—15 **2 Claims**

1. A process for shearing a steel workpiece of sheet or round bar stock having a body centered cubic crystallographic structure comprising the steps of:

a. cooling the workpiece to a temperature below minus 70°C; and

b. applying a shearing force to the cooled workpiece by positioning two blades on opposite sides of the surface of the workpiece with the cutting edges of the blades opposite to each other and perpendicular to the surface, said cutting edges having sufficient clearance between them so that the cutting edges will not meet, and moving at least one blade toward the other blade at such a rate to meet and shear the workpiece and cause adiabatic heating at the point of shear in the workpiece.

3,979,982

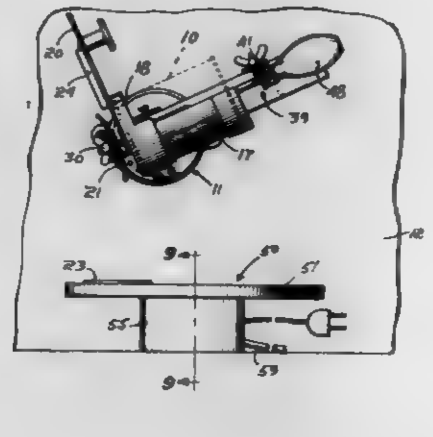
APPARATUS FOR SLICING AND DISPENSING JELLIED FOOD PRODUCTS FROM CANS AND COLLECTING THE DISPENSED SLICES

Lawrence S. Cole, High St., North Carver, Mass. 02355

Filed Sept. 23, 1974, Ser. No. 508,144

Int. Cl.² B26D *4/38*

U.S. Cl. 83—150 **20 Claims**



1. Apparatus for dispensing jellied products from a can in substantially uniform servings, said apparatus comprising a support, a holder for a can that has been opened at one end, said holder secured to said support and operable to hold that can in an inclined position, open end downwardly disposed, a stop, means connecting said stop to said support with the stop spaced from the open end of the can in a position to be engaged by the exposed end of the jellied body as it slides forwardly relative to the can, and a cutter connected to said support and movable across the open end of the can between it and the stop between a first position in which the path of the sliding jelly body is not blocked into a position in which said path is blocked and the exposed end of the body is sliced free, said stop connecting means disposed to provide between the stop and the open end of the can, a downwardly opening passageway for slices.

3,979,983

WORKPIECE-HANDLING APPARATUS

Dennis Daniels, Bellevue, Wash., assignor to U.S. Amada, Ltd., City of Industry, Calif.

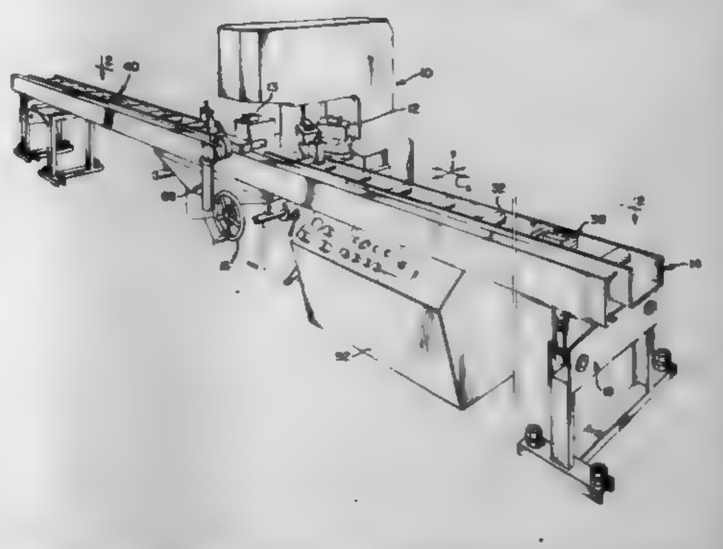
Filed June 5, 1974, Ser. No. 476,374

Int. Cl.² B26D *7/06*

U.S. Cl. 83—277 **6 Claims**

1. In an ironworker, punch press or similar apparatus which requires handling elongated structural members and having an operating station, a tool at said operating station and workpiece support means operable to support a workpiece, such as an angle, I-bar, plate, etc., at said operating station, the improvement comprising:

workpiece-positioning means on said workpiece support means, said positioning means including workpiece holding means, and gauging means for moving said holding means for accurately positioning the workpiece at the operating station, said gauging means including a flexible, relatively inelastic belt having teeth substantially evenly spaced along the length thereof, means connecting the workpiece holding means to said belt for movement therewith, and means for moving said belt lengthwise for moving said workpiece-handling means toward and away from said operating station.



3,979,984

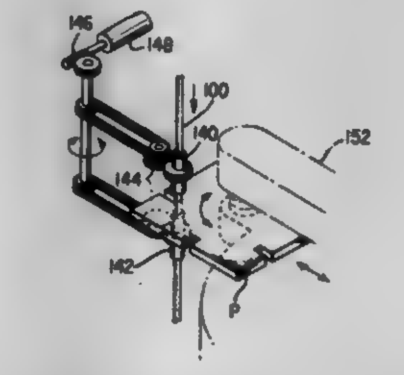
CONTOURING APPARATUS

Dennis Daniels, Bellevue, Wash., assignor to U.S. Amada, Ltd., City of Industry, Calif.

Division of Ser. No. 386,064, Aug. 6, 1973, which is a continuation-in-part of Ser. No. 359,983, May 14, 1973. This application Nov. 14, 1974, Ser. No. 523,667

Int. Cl.² B27B *13/04*

U.S. Cl. 83—410 **11 Claims**



5. Band saw cutting apparatus having an endless blade with a cutting edge having a length passing through a cutting location, guide means for supporting said cutting edge at said cutting location, powered means for pivoting said cutting edge about a pivot axis that is in lengthwise alignment with the length of the blade cutting edge at its cutting location and powered means for positioning a worksheet relative to said cutting edge, said worksheet positioning means including means for simultaneously rotating and linearly moving said worksheet in a plane perpendicular to said cutting edge.

3,979,985

SHEET TRANSFER BETWEEN A TURRET PUNCH PRESS AND AN ADJACENT APPARATUS

Dennis Daniels, Bellevue, Wash., assignor to U.S. Amada, Ltd., City of Industry, Calif.

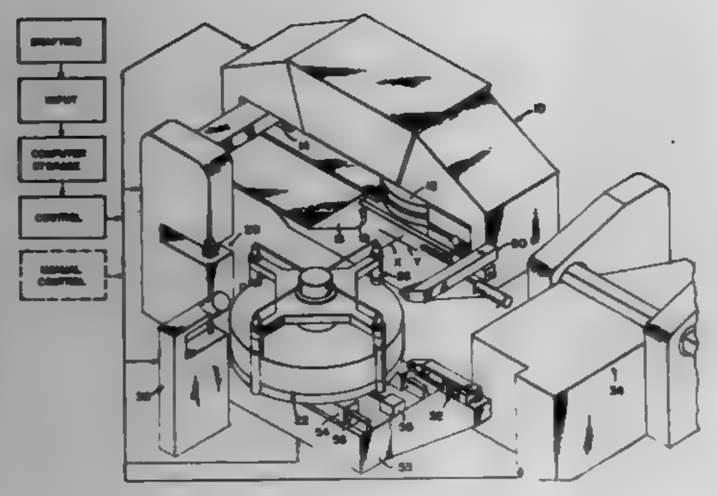
Division of Ser. No. 386,064, Aug. 6, 1973, which is a continuation-in-part of Ser. No. 359,938, May 14, 1973, abandoned. This application Feb. 18, 1975, Ser. No. 550,440

Int. Cl.² B26D *9/00;* B65H *35/00*

U.S. Cl. 83—410 **12 Claims**

1. A transfer mechanism for accurately removing a sheet material part from a punch press, of the type having a plurality of tools with the worksheet movable beneath said tools in X and Y horizontal mutually perpendicular axes and worksheet positioning means for moving a worksheet along the X and Y

axes, and for positioning the part accurately in a part holder of an adjacent apparatus, comprising arm means having a part clamping member at one end, said part clamping member including means for directly engaging the sheet material part, support means pivotally mounting said arm means, powered means for positioning the part clamping member in a first direction relative to the part and along the Y axis a distance in direct correlation with the location of the punch press worksheet positioning means in the same Y axis, means for rotating the arm after clamping the part to align the clamping member with said part holder, means for linearly translating the part holder of the adjacent apparatus toward and away from said part clamping member when said clamping member is rotated from said punch press to position the part in a second direction in the part holder, and control means for so positioning the part holder relative to said clamping member in the second direction according to the dimension of the part in the second direction to exactly position the part in the part holder in a desired orientation and location.



3,979,986

DEVICE FOR DIVIDING RECTANGULAR BARS SINGLY AND IN MULTIPLES PRODUCED IN PARTICULAR BY DIVIDING RECTANGULAR BLOCKS ESPECIALLY OF DEEP FROZEN FISH

Heinz Nienstedt, Zum Nonnenberg 8a, 435 Recklinghausen, Germany

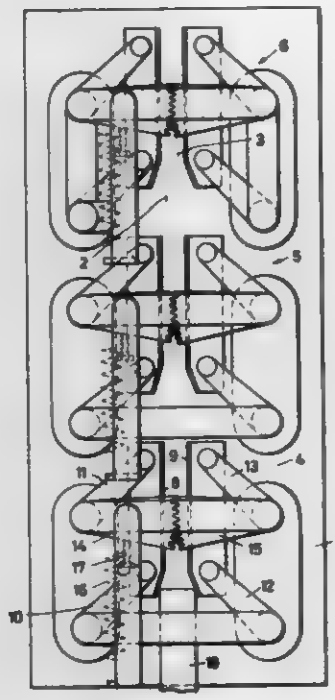
Filed Sept. 16, 1975, Ser. No. 613,910

Claims priority, application Germany, Sept. 16, 1974, 2444139

Int. Cl.² B26D *7/16*

U.S. Cl. 83—420 **5 Claims**

1. Device for dividing rectangular bars singly and in multiples produced by dividing rectangular blocks especially of deep-frozen fish, comprising a table with a laterally adjustable stop for the bars to be cut and at least one dividing element arranged at a lateral distance therefrom, in particular an endless saw blade, wherein a further lateral stop is positioned on the opposite side to the lateral stop under formation of a transit slot for the bar and that these two stops are coupled by a gear in such a way that they can be uniformly pressed apart against the force of a spring.



3,979,987

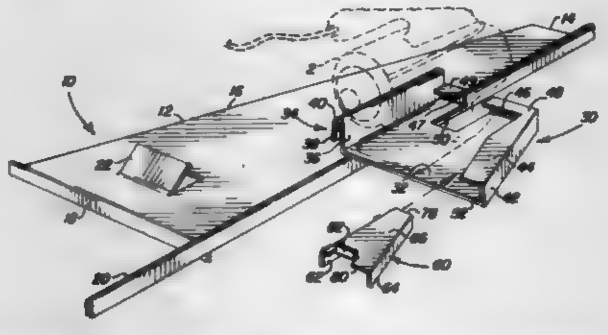
GUIDE SQUARE APPARATUS FOR POWER TOOLS HAVING A BLADE

Thomas H. Mayhew, 6255 E. Earll Drive, and Marvin G. Rice, 6614 E. Monte Rosa, both of Scottsdale, Ariz. 85251

Filed Feb. 18, 1975, Ser. No. 550,461

Int. Cl.² B27B *9/04*

U.S. Cl. 83—745 **11 Claims**



1. Guide apparatus for a power tool having a blade, comprising, in combination:
carrier shoe means for receiving the power tool, including
a platform on which the power tool is disposed,
a guide channel extending substantially perpendicular to the platform,
front wall means extending upwardly against which the power tool is disposed substantially perpendicular to the platform and to the guide channel,
a side wall extending upwardly substantially perpendicular to the platform and disposed at an obtuse angle to the front wall means, and including a flange extending inwardly from the side wall spaced apart from and generally parallel to the platform;
guide square means on which the carrier shoe means is movable, including
a base flange for aligning and orienting the guide square means,
a guide flange extending upwardly substantially perpendicular to the base flange and disposed in the guide channel of the carrier shoe means for guiding the carrier shoe means;
wedge means movable relative to the carrier shoe means and under the flange of the side wall of the carrier shoe means for securing the power tool to the carrier shoe means, including
a top having a front edge
a first side wall connected to the top and extending substantially perpendicular to the top and to the front edge of the top, and
a second side wall connected to the top and extending substantially parallel thereto, but disposed at an obtuse angle with respect to the front edge of the top.

3,979,988

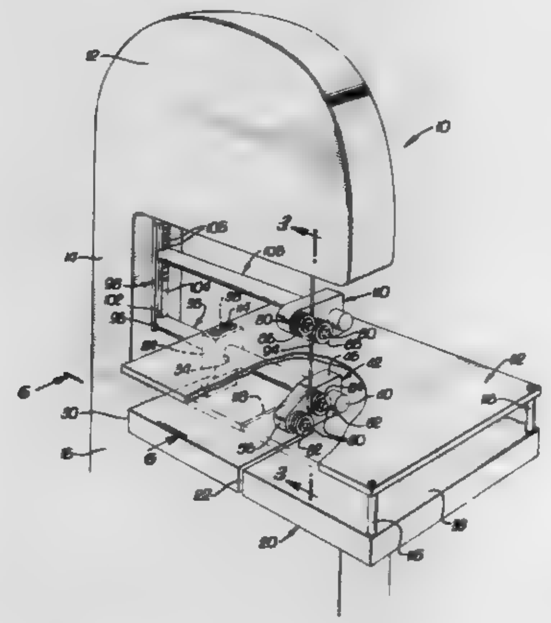
APPARATUS FOR CONVERTING A FLAT BLADE BAND SAW FOR USE WITH SPIRAL BLADES

Thomas Best, Los Angeles, Calif., assignor to Tyler Manufacturing Co., Hawthorne, Calif.

Filed June 2, 1975, Ser. No. 582,760

Int. Cl.² B27B *13/10*

U.S. Cl. 83—820 **11 Claims**



6. In a flat blade band saw, apparatus for converting the band saw for use with spiral blades, comprising:
vertically spaced upper and lower guide means for guiding a continuous spiral blade adjacent the cutting area in a band saw structure,
mounting means for securing said guide means to the band saw structure,
said mounting means including a frame member adapted to be secured to and above the band saw table to secure said mounting means thereto,
a lower supporting member supported by said frame member,
a lower guide means mounting block secured adjacent one end of said lower supporting member,
said lower guide means being secured to said lower block,
a spacing member secured adjacent the other end of said lower supporting member and extending upwardly therefrom,
an upper supporting member extending horizontally from said spacing member above said lower supporting member, and
an upper guide means mounting block secured adjacent one end of said upper supporting member,
said upper guide means being secured to said upper block above said lower guide means,
said upper and lower guide means being aligned to receive said spiral blade moving in a straight line between each guide means.

3,979,989

ELECTRONIC MUSICAL INSTRUMENT

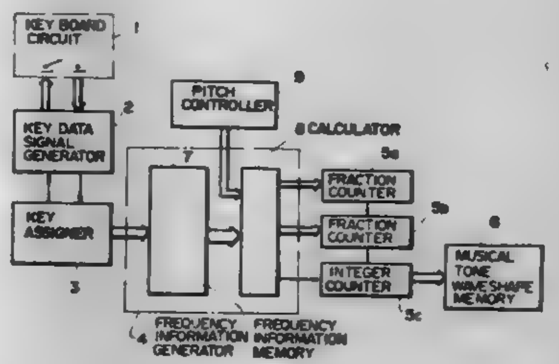
Norio Tomisawa, Hamamatsu; Yasuji Uchiyama, Hamakita; Takatoshi Okumura, and Toshio Takeda, both of Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed May 27, 1975, Ser. No. 581,184

Claims priority, application Japan, May 31, 1974, 49-61710; May 31, 1974, 49-61711

Int. Cl.² G04H *1/04*

U.S. Cl. 84—1.01 **5 Claims**



1. An electronic musical instrument for producing a musical tone in a modified scale comprising:
means for generating a key address code corresponding to a depressed key;
a frequency information memory for storing a plurality of first frequency information corresponding to a respective keys and producing, upon receipt of said key address code, frequency information corresponding to said key address code;
a pitch control section for generating second frequency information represented by a predetermined frequency information difference with respect to each of said first frequency information;
calculating means for calculating modified frequency information corresponding to a modified scale on the basis of said first frequency information produced from said frequency information memory and said second frequency information
a frequency counter for receiving and cumulatively counting the result of calculation by said calculating means; and
a musical tone waveshape memory for storing a desired musical tone waveshape which is read out by the output of said frequency counter.

3,979,990

KEYBOARD ARRANGEMENT IN ELECTRONIC MUSICAL INSTRUMENT

Yasuhiro Hinago, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed May 27, 1975, Ser. No. 580,758

Claims priority, application Japan, May 28, 1974, 49-61170[U]; May 28, 1974, 49-61171[U]

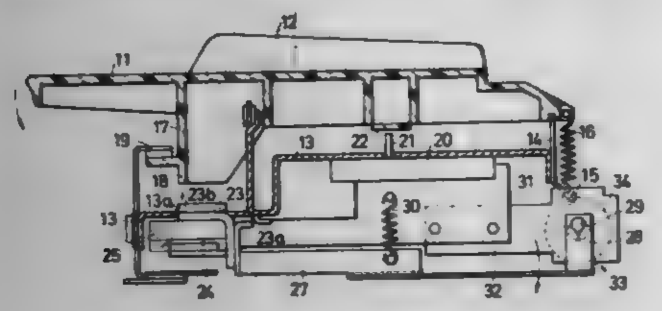
Int. Cl.² G10H *1/02*

U.S. Cl. 84—1.24 **9 Claims**

1. A keyboard arrangement for an electronic musical instrument, comprising:
a plurality of elongated keys pivotably supported and arranged in juxtaposed relationship,
each of said keys being movable at a predetermined distance,
movable means for provisionally limiting the movement of the key intermediate of said distance when the key is depressed with a smaller depressing force, said movable means being depressable along with the key when the key is further depressed with a larger force,

extension means extending along the elongated key, said extension means being secured to said movable means so as to be depressable therewith,

detecting means for detecting movement of said extension means and producing a control signal in accordance therewith, the key being provided with a pressing member



to effect the depression of said movable means, and said movable means for the key being pivoted near the pressing member so that the distance between the pivoted point of said movable means and the depressing point of said pressing member is shorter than the distance between the pivoted point of said movable means and a point where said detecting means is provided.

3,979,991
ELECTRONIC EXPRESSION DEVICE FOR PRODUCING TREMULANT EFFECT

Kinji Kawamoto, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 245,083, April 18, 1972, abandoned, which is a continuation of Ser. No. 826,190, May 20, 1969, abandoned. This application Aug. 17, 1973, Ser. No. 389,203

Claims priority, application Japan, May 22, 1968, 43-35253; May 23, 1968, 43-35352; May 23, 1968, 43-35353; May 23, 1968, 43-35354; June 19, 1968, 43-43040; June 19, 1968, 43-43042; June 19, 1968, 43-43043; June 25, 1968, 43-44724; Aug. 8, 1968, 43-56908; Oct. 21, 1968, 43-77562

Int. Cl.^{2} G10H *1/02*

U.S. Cl. 84—1.25 **8 Claims**

1. An electronic expression device for producing a tremulant effect comprising:

an input terminal to which an audio frequency signal is applied;

a distributing means;

a connecting means which connects said input terminal with said distributing means;

a plurality of transmission channels at least one of which has a modulation means therein for modulating the input signal of said transmission channels by a modulation signal, the frequency of which is in a sub-audio frequency range, and for modulating the input signal of said at least one of said plurality of transmission channels with a modulation depth increasing as the frequency of said audio frequency signal increases and exceeding ± π/2 radians, said modulation means being a phase shifter having a constant amplitude gain and a phase shift the rate of the increment of which increases with an increase in the frequency, said phase shift fluctuating in said sub-audio modulation frequency range for producing a phase modulation having a maximum phase deviation which increases with an increase in the frequency of the signal of said channels at least until it exceeds ± π/2 radians in the frequency range of said audio frequency signal;

a plurality of connecting means which connect said distributing means with said transmission channels; and

a coupling means coupled to said transmission channels for coupling output signals of said plurality of transmission channels with each other,

whereby said distributing means distributes said audio frequency signal to said plurality of transmission channels, said modulation means modulates by said modulation signal, at least one of the plurality of transmission channels puts out an output signal which is modulated differently from one other output signals of said plurality of transmission channels due to the modulation of said modulation means, and said coupling means couples the output signals from said plurality of transmission channels together in order to produce a final output signal, each vector of which fluctuates differently from the other vectors thereof and the pass-bands of at least two of said plurality of transmission channels coincide with each other at least partially.

3,979,992
BOWS FOR STRINGED INSTRUMENTS

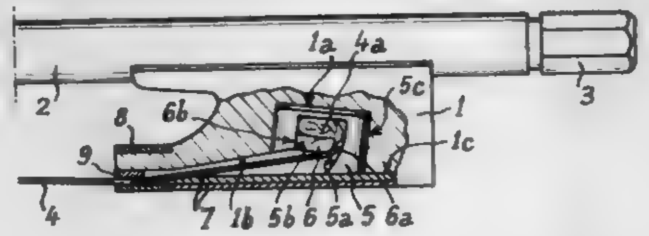
André Gandillet, Carmaux, France, assignor to C.A.T. Ary-France, France

Filed Apr. 22, 1975, Ser. No. 570,929

Claims priority, application France, Apr. 29, 1974, 74.15306

Int. Cl.^{2} G10D *1/02*

U.S. Cl. 84—282 **5 Claims**



1. A bow for a stringed musical instrument having a stick, a nut end and a head end, at least one of said nut end and said head end having a cavity opening out on the side opposite said stick, means for blocking the hair consisting of a molded element of such outer configuration that it fits within the walls of said cavity, said molded element having a housing and a stop in said housing, the stop having a rounded rear edge and being held within said housing by said rear edge and the opposite front edge, the hair being held between the internal rear facing of the housing of said molded element and the rear edge of said stop.

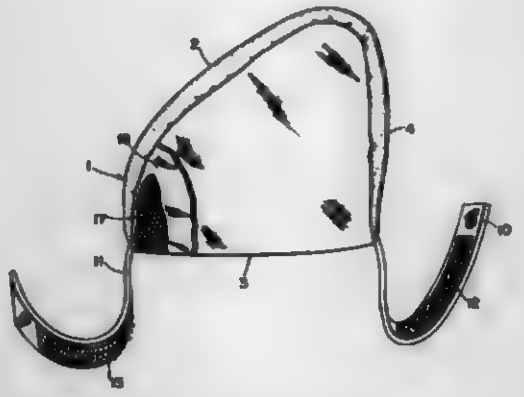
3,979,993
SUPPORT CUSHION FOR PLUCKED STRING INSTRUMENT

Alan Robert Proctor, 5039 No. 2 N. Capitol St., Washington, D.C. 20011

Filed Oct. 31, 1975, Ser. No. 627,783

Int. Cl.^{2} G10G *5/00*

U.S. Cl. 84—327 **11 Claims**



1. A cushion to be interposed between the curved underside of a plucked string instrument such as a guitar or lute and the thigh of the performer, said cushion having an oblique upper surface and being partially filled with a particulate material thereby to enable the instrument to be supported in the proper oblique position for classical playing, the partial filling of the particulate material enabling the oblique upper surface of the cushion to conform itself to that of the curved underside of the instrument and its bottom surface to similarly conform to the profile of the performer's thigh.

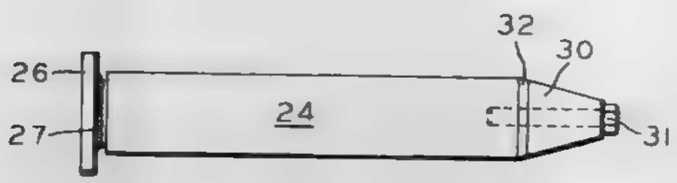
3,979,994
PIVOT PIN INCLUDING DETACHABLE PILOT SECTION

Gerard M. G. J. Collignon, Fleurus, Belgium, assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 23, 1975, Ser. No. 543,578

Int. Cl.^{2} F16B *19/02, 21/16;* **B25B** *27/14*

U.S. Cl. 85—5 N **3 Claims**



1. A self-centering combined pivot pin and tool for pivotally connecting a pair of working components of a machine together comprising a cylindrical body portion and a conically shaped self-centering means releasably attached to one end of said body portion by releasable fastening means, said self-centering means comprising a frustoconically-shaped member disposed on a centerline axis thereof and having a top and a base, said base disposed on the one end of said body portion and substantially coextensive therewith, said member extending outwardly from the one end of said body portion, with the top of said member lying in a plane substantially parallel relative to the base of said member and relative to the one end of said body portion and said releasable fastening means constituting a cap screw threadably attaching said member to the one end of said body portion, said cap screw inserted at the top of said member to threadably attach said member to said body portion via a bore axially disposed along the centerline axis of said member and said body portion.

3,979,995
SHELL CASING RESIZER

Welton E. Phillips, 1820 S. 11th Ave., Yuma, Ariz. 85364

Filed Feb. 21, 1975, Ser. No. 551,835

Int. Cl.^{2} F42B *33/10*

U.S. Cl. 86—36 **20 Claims**

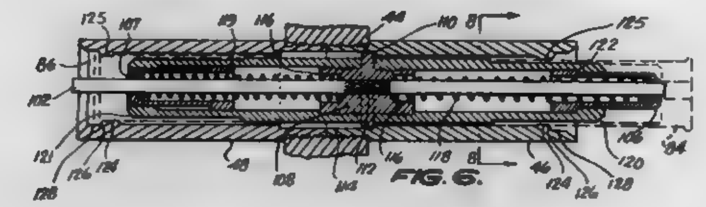


FIG. 6.

1. A machine for resizing used shell casings, which comprises:

a pair of oppositely disposed die means each of which receives a shell casing for resizing same;

manually operable press means for applying force to one of said shell casings to urge same past its associated die means; and

means further responsive to said force for automatically ejecting the other of said shell casings from the other of said die means.

3,979,996
ELECTRONIC MUSICAL INSTRUMENT

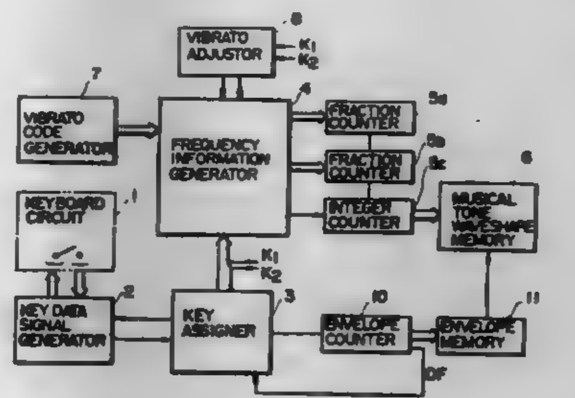
Norio Tomisawa, Hamamatsu; Yasuji Uchiyama, Hamakita; Takatoshi Okumura, and Toshio Takeda, both of Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed May 27, 1975, Ser. No. 581,186

Claims priority, application Japan, May 31, 1974, 49-61709; May 31, 1974, 49-61714

Int. Cl.^{2} G04H *1/04*

U.S. Cl. 84—1.25 **6 Claims**



1. An electronic musical instrument comprising:

means for generating a key address code representing the note and keyboard of a depressed key;

a freqeuncy information memory for producing, upon receipt of said key address code, basic frequency information corresponding to said key address code;

a vibrato code generator for counting a clock pulse used for providing a musical tone to be reproduced with a periodic frequency variation and producing a counting output as a vibrato code;

a vibrato information generator for producing an output in the form of a function representing the ratio of the frequency variation in response to the counting output of said vibrato code generator;

a multiplier for multiplying said output in the form of a function with said basic frequency information;

a counter for receiving and counting the result of multiplication by said multiplier; and

a musical tone waveshape memory for storing a desired musical tone waveshape which is read out by the output of said counter;

a vibrato effect being produced by frequency-modulating a predetermined pitch corresponding to the depressed key in accordance with the function represented by the output of said vibrato information.

3,979,997
FIREARM HAVING A SLIDE DAMPER AND ENERGY ABSORBER

Efim Leontievich Khaidurov, ulitsa Glagoleva, 25, korpus 2, kv. 138, Moscow, and Vladimir Alexandrovich Razorenov, ulitsa Ponomareva, 4-a, kv. 51, Minsk, both of U.S.S.R.

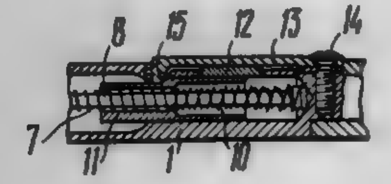
Filed Sept. 27, 1974, Ser. No. 510,018

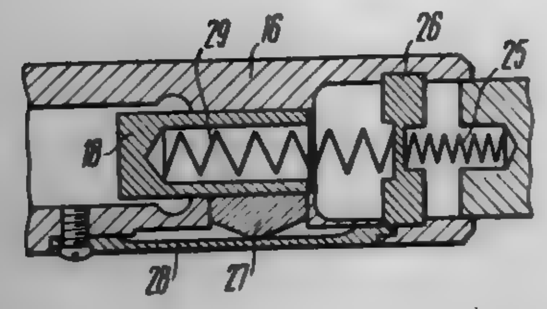
Int. Cl.^{2} F41D *11/12*

U.S. Cl. 89—198 **3 Claims**

1. A firearm comprising: a housing; a barrel supported by said housing and having a bore therethrough; a compensator forwardly of said barrel; a slide for locking said bore, mounted on said housing for reciprocation at the firing of the firearm; a firing and trigger mechanism mounted on said housing; a return spring disposed underneath and substantially parallel with said barrel, at the bottom portion of said housing, having one end thereof bearing against said housing, just behind said compensator, and the other end against said slide; a damper spring having one end thereof bearing against said housing and the other end arranged for cooperation with said slide at the firing; a part arranged intermediate of said slide and said

damper spring so that the cooperation of said slide and said damper spring is effected through said intermediate part; and means for biasing said intermediate part into permanent resilient contact with a portion of said housing in a direction transverse to the direction of the reciprocation of said slide;





said intermediate part being movable relative to said housing jointly with said slide, whereby part of the recoil energy of said slide is absorbed after the firing, and then part of the energy stored by said damper spring is absorbed when said slide performs its return motion.

3,979,998

HYDRAULIC ACTUATORS EQUIPPED WITH CUSHIONING MEANS

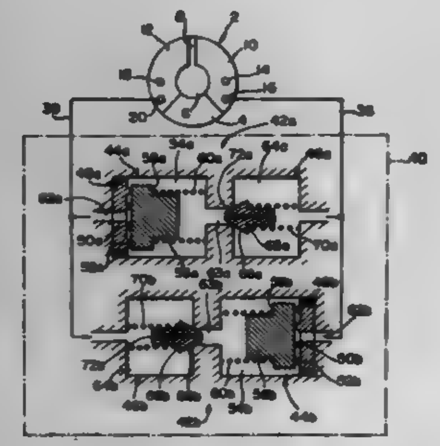
Hideo Wada, Fujisawa, Japan, assignor to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Sept. 27, 1974, Ser. No. 509,989

Claims priority, application Japan, Oct. 2, 1973, 48-110214

Int. Cl.² F15B *15/22*

U.S. Cl. 91—26 11 Claims



1. A hydraulic actuator comprising a main body, output means reciprocably disposed within said main body and first and second chambers defined by said output means within said main body, said first chamber having a first main port which is closed when said output means approaches one end of its stroke and a first cushioning port disposed so that it remains open after said first main port has been closed, said second chamber having a second main port which is closed when said output means approaches the other end of its stroke and a second cushioning port disposed so that it remains open after said second main port has been closed, and said first and second main ports being connected by control valve means to a source of pressurized fluid including a reservior, cushioning means for connecting said first cushioning port and said second cushioning port to each other independently of said control valve means, and said cushioning means comprise a first cracking valve responsive to open at a first predetermined pressure and is responsive to close at a second predetermined pressure lower than said first predetermined pressure, first restricting means including a relief valve whose rated pressure is lower than the first predetermined pressure, said first restricting means, in series with said first cracking valve means which restricts the flow of pressurized fluid from said first cushioning port to said second cushioning port while said first cracking valve is open, a second cracking valve responsive to open when the pressure on the side of said second cushioning port reaches said first predetermined pressure and is responsive to close at a pressure lower than said first predetermined pressure, and a second restricting means including a relief valve whose rated pressure is lower than the first predetermined pressure, said restricting means in series with the said second cracking valve which restricts the flow of the fluid from said second cushioning port to said first cushioning port while said second cracking valve is open.

3,979,999

FLUID CYLINDER HAVING SELF-LOCKING MEANS

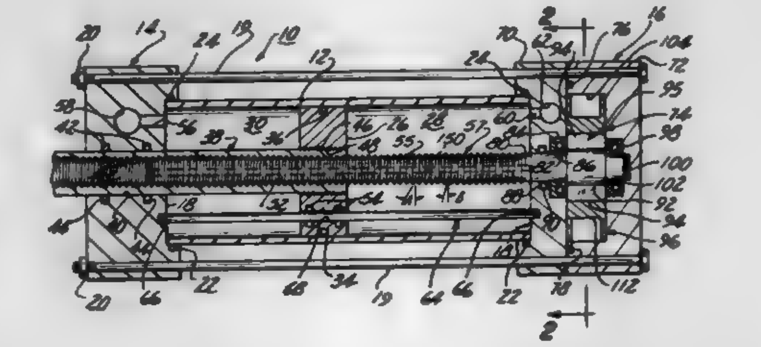
Richard G. Emenaker, Romeo, Mich., assignor to Harry S. Nichols, Jr., Troy and Karen (Emenaker) Powers, Leonard, both of, Mich., part interest to each

Division of Ser. No. 114,575, Feb. 11, 1971, Pat. No. 3,732,783. This application Oct. 30, 1972, Ser. No. 302,341

The portion of the term of this patent subsequent to May 15, 1990, has been disclaimed.

Int. Cl.² F15B *15/26*

U.S. Cl. 91—44 7 Claims



1. A fluid pressure operated actuator comprising:

a tubular housing having an internal bore enclosed at its opposite ends;

piston means axially reciprocally disposed in said tubular housing bore and dividing said bore into two pressure chambers;

means for communicating pressure fluid to one of said pressure chambers while exhausting the other of said pressure chambers to move said piston means in one direction in said tubular housing bore;

an actuating rod carried by said piston means and extending from one side of said piston means through one enclosed end of said tubular housing;

a member extending from the opposite side of said piston means and rotatably supported in the other enclosed end of said tubular housing, said member having a threaded portion engaging a mating threaded portion carried by said actuating rod, the engaging threaded portion carried by said actuating rod and the threaded portion of said member being in a self-locking relationship such that said piston means is axially movable only when said one pressure chamber is communicated to said pressure fluid and said member is rotated relative to said piston means;

non-locking means operable upon actuation for rotating said member relative to said piston means, said non-locking means being carried by said other enclosed end of said tubular housing; and

means coupling said non-locking means to said member such that said non-locking means and said member are rotatable together after a limited amount of independent rotational movement of said non-locking means relative to said member, said non-locking means being coupled to said member in such a manner that said non-locking means does not restrain said member from rotating relative to said piston means whereby the rate of movement of said piston means is controlled by the rate of rotational movement of said member and the force exerted by said piston means and movement thereof is a function of the pressure in said chambers.

3,980,000

CONTROL SYSTEM FOR A HYDRAULIC CLAMPING DEVICE

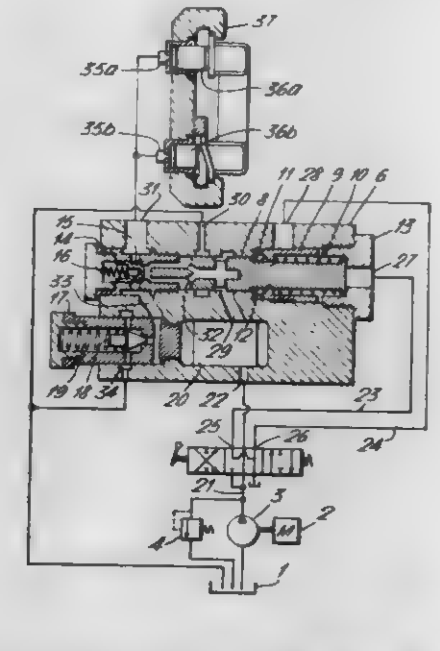
Katsuhiko Iijima, and Katsumasa Jomen, both of Sagamihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 29, 1974, Ser. No. 492,845

Claims priority, application Japan, Aug. 24, 1973, 48-94299

Int. Cl.² E02F *3/28*; F15B *11/16*, *13/08*

U.S. Cl. 91—411 R 1 Claim



1. A control system for a hydraulically actuated apparatus comprising, at least, a first expansible hydraulic motor for actuating a clamping device and a second hydraulic motor actuatable separately from said first motor, said control system comprising:

fluid distribution means including:

manually movable valve means for selectively supplying fluid under pressure along a first hydraulic path from a source to said fluid distribution means,

said fluid distribution means having, at least, one valve member in said first hydraulic path movable between an actuated position, wherein flow of fluid under pressure to said second hydraulic motor is permitted, and a deactuated position, wherein said flow of fluid to said second hydraulic motor is prevented,

said fluid distribution means further including a second hydraulic path communicating with said first expansible hydraulic motor and said first hydraulic path at a point between said manually movable valve means and said one valve member, check valve means in said second hydraulic path, said check valve means being movable between an open and closed position in said second hydraulic path, resilient means for constantly urging said check valve means towards said closed position, a fluid actuated pilot piston in said second hydraulic path movable between a deactivated position, wherein fluid flow through said second hydraulic path to said first expansible motor is controlled by said check valve means, and an activated position, wherein said pilot piston engages and holds open said check valve means, means biasing said pilot piston towards said deactivated position, said check valve means being movable to said open position when both said movable valve means supplies fluid under pressure to said fluid distribution means and said pilot piston is in its said deactivated position so that the pressure of the fluid supplied to said first hydraulic motor will be the same as the pressure of the fluid supplied to said second hydraulic motor through said one valve member, fluid operated locking means for holding said pilot piston in its said activated position when said pilot piston moves into its activated position, said fluid distribution means further including a fluid return path and said pilot piston having means for closing said second hydraulic path and passage means associated therewith for establishing a drain path from said first expansible hydraulic motor to said fluid return path when said pilot piston is in its said activated position,

said manually movable valve means being movable to one position to supply fluid under pressure to said pilot piston to move said pilot piston from each deactivated to said activated position and to another position to supply fluid to said locking means wherein said locking means is released and said pilot piston is moved by said biasing means to said deactivated position.

3,980,001

REVERSING VALVE OPERATED BY A PILOT VALVE

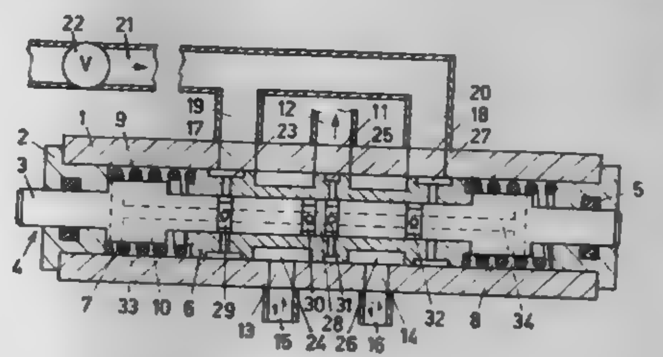
Ivan Jaroslav Cyphelly, Forchstrasse 968, 8128 Hinteregg, Switzerland

Filed July 17, 1974, Ser. No. 489,386

Claims priority, application Switzerland, Aug. 8, 1973, 11489/73

Int. Cl.² F15B *11/08*, *13/042*; F16K *11/07*

U.S. Cl. 91—420 9 Claims



1. A valve arrangement comprising, in combination:

a. a valve body defining a cavity therein and being formed with first and second supply ports, a return port, a first pressure port, and a second pressure port, said ports communicating with said cavity for flow of pressure fluid;

b. a pressure responsive main slide valve movable back and forth in said cavity in a predetermined direction between a first terminal position and a second terminal position, said main slide valve and said valve body bounding two compartments of said cavity in said predetermined direction, said main slide valve sealing said compartments from each other;

c. yieldably resilient means continuously biasing said main slide valve toward a position intermediate said terminal positions, one of said compartments increasing in size when said main slide valve moves away from said intermediate position while the other compartment simultaneously decreases in size;

d. a pilot slide movable in said valve body in said direction between a first end position and a second end position;

e. first and second cooperating abutment means on said main slide valve and on said pilot slide engageable for moving said pilot slide into said first end position when said main slide valve moves from said intermediate position into said first terminal position, and for moving said pilot slide into said second end position when said main slide valve moves from said intermediate position into said second terminal position respectively; and

f. brake means in said valve body preventing movement of said pilot slide valve with said main slide valve when said main slide moves from one of said terminal positions into said intermediate position thereby holding said pilot slide in a respective end position,

first and second means on said pilot slide defining respective conduits connecting said first and second supply ports, respectively, via respective passages in said main slide valve, with said respective compartments to provide pressure fluid thereto to act on said pressure responsive main slide valve and cause movement thereof when said pilot slide is in said first and second end positions;

said main slide valve, when in said first terminal position, defining a conduit connecting one of said pressure ports to a respective one of said supply ports and a conduit connecting the other pressure port to said return port, and

said main slide valve, when in said second terminal position, defining a conduit connecting said one pressure port to said return port.

3,980,002

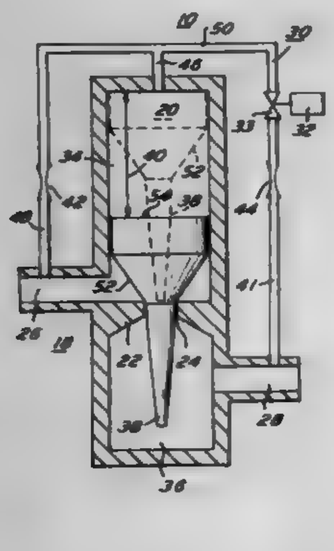
TWO STAGE SOLENOID ACTUATED VALVE, SYSTEM, AND METHOD OF ACTUATION

Alonzo B. Jarman, Wrightstown, and Kenneth W. Zeuner, Newtown, both of Pa., assignors to Control Concepts, Inc., Newtown, Pa.

Continuation of Ser. No. 304,816, Nov. 8, 1972, abandoned. This application May 16, 1975, Ser. No. 578,006

Int. Cl.² F15B *13/043*; F16K *31/383*

U.S. Cl. 91—461 **3 Claims**



1. A valve assembly comprising

a first pilot stage adapted to have its inlet coupled to a fluid source and its outlet connected to a fluid outlet, said first pilot stage having an inlet flow restricting orifice and an outlet flow restricting orifice with each flow restricting orifice having precalculated and nonvariable dimensions and being nonmodulated, solenoid valve means coupled between said orifices,

a second stage divided into first and second sections, a second stage orifice between said first and second sections within which a single movable second stage valve plug reciprocates without mechanical bias, said second stage valve plug having an outer smooth imperforate continuous surface with a substantially parabolic contour to provide a predetermined flow area between said second stage orifice and said parabolic contour as said second stage valve plug moves through said second stage orifice between an open state and a closed state, a main fluid inlet communicating with said first section and a main fluid outlet communicating with said second section without any balancing device coupled to said second stage valve plug in said main fluid outlet,

said first pilot stage being coupled to said second stage valve plug and said first section not by mechanical connection except for fluid communication for controlling the time of movement of said second stage valve plug from one of the states to the other, and

the predetermined dimensions of (1) said parabolic contour of said second stage valve plug (2) said second stage orifice and (3) said inlet and outlet flow restricting orifices being chosen in a predetermined relation for providing substantially linear flow rate change when said second stage valve plug moves thereby to provide substantially zero flow jerk.

3,980,003

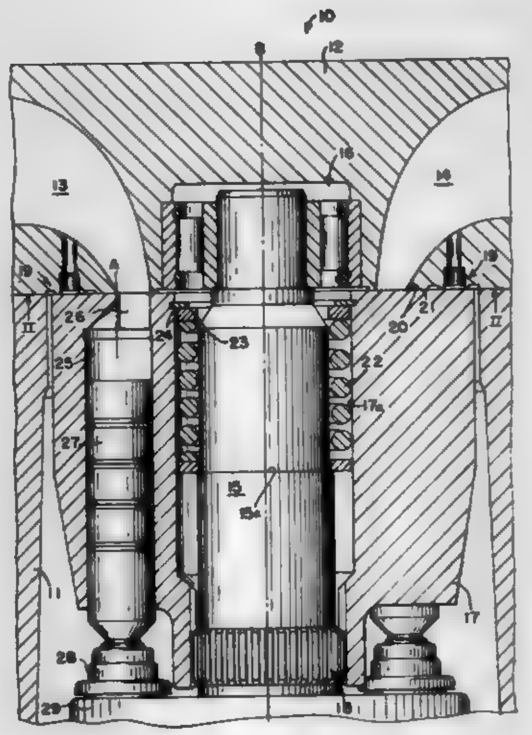
VARIABLE HYDROSTATIC BEARING BETWEEN BARREL AND HEAD OF AXIAL PISTON UNITS

Robert J. Huebner, Peoria, Ill.; Carman P. Lynnes, Leonard, N. Dak.; Ralph A. Matzelle, Brimfield, and Richard L. M. Sears, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 7, 1975, Ser. No. 547,907

Int. Cl.² F01B *13/04*

U.S. Cl. 91—487 **7 Claims**



1. A port cap for a hydraulic fluid pressure energy translating device having a rotatable barrel axially floatingly disposed adjacent said port cap of said device, said port cap having inlet and outlet ports inset to the barrel axis side of the axis of the cylinders of said device and having hydrostatic pressure balancing means for balancing forces and moments within the device acting on said barrel to obtain an optimum bearing clearance between said port cap and said barrel;

said balancing means further including a plurality of fluid-containing recess means within a bearing surface of said port cap and flow control means for regulating flow from a port of said device into said recess means; and,

wherein said flow control means includes a fluid-flow passageway communicating between a port of said port cap and said recess means, said flow control means further including fluid-restricting means between said passageway and said recess means for regulating pressure within said recess means.

3,980,004

PISTON AND SEAL ASSEMBLIES

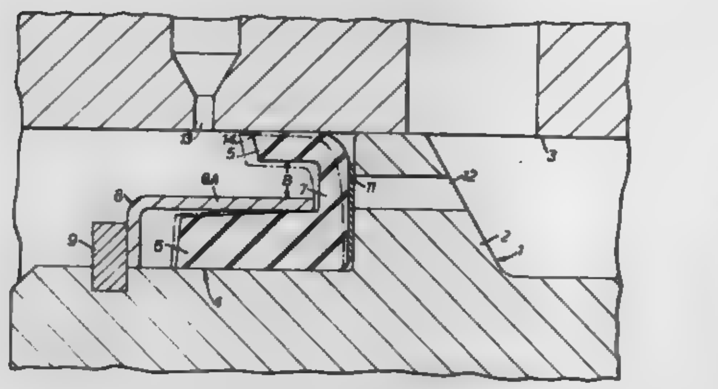
Peter Jones, and Colin McDonald, both of Birmingham, England, assignors to Girling Limited, Birmingham, England

Filed Nov. 4, 1974, Ser. No. 520,649

Claims priority, application United Kingdom, Nov. 7, 1973, 51680/73

Int. Cl.² F16J *9/00, 15/00*

U.S. Cl. 92—182 **3 Claims**



1. A piston and seal assembly adapted to work in a cylinder comprising a piston reciprocably slidable in the cylinder bore to perform a pressure stroke and a return stroke, a seal generally U-shaped in cross section having inner and outer arms interconnected by an interconnecting portion to define a space between said arms, the inner arm engaging said piston and the outer arm defining a lip portion sealingly engaging said cylinder bore during the pressure stroke of said piston, retaining means having an axially extending portion projecting into the space between the arms and engaging said inner arm to hold it in permanent sealing engagement with said piston, said axially extending portion engaging said interconnecting portion during the return stroke of the piston along a line of engagement which is spaced radially inwardly from the lip portion defined by said outer arm, said seal being flexible about a line of flexure determined by said line of engagement of said retaining means with said interconnecting portion so that said seal flexes about said line and establishes a recuperation flow path between said lip portion and said cylinder bore upon the return stroke of the piston, said piston having an enlarged portion which supports one side of said seal, said enlarged portion including means defining at least one axially extending fluid passage, said passage being closed by said seal during said forward stroke of said piston and forming part of said recuperation fluid flow path during said return stroke of said piston.

3,980,005

SYNTHETIC PLASTIC FOAM CARTON LINERS

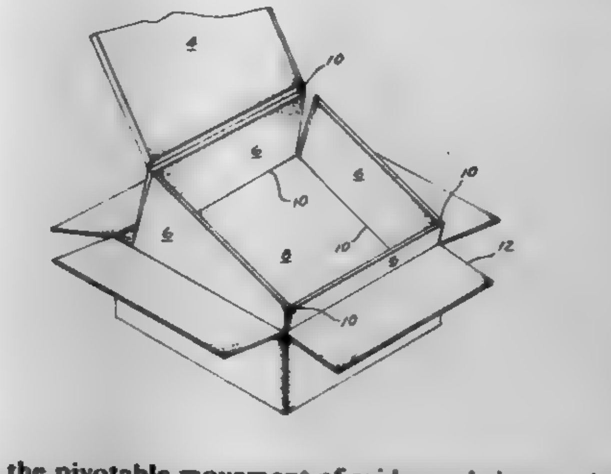
Robert B. Buonaiuto, 12 Bayview Road, Ipswich, Mass. 01938

Filed Nov. 20, 1974, Ser. No. 525,586

Int. Cl.² B31B *49/02*

U.S. Cl. 93—36.01 **2 Claims**

1. Method of fabricating protective cartons and liners therefor comprising the steps of applying a thermoplastic resin, heated to its melt temperature, to a synthetic plastic foam sheet to form thereon an overall layer, cooling said resin to solidify the same and to form a resiliently flexible layer which has a tear strength and flexibility substantially greater than said foam, cutting grooves into said sheet of foam on the surface thereof opposite said resilient layer without cutting into said layer to form a plurality of panels delineated by said grooves, which are of sufficient depth and configuration to enable said panels to be swung into mutually perpendicular orientation, said resilient layer and foam forming a composite laminar structure in which said layer and grooves form flexible hinges for the pivotable movement of said panels into and out of said mutually perpendicular orientation.



3,980,006

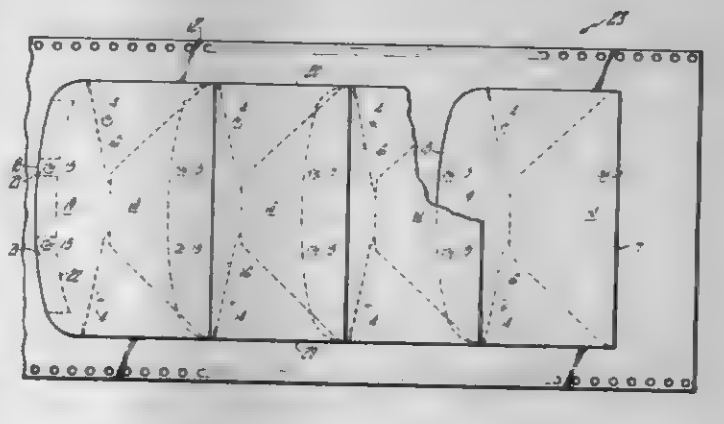
CONTINUUOUS ENVELOPE SYSTEM

Archibald H. Welch, Branford, Conn., assignor to Converters Incorporated, Farmington, Conn.

Filed Apr. 7, 1975, Ser. No. 565,552

Int. Cl.² B31B *1/08*

U.S. Cl. 93—61 R **16 Claims**



1. In a continuous envelope system for attaching envelopes in succession to an elongated paper carrier sheet and subsequently detaching the envelopes from the carrier sheet, the envelopes having a transversely extending envelope body with a front panel and a back panel with an upper transverse edge defining an envelope opening and an upper sealing flap with an upper transverse edge and a lower transversely extending fold connector to the front panel providing for folding the sealing flap rearwardly and downwardly into sealing engagement with the back panel to seal the envelope, the continuous envelope means comprising the steps of attaching the envelopes in longitudinal succession to the carrier sheet to form an elongated composite envelope and carrier sheet product, with each envelope extending transversely of the elongated carrier sheet, the sealing flap open and lying beneath the body of the succeeding envelope and the sealing flap and back panel in engagement with the carrier sheet, with attachment spots between each envelope and the carrier sheet at the sealing flap and the back panel, and subsequently detaching the envelopes in succession by longitudinally conveying the elongated composite envelope and carrier sheet product forwardly with the envelope sealing flaps trailing the envelope body, and gradually separating the envelopes and carrier sheet as they are being longitudinally forward conveyed to form from the attachment spots surface tear connectors between the carrier sheet and envelopes, and severing, with severance means provided between the gradually separating envelopes and carrier sheet, the tear connectors interconnecting each envelope and carrier sheet adjacent the envelope to remove the tear connectors from the envelope as the carrier sheet and

envelope are being conveyed longitudinally forwardly and gradually separated.

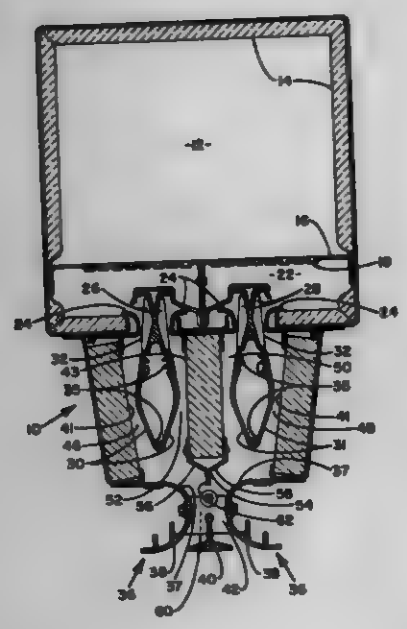
3,980,007
AIR CONDITIONING TERMINAL

Carl C. Herb, Camillus, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed June 10, 1975, Ser. No. 585,558

Int. Cl.² F24F *13/08*

U.S. Cl. 98—40 D 6 Claims



1. In an air conditioning terminal provided to discharge conditioned air into a space, the improvement comprising:

first and second damper assemblies with an outer wall of each assembly spaced from first and second vertically extending walls to define first and second air passages, and an inner wall of each assembly spaced from a third vertically extending wall to define third and fourth air passages, with said third and fourth passages being disposed radially inward relative to said first and second air passages, and said third vertically extending wall being disposed substantially on the vertical axis of said terminal; and

a diffuser section comprising first and second side diffuser members having a third diffuser member interposed therebetween to define first and second air discharge openings substantially in vertical alignment with said third wall, said side diffuser members including a portion having a curved surface spaced from the sides of said third wall to define therebetween sections wherein the air moving through said first, second, third and fourth air passages is gradually directed towards a mixing space provided between the lower surface of said third wall and said first and second discharge openings.

3,980,008
LADLE CANOPY

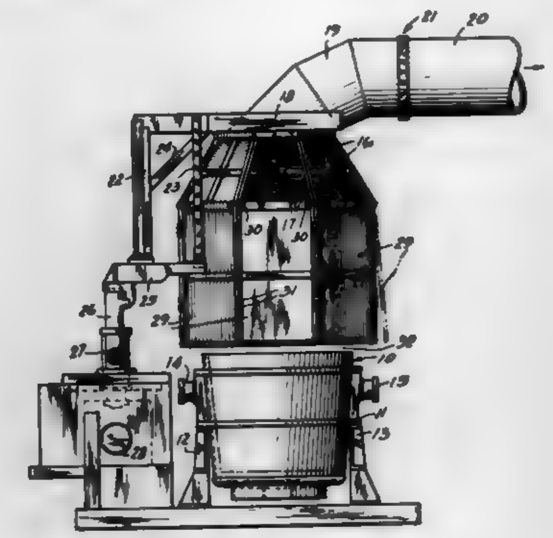
Robert W. Martin, Rock Falls, and Kenneth L. Ernst, Dixon, both of Ill., assignors to Northwestern Steel and Wire Company, Sterling, Ill.

Filed Dec. 2, 1974, Ser. No. 528,947

Int. Cl.² B65B *3/18*

U.S. Cl. 98—115 VM 7 Claims

1. A ladle canopy for venting gases during pouring of the molten contents of a furnace into a ladle comprising a frame, a plurality of individual curtain walls in side-by-side relation individually supported by and depending from said frame and arranged to be received above the periphery of said ladle, a duct connected to said frame for receiving said gases, means for drawing said gases into said duct, and means for pivotally mounting said frame to swing the same into and out of ladle covering position.



3,980,009
APPARATUS FOR PREPARING AN ELONGATED EDIBLE PRODUCT

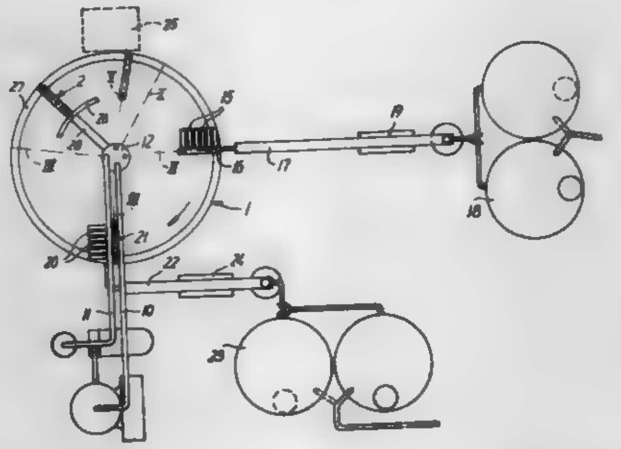
Gunnar Christian Petersen, Odense; Ole Thisgaard, Hjallese, and Steen Wiig, Naesby, all of Denmark, assignors to Dansk Andels Aegexport, Copenhagen V, Denmark

Filed Nov. 26, 1975, Ser. No. 635,547

Claims priority, application Denmark, Nov. 29, 1974, 6240/74

Int. Cl.² A23P *1/00*

U.S. Cl. 99—353 12 Claims



1. Apparatus for preparing an elongated edible product including a cylindrical core comprising a first product component and a surrounding cylindrical shell comprising a second product component, the apparatus comprising:

a plurality of vertically oriented cylindrical moulds open at their upper ends and closed at their lower ends,

means for cyclically moving said moulds through a plurality of stations including a station for inserting a core member in each mould, a station for withdrawing the core member from the mould, at least one station for supplying said second product component in a flowable state to the annular space defined between the inner wall of the mould and said core member and supplying said first product component in a flowable state to the space formed by the core member, and a station for withdrawing the finished products from the moulds,

means between said material supply station and said product withdrawal station for causing the product components to solidify,

a frame rigidly connected with said moulds so as to move in unison therewith, means on said frame for slidingly supporting a plurality of said core members with one core member located above each mould,

first gripper means in said core insertion station for cooperating with said core members, and drive means for vertically reciprocating said first gripper means,

second gripper means in said core withdrawal station for cooperating with said core members, and drive means for vertically reciprocating said second gripper means,

said first and second gripper means and said core members having interengageable coupling means shaped so as to define a fixed angular position of each core member relative to said frame when said coupling means are engaged.

3,980,010
COOKING SPIT

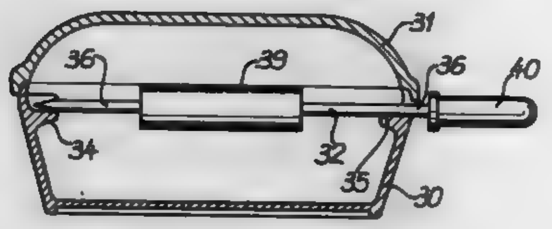
Luigi Collinucci, 12, Rue Crespin, 1206 Geneva, Switzerland

Continuation-in-part of Ser. No. 506,950, Sept. 18, 1974, abandoned. This application Sept. 19, 1975, Ser. No. 614,949

Claims priority, application Switzerland, July 28, 1975, 9506/75

Int. Cl.² A47J *37/04*

U.S. Cl. 99—421 H 8 Claims



1. A cooking spit comprising:

an insulating handle;

a hollow elongated metal rod extending from the handle, said rod having first and second end parts and a central part;

heating bodies disposed in said first and second end parts of the hollow rod;

a non-perforated tubular sleeve having first and second open ends;

and means for supporting said tubular sleeve about said central part of the rod with said open first and second ends facing said first and second end part of the rod, said sleeve defining at least one longitudinal passageway about said central part of the rod.

3,980,011
STERILIZING APPARATUS COMPRISING A PRESSURE REDUCING VALVE

Willem Frederik Hermans, Amstelveen, Netherlands, assignor to Stork Amsterdam B.V., Amstelveen, Netherlands

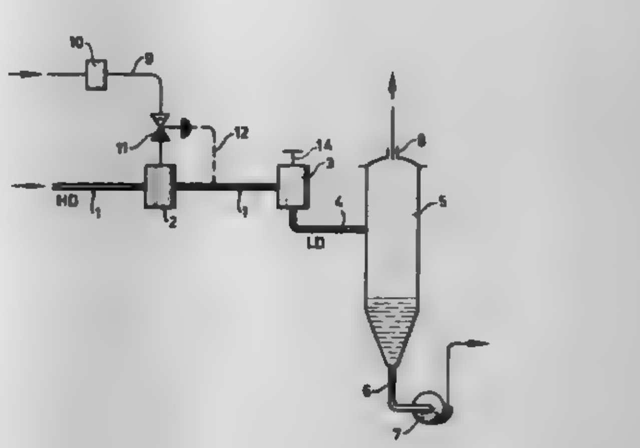
Filed Aug. 12, 1975, Ser. No. 603,953

Claims priority, application Netherlands, Aug. 14, 1974, 7410906

Int. Cl.² A23C *3/02*

U.S. Cl. 99—453 2 Claims

1. An apparatus for sterilizing a liquid by means of steam injection, comprising: a feed pipe for the liquid into which one or more steam injectors open, an expansion vessel into which said pipe extends, a pressure reducing valve being disposed in said feed pipe upstream of said expansion vessel and including a valve housing provided with a valve body, the latter being secured to a movable spindle mounted on the high pressure side of said valve housing and sealingly protruding through the wall of the housing through a first chamber, said spindle controlling the flow of said liquid to said expansion vessel, a feed pipe for hot fluid under a pressure lower than the supply pressure of the liquid to be sterilized and being connected to said first chamber, and a discharge pipe for fluid condensate being connected to said first chamber.



3,980,012
Patent Not Issued For This Number

3,980,013
SPLIT WORM FOR SCREW PRESS

Dean K. Bredeson, Piqua, Ohio, assignor to The French Oil Mill Machinery Company, Piqua, Ohio

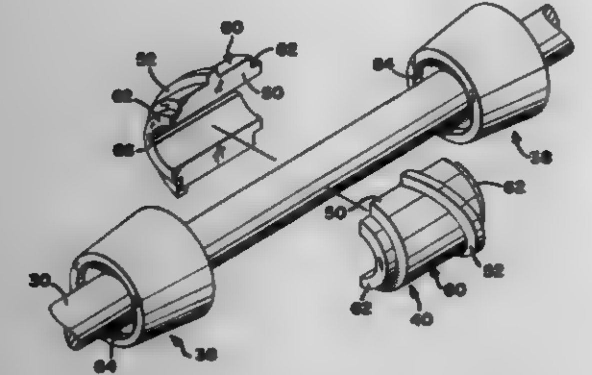
Filed Sept. 15, 1975, Ser. No. 613,102

Int. Cl.² B30B *9/12*

U.S. Cl. 100—117 4 Claims

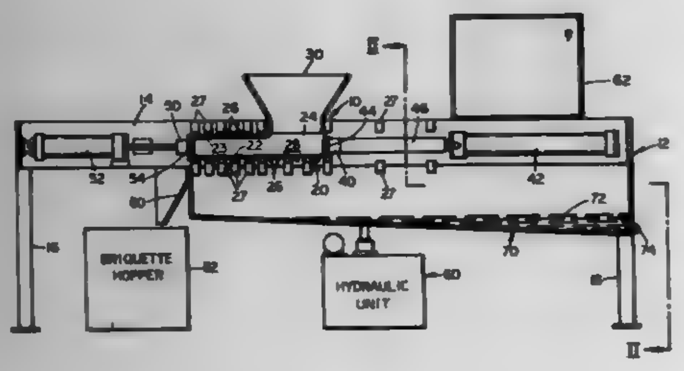
1. In a mechanical screw press for expressing fluid from a material, including a cage having means defining an elongated pressing chamber with an inlet end and a discharge end, a rotatable screw assembly extending through said chamber and including a shaft, a series of axially aligned worm members

mounted on said shaft and having corresponding bodies and helical flights projecting outward from the bodies, a series of collars located on said shaft between the worm bodies, at least said worm members being connected to rotate with said shaft, means for rotating the screw assembly, and means for resisting rotation of said material within the chamber as it moves toward the discharge end in response to the rotation of the screw assembly; the improvement comprising at least one of said worm bodies being longitudinally split into pieces having cooperating sections of worm flight thereon and cooperating flanges extending axially therefrom, and releasable retainers fitted over said flanges and holding the pieces of said split worm body around said shaft whereby the split worm body may be readily removed from said shaft by releasing said retainers from said worm body.



3,980,014
BRIQUETTING MACHINE

Stephen N. McEwen, and William S. LaFayette, both of Bowling Green, Ohio, assignors to Henry Manufacturing Company, Bowling Green, Ohio
Filed May 14, 1974, Ser. No. 469,859
Int. Cl.² B30B *9/06*
U.S. Cl. 100—127 **18 Claims**

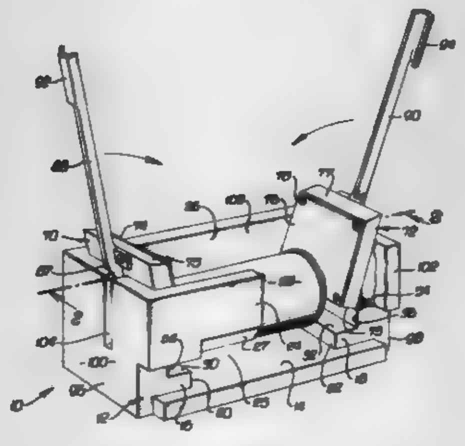


1. A briquetting machine for removing liquid from liquid and solid particles comprising:

A. a compression chamber capable of withstanding at least about 250 p.s.i. and having openable ends and at least two parallel side walls between said ends, at least one of which walls has therein parallel outwardly diverging filter slots extending longitudinally between said ends, which slots are less than about three inches from any point inside said chamber, and said chamber has an opening therein having a minimum dimension of about six inches for receiving said liquid and solid particles,
B. an openable means for closing and sealing off one end of said chamber during compression,
C. a piston means closing and sealing off the other end of said chamber and relatively movable the full length of said chamber between said ends, said piston having a gasket surrounding its edge for wiping the inside walls of said chamber, and
D. means for introducing said liquid and solid particles into said opening in said chamber.

3,980,015
CAN CRUSHING DEVICE

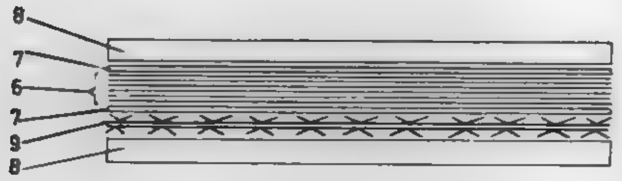
Hubert R. Woodard, 1604 E. 60th St., Long Beach, Calif. 90805
Filed June 2, 1975, Ser. No. 582,741
Int. Cl.² B30B *7/00*
U.S. Cl. 100—233 **8 Claims**



1. A crushing device, comprising:
a base member having an area thereof to receive an object to be crushed,
a first crushing member having one end pivotally secured to said base member adjacent one end of said area, and
a second crushing member having one end pivotally secured to said base member adjacent an end of said area opposite said one end,
said crushing members being adapted to be moved on said pivotally secured ends toward said area and into a crushing position in relation to said object,
the other ends of said crushing member being adjacent in said crushing position,
said crushing members extending over said area in said crushing position,
said area being bounded on its said ends by edge members on said base member spaced to receive a predetermined sized can for crushing, the can being adapted to be positioned on its side extending longitudinally between said edge members,
said crushing members being pivotally secured by hinges, each hinge being spaced from a respective edge member,
each crushing member being adjacent a respective edge member outwardly of said area in said crushing position, and
said area having an upper surface on which said can is positioned for crushing,
said crushing members in said crushing position being spaced from said upper surface.

3,980,016
PRESSING APPARATUS

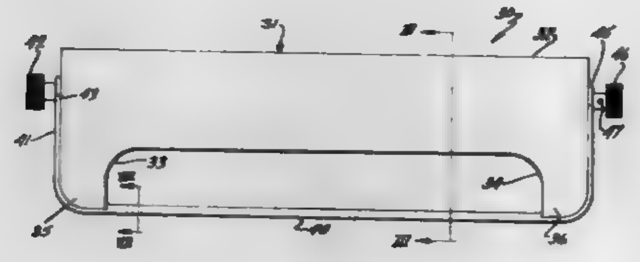
Thomas Taylor, Poulton-le-Fylde, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Aug. 19, 1975, Ser. No. 605,884
Claims priority, application United Kingdom, June 18, 1975, 25952/75
Int. Cl.² B30B *15/06, 15/34*
U.S. Cl. 100—295 **6 Claims**



1. A pressure distributing device comprising a supporting plate and a plurality of disc-spring units disposed adjacent to one another over the surface of the supporting plate, each disc spring unit comprising a pair of disc-springs disposed one on either side of the supporting plate with the apexes of the springs toward each other, the springs of each pair being fastened together by means of rivets passing through the orifices of the springs and through an orifice in the plate.

3,980,017
STENCIL SCREEN COATING APPARATUS

James A. Black, 13700 Sparta Ave., Kent City, Mich. 49501
Filed Oct. 31, 1974, Ser. No. 519,539
Int. Cl.² B41F *15/42, 15/44*
U.S. Cl. 101—129 **8 Claims**

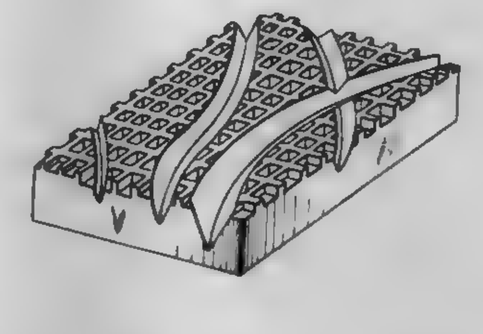


3. In a stencil screen printing apparatus, a submersion transfer device for forcing stencilling fluid through the stencil screen comprising: an elongated mount having spaced support members depending from opposite ends thereof to extend down into said stencilling fluid; and
a submersion strand having surface areas along the underside thereof to engage the stencil screen and transfer a portion of said stencilling fluid through said stencil screen; said submersion strand extending between said support members and spaced below said mount to be submersed in said stencilling fluid, and to define a space above said strand, below said mount, and between said support members and thereby allow stencilling fluid in excess of said portion to flow through said space.

7. A method of stencil screen printing, comprising the steps of: supplying a pool of fluid on a stencil screen; submersing a strand in the pool of fluid across and in contact with the stencil screen; causing relative motion between the strand and the stencil screen while simultaneously retaining printing stock under the stencil screen, to form a coating on the stock as the strand forces a portion of the fluid through the stencil screen onto the stock, and allowing excess fluid in the pool to flow over the strand.

3,980,018
SPECIAL INTAGLIO PRINTING PROCESS FOR PREVENTING FORGERY OF SECURITIES

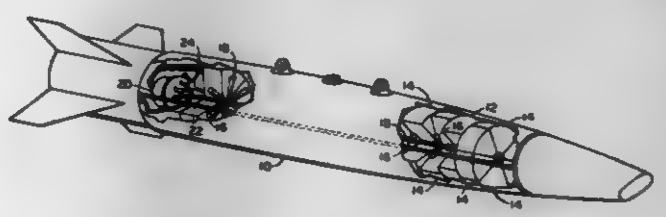
Ieyasu Ichikawa, Tokyo, Japan, assignor to Director General, Printing Bureau, Ministry of Finance, Tokyo, Japan
Continuation of Ser. No. 156,314, June 24, 1971, abandoned. This application July 11, 1973, Ser. No. 378,174
Claims priority, application Japan, July 3, 1970, 45-57988
Int. Cl.² B41M *1/10;* **B41N** *1/06*
U.S. Cl. 101—170 **2 Claims**



1. An intaglio printing process for preventing forgery or counterfeiting of securities or the like comprising: providing a gravure printing plate having a grid pattern representing an original design and made up of a plurality of small discrete recesses on the plate surface, said recesses varying in depth for reproducing fine continuous gradations of color, highlight or shadow of the original design on a surface printed by the inked plate, said plate also having elongate engraved grooves cut into the plate surface and extending across a plurality of said gravure recesses, said engraving grooves varying in depth and width and representing a complex pattern for preventing forgery or counterfeiting; positioning said printing plate on a printing plate cylinder; inking said printing plate with ink having a viscosity of a normal intaglio engraving printing ink; wiping off surplus ink from the plate surface; feeding a sheet between the inked printing plate and an impression cylinder in contact with said printing plate cylinder to obtain on said sheet a printed reproduction of said original design including said complex pattern for preventing forgery or counterfeiting.

3,980,019
ADAPTIVE ORDNANCE SYSTEM

Matthew E. Anderson, Ontario, and Maurice H. Brown, Riverside, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 30, 1970, Ser. No. 43,617
Int. Cl.² F42B *25/16*
U.S. Cl. 102—7.2 **6 Claims**



1. An adaptive ordnance system which is effective against a wide range of targets and conditions comprising:
a. a plurality of bomblets packaged in a single container,
b. first detonator means associated with said packaged bomblets for detonating said bomblets as a unitary warhead in response to a first set of conditions,
c. second detonator means associated with said packaged bomblets including circuit means connected to a first input terminal for receiving missile guidance signals and to a second input terminal to receive a firing signal and being responsive to a second set of conditions which includes the relative values of the signals received at said

input terminals for dispersing said bomblets to fall in a predetermined pattern.

3,980,020
PROJECTILE WITH DELAYED BURSTING EFFECT

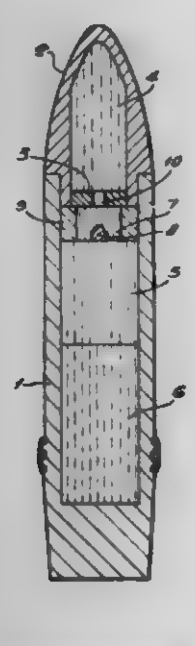
Kåre Roald Strandli, Raufoss, Norway, assignor to A/S Raufoss Ammunisjonsfabrikker, Raufoss, Norway

Filed May 17, 1974, Ser. No. 471,153

Claims priority, application Norway, May 18, 1973, 2048/73

Int. Cl.² F42B *13/14*

U.S. Cl. 102—66 **5 Claims**



1. An elongated projectile of the type wherein the bursting effect is delayed following impingement of the front of the projectile against a target, comprising:

- a bursting charge,
- an incendiary charge arranged in front of the bursting charge, said incendiary charge being capable of burning, upon ignition thereof, until it ignites the bursting charge,
- an adjustment charge arranged in front of the said incendiary charge so as to ignite said incendiary charge,
- a body arranged at the rear boundary of said adjustment charge and capable of being driven rearwardly into the incendiary charge, upon ignition of the adjustment charge, to form a longitudinal aperture into the incendiary charge,
- and means for igniting the adjustment charge upon impingement of the forward end of the projectile against a target.

3,980,021
PROJECTILE HAVING AT LEAST TWO CHARGES

Kåre Roald Strandli, Raufoss, Norway, assignor to A/S Raufoss Ammunisjonsfabrikker, Raufoss, Norway

Filed May 17, 1974, Ser. No. 471,154

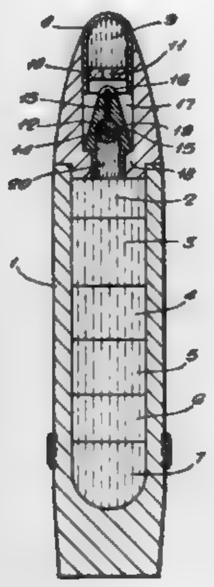
Claims priority, application Norway, May 18, 1973, 2049/73

Int. Cl.² F42B *13/12, 13/14*

U.S. Cl. 102—66 **4 Claims**

1. A projectile having a forwardmost incendiary charge located at the forward end of the projectile, said incendiary charge including a hollow casing at the very front end of the projectile of sufficiently soft material to distort upon impact, and an incendiary material filling said hollow casing, said incendiary charge being arranged to be ignited upon distortion of the said incendiary charge upon impact of the projectile against a target, and at least one other charge located rearwardly thereof,

- a rotatable safety device located rearwardly of said forwardmost incendiary charge and forwardly of said other charge or charges,
- a striker rod arranged just rearwardly of the forwardmost incendiary charge and positioned to be driven into a detonator of the safety device when the safety device has been neutralized,
- the forward end of the striker rod being positioned, and comprising means, for driving the striker rod rearwardly into the detonator for detonating said other charge or charges, under the action of the gas pressure built-up rearwardly of the forwardmost incendiary charge upon ignition thereof.



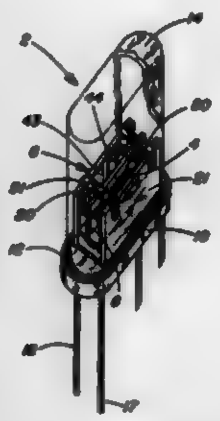
3,980,022
FILTER DEVICE FOR HIGH ACCELERATION APPLICATIONS

Antonio Lange, 7076 Big Creek Parkway, Middleburg Heights, Ohio 44130

Filed Oct. 24, 1974, Ser. No. 517,402

Int. Cl.² F42C *19/06;* **H01L** *41/00*

U.S. Cl. 102—70.2 R **10 Claims**



1. A filter device for use in high acceleration applications comprising,

- a resonator,
- a mounting assembly for supporting said resonator in a predetermined orientation during acceleration of said device,
- said mounting assembly including yieldable support means to provide a compliant mounting for substantially unrestricted vibrational movement of said resonator, subsequent to acceleration of the device, and
- said mounting assembly including a support member disposed in predetermined spaced relation from said resonator for abutting engagement with said resonator to limit its displacement during acceleration, and
- said support means being arranged to enable said abutting engagement during acceleration of said device and to return said resonator to a position out of engagement with said support member subsequent to acceleration of said device to enable said vibrational movement thereof.

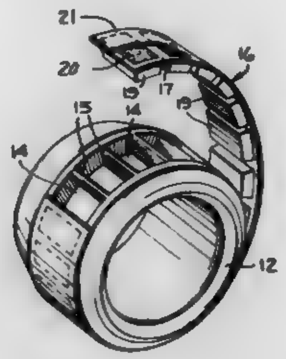
3,980,023
PAYLOAD CARRYING TUBULAR PROJECTILE

Kenneth W. Misevich, Fairfield, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Sept. 11, 1974, Ser. No. 504,971

Int. Cl.² F42B *11/18, 11/32*

U.S. Cl. 102—92.6 **9 Claims**



1. A projectile comprising a generally cylindrical body, a plurality of recessed pockets circumferentially extending around the outer peripheral surface of said body, circumferentially-spaced rib means separating adjacent pairs of said pockets, payload material positioned in said pockets, and wrapping means engaged around the body for holding said payload material in said pockets and breaking on impact to release said material.

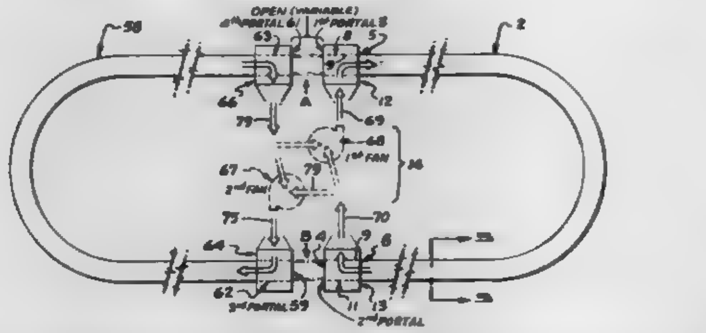
3,980,024
AIR PROPELLED VEHICLE TRANSPORTATION SYSTEM

Rudolph E. Futer, 1501 Park Ave., Emeryville, Calif. 94608

Filed Nov. 18, 1974, Ser. No. 524,747

Int. Cl.² B61B *13/10*

U.S. Cl. 104—155 **13 Claims**



1. An air propelled reversible vehicle transportation system comprising:

- a. an elongated vehicle conduit having a substantial length devoid of openings of substantially uniform cross section for containing moving air at low gauge pressure having unrestricted first and second non-gated portals open at all times to atmospheric pressure at the ends of said conduit;
- b. a vehicle dimensioned for travel through said conduit and said portals; and having a cross sectional area slightly less than the area of said conduit portals;
- c. a first plurality of axially aligned closely spaced Coanda-effect directional slit orifices having an opening which is substantially greater in width than depth formed in the walls of said conduit and located adjacent said first portal so that the air flow is initially along the surface of said conduit and provides driving air in a direction toward said portal or for receiving reverse air from said conduit along the surface of said conduit;
- d. a second plurality of Coanda-effect directional slit orifices having an opening which is substantially greater in width than depth formed in the walls of said conduit located adjacent said second portal for receiving said driving air along the surface of said conduit or for directing said reverse driving air in the direction of said first portal;
- e. a first manifold communicating with said first plurality of directional orifices;
- f. a second manifold communicating with said second plurality of directional orifices;
- g. powered fan or blower means communicating with said first and second manifolds for supplying a quantity of air to one of said manifolds and removing air from the other manifold; so that the pressure in said conduit is slightly above the pressure outside said portals;
- h. said conduit, Coanda-effect directional slit orifices, manifolds, and power means being dimensioned and regulated to drive said vehicle through said conduit and to supply substantially all of the air through one of said manifolds and to remove substantially all of said air from said conduit through said other manifold so that substantially no air is transferred through said portals into or out of said conduit with a minimal amount of air entering at said first port when no vehicle is traveling through said conduit and a minimal amount of air flows out of said first port when said vehicle is in transit through said conduit;
- i. there being a substantial number of orifices in each of said first and second pluralities of orifices forming a row; and
- j. there being a plurality of closely spaced rows of orifices and said rows are spaced along the longitudinal axis of said conduit for only a minor portion of the total length of said conduit.

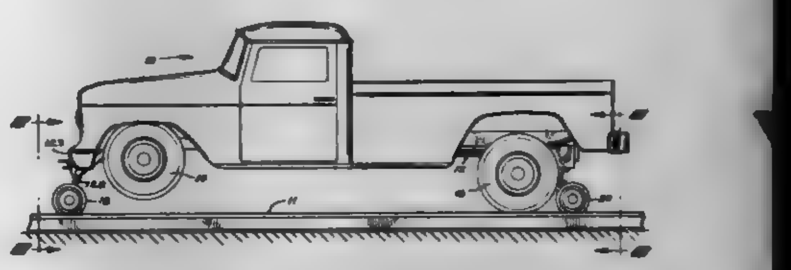
3,980,025
CONVERTIBLE RAIL-HIGHWAY VEHICLE

Buford W. Olson, Sr.; Eldrid W. Nelson, and Albin A. Davidson, all of Minneapolis, Minn., assignors to Chas. Olson & Sons Incorporated, Minneapolis, Minn.

Filed Dec. 11, 1974, Ser. No. 531,683

Int. Cl.² B61D *15/00;* **B61F** *9/00, 13/00;* **B62D** *61/12*

U.S. Cl. 105—215 C **8 Claims**



1. In a combination highway and rail vehicle having a body and frame, front and rear tires mounted on axles connected through suspension springs to the frame and front and rear rail guide wheels contactable with rails of the railroad track,

- a front guide wheel suspension comprising mounting means mounting the front guide wheels to the frame and permitting the guide wheels to be moved downwardly into contact with the rails of a railroad track forwardly of the front tires so that the distance separating the front guide wheels from the rear tires is greater than the distance separating the front tires from the rear tires, and retraction means responsive to downward movement of the front rail guide wheels for retracting upwardly and holding the front tires against their suspension springs above the rails, the front rail guide wheels replacing the front tires for bearing weight at the front of the vehicle whereby a greater proportion of the vehicle weight is borne at the rear of the vehicle; and
- rear guide wheel mounting means mounting the rear rail guide wheels to the frame and including torsion spring means movable with respect to the body and urging the latter wheels downwardly against the rails, and capable means arranged with respect to the body and torsion spring means for maintaining substantially constant the downward force exerted by the torsion spring means on the guide wheels and by the latter upon the rails substantially independent of the weight borne by the tires and guide wheels at the rear of the vehicle, whereby the rear

guide wheel mounting means cooperates with the front guide wheel suspension to cause the rear tires of the vehicle substantially alone to bear said greater proportion of the vehicle weight, increasing traction between the rear tires and rails upon which they ride.

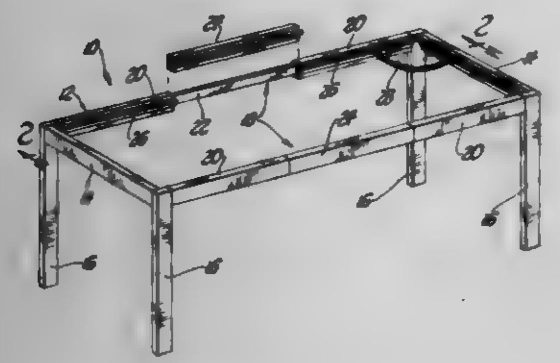
3,980,026
SLIDE ASSEMBLY FOR EXTENDABLE TABLE

Paul P. Thomas, Bryan, Ohio, assignor to Winzeler Stamping Co., Montpelier, Ohio

Filed June 9, 1975, Ser. No. 585,267

Int. Cl.^{2} A47B *1/08*

U.S. Cl. 108—83 **15 Claims**



1. An extendable table comprising: an extendable frame for supporting table tops of different lengths; the frame including a pair of laterally spaced slide assemblies interconnecting opposite ends thereof; each slide assembly including an elongated female beam of a hollow construction secured to one end of the frame so that one end of the beam opens toward the other end of the frame; each slide assembly also including an elongatd male support member of a smaller cross-section than the interior of the female beam; the male support member having a first end received within the open end of the female beam and a second end secured to the other end of the frame; the female beam including a bottom wall which defines an opening having an end that opens toward the other end of the frame and a closed end located toward the one end of the frame from the open end of the opening; said bottom wall including a locking portion that partially closes the open end of the opening; a downwardly projecting first pad on the first end of the male support member, said first pad engaging the interior of the bottom wall of the female beam after insertion of the support member into the beam; and a second pad having a locking portion that is resiliently snapped over the locking portion of the beam into a locking relationship between the locking portion of the beam and the closed end of the opening to secure the second pad to the beam after insertion of the support member thereinto, the second pad also having upper and lower portions between which the support member is received to cooperate with the first pad in maintaining a parallel relationship between the elongated directions of the beam and the support member during use of the table, and the pads permitting sliding movement between the support member and the beam to vary the length of the frame between its opposite ends and the corresponding length of a table top that may be supported by the frame.

3,980,027
DISPLAY TABLE FOR ORNAMENTAL OBJECTS

Charles-Henri Marie Maës, Paris, France, assignor to Orfevrerie D'Ercuis, Paris, France

Filed Oct. 29, 1974, Ser. No. 518,804

Claims priority, application France, Nov. 5, 1973, 73.39190

Int. Cl.^{2} A47B *11/00*

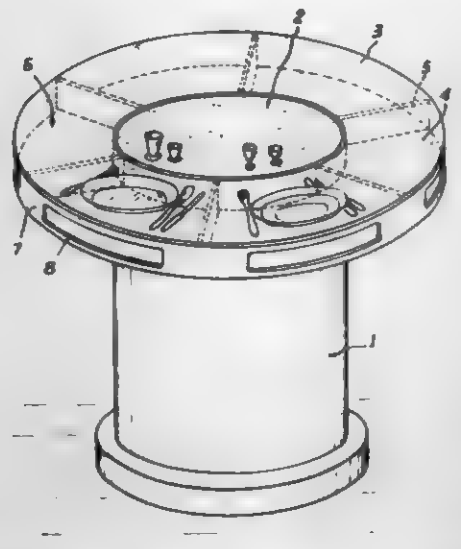
U.S. Cl. 108—103 **4 Claims**

1. A table for displaying several articles in different set arrangements comprising:

a central pedestal having a horizontal generally circular upper member on which one or more first articles can be displayed,

an annular member surrounding the upper portion of said pedestal, said annular member including an annular upper disc of transparent material on which one or more second articles can be displayed, said upper disc being mounted horizontally at substantially the same level as said upper member of said pedestal and extending outwardly of the outer periphery of said pedestal, said annular member also including a lower disc spaced below the upper disc and extending outwardly of the outer periphery of said pedestal to form a storage space therebetween so that one or more third articles can be displayed on said lower disc and seen through said upper disc, and

means for mounting at least one of said upper and lower discs of said annular member to rotate about said pedestal to permit the display of different ones of second and third articles relative to a first article.



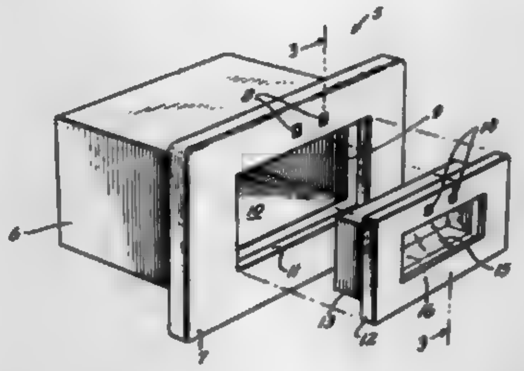
3,980,028
INTERCHANGEABLE SEE-THROUGH AND OPAQUE INSERTS FOR MUFFLE FURNACE

Leon Ginsburg, 244 Liberty Road, Tappan, N.Y. 10983

Filed May 30, 1975, Ser. No. 582,104

Int. Cl.^{2} F23M *7/00*

U.S. Cl. 110—173 R **7 Claims**



1. A muffle furnace device comprising in combination: a door means for providing access to and for closing off furnace interior heating space, the door means defining an insertable structure insertable sealable within a furnace access opening with the door structure having inner and outer faces with a passage extending substantially lineally therebetween such that an interior of a furnace space is viewable through the passage from an exterior thereof when the door means is inserted within a furnace access opening; first and second insert structures each having a configuration for sealably inserting within the door structure defining said passage, one of the first and second insert structures being substantially opaque and composed substantially of insulating composition, and the other of the first and second insert structures having a substantially lineally extending channel extending between and through inner and outer faces thereof such that when inserted within the passage, interior space of a furnace is viewable from an exterior thereof, the other of the first and second insert structures including a transparent barrier structure mounted within the channel substantially transversely to a longitudinally elongated axis of the channel providing thereby insulation between interior compartment space and exterior space, whereby alternately intermittently the first insert structure may be removed and replaced by the second insert structure thus providing for intermittent observation interior space of a furnace without excessive heat loss.

3,980,029
GRASS GROWING

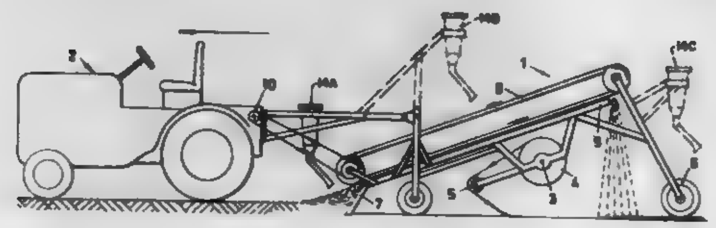
Wallace A. Huggett, Marlette, Mich., assignor to F. B. Mercer, Limited, England

Filed Dec. 2, 1974, Ser. No. 528,745

Claims priority, application United Kingdom, Dec. 4, 1973, 56148/73

Int. Cl.^{2} A01C *1/04*

U.S. Cl. 111—1 **4 Claims**



1. A method of embedding a reticulate mesh or net surface within a scraped soil surface for grass growing comprising continuously unwinding a reticulate mesh or net sheet onto the scraped surface from a travelling reel while continuously scraping soil from the surface in advance of the reel, conveying said scraped soil to the rear of the reel, mixing said scraped soil with seed, holding said sheet in contact with the scraped soil surface and continuously depositing said seeded scraped soil onto the already laid sheet.

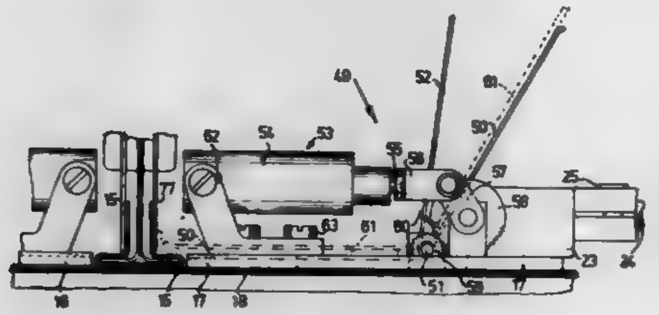
3,980,030
DEVICE FOR PRODUCING PIPED OPENINGS IN GARMENT PARTS

Jochen Fischer, Grieses Hof 5, 4812 Brackwede, and Reinhold Schrudde, Birkenstr. 77, 4801 Milse, both of Germany

Filed Dec. 16, 1974, Ser. No. 533,151

Int. Cl.^{2} D05B *3/10*

U.S. Cl. 112—121.15 **12 Claims**



1. A device for producing piped openings in flat base material comprising a frame having a workplate, first workpiece clamping means including two clamping plates, for securing said flat base material to said workplate, piping patch holding and folding means, stationary stitching mechanisms for sewing said folded piping patch to said flat base material with two stitch rows, a straight slit forming means for cutting a slit into said flat base material and said piping patch during sewing, a cutting means for forming V-shaped tab-slits at the ends of said straight slit, driving and actuating means for said stitching mechanisms, said first workpiece clamping means, said piping patch holding and folding means and said cutting means, second workpiece clamping means having two pairs of clamping rails and displaceable into said first workpiece clamping means and said piping patch holding and folding means, to receive said flat base material together with said folded piping patch and to feed them through said stitching mechanisms and said cutting means, said piping patch holding and folding means comprising pocket flap delivery means attached to each of said clamping plates and cooperating with said second workpiece clamping means and said piping patch folding means for feeding a pocket flat into the area of said clamping rails of said second workpiece clamping means.

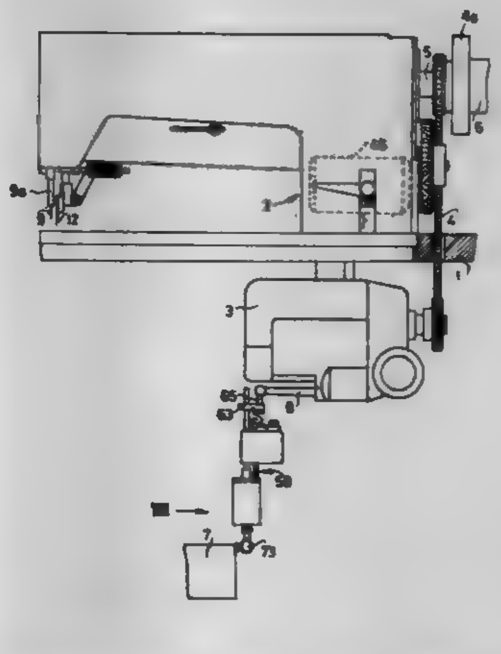
3,980,031
TRIMMING MECHANISM FOR SEWING MACHINES

Günter Landwehr, Rudolf Virchow Weg 48, 4814 Sennestadt, Germany

Filed Jan. 27, 1975, Ser. No. 525,471

Int. Cl.^{2} D05B *37/00*

U.S. Cl. 112—122 **4 Claims**



1. In a sewing machine having a hollow standard, an overhanging arm, a head, a rotary drive shaft extending longitudinally in said arm, a combined handwheel and pulley secured to said drive shaft, a reciprocating needle bar driven by said shaft, stitch forming means, a stop motor in driving connection with said pulley and having an actuating rod, a foot treadle and connecting means between said foot treadle and said actuating rod, a trimming mechanism including a trimming blade adjacent to said needle bar, a stationary counterknife cooperating with said trimmer blade, first driving means for imparting up and down motions to said trimming blade as a function of the positions of said needle bar, comprising eccentric means fastened to said rotary drive shaft driven by said stop motor, a double armed lever pivoted below said overhanding arm, a connecting rod linked to said eccentric means and one arm of said double-armed lever, a block carrying said trimming blade, a vertical guide rod receiving said block, and a transmission rod linked to said block and the free arm of said double-armed lever, and second driving means for imparting up and down motions to said trimming blade, irrespective to said first driving means consisting of a plate cam, a motor for driving said plate cam, cam follower means in engagement with said plate cam, an operating rod between said cam follower means and said first driving means and disengaging means for disconnecting said follower means from said plate cam, and control means for said motor.

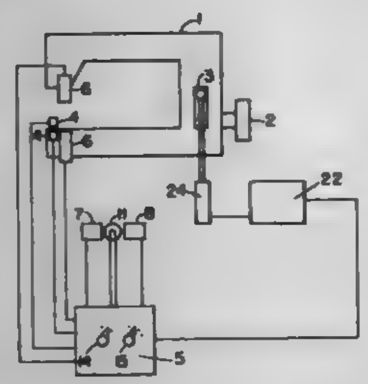
3,980,032
SEWING MACHINE HAVING AUTOMATIC FEED CONTROL SYSTEM

Johann Otto Kleinschmidt, Wettersbach, and Wolfgang Niem, Leonberg, both of Germany, assignors to Union Special Maschinenfabrik G.m.b.H., Stuttgart, Germany

Filed Apr. 17, 1975, Ser. No. 569,030

Int. Cl.^{2} D05B *27/08*

U.S. Cl. 112—209 4 Claims



1. A Sewing Machine for joining a plurality of fabric plies having a differential feed means, and means for matching the ends of said plies upon completion of a sewing operation, said means comprising:

- a first measuring means for continuously measuring the effective feed length of each individual fabric ply and for supplying a first variable value corresponding to the difference in the effective feed lengths of said plies;
- a second measuring means for measuring the lengths of said fabric plies prior to sewing, including means for generating a resultant output;
- logic means receiving said resultant output from said measuring means, said logic means includes means for producing a second variable value corresponding to the length difference of said fabric plies; and
- comparator means receiving said first and second variable values, said comparator means comparing said values and supplying a corrective value to said differential feed means when said values differ whereby variances in fabric lengths are corrected over the total length of said plies to bring the ends of said pieces into registration with one another upon completion of said sewing operation.

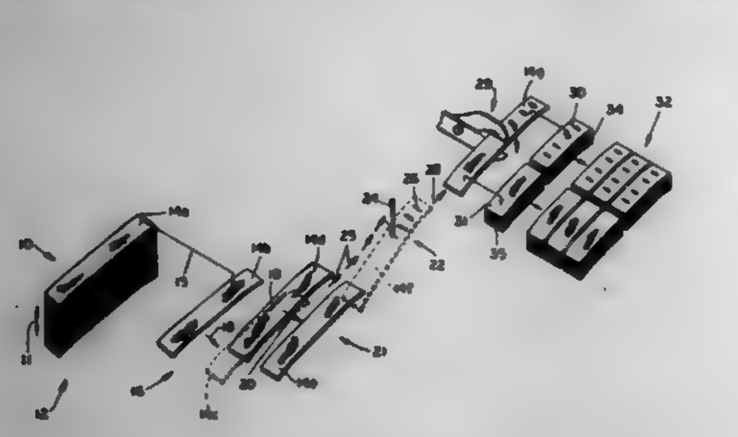
3,980,033
PLACKET BUTTONHOLE SYSTEM

Walter Wade Frost, Vidalia, and John P. Hunter, Jr., Dunwoody, both of Ga., assignors to Oxford Industries, Inc., Atlanta, Ga.

Filed Apr. 28, 1975, Ser. No. 572,269

Int. Cl.^{2} D05B *3/06, 21/00, 27/00*

U.S. Cl. 112—264 11 Claims



1. In a process of manufacturing curved shirt plackets with buttonholes, the improvement comprising moving a curved placket blank from the top of a stacked bundle of the curved placket blanks to a sewing station, intermittently moving the placket blank along its length through the sewing station, sewing and cutting a series of buttonholes in the placket blank at spaced intervals in one-half the length of the placket blank with the lengths of the buttonholes extending across the length of the placket blank, and turning the placket blank with respect to the sewing station to orient the lengths of the buttonholes approximately normal to the length of the curved placket blank.

3,980,034
METHOD OF PRODUCING AN EASY-OPENING CLOSURE

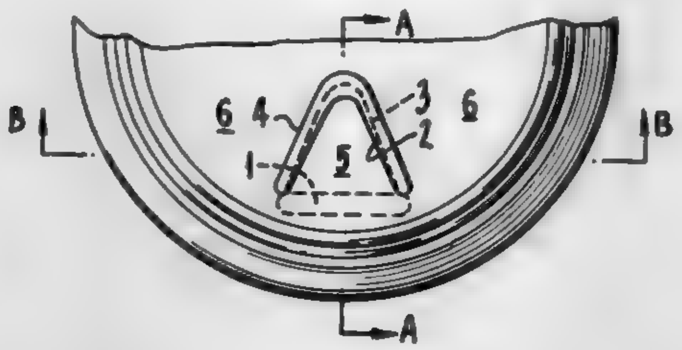
Michael Debenham, "Winton" Humphries Road, Frankston, Victoria, and Thomas Charles Coy, 4 Doset Court, Noble Park, Victoria, both of Australia

Filed May 14, 1974, Ser. No. 469,866

Claims priority, application Australia, May 15, 1973, 55705/73

Int. Cl.^{2} B21D *51/38*

U.S. Cl. 113—121 C 12 Claims



1. A method of forming an easy-opening closure in a sheet metal container member, said method consisting essentially of forming a bulge in an area of the sheet metal container member, partially severing a portion of the sheet metal adjacent said area to provide a free-edge which loops from adjacent a first point along the bulge to a second point along the bulge without diverging width wise between these points, the bulge lying outside of the loop, the free edge of the sheet metal from which said portion is partially severed defining an opening, and said severed portion defining a closure member for said opening, thereafter increasing the size of the closure member by at least partly flattening at least that portion of said bulge lying between said points to place at least a part of the free-edge portion of said closure member and the free-edge defining said opening or the interior surface of the sheet metal adjacent said opening in overlapping contact or in overlapping close proximity, whereby said container member having said-easy opening closure is suitable for use in forming a container for liquids.

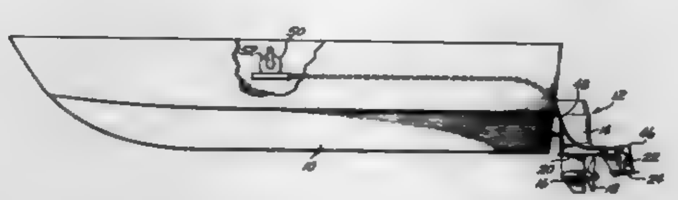
3,980,035
ATTITUDE CONTROL DEVICES FOR STERN DRIVE POWER BOATS

Sten E. Johansson, 5711 S. 152nd Place, No. 120, Seattle, Wash. 98188

Filed Dec. 23, 1974, Ser. No. 535,719

Int. Cl.^{2} B63B *1/26*

U.S. Cl. 114—66.5 H 11 Claims



1. In combination, a marine sterndrive propulsion unit adapted for attachment to a transom located mount comprising a generally vertically elongated housing which during use is positioned immediately rearwardly of the transom, said housing having a lower portion which during use is submerged, said housing further including a rearwardly projecting generally horizontally elongated mid-portion, a propeller supported by said lower portion, and adjustable trim tab means comprising:

- a laterally extending vane member;
- support strut means depending from a rear part of the horizontally elongated mid-portion of said housing, said support means mounting said vane member onto said housing and positioning said vane at a location below the water line, aft of the propeller and substantially within the slipstream of the propeller for rotation about a horizontal axis, with opposite portions of said vane member projecting outwardly from opposite sides of said depending support strut means in wing-like fashion; and
- control means for rotating said vane in position about said horizontal axis, to change the ange of attack on said vane member.

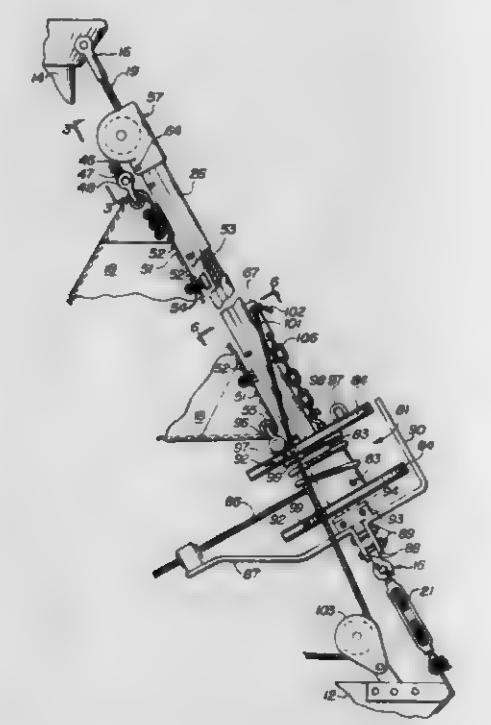
3,980,036
ROLLER FURLING ASSEMBLY

Donald H. Crall; 1580 Oleander Ave., Chula Vista, Calif. 92011

Filed Mar. 8, 1976, Ser. No. 664,521

Int. Cl.^{2} B63H *9/10*

U.S. Cl. 114—106 11 Claims



1. A roller furling assembly for installation on a stay comprising a plurality of spool half-sections shaped to fit around and rotate relative to said stay, first means for joining pairs of said half sections together, second means for joining said pairs of sections end-to-end for rotation together, each said half section having at least one longitudinal bore having a slot extending out to the exterior of said half section, a crown block fixed to the upper end of the uppermost pair of half sections and rotatable about said stay therewith, at least one sheave in said crown block, a furling drum fixed to and rotatable about said stay with the lowermost pair of half sections, a sail, third means on an edge of said sail fitting into a first of said slots and into a first of said bores, a furling line around said drum to rotate said drum around said stay and thereby to rotate said spool half-sections to furl said sail, a halyard fixed to the head of said sail extending up and over said sheave and down a second of said bores, a traveller fixed to the end of said halyard remote from said sail and partially disposed in said second bore, said traveller having an ear extending outside of said second slot, fourth means connected to said ear for tightening said halyard and fifth means for securing said ear in place relative to said assembly to maintain said halyard tight.

3,980,037
APPARATUS FOR MOORING SHIPS

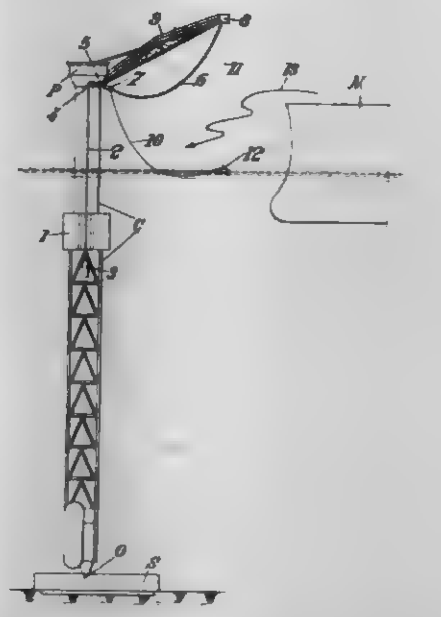
Samuel Tuson, Mesnil-le-Roi, France, assignor to Entreprise d'Equipements Mecaniques Hydrauliques E.M.H., Boulogne, France

Filed Jan. 17, 1975, Ser. No. 541,949

Claims priority, application France, Feb. 12, 1974, 74.04643

Int. Cl.^{2} B63B *21/00*

U.S. Cl. 114—230 8 Claims



1. Apparatus for mooring a ship comprising an elongate column, means for buoying said column in an upright manner in water, means for pivotally connecting the lower end of said column to a base anchored to a sea bed, a mooring cable having a first end for attaching to a ship to be moored and a second end attached to a counterweight moveable lengthwise of said column to permit extraction and retraction of said mooring cable out of and into said column, means for guiding the motion of said counterweight and cable lengthwise of said column and stop means for stopping the upward motion of said counterweight, said cable being arranged to be extracted from said column for the purpose of mooring a ship by traction applied by the ship to raise the counterweight against said stop means.

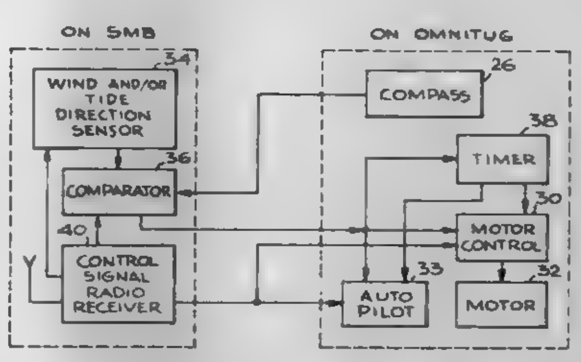
3,980,038
HOSE AND MOORING LINE POSITIONING SYSTEM

Stanley A. Dashew, Santa Monica, and Charles D. Sutton, Woodland Hills, both of Calif., assignors to Omnithruster, Inc., Compton, Calif.

Filed Mar. 31, 1975, Ser. No. 563,643

Int. Cl.^{2} B63B *21/50*

U.S. Cl. 114—230 15 Claims



1. In a tanker mooring a loading and unloading system of the type wherein pipes extend from a depot on shore, along the ocean bottom to a ship mooring means, said ship mooring

means being provided with a swivel means to which hoses extend and from which hoses extend and float on the surface of the ocean said ship mooring means also including mooring line means extending therefrom and floating on the surface of said ocean, the improvement comprising

boat means attached to said floating hoses and said mooring line means,

means for generating heading signals representative of said boat means heading,

mean for generating direction signals representing a desired direction for said hoses and said mooring line means to extend, including a wind and tide direction sensor means for generating desired direction signals representative of the wind and tide direction,

means for comparing said heading and wind and tide direction signals and generating error signals indicative of the difference between the two,

means on said boat means responsive to said error signals to cause said boat means to move in said desired direction thereby causing said floating hoses and said mooring line means to extend in said desired direction, and

means for instructing said boat means to move away from said ship mooring means when it is less than a predetermined distance from said ship mooring means.

3,980,039

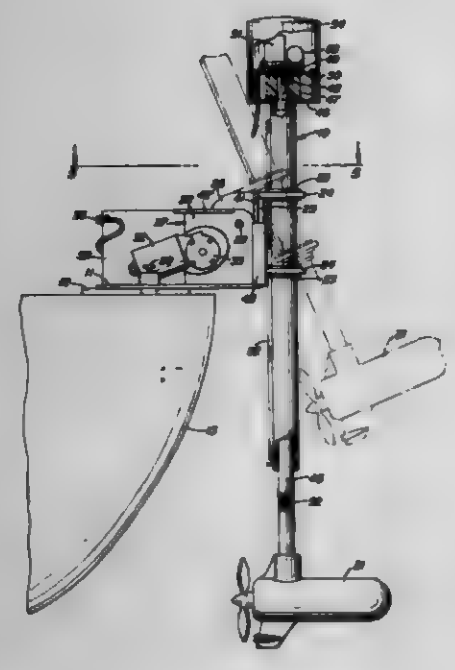
ELECTRICALLY OPERATED BOW MOUNT FOR TROLLING MOTOR

Andrew R. Henning, Richland, Mich., assignor to Shakespeare Company, Columbia, S.C.

Filed Oct. 29, 1975, Ser. No. 626,850

Int. Cl.² B63H *21/26*

U.S. Cl. 115—41 R **10 Claims**



1. Apparatus for mounting a trolling motor having a motor tube on the bow of a boat between an operating position with the motor tube vertical and a stowed position with the motor tube horizontal, comprising a mounting plate for attachment to the bow, a gear having a shaft journaled on said plate, an electric motor on said plate driving said gear, a rack on said motor tube meshing with said gear, a bracket pivoted on said gear shaft and slidably mounting said motor tube, latch means releasably connecting said bracket in the vertical operating position to said plate, and means on said motor tube to release said latch means when said motor tube is raised a predetermined amount to allow said tube to rotate bodily with said gear to the horizontal stowed position.

3,980,040

DIFFERENTIAL PRESSURE INDICATOR

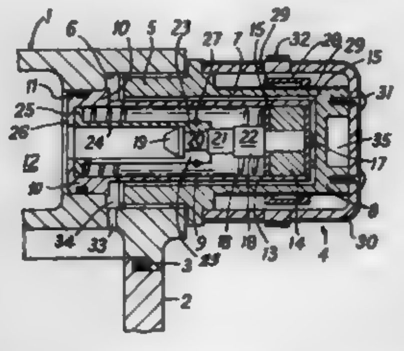
Brian Read, Chester, England, assignor to Fawcett Engineering Limited, Bromborough, England

Filed Mar. 27, 1975, Ser. No. 562,521

Claims priority, application United Kingdom, Mar. 29, 1974, 14056/74

Int. Cl.² G01D *7/00*; G01L *7/16*

U.S. Cl. 116—114 PV **10 Claims**



1. A differential pressure indicator comprising: a piston slidable in a cylindrical sleeve the opposite ends of which are in communication with fluid spaces between which a differential pressure may exist, resilient biasing means urging the piston towards the end of the sleeve associated with the higher pressure, a resiliently yieldable stop means for yieldably impeding movement of the piston in the direction against the resilient bias, an indicator member slidable on a surface exteriorly of the cylindrical sleeve and having a magnetic interconnection with the piston, a casing having a transparent portion and an opaque portion which conceals at least part of the indicator member in at least part of its range of movement, the arrangement being such that in use, with increasing differential pressure across the differential pressure indicator, the yieldable stop means holds the piston in a first position for as long as the differential pressure does not exceed a predetermined value but when the differential pressure exceeds this value the differential pressure across the piston will move the latter to a second position by causing the stop means to yield, the indicator member following the movement of the piston and co-operating with the casing so as to give a distinctive different visual indication in each of the positions of the piston.

3,980,041

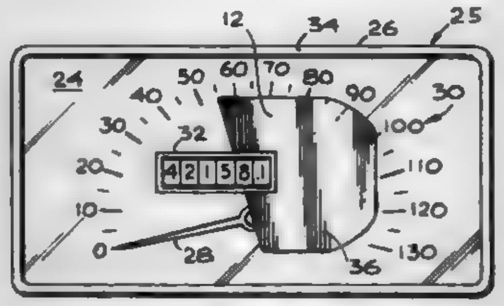
SPEEDOMETER WITH SPEED WARNING INDICATOR AND METHOD OF PROVIDING THE SAME

Robert Burns Evans, 1151 223rd St., Carson, Calif. 90745

Filed Oct. 22, 1974, Ser. No. 517,278

Int. Cl.² G01P *1/10*

U.S. Cl. 116—116 **6 Claims**



1. An improved speed warning indicator for a speedometer, said warning indicator comprising:

a transparent plate of clear plastic having means for attaching said plate to the transparent front cover of a speedometer casing having a speedometer dial disposed therein and spaced behind said cover, the plate being releasable and repositionable on said cover, the attaching means comprising a releasable and reattachable adhesive layer for adhering to the front cover in a selected position;

said plate bearing indicia demarking said plate and capable of demarking at least a portion of said dial, thereby indicating a speed warning while still permitting unobstructed viewing of said speedometer dial when said plate is secured on said cover.

3,980,042

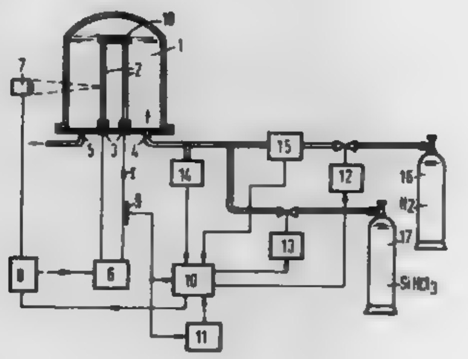
VAPOR DEPOSITION APPARATUS WITH COMPUTER CONTROL

Hans Stut, Groebenzell, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Division of Ser. No. 236,680, March 21, 1972. This application June 7, 1973, Ser. No. 367,832

Int. Cl. C23c *13/08*

U.S. Cl. 118—5 **3 Claims**



1. A device for producing highly pure semiconductor rods, comprising: a reaction chamber having a gas input opening and a gas output opening; a mounting device mounting a plurality of carrier members within said reaction chamber; means serially connecting said carrier members so that each may be traversed by the same heating current; an adjustable heating current source connected to said serially connected carrier members; an optical pyrometer for measuring the surface temperature of the carrier members, said optical pyrometer disposed outside of said reaction chamber and connected to said adjustable heating current source; a temperature regulator connected between said optical pyrometer and said adjustable heating current source for adjusting said heating current source; a current transformer interposed in the connection between said adjustable heating current source and said carrier members for sensing the flow of heating current; a process computer and a program generator connected to and feeding said process computer information including the amount of gas required for precipitation, said process computer connected to said temperature regulator and to said current transformer to derive signals for controlling gas feeding in accordance with the desired amount of gas required for precipitation and the temperature of the carrier members as reflected by the sensed current; a supply of carrier gas and a supply of gaseous compound containing the semiconductor material to be precipitated, said gas supplies connected to said gas input opening of said reaction chamber; and regulating means interposed between the respective gas supplies and said gas input opening including respective regulator valves connected to and controlled by said process computer.

3,980,043

PRESSURE-TYPE LIQUID COATING APPLICATOR

Anthony W. Pomper, deceased, late of Edison, N.J., by Hortense Head Pomper, executrix, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Feb. 25, 1975, Ser. No. 553,001

Int. Cl.² B05C *1/08, 3/18, 11/10*

U.S. Cl. 118—60 **5 Claims**

1. Web coating apparatus for applying a thin coating of molten resinous composition to a web comprising:

a carrier roll having a resilient peripheral surface for receiving a layer of coating material, and a metering roll having a hard non-resilient peripheral surface arranged in nip relationship therewith, said rolls having axes of rotation contained in a plane extending in angled relation with the vertical;

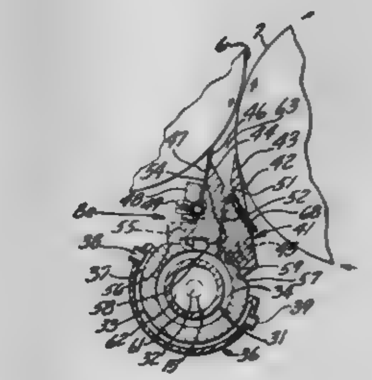
means for rotating the carrier roll upwardly into said nip, and means for rotating said metering roll downwardly into said nip;

liquid-applying means located along the underside of said nip comprising an upwardly-extending doctor blade in continuous engagement with a longitudinal portion of the periphery of said metering roll; dike means in spaced substantially-parallel coextensive relation with said doctor blade to extend in continuous uniform proximity with a longitudinal portion of said carrier roll; means for positioning said dike means to obtain any desired clearance thereof with said carrier roll; liquid-feeding manifold means supporting said doctor blade and dike means and extending in sealed relation with, and along, the edge portions thereof further away from said rolls; a pair of deckle devices received between opposite end portions of said doctor blade and said dike means, said devices being adjustable toward and away from each other to vary the width of application of coating material to a web; said devices, doctor blade, said dike means, and said manifold means forming an elongate, substantially-sealed, liquid-retaining region about areas of said rolls which are contiguous with said nip and face into said region;

said manifold means comprising supply duct means extending in its longitudinal direction lengthwise of the doctor blade and dike means, the interior of said duct means being connected with said region by transverse passageway means at a plurality of points substantially along the entire length of said region and said duct means; jacket means substantially surrounding said duct means to define a heating chamber for circulating a heat exchange fluid therethrough; circulating means for supplying a heat exchange fluid to said jacket and circulating it therethrough at a desired temperature corresponding to a desired temperature and viscosity of a coating composition;

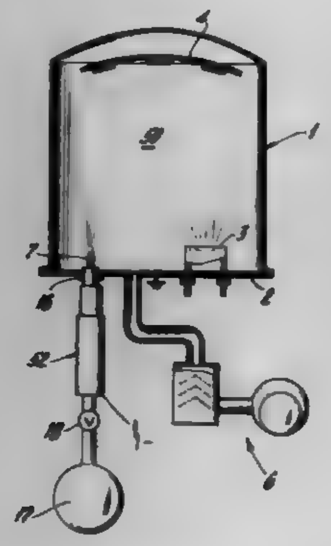
means for heating and plasticizing a normally solid resinous coating material to a liquid heated condition; and

pumping means for forwarding said material from said heating and plasticizing means to said liquid applying means.



3,980,044
APPARATUS FOR DEPOSITING THIN COATS BY VAPORIZATION UNDER THE SIMULTANEOUS ACTION OF AN IONIZED GAS

Erich Zollinger, Schaanwald, Liechtenstein, assignor to Balzers Patent und Beteiligungs AG, Liechtenstein
Continuation of Ser. No. 335,089, Feb. 23, 1973, abandoned.
This application Feb. 24, 1975, Ser. No. 552,215
Claims priority, application Switzerland, Mar. 6, 1972, 3175/72
Int. Cl.² C23C *13/12*
U.S. Cl. 118—49.1 4 Claims

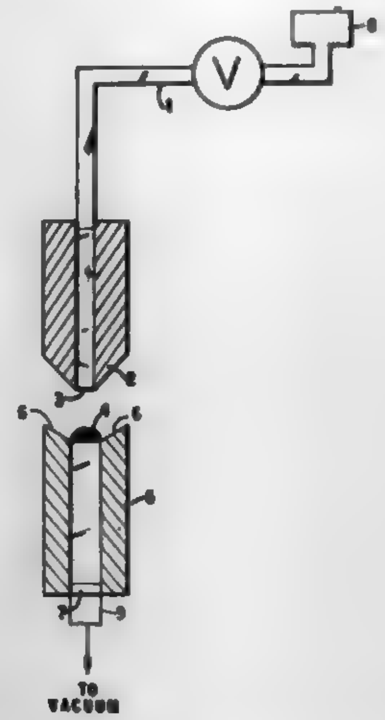


1. An arrangement for depositing thin coats by vaporization on substrates under the simultaneous action of an ionized gas, comprising a first housing defining a first gas chamber having an evaporative coating material therein and means defining a counter electrode and a holder for an object to be coated, a second housing including an antechamber portion having a tubular gas discharge electrode therein, a supply line for the gas to be ionized, connected to said gas discharge electrode, a long tubular gas flow restrictor extending from said antechamber to said first chamber and having a first open end aligned with said gas discharge electrode, and an opposite end with an orifice restrictor opening into first chamber, an insulating sleeve surrounding said tubular gas flow restrictor and having flange means connecting said sleeve to said first housing and insulating said tubular gas flow restrictor and said antechamber portion from said first housing, and means to maintain a pressure gradient between said first chamber and said antechamber portion during vaporization.

3,980,045
APPARATUS FOR APPLYING LIQUID FINISHING AGENTS TO TEXTILE THREADS

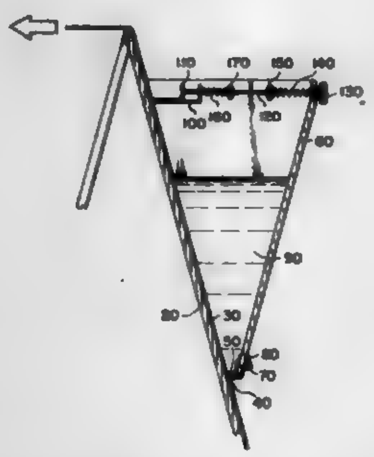
Wolfgang Zollner, Duesseldorf, Germany, assignor to Henkel & Cie G.m.b.H., Duesseldorf, Germany
Division of Ser. No. 447,636, March 4, 1974, Pat. No. 3,922,144. This application Apr. 29, 1975, Ser. No. 572,738
Claims priority, application Germany, Mar. 5, 1973, 2310899
Int. Cl.² D06B *1/04*
U.S. Cl. 118—50 3 Claims

1. Apparatus for applying a liquid finishing agent to a textile thread or yarn, comprising valved liquid finishing agent supply means, a finishing agent supply nozzle connected thereto to discharge liquid finishing agent downwardly as a free-falling jet; a suction nozzle positioned below said agent discharge nozzle and having a suction orifice coaxially in register with the discharge orifice of said finishing agent supply nozzle, said nozzles having substantially circular cross-sections, the inside diameter of said suction nozzle being substantially equal to the inside diameter of said supply nozzle; and a fiber guide at said suction orifice to maintain a moving thread or yarn in contact with said suction orifice; the distance between the discharge orifice of said agent discharge nozzle and the suction orifice of said suction nozzle being about ½ to 20 times the inside diameter of said suction orifice.



3,980,046
PAPER HANGER'S PASTE APPLICATOR

John D. Homan, Cheyenne, Wyo., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Aug. 11, 1975, Ser. No. 603,321
Int. Cl.² B05C *3/12*
U.S. Cl. 118—405 2 Claims



1. A device for applying paste to wallpaper, comprising:

an open-topped elongated bucket with a trapezoidal cross-section, with the large base of the trapezoidal being upwardmost and the bottom of the bucket having an elongated slit for introducing a strip of wallpaper into the bucket from the bottom;

guide means including a flexible elongated sealing lip located in the bottom of the bucket for allowing paper to be introduced into the bucket while preventing any fluid contents of the bucket from leaking downwardly out of the slit and said flexible lip maintaining the wallpaper onto the rear wall of the bucket; so that paste is applied to only one surface of said wallpaper;

scraping means located at the top of the bucket for scraping all but a predetermined amount of any contents of the bucket from said one surface of the paper;

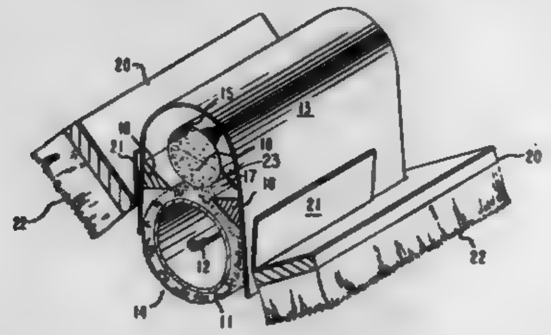
said scraping means comprising

- a. a first blade at least co-extensive with the width of said surface and fixed to the end of at least one horizontally extending threaded rod passing freely through the bucket wall remote from said surface,
- b. resilient means mounted on said rod and biasing said rod and blade into operative contact with said surface,
- c. a threaded adjustment nut on said rod and cooperative with said bias means whereby to vary the bias pressure,
- d. a second blade at least co-extensive with the width of said surface and supported from an intermediate portion of said rod,
- e. second resilient means mounted on said rod and biasing said second blade into operative contact with said surface, and
- f. a second nut on said rod and cooperative with said second resilient means to vary the bias pressure on said second blade,

whereby said blades are separately adjustable and adapted to function sequentially to first remove the major amount of excess paste and finally doctor said surface to said predetermined amount of paste.

3,980,047
AUTOMATIC TONING DEVICE

Abraham B. Cohen, Springfield, and Michael J. Krawacki, Union, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 15, 1974, Ser. No. 524,202
Int. Cl.² B05C *11/10, 17/02*
U.S. Cl. 118—608 5 Claims

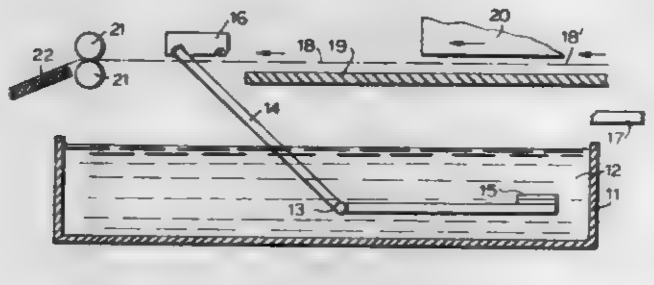


1. An apparatus for applying particulate material to a tacky surface comprising, within a housing:

1. a cylindrical sieve for breaking up agglomerates in the particulate material to form smaller particles of controlled size and for dispensing the particles to a depositing means; and
2. depositing means comprising at least one roller for applying the particles to a tacky surface without applying shear force, wherein said cylindrical sieve is driven by said roller and is free to move laterally within said housing.

3,980,048
LIQUID DEVELOPMENT APPARATUS

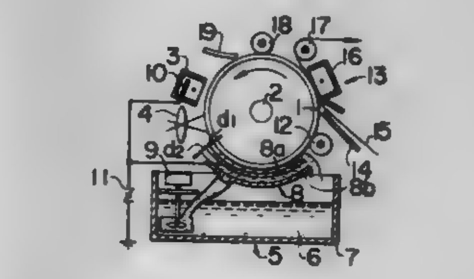
Guy Weber, Arques la Bataille, and Pham Kim Quang, Dieppe, both of France, assignors to La Cellophane, Paris, France
Filed Mar. 24, 1975, Ser. No. 561,546
Claims priority, application France, Apr. 2, 1974, 74.11626; Jan. 10, 1975, 75.00658; Jan. 17, 1975, 75.01385
Int. Cl.² G03G *15/10*
U.S. Cl. 118—637 12 Claims



1. A liquid development device for a document reproduction machine operating on a sheet by sheet basis comprising: (a) a mobile reservoir open in its upper part and having a plurality of relatively small openings in a side wall of its lower part, (b) a stationary tank containing the liquid developer and said reservoir disposed within said tank below the free surface of the developer whereby to charge said reservoir, (c) a means for lifting said changed reservoir above said tank when a sheet is present for developing and returning it to its original position at the bottom of the tank when the development has been completed, said tank openings being associated with means to establish capillary flow of developer liquid from said reservoir when at its position above the tank whereby to dispose developer material having a free surface at the bottom of tank and retained thereat by surface tension, and (e) means for applying a sheet to be developed in wiping contact with said free surface of the liquid developer.

3,980,049
DEVELOPING UNIT FOR ELECTROPHOTOGRAPHY

Susumu Tatsumi, Kawasaki, and Seiichi Miyakawa, Nagareyama, both of Japan, assignors to Ricoh Co., Ltd., Japan
Filed Jan. 28, 1976, Ser. No. 653,155
Claims priority, application Japan, Jan. 28, 1975, 50-12014
Int. Cl.² G03G *13/10*
U.S. Cl. 118—637 9 Claims



1. A developing unit for use with electrophotographic copying apparatus comprising photoreceptor means, having a photosensitive surface movable in a direction, for retaining an electrostatic latent image on said surface, developing electrode means maintained close to said latent image carrying surface, and means for supplying a developer between said surface and said electrode means to thereby develop the latent image, said unit comprising;

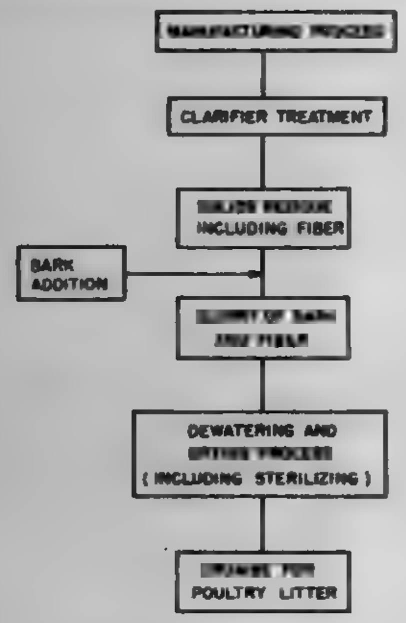
- a. first conductor means maintained spaced apart from said latent image carrying surface by a first predetermined distance, a fraction of said developer used being filled up between said first conductor and said surface,
- b. second conductor means maintained spaced apart from said first conductor means by a second predetermined distance, a fraction of said developer used being filled up between said first and second conductors,
- c. means connecting said second conductor means to the ground, and
- d. means maintaining the potential on said electrode means at a magnitude which is in a predetermined relationship with the magnitude of the potential on said first conductor means caused by an average potential of an electrostatic latent image facing thereto.

3,980,050
POULTRY LITTER AND PREPARATION THEREOF

Howard A. Neubauer, Childersburg, Ala., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Dec. 9, 1974, Ser. No. 530,707
Int. Cl.² A01K *1/01*
U.S. Cl. 119—1 8 Claims

1. A process for the conversion of waste product to a poultry litter which comprises the steps of mixing the fiber containing effluent of a paper mill with pine bark particles, and slurrying the bark particles and fibers together while agitating the

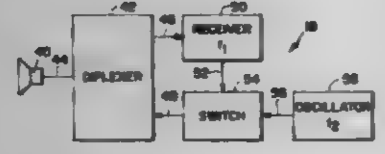
slurry to cause the fibers to come into intimate contact with the bark particles, dewatering the composite of fibers and bark under conditions which cause the fibers to adhere to the bark particles and dewatering to the extent that the composite is in the form of a mass of crumbs and has a bone dry solids content of about 65 to about 85 per cent by weight.

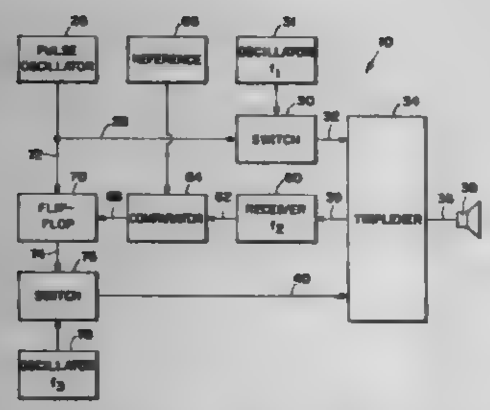


6. A litter for poultry houses comprising a body of absorbent crumbs having pine bark particles and cellulosic wood pulp fibrous particles adhered to the bark particles, the crumbs having a solids content on a bone dry basis in the range of about 65 percent to about 85 percent and the ratio by weight on a bone dry basis of the cellulosic fibrous particles to the pine bark particles being between about 60:40 to about 40:60, said crumbs having a limited capacity to retain liquid such that the litter does not tend to compact in use.

3,980,051
RANGE TRIGGERED ANIMAL TRAINING SYSTEM

Charles M. Fury, Chicago, Ill., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed May 16, 1975, Ser. No. 578,215
Int. Cl.^{2} A01K *15/00*
U.S. Cl. 119—29 3 Claims

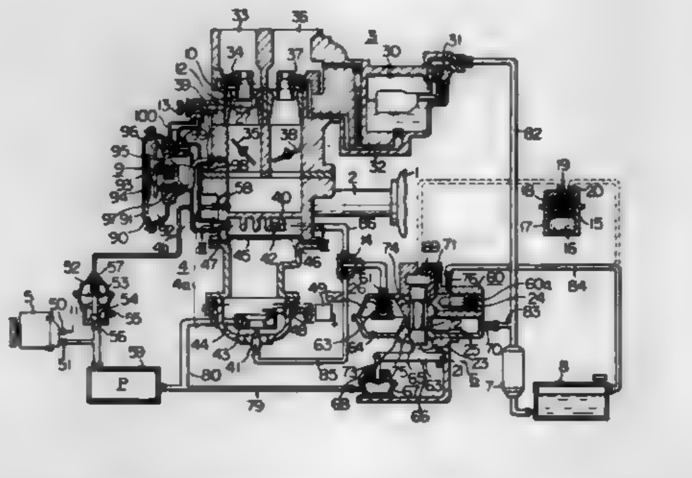




1. An animal training system responsive to the distance between an animal and a master location comprising: a first housing adapted to be positioned at said master location, transmitter means and receiver means in said first housing, and means in said first housing responsive to the time delay between transmitted and received signals for turning on means for signalling the animal to return to the master location and a second housing adapted to be worn on the animal, repeater means in said second housing for signalling said receiver means in response to receipt of a signal from said transmitter means.

3,980,052
FUEL SUPPLY INSTALLATION FOR INTERNAL COMBUSTION ENGINES

Masaaki Noguchi, Nagoya, and Masaharu Sumiyoshi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan
Filed Oct. 1, 1974, Ser. No. 510,915
Claims priority, application Japan, Dec. 21, 1973, 49-1992
Int. Cl.^{2} F02M *33/00*; F02B *43/10*
U.S. Cl. 123—3 11 Claims



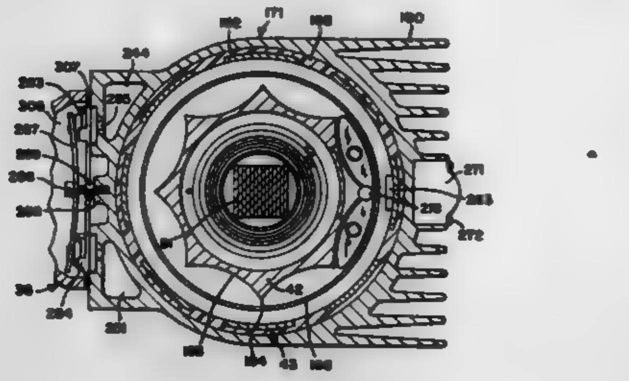
1. A fuel supply installation for internal combustion engines, in which a fuel tank and a carburetor for producing an attenuated air fuel mixture are connected by a first fuel supply line, and the carburetor is mounted on an intake manifold which is provided with opposite multiple delivery branches connectable to an internal combustion engine, comprising means for generating a fuel vapor containing partially oxidized fuel components, said fuel vapor generating means comprising a barrel having therein a space closed from the atmosphere, an air injecting means provided for injecting air into the space of the barrel, a fuel liquid supply nozzle supplying the space of said barrel with a liquid fuel fed from the fuel tank through a second fuel supply line, an ignition plug for providing an electric spark which causes combustion of the liquid fuel in the barrel with the aid of the air from the air injector thereby to cause generation of said fuel vapor containing partially oxidized fuel components in said barrel, and conduit means for carrying said fuel vapor from said barrel to said carburetor which includes ports for permitting said fuel vapor containing partially oxidized fuel components to enter the carburetor and mix with the attenuated air-fuel mixture entering an internal combustion engine.

3,980,053
FUEL SUPPLY APPARATUS FOR INTERNAL COMBUSTION ENGINES

Stephen Horvath, St. Ives, Australia, assignor to Beeston Company Limited, Hong Kong, Hong Kong
Continuation-in-part of Ser. No. 485,498, July 3, 1974, abandoned. This application Nov. 25, 1974, Ser. No. 527,085
Int. Cl.^{2} F02B *1/00, 67/00*; C25B *1/04*; F02M *7/00*
U.S. Cl. 123—3 18 Claims

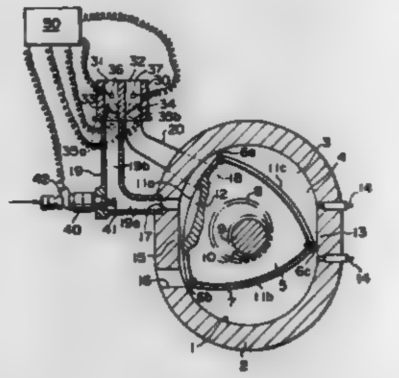
9. In combination with an internal combustion engine having an inlet for combustible fuel, fuel supply apparatus comprising:

a. an electrolytic cell to hold an electrolytic conductor;
b. a first hollow cylindrical electrode disposed within said cell and provided about its outer surface with a series of circumferentially spaced and longitudinally extending flutes;
c. a second hollow cylindrical electrode surrounding said anode and segmented into a series of electrically connected longitudinally extending strip; said strips being equal in number to the number of said flutes, said strips having a total active surface area approximately equal to the total active surface area of said flutes, and said strips being in radial alignment with the crests of said flutes;
d. current generating means for generating a flow of electrolysing current between said first and second electrodes;
e. gas collection and delivery means to collect hydrogen and oxygen gases from the cell and to direct them to said fuel inlet of the engine; and
f. water admission means to admit water to the cell.



3,980,054
STRATIFIED COMBUSTION ROTARY PISTON ENGINE WITH A FUEL INJECTION SYSTEM

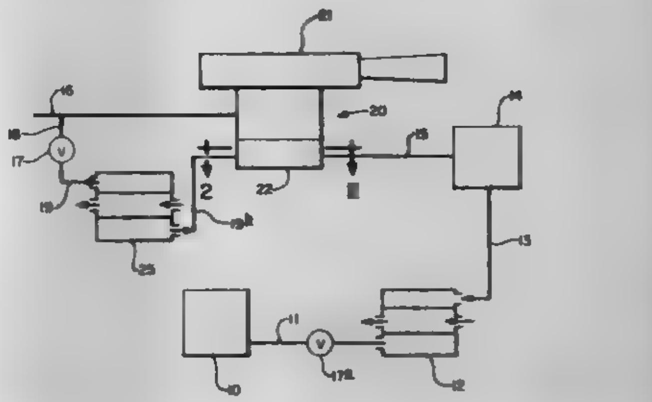
Toshiyuki Kono, Toyoake, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Sept. 25, 1975, Ser. No. 616,650
Claims priority, application Japan, June 19, 1975, 50-74641
Int. Cl.^{2} F02B *53/04*
U.S. Cl. 123—8.13 4 Claims



1. A rotary piston engine comprising a casing composed of a rotor housing having a trochoidal inner peripheral surface and side housings which close opposite sides of said rotor housing and a polygonal rotor mounted to rotate eccentrically in said casing with apex portions thereof sliding over said inner peripheral surface, said casing having a first intake port which opens in said trochoidal inner peripheral surface and a second intake port which opens in an inner surface of said side housing at a portion advanced from said first intake port with respect to the rotational direction of said rotor, said first intake port being supplied with a fuel-air mixture while said second intake port is supplied with only air, wherein the improvement comprises a fuel injection device provided in a fuel supply system for supplying a fuel-air mixture to said first intake port, said fuel injection device being provided with means for controlling the injection of fuel in relation to the amount of air supplied through said first and second intake ports.

3,980,055
FUEL SAVER AND POLLUTION CONTROL DEVICE

Charles Leonard Webb, 4834 E. Central St., Zachary, La. 70791
Continuation-in-part of Ser. No. 464,104, May 29, 1974, abandoned. This application Oct. 4, 1974, Ser. No. 512,073
Int. Cl.^{2} F02D *19/00*
U.S. Cl. 123—25 B 5 Claims



1. An apparatus for improving gas economy and abating exhaust gas pollution for four cycle, reciprocating piston, internal combustion engines or rotary engines, consisting essentially of, in combination with a four cycle, reciprocating piston, internal combustion engine, the following elements:

a. a water reservoir;
b. a heat exchanger located within the exhaust manifold of said engine and beneath said water reservoir whereby water flowing from said reservoir through a conduit connected to said reservoir and said heat exchanger is turned to steam;
c. a second conduit connecting said heat exchanger to a water trap in which steam from said heat exchanger is separated from any condensation;
d. a third conduit attached to said steam trap whereby steam is passed therefrom to the gas-air mixture feed of the carburetor of said engine;
e. a fourth conduit attached to said heat exchanger for heating and conveying gasoline to said gas-air mixture feed of the carburetor of said engine;
f. a mixing chamber wherein said heated gasoline and said steam is mixed prior to the entry of said gas and said steam into the gas-air mixture feed of the carburetor of said engine; and
g. plate means containing said mixing chamber, said plate means being located between the downstream end of said carburetor and the intake manifold of said engine, said plate means having a series of holes therein through which the gasoline and air mixture from said carburetor flows, said plate means having channels therein connecting said mixing chamber with said holes.

3,980,056
FUEL INJECTION DEVICE

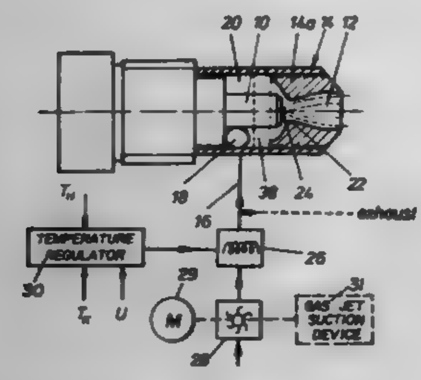
Werner Kraus, Bauerstrasse 31, 8000 Munich 40, Germany
Filed Dec. 18, 1972, Ser. No. 315,817
Int. Cl.^{2} F02B *3/00*
U.S. Cl. 123—27 A 16 Claims

1. A fuel injection system for an internal combustion engine which has at least one combustion chamber and a given combustion air requirement at idling speed comprising a fuel injection device including;

a fuel injector ;
an annular means for forming a chamber having an inner wall and surrounding said injector, with said injector having an opening for injecting a fuel mist jet into a zone of the chamber adjacent said opening, with a part of said wall extending in the direction of the fuel mist jet emerging from said opening of said injector in an axial direction beyond said opening, thereby defining said zone, and with

the inner wall of said extending part of said annular means being shaped so that it is not reached by fuel droplets of the fuel mist jet; and

a hot gas supply means connected to said chamber including a heating device independent of the internal combustion engine for supplying a hot gas current into said chamber downstream of said zone adjacent to said opening in said injector for passage through said zone at a mean flow rate of at most one-third of the given combustion air requirement at idling speed.



3,980,057

TORCH IGNITION TYPE INTERNAL COMBUSTION ENGINE

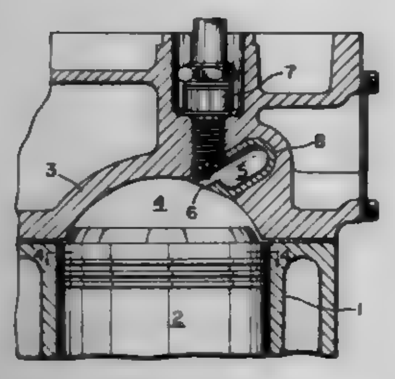
Shougo Sanda, Okazaki, and Norihiko Nakamura, Mishima, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 18, 1975, Ser. No. 550,632

Claims priority, application Japan, July 31, 1974, 49-87800

Int. Cl.² F02B *23/00*

U.S. Cl. 123—32 K **3 Claims**



1. A torch ignition internal combustion engine of the type which has no intake valve in the auxiliary combustion chamber, said engine comprising:

a cylinder;

a cylinder head;

a reciprocable piston in said cylinder;

a main combustion chamber defined between said cylinder head and an end face of said piston and equipped with intake and exhaust valves;

an auxiliary combustion chamber in said cylinder head;

a passage directly interconnecting said main and auxiliary combustion chambers, one end of said passage opening into said main combustion chamber and the other end thereof opening into said auxiliary combustion chamber; said passage having a uniform transverse cross-sectional area from the one end to the other end thereof;

an ignition plug having sparking electrodes in said passage;

said auxiliary combustion chamber being completely closed except for the opening of said passage thereinto; and

the ratio of the volume of the auxiliary combustion chamber to the volume of displacement of the piston is within a range of 0.0106:1 to 0.0137:1 and the ratio of the transverse cross-sectional area of said passage to the cross-sectional area of the end face of said piston is within a range of 0.009:1 to 0023:1.

3,980,058

FUEL FEED CONTROL SYSTEM OF INTERNAL COMBUSTION ENGINE

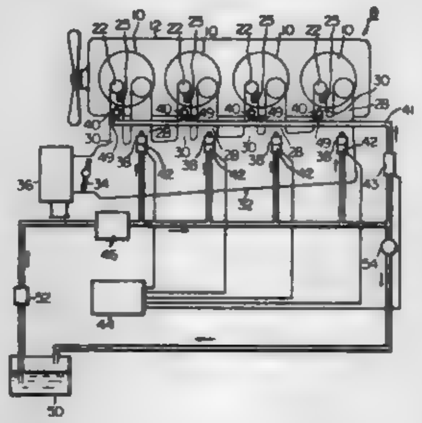
Ryoichi Nakagawa, Tokyo; Shuya Nambu, Yokosuka, and Hidehiro Minami, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 27, 1974, Ser. No. 455,274

Claims priority, application Japan, Mar. 28, 1973, 48-35444

Int. Cl.² F02B *19/10, 19/18*

U.S. Cl. 123—32 SP **7 Claims**



1. In a fuel supply system for supplying at predetermined values fuel to main combustion chambers as well as to auxiliary combustion chambers of a torch type internal combustion engine, said fuel supply system having a fuel injector pump; the improvement comprising:

a plurality of main fuel injectors respectively mounted in a plurality of main branches which are respectively communicated with said main combustion chambers through main intake valves, each of said main fuel injectors being connected to said fuel injector pump;

a plurality of auxiliary fuel injectors respectively mounted in a plurality of auxiliary branches which are respectively communicated with said auxiliary combustion chambers through auxiliary intake valves, said auxiliary fuel injectors being connected through a common conduit to said fuel injector pump;

a plurality of first injection control solenoid valves respectively mounted on said main fuel injectors and controlling the amount of fuel injected into said main branches;

a second injection control solenoid valve operatively disposed in said common conduit and controlling the amount of fuel injected into said auxiliary branches; and

computer means electrically connected with said first and second injection control solenoid valves for operating said first and second injection control solenoid valves in synchronism with the intake stroke of said engine.

3,980,059

INTERNAL COMBUSTION ENGINE

Masaaki Noguchi, Nagoya; Yukiyasu Tanaka, Okazaki, and Setsuro Sekiya, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed June 6, 1974, Ser. No. 476,795

Claims priority, application Japan, June 8, 1973, 48-64501

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 ST **18 Claims**

7. An internal combustion engine comprising:

a main combustion chamber;

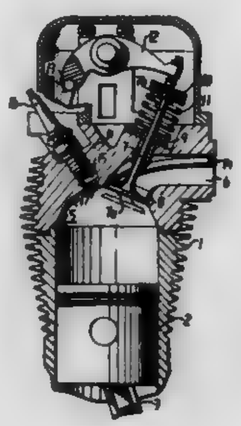
an auxiliary combustion chamber having an orifice through which said auxiliary combustion chamber communicates with said main combustion chamber;

a suction port means in communication with said main combustion chamber for introducing a lean mixture

thereto, said suction port being so constructed in association with said main combustion chamber that said port causes said lean mixture to swirl in said main combustion chamber in such a manner that the center of the swirling of said lean mixture is formed in the vicinity of said orifice; and

a suction passage means located within said suction port means for introducing a rich mixture into said main combustion chamber and toward said center of said swirling, whereby a rich mixture zone is formed in the vicinity of said orifice and a lean mixture zone is formed around said rich mixture zone;

whereby at least a portion of said rich mixture is introduced through said orifice into said auxiliary combustion chamber during a compression stroke of said internal combustion engine.



3,980,060

INTERNAL COMBUSTION ENGINE

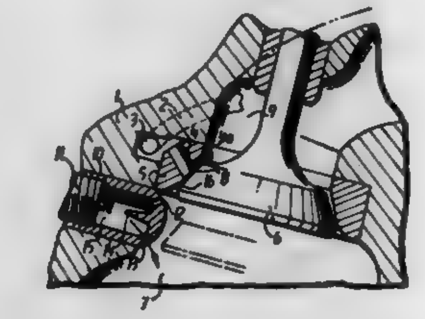
Masaaki Noguchi, Nagoya; Yukiyasu Tanaka, Okazaki; Setsuro Sekiya, and Katsuhiko Motosugi, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed July 3, 1974, Ser. No. 485,531

Claims priority, application Japan, July 12, 1973, 48-078917

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 ST **14 Claims**



1. An internal combustion engine, wherein a rich air-fuel mixture is adapted to be ignited within an auxiliary combustion chamber and a lean air-fuel mixture is adapted to be ignited within a combustion chamber by means of said ignited rich air-fuel mixture, comprising:

a cylinder;

a cylinder head cooperating with said cylinder to define a combustion chamber;

an intake valve having a valve stem and a valve head connected thereto;

suction port means for introducing a lean air-fuel mixture into said combustion chamber;

valve seat means adapted to seat said intake valve thereon; and

passage means for introducing a rich air-fuel mixture into said combustion chamber prior to entry of said rich air-fuel mixture into an auxiliary combustion chamber;

said passage means having an open end which opens in said suction port, said open end being adapted to be seated on said intake valve head whereby said open end is closed when said intake valve is seated on said valve seat.

3,980,061

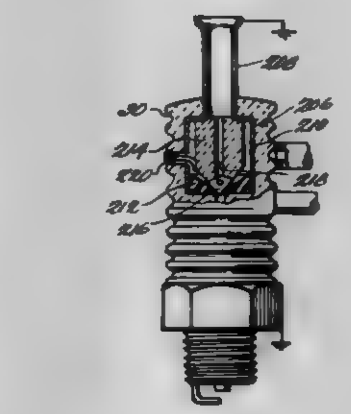
FUEL INJECTION-SPARK IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Roy E. McAlister, 5285 Red Rock North, Phoenix, Ariz. 85018

Division of Ser. No. 232,575, March 7, 1972, Pat. No. 3,830,204. This application July 9, 1974, Ser. No. 486,910

Int. Cl.² F02M *51/00*

U.S. Cl. 123—32 AE **2 Claims**



1. A device for injecting fuel into a combustion chamber of an internal combustion engine comprising a structure adapted to be mounted in an internal combustion engine with one portion thereof disposed in operative communicating relation with a combustion chamber and another disposed in generally exposed relation, said structure having fuel passage means extending therethrough having inlet means in said exposed portion and outlet means in said one portion, and valve means of piezoelectric material normally closing said passage means operable in response to the transmittal of a variable characteristic electrical signal thereto to open said passage means a variable amount which varies the flow rate therethrough as a function of the variable characteristic of said electrical signal, said valve means including a rigid valve housing and an elongated valve member of piezoelectrical material, said elongated member having one end thereof fixed to said housing and the opposite end thereof disposed in normally closing relation to said passage means, and means for electrically connecting the ends of said piezoelectrical member for transmittal of a variable characteristic electrical signal therethrough whereby the opposite end of said piezoelectrical member moves longitudinally away from said passage means a variable amount which is a function of the variation in said variable characteristic electrical signal.

3,980,062

FUEL INJECTION SYSTEM

Wolf Wessel, Schwieberdingen; Wilfried Sautter, Ditzingen; Jürgen Abt, Stuttgart, and Dieter Handtmann, Sindelfingen, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Mar. 31, 1975, Ser. No. 563,334

Claims priority, application Germany, Apr. 25, 1974, 2420031

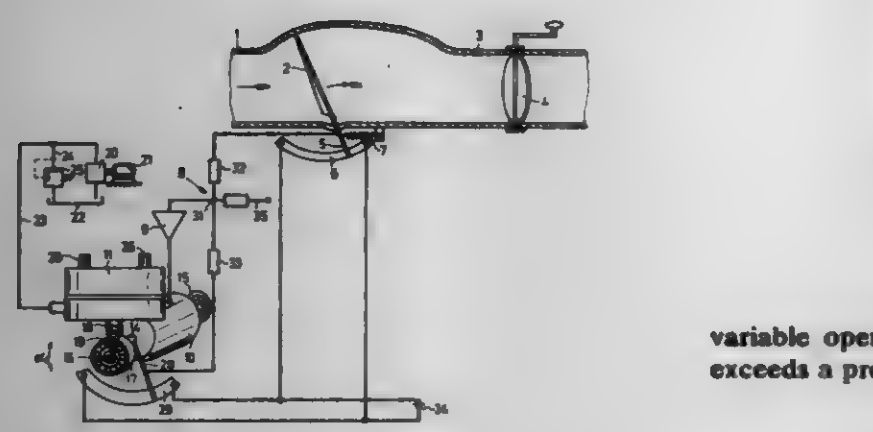
Int. Cl.² F02B *3/00;* **F02M** *39/00*

U.S. Cl. 123—32 EA **13 Claims**

1. In a fuel innjection system for an internal combustion engine which includes an electric battery and an air induction tube containing, seriatim, an air flow rate measuring member and a throttle valve, said system also including

A. first measuring transducer means associated with said air flow member and producing a first electrical signal;

B. control amplifier means, connected to said first measuring transducer and receiving said first electrical signal;
C. electromagnetic servomotor means, including an armature, and controlled by said control amplifier means, said electromagnetic servomotor means having a rotating shaft means;
D. fuel control means, including a fuel control slide for providing fuel to the engine;
E. linkage means, for transmitting and setting motions of said servomotor shaft means to said fuel control means;



F. second measuring transducer means coupled with said shaft means for providing a second electrical signal representative of the position of said rotating shaft to said control amplifier means, the improvement comprising:
G. circuit means mediately supplying said first and second signals to said control amplifier means constituting a feedback control loop wherein said airflow rate measuring member and said linkage means have substantially identical non-linear operating characteristics.

3,980,063

DEVICES FOR RECIRCULATING EXHAUST GASES IN INTERNAL COMBUSTION ENGINES

Claude Hénault, Billancourt, France, assignor to Regie Nationale des Usines Renault and Automobiles Peugeot, both of, France

Filed June 1, 1971, Ser. No. 148,329

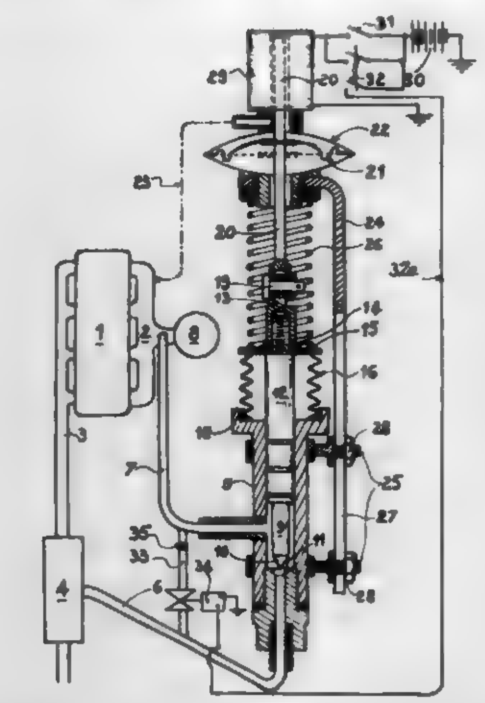
Claims priority, application France, June 12, 1970, 70.21640; Nov. 26, 1970, 70.42529

The portion of the term of this patent subsequent to Sept. 14, 1991, has been disclaimed.

Int. Cl.^{2} F02M *25/06*

U.S. Cl. 123—119 A **3 Claims**

1. An exhaust gas recirculation control device for an internal combustion engine comprising an induction manifold, an exhaust gas expansion muffler, recirculation means interconnecting said muffler and said manifold for recirculating the exhaust gas, at least one recirculation control valve inserted in said recirculation means, electromagnetic means for actuating said valve, vacuum means for actuating said valve, a starter motor swtich, a switch responsive to full-load conditions of the engine, said starter motor switch being electrically connected with said electromagnetic means so as to cause the full opening of said valve when starting the engine during the period preceding the engine firing, said switch responsive to full-load conditions being electrically connected with said electromagnetic means so as to cause the full opening of said valve at full-load conditions of the engine, and said vacuum means being connected to said induction manifold so as to cause a variable opening of said valve when the induction vacuum exceeds a pre-adjusted value.



3,980,064

INTERNAL COMBUSTION ENGINE

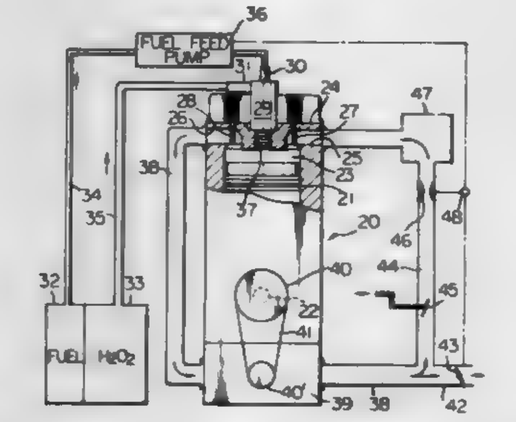
Hajime Ariga, Yokohama, and Shuzo Maruyama, Kamakura, both of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Feb. 22, 1973, Ser. No. 334,658

Claims priority, application Japan, Apr. 21, 1972, 47-40179; June 28, 1972, 47-64686; July 4, 1972, 47-67408; Apr. 3, 1972, 47-33328; Sept. 13, 1972, 47-92124

Int. Cl.^{2} F02M *25/00*

U.S. Cl. 123—119 A **5 Claims**



1. In an internal combustion engine of the type including a combustion chamber having intake and exhaust ports; and injection means for injecting a mixture of fuel and oxidizer into said combustion chamber, the improvement comprising:
means defining an exhaust flowpath for providing communication between said exhaust port and said intake port;
wherein said injection means comprises means defining a fuel flowpath, including a venturi, for delivering fuel to said combustion chamber and means defining an oxidizer flowpath for delivering oxidizer to said fuel flowpath downstream of said venturi; and
wherein said means defining an exhaust flowpath comprises a branched conduit providing communication between said exhaust port and said intake port, and providing communication between said exhaust port and the ambient atmosphere, a throttle valve disposed in the portion of said branched conduit in communication with said intake port and actuatable for controlling the flow of exhaust gases to said intake port, a sensor disposed in the portion of said branched conduit in communication with said intake port at a position downstream from said throttle valve for developing an output signal representative of the flow rate of exhaust gases at said position, a fuel pump responsive to the sensor output signals for providing fuel under pressure to said means defining a fuel flowpath and for increasing the fuel pressure in response to sensed increases in exhaust gas flow rate, means for applying the sensor output signal to said fuel pump, valve means responsive to the sensor output signal for decreasing the rate of exhaust gas flow into the ambient atmosphere in response to sensed increases in exhaust gas flow rate, and means for applying the sensor output signal to said valve means.

3,980,065

AUTOMATIC ACTUATOR FOR CARBURETOR CHOKE VALVE

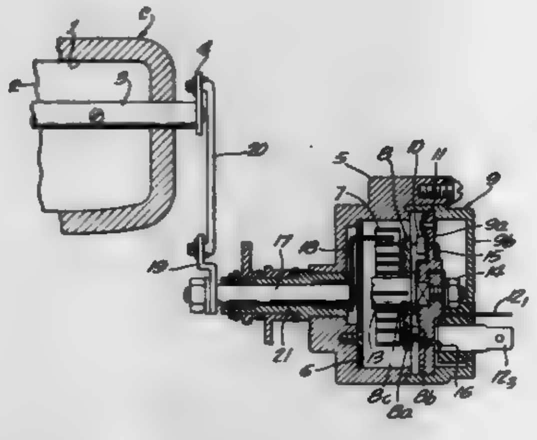
Toshio Nomura, Niiza; Masaaki Ozaki, Sayama; Makoto Ishii, Wako, and Masahiko Iiyama, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1975, Ser. No. 565,082

Claims priority, application Japan, Apr. 10, 1974, 49-41316; Apr. 15, 1974, 49-40936

Int. Cl.^{7} 02D *11/08;* **F02N** *1/10, 23/04*

U.S. Cl. 123—115 **12 Claims**



1. In an internal combustion engine carburetion system having a carburetor including an air intake passageway and a choke valve, the improvement of an automatic actuator for the carburetor choke valve comprising: a shaft comprised of heat conductive material fixed relative to said carburetor, temperature responsive choke valve operating means attached to said shaft for actuating said choke valve, a heater attached to said shaft for heating said choke valve operating means, and heat sensing means attached to said shaft for sensing heat from said choke valve operating means and for regulating current to said heater; said choke valve operating means, heater and heat sensing means being thermally associated with said heat conductive shaft.

3,980,066

FUEL INJECTION PUMPING APPARATUS

William John Hollins, London, England, assignor to C.A.V. Limited, Birmingham, England

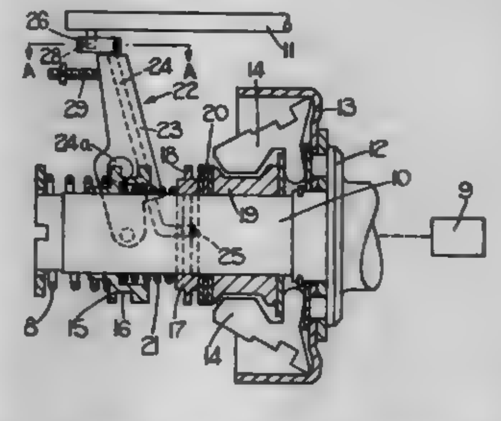
Filed Mar. 25, 1975, Ser. No. 561,854

Claims priority, application United Kingdom, Apr. 2, 1974, 14484/74

Int. Cl.^{2} F02D *1/04, 1/06*

U.S. Cl. 123—140 R **7 Claims**

1. A fuel injection pumping apparatus for supplying fuel to internal combustion engines and comprising a rotary shaft adapted to be driven in timed relationship with an associated engine, an injection pump driven by the shaft, a control member movable to vary the quantity of fuel supplied by the injection pump, and lever means coupling the control member to a governor mechanism including a centrifugally operable weight mechanism driven by the shaft, said governor mechanism comprising a first sleeve slidable on the shaft, first resilient means acting on the first sleeve to urge the sleeve in one direction, a second sleeve slidable on the shaft, second resilient means acting on said second sleeve, said weight mechanism acting to effect movement of the sleeves in opposition to the force exerted by said resilient means, said lever means comprising a first element constrained for pivotal movement about an axis, said first element being coupled to said first sleeve, a second element coupled to said second sleeve and being mounted relative to said first element so as to pivot therewith about said axis, and means coupling said second element to the control member whereby limited movement of the control member will occur as a result of movement of the sleeves relative to each other, the main movement of the control member occurring as a result of movement of the first sleeve.



3,980,067

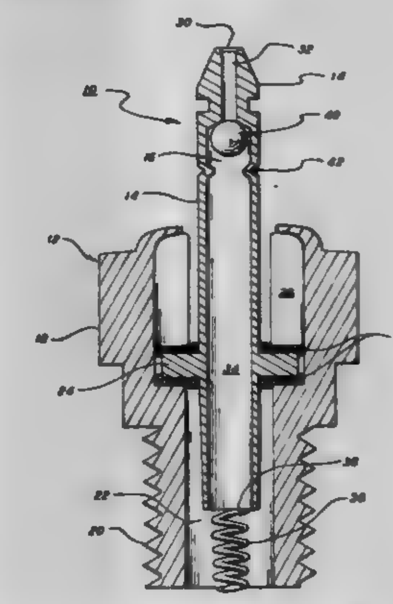
PRIMER VALVE FOR MODEL ENGINES

Richard C. Remington, 10 Van Riper Ave., Pompton Plains, N.J. 07444

Filed Feb. 21, 1975, Ser. No. 551,601

Int. Cl.^{2} F02M *1/16*

U.S. Cl. 123—187.5 R **2 Claims**



1. A primer valve for a two cycle engine attached to an accessible portion thereof and independent of the mounting configuration of the engine comprising a glow plug having a cylindrical housing threadedly secured into the cylinder head of the engine and provided with a hollow center electrode electrically isolated therefrom, said electrode provided with an integral circular flange to maintain it in a fixed axial configuration relative to said housing and having an exposed end formed with a primer opening, a hollow electrode portion axially spaced from said primer opening and having direct access to the engine cylinder, an axial aperture operatively connecting said primer opening and said hollow electrode portion and having an inner end forming a valve seat, a num-

ber of indent portions provided on the inner surfaces of said hollow electrode and axially spaced from said valve seat, a ball check valve freely movable within said hollow electrode between said valve seat and said indent portions to operatively seal said inner end in response to the continuous positive internal pressure of the operating engine while permitting fuel flow through said indent portions during priming of the engine.

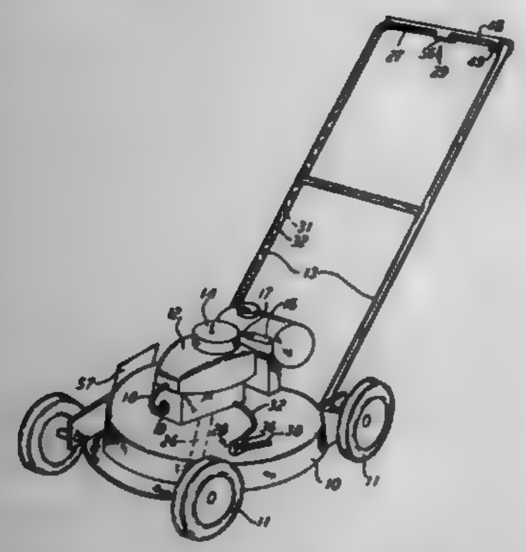
3,980,068
GASOLINE POWERED MACHINE HAVING TWO ELECTRIC CIRCUIT SWITCHES

Lee L. Karsten, Racine, and Merlin H. Gandrud, Sturtevant, both of Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.

Filed Mar. 25, 1975, Ser. No. 561,772

Int. Cl.² F02B *77/08*

U.S. Cl. 123—198 DC 3 Claims



1. A gasoline powered machine comprising a gasoline engine, an electric circuit electrically connected to said engine for conducting electrically to said gasoline engine for operation of said gasoline engine, two electric switches electrically connected together in series with said electric circuit, both of said switches including spring means operative in both of said switches and yieldingly urging said switches to the normally closed position and said normally-closed switches being electrically connected with said machine in an electrically grounded connection, whereby said electric circuit is grounded through said switches to thereby interrupt the operative electric connection of said circuit with said engine and thereby require that at least one of said switches be retained in its electrically open position in order to avoid the grounding of said circuit when it is desired that said engine be operating, and both of said switches including actuator means operative on said spring means for overcoming the urging of said spring means to thereby open said switches and allow the operator to hold said actuators against the forces of said spring means to effect positioning said switches in the electrically open positions.

3,980,069
INSERT FOR A RADIANT HEATING SYSTEM

Eugene W. Butlak, Buffalo, and Robert G. Budden, Clarence, both of N.Y., assignors to Roberts-Gordon Appliance Corporation, Buffalo, N.Y.

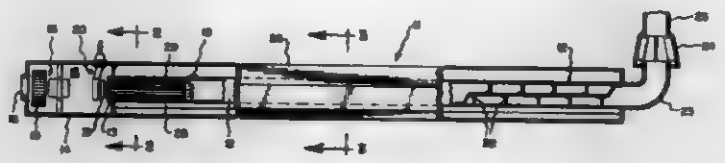
Filed Sept. 22, 1975, Ser. No. 615,379

Int. Cl.² F24C *3/00*

U.S. Cl. 126—91 A 4 Claims

1. In a heating system having a burner head spaced from an open end of an elongated heat-radiating tube and adapted to deliver a fuel to support a flame within a marginal portion of said tube adjacent said end, the improvement comprising:

a tubular insert arranged within such tube marginal portion and adapted to contain said flame to insulate said tube marginal portion from the heat of said flame and to insure efficient combustion of said fuel, said insert having a corrugated outer surface comprising an alternating series of longitudinally-extending peaks and valleys, said peaks adapted to contact the inner surface of said tube to maintain the axis of said insert substantially coincident with the axis of said tube,



whereby said insert may insulate said tube marginal portion from the heat of said flame and may preheat air drawn into said tube and passing through the spaces between said valleys and said tube inner surface to insure efficient combustion of said fuel.

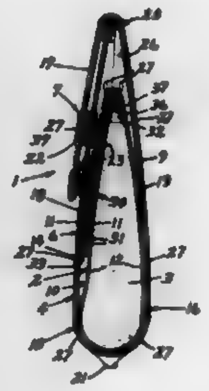
3,980,070
HEATING PACK CONTAINING A GRANULAR CHEMICAL COMPOSITION

Calvin S. Krupa, Osseo, Minn., assignor to Scotty Manufacturing Company, Osseo, Minn.

Filed Jan. 8, 1975, Ser. No. 539,272

Int. Cl.² F24J *1/02*

U.S. Cl. 126—263 4 Claims



1. In a heating pack comprising an outer bag and a removable inner bag for containing a particulate ferrous metal for producing an exothermic oxidation reaction in the presence of water, the improvement which comprises 6–8 parts by weight of an oxidizing mixture for use in combination with 100 parts by weight of said ferrous metal, said oxidizing mixture consisting essentially of:

25–35% by weight of cupric carbonate;
30–40% by weight of sodium chloride;
20–30% by weight of citric acid; and
7–10% by weight of potassium chlorate.

3,980,071
SOLAR ENERGY COLLECTOR

Everett M. Barber, Jr., Madison, Conn., assignor to Sunworks, Inc., Guilford, Conn.

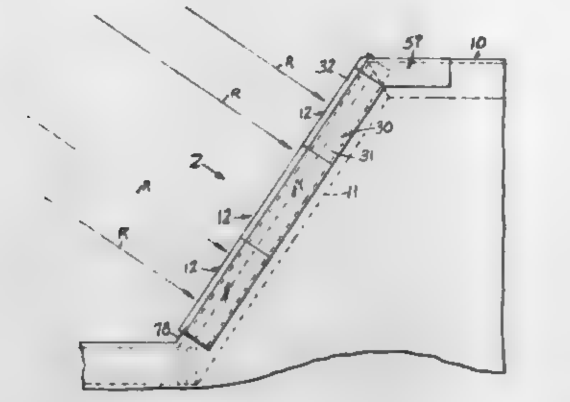
Filed Mar. 21, 1974, Ser. No. 453,353

Int. Cl.² F24J *3/02*

U.S. Cl. 126—271 18 Claims

1. A solar heat collecting device, comprising a housing member having upstanding side wall members, a layer of insulating material in said housing extending between said side walls, a solar heat energy collecting member extending between but not contacting said side wall members above said insulating material, said plate being positioned below the upper edges of said side wall members, flanges extending inwardly of said housing from said side wall members below the upper extremities thereof, a transparent cover member

supported at its edges on said flanges, inner sealing means disposed between said cover member and said flanges, outer



sealing means on the upper edges of said cover member, and a cap member clamping said cover member to said flanges between said sealing means.

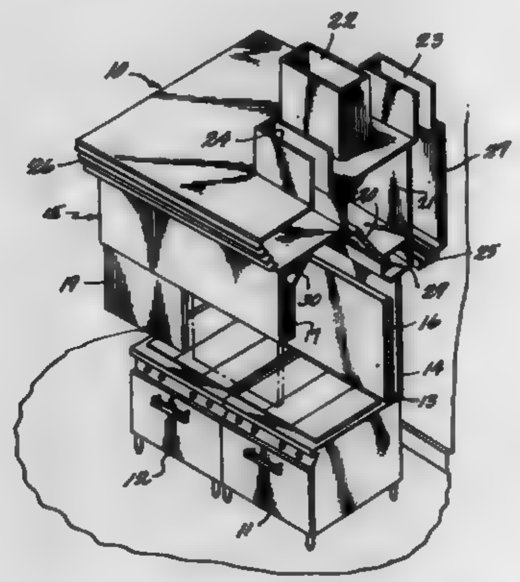
3,980,072
VENTILATING AND COOLING APPARATUS

Eugene A. Jacobs, 100 Shealey Ave., Towson, Md. 21204

Filed Jan. 24, 1975, Ser. No. 543,946

Int. Cl.² F24C *9/00*

U.S. Cl. 126—299 B 14 Claims



1. Apparatus for cooling and ventilating cooking equipment comprising:

means mounted above said equipment for exhausting air from the region between said equipment and said exhausting means,

at least one heat exchanging panel extending along one side of said equipment to receive radiant heat therefrom and including means for circulating a cooling fluid within said panel between an inlet and outlet to carry away radiant heat impinging on said panel, and

means for supplying said cooling fluid to said circulating means.

3,980,073
METHOD AND APPARATUS FOR AIDING DIAGNOSTIC SCANNING OF THE BODY OF A PATIENT

Alexander F. Shaw, IV, Davenport, Iowa, assignor to Neeley, Carletta M. and Carl R. Neeley, both of Spokane, Wash.

Division of Ser. No. 551,264, Feb. 20, 1975. This application Aug. 12, 1995, Ser. No. 604,021

Int. Cl.² A61B *5/05;* **A61H** *39/02*

U.S. Cl. 128—2 H 5 Claims

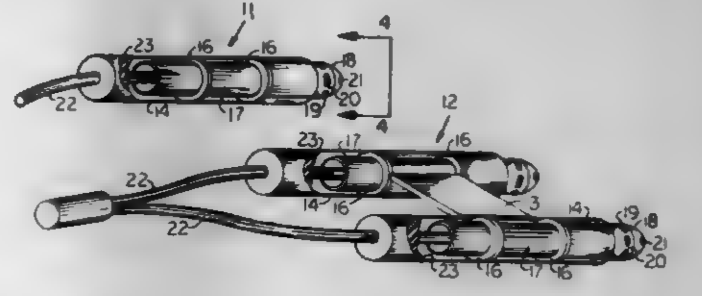
1. A method of aiding diagnostic scanning of the back of a patient by a doctor which comprises:

disposing a first electrode held in the hand of the patient;

disposing a probe means held in the hand of the doctor, said probe means including a resistance detecting means and a temperature detecting means, said temperature detecting means includng a resistive means for responding to temperature changes;

applying a D.C. voltage to said electrode and to said resistance detecting means to cause a potential difference therebetween;

placing said probe means against the body of the patient to complete a circuit, said circuit including said electrode, said resistance detecting means, said temperature detecting means, and said D.C. voltage source connected between said electrode and said resistance detecting means, said circuit further including means for responding to changes in resistance connected to said electrode, said resistance detecting means, and said temperature detecting means of said probe means, said circuit including means for indicating resistance and temperature responses coupled to said responding means, said resistance detecting means and said temperature detecting means being simultaneously pressed against the body of the patient;



scanning the body of the patient by passing said probe means over the body of the patient;

measuring the resistivity of the area of the patient's body pressed against by said probe means by detecting changes in the resistance between said resistance detecting means and said electrode;

simultaneously measuring the temperature of the area of the patient's body pressed against by said probe means by detecting changes in the resistance of said resistive means;

feeding back to the doctor the responses of said circuit to resistance changes indicating the resistivity and the temperature of the area of the body being pressed against by said probe means, whereby areas of the body of the patient to be closely examined and treated are more thoroughly located.

3. A probe apparatus for use with a circuit for detecting and indicating changes in resistance in aiding diagnostic scanning of the back of a patient comprising:

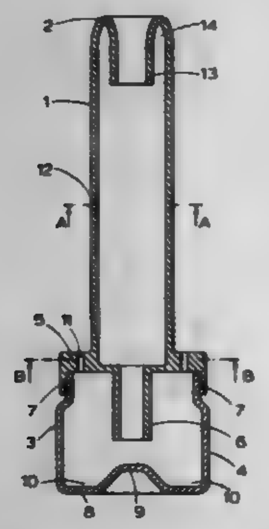
an external elongated insulating member; and

an internal elongated conducting means for simultaneously conducting a current and heat from a body area against which it is pressed so that the resistivity and the temperature of the body area are simultaneously detected, said conducting means being within said external insulating member and projecting at one end therefrom, said conducting means including temperature detecting means and resistance detecting means, a first conductor means for connecting said resistance detecting means and said temperature detecting means to the circuit, a second conductor means for connecting said temperature detecting means to the circuit, said resistance detecting means having a conductive tapered end at said conducting means projecting end, said tapered end having a slightly curved tip portion, said temperature detecting means having a resistive means for responding to changes in temperature by transmitting a variable amount of current, said resistive means being formed in and encircled by said tip portion, said tapered end conducting a current from an area of the body of a patient through said tip portion adjacent to said resistive means and conducting heat from the body area and said resistive means responding to heat from the body area and from said tapered end when said tapered end is pressed against the body area, whereby changes in the resistance and the temperature of the body area are detected simultaneously.

3,980,074
DEVICE FOR THE ADMINISTRATION OF POWDERS

Peter Ridgway Watt, Ewhurst, and Harold George Wilkinson, Goring-by-Sea, both of England, assignors to Beecham Group Limited, Great Britain

Continuation of Ser. No. 487,714, July 11, 1974, abandoned.
This application Oct. 16, 1975, Ser. No. 622,802
Claims priority, application United Kingdom, July 18, 1973, 34273/73
Int. Cl.² A61B *6/00*
U.S. Cl. 128—2 A **12 Claims**



1. A device for the insufflation of powders in a quantity sufficient for radiography comprising a container for powder removably attached to an elongated housing having a passage formed therein, said passage communicating internally at one end thereof with the container for powder and at the other end thereof terminating in a mouthpiece provided in the housing, first air inlet means for producing turbulent air flow in the container, being provided in the housing or the container for powder, a protuberance arranged centrally in the base of the container to prevent a powder when present within the container from being fluidized into a dense cloud at the onset of insufflation and second air inlet means for directing incoming air into a vertical motion within the passage, said second air inlet means being provided in the housing; and means for classifying powder adjacent the interior walls of the passageway between the mouthpiece and the second air inlet means.

3,980,075
PHOTOELECTRIC PHYSIOLOGICAL MEASURING APPARATUS

James E. Heule, Minneapolis, Minn., assignor to Audronics, Inc., Minneapolis, Minn.

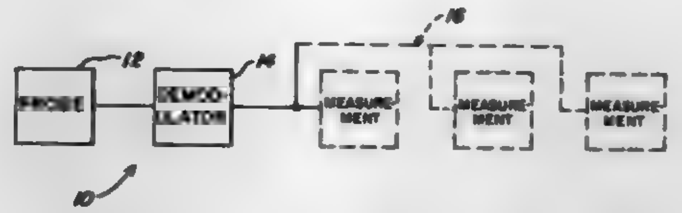
Continuation-in-part of Ser. No. 330,683, Feb. 8, 1973, abandoned. This application Sept. 27, 1974, Ser. No. 510,006
Int. Cl.² A61B *5/02*
U.S. Cl. 128—2.05 R **29 Claims**

1. An apparatus for the non-invasive measurement of physiological data obtainable from monitoring blood flow in the circulatory ststem comprising:

a. a pulsating light source adapted to be placed in non-invasive adjacent relationship to at least a portion of said circulatory system;

b. light receiving means for receiving light signals from said light source after reflection from said circulatory system, and for generating electrical signals representative of said received light signals;

c. a demodulating circuit means, connected to said light receiving means, for demodulating said electrical signals to amplitude modulate said pulsating light representations, and having an output terminal for transmitting said demodulating signals;



d. circuit means, connected to said output terminal, for providing at least one of the electrical functions:

i. averaging over a predetermined time interval,

ii. detecting peak signal magnitudes, and

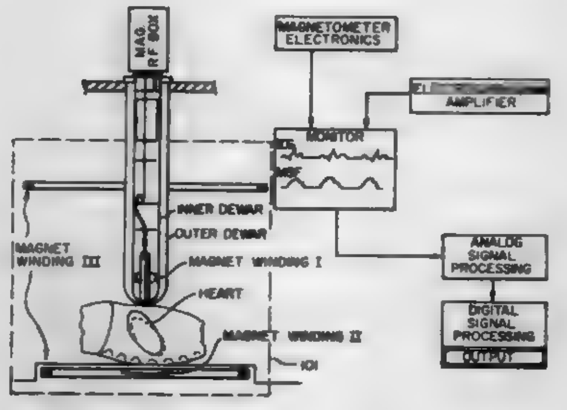
iii. passing signals over a predetermined frequency band; and

e. display means, connected to said circuit means, for providing a visual display of said electrical functions.

3,980,076
METHOD FOR MEASURING EXTERNALLY OF THE HUMAN BODY MAGNETIC SUSCEPTIBILITY CHANGES

John P. Wikswo, Jr., Palo Alto; William M. Fairbank, Menlo Park, and James E. Opfer, Palo Alto, all of Calif., assignors to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Oct. 2, 1974, Ser. No. 511,456
Int. Cl.² A61B *5/02*, *5/05*
U.S. Cl. 128—2.05 F **14 Claims**



1. The method of non-invasively observing blood movement in a living body which comprises the steps of applying magnetic field to at least that portion of the body where the blood movement is to be observed, detecting the changes in magnetic susceptibility in said portion of the body due solely to blood movement and indicating such changes.

3,980,077
METHOD FOR AIDING DIAGNOSTIC SCANNING OF THE BODY OF A PATIENT

Alexander F. Shaw, IV, Davenport, Iowa, assignor to Carlotta M. Neeley and Carl R. Neeley, both of Spokane, Wash.

Filed Feb. 20, 1975, Ser. No. 551,264
Int. Cl.² A61B *5/05*
U.S. Cl. 128—2.1 Z **6 Claims**

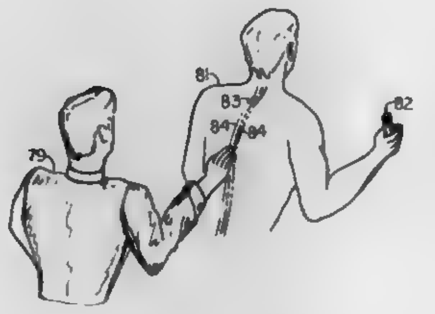
1. A method of aiding diagnostic scanning of the back of a patient by a doctor which comprises:

disposing a first electrode held in the hand of the patient;

disposing a second electrode held in one hand of the doctor;

applying a D.C. voltage to the electrodes to cause a potential difference between the electrodes;

placing of the second hand of the doctor against the body of the patient to complete a circuit, said circuit including said electrodes and said D.C. voltage source connected to said electrodes, said circuit including means connected to said electrodes responsive to changes in resistance between said electrodes, said circuit including means for indicating responses coupled to said responsive means;



scanning the body of the patient by passing the second hand of the doctor over the body of the patient;

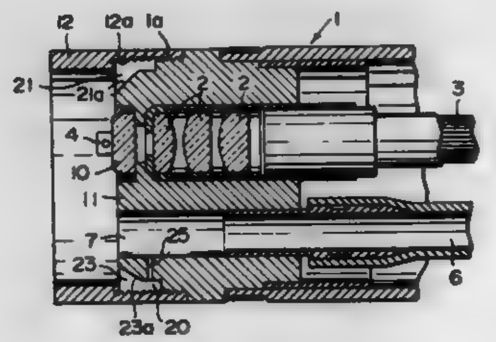
measuring the resistivity of the area of the patient's body pressed against by the second hand of the doctor; and

feeding back to the doctor the responses of said circuit indicating the resistivity of the area of the body being pressed against by the hand of the doctor, whereby areas of the body of the patient to be closely examined and treated are more thoroughly located.

3,980,078
ENDOSCOPE WITH CLEANING DEVICE

Hiroshi Tominaga, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed July 22, 1975, Ser. No. 598,047
Claims priority, application Japan, July 23, 1974, 49-87509[U]
Int. Cl.² A61B *1/00*
U.S. Cl. 128—4 **5 Claims**

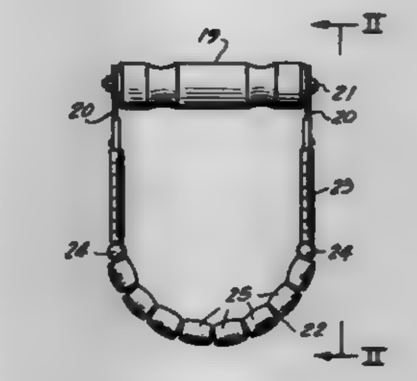


1. An endoscope with a cleaning device wherein an air and water transfer conduit and a suction conduit are provided in the body of the endoscope, and having an end face provided with an injection nozzle and a suction port, and a hood is demountably mounted to the end of the endoscope, characterized in that a drain port means is formed between the hood and the marginal portion of the end face of the endoscope, and drain port means being communicated with said suction conduit.

3,980,079
MASSAGING AND RELAXING DEVICE

Brunhilde Brodbeck, 1440 Poplar Ave., Memphis, Tenn. 38104

Division of Ser. No. 511,981, Oct. 4, 1974, Pat. No. 3,934,579.
This application Dec. 2, 1975, Ser. No. 636,980
Int. Cl.² A61H *15/00*
U.S. Cl. 128—57 **6 Claims**



1. In a massaging and relaxing device for stimulating and relaxing various parts of the body,

a hand grip,

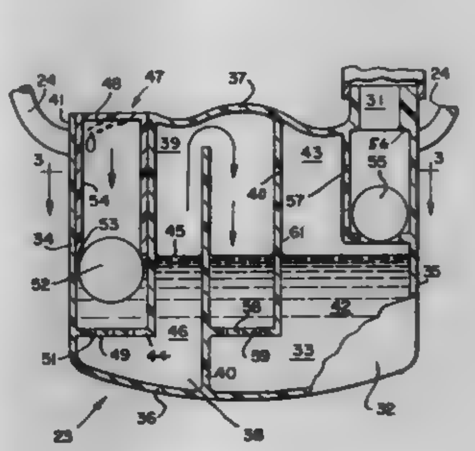
a plurality of laterally spaced U-shaped wires having arch-shaped outer portions and connected at their opposite end portions to opposite ends of said hand grip, and

a plurality of beads freely mounted on said wires for the length thereof to afford free massaging access to various parts of the body.

3,980,080
AIR FILTRATION GAS MASK

Rudolph Muto, 24 Williams St., Andover, Mass. 01810

Filed Dec. 23, 1974, Ser. No. 535,446
Int. Cl.² A62B *7/10*
U.S. Cl. 128—146.6 **3 Claims**



1. In a gas mask of the type having a face mask, a canister and a conduit connecting the same, the improvement comprising:

a canister of relatively stiff, semi-rigid self-supporting sheet material, resistant to collapse under slight vacuum, said canister having a lower chamber, an upper chamber, and a liquid filtration medium in the lower chamber,

an air inlet conduit, leading from the atmosphere into said canister and terminating in a tip at a predetermined distance below the level of the liquid in said lower chamber;

a plate, or screen, across said tip having apertures of predetermined area for breaking up large bubbles;

valve means in said canister for admitting air but automatically preventing liquid leakage therefrom,

a face mask, covering the mouth and nose of a user said mask being connected to the upper chamber of said canister for receiving air therefrom,

- ball float valve means in the upper chamber of said canister normally permitting passage of air into said face mask but closing to bar passage of liquid thereinto when said mask is unduly tilted or inverted;
- valve means in said face mask for admitting fresh air from said canister, preventing discharge of air into said canister and permitting discharge of air into the atmosphere and
- a seal extending around the periphery of said mask, said seal comprising a putty-like, soft deformable substance encased in a plastic casing and having a narrow band of thin plastic sheeting attached thereto;
- whereby said encased deformable substance conforms to the contours of the face of the user and said plastic band adheres to the skin by static electricity to effectively form a seal.

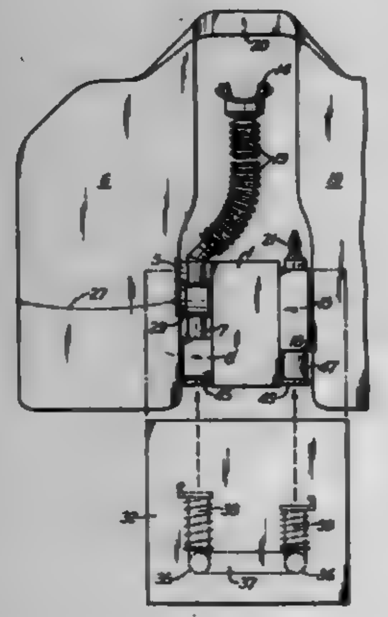
3,980,081
SELF-RESCUE BREATHING APPARATUS

Harry N. Cotabish, Allison Park, and Ellison Lloyd Davison, Gibsonia, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed June 25, 1975, Ser. No. 590,382

Int. Cl.^{2} A62B *7/08*

U.S. Cl. 128—147 **12 Claims**



1. In self-rescue breathing apparatus, a self-contained pendulum breathing main unit comprising a first canister having opposing sides and containing a bed of oxygen generating and carbon dioxide removing chemical therebetween, the canister having inlet means on one side of the bed for directing exhaled air through said bed and an opening at the opposite side of the bed, a normally open valve in said inlet means, a first breathing bag connected with said opening, and a breathing hose connected with said inlet means for exhaling through the canister into the bag and then inhaling from the bag through the canister; and a supplemental breathing unit; means for attaching said supplemental breathing unit to said main unit, said supplemental unit comprising a second canister having opposing sides containing a bed of oxygen generating and carbon dioxide removing chemical therebetween, the second canister having inlet means for directing exhaled air through said bed from one side and outlet means for receiving exhaled air from the opposite side of the bed, first means forming part of the supplemental unit for closing said normally open valve and connecting the second canister inlet means with said hose when the two units are attached to each other, and second means forming part of the supplemental unit for simultaneously connecting the second canister outlet means with said opening in the first canister to put the second canister in communication with said bag.

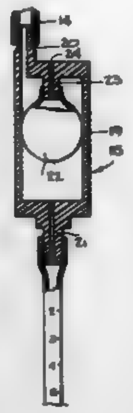
3,980,082
VENOUS PRESSURE INDICATOR

William Miller, 25 Manitou Road, Westport, Conn. 06880

Filed Mar. 14, 1975, Ser. No. 558,357

Int. Cl.^{2} A61M *5/14*; A61B *5/02*

U.S. Cl. 128—214 R **9 Claims**



1. A medical instrument usable in conjunction with an intravascular infusion system having a fluid source and selectively adapted to effect normal intravascular infusion or to measure intravascular fluid pressure, said instrument comprising:

- A. a transparent chamber having an inlet and an outlet and having a collapsible bulb mounted therein, the interior of the bulb being vented to the atmosphere and the exterior thereof being subject to the fluid pressure existing within the chamber, whereby said bulb assumes an erect state when said fluid pressure is no greater than atmospheric and assumes a collapsed state when said fluid pressure is greater than atmospheric;
- B. a flexible upstream line connecting the inlet of said chamber to said fluid source and a flexible downstream line connecting the outlet of said chamber to said patient whereby, in the infusion mode, fluid from said source flows through said upstream line into said chamber and from said chamber through said downstream line into said patient;
- C. means, in the pressure measuring mode, to clamp said upstream line to block flow of infusion fluid, said chamber then being elevated to a balance level above or below said patient at which the fluid pressure in said chamber equals atmospheric pressure, as indicated by the sudden erection or collapse of said bulb; and
- D. means to measure the height of said balance level to determine the intravascular pressure.

7. A medical instrument to measure the pressure in a body cavity, said instrument comprising a transparent chamber having a collapsible bulb mounted therein, the interior of the bulb being vented to the atmosphere through an opening in the chamber, whereby the interior of the bulb is at atmospheric pressure and the exterior thereof is subject to the existing fluid pressure within the chamber, a flexible tube for connecting said chamber to said body cavity, and means to determine the height of the fluid level in said tube above the point in the body cavity whose pressure is being measured when the pressure within said bulb is substantially equal to the pressure within said chamber to provide a pressure indication.

3,980,083
MEDICAMENT INFUSOR UNIT

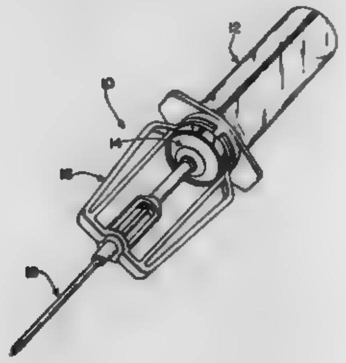
Phillip M. Elliott, Schiller Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 13, 1975, Ser. No. 549,563

Int. Cl.^{2} A61M *5/00*

U.S. Cl. 128—220 **46 Claims**

1. A medicament infusor unit including a tubular container open at one end, a resilient piston having a central bore blocked by a transverse imperforate diaphragm means adapted to cooperatively seal the end of said container, a substantially rigid hollow tubular infusor means having means to secure a sharpened cannula which extends outwardly therefrom and in communication with one end thereof and the other end of said infusor having means adapted to cooperate with means in said piston to sealingly engage therewith, means on said infusor at said other end for cooperatively penetrating said diaphragm to provide access of the rigid hollow infusor to the interior of the piston sealed tubular container, said piston and said container having controlled configurations, sizes and relative moduli of friction such as to permit axial insertion, diaphragm penetration, and locking of the infusor within the piston solely by an axial movement without relative axial motion between said piston and container, but permitting such relative movement between the piston and container after the infusor has penectrated and is seated within said piston, and means on said infusor for manipulation relative to said container, said container including a reduced dimensional portion adjacent its open end to provide a point of interference with said piston which is formed of an elastomeric material, said piston being provided with a plurality of radially extending annular rings about its periphery in spaced axial relation, the central bore of said piston including an interior chamber closed at one end by said diaphragm means and a reduced entryway at its open end, said reduced entryway and said chamber at its open end defining a positive interior shoulder adapted to cooperate with a shoulder means on said infusor, said infusor at its free end includes a sharp tapered point opening to the hollow interior thereof with said sharp point formed by one or more diagonal planes intersecting a cylinder on the bias, said point being axially spaced from first shoulder means for cooperation with the interior shoulder formed by said chamber at its junction with the reduced entryway, having a diametrical extent less than the larger dimension of said first shoulder means but greater than said reduced entryway, the axial extent of said chamber and the resiliency of said diaphragm being controlled relative to the axial extent of said tapered point from its sharpened tip to said protuberance means to permit telescopic preassembly of the infusor with the piston without penetration of said diaphragm by said point, said protuberance means engaging the first shoulder means formed by said chamber to prevent inadvertent removal of said infusor from said piston.



3,980,084
OSTOMY GASKET

Robert D. Kross, Bellmore, N.Y., assignor to Hydro Optics, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 432,068, Jan. 9, 1974, Pat. No. 3,877,431, and a continuation-in-part of Ser. No. 495,822, Aug. 8, 1974. This application Mar. 3, 1975, Ser. No. 554,709

The portion of the term of this patent subsequent to Apr. 15, 1992, has been disclaimed.

Int. Cl.^{2} A61F *5/44*

U.S. Cl. 128—283 **7 Claims**

1. An ostomy sealing gasket designed to provide a seal between a post-surgical drainage pouch and the skin around the stomal opening comprising a flat sheet of polymeric material including an opening therethrough to receive the stoma of the patient, wherein said polymeric material comprises the reaction product of:

- a. a compound selected from the group consisting of a hydroxyalkyl acrylate, a hydroxyalkyl methacrylate and mixtures thereof;
- b. a glycolic compound selected from the group consisting of a polyalkylene glycol, an alkylene glycol, glycerine, and mixtures thereof;
- c. a water-soluble reducing agent; and
- d. an absorptive material for absorbing excess water;

the reaction carried out in the presence of water.

3,980,085
HIGH FREQUENCY APPARATUS FOR HEAT TREATMENT OF BIOLOGICAL TISSUE

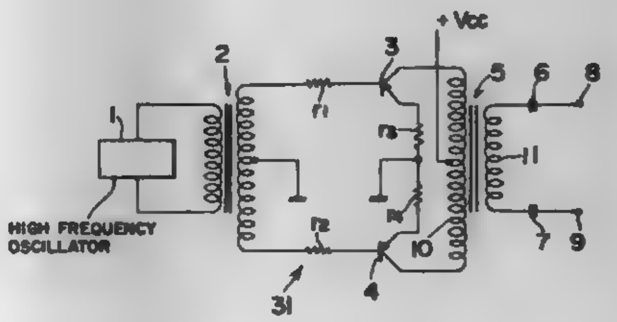
Yuji Ikuno, Fuchu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed June 10, 1975, Ser. No. 585,769

Claims priority, application Japan, June 17, 1974, 49-68998

Int. Cl.^{2} A61N *3/04*

U.S. Cl. 128—303.17 **4 Claims**



1. A high frequency apparatus for heat treatment of a biological tissue, said apparatus comprising:

- a high frequency oscillator;
- amplifier means having its input connected to the output of said oscillator and having first and second bipolar outputs;
- a pair of bipolar electrodes adapted to bear against a biological tissue at spaced points;
- impedance transformation means for coupling the first and second outputs of said amplifier means to respective ones of said bipolar electrodes;
- said amplifier means including means for generating a high frequency voltage for application to said bipolar electrodes wherein the peak-to-peak value of the voltage is in the range from 250 to 600 volts to cause a flow of high frequency current through that portion of the tissue extending between said electrodes to produce Joule's heat in accordance with an electrical resistance presented by the tissue to thereby treat the tissue with the Joule's heat whereby the low peak-to-peak voltage range prevents the occurrence of a discharge between either electrode and the tissue adjacent thereto due to any increase in tissue resistance, said amplifier means further including means for maintaining said peak-to-peak voltage constant so that any increase in tissue resistance causes a reduction in current flow through the tissue thereby preventing coagulation of those portions of the tissue not intended for treatment.

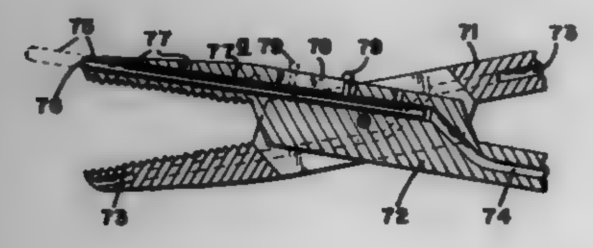
3,980,086
FLUID CONVEYING SURGICAL INSTRUMENT

Harold D. Kletschka, Minneapolis, and Edson D. Rafferty, Excelsior, both of Minn., assignors to Bio-Medicus, Inc., Minnetonka, Minn.

Continuation of Ser. No. 446,809, Feb. 28, 1974, abandoned, and a continuation-in-part of Ser. No. 368,192, June 8, 1973, Pat. No. 3,807,406, which is a continuation of Ser. No. 156,825, June 25, 1971, abandoned. This application July 18, 1975, Ser. No. 597,095

Int. Cl.² A61B *17/32*; B62B *13/22*

U.S. Cl. 128—318 26 Claims



1. A surgical instrument of scissors-type configuration comprising:

a. first and second elongated members of essentially the same length, each having a manipulating end and a functional end, said functional ends having opposed innerfaces and outer faces, the first and second elongated members being pivotally connected at an intermediate point and arranged so that the functional ends together provide a surgical function upon relative movement of said manipulating ends;

b. first and second fluid conduit means associated with said first elongated member, each conduit means terminating in at least one opening disposed on the outer face of said first elongated member;

c. said first conduit means being adapted for connection with a source of positive fluid pressure; and

d. said second conduit means being adapted for connection with a source of negative fluid pressure.

3,980,087
TOBACCO FEED SYSTEMS

Francis Auguste Maurice Labbé, Neuilly-sur-Seine, France, assignor to Molins Limited, England

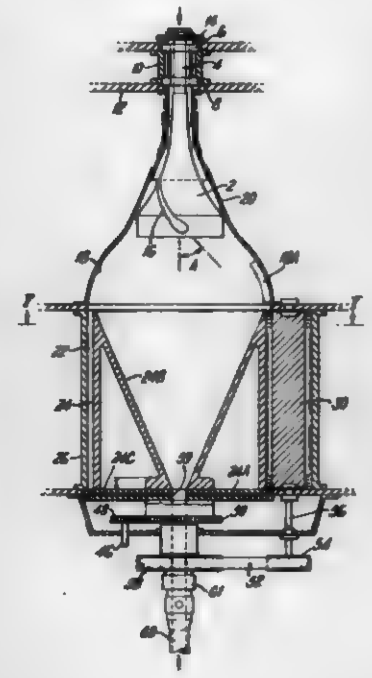
Continuation of Ser. No. 275,635, July 27, 1972, abandoned. This application Nov. 22, 1974, Ser. No. 526,428

Claims priority, application United Kingdom, Aug. 27, 1971, 35515/71

Int. Cl.² A24C *5/18*

U.S. Cl. 131—84 R 42 Claims

1. A cigarette filler forming apparatus for a cigarette making machine, comprising means for delivering a stream of tobacco particles; two cooperating members defining between them an annular space having a central axis, the annular space having a length, as seen in a plane containing the central axis, which is many times greater than its thickness, one of the cooperating members being movable about the central axis; means defining an outlet from the annular space having a length substantially equal to the length of the annular space; a spreading device arranged to receive the tobacco particles and to throw the particles into the annular space at positions substantially all the way around the central axis of the annular space to build up in the annular space a continuous carpet of tobacco, the width of the carpet, as seen in a plane containing said central axis, corresponding to the length of the annular space, the carpet being carried continuously by the moving member towards the outlet; means for feeding substantially the entire width of the carpet out through the outlet; and filler forming means arranged to receive said continuous carpet of tobacco for forming a cigarette filler therefrom, each section of the filler including tobacco particles obtained from various positions across substantially the entire width of the carpet.



3,980,088
CIGARETTE MAKING MACHINE

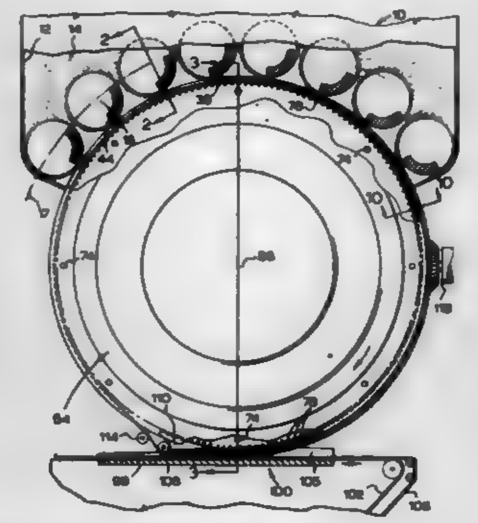
Warren A. Brackmann, Cooksville, and Daniel Dilaani, Toronto, both of Canada, assignors to Rothmans of Pall Mall Canada Limited, Toronto, Canada

Filed Mar. 27, 1975, Ser. No. 562,447

Claims priority, application United Kingdom, Mar. 28, 1974, 13886/74

Int. Cl.² A24C *5/18*

U.S. Cl. 131—84 B 37 Claims



1. A cigarette making apparatus comprising

a vertically-extending chute for confining and conveying a relatively wide stream of tobacco particles of narrow thickness falling towards the lower end thereof,

a cylindrical vacuum wheel of substantial diameter greater than the width of said chute and located outside said lower end of said chute, said vacuum wheel being mounted for rotation about a substantially horizontal axis substantially perpendicular to a plane in which a flow path of said relatively wide stream is located,

said cylindrical vacuum wheel including a front closure element and a rear annular element, joining and spacing means connecting said front closure element and said rear annular element in spaced apart relationship, support means associated with said front closure element and rear annular element for supporting an air-permeable and tobacco-impermeable tobacco filler rod-forming and-conveying surface over at least the filler rod-forming and-conveying arcuate length of said vacuum wheel, said filler rod-forming and-conveying surface being recessed between said front closure element and rear annular element adjacent the periphery of said vacuum wheel, and hollow hub means connected to said rear annular element and rotatably mounted on a fixed frame member, said hollow hub means having a central bore connecting a source of subatmospheric pressure and the space between said front closure element and said rear annular element to cause the application of suction across said filler rod-forming and-conveying surface,

said filler rod-forming and-conveying surface being provided by a continuous band of flexible air-permeable and tobacco impermeable material,

said support means being provided by continuous shoulders formed on said front closure element and said rear annular element for engagement by the edge portions of said band and a plurality of circumferentially-spaced pins extending between said shoulders for engagement of said band across the width thereof,

vacuum interrupting means associated with said vacuum wheel and positioned to prevent the application of said suction over at least part of non-filler rod-forming and-conveying arcuate length of said vacuum wheel,

filler wrapping means in rod-flow relationship with said vacuum wheel to receive a filler rod from said filler rod-conveying surface of said vacuum wheel to compress the so-received filler rod and wrap the compressed filler rod in paper to form a continuous cigarette rod from which individual cigarettes may be cut, and

a plurality of substantially arcuately-arranged shallow cylindrical disc members positioned adjacent said lower end of said chute across the width thereof and adjacent an arcuate length of the periphery of said vacuum wheel,

said disc members having substantially the same diameter and being mounted for rotation about axes parallel to the axis of rotation of said vacuum wheel,

each of said disc members including an air-permeable and tobacco-impermeable substream-forming and-conveying suface extending arcuately over at least a major portion of the periphery of the disc member intercepting said plane,

each of said disc members being hollow and the interior thereof having a pressure less than atmospheric to cause the application of suction across said substream-forming and-conveying surface to attract tobacco particles from said relatively wide stream so as to form a narrow substream of tobacco thereon and to convey said narrow substream thereon,

each of said disc members including a vacuum interrupter positioned to prevent the application of said suction over a selected arcuate length of the disc member commencing at the approximate point of closest approach of said substream-forming and-conveying surface to said filler rod-forming and-conveying surface of said vacuum wheel for release of the tobacco particles of said substream from said peripheral surface and formation of a filler rod on said filler rod-forming surface of said vacuum wheel from the released tobacco particles.

3,980,089
NOVEL HETEROCYCLIC FLAVORING COMPOSITIONS AND PROCESSES

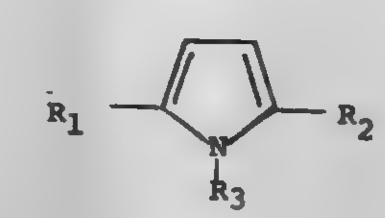
Alan O. Pittet, Atlantic Highlands; John V. Pascale, Jackson, and Denis E. Hruza, Bricktown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 246,484, April 21, 1972, Pat. No. 3,869,554. This application May 8, 1974, Ser. No. 468,180

Int. Cl.² A24B *15/04*

U.S. Cl. 131—144 15 Claims

1. A process for altering the flavor and aroma of a tobacco product which comprises adding thereto from about 0.01 to 500 parts per million of at least one N-substituted pyrrole having the formula



wherein R_1 and R_2 are the same or different and represent hydrogen or methyl and R_3 represents alkyl containing eight to fourteen carbon atoms, alkenyl containing three or four carbon atoms, cycloalkyl containing three to twelve carbon atoms, or phenalkyl containing seven to eleven carbon atoms.

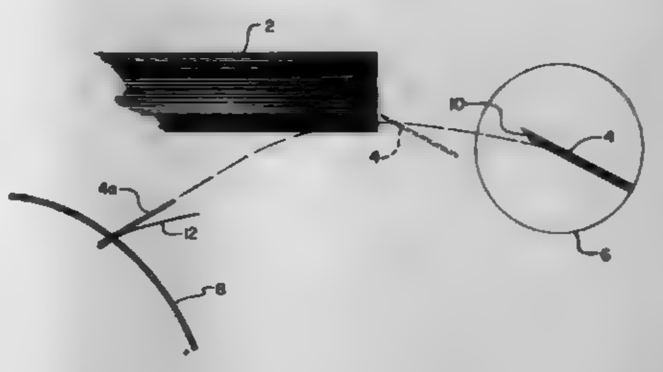
3,980,090
HAIR SEIZURE AND IMPLANTATION METHOD

David C. Bonham, 3594 S. 3610 East, Salt Lake City, Utah 84109

Filed Sept. 25, 1974, Ser. No. 509,250

Int. Cl.² A41G *3/00*; D05C *15/02*

U.S. Cl. 132—5 5 Claims



1. A process of implanting hair in a scalp base comprising

moving a needle having an axially extending opening in one end thereof into contact with the end of a hair so that the hair end is received longitudinally into the opening and a portion of the hair extends out of the opening,

moving the needle so that the hair end remains therein,

inserting said one end of the needle into the scalp base to implant the hair therein, and

removing the needle from the scalp base to leave the hair implanted therein.

5. A method of seizing a hair comprising moving a needle, having a bore extending axially through an end and into the needle shank, into contact with the hair end generally from the direction in which the hair end points, the end of said needle having said bore approaching the hair end so that a portion of the hair is received longitudinally into the bore thereby enabling the needle to carry the hair.

3,980,091

QUATERNARY AMMONIUM COMPOUNDS IN PRETREATMENT OF HAIR BEFORE SHAMPOOING WITH AN ANIONIC SHAMPOO

George F. Dasher, Inverness; Kathleen A. O'Cull, Northlake, and Thomas J. Schamper, Chicago, all of Ill., assignors to Alberto Culver Company, Melrose Park, Ill.

Filed Jan. 6, 1975, Ser. No. 538,891

Int. Cl.² A45D *7/00;* A61K *7/06*

U.S. Cl. 132—7 **18 Claims**

1. A method of treating hair to improve the manageability thereof, which comprises initially contacting the hair with a dilute aqueous composition containing a water-soluble quaternary ammonium compound containing at least one long chain alkyl radical attached to the central nitrogen atom thereof, and then shampooing the hair with an anionic shampoo.

3,980,092

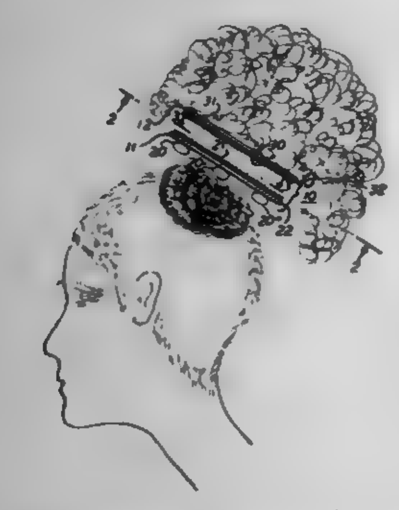
HAIRPIECE APPARATUS

Tino Garufi, 607 Wildwood Road West, North Vale, N.J. 07647

Filed Aug. 15, 1974, Ser. No. 497,519

Int. Cl.² A41G *3/00*

U.S. Cl. 132—53 **1 Claim**



1. A hairpiece, comprising:

a. a first pad, one surface of which is securable to the hair of the user, which one surface includes a compressible member extending therefrom through which means are insertable which are also extendable into the wearer's hair for engagement therewith, including a first binding agent substantially covering the other surface thereof; and

b. a second pad, including hair or hair-like fibers secured to one surface thereof and a second binding agent substantially covering the other surface thereof, which second binding agent is interengageable with the first binding agent so as to enable detachable connection of the second pad to the first pad.

3,980,093

TIMED PULSED FUEL INJECTION APPARATUS AND METHOD

Samuel Rhine, c/o Automotive Center, Texas State Technical Institute, and Merle Robert Showalter, 205 Robins Loop, both of Waco, Tex. 76705

Continuation of Ser. No. 433,481, Jan. 15, 1974, abandoned, which is a division of Ser. No. 339,153, March 8, 1973, Pat. No. 3,810,581. This application May 14, 1975, Ser. No. 577,283

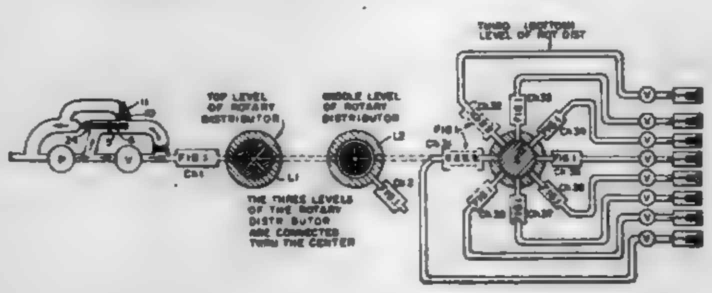
Int. Cl.² F16K *11/00*

U.S. Cl. 137—1 **5 Claims**

1. In a fluid metering system pumping an effectively incompressible fluid from a supply passage at a variable pressure p_m into one or more downstream receiving passages, wherein each of said receiving passages has an internal fluid pressure ranging below a set positive pressure p_r, where p_m is always greater than p_r during the operation of said metering system

the method of totally eliminating the effect of variations in the pressure of the fluid in the receiving passage(s) on the flow of fluid between said supply passage and said receiving passage(s) by transferring fluid from said supply passage to said downstream passage(s) in a repeating sequence having a fixed ratio between transfer steps, said method comprising the repeating sequence of

a. bringing said supply passage into flow contact with a transfer passage which transfer passage has the property that the fluid containing volume of said transfer passage varies directly with internal fluid pressure above a set fluid pressure p_e (where p_e is less than p_m and p_e is greater than p_r) and where the volume of said transfer passage is substantially invariant with variations of internal fluid pressure below pressure p_e, said fluid contact between said supply passage and said transfer passage occurring at a time in said repeating sequence when said transfer passage is cut off from fluid contact with any receiving passage, whereby said transfer passage will expand in a time period under one second to an internal volume corresponding to said internal pressure p_m


THIRD (BOTTOM) LEVEL OF ROT DIST
TOP LEVEL OF ROTARY DISTRIBUTOR
MIDDLE LEVEL OF ROTARY DISTRIBUTOR
THE THREE LEVELS OF THE ROTARY DISTRIBUTOR ARE CONNECTED THRU THE CENTER

b. cutting off fluid contact between said supply passage and said transfer passage

c. establishing fluid contact between said transfer passage and a receiving passage at pressure less than p_r, whereby the transfer passage will discharge volume into said receiving passage until said transfer passage is at its minimum volume corresponding to an internal pressure less than or equal to p_e, the aforesaid transfer passage discharge process occurring in a period of less than 1 second

d. cutting off fluid contact between said transfer passage and the said receiving passage,

e. reestablishing fluid contact between said transfer passage and said supply passage at an internal pressure greater than p_e, whereby fluid from said supply passage flows into said transfer passage in a period less than one second to displace the volume of said transfer passage volume increase corresponding to the increase in pressure between p_e and p_m

f. cutting off fluid contact between said transfer passage and said supply passage

g. reestablishing fluid contact between said transfer passage and a receiving passage.

3,980,094

QUICK ACTION SLIDE VALVE

Fritz Schröder, Muhlheim (Main), and Klaus Rüssel, Offenbach (Main), both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 3, 1975, Ser. No. 564,696

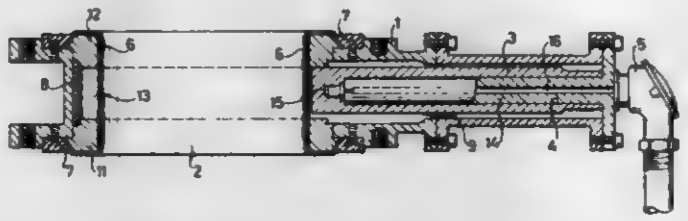
Claims priority, application Germany, Apr. 8, 1974, 2416967

Int. Cl.² F16K *17/40*

U.S. Cl. 137—68 A **4 Claims**

1. A quick-acting slide valve comprising a valve casing having a pair of connections to a pipeline defining a flow path for a substance, the casing comprising a flow-conducting portion and an auxiliary portion, an annular groove in the flow-conducting portion, a sliding plate having a path of movement in the plane of the plate from a position in which

it is disposed in the auxiliary portion when the flow path is opened and in the annular groove in the closed position of the valve, a frangible collar disposed over the annular groove to seal it when the slide plate is disposed in the auxiliary portion, the collar being frangible to cause it to break up upon impact out of the path of the slide plate when the plate is moved to the closed position, inelastic shock-absorbing means disposed in the annular groove for cushioning the movement of the slide plate when it is moved to the closed position, projections disposed in the annular groove, and the sliding plate naving on one surface thereof wedges for engaging the projections for urging the plate against one side of the annular groove for sealing the valve against flow through it, the sliding plate having a longitudinal recess, a longitudinal guide means rigidly connected to the auxiliary portion of the valve casing for engagement by the sliding plate when the sliding plate is disposed in the auxiliary portion and the flow path is opened, the guide means being long enough to guide the sliding plate into the annular groove, a propellant charge means disposed in the recess for exerting a closing pressure against the sliding plate when the propellant charge means is actuated, ignition means connected to the propellant charge means and constructed and arranged for connection outside of the casing for actuating the slide plate to the closed position, and sensing means connected to the pipeline which is constructed and arranged to actuate the ignition means to exert a closing pressure on the sliding plate for immediately closing the valve when a predetermined condition occurs.



3,980,095

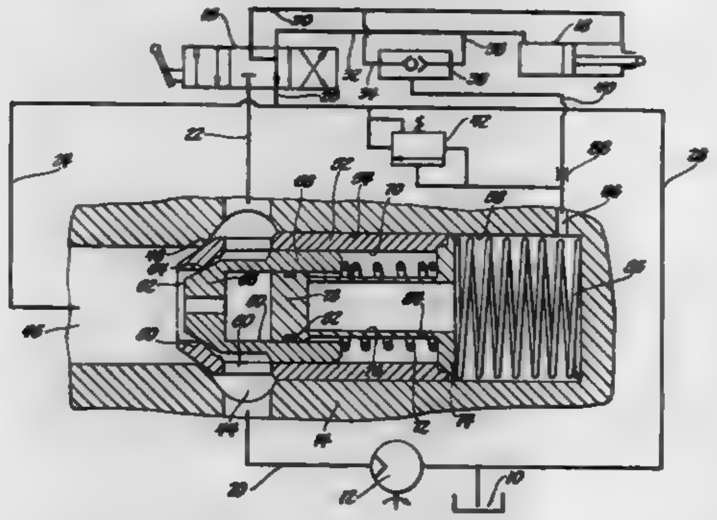
POWER TRANSMISSION

Dennis J. McAvoy, 3438 Bald Mountain Road, Lake Orion, Mich. 48035

Filed Feb. 10, 1975, Ser. No. 548,475

Int. Cl.² F15B *13/04*

U.S. Cl. 137—117 **2 Claims**



1. A combined unloading, relief and load compensating valve comprising a body having an inlet port and an outlet port, a seat between the ports, and a cylinder chamber opposite the seat with a diameter somewhat larger than the seat, a cartridge slidable in the chamber and having a poppet movable to close the seat, a spring in the chamber urging the cartridge toward seat-closing position, a second inlet and a second outlet within the cartridge with a second seat between them, a second cylinder chamber opposite the second seat and having a diameter somewhat larger than the second seat, a second poppet slidable in the second chamber to close the second seat, a spring in the second chamber urging the poppet toward seat-closing position, means attached to the second chamber for limiting the area of the second poppet exposed to pressure in the second chamber, a restricted passage connecting the first and second chambers, and a control passage leading from the first chamber whereby when the control passage is connected to exhaust, the cartridge will shift to open the first seat, when the control passage is connected to a load sensing port the second poppet will maintain a fixed pressure difference between the first inlet port and the load sensing port, and when the control passage is connected to a pilot relief valve, the second poppet will limit the maximum pressure at the first inlet port to a value determined by the setting of the pilot relief valve; the area limiting means comprising a bore within the second poppet valve and a spud fixed to the cartridge and on which the bore is slidably positioned.

3,980,096

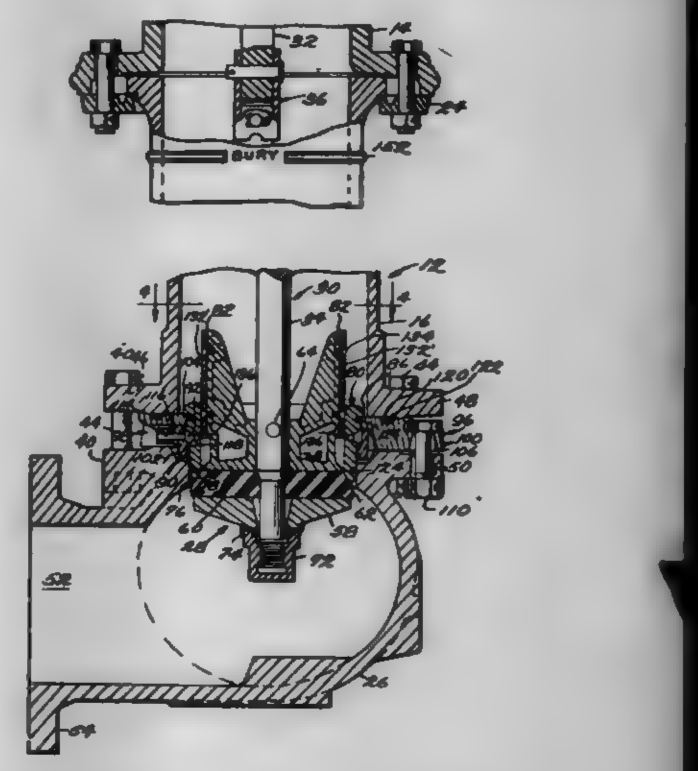
FIRE HYDRANT

Daniel A. Ellis, and Joseph L. Daghe, both of Decatur, Ill., assignors to Mueller Co., Decatur, Ill.

Filed July 29, 1975, Ser. No. 600,192

Int. Cl.² E03B *9/14*

U.S. Cl. 137—283 **24 Claims**



1. In a fire hydrant, the combination comprising: a barrel having a flanged lower end, a hydrant shoe having a flanged end with an upwardly opening mouth and another end arranged to be connected to a water main, means for detachably connecting the flanged lower end of said barrel to the flanged end of said shoe, an annular housing member sandwiched between the flanged lower end of said barrel and said flanged end of said shoe, means for detachably connecting said housing member to the flanged end of said shoe independent of said barrel and said first mentioned connecting means, said annular housing member having interior threads, a valve seat ring having exterior threads received in the interior threads of said housing member and having a downwardly facing annular valve seat, a valve stem extending upwardly through the mouth of said shoe and through said barrel and a valve element on the lower end of said stem seatable on said valve seat.

3,980,097

FIRE HYDRANT WITH DRAIN VALVE AND BACKFLOW PREVENTER MECHANISM

Daniel A. Ellis, Decatur, Ill., assignor to Mueller Co., Decatur, Ill.

Filed July 29, 1975, Ser. No. 600,193

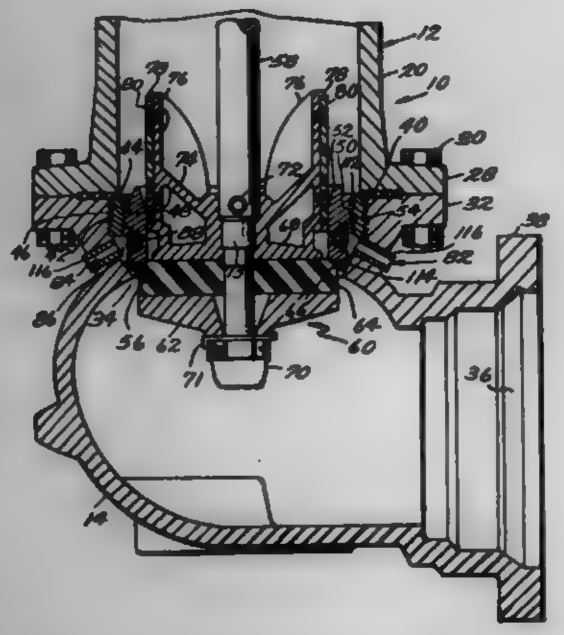
Int. Cl.² E03B *9/14*

U.S. Cl. 137—283 **21 Claims**

1. In a fire hydrant, the combination comprising:

a hydrant barrel having a lower flanged end;

- a hydrant shoe having an upwardly-opening mouth surrounded by a flanged end, the flanged end of said hydrant shoe being operatively connected to the lower flanged end of said hydrant barrel;
- a valve seat ring having a main hydrant valve seat and at least one drain passage having an inner and an outer end and extending through said valve seat ring and opening above said main hydrant valve seat;
- means removably supporting said valve seat ring adjacent the connection of the hydrant barrel and the hydrant shoe;
- means defining a circumferential groove between the periphery of said valve seat ring and said means for supporting the same, said drain passage of said valve seat ring opening to said circumferential groove;
- at least one drain passageway opening at one end to said circumferential groove and at the other end to the exterior of the hydrant;
- a reciprocating valve stem carrying a main hydrant valve element for seating and unseating cooperation with said main valve seat;



- valve means operatively connected to and actuated by said valve stem and said main valve element for opening and closing the drain passage in said valve seat, said valve means opening said drain passage when said main valve element is seated whereby water in said barrel may drain to the exterior of said hydrant and closing said drain passage when said main valve element is at least fully unseated; and,
- a pressure responsive one-way check valve removably mounted in said drain passage of said valve seat ring, said check valve being arranged to open when there is water in said hydrant barrel and said first mentioned valve means is open and being arranged to close when said barrel is dry to thereby prevent backflow of water from the exterior to the interior of said barrel and said one-way check valve being removable with removal of said seat ring without necessity of removal of said shoe.

3,980,098
POWER ASSIST STRUCTURE FOR SIDE ROLL WHEEL LINES

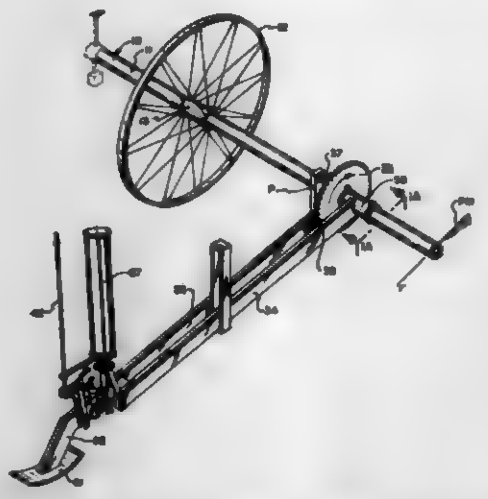
Burr Courtright, LeGrande, Oreg., assignor to Chzo, Inc., LeGrande, Oreg.

Filed May 27, 1975, Ser. No. 580,584

Int. Cl.² B05B *15/00*

U.S. Cl. 137—344 **10 Claims**

1. A side-roll wheel line including in combination, a central, axial conduit for supplying irrigation water and having a perforate portion, wheel means mounted to said conduit for carrying the same, a water jacket sealed to and enveloping said perforate portion of said conduit, said water jacket having a fluid outlet port, an elongate fixed leg secured to and transversely extending from said water jacket and having an outer end constructed for sliding on the ground, a main gear keyed to said conduit, a movable leg pivotally disposed relative to said fixed leg, said movable leg carrying pawl means engaging said main gear for advancing the same in response to liftings of said movable leg, a piston and cylinder combination interposed between said movable leg and said fixed leg for successively raising and lowering the former relative to the latter, valve means intercoupled between said jacket port and said cylinder for actuating said piston in successive, opposed directions, and control means responsive to cylinder movement relative to said piston for controlling said valve means.



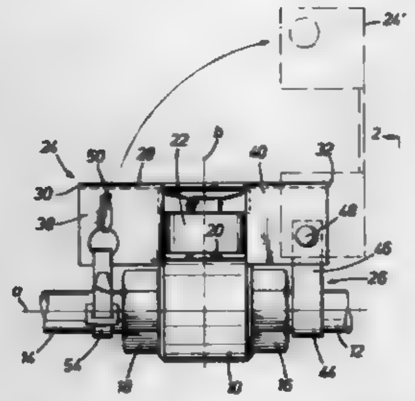
3,980,099
VALVE GUARD

Gurney V. Youngblood, Texas City, Tex., assignor to Custom Iron & Specialties, Inc., Galveston County, Tex.

Filed June 11, 1975, Ser. No. 586,070

Int. Cl.² F16K *35/00*

U.S. Cl. 137—382 **11 Claims**



1. A valve guard for use with a valve of the type comprising a valve body having a flowway therethrough, a valve stem extending from said valve body generally perpendicular to the axis of said flowway, and a valve handle rigidly affixed to said valve stem distal said valve body, said valve handle being rotatable about the axis of said valve stem between an open-valve position and a closed-valve position, said valve guard comprising:

- a connecting member for connection to said valve body in a location spaced from said valve stem along the axis of the flowway of said valve, and a locking member pivotally connected to said connecting member for movement between a locking position and a free position, said locking member including first abutment means engageable with said valve handle when said locking member is in said locking position and said valve handle is in said open-valve position to lock said valve handle in said open-valve position, and second abutment means engageable with said valve handle when said locking member is in said locking position and said valve handle is in said closed-valve position to lock said valve handle in said closed-valve position.

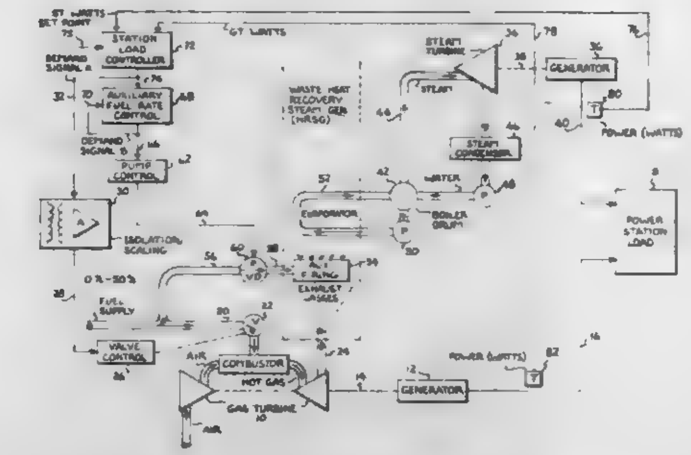
3,980,100
FLUID FLOW CONTROL SYSTEM

Robert E. Gasparoli, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Division of Ser. No. 517,259, Oct. 23, 1974, Pat. No. 3,930,367. This application June 9, 1975, Ser. No. 584,873

Int. Cl.² F16K *31/12*

U.S. Cl. 137—487.5 **6 Claims**



1. A fluid flow control system comprising:

- a. means for metering the rate of fluid flow in response to a metering signal provided thereto;
- b. comparison means responsive to a demand signal indicative of a desired rate of fluid flow and to said metering signal to provide an output signal when a difference exists therebetween;
- c. control signal generating means for generating said metering signal and for varying the value thereof in response to said comparison means output signal, said control signal generating means further responsive to a rate of change signal supplied thereto to control the rate at which said metering signal changes; and
- d. means for providing said rate of change signal to said control signal generating means.

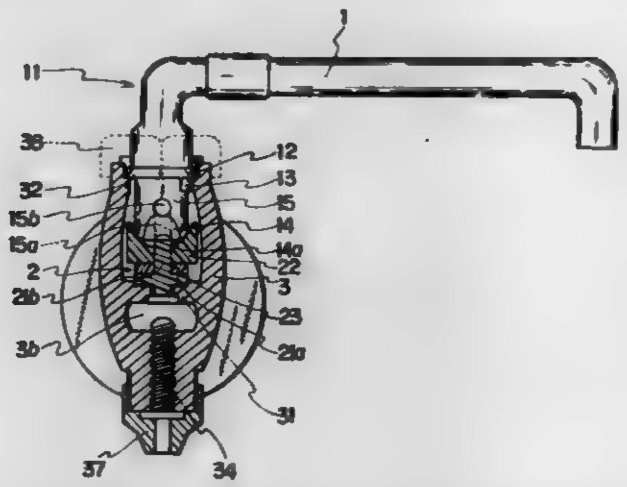
3,980,101
VALVE FOR SWIVELING FAUCET

Takakiyo Kurioka, 15-15, 1-chome, Higashinakamoto, Higashinari, Osaka, Japan

Filed Apr. 11, 1975, Ser. No. 567,079

Int. Cl.² F16K *31/524, 31/58*

U.S. Cl. 137—616.5 **3 Claims**



1. In a swiveling faucet having a valve casing, a valve disk inserted in said valve casing and an outlet tube swivelable to operate said valve disk and to thereby open and close a water passage, said outlet tube including a cylindrical member at the lower portion thereof with a semicircular curved surface formed on the end thereof, a valve comprising said valve disk including an assembly of a first member, a second member and a soft packing interposed between said first and second members, said second member having a semicircular recessed surface adapted for substantially full face-to-face contact with said semicircular curved surface formed on said cylindrical member at the lower portion of the outlet tube, said second member including thick plate-like guide means at the opposite ends of said semicircular recessed surface respectively, and said valve casing formed with vertical guide channels for guiding the thick plate-like guide means of said second member.

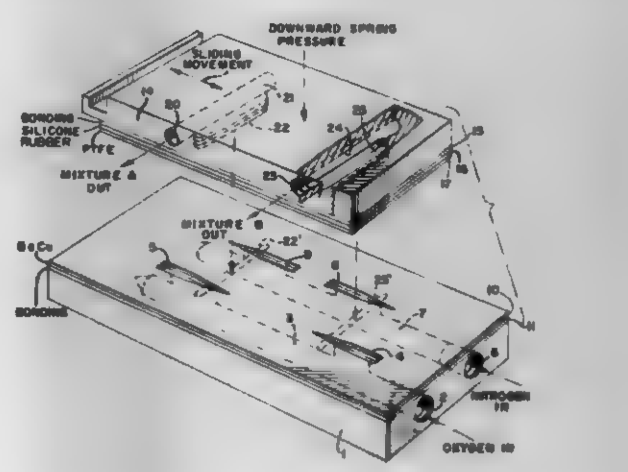
3,980,102
MIXING VALVE

Lutz A. Kiesow, Bethesda, Md., assignor to Baxter Laboratories, Inc., Deerfield, Ill.

Filed Oct. 24, 1975, Ser. No. 625,548

Int. Cl.² F16K *11/06*

U.S. Cl. 137—625.48 **9 Claims**



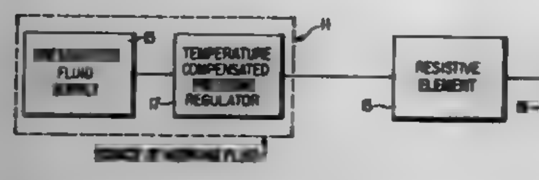
1. A mixing valve for mixing two fluids in any desired proportion in accordance with the movement of a portion of said valve, comprising:

- a first member having a smooth face and a second member having a smooth face;
- means to relatively and rectilinearly move said first and second members with respect to each other in a longitudinal direction through a limited operating range, with the said smooth faces sliding on each other in fluid-tight contact;
- first, second, third and fourth metering ports in the smooth face of said first member, each of said metering ports being of tapered shape, and extending in the longitudinal direction and having, along an operating extent, a width, measured in a direction transverse to said longitudinal direction, which varies monotonically along said longitudinal direction, the sense of variation of said first and third metering ports being identical and the sense of variation of said second and fourth ports being opposite to the sense of variation of said first and third ports;
- scanning port means in said second member for cooperating with each of said metering ports, said scanning port means comprising plural, narrow slits extending transversely of said longitudinal direction, and being so located that each of the metering ports is concommitantly scanned over its said operating extent by its cooperating slit as the first and second members move relatively and rectilinearly with respect to each other over said limited operating range;
- each of said first, second, third and fourth metering ports and its cooperating narrow slit respectively defining first, second, third and fourth variable throttling valves, the hydraulic resistance of each of which varies monotonically with relative movement of said first and second members over said limited range, the hydraulic resistance of said first and third variable throttling valves varying in one sense, and that of the second and fourth variable throttling valves varying in the opposite sense with said relative movement.

3,980,103
FLUIDIC RESISTIVE ELEMENT

Tadeusz M. Drzewiecki, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 7, 1975, Ser. No. 629,817
Int. Cl.² F15C *1/04*
U.S. Cl. 137—828 10 Claims

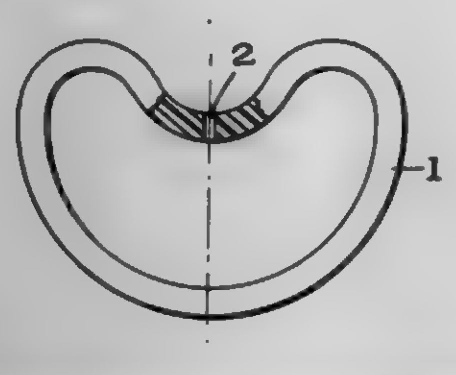


1. In a fluidic system having a load and a supply of working fluid at a supply pressure which is a constant independent of temperature, a resistive element comprising:
- a housing including a variable width rectangular channel for fluid flow; and
- means slidably mounted inside said housing responsive to incremental variations in fluid temperature for varying the width of the rectangular channel at a constant rate.

3,980,104
HOSE OR PIPE FOR SPRINKLING OR IRRIGATION

Deszö Kabel, Blankenloch Buchig, Germany, assignor to Interdisciplin Forschungsgesellschaft m.b.H. Entwicklungs K.G., Karlsruhe, Germany

Filed Jan. 8, 1975, Ser. No. 539,600
Claims priority, application Germany, Jan. 9, 1974, 2400797
Int. Cl.² B05B *1/20, 1/30*
U.S. Cl. 138—103 2 Claims



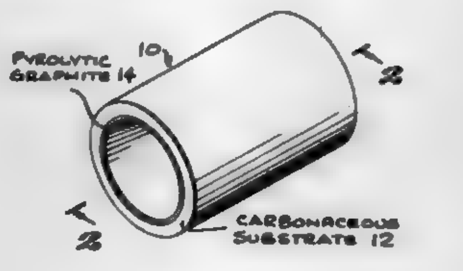
1. An apparatus for dispensing fluids comprising:
- a. a pipe, for suitable connection to a source of pressurized fluid and provided with a plurality of openings in its wall; and
- b. deformable plates, each having a pair of opposed annular flange members which engage the rim of one of said wall openings within said pipe, there being one deformable plate in each of said openings, and each of said plates containing an orifice through which said fluid under pressure may flow, the minimum cross-section of each orifice becoming smaller with increasing pressure during the pressure-dependent deformation of said deformable plates making the fluid flow rate through each of the orifices in said plurality of deformable plates substantially independent of internal fluid pressure.

2. A hollow conduit for dispensing fluids with a flexible tubular wall which has a predetermined longitudinal extent and which has transverse cross-sectional profiles throughout said extent and which includes orifices defined only by perforations of the flexible wall of the conduit for outward passage of fluid therethrough, said transverse cross-sectional profiles and said orifices having a given configuration in the relaxed un-pressurized state of said conduit and assuming a different configuration when the flexible wall of the conduit deforms under internal fluid pressure, said orifices presenting a smaller opening for fluid to pass therethrough as the degree of deformation of said walls becomes greater, thereby making the outward fluid flow rate through said orifices substantially independent of internal fluid pressure.

3,980,105
LAMINATED ARTICLE COMPRISING PYROLYTIC GRAPHITE AND A COMPOSITE SUBSTRATE THEREFOR

Edwin T. Myskowski, Culver City, Calif., assignor to Hitco, Irvine, Calif.

Filed July 10, 1974, Ser. No. 487,051
Int. Cl.² F16L *9/14*; B64D *33/04*; B32B *9/00*
U.S. Cl. 138—140 5 Claims

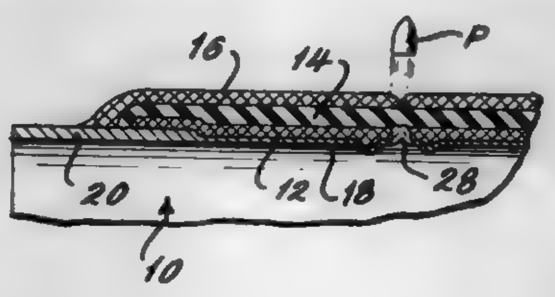


1. A laminate of generally carbonaceous composition comprising:
- a first member of relatively strong carbonaceous material having a hollow interior;
- a second member of compactible carbonaceous material having a selected compressibility which is substantially greater than the compressibility of the first member, the second member having a hollow interior defined by an inner surface thereof and being disposed within the hollow interior of and in contact with the first member, the second member combining with the first member to form a composite substrate; and
- a third member of pyrolytic graphite deposited on the inner surface of the second member;
- said second member being capable of undergoing substantial, controllable compaction in response to stress between the third member and the substrate.

3,980,106
FLUID CONTAINING STRUCTURE

Edwin W. Wiggins, Bridgeton, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Continuation of Ser. No. 387,913, Aug. 13, 1973, abandoned. This application Aug. 22, 1975, Ser. No. 606,850
Int. Cl.² F16L *9/14*; B65D *25/14*; F16L *21/00*
U.S. Cl. 138—140 11 Claims

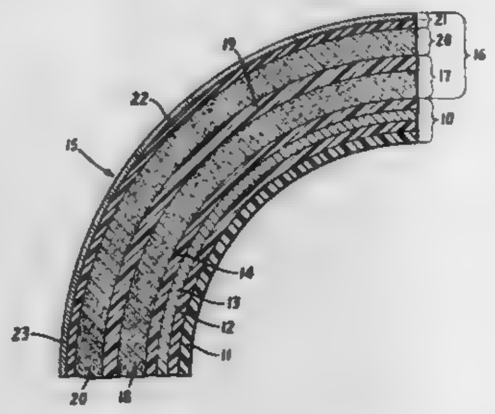


1. A self-sealing hollow body for holding a liquid even after the body is pierced by a projectile, said hollow body comprising: an impervious metal structure which is configured to form a cavity in which the liquid is contained, the metal structure including a liner portion having a wall thickness between approximately 0.002 inches and approximately 0.015 inches and a connecting portion having a greater wall thickness of at least about 0.028 inches, the liner portion occupying substantially greater area of the metal structure than the connecting portion so that the metal structure is for the most part constituted of the liner portion, the connecting portion being partially exposed beyond the liner portion and surrounding an opening leading into the cavity, the connecting portion being substantially stronger than the liner portion with its strength being sufficient to enable the hollow body to be coupled to some other device at the connecting portion; a rigidifying layer extending over and obscuring the entire liner portion of the metal structure and reinforcing the liner portion, the rigidifying layer further extending beyond the liner portion and over that part of the connecting portion which is contiguous to the liner portion, the rigidifying layer including strands of non-metallic material which encircle the liner portion and part of the connecting portion and which will remain substantially undistorted in the lateral direction after being pierced by a projectile, the strength of the rigidifying layer in comparison to the liner portion of the metal structure being such that the liner portion does not, after the passage of a projectile through the hollow body, project beyond the rigidifying layer at the exit hole left by the projectile and petalling of the metal liner portion does not occur at the exit hole; a sealant layer extended over the rigidifying layer and being capable of swelling when contacted by the liquid so as to close a hole imparted thereto by a projectile passing through the hollow body; and means extending over the sealant layer for maintaining the sealant in place.

3,980,107
HELICALLY WOUND TUBULAR WALL MATERIAL

Donald E. Barnes, Minnetonka, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed May 8, 1975, Ser. No. 575,635
Int. Cl.² F16L *9/16*
U.S. Cl. 138—143 4 Claims



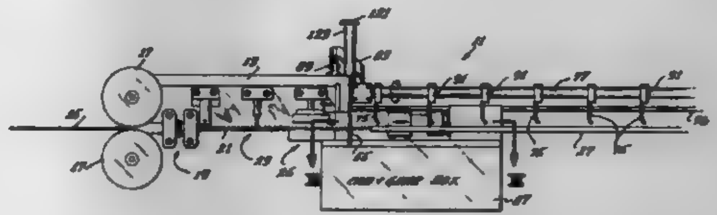
1. In a helically wound tubular wall material comprising an inner continuous layer of barrier liner material and an adherent outer continuous layer of rigidity and structure imparting material, the improvement which comprises a liner composition comprising a metal foil, a polyester film having a coefficient of friction of less than 0.3 at 250°F. bonded to one surface of said metal foil through an intermediate ply of low density polyethylene or polyurethane adhesive and a heat sealable coating bonded to the other surface of said foil.

3,980,108
ROUND MESH WEAVING MACHINE AND MULTI-OUTPUT POWER TRANSMISSION UNIT THEREFOR

Jack Rolf Evers, Torrance, and Herbert Edward Rohrbacher, Whittier, both of Calif., assignors to Bergandi Manufacturing Company, Inc., South El Monte, Calif.

Filed May 2, 1975, Ser. No. 573,999
Int. Cl.² B21F *27/04*
U.S. Cl. 140—92.8 25 Claims

12. A round mesh weaving machine comprising
- means for feeding a continuous length of wire to a coiling die means,
- coiling die means for converting the continuous length of wire into a coiled needle of uniform diameter and for rotating the coil about its longitudinal axis as it leaves said die means,
- means for receiving the coiled wire as it leaves said coiling die means,
- means for retaining a first coiled section of wire of predetermined length in a predetermined position in which its longitudinal axis is parallel to the longitudinal axis of the coiled needle leaving said coiling die means such that said longitudinal axes are offset by less than the diameter of said first coiled section of wire, and for receiving the incoming coiled needle such that the rotation of the coiled needle leaving said coiling die causes the coiled needle and the first coiled section of wire to be threaded together, said retaining means comprising
- a base member,
- fixed gripping means mounted upon said base member and extending into cooperative relationship with said receiving means,
- presser plate means pivotally mounted on said base member in cooperative relationship with said fixed gripping means, and



- means mounted on said base member for releasably biasing said presser plate means toward said fixed gripping means, and
- power transmission means including
  - a housing containing
    - a power input means,
    - first cam means operatively connected to said power input means,
    - means actuated by said first cam means for severing said coiled needle when a predetermined length thereof is positioned in said receiving means, thereby forming the severed portion into a second coiled needle,
    - second cam means operatively connected to said power input means,
    - means actuated by said second cam means for moving the first coiled section of wire perpendicular to its axis and out of said retaining means and for moving the second coiled section of wire into the predetermined position vacated by said first coiled section,
    - third cam means operatively driven by said power input means, and
    - means actuated by said third cam means for moving the second coiled section parallel to its axis a distance equal to approximately one-half the pitch of the coil.

3,980,109
FOOD DISPENSER WITH SERVING MEANS

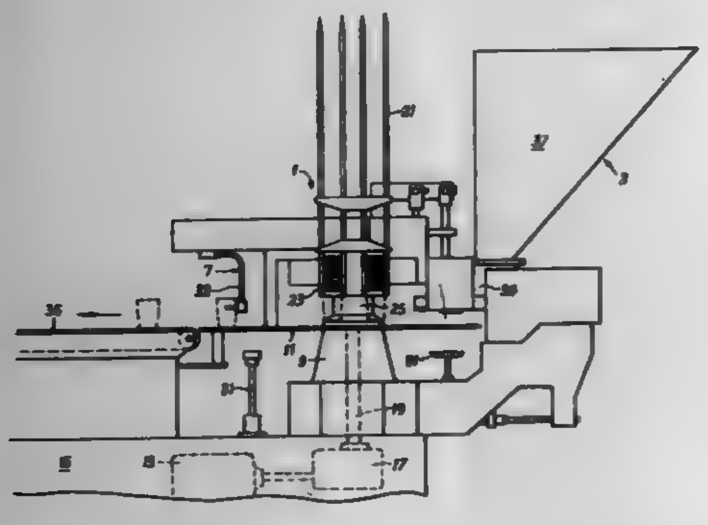
Frederick Ransom Trueman, 11, High St., Fareham, Hampshire; Roy George Swain Couzens, 3 Charlesworth Gardens, Waterlooville, Hampshire, and Brian Henry Islip, 11, High St., Fareham, Hampshire, all of England

Division of Ser. No. 327,103, Jan. 26, 1973, Pat. No. 3,892,338. This application Dec. 30, 1974, Ser. No. 537,443

Claims priority, application United Kingdom, Jan. 26, 1972, 3740/72

Int. Cl.² B65B *1/22, 3/32*

U.S. Cl. 141—71 **17 Claims**



1. A dispenser for a food product which comprises a solid or a highly viscous liquid, the dispenser comprising a dispensing chamber having an inlet and an outlet for the said product, means for supplying the said product to said dispensing chamber via said inlet and for closing said inlet after a predetermined quantity of the said product has entered said chamber, a dispensing member slidably mounted within said dispensing chamber and acting, upon movement towards said outlet, to force food product within said dispensing chamber outwardly via said outlet, and means for closing said outlet from said dispensing chamber after the said movement of said dispensing member is complete, to substantially preclude flow of excess food product from said outlet; and wherein said dispenser further includes means for positioning a succession of containers beneath said dispensing chamber outlet in timed relation to each discharge of food product to fill each said container with said food product.

3,980,110
FLOW METERING DEVICE

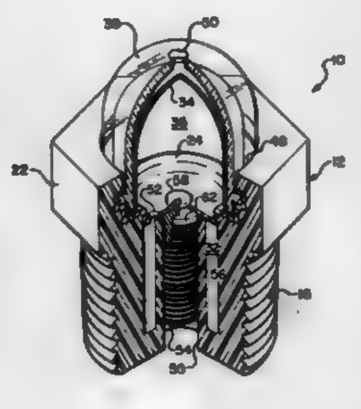
Earl S. Cain, Portola Valley; Jerome A. Carlson, Woodside; James G. Crummett, San Jose, and George E. Goodrich, San Carlos, all of Calif., assignors to Tribotech Incorporated, Redwood City, Calif.

Filed Jan. 29, 1975, Ser. No. 545,126

Int. Cl.² B65B *3/10;* **F16N** *5/00;* **F01M** *11/04*

U.S. Cl. 141—351 **29 Claims**

1. In a device for metering the flow of a viscous medium into a structure with an opening having internal threads of a given pitch, the combination of means forming a chamber for containing a charge of the medium under pressure, means forming at least one elongate flow passage having an inlet end positioned to receive said medium from said chamber and an outlet end positioned to direct said medium to said structure, said flow passage having a given cross-sectional area and having a length which is sized in relation to said cross-sectional area and in relation to the viscosity of the pressurized medium whereby the medium flows from the chamber through the passage at a predetermined rate, an elastomeric base member formed with external threads having a pitch which differs from said given pitch with the external threads of the base member being engageable with the internal threads of the opening whereby the difference in pitch of the threads causes a change in axial dimension of the base member, and flow shut-off means mounted for movement with the end of the base member with the flow shutoff means being positioned to occlude said inlet end of the flow passage for shutting off flow therethrough when the base member is out of engagement with the opening, and with the shut-off means being moved by the base member away from the inlet of the flow passage to permit flow therethrough when the base member is threadably engaged with said structure opening.



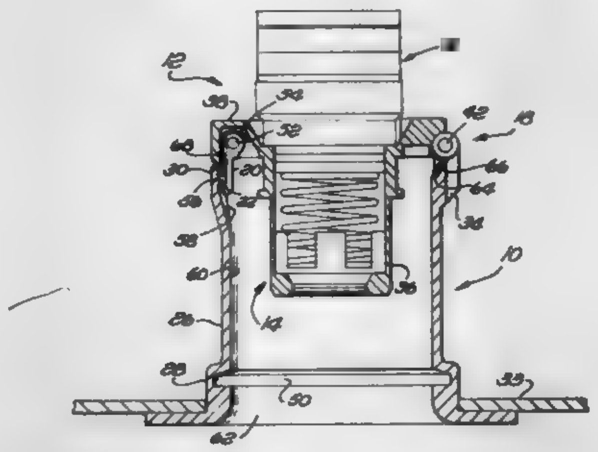
3,980,111
FUEL RECEIVER

Everett H. Badger, La Habra, Calif., assignor to Textron, Inc., Pacoima, Calif.

Filed Mar. 7, 1975, Ser. No. 556,253

Int. Cl.² B65B *3/04*

U.S. Cl. 141—367 **16 Claims**



1. A fuel receiver providing gravity and closed circuit refueling capability comprising:

A. a tubular body;

B. a swing-away module having a fluid flow path therethrough and including nipple means for receiving a refueling nozzle and valve shut-off means operative to open and close said path;

C. means pivotally attaching said swing-away module to said body; and

D. latch means releasably securing said swing-away module to said body, whereby said valve shut-off means is operatively positioned in said flow path during the time said module is secured to said body, and upon release of said latch means said module swings away from said body to provide a substantially unimpeded flow path through said body.

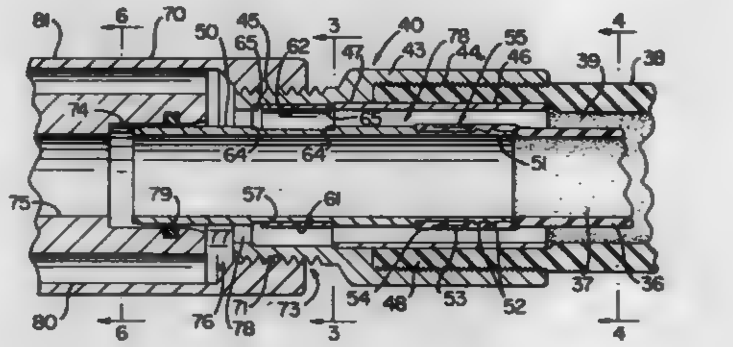
3,980,112
CONDUIT ASSEMBLY FOR CONVEYING VOLATILE FLUIDS

Robert L. Basham, Dayton, Ohio, assignor to Dayco Corporation, Dayton, Ohio

Filed Mar. 21, 1975, Ser. No. 560,752

Int. Cl.² B65B *3/18;* **F16L** *47/00*

U.S. Cl. 141—392 **22 Claims**



1. A conduit assembly having fluid passages there for conveying a volatile liquid in one direction to a container and returning vapors of said volatile liquid from said container, said assembly comprising a flexible inner conduit defining an inner one of said fluid passages, a flexible outer conduit having an inside diameter and being disposed around said inner conduit, said conduits being relatively sized to define an outer one of said fluid passages between said conduits, a coupling having means fixing one end portion of said outer conduit thereto in sealed relation, a tubular fitting having a cylindrical outermost surface which has a diameter smaller than said inside diameter and having an end portion received within an associated end portion of said inner conduit, a fastening device fastened concentrically around said associated end portion of said inner conduit with said end portion of said fitting disposed therewithin and fixing said fitting to said inner conduit, said fastening device in its fastened condition having a maximum outside diameter which is approximately equal to the maximum outside diameter of said associated end portion of said inner conduit, and means holding said fitting and said associated end portion of said inner conduit in said coupling concentrically within said outer conduit to define a continuation of said outer passage while preventing axial movement of said fitting relative to said coupling, said coupling being adapted to be detachably fastened to a coupling adapter.

3,980,113
PENCIL SHARPENER

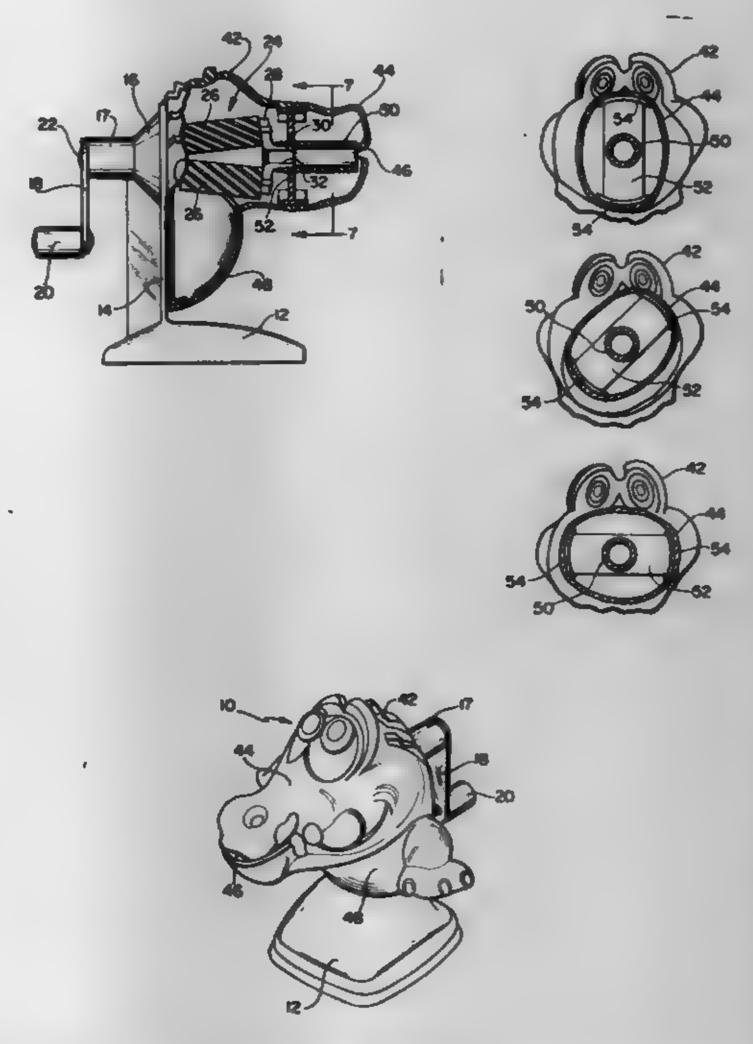
John D. Birdsall, Los Angeles, Calif., assignor to Hasbro Development Corporation, Pawtucket, R.I.

Filed Oct. 28, 1975, Ser. No. 626,578

Int. Cl.² B43L *23/02*

U.S. Cl. 144—28.6 **10 Claims**

1. A pencil sharpener, comprising a base to which a mounting bracket is joined, a sharpening assembly mounted for rotation on said mounting bracket and including a handle to which sharpener rollers are operatively interconnected and a pencil guide that is secured to said rollers for guiding a pencil to be sharpened therebetween, a hollow figure formed of a flexible, deformable material and being secured to said sharpening assembly in surrounding relation with respect to said rollers, said figure having an opening formed therein that is aligned with said pencil guide for receiving a pencil to be sharpened therein, and means mounted for rotating movement with said sharpening assembly and interiorly of said hollow figure and being engageable with interior surfaces of said hollow figure, wherein rotation of said sharpening assembly and said means mounted for rotating movement with said sharpening assembly during a pencil sharpening operation causes said means mounted for rotating movement with said sharpening assembly to distort the flexible figure.



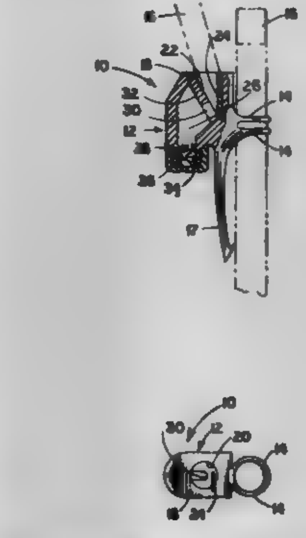
3,980,114
COMBINED PENCIL CLIP AND SHARPENER

Peter Maniscalki, Bayonne, N.J., assignor to Lawrence Peska Associates, Inc., New York, N.Y.

Filed Nov. 13, 1975, Ser. No. 631,428

Int. Cl.² B43L *23/00*

U.S. Cl. 145—3.31 **1 Claim**

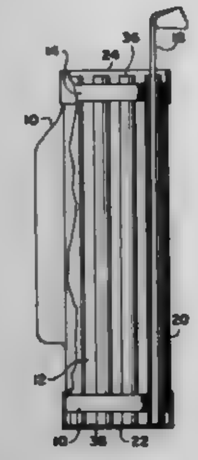


1. A combined pencil clip and sharpener device comprising: a body having a tapered bore for receiving the writing end of a pencil; a sharpening blade mounted in said body projecting into said bore; a reservoir for shavings formed in said body in communication with said bore; a removable cap threadably retained on said body forming a wall of said reservoir, resilient opposed arcuate fingers projecting from said body for frictionally engaging a pencil

and a clip arm projecting from said body generally perpendicular to said fingers.

3,980,115
GOLF CLUB SEPARATORS FOR GOLF BAG

Paul Longo, E. State & High Sts., Camden, N.J. 08105
Filed May 16, 1975, Ser. No. 578,088
Int. Cl.² A63B *55/00*
U.S. Cl. 150—1.5 R **4 Claims**

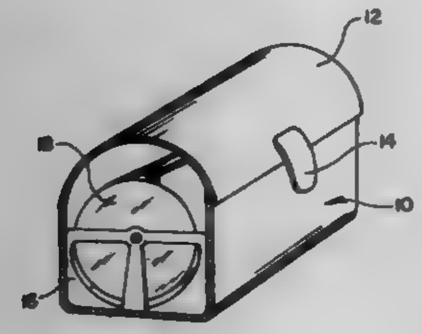


1. In a golf club separator system for an existing golf bag of the type defining an elongated interior space, the combination of

- a plurality of tubular members positioned within the golf bag interior space;
- a resilient, compressible upper spacer positioned within a golf bag interior space and being provided with a plurality of openings,
- at least some of the said tubular members being positioned within the spacer openings;
- resilient means to retain the spacer within the interior of the golf bag;
- means to retain the tubular members within the openings of the spacer; and
- resilient means to retain the tubular members in parallel relationship within the golf bag.

3,980,116
ORGANIZER FOR PURSE, HANDBAG OR THE LIKE

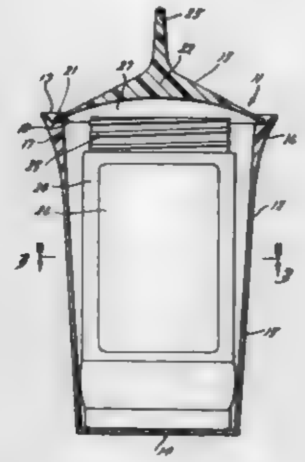
Edna H. Edwards, 1100 Chantilly Road, Los Angeles, Calif. 90024
Filed Sept. 22, 1975, Ser. No. 615,574
Int. Cl.² A45C *13/02*
U.S. Cl. 150—30 **9 Claims**



1. In combination: an organizer insert and a receptacle, such as a purse, handbag, luggage, and the like, said receptacle having first and second ends with an openable closure means therebetween, said insert comprising an enclosed compartmented rotatable member rotatably mounted in the receptacle about its axis extending between the ends of the receptacle and having a plurality of internal compartments each with an opening therein to permit access to the interior thereof, and additional closure means for each of the openings, said insert further includes a rigid frame adapted to fit into the receptacle, said frame having a pair of end brackets adapted to be positioned adjacent to the respective ends of the receptacle, and in which said rotatable member is rotatably mounted on the frame between the end brackets thereof.

3,980,117
CONTAINER FOR A DISPOSABLE JAR

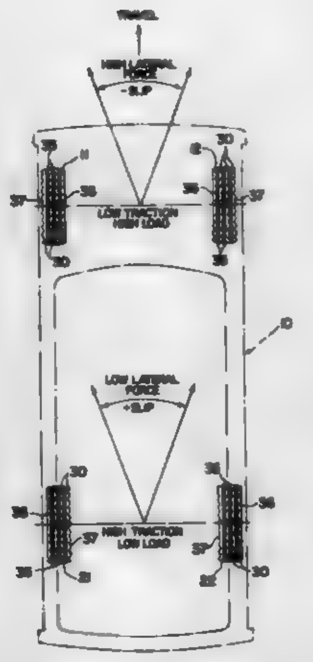
Bertrand N. Trombley, 1100 N. Woodward, Birmingham, Mich. 48011
Filed Sept. 4, 1975, Ser. No. 610,117
Int. Cl.² B65D *23/08*
U.S. Cl. 150—52 R **2 Claims**



1. An attractive container and cover for an unattractive disposable jar for a food product, said container being of cylindrical shape which has a slight upward and outward taper to provide a top opening, said opening being of bell shape with the material thickened to provide strength and to form a ledge, a cover of truncated conical shape having a tapered central top projection of small diameter, said ledge having an outer and upward flared portion which centers the cover when the outer edge is engaged thereby.

3,980,118
TREAD CONFIGURATION FOR AUTOMOTIVE TIRE

Kenneth P. Kinas, Green Lake, Wis., assignor to The General Tire & Rubber Company, Akron, Ohio
Filed May 5, 1975, Ser. No. 574,789
Int. Cl.² B60C *11/06*
U.S. Cl. 152—209 R **3 Claims**

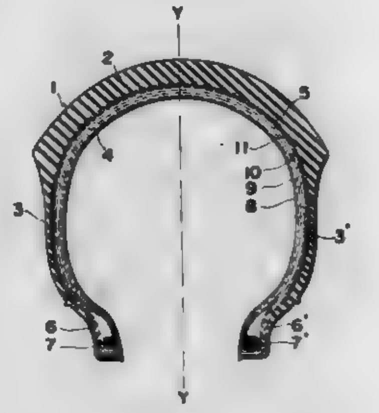


1. In a pneumatic tire having a tread portion including a plurality of circumferential ribs, said ribs defining circumferential grooves therebetween, the improvement wherein said ribs each have a relatively flat continuous side facing in one

axial direction to provide a relatively rigid edge of the rib, and sides facing in the opposite axial direction defining an irregular configuration to provide an edge of the rib with less rigidity than the other edge whereby said tire has under normal inflation conditions, a greater cornering stiffness in one axial direction than in the opposite axial direction.

3,980,119
BIAS-PLY PNEUMATIC TIRES FOR MOTORCYCLES

Eiji Nakasaki, Kakogawa, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed July 22, 1974, Ser. No. 490,388
Claims priority, application Japan, July 26, 1973, 48-88890
Int. Cl.² B60C *9/10, 17/00*
U.S. Cl. 152—354 **4 Claims**

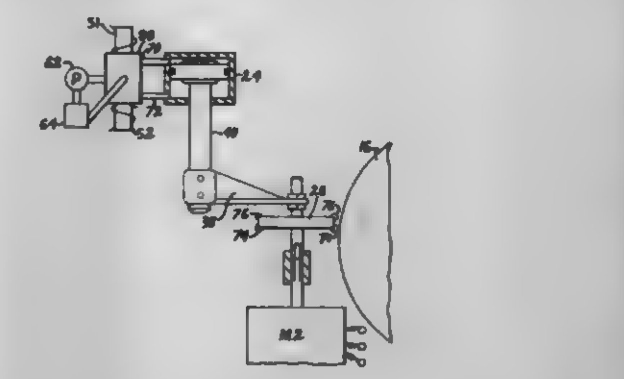


1. A pneumatic tire for use on a motorcycle, which comprises a tire cover made of a rubber material and having a tread portion, a pair of opposed sidewalls integrally extending from respective side edges of said tread portion, and a pair of opposed bead portions integrally extending from respective free ends of the individual sidewalls, said bead portions being adapted to firmly engage with associated rim flanges of a wheel rim, said tire cover including bead cores embedded respectively in said bead portions and a reinforcing structure for preventing the tire from collapsing when it is at least partially deflated which comprises a carcass structure embedded in said tire cover adjacent the inner surface thereof, said carcass structure having a plurality of piles of textile cords which are alternately disposed on a bias at an angle within the range of 25° to 45° relative to the mid-circumferential plane of the tire, said carcass structure having both ends turned up around the respective bead cores and secured in position adjacent the free ends of said sidewalls, and at least one reinforcement layer substantially forming a part of said carcass structure and made of a cord of steel material, said reinforcement layer being laid down on a bias at an angle within the range of from 20° to 40° relative to the mid-circumferential plane of the tire and having both ends terminating adjacent respective boundaries between the sidewalls and the bead portions without being turned up around the associated bead cores, said reinforcing structure representing the principal reinforcing portion of the tire.

3,980,120
METHOD AND APPARATUS FOR REMOVING TREAD MATERIAL FROM RADIAL BELTED TIRES

William E. Fawcett, Latrobe, and Robert S. Çulibon, Mount Pleasant, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.
Division of Ser. No. 546,989, Feb. 4, 1975, Pat. No. 3,953,915.
This application Jan. 9, 1976, Ser. No. 647,714
Int. Cl.² B29H *21/08;* **B23B** *3/00*
U.S. Cl. 157—13 **17 Claims**

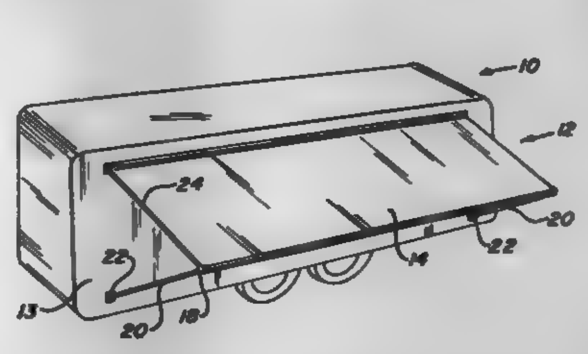
1. An improved machine for removing tread material from a pneumatic tire preparatory to retreading of the tire, in which the machine has a support frame, a rotatable tire support shaft mounted in said frame, and a rotatable cutter support shaft mounted in said frame, wherein the improvement comprises: cutter means on the cutter support shaft for cutting engagement with a tire on the tire support shaft when the cutter is rotated in either direction about the central axis thereof while the tire also rotates on the axis thereof, means for positioning the plane of rotation of the cutting means relative to the radial centerline of the tire in a respective axial position for each direction of rotation of said cutting means, means for guiding



the cutting means during cutting engagement with the tire for a cutting operation commencing near the axial centerline of the tire and extending laterally outward toward a side wall region of the tire, and means for rotating the cutting means in a direction such that during cutting engagement thereof with the tire the direction of the cut taken is toward the lateral side wall of the tire toward which the cutting means is being guided.

3,980,121
BRACKET FOR USE IN A RETRACTABLE AWNING

Donald S. McKee, Louisville, Colo., assignor to The Scott & Fetzer Company, Lakewood, Ohio
Filed Feb. 26, 1975, Ser. No. 552,972
Int. Cl.² E04F *10/06*
U.S. Cl. 160—71 **4 Claims**



1. In a retractable awning assembly having an awning sheet securable on one edge to a supporting surface, an awning sheet bar secured to said awning sheet along another edge thereof, a pair of elongated support arms having said awning sheet bar mounted on the upper ends thereof, a pair of first bracket means mounted on said supporting surface, a pair of brace members each pivotally secured on one end to one of said first bracket means and having its opposite end operatively engageable with one end of said awning sheet bar, the improvement comprising:

- a pair of second bracket means mounted on said support surface each pivotally mounting the lower end of one of said support arms and selectively retaining the opposite end of one of said brace members in parallel relationship with an associated one of said support arms and in spaced relationship from said support surface when the awning is retracted, said second bracket means each including a pair of spaced parallel plate-like side members extending in a substantially vertical direction, a substantially vertically extending web member interconnecting said side members to define a vertically extending channel opening outwardly away from said support surface, a pivot pin extending substantially horizontally between said side members and being operably connected to the lower end of one of said support arms to cooperate with the side members in pivotally supporting said support arm, said support arm when connected to said pivot pin cooperating with said side members and web member in defining a substantially vertically extending passage means through the second bracket, said passage means having a closed periphery and being adapted to receive and retain said opposite end of an associated brace member in parallel relationship with the support arm and in spaced relationship from said support surface when the awning is retracted, and mounting means on each of said second bracket means for mounting the second bracket means on said supporting surface.

3,980,122
CURTAIN TURNING DEVICE

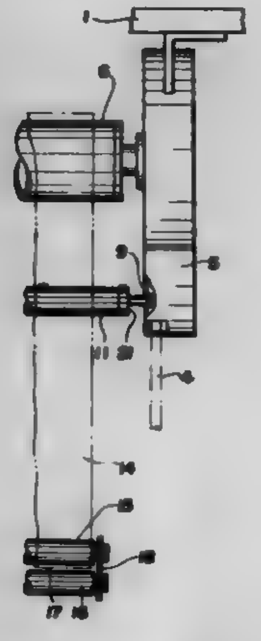
Ietsugu Takazawa, Bancho-chidorigabuchi Habitation 901, 3 Sanban-cho,, Chiyoda, Tokyo, Japan

Filed Dec. 6, 1974, Ser. No. 530,412

Claims priority, application Japan, May 13, 1974, 49-54162

Int. Cl.² A47H *1/00;* E06B *9/08*

U.S. Cl. 160—85 **2 Claims**



1. In a curtain turning device including an elongated fitting frame having supporting cases at opposite ends thereof, a winding shaft substantially parallel to said fitting frame and journaled for rotation in said cases, rotating means in one of said cases associated with said winding shaft for rotating said shaft, a fitting rod substantially parallel to said winding shaft and supported from said cases below and spaced from said winding shaft, said fitting rod comprising an elongated tubular portion having removable closure means at the open ends thereof and a substantially concentric shaft portion in said tubular portion, said shaft portion passing through said closure means and rotatably journaled in said cases, and a curtain having first and second opposite surfaces folded over on itself fitted between said shaft portion of said fitting rod and said winding shaft with suspending rod means in said fold to tension said curtain into a generally U-shaped configuration whereby said first surface of the curtain constitutes the outside of said U-shape and said second surface of the curtain constitutes the inside of said U-shape, the improvement wherein said suspending rod means comprises two relatively rotatable, generally parallel elongated rod-like members disposed in a vertical plane and having a fixed spacing therebetween for passing said curtain therethrough, each of said rod-like members having a length greater than the width of said curtain, whereby one of said rod-like members is disposed in said fold when said first curtain surface constitutes the outside surface of said U-shape and the other of said rod-like members is disposed in said fold when said curtain is turned such that said second curtain surface constitutes the outside surface of said U-shape.

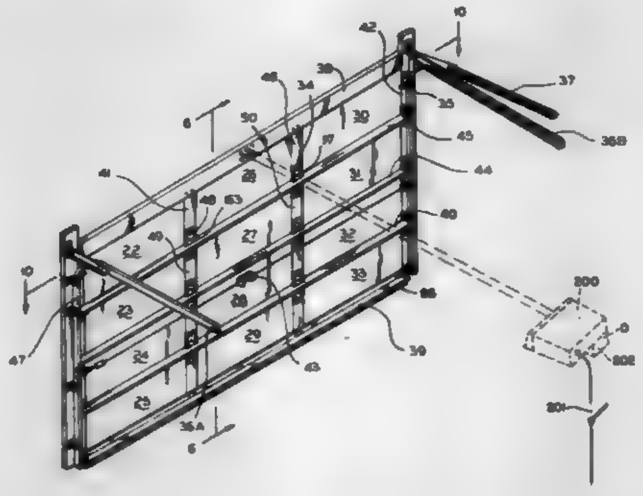
3,980,123
BLOW-MOLDED ARTICULATED OVERHEAD DOOR

Louis N. Vago, Aurora, Ill., assignor to General Aluminum Corporation, Montgomery, Ill.

Filed June 12, 1975, Ser. No. 586,195

Int. Cl.² E05D *15/36*

U.S. Cl. 160—201 **18 Claims**



1. An articulated overhead door comprising:
a series of panel sections of blow-molded material having substantially hollow cavities within a substantially double-walled construction,
said panel sections having means to enable increased strength within said substantially hollow cavities,
said panel sections having means within said double-walled construction to enable insulation,
said panel sections having means for attachment and interaction with said other panels of said series,
a plurality of vertical stile support means spanning the height of said door,
a plurality of horizontal rail support means spanning the length of said door,
guiding track means which direct the movement of the overhead door whereby the door moves to a substantially horizontal position over the interior of a building when opened and is returned to secure vertical position when closed,
roller means on the edges of said door which ride in said guiding track means,
power assist means to facilitate opening of said door from a closed position to an open position, and
control means which enable the locking, unlocking, and mechanical opening and closing of said door.

3,980,124
GRAIN DOOR AND METHOD OF INSTALLATION

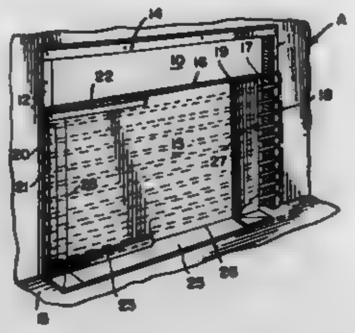
William E. Bruning, Omaha, Nebr., assigner to Omni Corporation, Omaha, Nebr.

Filed June 10, 1974, Ser. No. 477,702

Int. Cl.² A47H *3/00;* B65D *5/24*

U.S. Cl. 160—368 G **1 Claim**

1. A grain door comprising a generally rectangular, relatively stiff panel having a plurality of horizontally extending metal straps adjacent one face thereof; a horizontally extending fold line adjacent the panel bottom adapted to develop a floor flap, a vertical fold line adjacent each side of said panel adapted to develop a side flap and intersecting said horizontal fold line, a downwardly diagonal fold line extending from each intersection to the adjacent bottom corner of said panel and forming an acute angle with said horizontal fold line, and an upwardly diagonal fold line extending from each intersection to the adjacent side and forming approximately the same acute angle with said horizontal fold line whereby, when said panel is installed across the doorway of a boxcar, inward force



at the end of said upwardly diagonal fold line permits folding through an arc of 180° its associated side flap and floor flap end into overlying relation with the remainder of said panel.

3,980,125
APPARATUS FOR MOLDING AT LOW PRESSURE

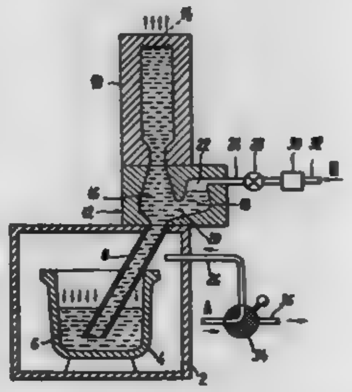
Robert Portalier, Ville d'Avray, France, assignor to Societe de Vente de l'Aluminium Pechiney, Paris, France

Filed May 7, 1975, Ser. No. 575,477

Claims priority, application France, May 10, 1974, 74.16155

Int. Cl.² B22D *17/06, 17/32*

U.S. Cl. 164—154 **4 Claims**



1. A low-pressure molding apparatus of the type comprising a mold, a compression/expansion chamber communicating with the lower end of the mold, a fluid-tight chamber, a crucible within the fluid-tight chamber and a plunger tube communicating the compression/expansion chamber with the crucible, the compression/expansion chamber comprising first and second compartments communicating with one another at their lower ends, the second compartment being provided at its upper end with an outlet which is connected to a source of gas under pressure, this gas being a gas which is inert with respect to the molding material contained in the crucible, a check valve and a device for controlling the rate of flow of the gas being arranged between the outlet and the inert gas source, the fluid-tight chamber being provided with an inlet for medium under pressure which is connected to a compressed air source with a check valve in between, the improvement which comprises a device for automatically feeding and metering inert gas and compressed air arranged in the outlet and in the pressure medium inlet, the automatic feed and metering device comprising a cylinder mounted for free oscillation about a horizontal axis, a diametric partition dividing the cylinder into two compartments and which only communicate with one another through at least one opening formed in the lower part of the partition, a liquid partially filling the cylinder, an outlet in the upper end of the first compartment and a pressure medium inlet communicating with the second compartment at its upper end.

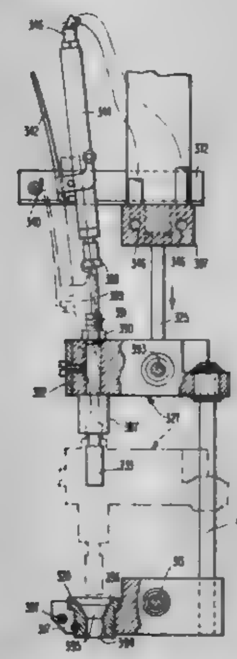
3,980,126
AUTOMATED POST BURN STATION

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Continuation-in-part of Ser. No. 432,545, Jan. 11, 1974, Pat. No. 3,954,216, which is a continuation-in-part of Ser. No. 395,528, Sept. 10, 1973, Pat. No. 3,861,575, which is a division of Ser. No. 184,338, Sept. 28, 1971, abandoned. This application Oct. 2, 1975, Ser. No. 618,772

Int. Cl.² B22D *11/124*

U.S. Cl. 164—271 **19 Claims**



1. An automated apparatus for sequentially forming integrally fused battery terminals on a plurality of storage batteries, each of which comprises at least one battery post element and adjacent battery element said apparatus comprising:
a. a frame,
b. head means movable with respect to said frame along a substantially vertical axis and having a trip member fixedly attached thereto,
c. mold means on said head means, adjustably mounted to accommodate any of a plurality of battery sizes,
d. cylinder means for moving said head means a predetermined distance along said substantially vertical axis between a first standby position and a second molding position, said mold means being adapted to matably encircle said battery elements in said molding position,
e. burning means capable of selectively producing a flame for melting said battery elements, said burning means being mounted in slidable engagement along said substantially vertical axis on said head means and further comprising a lever means for contacting said trip member for camming there against thereby automatically regulating the intensity of said flame from a minimum pilot flame when the burn means is in the pilot position to maximum when the burn means is in the burn position,
f. hydraulic means for moving said burning means along said substantially axis with respect to said head means between a first pilot and a second burning position.

3,980,127
ENERGY CONSERVATION SYSTEM

Bernard Sacks, Philadelphia, Pa., assignor to Patco Inc., Pennsauken, N.J.

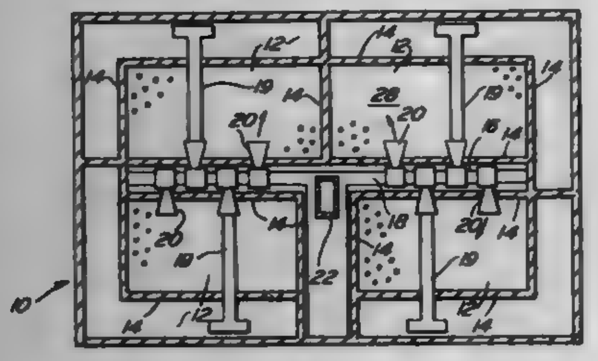
Filed May 6, 1974, Ser. No. 467,040

Int. Cl.² F25B *13/00*

U.S. Cl. 165—2 **7 Claims**

1. An air circulation system comprising a building having intake means for withdrawing air from the environment;
a plurality of uniformly sized means on one floor of the building for treating said environmental air by heating or cooling having a predetermined air treating capacity,

each of said treating means being in communication with said intake means;
a plurality of means for pumping said treated environmental air, the suction sides of said pumping means being in communication with said air treating means;
a ventilating ceiling;
a plurality of pre-designed plenum chambers disposed above said ceiling, each of said chambers being in communication with a separate one of said pumping means such that air pumped by each pumping means flows into

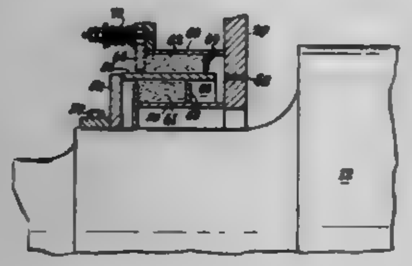


its respective chamber and through said ventilating ceiling to the area beneath said ceiling; and
recirculation means in communication with said area beneath the ceiling and with said pumping means for exhausting the treated air from the enclosed area beneath the ceiling and for conducting the air back to said pumping means so that said recirculated air is mixed with said treated environmental air and said mixture is pumped into each plenum chamber whereby the volume of air pumped into each plenum chamber is greater than the air treating capacity of the treating means.

3,980,128
ROTOR POST SEAL

Richard Franklin Stockman, Friendship, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed June 2, 1975, Ser. No. 583,007
Int. Cl.² F28D *19/00*
U.S. Cl. 165—9 **13 Claims**



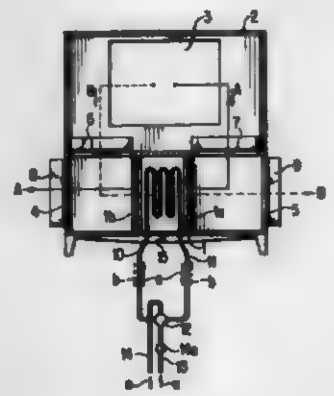
1. A regenerative heat exchange apparatus including a central rotor post, a plurality of compartments lying in lateral juxtaposition to provide a composite rotor that extends around the rotor post, means joining each compartment to the rotor post, a mass of heat absorbent material contained in the compartments of the rotor, housing means surrounding the rotor including end plates at opposite ends thereof having inlet and outlet openings that direct a heating fluid and a fluid to be heated through the heat absorbent material of the rotor, sealing means between the rotor post and the surrounding housing structure adapted to preclude the flow of fluid through the space therebetween, said sealing means comprising an annular flange attached to the rotor post in spaced relation to the end plate of the housing to provide a clearance space between the annular flange and said end plate, a plurality of independent sealing rings in said clearance space that provide a fluid chamber therebetween, a source of high pressure fluid, and an inlet for high pressure fluid connecting said source to said fluid chamber whereby said fluid chamber may be supplied with a quantity of high pressure fluid.

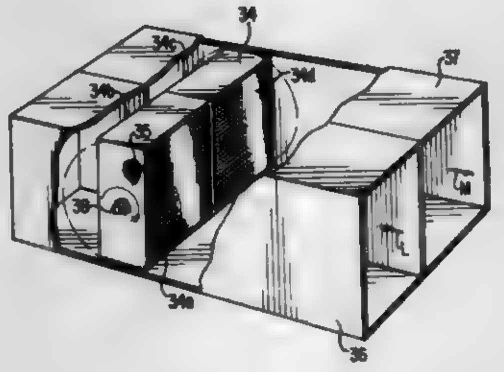
7. Regenerative heat exchange apparatus including a horizontal rotor post, sectorial compartments spaced from the rotor post and lying in lateral juxtaposition to provide an annular rotor around the rotor post, means joining each compartment to the rotor post, a mass of heat absorbent material contained in the compartments of the rotor, housing means surrounding the rotor having end plates with inlet and outlet openings that direct a heating fluid to be heated through the heat absorbent material of the rotor, means for rotating the rotor about its axis, sealing means between the rotor post and the surrounding housing structure adapted to preclude the flow of fluid through the space therebetween, said sealing means comprising a connecting flange that extends around the rotor post, an annular sleeve concentric with the rotor post with one end thereof secured to the connecting flange and having an unsupported end thereof extending axially, an annular trough extending around the rotor post supported by the housing and arranged to receive the unsupported end of the annular sleeve, and packing material carried by the annular trough adapted to resist flow of fluid through said trough.

3,980,129
HEAT EXCHANGE IN VENTILATION INSTALLATION

Knut Bergdahl, Kvartsgrand 4, 852 52 Sundsvall, Sweden

Filed Dec. 4, 1974, Ser. No. 529,525
Claims priority, application Sweden, Dec. 4, 1973, 7316326
Int. Cl.² A23C *3/02*
U.S. Cl. 165—17 **10 Claims**



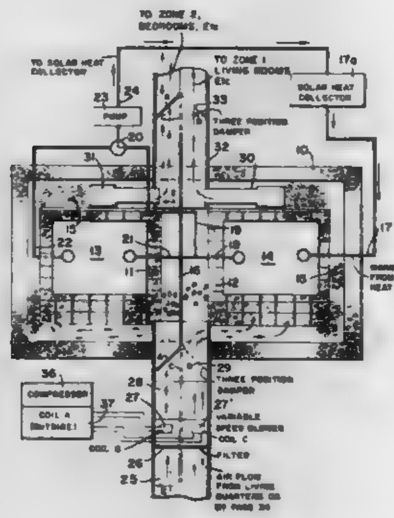


1. A method of defrosting a heat exchanger, which is disposed in the exhaust air duct of a ventilation installation for the recovery of heat between the exhaust air and the supply air and operates with two media with opposed flow, comprising the step of periodically reversing the flow directions of the two heat exchanging media in the heat exchanger to establish two alternating cold and hot zones in the heat exchanger whilst maintaining the opposed flow, for periodically defrosting said zones of the heat exchanger in alternation while the heat recovery is going on continuously.

3,980,130
HEAT, COLD AND DRY STORAGE

Harry E. Thomason, and Harry Jack Lee Thomason, Jr., both of 6802 Walker Hill Road, SE., Washington, D.C. 20027

Continuation-in-part of Ser. No. 317,764, Dec. 22, 1972. This application Dec. 21, 1973, Ser. No. 427,312
Int. Cl.² F24D *11/00*
U.S. Cl. 165—18 **12 Claims**



1. Heat or cold storage apparatus comprising a storage bin having multiple compartments, means to direct warm liquid into each of said compartments when maximum heat storage capacity is needed, or to a first of said compartments when less than maximum heat storage capacity is needed, a second of said compartments being left available for cool storage, means to direct air through said bin in heat exchange relationship with said compartments to heat the air as it passes through a warm compartment or to cool the air as it passes through a cool compartment, means for warming the liquid in one or more compartments for heat storage, and means for cooling one or more compartments for cool storage.

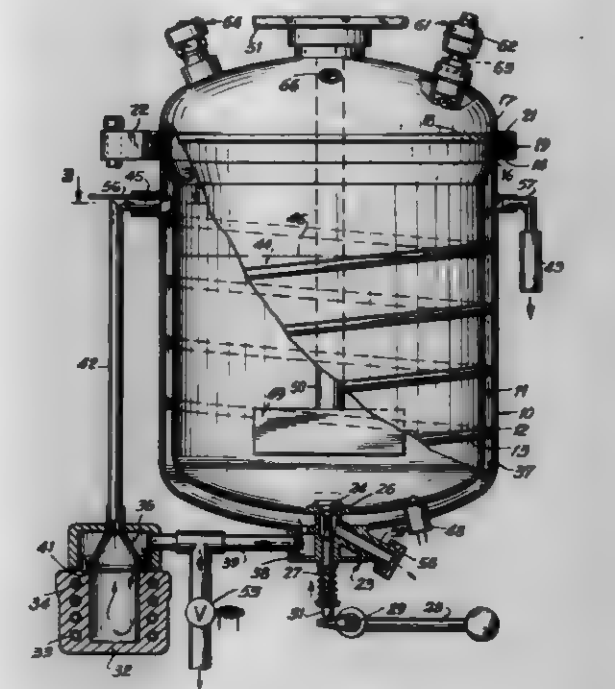
3,980,131
STERILIZER FOR CULTURE MEDIA AND LABORATORY WARE

Abe J. Perle, Verona, and David Freedman, Highland Park, both of N.J., assignors to New Brunswick Scientific Co., Inc., New Brunswick, N.J.

Filed May 8, 1975, Ser. No. 575,569
Int. Cl.² F25B *29/00*
U.S. Cl. 165—61 **18 Claims**

1. Apparatus for taking a container and the contents thereof through a timed temperature cycle comprising:

a. a vessel having top and bottom portions;
b. a jacket joined to said vessel and enclosing with said vessel a narrow jacket space therebetween, said jacket having top and bottom portions;
c. boiler means including heating means;
d. column means joining said boiler means to said jacket proximate the top thereof for carrying boiling water and steam from said boiler means to said jacket near the top thereof and into said jacket space for heating said vessel and any contents therein;
e. guiding means for leading said water through said jacket space to the bottom of said jacket in a path such that said water makes contact with a major portion of the exterior of said vessel;
f. conduit means joining said jacket proximate the bottom thereof to said boiler means for returning said water from proximate the bottom of said jacket to said boiler means;
g. first pipe and valve means for introducing cooling water into said jacket near the top thereof;
h. second pipe and valve means for draining water from said jacket;
i. temperature sensing means in said vessel, said sensing means being adapted for transmitting a signal corresponding to the temperature of said vessel; and

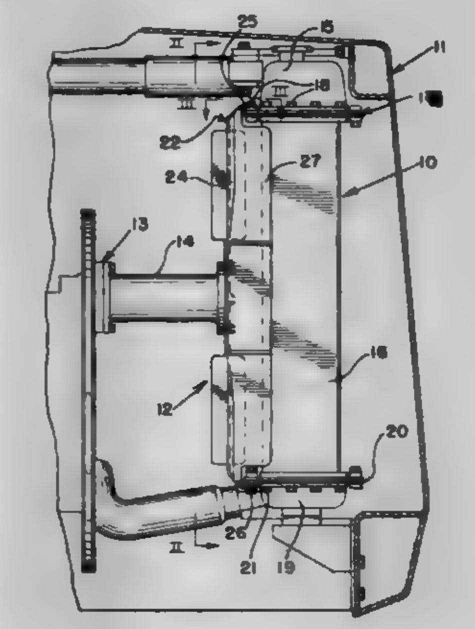


j. programmable control means constructed and arranged for receiving said signal from said temperature-sensing means, controlling heat output by said heating means and flow of said cooling water in response to said signal and an imposed timed-temperature program.

3,980,132
HEAT EXCHANGER WITH SELF-ADJUSTING SNAP-ON FAN SHROUD

Thomas L. Mitchell, Washington, and Ronald C. Stump, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 16, 1975, Ser. No. 623,131
Int. Cl.² F28F *7/00*
U.S. Cl. 165—76 **12 Claims**



1. In a heat transfer apparatus having a heat exchanger having air passages therethrough, a fan mounted adjacent said heat exchanger to cause air flow through said passages, and a fan shroud partially surrounding said fan for guiding the air flow through the fan, the improvement comprising:
mounting means integral with the shroud for mounting the shroud adjustably on the heat exchanger; and
biasing means integral with the shroud for urging the shroud to a preselected centered position relative to the fan.

3,980,133

HEAT TRANSFERRING APPARATUS UTILIZING PHASE TRANSITION

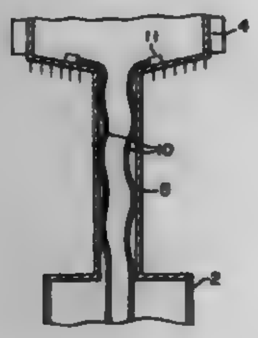
Hiroshi Mitsuoka, and Yoshio Kimura, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed July 11, 1974, Ser. No. 487,650

Claims priority, application Japan, July 11, 1973, 48-78191

Int. Cl.² F28D *15/00*; H01L *23/44*

U.S. Cl. 165—105 4 Claims



1. A heat transferring apparatus utilizing phase transition which comprises:

an evaporator for housing a heat generating device and containing a condensable coolant;

a condensor disposed above said evaporator;

a conduit, the sectional area of which is less than that of said evaporator and condensor, connecting between a part of the bottom of said condensor and a part of the top of said evaporator, said bottom of said condensor sloping downwardly toward the interconnection of said condensor and said evaporator so as to facilitate the flow of the condensate toward said conduit; and

a plurality of tubular elements composed of a material permeable by said coolant in its liquid phase and non-permeable by said coolant in its gaseous phase, inserted in said conduit and secured within said condensor for transferring the condensed coolant liquid from said condensor to said evaporator,

said elements being longitudinally aligned with said conduit yet of a non-linear configuration such that external peripheral portions of said elements are in contact with the internal periphery of said conduit while other external peripheral portions of said elements are spaced from said internal periphery of said conduit so as to define chambers therewith, said coolant gas being conducted from said evaporator to said condensor through said chambers and said conduit while said coolant liquid is conducted from said condensor to said evaporator through said conduit, said portions of said elements in contact with said conduit, and the interior portions of said tubular elements,

whereby interference between said coolant gas flow and said coolant liquid flow is precluded.

3,980,134

WELL PACKER WITH FRANGIBLE CLOSURE

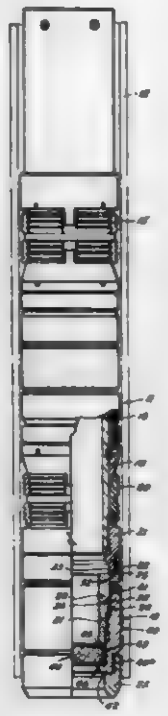
Amareswar Amancharla, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 428,068, Dec. 26, 1973, abandoned. This application Apr. 7, 1975, Ser. No. 565,769

Int. Cl.² E21B *33/12*

U.S. Cl. 166—133 13 Claims

1. A bridge plug for use with a well packer to temporarily close a bore through said packer comprising: a sub connectible to the lower end of said packer; a housing connected on said sub, said sub and said housing having bores having collinear axes collinear with the axis of the bore of said well packer when said sub and housing are on said packer, said bores through said housing and said sub being substantially the same diameter as the said bore through said packer; a closure plate clamped between said sub and said housing across the bores therethrough, said closure plate comprising a material adapted to deflect responsive to high hydraulic pressures while holding said pressures from opposite sides thereof and to disintegrate into small pieces responsive to a low value mechanical impact; vibration insulation means on each side of said plate between said plate and said sub and housing; and a surface portion of each of said sub and said housing engaging said vibration insulation means being serrated to resist extrusion of said vibration insulation means responsive to hydraulic pressure.



3,980,135

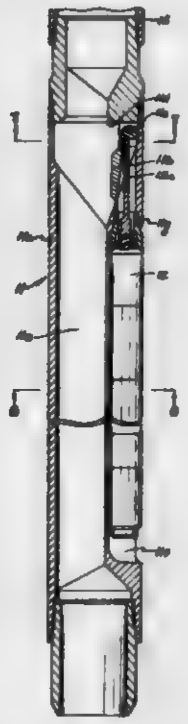
SELF-CONTAINED, RETRIEVABLE VALVING ASSEMBLY

Henry U. Garrett, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Aug. 18, 1971, Ser. No. 172,750

Int. Cl.² E21B *33/00*, *43/00*

U.S. Cl. 166—224 A 11 Claims



1. A self-contained retrievable valving assembly comprising:

a. retrievable securing means for releasably securing said valving assembly within a tubular well conduit at a subsurface location;

b. valving means connected with said securing means and being operable to regulate the flow of fluid through said tubular well conduit, said valving means including:

   i. conduit seal means for forming a sealing engagement with said well conduit;

   ii. a substantially tubular valve housing body adapted to be anchored at a subsurface location substantially concentrically within said well conduit;

   iii. an axially developed flow passage extending through said tubular valve housing body;

   iv. first sealing means included with said flow passage and having a sealing surface extending about said flow passage;

   v. a movable closure element mounted for movement with respect to said first sealing means to open or close said housing flow passage, said closure element including a flapper valve means pivotally mounted in said housing body for movement into and out of sealing engagement with said sealing surface for closing or opening said flow passage to fluid flow;

   vi. control means connected with said valving means and said securing means for controlling operation of said valving means;

   vii. connecting means, including resilient, flexible transfer means for transferring linear motion in said control means to pivotal motion in said flapper valve means, for linking said closure element and said control means whereby said control means governs movement of said closure element to regulate operation of said valving means; and

   viii. snap acting means for snapping said flapper means from open to closed position.

3,980,136

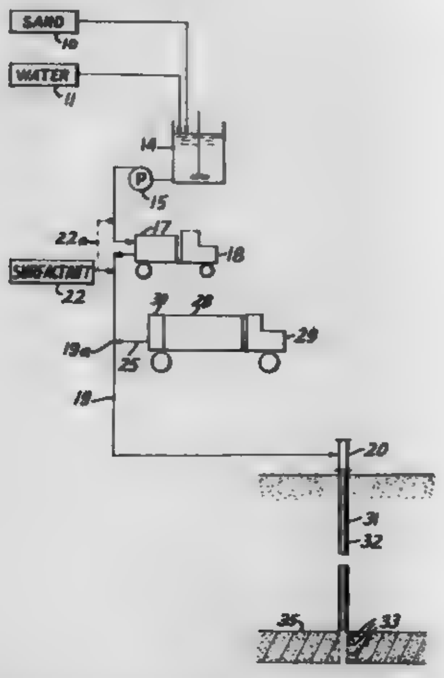
FRACTURING WELL FORMATIONS USING FOAM

Ray A. Plummer, and Charles W. Johnson, both of Houston, Tex., assignors to Big Three Industries, Inc., Houston, Tex.

Filed Apr. 5, 1974, Ser. No. 458,298

Int. Cl.² E21B *43/26*

U.S. Cl. 166—280 7 Claims



1. Method for facturing well formations comprising

generating under high pressure at the well surface a stable gas-in-liquid foam facturing fluid having solid propping material uniformly suspended therein and having a prescribed foam quality in the range of from about 50% to about 90%;

delivering said foam fracturing fluid to the well while at the same time adjusting the amount of high pressure gas in said foam to maintain the prescribed foam quality as the foam reaches downhole and formation pressures;

forcing a prescribed amount of said foam fracturing fluid from the well into the formation surrounding the well casing at a pressure sufficient to effect fracturing of said formation;

bleeding gas pressure from the well head sufficient to cause the foam within the well to break and to leave the well filled with gas under pressure and the formation fracture area remaining filled with foam;

shutting in the well until the formation has healed, and thereafter releasing the well pressure at a rate sufficient to break the foam in the formation and purge the well and formation of substantially all gas and liquid while leaving the propping material distributed throughout the fracture area.

3,980,137

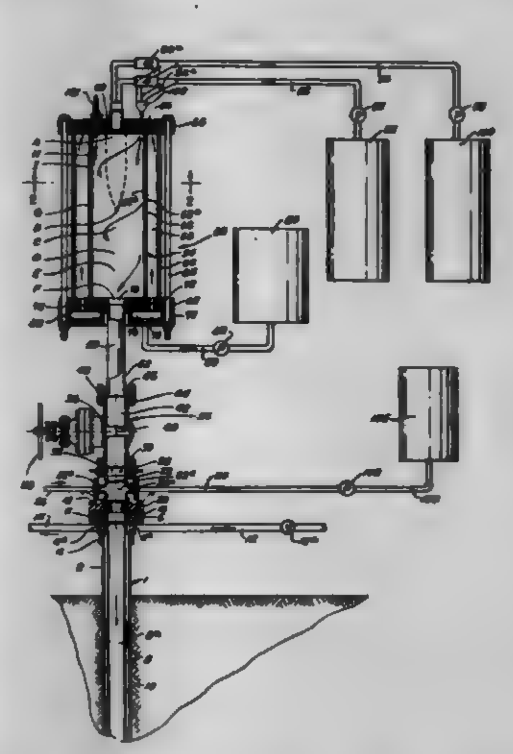
STEAM INJECTOR APPARATUS FOR WELLS

William W. Gray, Dallas, Tex., assignor to GCOE Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 431,459, Jan. 7, 1974, abandoned, which is a continuation-in-part of Ser. No. 336,784, June 4, 1973, Pat. No. 3,818,173. This application June 3, 1975, Ser. No. 583,281

Int. Cl.² E21B *43/00*, *43/24*, *43/27*

U.S. Cl. 166—303 22 Claims



1. A method of injecting steam into a well comprising the steps of: delivering a conbustible fuel and oxygen into a conbustion chamber; igniting fuel in the chamber to form a flame; delivering a fluid into the chamber adjacent said flame and between the flame and along the walls of the chamber and removed from the flame to form a vapor barrier between the flame and along the inner walls of said combustion chamber; and delivering steam from the combustion chamber into a well.

11. Apparatus to inject fluid into tubing in a well comprising: a combustion chamber having an inlet end and an outlet end; connector means to secure said outlet end of said combustion chamber to said tubing in said well, said connector means having a passage formed therein communicating with the outlet of said combustion chamber and the inside of said tubing; means to deliver a combustible fuel to said inlet end of said combustion chamber; means to deliver oxygen to said inlet end of said combustion chamber; means to ignite the combustible fuel within said combustion chamber to form a flame; means to inject fluid into said combustion chamber adjacent said inlet end and along the walls of the chamber and removed from the flame such that a vapor barrier is formed between the flame and along the inner side walls of said combustion chamber.

3,980,133

HEAT TRANSFERRING APPARATUS UTILIZING PHASE TRANSITION

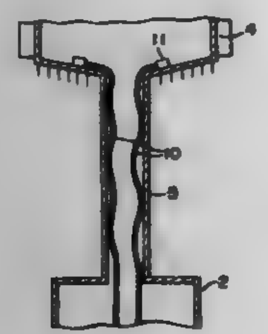
Hiroshi Mitsuoka, and Yoshio Kimura, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed July 11, 1974, Ser. No. 487,650

Claims priority, application Japan, July 11, 1973, 48-78191

Int. Cl.² F28D *15/00*; H01L *23/44*

U.S. Cl. 165—105 4 Claims



1. A heat transferring apparatus utilizing phase transition which comprises:

an evaporator for housing a heat generating device and containing a condensable coolant;

a condensor disposed above said evaporator;

a conduit, the sectional area of which is less than that of said evaporator and condensor, connecting between a part of the bottom of said condensor and a part of the top of said evaporator, said bottom of said condensor sloping downwardly toward the interconnection of said condensor and said evaporator so as to facilitate the flow of the condensate toward said conduit; and

a plurality of tubular elements composed of a material permeable by said coolant in its liquid phase and nonpermeable by said coolant in its gaseous phase, inserted in said conduit and secured within said condensor for transferring the condensed coolant liquid from said condensor to said evaporator,

said elements being longitudinally aligned with said conduit yet of a non-linear configuration such that external peripheral portions of said elements are in contact with the internal periphery of said conduit while other external peripheral portions of said elements are spaced from said internal periphery of said conduit so as to define chambers therewith, said coolant gas being conducted from said evaporator to said condensor through said chambers and said conduit while said coolant liquid is conducted from said condensor to said evaporator through said conduit, said portions of said elements in contact with said conduit, and the interior portions of said tubular elements,

whereby interference between said coolant gas flow and said coolant liquid flow is precluded.

3,980,134

WELL PACKER WITH FRANGIBLE CLOSURE

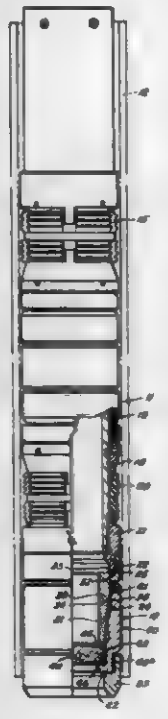
Amareswar Amancharla, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 428,068, Dec. 26, 1973, abandoned. This application Apr. 7, 1975, Ser. No. 565,769

Int. Cl.² E21B *33/12*

U.S. Cl. 166—133 13 Claims

1. A bridge plug for use with a well packer to temporarily close a bore through said packer comprising: a sub connectible to the lower end of said packer; a housing connected on said sub, said sub and said housing having bores having collinear axes collinear with the axis of the bore of said well packer when said sub and housing are on said packer, said bores through said housing and said sub being substantially the same diameter as the said bore through said packer; a closure plate clamped between said sub and said housing across the bores therethrough, said closure plate comprising a material adapted to deflect responsive to high hydraulic pressures while holding said pressures from opposite sides thereof and to disintegrate into small pieces responsive to a low value mechanical impact; vibration insulation means on each side of said plate between said sub and said housing; and a surface portion of each of said sub and said housing engaging said vibration insulation means being serrated to resist extrusion of said vibration insulation means responsive to hydraulic pressure.



3,980,135

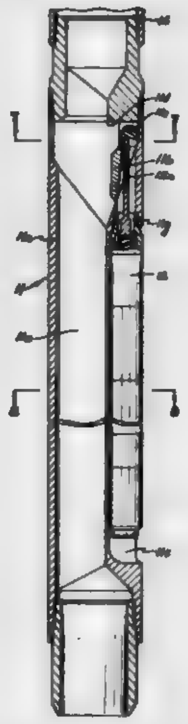
SELF-CONTAINED, RETRIEVABLE VALVING ASSEMBLY

Henry U. Garrett, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Aug. 18, 1971, Ser. No. 172,750

Int. Cl.² E21B *33/00*, *43/00*

U.S. Cl. 166—224 A 11 Claims



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  ii. a substantially tubular valve housing body adapted to be anchored at a subsurface location substantially concentrically within said well conduit;

  iii. an axially developed flow passage extending through said tubular valve housing body;

  iv. first sealing means included with said flow passage and having a sealing surface extending about said flow passage;

  v. a movable closure element mounted for movement with respect to said first sealing means to open or close said housing flow passage, said closure element including a flapper valve means pivotally mounted in said housing body for movement into and out of sealing engagement with said sealing surface for closing or opening said flow passage to fluid flow;

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  vii. connecting means, including resilient, flexible transfer means for transferring linear motion in said control means to pivotal motion in said flapper valve means, for linking said closure element and said control means whereby said control means governs movement of said closure element to regulate operation of said valving means; and

  viii. snap acting means for snapping said flapper means from open to closed position.

3,980,136

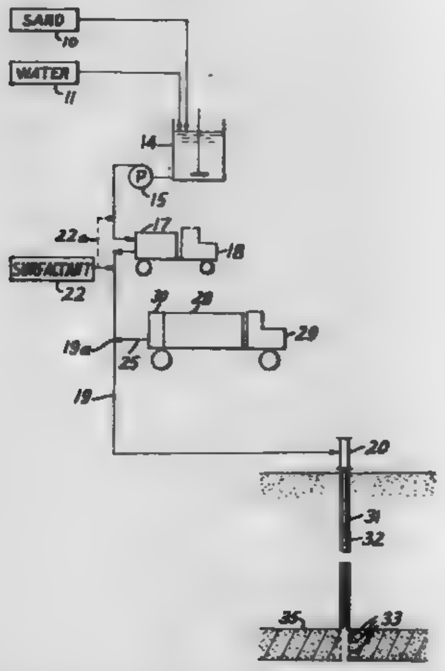
FRACTURING WELL FORMATIONS USING FOAM

Ray A. Plummer, and Charles W. Johnson, both of Houston, Tex., assignors to Big Three Industries, Inc., Houston, Tex.

Filed Apr. 5, 1974, Ser. No. 458,298

Int. Cl.² E21B *43/26*

U.S. Cl. 166—280 7 Claims



1. Method for facturing well formations comprising

generating under high pressure at the well surface a stable gas-in-liquid foam facturing fluid having solid propping material uniformly suspended therein and having a prescribed foam quality in the range of from about 50% to about 90%;

delivering said foam fracturing fluid to the well while at the same time adjusting the amount of high pressure gas in said foam to maintain the prescribed foam quality as the foam reaches downhole and formation pressures;

forcing a prescribed amount of said foam fracturing fluid from the well into the formation surrounding the well casing at a pressure sufficient to effect fracturing of said formation;

bleeding gas pressure from the well head sufficient to cause the foam within the well to break and to leave the well filled with gas under pressure and the formation fracture area remaining filled with foam;

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3,980,137

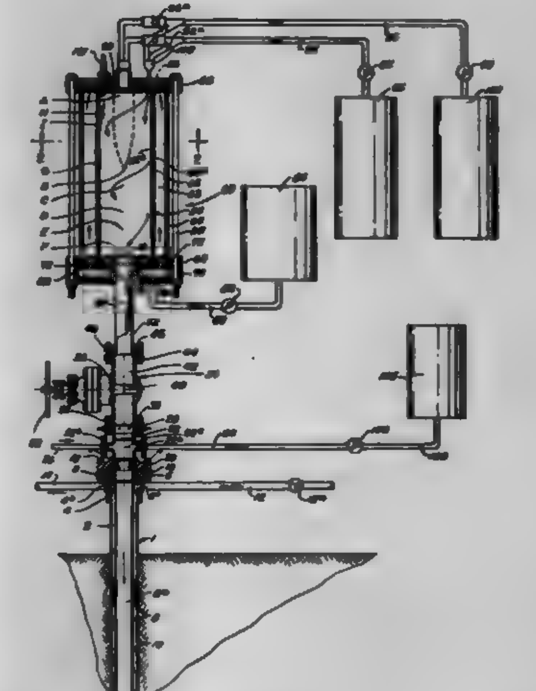
STEAM INJECTOR APPARATUS FOR WELLS

William W. Gray, Dallas, Tex., assignor to GCOE Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 431,459, Jan. 7, 1974, abandoned, which is a continuation-in-part of Ser. No. 336,784, June 4, 1973, Pat. No. 3,818,173. This application June 3, 1975, Ser. No. 583,281

Int. Cl.² E21B *43/00*, *43/24*, *43/27*

U.S. Cl. 166—303 22 Claims



1. A method of injecting steam into a well comprising the steps of: delivering a conbustible fuel and oxygen into a combustion chamber; igniting fuel in the chamber to form a flame; delivering a fluid into the chamber adjacent said flame and between the flame and along the walls of the chamber and removed from the flame to form a vapor barrier between the flame and along the inner walls of said combustion chamber; and delivering steam from the combustion chamber into a well.

11. Apparatus to inject fluid into tubing in a well comprising: a combustion chamber having an inlet end and an outlet end; connector means to secure said outlet end of said combustion chamber to said tubing in said well, said connector means having a passage formed therein communicating with the outlet of said combustion chamber and the inside of said tubing; means to deliver a combustible fuel to said inlet end of said combustion chamber; means to deliver oxygen to said inlet end of said combustion chamber; means to ignite the combustible fuel within said combustion chamber to form a flame; means to inject fluid into said combustion chamber adjacent said inlet end and along the walls of the chamber and removed from the flame such that a vapor barrier is formed between the flame and along the inner side walls of said combustion chamber.

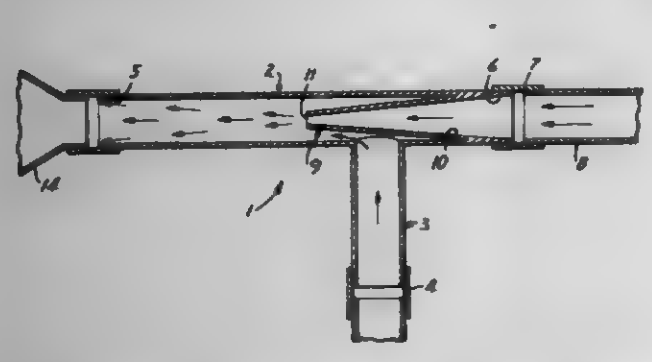
3,980,138
UNDERGROUND FLUID RECOVERY DEVICE

Duane L. Knopik, P.O. Box 33427, St. Paul, Minn. 55133

Filed Nov. 15, 1974, Ser. No. 523,973

Int. Cl.² E21B *43/00*

U.S. Cl. 166—314 6 Claims



1. A method for extracting liquid and vapor petroleum substances from subterranean strata by use of a recovery device and comprising the following steps:

1. forming a conduit means having a top portion with an inlet port and an outlet port and a bottom portion having an upper end that joins with said top portion to provide a path for fluid flow therethrough;
2. disposing a fluid discharge means in the top portion of said conduit means to extend from the inlet port of said portion to a point between the outlet port thereof and the joinder of said top and bottom portions, which discharge means has at least one end smaller than said top portion;
3. drilling a fuel recovery shaft into said subterranean strata to a depth at which said liquids and vapors to be recovered are present;
4. positioning the bottom portion of said conduit means into said shaft until its lower end extends to a point directly above the location of the liquid to be recovered; and
5. supplying a fluid to the inlet port of said conduit means to create a strong suction force in said bottom portion of said conduit means to draw said liquids and vapors of the subterranean strata in an air-liquid mixture up through said bottom portion and into said top portion of said conduit means.

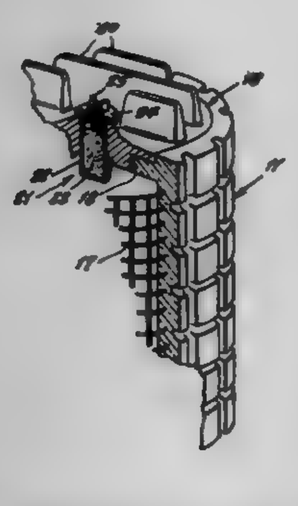
3,980,139
FIRE EXTINGUISHING BOMB FOR PUTTING OUT FIRES

Norman Kirk, 9 Rosedale Ave., Montclair, N.J. 07042

Filed Sept. 15, 1975, Ser. No. 613,188

Int. Cl.² A62C *19/00*

U.S. Cl. 169—28 3 Claims



1. In a Fire Extinguishing Bomb, the combination of a fracturable glass container having a filling opening on top, a metal cap screwed in said opening, an interior of said container being filled with a chemical having properties to put out a fire, and said cap having an explosive fire pin through its center and which explodes at a high temperature, wherein said container includes a side wall having its outer side formed with a plurality of crossing vertical and horizontal grooves so to form pads therebetween, and a metal screen is imbedded in said side wall.

3,980,140
METHOD OF FIRE PREVENTION IN FIELDS

Takashi Matsui; Kazuo Umeda, and Yujiro Nakada, all of Osaka, Japan, assignors to Kansai Nissan Chemicals Ltd., Osaka, Japan

Filed Mar. 12, 1974, Ser. No. 450,356

Claims priority, application Japan, Mar. 12, 1973, 48-28067

Int. Cl.² A62C *3/02*

U.S. Cl. 169—45 7 Claims

1. A method of fire prevention in fields which comprises spraying an aqueous suspension of magnesium ammonium phosphate, a vinyl resin emulsion and a surfactant on dried weeds in the field.

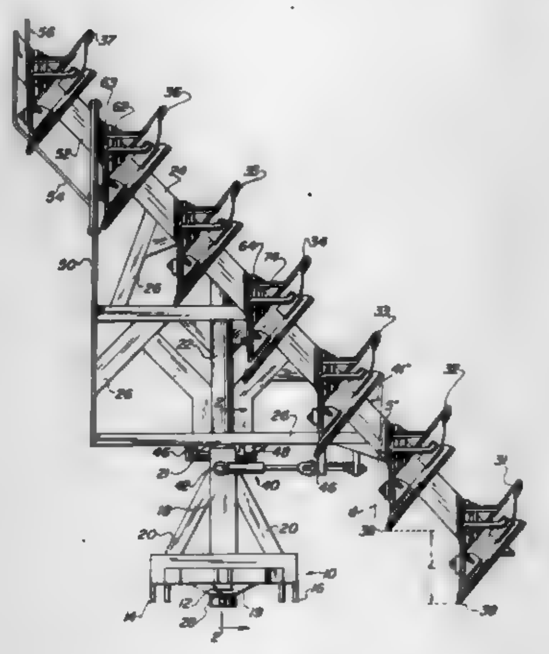
3,980,141
MOLDBOARD PLOW

Robert C. Vest, Jr., Stanton, Tex., assignor to Stanton Supply Corporation, Stanton, Tex.

Filed June 6, 1974, Ser. No. 476,925

Int. Cl.² A01B *3/44*, *15/00*, *15/14*

U.S. Cl. 172—225 10 Claims



1. In a two-way reversible plow having
a. a three point hitch,
b. said hitch forming means for lifting the plow and for pulling the plow in a direction of draft,
c. a bearing tube having
  i. a forward end and
  ii. an after end,
d. said tube attached to said hitch parallel to said direction of draft,
e. hitch bracing between said hitch and said tube,
f. a shaft journaled into said tube,
g. a main plow beam attached to said shaft at an acute angle thereto,
h. main bracing between said shaft and said main plow beam, and
j. a hydraulic cylinder extending between said tube and said main bracing,
k. said hydraulic cylinder forming means for rotating said shaft within said tube whereby the main plow beam is reversed,
m. THE IMPROVEMENT COMPRISING IN COMBINATION WITH THE ABOVE:
n. at least ten plow bottoms attached to said plow beam in pairs with one plow of each pair on each side of said beam, so that there are two gangs of plows, each gang having at least five plows,
o. the first of said pairs forward of the after end of said bearing tube, and
p. a plane perpendicular to the direction of draft through the after end of said bearing tube passing behing the first of said pairs and intersecting the second of said pairs from front of the gang.

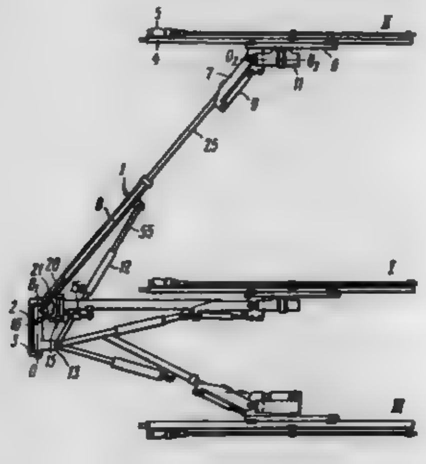
3,980,142
DRILLING BOOM

Vladimir Konstantinovich Grigoriev, 1 Streletsky pereulok, 3, kv. 24, Moscow; Viktor Dmitrievich Chugunov, poselok 2, dom 4, kv. 13, Moskovskaya oblast, Solnechnogorsky raion; Alexandr Moiseevich Tsipkis, Ananievsky pereulok, 4/2, kv. 121, Moscow; Mikhail Nikolaevich Kudryakov, ulitsa Zholtovskogo, 27, kv. 10, Moscow; Vladimir Germogenovich Yakovlev, proezd Kirova, 6a, kv. 7, Moscow; Vladimir Borisovich Tumarkin, ulitsa Markhlevskogo, 3, kv. 26, Moscow; Jury Borisovich Bashilov, ulitsa Suvorova, 12; Jury Mikhailovich Kulaev, prospekt Mira, 9, kv. 3, both of Dzhezkazgan; Vladimir Yakovlevich Feldman, Nakhimovsky prospekt, 39, korpus 2, kv. 57, Moscow; Vyacheslav Fedorovich Semikozov, Vishnyakovskaya ulitsa, 6, korpus 5, kv. 29, Moscow; Viktor Ivanovich Badin, ulitsa Chertanovskaya, 29, korpus 2, kv. 85, Moscow, and Vladislava Vladislavovna Sheveleva, ulitsa Chertanovskaya, 52, korpus 1, kv. 71, Moscow, all of U.S.S.R.

Filed Sept. 10, 1975, Ser. No. 611,926

Int. Cl.² E21C *11/00*, *5/08*

U.S. Cl. 173—43 3 Claims



1. A drilling boom, comprising: a telescopic manipulator whose one end is hinged to a pier column mounted on a bearing plate with a possibility to turn round a vertical axis; a telescopic manipulator actuating hydraulic cylinder housed in said manipulator; a feed with a drifter hinged to the vacant end of said telescopic manipulator with a possibility to move axially either towards or away from the face, a crowd hydraulic cylinder of said feed, mounted on the vacant end of said telescopic manipulator and adapted to crowd said feed either towards or away from the face; a head rigidly secured on the vacant end of said telescopic manipulator and adapted to carry hydraulic cylinders for tilting and turning said feed with drifter in a horizontal plane as well as a rotational mechanism adapted to turn said feed round the axis of said rotational mechanism, which axis is parallel to that of the feed; a hydraulic cylinder adapted for lifting said telescopic manipulator, one end of said hydraulic cylinder being hinged to said telescopic manipulator, while its other end is hinged to said pier column; a hydraulic cylinder adapted to turn said telescopic manipulator in a horizontal plane and hinged with its one end to said bearing plate, and with its other end, to said pier column; a servomechanism adapted to control the operation of said telescopic manipulator actuating hydraulic cylinder and provided with a drive having a cylinder secured on said telescopic manipulator and a link motion kinematically coupling said drive of the servomechanism with said telescopic manipulator and comprising guideways rigidly secured on said pier column and a slide block mounted in said guideways and rigidly fixed to the body of said servomechanism drive hydraulic cylinder; said servomechanism drive incorporates a rod, coaxially mounted on which are: a hydraulic cylinder whose rod-end or piston-end space communicates with the respective rod-end space or piston-end space of said telescopic manipulator actuating hydraulic cylinder, said spaces being equal in volume; a servopiston rigidly connected with the rod of said servomechanism drive hydraulic cylinder, said servomechanism controlling the operation of said telescopic manipulator actuating hydraulic cylinder, said servopiston having a body with a duct to feed working fluid into said servopiston; ducts to feed the working fluid into the respective piston-end space or rod-end space of said servomechanism hydraulic cylinder, or into the respective piston-end space or rod-end space of said telescopic manipulator actuating hydraulic cylinder; ducts to return the working fluid from said spaces and a plunger located inside said servopiston body and rigidly secured on said rod; depending on the position of said servopiston body with respect to said plunger, one of said ducts for feeding the working fluid into said servomechanism drive hydraulic cylinder or said telescopic manipulator actuating hydraulic cylinder communicating with a duct for feeding the working fluid into said servopiston, while the other duct communicating with one of the ducts adapted to return the working fluid; as a result, the vertical swivelling of said telescopic manipulator causes said body of the servomechanism drive hydraulic cylinder with its rod and together with the body of said servopiston, to move with respect to said plunger, thus communicating the duct for feeding the working fluid into said servopiston with one of the spaces of said telescopic manipulator actuating hydraulic cylinder, either extending or retracting its rod and, thereby compensating for deviation of the feed business end from the face.

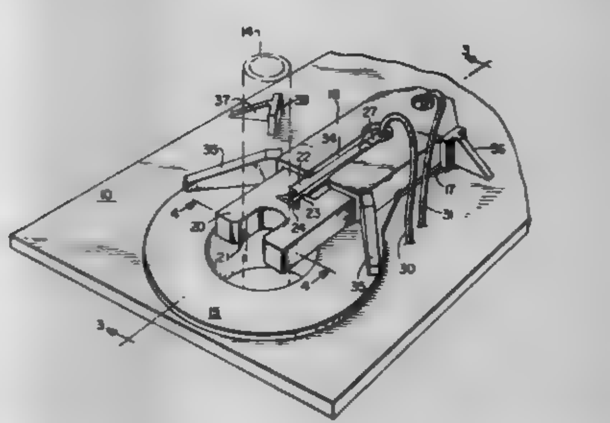
3,980,143
HOLDING WRENCH FOR DRILL STRINGS

Richard H. Swartz; Richard J. Pearce, and James M. Bowe, all of Gainesville, Fla., assignors to Driltech, Inc., Gainesville, Fla.

Filed Sept. 30, 1975, Ser. No. 618,177

Int. Cl.² E21B *3/00*

U.S. Cl. 173—100 5 Claims



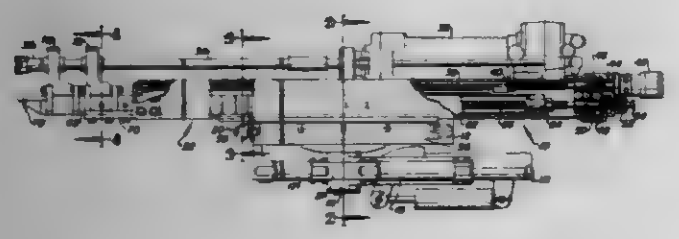
1. Apparatus mounted on a drill table for selectively holding and supporting a string of drill pipe sections connected together in end-to-end relationship, each of said drill pipe sections having at least one flattened portion, said apparatus comprising a platform swingably mounted on the drill table, said platform having an opening through which the drill pipe sections are axially movable, a housing mounted on said platform, a holding member slidably mounted in said housing generally radially of said opening, said holding member having a recess extending inwardly from one edge and being of a size to cooperatively receive the flattened portion of a drill pipe section, means for selectively extending and retracting said holding member, at least one stop member mounted on the drill table in spaced relationship to said opening and in a

position to engage said housing when said platform is swung in one direction, whereby said holding member is selectively movable into and out of engagement with a drill pipe section.

3,980,144

ROCK DRILL FEED MECHANISM

Henry H. Roos, Dallas, Tex., and Clarence O. Boom, Littleton, Colo., assignors to Gardner-Denver Company, Dallas, Tex.
Continuation of Ser. No. 479,913, June 17, 1974. This application Aug. 8, 1975, Ser. No. 603,207
Int. Cl.² E21C *5/02*
U.S. Cl. 173—160 **6 Claims**

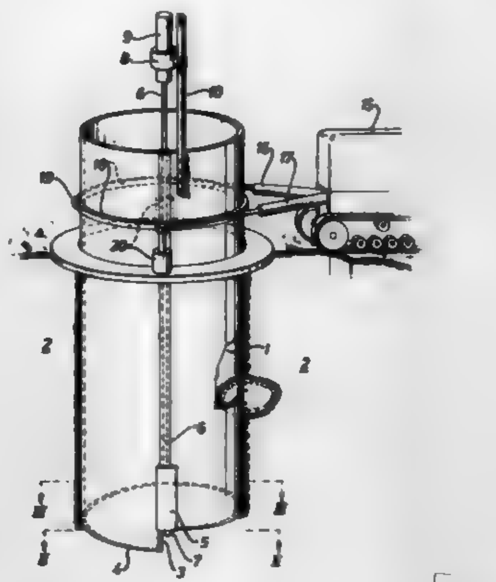


1. A rock drill feed mechanism comprising:
an elongated feed shell;
a support for said feed shell including guide means for engaging said feed shell for guiding said feed shell for linear movement in opposite directions along said support;
a rock drill slidably mounted on said feed shell;
first means mounted on said feed shell and connected to said rock drill for feeding said rock drill along said feed shell in opposite directions;
a member disposed on said feed shell for linear telescoping movement with respect to said feed shell;
a pressure fluid cylinder actuator interconnecting said member and said support; and,
second means interconnecting said member and said feed shell for moving said feed shell linearly along said support in response to the operation of said pressure fluid cylinder actuator, said second means being operable to move said feed shell linearly along said support and with respect to said member.

3,980,145

METHOD AND APPARATUS FOR INSERTING TUBULAR STRUCTURAL MEMBERS IN A SOIL FORMATION

Gustaf Håkan Oskar Wibom, Skogsvagen 12, 181 41 Lidingo, Sweden
Filed Oct. 9, 1974, Ser. No. 513,384
Claims priority, application Sweden, Oct. 19, 1973, 7314236
Int. Cl.² E21B *3/02*
U.S. Cl. 175—65 **17 Claims**

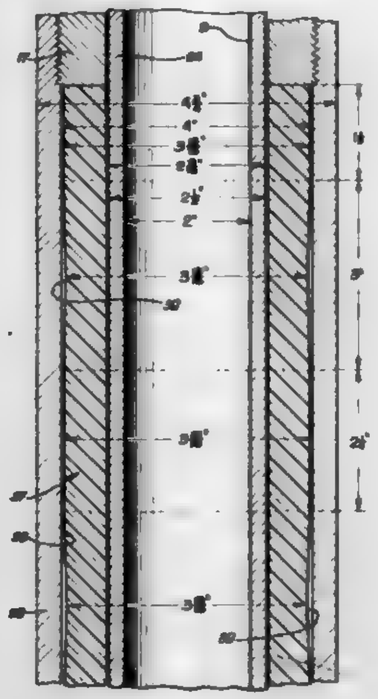


1. A method of inserting a tubular structural member such as a casing tube for concreting in a ground or soil formation which may contain rock comprising the steps of:
drilling the formation at a position circumferentially ahead of a circumferential cutting edge provided on the tubular structural member so as to dislodge and/or disintegrate any rock which may be disposed within said formation and thereby facilitate cutting of said formation by said cutting edge, and causing the structural member to perform a combined rotary and axial movement so that the circumferential cutting edge is driven into the drilled zone disposed circumferentially ahead of said cutting edge.

3,980,146

FISHING TOOL ENERGIZER AND POLYMER ENERGY STORAGE ELEMENT EMBODIED THEREIN

Wayne N. Sutliff, and Jim L. Downen, both of 2931 Pierce Road, Bakersfield, Calif. 93308
Filed June 19, 1975, Ser. No. 588,377
Int. Cl.² E21B *1/10*
U.S. Cl. 175—299 **7 Claims**

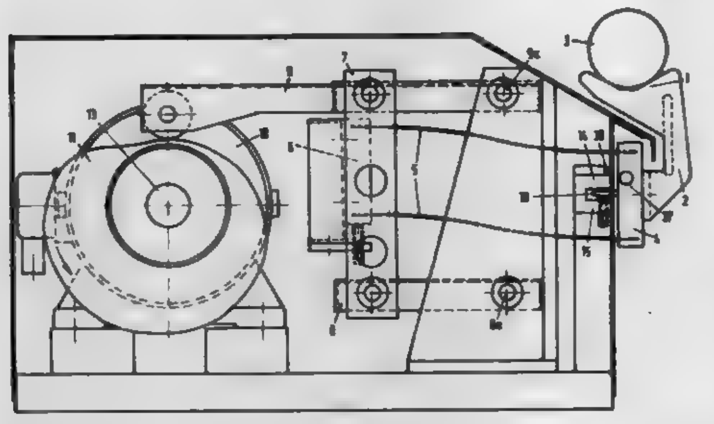


1. An elastic element for regular service in a deep well energy storing tool for subjection at its opposite ends to a mechanically applied axial compression ranging from 10,000 pounds to 125,000 pounds, with rapid recovery memory and return to starting form when released, said element comprising:
an approximately cylindrical tube molded of polyurethane with a durometer hardness within the range of 80 to 100,
said tube having a wall thickness of approximately 0.18 its outside diameter and a length approximately 12 times its outside diameter, and wherein
the inner and outer surfaces thereof are approximately concentrically cylindrical throughout excepting for the provision sequentially, in a least one of said surfaces, of a series of very shallow annular flutes, each of said flutes having a maximum depth of approximately two hundredths of the axial length of said flute.

3,980,147

ARTICLE WEIGHT GRADING APPARATUS

Jelle van der Schoot, Aalten, Netherlands, assignor to Staalkat B.V., Aalten, Netherlands
Filed Oct. 6, 1975, Ser. No. 620,044
Int. Cl.² G01G *3/08*; B07C *5/18*; A01K *43/08*
U.S. Cl. 177—48 **10 Claims**

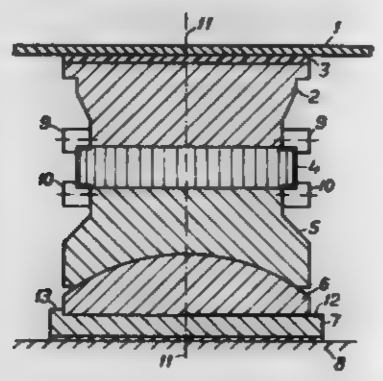


1. A weighing assembly for grading articles such as eggs and the like dependent upon the weight thereof, said assembly comprising
a tray for receiving an article thereon,
means for mounting said tray for generally reciprocal up and down movement and for providing a restoring force dependent upon the weight of the tray, said means comprising a plurality of leaf spring members operatively connecting said tray and a support member, said tray being deflectable generally downwardly relative to said support member a first distance dependent upon the article weight,
means for allowing generally downward deflection of said tray relative to said support member only to a second distance, normally generally less than said first distance, said means including a stop,
means for gradually changing the relative position of said stop and said support member so that said second distance approaches said first distance, and
means for sensing when said second distance is substantially equal to said first distance.

3,980,148

DEVICE FOR WEIGHING STATIONARY OBJECTS

Klaus Von Drygalski, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed May 1, 1975, Ser. No. 573,796
Claims priority, application Sweden, May 24, 1974, 7406906
Int. Cl.² G01G *21/02*
U.S. Cl. 177—132 **3 Claims**

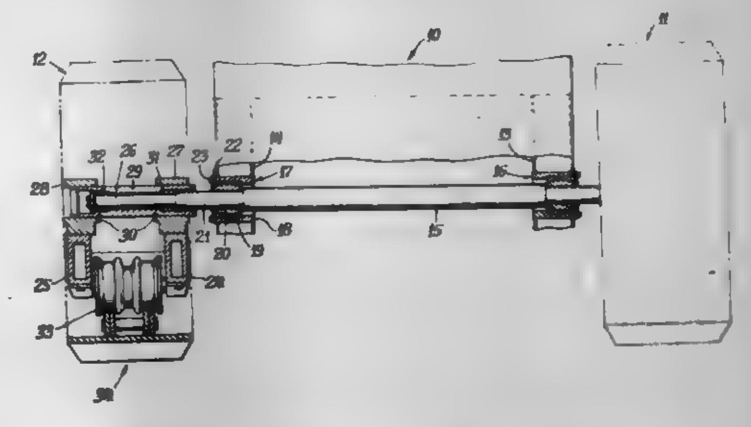


1. Weighing equipment for weighing stationary objects comprising a rigid base and a plurality of supports containing pressure sensitive load cells and each of which includes an upper supporting part which is attached to the object and a lower supporting part which rests on the base, a spherical bearing formed of upper and lower mating portions having upper and lower bearing surfaces, one of said bearing surfaces being concave and the other convex, said portions being attached one to each of said supporting parts and engaging each other along a spherical surface, at least one of the supports being a rigid support (15) with the lower supporting part (6, 7) rigidly connected to the base (8), the other supports (16, 17, 18) being free supports, in which the lower supporting part includes a base plate (7) rigidly connected to the base and a bearing member (6) arranged on top of the base plate and formed with a lower bearing surface, and means mounting the bearing member on the base plate (7) for movement with respect thereto in at least one direction.

3,980,149

STRESS-RELIEVED AXLE MOUNTING FOR TRACK-TYPE VEHICLES

Gary D. Blomstrom, Waverly, Nebr.; Thomas E. Cochran, Yorkville, Ill.; Mohamed Abdel-Fattah Abdel-Latif, Aurora, Ill., and Lyle E. York, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed May 12, 1975, Ser. No. 576,812
Int. Cl.² B62D *55/08*
U.S. Cl. 180—9.5 **8 Claims**



1. In a track-type vehicle of the type comprising a main frame, a pair of laterally spaced track assemblies disposed on either side of said main frame, an equalizer bar assembly operatively connecting forward ends of said track assemblies to said main frame and pivot means pivotally mounting a rearward end of each of said track assemblies on an axle means for permitting such track assembly to pivot vertically relative to said main frame, the improvement comprising mounting means movably mounting said axle means on said main frame to cooperate with said pivot means for permitting said axle means to move slightly relative to said main frame when said sub-frames pivot relative to each other to cause "toe-in" at forward ends thereof.

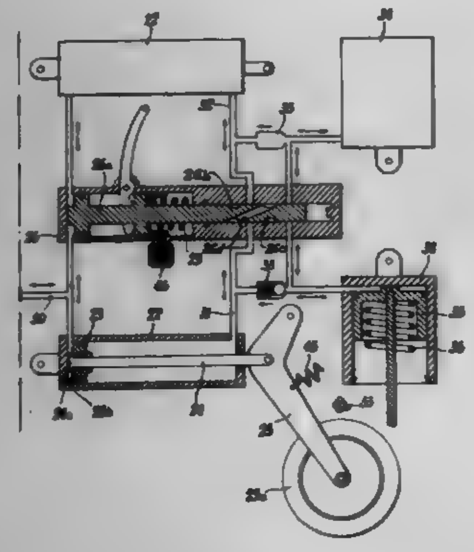
3,980,150

MOTORCYCLE AUXILIARY SUPPORT SYSTEM

Mario Gigli, No. 429, Via Flaminia, Rome, Italy
Filed Jan. 16, 1975, Ser. No. 541,634
Claims priority, application Italy, Jan. 25, 1974, 47930/74
Int. Cl.² B62D *61/12*
U.S. Cl. 180—30 **4 Claims**

1. A motorcycle auxiliary support system comprising: a pair of swingably mounted arms respectively on each side of the motorcycle and carrying auxiliary wheels and movable between retracted and lowered positions; retracting spring means connected between said arms and the motorcycle for biasing the arms to the retracted position; an oil container mounted on the motorcycle; a pair of hydraulic cylinders respectively at opposite sides of the motorcycle adjacent one of said arms and each including a rod slidable therein and connected with an adjacent one of said arms, and a piston slidable on said rod but engaging therewith for actuating said rod so as to move said adjacent arm to said lowered position;

a displacement pump connected between said container and first ends of said cylinders and operated in response to one of the motorcycle wheels for pumping oil from said container to said cylinders, said oil pressure increasing with increasing vehicle speed to move said piston out of engagement with said rod such as to allow said retracting spring to move said arm to said retracted position; a pressure distributing cylinder having a spool movable between opened and home positions and operated toward said opened position by said oil pressure from said pump, a spring biasing said spool to said home position, and a means for locking said spool in said home position, said spool having first and second annular grooves and a bore interconnecting said grooves; two hydraulic suspension cylinders respectively disposed on opposite sides of a rear wheel of the motorcycle and having a piston bearing on a suspension spring of the motorcycle; first oil lines connecting second ends of said pair of cylinders with said first annular groove when said spool is in said opened position; second oil lines connecting said suspension cylinders with said second annular groove when said spool is in said opened position; third oil lines connecting said second ends of said pair of cylinders with the adjacent one of said suspension cylinders; and one-way check valves in said third oil lines for allowing the passage of oil from a suspension cylinder to an associated hydraulic cylinder as pressure in the hydraulic cylinders from said pump decreases upon a reduction of speed of the motorcycle, and thereby causing said pistons to actuate said rods for lowering said arms against the action of said retracting spring means.



3,980,151

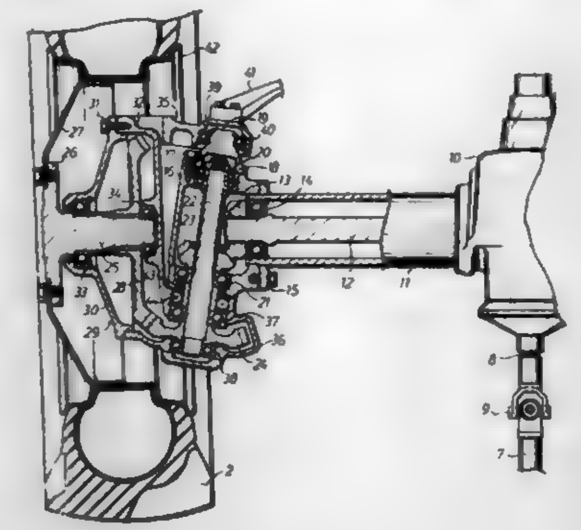
FRONT WHEEL DRIVE ASSEMBLY FOR FOUR-WHEEL DRIVE TRACTOR

Yoshinobu Murayama; Kenzou Soda, and Mitsuhiro Kutomi, all of Sakai, Japan, assignors to Kubota Tekko Kabushiki Kaisha, Osaka, Japan

Filed Apr. 29, 1975, Ser. No. 572,900
Claims priority, application Japan, Aug. 13, 1974, 49-93132
Int. Cl.² B60K *17/30*

U.S. Cl. 180—43 A **1 Claim**

1. A front wheel drive assembly for use in a four-wheel drive tractor comprising a front wheel axle housing rotatably supporting a differential yoke shaft having a bevel pinion at its outer end, a gear case fixedly mounted on the outer end of the front wheel axle and having a pin portion projecting from a cap of the case, an upright bevel pinion shaft housed in and rotatably supported by the gear case and having a bevel pinion meshing with the bevel pinion, the bevel pinion shaft having another bevel gear below the bevel pinion thereon, a front wheel hub shaft fixed to the disk of the front wheel and having a terminal reduction bevel gear, and a case housing the bevel gear on the hub shaft and rotatably supporting the hub shaft in a lateral position, the bevel gear on the hub shaft meshing at its lower portion with the bevel gear on the bevel pinion shaft, the second-mentioned case being fitted over the pin portion of the gear case and around a lower portion of the bevel pinion shaft so as to hold the gear case from above and below, the gear case being turnable about a vertical axis.



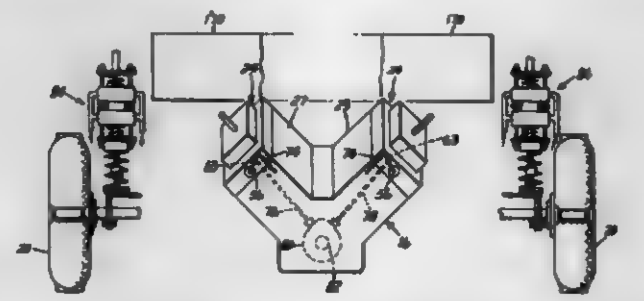
3,980,152

AIR POWERED VEHICLE

Robert T. Manor, P.O. Box 95, Salmonia, Ind. 47381

Division of Ser. No. 341,318, March 14, 1973. This application Apr. 5, 1974, Ser. No. 458,178
Int. Cl.² F16F *11/30*

U.S. Cl. 180—66 B **8 Claims**



1. For use on a vehicle, a suspension type compressor comprising a cylinder device having a reciprocable piston which defines two pressure chambers therewith, a piston rod secured to said piston and extending axially therefrom, means for securing said cylinder device and piston between the frame and axle of a wheeled vehicle; said cylinder device including two separate heads arranged one above the other, means mounting said heads for limited relative movement, means yieldably urging said heads toward each other, and intake and exhaust valve means in each head responsive to reciprocation of said piston in said cylinder device for drawing gaseous fluid into and forcing such fluid out of said chambers.

3,980,153

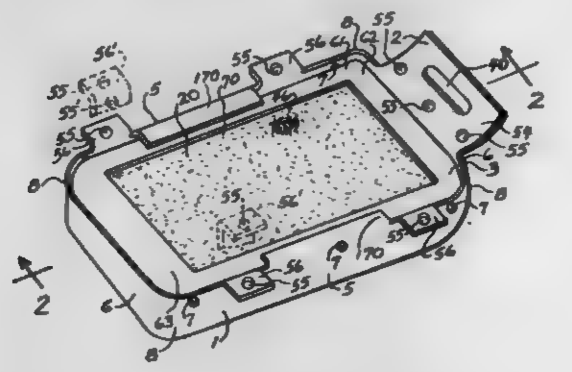
MOTOR VEHICLE OIL DROP PAN APPARATUS DEVICE FOR INDIRECTLY SAVING LIVES AND ACCIDENTS ON A HIGHWAY

Peter Andrews, 190 Gebhardt Road, Penfield, N.Y. 14526

Continuation-in-part of Ser. No. 315,174, Dec. 14, 1972, Pat. No. 3,809,175, which is a continuation-in-part of Ser. No. 94,793, Dec. 3, 1970, abandoned, which is a continuation-in-part of Ser. No. 532,831, Feb. 21, 1966, Pat. No. 3,669,204, and Ser. No. 750,094, Aug. 3, 1968, Pat. No. 3,590,937, which is a continuation-in-part of Ser. No. 508,625, Oct. 21, 1965, Pat. No. 3,396,810, which is a division of Ser. No. 288,159, June 17, 1963, abandoned. This application May 7, 1974, Ser. No. 467,719
Int. Cl.² B62D *25/20*

U.S. Cl. 180—69.1 **52 Claims**

1. A substantially skidpan apparatus device for retaining fluid drippings which drip from a motor vehicle having a metal frame which has a front cross member having an integrally extending horn-like projection and a generally centrally located cross member comprising, in combination: a polygonal shaped open topped fluid retaining and fluid impermeable skidpan receptacle having two outwardly formed integral side ear members with one of said side ear members generally extending at an angle from each of two upper rectilinear side wall portions and also having one integrally outwardly formed large bracket member having a large generally elongated opening and extending outwardly from one upper integral rectilinear end wall portion of said receptacle and when said apparatus device is to be removably secured to said vehicle said side ear members are removably secured to said centrally located cross member by use of threaded bolt means and threaded member means while said bracket member is threadingly hooked over and onto said horn-like projection by use of said elongated opening in said bracket member for suspending and hookingly disposing said receptacle under at least one portion of said vehicle and for receiving and substantially retaining fluid drippings which dripped substantially into said receptacle from at least one underpart portion of said vehicle; said receptacle having a bottom wall and two integral rectilinear side wall portions and two integral rectilinear end wall portions that merge integrally at four corner portions and having said side ear members and said bracket member extending integrally from said side wall portions and said end wall portion respectively; said ear members having an opening for removably receiving a shank portion of said bolt means therein; said receptacle having a substantially porous material retained therein for substantially retaining at least one portion of said drippings therein; said material having at least one portion of its top surface in spaced relation to at least one lowest underside outer wall surface portion of a crankcase lubricating oil pan sump of said vehicle so that at least one engine will not be ruined by still having a motor vehicle generated draft of air indirectly cool the lubricating oil in the crankcase oil pan sump when at least one said vehicle is travelling at a high rate of speed on the highways.



3,980,154

CABINET FOR IMPROVING THE SOUND OUTPUT OF AN AMPLIFIER

Rubein V. Johnson, 2432 Court St., Muskogee, Okla. 74401

Filed Sept. 26, 1975, Ser. No. 617,046
Int. Cl.² G10K *13/00*; H05K *5/00*

U.S. Cl. 181—199 **7 Claims**

1. A cabinet for improving the sound output of an amplifier, comprising:

an upright housing having a front and a rear;

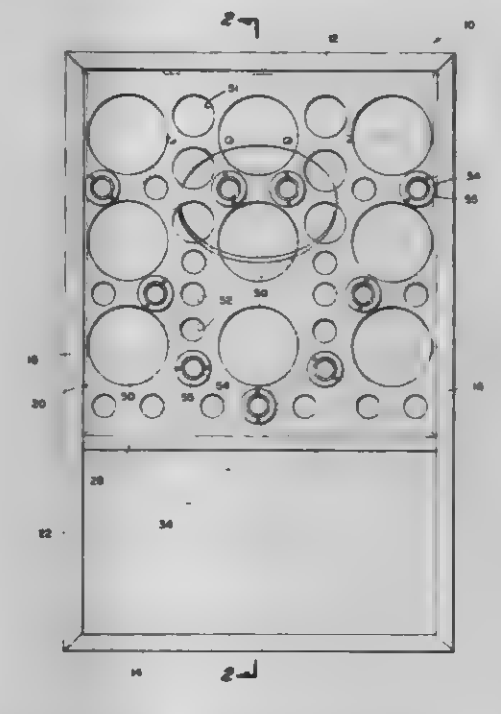
a horizontal partition dividing the interior of the housing into an upper portion and a lower portion, the partition having an opening therein;

a speaker mounted on said horizontal partition and covering said opening therein, the speaker having a vibrational area of preselected size, the speaker being mounted for upward projection of sound through said opening into said housing upper portion, the speaker having means for connecting to the output of an amplifier;

a sounding board positioned within said housing upper portion and inclined at an angle of from about 30° to about 70° relative to said horizontal partition, the sounding board being inclined from the housing rear upwardly toward the housing front, the sounding board having an opening therein of an area approximately one-half to seven-eighths times the vibrational area of said speaker;

a sheet of metal affixed to said sounding board and covering said opening therein; and

a front panel covering the housing upper and lower portions, the upper portion having openings therein for the emission of sound, the area of the openings being at least twice the vibrational area of said speaker.



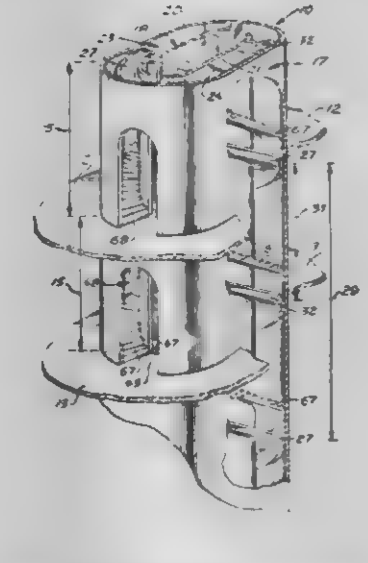
3,980,155

FIRE ESCAPE

William Murray Campbell, Suite 331, 10637-150 St., North Surrey, British Columbia, Canada

Filed June 24, 1974, Ser. No. 482,241
Int. Cl.² A62B *1/20*

U.S. Cl. 182—49 **11 Claims**



1. A fire escape for use in a multi-storied building in which floors are spaced generally equally from adjacent floors at a floor spacing, the fire escape comprising:

a. a fire resistant, vertically-disposed hollow outer column having a generally oval-sectioned inner side wall,

b. a vertically disposed inner column positioned generally centrally within the outer column, the inner column having a generally oval-sectioned outer side wall generally similar to and spaced from the inner side wall of the outer column, thus defining a vertically disposed columnar space between the inner and outer columns,

c. a first generally helical chute provided within the columnar space, the chute following a generally helical path of essentially constant pitch of twice the floor spacing so that one complete circuit of the chute passes two floors,

d. the inner column being hollow and having an inner side wall defining an interior of the inner column,

e. access means to the chute for persons escaping, said access means at each floor level comprising:

a column floor extending between the inner side wall of the inner column and being generally level with and corresponding to the floor outside the outer column,

a walkway extending across the columnar spaced between the inner and outer columns at each floor level, the walkway leading from a particular floor of the building to the column floor within the inner column, the walkway passing between and being spaced from adjacent portions of the chute in the columnar space to provide clearance for a person on the walkway, and for a person on the chute,

the inner and outer columns being provided with aligned door openings above the walkway to provide access to the interior of the inner column, the inner column also having a chute opening adjacent the chute to provide access to the chute from the interior of the inner column.

3,980,156

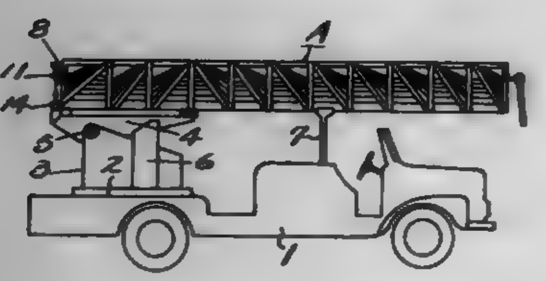
DEVICE FOR PREVENTING JUTTING-OUT OF LADDER OF LADDER TRUCK

Fusaji Terayama, and Seiichi Nakagawa, both of Osaka, Japan, assignors to Morita Pump Kabushiki Kaisha, Osaka, Japan

Filed Aug. 25, 1975, Ser. No. 607,552

Int. Cl.² E06C *5/06, 7/06*

U.S. Cl. 182—66 2 Claims



1. A device for preventing the jutting-out of the ladder of a ladder truck, comprising locking portions provided on stage ladder required to be prevented from jutting out, locking levers corresponding to said locking portions installed on the lowermost stage ladder which does not extend or retract, an operating cylinder for turning said locking levers between a locking position and a retracted position, a directional control valve disposed adjacent a ladder extension and retraction changeover valve whereby the hydraulic circuit of said cylinder is switched in connection with the switching of said changeover valve between a neutral position and ladder extending and retracting positions, the arrangement being such that at the time of ladder extending and retracting operation, the locking levers are turned to their retracted position, whereas at the time of stoppage of ladder extending and retracting operation, the locking levers are turned to their locking position.

3,980,157

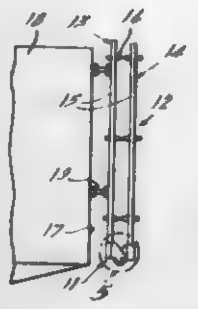
STOWING HINGE FOR BOAT LADDER

Robert A. Wrigley, Grosse Pointe Park, Mich., assignor to Detroit Marine Engineering Corporation, Detroit, Mich.

Filed Sept. 22, 1975, Ser. No. 615,413

Int. Cl.² E06C *1/383, 5/26*

U.S. Cl. 182—163 5 Claims



1. A stowable boat ladder hinge comprising upper and lower sections, each section having a rail support, the upper support having at least one leaf extending therefrom, the lower support having two spaced parallel leaves interfitting with the upper leaf, pin-and-slot means connecting said upper and lower leaves, said lower section being movable between an extended position in which said upper and lower supports are aligned and a folded position in which said supports are alongside each other, abutment means at the lower portion of said upper section, the length of said lower leaves being such that when the lower section is swung to its folded position, said lower leaves may be slid downwardly and inwardly with respect to said upper section until the lower portions of said lower leaves engage said abutment means on the upper section to prevent unfolding of the ladder, and a bridge extending between the two leaves of said lower section, said bridge being above said pin-and-slot means and movable downwardly and inwardly during said sliding movement transversely to the extent of the leaf of said upper section when the lower section is in its folded position to engage the edge of said leaf, whereby further downward and inward movement of said folded lower section is prevented.

3,980,158

BRAKE APPARATUS WITH VARIABLE BRAKE FORCE FOR AERIAL CABLEWAYS

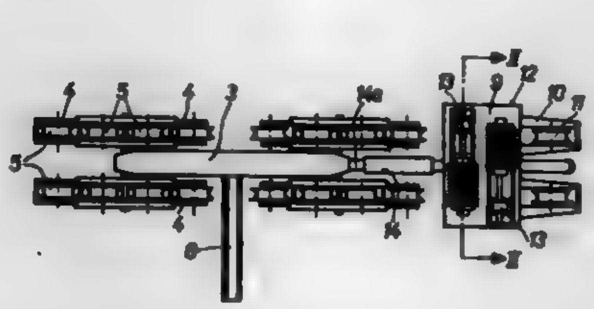
Emil Hirsig, Thun, Switzerland, assignor to Willy Habegger, Thun, Switzerland

Filed Nov. 11, 1974, Ser. No. 522,586

Claims priority, application Switzerland, Nov. 21, 1973, 16372/73; Germany, July 27, 1974, 2436253

Int. Cl.² B61H *9/02*

U.S. Cl. 188—42 11 Claims



1. A brake apparatus with variable braking force for a cable car comprising, in combination: a brake carriage connectable with said cable car by means of a connection shaft and including at least one pressure released catch brake, said catch brake having brake jaws, spring brake pressure means for applying said jaws with a predetermined brake pressure to a guide track of the cable car, hydraulic brake release means including hydraulic brake cylinder means for releasing said brake jaws in counter action to the brake pressure; first brake

release pressure generating means connected with said hydraulic brake release means; an actuable hydraulic brake applying device connected with said hydraulic brake release means, whereby said brake is released when said hydraulic applying device is not actuated and is applied when said hydraulic applying device is actuated; at least one brake force measuring device coupling said brake carriage with said connection shaft for ascending travel of the cable car and at least one other brake force measuring device coupling said brake carriage with said connection shaft for descending travel; and a hydraulic control system controlled by said brake force measuring devices via a brake force balance, said hydraulic control system including a hydraulic control mechanism having a second brake release pressure generating means controlled by said brake force measuring devices and operatively connected with said hydraulic brake release means, and wherein said hydraulic brake cylinder means being operatively connected with said first pressure generating means for generating a complete brake releasing pressure within said brake cylinder means when said hydraulic brake applying device is not actuated and said brake cylinder means being operatively connected with said hydraulic second brake release pressure generating means via said hydraulic control system for generating a controlled brake pressure within said brake cylinder means upon actuation of said hydraulic brake applying device.

3,980,159

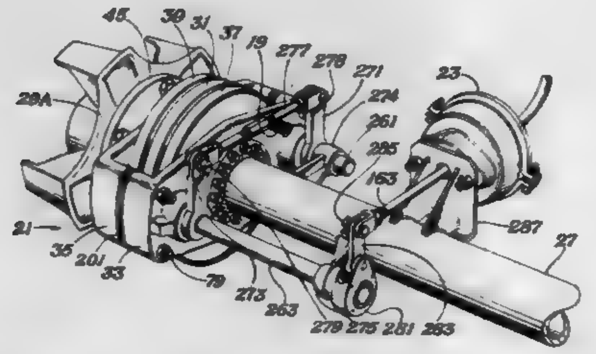
CAM ACTUATED DISC BRAKE ASSEMBLY

Charles L. Baxendale, Burleson, Tex., assignor to Mechanics, Inc., Fort Worth, Tex.

Filed Dec. 19, 1974, Ser. No. 534,170

Int. Cl.² F16D *55/16*

U.S. Cl. 188—72.7 3 Claims



2. A disc brake assembly for a wheel of a vehicle comprising:

an annular disc means adapted to be coupled to a wheel around the axle of the vehicle for rotation with the wheel and for sliding movement in a direction along the axis of the axle,

frame means adapted to be fixedly secured to the vehicle and including a pair of wall means adapted to be located on opposite sides of said disc means,

brake lining means coupled to one of said wall means on a side facing said disc means,

an annular brake shoe adapted to be located around the axle between said disc means and the other of said wall means and supported for axial movement toward and away from said disc means,

brake lining means secured to said brake shoe on the side facing said disc means,

means for preventing said brake shoe from rotating, said brake shoe having a pair of cam engaging roller means located on its side opposite said disc means,

a pair of rotary cams supported for engaging said pair of cam engaging roller means respectively for moving said brake shoe toward said disc means upon rotation of said rotary cam in a given direction for engaging said brake lining means of said brake shoe with said disc means for moving said disc means toward and into engagement with said brake lining means coupled to said one wall means for braking purposes,

said pair of rotary cams being supported for rotation about axes generally parallel with the axis of said annular brake shoe,

a pair of rod means extending from said pair of rotary cams respectively for rotating said rotary cams,

a pair of linkage means having first ends fixedly connected to said pair of rod means respectively,

a linkage pivotally connected between the other ends of said pair of linkage means,

a rear linkage connected to one of said rod means,

fluid pressure means comprising piston rod means pivotally coupled to said rear linkage for rotating said rear linkage and hence said rotary cams in said given direction,

each of said cam engaging roller means and its associated rotary cam being located between their associated linkage means and said brake shoe, and

means for preventing each of said linkage means and its associated rod means for moving toward said brake shoe.

3,980,160

PARTIAL LINING DISK BRAKE, ESPECIALLY FOR MOTOR VEHICLES

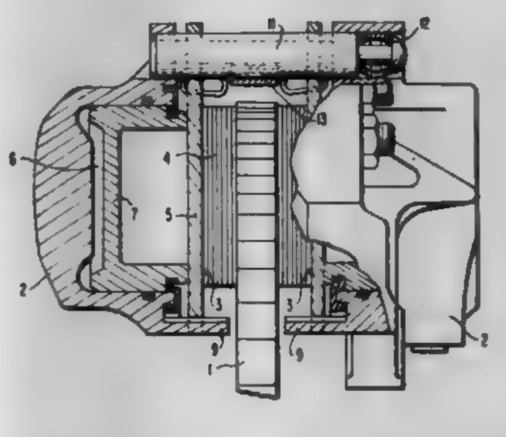
Friedrich Hoffmann, and Wilhelm von Kamp, both of Stuttgart, Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Jan. 11, 1974, Ser. No. 432,512

Claims priority, application Germany, Jan. 13, 1973, 2301595

Int. Cl.² F16D *65.02*

U.S. Cl. 188—73.5 8 Claims



1. A partial lining disk brake arrangement including a brake disk, a U-shaped brake housing means surrounding the brake disk, the arrangement comprising: hydraulically actuated brake cushion means disposed on each side of the brake disk, said brake cushion means including brake pad means and carrier means for carrying said brake pad means, a pair of guide means for axially displacably supporting each of said brake pad carrier means, said guide means being arranged in a center plane of the brake disk which extends vertically through the axis of the brake disk, the first of said pair of guide means supporting the brake pad carrier means from the outside as viewed in the radial direction including a single guide member extending in the axial direction of the brake disk above the radially outermost portion thereof, at least a portion of said single guide member being disposed in the center plane of the brake disk, bore means provided in said brake pad carrier means at the upper edge thereof for receiving said guide member, the second of said pair of guide means supporting said brake pad carrier means from the inside as viewed in the radial direction including a tongue portion provided on each side of said brake disk extending in the axial direction thereof, at least a portion of each of said tongue portions being disposed in the center plane of the brake disk, a recess provided at the lower edge of said brake pad carrier means for receiving said tongue portions, the single guide member is detachably secured at the housing means and consists of a bolt

means, aligned bores are provided in the brake housing means for receiving the free ends of said bolt means, the aligned bores in the brake housing means are in alignment with the bore means in the brake pad carrier means, means are provided for securing the bolt means against inadvertent falling out, and a leaf spring means is arranged above each brake pad carrier means which engages the bolt means from below, the free ends of the leaf spring means pressing against lateral end surfaces of the brake pad carrier means.

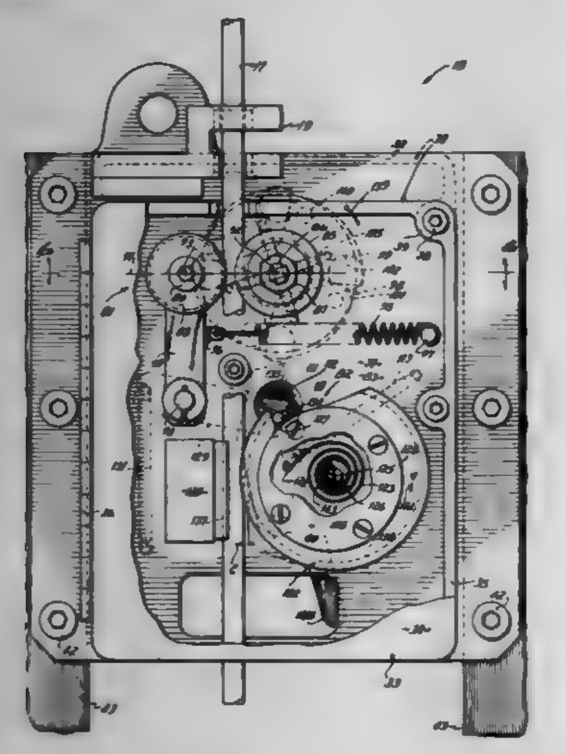
3,980,161
SAFETY LOCK FOR A HOISTING MECHANISM THAT ASCENDS AND DESCENDS A CABLE

William E. Mauldin, Cincinnati, Ohio, assignor to Hi-Lo Powered Stirrups, Inc., Cincinnati, Ohio

Filed Jan. 14, 1975, Ser. No. 540,838

Int. Cl.² B60T *8/24*

U.S. Cl. 188—188 **1 Claim**



1. A safety lock structure for a hoisting mechanism that ascends and descends a cable, said safety lock comprising

a pressure roller and a guide pulley, said pressure roller being spring loaded toward said guide pulley so as to maintain the cable in frictional driving relation with said guide pulley,

an activator device fixed to said guide pulley and adapted to rotate therewith, said activator device including a series of arms normally spring loaded into the unactivated attitude during normal rotation of said guide pulley but adapted to swing outwardly in response to centrifugal force due to higher than normal rotation of said guide pulley,

a lock block and a lock wheel, said lock wheel being mounted for eccentric rotation relative to said lock block and being spaced relative to said lock block for unhindered passage of the cable therebetween when in the unactivated attitude, said lock wheel also including a spring motor normally biasing said lock wheel toward rotation into locking relation with the cable and said lock block,

a latch lever pivotally mounted relative to said guide pulley and lock wheel, said latch lever including a latch pin at one end thereof adapted to seat in a latch seat defined in said lock wheel to restrain said lock wheel in the unactivated attitude against the normal bias of said motor,

a latch lever spring normally biasing said latch lever in that pivotal direction which removes said latch pin from said lock wheel's latch seat,

a release lever also pivotally mounted relative to said guide pulley and said lock wheel, said release lever defining a seat against which the latch pin of said spring loaded latch lever rests when said lock is in the unactivated attitude, thereby restraining said latch lever in the unactivated attitude which restrains said latch pin in the latch seat provided in said lock wheel to prevent rotation of said lock wheel in the unactivated attitude,

a release lever spring normally biasing said release lever in that pivotal direction which restrains said latch pin with said release lever's seat,

said centrifugally activated arms being positioned relative to said spring loaded release lever so as to knock said release lever from functional interengagement with said latch pin upon operation of said activator device, thereby permitting said spring loaded latch lever to remove said latch pin from said lock wheel's latch seat and allowing said lock wheel to rotate into locking engagement with said lock block in response to said lock wheel's spring motor,

a mounting plate on one side of which said activator device, latch lever and release lever are carried, and on the other side of which said guide pulley, pressure roller, lock wheel and lock block are carried,

structure defining a first port in said mounting plate through which said latch pin may extend into interengagement with the lock wheel's latch seat, and structure defining a second port in said mounting plate in proximity to said release lever, and

a reset toe fixed to said release lever, said reset toe being manually accessible from the side of said mounting plate opposite to that on which said release lever is mounted for resetting of said safety lock.

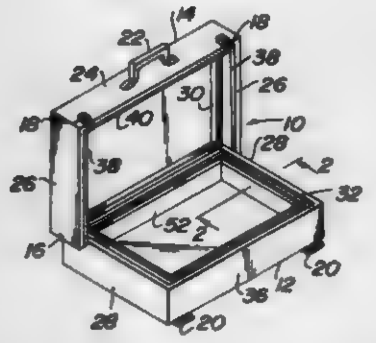
3,980,162
FLAME AND HEAT-RESISTANT LUGGAGE CASE

Sidney T. Dvorak, 9428 Stenton Ave., Philadelphia, Pa. 19118

Filed Sept. 4, 1975, Ser. No. 610,129

Int. Cl.² A45C *3/02*

U.S. Cl. 190—41 R **5 Claims**



1. A flame and heat-resistant luggage case comprising a hollow body section and a hollow cover section, said body section having front, rear, bottom and side walls and having an open top, said cover section having front, rear, top and side walls and having an open bottom, said cover section being hinged to said body section at the corresponding rear walls of said sections, the front and side walls of said cover section completely overlapping the front and side walls of said body section and the top wall of said cover section extending beyond the front and side walls of said body section when said cover section is in hingedly closed position against said body section thereby providing a uniform space between respective front walls and respective side walls of the cover and body sections, said space being closed at the outer edges of the front and side walls of the cover by peripheral inwardly extending flanges which abut against the front and side walls respectively of the body when in closed position, and spacing means holding the top wall of said cover section spaced from the free edges of the front and side walls of said body section when said cover is in closed position, said rear wall and bottom wall of said body section comprises at least two layers separated from each other by an air space substantially throughout the lengths of said layers.

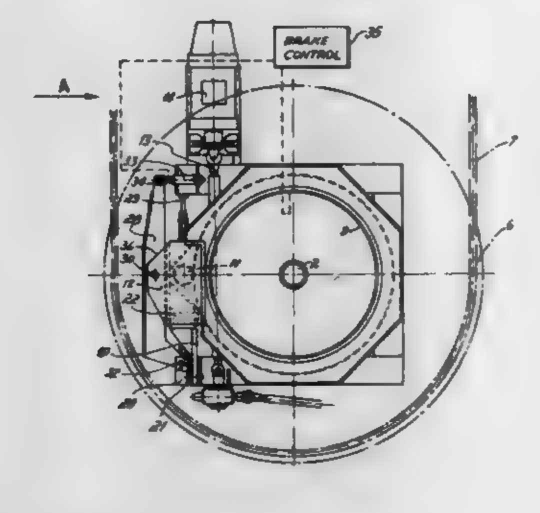
3,980,163
WINCH FOR CABLE CAR

François Durand, 11 rue du Bateau, 06600 Antibes, France

Filed Dec. 26, 1973, Ser. No. 427,697

Int. Cl.² B60T *7/12;* **F16H** *57/00*

U.S. Cl. 192—7 **9 Claims**



1. A winch comprising

a pulley having a main gear fixed thereto,

a pinion operatively engaged with said main gear, said pinion being carried in a mounting block,

a first swing bar pivotally connected at one end to ground, said pinion mounting block being pivotally connected to said first swing bar intermediate the ends thereof,

an elastic connecting rod connected at one end to the other end of said first swing bar and to ground at the other end, said elastic connecting rod including a compression device adapted continuously to bias said first swing bar about its pivot connection with ground, thereby continuously biasing said pinion toward meshed engagement with said main gear, and

a brake control servo-command mechanism connected between said elastic connecting rod and said main gear, said brake mechanism being activated to brake said main gear when the forces developed between said pinion gear and said main gear are such as to effect an increase in the length of said elastic connecting rod.

3,980,164
TRANSMISSION SYNCHRONIZER AND DOG-CLUTCH UNIT

Pierre Labat, and Michel Oudard, both of Suresnes, France, assignors to Societe Anonyme de Vehicules Industriels et d'Equipments Mecaniques Saviem, Suresnes, France

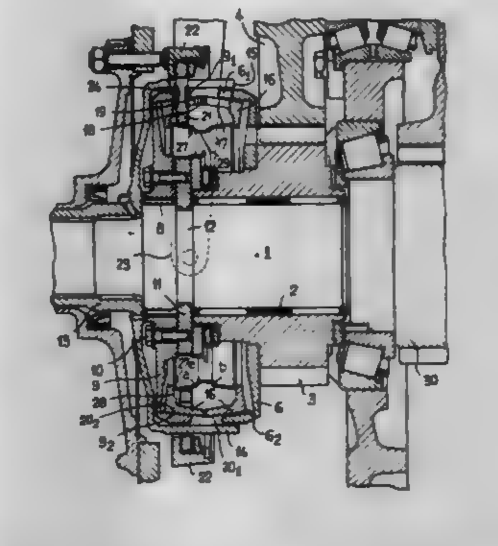
Filed June 5, 1975, Ser. No. 584,063

Claims priority, application France, June 7, 1974, 74.19730

Int. Cl.² F16D *23/06*

U.S. Cl. 192—53 E **2 Claims**

1. A synchronizing and dog-clutch device for change-speed mechanism, which comprises a coupling bell rigid with a rotary shaft, a pair of female friction cones surrounded by said bell and provided with registering sets of dog teeth, a pair of synchromesh rings provided with male tapered surfaces adapted to co-act with said female friction cones, respectively, said coupling bell comprising peripheral axial teeth in meshing engagement with the radial spokes of a coupling ring, interlocking surfaces formed on said synchromesh rings and said coupling ring spokes, respectively, and adapted to co-act with each other by angularly shifting said synchromesh rings in relation to said coupling ring, said coupling ring reacting against a resilient member interposed between said coupling ring and said synchromesh rings, said resilient member consisting of a split expansible cylindrical sleeve mounted in a pre-stressed condition in the central portion of said coupling ring while said sleeve has outflaring ends adjacent each inner surface, respectively, or said synchromesh rings, said synchromesh rings being rigidly assembled with each other, the intermediate portion of said sleeve comprising a groove having inclined marginal portions adapted to co-operate with said coupling ring, whereby in the neutral position of said coupling ring said female friction cones are disengaged from said male tapered surfaces.



3,980,165
DEVICE IN CONNECTION WITH CENTRIFUGAL COUPLINGS

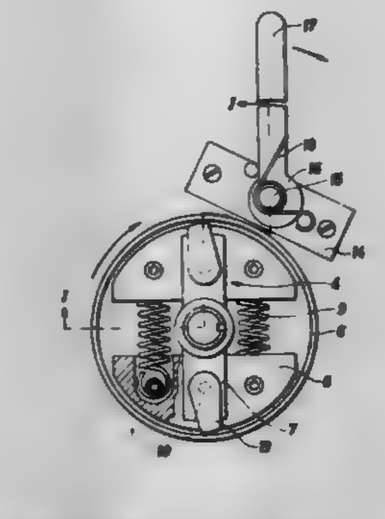
Mats Kesselmark, Vattugatan 45, S-382 00 Nybro, and Bengt Morner, Ryetuagen 9, Hovas, both of Sweden

Filed June 3, 1974, Ser. No. 476,070

Claims priority, application Sweden, July 9, 1973, 7309603

Int. Cl.² F16D *43/24, 23/00*

U.S. Cl. 192—105 CE **3 Claims**



1. In a centrifugal clutch comprising a rotary driving member, a rotary driven member having an internal drum surface, bearing means for rotatably supporting said driving member and said driven member in a coaxial relation to each other, a pair of friction shoe members displaceably supported by said driving member for movement away from each other and into engagement with said internal drum surface under the action of the centrifugal force of said friction shoe members, and spring means for urging said friction shoes generally towards each other and out of engagement with said internal drum surface, the improvement comprising a pair of cam shafts rotatably mounted in said driving member and extending parallel to the axis of rotation of the clutch, a cam and an arm on each of said cam shafts, a cam surface on each of said friction shoe members provided between one of said cams and the clutch axis and extending at substantially right angles to the direction of the centrifugal force on said friction shoe member, said cam and said arm being arranged in such an angular relation about the axis of said cam shaft that said cam is set at an inoperative position with respect to said cam surface when said arm is directed radially outwards with respect to the clutch axis and that angular displacement of the arm

from said radial position in a rotational direction opposed to the rotation of the driving member causes said cam to push said cam surface inwards, whereby said friction shoe carrying said cam surface is shifted out of engagement with said internal drum surface against the action of the centrifugal force on said friction shoe, and means for operating said arms comprising a supporting member rigidly connected with said bearing means and an operating member movably supported by said supporting member and manually shiftable between an inoperative position and an operative position in which said operating member projects into the path of rotation of said arms about the clutch axis so as to shift said arms angularly in a rotational direction opposed to the rotation of said clutch.

3,980,166

DEVICE FOR DUMPING CHUTE

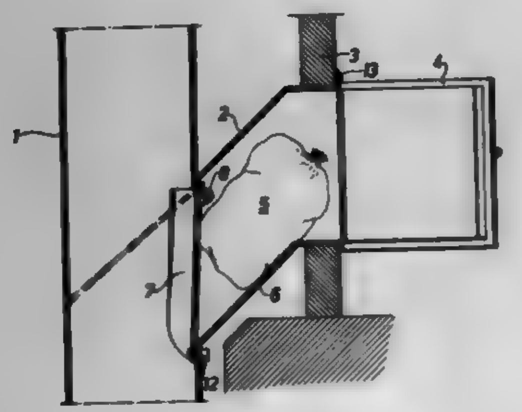
Sergio de Feudis, Nacka, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Stockholm, Sweden

Continuation-in-part of Ser. No. 471,388, May 20, 1974, abandoned. This application Aug. 11, 1975, Ser. No. 603,364

Claims priority, application Sweden, May 21, 1973, 7307137

Int. Cl.² E04F *17/12*; **B65G** *11/00*

U.S. Cl. 193—34 **5 Claims**



1. In combination in a vertical dumping shaft structure with a dumping chute, such as a refuse or laundry chute, directed obliquely downward and having an outlet opening into a substantially vertical dumping shaft,
  - the improvement comprising a gate at the end of said chute outlet opening into the dumping shaft,
  - the said gate being pivoted at its upper margin on a substantially horizontal axis so as to close the chute outlet when at rest,
  - the lower part of the gate being operable to swing out into said shaft to open in response to the force of dumped goods in the chute to thereby cause the dumped goods to enter the dumping shaft,
  - said gate forming part of the inner wall surface of the shaft and the shape of said gate on the side facing said dumping shaft substantially coinciding with the shape of the inside of said dumping shaft,
  - the upper and lower margins of said gate overlapping the adjacent edges of the structure forming said dumping shaft when said gate is in the closed position,
  - the upper margin of said gate overlapping said structure on the outside relative to the shaft and the lower margin overlapping said structure on the inside of said shaft to thereby avoid upward facing abruptly protruding marginal edges at said gate so that the combination of the walls of said shaft and the inner surface of said gate serve to convey dumped goods smoothly past said gate,
  - said gate being substantially narrower than said opening of said chute into said dumping shaft to thereby provide air communication for free movement of contaminated air from said chute into said shaft.

3,980,167

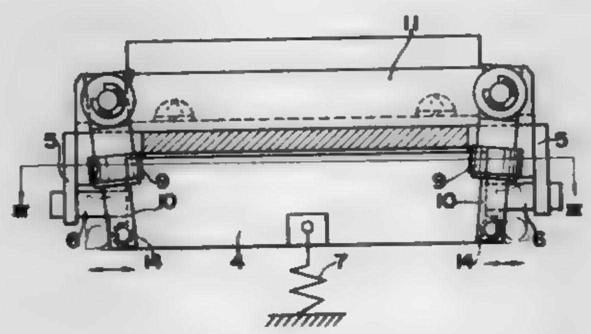
ENTRY CONTROL DEVICE

Takanori Tamura, Nagaokakyo, and Koichi Imoto, Omihachiman, both of Japan, assignors to Omron Tateisi Electronics Co., Japan

Filed Dec. 30, 1974, Ser. No. 537,390

Int. Cl.² G07F *1/06*

U.S. Cl. 194—4 R **8 Claims**



1. An entry control device for coded cards or the like to be incorporated in an identification system which comprises a main body having a passage therein for receiving and orientating a card into the identification system and notches formed in said main body adjacent to opposite corners of said passage so that part of each of said notches enters a path of the card through said passage, a pair of pins mounted on said main body in positions above said notches and extending in a direction parallel to said path of the card, a corresponding pair of width detection levers pivotally mounted on said pins, each of said width detection levers having a roller rotatably mounted on said lever at a position corresponding to each of said notches, spring means mounted on said pins for urging each of said levers inwardly toward said passage and consequently for holding said rollers in said notches, said rollers being adapted to be in a first position engaging said notches with part of each of said rollers blocking said path of the card through said passage at opposite corners of said passage, and said rollers also being adapted to be pressed apart, when a selected sized card is inserted therebetween, by side edges of said selected sized card, with said width detection levers being rotated outwardly away from said passage about said pins against the urging force by said spring means and with said rollers being moved to a second position, and a gate member which is pivotally connected to said main body by a shaft, said gate member having an upper end normally projecting into said path of the card through said passage, and said gate member having a lower portion connected to a spring member for urging said gate member into a normally upright position, said gate member being adapted to be prevented from rotation about said shaft in the direction of card insertion by said width detection levers contacting corresponding ends of the lower portion of said gate member when said rollers are in said first position and also being adapted to rotate about said shaft in a direction of card insertion wherein said width detection levers are disengaged from said corresponding ends of said lower portion of said gate member when said rollers have been moved to said second position for permitting the card to pass therethrough, said gate member also being adapted to rotate freely about said shaft in a direction of card returning when said card is returned from said identification system back into said passage.

3,980,168

METHOD AND APPARATUS FOR AUTHENTICATING AND IDENTIFYING COINS

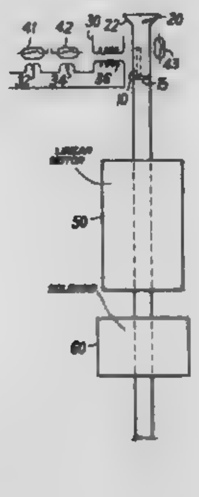
Michael John Knight, 18c Lincoln Hatch Lane, Burnham, Buckinghamshire, England; Gérard Cuénod, 11B Chemin des Senailles, Grand-Nancy, Geneva, Switzerland, and Louis Marius Andre Bechet, 49 re de Romagny, Annemasse, France

Continuation of Ser. No. 405,557, Oct. 11, 1973, abandoned. This application July 9, 1975, Ser. No. 594,298

Claims priority, application United Kingdom, Oct. 12, 1972, 47162/72

Int. Cl.² G07F *3/02*

U.S. Cl. 194—100 A **15 Claims**



1. A device including
  - a single, nearly vertical coin passageway down which coins can pass;
  - detecting means for determining whether the coin is made of magnetic or non-magnetic material;
  - an impeller downstream of the detecting means, the impeller comprising means for generating a magnetic field travelling up the passageway which is energized only when the detecting means detects a non-magnetic coin in the passageway;
  - a solenoid electromagnet surrounding the coin passageway downstream of the detecting means and arranged to generate a stationary magnetic field only when a magnetic coin is detected by the detecting means; and
  - means for examining the velocity of coins subjected to either of the magnetic fields.

3,980,169

IMPACT CONTROL FOR SINGLE ELEMENT PRINTER

Herbert Decker, Lauf, and Gerald Nowak, Bienrode, both of Germany, assignors to Triumph Werke Nurnberg A.G., Nurnberg, Germany

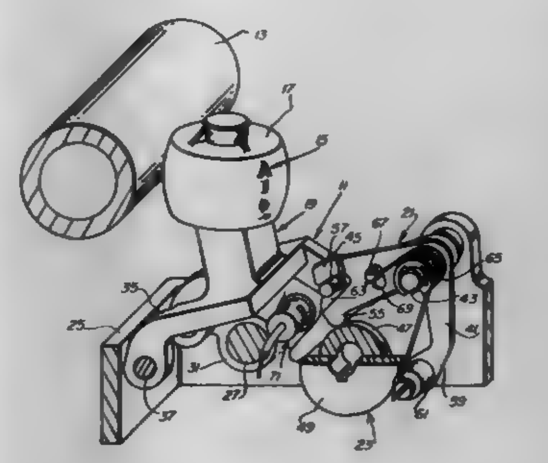
Continuation of Ser. No. 455,280, March 27, 1974, abandoned, which is a continuation of Ser. No. 288,652, Sept. 13, 1972, abandoned. This application Feb. 26, 1975, Ser. No. 553,166

Claims priority, application Germany, Oct. 1, 1971, 2149094

Int. Cl.² B41J *1/32*

U.S. Cl. 197—55 **5 Claims**

1. Impression control mechanism for a single element printer comprising a platen,
  - a single element type carrier having large and smaller area type characters located thereon,
  - means supporting said type carrier for pivotal movement from a rest position toward said platen for impacting a selected type character thereagainst, said type carrier support means including a drive abutment,
  - a rotatable cam,
  - pivotally mounted cam follower means associated with said cam,
  - a pivotally mounted drive member engaging said drive abutment, said drive member adapted when driven to drive said type carrier support means toward said platen,
  - spring means connected between said cam follower means and said drive member for transmitting driving motion of said cam to said drive member over a full cam stroke when large area type characters are selected for printing,



  - and means selectively interposable in the path of motion of said driven drive member to arrest its movement in advance of a full cam stroke when smaller area type characters are selected for printing to earlier terminate its engagement with said type carrier support means thereby controlling the impact force of a selected smaller area type character against said platen.

3,980,170

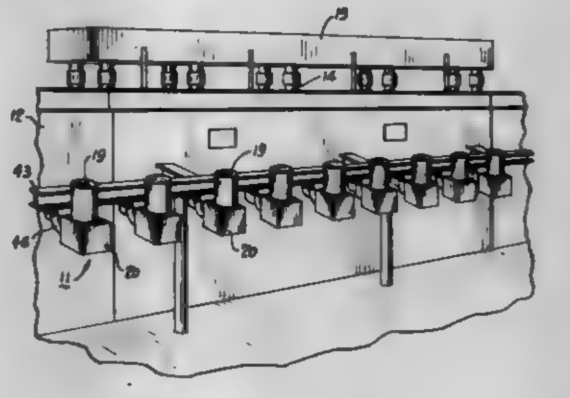
DRIVE SYSTEM FOR AN ANNEALING LEHR

Gerald A. Jakes, Toledo, and Raymond E. Bond, Newburry, both of Ohio, assignors to Reliance Electric Company, Pepper Pike, Ohio

Filed Dec. 23, 1974, Ser. No. 536,938

Int. Cl.² B65G *21/12*

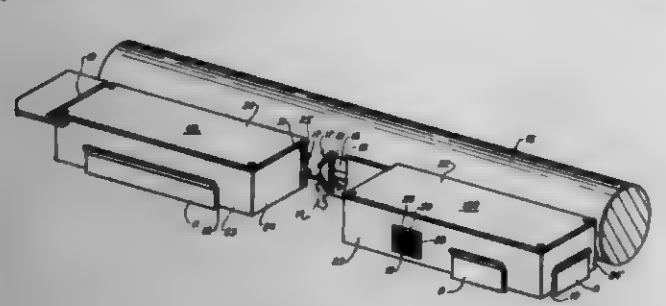
U.S. Cl. 198—782 **6 Claims**



5. A drive system, comprising, in combination, conveyor rolls to support and move a strip of glass-like material through an annealing lehr,
  - first and second girders longitudinally on opposite sides of the lehr,
  - first and second pluralities of bearing blocks,
  - a hinge supporting one side of each bearing block on the respective girder and quick-actuating fastening means securing the opposite side of each bearing block to the respective girder, each roll being journalled in a bearing block of said first and second pluralities,
  - a plurality of motors each motor supported by and driving a respective one of said rolls,
  - said fastening means being capable of being unfastened from the respective girder to lower downwardly the bearing blocks at each end of a particular roll to move that particular roll out of physical engagement with the strip of glass within the lehr.

3,980,171
RIBBON CARTRIDGE

Thomas E. Frechette, Windsor Locks, Conn., assignor to Royal Business Machines, Inc., Hartford, Conn.
Filed May 27, 1975, Ser. No. 581,206
Int. Cl.² B41J *35/23*
U.S. Cl. 197—151 **6 Claims**

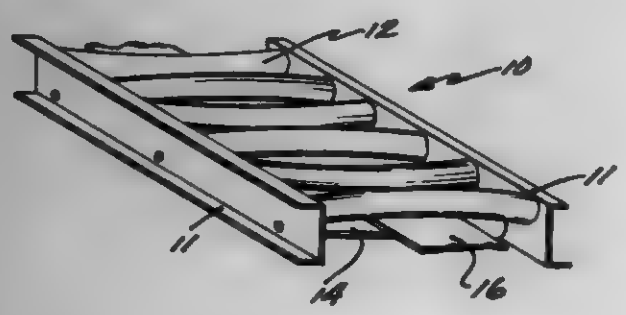


1. A ribbon cartridge adapted to be top loaded into a receptacle on a typewriter to one side of the printing point comprising

a housing having a supply and take-up chamber,
a supply of ribbon supported in said supply chamber,
ribbon threaded guide means in said housing carrying ribbon from said supply chamber to said take-up chamber,
said guide means having an opening to expose a portion of ribbon opposite said printing point, said guide means being movably supported in said housing for movement from a retracted position within said housing to an extended position outside said housing to place said opening opposite said printing point,
and means for moving said guide means in a lateral straight line movement between retracted and extended positions.

3,980,172
LOW LINE PRESSURE ACCUMULATOR

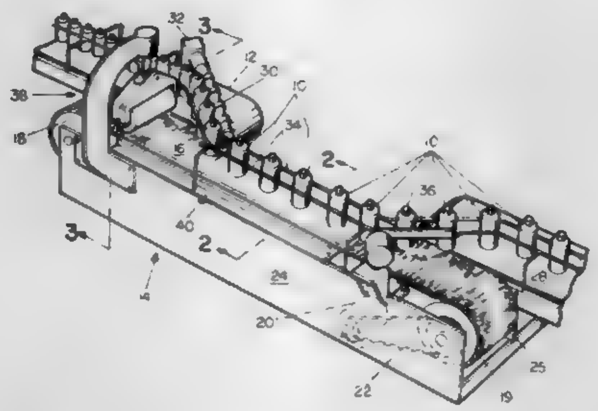
Maynard J. Degood, Grand Rapids, Mich., assignor to Rapistan, Incorporated, Grand Rapids, Mich.
Continuation of Ser. No. 404,709, Oct. 9, 1973, abandoned. This application Apr. 9, 1975, Ser. No. 566,264
Int. Cl.² B65G *13/02*
U.S. Cl. 198—781 **6 Claims**



1. A conveyor for accumulating articles with low line pressure, said conveyor having a frame and a plurality of elongated, freely rotatable article carrier rollers forming an elongated conveying surface, a belt propelling member having a width which is a minor portion of the length of the carrier rollers and means supporting said propelling member beneath and substantially midway between the ends of said carrier rollers, said conveyor characterized in that each of said carrier rollers between its ends is of constant diameter and is bowed along its longitudinal central axis to form a shallow arch; means mounting each of said rollers for rotation about an axis which is the chord of said arch, the center of said arch being aligned vertically with the center of said belt propelling member and said propelling member being supported in a plane wherein the upper surface of said propelling member is in driving contact with said carrier rollers when the rotational position of said rollers is such that their longitudinal central axes are concave and said carrier rollers are disengaged from said propelling member when the rotational position of said rollers is such that their central axes are convex.

3,980,173
PRECISION MOVING PLATFORM

Darius O. Riggs, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Oct. 2, 1975, Ser. No. 618,878
Int. Cl.² B65G *17/00*
U.S. Cl. 198—339 **7 Claims**

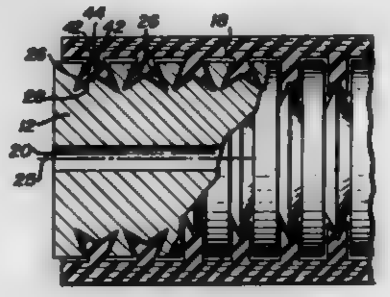


1. Apparatus for providing a dimensionally stable, moving platform for the inspection of articles being moved by said apparatus which comprises, in combination:

a modified, endless silent chain of the type having a plurality of transverse and longitudinal links, said silent chain being held together as a unit by a plurality of pairs of pins extending transversely through a common opening in said links to hold adjacent links together, said chain being modified to allow vertical and longitudinal movement of a center group of said links relative to said pins while the outermost of said links are in fixed positional contact with said pins;
at least two rotatably mounted, longitudinally spaced apart sprockets over which said endless silent chain is trained;
means for driving one of said sprockets;
magnetic force applying means, positioned under said silent chain between said sprockets, for holding said center group of said links in common horizontal and vertical planes; and
mechanical force applying means positioned adjacent said silent chain in the area where said magnetic force applying means begins, for pressing said silent chain downward to insure that all of said center group of said links are held by said magnetic force applying means.

3,980,174
CLOSED LOOP RIBBED BELT/GROOVED PULLEY CONVEYOR SYSTEM

René A. Conrad, Woodside, Calif., assignor to Dynaloc Corporation, San Mateo, Calif.
Filed Oct. 10, 1975, Ser. No. 621,589
Int. Cl.² B65G *15/62*
U.S. Cl. 198—835 **8 Claims**

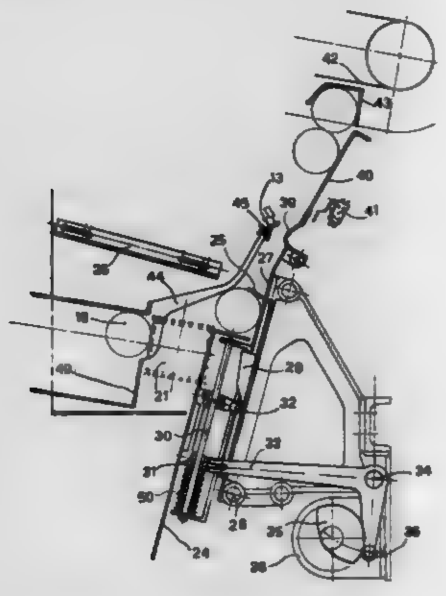


1. A closed loop conveyor system comprising:

a generally cylindrical drive pulley and a generally cylindrical return pulley, at least one of said drive and return pulleys including at least one groove having a generally W-shaped transverse cross section formed by a pair of oppositely beveled side walls radially converging toward the surface of the pulley—has been added in order to more clearly define the shape of the groove in the pulley and a centrally peaked annular bottom wall; and
a conveyor belt disposed around said drive and return pulleys and including a carcass having an exterior load-carrying surface and an interior surface including at least one rib formed in the direction of belt travel, said rib having a pair of parallel side surfaces and a bottom surface that is generally concave in transverse cross section to form two wedging portions which upon engaging said bottom wall are spread apart to cause said side surfaces to lockingly mate with the side walls of said groove.

3,980,175
DEVICE FOR ALIGNING COPS WHICH WITHDRAWS THEM IN BULK

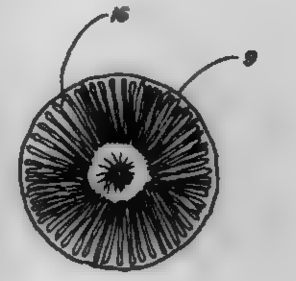
Armando D'Agnolo, and Giovanni Favero, both of Pordenone, Italy, assignors to Officine Savio, S.p.A., Pordenone, Italy
Filed Apr. 30, 1974, Ser. No. 465,581
Claims priority, application Italy, May 3, 1973, 83362/73
Int. Cl.² B65G *47/14*
U.S. Cl. 198—410 **14 Claims**



7. A device for aligning cops which withdraws them in bulk comprising a substantially horizontal first removal conveyor belt, an upwardly sloped second elevator conveyor belt bearing a plurality of series of staggered projections which receives the discharge from said first belt, an intermediate storage point between said removal conveyor and said sloped second elevator conveyor, a retaining chute between the removal conveyor belt and that part of the elevator conveyor belt which is positioned below said removal conveyor belt, a plurality of striker means, which pivot between the lower edge of the chute and the surface of the elevator conveyor belt and which cooperate with said chute in the retaining action, a substantially horizontal third collection conveyor belt positioned across and below the unloading edge of said second elevator conveyor belt, a substantially horizontal fourth exit conveyor belt positioned below said third collection conveyor belt being parallel thereto and vertically staggered therefrom, a vertically sloped connecting conveyor which joins the entrance of said horizontal exit conveyor belt to the exit from said collection conveyor belt, a collection chamber positioned at the exit from said horizontal exit conveyor belt, said collection chamber having a means for restricting the exiting of cops and a lower movable surface, and a sloped collection surface with a means for restricting the entry of said cops onto said collection surface.

3,980,176
SCREW JET PACK FOR TEXTILE FIBERS

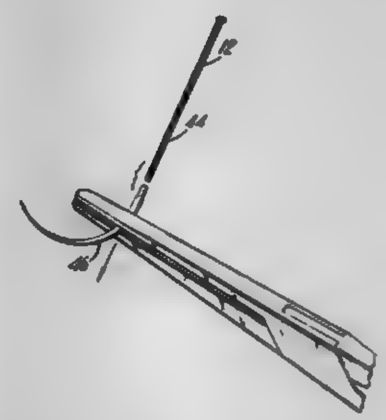
Beryl Aaron Boggs, Chester, Va., assignor to Allied Chemical Corporation, Petersburg, Va.
Division of Ser. No. 107,386, Jan. 18, 1971, Pat. No. 3,759,010. This application May 14, 1973, Ser. No. 360,237
Int. Cl.² B65D *71/00, 85/66, 85/672*
U.S. Cl. 206—392 **8 Claims**



1. A package of textile fibers comprising a continuous core of yarn, said yarn being compactly folded within convolutions of a uniform helically, compactly wound mass of yarn, said yarn compressed within a long tube of flexible material, said folded and helically wound mass of said yarn being compressed in said tube so that said mass of said yarn expands after removal of said tube from around said mass, said yarn being compressed with a compressive force that is entirely longitudinal along the axis of said long tube.

3,980,177
CONTROLLED RELEASE SUTURE

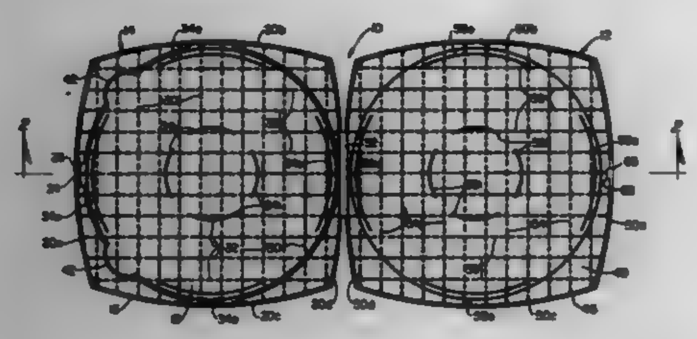
Walter McGregor, Somerset, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.
Division of Ser. No. 409,974, Oct. 26, 1973, Pat. No. 3,890,975, which is a continuation-in-part of Ser. No. 258,159, May 31, 1972, abandoned. This application Oct. 21, 1974, Ser. No. 516,549
Int. Cl.² A61B *17/06*
U.S. Cl. 206—63.3 **9 Claims**



1. A plurality of needle-suture combinations in a sterile sealed package, each of said needle-suture combinations within said package comprising a needle having a recess at the blunt end and a suture having a diameter greater than 7 mils., one end of which is received within said recess and swaged whereby said end is compressed, said needle-suture combinations being characterized by having individual straight pull-out values of from about 3 ounces to about 26 ounces and an average straight pull-out value between about 9 ounces and about 15 ounces.

3,980,178
PROTECTIVE RECORD COVER

J. Carlos Schidlowski, P.O. Box 14, Sedalia, Colo. 80135
Continuation-in-part of Ser. No. 381,917, July 23, 1973, abandoned. This application July 26, 1974, Ser. No. 492,002
Int. Cl.² B65D *81/02, 85/02, 85/30*
U.S. Cl. 206—313 **5 Claims**

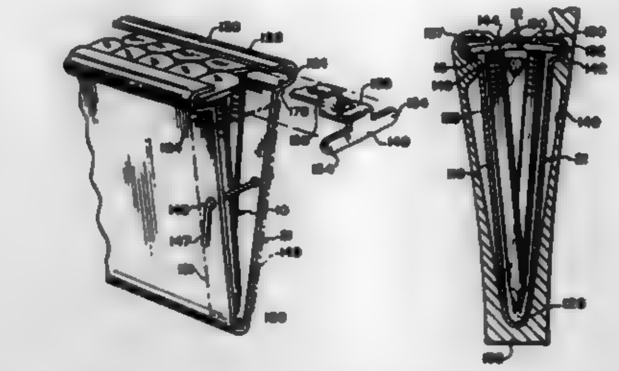


1. A record cover for a circular phonograph record having a central circular label area, an unrecorded circular peripheral area, and a recorded area between the label area and the unrecorded area comprising in combination first and second plastic panels of generally square configuration, each panel having a broad but shallow recessed inner face, a plurality of mutually perpendicular reinforcement ribs forming a rib gridwork in the recessed inner face of each panel to rigidity the panels, a first set of spaced elongated bead-like arcuate support ribs in the recess of each panel defining arcs of a common circle having a diameter slightly less than the diameter of the label of the phonograph record, a second set of spaced elongated bead-like arcuate support ribs in the recess of each panel defining arcs of a common circle concentric with and larger than said first-mentioned common circle, the diameter of the second-mentioned common circle being the same as at least a portion of the circular unrecorded peripheral area of the record, said support ribs extending away from the recess of each panel slightly more than said reinforcement ribs, a Styrofoam lining in the recess of each panel, said linings each having a circular recessed portion conforming in size to the phonograph record so as to seat the phonograph record and defining an annular shoulder adapted to prevent the phonograph record from sliding in the recessed portion, said recessed portion of the lining covering the reinforcement ribs and the supporting ribs protruding through the lining so as to support the phonograph record within the recessed portion of the lining in spaced relation from the lining, a living hinge pivotally interconnecting corresponding sides of the panels whereby the panels are pivotal between an open and closed position, said inner faces of the panels being in face-to-face relationship in the closed position so that said recesses in the lining define a closed cavity for the phonograph record, and cooperating latch members on corresponding sides of the panels, said latch members being on sides opposite to the sides which are pivotally connected.

3,980,179
NAIL CLIP ARRANGEMENT

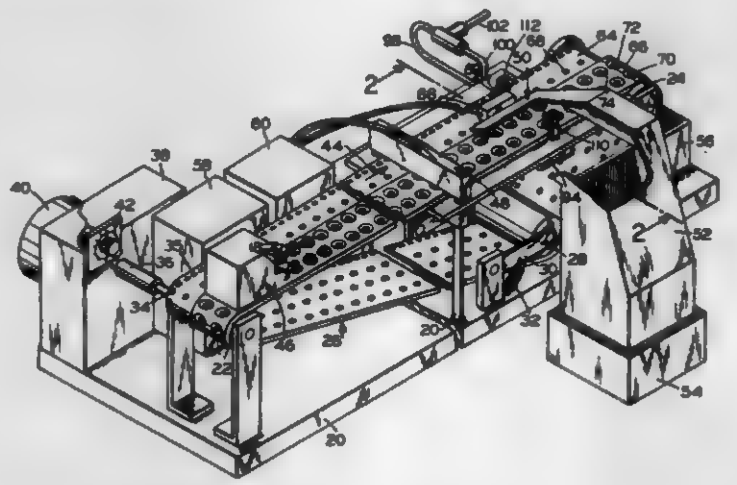
John R. Schrepferman, Merriam, Kans., assignor to Bliss & Laughlin Ind., Inc., Oak Brook, Ill.
Division of Ser. No. 352,243, April 18, 1973, which is a continuation-in-part of Ser. No. 153,756, June 16, 1971, abandoned. This application Oct. 11, 1974, Ser. No. 514,248
Int. Cl.² B65D *85/24;* **F16B** *15/02*
U.S. Cl. 206—338 **8 Claims**

1. A nail clip comprising a plurality of flat-headed nails arranged in two parallel rows with adjacent heads oriented in edge-to-edge contact with their shanks interdigitated, carrier feed clip means engaging the points of the nails in supporting relation and having opposing channels slidably receiving the remote edges of the nail heads in guiding supported relationship.



3,980,180
TRANSMISSIVE ARTICLE SORTING APPARATUS

John A. Jamieson, 5306 Kenwood Ave., Chevy Chase, Md. 20015
Filed Nov. 20, 1974, Ser. No. 525,660
Int. Cl.² B07C *5/342*
U.S. Cl. 209—111.6 **8 Claims**



1. An apparatus for sorting articles according to transmissivity comprising

an opaque belt conveyor having a row of longitudinally spaced apertures and means for receiving the articles such that each article is positioned over one of the apertures,

means for moving the belt conveyor,

a light source positioned on one side of the belt conveyor for directing a light beam through the apertures as they pass thereby,

a light responsive device positioned on the other side of the belt conveyor in alignment with the light source, said light responsive device producing an output voltage indicative of the light impinging thereon,

a peak detecting and holding circuit for detecting and holding a peak voltage produced by the light responsive device,

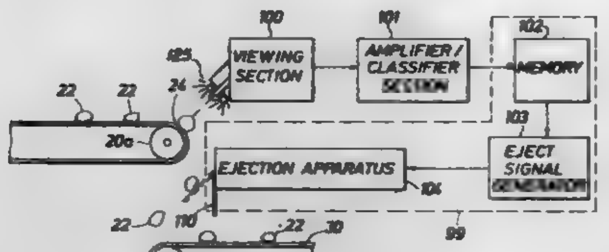
means for passing a selected percentage of the peak voltage held by the peak detecting and holding circuit,

a threshold circuit responsive to the output voltage from the light responsive device exceeding the passed selected percentage of the peak voltage for producing a signal indicating that an aperture has passed a predetermined light, and

separating means operated in response to the threshold circuit for separating articles transmitting the predetermined light from articles not transmitting the predetermined light.

3,980,181
COLOR SORTING APPARATUS

Michael C. Hoover, and Elias H. Codding, both of Houston, Tex., assignors to Geosource Inc., Houston, Tex.
Filed June 19, 1975, Ser. No. 588,219
Int. Cl.² B07C *5/342*
U.S. Cl. 209—111.6 **11 Claims**



1. Apparatus for sorting articles randomly disposed across a wide path in a product stream according to color, comprising:

means for viewing a selected illuminated area through which the product stream is passed,

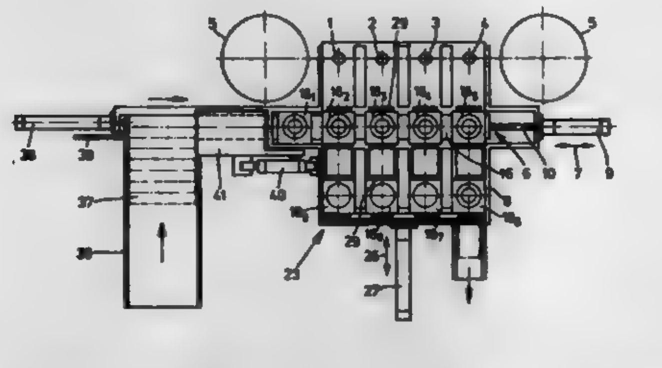
said viewing means including a plurality of viewing sections disposed in side-by-side spaced relationship to one another to view a corresponding plurality of viewed areas within the selected illuminated area, each of said viewing sections including means for generating first and second continuous electrical color signals representative of the instantaneous average value of the light energy reflected from the corresponding viewed area at respective first and second wavelengths selected from the optical frequency spectrum,

classifier means operatively coupled to each of said viewing sections for generating a third continuous electrical color signal functionally related to the ratio of the first electrical color signal to the second electrical color signal, for comparing said third electrical color signal with a selected reference, and for generating a reject command in response to a change in said third electrical color signal representative of the presence of an unacceptably colored article in the corresponding viewed area, and,

ejector means operatively coupled to each of said classifier means for receiving said reject command and separating the unacceptably colored article from the product stream in response to said reject command.

3,980,182
WORKPIECE HANDLING DEVICE IN AN INTERNAL BROACHING MACHINE

Gustav Esser, and Eckhard Schröder, both of Solingen, Germany, assignors to Oswald Forst Maschinenfabrik und Apparatebauanstalt, Solingen, Germany
Filed Sept. 12, 1974, Ser. No. 505,499
Claims priority, application Germany, Sept. 15, 1973, 2346520
Int. Cl.² B65G *59/06*
U.S. Cl. 214—1 BB **14 Claims**



1. A workpiece handling device in a machine tool having at least one working station, having a vertical center line axis, disposed on the frame of the machine tool and wherein workpieces are held in workpiece holders during machining, comprising:

transfer means, for transferring workpiece holders along a first axis, having a plurality of first engaging means, each for engaging a workpiece holder, the number of said engaging means exceeding the number of working stations by at least one, said plurality of first engaging means defining a plurality of equidistant positions along said transfer means, said equidistant positions along said transfer means being disposed at a lateral distance from each other equal to the lateral distance between adjacent working stations, when more than one working station is present, said transfer means being reciprocably movable along said first axis;

feeding means for transferring workpiece holders along at least one second axis, the number of second axes being equal to the number of working stations, each second axis intersecting said first axis at one of said equidistant positions and forming right angles therewith, and also intersecting the vertical centerline axis of one of said working stations, said feeding means including a plurality of second engaging means each for engaging a workpiece holder, said plurality of second engaging means including one second engaging means lying on each of said second axes at the intersection with said first axis and another second engaging means at a position displaced a predetermined distance from said intersection, said predetermined distance for each second axis being the same as the perpendicular distance from said first axis to the vertical centerline axis of the working station;

a first reciprocating means for reciprocating said feeding transfer means along said first axis; and

a second reciprocating means or reciprocating said feeding means along said second axes,

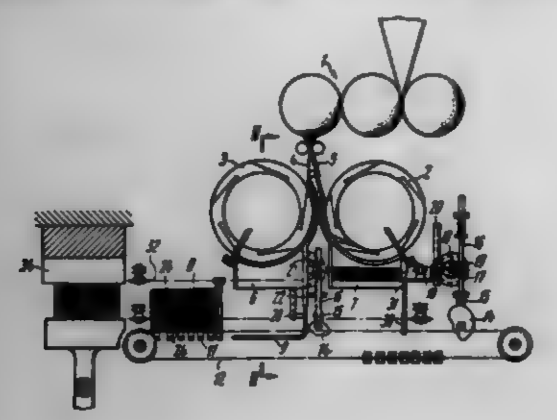
whereby, after loading, the workpiece holders carry the work pieces to each of said at least one working stations and, after unloading, the workpiece holders are returned for reloading solely by means of operation of said transfer means, said feed means and said first and second reciprocating means.

3,980,183
DELIVERY AND COLLECTING ARRANGEMENT FOR ROTARY MACHINES FOR PRINTING BOOKS OR MAGAZINES

Nikolai Ivanovich Anikanov, Bolshaya Bronnaya ulitsa, 2/6, kv. 6; Leonid Pavlovich Grachev, ulitsa Lva Tolstogo, 7, kv. 32, both of Moscow; Grigory Iosifovich Zax, ulitsa Mechnikova, 14a, kv. 24, Kiev; Grigory Avramovich Radutsky, 16 Parkovaya ulitsa, 49, korpus 2, kv. 68, Moscow, and Rafail Efimovich Kheifets, Brest-Litovksy prospekt, 162, kv. 30, Kiev, all of U.S.S.R.
Continuation of Ser. No. 509,962, Sept. 27, 1974, abandoned. This application July 29, 1975, Ser. No. 600,123
Claims priority, application U.S.S.R., Dec. 21, 1973, 1975405
Int. Cl.² B65G *57/03*
U.S. Cl. 214—6 M **5 Claims**

1. A delivery and collecting apparatus in rotary machines for making books comprising: a folder for shaping booklets to make books; two spiders mounted under said folder; a driven switch to direct said booklets after leaving the folder to one of said spiders; two receiving bins having driven movable bottoms for receiving the booklets leaving said spiders and for collecting them into stacks, said bins being located in series in the direction of stack movement so that each bin is located under each of said spiders; each of said bins being provided with a slot in one of the side walls thereof for feeding rigid boards therein to be placed over and beneath the stack being collected, respectively; a container for the rigid boards disposed adjacent to each receiving bin; a driven pusher for said rigid boards located inside said container for feeding said

boards one-by-one alternately into each of the bins; said drive of said pusher being coupled to the drive of said driven switch in such a manner that during the collection of said stack the rigid boards are fed one-by-one into each bin at time intervals corresponding to the filling time of the bin; a discharge conveyor mounted under said receiving bins, said discharge conveyor having pallets for receiving the resulting stack from each of said movable bottoms; and each of said pallets comprising a corrugated strip having uniformly spaced corrugations of rectangular shape.



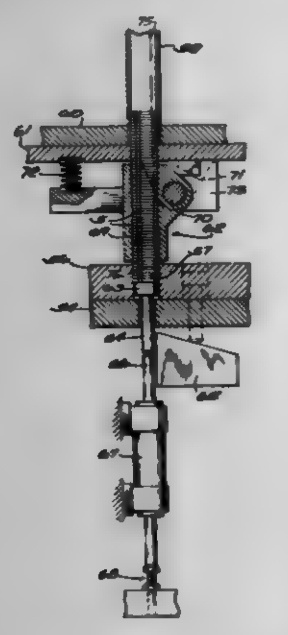
3,980,184
APPARATUS FOR AUTOMATIC PRODUCTION OF ARMATURES

Arnold P. Le Vasseur, Lakeville, Minn., assignor to Possis Corporation, Minneapolis, Minn.

Division of Ser. No. 477,549, June 7, 1974, Pat. No. 3,920,129. This application Aug. 22, 1975, Ser. No. 607,048

Int. Cl.^{2} B65G *59/06*

U.S. Cl. 214—8.5 H **4 Claims**



1. A lamination separating device for successively separating laminations from a supply thereof, comprising:

A. a vertically oriented tubular magazine to hold the supply of laminations in stacked order to drop from the magazine through a discharge mouth at its bottom;

B. a carrier for the separated laminations located beneath the magazine and having a horizontally disposed top surface and a series of pockets opening to that surface to receive the separated laminations;

C. means for imparting indexed motion to the carrier in a defined direction to successively advance its pockets into alignment with the discharge mouth of the magazine;

D. a feeder between the discharge mouth of the magazine and the top surface of the carrier,
said feeder having a passageway extending vertically therethrough, through which laminations leaving the magazine reach the pockets in the carrier; and

E. means yieldingly mounting said feeder for movement from a lamination feeding position in which its passageway forms an extension of the magazine and its bottom is closely contiguous to said top surface of the carrier to a releasing position in which its bottom is spaced farther from said top surface, so that
in the event the topmost lamination in a pocket of the carrier has not fully left the passageway in the feeder by the time indexed advance of the carrier is begun, the feeder yields to the force imparted to it by the movement of said topmost lamination with the carrier and thereby enables that lamination to free itself from the feeder.

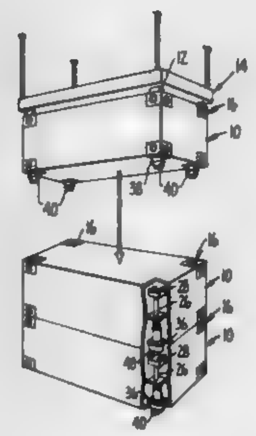
3,980,185
CARGO CONTAINER INTERLOCK SYSTEM

Clyde R. Cain, 75 Half Moon Road, Novato, Calif. 94947

Continuation of Ser. No. 386,022, Aug. 6, 1973, abandoned, which is a continuation of Ser. No. 278,928, Aug. 9, 1972, abandoned. This application June 26, 1974, Ser. No. 483,234

Int. Cl.^{2} B65G *1/14*

U.S. Cl. 214—10.5 R **4 Claims**



1. A cargo container having means to connect and disconnect it with respect to turnable members of a spreader and with respect to either slotted corner fittings of another or to slotted deck fittings beneath it, said means comprising a pair of vertically offset upper and lower corner fittings having vertically directed access openings or slots, shaft means extending between the upper and lower fittings and mounted for at least limited rotative movement about its longitudinal axis, actuator means connected to the upper end of the shaft means within the upper fitting adapted to be engaged and rotated by a turnable member of a spreader, and a foot member carried at the lower end of the shaft means adapted to fit within and lock and unlock with slotted corner and slotted deck fittings, the first mentioned actuator means and the foot member being radially offset at an angle of about 90°, such that, when the turnable members of a spreader are locked to a container, said container is unlocked with respect to either the slotted corner fitting of a container therebeneath or a slotted deck fitting, and vice versa.

3,980,186
SILAGE HANDLING APPARATUS

Duane A. Leith, Claypool, Ind., assignor to Supreme Farmstead Equipment, Inc., Silver Lake, Ind.

Filed Aug. 18, 1975, Ser. No. 605,396

Int. Cl.^{2} B65G *65/38*

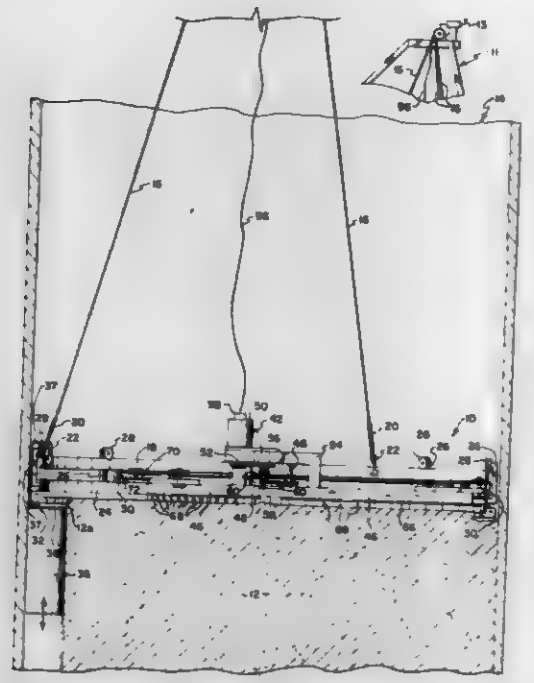
U.S. Cl. 214—17 DB **10 Claims**

1. Apparatus for handling material in cylindrical silos comprising:

first horizontally stationary ring means forming a track around the inside periphery of said silo mounted for vertical movement therein;

second horizontal ring means supported for rotation relative to said first ring means and including blade means for engaging the material in said silo below said second ring means forming a peripheral trench in said material around the inside surface of said silo; and

at least one radial arm assembly extending radially outwardly of the center of said silo and including drive means adjacent the outer end for drivingly engaging said first and second ring means for rotating said arm assembly around said silo in one direction and driving said second ring means around said silo in an opposite direction, said arm assembly including endless chain means extending between the center of said silo and said outer end with knives on links of said chain means for engaging said material for movement thereof in a radial direction in said silo.



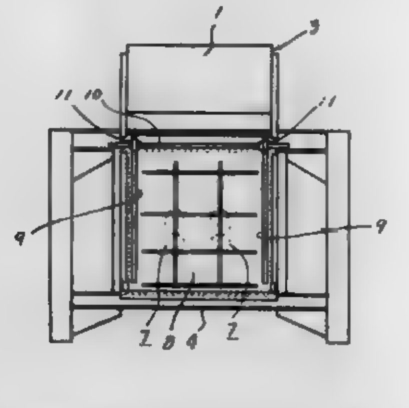
3,980,187
HOPPER FOR DISPOSING OF MACHINING REFUSE

Masaru Yasukawa, and Souzi Yasukawa, both of 122, Sanmaidencho, Tenrishi, Nara, Japan

Filed May 15, 1975, Ser. No. 577,855

Int. Cl.^{2} B65G *65/46*

U.S. Cl. 214—17 D **10 Claims**



1. A hopper for disposing of machining refuse which comprises a hopper body having an inlet zone provided with an inlet end and an outlet zone provided with an outlet end, said outlet zone being angled from said inlet zone, said hopper body being provided with side walls which extend outwardly towards said outlet end of said outlet zone, so that the diameter of the outlet end is larger than the diameter of the inlet end, gate means operatively associated with said outlet end for opening and closing said outlet end and at least one screw conveyor means rotatably disposed in the lower portion of the hopper in said outlet zone, said screw conveyor means being directed toward the outlet end of the hopper.

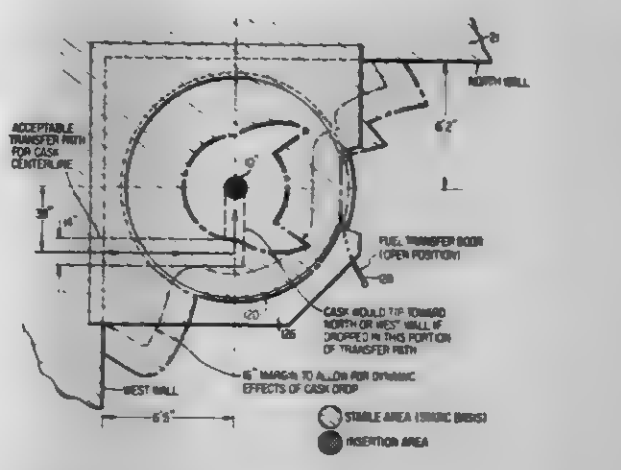
3,980,188
METHOD FOR HANDLING NUCLEAR FUEL CASKS

Sterling J. Weems, Chevy Chase, Md., assignor to MPR Associates, Inc., Washington, D.C.

Division of Ser. No. 507,858, Sept. 20, 1974, Pat. No. 3,945,509, which is a continuation-in-part of Ser. No. 224,495, Feb. 8, 1972, abandoned. This application May 14, 1975, Ser. No. 577,395

Int. Cl.^{2} B66C *5/02*

U.S. Cl. 214—152 **10 Claims**


NORTH WALL
ACCEPTABLE TRANSFER PATH FOR CASK CENTERLINE
FUEL TRANSFER DOOR (OPEN POSITION)
6" MARGIN TO ALLOW FOR DYNAMIC EFFECTS OF CASK DROP
WEST WALL
6'5"
STABLE AREA (STATIC BASIS)
INSERTION AREA

1. In a method for inserting a nuclear fuel cask into a nuclear fuel pool, wherein the pool comprises two side walls forming a corner, a deck associated with each of said side walls, and a guide tube positioned in the area of said corner and extending substantially from the level of said decks to the bottom of said pool; the improvement comprising moving the fuel cask from a position over the deck associated with a first of said side walls to a position centrally located over said guide tube, by guiding the cask along a path that extends from and is substantially perpendicular to said first side wall to a location that lies substantially on a line perpendicular to the second of said side walls and which passes through the axis of said guide tube, said axis lying between said second side wall and said location, said path further extending from said location to a point substantially coincident with said axis.

3,980,189
METHOD AND APPARATUS FOR HOMOGENIZING, STOCKPILING AND SAMPLING PARTICULATE MATERIAL

Raymond Louis Proner, and Réne Léon Clément Bourgoin, both of Paris, France, assignors to Societe Anonyme: Ciments LaFarge, Paris, France

Continuation-in-part of Ser. No. 370,739, June 18, 1973, Pat. No. 3,913,761. This application Oct. 20, 1975, Ser. No. 624,403

Claims priority, application France, June 23, 1972, 72.22891

Int. Cl.^{2} B65G *65/28*

U.S. Cl. 214—152 **10 Claims**

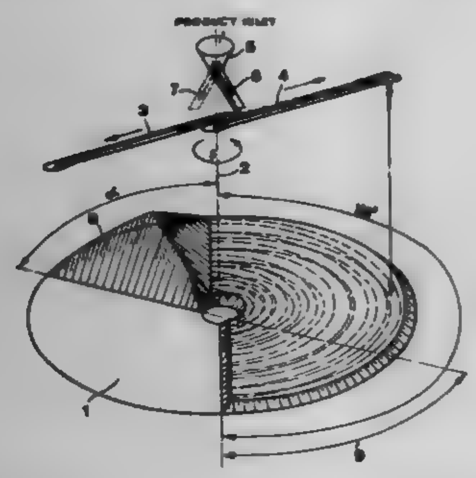
1. A process for increasing the homogeneity of particulate material which is not completely homogeneous which comprises:

a. forming a dead heap over a sector of an essentially circular area, the dead heap having a base, a height and sloping sides the slopes of which are approximately equal, but in opposite directions;

b. forming a first active heap by dropping the particulate material in superposed layers of juxtaposed strips over a portion of a circular surface extending from and including one side of the dead heap, the portion being less than that which is not occupied by the dead heap, successive juxtaposed strips being radially displaced, all strips and all layers being laid in the same direction and having one end touching one side of the dead heap and the other end being free and having a slope which approximates the slope of the dead heap which the strips and layers touch;

c. retrieving radial slices from the free end of the first active heap, the slices being in successive planes which have slopes approximating that of the dead heap which the strips and layers touch;

d. when sufficient radial slices have been retrieved to free a portion of the circular surface, not occupied by the dead heap, which is approximately equivalent in size to that occupied by the entire first active heap, forming a second active heap by dropping the particulate material in superposed layers of juxtaposed strips over a portion of the circular surface essentially equal to that formerly occupied by the entire first active heap and extending from the side of the dead heap which was not touched by the first active heap, successive juxtaposed strips being radially displaced, all strips and all layers being laid in the same direction and having one end touching the side of the dead heap which was not touched by the first active heap and the other end being free and having a slope which approximates that of the dead heap which the strips and layers touch, the direction in which the strips and layers are laid being the same as or opposite from that employed in forming the first active heap;



e. retrieving radial slices from the free end of the second active heap, the slices being in successive planes which have slopes approximately that of the dead heap which the strips and layers touch;

f. sequentially repeating steps (*b*), (*c*), (*d*) and (*e*) until all of said particulate material is exhausted and at least approximately all but that reserved for the dead heap is retrieved.

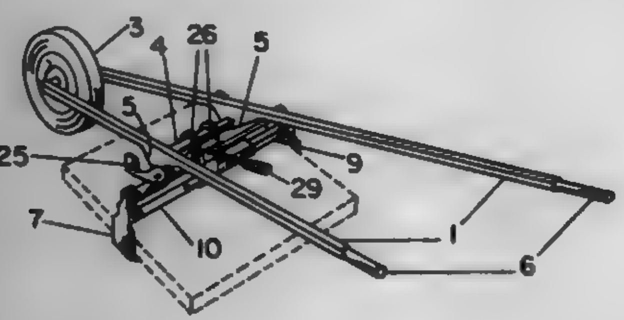
3,980,190
PAVING SLAB HANDLING DEVICE

Patrick James Paterson, Box 703, R.R. No. 5, Ottawa, Ontario, Canada (K1G 3N3)

Filed Oct. 24, 1975, Ser. No. 625,703

Int. Cl.^{2} B62B *1/06*

U.S. Cl. 214—383 **8 Claims**



1. A device for the handling of precast paving slabs, comprising an opposed pair of jaws, horizontally and inwardly flanged at their lower edges and suspended intermediate their upper and lower ends by means of horizontal hinge pins, an extensible push rod cooperating at its ends with the upper extremities of said jaws, a horizontal beam structure supporting said hinge pins, a pair of parallel members rigidly attached to and projecting vertically upward from the mid-length of said beam structure and each terminating in a hook, a pair of spaced bars with handles at one end joined at their other end by a wheel axle with one wheel thereon and at a position between their ends by a crossbar sized to be enclosed by and to pivotally suspend said hooks.

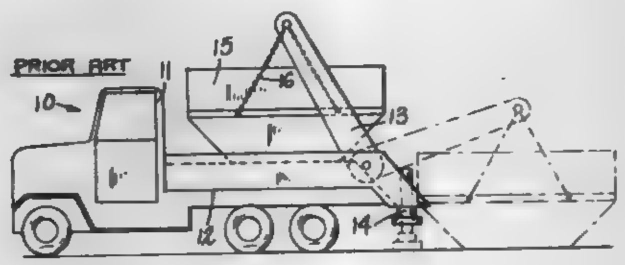
3,980,191
MOTOR TRUCK WITH PLURAL CONTAINER HANDLING MECHANISM

Michael Schiavone, North Haven, and Harold Hoette, Farmington, both of Conn., assignors to Michael Schiavone & Sons, Inc., North Haven, Conn.

Filed Dec. 12, 1974, Ser. No. 532,049

Int. Cl.^{2} B60P *1/00*

U.S. Cl. 214—518 **3 Claims**



1. A motor truck chassis with loader-unloader mechanism comprising a truck bed and frame adapted to support a plurality of cargo carrying containers, means for moving one container at a time between a first position on said truck bed and a position to the rear of the truck chassis, a channel extending longitudinally of said bed, an endless drive chain having at least one run disposed in said channel, a connector plate fixed to said chain, a reversible motor for driving the chain and means for releasably connecting the chain to a container, the releasable connecting means comprising a block adapted to be removably locked to the connector plate, a tie chain having one end fixed to said block and being adapted to be engaged with a container, and means for fastening the other end of said tie chain to said block.

3,980,192
PVC BOTTLES AND METHOD FOR THE MANUFACTURE THEREOF

Wolfgang Hafner, and Walter Hufnagel, both of St. Mang, Germany, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 464,155, April 25, 1974, abandoned, which is a continuation-in-part of Ser. No. 91,178, Nov. 19, 1970, abandoned, which is a continuation of Ser. No. 883,667, Dec. 22, 1969, abandoned, which is a continuation of Ser. No. 698,691, Jan. 18, 1968, abandoned. This application June 30, 1975, Ser. No. 592,081

Int. Cl.^{2} B65D *3/00*

U.S. Cl. 215—1 C **15 Claims**

1. A biaxially oriented hollow plastic article of thin-wall construction having improved tensile and bursting strength, elasticity and drop resistance, said article being made from a polyvinyl chloride composition containing less than 2.7% total additives and less than 1% thermal stabilizer and characterized by having a maximum oxygen permeability of 6 to 12 cc/liter and a maximum carbon dioxide permeability of 150 to 250 cc/liter during a 6 month storage period at ambient temperature.

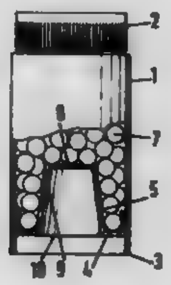
3,980,193
CHILD-RESISTANT CONTAINER

David Leslie White, Richmond, England, assignor to C.R.C. Packaging Limited, London, England

Filed Dec. 9, 1975, Ser. No. 639,143

Int. Cl.^{2} B65D *55/02, 85/56*

U.S. Cl. 215—205 **6 Claims**



1. A container comprising a hollow tubular member having an opening at one end and an un-removable cap formation at the other end, and an insert of resilient material having a hollow portion, open at one end and tapering towards a closed other end, for receiving the distal phalanx of an adult's finger, the insert being adapted to be tightly held in and to achieve an air-tight fit with the hollow tubular member when inserted therein and being removable therefrom by deformation by digital pressure.

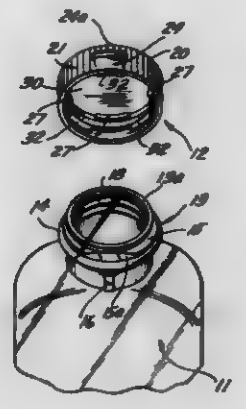
3,980,194
SAFETY CLOSURE CAP FOR A CONTAINER HAVING A NECK PORTION

Allan Costa, Melville Park Road, Melville, N.Y. 11746

Filed Jan. 22, 1976, Ser. No. 651,286

Int. Cl.^{2} B65D *55/02, 85/56;* A61J *1/00*

U.S. Cl. 215—223 **9 Claims**



1. A combination of a container having an elongate neck portion providing access to the space within the container and a safety closure cap for selectively opening and closing the neck portion, said combination comprising:

- a container made of essentially rigid material and having at its upper end a neck portion of circular configuration, said neck portion having on its outside a radially protruding rib of generally triangular cross-sectional configuration encircling the neck portion except for a flat portion subtending the peripheral outline of the rib;
- a closure cap having a circular top wall and an elastically deformable skirt extending therefrom, said skirt having on its inner surface a plurality of radially inwardly protruding first lugs disposed circumferentially spaced in a plane parallel to said top wall;
- a plurality of radially inwardly protruding second lugs disposed circumferentially spaced in a plane intermediate the plane of the first lugs and parallel thereto;
- a circular liner of form-retaining, moisture-absorbing material between the top wall and the second lugs supported by the latter, the diameter of said liner being substantially equal to the outer diameter of the neck portion at its top edge;

the radial outer width of the neck portion and the radial inner width of the skirt being correlated to define therebetween an annular gap and the maximal radial width of the rib on the neck portion and the inner radial width of the first lugs being correlated with each other and the width of the gap so that the rib and the first lugs overlap but can pass each other in either direction upon elastic deformation of the first lugs by applying axial pressure to the cap and the neck portion toward each or away from each other, placement of all the first lugs into positions underlying the rib relative to said top wall locking the cap to the neck portion and holding said liner in sealing engagement with the top edge of the neck portion and placement of any one of the first lugs in axial alignment with the flat portion of said rib releasing the respective first lug from the rib thereby permitting removal of the cap from the neck portion by applying an upward pull to the cap at the part thereof aligned with the flat portion of the rib on the neck portion.

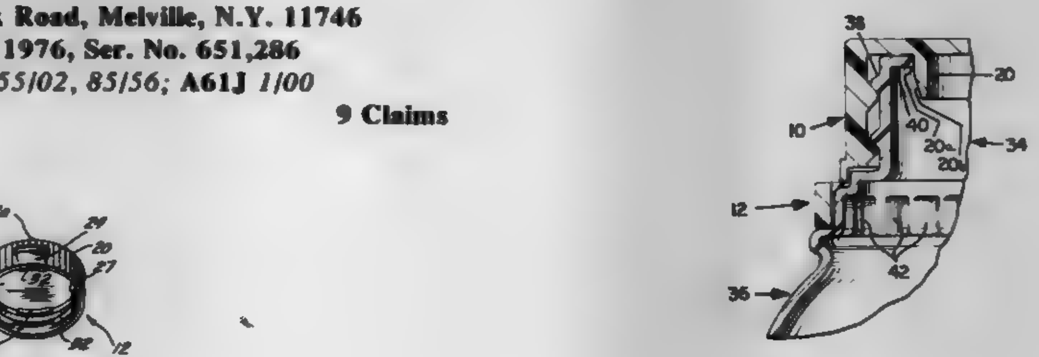
3,980,195
TAMPER-PROOF CLOSURE

William E. Fillmore, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 18, 1974, Ser. No. 524,386

Int. Cl.^{2} B65D *41/32*

U.S. Cl. 215—256 **2 Claims**



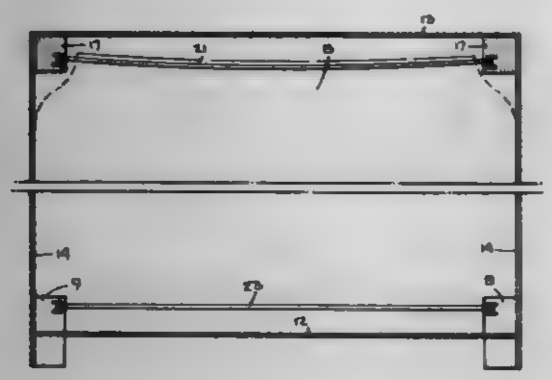
1. A tamper-proof closure for a container having an externally threaded finish portion terminating in an annular rim defining an opening into said container, said container further including a plurality of circumferentially spaced-apart projections located below and adjacent to said finish threads, which comprises, in combination:

- a closure body having internal threads for cooperative threadable engagement with said threaded finish;
- a main sealing ring, attached to the inner surface of said closure body and depending downwardly therefrom, for entry into said container opening and engagement with the inner surface thereof;
- a split, discontinuous, tamper-proof ring having a plurality of internal projections for cooperation with said container external projections to thereby define a one-way ratchet drive to prevent removal of said closure once said internal and external projections are engaged, said split, discontinuous tamper-proof ring terminating in two opposed facing free ends, said tamper-proof ring being severably connected to said closure body only at a root portion of said each of said internal projections; and
- a severable bridge connecting the opposed ends of said split tamper-proof ring and being positioned between said opposed ends, said severable bridge lying completely radially inward of the outer most radius of said tamper-proof ring.

3,980,196
LINING OF CONTAINERS FOR BULK CARGO

John T. Paulyson, London, England, and John P. Travis, Hunlocks Creek, Pa., assignors to United States Lines, Inc., New York, N.Y.

Filed May 21, 1975, Ser. No. 579,429
Int. Cl.² B65D *87/28, 87/34*
U.S. Cl. 220—1.5 **20 Claims**

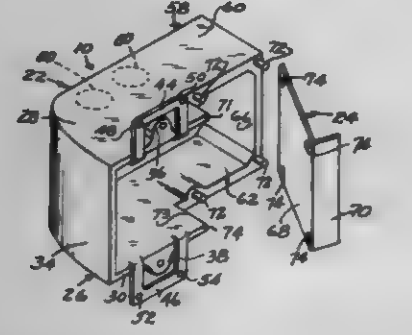


1. In a cargo container of the type having a floor, side walls, a roof, a rear doorway and a front wall, said front wall having a pair of laterally spaced portions resistent to displacement toward each other and disposed adjacent one of said floor and said roof, a liner bag adapting the container for receiving bulk cargo, and supporting means for supporting said liner bag within the container, comprising front supporting means including a flexible, load distributing cross member extending transversely and continuously substantially across said front wall of the container, said cross member being flexible in the sense that it is deformable under load applied in lateral direction along the length thereof to distribute said load substantially uniformly therealong, means securing said cross member at one of its ends to one of said portions and at its opposite end to the other of said portions, said liner bag having respective transversely extending upper and lower front end attachments areas, one of said liner front end attachment areas being connected to and extending along said cross member, and retaining means retaining the other of said liner front end attachment areas substantially adjacent to and extending transversely substantially across said front wall of the container at a height location spaced from said cross member whereby, when said container is tilted to unload said bulk cargo via its said rear doorway, said cross member retains the liner front end attachment area connected thereto in position substantially adjacent to said front wall and said cross member is held under tension.

3,980,197
ELECTRICAL OUTLET BOX

Gordon K. Ware, St. Charles, Ill., assignor to Ware Fuse Corporation, Chicago, Ill.

Continuation of Ser. No. 137,146, April 25, 1971, abandoned. This application Mar. 17, 1975, Ser. No. 559,355
Int. Cl.² H02G *3/08*
U.S. Cl. 220—3.6 **4 Claims**

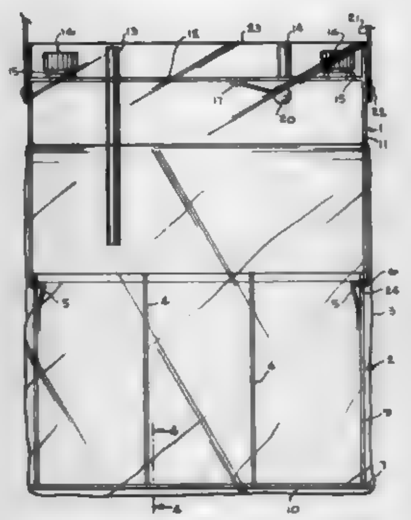


1. An electrical outlet box structure of the type described adapted to be assembled through an opening of predetermined width in a wall panel or the like, comprising tough resiliently yieldable plastic means forming a one-piece main box member providing sidewalls, a first end wall and a bottom wall of a first box portion, and also providing a second box portion with said side walls, a bottom wall and an end wall opposite said first end wall of said first box portion, said side and end walls having upper margins defining an opening opposite from said bottom wall; and a cover member joined to said main box member, said cover member providing a second end wall for said first box portion and a top wall for said second box portion, said second box portion being in open communication with said first box portion and including a top wall formed by said cover member offset inwardly from said upper margin, and tough resiliently yieldable plastic mounting elements integral with and projecting laterally from opposite sides of said first box portion and being yieldable for permitting manipulation by stretching and bending for accomplishing alignment with a desired cooperable portion of the wall panel or the like with which the box structure is being mounted.

3,980,198
EXPANDABLE CONTAINER

Carl B. Baumgarten, Houston, Tex., assignor to Gomco Surgical Manufacturing Corporation, Buffalo, N.Y.

Continuation of Ser. No. 420,890, Dec. 3, 1973, abandoned. This application July 7, 1975, Ser. No. 593,372
Int. Cl.² A61M *1/00;* **B65D** *11/18*
U.S. Cl. 220—8 **7 Claims**



1. A container for collecting liquids under vacuum comprising an upper section forming an upper compartment having an opening therein and a tube extending from said opening into said upper section for liquid ingress, an opening in said upper compartment for connection to a vacuum source, a lower section forming a lower enclosed compartment communicating with said upper section and slidably associated with said upper section, a latch attached to one of said sections and adapted to engage a portion of another section to lock said sections in an extended position relative to each other while slidably associated, said sections having structural rigidity, a fluid tight seal formed by a continuous flexible film sleeve position externally about said container over the juncture of said sections, said sleeve being hemetically sealed to each section.

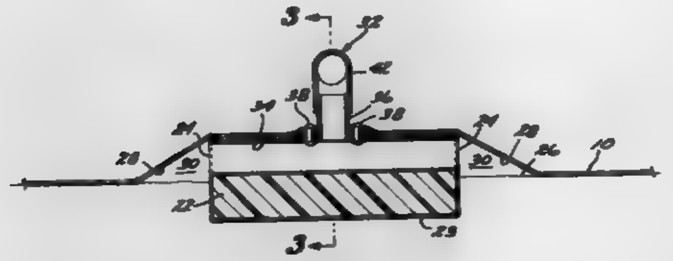
3,980,199
GAS VENTING FOR FLOATING COVER

William B. Kays, La Habra, Calif., assignor to Globe Linings, Inc., Long Beach, Calif.

Filed Aug. 16, 1974, Ser. No. 498,223
Int. Cl.² B65D *51/16*
U.S. Cl. 220—227 **7 Claims**

1. A floating cover for a liquid storage reservoir, said cover comprising:

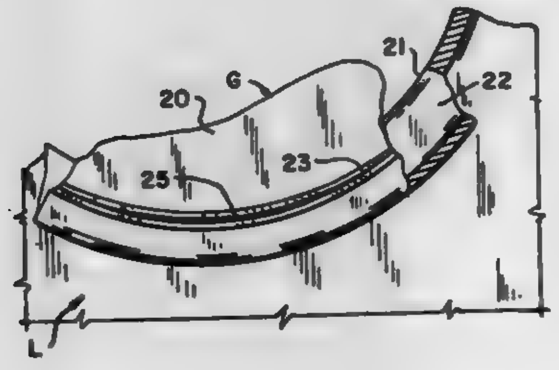
- a continuous sheet of flexible material lying upon the liquid in the reservoir in coextensive relationship therewith and attached to the reservoir sides;
- elongated blocks of flotation material attached to the underside of said cover and buoying the portions of said cover adjacent the edge margins of said blocks above the surface of said liquid, said cover extending downwardly from said edge margins into contact with the liquid surface in a natural drape by reason of the flexibility of the material of said cover whereby said edge margins and said portions of said cover define downwardly open collection spaces located above the surface of said liquid; and
- a gas collection manifold having means providing normally open communication between said collection spaces for receiving and carrying away gases collecting in said collection spaces.



3,980,200
SEALANT FOR PUSHDOWN GATE IN A CAN LID

Gerald B. Klein, 13451 Stuart Court, Broomfield, Colo. 80020

Continuation-in-part of Ser. No. 370,924, April 28, 1975, Pat. No. 3,905,513. This application Aug. 18, 1975, Ser. No. 605,602
Int. Cl.² B65D *41/32*
U.S. Cl. 220—268 **6 Claims**



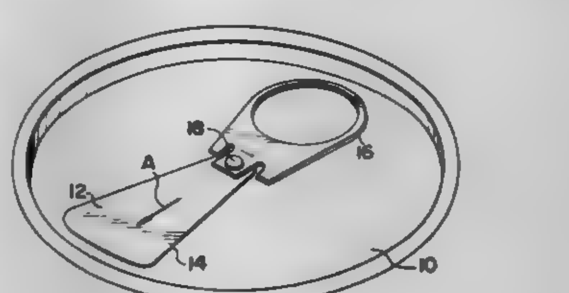
1. In a can lid having a panel below the lid and at an opening defined by an underfolded edge of the lid, said panel constituting a pushdown gate defined by a score line at the edge of the panel underneath the underfolded edge of the lid, wherein at least a substantial portion of said score line is lanced through to permit separation of the gate from the lid and to facilitate the tearing and severing of any remaining unlanced portion of the score line when the gate is pushed downwardly, the improvement comprising:

- a wax-like sealer-filler of a type which may be obtained as a settable fluid, extended continuously about the opening defined by the underfolded edge of the lid as a fillet, between the underfolded edge of the gate and the panel surface thereunder as a capillary layer and in the lanced opening as a plug.

3,980,201
POP-TOP CAN LID

Taniuchi Keiji, No. 6-7, 2-chome, Nishi-Koujiya, Ohta, Tokyo, Japan

Filed Mar. 11, 1975, Ser. No. 557,391
Claims priority, application Japan, July 4, 1974, 49-78209
Int. Cl.² B65D *41/32*
U.S. Cl. 220—270 **6 Claims**

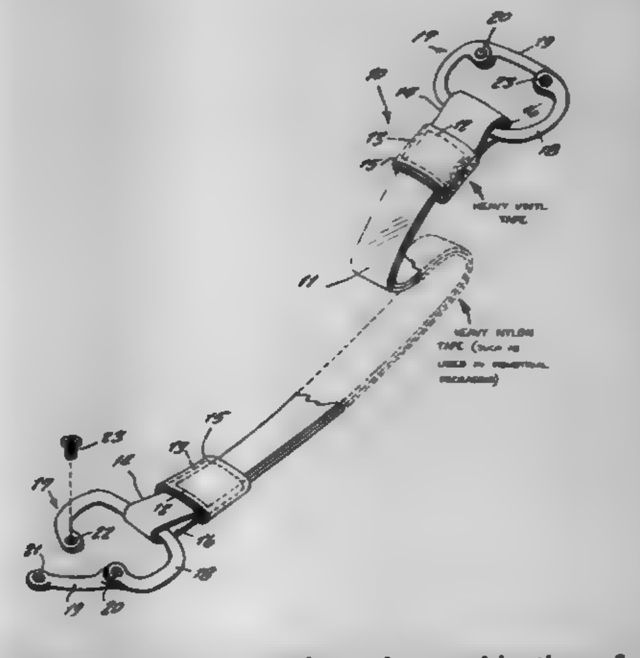


1. A safety pop-top can lid comprising a tearably detachable portion on the can lid which is severable therefrom along a tear line which defines the peripheral configuration of said detachable portion, said tear line comprising a continuous folded wall portion folded about a fold line, said wall portion extending inwardly of said can lid and having a generally V-shaped cross-section to form a pair of coextensive flange portions each of which is substantially normal to the plane of said can lid and has an inward-most end portion, said pair of flanges being joined to each other at said inward-most end portion thereof along said fold line, whereby severance of said detachable portion from said can lid along said fold line forms edges at a point most remote from said can lid, said edges remaining to be inwardly directed away from said can lid to minimize dangerous exposure of the flange edge which remains on the can lid after said detachable portion is removed.

3,980,202
GARBAGE CAN COVER RETAINER

Arnold Monyak, and George Specter, both of 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Dec. 2, 1975, Ser. No. 636,927
Int. Cl.² B65D *45/00;* **E05C** *19/18*
U.S. Cl. 220—318 **2 Claims**

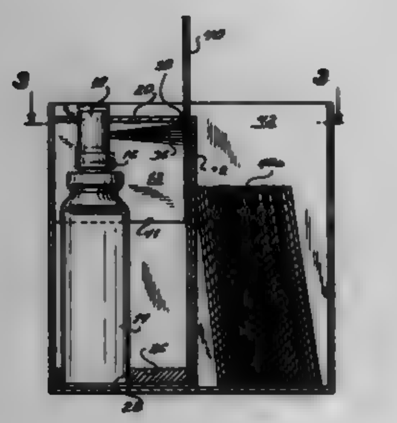


1. In a garbage can cover retainer, the combination of a garbage can, a removable cover placed upon an open upper end of said can, and a fastener attached at one end to a handle upon said cover and attached at its other end to one handle on a side of said can, said fastener comprising an elongated strap of several thickness of heavy nylon tape, opposite end of said tape each being secured by a heavy vinyl tape to a loop strap retaining a metal ring consisting of a C-shaped member pivot-

ally attached to a bar for closing said ring, and a removable screw securing said ring in a closed position.

3,980,203
FRAGRANCE DISPENSER

Harry S. Dearling, 25 E. 83rd St., New York, N.Y. 10028
Filed Nov. 25, 1974, Ser. No. 526,816
Int. Cl.² B05B *13/00*
U.S. Cl. 221—96 5 Claims

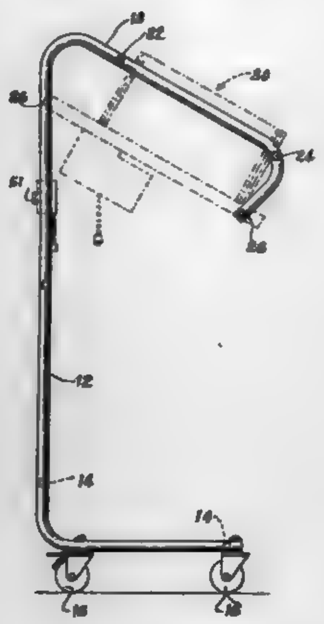


1. A fragrance dispensing device comprising a housing to retain a fragrance container having discharge valve means and means to actuate said valve means to discharge a predetermined quantity of said fragrance as a spray, partition means fixed within said housing to define a fragrance container receiving segment within said housing to positively retain and position the said fragrance container, removable carrier means adapted to receive said spray of said fragrance, means within said housing to position and orient said carrier means whereby when said discharge valve means on said container is actuated said spray of fragrance impinges on said carrier means within said housing, said partition means comprising a first vertically disposed partition member within said housing and a second horizontally disposed partition member secured between the top of said first partition member and a wall of said housing, and a pair of vertically disposed brace members having a vertical extent less than the vertical extent of said first partition member, said brace members being angularly disposed and connected between said first partition member and said wall of said housing thereby to define the fragrance container receiving area.

3,980,204
TRAY DISPENSER APPARATUS

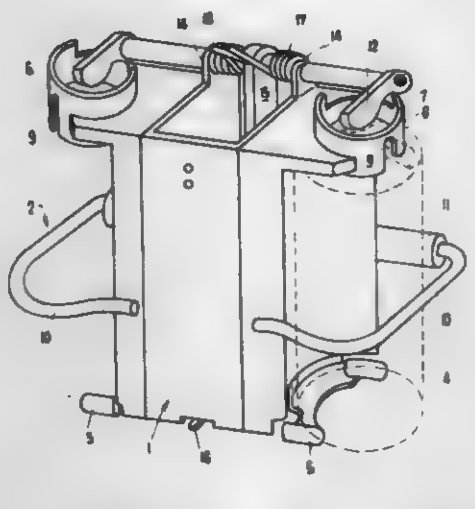
Warren DuBroff, Highland Park, and Ralph Ettlinger, Jr., Glencoe, both of Ill., assignors to Avant Industries, Inc., Wheeling, Ill.
Continuation-in-part of Ser. No. 529,846, Dec. 5, 1974, abandoned. This application Oct. 30, 1975, Ser. No. 627,205
Int. Cl.² B65H *3/28*
U.S. Cl. 221—222 15 Claims

1. An apparatus for dispensing trays comprising a lower supporting member for supporting the bottom edges of a plurality of trays, an upper supporting member, a dispensing opening defined between said supporting members, at least one dispensing element, said element comprising a short section being positioned adjacent said opening and engaging the bottom edge of at least the forwardmost tray, means for driving said element upwardly whereby said bottom edge is moved by said element off the lower supporting member and toward said dispensing opening, said movement resulting in the pivoting of said tray about said upper supporting member and in movement of said tray through said opening, and means for collecting said tray.



3,980,205
AEROSOL CAN DISCHARGING APPARATUS

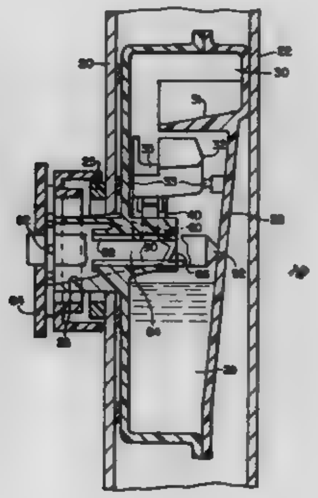
Robert Keith Smart, Sydney, Australia, assignor to Qantas Airways Limited, Queensland, Australia
Filed Mar. 20, 1975, Ser. No. 560,353
Int. Cl.² G04C *23/04*
U.S. Cl. 222—70 10 Claims



1. Aerosol can discharging apparatus for simultaneously discharging the contents of two aerosol cans, said apparatus comprising a tubular body, aerosol can locating and supporting means to releasably secure an aerosol can alongside each of two opposed sides of said tubular body, a shaft rotatably mounted at one end of said tubular body substantially perpendicular to the longitudinal axis of said tubular body, and rotatable between a first and a second position, said shaft extending past each said opposing side, having a plunger arm secured at each end, and having an indicator arm connected thereto and passing through said tubular body, wherein said shaft is manually rotatable against biasing means into said first position to move said plunger arms clear of said aerosol can locating and supporting means, with said shaft in said first position two aerosol cans are releasably securable alongside said two opposed sides to position the operating button at the top of each aerosol can in proximity to the corresponding plunger arm, and said shaft is movable at a predetermined time from said first to said second position whereby said plunger arms depress said operating buttons to simultaneously discharge the contents of said aerosol cans and the altered position of said indicator arm caused by said movement of said shaft provides an easily observable indication of the position of said plunger arms.

3,980,206
DISHWASHER WETTING AGENT DISPENSER

Charlie L. Hancock, Frazeysburg, Ohio, assignor to White-Westinghouse Corporation, Cleveland, Ohio
Filed Oct. 10, 1974, Ser. No. 513,916
Int. Cl.² G01F *11/10*
U.S. Cl. 222—156 7 Claims



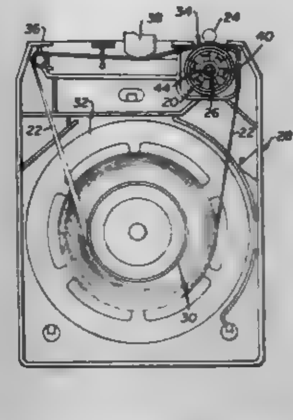
1. In a front-loading dishwasher having an in-door liquid dispenser of the type in which liquid in the dispenser container is transferred to a volume-metering dispensing element through movement of the door from an open, horizontal position to a closed, vertical position, an arrangement comprising: a single, open-ended, charge-discharge conduit disposed through the wall of said container which faces the dishwasher chamber when the door is in a vertical position for both charging said container with liquid and for discharging the liquid to the dishwasher chamber, said conduit having its end which opens into the chamber disposed at a level above a level of liquid therein predetermined to constitute a full charge in said container when said door is in a vertical position; a tiltable bucket having a hold and a dump position in said container serving as said volume-metering dispensing element, said bucket being located in said container in a position to dispense a predetermined charge of liquid into said conduit when said bucket is in a dump position; means interior of said container and including a portion of said container for trapping a quantity of the container carried liquid when the door is opened to at least a horizontal disposition and for delivering trapped liquid to and charging said bucket when said door is moved back to a closed vertical disposition; shaft means extending in subatantially sealed relation through an opening in the wall of said container and operatively connected to said bucket for positioning said bucket in said positions.

3,980,207
PINCH ROLLERS

Mario Maccaferri, 24 Refield St., Rye, N.Y. 10580
Filed Dec. 19, 1974, Ser. No. 534,435
Int. Cl.² B65H *17/22*
U.S. Cl. 226 — 186 37 Claims

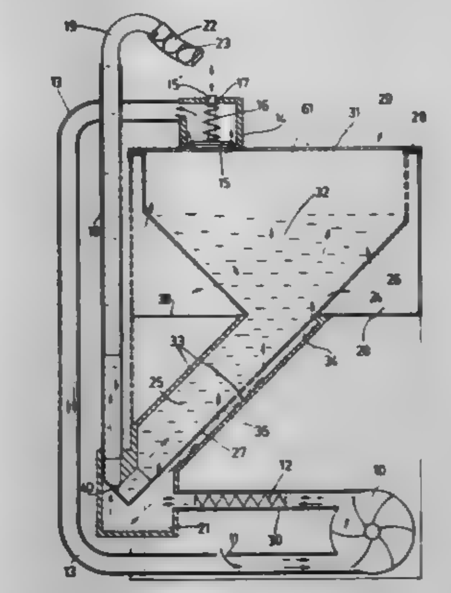
1. A pinch roller for moving a continuous web of the type which is placed in communication with a capstan, said roller comprising:

a. substantially hollow and cylindrical outer wall means for moving the web;
b. substantially hollow and cylindrical inner wall means for acting as an axle; said inner wall being, in a quiescent condition, substantially concentric with said outer wall; and
c. annular means, uniformly flexible throughout its circumference, interconnecting said inner and outer walls, such that, upon said roller receiving forces from the capstan, said outer wall being capable of moving to an eccentric position with respect to said inner wall.



3,980,208
FLUIDIZER FOR FEEDING FLOWABLE MATERIAL TO A PRODUCTION MACHINE

Karl Hehl, Arthur-Hehl-Strasse 32, 7291 Lossburg, Germany
Filed Feb. 25, 1975, Ser. No. 552,750
Claims priority, application Germany, Feb. 26, 1974, 2409128
Int. Cl.² B65D *83/06*
U.S. Cl. 222—193 17 Claims



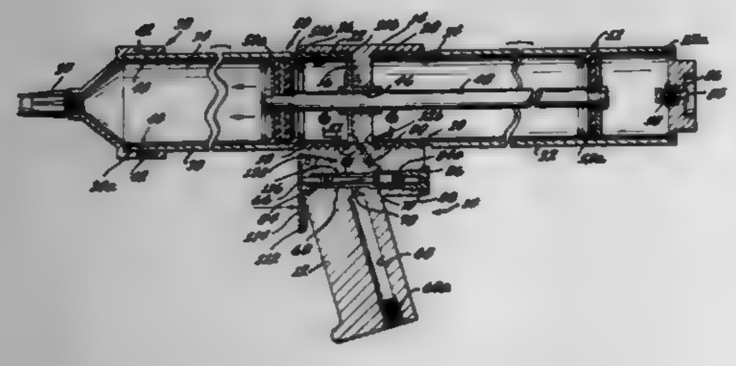
1. A device for feeding flowable material to a production machine, which device is particularly suitable for feeding plastic granulate to an injection molding machine, while being adaptable for drying and preheating of the granulate, the device comprising in combination:

a receptacle holding a supply of material ready for feeding to the production machine, said receptacle having a discharge opening;
a pneumatic material conveying unit including means for generating a flow of compressed air and a pneumatic material conveying line connected thereto;
a pickup chamber in the pneumatic conveying line communicating with the discharge opening of the receptacle so as to admit flowable material into the conveying line for transportation by the air flow toward the production machine;
a feed barrel connected to one end of the pneumatic conveying line at a distance from said receptacle, said barrel communicating with the production machine for delivery of the conveyed material thereto, while being adapted to accumulate said material therein until such delivery; the feed barrel having a wall portion that is permeable to air while retaining the accumulated material in the manner of a sieve, thus allowing the air flow to exit from the conveying line at this point; and

a bypass flow channel connected to the pneumatic conveying line upstream of the feed barrel so as to allow the pressurized air to exit therefrom, the bypass channel having a flow resistance therein which allows the air flow to pass only when, through the coverage of at least a major portion of the air-permeable wall of the feed barrel with accumulated material, the exit of air through the feed barrel encounters a flow resistance which is as high or higher than the flow resistance in the bypass channel.

3,980,209
BULK LOADING PLASTIC COMPOUND DISPENSING DEVICE

Roland W. Collar, Sun Valley, Calif., assignor to Rocan Industries, Pacoima, Calif.
Continuation of Ser. No. 423,070, Dec. 10, 1973, abandoned. This application May 16, 1975, Ser. No. 578,000
Int. Cl.² B67D *5/46*
U.S. Cl. 222—323 **3 Claims**



1. In an air powered gun adapted to be loaded with a plastic material such as a caulking compound from a bulk container thereof, and to dispose the same through a nozzle, said gun comprising:

A. A body gripping member, said member including first and second coaxial oppositely facing cylindrical receptacles, each of said receptacles being closed at one end and open at its other end, with their closed ends being disposed back-to-back to constitute a transverse wall, said wall having a coaxial orifice therethrough, and a handle extending radially from one side of said member and attached thereto;

B. A first cylindrical barrel, one end of which is insertable in the first of said receptacles for interlocking engagement therein, said barrel having interlocking means at its other end;

C. A removable dispensing cap including a nozzle, said cap fitting over the said other end of said first barrel and having means cooperating with said interlocking means to enable said cap to be removably secured on said other end of the first barrel;

D. A second cylindrical barrel one end of which is insertable in the second of said two receptacles for interlocking engagement therein, the other end of said second barrel being closed except for a small air relief orifice;

E. A first piston reciprocally slidable axially in the said first barrel;

F. A second piston reciprocally slidable axially in said second barrel;

G. A piston rod secured to said first piston and extending coaxially from said first piston in its position closest to said transverse wall slidably through the orifice therein, and secured to said second piston in its position most distant from said transverse wall;

An improved valving system in the handle and remainder of said body gripping member, said system comprising:

i. an air inlet passage connectable at the handle to an outside source of air under pressure and extending in at least a partial radial direction toward the common axis of the cylindrical receptacles;

ii. a first bore extending through the upper part of the said handle and transversely intersecting said air inlet passage, said first bore having a forward end through the leading edge of the handle, and an after end through the rear edge of the handle, said first bore being threaded and plugged by an axially orificed threaded fastening means at the after end of the first said bore and being of smaller diameter at its forward end;

iii. an air passage connecting said first bore to the first receptacle,

iv. first valve means slidable in said first bore and at least partially into the axial orifice in said threaded fastening means, and being actuable by the application of pressure from outside of said handle, said valve means being slidable from a first position wherein communication between said first bore and said air inlet passage on the one hand and said first receptable through said air passage on the other hand is blocked, and said first receptacle is vented to the atmosphere through said air passage and the orifice in said fastening means, to a second position wherein such venting is blocked and said air inlet passage and said bore are placed in communication with said first receptable through said air passage, thereby admitting air under pressure into said first receptacle to force said first piston down the first barrel toward the dispensing cap; said first valve means having an actuating stem projecting from the unplugged end of the first bore;

v. first spring means seated in said axial orifice in said threaded fastening means to bias said first valve means into said first position in the absence of the application of force applied externally to said projecting actuating stem;

vi. a second bore extending through the upper part of said handle transversely to both said air inlet passage and said first bore and displaced vertically from the latter, said second bore being threaded and plugged by an orificed threaded fastening means at one end thereof, and of a smaller diameter at its other end thereof;

vii. first air passage means connecting said air inlet passage to said second bore,

viii. second air passage means connecting said second bore to the said second receptacle; and

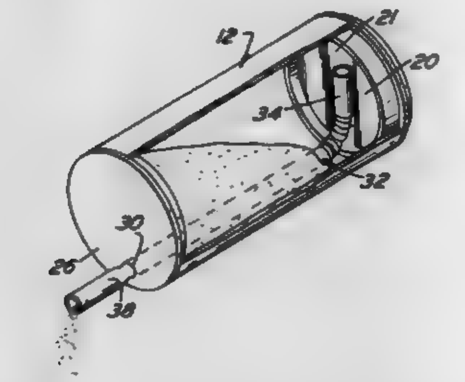
ix. second valve means, said second valve means being slidable in said second bore and actuatable by the application of pressure from outside said handle, said second valve means further being slidable from a first position wherein communication between said second bore and said first air passage means on the one hand and said second receptacle through said second air passage means on the other hand is blocked, and said second receptacle is vented to the atmosphere through said second air passage means and the orifice in said fastening means, to a second position wherein the last said venting is blocked and said first air passage means is placed in communication with said second air passage means, thereby admitting air to said second receptacle to force said second piston down the second barrel towards its closed end; said second valve means having an actuating stem projecting from the unplugged end of the second bore; and

x. second spring means seated in the axial orifice in the threaded fastening means plugging said second bore to bias said second valve means into its said first position in the absence of the application of force applied externally to the actuating stem projecting from the unplugged end of the second bore; and

xi. means whereby each of said projecting valve actuating means may be pushed into its respective bore to slide the valve means therein to its respective second position

3,980,210
MEASURING AND DISPENSING DEVICE FOR FLUENT MATERIAL

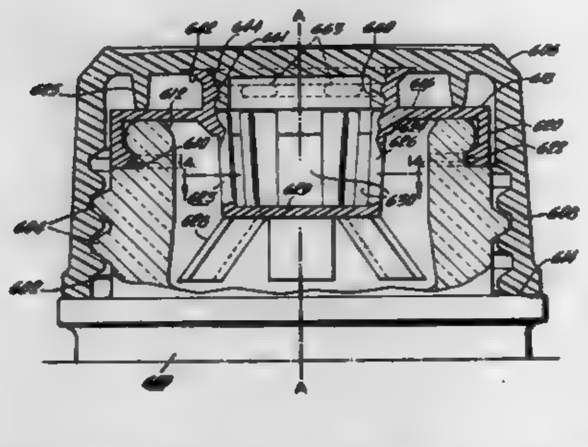
Alan E. Kligerman, 3540 Atlantic Ave., Atlantic City, N.J. 08404
Filed Mar. 24, 1975, Ser. No. 561,610
Int. Cl.² G01F *11/26*
U.S. Cl. 222—456 **5 Claims**



3. A measuring and dispensing device for fluent material, said device comprising a bottom wall, a side wall extending peripherally about and upstanding from said bottom wall, a top wall extending across said side wall, said top and bottom walls combining with said side wall to define an enclosed container, said top wall having a through aperture adjacent to one region of said side wall, a tubular member extending internally of said container along said one side wall region between said bottom and top walls, a lower tube extension communicating with the lower end of said tubular member and extending along said bottom wall terminating in an open end spaced from said one side wall region, and an upper tubular extension communicating with the upper end of said tubular member extending snugly through said aperture beyond said top wall, said tubular member and lower and upper extensions combining to define a fluent material passageway communicating between the interior and exterior of said enclosed container for discharge of contents therefrom, said lower tubular extension including a bellows for smooth mergence with the lower end of said tubular member.

3,980,211
POURING ADAPTOR-CLOSURE ASSEMBLY

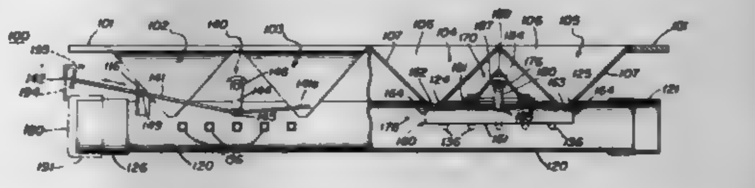
Phillip J. Owens, Exton, Pa., assignor to The West Company, Phoenixville, Pa.
Continuation of Ser. No. 287,872, Sept. 11, 1972, abandoned, which is a continuation-in-part of Ser. No. 106,356, Jan. 14, 1971, abandoned. This application Feb. 19, 1975, Ser. No. 551,011
Int. Cl.² B65D *25/48*
U.S. Cl. 222—478 **31 Claims**



1. The combination of a pouring adaptor and a closure for use on a container for liquid products, said adaptor comprising a central portion having means for securing the adaptor over the discharge opening in the container, a lower section depending into the container having a plurality of window-like discharge openings of a size and shape to control discharge of fluid therethrough and an upper head section terminating in an outwardly directed lip, said closure including a top and a skirt depending from the outer peripheral edge of the top with means for detachably mounting the closure over the open end of the container, said closure and adaptor having detachable retaining means normally maintaining the adaptor and closure assembled as a unit and operable to release the closure from the adaptor when the closure is removed from the container without unseating the adaptor, said detachable retaining means including at least one member depending from the top of said closure engageable with said upper section, said lip of the upper section engageable with the inside top surface of said closure when the closure and adaptor are interengaged to provide a seal therebetween.

3,980,212
HOPPER UNLOADING SYSTEM

Edmund R. Aller, Portage, and Richard W. Arndt, Michigan City, both of Ind., assignors to General American Transportation Corporation, Chicago, Ill.
Filed Nov. 20, 1974, Ser. No. 525,364
Int. Cl.² B65G *53/40*
U.S. Cl. 222—485 **19 Claims**



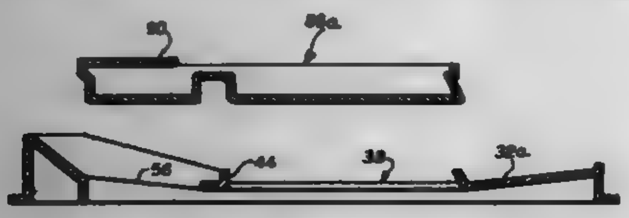
1. An unloading system for a hopper for holding granular lading comprising a hopper having a discharge opening in the lower portion thereof, a discharge tube disposed below said hopper and communicating intermediate its ends with the opening in said hopper for receiving granular lading from said hopper into said discharge tube, a part-tubular slider mounted within said discharge tube and adjacent to said opening, support structure carried by said discharge tube and extending inwardly therefrom and carrying the lower edges of said slider thereon to position said slider in the upper portion of said discharge tube, said slider being shiftable longitudinally within said discharge tube upon said support structure between a storage position covering said opening and a discharge position uncovering at least a portion of said opening, said slider in said storage position preventing discharge of granular lading from said hopper into said discharge tube and said slider in said discharge position permitting discharge of granular lading from said hopper into said discharge tube, and mechanism for moving said slider between said storage position and said discharge position.

3,980,213
COVERS FOR PAINT CANS

Richard A. Ramsay, Babylon, N.Y., assignor to Three Dimensional Circuits, Inc., Plainview, N.Y.
Continuation-in-part of Ser. No. 369,380, June 12, 1973, abandoned. This application Sept. 12, 1974, Ser. No. 505,442
Int. Cl.² B65D *25/48*
U.S. Cl. 222—485 **4 Claims**

1. Covering means for an open paint can having a rim about its top, said covering means comprising a cover and sealing means therefor, said cover comprising a generally planar surface having a peripheral lower portion depending therefrom and adapted to snugly engage the rim of the top of the paint can, said cover being provided approximately centrally of said surface with a brush opening having a pair of parallel straight edges defined by walls extending up from said surface for wiping both faces of a brush moved back and forth in said brush opening, one of said walls being undercut whereby paint

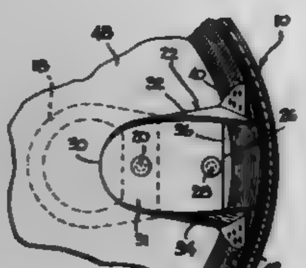
thereby wiped off a brush will flow back into said paint can, said cover being further provided with an arcuate raised pouring lip at one area along the periphery of said surface and with an arcuate bounded pouring opening leading to said lip, said cover being contoured in its upper surface so that any paint thereon will flow by gravity toward and into said brush opening and said pouring opening, said sealing means having a generally planar first portion conforming in contour to said brush opening, a second planar portion conforming to said pouring opening, and a peripheral wall about said first and second portions for contact with the edges of said openings, removal of said wall from said openings permitting access to the inside of said can.



3,980,214
CONTAINER WITH CONCEALED POURING SPOUT HAVING SEALING FLANGES

Kenneth J. Dahlquist, Rte. 1, Box 728, Mount Shasta City, Calif. 96067

Filed Apr. 18, 1975, Ser. No. 569,548
Int. Cl.² B65D *41/32*
U.S. Cl. 222—541 3 Claims



1. In combination:

a container having a pull tab type tear strip with a pull member attached thereto to produce an opening in said container upon removal of said tear strip;

a pouring spout attached to said tab, stored inside said container, and contoured to be pulled through said opening from the inside to the outside of said container when said pull member is pulled, including a hinge on one end of said opening for said spout;

the trailing edge of said spout having a pair of sealing flanges extending outward from the side edges of the trailing end of said spout to contact the inner surface of said container and to seal the edges of the open spout against fluid leakage, each of said sealing flanges having a plurality of openings formed therein.

3,980,215
TENNIS BALL HOLDER

Harvey Schwarzbauer, 1312 Whytecliff Road, Palatine, Ill. 60067

Filed Sept. 25, 1974, Ser. No. 509,226
Int. Cl.² A45C *11/00*
U.S. Cl. 224—5 D 1 Claim

1. A portable tennis ball holder formed of wire, comprising:

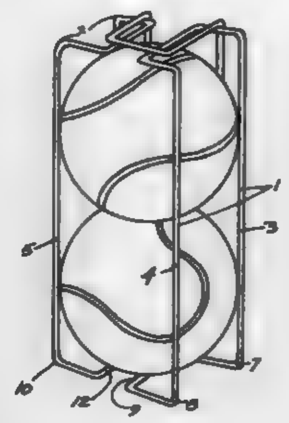
a top wire bracket,

a pair of flexible wire gripper members facing each other and each having a top end bent inwardly and rigidly affixed to said top wire bracket at opposite sides thereof to be supported thereby and having free ends at the bottom edge, each of said free ends being bent inwardly to form a seat at the lower extremity for retaining a tennis ball between said pair of flexible wire gripper members,

said gripper members facing each other in parallel relation and being spaced apart by a distance which is less than the diameter of a tennis ball to be held therebetween,

each of said gripper members including a pair of parallel longitudinal segments spaced apart by a distance which is less than the diameter of the ball thereby allowing a portion of the ball to protrude therethrough,

the edges of said gripper members defining a pair of substantially equal sized rectangular end openings at opposite ends of the holder to permit a pair of tennis balls to be inserted and removed therefrom,



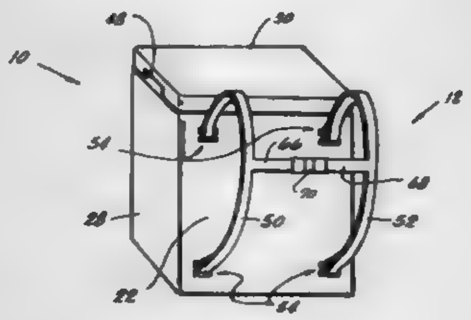
said gripper members having sufficient resiliency to permit tennis balls to be readily inserted and removed through said end openings, and

said top wire bracket having a portion extending parallel to said flexible gripper members for receiving the belt of a player therebetween, whereby said flexible gripper members retain vertically stacked tennis balls and said free ends permit the ready removal of the lower stacked ball allowing the upper stacked ball to drop freely to the lower position at said seat.

3,980,216
INSULATED CONTAINER

Gary G. Nye, 1057 N. Old Manor, Wichita, Kans. 67208

Filed Aug. 5, 1974, Ser. No. 494,876
Int. Cl.² A45F *3/00*
U.S. Cl. 224—8 R 3 Claims



1. A container, comprising,

a. a housing having a bottom with integral upright sidewalls and endwalls to form a cavity therebetween said housing being open on one end portion thereof,

b. a top removably mounted with said sidewalls and endwalls on said open end portion by a means to mount same,

c. said housing having rib members in interior corners thereof at junctures of said sidewalls and said endwalls, said rib members extending upward from said bottom and having their upper ends in a center portion of said housing.

d. a shelf removably mountable in said container, said shelf when mounted in said container resting on the upper ends of said rib members, and

e. a carrying strap means mounted on said housing having a pair of carrying straps formed in separate loops on opposed sides of one of said sidewalls, said carrying strap means having strap mounts integrally formed in an outside portion of one of said sidewalls in a spaced relation at corner portions of same said sidewall, said strap mounts each have a recessed portion in said sidewall and a bar portion in a spaced relation in said recessed portion and say carrying strap each have their opposite ends secured to said bars on one side portion of said container,

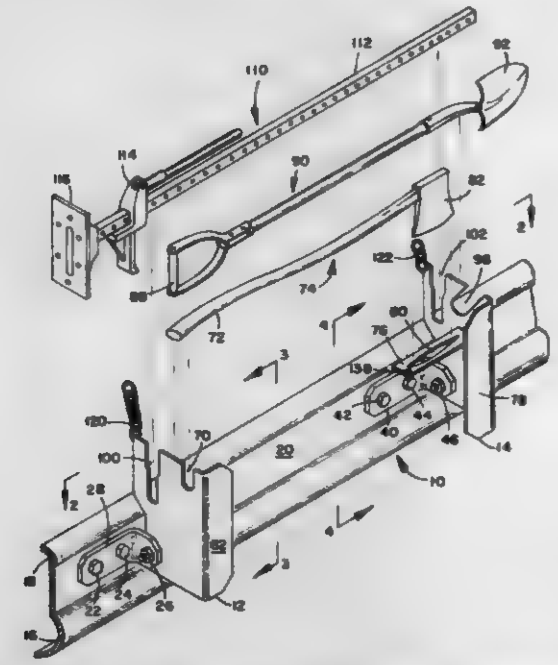
f. said shelf has a substantially flat center portion with raised portions oppositely extending perpendicularly from opposed faces of said center portion on opposed end portions of said center portion, and said shelf being alternately mountable in said container in one position with one of said raised portion resting on said upper end of one of said rib members or in a second position with the face of said shelf opposite to said first named raised portion thereon resting on said upper end of said one of said rib members;

said container is constructed and adapted to in use be carried by said carrying strap means on a person's back with said loops being around the person's shoulders.

3,980,217
VEHICLE TOOL RACK

Merritt K. Yochum, 4847 E. Nye Lane, Carson City, Nev. 89701

Filed Feb. 24, 1975, Ser. No. 552,768
Int. Cl.² B60R *9/06, 11/06*
U.S. Cl. 224—42.04 6 Claims



1. A bumper guard for holding hand tools on the bumper of a vehicle comprising:

a first bumper guard having openings therein adapted to receive one end of the hand tools whereby the hand tools are laid within the openings internal to the outer portion of said bumper guard surface so that any intervehicular contact will be between the bumper guard and the other vehicle without contacting the hand tools and having bolt fastening means for securing said guard to a bumper;

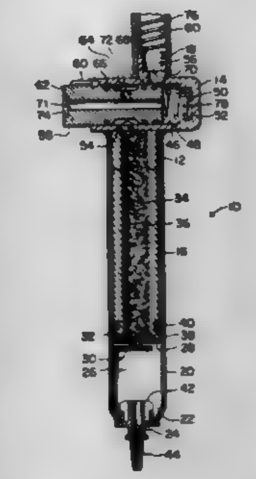
a second bumper guard for receiving the other end of the hand tools received within said first bumper guard and having bolt fastening means for securing said guard internal to the outer portion of said bumper guard surface so that any inter-vehicular contact will be between the bumper guard and the other vehicle without contacting the hand tools to a bumper; and,

a flexible connector secured to at least one rack element; and an opening on said rack element to receive a lock through the opening and said flexible connector for securing the tools in at least partially wrapped relationship by said connector to avoid removal of the tools from said rack.

3,980,218
VACUUM DESOLDERING SYSTEM

William S. Fortune, 14250 Dearborn St., Panorama City, Calif. 91202

Filed Aug. 4, 1975, Ser. No. 601,277
Int. Cl.² B23K *3/00*
U.S. Cl. 228—20 7 Claims



1. Hand held and hand operated vacuum desoldering apparatus of the character to be connected to and driven by an external vacuum source, the apparatus comprising:

a tubular body member having a forward, end and a rearward, end and a barrel portion interposed therebetween;

tip means removably carried by said body member contiguously to its said forward end and having a central bore provided therethrough for drawing molten solder into said barrel portion of said tubular body member; connector means carried by said body member for interconnecting said body member and the external vacuum source;

trigger valve means carried by said body member contiguously to said rearward end for time selectively interconnecting said connector means with said barrel portion of said tubular body member, said trigger valve means including

trigger housing element affixed to said tubular body member,

air inlet duct means interconnecting said housing element with said barrel portion,

air outlet duct means interconnecting said housing element with said connector means,

finger operable, movable valve body means carried by said housing element for selectively and alternatively isolating said air outlet means and interconnecting it with said air inlet means, and

filter means disposed in said barrel portion for blocking foreign substance from traversing said air inlet means,

said trigger housing element further comprising a valve bore having a predetermined axis defining a direction of operating motion of said finger operable valve body means axially movably disposed therewithin,

said inlet and outlet duct means being spaced apart along said axis by a distance a, said movable valve body means comprising,

valve spool element having a normal, outlet duct closed, axial disposition and a triggered, outlet-inlet ducts interconnected, axial disposition,

first and second sealing rings carried by said spool element and spaced by an axial distance b which is greater than a, said first sealing ring being axial disposed to the side of said inlet duct opposite from said outlet duct irrespective of whether said spool element is in its said normal or triggered disposition, said second sealing ring being disposed on the side of said outlet duct toward said inlet

> duct when said spool element is in its said normal disposition, thereby to isolate said ducts, and being disposed on the side of said outlet duct opposite from said inlet duct when said spool element is in its said triggered disposition, and said spool element being formed to provide interconnection means between said first and second sealing rings whereby said inlet and outlet ports are interconnected when said spool element is in its said triggered disposition, and third sealing ring carried by an inserted end of said spool element and disposed axially to the side of said outlet duct away from said inlet duct irrespective of whether said spool element is in its normal or triggered disposition,

said valve bore of said trigger housing element being formed to provide a trigger servo booster chamber between said inserted end of said spool element and said trigger housing element, and said spool element being formed to provide a first vent duct between its said inserted end, said booster chamber, and said interconnection means of said spool element between said first and second sealing rings.

3,980,219

SOLDER BATH APPARATUS

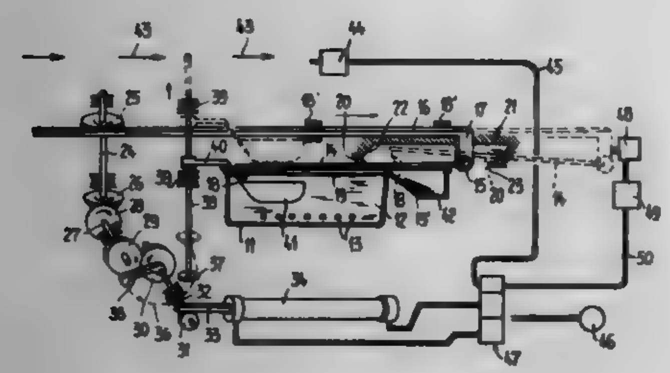
Hans Schmid, Ruschlikon, Switzerland, assignor to Meteor AG, Ruschlikon, Switzerland

Filed Apr. 16, 1975, Ser. No. 568,656

Claims priority, application Switzerland, Apr. 19, 1974, 5422/74

Int. Cl.² B23K *1/00, 1/08*

U.S. Cl. 228—34 6 Claims



1. Solder bath apparatus comprising an open vessel for containing molten solder, a movable lid for covering said vessel, drive means for sliding said lid between an uncovered and covered position relative to said vessel in a plane that is substantially parallel to the surface of the molten solder in said vessel, a slag stripper fixed to said lid to be movable therewith and depending rigidly therefrom to extend at least partially into said molten solder so that said slag stripper will remove slag skin from the surface of the molten solder when said lid is moved from said covered to said uncovered position relative to said vessel, a ladle, ladle carrying means actuatable by said drive means for carrying said ladle into said vessel and the molten solder therein upon each movement of said lid to said covered position and out of said vessel upon each movement of said lid to said uncovered position.

3,980,220

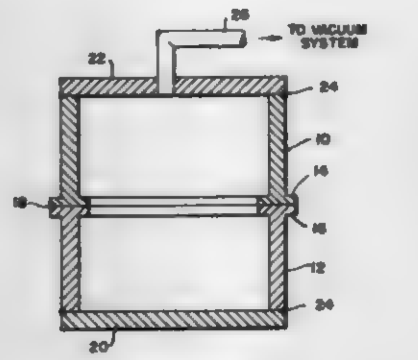
METHOD OF FABRICATING LARGE TITANIUM PRESSURE HULLS

Robert J. Wolfe, Arnold; Charles A. Zanis, Bowie, and Louis F. Aprigliano, Annapolis, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 5, 1974, Ser. No. 529,991

Int. Cl.² B23K *19/00*

U.S. Cl. 228—160 4 Claims



1. The method of welding large annular sections of a homogenous material which comprises:

preparing the mating surfaces between the sections to achieve intimate contact between the mating surfaces;
assembling the sections with the mating surfaces in contact;
sealing the assembled sections to form an air tight container;
evacuating the container in the normal atmosphere to apply atmospheric pressure to the mating surfaces;
applying heat in place in the normal atmosphere to the area adjacent the mating surfaces only to diffusion weld the sections together.

3,980,221

PACKAGE CUSHIONING STRUCTURE

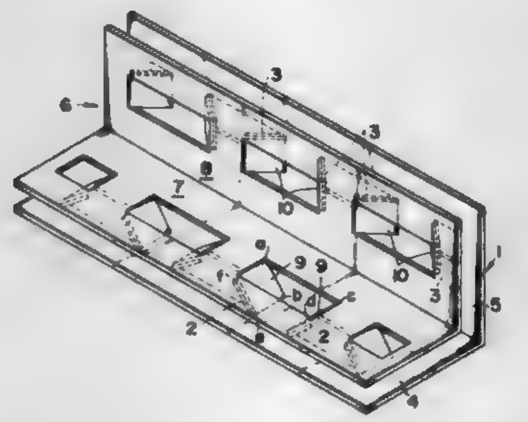
Kikuji Okada, 3-11, 5-chome, Asagayakita, Suginami, Tokyo, Japan

Filed Dec. 27, 1974, Ser. No. 536,738

Claims priority, application Japan, Dec. 28, 1973, 48-144655

Int. Cl.² B65D *5/50;* F04B *2/28*

U.S. Cl. 229—14 C 14 Claims



1. A package cushioning structure comprising an outer backing board bent at a given angle into two face portions and containing a plurality of spacer fins, and an inner contact board bent into two face portions which are disposed substantially parallel to those of the outer board, said inner contact board containing a plurality of matching spacer fins, said fins of the inner and outer boards being folded aslant at a given angle with respect to said boards, said fins being superimposed and joined together back to back to provide an integral structure.

3,980,222

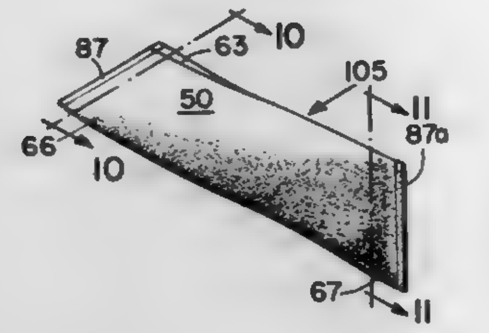
LONGITUDINALLY PARTITIONED TUBULAR BODY

Charles R. Hood, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 415,467, Nov. 13, 1973, abandoned. This application June 11, 1975, Ser. No. 586,103

Int. Cl.² B65D *5/06, 31/12*

U.S. Cl. 229—22 3 Claims



1. A longitudinally partitioned, two compartment, tetrahedral-shape package comprising a tubular body of flexible material, said body having a longitudinally extending twisted chordal partition wall disposed within a tubular wall, the ends of said body being sealed along two transverse seams, said seams comprising oppositely disposed unpleated band-shape end portions of said tubular wall which are oppositely folded flat with respect to adjacent unpleated and unfolded chordal end-edge portions of said partition wall.

3,980,223

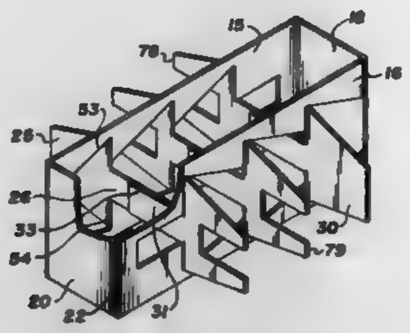
CELLULAR STRUCTURE FOR CARTONS

John J. Curran, 4470 Granville St., Vancouver, British Columbia, Canada (V6H 3L8)

Filed June 2, 1975, Ser. No. 582,933

Int. Cl.² B65D *5/48*

U.S. Cl. 229—28 R 9 Claims



1. A cellular structure for use in cartons and the like, comprising first and second parallel wall sections movable longitudinally relative to and towards and away from each other and adapted, when the cellular structure is in its erected position, to be spaced from the walls of the carton and the like to divide the carton and the like into three longitudinal compartments including a central longitudinal compartment defined between the first and second parallel wall sections, outer divider flaps cut from and hinged to the wall sections each extending longitudinally from a hinge line extending transversely of its wall section and spaced from the ends thereof, said flaps being swingable outwardly relative to their respective wall sections, flap inner cut from the wall sections each connected to an outer flap at the hinge line thereof and extending away from said outer flap, said inner flaps swinging inwardly when their respective outer flaps swing outwardly, and means securing opposed inner flaps of the two wall sections together to cause said connected inner flap to swing inwardly and the outer flap connected thereto to swing outwardly to divide said three longitudinal compartments into a plurality of cells when said wall sections are moved longitudinally relative to each other.

3,980,224

OPENING MEANS FOR CONTAINERS AND PACKAGES

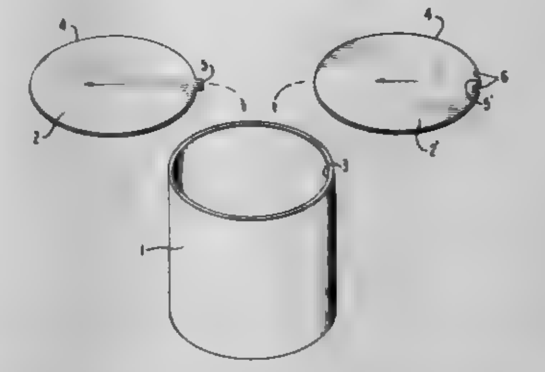
Jyunichi Yasuda, Tokyo, Japan, assignor to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Sept. 13, 1974, Ser. No. 505,695

Claims priority, application Japan, Sept. 13, 1973, 48-102654

Int. Cl.² B65D *5/70*

U.S. Cl. 229—51 TS 10 Claims



1. An opening means for containers and packages comprising a sheet containing at least one crystalline thermoplastic high molecular weight resin layer, said resin layer being a laminated composite comprising a uniaxially oriented film and a biaxially oriented film, and a tab integrated with said sheet to be pulled up in the uniaxially oriented direction, the sheet being applied to a part of the container and package to be opened.

3,980,225

SELF-STANDING BAG

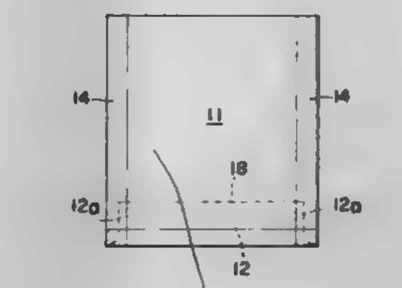
Osamu Kan, Kyoto, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1975, Ser. No. 601,506

Claims priority, application Japan, Dec. 25, 1974, 50-3574

Int. Cl.² B65D *33/00*

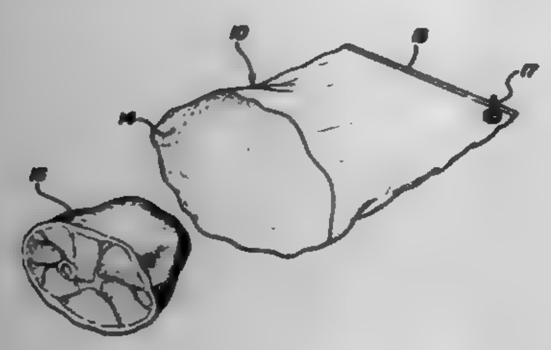
U.S. Cl. 229—57 3 Claims



1. A self-standing bag comprising identical first and second side wall sheets each having upper, lower, first-side and second-side edges respectively in opposed relation to corresponding edges of the other side wall sheet, and a bottom wall sheet having two opposite long edges integrally and contiguously joined respectively to the lower edges of said first and second side wall sheets and two opposite short edges respectively recessed from the first and second side edges of said first and second side wall sheets thereby to form cutouts of a specific width, said bottom wall sheet being folded inwardly along the longitudinal centerline thereof into an inverted Vee shape in cross section and being interposed between the first and second side wall sheets to form a bag bottom recessed inwardly from the outside, the first and second side wall sheets being heat-fused together along regions at the first-side and second-side edges thereof to form therebetween lap joints of a width greater than said width of said cutouts, said short edges of the bottom wall sheet covered by said width of the lap joints being heat-fused with the adjoining surfaces of said side wall sheets.

3,980,226
EVACUATEABLE BAG

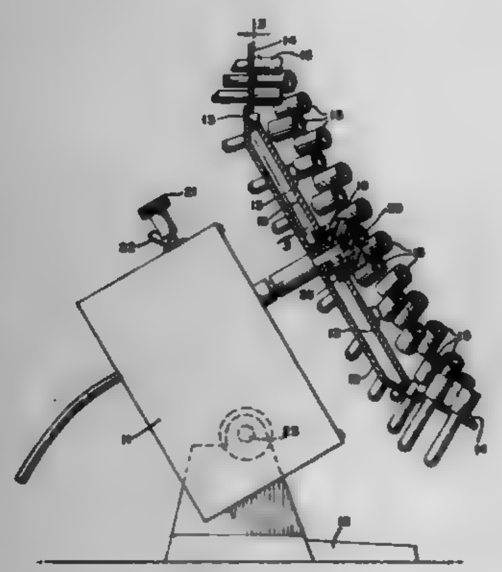
Charles F. Franz, 125 W. Jefferson Ave., Wheaton, Ill. 60187
Filed May 5, 1975, Ser. No. 574,602
Int. Cl.² B65D *31/14*
U.S. Cl. 229—62.5 **5 Claims**



1. A casing for the home packaging of articles by a consumer comprising a bag of thin, flexible plastic material, said bag having a predetermined width and including a full width article receiving opening at one end thereof through which articles can be inserted and a sealed opposite end, removably replaceable means for closing and releasably sealing the article receiving opening of the bag, said bag after being sealed being collapsible for substantially conforming to the shape of the article therein, oral evacuation means connected with said bag for enabling a user orally to withdraw air entrapped in said bag and cause said thin, flexible material substantially completely to conform to the shape of the article therein, said oral evacuation means including a short tube extending from said bag at a location toward said opposite end for enabling evacuation of the bag substantially regardless of the extent to which the bag has been filled with an article by a user, and a closure removably replaceably engageable with an end of said tube for sealing the tube.

3,980,227
ADJUSTABLE ROTATOR FOR FLUID SAMPLES

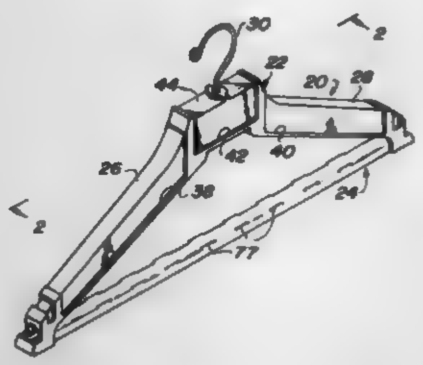
Michael E. Witty, El Toro; Dennis F. Shine, Huntington Beach, and Dennis J. Reindorf, Santa Ana, all of Calif., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Nov. 8, 1974, Ser. No. 522,201
Int. Cl.² B04B *9/10*
U.S. Cl. 233—23 R **7 Claims**



1. In a rotator for agitating or centrifuging liquid samples, the combination of
  a shaft, means to rotate said shaft about its axis, a circular disk concentrically mounted on said shaft so as to rotate with said shaft,
  a concentric flared annular flange extending from the edge of said disk,
  a series of retaining pins spaced along said flange, said retaining pins being located so that at least some are equally spaced from each other and equally spaced from the said axis,
  arcuate carriers hung on said retaining pins,
  each of said carriers having at least two mounting holes so spaced as to match the spacing of said at least some of said retaining pins,
  said carriers when hung on said retaining pins extending outboard of said flared flange,
  and a series of holes in the outboard portion of said carriers, said holes adapted to receive and support cuvettes for holding liquid samples.

3,980,228
PLASTIC HANGER

Max Bisk, 1100 Elbridge St., Philadelphia, Pa. 19111
Filed Aug. 14, 1975, Ser. No. 604,679
Int. Cl.² A47J *51/091*
U.S. Cl. 223—88 **5 Claims**

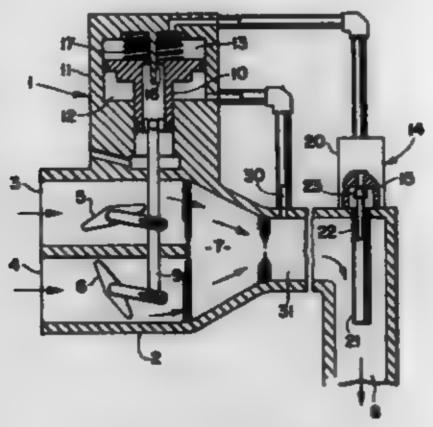


1. A garment hanger having a first member with a pair of shoulders which extend in opposite directions laterally from a supporting member, said shoulders also extending downwardly from said support member and each having at the free end thereof a fastening element, and a trouser bar, said bar being elongated and having at each end thereof a fastening element, each of said shoulders being hollow and of U-shaped cross-section including a front, rear and top wall, each of said fastening elements of said shoulders including a bridging member extending between the front and rear walls of said shoulders at the end thereof, and an opening formed by the termination of said top wall at a point intermediate of the end of said shoulder, said top wall having a flange at said intermediate portion which extends between said front and rear wall so that a socket is formed between said flange and said bridging member, said trouser bar being secured to said shoulder by insertion of the ends of said trouser bar into said openings with said ends of said trouser bar being supported by said bridging members.

3,980,229
TEMPERATURE CONTROLLED REGULATOR

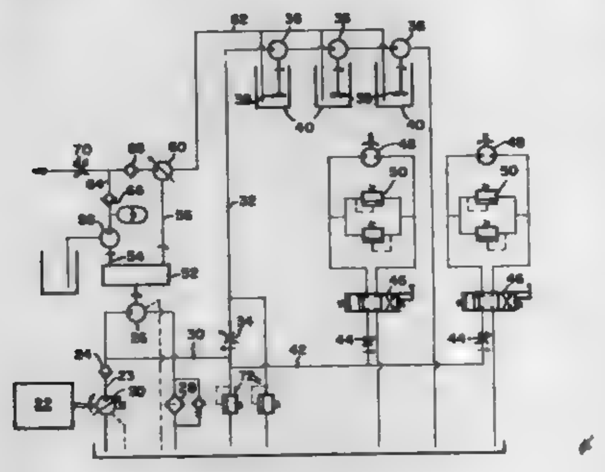
Hubert Q. Stedman, Jr., Santa Ana; Gerald G. Steele, Mission Viejo, and Robert P. Smith, Newport Beach, all of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Apr. 1, 1975, Ser. No. 564,064
Int. Cl.² G05D *11/16*
U.S. Cl. 236—12 A **9 Claims**

1. A temperature controlled regulator comprising a housing having an outlet for discharge of a mixture of fluids at a predetermined temperature; valve means for proportioning the flow of different temperature fluids into said housing to maintain such predetermined temperature of the fluid mixture; valve actuating means in said housing operatively connected with said valve means and defining with said housing a first chamber which is exposed to the pressure of the fluid mixture in said housing downstream of said valve means, and a second chamber of larger area than said first chamber which is exposed to the pressure of the fluid mixture further downstream of said valve means via a variable area orifice, said second chamber having a pressure control orifice communicating said second chamber with ambient pressure externally of said housing; and temperature sensing means in said housing exposed to the fluid mixture in said outlet and operative upon decrease or increase of the temperature of said mixture below or above said predetermined temperature to decrease or increase the size of said variable area orifice thus to vary the pressure drop thereacross whereby variation of the fluid pressure forces in said first and second chambers is effective through said valve actuating means to actuate said valve means for maintaining the fluid mixture at said predetermined temperature.



3,980,230
SPRAYER-MIXER

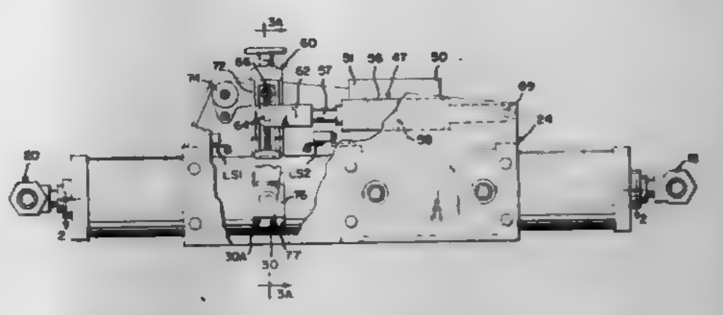
Orvi C. Pringle, 8630 - 220 SW., Edmonds, Wash. 98020, and John Beheyt, 10021 - 126 NE., Kirkland, Wash. 98033
Continuation of Ser. No. 397,216, Aug. 14, 1973, Pat. No. 3,865,308. This application Jan. 6, 1975, Ser. No. 539,040
The portion of the term of this patent subsequent to Feb. 11, 1992, has been disclaimed.
Int. Cl.² B05B *7/25*
U.S. Cl. 239—61 **3 Claims**



3. A fluid mixing and spraying system including a positive displacement, pressure compensated hydraulic pump having a variable volumetric outflow including an operating volumetric outflow condition and a zero volumetric outflow condition, a spray nozzle, means for pumping water to the spray nozzle, means for pumping solution to the spray nozzle, hydraulically powered drive means for powering the water and solution pumping means, and hydraulic conduit means coupling the drive means to said hydraulic pump, said water and solution pumping means, hydraulically powered drive means, and hydraulic conduit means forming a power link directly coupling the spray nozzle to said hydraulic pump for placing said hydraulic pump in said zero volumetric outflow condition when said spray nozzle is closed for placing the system in a passive condition.

3,980,231
PROPORTIONING SPRAYER DEVICE

John M. Trondsen, Seattle, Wash., assignor to Eastside Spraying Service Inc., Kirkland, Wash.
Filed Apr. 24, 1975, Ser. No. 571,439
Int. Cl.² B05B *7/26*
U.S. Cl. 239—61 **5 Claims**



1. A proportioning sprayer device for a mobile vehicle having a main fluid supply and an additive fluid supply, a hose and a spray shut-off nozzle, and main fluid and additive fluid pumping means coupling said supplies to said nozzle, variable volume, constant, pressure positive displacement hydraulic power supplying means powering said pumping means, said pumping means comprising, a main piston powered by said power supplying means, a main fluid supply piston-cylinder assembly having a main fluid piston coupled to said main piston for positively pumping main fluid in response to movement of said main piston and an additive fluid piston-cylinder assembly having an additive piston mechanically and adjustably slaved to said main fluid piston for providing adjustable accurate metering of the additive fluid into the main fluid under control of the shut-off nozzle, said main fluid piston-cylinder assembly including a main rod, said additive fluid piston-cylinder assembly including pivot arm means slidably coupled to said main rod for oscillation with said main rod about a fixed pivot axis, an additive rod coupled to said additive piston, said additive rod having a free end, means adjustably coupling the free end of said additive rod to said pivot arm means for movement toward and away from said fixed pivot axis, said adjustable coupling means including a screw, a threaded bracket on said screw coupled to said additive rod free end and moveable along said screw toward and away from said pivot axis, and handle means on the end of said screw opposite said end of said pivot arm means which is slidably coupled to said main rod for turning the screw to cause movement of said bracket, whereby reciprocation of said additive rod occurs in response to oscillation of said pivot arm means which reciprocation can be easily varied by said handle moving said screw to vary the distance between the fixed pivot axis and the free end of the additive rod to vary the proportions of additive fluid to main fluid.

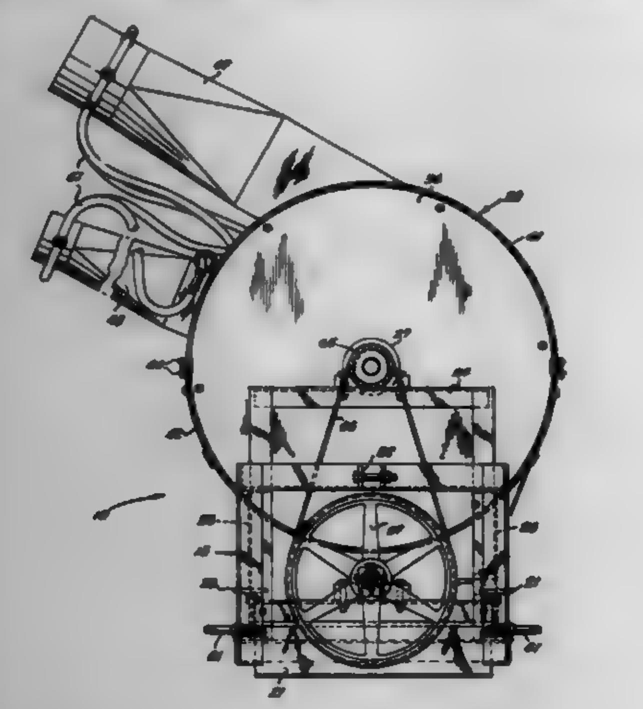
3,980,232
AIR BLAST SPRAYING APPARATUS

Welker W. Funk, 1507 Phyllis Court, Irving, Tex. 75060
Filed Oct. 17, 1974, Ser. No. 515,691
Int. Cl.² B05B *9/04*
U.S. Cl. 239—77 **11 Claims**

1. In air blast spraying apparatus, a discharge head unit comprising
  a generally horizontal base frame; laterally spaced supports mounted on said frame including means defining a horizontal rotation axis;
  a discharge head comprising a blower housing and enclosed blower rotor, both rotatably mounted about said frame rotation axis; said blower housing having generally parallel side walls and a generally cylindrical peripheral wall, at least one side wall having a central inlet opening, a plurality of elongated discharge nozzles rigidly mounted on said peripheral wall, projecting generally radially outward therefrom in circumferentially spaced relation;

said blower rotor having generally radial vanes, with the radially outer edges thereof spaced from the housing peripheral wall to define a substantial clearance space between said rotor vanes and the inlet ends of said nozzles;

bearing means associated with each of said housing side walls for rotatably supporting said side walls relative to said horizontal rotation axis; spacer means provided at spaced peripheral points of said side walls, for supporting said side walls in spaced relation to each other;



said housing peripheral wall being fabricated from at least one generally cylindrically formed section; and coacting clamping means mounted on the respective joining ends of said peripheral wall section for clamping said section to said side walls.

3,980,233

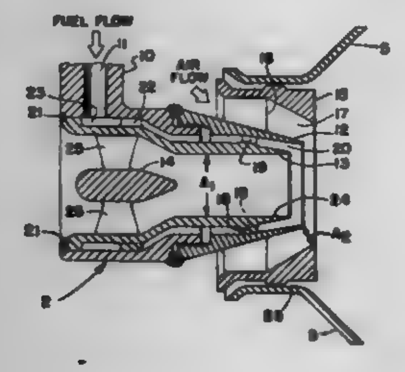
AIR-ATOMIZING FUEL NOZZLE

Harold C. Simmons, Richmond Heights; Robert R. Conrad, Chardon, and Mihkel Orav, Euclid, all of Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 512,560, Oct. 7, 1974, abandoned. This application Nov. 24, 1975, Ser. No. 634,460

Int. Cl.² B05B *7/04*, *7/10*

U.S. Cl. 239—400 **19 Claims**



1. An air-atomizing fuel nozzle comprising a nozzle body assembly defining therewithin a fuel passage having a discharge orifice at its downstream end and having a vortex chamber to impart a whirling motion to the fuel flowing through said passage for discharge from said discharge orifice in the form of a conical sheet, and a central air passage within said fuel passage having swirl means and having a downstream end from which air is discharged as an expanding cone of predetermined angle, said discharge orifice being axially beyond the downstream end of said central air passage and being of diameter greater than that of the downstream end of said central air passage such that the outer layer of the expanding air cone impinges on the swirling fuel where it emerges as a conical fuel sheet from said discharge orifice.

3,980,234

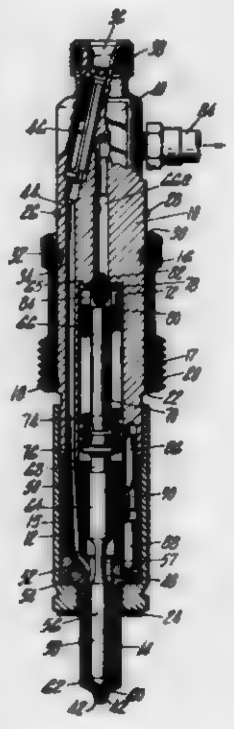
FUEL INJECTION NOZZLE

Gerald R. Bouwkamp, West Hartford, Conn., assignor to Stanadyne, Inc., Hartford, Conn.

Filed June 13, 1975, Ser. No. 586,567

Int. Cl.² B05B *1/30*

U.S. Cl. 239—533 **2 Claims**



1. An inwardly opening pressure actuated fuel injection nozzle, a valve body comprising a nozzle holder, a cylindrical valve guide and a nozzle tip providing a valve chamber, a unitary valve plunger of smaller cross-section than said chamber extending into said chamber and mounted by said valve guide for reciprocation toward and away from a valve seat formed at the discharge end of the nozzle tip, said nozzle tip having a cylindrical flange engageable with the end of said valve guide, a biasing spring biasing said valve plunger toward said valve seat, a retaining nut telescoped over the cylindrical flange of said nozzle tip and over said valve guide and threadably engaging said nozzle holder for coupling said valve guide and said nozzle tip to said holder, said retaining nut receiving both the outer periphery of the cylindrical flange of said nozzle tip and said valve guide with a close slidng fit to automatically align the axes of the valve guide and the nozzle tip during the assembly of the nozzle, communicating passages in the walls of said nozzle holder, valve guide and nozzle tip to deliver incoming fuel to the valve chamber, and locating pin means spanning the sealing surfaces between said nozzle holder and valve guide and between said valve guide and nozzle tip to angularly position and maintain said passages in communicating relationship, said locating pin means comprising a pair of pins respectively located in the ends of a single stepped bore in the side wall of said valve guide whereby the smaller of said pins may be depressed into said bore to press the larger of said pins out of said bore.

3,980,235

FOOD CUTTING APPARATUS

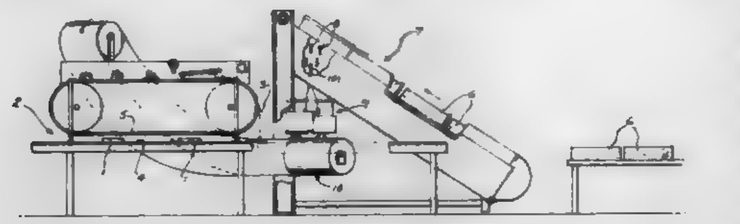
Harvey G. Kuhlman, N56 W21466 Silver Spring Road, Menomonee Falls, Wis. 53051

Filed Nov. 6, 1974, Ser. No. 521,270

Int. Cl.² B02C *19/00*

U.S. Cl. 241—84 **24 Claims**

1. In a food cutting device for cutting food blocks and supplying of food chunks to a processing apparatus, an inclined conveyor means adapted to receive a plurality of said food blocks and to sequentially transport said blocks upwardly, a cutting device secured to the upper end of said conveyor including means to move each of said blocks laterally through a cutting means to separate said food block into a plurality of small chunks, a processing means located adjacent to and below said cutting device and adapted to receive the cut food from said cutting device, means to activate said conveyor and said cutting device to alternately operate, and said conveyor means, cutting device and processing means being formed of removable outer enclosure means to expose the internal working components for cleaning.



3,980,236

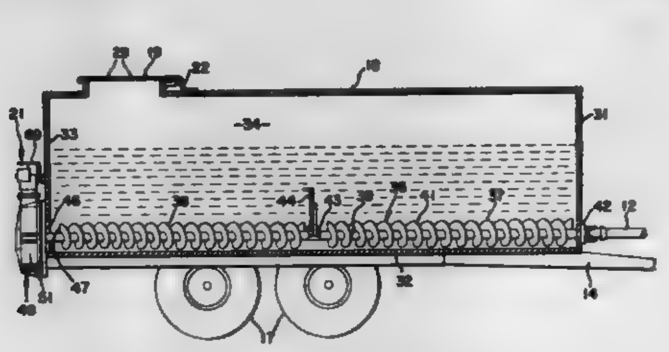
SLINGER SPREADER

James L. Richardson, St. Paul, Minn., assignor to Veda, Inc., Long Lake, Minn.

Continuation of Ser. No. 435,843, Jan. 23, 1974, abandoned. This application May 19, 1975, Ser. No. 578,385

Int. Cl.² B05B *15/00*

U.S. Cl. 239—172 **33 Claims**



1. An apparatus for spreading material, as liquid manure, in a low generally horizontal spread pattern onto a location comprising: tank means having an end wall and a tank chamber for carrying the material, slinger means mounted on the end wall for moving material from the tank means and discharging the material to a location, said slinger means having spreading structure and a pump assembly to deliver material under pressure to the spreading structure, said pump assembly including a housing mounted on the end wall, said housing having a chamber and an inlet opening open to the tank chamber and an upright section having an upwardly open outlet opening, and impeller means in the housing chamber to move material from the inlet opening to the outlet opening, an auger assembly located longitudinally along the bottom of the tank chamber, said auger assembly having an end located adjacent said inlet opening, means connecting the auger assembly and impeller means, transverse baffle means located in the midsection of the tank chamber above the auger assembly, means attached to the baffle means rotatably supporting the midsection of the auger assembly, means connected to the auger assembly and adapted to be connected to a drive unit, said drive unit operable to rotate the auger assembly and impeller means whereby the auger assembly mixes the material in the tank chamber and feeds material to the pump assembly, said spreading structure including upright means having a passage and a discharge opening mounted on the upright section to receive material from the outlet opening, valve means between the pump assembly and spreading structure for controlling the flow of material to the spreading structure, generally horizontal plate means secured to the upright means and extended over and located above the discharge opening for directing material moving from the discharge opening in a relatively low horizontal profile and even spread pattern rearwardly and to opposite sides of the tank means, and means for adjusting the size of the discharge opening to regulate the density of the spread pattern.

24. Spreading structure for receiving material under pressure and discharging the material in a relatively low and generally horizontal profile and even spread pattern comprising: a tubular cylinder having an inlet for receiving the material under pressure and an open outlet end, said outlet end having a side wall, said side wall having a semicircular cutout section with side edges, a bottom edge, and the top portion of the cutout section being open to the open outlet end, generally horizontal plate means extended over the cutout section and the outlet end closing the outlet end and secured to the side wall, said side edges bottom edge and plate means forming a discharge opening, a semicircular member having an inside surface engageable with the outside surface of the cylinder and an upper horizontal edge extended generally parallel to the plate means, said plate means having a rearwardly directed extension, said extension having a width greater than the thickness of said upper horizontal edge of the semicircular member, and fastening means securing the semicircular member to the cylinder in a fixed non-movable position to hold the inside surface of the member in engagement with the outside surface of the cylinder and the upper horizontal edge in a fixed spaced relation relative to the plate means thereby forming a discharge opening of a selected size, said member being secured to the cylinder with the fastening means in a selected fixed position, said fastening means being releasable to allow movement of the semicircular member relative to the cylinder whereby the size of the discharge opening can be changed by locating the semicircular member in a selected position relative to the plate means.

3,980,237

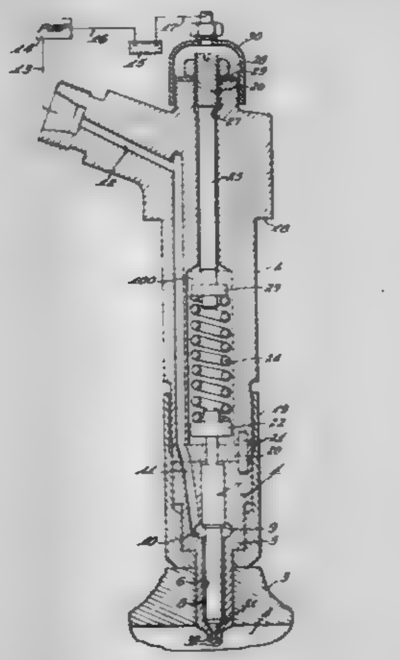
DIFFERENTIAL VALVE IN FUEL INJECTION NOZZLE

Walter A. Parrish, Jr., Hazel Crest, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 17, 1975, Ser. No. 632,854

Int. Cl.² F02M *61/04*; **B05B** *1/30*

U.S. Cl. 239—533 **10 Claims**



1. A nozzle assembly in a fuel injection nozzle and holder assembly for an internal combustion engine comprising, valve elements including a valve body and a valve defining conical surfaces forming a differential angle valve, resilient means normally biasing said differential angle valve to a closed position with said differential angle valve opening in response to the force of pressurized fluid in said nozzle assembly opposing the biasing force of said resilient means, said nozzle body

defining orifices downstream from said differential angle valve, one of said valve elements including intersecting conical surfaces defining a valve seat seal when engaging the other of said elements, said valve body and said valve defining a differential angle valve of smaller differential angle between the cone surface of said valve body and the cone surface of said valve above said valve seat seal than the angle said valve body and said valve define between the cone surface of said valve body and the cone surface of said valve downstream from said valve seat seal, the smaller differential angle between said valve body and said valve upstream from said valve seat seal thereby causing the valve seat seal to migrate upwardly from the initial valve seat seal due to wear of said valve.

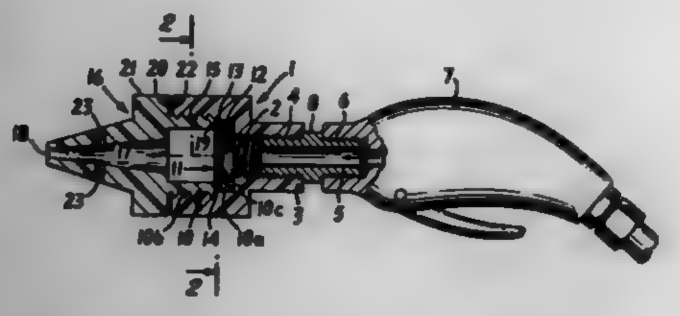
3,980,238
FILTER NOZZLE FOR AIR GUN

Joseph G. Adiletta, Thompson, Conn., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Nov. 24, 1975, Ser. No. 634,570

Int. Cl.² B05B *1/14*

U.S. Cl. 239—590.3 **11 Claims**



1. A filter nozzle for air guns comprising, in combination, a filter housing having a air channel therethrough and adapted to be mounted to an air outlet of an air gun; an air nozzle removably attached to the filter housing and having an air channel therethrough in fluid flow connection with the air channel of the filter housing, for restricting and directing the air from the air gun as an air stream; and a filter removably attached to the filter housing across the air channel upstream of the nozzle, so that air passing through the channel must pass through the filter before passing through the nozzle.

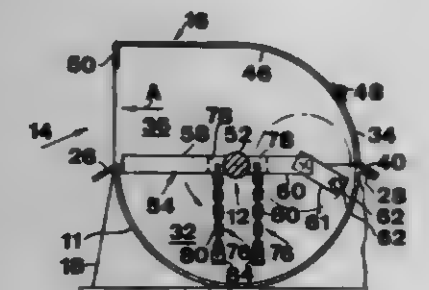
3,980,239
FLAIL-TYPE MATERIAL SPREADER

John L. Lee, Box 202, Reamstown, Pa. 17567

Filed Aug. 27, 1975, Ser. No. 608,313

Int. Cl.² A01C *3/06*

U.S. Cl. 239—658 **13 Claims**



1. In a flail-type material spreader having:

a material holding tank with end surfaces and a discharge opening for material to be unloaded therethrough;

a rotor shaft within said tank longitudinally to said opening;

a plurality of flails secured at one end to said rotor shaft to unload material within said tank through said opening upon rotation of said shaft; and

at least one starter flail mounted to said rotor shaft for starting the unloading process, the starter flail comprising:

an arm mounted at one of its ends to said rotor shaft and extending radially outwardly therefrom;

an elongated main body having one end pivotally attached to the other end of said arm adjacent a side thereof; and

a drag segment affixed only to the side of said main body opposite the side attached to said arm, said drag segment is inclined upwardly and rearwardly to the elongated axis of said main body for attacking material reposing in said tank and ejecting said material out of said tank.

3,980,240
BRIGHTENING OF NATURAL CALCITIC ORES

Alan J. Nott, Crantock near Newquay, England, assignor to Anglo-American Clays Corporation, Sandersville, Ga.

Filed Apr. 11, 1975, Ser. No. 567,138

Int. Cl.² B02C *23/18*

U.S. Cl. 241—20 **13 Claims**

1. A method for brightening and purifying a natural calcitic ore by removing discoloring contaminants therefrom, comprising the steps of:

crushing said ore;

forming said crushed ore into an aqueous slurry, and coarse-milling said slurry to produce a course-milled product;

liberating substantial quantities of said discoloring contaminants by subjecting said coarse-milled product to a further wet-milling step to alter the particulate such that at least 70 percent of the particles are less than 2 microns; and

separating the liberated contaminants from said further milled slurry, said separation being at least partially effected by subjecting said slurry to a wet magnetic separation in a high intensity magnetic field.

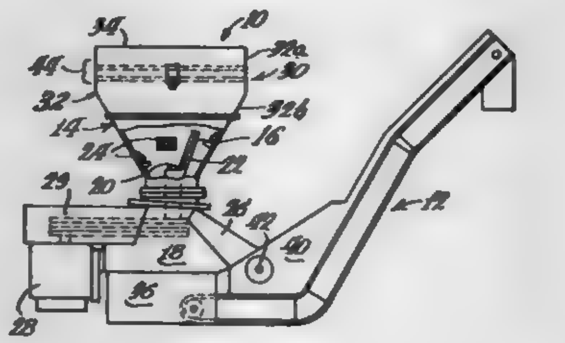
3,980,241
CRUSHER AND CONTROL CIRCUIT THEREFOR

Melvin Van Nocker, Kalamazoo, Mich., assignor to Prab Conveyors, Inc., Kalamazoo, Mich.

Filed May 27, 1975, Ser. No. 580,799

Int. Cl.² B02C *25/00*

U.S. Cl. 241—33 **9 Claims**



1. Apparatus for crushing swarf and like materials comprising:

a crushing chamber for the material to be crushed, said crushing chamber having a loading opening to receive the material to be crushed and having means for discharging crushed material;

crushing means disposed within said crushing chamber;

bi-directional motor means operable in a first direction to drive said crushing means to effect crushing of material within said crushing chamber; and

control circuit means connected to said motor means for controlling the operation thereof;

said control circuit means including:

first circuit means operative when energized to operate said motor means in said first direction;

selectively energizable second circuit means operative when energized to energize said first circuit means and effect operation of said motor means in said first direction;

third circuit means energized in response to stoppage of said crushing means while said first circuit means is energized for alternately and repeatedly de-energizing and reenergizing said first circuit means to effect termination of said stoppage; and

fourth circuit means energized in response to said stoppage of said crushing means for de-energizing said third circuit means if said stoppage is not terminated within a selected time interval.

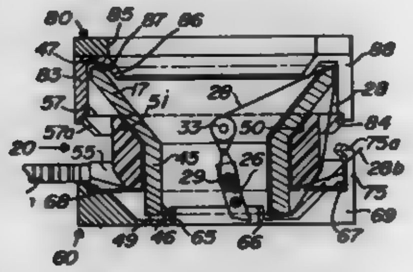
3,980,242
COIL WINDING MACHINE FOR TOROIDAL CORES EMPLOYING CORE HOLDER ASSEMBLY

Hans Schmidt, Deerfield, Ill., assignor to Quasar Electronics Corporation, Franklin Park, Ill.

Continuation of Ser. No. 364,563, May 29, 1973, abandoned, which is a continuation of Ser. No. 144,140, May 17, 1971, abandoned. This application Apr. 29, 1974, Ser. No. 465,017

Int. Cl.² H01F *41/08*

U.S. Cl. 242—4 C **4 Claims**



1. The toroidal core assembly for use in a coil winding machine, comprising in combination:

a toroidal core device; and

a core holder with first and second rows of aligned outer tooth-like projections axially spaced from one another and having a ring-like band adapted to circumferentially surround at least an intermediate portion of the axial dimension of said core device, said core holder further having an axial dimension less than the axial dimension of said toroidal core device for exposing the rim portions of said core device.

3,980,243
FLEXURE MOUNT FOR COIL WINDING DEVICE

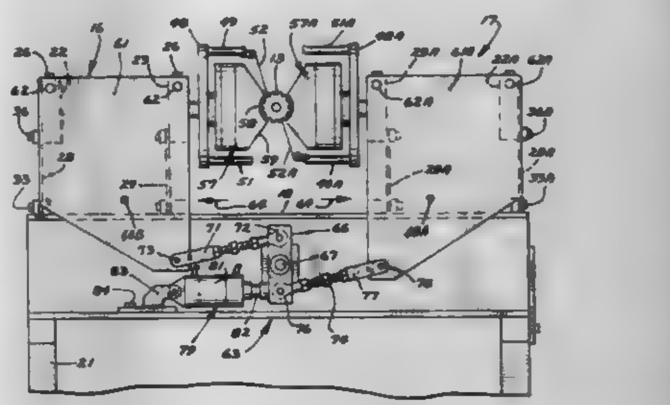
David A. Schulman, Hopkins, Minn., assignor to Possis Corporation, Minneapolis, Minn.

Filed June 12, 1975, Ser. No. 586,287

Int. Cl.² H02K *15/04*

U.S. Cl. 242—7.05 B **51 Claims**

48. An apparatus for positioning an object in a location comprising: means for holding an object, a support, flexure means mounting the means for holding an object on the support, said flexure means including a plurality of plate beam assemblies, each of said plate beam assemblies including a plurality of side-by-side flat and flexible plate members, means securing the plate members to the support and to the means for holding an object, and control means connected to the means for holding an object operable to move said means for holding an object to a release position spaced from the object,



said control means being operative to move the means for holding an object to a first position adjacent the object.

3,980,244
COIL WINDING MACHINE FOR THE CONTINUOUS WINDING OF COILS, IN PARTICULAR OF METAL WIRE COILS

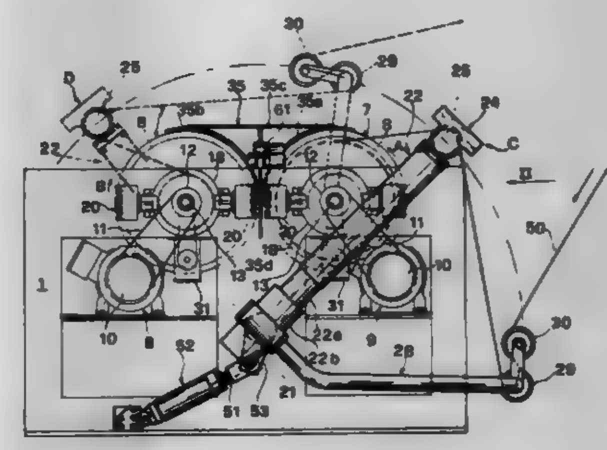
Piero Pietroni, Ascoli Piceno, Italy, assignor to Technofil S.p.A., Ascoli Piceno, Italy

Filed June 10, 1975, Ser. No. 585,678

Claims priority, application Italy, June 17, 1974, 3418/74

Int. Cl.² B65H *54/02*

U.S. Cl. 242—25 A **9 Claims**



1. A wire coiling machine for the continuous winding up of wire, particularly metal wire, in coils sequentially on two reels having parallel axes, comprising:

support means for supporting the two reels;

pulling means for ensuring the rotation of the two reels;

wire gripping means carried by said pulling means;

a wire guide with pulley for the uniform distribution of the wire being coiled;

a first arm carrying said wire guide, oscillatable between two extreme positions when the wire passes from a completely wound reel to an empty reel;

a second oscillating arm having a pendular motion synchronized to the motion of said first arm and fitted wth at least one idler pulley for partially receiving the wire before the wire reaches said wire guide pulley;

a locator body having a vertical edge in intermediate position between the two reels and oscillatable rectilinearly between two extreme positions along on axis parallel to the axes of the reels, said vertical edge being at such a level that it will interrupt the wire when it passes from one extreme position to the other;

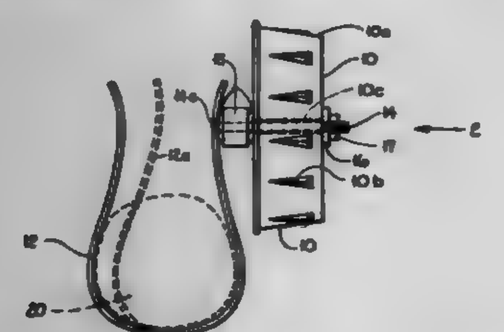
thrust means for moving said locator body into a position where the vertcal edge will push the intercepted wire against the gripping means in association with the empty reel;

a vertical rod at the same level as said vertical edge of said locator body, carried and moved by levers in cooperaton with the motion of said locator body, said vertical rod being oscillatable between two extreme positions lateral to said vertical edge, said vertical rod maintaing the length of wire between the completed coil and said rod outside the interrupting zone of said gripping means of the completed coil reel.

3,980,245
DISPENSER-HOLDER FOR A RING OF STICKER-TAPE

Billy G. Delehoy, Fort Collins, Colo., assignor to Dekuh, Inc., Fort Collins, Colo.

Filed July 5, 1974, Ser. No. 486,116
Int. Cl.² B65H *19/00*
U.S. Cl. 242—55.2 **5 Claims**

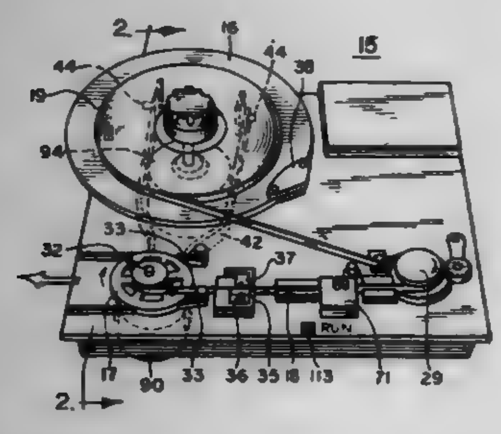


1. A dispenser-holder, for a ring-roll of pre-formed peripherally tearable sticker-tape, comprising, a wheel rotatably mounted on an axle, a holding means adapted for frictional removable attachment to an animate or inanimate object, an axle carried by the holding means and having said wheel so mounted thereon, and said wheel having its periphery adapted for frictionally fixedly carrying a roll of such sticker-tape thereon, and wherein the wheel periphery has a plurality of pivotally adjustably movable peripherally-expandable segment member means adapted for variably substantially increasing the periphery of the wheel for adapting the extended periphery for carrying a larger inside diameter ring-roll of such sticker-tape than the normal peripheral size of the wheel before such peripheral increase.

3,980,246
AUTOMATIC TAPE WINDING SYSTEM

Norman E. H. Deletzke, Jr., 849 Fletcher St., Chicago, Ill. [illegible]601

Filed Feb. 26, 1975, Ser. No. 553,118
Int. Cl.² B65H *19/20, 59/38*
U.S. Cl. 242—56 R **35 Claims**



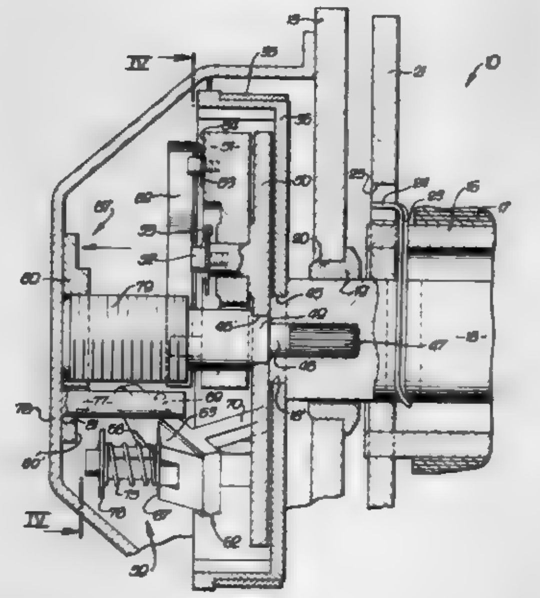
1. In a tape winding system having supply means driven by supply driving means, takeyp means driven by takeup driving means, and tape quantity selection means, a method for automatically winding a predetermined quantity of tape from said supply means to said takeup means, comprising the following steps:

a. adjusting said tape quantity selection means for a reduced quantity of tape, less than said predetermined quantity, and for an additional quantity of tape equal to the difference between said predetermned quantity and said reduced quantity;
b. simultaneously accelerating said supply means and said takeup means by energizing said supply driving means and said takeup driving means, causing tape to unwind from said supply means and wind onto said takeup means with minimal tension on said tape;
c. reducing the energization of said supply driving means causing said tape to be pulled from said supply means onto said takeup means;
d. decelerating said supply means when the selected quantity of tape is wound onto said takeup means; and
e. stopping said takeup means and said supply means when said additional quantity of tape is wound onto said makeup means.

3,980,247
SAFETY BELT RETRACTOR

Gregory G. Kuszynecki, Pasadena; William S. Wright, Jr., Corona Del Mar, and Akira Tanaka, Northridge, all of Calif., assignors to American Safety Equipment Corporation, Encino, Calif.

Filed Apr. 17, 1975, Ser. No. 568,927
Int. Cl.² B65H *75/48*
U.S. Cl. 242—107.4 B **17 Claims**



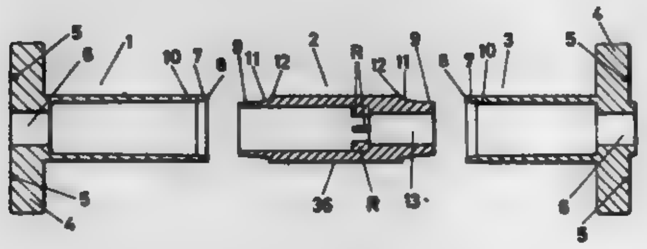
1. In a safety belt retractor having a strap receiving reel mounted for rotation in a frame with said reel being urged into a strap wound position and including a pawl having at least one locking tab thereon adapted to engage the teeth of a ratchet wheel on the reel, inertia responsive means associated with said pawl and responsive to acceleration of said strap off said reel at a first rate of acceleration for causing said tab to engage with said teeth, said inertia responsive means including an inertia plate movable within a plane of movement from a position out of locking engagement to a position causing said tab to engage with said teeth when said first rate of acceleration is reached, the improvement comprising the provision of:

pawl lock-up preventing means associated with both said reel and said inertia responsive means for selectively preventing said inertia responsive from causing said tab to engage with said teeth upon acceleration of said strap off of said reel within a second rate of acceleration thereof above said first rate of acceleration while permitting operation of said inertia responsive means upon acceleration of said strap off of said reel at a third rate of acceleration higher than said second rate of acceleration, said inertia plate having an unobstructed path of movement within said plane of movement during the time said pawl lock-up preventing means prevents said inertia responsive means from causing said tab to engage with said teeth upon accelerration of said strap off of said reel within said second rate of acceleration above said first rate of acceleration while permitting operation of said inertia responsive means upon acceleration of said strap off of said reel at said third rate of acceleration.

3,980,248
MANUFACTURING METHOD FOR THERMOPLASTICS

Manji Minoshima, 1-989 Nagara, Gifu, Gifu, Japan

Continuation-in-part of Ser. No. 365,604, May 31, 1973, abandoned. This application May 7, 1975, Ser. No. 575,388
Claims priority, application Japan, June 7, 1972, 47-57471
Int. Cl.² B65H *75/14*
U.S. Cl. 242—118.7 **20 Claims**



1. A method for integrally joining tubular bodies such as for manufacturing bobbins for spinning and twisting machines comprising the steps of:

fabricating two differently shaped component bodies, each having at least one tubular mating male and female-end section, respectively, of thermoplastic material with the female end section of one to mate with the male end section of the other body in a linear coaxial body alignment at a common radial junction;

said male section and said female section having the same outer diameters for axial assembly with a continuous cylindrical surface;

the thickness of the tubular wall of the male section being substantially larger than that of said female section;

the end sections having an outer shoulder running at an angle to the wall thereof from its surface toward its longitudinal axis to a distance of about one half of the thickness of the wall of the male section to form symmetrically shaped inner radial frictional edges of said shoulders abutting in assembly upon each other in alignment in intimate contact with each other;

the female section continuing from the inner radial edge of said shoulder rearwardly into its tubular inner surface with a frusto-conical hollow surface at an acute taper angle to form with the inner surface of its linear wall a corresponding obtuse angled edge;

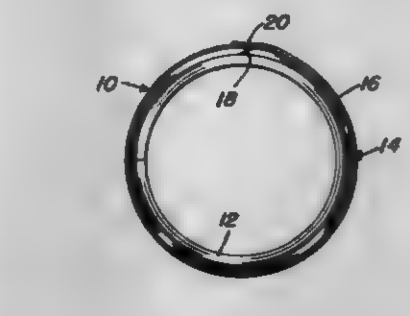
the male section having a frusto-conical surface protrusion continuing from the inner radial edge of said shoulder toward its axis at an acute taper angle same as that of the frusto-conical surface of the female section to meet with the said obtuse angled edge of said male section in said radial inner edge junction and in an intimate contact alignment with the frusto-conical projection of said male section in assembly;

the taper of the frusto-conical protrusion of said male section continuing as a pocket side from the said radial inner edge junction at an acute pocket-angle for a distance about equal to the thickness of the tubular wall of the female section, to form with the inner wall surface of the female section upon assembly a radial pocket, whereby on axial frictional rotation of one section relative to the other the surfaces of the radial edges and of the frusto-conical surfaces melt and integrally fuse said sections, with surplus thermoplastic material overflowing into said pocket.

3,980,249
HIGH SPEED CARRIER WITH DECKLED UNDERPLY

McCleery B. Cunningham, and Clement D. LeHardy, both of Hartsville, S.C., assignors to Sonoco Products Company, Hartsville, S.C.

Filed May 27, 1975, Ser. No. 581,373
Int. Cl.² B65H *75/10*
U.S. Cl. 242—118.31 **5 Claims**

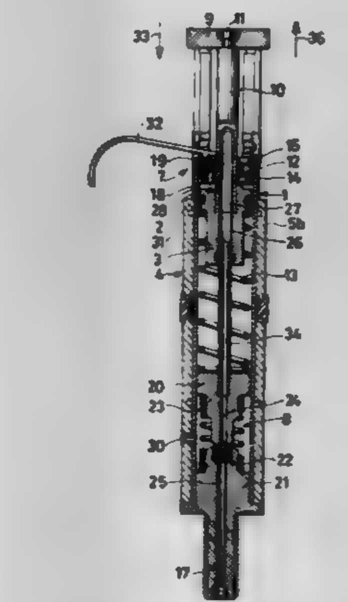


1. A high speed carrier for textile winding or the like comprising a multiple ply construction including, in addition to a base defined by one or more base forming plies, a thin outer ply incorporating specific surface characteristics, and a carrier strengthening structural underply beneath said outer ply, said underply being defined by a strip spirally wound on the base, said underply strip having opposed deckle edges along the length thereof, said deckle edges, in the spirally wound strip, overlapping one deckle edge over the other deckle edge and being adhesively bonded to each other, the width of the overlap of the one deckle edge over the other deckle edge being no greater than the width of the other deckle edge.

3,980,250
DEVICE FOR HOLDING TUBE SHAPED OBJECTS

Leif Persson, Harley Bank South, Victoria Road, Todmorden, Lancs, England

Filed Mar. 13, 1975, Ser. No. 557,981
Claims priority, application Sweden, Mar. 19, 1974, 7403651; Nov. 12, 1974, 7414160
Int. Cl.² B65H *49/00;* D01H *7/16;* B65H *75/24*
U.S. Cl. 242—129.5 **23 Claims**



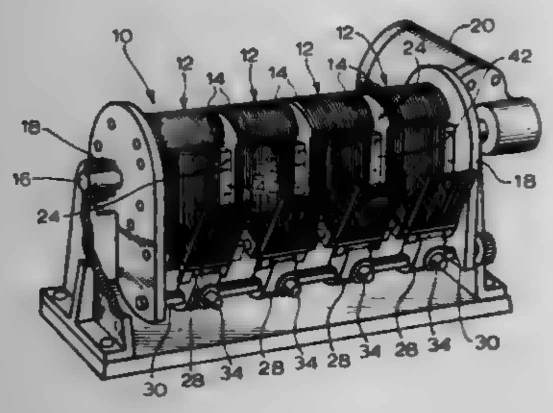
1. Device for holding tube-shaped objects comprising a cylinder, a piston slideably mounted in said cylinder, a sleeve shaped-casing surrounding said cylinder, said casing having a fixed portion and a portion slideably mounted on said cylinder, expandable means connecting said casing portions, means connecting said piston to said casing slideable portion, passageways for connecting a pressure medium to at least one side of said piston, sensor means capable of sensing longitudinally directed forces on the object and valve means being connected to said sensor means and capable of controlling the

supply of pressure medium to said piston in dependence to the direction of said force acting on the object.

3,980,251
APPARATUS FOR CHANGING THREAD SPACING

Dickie R. Wyatt, 1585 Greenbay Road, Highland Park, Ill. 60035

Filed July 23, 1973, Ser. No. 381,784
Int. Cl.² B65H *57/16*
U.S. Cl. 242—157 R 9 Claims



1. A thread spacing changer comprising:

a plurality of rotatably mounted vanes;

spacing means positioned between said vanes, said spacing means being of progressively decreasing thickness;

said vanes and said spacing means defining passages for accommodating a plurality of threads;

said passages being of progressively decreasing thickness, thereby permitting the spacing between threads placed therein to be changed by rotating said rotatably mounted vanes; and

means for intermittently rotating said mounted vanes to selectively adjust said thread spacing.

7. A comb threading device for threading at least one comb member comprising means for defining a plurality of passages for accommodating a plurality of threads;

said passages being so constructed that inlet portions accommodate a predetermined number of threads per inch, and outlet portions accommodate a greater number of threads per inch;

means for rotatably supporting said passage defining means such that said supporting means and plurality of threads are moveable relative to one another;

means for intermittently rotating said supporting means; and

means, including said outlet portions, for cooperating with said at least one comb member so that said plurality of passages are aligned with the spaces between the teeth of said comb member to assure threading of the comb member in response to relative movement of said supporting means and plurality of threads.

9. A comb threading device for threading at least one comb member comprising means for defining a plurality of passages for accommodating a plurality of threads;

said passages being so constructed that inlet portions accommodate a predetermined number of threads per inch, and outlet portions accommodate a greater number of threads per inch;

means for supporting said passage defining means such that said supporting means and plurality of threads are movable relative to one another;

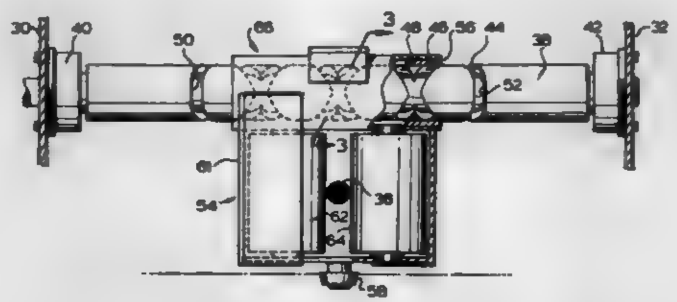
means for effecting relative movement between said supporting means and said plurality of threads for moving said threads between said inlet and outlet portions; and

means, including said outlet portions, for cooperating with said at least one comb member so that said plurality of passages are aligned with the spaces between the teeth of said comb member to assure threading of the comb member in response to relative movement of said supporting means and plurality of threads.

3,980,252
WIRE ROPE SPOOLING MECHANISM

Margus Tae, Islington, Canada, assignor to John T. Hepburn Limited, Toronto, Canada

Filed Oct. 31, 1975, Ser. No. 627,823
Int. Cl.² B65H *54/28*
U.S. Cl. 242—158.3 3 Claims



1. A guide assembly for use with a winch and the like of the type having a drum, a drive to the drum, a drive chain adapted to drive a drive shaft coupled to the drive chain with the axis of the shaft parallel to that of the drum, the drive shaft being generally cylindrical and defining a track consisting of first and second helical parts disposed about the shaft in opposite directions and meeting one another at a plurality of junctions, and third and fourth parts defining respective end extremities of the track and linking the corresponding ends of said first and second parts, the guide assembly comprising: means to guide a rope; and a follower assembly, the rope guide means and the follower assembly being journalled about the drive shaft to permit rotation of the drive shaft in the follower assembly, the follower assembly including: a support block; a fixed follower mounted in the support block and adapted to engage in the track; and first and second pivotal followers turnably connected on the support block for movement about respective intersecting axes and adapted to engage in the track, the intersecting axes meeting at a first line drawn perpendicularly to a second line which on assembly is coincident with the axis of the drive shaft, the first line passing through the center of the fixed follower, each of the pivotal followers including a body member and means attached to the body member and engageable in the track, said means being offset from the corresponding one of said axes; and said body members and support block combining to limit turning of the pivotal followers between respective first positions in which these followers are positioned for engagement in said first part of the track, and respective second positions in which these followers are positioned for engagement in the second part of the track.

3,980,253
CASSETTE LOADING APPARATUS

Donald L. Burdorf, 2652 Vista Drive, Newport Beach, Calif. 92660, and Robert L. Gertz, 25012 Ericson Way, Laguna Hills, Calif. 92653

Filed Aug. 16, 1974, Ser. No. 498,036
Int. Cl.² G11B *15/32, 23/10*
U.S. Cl. 242—192 6 Claims

1. A tape transport apparatus with loading means permitting a supply hub having a tape pack wound thereon to be manually snapped onto a supply shaft when retracted to a loading position, said tape pack being contained in a normally closed cassette of the type having means for providing a side opening during the tape transport operation, and said apparatus further including

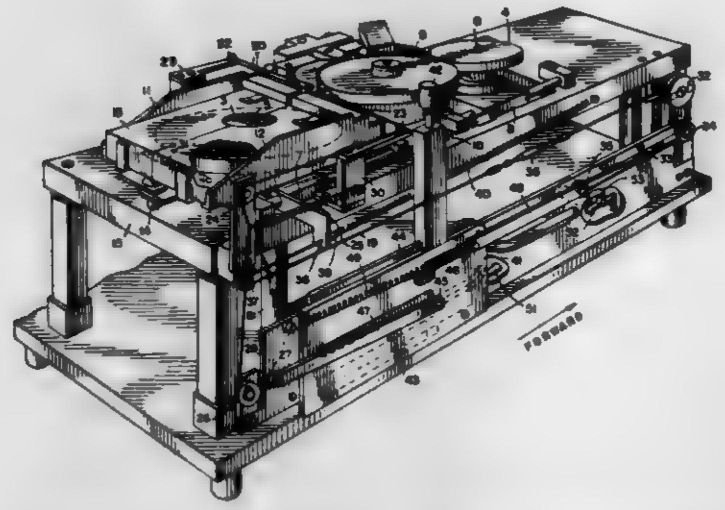
a drive capstan,

a supply carriage having rotationally mounted thereon a take-up shaft carrying a take-up hub,

means which, in the transporting operation of said apparatus, urge said two carriages towards said capstan,

a combination cassette-opening and carriage-advancing actuator movable over a predetermined stroke,

operating means which, incident to said supply hub being manually snapped onto said supply shaft, engage said cassette, and

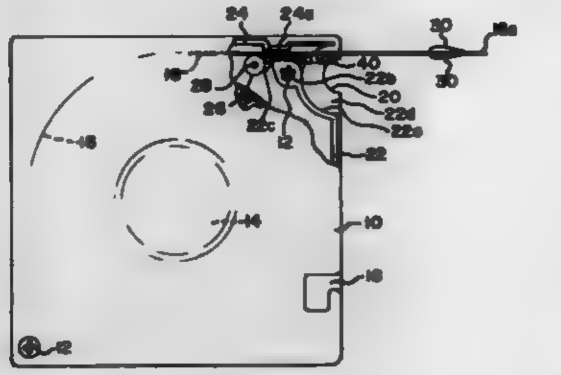


sequencing means controlled by said actuator in an initial portion of its stroke to cause said operating means and hence said opening-providing means to be actuated sufficiently to expose said tape pack for subsequent engagement by said capstan, and in a later portion of its stroke cause said supply carriage to be advanced to an operative position where said tape pack is contacted by said capstan.

3,980,254
FILM STRIP LEADER ALIGNMENT AID

Donald B. Coon, Chesterland, Ohio, and Timothy M. Katnnik, College Park, Md., assignors to Western Reserve Electronics, Inc., Twinsburg, Ohio

Filed Apr. 3, 1975, Ser, No. 564,702
Int. Cl.² G03B *1/04*; G11B *15/32*
U.S. Cl. 242—195 8 Claims



1. A film positioning means for a film cartridge having a film therein and wherein the cartridge has at least a pair of spaced apart walls defining an exit and entrance throat opening for the passage of the film, the improvement which comprises resilient friction means on the film for increasing the apparent thickness of the film in a zone spaced from the end of the film the right distance to allow the end of the film to be engaged by a reader-printer, said means being thick enough to frictionally and resiliently engage with opposite inner walls of the throat and increase the drag on the film in either direction and position it in the desired extended position but still allow it to pass through.

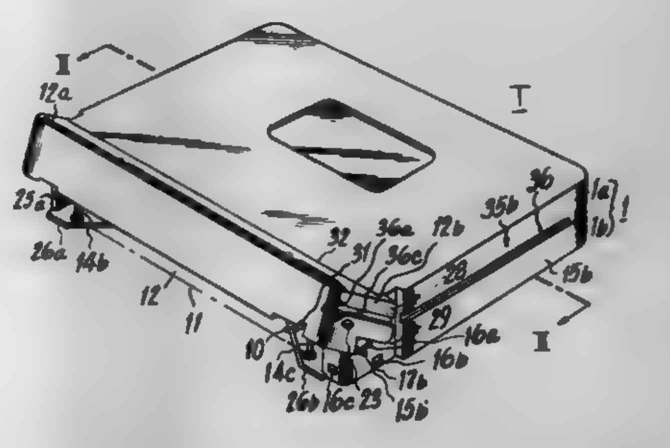
3,980,255
TAPE CASSETTE

Akio Serizawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 403,431, Oct. 4, 1973, Pat. No. 3,900,170. This application Mar. 26, 1975, Ser. No. 562,150

The portion of the term of this patent subsequent to Aug. 19, 1992, has been disclaimed.

Int. Cl.² G03B *1/04*; G11B *15/32, 23/04*
U.S. Cl. 242—198 3 Claims



1. A tape cassette comprising a housing of generally rectangular configuration containing a supply of tape and having top and bottom walls and a peripheral wall extending between said top and bottom walls along three of the sides of the latter so as to leave an opening along the fourth side of the housing through which the tape can be withdrawn, said tape cassette being insertable into a cassette holder in a selected one of at least two directions parallel to said fourth side and at right angles to the latter, respectively, a lid including an elongated front portion substantially coextensive in length with said fourth side of the housing and ears directed rearwardly from said front portion at the opposite ends of the latter, said ears being pivoted on said peripheral wall of the housing at the sides of the latter which extend at right angles to said fourth side for movement of said lid between a closed position covering said opening and an opened position exposing said opening, and latching means disposed in said housing adjacent said peripheral wall near a corner of the housing between said fourth side and a contiguous side of said housing; and in which said latching means is yieldably urged toward said peripheral wall to engage the adjacent one of said ears of the lid and lock the latter in said closed position thereof, and said housing has apertures therein adjacent said corner and respectively opening in said directions parallel to said fourth side and at right angles to the latter and through which said latching means can be selectively released from said lid to permit movement of the latter to said opened position upon insertion of the tape cassette into a cassette holder in the respective one of said directions.

3,980,256
TAPE CASSETTE

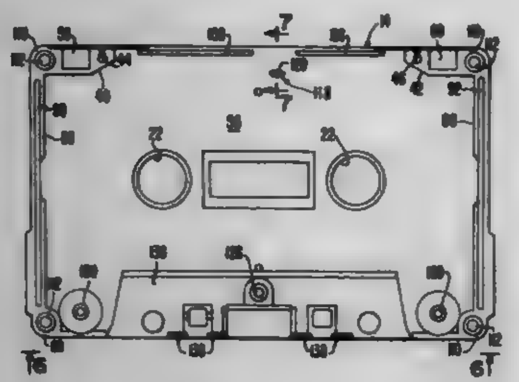
Vernon R. Schwartz, Cupertino, and Roger N. J. Tregear, San Jose, both of Calif., assignors to Information Terminals Corporation, Sunnyvale, Calif.

Division of Ser. No. 276,633, July 31, 1972. This application Nov. 8, 1974, Ser. No. 522,074

Int. Cl.² G03B *1/04*; G11B *15/32, 23/04*
U.S. Cl. 242—199 10 Claims

1. In a tape cassette: a cassette housing formed of a pair of shells with each shell having a pair of spaced opposed sides, the shells being movable into operative positions adjacent to each other with respective sides thereof in alignment with each other; and means for interconnecting the shells when the latter are in said operative positions to form said housing, there being a rib on and extending along each side, respectively, of one of the shells, each side of the other shell having a groove extending along the same and being substantially

complemental to the corresponding rib of said one shell, the ribs being receivable within respective grooves when the shells are moved into said operative position, a first of said shells having a number of spaced projections thereon, the second shell having a hole for each projection, respectively, each projection being substantially complementally receivable in the respective hole when the shells are moved into said operative positions, the projections and holes being independent of the ribs and grooves.



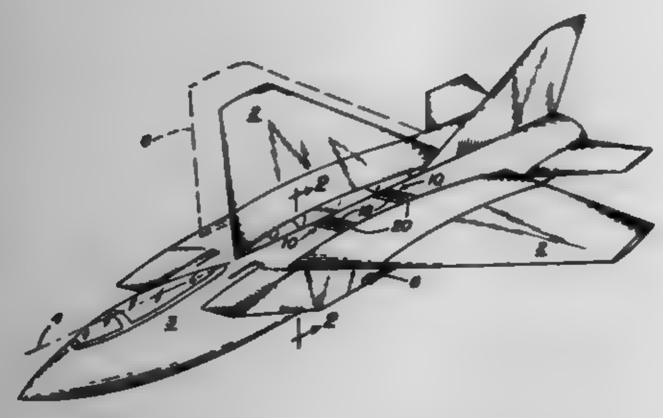
3,980,257
EXTENSIBLE-RETRACTABLE WING

Leland C. Koch, Ferguson; Warren P. Crossley, Affton, and Donald M. Scheller, Ballwin, all of Mo., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 360,226, May 14, 1973, abandoned. This application Aug. 16, 1974, Ser. No. 498,010

Int. Cl.^{2} B64C *3/54*

U.S. Cl. 244—43 13 Claims



1. An aircraft comprising:
a fuselage having an outer configuration that is incapable of producing a substantial amount of aerodynamic lift;
two wing semi-spans, each of unitary construction, movably mounted on said fuselage, each semi-span having an inboard portion overlapping a portion of the fuselage and an outboard portion extending beyond the fuselage when the semi-spans are in their fully retracted position said moveable wing semi-spans together forming a wing which provides substantially all the lift for the aircraft; and
means for selectively extending and returning said semi-spans as a whole from and to their fully retracted position substantially transversely to the aircraft longitudinal axis, whereby the amount of each semi-span overlapping said fuselage is varied without varying wing sweep-angle, said inboard portion of each semi-span still overlapping a portion of said fuselage in all positions of extension.

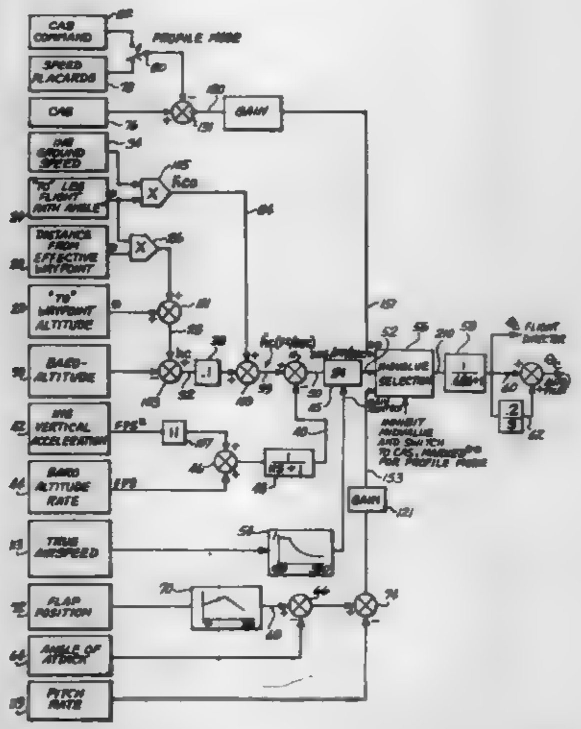
3,980,258
VERTICAL NAVIGATION STEERING CONTROL SYSTEM FOR AIRCRAFT

Peter Eberhard Simeon, Edmonds, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed June 27, 1975, Ser. No. 591,250

Int. Cl.^{2} G05D *1/08*

U.S. Cl. 244—182 9 Claims



3. A flight control system for an aircraft comprising in combination:
means for providing an angle of attack error signal;
means for providing a navigation path error signal;
means for providing a calibrated airspeed error signal;
means responsive to each of said aforementioned means for selecting the mid value amplitude of the aforementioned signals for path command control of the aircraft.

3,980,259
AIRCRAFT RECOVERY METHODS

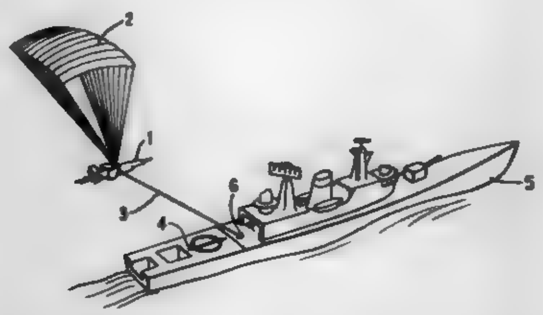
Richard David Greenhalgh; Ronald Alexander Saunders, and George Reginald Seyfang, all of Warton near Preston, England, assignors to British Aircraft Corporation Limited, London, England

Filed Apr. 2, 1975, Ser. No. 564,639

Claims priority, application United Kingdom, Apr. 3, 1974, 14871/74

Int. Cl.^{2} B64D *17/80*

U.S. Cl. 244—139 2 Claims



1. A method of effecting transition of a flight vehicle having propulsion means from an in-flight state to an on-ground state including the following steps:
deploying an inflatable wing from a stowed position in the vehicle such that the vehicle is suspended therefrom,
maneuvering the combination of the vehicle and its deployed wing with the propulsion means operating to a position higher than and in the region of a landing surface,
causing a line to be passed between the combination vehicle and the landing surface,
causing the combination vehicle to act as a kite to maintain tension in the line by stopping the propulsion means, and,
winding the line in so that the combination vehicle is drawn toward the landing surface.

3,980,260
INFLATABLE KITE

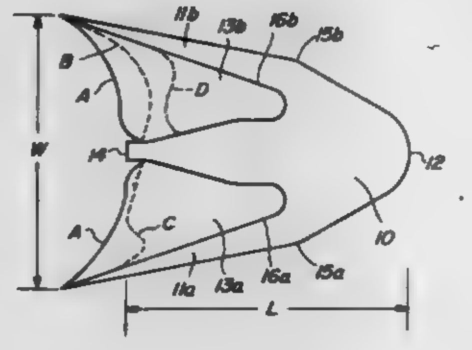
Louis Lawrence Laske, Grayslake, Ill., assignor to Vonco Products, Inc., Lake Villa, Ill.

Continuation of Ser. No. 347,879, April 4, 1973, abandoned. This application Sept. 26, 1974, Ser. No. 509,491

The portion of the term of this patent subsequent to Apr. 2, 1988, has been disclaimed.

Int. Cl.^{2} B64C *31/06*

U.S. Cl. 244—153 R 12 Claims



1. A kite comprising:
an inflatable rearwardly tapering body member provided with a rounded leading edge which when said body is inflated is rounded in both plan and side views forming the leading edge of said kite and having substantially smooth teardrop shape, two inflatable opposing rearwardly projecting side members extending when inflated rearwardly to at least about the rear extremity of said body member attached to said body member and together forming a single inflated volume wherein said rounded leading edge is connecting with the outer edges of said side members;
a non-inflatable web of flexible sheet material connected between the trailing edge of each rearwardly projecting side member and said body member, said web extending over at least 50% of the area defined by said body member the side members and straight lines joining the rear extremities of said body member and each of said side members;
a line attachment means bonded to said body member; and
the ratio of the maximum width of the kite when inflated to the length of the kite being 0.5 to 1.5.

3,980,261
SPEED GOVERNORS

Harry William Hadaway, Eastcote, England, assignor to London Transport Executive, London, England

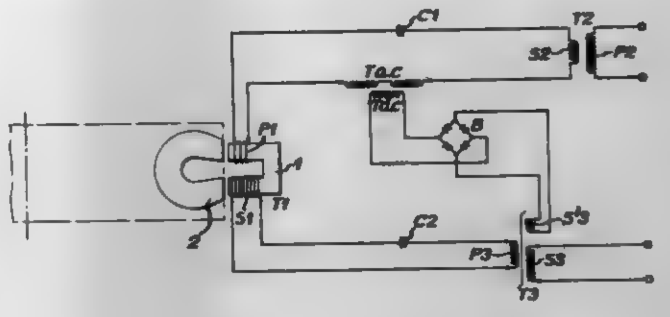
Filed Feb. 3, 1975, Ser. No. 546,200

Claims priority, application United Kingdom, Feb. 8, 1974, 5833/74

Int. Cl.^{2} B61L *3/16*

U.S. Cl. 246—182 R 4 Claims

1. A vehicle speed governor including a dynamo electric device comprising a rotor arranged to rotate in response to rotation of an axle of the vehicle and a stator having a primary winding connected across an a.c. voltage supply and a secondary winding coupled via a secondary winding of a saturable transformer to the d.c. control winding of a transductor whose a.c. winding is connected in the a.c. voltage supply circuit to the primary winding of the said stator, a further secondary winding of the saturable transformer being arranged to be connected to vehicle speed control means and the arrangement being such that saturation of the saturable transformer occurs at a predetermined rotor speed to increase the impedance of the transductor and effect a corresponding reduction in the current through both secondary windings of the saturable transformer.



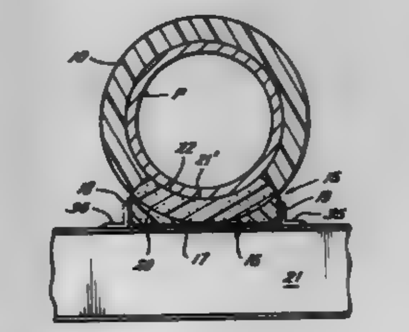
3,980,262
PIPE INSULATION LOAD BEARING SUPPORT

Harvey H. Lee, Pasadena, Tex., assignor to Rilco, Division Sadler Industrial Services, Inc., Clute, Tex.

Filed Mar. 9, 1972, Ser. No. 233,042

Int. Cl.^{2} F16L *3/18*

U.S. Cl. 248—65 1 Claim



1. A rigid insulation support for engaging and positioning an insulated tubular member on the upper surface of a support member including:
a. a load bearing metal member;
b. said load bearing metal member having a substantially flat bottom for engaging the upper surface of the support member throughout the width thereof;
c. said load bearing metal member having sides extending substantially the length thereof and substantially perpendicular to said bottom;
d. a foamed, rigid plastic load bearing member bonded to said sides and said bottom of said load bearing metal member;
e. said foamed, rigid plastic load bearing member having an integral arcuate segment extending above said sides of said load bearing metal member and said arcuate segment having extensions extending beyond said flat bottom of said load bearing metal member at each end thereof;
f. said integral arcuate segment having an upper arcuate surface for engaging the tubular member;
g. said arcuate segment extensions beyond the ends of said flat bottom forming arcuate surfaces for securing said foamed, rigid plastic load bearing member to the insulated tubular member; and
h. means secured to the support member and abutting said sides of said load bearing metal member to inhibit lateral movement of the insulated tubular member while accommodating longitudinal movement of the insulated tubular member and rigid insulation support.

3,980,263
DEVICE FOR HOLDING AN ELONGATED OBJECT SUCH AS A WIRE

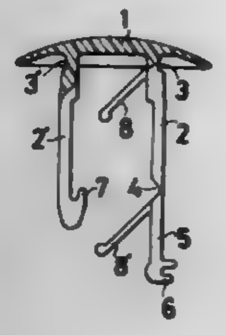
Seizi Okuda, Yokohama, Japan, assignor to Nifco Inc., Tokyo, Japan

Filed June 5, 1975, Ser. No. 584,235

Claims priority, application Japan, June 8, 1974, 49-65876

Int. Cl.² F16L *3/00*

U.S. Cl. 248—73 **3 Claims**



1. A plastic device for holding a length of wire and other elongated objects comprising: an umbrella-shaped head portion; a pair of plate legs integrally connected to and extending from the undersurface of the head portion; and a flap hinged to the end of one of the opposite legs by a hinge portion, said flap having a nail catch at the free end thereof, whereas the other leg having a hook at the free end thereof, thus connecting the opposite legs at their free ends by raising and fitting the flap into a closing position in the inter-leg space and by engaging the nail catch with the hook; said one leg having a slant branch extending downward from the vicinity of the connection of said one leg to said head portion whereas said flap having a similar slant branch in the vicinity of the hinge portion so that the slant branch when the flap is brought to the closing position, may provide with the slant branch of said one leg, a converging space in which the elongated object is fixedly confined.

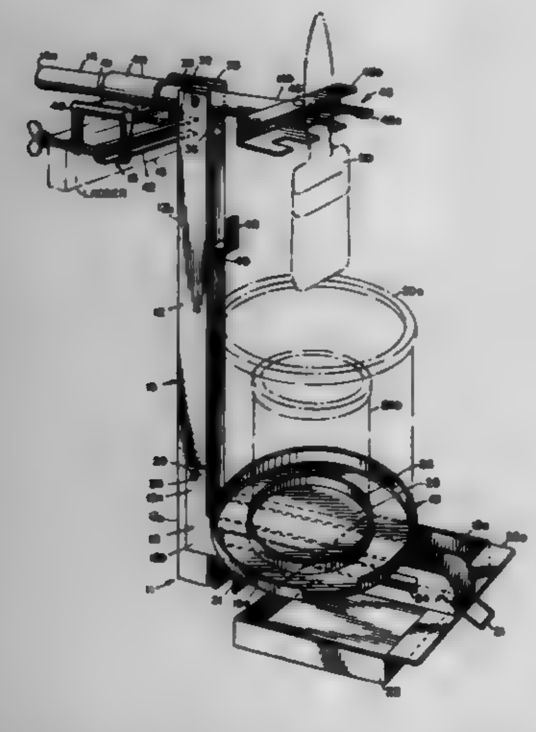
3,980,264
PAINT CAN AND ACCESSORY HOLDER

Oliver R. Tomasik, 107 Mississippi Ave., Joliet, Ill. 60433

Filed Dec. 22, 1975, Ser. No. 643,013

Int. Cl.² E06C *7/14*

U.S. Cl. 248—210 **6 Claims**



1. A paint can and accessory holder comprising, in combination, a base for supporting a paint can, said base including a support mount disposed generally horizontally and having fixedly secured thereon a generally flat tray sized and shaped to receive a paint can, said support mount being elongated and having its ends extending beyond the tray, an accessory tray underlying said support mount and having a lip swingably securable to one end thereof, means for swingably securing together said lip of the accessory tray and said one end of the support mount, the other end of said support mount being bifurcated, an elongated, vertical member having its lower end sized and shaped to fit within said bifurcated support mount end and being removably securable thereto, stop means carried by said support mount for abutment by said lower end of the vertical member so that the vertical member is disposed at a 90 degree angle with the support mount, means for removably securing together said bifurcated support mount end and the lower end of said vertical member, an elongated upper cross-arm removably securable along its mid-portion to the upper end of said vertical member, means for removably securing together the mid-portion of said upper cross-arm to the upper end of said vertical member, said upper cross-arm being horizontally disposed and generally vertically juxtaposed over said support mount so that one end of the cross-arm terminates at a location approximately over the center of said tray, means carried by said one end of the cross-arm for holding a paint brush or the like, and clamping means removably secured to the other end of said cross-arm for releasably gripping a ladder or other fixed structural member.

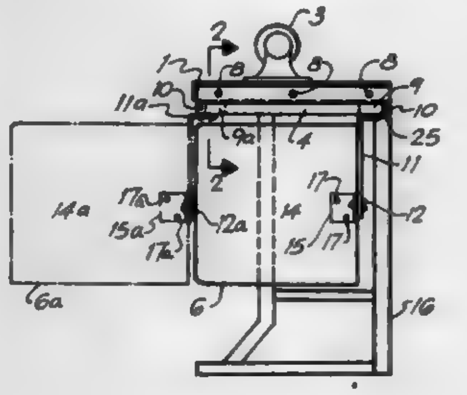
3,980,265
SEWING MACHINE TABLE ACCESSORY SHELF

Dominick Pizzi, Jersey City, N.J., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Aug. 21, 1975, Ser. No. 606,468

Int. Cl.² A47G *29/02*; E04G *3/08*

U.S. Cl. 248—240.4 **5 Claims**



1. A sewing machine table accessory shelf comprising a longitudinal track fastened horizontally at a side end of a sewing machine table, a longitudinal slot extending the entire length of the lowermost surface of a cavity in said track, said cavity extending the length of said track, a slidable support member within said cavity substantially shorter than the entire length of said track, an L-shaped bracket having a leg depending vertically downwards from the lowermost surface of said slidable support member, a right angle detenting bracket fastened at one edge on the surface of a shelf, a square pin transverse to said vertical leg of said L-shaped bracket located near the free end thereof, said square pin non-rotatably fastened to said vertical leg, passing through a generally W-shaped slot cut through the surface of said right angle detenting bracket which is perpendicular to said shelf, said W-shaped slot terminated at each extreme in rectangular cutouts at right angles to each other, whose width is slightly greater than the width of said square pin, the central portion of said W-shaped slot having an opening of sufficient size to permit free rotation of said right angle detenting bracket and shelf about said square pin, said vertical leg maintained near parallel engagement with that face of said right angle detenting bracket which is transverse to said shelf by a washer securely fastened to said square pin ner the free end thereof, said shelf

maintained in a vertical plane by that portion at one end of said W-shaped slot rectangular in shape, said shelf maintained in a horizontal plane by the other rectangular portion at the other end of said W-shaped slot, a pin transverse to said cavity traversing said cavity, said pin fastened near the ends of said track.

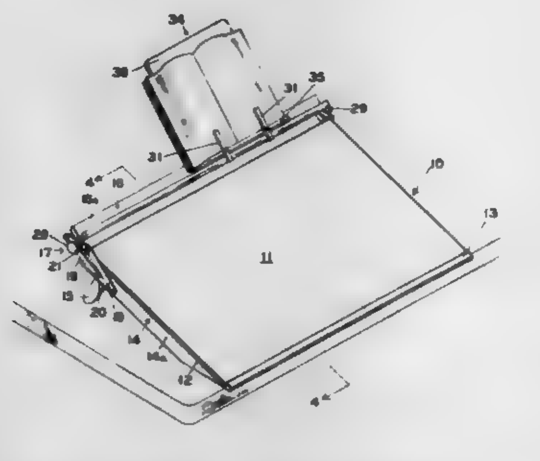
3,980,266
DESK TOP WORK SUPPORT DEVICE

Robert E. Jones, 4818 Marathon Drive, Madison, Wis. 53705

Filed Dec. 26, 1974, Ser. No. 536,610

Int. Cl.² A47G *1/24*

U.S. Cl. 248—454 **8 Claims**



1. A desk top work support device comprising:

a. a base having an inclined primary work surface,

b. a secondary work support member positioned above said primary work surface, and

c. at least one linkage having a top link connected to said secondary work support member and having forward and rearward links pivotally connected to the said base and to said top link, said linkage and said connected secondary work support member being pivotable between a forward position in which the linkage extends forwardly from the base connection and the secondary work support member extends across the primary work surface to provide a close reading position and a rearward position in which the linkage extends rearwardly from the base connection and the secondary work support member is located rearwardly from the primary work surface to provide a secondary reference reading position and to allow full access to the primary work surface,

d. the distance between the points of connection of the forward and rearward links to the top link being greater than the distance between the points of connection of the forward and rearward links to the base to position the secondary work support member at a greater inclination with respect to the primary work surface in its forward position than in its rearward position.

3,980,267
COLLAPSIBLE EASEL MODULE

Evan Palmer, 144-24 27th Ave., Flushing, N.Y. 11354

Filed Oct. 15, 1975, Ser. No. 622,481

Int. Cl.² A47B *97/04*

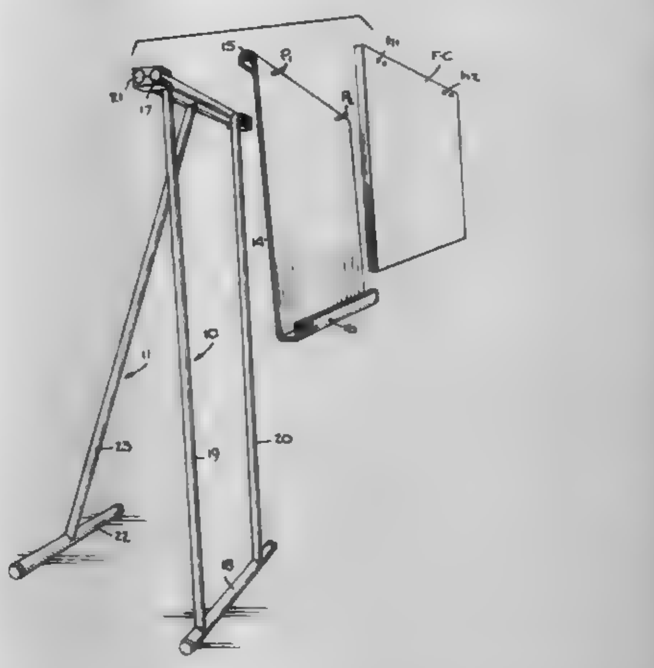
U.S. Cl. 248—463 **9 Claims**

1. A collapsible easel module adapted to support flip-chart pads or other material to be displayed, said module comprising:

a. a front frame element formed by upper and lower horizontal arms bridged by a pair of parallel legs at points of connection displaced from the ends of the arms;

b. a rear element formed by corresponding upper and lower arms bridged by a single leg connected to said arms at the midpoints thereof;

c. double-barreled couplers engaging the complementary ends of the upper arms of the front and rear elements to hold the arms in parallel relation and to maintain a desired caret angle therebetween; and



d. a display panel whose upper end is curved backwardly to define a hook which is receivable in the space between the parallel upper arms of the frame, whereby the panel is suspended therefrom.

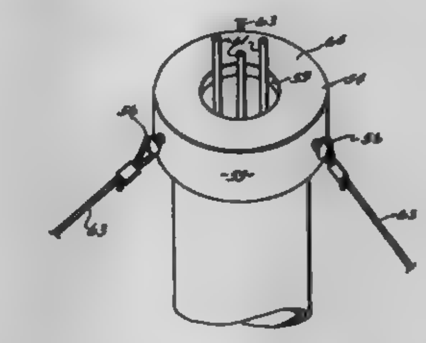
3,980,268
CIRCULAR COLUMN MOLD HAVING AN UPPER ALIGNMENT RING

Joseph O. Ellis, 3741 Crown Shore Drive, Dallas, Tex. 75234

Division of Ser. No. 521,742, Nov. 7, 1974, Pat. No. 3,956,437, which is a continuation-in-part of Ser. No. 379,368, July 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 347,445, April 3, 1973, abandoned, which is a continuation-in-part of Ser. No. 162,573, July 14, 1971, abandoned. This application June 2, 1975, Ser. No. 583,414

Int. Cl.² E04G *13/02*

U.S. Cl. 249—49 **8 Claims**



1. An alignment ring for a column mold used in casting concrete columns, said mold alignment ring comprising

a relatively flat, plate-shaped element adapted to cooperatively engage the top of said column mold,

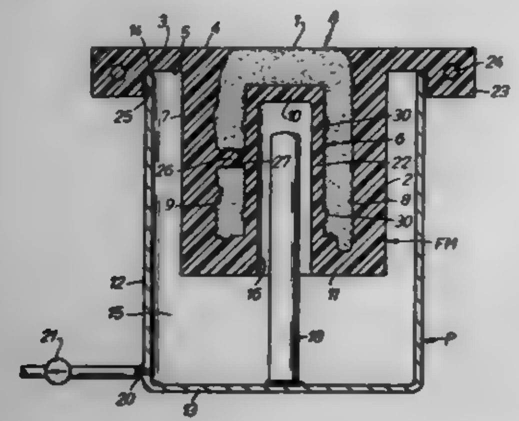
at least two seats defined in said plate-shaped element, each of said seats having a cross-sectional area different from the other, each of said seats being substantially concentric one with the other, one of said seats being sized to engage the top of said column mold in seated relation thereon when said column mold is of a first cross-sectional area, and the other of said seats being sized to engage the top of said column mold in seated relation thereon when said column mold is of a second cross-sectional area,

plumb means fixed to said plate-shaped element, said plumb means permitting said column mold to be plumbed after seating said mold alignment ring on top of said column mold and prior to casting of concrete therein, and

structure defining a hole through said plate, said hole being substantially concentric with said seats, and said hole permitting concrete to be cast therethrough into said column mold when said mold alignment ring is seated on said column mold.

3,980,269
MOLDING APPARATUS INCLUDING A ONE-PIECE FLEXIBLE MOLD HAVING MALE AND FEMALE FORMING MEMBERS

William J. Maurine, and Raymond M. Putzer, both of Racine, Wis., assignors to Precision Flexmold, Inc., Racine, Wis.
Filed Jan. 20, 1975, Ser. No. 542,176
Int. Cl.² B29C *1/16, 1/12;* **B28B** *7/10, 7/06*
U.S. Cl. 249—139 **1 Claim**

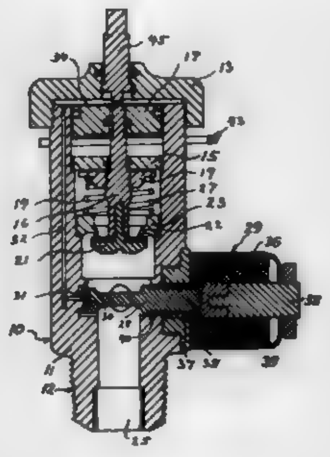


1. Apparatus for molding a generally hollow and seamless article comprising a one-piece distensible flexible mold having a generally hollow outer portion and a generally hollow inner portion, said outer mold portion having a bottom wall, said inner mold portion being integrally formed with and extending upwardly from said bottom wall and comprising a generally cylindrical body having an upper end wall and defining a downwardly opening generally cylindrical cavity, said mold portions defining an upwardly opening generally annular cavity into which hardenable material can be placed and which is of the configuration of the article to be molded, said outer mold portion being of such wall thickness that it is self-supporting and supports the weight of the material poured therein without distortion; a vacuum pot being of such size so as to receive said mold therein, said outer mold and pot forming a sealed generally annular chamber therebetween, an upwardly extending rigid mandrel projecting from and fixed to the bottom of the pot and into the hollow downwardly opening cavity of said inner mold portion, the rigid mandrel and inner mold portion being spaced apart and defining an annular space into which said mold can collapse, and means for drawing a vacuum in said chamber whereby said outer mold portion distends and expands into said chamber and said inner mold portion collapses to permit its withdrawal from said article when the latter has hardened.

3,980,270
VALVE FOR CONTROLLING THE FLOW OF GASES UNDER HIGH PRESSURE FROM STORAGE VESSELS

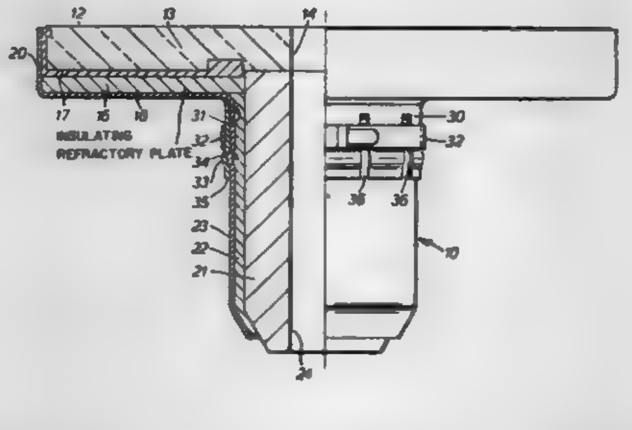
Morgan Carlos Thomas, Estrada Froes 503, Sao Francisco, Niteroi, Estado do Rio de Janeiro, Brazil
Filed May 5, 1975, Ser. No. 574,509
Claims priority, application Brazil, May 30, 1974, 4.428/74
Int. Cl.² F16K *31/06*
U.S. Cl. 251—30 **2 Claims**

1. In a valve assembly for controlling the flow of a fluid or gas such as CO_2 under high pressure from storage vessels such as cylinders, incorporating in a single unit; a valve body defining a pressure chamber; a main valve in said pressure chamber having a valve stem movable to cause said main valve to open; a shoulder on said valve stem, a piston which normally floats freely on the valve stem but movable to bear against said shoulder on the valve stem to cause the valve stem to move to open the main valve; a pilot valve accommodated in said valve body and controlling flow of fluid under pressure to said piston; an electrically operated solenoid plunger operatively associated with said pilot valve for actuating same to open and permit said fluid under pressure to flow to said piston and move it against said shoulder on the valve stem; there being a space adjacent said piston when the main valve is closed for receiving a safety fork member to hold said piston off said shoulder on the valve stem to immobilize said piston and prevent it from moving the valve stem to open the main valve, and a manual means of operation comprising a manually rotatable plunger movable to contact said valve stem independently of said piston to open said main valve.



3,980,271
POURING OF MOLTEN METALS

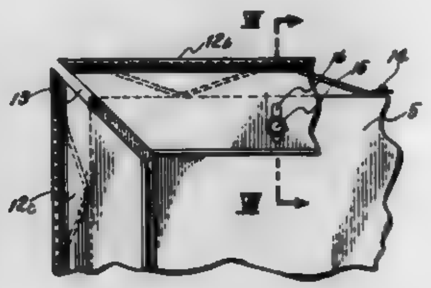
Robert Duncan Hind, Rotherham, and Jeffrey Hill, Oxspring, near Sheffield, both of England, assignors to United States Steel Corporation, Pittsburgh, Pa.
Filed Jan. 9, 1975, Ser. No. 539,665
Claims priority, application United Kingdom, Jan. 16, 1974, 2130/74
Int. Cl.² B22D *37/00*
U.S. Cl. 251—144 **25 Claims**



1. A sliding plate for a sliding gate valve, comprising an apertured main upper refractory portion, an apertured nozzle mounting encasing said main portion and underlying the understood thereof, a collector nozzle tube which depends from said nozzle mounting, a metal sleeve encasing said nozzle tube and cemented thereto, and securing means fastening said metal sleeve and said nozzle mounting together such that an end of said nozzle tube is held in direct abuttment with the underside of said main portion, said securing means being releasable to allow said nozzle tube to be detached from said main portion for replacement.

3,980,272
FIRE SMOKE DAMPER

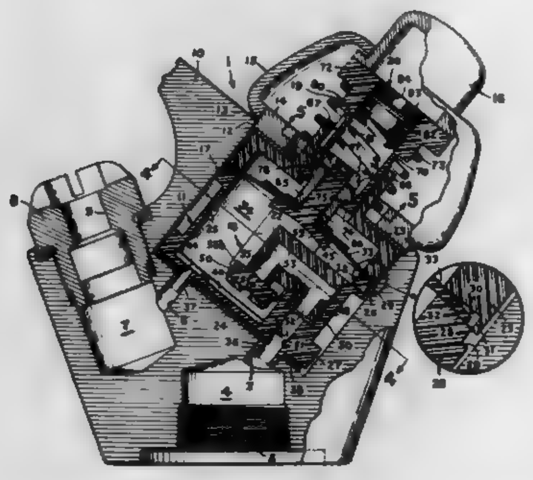
Takao Nakai, Takarazuka; Isamu Shimonomura, Kodaira; Isao Nakayama, Itami, and Yoshiyuki Yoshii, Kawanishi, all of Japan, assignors to Nittan Company, Limited, Japan
Filed Jan. 15, 1975, Ser. No. 541,160
Claims priority, application Japan, Oct. 9, 1974, 49-121229; May 16, 1974, 49-55003; June 7, 1974, 49-65386
Int. Cl.² F16K *1/228*
U.S. Cl. 251—306 **3 Claims**



1. A fire and smoke damper comprising a tubular casing, a rotatable transversely disposed shaft disposed within the casing, a vane plate fixed to said shaft for rotation therewith to open and closed positions, the periphery of said plate being slightly smaller than the inside of said casing to form a gap therebetween and a peripheral structure slidably engaging the periphery of said vane plate and enclosing the peripheral edge thereof, said peripheral structure being biased outwardly to close said gap when the vane plate is in the closed position.

3,980,273
CARTRIDGE TYPE CONTROL VALVE WITH PLASTIC ELEMENTS

Warren E. Turner, Succasunna; Arthur C. Homeyer, Essex Fells, and Richard C. Dreibelbis, Fair Lawn, all of N.J., assignors to Emerson Electric Co., St. Louis, Mo.
Division of Ser. No. 455,516, March 29, 1974, Pat. No. 3,902,600. This application Mar. 20, 1975, Ser. No. 560,357
Int. Cl.² F16K *25/00*
U.S. Cl. 251—366 **2 Claims**

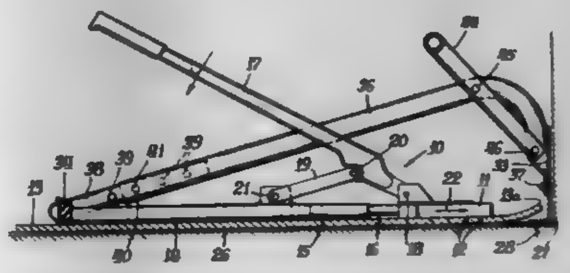


1. A fluid transfer assembly for a cartridge type control valve comprising;

- a. a composite fluid transfer chamber means and inlet duct assembly made of plastic material having an outlet for fluid to be dispensed,
- b. said transfer chamber means including, a cup-like member having a bottom and side wall means,
- c. locking groove means formed in the medial section of the side wall means of the cup like member,
- d. said inlet duct assembly including, a longitudinal leg, and a cantilevered transverse leg having a valve port means at the cantilevered end thereof,
- e. the longitudinal leg is formed with one end as part of the bottom of the cup-like member and a portion thereof extending along the side wall means of the cup-like member to a point adjacent the locking groove means,
- f. means for connecting the end of the transverse leg remote from the cantilevered end to both the side wall means at said locking groove means and the end of the longitudinal leg adjacent the locking groove means to prevent relative rotation of the transverse leg in assembled position
- g. said longitudinal leg and transverse leg having interconnecting passage means formed therethrough and one end of the said interconnecting passage means communicating with a source of fluid to be dispensed, and
- h. the valve port means in said transverse leg communicating at one end with said interconnecting passage means and disposed at the other end for delivering fluid to be dispensed to the chamber formed by said cup-like member.

3,980,274
CARPET STRETCHER HOLDER

Jack Edward Ebert, 103 W. Stratford Place, Mount Prospect, Ill. 60056
Filed Oct. 16, 1975, Ser. No. 622,944
Int. Cl.² A47G *27/04*
U.S. Cl. 254—57 **8 Claims**



1. An apparatus for use in the process of laying carpet over an area of floor having a tackless carpeting strip immovably secured at a border of the area and employed in conjunction with a power carpet stretcher comprising a frontwardly extending carpet engaging head, a rearwardly extending tailpiece and power means interconnecting the head and tailpiece for moving the head away from the tailpiece, said apparatus comprising:

- a unit separate from said power carpet stretcher and unconnected thereto, said unit including:
  - engaging means for placing in engagement with the side of the carpet strip opposite to said area whereby a pulling force in a direction from the area toward the carpet strip may be applied to the carpet strip;
  - a pressure member for positioning in said area and spaced from said engaging means a distance greater than the length of the stretcher from the distal end of the head thereof to the distal end of the tailpiece thereof, whereby the stretcher may be positioned on said area with said tailpiece against the pressure member and said head engaging the carpet adjacent said strip; and
  - frame means interconnecting the engaging means and the pressure member to prevent their separation, whereby as said power means is operated the pressure of the tailpiece against the pressure member is transmitted by the frame means to the engaging means and thus to the strip which holds the apparatus and tailpiece against movement.

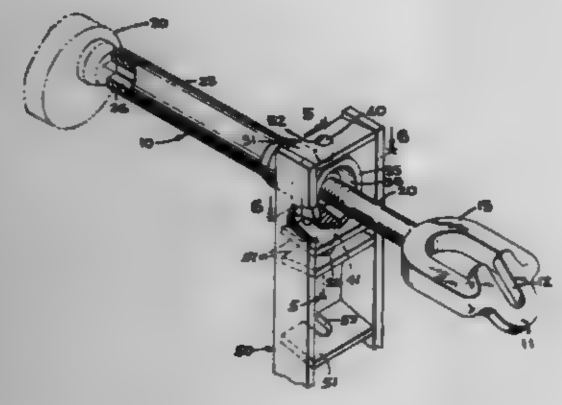
3,980,275
CABLE TENSIONING APPARATUS

Anastacio V. Sanchez, 10775 Foothill Blvd., Cupertino, Calif. 95014

Continuation-in-part of Ser. No. 227,991, Feb. 22, 1972, Pat. No. 3,749,364. This application Mar. 26, 1973, Ser. No. 344,573

Int. Cl.² B66F *3/10, 3/36*

U.S. Cl. 254—67 **5 Claims**



1. Apparatus for tensioning a cable comprising:

a. a tube with an inner threaded wall;

b. a threaded rod disposed in said tube in threaded engagement with the inner wall thereof, said rod projecting out of said tube;

c. a cable retaining member carried by said rod for movement therewith;

d. an abutment member disposed between said cable retaining member and said tube, said abutment member being formed with an aperture for freely receiving said rod and arranged to be engaged by said tube to inhibit axial movement of said tube toward said cable retaining member, said abutment member being formed with aligned, oppositely directed means for imparting pivotal movement to said abutment member, the configuration of a wall surrounding the aperture of said abutment member conforms to the contour of the end of said tube adjacent thereto for nesting said tube in said aperture of said abutment member for swivel movement; and

e. a post, said post being formed with transversely spaced, longitudinally extending members and transversely disposed, longitudinally spaced members, said transversely disposed members being formed with means cooperating with said oppositely directed means of said abutment member for said transversely disposed members to support said abutment member for pivotal movement.

3,980,276
COLLAPSIBLE BOOM FOR VEHICLES

James R. Burkland, 5602 E. 152nd St., Puyallup, Wash. 98371

Filed Jan. 30, 1975, Ser. No. 545,704

Int. Cl.² B66C *23/60*

U.S. Cl. 254—139.1 **16 Claims**

1. A collapsible boom assembly suitable for storage in a limited space within a vehicle and adapted for quick and easy attachment to the vehicle for raising and lowering heavy objects with a cable and winch assembly, said collapsible boom assembly comprising:

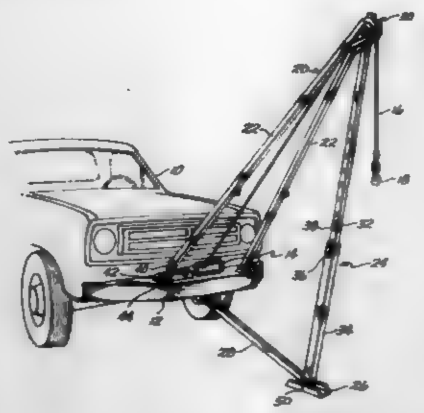
a pair of upper members, each having at one end thereof means for attachment to said vehicle;

an upright member;

a sheave device adapted to guide said cable;

connecting means pivotally interconnecting at a first juncture each of said pair of upper members, said upright member, and said sheave device;

said connecting means providing means for aligning each of said members in a substantially parallel relationship for storage in a minimum space, and means for controlling and guiding relative movement of said upright member with respect to said upper members in a direction parallel to the longitudinal axis of said upper members and into a spread apart relationship for reacting loads imposed on said sheave device when said upper members are attached to said vehicle.



3,980,277
DEVICE FOR FENCE CONSISTING OF A NUMBER OF POSTS WITH ELECTRICALLY CONDUCTING CONDUCTORS AND A HIGH TENSION UNIT

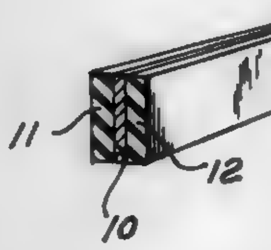
Bertil Petrus Enoksson, Gyttorp, Sweden, assignor to Nitro-Nobel A.B., Gyttorp, Sweden

Continuation of Ser. No. 343,481, March 21, 1973, abandoned. This application Oct. 21, 1974, Ser. No. 516,666

Claims priority, application Sweden, Apr. 14, 1972, 4863/72

Int. Cl.² A01K *3/00*

U.S. Cl. 256—10 **4 Claims**



1. An electrified fence for blocking the passage of earth bound animals, said fence comprising a plurality of posts and at least one electric conductor adapted to be connected to a voltage source and strung from post to post, said conductor including a single flat metal ribbon or rectangular cross-section and two layers of pliable insulation material, each of said layers fully coating one of the opposite face sides of said ribbon thereby sandwiching the metal ribbon between the insulation layers, said layers defining therebetween a continuous and uninterrupted strip of metal along the length of both edges of the conductor.

3,980,278
INTERLOCKING SAFETY FENCE POST AND PANEL

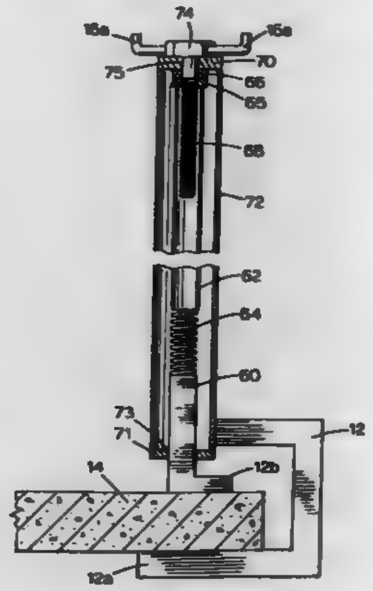
Murray A. Elias, Islington, Canada, assignor to Dell Holdings Limited, Toronto, Canada

Filed Jan. 17, 1975, Ser. No. 541,872

Int. Cl.² E04H *17/14*

U.S. Cl. 256—59 **6 Claims**

1. In combination, a safety fence panel and a safety fence post, said safety fence post having feet which are movable with respect to each other to cooperatively engage with a post mounting site to mount the post in an operative position at the site, operating means for moving said feet with respect to each other, a fence bracket mounted on said operating means, said fence bracket being adapted to engage with said safety fence panel, when said post is in an operative position to support said safety fence, to lock said operating means whereby said operating means is rendered inoperative when a safety fence panel is supported on said safety post to prevent movement thereof permitting movement of said feet with respect to one another, said operating means including a rotatable member adapted to rotate about an axis that extends longitudinally of said post, said fence bracket connecting with said rotatable member, said safety post consisting of at least two elongated members which are telescopically mounted with respect to one another and wherein said operating means consists of a turn-buckle member disposed between said elongated members, said turn-buckle being rotatable to effect said movement, said fence bracket consisting of at least one bracket member secured to and projecting from said turn-buckle member.



3,980,279
INTERLOCKING SYSTEM FOR ROADWAY TRAFFIC BARRIERS

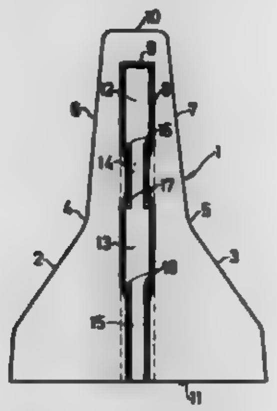
Peter Bofinger, 11 Orlando Drive, Chadwick Beach, N.J. 08739

Filed May 9, 1974, Ser. No. 468,257

Claims priority, application Germany, June 19, 1973, 2331160

Int. Cl.² E01F *15/00*

U.S. Cl. 256—13.1 **13 Claims**



1. An interlocking system for a plurality of roadway traffic barriers comprising

female locking means for both ends of a first of said barriers including female slot means having a longitudinal and a transverse dimension,

male locking means for both ends of a second of said barriers having at least one male member having a body and an end portion, said end portion being larger than said body portion in said transverse dimension, and

each said female slot means of a first barrier having (1) at least one entranceway section for receiving therethrough said male member of an adjacent second barrier and (2) at least one section reduced in the transverse dimension for capturing said male member end portion of said adjacent second barrier, each said female slot means having a longitudinally extending opening formed throughout a major portion of the longitudinal dimension of said first barrier and extending into and forming a bottom entranceway through opening through a bottom face of said first barrier to provide clear open passageway through said female slot means and out of said bottom entranceway for said adjacent second barrier male member when said first barrier is lifted upwardly for removal.

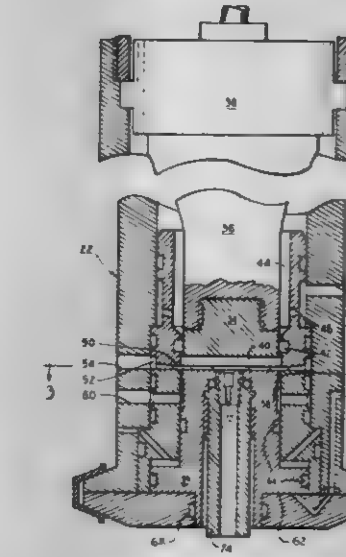
3,980,280
OSCILLATORY MIXER AND METHOD

Glendon M. Benson, Danville, Calif., assignor to Energy Research & Generation, Inc., Oakland, Calif.

Division of Ser. No. 259,885, June 5, 1972, abandoned. This application Dec. 16, 1974, Ser. No. 533,380

Int. Cl.² B01F *5/00, 11/00*

U.S. Cl. 259—2 **9 Claims**



1. A material processing device comprising means for introducing and dispersing flowable material into a disc-shaped processing chamber defined at least partially by two substantially fluid impervious end plates and a peripheral margin, means for rotating at least one of said end plates of said chamber, means for driving only one of said end plates in oscillatory motion to produce high shear rates within said material contained in said chamber, and means for removing and displacing processed said material from said chamber.

3,980,281
AGITATED VESSEL ACCESSORIES WITH VIBRATION SUPPRESSING STABILIZERS

Takashi Okabayashi, and Satoru Mikuni, both of Kobe, Japan, assignors to Sybron Corporation, Rochester, N.Y.

Filed Oct. 22, 1974, Ser. No. 516,903

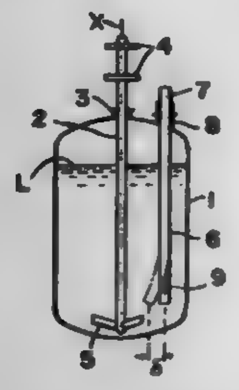
Claims priority, application Japan, Apr. 22, 1974, 49-45325

Int. Cl.² B01F *7/16, 7/18, 7/20*

U.S. Cl. 259—107 **2 Claims**

1. In a liquid containing vessel having a centrally located rotary agitator that causes liquid to rotate about a central vertical axis of the vessel and an elongated member having a longitudinal axis extending generally parallel to said central axis at a positioned laterally displaced from said central axis and having a free end projecting into said liquid, the improvement comprising at least one vibration suppressing stabilizer plate having parallel and opposite flat surfaces extending from

adjacent said free end of said elongated member substantially at right angles to a radial line from said central axis to said elongated member and positioned such that said flat surfaces are parallel to said elongated member longitudinal axis.



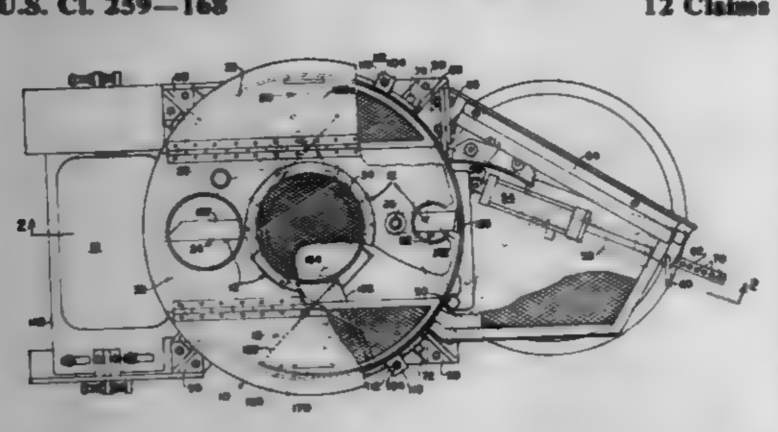
3,980,282
MATERIAL MIXING APPARATUS

Elsward K. Burch, Chicago, and Pete B. Pedersen, Glendale Heights, both of Ill., assignors to Pettibone Corporation, Chicago, Ill.

Filed Mar. 18, 1974, Ser. No. 451,734

Int. Cl.² B01F *7/20*; B28C *7/24*

U.S. Cl. 259—168 12 Claims



11. In a mixing apparatus of the type that embodies a bowl adapted to receive therein material to be mixed and including a bottom wall and an upstanding cylindrical side wall, a turret mounted for rotation in one direction about a vertical central axis within the bowl and defining with said side and bottom walls a mixing annulus, and power means for rotating said turret in said one direction, the improvement which comprises: a plow component fixedly connected to and disposed outwardly of the turret for rotation bodily in unison therewith for sweeping movement around the annulus, said plow component having an upper planar surface which is inclined forwards and downwards with respect to the direction of travel of the turret, has a leading edge in close proximity to the bowl bottom wall and an elevated trailing edge, and is adapted upon swinging movement of the plow component around said annulus to lift that portion of the material that is adjacent to the bottom region of the bowl and then release the same over said trailing edge so as to form a void behind said trailing edge, said plow component having an additional gusset-like planar surface which is positioned so that it bridges the space between the front region of the inner marginal portion of the first mentioned planar surface and the adjacent portion of the turret, extends upwards and inwards, intersects the turret at a dihedral angle and also intersects said first mentioned inclined planar surface at a dihedral angle, has its trailing end positioned adjacent to the medial portion of said inner marginal portion of the first mentioned planar surface and in substantially parallel relation with the leading edge of the lift plow, and is adapted to elevate that portion of the material that is in the vicinity of the turret and to pass the same beneath the material issuing from the trailing edge of the first mentioned inclined surface and into said void, thus providing a continuous division and recombination of the material within the annulus as the turret is rotated.

3,980,283
APPARATUS FOR PERFORMING A CONTINUOUS METALLURGICAL REFINING PROCESS

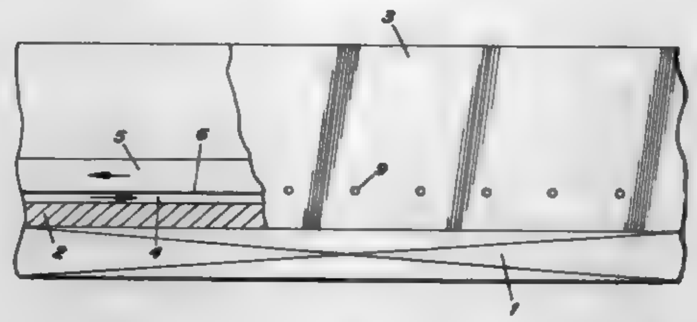
Eberhard Steinmetz, and Jürgen Kuhn, both of Bochum, Germany, assignors to Gesellschaft zur Forderung der Eisenhuttentechnik mbH, Dusseldor, Germany

Division of Ser. No. 226,303, Feb. 14, 1972, Pat. No. 3,861,905. This application Apr. 26, 1974, Ser. No. 464,714

Claims priority, application Germany, Feb. 16, 1971, 2107263

Int. Cl.² C21C *5/56*

U.S. Cl. 266—215 6 Claims



1. An apparatus for performing a continuous metallurgical refining process in which metal and slag contact one another counter-currently, comprising an electromagnetic counter-current channel, said electromagnetic counter-current channel inclined upwards with respect to the horizontal, the electromagnet being disposed on said channel to effect upward movement of said metal, said electromagnetic counter-current channel having nozzles for the introduction of refining gases into the immediate vicinity of the metal-slag boundary which nozzles are disposed through the longitudinal side walls of the channel in the region of the predetermined boundary surface between metal and slag, the discharge directions of the nozzles being disposed in the plane of the predetermined boundary surface.

3,980,284
APPARATUS FOR PREVENTING SOLIDIFICATION OF MOLTEN METAL IN AN ELECTRO-MAGNETIC PUMP FOR SUPPLYING THE MOLTEN METAL

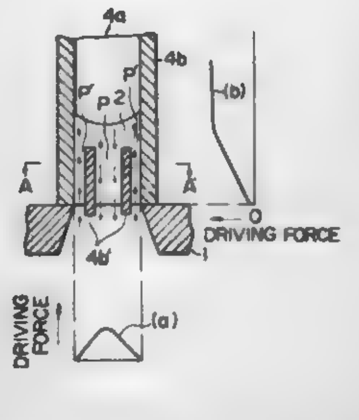
Shigeyuki Shigihara; Mitsuji Karita, and Hideo Ikeguchi, all of Ise, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan

Filed Nov. 25, 1974, Ser. No. 526,792

Claims priority, application Japan, Dec. 6, 1973, 48-138327

Int. Cl.² F27D *3/14*

U.S. Cl. 266—237 5 Claims



1. An apparatus for supplying molten metal which comprises:

a. a container means for receiving molten metal;

b. an electromagnetic pump including a molten metal conduit therein, said conduit including a plurality of adjacent passageways therein, said pump being connected to said container means, said electromagnetic pump including means for generating a traveling magnetic field directed away from said container to discharge the molten metal from the container through said conduit and by using the molten metal as a secondary conduit thereof, and said electromagnetic pump including means for alternatively generating a traveling magnetic field toward said container;

c. and means for causing perpetual replacement of the molten metal in the pump with that in the container when the traveling magnetic field is directed toward the container and for preventing solidification of said molten metal in said pump, said means for causing perpetual replacement of molten metal in the pump including partition walls disposed within said molten metal conduit and defining said passageways for said molten metal, said partition walls extending into said container whereby when the magnetic field is applied toward the container, the partition wall causes molten metal to be introduced into the container.

3,980,285
TILTABLE CONVERTER

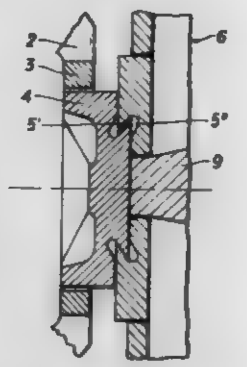
Bernhard Enkner, Linz, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Apr. 23, 1975, Ser. No. 570,826

Claims priority, application Austria, Apr. 25, 1974, 3409/74

Int. Cl.² C21C *5/42*

U.S. Cl. 266—246 13 Claims



1. A tiltable converter surrounded by a shell and borne on supporting elements accommodating support and tilting forces, said supporting elements comprising:

- a carrying ring having a certain profile,
- two carrying trunnions provided on said carrying ring and arranged to lie opposite each other,
- two bearing eyes secured to the converter shell and arranged to lie opposite each other, and
- two carrying disks, each disk being engaged with play in a bearing eye, the carrying disks and the carrying ring being releasably connectable by means of tongue-and-groove connections in such a manner that the carrying disks each lie opposite corresponding carrying trunnions.

3,980,286
TUYERE FEED LINES

René N. Mahr, Howald-Hesperange, Luxemburg, and Ernest P. Küntziger, Assenede, Belgium, assignors to S.A. des Anciens Etablissements Paul Wurth, Luxembourg, Luxemburg

Filed July 17, 1974, Ser. No. 489,459

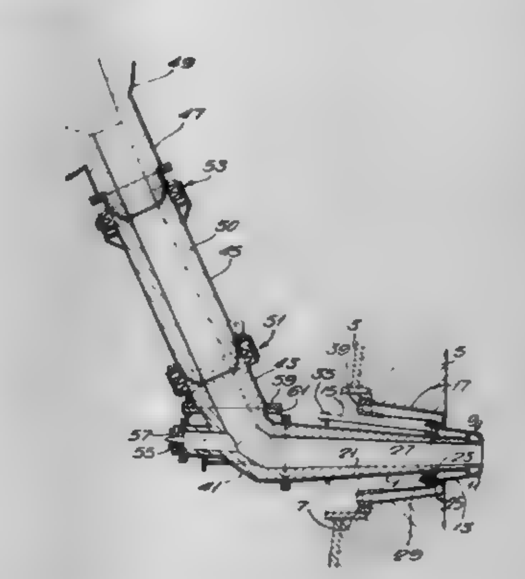
Claims priority, application Luxemburg, July 30, 1973, 68126

Int. Cl.² C21B *7/16*

U.S. Cl. 266—270 14 Claims

1. In apparatus for delivering preheated fluid from a source for injection into a furnace, the improvement comprising:

- fluid injector means, said injector means defining a first conduit section having first and second ends and being adapted to be at least partly inserted into a furnace combustion chamber through an aperture in the furance wall whereby fluid may be discharged into the furnace from said first end of said first conduit section;
- a lining of refractory material on at least a portion of the wall of said fluid injector means, said refractory material extending longitudinally from said second end of said first conduit section toward said first end and defining the inner diameter of said portion of said first conduit section;
- nozzle means, said nozzle means defining a second conduit section, said nozzle means including a lining of refractory material which defines the inner diameter of said second conduit section;



- means rigidly assembling said injector means to said nozzle means whereby said first and second conduit sections are axially aligned and said lining of refractory material on said nozzle means and said lining of refractory material on said fluid injector means cooperate to form a continuous lining and define a fluid passage with a substantially continuous straight wall; and
- cooler means, said cooler means being installed in the furnace wall about said rigidly assembled injector means and nozzle means, a portion of said cooler means cooperating with said rigidly assembled injector and nozzle means to define a pivot connection therebetween whereby distortions of the delivering apparatus may be accommodated without interruption of the connection established between said cooler means and said rigidly assembled injector and nozzle means.

3,980,287
COMBINATION VISE, V-BLOCK AND DRILL JIG WORKHOLDER

J. Charles Nilsson, 43 May St., Poughkeepsie, N.Y. 12601

Filed Dec. 11, 1975, Ser. No. 639,925

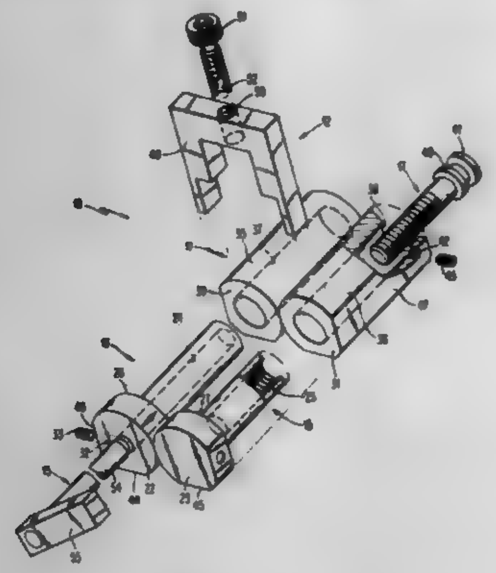
Int. Cl.² B25B *1/20*

U.S. Cl. 269—87.3 9 Claims

1. A workholder comprising:

- a first pair of parallel, cylindrical first and second members rigidly joined in a side-by-side relationship, and having axial first and second bores, said members having flat end faces defining first jaw means;
- a second pair of parallel, cylindrical members rigidly joined in a side-by-side relationship and having flat end faces defining second jaw means disposed parallel to said first jaw means;
- a pair of parallel first and second rods slidably disposed in said first and second bores and rigidly connected to said second pair of said cylindrical members whereby said rods and said second pair are movable as a unit relative to said first pair, said first rod having an internally threaded bore opening into said first bore; and,

actuating screw means rotatably mounted on said first member in said first bore, said screw means being threadedly engaged with said threaded bore whereby rotation of said screw means is operative to move said first jaw means and said second jaw means relative to each other to thereby develop a clamping and releasing action between said jaw means.



3,980,288

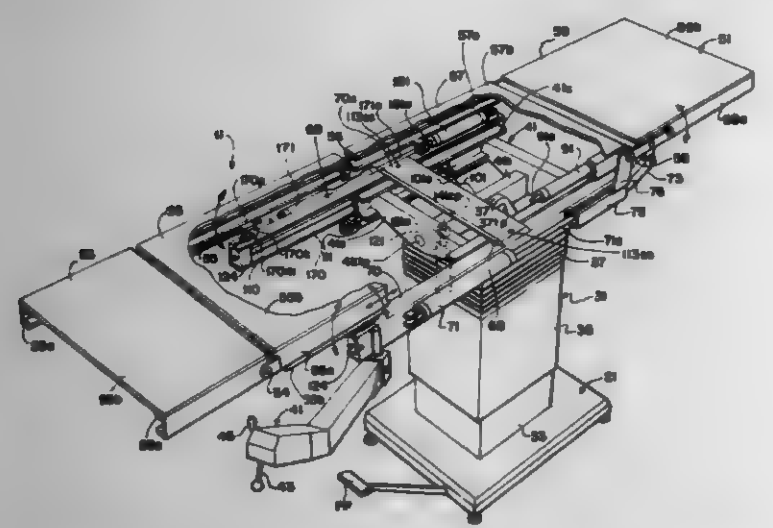
OPERATING TABLE OR THE LIKE, WITH IMPROVED SLIDABLE TOP ARRANGEMENT

Larry D. Mitchell, Ballwin, and Murray Q. Tanner, III, Florissant, both of Mo., assignors to Affiliated Hospital Products, Inc., St. Louis, Mo.

Filed Mar. 25, 1975, Ser. No. 561,886

Int. Cl.² A61G *13/00*

U.S. Cl. 269—325 11 Claims



1. An operating table comprising:

a longitudinally adjustably slidable patient supporting table top having opposite longitudinal ends, and a support base therefor,

a pair of parallel longitudinally extending slide shafts, each of said slide shafts engaging in sliding load transmitting relation within a respective pair of longitudinally spaced apart linear ball bushings,

said slide shafts and linear ball bushings connecting respectively in slidable load transmitting and carrying relation between said support base and said slidable table top,

a longitudinally extending hydraulic cylinder having a piston rod, said cylinder and rod being in longitudinal forward and rearward movement connection between said support base and said slidable table top,

and a transverse tilt frame pivotally connected between said support base and said slide frame through a longitudinally extending pivot member.

3,980,289

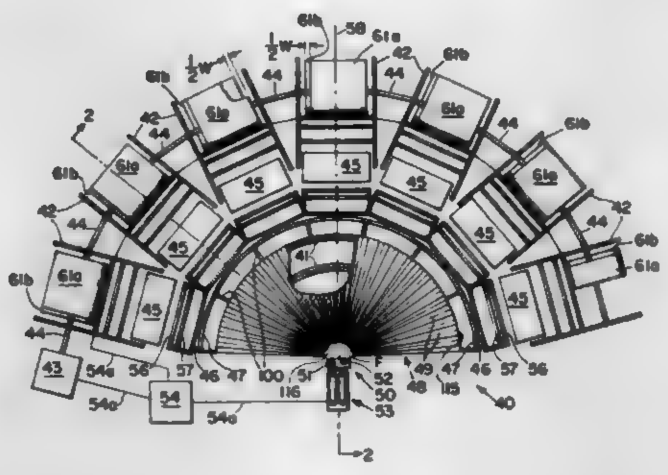
INTERFOLDING APPARATUS

Alson Robert Harm, Sunman, Ind., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 7, 1975, Ser. No. 565,929

Int. Cl.² B41L *1/30*

U.S. Cl. 270—40 7 Claims



1. An apparatus for simultaneously and progressively folding and interleaving a multiplicity of running webs of flexible material to continuously form a substantially endless composite bundle of interleaved webs, each of the webs comprising a predetermined number of at least two longitudinally extending folds which folds are hingedly secured together along longitudinally extending, transversely spaced fold lines, the folds being designated edge folds each of said folds having a predetermined width and a predetermined uncompressed thickness, said apparatus comprising:

a frame;

means secured to said frame for juxtapositioning the webs in partially overlapped relation with an edge fold of each web disposed in overlapped relation with an edge fold of another web;

means secured to said frame for alternately V-folding adjacent folds of the webs upwardly and downwardly along the spaced fold lines so that each of the overlapped folds is disposed intermediate an edge fold and another fold of said another web, said V-folding means comprising a set of tapered elongate guides and a turning guide having a turning surface, each said elongate guide having an outboard end, an inboard end, a horizontally extending neutral axis, an inverted V-shape cross-section, and an apex ridge, said elongate guides being secured to said frame in side-by-side relation to form a tapered V-shape trough between each two elongate guides and to form a substantially horizontally disposed fan-shape folding table having alternately spaced said apex ridges and said V-shaped troughs forming an upwardly facing working surface with said inboard ends spaced from said turning guide, and with said apex ridges disposed in convergent relation and extending radially inwardly towards said turning guide,

said apparatus further comprising web drawing means and alignment means for simultaneously drawing the multiplicity of webs generally radially inwardly across said working surface of said folding table with said fold lines alternately aligned with said convergent apex ridges and the bottoms of said troughs respectively to cause said webs to become fully folded, and thence drawing the webs about said turning surface of said turning guide, said apex ridges of said elongate guides being so aligned with respect to points of tangency to said turning surface and previously accumulated fully folded webs disposed radially inwardly therefrom which webs being drawn thereabout that said fold lines remain aligned with their respective apex ridges and troughs until the folding of each respective web has been completed at its respective point of tangency adjacent said turning surface and said previously accumulated fully folded webs.

3,980,290

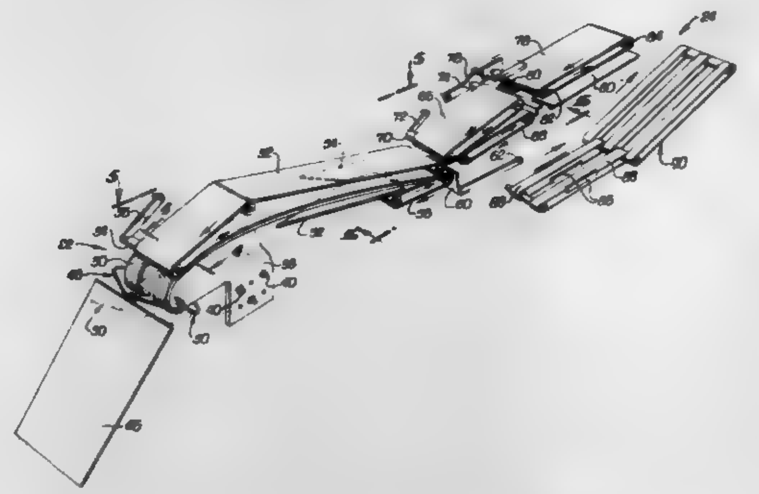
TOWEL FOLDER

Carl F. Sjoman, Los Angeles, and Edward L. McClain, Inglewood, both of Calif., assignors to Team Industries, Los Angeles, Calif.

Continuation of Ser. No. 215,843, Jan. 6, 1972, abandoned. This application Aug. 17, 1973, Ser. No. 389,365

Int. Cl.² B65H *45/16*

U.S. Cl. 270—66 5 Claims



1. In a towel folder or the like, the combination of:

a. a first pair of spaced apart frame plates; a second pair of spaced apart frame plates mounted between said first pair of plates;

b. at least two rods connected to said first pair of plates, at least one of said rods having a threaded portion and being rotatably connected to said first pair of plates, said rod with a threaded portion having a first plate of said second pair mounted thereto and movable therealong, the second plate of said second pair being fixedly mounted to another of said rods;

c. means connected to said rotatable rod for rotating said rod and thereby spacing the first and second plates of said second pair of plates;

d. two elongated generally horizontal forms, each form attached to a plate of the second pair of plates, the form attached to said first plate of said second pair being movable therewith thereby determining the distance between said spaced forms;

e. a conveyor belt seated on and extending longitudinally of said forms and adapted to slide a towel longitudinally along said forms with at least one longitudinal side of said towel depending from said forms;

f. means positioned beneath said forms and supported by at least one plate of said first pair of frame plates for folding the depending longitudinal side of the towel upwardly; and

g. means supported by said first pair of frame plates for cross folding the longitudinally folded towel.

3,980,291

MACHINE FOR FOLDING A CONTINUOUS WEB ASSEMBLY

Raymond M. Loase, Dayton, Ohio, assignor to Harris Corporation, Cleveland, Ohio

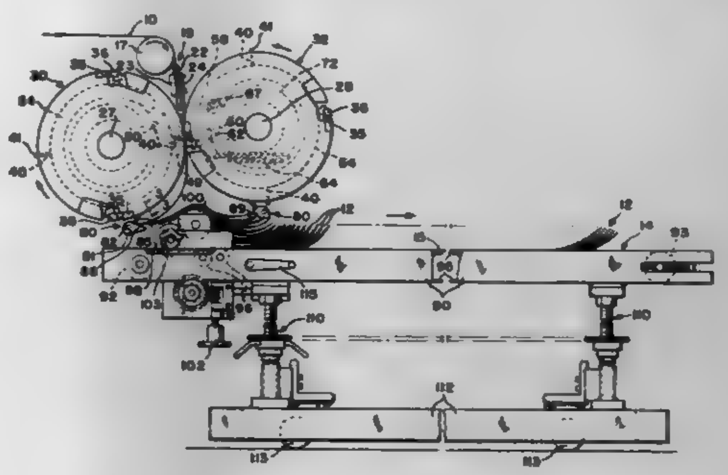
Continuation of Ser. No. 118,047, Feb. 23, 1971, abandoned. This application Apr. 1, 1975, Ser. No. 564,119

Int. Cl.² B65H *45/16*

U.S. Cl. 270—73 1 Claim

1. In a high speed cylinder type folder for folding a continuous web in zig-zag fashion, said folder including a pair of driven cylinders mounted with their axes of rotation in parallel adjacent relation and each having an outer cylindrical wall defining a nip adapted to receive the web therebetween, grippers and tucker blades mounted in diametrically opposed positions in said walls lengthwise of each said cylinder, the gripper on one cylinder being arranged in opposed cooperating relation with the blade on the other cylinder whereby said blades tuck the web into said grippers on alternate ones of said cylinders at longitudinally spaced intervals along the web in response to rotation of said cylinders, said grippers being controlled such that lengths of said web are pulled away from said nip and held by said grippers in contact with portions of the associated said outer cylindrical walls of first one and then the other of said cylinders before release of said grippers, and stripping members operative to guide the folded web from said cylinders upon release of said grippers;

the improvement comprising said portions of said outer walls having formed therein a series of spaced apart relatively wide and shallow recesses opening outwardly in a circumferential direction around each said cylinder and having bottoms slightly depressed with respect to said outer cylindrical walls, said recesses being separated by relatively narrow ribs having outer surfaces which are adapted to contact the web and having sides integral with the bottoms of said recesses the width of said recesses being substantially greater than the width of said ribs, said grippers and tucker blades extending lengthwise of said cylinders across said recesses and ribs to form end walls of said recesses extending outward to the level of said outer cylindrical walls and thereby to trap air in said recesses behind said lengths of said web whereby upon release of said grippers the lengths of web will be urged away from said cylinders by the trapped air.



3,980,292

DEVICE FOR PARALLELY FEEDING OBJECTS TO BE PRINTED IN A PRINTING MACHINE

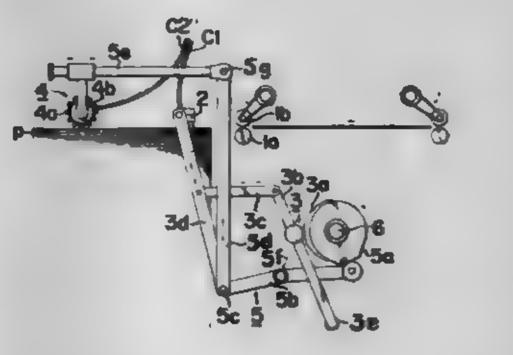
Yoshikuni Sakurai, Tokyo, Japan, assignor to Sakurai Seisakusho Co. Ltd., Japan

Filed Dec. 18, 1974, Ser. No. 533,943

Claims priority, application Japan, Aug. 23, 1974, 49-96091

Int. Cl.² B65H *3/08*, *3/10*

U.S. Cl. 271—11 2 Claims



1. A device for lifting, sustaining and parallelly feeding objects to be printed in a printing machine, said device comprising

a plurality of feed rollers,
a support mounted for motion solely in a vertical direction,
a sucker movably mounted on said support for horizontal motion relatively thereto toward and away from said feed rollers and adapted to be connected to a vacuum pump,
a rocking mechanism for moving said sucker horizontally independently of the solely vertical motion of said support,
a rotary vacuum ring means rotatably mounted on said support and having a rotatable sucking member adapted to be connected to said vacuum pump and lifted simultaneously with said sucker,
and a lifting mechanism for moving said support solely in a vertical direction and consequently unitarily lifting said sucker and said rotary vacuum ring means,
said rotary vacuum ring means being lifted together with said sucker by said vertically movable support and rotated in response to the pull thereon by an object to be printed while said object is sustained and fed parallelly to said feed rollers without bending of said object.

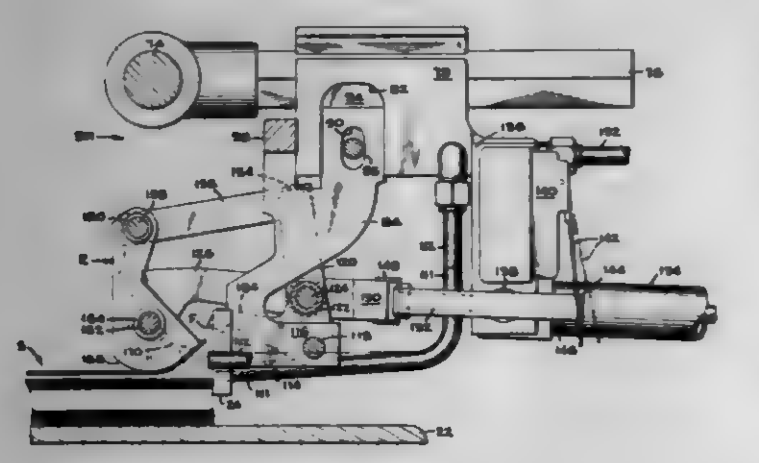
3,980,293

SHEET FEEDING WITH REAR SHEET SEPARATION

Donald W. Shelmire, Churchville, Pa., assignor to FMC Corporation, San Jose, Calif.

Filed Oct. 10, 1974, Ser. No. 513,608
Int. Cl.^{2} B65H *3/08, 3/48*

U.S. Cl. 271—93 12 Claims



6. The method of feeding the top sheet from a stack of sheets supported by the stack elevator of a sheet processing wherein the front edge of the top sheet is vacuum lifted and presented to feed rolls, the rear edge of the top sheet is vacuum lifted and the rear edge of the second sheet is held down; the improvement comprising the steps of lifting the rear edge of the top sheet and directing a rear jet of air forwardly between the top sheet and the second sheet while the second sheet is being held down and before lifting the front edge of the top sheet, and removing the hold down on the rear edge of the second sheet before the front edge of the top sheet is picked up by the feed rolls.

12. Mechanism for separating the top sheet from a stack of sheets supported by the elevator table of a sheet feeder for a sheet processing machine, said mechanism being of the type comprising normally stationary support means mounted on the machine frame, a rear sheet separating shoe having a pivot, a curved face concentric with the pivot extending from a vacuumized face for lifting a portion of the top sheet from the stack, link means pivoted on said support means for mounting said shoe pivot, means for rotating said shoe about its pivot, and a hold down foot mounted on said support means for engaging the second sheet after the top sheet portion has been lifted; the improvement wherein said shoe rotating means also comprises link means pivotally connected to said shoe and pivotally connected to said support means, both of said link means accommodating vertical floating motion of said shoe when it is supported by sheets on said table, stop means for limiting the downward motion of said shoe, and means for operating said shoe rotating means.

3,980,294

PHOTOCOPYING MACHINES

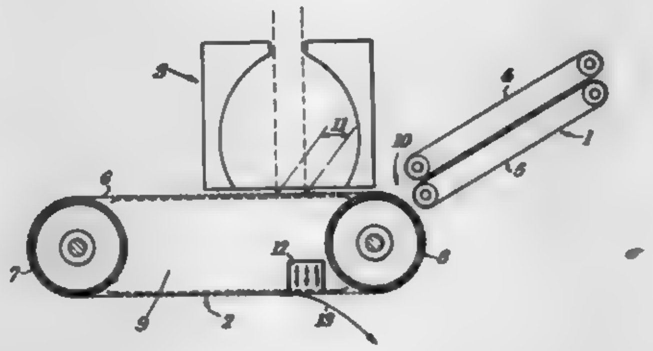
Paul Heinzer, Zurich, and Helmut Wulz, Birmensdorf, both of Switzerland, assignors to Wito Wissenschaftliches Forschungs-Institut A.G., Zurich, Switzerland

Filed Feb. 11, 1975, Ser. No. 549,050

Claims priority, application Switzerland, Feb. 11, 1974, 1859/74

Int. Cl.^{2} B65H *5/02, 29/16*

U.S. Cl. 271—197 2 Claims



2. In a photocopying machine, a band conveyor for transporting sheet material through the machine, said conveyor comprising end drums, an endless perforated conveyor band extending around said end drums to provide an upper run and a lower run, said band being made of a galvanically deposited metal, and a suction chamber disposed beneath the upper run of said band.

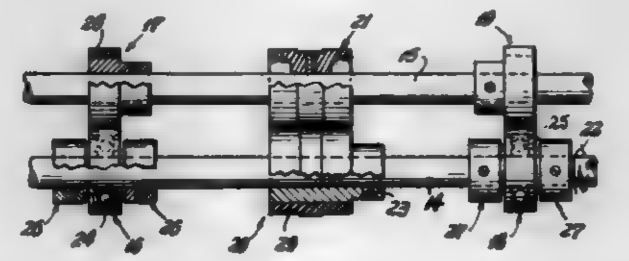
3,980,295

SKEW ELIMINATING SHEET FEEDING MECHANISM

Robert E. Kleid, Fairfield, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jan. 13, 1975, Ser. No. 540,524
Int. Cl.^{2} B65H *9/00, 5/06*

U.S. Cl. 271—242 6 Claims



1. A skew eliminating sheet feeding mechanism comprising first means adapted to engage a portion of a sheet to advance a sheet along a path, the first means including a pair of feed rolls, one of which is a drive roll and the other of which is a driven roll, the feed rolls of the first means being spaced to be frictionably engagable only with a portion of a sheet disposed therebetween, second means adapted to engage another portion of the sheet to advance it along the path, the second means including a pair of cooperating feed rolls in frictional driving interengagement, means for rotatably interconnecting one of the feed rolls of the second means with the driven feed roll of the first means to cause the second means to only advance the sheet equally and in synchronism with the first means when a portion of a sheet is disposed between the drive feed roll and the driven feed roll of the first means, whereby both the first and second means initiate feeding the sheet simultaneously.

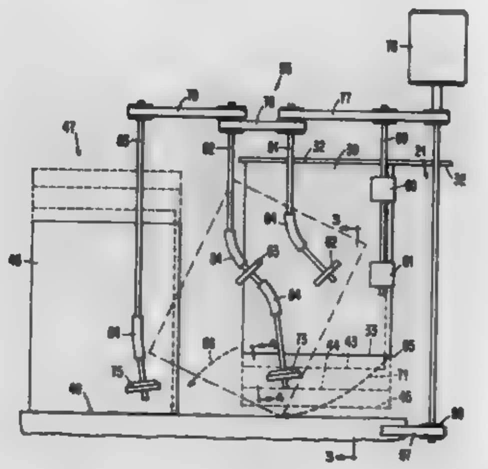
3,980,296

DUPLICATING MACHINE EMPLOYING IMAGE REVERSING OPTICAL PATHS WITH FRONT EDGE DOCUMENT ALIGNMENT ON DOCUMENT INPUT AND OUTPUT

James Alexander Craft, Lexington, Ky., and James Charles Rogers, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 30, 1975, Ser. No. 582,510
Int. Cl.^{2} B65H *9/14*

U.S. Cl. 271—251 6 Claims



1. A document reproduction machine having a copy station for receiving a master alignable along a front reference edge, reproduction means operatively associated and in optical communication with the copy station for creating duplicate images of said master, said optical communication causing an image reversal whereby said front reference edge becomes a rear reference edge,

the improvement comprising:
first drive means for removing a duplicate copy from said reproduction station along said rear reference edge and transporting same in a first direction somewhat parallel to said rear reference edge;
an aligner contiguous with said reproduction station and having means establishing a front reference edge substantially contiguous with said reproduction station;
second drive means in said aligning station for moving a document received from said reproducing station from said rear reference edge to said aligner front reference edge and disposed at about 45° with respect to said rear reference edge;
an additional drive roller disposed between second drive means and said aligning station front reference edge for accommodating variable length documents to be aligned; and
an exit station contiguous with said aligner for receiving documents aligned with said aligner front reference edge.

3,980,297

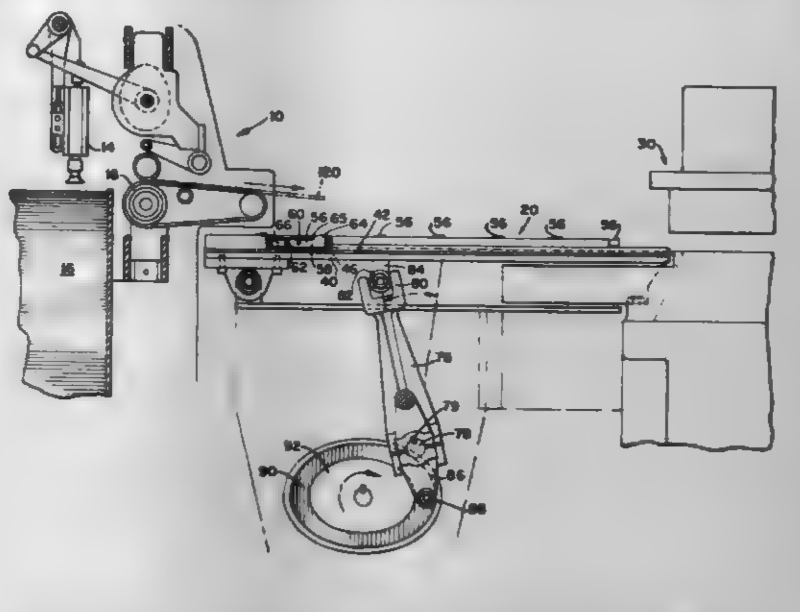
METHOD AND APPARATUS FOR FEEDING SHEETS TO A TREATING MACHINE IN OVERLAPPED RELATION

Joseph D. Bulso, Jr., and William Russell Lewers, both of Canton, Ohio, assignors to Redicon Corporation, Canton, Ohio

Filed May 23, 1975, Ser. No. 580,181
Int. Cl.^{2} B65H *5/16*

U.S. Cl. 271—269 6 Claims

1. Apparatus for feeding metal sheets stepwise to a treating machine in overlapped relation to provide a continuous flow of sheets to said machine, said apparatus comprising: a base adapted for positioning adjacent a treating machine, reciprocating sheet feed means on said base for feeding the sheets in step-wise manner to the treating machine, means for longitudinally feeding each sheet in the direction of feed of the reciprocating sheet feed means and for freely dropping each sheet on the base for engagement by the reciprocating sheet feed means whereby the rear edge of the forward sheet is overlapped by the forward edge of the sheet delivered to the feed means, said overlapping of the forward and delivered sheets being less than one step of the feed means, magnetic hold-down means positioned in the sheet feed are to cause the metal sheets to rest smoothly on each other and further to assure positive engagement of the sheets by the reciprocating sheet feed means and wherein the sheets are lengthwise slightly longer than a given number of feed steps thus always providing an overlapping of adjacent edges of successive sheets.



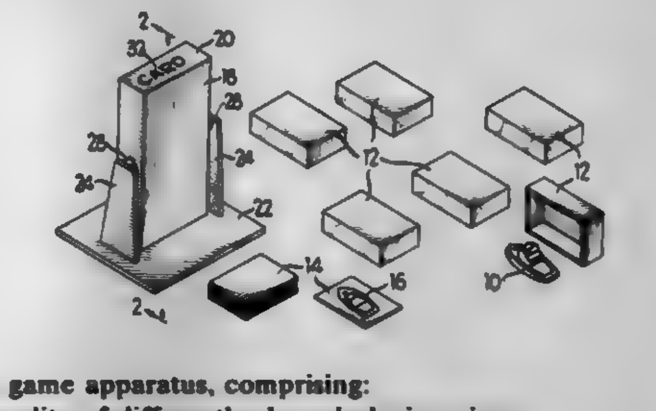
3,980,298

CONCEALED PLAYING PIECE APPARATUS

Jeffrey D. Breslow, Highland Park, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 20, 1975, Ser. No. 623,755
Int. Cl.^{2} A63F *9/00*

U.S. Cl. 273—1 R 10 Claims



1. A game apparatus, comprising:
a plurality of differently shaped playing pieces;
a plurality of devices for individually concealing or exposing each of said playing pieces;
a plurality of cards each having indicating means thereon corresponding to respective ones of said playing pieces; and
a chance device for determining, during a player's turn, whether the player is to obtain a card or whether the player is to attempt to expose a playing piece corresponding to the indicating means on one of the cards that player has obtained.

3,980,299

TENNIS GAME APPARATUS KIT

Robert Leon Brown, El Cerrito, Calif., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Aug. 4, 1975, Ser. No. 601,805
Int. Cl.^{2} A63B *61/00*

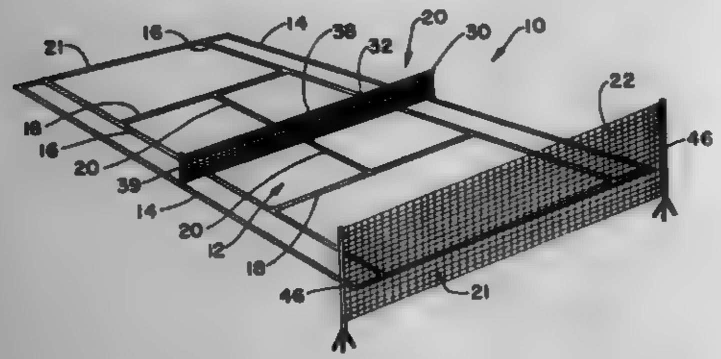
U.S. Cl. 273—29 R 1 Claim

1. A kit for forming a tennis court on asphalt, concrete, or grass, which comprises:
a. a plurality of tape members for forming the sides, the ends, the service sides, and half court lines of said tennis

court, each said tape member having a plurality of apertures therethrough;

b. an anchoring means extending downwardly through each said aperture to secure each said tape member to the ground;

c. a center court net assembly, said center net assembly including a pair of end poles, a center pole and a horizontally extending rectangularly shaped net member having each of its ends detachably mounting onto a said end pole and a central portion detachably attached to said center pole, each said end and center pole including a cylindrically shaped rod having one externally threaded end, a disc shaped base having a plurality of holes therethrough



and a center top threaded opening therein, said threaded end of said rod threadably engaging into said threaded opening of said base, and U-shaped brackets affixed onto each said rod, said net member having means for attaching said net to said U-shaped bracket;

d. a spike extending downwardly through said holes to secure each said base to said ground;

e. a pair of end net assemblies and a pair of side line net assemblies; each said end net assembly including a net and foldable tripod poles for holding each said net in a substantially vertical plane to form a ball retaining boundary around a tennis game playing area defined by said plurality of tape members; each said pole being provided with a foldable leg tripod base.

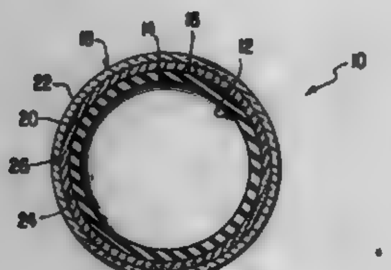
3,980,300
AMUSEMENT BALL

James R. Hornsby, Jr., 6239 Edgewater Drive, Orlando, Fla. [illegible]

Filed Feb. 7, 1975, Ser. No. 548,103

Int. Cl.^{2} A63B *43/06*

U.S. Cl. 273—58 B — 9 Claims



1. An amusement device in the form on a play ball comprising

body member in the shape of a sphere adapted to be bounced and impacted in play;

a transparent spherical cover means concentrically surrounding said body member and spaced therefrom to define a spherical cavity therebetween; and

a layer of liquid crystalline material disposed within said cavity.

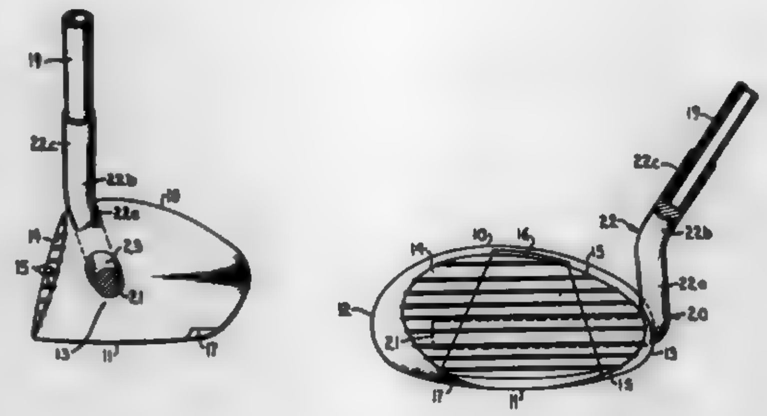
3,980,301
WOOD GOLF CLUB IMPROVEMENT

Kenneth L. Smith, 12925 W. 71st St., Lenexa, Kans. 66015

Filed June 26, 1975, Ser. No. 590,691

Int. Cl.^{2} A63B *53/02*

U.S. Cl. 273—80.2 — 10 Claims



1. In a wood golf club, described with the club head grounded in normal play,

a club head provided with a toe and a heel at opposite ends thereof, a sole and a slightly arcuate, somewhat inclined striking face on the leading side of said head,

an elongate shaft having a lowermost extremity,

a generally L-shaped, in view toward the striking face of the club head, integral connecting member made up of two legs,

a first one of said connecting member legs being received within and internally connected to said head and extending longitudinally therewithin from the heel towards the toe thereof in a direction substantially parallel to said striking face,

said first leg entering the club head through the heel thereof, extending in substantially horizontal direction therewithin and spaced rearwardly within said club head with respect to said striking face,

the other leg having lower and upper lengths thereof forming a substantially obtuse angle with one another viewing toward said striking face,

the lower length of said other leg extending, in view toward said striking face, at substantial right angles to said first leg in substantially vertical orientation,

the upper length being connected to the lowermost extremity of the shaft and extending downwardly therefrom in longitudinal alignment therewith,

the longitudinal axis of the shaft and said upper length, extended downwardly, passing behind the striking face of the club head, but positioned more closely thereto than the longitudinal axis of said first leg,

whereby the lower length, in view towards the heel of the club head, is angled forwardly and upwardly from its connection with the first leg toward the striking face of the club head and its connection with the upper length of said other leg.

3,980,302
SURFACE PROJECTILE GAME DEVICE

Burton C. Meyer, Downers Grove, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed May 8, 1975, Ser. No. 575,793

Int. Cl.^{2} A63F *7/06, 7/10, 7/14*

U.S. Cl. 273—87.2 — 4 Claims

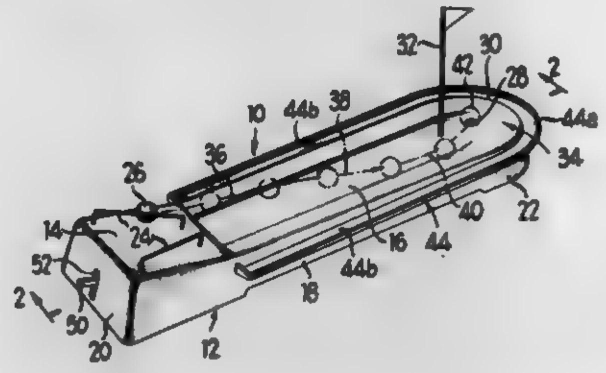
1. A toy golf game apparatus, comprising, in combination:

a frame defining a game board having a stationary, inclined ramp portion disposed at a predetermined angle leading downwardly to and adjoining a curvilinear playing surface which is concave in cross section over a substantial portion thereof, said playing surface ending in a semi-conical portion at the end thereof opposite said ramp, said playing surface being inclined downwardly back toward said ramp at an angle smaller than said predetermined angle;

an aperture defined in said playing surface between said ramp portion and said semi-conical portion;

an upstanding obstacle on said playing surface between the aperture and the ramp portion;

a rollable playing piece for projection down the ramp portion by a player of the game onto said playing surface for movement thereover along the curvilinear shape thereof in an attempt to roll around said obstacle into said aperture;



guide rail means on said ramp portion to facilitate aiming of said rollable playing piece down the ramp portion onto the playing surface;

a generally contiguous playing piece return trough circumscribing said playing surface and sloped downwardly toward said ramp portion for returning the rollable playing piece back to a player at said ramp portion should it roll off of said playing surface into said trough; and

means for ejecting a playing piece from said aperture, including a selectively actuatable lever extending through the frame below the ramp portion to facilitate return of a rollable playing piece by a player at said ramp portion.

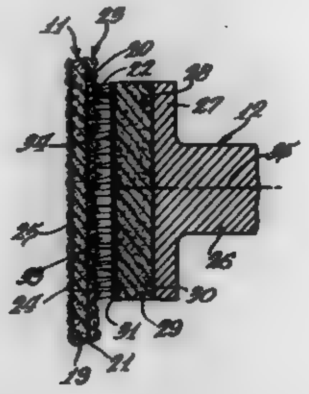
3,980,303
GAME STRUCTURE

Douglas R. Bolton, Palatine, Ill., assignor to Cadaco, Inc., Chicago, Ill.

Filed July 6, 1972, Ser. No. 269,502

Int. Cl.^{2} A63B *71/02*

U.S. Cl. 273—95 R — 12 Claims



1. A structure for playing a game, comprising: a target sheet of material having a front flat surface portion comprising a plurality of fibers definng a plurality of interstitial spaces, said sheet including a resilient layer rearwardly supporting said fibers; and a dart having a substantially rigid grasping portion, a rigid flat nose portion at the front end of the grasping portion comprising a flat target contacting element defining a plurality of forwardly projecting barbs adapted to pass into said interstitial spaces and releasably hook said fibers to releasably hold said dart to said sheet as an incident of throwing of the dart to impact said nose portion flatly against said front surface portion, and resilient support means mounting said target contacting element to said grasping portion for absorbing deceleration energy resulting from the impact of the dart against said sheet to effectively preclude bounding-off of said dart nose portion upon impact with said sheet while effectively maintaining the flat configuration of said element on impact.

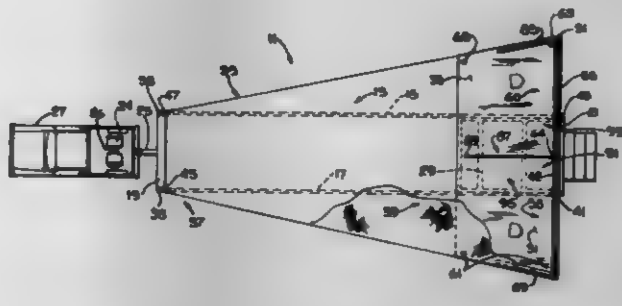
3,980,304
PORTABLE BATTING PRACTICE CAGE

Michael W. O'Neill, 4860 W. 118th St., Apt. 6, Hawthorne, Calif. 90250, and Arnold P. Ginsburg, 222 Washington Ave., Apt. 16, Santa Monica, Calif. 90403

Filed Apr. 26, 1974, Ser. No. 464,555

Int. Cl.^{2} A63B *69/40*

U.S. Cl. 273—26 R — 2 Claims



1. A mobile means including a prime mover, and a trailer adapted to be towed by said prime mover;

batting platform means supported by said trailer on which at least one baseball player stands;

pitching means supported on said prime mover an extended distance from said batting platform means for automatically pitching a plurality of baseballs at said batting platform means to permit hitting of said baseballs by a baseball player; and

restraining means disposed around at least the batting platform for restraining to a limited area the baseball pitched by said pitching means and a baseball hit by a baseball player standing on said platform.

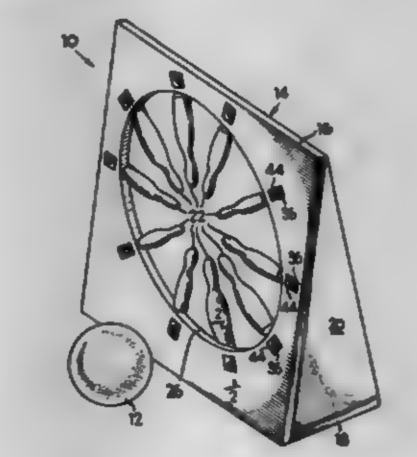
3,980,305
SIMULATED BOWLING APPARATUS

Jeffrey D. Breslow, Highland Park, and Eugene Jaworski, Park Ridge, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 13, 1975, Ser. No. 549,483

Int. Cl.^{2} A63B *71/02*

U.S. Cl. 273—102 AP — 6 Claims



1. A simulated bowling game apparatus comprising:

a frame having a subetantially vertical target support portion having an opening therein;

a plurality of simulated bowling targets pivotally mounted on the target support portion radially within said opening with their free head ends radially converging, said targets being movable between a first, vertical set position and a second, horizontal knocked down position;

means for maintaining said targets in said first position whereat only a small predetermined force is required to initiate movement to said second position or in said second position whereat a force substantially larger than said predetermined force is required to initiate movement back to said first position; and

a projectile to be propelled through the air by a user of the game at the targets for moving the targets from said first to said second positions wherein the free ends of the targets are cumulatively spaced about a space smaller in diameter than said projectile.

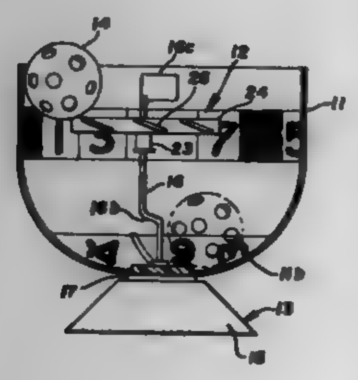
3,980,306
SPINNING TOY

James T. Tollefson, 10925 Wayzata Blvd., Minnetonka, Minn. 55343

Filed July 2, 1975, Ser. No. 592,641

Int. Cl.² A63F *7/04*

U.S. Cl. 273—109 **12 Claims**



1. A spinning toy including:

a. a generally semi-sperhical bowl member having a portion thereof extending above the midpoint of the spherical portion thereof defining an interior, smoothly radiused wall portion;

b. a spinnable member having a plurality of equal length radially extending blade members, the radial dimensions of said blade members being less than the radial dimension of said interior wall portion;

c. means locating said spinnable member about an axis which is vertical and offset with respect to the vertical axis of the bowl member when the latter is disposed in an upright position;

d. a ball normally freely disposed in said bowl member below said spinnable member; and,

e. said ball, blade member lengths and offset being so dimensioned as to allow the ball to move from the bottom of the bowl member past the spinnable member along a path defined by that part of said wall portion which is generally furthest removed from said axis and allow the ball to be supported conjointly by one or more blades and that part of said wall portion which is generally closest to said axis.

3,980,307
STOCK MARKET GAME APPARATUS

Donald W. Raub, Box 207, Tylersport, Pa. 18971

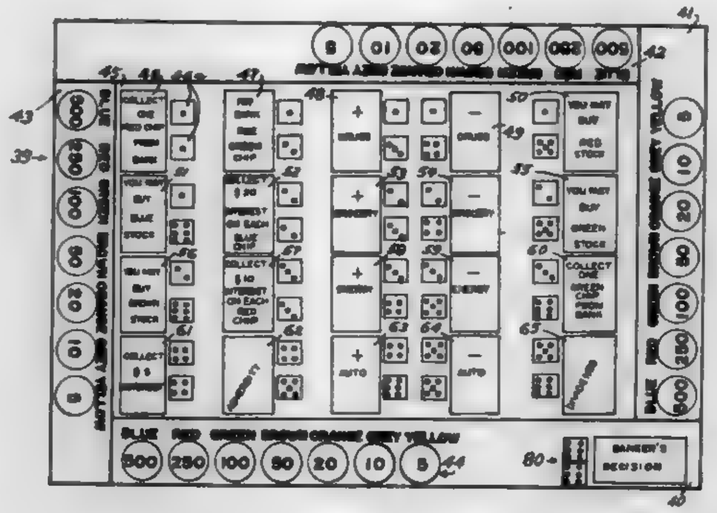
Filed Apr. 14, 1975, Ser. No. 567,935

Int. Cl.² A63F *3/00*

U.S. Cl. 273—135 C **1 Claim**

1. A game apparatus comprising:

1. dice, each of which has a distinct identifying symbol on each face different from that on any other of its faces,
2. a playing board having a plurality of individualized spaces marked thereon, the individualized spaces each having a distinct identifying symbol identical to only one pair of the dice symbols,
3. some spaces having additional indicia thereon,
4. a stack of cards on each of other ones of said spaces,
   a. all the cards in each stack differing from the cards in the other stacks,



   b. each card in each stack differing from all other cards in the same stack,
5. stock certificate cards and
6. money means to transact financial operations.

3,980,308
CLAMPING DEVICE FOR A ROTATABLE INFORMATION-CARRYING RECORD

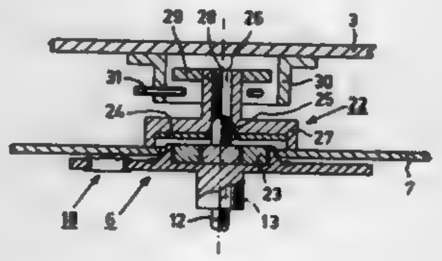
Eduard Camerik, and Johannus Alphonsus Hendrikus Siteur, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 5, 1975, Ser. No. 583,988

Claims priority, application Netherlands, Mar. 10, 1975, 7502804

Int. Cl.² G01D *15/32;* **G11B** *25/04*

U.S. Cl. 274—9 R **8 Claims**



1. A clamping device (6, 22) for clamping a disc-shaped information-carrying record (7) with a central hole (8) onto a rotatable drive spindle (12) with the aid of which it can be rotated, said clamping device being of the type comprising:

a drive spindle (12),

a record support including a generally planar surface (6), which is rigidly mounted on the drive spindle,

a means for centering the record (7) relative to the axis (13) of the drive spindle (12), which comprises a centering member (14) provided with a centering surface (15) whose diameter varies from smaller than to greater than the diameter of the record hole (8) which surface, also during operation, co-operates with the edge (16) of the central hole in the record, and

resilient pressure means (23, 24) for pressing the centering surface (15) and the edge (16) of the central hole (8) in the record (7) against each other, the improvement, wherein

the centering member (14) is rigidly connected to and forms a part of the record support (6),

the part of the centering surface (15) which has a diameter equal to that of the record hole (8) is disposed at some axial distance from said planar surface of the record support, so that a rigid record (7) can be tilted to a limited extent on the centering member (14) for pressing the centering surface (15) against the edge (16) of the record hole (8).

3,980,309
TWO-PART SCRAPER-TYPE SHAFT-SEAL

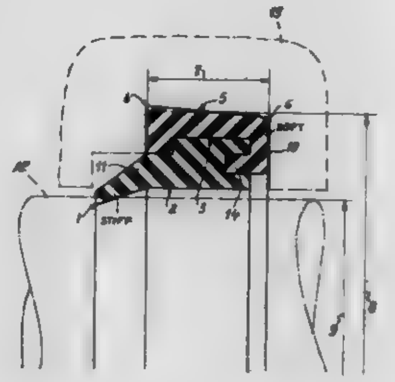
Jacques Dechavanne, 3, Boulevard de Jomardier, Saint Egreve, Isere, France

Filed Dec. 19, 1974, Ser. No. 534,275

Claims priority, application France, Dec. 19, 1973, 73.45528

Int. Cl.² F16J *15/32*

U.S. Cl. 277—24 **1 Claim**



1. A scraper-seal fittable into an inwardly open groove for engaging the outer surface of a shaft, said seal comprising:

a supple and elastomeric outer ring receivable in said groove; and

a hard but flexibly elastomeric inner ring of substantially greater stiffness than said outer ring and having an outer periphery secured in said outer ring and an inner periphery formed as a lip defined by two frustoconical surfaces engaging said surface of said shaft, said lip tapering toward said shaft, said outer ring being of C-section and receiving said outer periphery of said inner ring, said outer ring having an outer surface which is normally frustoconical, the frustoconical outer surface of said outer ring being of greater diameter than the axial end thereof opposite to said lip, said inner ring having an inner periphery of greater diameter than the outer surface of said shaft, and said lip having an inner diameter smaller than said outer diameter of said shaft.

3,980,310
RING MANUFACTURE, PRODUCTIVE OF FACE CONTACT SEAL

Norman M. Packard, Des Plaines, and John W. Gaines, Wheaton, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Division of Ser. Nos. 195,955, Nov. 5, 1971, abandoned, and Ser. No. 382,787, July 26, 1973, Pat. No. 3,862,480. This application June 21, 1974, Ser. No. 481,949

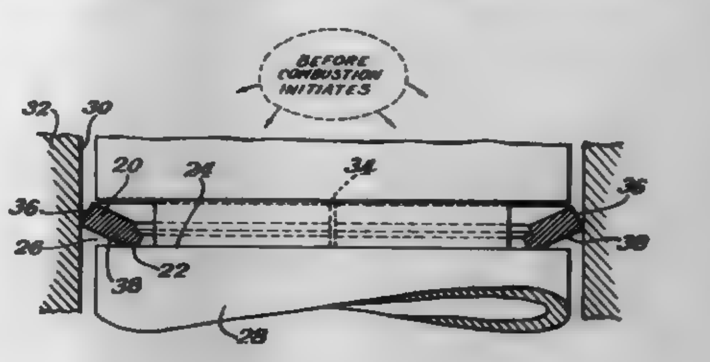
Int. Cl.² F16J *9/20;* **F02F** *5/00*

U.S. Cl. 277—173 **21 Claims**

1. A parted torsion piston ring which twists when, in reaching the collapsed state thereof, the parting is closed or substantially so, as in operation, said ring upon manufacture having:

a side, and a face and a back adjacent the side and respectively adjoining same at the side of the ring and forming corners therewith at that side, said side in the normal state of the ring being flat to at least about 10 to 5 light bands of lapped flatness:

said side operatively arranged so as to be frusto conical when the ring is in torsionally twisted collapsed state, and with the inner periphery thereof, at or adjacent the corner of the junction with the back, arranged when the ring is so collapsed to protrude into contact with a confronting surface to be face sealed, wherein a major portion of said ring side is in full extent and is flat to at least about 10 to 5 light bands of lapped flatness when compressed in flattened state while so collapsed, and operatively arranged when so compressed into flattened state while so collapsed to establish a substantially uninterrupted pressure ring of face contact with, when contacted by, said surface to be face sealed.



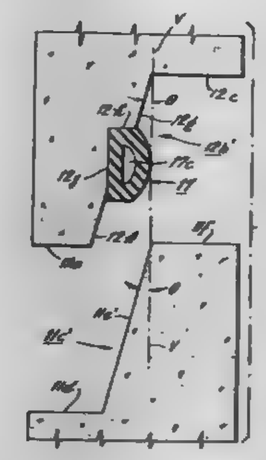
3,980,311
JOINT ASSEMBLY FOR VERTICALLY ALIGNED SECTIONALIZED MANHOLE STRUCTURES INCORPORATING D-SHAPED GASKETS

John Ditcher, Langhorne, Pa., assignor to A-Lok Corporation, Trenton, N.J.

Division of Ser. No. 452,677, March 20, 1974, Pat. No. 3,891,224. This application Jan. 23, 1975, Ser. No. 543,318

Int. Cl.² F16J *15/10*

U.S. Cl. 277—226 **8 Claims**



1. A gasket for use in providing a water-tight seal between the adjacent surfaces of mating sections of stationary manhole structures and the like, said gasket comprising:

a closed loop annular shaped member formed of a resilient compressible material;

said gasket having a smooth continuous D-shaped exterior cross-sectional configuration and having a hollow continuous annular interior adapted to allow said gasket to be more fully collapsed whereby the curved surface of the exterior is flattened when the gasket is compressed.

3,980,312
SKI CONTAINING A COATING STRIP ON ITS SLIDING SURFACE

Franz Buttner, Haus Gada, Dischmastrasse, CH-7270 Davos-Dorf, Switzerland

Filed Jan. 29, 1975, Ser. No. 545,170

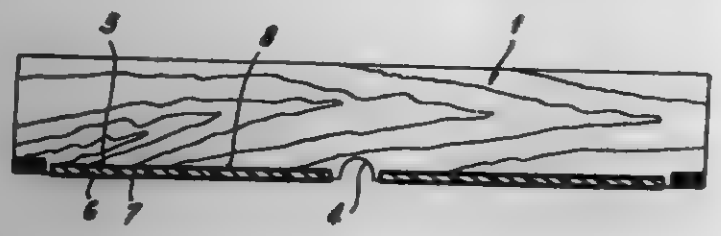
Claims priority, application Switzerland, Jan. 31, 1974, 1319/74; Dec. 23, 1974, 17429/74

Int. Cl.² A63C *5/04, 7/02*

U.S. Cl. 280—610 **13 Claims**

1. A ski comprising a coating strip fixed to the underside of the ski, said coating strip provided with a central guiding groove and at least one longitudinal recess disposed on each

side of said central guiding groove, each of said recesses containing at least one interchangeable insert strip having an



outer surface for contacting the surface over which the ski moves and having removable mounting means for selectively fixing said strip in said recess.

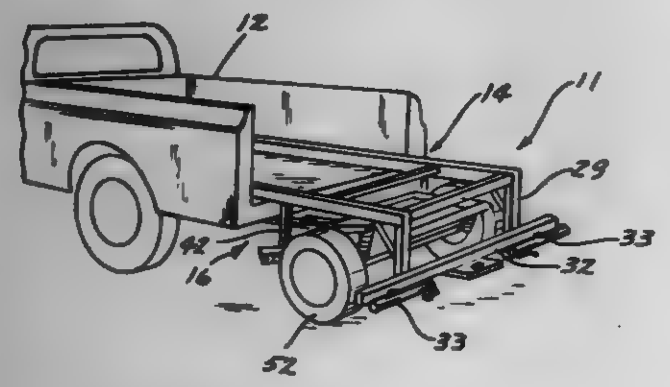
3,980,313
QUICK-UNLOADING CAMPER UNIT

Clarence A. Meinecke, Jr., Jefferson, Iowa, assignor to Multi-Products, Inc., Gowrie, Iowa

Filed Feb. 14, 1975, Ser. No. 549,914

Int. Cl.² B62D *21/00*

U.S. Cl. 280—81 R **4 Claims**



1. For use with camper cabins and vehicles having beds for carrying the camper cabins, a quick-unloading camper device comprising:

a frame means for receiving and holding the camper cabin;

a front member affixed to the bed of the vehicle, said frame means at one end being detachably connected to said front member, said frame means resting on the bed of the vehicle when connected to said front member and having a rear end extending beyond the bed of the vehicle at the end opposite said front member; and

an axle assembly affixed to said frame means adjacent said frame means rear end, said axle assembly including a tongue member pivotally depending therefrom at one end and at the other end being detachably affixed to the vehicle, said tongue member having a jack member and a chain member, said jack member being pivotally attached to said tongue member at one end and affixed to said chain member at the other end, said chain member being affixed between said tongue member and said jack member.

3,980,314
SAFETY STEERING FOR MOTOR VEHICLES

Wolfgang Köpf, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

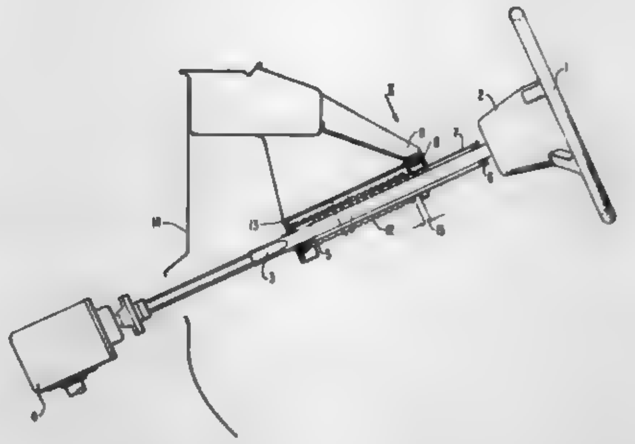
Filed Dec. 18, 1974, Ser. No. 534,161

Claims priority, application Germany, Dec. 21, 1973, 2363895

Int. Cl.² B62D *1/18*

U.S. Cl. 280—87 C **7 Claims**

1. In a safety steering of the type including a steering wheel, a steering spindle means being displaceable during an accident, a hollow column means surrounding said steering spindle means and being displaceable therewith during an accident, and a plastically deformable deformation means concentrically surrounding at least a portion of both said column means and said steering spindle means, said deformation means being changeable in length during an accident, wherein said deformation means includes at least one hollow body having an inner diameter only slightly larger than the outer diameter of said column means, the improvement comprising holding means for supporting said column means, said holding means including a movable member being spaced at a predetermined dimension from a first end of said deformation means facing said steering wheel such that said movable member pushes against said first end upon impact of a driver on said steering wheel during an accident, and said deformation means having a second end facing away from said steering wheel and being supported at a fixed vehicle part separated at a second predetermined distance from the end wall of a vehicle passenger compartment to prevent impact forces of said end wall from effecting said deformation means.



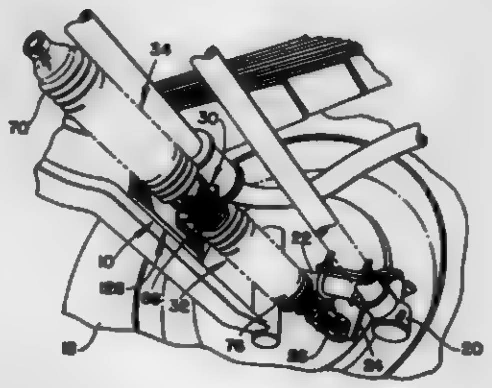
3,980,315
STABILIZER APPARATUS FOR ROAD VEHICLES

Fred W. Hefren, 609 E. Ninth St., Winfield, Kans. 67156

Filed Apr. 14, 1975, Ser. No. 567,682

Int. Cl.² B62D *7/08*

U.S. Cl. 280—94 **12 Claims**



1. In a road vehicle, provided with a running gear in the form of a wheel suspension system, with one of the wheels being a steering wheel mounted for horizontal turning about a turning axis by an arm connected thereto, and having a steering system which includes means connected for moving the arm, the improvement comprising:

a steering gear stabilizer apparatus for resisting turning movement of the steering wheel about the turning axis; said stabilizer apparatus comprising a fixed mounting bracket, a shaft having opposed ends, compression springs, spring retainers, and a movable mounting bracket;

means by which said shaft is reciprocatingly received in supported relationship respective to said fixed mounting bracket;

said springs being spaced from one another by said fixed mounting bracket;

said spring retainers being affixed to opposed ends of said shaft in a position to bias each of said springs towards said fixed mounting bracket;

means connecting one end of said shaft to said movable bracket;

means by which said movable mounting bracket is affixed to said steering system; means by which said fixed mounting bracket is connected in fixed relationship with respect to said movable bracket;

means forming an elastimeric grease receiving housing disposed about spaced marginal shaft lengths and encapsulating a spring therein, a passageway formed between each housing for transfer of grease therebetween upon movement of said shaft;

so that turning movement of the wheel about the turning axis is resisted by one of said compression springs.

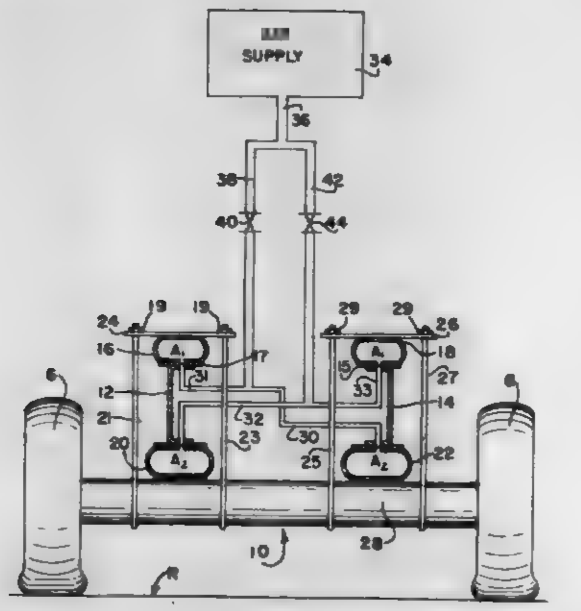
3,980,316
ROLL STABILIZED VEHICLE SUSPENSION SYSTEM

Jan Beryl Yates, Reynoldsburg, Ohio, assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 7, 1975, Ser. No. 593,592

Int. Cl.² B60G *11/26*

U.S. Cl. 280—112 A **8 Claims**



1. A vehicle suspension system having improved roll stiffness characteristics, comprising:

a wheeled axle and a mass to be supported on such axle;

first pressurized air springs arranged between the mass and the axle on opposite sides of the vehicle and capable of supporting the mass;

second pressurized air springs arranged between the mass and the axle on opposite sides of the vehicle adding its weight to the mass;

said springs being pneumatically cross-vehicle-connected only from side to side between first and second air springs to increase spring stiffness against vehicle roll, said first springs being sized in excess of the size of the second springs to exert pressure at least equal to said mass plus said second air spring weight.

3,980,317
VEHICLE BANKING ARM CONSTRUCTION

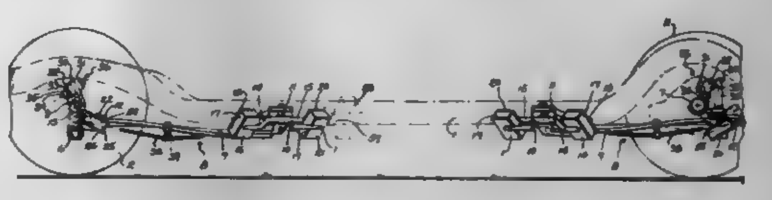
Joachim Kolbe, 5126 Haskell Ave., Encino, Calif. 91316

Continuation of Ser. No. 451,744, March 18, 1974, abandoned. This application Oct. 29, 1974, Ser. No. 518,471

Int. Cl.² B60G *11/60*

U.S. Cl. 280—112 A **17 Claims**

1. In a vehicle of the class described, having a superstructure, a banking support for the superstructure connecting the superstructure at its forward end to a wheel spindle carrying wheel supported rigid front axle structure and at its rearward end to a rigid wheel supported rear axle structure, said banking support comprising a plurality of pairs of cooperating roll banking arms, each arm including a longitudinally extending torsionally operated resilient spring means connected by a separate support member and a ball and socket joint at one end to the superstructure and at the other end to the respective rigid axle structure, side lever arms forming a part of said separate support members and bearing at their outer ends against respective resilient multiturn cushions of polyurethane based material placed near the outer ends of the resilient spring means with the related ball joints and the multiturn cushions placed a selected distance longitudinally of the vehicle from the related axle structure, and side lever arms forming a part of the related support members bearing at their ends against respective multiturn cushions of polyurethane based material supported by the superstructure, each rigid transversely extending axle structure having a predetermined orientation as appearing in side view during static loading of the superstructure by means of a control pivot pivotally interconnecting the related axle structure and at least one of its related banking arms to secure and control said orientation of the related axle structure and to carry the axle torque pressures to the superstructure through said resilient means, wherein the improvement comprises the arranging of both said superstructure supported side lever arms forming a part of the related support members, and the related multiturn cushions carried at their ends, in pairs, with the cushions of each pair placed along an axis line extending diagonally from the related banking arm ball and socket joint towards the central district of the superstructure in one direction and towards a space near the nearest vehicle wheel in the other direction, and wherein the improvement further comprises the arranging of both said axle carried side levers forming a part of the related separate support member and the related multiturn cushions carried at their ends, in pairs, with the cushions of each pair placed along an axis line extending horizontally and transversely from the related banking arm ball and socket joint towards the nearest vehicle wheel in one direction and towards the central district of the related axle structure in the other direction.



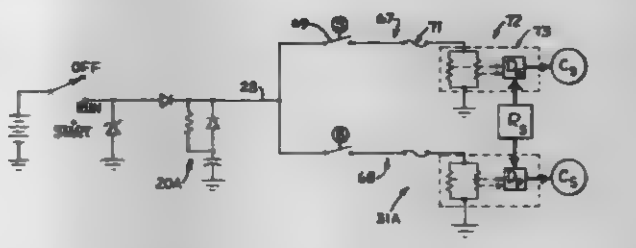
3,980,318
FUSED MULTIPLE STAGE INFLATION SYSTEM

Morton S. Balban, Oak Park, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 15, 1974, Ser. No. 460,768

Int. Cl.² B60R *21/08*

U.S. Cl. 280—735 **9 Claims**



1. A vehicle safety system comprising:

a. an electrical power supply;

b. a redundant power supply pre-energizable by said electrical power supply;

c. a first safety device;

d. deceleration sensing means in series with each of said power supplies;

e. a first electrical loop for actuating said first safety device, said first loop comprising a first electroexplosive means in series with said deceleration sensing means for actuating said safey device in response to actuation of said sensing means and a first power supply protective device in series

with said first electroexplosive means for protecting said redundant power supply;
- f. a second safety device; and,
- g. a second electrical loop in parallel with said first loop for actuating said second device, said second loop comprising a second electroexplosive means in series with said sensing means for actuating said second device in response to actuation of said sensing means and a second power supply protective means in series with said second electroexplosive means for protecting said redundant power supply means for inadvertent shortings and discharge by conductive members and fragments released by explosive energization of said second electroexplosive means.

3,980,319
FOLDING STEP FOR HIGH GROUND CLEARANCE VEHICLES

Elwood L. Kirkpatrick, Portland, Oreg., assignor to R and L Accessories, Inc., Portland, Oreg.

Filed July 23, 1975, Ser. No. 598,420

Int. Cl.² B60R *3/02*

U.S. Cl. 280—166 **6 Claims**

1. A step structure for high ground clearance vehicles having a bottom frame, said step comprising,
- a. a body member,
- b. means on said body member arranged to secure it to a vehicle frame,
- c. said body member having a downwardly angled laterally extending flat wall portion,
- d. an arm having inner and outer ends,
- e. a step plate supported on the outer end of said arm,
- f. means pivotally supporting said arm adjacent its inner end on said downwardly angled laterally extending portion,
- g. said pivot means having it axis extending at substantially right angles to said downwardly angled laterally extending flat wall portion whereby said arm in a pivoted position extending laterally outwardly positions said step plate in a use position lower than said pivot means and in a pivoted position extending rearwardly positions itself and said step plate in a non-use position in a plane higher than said use position so as to be out of the way.
- h. and holding means maintaining said arm in the outward use position of said step plate but allowing ready releasable movement of the arm from said use position to permit the arm to swing rearwardly in the event it or the step plate is struck from the front.

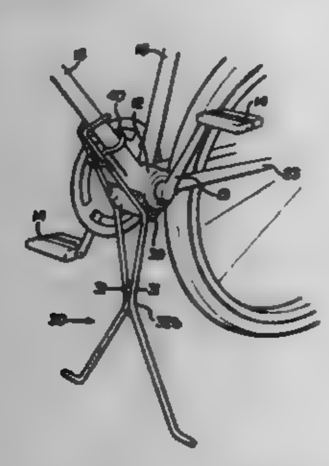
3,980,320
BICYCLE SUPPORT STAND

John L. Marchello, Box 100, New Hudson, Mich. 48178

Filed Aug. 27, 1975, Ser. No. 608,035

Int. Cl.² B62H *3/10*

U.S. Cl. 280—293 **8 Claims**



6. A bicycle support stand for supporting a conventional bicycle in an upright position, said bicycle having a conventional frame including a pedal crank hub to which is secured an upwardly and forwardly extending frame element, comprising:
- a pair of stiff metal rods arranged side by side in a normally upright position, and secured together near their upper ends and at a distance from their lower ends to form upper and lower junctures;
- said rods being bent apart at their upper ends, i.e., above the upper juncture, to form a roughly V-shaped fork for receiving said frame element, and said rods being bent apart into an inverted generally V-shape below their lower juncture to form a pair of diverging legs;
- and releasable clamping means for securing the frame element to the rods;
- and a support means secured to the rods between the junctures for loosely resting the bicycle pedal crank hub thereon;
- and said rod portions between the support means and the lower ends of said legs being greater in height than the normal height of said hub above ground, for thereby supporting the bicycle upon the legs and selectively upon either the front or rear wheel of the bicycle.

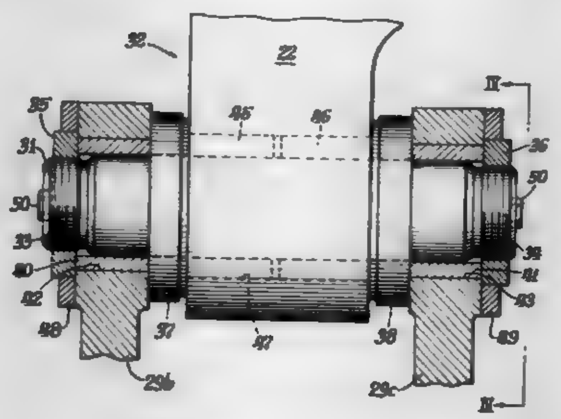
3,980,321
HITCH PIN ASSEMBLY FOR A TRACTOR-SCRAPER VEHICLE AND THE LIKE

Thomas R. Hamilton, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 23, 1974, Ser. No. 535,934

Int. Cl.² B60D *7/02*

U.S. Cl. 280—515 **8 Claims**



1. A hitch pin assembly for a tractor scraper vehicle and the like, comprising a pair of machine elements carried on said vehicle, a pivot pin threaded at both ends and fitted within a bore formed completely through said machine elements to pivotally connect said machine elements so that the pin may be inserted from one side of the elements and removed from the other side thereof, a pair of adjusting nuts threadably mounted on the respective threaded ends of the pivot pin, and a pair of locking elements each secured to one of said machine elements and removably engaging a respective one of the pair of adjusting nuts and restraining it against rotation with respect to said one of the machine elements and so that said pivot pin is positively held relative one of the machine elements while said other of said machine elements is rotatable relative said pivot pin.

3,980,322
SKI STOPPER

Hermann Schultes, Hohenems, Austria, assignor to Olin Corporation, New Haven, Conn.

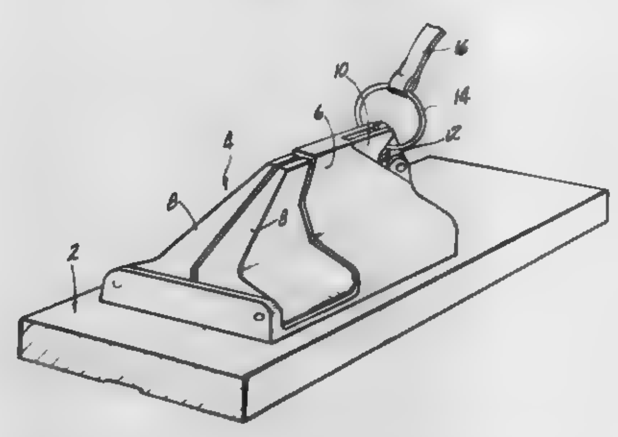
Division of Ser. No. 528,292, Nov. 29, 1974, Pat. No. 3,918,730. This application July 23, 1975, Ser. No. 598,318

Int. Cl.² A63C *7/10*

U.S. Cl. 280—605 **2 Claims**

1. A ski stopping device for mounting on a ski having separate bindings for releasably securing the ski to a skier's boot, said device comprising:

- a. braking means movable between a cocked position and a deployed position, said braking means being operable, when in said deployed position, to stop the ski from sliding;
- b. means operable to bias said braking means toward said deployed position;
- c. searing means operable when cocked to engage said braking means to retain the latter in said cocked position;
- d. cocking means for cocking said searing means;
- e. strap means adapted to be secured to the skier's boot;
- f. releasable connection means for connecting said strap means to said device, said cocking means being movable, when said searing means is cocked, into engagement with said releasable connection means;



- g. means for biasing said cocking means against said releasable connection means with a predetermined quantum of force whereby said strap means will remain secured to said device when pulled away from said device with a force lower than said predetermined quantum, and said strap means will become disconnected from said device when pulled away from said device with a force exceeding said predetermined quantum; and
- h. said cocking means being operable to release said searing means from its cocked condition only when said strap means has become disconnected from said device and said releasable connection means has been disengaged from said cocking means.

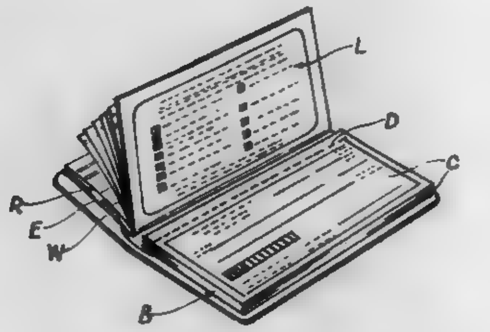
3,980,323
METHOD OF RECORDING AND IDENTIFYING INTELLIGENCE ON BANK CHECKS BY CATEGORY AND OF INDEXING CANCELLED BANK CHECKS BY CATEGORY FOR SUBSEQUENT USE

Marcel Boyreau, Lincolnwood, Ill., assignor to Exchange National Bank of Chicago, Chicago, Ill.

Continuation of Ser. No. 296,584, Oct. 11, 1972, abandoned. This application Jan. 17, 1974, Ser. No. 434,187

Int. Cl.² B42D *15/00*

U.S. Cl. 283—57 **1 Claim**



1. A method of recording and identifying tax deduction information on bank checks by category and of indexing cancelled bank checks by category for subsequent use, comprising the steps of providing a list having a plurality of tax deduction categories, each of said categories being denoted by a first indicator visibly distinct from each other first indicator, providing a check register booklet having a plurality of check register pages, providing a check book having a plurality of individual, conventional single part bank checks secured in said book, each of said checks being secured in said book along a serrated line, providing the face of each check with a plurality of second indicators, each of which is visibly distinct from each other second indicator, each of said second indicators corresponding to one of said first indicators, providing a check folder having pockets to receive appropriately configured mounting tabs associated with said check book and with said check register, positioning said list and said check register via positioning the mounting tab thereof in one pocket in said check folder and positioning said book of checks via the positioning of the mounting tab thereof in the other pocket in said check folder adjacent said list so that said list is readily visible at an upper portion of said folder as a check is being written at the lower position of said folder, by reference to said list, selecting a first indicator corresponding to the one of those tax deduction categories to which category the intended recipient of the proceeds of a check to be written belongs, marking a second indicator on the face of a check which corresponds to the selected first indicator, thereby visually to identify the selected category of tax deduction on the face of the check and visibly to distinguish that check from other checks in other of said categories, entering the selected first indicator in said check register thereby to provide a visual indicator in said register for subsequently indicating in said register the location of a check subsequently indexed, then, after the cancelled check is returned to the maker, indexing the check according to tax deduction category with other marked checks in response to inspection of said second indicator.

3,980,324
SWIVELLING COUPLING FOR FLUID

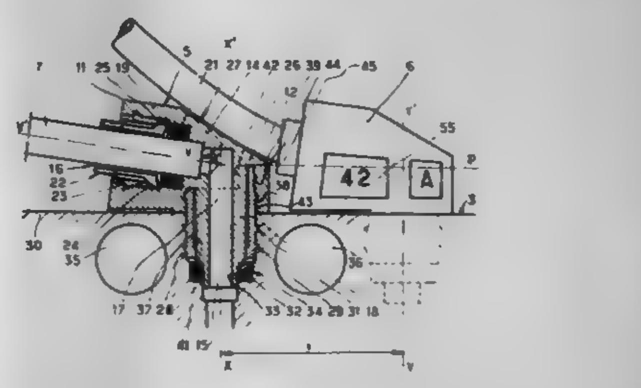
Daniel Bouteille, Marnes la Coquette, and Michel Nicolas, Plaisir, both of France, assignors to La Telemecanique Electrique, France

Filed Mar. 10, 1975, Ser. No. 556,837

Claims priority, application France, Mar. 21, 1974, 74.09797

Int. Cl.² F16L *39/04*

U.S. Cl. 285—179 **2 Claims**



1. A swivelling coupling for fluid comprising:
- i. a frame having a cylindrical recess therein opening at a surface
- ii. a coupling body including a cylindrical portion and a lateral portion, said cylindrical portion having a central axis and said lateral portion having a central axis, said body having an internal channel extending from a first opening provided in said cylindrical portion to a second opening provided in said lateral portion, said cylindrical portion being disposed in said recess, said cylindrical portion having annular projections engaging into said frame such that said cylindrical portion is rotatable in said frame recess but locked against axial withdrawal therefrom,

iii. a toroidal resiliently compressible sealing member and an annular clamping means disposed in said channel in said lateral portion for sealingly securing a flexible tube therein, said coupling body having a first surface portion, a second surface portion contiguous with said first surface portion, and a third surface portion contiguous with said second surface portion, said first surface portion being parallel to said axis of said cylindrial portion and diametrically opposite to said second opening, said second surface portion being inclined relative to said axis of said cylindrical portion, said third surface portion being substantially parallel to said axis of said lateral portion, said first and second surface portions meeting along a common edge, that point of said second opening which lies closest to said frame surface being substantially in a plane normal to the axis of the cylindrical portion containing said common edge, said axis of said lateral portion being inclined by an angle 90°-minus-alpha with respect to a plane normal to said axis of said cylindrical portion, said second surface portion being inclined by an angle approximately twice 90°-minus-alpha with respect to said plane normal to said axis of said cylindrical portion.

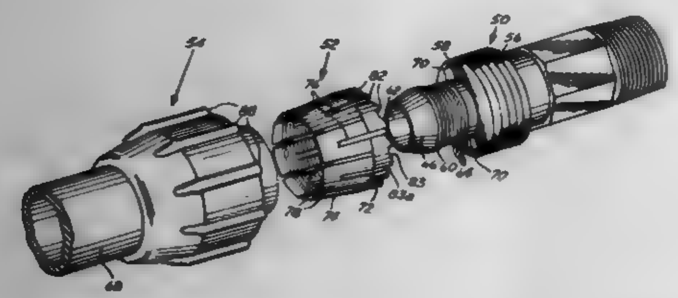
3,980,325
FITTING FOR FLEXIBLE PLASTIC PIPE

Duane D. Robertson, Denver, Colo., assignor to Duane D. Robertson and Frank J. Progar, both of Denver, Colo.

Continuation-in-part of Ser. No. 350,306, April 12, 1973, abandoned. This application July 29, 1974, Ser. No. 492,776

Int. Cl.² F16L *33/00*

U.S. Cl. 285—249 5 Claims



1. In a pipe fitting, for engagement with a cut end of pipe of flexible plastic material, which fitting includes a hollow tubular body having an external screw thread on an intermediate portion thereof terminating at a radially inwardly extending shoulder and a nipple of reduced diameter at one end portion thereof projecting coaxially outwardly from said shoulder, said nipple being inserted into a cut end of a flexible pipe with the cut end positioned in closely adjacent relationship with said shoulder, an annular slotted frusto-conical collet having a thicker end and a tapered end positioned over said pipe and inserted nipple with the thicker end of said collet in close juxtaposition to said shoulder, and a collet clamping sleeve having an internal screw thread at one end portion cooperating with the external thread on said body and a coaxial inwardly tapering frusto-conical surface at its other end complementary to said frusto-conical collet and engaged with said collet and radially compressing the same against the pipe with said collet in abutment with said shoulder and said sleeve threaded axially inwardly onto said body; the improvement comprising: a plurality of spaced, axially projecting ratchet dogs integral with said body shoulder and engaging and biting into the cut end of the pipe with said nipple inserted thereinto, and a plurality of axially extending ratchet teeth integral and coextensive with the thicker end of the collet and positioned in juxtaposition with said shoulder in holding engagement with said dogs when said collet sleeve is threaded onto said collet and body, thereby preventing relative rotation between the pipe and the fitting body as said collet sleeve is threadably tightened in place to effect gripping engagement of the pipe between the collet and the nipple.

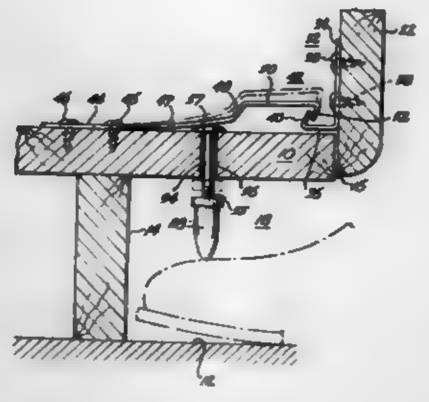
3,980,326
OBSCURELY LATCHED CLOSURES FOR CABINETS

Charles V. Smith, 24120 Dunlap Road, Bothell, Wash. 98011

Filed June 2, 1975, Ser. No. 583,111

Int. Cl.² E05C *3/10*

U.S. Cl. 292—86 2 Claims



1. In a cabinet or the like having a kick-space beneath the front edge of the bottom shelf and a latched door panel normally closing to said bottom shelf, the latching of said door panel being accomplished by an instanding strike device having an upstanding catch located to overlie the bottom shelf when the door is closed and there is an elongated latching mechanism comprising a tang secured to the upper face of said shelf and having a downwardly biased flexible arm supporting a downstanding jaw latch located to engage said catch to retain said door closed against said shelf edge, the improvement comprising:

- **a lifter pin slideably mounted upright in said shelf and being of a length to depend into said kick space in a normally unobvious manner, the lower end of said pin being located to be readily accessible to a user's toe applied in an upward direction to its lower extremity;**
- **said lifter pin having a head on its upper end limiting downward travel and being located beneath said flexible arm for upward movement against the bias of said arm to cause disengagement of said downstanding jaw latch from said catch.**

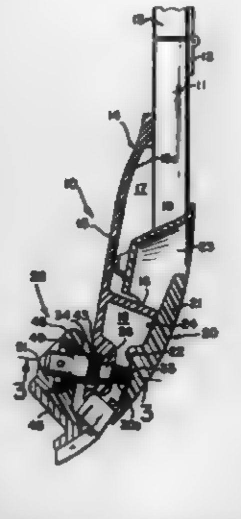
3,980,327
LATCHING MECHANISM

John A. Duran, Glendora, Calif., assignor to Avibank Mfg. Inc., Burbank, Calif.

Filed Apr. 29, 1974, Ser. No. 464,754

Int. Cl.² E05B *65/19, 65/28;* **E05C** *1/14;* **F16B** *19/00*

U.S. Cl. 292—252 4 Claims



1. In a latching mechanism having a latch member, latching means operatively connected to said latch member for latching said latch member in a locked position, the improvement which comprises:

- **said latching means including a pin assembly slidably mounted within said latch member and having a first elongated hollow sleeve member having a generally cylindrical wall fixedly secured at one end to said latch member, and said first sleeve member having adjacent the distal end thereof at least one opening extending through said wall opening into the interior thereof, a second elongated hollow sleeve member having an overall length substantially less than said wall slidably mounted on said first sleeve member and surrounding the cylindrical wall thereof and movable from a first position on said first sleeve member surrounding said opening to a second position unblocking said opening in said cylindrical wall, an elongated,generally cylindrical pin slidably and axially mounted within the interior of said first sleeve member, resilient means encircling said cylindrical wall between said second sleeve member and said latch member abutting against said latch member and biasing said second sleeve member to its first position, and detent means including said pin having a first portion of a generally uniform diameter and a second portion of a generally uniform diameter, said first portion being connected to said second portion by a third portion having a reduced diameter with respect to said first and second portions, and at least one detent member loosely disposed within both said opening and said third portion and abutting against the inner wall of said second sleeve member when said second sleeve member is in said first position and loosely disposed within said opening and abutting against the outer periphery of said first portion and extending beyond the outer periphery of said first sleeve member when said second sleeve member is in said second position in blocking relationship to said second sleeve member, said opening being adapted to allow only a portion of said detent member to extend outwardly thereof, and stop means associated with both said first and second sleeve members for preventing axial movement of said second sleeve member past said opening in a direction away from said latch member;**
- **said latch member being hingedly mounted by a hinge fixedly secured to a housing; and**
- **locking means in operative relationship with said latching means for receiving said latching means in its locked position, said locking means including a locking aperture disposed in a flange member extending from said housing, said aperture having its central axis generally aligned with respect to the central longitudinal axis of said pin and adapted to be slidably engaged by said distal end of said first sleeve member upon movement of said latch member about its hinge to its locked position into engagement with said aperture.**

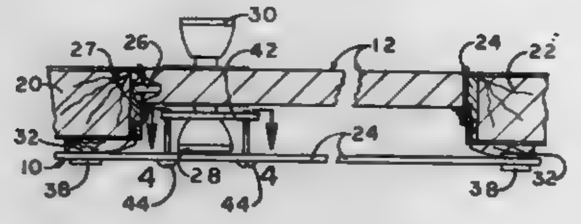
3,980,328
DOORBAR SYSTEM

Ernest A. Pearson, Pontiac, Mich., assignor to Robert J. Pearson, Clarkston, Mich.

Filed May 21, 1975, Ser. No. 579,479

Int. Cl.² E05B *13/00;* **E05C** *13/02, 19/18*

U.S. Cl. 292—256 6 Claims



1. Improvement in a doorbar device for barring the door of a doorway, said doorway having doorjambs and a door therefor, said door having a doorknob, said doorbar device comprising a doorbar constructed to be affixed to the doorjambs of said doorway to extend across and bar the door from being opened, said doorbar device also comprising a mechanism for applying a force upon said doorknob to prevent turning thereof, said mechanism being carried on said doorbar for applying a squeezing force upon opposite faces of said doorknob.

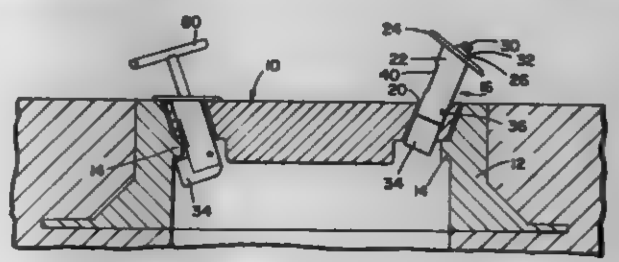
3,980,329
MANHOLE COVER LOCK

Donald K. Coe, Albuquerque, N. Mex., assignor to Loc-Coe, Alburquerque, N. Mex.

Continuation-in-part of Ser. No. 498,334, Aug. 19, 1974, Pat. No. 3,921,494. This application Apr. 28, 1975, Ser. No. 572,698

Int. Cl.² E05C *19/18*

U.S. Cl. 292—258 8 Claims



1. A manhole cover lock comprising:

- **a cylindrical housing having an angled face at one end with a co-planar flange extending therefrom, and a yoke at the other end;**
- **a first axial displaced longitudinal bore extending through said housing;**
- **a second threaded longitudinal bore adjacent and parallel said first bore;**
- **A control rod slideably housed in said first bore;**
- **a locking plate having a first end shaped for engagement of said control rod, pivotally mounted in said yoke, and having a longitudinal portion extending substantially laterally of said housing in the direction of the upper end of said angled face when said control rod is engaged therewith;**
- **threaded locking means threaded in said second bore having an uppermost projecting portion extending over said first bore for causing said control rod to be axially disposed to engage and position said locking plate laterally from said housing in a locked condition and to prevent axial movement of said control rod when said manhole lock is in a locked position; and,**
- **a recess in said upper face to allow said projecting portion to be disposed below said upper face to allow said projecting portion to be disposed below said upper face so that said threaded locking means is contained within said housing when said manhole cover is in the locked condition.**

3,980,330
SAFETY LATCH

Brooks Walker, 1280 Columbus Ave., San Francisco, Calif. 94133

Continuation-in-part of Ser. No. 523,199, Nov. 13, 1974. This application Dec. 9, 1974, Ser. No. 530,686

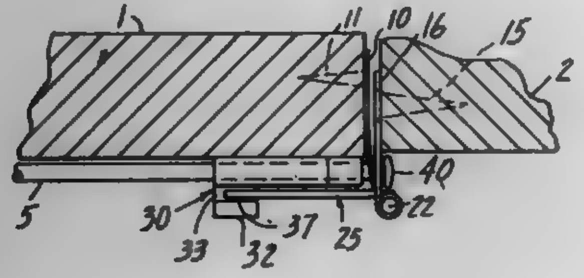
Int. Cl.² E05C *17/04*

U.S. Cl. 292—262 5 Claims

1. In a door structure that includes a frame, and a door having a hinge edge and an opposite latch edge, a safety latch for holding said door against opening, comprising:

- **a bar supported on said door structure**
- **a plate mounted on said frame adjacent said latch edge of the door and disposed in a plane normal to the plane of said door,**
- **said plate being formed with an opening extending to the outer edge of said plate for receiving one end of said bar therethrough,**

a keeper swingably mounted relative to said frame and adapted to be swung from an inoperative position in opposed relation to said frame to an operative position substantially parallel to the plane of said door,
holding means for holding said keeper in said operative position to prevent opening of said door,

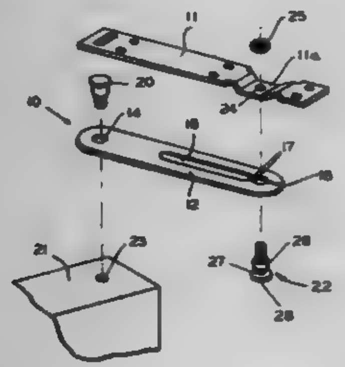


a support on said door adjacent the latch edge for supporting said bar,
said support comprising a second plate secured to the latch edge of said door, said second plate extending outwardly from said door substantially at right angles thereto and being provided with an aperture receiving said bar therethrough.

3,980,331
DOOR CHECK AND HOLD-OPEN DEVICE

Thomas E. Kennedy, and James F. Kinney, both of Niles, Mich., assignors to Tyler Refrigeration Corporation, Niles, Mich.

Filed Sept. 18, 1975, Ser. No. 613,389
Int. Cl.² E05C *17/16*
U.S. Cl. 292—268 **2 Claims**



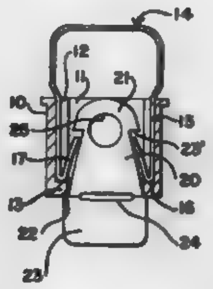
1. A door check and hold-open device adapted to be secured to a door and a frame, the door having resilient means biasing the door to a closed position with respect to the frame, said device comprising:

a. mounting means adapted to be secured on said frame;
b. an elongated resilient door check arm located in a generally parallel plane with said mounting means, said arm having an aperture provided near one end thereof and having a longitudinal slot on the longitudinal axis of said arm extending from about the midpoint thereof to near another end thereof;
c. means, projecting through said aperture, for pivotally connecting said one end of said arm to said door;
d. a multi-stepped pin projecting through said longitudinal slot, for connecting said arm to said mounting means, has one end thereof attached to said mounting means and further includes an enlarged head portion on a side of said arm removed from said mounting means, an intermediate groove portion and a shoulder portion, said slot being slightly wider than said pin groove and shoulder portions; and
e. said door check arm further including a restriction, wide enough to accommodate free passage of said pin groove portion, close to the end of said longitudinal slot near said another end of said arm, whereby as said door is opened to a fully opened position, said door carries said arm relative to said pin so as to locate said pin beyond said restriction in said slot, whereafter said arm can be slightly displaced from said parallel plane so that said restriction engages the shoulder portion of said pin when said door is released, to prevent said door from returning to a closed position, said door being closable by said resilient biasing means upon its release from its fully open position in a first of two alternate ways after a force is initially exerted against said door in a door-opening direction thereby disengaging said pin shoulder portion from said restriction and permitting said arm to return to said generally parallel plane wherein said longitudinal slot is generally in the plane of said pin groove portion.

3,980,332
SEALS FOR METERS AND THE LIKE

Karl G. King, Sr., DeLand, Fla., assignor to Inner-Tite (Division of Yara Engineering Corporation), Springfield, N.J.

Filed Sept. 9, 1975, Ser. No. 611,655
Int. Cl.² B65D *33/34*
U.S. Cl. 292—320 **9 Claims**



1. A seal for meters and the like comprising a generally rectangular housing having a central slot passing therethrough, a generally U-shaped fastening shackle member having at each end a reversely bent inwardly extending hook insertable into one end of said slot and keeper means inserted into said slot from the end opposite the shackle member, said keeper means having opposed notches intermediate its ends engaging the hook means of the shackle within the housing, stop means on the keeper means engaging the housing and limiting movement of the keeper into the slot to hold the notches and hook means in the housing and a frangible connection defining the stop means from the keeper means, said slot being dimensioned to permit passage of the shackle member and keeper free of the stop means through said one end whereby when the stop means are broken it permits the keeper and shackle to pass fully through the slot and said one end.

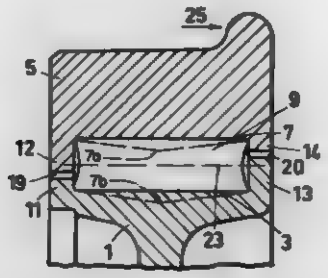
3,980,333
RESILIENT RAILWAY WHEEL

Willi Kasper, Speibergsfeld 6, Wattenscheid, and Helmut Licht, Liebigstr. 1, Bochum, both of Germany

Filed Sept. 26, 1974, Ser. No. 509,729
Claims priority, application Germany, Sept. 29, 1973, 2349107
Int. Cl.² B60B *9/14, 17/00;* **B60C** *7/06, 7/14*
U.S. Cl. 295—11 **3 Claims**

1. In a rubber-suspended railway wheel having a single-piece wheel rim; a single-piece wheel tire annularly encompassing said wheel rim; annular grooves being smooth surfaced and being formed in, respectively, said wheel rim and said wheel tire, said grooves facing each other, said annular groove on said wheel tire and said annular groove on said wheel rim each having only one shoulder adapted to overlap the transversely spaced other shoulder for restricting axial displacement between said wheel tire and said wheel rim; and highly prestressed rubber insert means formed of spaced individual blocks being inserted in said annular grooves at constant intervals, said grooves being transversely curved toward

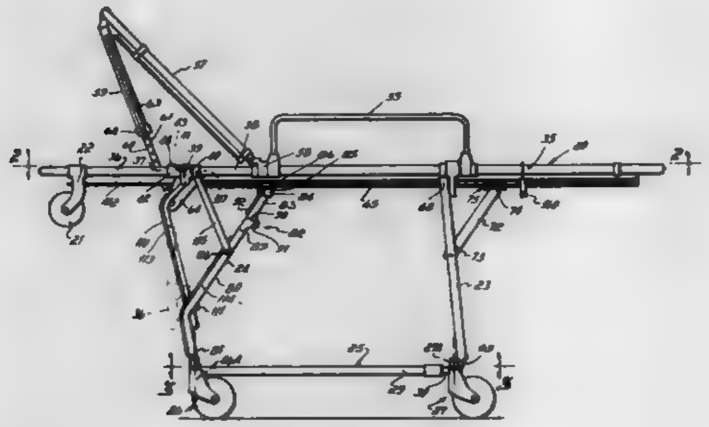
the axis of said wheel for prestressing said rubber insert means, the improvement comprising; one of said overlapping shoulders being located at one side and the other shoulder being located at the other side of said rubber insert means.



3,980,334
ALL LEVEL CART WITH SWIVEL CASTERS

Richard H. Ferneau, Washington Court House, and Burt Weil, Cincinnati, both of Ohio, assignors to Burt Weil, Cincinnati, Ohio

Filed Jan. 31, 1975, Ser. No. 545,969
Int. Cl.² A61G *1/02*
U.S. Cl. 296—20 **13 Claims**



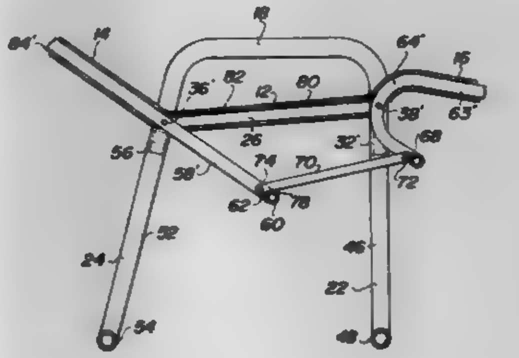
1. A cart comprising,
a generally horizontal bed,
four legs depending generally vertically from said bed,
diagonal braces connected between said legs and said bed,
a horizontal frame mounted on the lower ends of said legs and adapted to be elongated and shortened in one direction,
four wheels mounted on said frame,
at least two of said wheels being mounted on vertical swivel axes,
one of said braces being pivotally connected to said bed, and the other having a sliding connection to said bed,
means for adjustably varying said sliding connection to vary the level of said bed,
whereby said bed may be lowered without altering the vertical orientation of said swivel axes.

13. In a cart having slidable legs or braces attached to a bed, a sliding latch therefor comprising,
an elongated bar,
a slide mounted on said bar,
a series of spaced abutments on said bar,
a latch pivoted on said slide and engageable with said abutments,
an elongated cam mounted adjacent said bar for transverse movement, said cam having at least one angulated slot, a pin on said bed received in said slot whereby longitudinal movement of said cam will cause said cam to move transversely with respect to said bar,
said cam being engageable with said latch,
said cam being transversely movable away from said bar to cam said latch away from said spaced abutments.

3,980,335
RECLINING CHAIR

Matthew D. Marhefka, Southampton, Pa., assignor to The Bunting Company, Inc., Philadelphia, Pa.

Filed Aug. 29, 1975, Ser. No. 609,119
Int. Cl.² A47C *1/034*
U.S. Cl. 297—90 **11 Claims**

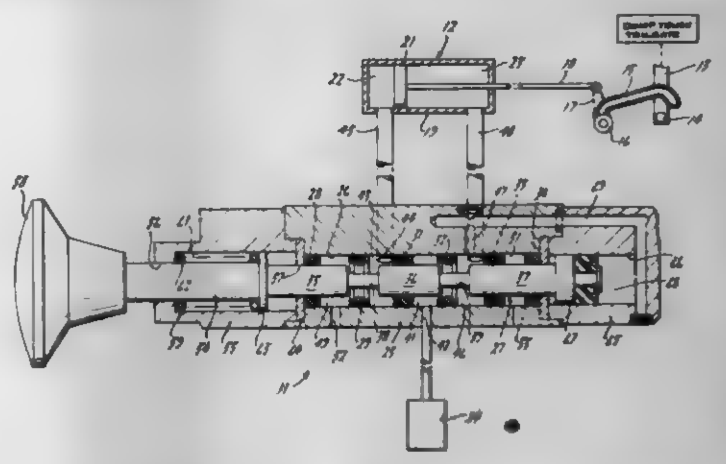


1. A chair movable between an upright position and a reclining position comprising:
a frame including a generally horizontal seat and legs depending downwardly from said seat;
a back pivotally mounted at a first pivot point to said frame adjacent the rear of said seat, said back including a lower section extending downwardly beneath said seat;
a leg rest pivotally mounted at a second pivot point to said frame adjacent the front of said seat, said leg rest including a reverse bend portion adjacent the top thereof extending inwardly and downwardly beneath said seat;
a link member beneath said seat, said link member having a first end pivotally connected at a third pivot point to said lower section of said back and a second end pivotally connected at a fourth pivot point to said reverse bend portion of said leg rest, said pivot points being such that when said chair is in its full upright position said fourth pivot point lies above the level of an imaginary straight line extending between said second and third pivot points whereby attempted movement of said back toward the reclining position forces said leg rest away from the reclining position.

3,980,336
SAFETY VALVE FOR TAILGATES OR THE LIKE

Paul A. Bitonti, Troy, Mich., assignor to Ross Operating Valve Company, Detroit, Mich.

Filed June 26, 1974, Ser. No. 483,309
Int. Cl.² B60P *1/04;* **F15B** *11/15, 13/04*
U.S. Cl. 298—23 M **4 Claims**



1. In combination with a double acting fluid motor shiftable between first and second positions, a two position safety control valve comprising a housing having a bore with spaced seals of uniform diameter, a spool valve slidably mounted in the seals of said housing bore, a central chamber in said housing, a supply port in said housing leading to said central cham-

ber, a pair of working chambers on opposite sides of said central chamber, two of said seals separating said central chamber from said working chambers, working ports in said housing leading from said working chambers, connections between said working ports and opposite sides of said fluid motor, a pair of exhaust chambers outwardly of said working chambers, two of said seals separating said working chambers from said exhaust chambers, exhaust ports in said housing leading from said exhaust chambers, said valve spool being movable between a first position in which said supply chamber is connected to a first working chamber and the second working chamber is connected to its adjacent exhaust chamber, whereby said fluid motor will be shifted to its first position, and a second position in which said supply chamber is connected to the second working chamber and the first working chamber connected to its adjacent exhaust chamber, whereby the motor will be shifted to its second position, a handle on one end of said spool outwardly of said housing for moving said spool between its positions, a spring between said housing and a portion of said spool, said spring engaging a portion of said spool which is unobstructed by said housing in all positions of said spool whereby the spring constantly urges the spool toward its first position regardless of the position of said spool, a pressure responsive piston having a circular face area fixed to said spool at the end opposite said handle, a piston chamber formed between said piston circular face area and said housing and a fluid passage leading from said second working chamber to said piston chamber, said fluid passage being open regardless of whether said valve spool is in either of its positions, the relative dimensions of said spring and piston face area being such that said piston will hold said spool in its second position against the urging of said spring as long as supply fluid pressure is above a predetermined level, whereby dropping of supply fluid pressure below said level will cause said spring to shift the spool to its first position.

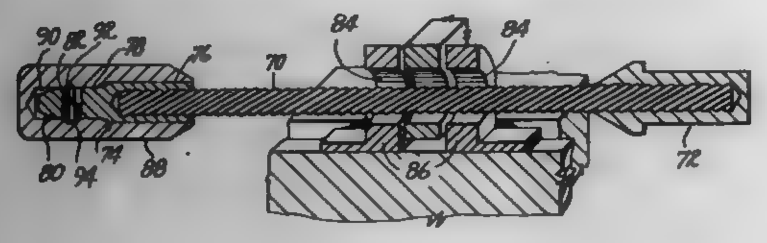
3,980,337
LOCKING SEAL

Sigurd Manfred Moberg, Orange, and George Lundberg, Pompton Lakes, both of N.J., assignors to E. J. Brooks Company, Newark, N.J.

Continuation-in-part of Ser. No. 313,161, Dec. 7, 1972, abandoned. This application Sept. 10, 1973, Ser. No. 395,416

Int. Cl.² B65D *33/34*

U.S. Cl. 292—319 **2 Claims**



1. A locking seal, comprising an elongated shackle formed of stranded cable and a fastener portion attached to each end of the shackle, each of said fastener portions having a rear portion surrounding and engaging an end of the cable, one fastener portion having a forwardly extending stud portion, the other fastener portion having a socket portion formed by a forwardly extending peripheral wall forming an internal aperture for receiving the stud portion said portions having cooperating means to effect locking engagement when the stud portion is inserted into the internal aperture in the socket portion, said portions being so dimensioned that when the stud portion is assembled into the socket portion the forwardly extending peripheral wall of the socket portion closely surrounds the rear portion of said one fastener portion and the end of the cable assembled therein.

3,980,338
METHOD AND APPARATUS FOR CONTROLLING WATER SPRAYS OF AN UNDERGROUND EXTRACTION MACHINE

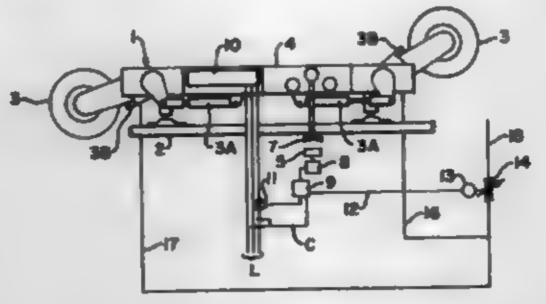
Karl-Heinz Weber, Witten-Heven, Germany, assignor to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Germany

Filed Dec. 5, 1974, Ser. No. 530,036

Claims priority, application Germany, Dec. 20, 1973, 2363572

Int. Cl.² E21C *35/22*

U.S. Cl. 299—1 **9 Claims**



1. A method of controlling the quantity of water discharged from a nozzle device toward cutting tools during operation of a drum-cutting mining machine of the type which is traversed by a drive along the longwall of the mine, the cutting tools being carried by a cutter head that is rotated by a motor on the mining machine to release material from the face of the mine, said method including the steps of detecting the speed at which said drum-cutting mining machine moves along by generating an electrical signal corresponding to the speed of movement thereof relative to the mine face, and proportionately controlling the water discharge rate by said nozzle device in response to said electrical signal.

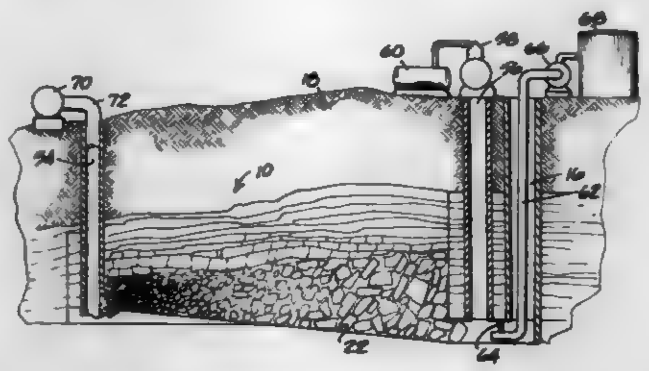
3,980,339
PROCESS FOR RECOVERY OF CARBONACEOUS MATERIALS FROM SUBTERRANEAN DEPOSITS

David D. Heald, San Mateo; John C. McKinnell, Bakersfield, and Mitchell A. Lekas, Concord, all of Calif., assignors to Geokinetics, Inc., Concord, Calif.

Filed Apr. 17, 1975, Ser. No. 568,900

Int. Cl.² E21B *43/24, 43/26*

U.S. Cl. 299—2 **30 Claims**



12. A method of preparing a subterranean mineral deposit for in-situ extraction of mineral values therefrom comprising the steps of:

selecting a portion of said deposit for processing;
providing an outlet in communication with an area defining a base of said selected portion of said deposit;
providing an inlet communicating with said selected portion at a point spaced from said outlet so that said portion lies substantially between said inlet and said outlet;
breaking said portion of said deposit into rubble defining a permeable zone extending between said inlet and said outlet and increasing in permeability from said inlet to said outlet so that the process of extraction may be initiated at the inlet and the extracted minerals transported through high permeability area to the outlet.

3,980,340
METHOD FOR LONGWALL MINING WITH SIDE-BY-SIDE ARCH SECTIONS

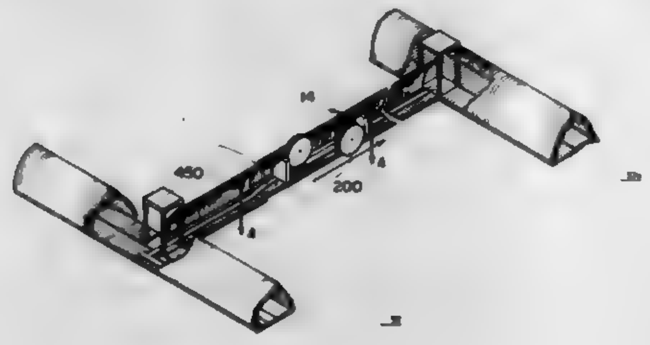
Robert W. Johns, Calgary, Canada, assignor to World Oil Mining Ltd., Calgary, Canada

Division of Ser. No. 509,489, Sept. 26, 1974. This application Oct. 28, 1975, Ser. No. 625,889

Claims priority, application Canada, Mar. 18, 1974, 195228

Int. Cl.² E21C *41/10*

U.S. Cl. 299—11 **8 Claims**



1. A method for underground mining of mineral deposits comprising:

a. providing two tunnels in spaced parallel relationship adjacent the working block of said mineral deposits,
b. providing a mining crosscut between said tunnels,
c. providing within said crosscut, a tunnellike mining shield having a bottom portion and a side wall extending upwardly at a generally acute angle therefrom, said shield being open opposite said side wall to expose an interior wall of said crosscut, and being formed from a plurality of forwardly advanceable arch sections positioned in side-by-side relationship.
d. mining the exposed interior wall of said crosscut from within said crosscut by a mining machine traveling within said shield the extent of the crosscut,
e. removing the mined material from said crosscut, and
f. advancing said shield in the mining direction to occupy the volume of said cut and leave the roof and wall posterior to the crosscut unsupported.

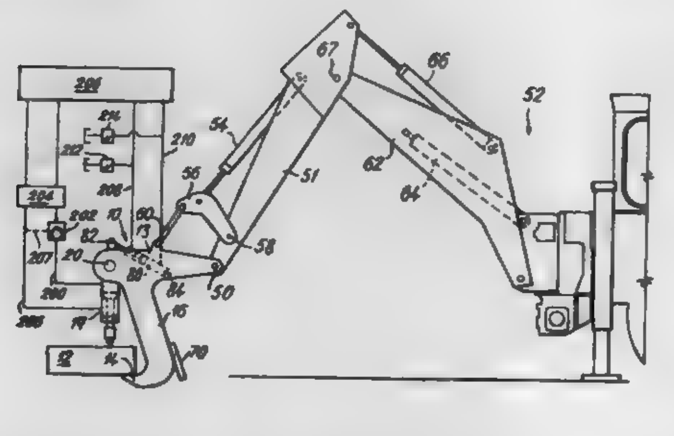
3,980,341
BREAKING UP OF CONCRETE SURFACE LAYERS OR THE LIKE

Ahmed Asim Bilgin Musannif, Dunstable, and Joseph Folkard Eden, Shenley, both of England, assignors to National Research Development Corporation, London, England

Filed Mar. 14, 1974, Ser. No. 451,292

Int. Cl.² E01C *23/12*

U.S. Cl. 299—36 **10 Claims**



1. Apparatus for breaking a concrete surface masonry wall or like planar construction comprising a rigid member, said rigid member having a body portion adapted to be positioned adjacent a free edge of the construction, said rigid member having a gripping portion remote from said body portion for engaging one major face of said construction, gripping means for gripping the other major face of the construction at a greater distance from said body portion of said rigid member than the distance between said gripping portion and said body portion, said gripping means being pivotally mounted to said rigid member and expansion means for pivoting said rigid member to effect breaking of the construction.

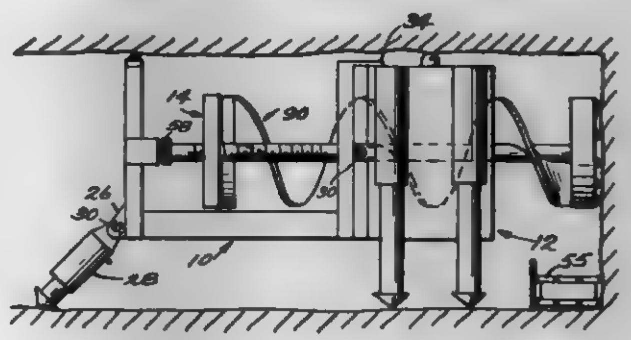
3,980,342
AUGER TYPE MINING MACHINE

George A. Dunham, Rte. 2, Box 155-C, Beckley, W. Va. 25801

Filed Apr. 9, 1975, Ser. No. 566,321

Int. Cl.² E21C *27/22*

U.S. Cl. 299—56 **22 Claims**

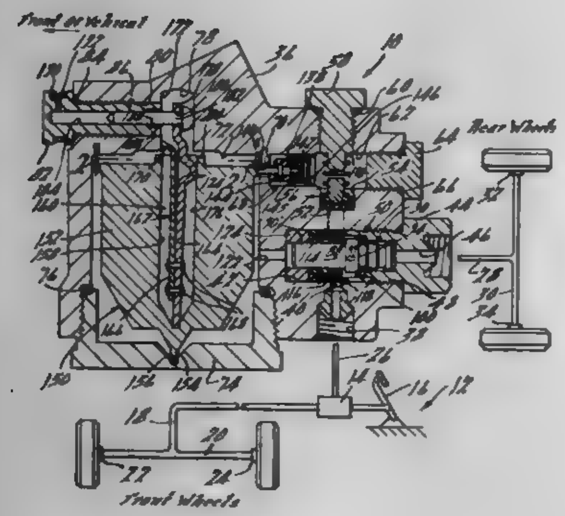


1. A mining device utilizing an auger which can be increased in length by securing additional sections of auger to the rear portion of the advancing auger so as to extend the cutting head of the auger into a seam of coal or the like being mined, for a greater distance than would otherwise be possible, comprising:

a rigid frame structure;
adjustable bracing means attached to the rigid frame structure for securing the device in place in relation to a surface from which the mining is to take place;
auger drive means for rotatably driving the auger, having an outer casing rigidly secured to the front portion of the frame structure, an inner driving member rotatably mounted within the casing and engageable with the outer peripheral portion of an auger the outermost extremities of which are generally defined by a cylindrical envelope;
motor means associated with the inner driving member for providing the rotational torque necessary to drive the auger including, a stator portion of an electric motor insulated from, secured to and contained within the casing of the auger drive means in concentric relation to the auger, a rotor portion of an electric motor insulated from and attached to the inner drive member of the auger drive means and disposed circumferentially about the auger in driven relationship to the stator portion;
auger advancing means having a variable speed motor mounted on the rear portion of the frame structure, at least one threaded rotatable auger advancing shaft driven by the variable speed motor and a thrust member having a threaded portion in engagement with the threads of the at least one threaded shaft and adapted for driving engagement with the rear portion of the auger the thrust member being movable between (1) a rearward position which is at least one auger length from the rearmost portion of the auger drive means and (2) a forward position which is at least as far forward as the rearmost portion of the auger drive means, so that when the thrust member is in the rearmost position an additional auger section may be attached to the rear of a previously inserted auger section and fed through the auger drive means by the thrust member.

3,980,343
LOAD RESPONSIVE PROPORTIONING VALVE

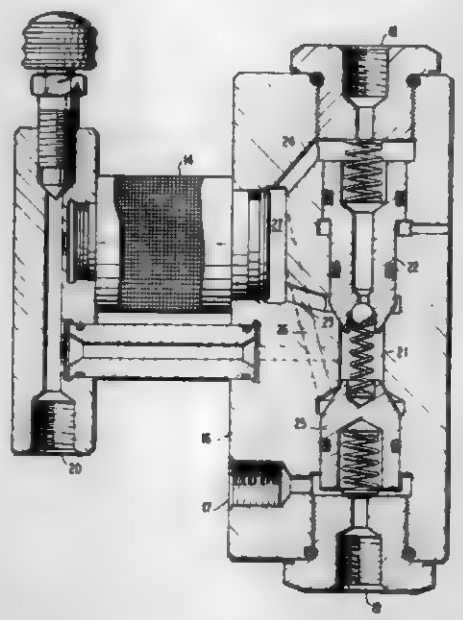
William Stelzer, Milford, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Continuation of Ser. No. 381,915, July 23, 1973, abandoned. This application June 27, 1975, Ser. No. 591,071
Int. Cl.² B60T *13/06*
U.S. Cl. 303—6 C 22 Claims



1. In an automotive vehicle having a source of hydraulic fluid and front and rear wheel hydraulically actuated brake systems, the improvement comprising:
- proportioning valve means in one of the systems actuable for modulating the brake pressure in that one system to provide for a reduced brake effect at the rear wheels relative to that at the front wheels to compensate for weight transfer during braking, said proportioning valve means comprising piston means movable between positions opening and closing a flow path from said fluid source to said one brake system,
- bias means including a chamber filled with pressurized fluid and providing a force to move said piston means toward a position opening said flow path from said fluid source to said one brake system,
- said chamber being in direct communication with said piston means through a passageway, said pressurized fluid in said chamber applying a direct force on said piston means,
- deceleration means disposed in said chamber for controlling the magnitude of said pressure in said chamber as a function of the magnitude of deceleration of the vehicle,
- said deceleration means including a weighted element and means supporting said element for pivotal movement between first and second positions, and
- valve means for selectively communicating said fluid source with said chamber filled with fluid, said valve means being open when said weighted element is in said first position and being actuable to a closed condition blocking communication between said fluid source and said chamber in response to said weighted element moving to said second position,
- whereby the modulating effect of said proportioning valve means compensates for variations in loading of the vehicle.

3,980,344
APPARATUS FOR CONTROLLING A TWO-CIRCUIT BRAKE INSTALLATION FOR MOTOR VEHICLES

Manfred H. Burckhardt, Waiblingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany
Filed Mar. 10, 1975, Ser. No. 556,915
Claims priority, application Germany, Mar. 8, 1974, 2411096
Int. Cl.² B60T *8/06, 8/26*
U.S. Cl. 303—6 C 5 Claims

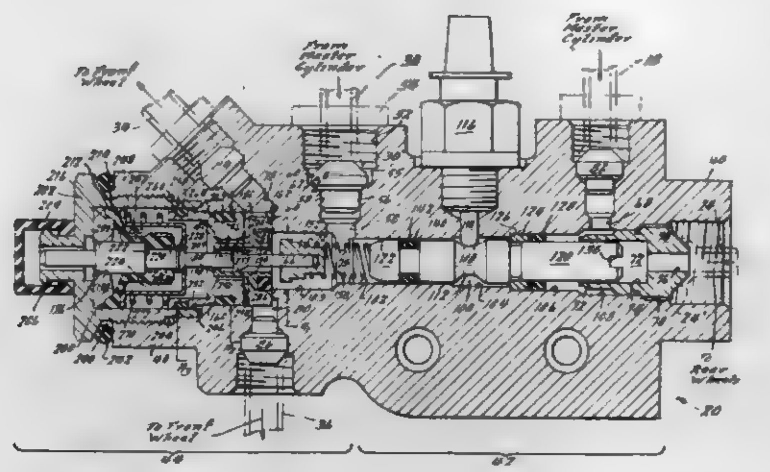


1. An apparatus for controlling the two-circuit brake system for a motor vehicle with the aid of a controllable pressure-reducing valve means operable to reduce the pressure in the rear wheel brake circuit compared to that in the front wheel brake circuit, said pressure-reducing valve means including a bypass line means providing a bypass between a pressure inlet operatively connected with a master cylinder and a pressure connection leading to the rear wheel brakes, and a solenoid valve means for controlling said bypass line means, characterized by means for measuring the brake slippage at the front wheels and at the rear wheels and producing electrical signals corresponding to the measured values, comparing means for comparing with each other the measured values, and pulse control means operatively connected at its input with the comparing means and its output with the solenoid valve means and operable to energize the solenoid valve means as long as the brake slippage at the front wheels is larger by a predetermined value than that of the rear wheels.

3,980,345
METERING AND PROPORTIONING VALVE MECHANISM

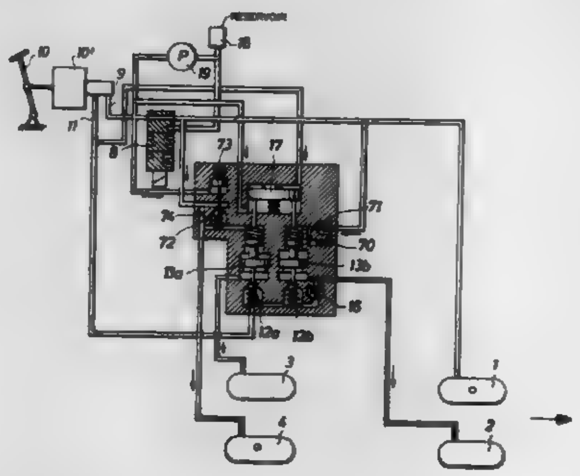
Roger E. Doerfler, Detroit, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed June 19, 1975, Ser. No. 588,329
Int. Cl.² B60T *8/26, 17/22*
U.S. Cl. 303—6 C 14 Claims

12. In a brake system for a vehicle having front brakes and rear brakes and having a front brake system separate from a rear brake system, the front brakes operable at a first preselected hydraulic pressure and the rear brakes operable at a second preselected hydraulic pressure in excess of said first preselected pressure, the improvement comprising a metering valve means and a proportioning valve means both connected in series circuit with said front brake system, said metering valve means including a differential pressure responsive means and operable to block communication of hydraulic pressure to said front brakes prior to reaching said first preselected hydraulic pressure until said second preselected pressure is attained, said proportioning valve means including a pressure responsive spool member and operable to restrict the pressure applied to the front brakes relative to said rear brakes at pressures above said second preselected pressure, said metering valve means and said proportioning valve means sharing a common valve mechanism which acts to limit the application of hydraulic fluid to said front brakes.



3,980,346
ANTI-LOCKING CONTROL SYSTEM FOR SIMULTANEOUS REGULATION OF STEERED WHEELS OR WHEELS ON A DIAGONAL OF VEHICLE

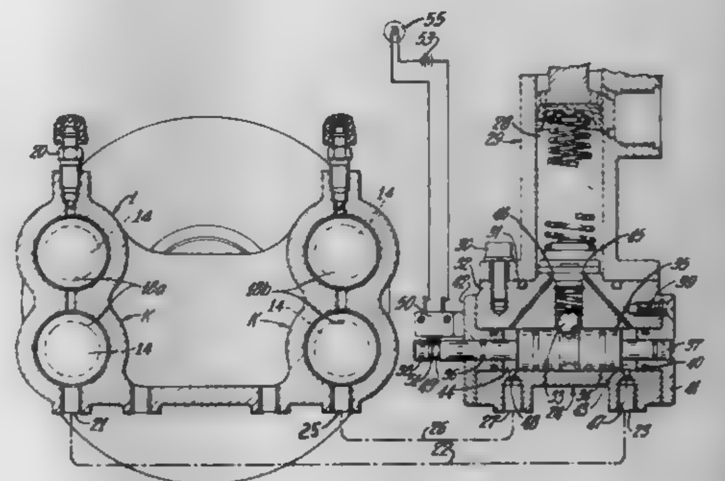
Heinz Leiber, Leimen, Germany, assignor to Teldix GmbH, Heidelberg, Germany
Filed July 10, 1975, Ser. No. 594,678
Claims priority, application Germany, July 10, 1974, 2433092
Int. Cl.² B60T *8/04*
U.S. Cl. 303—6 R 51 Claims



1. In an anti-locking control system for the brakes of a four wheel vehicle having dual brake circuits controlled by a single master cylinder and with each brake circuit connected to the brakes associated with two of said wheels, said control system including, a brake pressure regulating unit connected in one of said brake circuits for jointly regulating the brake pressure at the brakes of the two of said wheels associated with said one brake circuit, means for sensing the rotational behavior of two diagonally opposite ones of said wheels, and circuit means, connected to said sensing means, for evaluating the output signals from said sensing means and for generating brake pressure control signals for controlling said pressure regulating unit, the improvement wherein said two wheel brakes connected to said one brake circuit are the brakes associated with said diagonally opposite wheels whose rotational behavior is being sensed or the brakes associated with the steered wheels of the vehicle; and wherein said anti-locking control system further includes: switching means connected to said control circuit means for alternatingly producing a first operating state of said control circuit in which the pressure is regulated when there is a tendency to lock at one wheel whose rotational behavior is sensed and a second operating state in which the pressure is regulated when there is a tendency to lock at both wheels whose rotational behavior is sensed; a normally open brake pressure control valve connected in the other of said dual brake circuits; and means responsive to the pressure (P_{ST}) at the two brakes connected to the output of said brake pressure control valve and to the pressure (P_R) at the output of said brake pressure regulating unit, for closing said brake pressure control valve when the pressure P_{ST} has a given relationship to the pressure P_R.

3,980,347
FAIL-SAFE BRAKING SYSTEM

Karl-Heinz Griesenbreck, Heiligenhaus, Germany, assignor to Eaton Corporation, Cleveland, Ohio
Filed June 17, 1975, Ser. No. 587,755
Claims priority, application Germany, June 22, 1974, 2430049
Int. Cl.² B60T *17/22*
U.S. Cl. 303—6 R 4 Claims



1. In a brake system for a vehicle, a brake rotor member rotatable with a wheel of said vehicle, a first brake shoe member engageable with said rotor member, a second brake shoe member engageable with said rotor member, first hydraulic actuator means acting on said first shoe member to apply a braking force to said rotor in response to a hydraulic pressure signal, second hydraulic actuator means acting on said second shoe member to apply a braking force to said rotor in response to said hydraulic pressure signal, a brake master cylinder for selectively applying hydraulic pressure signals to said first and second actuator means, a first conduit connecting said first actuator means to said master cylinder for receipt of said pressure signals, a second conduit connecting said second actuator means to said master cylinder, and a valve connecting said master cylinder and said first and second conduits, said valve comprising a body having a bore formed therein, a valve spool received in said bore, means retaining said spool substantially centered between opposed first and second pressure chambers formed in said body, means connecting said first conduit in fluid communication with said first chamber, means connecting said second conduit in fluid communication with said second chamber, and means connecting the pressure chamber of said master cylinder with said first and second chambers, a reduction of pressure within either of said chambers causing said valve spool to move toward the chamber of reduced pressure due to the resulting unbalanced pressure in the opposite chamber, said spool including a projecting portion extending outward of said body and visible outside said body, the position of said projecting portion relative to said body providing a visual indication of the position of said valve spool.

3,980,348
FLUID FLOW CONTROL VALVES

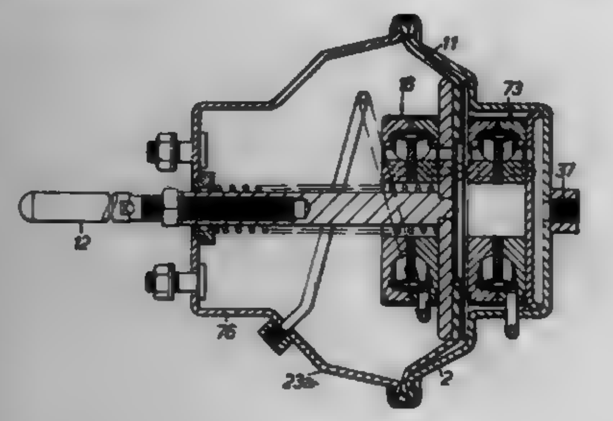
Anthony William Harrison, Birmingham, England, assignor to Girling Limited, Birmingham, England

Division of Ser. No. 305,220, Nov. 10, 1972, abandoned. This application Feb. 7, 1974, Ser. No. 440,577

Claims priority, application United Kingdom, Nov. 13, 1971, 52798/71; Jan. 21, 1972, 2881/72

Int. Cl.² F15B *13/043*; B60T *8/06*, *8/10*

U.S. Cl. 303—21 F **28 Claims**



1. A fluid-pressure operated actuator for a braking system of a vehicle comprising an actuator housing, a wall movable in said housing in response to differential fluid pressures applied to chambers in the housing on opposite sides of the movable wall, an actuating member attached to the movable wall and adapted to actuate a component of the braking system, a first valve located in the housing for establishing fluid communication through the movable wall to equalise the pressures in both chambers, said first valve comprising a valve housing having an inlet and an outlet, a seating member incorporating a seating separating the inlet and outlet, and a single valve member directly operable by fluid pressure and supported on the seating in the closed position of the valve, the ratio of the total length of the seating to the maximum span of the valve member unsupported by the seating in the closed position being substantially greater than three, and a fluid pressure connection extending from said first valve to the exterior of said actuator housing to enable said valve member to be remotely operated by fluid pressure, the condition of said first valve being unaffected by displacement of said movable wall relative to said actuator housing.

3,980,349
ANTI-SKID BRAKE CONTROL SYSTEM

Robert D. Cook, Newhall, Calif., assignor to Crane Co., Chicago, Ill.

Division of Ser. No. 68,433, Aug. 31, 1970. This application Jan. 13, 1975, Ser. No. 540,409

Int. Cl.² B60T *8/08*

U.S. Cl. 303—21 BE **10 Claims**

1. An anti-skid brake control system for a vehicle having brake-controlled wheels, comprising:

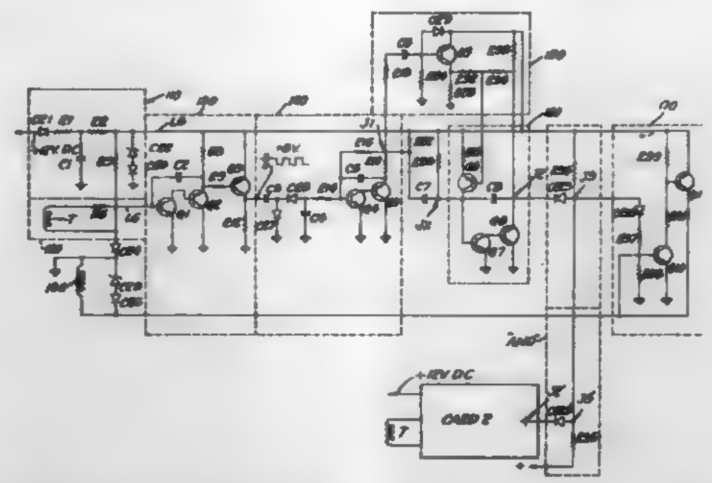
wheel speed signal generating means associated with at least one of said wheels for producing a signal representative of wheel speed;

comparison means for comparing the deceleration of said wheel speed signal with a predetermined deceleration reference for generating an error signal when the deceleration of said wheel speed signal sufficiently exceeds said predetermined deceleration reference, and then comparing said wheel speed signal with a declining velocity reference for terminating said error signal when said wheel speed signal exceeds said declining velocity reference;

reference control means responsive to said error signal to reduce the rate of decline of said velocity reference;

spin-up detection means responsive to said wheel speed signal for modifying the action of said reference control means to increase the rate of decline of said velocity reference when said wheel speed signal increases at a rate in excess of a predetermined spin-up rate; and

brake control means adapted to respond to said error signal to modify braking action.



3,980,350
METHOD AND DEVICE FOR REGULATING THE BRAKING CYCLE FOR AN INDIVIDUAL WHEEL ON A VEHICLE

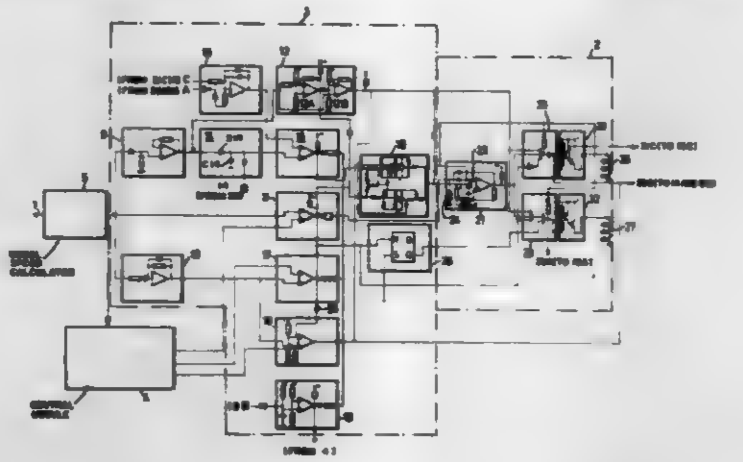
Ulf Erik Öberg, Goteborg, Sweden, assignor to Saab-Scania Aktiebolag, Sodertalje, Sweden

Filed Feb. 28, 1975, Ser. No. 554,219

Claims priority, application Sweden, Mar. 1, 1974, 7402760

Int. Cl.² B60T *8/08*

U.S. Cl. 303—21 A **26 Claims**



1. A method for regulating braking operations in a vehicle equipped with a braking control system including means for measuring wheel rotational speed, an electronic unit and a valve unit situated in a brake pressure line for at least one of the wheels, said braking control system, during a braking operation, causing the braking pressure applied to the wheel through the brake pressure line to vary in response to reference values for different observed control parameters so that the wheel, during the course of the braking operation, is affected during a number of braking control cycles, during which the wheel, by means of braking pressure alterations, is retarded from a first rotational speed to a second lower rotational speed, during which retardation the maximum braking capacity of the wheel on the appropriate road surface is surpassed, thereafter reducing the braking pressure to the wheel enabling the wheel to accelerate and increase its rotational speed at the reduced braking pressure whereby at least one of the observed reference parameters will trigger the next controlling cycle;

measuring during said acceleration the wheel rotational acceleration;

creating a first signal level representing maximum wheel rotational acceleration and temporarily storing the first signal level which serves to provide an indication of the amount of braking pressure increase that is possible over the braking pressure present during the time that the wheel is permitted to accelerate thereby making it possible to obtain optimum braking capacity between the wheel and the road surface;

initiating an increase in braking pressure and developing a second signal level representing the actual amount of brake pressure increase;

comparing the temporary stored signal with the second signal;

continually increasing the brake pressure until the first and second signal levels are equal.

14. Control means for regulating a braking operation for the braking means of at least one wheel in a vehicle having a brake line for coupling the braking pressure medium to the wheel braking means, said control system comprising:

measuring means sensing the wheel speed for generating a first signal representative of wheel speed;

a valve unit positioned within said brake line for selectively coupling the braking pressure medium to the wheel braking means;

an electronic unit for controlling the braking operation, said electronic unit including means for regulating the valve unit in response to signals from said measuring means to adjustably increase, decrease or maintain constant the pressure in the brake line to said braking means, whereby the wheel is sequentially caused to retard and to accelerate so that the maximum wheel braking capacity on the appropriate road surface is obtained, characterized in that the electronic unit further comprises peak value follower circuit means coupled to said measuring means for determining the maximum wheel acceleration during a control cycle in which braking pressure is reduced;

monitoring means responsive to operating signals applied to said valve unit by said valve regulating means for generating a signal representative of the pressure change applied to the braking means;

a pressure comparator for comparing the output of said peak value follower circuit with the output of the monitoring means for generating a control signal for application to the valve unit to regulate pressure in the brake line to bring the signal value representing brake pressure into equality with the signal representing peak acceleration, whereby said comparator terminates any further pressure increase.

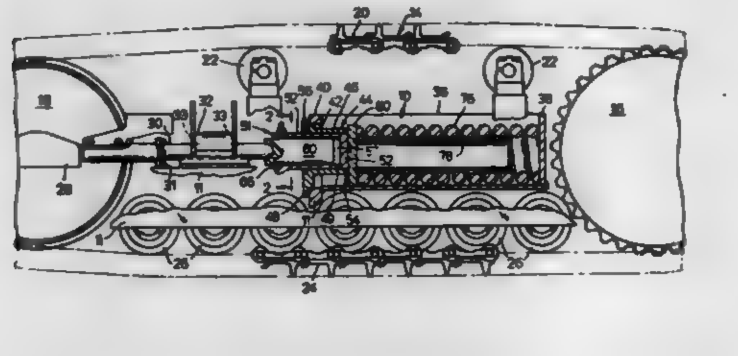
3,980,351
TRACK IDLER RECOIL SPRING ASSEMBLY AND METHOD FOR INSTALLATION AND REMOVAL

Bobby J. Orr; Donald L. Schaffner, both of Springfield, and Bill A. Danner, Rochester, all of Ill., assignors to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Jan. 2, 1975, Ser. No. 538,034

Int. Cl.² B62D *55/30*

U.S. Cl. 305—10 **10 Claims**



1. In an endless track type machine having an endless flexible track trained around a sprocket and around a track idler which is movable upon deflection of said track, a track idler recoil assembly for resiliently resisting said movement of said track idler and comprising:

a recoil spring having an unloaded state and being initially compressible to a preloaded state;

means including a selectively extendable and retractable hydraulic ram disposed between said track idler and said recoil spring,

said hydraulic ram being extendable to initially preload said spring to place it in readiness for operation, said hydraulic ram being retractable to unload said spring to facilitate its removal from said assembly;

means on said hydraulic ram to maintain it in extended position whereby said hydraulic ram serves as an incompressible force transmitting link between said track idler and said spring when the latter is preloaded;

a pair of members between which said spring is disposed, at least one of said members being adjustably movable relative to the other member between one position wherein said spring can assume its unloaded state and another position wherein said one member maintains said spring preloaded after said hydraulic ram is extended to initially preload said spring; and

at least one threaded member for releasably securing said one member in its said one position or other position or any position therebetween.

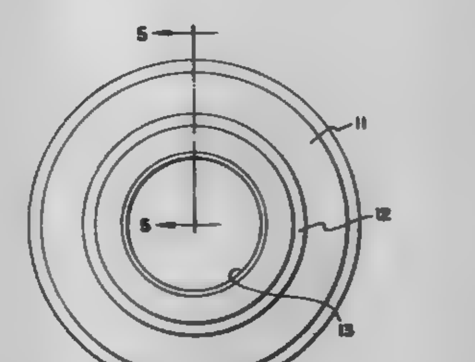
3,980,352
SPRING BEARING ASSEMBLY

Jerome A. Carlson, Woodside, Calif., assignor to Tribotech Incorporated, Redwood City, Calif.

Division of Ser. No. 359,610, May 11, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,126

Int. Cl.² F16C *17/02*, *17/10*, *23/04*, *27/02*

U.S. Cl. 308—73 **9 Claims**



1. A spring bearing member disposed between an inner race surface and an outer race surface for supporting a load therebetween, a plurality of separate segments in annular disposition between the inner and outer race surfaces in end to end relation and having inner and outer surfaces, a portion of said inner and outer segment surfaces being in positive contact with said inner and outer race surfaces respectively for both static and dynamic conditions, said separate segments having a dimensional configuration so that elastic deformation only occurs about the arc length thereof by relative radial motion between said inner and outer race surfaces, whereby bearing loads are supported and relative rotation between said inner and outer races may occur.

4. A spring bearing member for maintaining positive contact between an inner race and an outer race disposed for relative rotating motion therebetween for yieldably supporting a load, comprising a bearing member having a plurality of separate segments disposed in an annular array, an outer surface on each of said plurality of separate segments, an inner surface on each of said plurality of separate segments, said annular array of separate segments being disposed between the inner and outer races for contact therewith, the ends of one separate segment being adjacent ends of others of said plurality of separate segments, said annular array operating to support pressure between said inner and outer segment surfaces and the inner and outer races respectively.

6. A bearing for use between a housing and a journal, comprising an inner race on the journal, an outer race in the housing, a segmented bearing member disposed between said inner and outer races and having separate segments disposed in end to end relationship forming an annular array, means for retaining said separate segments axially between said inner race and said outer race, a first plurality of areas on said segmented bearing member for contact with said outer race, a second plurality of areas on said segmented bearing member for contact with said inner race, said separate segments yielding elastically only when subjected to bearing loading thereby maintaining a positive contact force between said second and first plurality of areas and said inner and outer races respectively for all operating conditions, whereby assembly of the bearing is facilitated by the segmented character of said bearing member and fretting and wear at said inner and outer races due to impact and vibratory bearing loads is reduced.

3,980,353
BEARINGS

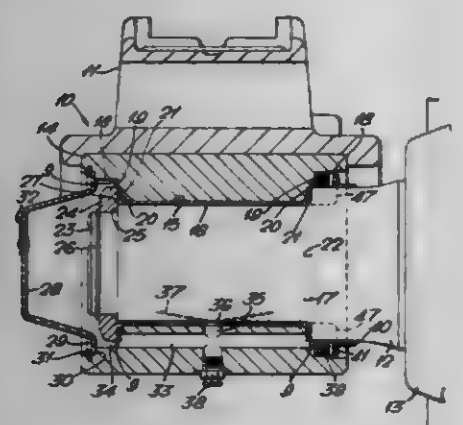
Joseph Henry Hill, Greenford, England, assignor to Vandervell Products Limited, England

Filed Apr. 4, 1975, Ser. No. 565,089

Claims priority, application United Kingdom, Apr. 9, 1974, 15662/74; Nov. 8, 1974, 48499/74

Int. Cl.² B61F *17/00*

U.S. Cl. 308—92 **5 Claims**



1. A bearing for an axle end comprising a housing having at least one cylindrical bearing liner mounted in the housing and having a cylindrical bearing surface to receive the axle end from one end of the housing, sealing means at said one end of the housing to form a lubricant seal with the axle, oppositely facing annular thrust faces on the housing, oppositely facing thrust faces on the axle in engagement with the thrust faces on the housing, a hollow end cap extending over and secured to the other end of the housing containing the axle end, a lubricant supply filling the reservoir to a level above the bottom of the axle end, delivery passage means extending through the housing from the reservoir to a bottom region of the bearing surface of the bearing liner and return flow passage means leading from at least one axial end of the bearing liner adjacent the reservoir to the reservoir to permit flow of lubricant from the reservoir to the bearing and return flow from the bearing to the reservoir.

3,980,354
WELDED-TOGETHER ROLLER BEARING

Horst Lamprecht, Oberwerrn, Germany, assignor to Kugelfischer Georg Schafer & Co., Schweinfurt, Germany

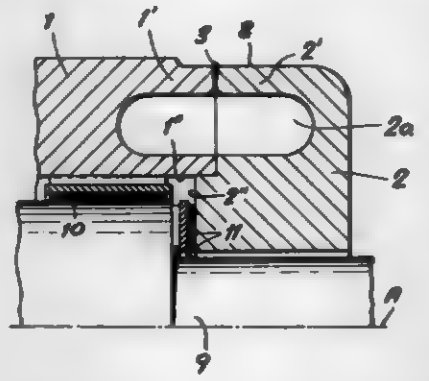
Filed Sept. 17, 1974, Ser. No. 506,890

Claims priority, application Germany, Sept. 17, 1973, 2346679

Int. Cl.² F16C *19/04, 33/58*

U.S. Cl. 308—174 **6 Claims**

1. A roller-bearing raceway comprising a pair of metallic race members each having machined race surfaces with a common rotation axis, a weld securing said race members together, and means including respective axially extending ribs on said members forming an elastic web region between said weld and the respective race surface, said ribs being of substantially less cross-sectional thickness than said members adjacent said surfaces, an axially open groove formed in each member defining the respective rib and lying between said weld and the respective race surface.



3,980,355
BEARING BOXES FOR ROTARY SHAFTS SUBJECTED TO TWISTING MOMENTS

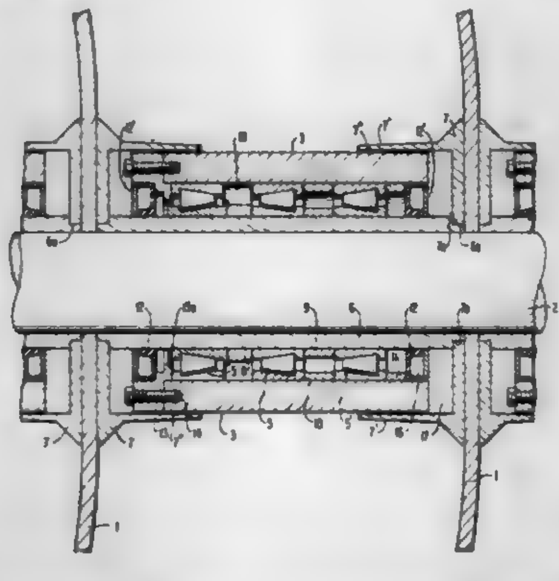
Bartolome Gilles, Colonia San Pedro, La Paz, Entre Rios, Argentina

Filed June 10, 1975, Ser. No. 585,723

Claims priority, application Argentina, June 17, 1974, 254238

Int. Cl.² F16C *13/00*

U.S. Cl. 308—181 **1 Claim**



1. Improvements to bearing boxes designed for the assembly of shafts bearing concave rotary disks for working the ground, said disks being commonly provided on certain types of agricultural implements and being mounted concentrically and perpendicularly on said shafts which are disposed at an oblique angle with respect to the direction of movement of the implement, said boxes being interposed between each pair of successive disks and each comprising an outer casing fixedly attached to a supporting frame of the implement and an inner box mounted in an inserted manner on said shaft, each box further comprising a pair of roller bearings mounted in rolling relationship between said outer casing and the inner box, characterized in that each box which is disposed adjacent to the convex face of each disk comprises a third bearing disposed further apart from each face than the other two aforementioned bearings, the outer casing consisting of a cylindrical sleeve integral with said frame and said cylindrical box comprising at its ends respective annular steps on which engage in an accurate manner the edges of corresponding circular openings concentrically disposed in the circular bases of respective cylindrical tubes, the cylindrical walls of which tubes are superposed with a small radial opening on the lateral outer parts of the mouths of said sleeve which comprises two

conventional oil retention elements disposed on said mouths and the one which is disposed closest to the convex face of the disk is mounted on a supporting catch secured by means of bolts to the side of the sleeve and which provides the seat for the same in the form of an annular step, said supporting catch comprising an annular hammered portion which partially penetrates the interior of the sleeve and abuts against the lateral face of the outer cup of one of the bearings, forming between the said tubes, the portion defined by the retaining elements and the end sides of the sleeve, respective chambers filled with grease separated from the lubricating oil contained in the space defined between the two retaining elements; the said disks mounted on each shaft, the tubes, the boxes and the inner cups of the bearings thus forming a rotary unit, the components of which are mutually connected together and to the shaft by means of a nut turned at the end thereof.

3,980,356
ROLLER ASSEMBLY

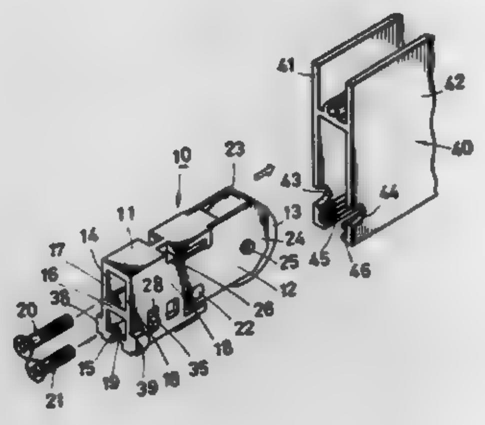
Takeo Uehara, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 7, 1975, Ser. No. 602,556

Claims priority, application Japan, Aug. 13, 1974, 49-96787

Int. Cl.² F16C *29/00*

U.S. Cl. 308—3.8 **3 Claims**



1. A roller assembly including a fixing means comprising an outer frame, an inner frame pivotally mounted on said outer frame, a roller wheel rotatably mounted on said inner frame, and a bottom rail of a window sash or door, said bottom rail being provided with a cutaway recess, said outer frame including side walls, a wall member extending between said side walls and having an internally threaded opening, a screw having a countersunk head and adapted to engage threadably with said opening, and an abutment member arranged adjacent said screw, and a projection formed integral with said side walls and adapted to fit in said cutaway recess of the bottom rail, said countersunk head of the screw being adapted to urge said abutment member to move transversely of the outer frame as said screw is rotated in said opening.

3,980,357
INTERNAL OIL CONNECTION ASSEMBLY HAVING MODULAR INSERTS FOR ROTARY MACHINE BEARING BLOCKS

Hans Bellati, Wettingen, Switzerland; Oscar Beuttenmüller, Dogern, Germany, and Hans Huber, Oberrohrdorf, Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

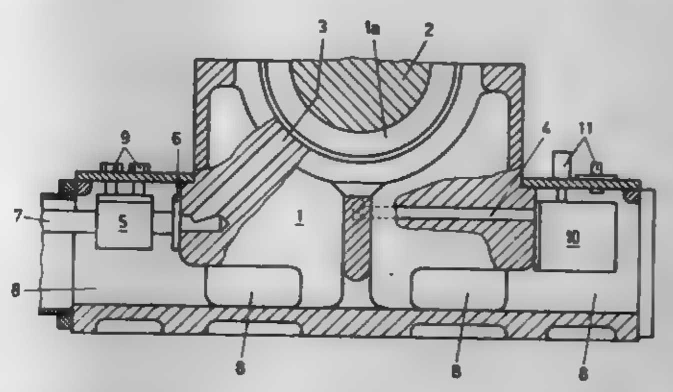
Filed July 2, 1975, Ser. No. 592,472

Claims priority, application Switzerland, July 31, 1974, 10558/74

Int. Cl.² F16C *1/24*

U.S. Cl. 308—78 **6 Claims**

1. An internal oil connector assembly for the bearing block of a rotating machine having combined lubricating and oil scavenging means comprising: a connector housing; a modular insert including connections for oil inlet measuring means, oil outlet means and removable interchangeable oil orifice means; a scavenging insert including means for scavenging the oil lines of said assembly; mounting surfaces defined on said connector housing; mounting surfaces defined on both said modular insert and said scavenging insert each configured for mating engagement with said mounting surfaces defined on said connector housing for enabling said modular insert and said scavenging insert, respectively, to be operatively connected in said connector housing; said mounting surfaces on said modular insert and said mounting surfaces on said scavenging insert being identically configured to enable said inserts to be exchangeably mounted in said connector housing with each of said inserts being adapted to be removed from said housing and replaced by the other of said inserts.



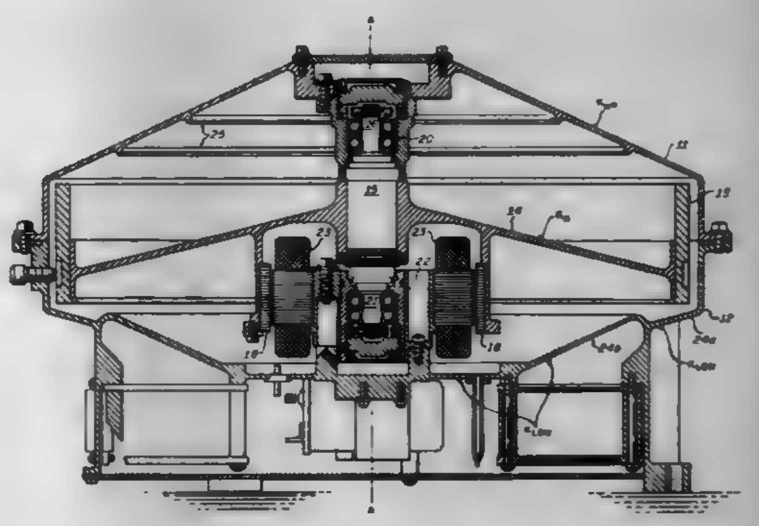
3,980,358
AXIAL VIBRATION DAMPER FOR FLOATING BEARINGS

Lawrence P. Davis, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Feb. 26, 1975, Ser. No. 553,189

Int. Cl.² F16C *19/00*

U.S. Cl. 308—173 **12 Claims**



1. A floating bearing assembly comprising
stationary member means,
movable member means radially separated from said stationary member means and coaxially positioned with respect to said stationary member means for accommodating axial displacements relative to said stationary member means,
annular shaped O-ring resilient means being annularly and radially resilient disposed within at least two perimetrical grooves formed within said stationary member means for cooperating with adjacent surfaces of said stationary member means and said movable member means to form a defined space,
partition means for dividing said defined space into two chambers connected through a restricted space, and
fluid means substantially filling said chambers and coacting with said partition means to provide damping of said axial displacements of said movable member means relative to said stationary member means in response to external vibrations.

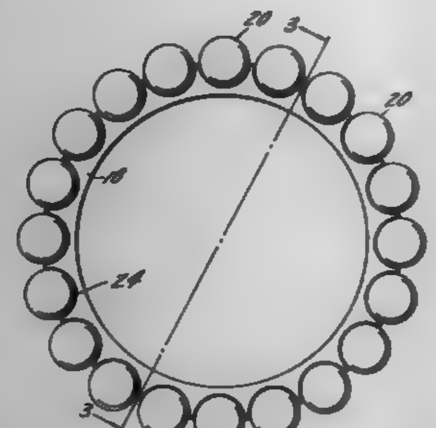
3,980,359
BALL BEARING

Arthur E. Wetherbee, Jr., Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 8, 1975, Ser. No. 575,683

Int. Cl.^{2} F16C *1/24*

U.S. Cl. 308—187 9 Claims



1. A ball bearing construction having an outer race, an inner race and a plurality of balls journaled therebetween, said inner race being defined by a pair of juxtaposed ring elements, a groove centrally disposed relative to the central plane of said balls of at least one of said ring elements, a cage defined by a scalloped ring element having an annular portion on the inner diameter fitting into said groove and dimensioned to be free to rotate therein, the scalloped portion defining recesses being dimensioned to space and receive each of said plurality of balls, and means for lubricating said inner race, said outer races, said cage and said balls comprising at least one radial passage formed on the outer diameter of at least one of said ring elements terminating in said groove for admitting lubricant thereto from external of said bearing, whereby said lubricant in said groove is then directed into the interior of the bearing and discharged therefrom.

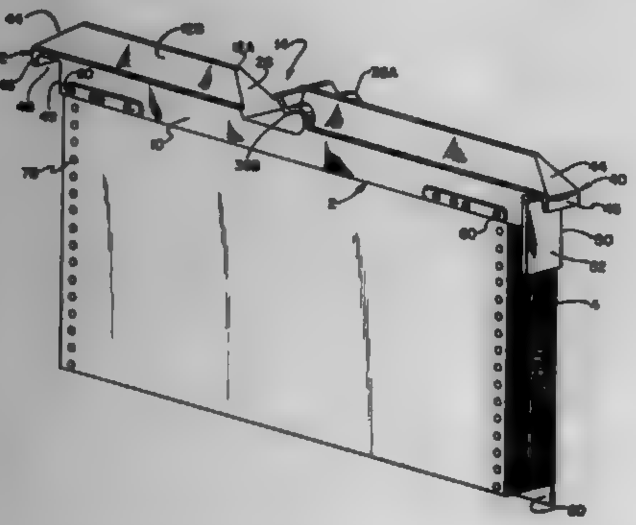
3,980,360
HANGABLE HOLDER FOR STATIONERY MATERIALS

David M. Wright, Shrewsbury, and Donald B. McCallum, Douglas, both of Mass., assignors to Barry Wright Corporation, Watertown, Mass.

Filed Apr. 11, 1975, Ser. No. 567,137

Int. Cl.^{2} A47B *63/00*

U.S. Cl. 312—184 17 Claims



1. A filing device for binding stationery materials and suspending them in a suspension filing system, said device comprising:

an elongate one-piece molded plastic holder having (a) at least one hook for suspending it from a suspension hanger bar and (b) a web section, first and second mutually spaced limbs formed integral with opposite sides of said web section and coacting therewith to form an open channel, and a plurality of struts extending across and formed integral with the web section, at least two of said struts being located at opposite ends of said holder; and

at least two pins detachably carried by said holder for releasably securing at least one sheet of stationery material disposed in said channel, each of said pins extending between and being disposed in aligned holes formed in said limbs.

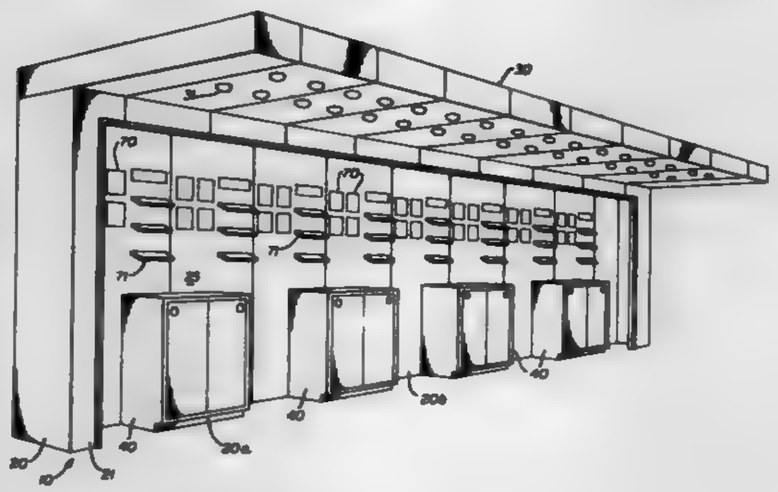
3,980,361
EXPANDABLE DISPLAY SYSTEM

Jerry Shaw, 50 W. Fairlawn Blvd., and Samuel G. Solitt, 2121 Brookshire Road, both of Akron, Ohio 44313

Filed Mar. 28, 1975, Ser. No. 562,872

Int. Cl.^{2} A47B *53/00*; A47F *3/00*

U.S. Cl. 312—223 6 Claims



1. An expandable display system comprising:

A. at least one first upstanding display unit having
  1. a vertical back wall with a forwardly presented planar display surface covering at least a portion of its surface area and
  2. an integral canopy projecting from the top of said back wall;

B. at least one second upstanding display unit having
  1. a vertical back wall with a forwardly presented planar display surface covering at least a portion of its surface area and
  2. an integral canopy projecting from the top of said back wall and
  3. a generally box-like display case secured to the lower portion of said back wall;

C. said first and second upstanding display units being arranged in side-by-side relationship with each other; and

D. a light source carried by each of said canopies of each said first and second upstanding display units for illumination of said planar display surfaces of said upstanding display units and said display case;

E. Said light source including
  1. a first series of adjustable lights carried adjacent the outboard projecting end of each of said canopies; and
  2. a second series of adjustable lights carried by each of said canopies and spaced from said first series of lights.

3,980,362
POSITION FINDING AND COURSE DETERMINING INSTRUMENT

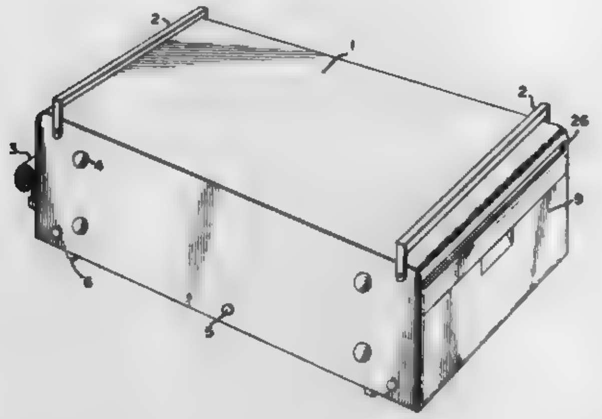
B. Wayne Harter, 823 Canyon Road, Redwood City, Calif. 94062

Filed Aug. 28, 1974, Ser. No. 501,821

Int. Cl.^{2} A47B *27/00*

U.S. Cl. 312—231 1 Claim

1. A portable navigational plotting board and storage case for use with nautical charts, consisting of a rectangular case having a top, bottom, two long sides, and two short sides, said top forming a drafting board for a nautical chart, said top being joined to said long sides along its length and said top being separated from said short sides and thus forming two slots communicating to the inside of said case for storage of unused portions of nautical charts, the edges of said top defining said slots, being formed as semi-circles, said top further being provided with clamping members which are pivotally mounted to the top at a point nearer the center of said top than the centers of said semi-circles, said clamping member being U-shaped, with the legs being larger than the radius of said semi-circle, thus allowing a chart to be releasably clamped, one of said short sides being defined by a door which allows access to the inside of said rectangular case, an instrument tray with clamps for drawing instruments, and a storage compartment for charts and the like inside said rectangular case, means for slidably mounting said tray, the other of said short sides having a clamp for attaching transparent plastic weather cover to said rectangular case.



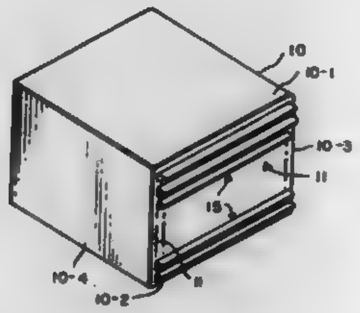
3,980,363
STORAGE SYSTEM

Carl J. Dean, Southbridge; Donald B. McCallum, Douglas, and Norman C. May, Sr., Shrewsbury, all of Mass., assignors to Barry Wright Corporation, Watertown, Mass.

Filed Jan. 31, 1975, Ser. No. 545,872

Int. Cl.^{2} A47B *88/00*

U.S. Cl. 312—294 4 Claims



1. Computer printout storage and filing system comprising a tray having a flat surface for supporting a computer printout, storage means for said tray, said tray being removable from said storage means, said tray having a pair of spaced apart holes extending therethrough from the bottom to the top thereof, a bracket positioned above the tray surface for supporting the computer printout, said bracket having a pair of holes, a pair of cutout portions and a hold-down finger positioned over each of said cutouts, and a pair of straps for holding said computer printout between said tray and said bracket and said straps having heads, each strap extending through said separate hole of said pair of holes of said tray and said bracket and held against the bracket by said fingers, the head of said straps abutting the bottom of said tray.

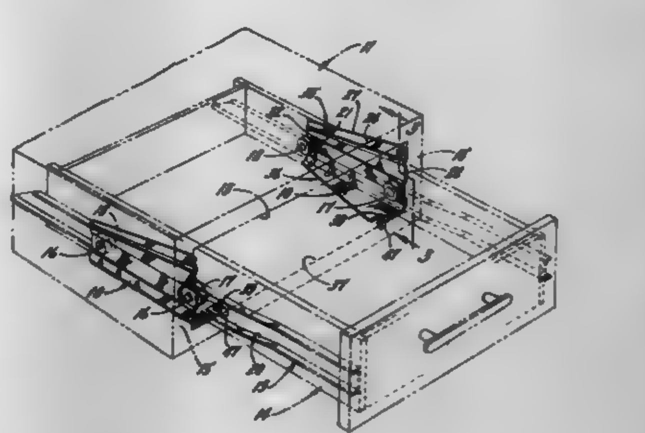
3,980,364
ROLLER BRACKET ASSEMBLY FOR DRAWERS

Ronald K. Entrikin, and Richard D. Livingston, both of Rockford, Ill., assignors to Amerock Corporation, Rockford, Ill.

Filed June 4, 1975, Ser. No. 583,546

Int. Cl.^{2} A47B *88/04*, *88/14*

U.S. Cl. 312—341 R 2 Claims



1. A roller bracket assembly adapted to support a drawer for in and out sliding in an opening in a cabinet, said bracket assembly comprising a vertical wing having forward and rearward end portions, rollers journaled on the inner sides of said end portions to rotate about first and second horizontal axes, two vertically spaced fastener-receiving openings formed in said forward end portion, bosses protruding from the outer side of said forward end portion around said openings, a horizontal wing extending inwardly from the lower margin of said vertical wing, a third fastener-receiving opening formed through said horizontal wing within the forward end portion thereof and adjacent the inner edge of said horizontal wing, said third opening being elongated in a fore-and-aft direction, and a tab formed integrally with and depending from the extreme forward edge of said horizontal wing adjacent said third opening, said tab defining the forwardmost part of said bracket assembly.

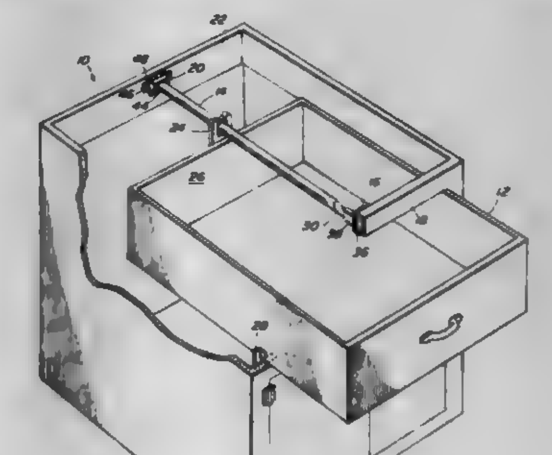
3,980,365
DRAWER RAIL SYSTEM

Francis X. MacDonald, Canton, and Paul M. MacDonald, Scituate, both of Mass., assignors to P. X. Industries, Inc., Rockland, Mass.

Filed Apr. 4, 1975, Ser. No. 565,145

Int. Cl.^{2} A47B *88/00*

U.S. Cl. 312—345 10 Claims



1. A system for mounting a drawer to a cabinet or the like, comprising

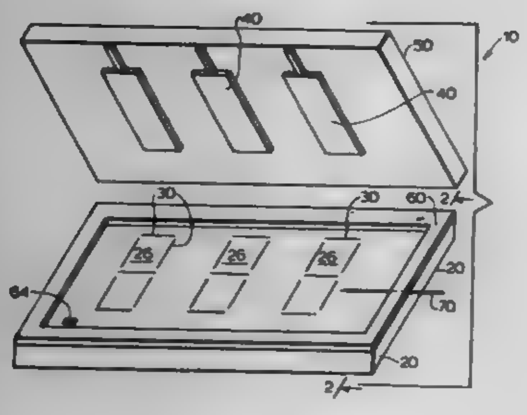
a. an elongated rail substantially coextensive with the length of said drawer and mountable to said cabinet in a horizontal plane between the front and back walls of said cabinet parallel to the path of travel of said drawer,

- b. said rail being cylindrical over a substantial portion thereof and being formed with a vertically and longitudinally flattened portion at the forward end thereof, and,
- c. a unitary guide fixed to the back wall of said drawer and slidably engaging said rail,
- d. said guide being formed with a pair of spaced legs with inwardly extending end portions defining a restricted opening therebetween less than the diameter of said cylindrical portion and greater than the thickness of said flattened portion to allow separation of said guide and drawer from said rail at said flattened portion.

3,980,366
METHOD OF MAKING A HERMETIC SEAL THEREIN A MULTI-POSITION CHARACTER DISPLAY PANEL

George J. Przybylek, Martinsville, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 31, 1975, Ser. No. 546,093
Int. Cl.² H01J *9/385*
U.S. Cl. 316—20 2 Claims



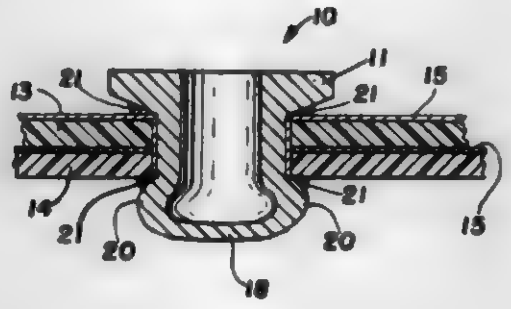
1. Method of making an hermetically sealed gas-filled display panel comrising the steps of

- preparing a base plate and face plate which are to be sealed together along their aligned perimeters to form an envelope, with electrodes included in said envelope,
- providing a frame of sealing material between said base plate and face plate along said aligned perimeters,
- embedding a non-deformable wire in said frame of sealing material,
- hermetically sealing together said base and face plate by heating said frame of sealing material to form said envelope with said wire extending through said seal from the inside to the outside of said envelope,
- providing an auxiliary mass of sealing material adjacent to said frame of sealing material and enclosing said wire where it exists from said frame,
- heating said auxiliary mass to remove binders therefrom,
- removing said wire to leave a hole in said seal and in said auxiliary mass to provide gas communication between the inside and outside of said envelope,
- evacuating and baking out said envelope, and filling said envelope with a gas, and
- hermetically sealing said hole, by heating said auxiliary mass, to form a complete hermetic seal between said plates.

3,980,367
ELECTRICAL CONNECTOR FOR JOINING CONDUCTORS ATTACHED TO PRINTED CIRCUIT BOARDS

Gregory L. Laserson, Scarsdale, and James Iantorno, Mamaroneck, both of N.Y., assignors to Sealectro Corporation, Mamaroneck, N.Y.

Filed Mar. 19, 1975, Ser. No. 559,720
Int. Cl.² H05K *1/10*
U.S. Cl. 339—17 R 11 Claims



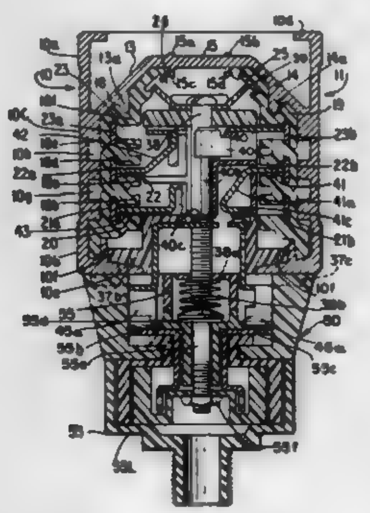
1. An electrical connection for joining electrical conductors attached to the surfaces of a plurality of printed circuit boards arranged in a bundle and having top and bottom boards comprising:

- a. at least a top and a bottom circuit board;
- b. a hollow closed end cylindrical conductor for insertion into and through axial holes formed in said boards, said cylindrical conductor formed with a flange at one end for limiting against a top surface of the top board;
- c. a deformable integral cone formed at the other end of the cylindrical conductor, the walls of which are deformed and spread over a portion of bottom surface of the bottom board.

3,980,368
ADAPTER FOR POWER DISTRIBUTION SYSTEM

Robert S. Fremont, Glencoe, Ill., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Apr. 23, 1975, Ser. No. 570,596
Int. Cl.² H01R *9/00*
U.S. Cl. 339—21 R 5 Claims

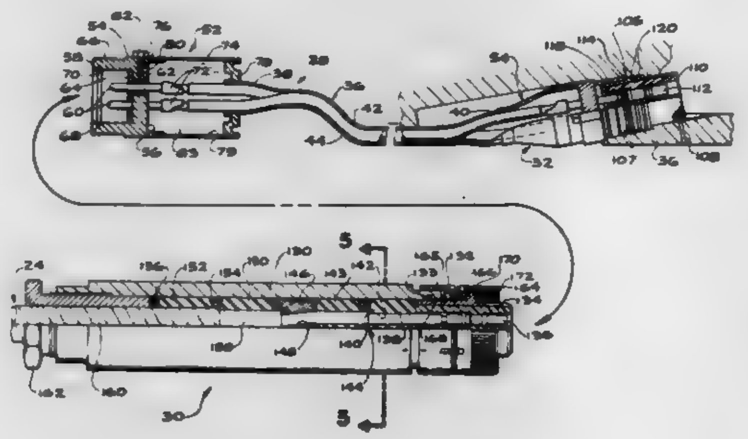


1. An adapter for providing electric power to a single circuit load from a multi-circuit distribution system of the type having a U-channel assembly whose opening is narrower than the channel interior, said channel assembly including longitudinal conductors within the channel interior disposed adjacent the channel side walls to provide three opposed conductor pairs at different levels along the channel depth, said adapter comprising a base portion with a turret support portion having a flat mounting face whose dimensions are greater than the width of the channel opening to prevent the flat face entering the channel along a line normal to the channel opening, an insulating turret having a bottom flat face, means adjustably securing said turret support flat face to said insulating turret bottom flat face to permit turret rotary adjustment to one of two positions by a central bolt, the turret lateral dimensions and length permitting insertion of said turret into said channel in either of two positions with said flat mounting face disposed against the channel opening to limit turret insertion, two pairs of electrical contact blades extending laterally from said turret at opposite sides thereof, said contact blades being long enough to prevent turret insertion except when said blades extend along the channel length and after insertion and 90° rotation of said adapter, said contact blades bear against certain conductors corresponding to the blade locations along the turret length, one turret contact blade at one turret side being offset longitudinally of the turret from one turret contact blade at the other turret side so that the connecting pattern can be changed with turret orientation, means for locking the adapter, after insertion into the channel and 90° rotation thereof, against removal from the channel, two output terminals for connection to a load, said output terminals being supported on said base portion and being always available for connection to a load, said turret resting upon said turret support portion flat face, the turret and turret support faces carrying cooperating electrical contacts, the contacts on said turret support face being two in number and being connected to said output terminals, the cooperating contacts of said turret face being four and being respectively connected to said four turret contact blades, said adjustable turret securing means providing for two possible turret orientations 180° apart about the turret axis, whereby a greater selection of power supply circuits for connection to the load circuit is possible.

3,980,369
SUBMERSIBLE PUMP INTERCONNECTION ASSEMBLY

George J. Panek, Phoenix, Ariz., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 15, 1975, Ser. No. 641,144
Int. Cl.² H01R *11/04*
U.S. Cl. 339—28 8 Claims



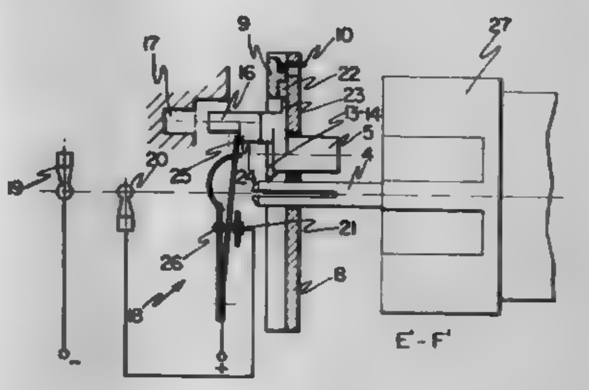
1. A submersible pump interconnection assembly comprising:

- an elongated, flexible, liquid and gas impervious, metallic tube having cylindrical ends, said tube being flattened between said ends to provide closely spaced, generally parallel, flat walls;
- a plurality of electrical conductors extending lengthwise through said tube and disposed in side-by-side relationship between said flat walls;
- an electrical connector member connected to each end of said tube in sealing relationship therewith;
- a filling port in one of said connector members;
- a dielectric liquid filling any voids in said tube and connector members to provide pressure compensation between the interior and exterior of said tube; and
- electical contacts in each said connector member terminated to the ends of said conductors, said contacts having a sealed mounting in their respective connector members.

3,980,370
SAFETY PLUG-IN JACK BASE

Angel Gonzalez-Hernandez, Somontin, 116, Madrid, 33, Spain

Filed June 25, 1975, Ser. No. 590,173
Claims priority, application Spain, July 2, 1974, 204316
Int. Cl.² H01R *13/44*
U.S. Cl. 339—40 5 Claims



1. An electrical outlet for receiving a pronged plug-in jack, said outlet having

- at least two sockets aligned to receive the jack prongs and one of said sockets being an electrically live socket,
- a circuit breaker associated with said live socket, said circuit breaker comprising cooperating fixed and movable contacts, a spring element coupled to said movable contact and a trigger button in engagement with said spring element and having an extremity engageable by the jack upon advancing to enter the outlet to displace said button in the longitudinal direction of said sockets to trigger said spring element and close the circuit,
- and a spring biassed lock engageable with said button to prevent closing of said circuit prior to insertion of said prongs into said sockets, said lock being movable between a latched position in engagement with said button to prevent displacement thereof and an unlatched position in which said button is free to be moved to close the circuit, said lock further having cam shaped portions adapted partially to cover the sockets and be displaced by the prongs upon advancing of said jack into the outlet to move said lock from said latched to said unlatched position.

3,980,371
SAFETY ELECTRICAL OUTLET

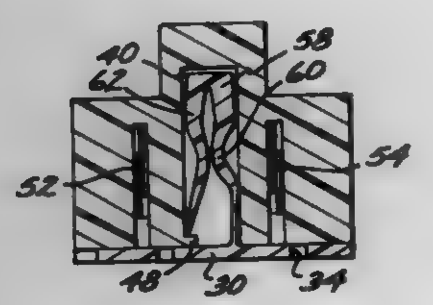
Bernard I. Kahn, Cypress; Donald Dodge, Long Beach, and Ernest W. Dietz, Torrance, all of Calif., assignors to Pacific Electricord, Gardena, Calif.

Continuation-in-part of Ser. No. 550,427, Feb. 18, 1975, abandoned. This application Nov. 3, 1975, Ser. No. 628,418
Int. Cl.² H01R *13/44*
U.S. Cl. 339—40 12 Claims

1. An electrical connector for receiving a prong type connector plug comprising:

- a body bearing at least one pair of parallel, prong-receiving slots in a surface thereof;
- parallel electrical contacts in the form of conductor strips mounted within said body and bearing prong-receiving slits, one each associated in a prong-receiving position with each of said slots;
- a cavity in said body open to said surface, centrally positioned between said parallel slots;
- a protective plate overlying said surface and bearing a pair of prong-receiving, parallel through openings; and
- resilient means in the form of bifurcated spring member having one leg thereof attached to said protective plate

and its bight and remaining leg seated within said cavity to bias said protective plate to one side of said body with



said through openings thereof out of alignment with said slots.

3,980,372

ELECTRICAL SOCKET

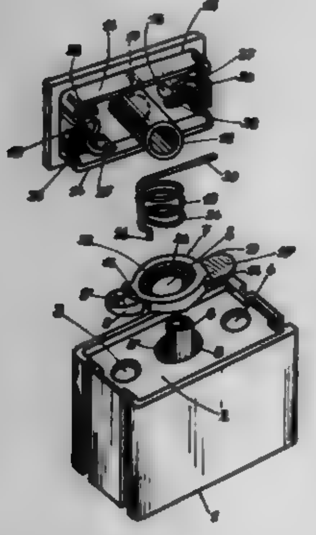
Pierluigi Ranzanigo, Brescia, Italy, assignor to Bassani S.p.A., Milan, Italy

Filed Nov. 5, 1974, Ser. No. 521,149

Claims priority, application Italy, Dec. 5, 1973, 306/73

Int. Cl.^{2} H01R *13/44*

U.S. Cl. 339—41 14 Claims



1. In a socket having apertures for receiving pins of a plug, a combination comprising a movable shutter having a central portion located in a general plane and side portions bendable relative to the central portion, said side portions being bendable from a normal first position in which they are located in a first orientation relative to said plane to a bent second position in which they are located in a different second orientation relative to said plane; means mounting the central portion of the movable shutter for movement only transverse to the direction of pin insertion between a blocking position in which the side portions block the apertures and in which the side portions are bendable from the first to the second position by the force of entering pins, and an unblocking position, said side portions being so configurated that pressure exerted upon them in the direction of pin insertion tends to cause the shutter to move from the blocking to the unblocking position; and means for preventing movement of the shutter from the blocking to the unblocking position unless both of the side portions are in the bent second position.

3,980,373

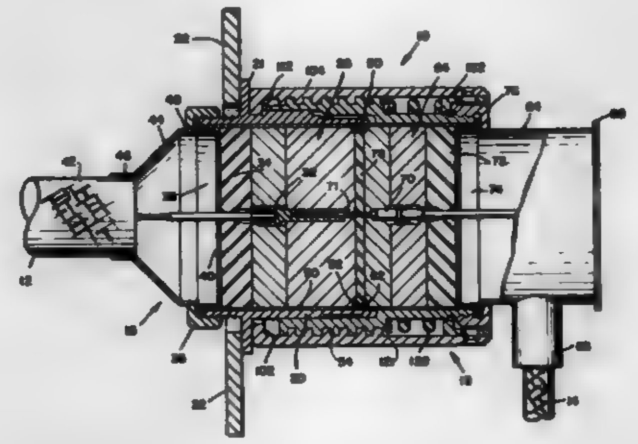
ELECTRICAL CONNECTOR

Larry L. McCormick, and Ben F. Selk, both of Los Angeles, Calif., assignors to G & H Technology, Inc., Los Angeles, Calif.

Division of Ser. No. 287,184, Sept. 7, 1972, Pat. No. 3,848,950. This application May 28, 1974, Ser. No. 474,041

Int. Cl.^{2} H01R *13/54*

U.S. Cl. 339—45 M 7 Claims



1. An electrical connector including the combination of
a receptacle section having a first shell,
a first set of electrical contacts in said first shell,
a plug section having a second shell, said shells being effective to mate with each other when said sections are mated with each other,
a second set of electrical contacts in said second shell,
a member on one of said sections rotatable between a first position and a second position, said member including means effective to move one of said shells and the set of electrical contacts thereon axially between a mated position wherein said sets of electrical contacts are electrically mated and an unmated position wherein said sets of electrical contacts are electrically unmated, and
a collet lock for securing the two sections together, said collet lock being coupled to said member and actuated by said member.

3,980,374

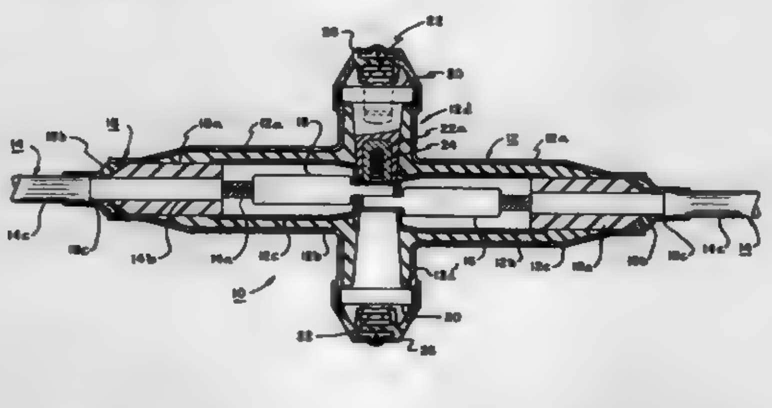
SEPARABLE SPLICE CONNECTOR

Alan Clyde Fallot, Spring Lake, Mich., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 26, 1975, Ser. No. 553,099

Int. Cl.^{2} H01R *11/10*

U.S. Cl. 339—60 C 5 Claims



1. A separable connector for splicing adjacent cable ends of a primary distribution system line comprising, in combination:
first and second cable adapters, each adapter having an insulated portion for surrounding and engaging an insulated portion of one of said cable ends and a semi-conductive end portion of said one of said cable ends, and wherein a conductor portion of said one of said cable ends extends from the adapter to receive a lug conductor termination thereon;

a unitary splice body assembly of molded elastomeric material including a generally tubular longitudinal portion for receiving the terminated cable ends from opposite ends thereof and a generally tubular transverse portion at a central portion of said longitudinal portion, wherein said longitudinal portion includes first and second sections respectively extending in opposite directions away from said transverse portion and wherein said transverse portion extends in opposite directions away from said longitudinal portion, said assembly including a semiconductive inner sleeve for surrounding said lugs and a substantially continuous outer jacket, and said assembly having an insulated portion separating said inner sleeve and said outer jacket and engaging said insulated portions of said adapters;
first removable conductor means extending along said transverse portion for engaging and rigidly fastening said lugs within said transverse portion, thereby to provide an electrically conductive circuit junction between said lugs; and
second means including said first means and extending through said transverse portion to provide a rigid but removable interface for receiving a portion of an external utilization device adjacent said assembly.

3,980,375

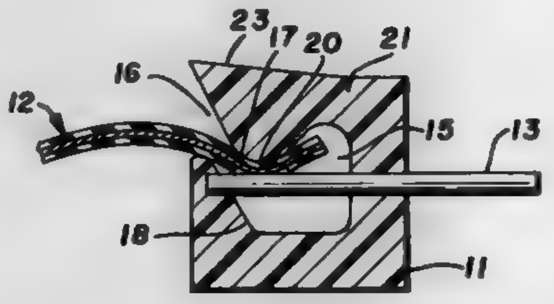
CONNECTOR FOR FLEXIBLE CIRCUITRY

Frederick W. LaMarche, Northfield, Minn., assignor to Sheldahl, Inc., Northfield, Minn.

Filed Nov. 10, 1975, Ser. No. 630,088

Int. Cl.^{2} H01R *9/12*

U.S. Cl. 339—61 M 2 Claims



1. Connector means for electrical circuitry disposed upon a flexible substrate and forming a flexible circuitry assembly, said connector means comprising:
a. a resilient block means with a longitudinal axis and having an opening formed therein and extending across a pair of opposed spaced apart jaw members, with the elongated axis of said jaw members being generally parallel to said longitudinal axis, and with said opening having a throat zone extending generally diagonally inwardly from the surface of said resilient block, and being in communication with a central cavity disposed between said jaw members, said throat zone being disposed between the surfaces of an inner lip and an outer lip element;
b. rigid contact pins extending inwardly of said resilient block and being disposed generally transversely of said longitudinal axis and along the transverse axis of said resilient block and extending generally laterally outwardly of said block, said rigid contact pins extending across and spanning said central cavity, being secured within said outer lip only and applying a force against said inner lip, said inner lip adjoining said central cavity along a generally convex surface with the surface of each of said rigid contact pins being substantially tangentially arranged relative to said convex surface, and with the surface of said rigid contact pins maintaining said convex surface in flexed disposition away from said central cavity to normally bias said convex surface against the surface of said rigid contact pins.

3,980,376

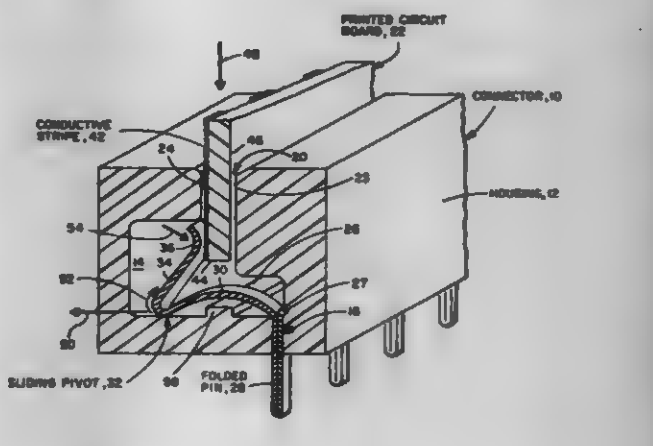
ZERO INSERTION/RETRACTION FORCE CONNECTOR

Harold Rosen, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed July 24, 1975, Ser. No. 599,240

Int. Cl.^{2} H01R *13/26*

U.S. Cl. 339—75 MP 10 Claims



1. A connector comprising:
a housing having a cavity and a channel communicating with said cavity;
contact means within said cavity including a contact portion moveable into engagement with a male connector inserted through said channel; and
means including sliding and rotating pivot means having a portion positioned to be depressed by the bottom of an inserted male connector for moving said contact means into engagement with said male connector.

3,980,377

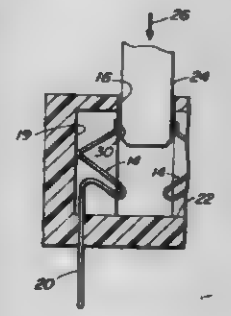
PRINTED CIRCUIT CONNECTOR

Vincent C. Oxley, Wayland, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Aug. 25, 1975, Ser. No. 607,163

Int. Cl.^{2} H01R *13/26*

U.S. Cl. 339—75 MP 9 Claims



1. A printed circuit board connector comprising
a hollow insulating body of predetermined length, the insulating body having an oblong slot in the top thereof for receiving a printed circuit board, having a bottom surface in the interior thereof against which a fully inserted board bears, having a recessed portion adjacent to and integral with the oblong slot, and including means for guiding the board within the oblong slot so that the board does enter into the recessed portion,
a plurality of electrical contact members each of which lies generally in the recessed portion in a regularly spaced vertically oriented parallel plane which is generally normal to the oblong slot in the top of the insulating body, each of the contact members being comprised of the following portions which are mechanically and electrically interconnected
a terminal portion,
a cam portion,
a contact portion,
the terminal portion being fixedly secured in and passing through the bottom of the insulating body to form a

terminal below the insulating body to which external electrical connection may be made,

the cam portion normally projecting downwardly toward the bottom of the body and into a portion of the slot which is to be occupied by the fully inserted board,

the contact portion being normally positioned in a vertical plane within the recessed portion of the hollow insulating body adjacent to and separated from the printed circuit board connector as it enters the oblong slot of the connector, the printed circuit board upon insertion into the oblong slot being free of contact with the contact portion until the board contacts the cam portion when nearly fully inserted which then rotates the cam and contact portions generally about an intermediate pivot point to bring the contact portion into mechanical and electrical contact with the board, and to bring the cam portion out of the oblong slot and into mechanical contact with the board, the initial mechanical contact at an edge of the board being with the cam portion so that wear on the contact portion is minimized.

3,980,378
CLIP CONNECTION

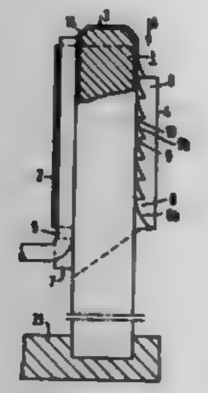
Roman Keller, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed June 9, 1975, Ser. No. 585,373

Claims priority, application Germany, June 24, 1976, 2430172

Int. Cl.² H01R *9/16*

U.S. Cl. 339—95 R **5 Claims**



1. A metal clip for making an electrically conducting connection of a bare wire to a connector pin, the clip being of the type which encompasses the wire and the connector pin in a sleevelike manner and comprises a piece of sheet metal bent in a U-section with the free legs of the U-section bent at their ends in a U-shape so that the edges of the legs contact one side of the connector pin, wherein the improvement comprises:

the sheet metal ends of both legs which point toward the clip interior and contact said side of the connector pin having on their leading edge a bevel starting at said leading edge and extending over a portion of their length, said ends also being corrugated over at least a portion of their length adjacent said bevel.

3,980,379
ELECTRICAL CONNECTOR

Clive Bone, London, England, assignor to The Post Office, London, England

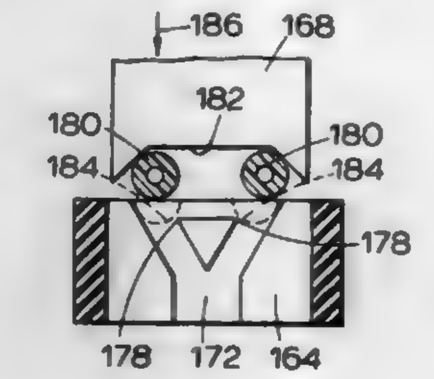
Division of Ser. No. 388,909, Aug. 16, 1973, Pat. No. 3,914,004. This application June 30, 1975, Ser. No. 591,933

Claims priority, application United Kingdom, Aug. 23, 1972, 39283/72

Int. Cl.² H01R *9/08*

U.S. Cl. 339—98 **4 Claims**

1. An electrical connector comprising a support member with a mouth formed therein, said mouth having at least one side wall provided with a pair of channels arranged to converge into a single channel, a member projecting from said sidewall intermediate said pair of channels and having a first and a second stripping edge, a tongue member slidably positioned within said mouth of said support member, a plurality of insulated covered wire cores positioned across said mouth and beneath said tongue member with said tongue member engaging said wire cores upon being moved into said mouth,



with one of said wire cores engaging said first stripping edge and a second wire core engaging said second stripping edge to strip the insulative covering from said cores with the bared lengths of said cores being guided by the converging channels into the single channel upon the movement of the tongue in the said mouth whereby said cores are forced into mutual electrical contact.

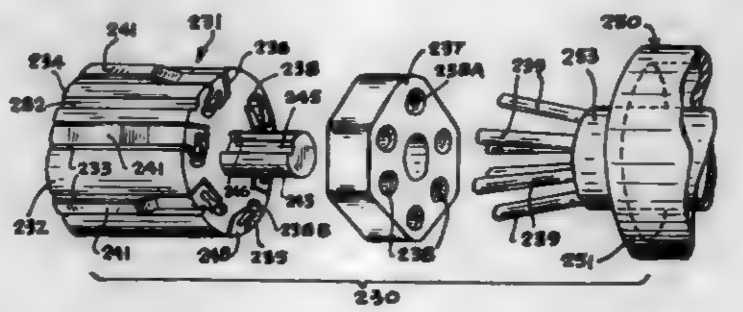
3,980,380
ELECTRICAL CONNECTORS WITH PLURAL SIMULTANEOUSLY-ACTUATED INSULATION-PIERCING CONTACTS

Edward A. Cieniawa, Claredon Hills, and Vincent J. Palecek, Cicero, both of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 308,634, Nov. 21, 1972, abandoned. This application Nov. 7, 1975, Ser. No. 629,970

Int. Cl.² H01R *9/08, 13/58*

U.S. Cl. 339—99 R **20 Claims**



1. An electrical connector unit for receiving in mating engagement a second mating connector unit carrying a plurality of contacts comprising:

an insert of dielectric material including a terminal end, a plurality of conductor retainer apertures extending along an aperture axis longitudinally from said terminal end into said insert, in a spaced-apart pattern, and a plurality of terminal guide slots extending in said insert transversely to said apertures, each of said retainer apertures extending into one of said terminal guide slots and being of a size to receive an insulation-covered conductor;

a corresponding plurality of conductive contact members carried by said insert for mating engagement in a predetermined pattern with the mating contacts carried by said second connector unit, each of said contact members including an active contact element for engagement with one of said mating contacts and an insulation-piercing, self-connecting terminal element, each terminal element extending into a respective one of said terminal guide slots and located in a general plane transverse to the aperture axis of a respective associated one of said retainer apertures;

actuating means, movable along a surface portion of said insert adjacent said terminal end, for simultaneously causing relative transverse movement between all of said terminal elements of said contact members and said conductors to cause each contact terminal element to pierce the insulation of a respective conductor along said plane transverse to the axis of a respective retainer aperture and complete an electrical connection to a respective insulated conductor positioned in the associated aperture,

and interlock means for maintaining the actuating means and terminal elements in actuated position relative to said conductor retainer apertures,

wherein said insert comprises a main insert member and said actuating means is an auxiliary insert member positioned in juxtaposition to the terminal end of said main insert member and rotationally movable with respect thereto to cause conductors in said retainer apertures to move into said guide slots and into said self-connecting terminal elements.

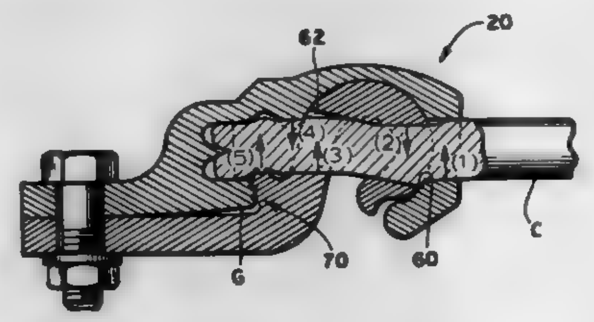
3,980,381
CABLE CONNECTOR

Paul A. Cornell, Knockanore, Ireland, assignor to Electro-Clamp Corporation, Beverly Hills, Calif.

Filed Sept. 26, 1974, Ser. No. 509,321

Int. Cl.² H01R *7/20, 9/08*

U.S. Cl. 339—100 **10 Claims**



1. A cable clamp comprising:

a male jaw having a transverse cylindrical head and a mounting tail extending therefrom, said male head having a generally diametrical, cable-receiving opening and said male mounting tail having a raised pressure surface adjacent said male head;

a female jaw having a coupling sleeve, an intermediate cable-receiving body and a mounting tail extending from said body, said coupling sleeve including a cable-receiving opening and an internal surface engaging said male head to allow hinging movements of said jaws between open and closed positions, said intermediate body being spaced from said male head and including a pocket for receiving the butt end of said cable;

said male head opening, said coupling sleeve opening and said pocket being in generally linear alignment when the clamp is in an open, cable-receiving position, and said male head opening being offset from said linear alignment when the clamp is in a closed cable-clamping position; and

said raised pressure surface projecting between said intermediate body and said male head to laterally deform said cable when the clamp is closed.

3,980,382
MATCHED IMPEDANCE COAXIAL CABLE TO PRINTED CIRCUIT BOARD TERMINATOR

Larry R. Reeder, San Jose, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed June 3, 1974, Ser. No. 475,753

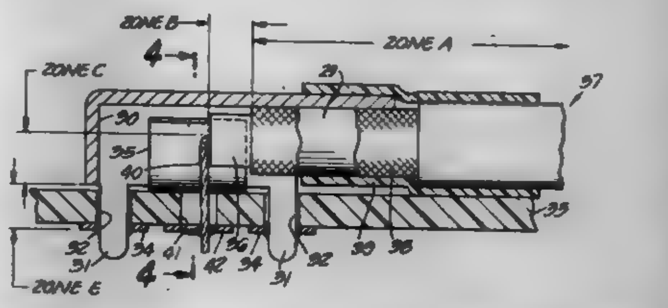
Int. Cl.² H01R *17/18*

U.S. Cl. 339—177 R **24 Claims**

1. A terminating device for a coaxial cable having a shield, a center conductor and a dielectric separating said shield and center conductor comprising:

a conductive body having sidewalls and a plurality of legs adapted for connection to selected areas of a circuit;

tab means adapted to receive and physically contact said dielectric and position said center conductor over a further selected area of a circuit, said tab means being electrically and mechanically connected to said conductive body said tab means projecting into the space defined by said conductor body at an acute angle to said sidewalls; and



means adapted to electrically connect said shield to said conductive body.

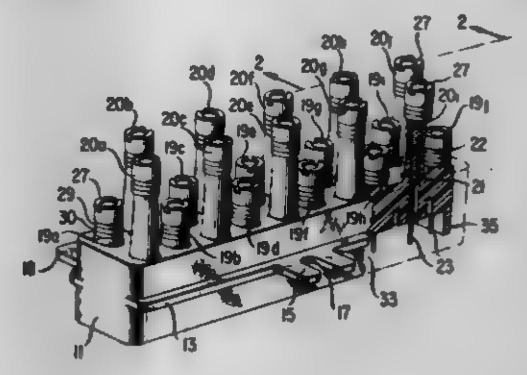
3,980,383
MULTIPLANE TERMINAL BLOCK

Larry Wayne Dickey, Hackettstown, and Edward Lewis Ramsey, Jr., Martinsville, both of N.J., assigners to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 18, 1975, Ser. No. 569,584

Int. Cl.² H01R *9/16*

U.S. Cl. 339—198 R **6 Claims**



1. A terminal block for interconnecting electrical conductors comprising a generally rectangular block of insulating material, a plurality of insulating terminal posts extending outwardly from said block, said terminal posts being arranged in rows, each row comprising an alternating sequence of first and second length terminal posts in spaced relation, the first length posts in each row being adjacent to the second length posts of the adjacent row, and a conductive element fixedly inserted into each post comprising an upper portion for releasable connection with at least one electrical conductor, and a lower portion protruding through said block adapted to fixedly interconnect with an electrical conductor.

3,980,384
TERMINAL BLOCK

Gustaf Rudolph Lawson, Willingboro, N.J., assignor to AMP Incorporated, Harrisburg, Pa.

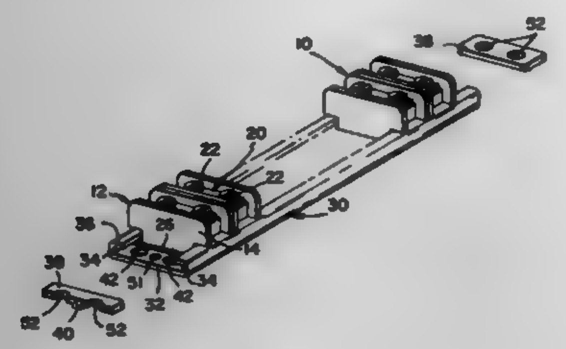
Filed Apr. 28, 1975, Ser. No. 572,562

Int. Cl.² H01R *9/16*

U.S. Cl. 339—198 GA **8 Claims**

1. An electrical connector assembly comprising an elongated channel-shaped member having a base portion, a pair of upstanding legs extending from opposite sides of said base portion, and an overhanging portion extending from each said legs and lying above said base portion and being spaced therefrom, an elongated tape-like member having a securing surface on one side thereof, and a plurality of connector units being of similar configuration, each said unit having a surface secured to the securing surface of said tape-like member and

having parallel side surfaces, said units being arranged in side-by-side relationship with side surfaces of adjacent units being in juxtaposition along said tape-like member, said units and said tape-like member being slidably received within said channel-shaped member to thereby form a connector assembly.



3,980,385
ELECTRICAL CONNECTOR

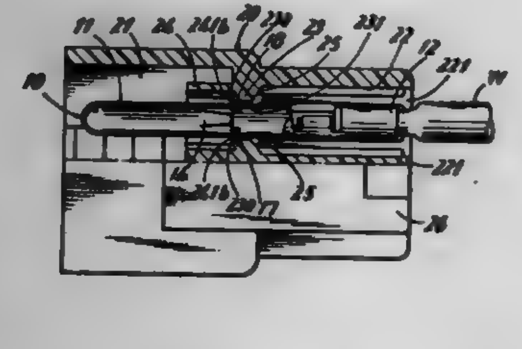
Kazuaki Hirokawa, Tokyo, and Tsugio Anbo, Tokorozawa, both of Japan, assignors to Shinagawa Automotive Electric Wire Co., Ltd., Tokyo, Japan

Filed Sept. 25, 1974, Ser. No. 509,235

Claims priority, application Japan, Oct. 1, 1973, 48-113203[U]; Mar. 1, 1974, 49-23812[U]

Int. Cl.^{2} H01R *9/08*

U.S. Cl. 339—217 S **21 Claims**



1. An electrical connector comprising: an elongated electrical terminal and a housing for containing and supporting said terminal in said housing, said terminal comprising a mating portion matable with a mating portion of an opposite terminal of paired electrical connectors, a wire connecting portion for connecting an electrical wire, and an intermediate portion of a predetermined length in the axial direction of said terminal formed contiguous to and between said mating portion and said wire connecting portion, said intermediate portion having a first portion and a second portion, said first portion having a tongue provided at the side wall thereof extending rearward and outward within said predetermined length in the axial direction, and said housing for housing said terminal comprising a first aperture for insertion of said first portion of said terminal, said first aperture having a plurality of elongated ribs formed on the inside wall thereof extending commensurate with the length of said first portion in parallel in the axial direction of said terminal for supporting said first portion of said terminal, the top surfaces of said ribs being in contact with and supporting said first portion, said tongue being positioned between said elongated ribs, and a shoulder against which a rear end of said tongue abuts for preventing rearward movement of said terminal, said electrical connector further comprising means for preventing forward movement of said terminal.

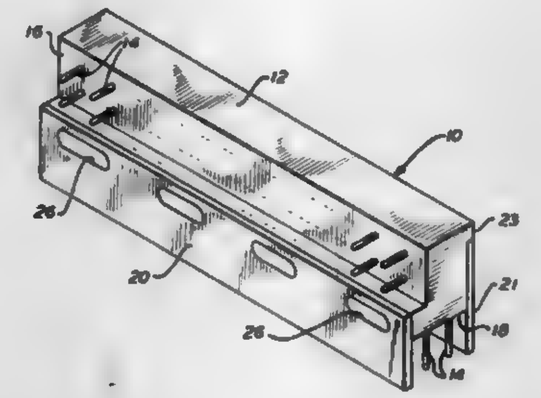
3,980,386
ELECTRICAL CONNECTOR WITH MOLDED PIN PROTECTOR

Frank G. Spadoni, Jr., Orange, Conn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jan. 6, 1975, Ser. No. 538,889

Int. Cl.^{2} H01R *13/40*

U.S. Cl. 339—218 M **5 Claims**



1. A miniature electrical connector comprising:

a molded housing;

a plurality of conductive pins mounted in said molded housing;

a planar pin protector mounted on said molded housing having first and second opposing parallel planar surfaces with a plurality of elongated apertures therein;

said planar pin protector having internally offset perimeter forming portions extending from the plane of said planar pin protector toward said elongated apertures therein to form first and second parallel housing engaging shouldered surfaces integral with said first and second opposing parallel planar surfaces and extending out of said planes of said surfaces and into said molded housing to terminate at the perimeter of each of said apertures; and

said molded housing having pin protector engaging surfaces molded around and through said elongated apertures for engaging said first and second parallel housing engaging shouldered surfaces and retaining said pin protector on said housing against forces normal and parallel to the plane thereof.

3,980,387
SNAP-TYPE CONNECTOR FOR BATTERY TERMINAL

Rudolf Neidecker, Basel, Switzerland, assignor to Multi-Contact A.G., Allschwil, Switzerland

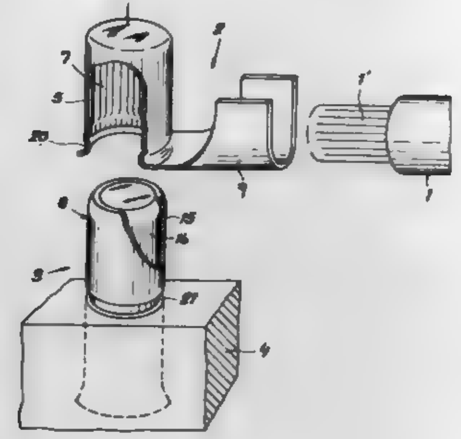
Continuation-in-part of Ser. No. 392,517, Aug. 29, 1973, Pat. No. 3,895,853. This application Nov. 25, 1974, Ser. No. 526,737

Claims priority, application Germany, Nov. 29, 1973, 2359419

Int. Cl.^{2} H01R *11/22*

U.S. Cl. 339—228 **9 Claims**

1. An electrical connector for interconnecting a conductor and a battery terminal, said connector comprising a connector pin on said terminal, a connector sleeve on said conductor engageable over said pin, and a resiliently deformable and conductive contact band lying between said pin and said sleeve and formed with a plurality of generally parallel transverse tongues compressed between said pin and said sleeve, said band comprising a generally flat conductive metal sheet having a pair of generally parallel longitudinally extending and longitudinally corrugated contracted side portions having extended lengths which exceed the length of said sheet along said side portions with said plurality of parallel transverse resilient tongues extending between said portions and twisted from the longitudinal directions of said portions, said tongues having ends joined to said side portions and middle regions wider than said ends, said side portions having at least one corrugation per tongue.



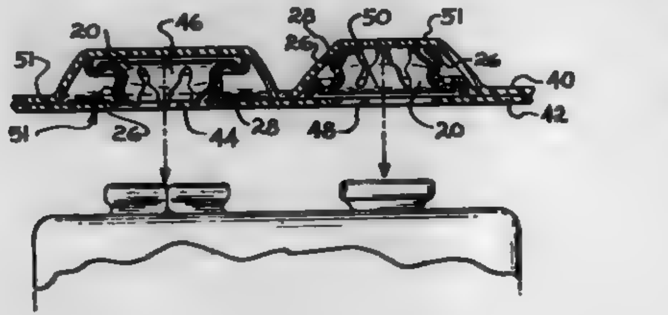
3,980,388
BATTERY SNAP TERMINAL

William Kirby Nailor, III, Mechanicsburg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 28, 1975, Ser. No. 626,030

Int. Cl.^{2} H01R *11/22*

U.S. Cl. 339—228 **5 Claims**



1. A battery snap terminal engageable with a male or female battery terminal comprising a ring having a plurality of inclined fingers extending inwardly of said ring, each finger including a first shoulder directed inwardly of said ring and a second shoulder directed outwardly of said ring, the first shoulders being annularly disposed on said fingers about a central axis of the ring a first radial distance from said axis, and the second shoulders being annularly disposed on said fingers about said axis a radial distance greater than the first shoulders.

3,980,389
ELECTRO-OPTICAL DEFLECTION APPARATUS USING HOLOGRAPHIC GRATING

Jean Pierre Huignard; Anne-Marie Roy, and Christian Slezak, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 12, 1974, Ser. No. 531,966

Claims priority, application France, Dec. 14, 1973, 73.44803

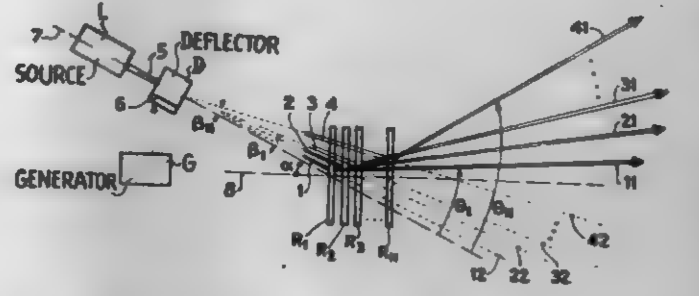
Int. Cl.^{2} G02B *5/32*; G02F *1/33*

U.S. Cl. 350—3.5 **8 Claims**

1. Apparatus for deflecting an incident beam of radiated energy under the control of an incoming electrical signal, said apparatus comprising:

a radiated energy beam deviator capable of deviating, under the control of said incoming electrical signal, said incident beam of radiated energy into a deviated beam having one of a plurality of first different angular directions; and

a plurality of LIPPMANN-BRAGG holographic diffraction gratings disposed and located so as to successively intercept said deviated beam arriving from said beam deviator, one of said gratings causing a diffraction of said deviated beam having one of said first different angular directions into a largely deviated output beam having one of a plurality of second different larger angular directions, the other of said gratings merely transmitting said deviated beam having said one direction, and each of said gratings corresponding to one of said first angular directions and to one of said second angular directions; whereby the value of the angular deflection of the beam is increased.



3,980,390
OPTICAL TRANSMISSION FIBER

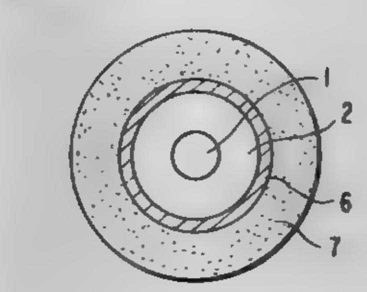
Yutaka Yamamoto, Osaka, and Munetaka Kawaguchi, Nagoya, both of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 20, 1975, Ser. No. 560,055

Claims priority, application Japan, Mar. 20, 1974, 49-31961; Feb. 28, 1975, 50-25280

Int. Cl.^{2} G02B *5/14*

U.S. Cl. 350—96 WG **10 Claims**



1. An optical transmission fiber which is formed by applying and baking a liquid resin composition or a solution or a dispersion prepared by dissolving or dispersing in a solvent a liquid or solid resin composition onto a glass fiber for optical transmission and, further, coating thereover by melt extrusion a thermoplastic resin composition.

3,980,391
OPTICAL FIBER TRANSMISSION COMPENSATOR

William James Stewart, Towcester, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland

Filed Apr. 17, 1975, Ser. No. 568,822

Claims priority, application United Kingdom, May 7, 1974, 19968/74

Int. Cl.^{2} G02B *5/14*

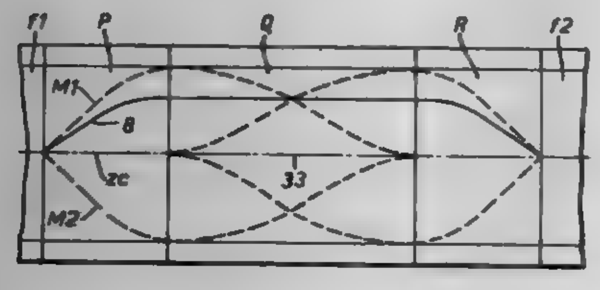
U.S. Cl. 350—96 C **1 Claim**

1. An optical fiber transmission compensator responsive to energy received from a first optical fiber in a number of modes having characteristic group velocities ranging progressively from a minimum to a maximum value, to deliver the received energy to a second optical fiber in the said number of modes, wherein the ends of said first and second optical fibers are in register with each other along a common axis, the energy received from the first fiber in modes increasing from the minimum to the maximum characteristic group velocities being delivered to the second fiber in modes decreasing re-

spectively from the maximum to the minimum characteristic group velocities, wherein the compensator comprises,

a. first, second and third focusing systems symmetrical about the said common axis, the first focusing system being adjacent to the first fiber end, the third focusing system being adjacent to the second fiber end, the second focusing system being positioned between the first and third systems, said first, second and third focusing systems comprising respectively first, second and third pieces of optical fiber disposed along said axis;

b. the first piece of optical fiber focuses energy received from the first fiber into concentric rings, whose radii, measured from the said axis, are dependent upon characteristic angles indicative of the group velocity characterizing the modes in which the energy is received, wherein the first piece of optical fiber has a core whose refractive index decreases as the radius increases, the length of the piece being related to the spatial rate of decrease of refractive index so that energy received from the first fiber is focused into said concentric rings;



c. the second piece of optical fiber transposes energy focused at a ring of minimum radius to a ring of maximum radius and vice versa, the transposition of energy being symmetrical about a mode having a group velocity equal to the mid-value of the range of group velocities characterizing the modes in which the energy is received, wherein the second piece of optical fiber has a core whose refractive index increases as the radius increases, until a change-point is reached, after which the refractive index decreases with further increases in radius, the change-point being spaced from said axis by a distance equal to the radius of the ring at which is focused the energy of the mode whose group velocity has the mid-value of the range of group velocities characterizing the modes in which energy is received at the compensator from the first fiber, and the length of the piece being related to the spatial rate of change of refractive index;

d. the third piece of optical fiber delivers transposed energy to the second fiber at angles which are dependent on the radii of the rings to which the energy was transposed by the second piece of optical fiber, wherein the third piece of optical fiber is identical to the first piece of optical fiber.

3,980,392
MODE TRANSDUCER FOR OPTICAL WAVE GUIDES

Franz Auracher, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

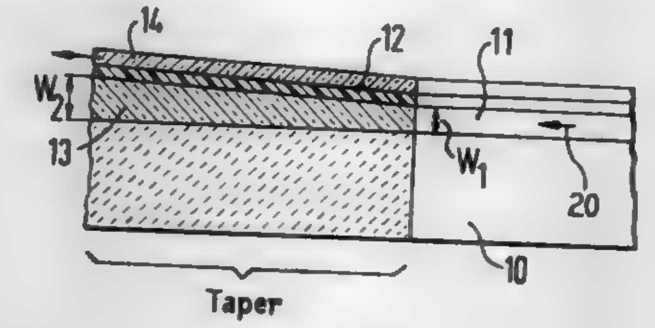
Filed May 1, 1975, Ser. No. 573,554

Claims priority, application Germany, May 2, 1974, 2421337

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96 WG **4 Claims**

1. A mode transducer for converting modes of different orders but of the same polarization during coupling between a pair of optical wave guides, comprising a coupling taper with a coupling structure arranged between the pair of wave guides, said coupling taper having an input thickness and an output thickness with the ratio of the opening angle of the light at the input and the output of the taper being equal to the square of the ratio of the input thickness and the output thickness; at least one additional taper and coupling structure said additional taper and coupling structures being arranged in series with the first-mentioned taper and coupling structure so that a plurality of modes in one of the pair of wave guides are sequentially coupled into the other of said pair of wave guides;



and the other wave guide including an electrical optical segment for each of the tapers, each optical segment having separate electrodes for applying an electrical field to the electro-optical segment so that the phase speed of each mode coupled to the other wave guide can be corrected to superimpose with the other modes coupled thereto.

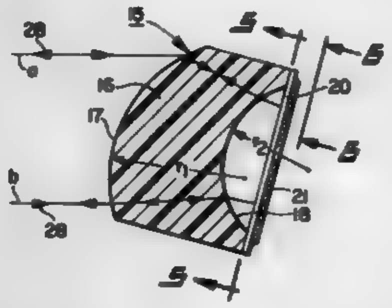
3,980,393
RETROREFLECTIVE DEVICE

James H. Heasley, Shaker Heights, and Alan G. King, Macedonia, both of Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Filed Mar. 10, 1975, Ser. No. 556,955

Int. Cl.² G02B *5/124*

U.S. Cl. 350—103 **10 Claims**



1. A retroreflective device comprising a lens having a front convex surface and a rear concave surface and, having a cube-corner array directed across its concavity, the radii of said convex and concave surfaces being different and so related as to converge light entering the convex surface and to diverge light leaving the concave surface into directions substantially parallel to the axes of the cube-corners of said array.

3,980,394
STEREO VIEWING

Kenyon L. Zapf, 1954–18th, Vero Beach, Fla. 32960

Continuation-in-part of Ser. No. 406,846, Oct. 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 817,662, April 21, 1969, abandoned. This application July 7, 1975, Ser. No. 593,490

Int. Cl.² G02B *27/22, 7/06, 7/12*

U.S. Cl. 350—139 **29 Claims**

1. Stereoscopic apparatus comprising,

means defining left and right viewing assmblies,

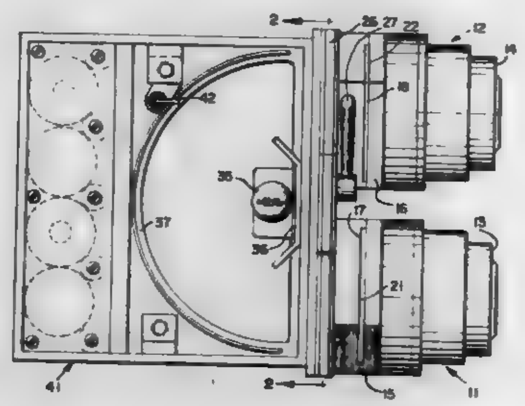
each of said viewing assemblies carrying lens means and pictorial representation support means in fixed relationship, each of said lens means having an optical axis,

support means for carrying said left and right viewing assemblies with said lens means optical axes generally parallel,

means for relatively displacing said left and right viewing assemblies for establishing a desired interpupillary distance,

each of said viewing assemblies comprising slide support means for supporting a slide of a first area,

aperture means between said lens means and said slide support means of second area less than said first area,



said lens means being wide angle,

means for illuminating the rear of said left and right viewing assemblies,

said means for illuminating comprising an opaque screen exhibiting circular symmetry,

and a light bulb at the center of a circle included by said opaque screen.

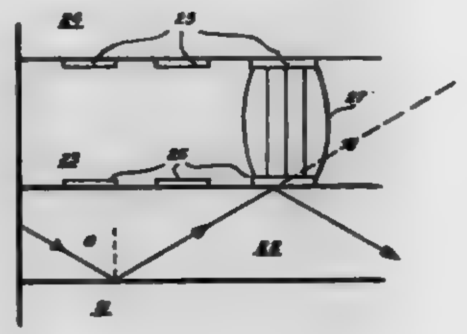
3,980,395
LIQUID CRYSTAL SWITCH FOR OPTICAL WAVEGUIDE

Thomas G. Giallorenzi, Alexandria, and Joel M. Schnur, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 333,602, Feb. 20, 1973, abandoned. This application Dec. 2, 1974, Ser. No. 528,825

Int. Cl.² G02F *1/13*

U.S. Cl. 350—160 LC **4 Claims**



1. A coupler for coupling coherent radiation out of or into a waveguide capable of supporting a discrete number of propagating radiation modes which includes a high index of refraction dielectric layer between first and second mediums, said first and second mediums normally having an index of refraction less than that of said high-index of refraction dielectric layer, wherein:

said first medium is a liquid crystal in its mesomorphic state of lowest index of refraction;

said second medium is a substrate of constant index of refraction;

means for confining said liquid crystal in homogeneous alignment in contact with said high-index of refraction dielectric layer;

at least one pair of first and second oppositely disposed radiation transparent electrodes of like configuration secured with said liquid crystal medium therebetween;

said first electrode of each pair secured onto said means for confining said liquid crystal medium in contact with said high-index of refraction dielectric layer; and

said second electrode of each pair secured onto said high-index of refraction dielectric layer;

whereby an electrical voltage applied to at least one pair of said radiation transparent electrodes increases the index of refraction of said liquid crystal confined between said electrodes to which a voltage is applied to approximately that of the index of refraction of said high-index of refraction dielectric layer to couple light out of or into said high-index of refraction dielectric layer through said second electrode and the area confined by said electrode pair to which a voltage has been applied.

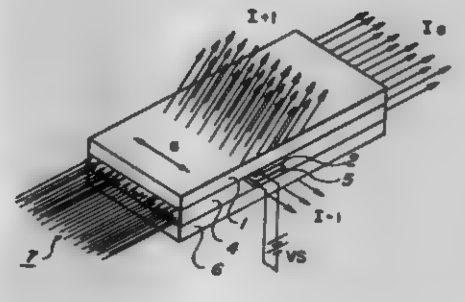
3,980,396
LIQUID CRYSTALLINE DEFLECTION AND MODULATION SYSTEM

Joel M. Pollack, Rochester, and Richard F. Bergen, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 25, 1975, Ser. No. 552,899

Int. Cl.² G02F *1/13*

U.S. Cl. 350—160 LC **8 Claims**



1. A method for selectively, variably deflecting light of any given wavelength, λ, comprising:

a. providing between two transparent electrodes, an about 1 micron to about 6 micron thick layer of homogeneously aligned nematic liquid crystalline material having negative dielectric anisotropy;

b. directing monochromatic light of any given wavelength, λ, into an coplanar with said layer of nematic liquid crystalline material; and

c. applying a d.c. voltage, between said two electrodes, at least at the parallel variable grating mode threshold level for said nematic liquid crystalline material wherein vortical domains of said liquid crystalline material are formed in a direction parallel to the direction of initial homogeneous alignment, said domains being substantially parallel one to the other and having a spatial frequency dependent upon the magnitude of said d.c. voltage, said d.c. voltage being above the critical angle voltage level for said light of wavelength, λ, wherein said spatial frequency is sufficient to defract said light of wavelength, λ, through said layer of liquid crystalline material and said electrodes.

3,980,397
DIFFRACTION SMOOTHING APERTURE FOR AN OPTICAL BEAM

O'Dean P. Judd, and Bergen R. Suydam, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

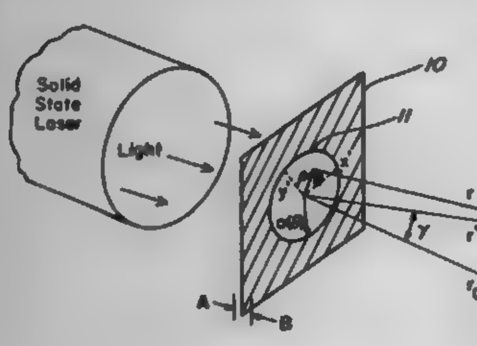
Continuation of Ser. No. 398,267, Sept. 17, 1973, abandoned. This application May 9, 1975, Ser. No. 576,532

Int. Cl.² G02B *5/18*

U.S. Cl. 350—162 R **1 Claim**

1. In combination with a solid state laser, an opaque sheet having an aperture therein, the aperture being substantially circular and having a periphery, the radius of said periphery varying randomly to provide irregular perturbations of said periphery, the maximum attained radial extent of said pertur-

bations being substantially 10 per cent of the average radius of said aperture, means for passing a beam from said laser through said aperture, the diameter of said beam being at least



as great as the average diameter of said aperture whereby the diffraction caused central intensity peak in said beam is smoothed.

3,980,398
ZOOM OBJECTIVE

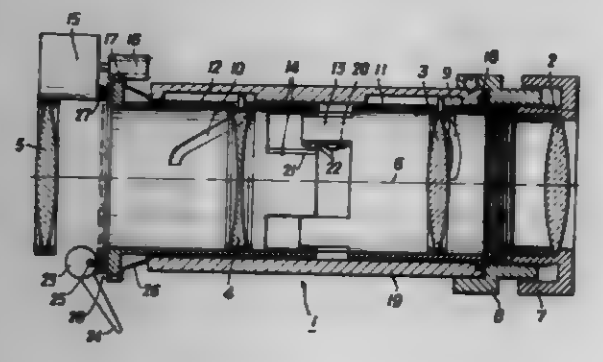
Peter Révy von Belvárd, Vienna, Austria, assignor to Earl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Nov. 12, 1973, Ser. No. 414,848

Claims priority, application Austria, Nov. 13, 1972, 9624/72

Int. Cl.² G02B *15/00, 7/02*

U.S. Cl. 350—187 **3 Claims**



1. In a zoom lens assembly, in combination:

a first and a second lens element individually shiftable along an optical axis;

a control mechanism including a first and a second rotatable cylinder of like radius centered on said optical axis and provided with first and second camming formations engaged by said first and second lens elements, respectively, for axially displacing said lens elements upon rotation of said cylinders, said cylinders having adjacent ends provided with intermeshing fingers linking same for joint rotation while enabling their relative axial displacement; and

actuating means coupled with said first cylinder for axially shifting said first cylinder independently of said second cylinder to preset said first lens element to a selected starting position relative to said second lens element.

3,980,399
ASPHERIC OPTICAL ELEMENTS

Harry Howden, Salfords, near Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

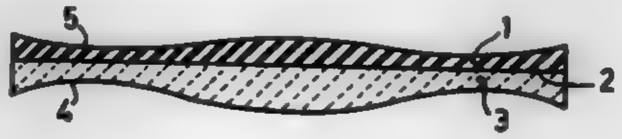
Filed Aug. 11, 1975, Ser. No. 603,281

Claims priority, application United Kingdom, Nov. 25, 1971, 54807/71

Int. Cl.² G02B *3/04*

U.S. Cl. 350—189 **1 Claim**

1. An aspheric light-transmissive optical element comprising a glass substrate portion having one surface defining an optical curvature and an opposite flat surface, and a portion of a thermosetting plastic material adhered to said flat surface and having substantially the same index of refraction as said substrate portion, said plastic portion defining at its outer surface said optical curvature.



3,980,400
ELECTROMAGNETIC TRIGGER DEVICE IN MOTOR-DRIVEN CAMERA CAPABLE OF BULB EXPOSURE

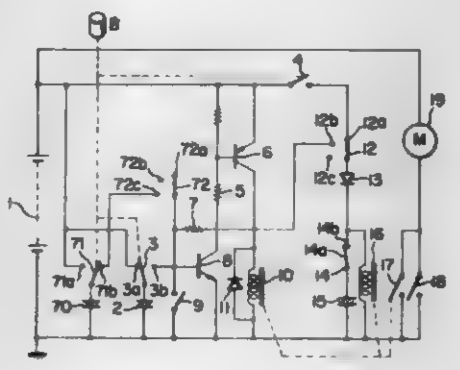
Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 10, 1975, Ser. No. 557,041

Claims priority, application Japan, Mar. 14, 1974, 49-28564

Int. Cl.² G03B *21/38*

U.S. Cl. 352—169 **16 Claims**



1. An electromagnetic trigger device in a motor-driven camera capable of a bulb exposure in which a shutter is opened when a trigger switch means is moved to an operative position and is closed when said trigger switch means is moved to an inoperative position, said device comprising:

1. a power source;
2. a motor;
3. trigger switch means;
4. shutter driving means driven by said motor for driving a shutter and movable between a closed shutter position in which the shutter is completely closed and an open shutter position in which the shutter is completely open;
5. latching means movable between a latching position and a non-latching position, said latching means being adapted, when moved to said latching position, to latch said shutter driving means which occupies one of the closed and open shutter positions;
6. a motor switch for electrically connecting said motor to said power source when said latching means is in the non-latching position;
7. electromagnetic means for attracting said latching means to move it to the non-latching when said electromagnetic means is energized;
8. first and second capacitors;
9. means for charging said capacitors;
10. and means responsive to said trigger switch means for connecting said first capacitor to said electromagnetic means to energize it for a predetermined time interval when said trigger switch means is moved to an operative position and for connecting said second capacitor to said electromagnetic means to energize it for a predetermined time interval when said trigger switch means is moved to an inoperative position, said first and second mentioned predetermined time intervals being shorter than the shorter of the time required for said shutter driving means to move from the closed shutter position to the open shutter position and the time required for said shutter driving means to move from the open shutter position to the closed shutter position.

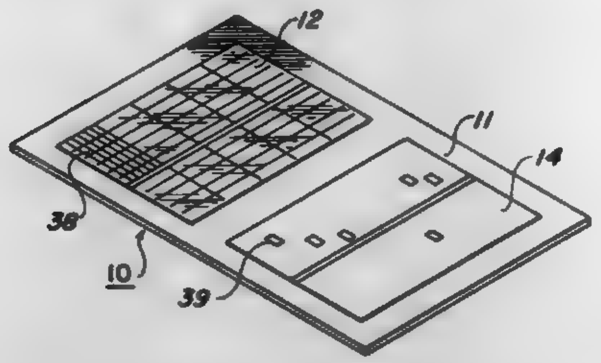
3,980,401
MICROFORM INFORMATION STORAGE ARRANGEMENT

Robert G. Holliday, Ann Arbor, Mich., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 388,528, Aug. 15, 1973, abandoned, which is a continuation of Ser. No. 199,689, Nov. 17, 1971, abandoned. This application Jan. 8, 1975, Ser. No. 539,382

Int. Cl.² G03B *23/08*

U.S. Cl. 353—27 A **3 Claims**



1. In combination, a microform viewing apparatus for holding and displaying a microform, said apparatus including reference means secured thereto; and a microform information storage unit including a plurality of generally flat microform information storage members having information recorded thereon in predetermined discrete areas of the members, said information storage members pivotally coupled along a common edge to an edge of a first body; a plurality of generally flat index members coupled with said microform storage members in predetermined alignment with said microform members, said index members integrally coupled along a common edge to an opposite edge of said first body whereby said index members and said microform members are adapted to be folded about the coupling edges; said index members having recorded thereon in predetermined discrete areas visible indicia to identify corresponding recorded information on said storage members, said indicia lying on said index members in substantially the same geometric array as said corresponding recorded information lies on said storage members, said index members oriented with respect to said recorded information for displaying and viewing particular information on said storage members when indicia on a particular index member relating to particular information on a microform storage member corresponding to said particular index member is aligned with said reference means on the microform viewing apparatus, said particular index member and corresponding microform storage member being rotated and aligned in substantially the same plane for viewing with said viewing apparatus.

3,980,402
MICROFORM INFORMATION STORAGE ARRANGEMENT

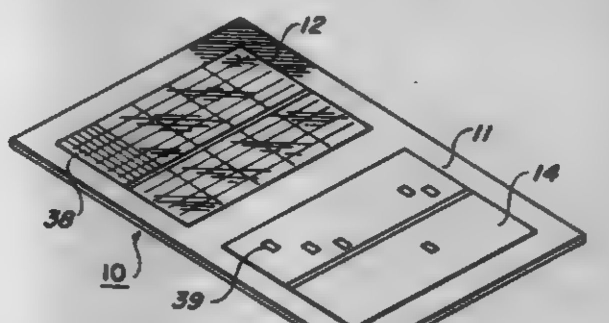
Robert G. Holliday, Ann Arbor, Mich., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 388,528, Aug. 15, 1973, abandoned, which is a continuation of Ser. No. 199,689, Nov. 17, 1971, abandoned. This application Jan. 8, 1975, Ser. No. 539,383

Int. Cl.² G03B *23/08*

U.S. Cl. 353—27 A **5 Claims**

1. In combination, a microform viewing apparatus for holding and displaying a microform, said apparatus including reference means secured thereto; and a microform information storage unit including an assembly of generally flat microform information storage members having information recorded thereon in predetermined discreet areas of the members, said microform storage members flexibly intercoupled along a common edge; an assembly of generally flat index members intercoupled with said microform storage members in predetermined alignment with said microform storage members, said index members intercoupled along edges thereof in a flexible pleated array, said pleated array of index members including an edge coupling member thereof which is coupled to said microform members along said common edge; said index members having recorded thereon in predetermined discreet areas visible indicia to identify corresponding recorded information on said storage members, said indicia



lying on said index members in substantially the same geometric array as said corresponding recorded information lies on said storage members, said index members oriented with respect to said recorded information for displaying and viewing particular information on said storage members when indicia on a particular index member relating to particular information on a microform storage member corresponding to said particular index member is aligned with said reference means on the microform viewing apparatus, said particular index member and corresponding microform storage member being rotated and aligned in substantially the same plane for viewing with said viewing apparatus.

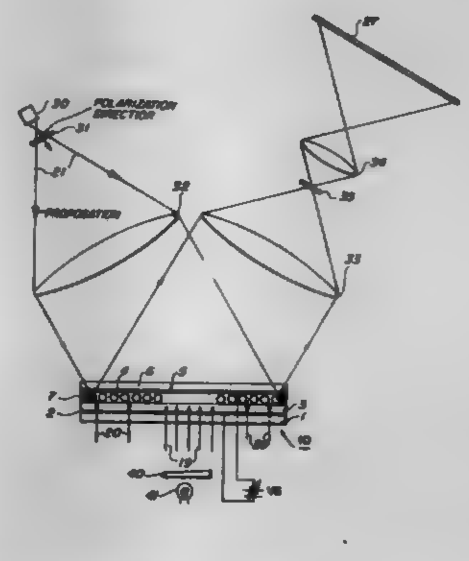
3,980,403
VARIABLE GRATING MODE IMAGING METHOD

Joel M. Pollack, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 25, 1975, Ser. No. 552,909

Int. Cl.² G03B *21/00*

U.S. Cl. 353—121 **9 Claims**



1. A method of imaging, comprising:

a. sandwiching between two transparent electrodes an imaging member comprising a negative photoconductor in contact with a layer of homogeneously aligned nematic liquid crystalline material; said layer of nematic material having a thickness of from about 1 to about 6 microns and said nematic material having negative dielectric anisotropy;

b. applying a D.C. voltage between said two electrodes above the parallel variable grating mode threshold voltage level for said nematic liquid crystalline material;

c. uniformly exposing said negative photoconductor to excitation radiation from the photoconductor side of said imaging member in an amount sufficient to form on said layer of nematic liquid crystalline material domains of the parallel variable grating mode, and to image configured actinic radiation which causes deletion of domains and formation of an imagewise configured array of domains in said layer of nematic material; and
d. reflecting from the liquid crystalline layer side of said imaging member monochromatic light linearly polarized in a direction perpendicular to the major axis of the domains in the layer of nematic material.

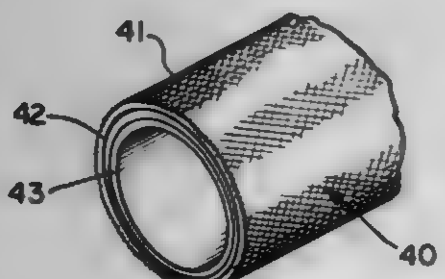
3,980,404
XEROGRAPHIC APPARATUS HAVING IMPROVED FLUID DISPENSING MEMBER

Robert H. Townsend, Richardson, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed July 26, 1974, Ser. No. 492,175

Int. Cl.² G03G *15/10*

U.S. Cl. 355—10 **3 Claims**



1. A xerographic apparatus comprising:
a. photoconductor means;
b. means for producing on said photoconductor means a selected electrostatic charge;
c. fluid developer;
d. a hollow, cylindrical, deformable fluid dispensing sleeve member having an outer elastomeric layer characterized by an outer surface having a relief pattern for carrying said fluid developer, and multiple inner layers, said inner layers imparting additional properties to said sleeve member, at least one of said inner layers being a stiffening layer;
e. means moving said fluid dispensing sleeve member into relationship with said photoconductor means; and
f. potential means, coupled to said fluid dispensing sleeve member, causing said fluid developer carried thereby to pass to said photoconductor means when said fluid dispensing sleeve member is moved into relationship with said photoconductor means.

3,980,405
CATHODE-RAY TUBE PICTURE PROJECTION APPARATUS

Yujiro Tatsuno, and Takatoshi Ikeda, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

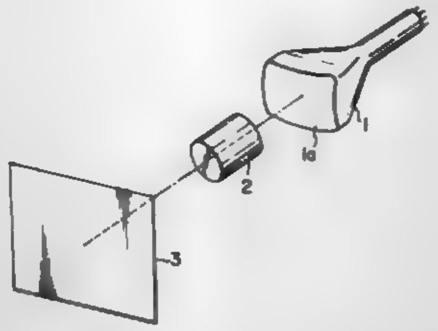
Filed Sept. 13, 1974, Ser. No. 505,778

Claims priority, application Japan, Sept. 17, 1973, 48-103789; Feb. 8, 1974, 49-15492

Int. Cl.² G03B *27/76, 27/78, 27/68;* H01J *29/89*

U.S. Cl. 355—20 **6 Claims**

1. An apparatus for projecting a cathode-ray tube display onto a flat imaging plane comprising a cathode-ray tube having a curved phosphor screen, said cathode-ray tube including means for displaying a picture on said curved screen, wherein said means for displaying said picture includes means for controlling the brightness of said phosphor screen of said cathode-ray tube to be substantially the same at the peripheral portion and at the central portion, and optical means for projecting said picture on said curved screen onto a flat imaging plane, said optical means having imaging properties for imaging a flat object plane onto a curved imaging surface with a central portion of said curved imaging surface being convex toward said optical means, such that an image of said picture on said curved screen is imaged on said flat imaging plane, and wherein said means for controlling the brightness of said phosphor screen of said cathode-ray tube includes first circuit means for producing in accordance with a horizontal synchronizing signal a first parabolic output voltage which increases from the center of deflection to the peripheral portions of deflection for a horizontal scan period, and second circuit means for producing in accordance with a vertical synchronizing signal a second parabolic output voltage which increases from the center of deflection to the peripheral portions of deflection for a vertical scan period, said parabolic output voltages of said first and second circuit means forming control signals to control the brightness of said phosphor screen.



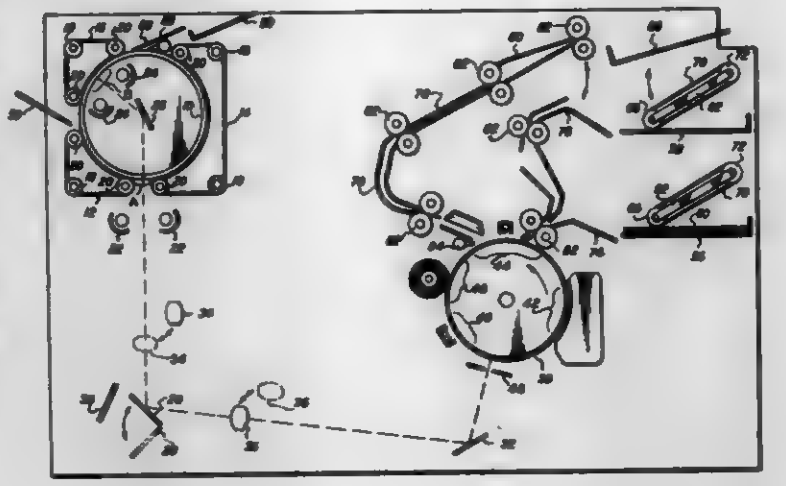
3,980,406
DUPLEX IMAGING SYSTEM

Richard F. Lang, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 2, 1975, Ser. No. 582,580

Int. Cl.² G03B *27/32, 27/52*

U.S. Cl. 355—24 **11 Claims**



7. In a duplex copying machine: a transparent rotatable drum, conveyor means engaging the outer surface of said drum, first ilumination means located exterior of said drum and arranged to direct light rays along a first given path intersecting a given area through which said drum rotates to define a first image station, second illumination means located within the confines of said drum and arranged to direct light rays along a second given path intersecting a given area through which said drum rotates to define a second image station, a recording medium, means for moving said conveyor means and rotating said drum at substantially the same speed and in the same direction, means for guiding a document with an image on each side thereof between said conveyor means and said drum, means for reversing movement of said conveyor means and rotation of said drum, and means for imaging said first and second image stations to said recording medium.

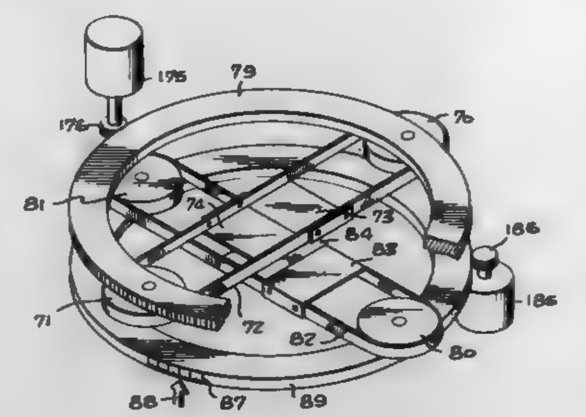
3,980,407
SHUTTER PLATE MOVEMENT

Edward Grant Hill, Santa Suzana, Calif., assignor to Electromask, Inc., Woodland Hills, Calif.

Filed Jan. 17, 1975, Ser. No. 541,706

Int. Cl.² G03B *27/76, 1/00;* G21F *5/04;* G21K *1/04*

U.S. Cl. 355—71 **11 Claims**



10. A variable aperture shutter for intercepting and shaping a beam of light emitted from a source, comprising, in combination, a pair of shutter mechanisms mounted in a frame in superimposed alignment with the optical axis of said light beam, each shutter mechanism comprising:
a base;
an endless belt;
capstan means, rotatably mouned to said base, supporting said endless belt in a loop having two opposed linear regions lying in spaced parallel alignment, and imparting circulartory motion to said belt;
reversible drive means driving said capstan means;
a first shutter blade positioned within said loop intermediate said linear regions thereof and secured to said belt in one of said linear regions;
a second shutter blade positioned within said loop intermediate said linear regions thereof to confront said first shutter blade and secured to said belt in the other of said linear regions;
control means controlling said drive means to vary the positions of said shutter blades and thereby vary the aperture defined by confronting edges of said blades; and
alignment means for controllably rotating the base of at least one of said shutter mechanisms about said optical axis in a plane normal to the optical axis of said light beam.

3,980,408
CONSTRUCTION ELEMENT

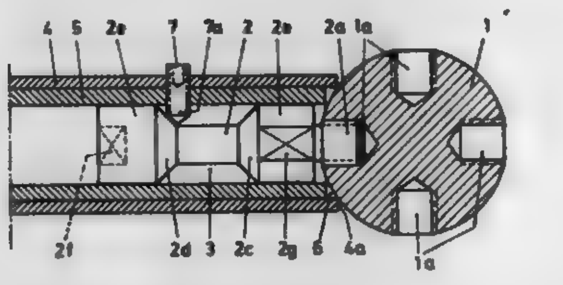
Rolf D. Jachmann, 3161 Hulptingsen 16, Germany

Filed Apr. 29, 1975, Ser. No. 572,712

Claims priority, application Germany, Apr. 30, 1975, 2420864

Int. Cl.² F16B *7/00*

U.S. Cl. 403—19 **4 Claims**



1. Construction element for releasing connecting rod-shaped structural elements, comprising a junction ball and a pin element extending radially from the ball surface and insertable and fixable in the end-face recess of a rod-shaped structural element,

characterized by the fact that

the pin element comprises a cylindrical bolt (2) which has, like a dumb-bell, an annular circumferential groove (3) with a trapeziform cross-section, with the end 7*a* of a radical fastening screw (7), extending from the outside and accommodated in the wall of the recess of the cylindrical rod-like structural element (4), engageable with the inclined wall most distant from the junction ball (1), the pin elements having on at least one end face a screw-threaded projection (2*a*) engageable with a threaded hole (*a*) in the junction ball (1), the pin element having at one end face a multi-sided recess for a socket wrench, and at least one of the cylindrical sections (2*e*, 2*f*) of the cylindrical bolts (2) on either side of the annular circumferential groove (3) having flats for receiving a wrench.

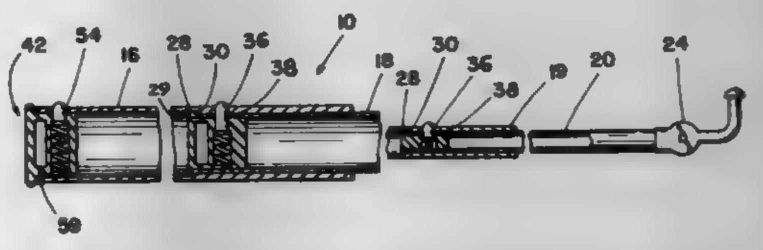
3,980,409
EXTENSIBLE TOOL FOR HANDLING ENERGIZED ELECTRIC EQUIPMENT

William F. Turner, Glen Ellyn, Ill., assignor to Square D Company, Park Ridge, Ill.

Continuation of Ser. No. 415,884, Nov. 14, 1973, abandoned. This application Oct. 29, 1974, Ser. No. 518,681

Int. Cl.² F16B *7/14*

U.S. Cl. 403—108 **15 Claims**



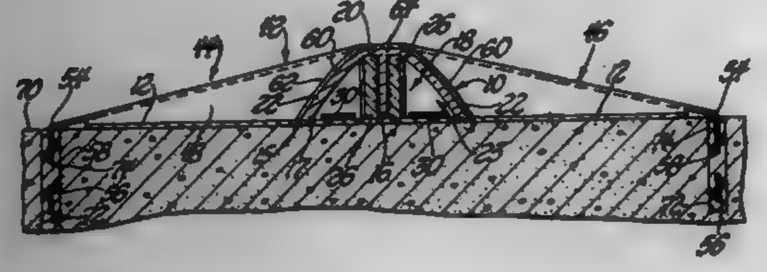
1. An extensible tool for handling energized electrical equipment comprising:
a. a plurality of telescoping cylindrical tubular sections of insulating material each having a longitudinal passage and arranged in series so that the tool when extended is of reduced transverse cross section progressively from a rear to a forward end, each of the sections except a most rearward section having an outer diameter of such size that it slidably fits in the next rearwardly adjacent larger section;
b. a rearwardly facing annular interior shoulder positioned near the forward end of each of the sections except a most forward section;
c. a forwardly facing annular exterior shoulder positioned near the rearward end of each of the sections except the most rearward section and defined by an edge face of a ring surrounding its associated section and bonded to the exterior surface of the section;
d. a first radial aperture in each section except the most forward section positioned forwardly of and adjacent to the rearwardly facing shoulder of its section;
e. a second radial aperture in each section except the most rearward section positioned forwardly of and adjacent to the forwardly facing shoulder of its section;
f. each forwardly facing shoulder, when the tool is fully extended, being in engagement with the rearward facing shoulder of the next adjacent larger section and the first apertures being in substantial alignment respectively with the second apertures;
g. a pin support disposed within each section except the most rearward section and having a cavity coaxial with the second aperture of its section; and
h. a pin and a spring disposed within each cavity, each spring biasing its associated pin radially outwardly for causing an end portion of its associated pin to extend into the second aperture of its section, and, when the tool is fully extended, for causing the end portion of its associated pin to extend into the first aperture of the next

larger section, thereby to lock the sections in their extended positions with respect to each other.

3,980,410
PAVEMENT MARKER WITH SNOW PLOW FRAME

Donald C. Suhr, Farmington Hills, Mich.; John F. Demaracki, and Robin A. Arnett, both of Windsor, Canada, assignors to ITL Industries, Inc., Newark, Ohio

Filed June 9, 1975, Ser. No. 584,810
Int. Cl.² E01F *9/04*
U.S. Cl. 404—16 14 Claims

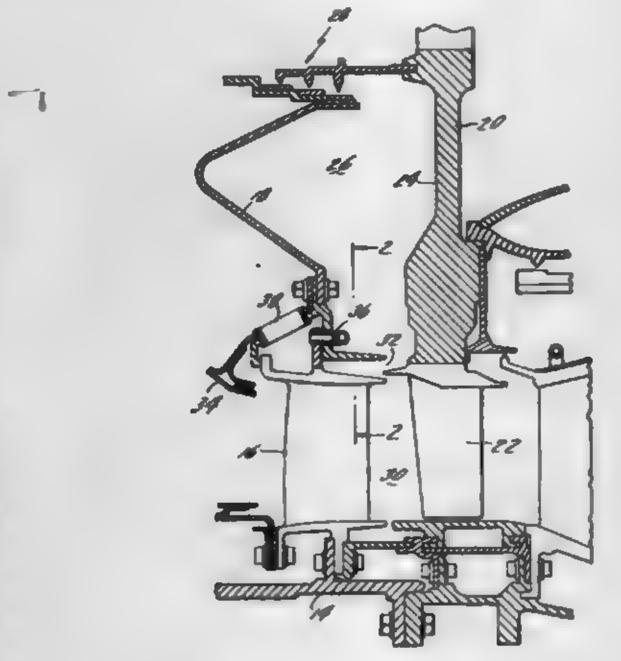


14. A pavement marker comprising: a snow plow frame having a unitary sheet metal body adapted to be secured to the surface of a roadway, said body having a base member with a fore and aft axis that extends parallel to the direction of travel when the body is secured to a roadway, and a transverse axis perpendicular to said fore and aft axis; a pair of snow plow ramp sections formed on said body on opposite sides of said fore and aft axis, each of said ramp sections including a pair of snow plow ramps extending in opposite directions from said transverse axis; each of said snow plow ramps having an inner side wall projecting upwardly from said base member on the side of said snow plow ramp adjacent said fore and aft axis, an outer side wall on the opposite side of its respective inner side wall from said fore and aft axis, an a top wall extending between the upper edges of said inner and outer side walls; each of said snow plow ramps having an enlarged end adjacent said transverse axis and decreasing in cross-section to a tip portion at the distal end thereof spaced from said transverse axis; a first opening in said base member extending on both sides of said transverse axis; an elongated strap spaced from the plane of said base and extending from one ramp section to the other along said transverse axis; said strap having one end connected with one ramp section and its other end connected with the other ramp section and being otherwise unconnected with said body so that there is a space between said strap and base member; a second opening in the junction of the inner side walls of the oppositely extending snow plow ramps of each of said ramp sections, each of said second openings having an flange-like edge portion extending from the edge of said first opening to said strap on opposite sides of said strap; a pavement marker housing seated in said opening; said pavement makrer housing having a top wall spaced from the plane of said base member and extending between said snow plow ramp sections beneath said strap; said pavement marker housing having a pair of outer walls intersected by said fore and aft axis and extending from opposite edges of the top wall thereof to the edge of said first opening such that the lower edge of each of said outer walls engages an edge of said first opening; said pavement marker housing having a pair of longitudinal ribs extending between said outer walls on opposite sides of said fore and aft axis and joined integrally to the top wall and outer walls of said housing to define an open ended chamber in said pavement marker housing; the edge portions of said second openings closely engaging the outer walls of said pavement marker housing; a closure plate sealingly secured to the outer walls and longitudinal ribs of said pavement marker housing to close and hermetically seal said chamber; at least one of said outer walls being transparent such that the interior of said chamber is visible through said transparent outer walls; a nighttime marker element received in said chamber, said marker element having retro-directive reflector elements formed thereon for reflecting light rays incident on said transparent outer walls; and desiccant material in said chamber to prevent the accumulation of moisture therein.

3,980,411
AERODYNAMIC SEAL FOR A ROTARY MACHINE

David Edward Crow, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 20, 1975, Ser. No. 624,205
Int. Cl.² F01D *11/10*
U.S. Cl. 415—1 7 Claims



1. Within a cavity formed between the rotating and stationary elements of a rotary machine, apparatus for decreasing the radial mass flow rate through the air boundary layer which is adjacent to the rotating element wherein said apparatus includes air swirl means for accelerating air within the cavity to a tangential velocity which approximates the tangential velocity of the rotating element at a corresponding radial position.

7. In the gas turbine engine of the type having a cavity located radially inward of the flow path of the working medium gases between the rotating and stationary elements of the engine, a method for preventing the ingestion of working medium gases from the flow path into the cavity, comprising:

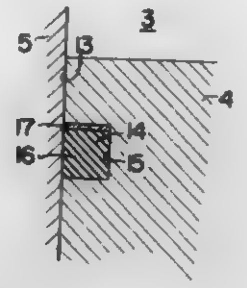
flowing air tangentially into the radially outer end of the cavity so as to accelerate the air within the cavity to a tangential velocity which is substantially equal to the tangential velocity of the rotor at a corresponding radial location.

3,980,412
CASING SEAL MEANS FOR A ROTARY PISTON ENGINE

Yasuto Terazawa, Kanyo-mubanchi, Kaita-cho, and Fumio Imamura, No. 2190, Kaitaichi, Kaita-cho, both of Aki, Hiroshima, Japan

Continuation of Ser. No. 390,341, Aug. 22, 1973, abandoned.
This application May 15, 1975, Ser. No. 577,623
Claims priority, application Japan, Sept. 9, 1972, 47-105342
Int. Cl.² F01C *19/00*
U.S. Cl. 418—149 2 Claims

1. In a rotary piston internal combustion engine including a casing having a rotor housing and a pair of side housings, said rotor housing having a trochoidal inner peripheral wall surface, said side housings mounted on opposed sides of said rotor housing, a polygonal rotor positioned in the space defined between said rotor housing and said side housings of said casing, said rotor being mounted for planetary revolution and rotation about an axis so as to define working chambers between the circumference of said casing and said rotor, circumferential cooling liquid passages extending axially through said rotor housing and into at least a portion of each of said side housings, and sealing means located between said rotor housing and each of said side housings and positioned between said cooling liquid passages and said inner peripheral wall surface of said rotor housing, the improvement in which each of said sealing means includes at least one seal member formed from a rubber body and a heat resistant layer integrally attached thereto and covering at least a portion of said rubber body, said seal member being positioned with said heat resistant layer interposed between said rubber body and said working chambers so as to protect said rubber body from the hot combustion gases in said working chambers, said heat resistant layer comprising polytetrafluoroethylene.

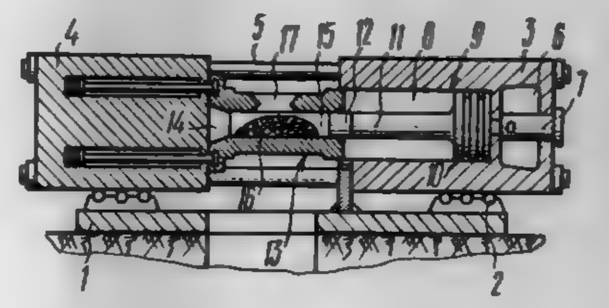


3,980,413
DEVICE FOR BRIQUETTING LOOSE MATERIALS

Vadim Grigorievich Kononenko, ulitsa Chkalova, 15, kv. 12; Valery Pavlovich Bozhko, ulitsa Chkalova, 13, kv. 56; Viktor Alexeevich Stelmakh, ulitsa Kirova, 18, kv. 2; Igor Pavlovich Komnatny, ulitsa Cheljuskintsev, 6; Sergei Vasilievich Yatsenko, Moskovsky prospekt, 204/1, kv. 36; Jury Mikhailovich Bukin, prospekt 50 let VLKSM, 72, kv. 151; Anatoly Egorovich Novikov, ulitsa Tankopia, 34, kv. 37; Sania Fatyakhovna Shaipova, Bulvar B.Khmelnitskogo, 4, kv. 65; Anatoly Nikolaevich Filyanov, ulitsa Kostycheva, 25, kv. 56; Armais Semenovich Shalbaian, pereulok Pilotov, 1a, kv. 12; Vitaly Dmitrievich Grechka, ulitsa Chaikovskogo, 12, kv. 7, all of Kharkov; Nikolai Grigorievich Tsyban, ulitsa R.Ljuxemburg, 116, kv. 4, Nikolaev; Abdulla Gilmutdinovich Gilmutdinov, ulitsa Dekabristov, 38/2, kv. 6, Nikolaev; Fedor Ivanovich Regida, ulitsa Dekabristov, 38/1, kv. 45, Nikolaev; Lidia Evgenievna Kazanovich, ulitsa Teatralnaya, 35, kv. 29, Nikolaev; Nikolai Andreevich Gertsuk, Merefyanskoe shosse, 22, kv. 27, Kharkov; Boris Alexeevich Kolokolov, ulitsa Kommunalnaya, 3a, kv. 9, Kharkov; Anatoly Sergeevich Morgolenko, ulitsa Chkalova, 15, kv. 434, Kharkov; Vladimir Alexandrovich Livanov, ulitsa Sovetskaya, 34, kv. 38; Anatoly Mikhailovich Berezko, shosse Entuziastov, 7, both of Moskovskava oblast, Stupino; Anatoly Avraamovich Petrenko, ulitsa Kibalchicha, 97, Kharkov; Trofim Andrianovich Mikhin, prospekt Pobedy, 22, kv. 54; Mikhail Nikitich Fedotov, ulitsa Chaikovskogo, 23, kv. 29, both of Moskovskaya oblast, Stupino, all of U.S.S.R.; Robert Sharafutdinovich Zakirov, deceased, late of Kharkov, U.S.S.R., by Ganna Fedgrovna Zakirova, administratix, ulitsa Zapadnaya, 8, kv. 2, Kharkov, U.S.S.R.

Filed Apr. 10, 1975, Ser. No. 566,823
Int. Cl.² B29C *7/00*; B30B *1/38*, *15/32*
U.S. Cl. 425—1 6 Claims

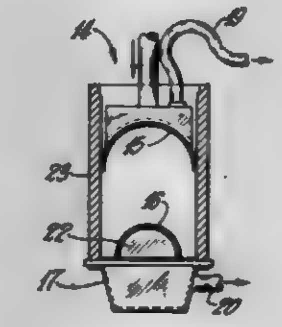
1. A device for briquetting loose materials with the use of impulse energy of detonation, comprising: a bed plate; a housing mounted on said bed plate; an explosion chamber provided within said bousing and communicating at regular intervals with an energy carrier source; a first actuating cylinder within said housing with the cylinder space being, at the moment of detonation of the energy carrier in said explosion chamber, connected thereto; a piston having a rod contained within the space of said first actuating cylinder and moving therein under the effect of the detonation energy generated in said explosion chamber; a plunger fixed on the rod; an anvil mounted on said bed plate at a distance from said housing on the side of said pounger and rigidly connected to said housing; said housing and anvil being mounted on said bed plate with a possibility of rolling back at the moment of explosion along the axis of said first actuating cylinder towards its rod; a container arranged intermediate of said housing and anvil, said container being aligned axially with said first actuating cylinder and provided with a through axial conduit which is filled with a batch of material to be briquetted and in which at the moment of detonation, moves said rod with the plunger; a die positioned intermediate of said anvil and container and integral therewith; with a briquette being formed in said die under the effect of the plunger; actuating cylinders provided within said anvil with the axis thereof being parallel to the axis of said first actuating cylinder within said housing and being spaced at the same distance from the axis of the first actuating cylinder; said actuating cylinders having rods, the rods of said actuating cylinders being connected rigidly to said die; said container and first actuating cylinder within said housing adapted each to receive its counterpart member, as required, during the axial displacement of said container under the effect of said actuating cylinders, through which the plunger pushes out the finished briquette from said die during the forward stroke of the rods of the actuating cylinders while during their back stroke, said container with the die are urged tight against said anvil.



3,980,414
CORE AND PRESSING HEAD OF MOLD BOX ASSEMBLY

Richard F. Shannon, Lancaster, Ohio, and Paul H. Scheuerle, Dallas, Tex., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sept. 29, 1975, Ser. No. 617,351
Int. Cl.² B30B *9/28*
U.S. Cl. 425—85 3 Claims



1. In a mold box assembly for use in pressing semi-cylindrical pieces of insulation from a slurry and including a mold box, a core having a semi-cylindrical perforated backing plate, and a reciprocable pressing head having a semi-cylindrical perforated backing plate adapted to be moved into concentric relationship with the backing plate of the core, the improvement comprising a greater percentage of hole area, as a percent of total area, in a pair of opposite leg portions of one of the backing plates than in a crown portion of the respective backing plate connecting the leg portions.

3,980,415
BURNER FOR BURNING LIQUID FUEL IN GASIFIED FORM

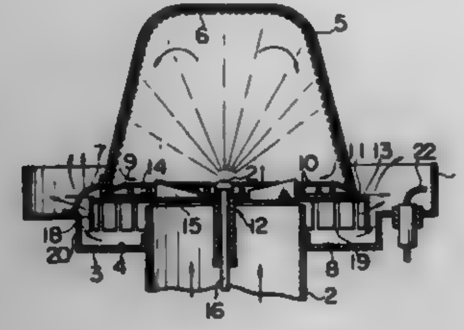
Kingo Miyahara, Tokyo, Japan, assignor to Dowa Co., Ltd., Tokyo, Japan

Filed Apr. 16, 1975, Ser. No. 568,710

Claims priority, application Japan, Apr. 24, 1974, 49-46726; July 15, 1974, 49-83533; July 15, 1974, 49-83534; Sept. 24, 1974, 49-115053; Jan. 15, 1975, 50-7352; Feb. 1, 1975, 50-15234

Int. Cl.² F23D *11/04*

U.S. Cl. 431—168 **5 Claims**



1. A burner for burning liquid fuel in gasified form comprising:
- a main body of the burner;
- an air supply duct inserted in said main body of the burner at one side thereof;
- a gas accumulation chamber provided in said main body of the burner;
- a fuel gasifying member open at one end which is non-rotatably mounted and disposed in spaced juxtaposed relationship to said gas accumulation chamber, said fuel gasifying member being maintained in communication with said gas accumulation chamber;
- liquid fuel scattering means rotatably mounted at the open end of said fuel gasifying member with a scattering gap being defined therebetween;
- a skirt disposed at the periphery of said liquid fuel scattering means formed therein with a multitude of gas ejection slits and having a lower half portion received in said gas accumulation chamber; and
- a gas ejection passageway defined between said skirt and said gas accumulation chamber.

3,980,416
OIL BURNER FOR OIL-WELLS

Carlos Alberto de Castro Goncalves; Romeu Almeida Neves, and Jose Bernardo Drucker, all of Rio de Janeiro, Brazil, assignors to Petroleo Brasileiro S.A.-Petrobras, Brazil

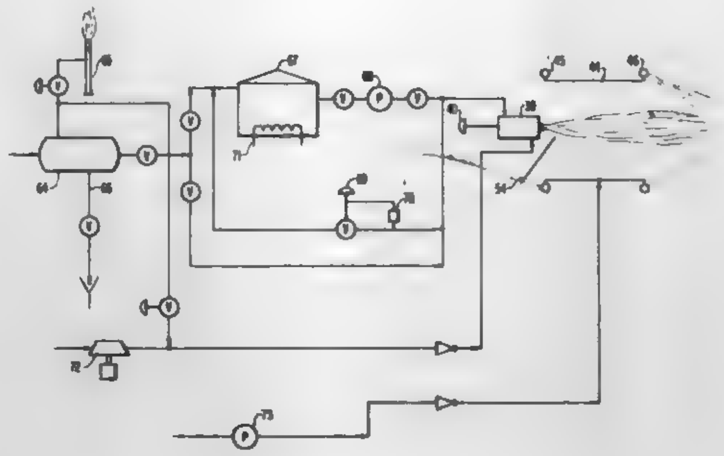
Filed Mar. 27, 1975, Ser. No. 562,739

Claims priority, application Brazil, Mar. 27, 1974, 2404

Int. Cl.² F23L *7/00*

U.S. Cl. 431—202 **12 Claims**

1. An oil burner for oil wells including a sprayer for atomizing oil products to be burned and means for igniting the atomizedd oil products at the outlet of the sprayer, comprising:
- a. a housing defining a chamber,
- b. a turbine mounted within the housing and having a plurality of generally helical channels which communicate a first part of said chamber on one side of the turbine with a second, central part of said chamber adjacent the other side of said turbine,
- c. an intermediate disc member mounted within the housing adjacent said other side of said turbine, said disc member having a central orifice in communication with said central part of said chamber,
- d. a centripetal stator mounted within the housing and having a central outlet orifice for the atomized oil products, said outlet orifice being in communication with the central orifice in said intermediate disc and defining a mixing chamber therebetween,
- e. an inlet for the oil products in the housing communicating with the first part of said chamber, said inlet being non-radial with respect to the housing,
- f. an inlet for an atomizing gas communicating with said mixing chamber,



- g. an open ended flame protector casing mounted in front of the sprayer outlet such that a flame produced by combusting atomized oil products is directed along the axis of said flame protector casing, and
- h. a pair of rings individually mounted at each end of said flame protector casing, each ring having a plurality of water spray nozzles.

3,980,417
APPARATUS FOR INCINERATING NON-HALOGENATED WASTE LIQUIDS

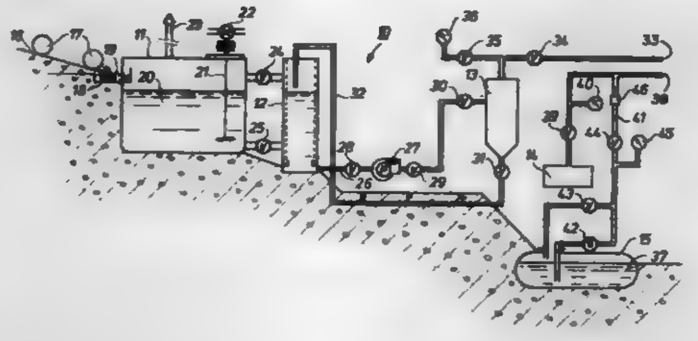
Peter Gerard Dierckx, Mortsel, Belgium, assignor to AFGA-GEVAERT N.V., Mortsel, Belgium

Filed Nov. 27, 1974, Ser. No. 527,595

Claims priority, application United Kingdom, Nov. 29, 1973, 55391/73

Int. Cl.² B05B *7/08;* **F23G** *7/00*

U.S. Cl. 431—284 **5 Claims**



1. A nozzle for burning solvents, comprising:
- a first body having an axial bore through which solvents are fed and terminating in a plurality of axially extending channels communicating with a first annular chamber,
- passage means connecting said first annular chamber with an outlet opening of said nozzle and adapted to bring the flow of waste solvents into a turbulent and atomized condition at the outlet opening of said nozzle, and
- means for feeding a mixture of compressed air and atomized fuel having a high heat of combustion into a second annular chamber spaced from said first annular chamber, said second chamber being provided with a plurality of outlet openings arranged concentrically with said nozzle opening and through which said mixture is forced to the atmosphere.

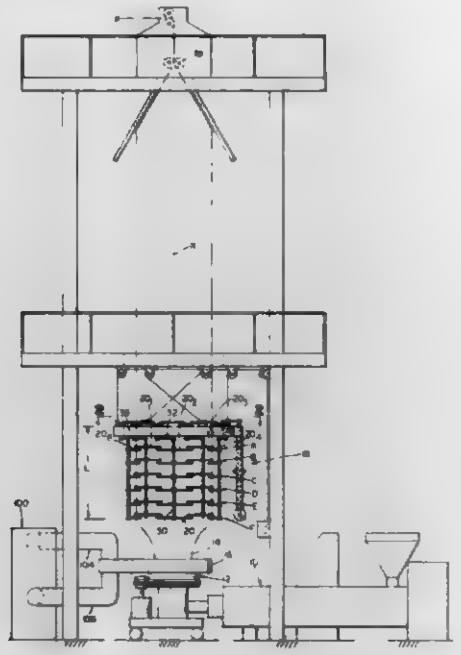
3,980,418
GUIDE ASSEMBLY FOR AIR-EXPANDED THERMOPLASTIC TUBES

Charles M. Schott, Jr., Gloucester, Mass., assignor to Gloucester Engineering Co. Inc., Gloucester, Mass.

Filed Sept. 5, 1975, Ser. No. 610,630

Int. Cl.² B29D *23/00;* **B29F** *3/00*

U.S. Cl. 425—455 R **21 Claims**



1. In a guide assembly for use with an extruder producing a continuous tube, the tube being expanded by internal air, said guide assembly comprising a set of tube-engaging guide members arranged in a circle encompassing the tube, each of said guide members connected to the end of an elongated support arm, each said arm being pivotally connected at its opposite end to a supporting frame with the line joining said connections of each arm forming a substantial angle with the radius of the tube projected to the respective guide member, whereby rotation of each said arm about its pivot is effective to adjust said guide member in correspondence with change in the diameter of said tube, the improvement wherein each said guide member is pivoted to its said support arm, and a compensatory rotation means is associated therewith dependent upon rotation of said arm for rotating said guide member about its pivot in the direction opposite to the said rotation of said arm in compensatory orienting motion.

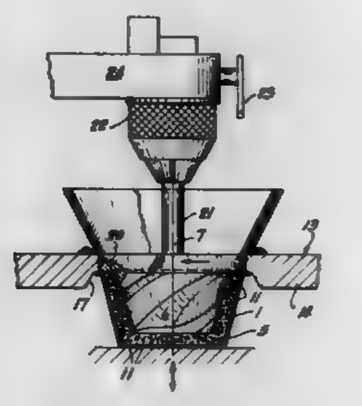
3,980,419
SHAPING HEAD APPARATUS FOR PRODUCING IMPROVED EDIBLE SHELLS

James N. Franz, 655 High St., Denver, Colo. 80218

Filed Aug. 26, 1974, Ser. No. 500,344

Int. Cl.² A23L *1/216*

U.S. Cl. 425—459 **6 Claims**



1. A shaping head apparatus for mounting within a basket to form an edible cup-shaped food product from a particulate food material, comprising a generally frustoconically shaped body portion having an axis and having a base wall and side wall including portions essentially coresponding to the inner shape of the food product, said side wall having at least one peripheral groove means extending axially and circumferentially along the side wall and base wall, said groove means having a material distributing and forming wall extending inwardly from the side wall and circumferentially of the body portion, and wherein said groove includes a lower end having a circumferentially largest dimension and a generally shallow cross-section with a relatively sharp trailing wall, said groove progressively changing to a generally U-shaped groove at the upper end.

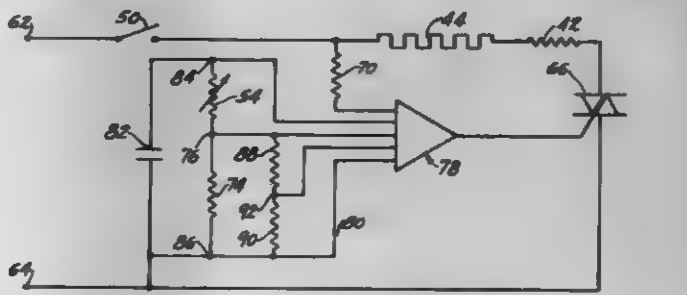
3,980,420
BURNER CONTROL SYSTEM FOR DOMESTIC GAS RANGE OVENS

Robert L. Baysinger, and John J. Love, both of St. Louis, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed July 3, 1975, Ser. No. 592,976

Int. Cl.² F23N *5/00*

U.S. Cl. 431—78 **6 Claims**



1. In a control system for an oven gas burner,
- a source of electrical power,
- a heat motor operated gas valve including an electrical resistance heater operative to effect opening of said valve when sufficient current is passing therethrough,
- a silicon-carbide glow coil for igniting said burner,
- a thyristor,
- circuit means connecting said resistance heater, said glow coil, and said thyristor in series across said power source,
- and means responsive to oven temperature variations controlling conduction of said thyristor.

3,980,421
FLASH LAMP UNIT

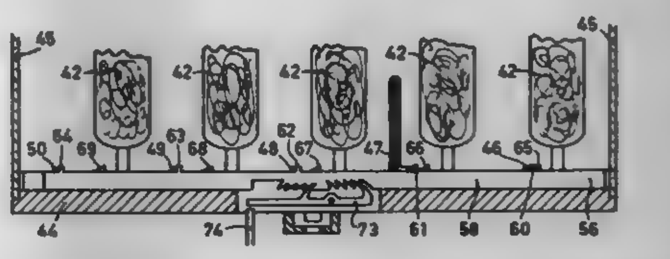
Andreas Maria Heeman, and Piet Jan Maria Steeghs, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 13, 1974, Ser. No. 505,633

Claims priority, application Netherlands, Sept. 28, 1973, 7313364

Int. Cl.² F21K *5/02;* **G03B** *15/02*

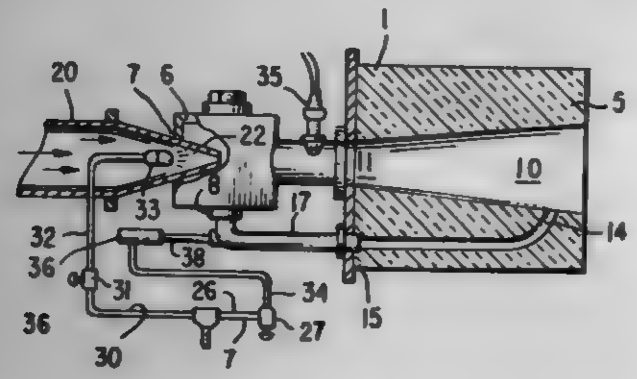
U.S. Cl. 431—93 **3 Claims**



1. A flash lamp unit having a plurality of percussion flash lamps which ignite responsive to impact disposed in at least one row, a common elongate support carrying said one row of lamps, a plurality of striker springs, each of said springs being disposed proximate to a different one of said plurality of lamps, means for holding each spring in a prestressed form and selectively releasing each spring individually, each spring impacting said proximate lamp when selectively released to ignite said proximate lamp, an elongate body cooperating with

said support, said body being movable in the longitudinal direction with respect to said support, said body having a plurality of projections disposed in spaced relationship, each of said projections cooperating with said springs and sequentially releasing said springs from a prestressed form upon incremental movement of said body in the longitudinal direction, escapement means to selectively hold said body in a plurality of discreet longitudinal positions and biasing means for urging said body in said longitudinal direction comprising one or more of said striker springs.

3,980,422
OIL INJECTION MEANS FOR LIQUID FUEL BURNER
John S. Dennis, Lambertville, N.J., assignor to HED Industries, Inc., Pennington, N.J.
Filed Aug. 11, 1975, Ser. No. 602,601
Int. Cl.² F23M *9/06*
U.S. Cl. 431—116 8 Claims



1. In a liquid fuel burner for burning a gasifiable liquid fuel such as oil and having reduced thermal stresses, said burner being of the type including

a burner made of refractory material and having a fire chamber, said chamber having a fuel mixture inlet port, a burned gas removal port, and a hot burned gas feedback port,

a mixing chamber for mixing said fuel and air, said mixing chamber being connected to said inlet port,

a burned gas and fuel inlet to said mixing chamber,

means directly interconnecting said burned gas removal port to said burned gas and fuel inlet,

an air inlet to said mixing chamber for directing air under pressure into said mixing chamber, said air inlet including a Venturi for drawing burned gas and fuel into said chamber through said interconnecting means and said burned gas and fuel inlet, and

a gasifiable liquid fuel inlet connected to said interconnecting means proximate to said refractory material,

whereby said fuel will be gasified by hot burned gas as it passes through said interconnecting means and the heat of vaporization of said fuel will cool said hot burned gases, thereby reducing the temperatures thereof and reducing thermal stresses therein, the improvement comprising means for adjusting the position of said liquid fuel inlet longitudinally of the interconnecting means, toward and away from said refractory material.

3,980,423
FUSER CLEANING ROLL ASSEMBLY
Salvatore Latone, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Apr. 28, 1975, Ser. No. 572,671
Int. Cl.² G03G *15/12, 13/20*
U.S. Cl. 432—75 1 Claim

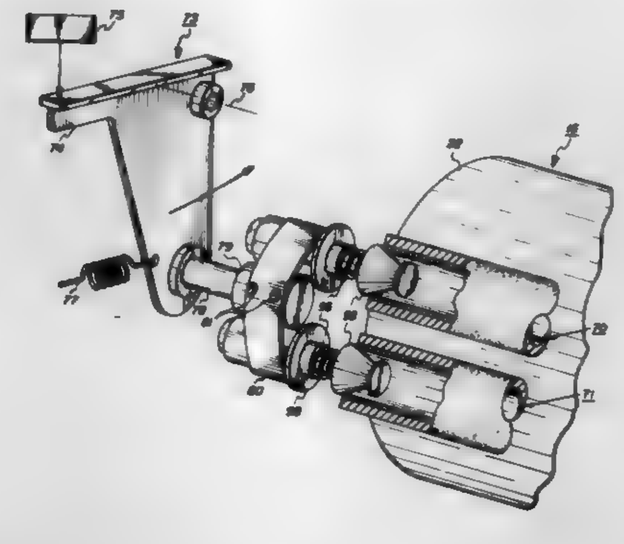
1. In a fusing system for fusing toner images in an electrostatic copying machine in which a relatively hard heated roll surface is used to fix the toner images to copy sheet material, an improved cleaning roll apparatus for cleaning toner offset onto the heated roll surface comprising:

a carriage means supporting at least one cleaning roller member in contact with the heated roll surface to be cleaned;

pressure loading means for urging said carriage means towards the heated roll surface at a predetermined pressure;

said cleaning roller member including a tubular core member which is exteriorly covered with a thermoplastic layer to create sufficient energy to collect toner from the heated roll surface;

shaft means positioned on said carriage means supporting said tubular core member at the ends thereof;

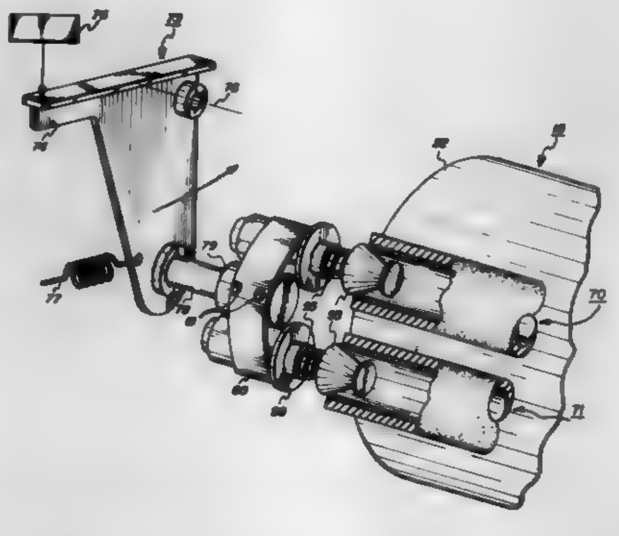


said shaft means including a displaceable member having a conical shaped portion engaging the tubular core member at the end thereof and spring bias means for urging said displaceable member in an axial direction away from said carriage means;

journal means coaxial with said displaceable member to support rotation thereof; and

bearing means coaxial with said journal means to support rotatable movement of said shaft means relative to said carriage means.

3,980,424
FUSER CLEANING ROLLER
Salvatore Latone, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Apr. 28, 1975, Ser. No. 572,699
Int. Cl.² G03G *15/12, 13/00*
U.S. Cl. 432—75 2 Claims



1. In a fusing system for fusing toner images in an electrostatic copying machine in which a relatively hard heated roll surface is used to fix the toner images to copy sheet material an improved cleaning roll apparatus for cleaning toner offset onto the heated roll surface comprising:

a carriage means including displaceable shaft means supporting at least one cleaning roller member at the ends thereof in contact with the heated roll surface to be cleaned,

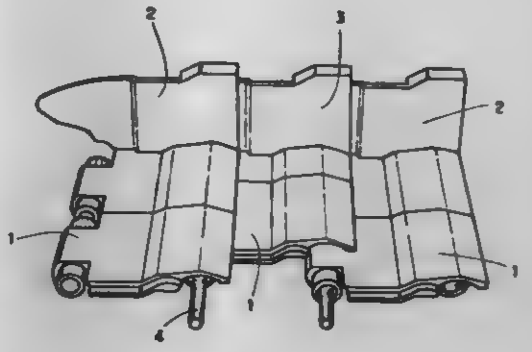
pressure loading means for urging said carriage means towards the heated roll surface to be cleaned at a predetermined pressure,

said cleaning roller member including a core member said core member being covered by a sleeve made of urethane foam to conform to the surface of the heated roll to effect uniform cleaning thereof,

said urethane foam sleeve being impregnated with silicone oil and exteriorly coated with a thermoplastic layer ranging from about 0.001 to about 0.005 inches to create sufficient surface energy to collect toner from the heated roll surface.

3,980,425
FURNACE HEARTH
Jacques Pinettes, Gieres, and Guy Hily, Albertville, both of France, assignors to Ugine Carbone, Grenoble and Ugine Aciers, Paris, both of France
Filed June 6, 1975, Ser. No. 584,383
Claims priority, application France, July 19, 1974, 74.25146
Int. Cl.² F27D *3/00*
U.S. Cl. 432—239 8 Claims

1. A furnace hearth formed by elements including interlocking links, which are all identical to one another, and edge pieces, each comprising a horizontal portion and a vertical edge, each link and edge piece horizontal portion including a plate having at one end a female pivot and at the other end at least one male pivot, the male pivots ef each element engaging within an end of the female pivot of neighboring elements; pins engaged inside the male pivots of the assembled elements; the plate of each link and edge piece having an upper surface which passes through a point tangent to the upper generatrix of the associated male pivots and, at a position parallel to the axis of the associated female pivot, through a point situated at a distance from the lastmentioned axis which is equal to the outside radius of the female pivot plus the thickness of the plate, the plate extending foward of the axis of the female pivot in a portion having a bottom surface in a plane parallel to the upper surface of the plate forward of the male pivots, the planes of the said bottom surface and of the said upper surface being spaced from a plane defined by the axes of the male and female pivots by a distance equal to the radius of the male pivots.



3,980,426

PROCESS FOR PRINTING OR PAD-DYEING CELLULOSE/POLYESTER MIXED FABRICS

Erich Feess; Sienling Ong, both of Lorsbach, Taunus, and Hans Helmut Steuernagel, Kelkheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jan. 30, 1975, Ser. No. 545,534

Claims priority, application Germany, Feb. 2, 1974, 2404047

Int. Cl.² D06P *3/82*

U.S. Cl. 8—21 C **2 Claims**

1. A process for the pad-dyeing or printing of textile material consisting of cellulose and polyester fibres with fibre-reactive and dispersion dyestuffs which comprises printing or padding the textile material with a printing paste or padding liquor which contains besides the usual printing auxiliaries and the dyestuffs mentioned an alkali salt of formic acid as well as carriers, levelling and/or dispersing agents, fixing the dyestuffs by dry heat at temperatures above 150°C or by hot steam at temperatures above 140°C, and completing the prints or pad dyeings in usual manner.

3,980,427

EXHAUST PROCESS FOR THE DYEING OF SYNTHETIC FIBER MATERIALS

Rutger Neeff, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 416,867, Nov. 19, 1973, which is a continuation of Ser. No. 161,282, July 9, 1971, abandoned. This application Feb. 14, 1975, Ser. No. 549,852

Claims priority, application Germany, July 10, 1970, 2034264; May 18, 1971, 2124495; May 18, 1971, 2124496

Int. Cl.² C09B *27/00;* **D06P** *1/02*

U.S. Cl. 8—41 R **12 Claims**

1. Process for dyeing synthetic fiber material by exhaustion comprising introducing synthetic fiber material into a dyebath which is a dispersion consisting essentially of

A. organic solvent;

B. a monoazo or disazo dyestuff containing 1 to 3 sulfonamide groups and largely insoluble in said dyebath; and

C. up to 1% by weight of said organic solvent of water; said organic solvent consisting of water immiscible aliphatic halogenated hydrocarbon; and

dyeing at a temperature of 60° to 170°C for 10–60 minutes until the dyebath is exhausted;

said monoazo or disazo dyestuff being free of reactive groups, acid groups and carboxamide groups.

3,980,428

DYEING PROCESS

Sergio Fabbri, Basel, and Josef Frauenknecht, Therwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Oct. 31, 1973, Ser. No. 411,255

Claims priority, application Switzerland, Nov. 6, 1972, 16126/72; Jan. 30, 1973, 1332/73

Int. Cl.² D06P *1/41, 1/64, 1/653*

U.S. Cl. 8—92 **18 Claims**

1. A process which comprises dyeing or printing a natural or synthetic organic substance with a dyeing or printing medium comprising a member selected from the group consisting of acid dyes and mixtures of acid dyes with metal complex, disperse, reactive or basic dyes to which has been added between 0.1 and 1 part per thousand, based on the dyeing or printing medium, of a lactone derived from an aliphatic hydroxy carboxylic acid to adjust the pH from a neutral or basic value to a value from 4.0 to 6.5.

3,980,429

CONTINUOUS PROCESS FOR THE LIQUID AMMONIA TREATMENT OF FABRICS

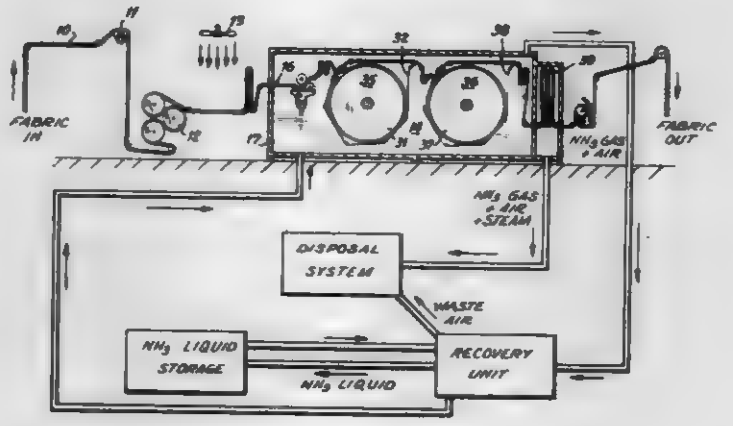
Jackson Lawrence, West Sand Lake, and Walter S. Troope, Latham, both of N.Y., assignors to Cluett, Peabody & Co., Inc., New York, N.Y.

Continuation-in-part of Ser. Nos. 249,736, May 2, 1972, abandoned, and Ser. No. 346,007, March 29, 1973, and Ser. No. 379,652, July 16, 1973, Pat. No. 3,915,632, said Ser. No. 249,736, and Ser. No. 346,007, each is a division of Ser. No. 106,514, Jan. 14, 1973, abandoned, said Ser. No. 379,652, is a continuation-in-part of said Ser. No. 106,514. This application May 14, 1975, Ser. No. 577,613

The portion of the term of this patent subsequent to Oct. 28, 1992, has been disclaimed.

Int. Cl.² D06M *1/10*

U.S. Cl. 8—125 **26 Claims**



1. The process of continuously treating with liquid ammonia a fabric web, formed in significant part of natural or regenerated cellulose, characterized by

a. continuously advancing a web of the fabric to and through a treating zone,

b. commencing a treating reaction within the treating zone by progressively impregnating the advancing fabric with liquid ammonia,

c. maintaining the advancing fabric in contact with the liquid ammonia for a predetermined reaction period, commencing with the initial impregnation of the fabric,

d. terminating the effective reaction period by, within 0.6 to 9 seconds of the commencement thereof, commencing and continuing the rapid removal of the liquid ammonia from said fabric, and

e. thereafter conveying the fabric web from said treatment zone.

3,980,430

PROCESS FOR DYEING ANIONICALLY MODIFIED SYNTHETIC FIBER MATERIALS

Hans-Peter Kühlthau, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

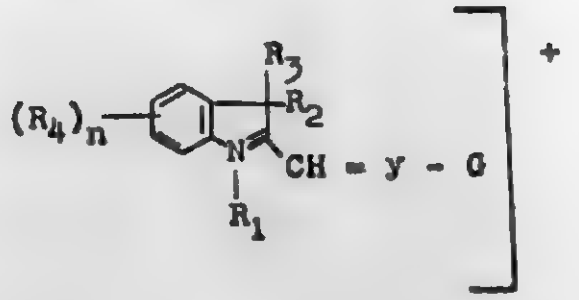
Division of Ser. No. 299,658, Oct. 24, 1972, Pat. No. 3,925,015. This application Apr. 1, 1975, Ser. No. 564,104

Claims priority, application Germany, Oct. 23, 1971, 2152948

Int. Cl.² D06P *5/00, 1/13*

U.S. Cl. 8—168 R **6 Claims**

1. In the process of dyeing an anionically modified fiber material by exhaustion from a dyebath consisting essentially of a cationic dyestuff dissolved in halogenated hydrocarbon the improvement comprising the use as said cationic dyestuff a dyestuff soluble in said halogenated hydrocarbon and having the formula



in which

A⁻ is a non-lipophilic anion;

R_1 is hydrogen; C_1–C_{12}-alkyl; C_1–C_5-alkyl substituted with CN, Cl or OH; cycloalkyl, aralkyl or aryl;

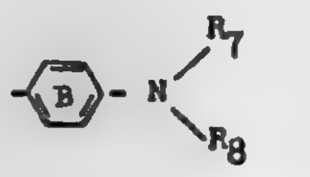
R_2 is C_1–C_5-alkyl, cycloalkyl or aralkyl;

R_3 is C_1–C_5-alkyl, cycloalkyl or aralkyl;

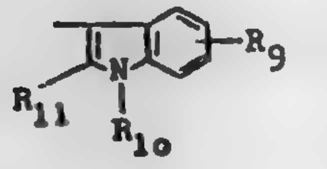
R_4 is halogen, C_1–C_{12}-alkyl, C_1–C_5-alkyl substituted with CN, Cl or OH, cycloalkyl, aralkyl, alkoxy, nitro, carbalkoxy, nitrile, acyl, acylamino, amino, carbamoyl, N-alkylcarbamoyl, N,N-dialkylcarbamoyl, N-alkyl-N-arylcarbamoyl, sulphamoyl, N-alkylsulphamoyl, N,N-dialkylsulphamoyl, alkylsulphonyl, arylsulphonyl, trifluoromethyl, aryloxy, aralkoxy or carbalkoxy;

y is CH or N; and

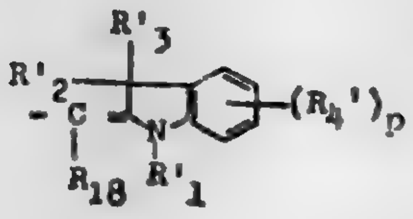
G is



or



or



in which

R'_1 is hydrogen, C_1–C_{12}-alkyl, C_1–C_5-alkyl substituted with CN, Cl or OH, cycloalkyl, aralkyl or aryl;

R'_2 is C_1–C_5-alkyl, cycloalkyl or aralkyl;

R'_3 is C_1–C_5-alkyl, cycloalkyl or aralkyl;

R'_4 is halogen, C_1–C_{12}-alkyl, C_1–C_5-alkyl substituted with CN, Cl or OH, cycloalkyl, aralkyl, alkoxy, nitro, carbalkoxy, nitrile, acyl, acylamino, amino, carbamoyl, N-alkylcarbamoyl, N,N-dialkylcarbamoyl, N-alkyl-N-arylcarbamoyl, sulphamoyl, N-alkylsulphamoyl, N,N-dialkylsulphamoyl, alkylsulphonyl, arylsulphonyl, trifluoromethyl, aryloxy, aralkoxy or carbaralkoxy;

R_7 is hydrogen; C_1–C_{12}-alkyl, C_1–C_5-alkyl substituted with CN, Cl or OH, which can optionally close a 5-membered or 6-membered ring to the adjacent o-position of the ring B, the heterocyclic ring thereby formed being optionally alkyl substituted or fused to a further carbocyclic ring; cycloalkyl; aralkyl or aryl;

R_8 is hydrogen, C_1–C_{12}-alkyl, C_1–C_5-alkyl substituted with CN, Cl or OH, or aralkyl; R_7 and R_8 can further, with the nitrogen atom, close a heterocyclic ring which can optionally contain further hetero atoms;

R_9 is hydrogen, C_1–C_{12}-alkyl, C_1–C_5-alkyl substituted with CN, Cl or OH, alkoxy or halogen;

R_{10} is hydrogen, C_1–C_{12}-alkyl, C_1–C_5-alkyl substituted with CN, Cl or OH, aralkyl, cycloalkyl or aryl;

R_{11} is C_1–C_{12}-alkyl, C_1–C_5-alkyl substituted with CN, Cl or OH, aryl, carboxylic acid ester, carbonamide or substituted carbonamide

R_{18} is hydrogen, nitrile, carboxylic ester or carbonamide;

X is —CH_2— or O;

a is 0 or 1; and

m, *n* and *p* independently of one another are numbers from 0 to 3;

"aryl" is phenyl; naphthyl; 4-methyl-phenyl, 2-methylphenyl, 4-chlorophenyl, 2-chlorophenyl, or 2-methylchlorophenyl;

"aralkyl" is benzyl, β-phenethyl or α,α-dimethylbenzyl; or the foregoing substituted in the phenyl nucleus by lower alkyl, halogen, alkoxy, carboalkoxy, nitro, cyano or hydroxyl;

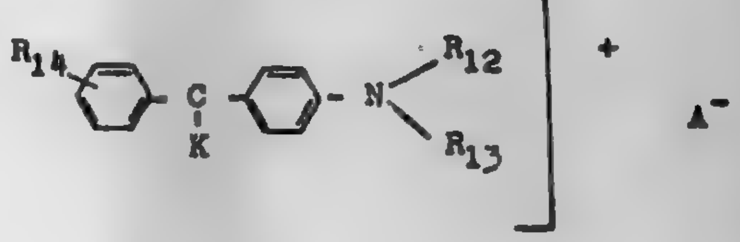
"aryloxy" is phenoxy or naphthoxy or the foregoing substituted with lower alkyl, halogen, alkoxy, carboalkoxy, nitro, cyano or hydroxyl;

"substituted carbonamide" is methyl-carbamoyl, N-ethylcarbamoyl, N-n-butyl-carbamoyl, N,N-dimethyl-carbamoyl, N,N-diethyl-carbamoyl, N-methyl-N-ethyl-carbamoyl, N-methyl-N-phenyl-carbamoyl or N-ethyl-N-phenylcarbamoyl;

"carboxylic acid ester" is selected from the group consisting of carbomethoxy, carboethoxy, carbopropoxy, carbobutoxy, carbobenzoxy, carbo-α-phenylethoxy, carbo-(β-phenylethoxy) and carbo-(γ-phenyl-n-propoxy) radicals and their derivatives substituted in the phenyl nucleus with lower alkyl, halogen, alkoxy, carboalkoxy, nitro, cyano or hydroxyl;

with the proviso that at least one of the substituents R_4, R_4', R_9 or R_{11} is a C_3–C_{12}-alkyl, C_3–C_{12}-alkoxy or C_5–C_6-cycloalkyl group or R_{10} is a C_3–C_{12}-alkyl or C_5–C_6-cycloalkyl group or R_4 or R_4' is a C_1–C_2-alkyl group, in which case *n*, *p* or *m* have the value 3.

2. In the process of dyeing an anionically modified fiber material by exhaustion from a dyebath consisting essentially of a cationic dyestuff involved in halogenated hydrocarbon the improvement comprising the use as said cationic dyestuff a dyestuff soluble in said halogenated hydrocarbon and having the formula



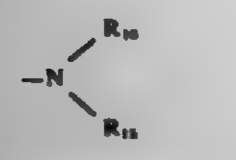
in which

A⁻ is a non-lipophilic anion;

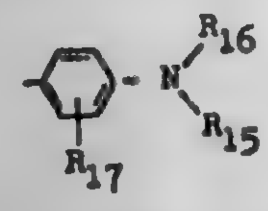
R_{12} is hydrogen, C_1–C_{12}-alkyl, C_1–C_5-alkyl substituted with CN, Cl or OH, aralkyl, cycloalkyl or aryl;

R_{13} is hydrogen, C_1–C_{12}-alkyl, C_1–C_5-alkyl substituted with CN, Cl or OH, cycloalkyl or aralkyl, or R_{12} and R_{13} together with the nitrogen atom form a heterocyclic ring which can optionally contain further hetero-atoms;

R_{14} is hydrogen, halogen, alkoxy, aralkoxy, aryloxy, acyloxy, C_1–C_{12}-alkyl, C_1–C_5-alkyl substituted with CN, Cl or OH, aralkyl, aryl, nitro, nitrile, trifluoromethyl, carboxylic acid ester, optionally N-substituted carbonamide groups,



acyl, alkylsulphonyl or arylsulphonyl or
[illegible]



or

- R_9 is hydrogen, C_1–C_1-alkyl, C_1–C_5-alkyl substituted with CN, Cl or OH, alkoxy or halogen;
- R_{10} is hydrogen, C_1–C_{12}-alkyl, C_1–C_5-alkyl substituted with CN, Cl or OH, aralkyl, cycloalkyl or aryl;
- R_{11} is C_1–C_{12}-alkyl, C_1–C_5-alkyl substituted with CN, Cl or OH, aryl, carboxylic acid ester, carbonamide or substituted carbonamide;
- R_{15} is hydrogen, C_1–C_{12}-alkyl, C_1–C_5-alkyl substituted with CN, Cl or OH, cycloalkyl or aralkyl;
- R_{16} is hydrogen, C_1–C_{12}-alkyl, C_1–C_5-alkyl substituted with CN, Cl or OH, aralkyl, cycloalkyl or aryl; or
- R_{15} and R_{16}, together with the nitrogen atom, form a heterocyclic ring which can optionally contain further hetero atoms;
- R_{17} is hydrogen, halogen, C_1–C_{12}-alkyl, C_1–C_5-alkyl substituted with CN, Cl or OH, or alkoxy;
- "aryl" is phenyl; naphthyl; 4-methyl-phenyl, 2-methylphenyl, 4-chlorophenyl, 2-chlorophenyl, or 2-methylchlorophenyl;
- "aralkyl" is benzyl, β-phenethyl, or α,α-dimethylbenzyl; or the foregoing substituted in the phenyl nucleus by lower alkyl, halogen, alkoxy, carboalkoxy, nitro, cyano or hydroxyl;
- "aryloxy" is phenoxy or naphthoxy or the foregoing substituted with lower alkyl, halogen, alkoxy, carboalkoxy, nitro, cyano or hydroxyl;
- "substituted carbonamide" is methyl-carbamoyl, N-ethylcarbamoyl, N-n-butyl-carbamoyl, N,N-dimethyl-carbamoyl, N,N-diethyl-carbamoyl, N-methyl-N-ethyl-carbamoyl, N-methyl-N-phenyl-carbamoyl or N-ethyl-N-phenylcarbamoyl;
- "carboxylic acid ester" is selected from the group consisting of carbomethoxy, carboethoxy, carbopropoxy, carbobutoxy, carbobenzoxy, carbo-α-phenylethoxy, carbo-(β-phenylethoxy) and carbo-(γ-phenyl-n-propoxy) radicals and their derivatives substituted in the phenyl nucleus with lower alkyl, halogen, alkoxy, carboalkoxy, nitro, cyano or hydroxyl;

with the proviso that at least one of the substituents R_9, R_{11}, R_{14} or R_{17} is C_5–C_{12}-alkyl, C_5–C_{12}-alkoxy, or C_5–C_6-cycloalkyl or R_{10} is C_5–C_{12}-alkyl or C_5–C_6-cycloalkyl.

3,980,431
MOBILE LOADING MEANS FOR STERILIZERS

Edgar L. Anderson, Penfield, N.Y., assigner to Sybron Corporation, Rochester, N.Y.

Continuation of Ser. No. 64,146, Aug. 3, 1970, abandoned, which is a continuation of Ser. No. 654,147, July 18, 1976, abandoned. This application Sept. 24, 1971, Ser. No. 183,699

Int. Cl.² A61L *3/02*; B65G *65/00*

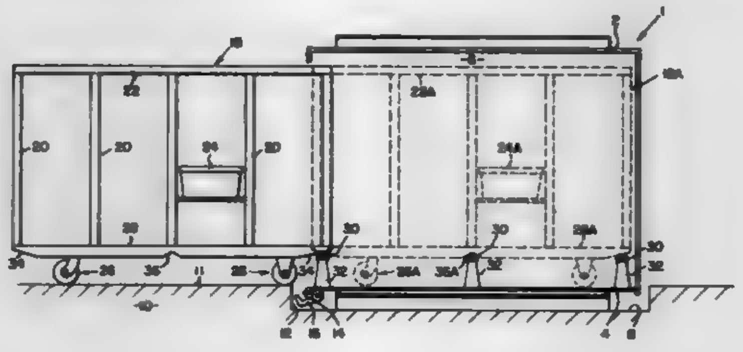
U.S. Cl. 21—91 4 Claims

1. In combination:

a. a sterilizing vessel enclosing a sterilizing chamber and having a vessel floor;

b. a mobile unit having a plurality of wheel means for rollably supporting said unit on a floor, said mobile unit having a size such that it can be fully received with said wheel means into said chamber, said wheel means being deformable when subjected in said chamber simultaneously to the weight of a loaded mobile unit and to heat;

c. first support means fixedly mounted in said vessel for supporting said mobile unit in said chamber in a completely suspended position with said wheel means off of said vessel floor, whereby said wheel means will not become deformed;



d. the tops of said first support means being spaced above said vessel floor a sufficient distance to hold said wheel means of said mobile unit up off of said vessel floor when said mobile unit is received within said chamber;

e. means on said mobile unit for supporting articles to be sterilized in said chamber; and

f. second support means mounted on said mobile unit for contacting and being received on said first support means when said mobile unit is positioned within said chamber.

3,980,432
PARTIAL THROMBOPLASTIN, ITS USE AS DIAGNOSTIC AGENT AND PROCESS FOR PREPARING IT

Heiner Trobisch, Dusseldorf, and Horst Schwinn, Marbach, Marburg an der Lahn, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Germany

Continuation-in-part of Ser. No. 456,892, April 1, 1974, abandoned. This application July 28, 1975, Ser. No. 599,365

Claims priority, application Germany, Apr. 2, 1973, 2316430

Int. Cl.² A61K *35/50*; G01N *33/16*

U.S. Cl. 23—230 B 6 Claims

1. A process for preparing a partial thromboplastin which comprises extracting bloodless dry comminuted placentas with an organic solvent selected from the group consisting of halogenated hydrocarbons and cyclic ethers in an amount from 20 to 100 times the weight of the placentas and at a temperature between room temperature and 80°C, separating the extract from the undissolved placental residue, evaporating the solvent from the extract, and dispersing the resulting residue in water to yield a concentration of 0.025 to 0.2 percent.

3,980,433
METHOD FOR DETERMINING CARBOXYLIC ACID AND SYSTEM FOR CARRYING OUT THE METHOD

Zenzo Tamura, 17-11, Sanno 2-Chome, Ota, Tokyo; Takenori Tanimura, 8-11, Matsunoki-cho 1-chome, Suginami, Tokyo, and Yasuhiko Kasai, 24-303, Keyakidaidanchi, 13-2, Wakaba-cho 1-chome, Tachikawa, Tokyo, all of Japan

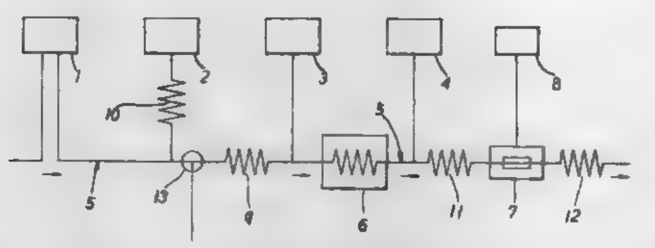
Filed Oct. 15, 1974, Ser. No. 514,942

Claims priority, application Japan, Oct. 17, 1973, 48-115712; Mar. 8, 1974, 49-26209; Mar. 12, 1974, 49-27756

Int. Cl.² G01N *33/16*, *21/24*, *33/02*

U.S. Cl. 23—230 M 10 Claims

1. In a method for determining the presence or amount of carboxylic acid in a sample by mixing the sample with a hydroxylamine whereby any carboxylic acid in the sample will react with the hydroxylamine to form hydroxamic acid, and thereafter determining the presence of hydroxamic acid in the mixture, the improvement which comprises mixing the sample with hydroxylamine and a carbodiimide.



3,980,434
METHOD FOR DETERMINING FURAZOLIDONE IN ANIMAL TISSUE

James L. Mertz, Norwich; Joanne Olivard, Honey Grove, and James P. Heotis, Norwich, all of N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed July 30, 1975, Ser. No. 600,385

Int. Cl.² G01N *33/16*, *21/00*

U.S. Cl. 23—230 B 1 Claim

1. A method for the determination of furazolidone in edible animal tissue comprising spotting a TLC plate with a solution containing furazolidone extracted from said tissue, developing the TLC plate, contacting the developed TLC plate with pyridine, exposing the contacted TLC plate to ultraviolet light, and relating the resulting fluorescence to the furazolidone determination.

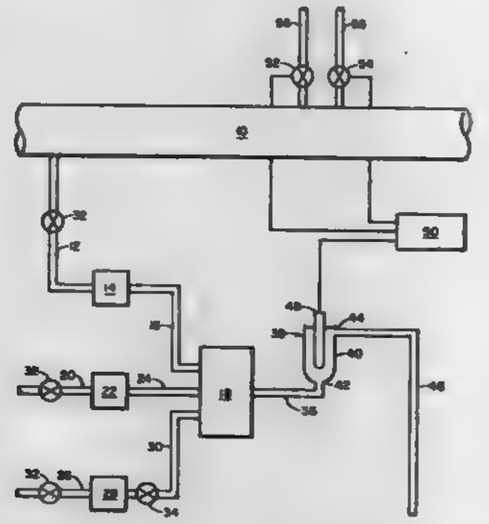
3,980,435
METHOD FOR CONTROLLNG BORIC ACID CONCENTRATION IN AN AQUEOUS STREAM

Jerry W. Wimberley, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Sept. 2, 1975, Ser. No. 609,451

Int. Cl.² G01N *31/00*

U.S. Cl. 23—230 R 4 Claims



1. A method for substantially continuously maintaining a desired boric acid concentration in an aqueous stream, said method consisting essentially of:

a. mixing a selected quantity of said aqueous stream with an aqueous solution containing an alkali metal hydroxide in an amount substantially stoichiometrically equal to the amount of boric acid which is present in said selected quantity of said aqueous stream at said desired boric acid concentration to form a solution mixture;

b. determining the pH of said mixture; and

c. adjusting the boric acid concentration, in said aqueous stream in response to said determination, to said desired boric acid concentration.

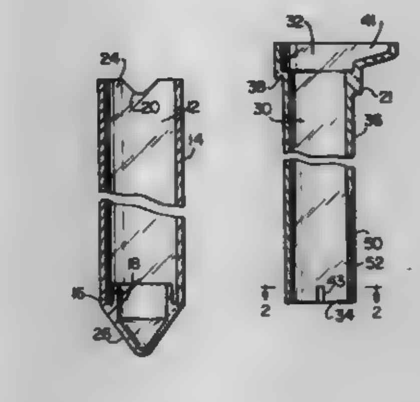
3,980,436
ANALYTIC TEST DEVICE

Walter Greenfield, Ardsley, and Raymond Berg, Scarsdale, both of N.Y., assignors to Sci-Med Laboratories, Inc., Hartsdale, N.Y.

Filed Dec. 19, 1974, Ser. No. 534,476

Int. Cl.² G01N *31/22*, *1/10*; A61B *1/10*

U.S. Cl. 23—253 R 6 Claims



1. An analytic test device and receptacle for a liquid test sample which comprises:

a closely adjacent concentric tube and sleeve relatively movable one to the other, the concentric fit of tube and sleeve providing an annular region therebetween, the sleeve constituting the inner member and being adapted to contain a liquid sample therein;

a recess-in the tube or sleeve wall surface bounding said annular region, said recess containing a test reagent therein;

sealing means provided on the tube for retaining the bottom rim of said sleeve in a fluid-tight seal against sample liquid migration under said rim into said annular region, the seal of said sealing means being opened by relative movement of tube and sleeve whereby sample liquid helped by capillary action migrates into said annular region and into contact with test reagent.

3,980,437
TEST STRIPS AND METHODS AND APPARATUS FOR USING THE SAME

Shinichi Kishimoto, Uji, and Hiroshi Yamamoto, Kyoto, both of Japan, assignors to Kabushiki Kaisha Kyoto Daiichi Kagaku, Japan

Filed Dec. 18, 1975, Ser. No. 641,829

Claims priority, application Japan, Dec. 21, 1974, 49-155888[U]; Jan. 17, 1975, 50-7005

Int. Cl.² G01N *21/30*, *21/48*, *31/22*, *33/16*

U.S. Cl. 23—253 TP 18 Claims

1. A test strip of the type which, after being dipped in a liquid such as urine, will assume a color indicative of a property of the liquid, comprising a transparent backing through which light can freely pass, a color-reaction paper for assuming a given degree of a given color when detecting the intensity of a given property of a liquid in which the paper is immersed, said color-reaction paper being situated on one side of but being spaced from said backing, and fastening means situated between the paper and backing and fastening the paper to the backing, said fastening means having at least the same area as said paper and engaging the latter throughout its entire area which is directed toward the backing, and said fastening means being substantially opaque and non-reflecting with respect to light, so that light will pass freely through said backing at portions thereof not engaged by said fastening

means while light will be reflected from said color-reaction paper while remaining substantially uninfluenced by said fastening means and backing.

3,980,438

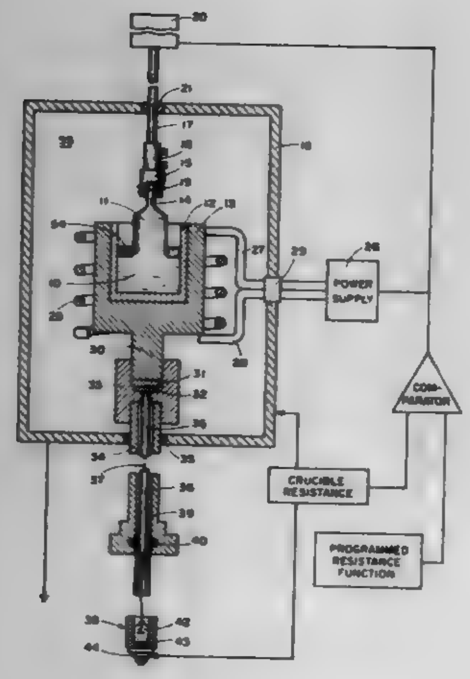
APPARATUS FOR FORMING SEMICONDUCTOR CRYSTALS OF ESSENTIALLY UNIFORM DIAMETER

Roger A. Castonguay, Salem; Martin L. Cohen, Belmont; Wilson P. Menashi, Lexington; Joseph F. Wenckus, Needham, and Peter C. VonThuna, Lexington, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Aug. 28, 1975, Ser. No. 608,522

Int. Cl.² B01J *17/00, 17/18*

U.S. Cl. 23—273 SP **18 Claims**



1. In an apparatus for forming a single semiconductor crystal by pulling said crystal attached to a seed crystal from a melt volume and comprising a crucible formed of a dielectric material containing said melt volume, support means for said crucible, heating means, load-bearing rod means for holding said seed crystal and for imparting translational motion to said crystal attached to said seed crystal, and variable-speed motor means to drive said load-bearing rod means, the improvement comprising means to monitor and control the diameter of said crystal as it is formed, said means comprising crucible assembly circuit means to provide an electrical current through said seed crystal, crystal, melt volume and crucible thereby to generate a measured signal, said crucible serving as a variable resistance, the value of which varies with the level of said melt volume in it; means to provide a reference signal representative of a predetermined crystal diameter and formation rate; comparator means to determine the difference between said measured signal and said reference signal and to generate an operational signal which is a function of said difference; and means to transmit said operational signal to either said heating means or to said variable-speed motor means whereby the temperature of said molten mass or the rate of said translational motion is varied to maintain the diameter of said crystal essentially uniform throughout its formation.

3,980,439

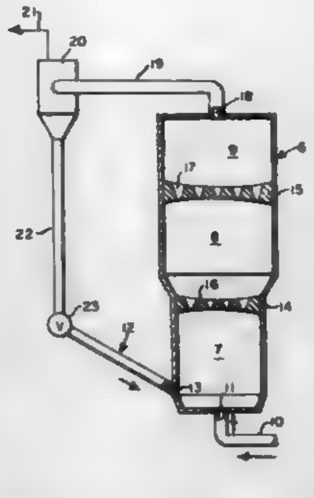
FLUIDIZING APPARATUS WITH FORAMINOUS MEMBER

Albert Louis Mayer, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 14, 1975, Ser. No. 577,282

Int. Cl.² B01J *8/18;* **F26B** *17/10;* **F27B** *15/00*

U.S. Cl. 23—284 **2 Claims**



1. In a material fluidizing apparatus comprising at least two communicating reaction chambers, each reaction chamber being separated from the next adjacent one by a foraminous member, and means for maintaining a recirculating cocurrent flow of gases and solid particles through said reaction chambers,

the improvement wherein said foraminous member is a concavo-concave structure having a plurality of frusto-conical openings extending therethrough to permit continuous passage of said flow of gases and solid particles from a first reaction chamber to a second adjacent reaction chamber and to produce a pressure drop across said foraminous member from 0.5 to 5.0 psi,

said frusto-conical openings being disposed in said concavo-concave structure so as to provide a pattern of spaced substantially circular cavities on the inlet side and the outlet side of said concavo-concave structure,

the diameter of said cavities on the inlet side of said concavo-concave structure being from 25 to 100 times greater than the average particle size of said solid particles,

the diameter of said cavities on the outlet side of said concavo-concave structure being from 2 to 10 times greater than the diameter of said cavities on the inlet side of said concavo-concave structure,

the average thickness of said concavo-concave structure being from 1 to 20 times the diameter of a cavity on the outlet side of said concavo-concave structure, and

the percentage of the area of the outlet side of said concavo-concave structure defining said frusto-conical openings being at least 70% of the total area of said outlet side of said concavo-concave structure.

3,980,440

CATALYST TUBE ASSEMBLY FOR STEAM-HYDROCARBON REFORMER

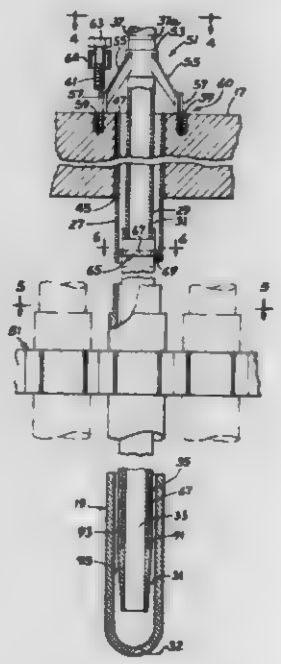
David C. Morse, La Jolla, and William W. Howard, San Diego, both of Calif., assignors to General Atomic Company, San Diego, Calif.

Filed Aug. 6, 1975, Ser. No. 602,198

Int. Cl.² B01J *8/02, 35/00*

U.S. Cl. 23—288 M **12 Claims**

1. A steam-hydrocarbon reformer comprising: a housing; a transverse tubesheet supported in said housing and forming a heating chamber threin on one side of said tubesheet; a plurality of parallel catalyst tube assemblies extending within and longitudinally of said housing with one end of each of said tube assemblies mounted on said tubesheet and extending therefrom into and substantially the entire length of the heating chamber, each assembly including an outer tube having an open end attached to said tubesheet and a closed opposite end and an associated central coaxial inner tube removably mounted within said outer tube by centering support means having securing points on said tubesheet independently of said outer tube, said coaxial inner tube having an open inner end spaced apart from the closed end of said outer tube; independently supported catalyst material carried on each said inner tube and extending circumferentially around a major portion of the outer surface thereof and spaced inwardly from the associated outer tube and defining therebetween an annular passageway for the conduction of fluids; means connective with the ends of said annular passageways adjacent the tubesheet for introducing reactant fluids therein; means connective with ends of said coaxial inner tubes adjacent the tubesheet for withdrawing reaction products from said catalyst tube assemblies; means for circulating heating fluid around the external surface of said outer tubes at a temperature such that reactant fluids within said annular passageways are heated to the steam reforming reaction temperature and a support means extending transversely of said housing and located in the heating chamber intermediate the length of said assemblies, said outer tubes being in sliding engagement with said support means for maintaining the parallel relation of said assemblies without impairing the longitudinal expansion of said tubes and without substantially affecting the circulation of the heating fluid.



3,980,441

APPARATUS FOR THE PRODUCTION OF DIMETHYL TEREPHTHALATE BY THE ESTERIFICATION OF TEREPHTHALIC ACID

Horst-Dieter Wulf; Ferdinand List; Kurt Wember, and Norbert Wilke, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Division of Ser. No. 361,597, May 18, 1973, Pat. No. 3,940,431. This application Sept. 23, 1975, Ser. No. 616,029

Claims priority, application Germany, May 20, 1972, 2224869

Int. Cl.² B01J *9/16;* **C07C** *69/76*

U.S. Cl. 23—288 E **2 Claims**

1. In an apparatus for the continuous esterification of a normally solid organic acid in the solid state with normally liquid alcohol in the gaseous or vapor state, in the presence of a granular solid esterification catalyst, which consists essentially of a rotatable tunnel oven pre-reactor and a follow-up reactor having a solid bed of catalyst therein;

means for heating said tunnel oven;

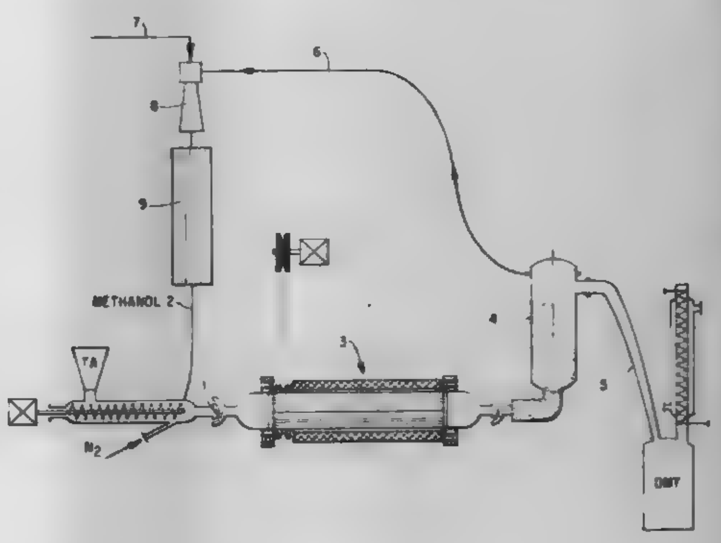
means for rotating said tunnel oven;

means for feeding said acid in solid state and a solid catalyst into one end of said oven;

means for feeding said alcohol in vapor state into said one end of said oven;

means for feeding said alcohol in vapor state into said one end of said oven;

said alcohol-feeding means including means for forwarding a current of alcohol from a source thereof to said oven, said forwarding means comprising a conduit, a pump and a superheater for vaporizing the alcohol by indirect heating of a current of the alcohol;



means for discharging gaseous reaction products and catalyst from the other end of said oven;

said follow-up reactor being connected to said means for discharging;

and means for removing gaseous dimethyl terephthalate product stream from said follow-up reactor;

the improvement comprising means connecting said follow-up reactor to said tunnel oven for recirculating a portion of said dimethyl terephthalate product stream into said one end of said oven.

3,980,442

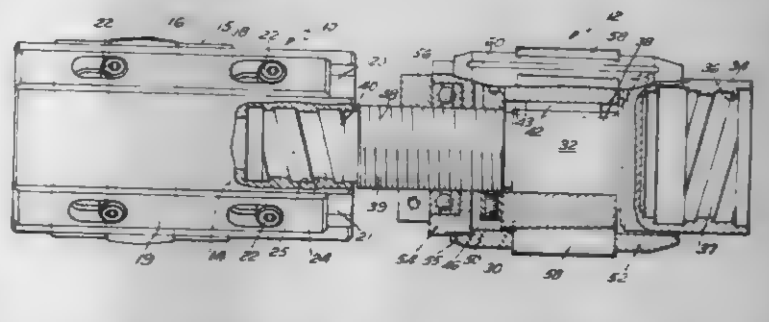
PROCESS FOR USING A COMBINATION TOOL

Harald Arno Wilhelm Riekeles, Dietzenbach, Germany, assignor to Amtel, Inc., Providence, R.I.

Filed Apr. 4, 1975, Ser. No. 564,865

Int. Cl.² B24B *39/00*

U.S. Cl. 29—90 R **2 Claims**



1. A method of skiving and roller burnishing a bore comprising furnishing a roller burnishing tool with a protruding mandrel shaft and a main mandrel section tapered with the largest diameter being adjacent the protruding shaft together with conical rollers disposed in operative relationship thereon, fastening a skiving tool assembly having a cutter on to the protruding mandrel shaft, conducting a current of fluid into the bore while advancing the tool into the bore, feeding the tool out of the bore and withdrawing the tool thru the bore to roller burnish the bore on the withdrawal stroke, the current of fluid urging the rollers toward the larger diameter of the mandrel.

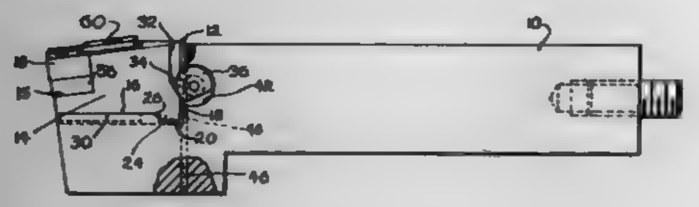
3,980,443
TOOL HOLDER

James W. McCreery, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Sept. 16, 1974, Ser. No. 506,556

Int. Cl.^{2} B26D *1/00*

U.S. Cl. 29—96 3 Claims



1. In a tool holder; a support member having a notch in one end with a planar rearward wall and a planar bottom wall at right angles to one another, a block receivable in said notch and having a planar rear side adajcent said rearward wall and a planar lower side adjacent said bottom wall, said rear side and lower side of said block being at right angles to one another, insert receiving pocket means in the upper side of said block at the forward end of the block, cooperating elements of rib and groove means on said bottom wall of said notch and said lower side of said block operable to interlock said block and support member against relative lateral movement and against relative fore and aft movement in at least one direction, and interengageable elements of relatively rotatable cam locking means on said block and support member, said cam locking means including a pair of laterally spaced rearwardly facing surface regions on opposite side regions of the rear side of the block which incline forwardly in the upward direction and a cam member rotatable in the support member and having eccentric regions at the ends engageable with said inclined surface regions, rotation of said cam member comprising the sole means for clamping said block in said notch in said support member and for releasing said block from said notch for removal thereof from said support member, said support member including a lateral recess therein formed inwardly into said rearward wall, said recess including enlarged end regions, said cam member having a central region rotatably seated in the recess between said enlarged ends and the said eccentric regions of said cam member being disposed in said enlarged end regions of said recess and in coplanar relation with said rearwardly facing surface regions on said block, said eccentric regions having flats thereon which substantially register with the plane of said rearward wall of said notch in the support member in one rotated position of said cam member.

3,980,444
SINTERED LIQUID PHASE STAINLESS STEEL

Orville W. Reen, Lower Burrell, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Jan. 22, 1975, Ser. No. 542,986

Int. Cl.^{2} B22F *1/00*, *3/00*

U.S. Cl. 29—182 5 Claims

1. A sintered stainless steel having excellent resistance to corrosive attack by the chloride ion; said steel having an overall composition consisting essentially of, by weight, up to 0.05% carbon, 22 to 26% chromium, 10 to 24% nickel, 2.7 to 5% molybdenum, 0.1 to 1% boron, up to 2.0% manganese, up to 2.0% silicon, balance iron and residuals, said steel having a morphology comprised of regions of sintered austenitic stainless steel and regions of solidified liquid phase; said steel having an overall density of at least 95% of full density; said morphology being comprised of from 8 to 25% of said liquid phase.

3,980,445
METHOD OF MAKING FILTERING METAL MATERIAL

Vasily Alexeevich Aleshin, ulitsa Zorge, 52/1, kv. 25, Ufa; Galina Petrovna Bazarova, ulitsa, 54, korpus 1, kv. 43; Serafima Pavlovna Gromova, Izmailovsky bulvar, 58/13, kv. 27, both of Moscow; Jury Iosifovich Dmitriev, ulitsa Dostoevskogo, 40, korpus 13, kv. 11.; Jury Arkadievich Kuteminsky, ulitsa Parkovaya, 20, kv. 48, both of Ufa; Iza Ivanovna Komoleva, 1 Dubrovskaya ulitsa, 13, kv. 39, Moscow; Georgy Olegovich Leschinsky, ulitsa Lyadova, 49/51, kv. 10; Vsevolod Konstantinovich Sorokin, ulitsa Kominterna, 174, kv. 19, both of Gorky; Galina Ivanovna Sazonova, ulitsa Volodarskogo, 45, kv. 11, Ufa; Alexandr Fedorovich Silaev, ulitsa Kransy Kazanets, 3, korpus 2, kv. 5, Moscow; Grigory Fedorovich Tikhonov, ulitsa Yablonevaya, 13-a, kv. 32, and Valery Mikhailovich Schekin, ulitsa Zvezdina, 19-d, kv. 7, both of Gorky, all of U.S.S.R.

Filed July 3, 1974, Ser. No. 485,756

Int. Cl.^{2} B22F *3/00*, *5/00;* B01D *39/20;* C22C *1/04*

U.S. Cl. 29—182 2 Claims

1. A method of making filtering metal material whereby powdered austenitic stainless steel ground into particles 10 to 30 microns is cold rolled to a strip form by being passed between mill rolls spaced 0.08 to 0.12 mm apart and rotating at a speed of 2 to 4 revolutions per minute, the strip material so produced undergoing a two-stage sintering process wherein the first stage of sintering is carried out in a reducing atmosphere at a temperature of 820° to 880°C for 2 to 3 hours and is followed by cooling down to 100°C in a reducing atmosphere and the second stage of sintering is carried out in a reducing atmosphere at a temperature of 1100° to 1150°C for 2 to 4 hours and is followed by cooling in a reducing atmosphere.

2. A filtering metal material consisting essentially of powdered austenitic stainless steel ground into particles 10 to 30 microns with interstitial spacing sufficient to retain particles of the size of 2–3 microns at elevated temperatures of up to 600°C, said material being cold rolled to a strip form by being passed between mill rolls and having a filtering capacity of 0.004–0.006 l/cm^2/min., a tensile strength of 11–13.5 kg/cm^2, a strip thickness of 0.15–0.18 mm., and a porosity ranging from 25–30 percent.

3,980,446
WALL STRUCTURE FOR VACUUM ENCLOSURE

Paolo della Porta, and Tiziano A. Giorgi, both of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy

Filed Jan. 7, 1975, Ser. No. 539,102

Claims priority, application Italy, Jan. 7, 1974, 19142/74

Int. Cl.^{2} B31D *3/04*

U.S. Cl. 29—191.4 4 Claims

1. A wall structure for a vacuum enclosure comprising:

a. a first surface defining the commencement of a thickness of a metal or ceramic sheet, and

b. a second surface defining the end of said thickness of said sheet, said sheet forming a vacuum barrier, and said second surface also defining the commencement of a thickness of a three dimensional metallic network defining a multiplicity of interconnecting free cells wherein there are more than 10 free cells per inch and the ratio of apparent density of the network to the density of the bulk material constituting the network is between 1 to 2 and 1 to 100, in which the metal of said network comprises a material chosen from the group Ni, Cr, Fe, Ti, Co, Mo and alloys of these metals between themselves and with other metals, and

c. a third surface defining the end of said thickness of said three dimensional network, and

d. a getter material contained within at least some of said free cells, the getter material comprising a powdered non-evaporable getter metal comprising at least one metal chosen from the group Zr, Ta, Hf, Nb, Ti, Th and U.

3,980,447
PROCESS FOR THE MANUFACTURE OF BROWN COAL BRIQUETTES

Friedrich Franke; Werner Wenzel; Mohamed Merajkib, and Hans Berkenkamp, all of Aachen, Germany, assignors to Rheinische Braunkohlenwerke AG, Cologne, Germany

Continuation of Ser. No. 354,664, April 26, 1973, abandoned.

This application Nov. 8, 1974, Ser. No. 522,098

Claims priority, application Germany, Apr. 26, 1972, 2220479

Int. Cl.^{2} C10L *5/00;* C10B *45/02*

U.S. Cl. 44—10 D 20 Claims

1. A process for manufacturing briquettes from brown coal comprising, in combination:

a. drying brown coal;

b. heating said brown coal substantially free of added material up to a temperature in a range from about 300° to about 320°C at a selected first rate;

c. subsequently heating said brown coal substantially free of added material up to a temperature in a range of from about 350° to about 400°C at a selected second rate which is less than said first rate to form bituminous binding material on grains of said brown coal so as to derive the binding material required for the briquettes; and

d. thereafter pressing said brown coal substantially free of added material into briquettes without separating the binding material produced in step (c);

whereby firm briquettes are produced in which the binding material substantially consists of material derived from the coal itself.

8. A process as defined in claim 1, wherein heating of said brown coal continues for a sufficient period so that bituminous binding material separates principally in thread form.

13. A process as defined in claim 1, including passing the briquettes through a chute and heating said briquettes during passage to a temperature in a range from about 950° to about 1100°C for liberating gas therefrom.

3,980,448
ORGANIC COMPOUNDS FOR USE AS FUEL ADDITIVES

Bernard Haemmerle; Bernard Sillion, and Gabriel De Gaudemaris, all of Grenoble, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants et Entreprise de Recherches et d'Activities Petrolieres Elf, Rueil-Malmaison, France

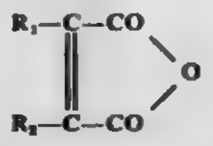
Division of Ser. No. 127,047, March 22, 1971, abandoned.

This application May 2, 1973, Ser. No. 356,508

Int. Cl.^{2} C10L *1/26*

U.S. Cl. 44—63 21 Claims

1. A fuel composition comprising a major amount of gasoline and, as an additive, an amount sufficient to result in an improvement of carburetor anti-fouling properties of said composition, of at least one imidic reaction product of a maleic anhydride of the formula



with a substantially equimolar quantity of a linear polyamine of the formula

$$H_2N\{(CH_2)_n - NH\}_m R'$$

in which R_1 and R_2 are selected from the group consisting of a hydrogen atom and an alkyl radical of 1–30 carbon atoms, the total number of carbon atoms of R_1 and R_2 being not more than 30, R' is an alkyl or alkenyl radical having 6–30 carbon atoms, n is an integer from 3 to 10 and m is an integer from 1 to 10, said reaction being conducted in an inert solvent and wherein the water resulting from the reaction is removed therefrom.

3,980,449
INHIBITION OF LEAD CORROSION

Michael J. Zetlmeisl; Walter R. May, and Robert R. Annand, all of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed July 25, 1974, Ser. No. 491,770

Int. Cl.^{2} C10L *1/26*

U.S. Cl. 44—68 22 Claims

1. A composition comprising a hydrocarbon fuel oil containing corrosive amounts of lead, a lead-vanadium mixture or a lead-vanadium-sodium mixture and corrosion inhibiting amounts of metallic magnesium, calcium, aluminum, silicon or combinations thereof.

3,980,450
GASOLINE COMPOSITION

John Battersby, Frimley, and Eric Simon Forbes, Lightwater, both of England, assignors to The British Petroleum Company Limited, London, England

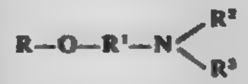
Division of Ser. No. 408,575, Oct. 23, 1973. This application Aug. 5, 1974, Ser. No. 494,710

Claims priority, application United Kingdom, Oct. 27, 1973, 49573/73

Int. Cl.^{2} C10L *1/22*

U.S. Cl. 44—72 4 Claims

1. A fuel composition comprising gasoline and up to 1,000 parts per million of a carburettor detergent of the formula:



wherein R is a hydrocarbyl group containing from 20 to 500 carbon atoms and derived from the polymerization of isobutylene, R^1 is a polymethylene group containing 2 to 6 carbon atoms interrupted by an imino group, and R^2 and R^3, which may be the same or different are hydrogen atoms or alkyl groups.

3,980,451
GASIFICATION PROCESS

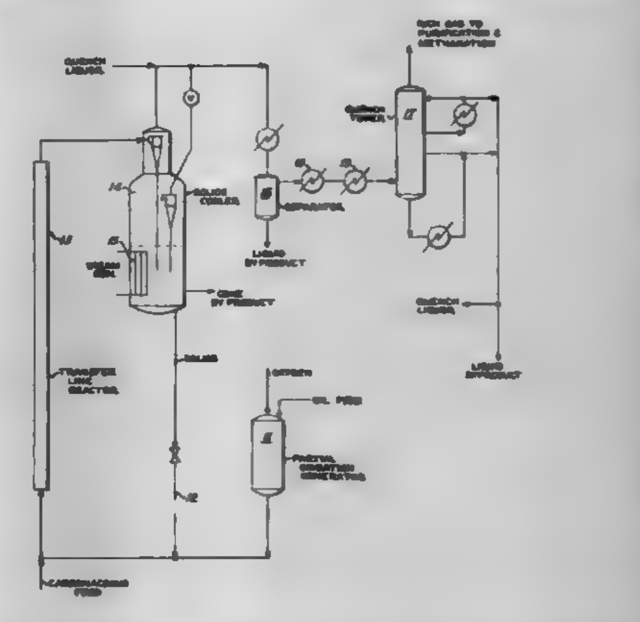
Joseph F. McMahon, Clinton, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Continuation of Ser. No. 383,859, July 30, 1973, abandoned.

This application Apr. 21, 1975, Ser. No. 570,127

Int. Cl.^{2} C10J *3/46;* C10G *13/30*

U.S. Cl. 48—197 R 6 Claims



1. A process for the gasification of carbonaceous materials which process is conducted in the absence of an external heat source and a catalyst, said process comprising the steps of:

a. feeding a liquid hydrocarbon fuel and an oxygen-containing gas into a partial oxidation generator;

b. gasifying said liquid hydrocarbon fuel by partial oxidation with said oxygen-containing gas to produce a gaseous mixture of carbon monoxide and hydrogen in about a 1:1 ratio, said gaseous mixture having a temperature range of about 2000° to 3000°F, the heat evolved during said gasification being sufficient to maintain said temperature range;
c. feeding said gaseous mixture along a path towards the lower end of a substantially vertically oriented high-velocity transfer line reactor,
d. feeding carbonaceous solid material having a particle size of about 100 – 5000 microns into said gaseous mixture along said path to form a gas-solid mixture, the temperature of said solid material being sufficiently lower than said temperature of said gaseous mixture such that the resultant gas-solid mixture has a temperature of about 1500° to 2000°F.
e. feeding a hydrocarbon oil feed stock into said gas-solid mixture along said path to form a hydrocarbon oil-gas-solid mixture wherein the weight ratio of solid material to hydrocarbon oil feed stock is at least 5:1 and the weight ratio of gaseous mixture to hydrocarbon oil feed stock is such that the resultant hydrogen to oil ratio corresponds to 25–100% of that required to convert all the hydrocarbon oil feed stock to methane;
f. passing the hydrocarbon oil-gas-solid mixture upwardly through said substantially vertically oriented high-velocity transfer line reactor at a temperature of about 1500° to 2000°F and a velocity of at least 10 feet per second such that the contact time of the hydrocarbon oil and the gas-solid mixture is about 0.05 to 5 seconds so that hydrogasification of the feed is obtained;
g. feeding the resultant gas-solid mixture from said transfer line reactor;
h. separating the solid material from said gas-solid mixture to provide a product having a heating valve in excess of about 400 B.T.U. per cubic foot and a specific gravity of about 0.5 to 0.8; and
i. cooling the solid material separated from the gas-solid mixture and recycling the cooled solid material, mixing the cooled solid material with further gaseous mixture produced by partial oxidation of the hydrocarbon fuel, said solid material being cooled to a temperature such that it will give the gas-solid mixture said temperature between about 1500° and 2000°F.

3,980,452
PROCESS FOR SUPPLYING HEAT TO CHEMICAL REACTIONS

Hagen Krumm, Frankfurt am Main; Heinz Jockel, Klein-Gerau; Klaus von Walter, Arnoldshain; Kurt Restin, and Robert Kühn, both of Berlin, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

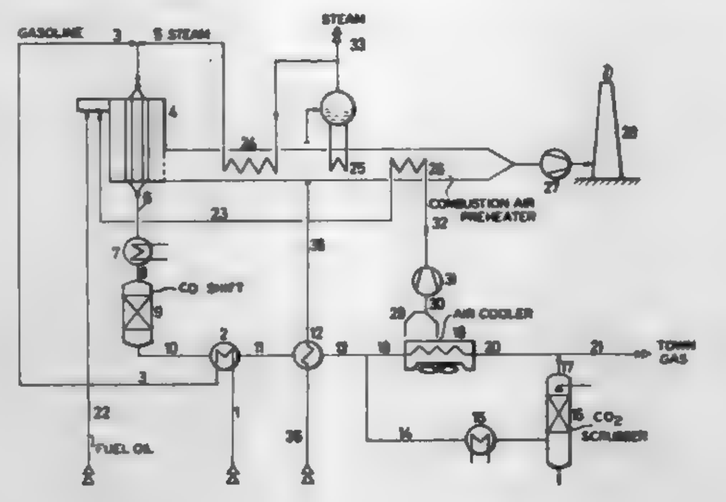
Continuation of Ser. No. 504,649, Sept. 9, 1974, abandoned. This application Nov. 24, 1975, Ser. No. 634,994

Claims priority, application Germany, Sept. 14, 1973, 2346275

Int. Cl.² C01B *2/14*

U.S. Cl. 48—215 **2 Claims**

1. Process for supplying heat to the steam reforming of hydrocarbons for producing gas, which comprises combusting fuels with preheated combustion air, extracting sensible heat from the flue gases produced by said combustion in an air preheater for preheating said combustion air, said flue gases containing oxides of sulfur, cooling the hot reaction products of said reforming reaction in several cooling stages, air cooling being the last cooling stage of at least part of said reaction products which enter said last cooling stage at a temperature of about 80° – 170°C, the resulting cooling air at temperatures of about 50° – 120°C being at least in part withdrawn and passed through said air preheater to produce said preheated combustion air without cooling said flue gases below their dew point in said air preheater.



3,980,453
LAMINATED RESINOID WHEELS, METHOD FOR CONTINUOUSLY PRODUCING SAME AND APPARATUS FOR USE IN THE METHOD

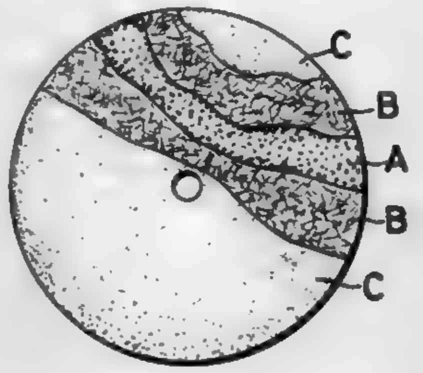
Heijiro Fukuda, No. 123, 3-chome, Umegaoka, Nagaokakyo Kyoto, Japan (617)

Filed Aug. 1, 1974, Ser. No. 494,015

Claims priority, application Japan, Oct. 9, 1973, 48-113718; Oct. 9, 1973, 48-113720; Oct. 9, 1973, 48-117761[U]; Mar. 18, 1974, 49-31284

Int. Cl.² B24D *11/02*

U.S. Cl. 51—297 **9 Claims**



1. A method for producing a laminated resinoid abrasive wheel having a core layer made of a thermosetting synthetic resin abrasive composition containing abrasive grains, and at least one pair of layers arranged on opposite sides of said core layer symmetrically thereof and made of an abrasive thermosetting synthetic resin composition containing abrasive grains different in size from those of said core layer, comprising the steps of:
a. preparing a first granular thermosetting synthetic resin abrasive composition by admixing said resin with coarse abrasive grains of 16-mesh to 46-mesh size;
b. preparing a second granular thermosetting synthetic resin abrasive composition by admixing said resin with fine abrasive grains of 60-mesh to 150-mesh size;
c. introducing either abrasive composition (a) or (b) into a die to form a layer thereof;
d. introducing the other abrasive composition into said die to form a superposed layer thereof;
e. forming additional alternating layers of said abrasive compositions up to a desired number, maintaining a core layer of either composition (a) or (b);
f. molding said layers into a block;
g. heating said block at a temperature of 70° to 90°C and at a pressure of 80 to 140 kg/cm² for 20 to 60 seconds to form a laminate;
h. rolling the heated block into a sheet;
i. cutting a circular piece from said sheet; and
j. baking said piece to form an abrasive wheel.

3,980,454
ADSORPTION METHOD

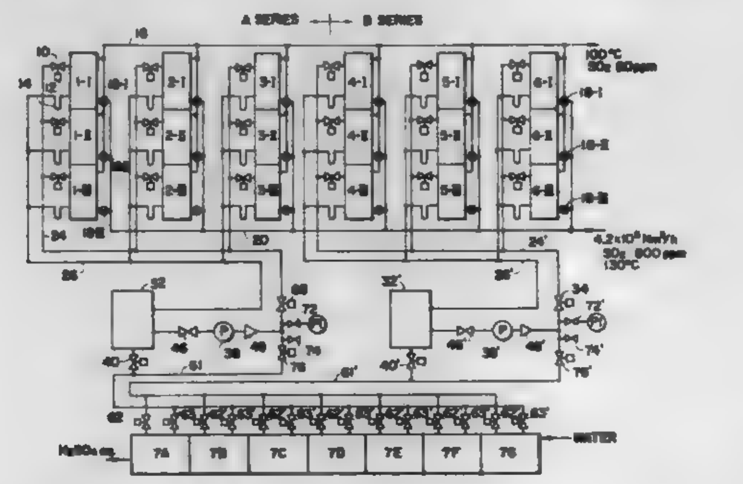
Yukio Hishinuma; Zensuke Tamura, both of Hitachi, and Syunzi Enomoto, Kure, all of Japan, assignors to Hitachi, Ltd. and Babcock-Hitachi K.K., both of Tokyo, Japan

Continuation of Ser. No. 362,230, May 21, 1973, abandoned. This application Jan. 29, 1975, Ser. No. 545,089

Claims priority, application Japan, May 19, 1972, 47-49057

Int. Cl.² B01D *53/04*

U.S. Cl. 55—73 **3 Claims**



1. In a process for removing sulfur dioxide contaminates from a process gas by passing the process gas through separate beds of material that will remove sulfur dioxide contaminates during a process period for each bed, and regenerating said beds by passing separate quantities of aqueous regenerating liquid of successively less sulfuric acid concentration from respective separate storage tanks through each bed to remove sulfur dioxide contaminates from said material of the bed and carry the contaminates away with the regenerating liquid to regenerate the bed during a regeneration period for each bed separate from its process period, wherein the improvement comprises: overlapping said regenerating for one bed with at least one other bed out of phase, by passing a first quantity of regenerating liquid of a predetermined sulfuric acid concentration from one storage tank through the one bed and returning it to a second higher concentration strorage tank, and thereafter passing regenerating liquid from said second higher concentration tank through the other bed and returning it to a third higher concentration storage tank during the regeneration period of said one bed.

3,980,455
PARTICLE CHARGING DEVICE AND AN ELECTRIC DUST COLLECTING APPARATUS MAKING USE OF SAID DEVICE

Senichi Masuda, 40-10-605, 1 chome, Nishigahara, Kita, Tokyo, Japan

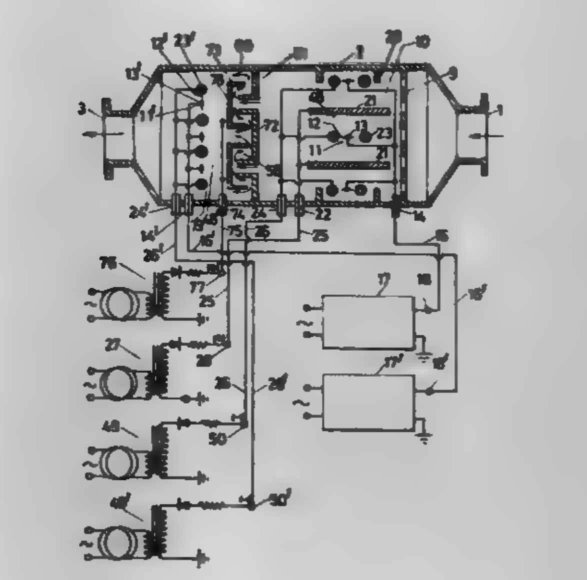
Filed Aug. 12, 1974, Ser. No. 496,537

Claims priority, application Japan, Aug. 14, 1973, 48-91188; Sept. 7, 1973, 48-100904

Int. Cl.² B03C *3/66*

U.S. Cl. 55—105 **6 Claims**

6. An electronic dust precipitator comprising:
a body duct providing a flow path for dust-containing gas;
a particle charging section positioned in said body and including spaced electrodes and first means for applying a high voltage therebetween for charging dust particles with an electrical charge as the dust-containing gas flows through said body duct;
a particle collecting section positioned in said body duct downstream from said charging section and including electrodes and second means for applying a high voltage therebetween for attracting and collecting charged particles on ones of said electrodes; and
a respatter suppression section positioned in said body duct downstream of said collecting section and including electrodes and third means for applying a high voltage to said electrodes for directing and repelling charged dust particles in an upstream direction toward said collecting section.



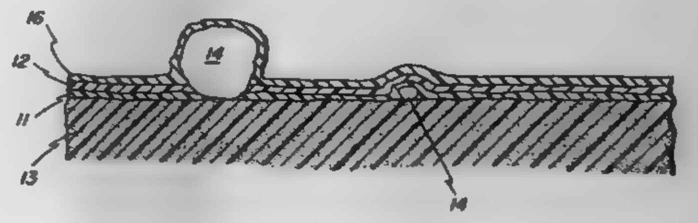
3,980,456
METHOD FOR SEALING BREACHES IN MULTI-LAYER ULTRATHIN MEMBRANE COMPOSITES

Warella R. Browall, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 31, 1975, Ser. No. 563,708

Int. Cl.² B01D *53/22;* B32B *35/00*

U.S. Cl. 55—158 **7 Claims**



1. In the method of preparing ultrathin membrane structures intended for use in the separation of a specific gas from a gas mixture wherein at least one ultrathin membrane layer for accomplishing said gas separation is applied over a smooth microporous substrate to form a basic ultrathin membrane composite and breaches through said at least one layer are patched, the improvement comprising the steps of:
a. casting a non-porous ultrathin film from a sealing material of high flexibility exhibiting at least about 3.5 times the permeability to said specific gas as the material of said at least one layer, being less selective to said specific gas than the material of said at least one layer and being directly bondable to said at least one layer and
b. applying said non-porous film of sealing material over said composite covering the outer surface of said at least one layer

whereby the need for patching is greatly reduced.

3,980,457

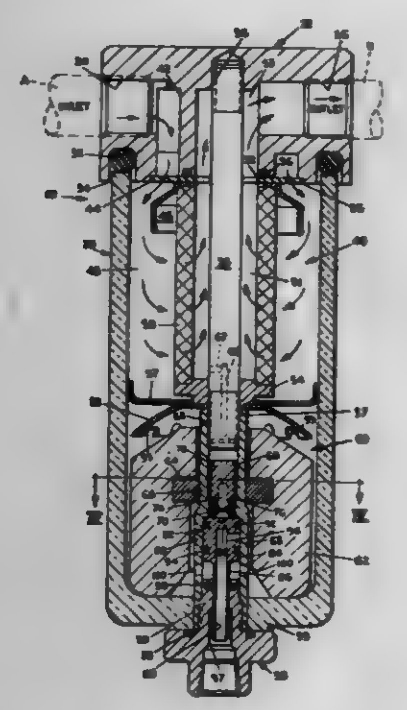
PNEUMATIC FILTER/SEPARATOR WITH MAGNETICALLY CONTROLLED FLUID VALVE

John L. Smith, Cuyahoga Falls, Ohio, assignor to International Basic Economy Corporation, New York, N.Y.

Filed Feb. 18, 1975, Ser. No. 550,215

Int. Cl.² B01D *53/00*; F16K *31/08*

U.S. Cl. 55—219 26 Claims



1. A pneumatic filter/separator having a housing with a gas inlet and a gas outlet; a reservoir means attached to said housing and communicating with said inlet and outlet and having means for filtering and separating foreign material including liquids from said gas as it passes through said reservoir means and out of said outlet; said reservoir including a collection portion for collecting said liquid separated from said gas; and a valve means adapted for preventing the escape of said liquid from said collection portion and releasing said liquid from said collection portion, the improvement comprising:

said valve means including a float, a first valve member, and second, gas-actuated valve means responsive to acutation of said first valve member for releasing the liquid from said reservoir means; cooperating magnet means associated with said float and with said first valve member for causing said first valve member to be actuated to at least two positions in response to movement of said float to admit gas to said second valve means; said filtering and separating means including means for supplying filtered gas to said first valve member and said second valve means; said first valve member when actuated to one position causing filtered gas to actuate said second valve means for a closed to an open position to release said liquid from said collection chamber, and when actuated to another position, closing off filtered gas to said second valve means allowing said second valve means to return to its closed position to prevent escape of said liquid from said collection portion whereby said filter/-separator automatically dumps collected liquid from said reservoir.

3,980,458

APPARATUS FOR PURIFYING A GASEOUS STREAM

Andre Berthoud, Lancy, Switzerland, assignor to Technicair S.A., Vernier, Switzerland

Filed Jan. 2, 1976, Ser. No. 646,052

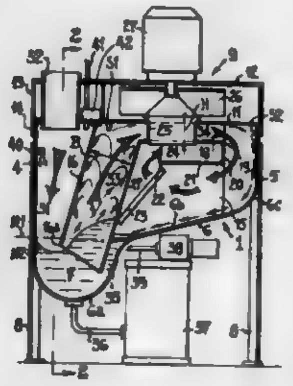
Claims priority, application Switzerland, Jan. 11, 1975, [illegible]/75

Int. Cl.² B01D *47/02*

U.S. Cl. 55—248 10 Claims

1. An apparatus for purifying a gaseous stream charged with particles, which comprises a bubbling device including

1. a sump containing a washing liquid assuming a normal level when the liquid is at rest in the sump,
2. an inlet for the gaseous stream substantially vertically above the sump,
3. a substantially vertical partition wall having an upper end and a lower end extending below the normal level of the liquid in the sump, the partition wall separating
   a. a substantially vertical upstream channel between the inlet and the sump from
   b. a substantially vertical downstream channel arising from the sump to an upper end whereby a gaseous stream passes downwardly through the upstream channel into the liquid in the sump and upwardly from the liquid in the sump through the downstream channel,
4. two substantially horizontal walls defining therebetween a horizontal channel in communication with the downstream channel,
   a. an upper one of the horizontal walls having a downstream end and an upstream end connected to the upper end of the partition wall and constituting an abutment surface substantially perpendicular to the downstream channel, the upwardly passing gaseous stream moving against the abutment surface, and



   b. a lower one of the horizontal walls being shorter than the upper horizontal wall and having an upstream end spaced from the partition wall and a downstream end,
5. a substantially vertical wall having an upstream end connected to the downstream end of the upper horizontal wall and a downstream end, the vertical wall constituting an abutment surface substantially perpendicular to the horizontal channel, the gaseous stream moving through the horizontal channel against the abutment surface, and the vertical wall being spaced from the downstream end of the lower horizontal wall,
6. an inclined bottom wall connecting the downstream end of the vertical wall to the sump for returning collected washing liquid carried by the gaseous stream to the sump,
7. a suction chamber below the horizontal channel and in communication therewith, and
8. suction means having an input in communication with the suction chamber whereby suction applied to the chamber circulates the gaseous stream from the inlet and through the channels while bubbling it through the liquid in the sump.

3,980,459

METHOD FOR MANUFACTURING OPTICAL FIBERS HAVING ECCENTRIC LONGITUDINAL INDEX INHOMOGENEITY

Tingye Li, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 24, 1975, Ser. No. 644,135

Int. Cl.² C03B *25/02, 37/02*

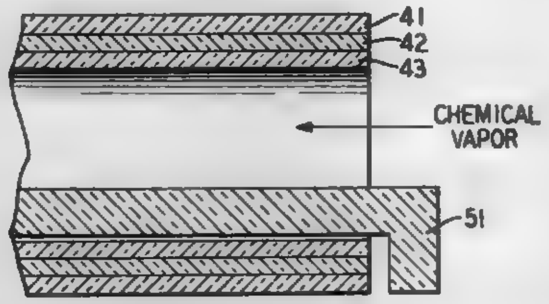
U.S. Cl. 65—18 13 Claims

1. In a method of manufacturing a preform which is intended to be subsequently drawn into an optical fiber, said method being of the type that includes the steps of:

flowing a vapor mixture including at least one compound, glass-forming, precursor together with an oxidizing medium through a hollow, cylindrical substrate; and

heating said substrate and contained vapor mixture with a moving heat source, external to the substrate, such that a suspension of particulate, oxidic reaction product material is produced within the substrate, said particulate material traveling downstream and coming to rest on the inner surface of said substrate and thereat being fused to form a continuous glassy deposit on said inner surface, the improvement which comprises:

terminating the vapor-flowing and substrate-heating steps recited above before said continuous glassy deposit has attained the desired thickness;



inserting at least one longitudinally extending rod into said substrate, said rod having a refractive index differing from the refractive index of said glassy deposit and being eccentrically positioned within said substrate;

restarting said vapor-flowing and substrate-heating steps to resume the production of said glassy deposit, said deposit forming on the glassy deposit layer previously formed and on said rod; and then

terminating said vapor-flowing and substrate-heating steps when said glassy deposit has attained the desired thickness whereby a preform is obtained which, when subsequently collapsed and pulled, yields an optical fiber having an eccentric, longitudinal index inhomogeneity close to the axis of the fiber.

3,980,460

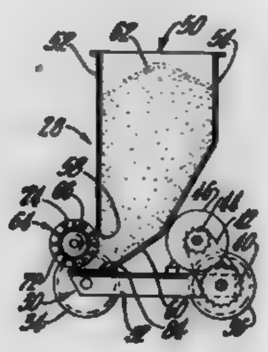
FEEDER FOR GLASS MELTING FURNACES

John L. Nelson, Los Gatos, and Joseph S. Berg, Gilroy, both of Calif., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 2, 1974, Ser. No. 466,109

Int. Cl.² C03B *3/00*

U.S. Cl. 65—29 5 Claims



5. In a method of operating an electrically-heated, glass-melting furnace which comprises forming a pool of molten glass, projecting electrodes into the pool and supplying power thereto to heat the pool, and forming a layer of batch material on top of the pool of molten glass, the improvement which comprises adding batch material to said layer by depositing the batch material thereon in individual, uniform, sequential increments across substantially the entire layer, sensing the thickness of the layer of batch material on top of the molten glass, and changing the rate of deposition of the batch material thereon in response to the sensed thickness of the layer.

3,980,461

METHOD OF MANUFACTURING A PREFORM FOR USE IN DRAWING GLASS FIBERS

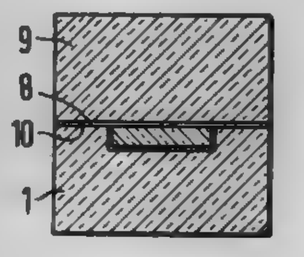
Peter Moeckel, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Feb. 13, 1975, Ser. No. 549,655

Claims priority, application Germany, Feb. 28, 1974, 2409673

Int. Cl.² C03B *23/20*; C03C *19/00*

U.S. Cl. 65—36 8 Claims



1. A method of manufacturing a preform having a core portion and a cladding portion for use in drawing glass fibers therefrom comprising:

a. milling an elongated groove having a rectangular cross section in a flat face of a first cladding glass element;
b. filling said groove with fused core glass;
c. polishing flat the laterally adjoining surfaces of said cladding glass element and said core glass; and
d. optically contacting a flat face of a second cladding glass element to said flat adjoining surface of said first cladding glass element and said core glass.

3,980,462

FERTILIZER FOR LONG TERM SUPPLY OF PLANTS WITH CHELATED MICRONUTRIENTS

Herbert Corte, Opladen; Harold Heller, Cologne; Peter Michael Lange, and Otto Netz, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Continuation of Ser. No. 490,570, July 22, 1974, abandoned. This application Jan. 15, 1976, Ser. No. 649,493

Claims priority, application Germany, July 27, 1973, 2338182

Int. Cl.² C05F *11/02*

U.S. Cl. 71—1 5 Claims

1. A process for the long term and uniform supply of plants with micronutrient ions of elements of atomic numbers 24 to 30, wherein an anion exchanger charged with anionic chelated ions of at least one element of the group consisting of elements having an atomic number of from 24 to 30 is applied to the plants or their environment as fertilizer.

3,980,463

PROCESS FOR PRODUCING GRANULAR COMPOSITION FOR USE IN AGRICULTURE AND HORTICULTURE

Noboru Muramoto, Ikeda; Yukikazu Okamoto, Toyonaka; Kazuo Kamaya, Minoo; Kunihiro Kawaji, Hirakata, and Makoto Shiraki, Ibaragi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 199,336, Nov. 16, 1971, abandoned. This application Oct. 16, 1974, Ser. No. 515,377

Claims priority, application Japan, Nov. 16, 1970, 45-101344

Int. Cl.² A01N *9/36, 9/00, 17/00, 17/08*

U.S. Cl. 71—86 7 Claims

1. A process for producing an agricultural or horticultural granular composition having at least 80% of particles having a size of from 105 microns (150 mesh) to 297 microns (48 mesh) which comprises mixing an effective amount of an

agricultural or horticultural active ingredient and 1 to 10% by weight based on the total weight of the composition of a liquid medium or a liquid medium and a binder soluble therein, with a carrier having the following particle size distribution:

- less than 30% by weight of particles larger than 149 microns (100 mesh), but which wholly pass through a size of 297 microns (48 mesh); and
- 10 to 30% by weight of particles smaller than 46 microns (300 mesh);
- the balance being of particles within the range of 149 microns (100 mesh) to 46 microns (300 mesh), using a stirring-type mixer for 10 to 30 minutes to make granules whereby the granulation is completed and then drying.

3,980,464
CONTROL OF WEEDS WITH 5-PROPIONYLAMINO-3-METHYLISOTHIAZOLE

Joseph Deli, Rockford, Ill., and Henry C. Stevens, Akron, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 5, 1975, Ser. No. 574,791

Int. Cl.^{2} A01N *9/22*

U.S. Cl. 71—90 13 Claims

1. A method of controlling weeds which comprises contacting the weed environment with a herbicidal dosage of 5-propionylamino-3-methylisothiazole.

3,980,465
PROCESS FOR PRODUCING IRON ORE OXIDIZED PELLETS FROM MAGNETITE CONCENTRATE

Reijiro Nishida; Kunio Takeda; Dentaro Kaneko, all of Kobe, and Kunio Uchida, Akashi, all of Japan, assignors to Kobe Steel Ltd., Kobe, Japan

Filed Oct. 2, 1974, Ser. No. 511,371

Claims priority, application Japan, Oct. 2, 1973, 48-110762

Int. Cl.^{2} C22B *1/24*

U.S. Cl. 75—3 6 Claims

1. A process for producing iron-ore oxidized pellets from magnetite concentrate, comprising the steps of:

- adding to said magnetite concentrate at least one calcium compound selected from the group consisting of slaked lime, quicklime, limestone and mixtures thereof, to basicity of 1 to 5;
- granulating the resulting mixture;
- drying the same;
- preheating the granules thus prepared at a temperature of 1000° to 1150°C for 3 to 10 minutes; and
- firing the thus preheated granules.

3,980,466
METHOD OF OPERATING A SHAFT FURNACE FOR THE PRODUCTION OF SINTERED IRON ORE PELLETS

Bengt Roland Dregge, Malmberget, Sweden, assignor to Luossavaara-Kiirunavaara Aktiebolag, Stockholm, Sweden

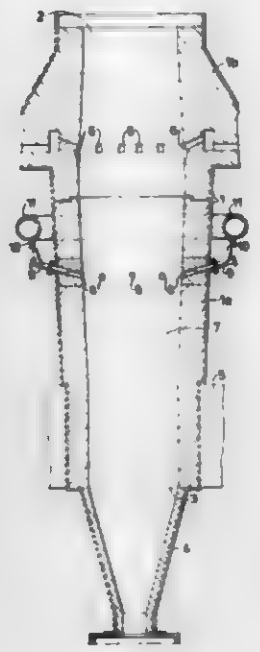
Filed Dec. 24, 1974, Ser. No. 536,306

Claims priority, application Sweden, Dec. 12, 1973, 7317496-3

Int. Cl.^{2} C21B *1/10*

U.S. Cl. 75—5 4 Claims

1. A method of operating a shaft furnace for the production of sintered ore pellets, in which ore pellets to be sintered descend through the shaft from a pellet supply port at the top of the shaft to a pellet discharge port at the bottom of the shaft, comprising heating the pellets to sintering temperature by supplying hot gas introduced into the shaft by means of a plurality of hot gas supply ports, distributed around the circumference of the shaft at a level below said pellet supply port, cooling the pellets heated by means of said hot gas supply by introducing cooling air into the shaft to pass upwardly through the shaft in counter-current to the pellets descending through the shaft after having been heated, and discharging the pellets at the bottom of the shaft after having been cooled by said cooling air, the improvement comprising introducing a portion of said cooling air at the bottom of said shaft at said pellet discharge port and introducing another portion of said cooling air into the shaft adjacent all surfaces defining the shaft through a plurality of air supply ports distributed about the entire circumference of the shaft at a level located between said pellet discharge port and said hot gas supply ports at a substantial distance as compared with the distance between said pellet discharge port and said hot gas supply ports from said pellet discharge port as well as from said hot gas supply ports, in order to provide such a temperature distribution of cooling air flowing through the shaft that the temperature of cooling air flowing along and in the vicinity of the shaft walls is lower around the entire circumference of the shaft than at the central parts of the shaft.



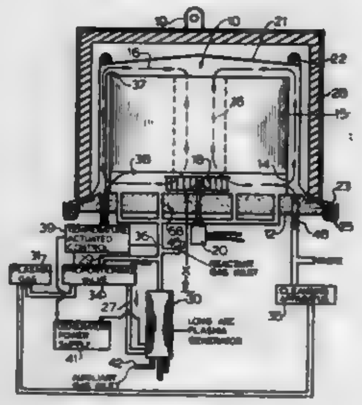
3,980,467
METHOD OF OPERATING A BATCH TYPE ANNEALING FURNACE USING A PLASMA HEAT SOURCE

Salvador L. Camacho, O'Neal Road, Raleigh, N.C. 27602, and James K. Magor, 3555 Hamstead Court, Durham, N.C. 27707

Division of Ser. No. 332,919, Feb. 16, 1973, Pat. No. 3,816,901. This application June 17, 1974, Ser. No. 480,235

Int. Cl.^{2} C22B *4/00*

U.S. Cl. 75—10 R 9 Claims



1. The method of operating a batch-type annealing furnace of the type having a hearth floor, an inner box-like cover having a closed upper end and a sealable open bottom end adapted to rest about the floor and provide a treatment chamber to enclose the charge to be annealed, an outer box-like cover having a closed upper end and an open bottom end and a refractory lining therein and being adapted to rest surrounding said inner cover, comprising the steps:

- a. placing the charge on the hearth floor in a fixed position;
- b. placing appropriate temperature sensors proximate the charge;
- c. placing the inner cover over the charge;
- d. placing the covers so that the outer cover is over the inner cover;
- e. purging the chamber formed by the inner cover with an appropriate purging gas;
- f. heating a plasma gas with a plasma generator mounted proximate and external of said treatment chamber and directing such heated plasma gas through gas entry paths in said floor to said inner cover chamber to provide a temperature controlled annealing atmosphere for said charge; and
- g. sensing with said sensors the temperature within said chamber and using such sensed temperature to control the operation of said plasma generator to control the temperature of said chamber according to some predetermined time-temperature cycle.

3,980,468
METHOD OF PRODUCING A DUCTILE RARE-EARTH CONTAINING SUPERALLOY

Barry H. Rosof, Carmel; H. Joseph Klein, and Dennis S. Acuncius, both of Kokomo, all of Ind., assignors to Cabot Corporation, Kokomo, Ind.

Filed Nov. 1, 1973, Ser. No. 411,721

Int. Cl.^{2} C22B *4/06*; C22C *19/00*

U.S. Cl. 75—10 R 4 Claims

1. The method of producing rare-earth containing superalloys having as their major components nickel, cobalt and chromium in combination characterized by enhanced ductility and substantial freedom from brittleness comprising:

- a. melting the desired super alloy composition;
- b. adding the desired rare-earth alloy to the molten alloy composition;
- c. forming the alloy composition into solid electrodes; and
- d. remelting said solid electrodes by electroslag remelting.

3,980,469
METHOD OF DESULFURIZATION OF A STEEL MELT

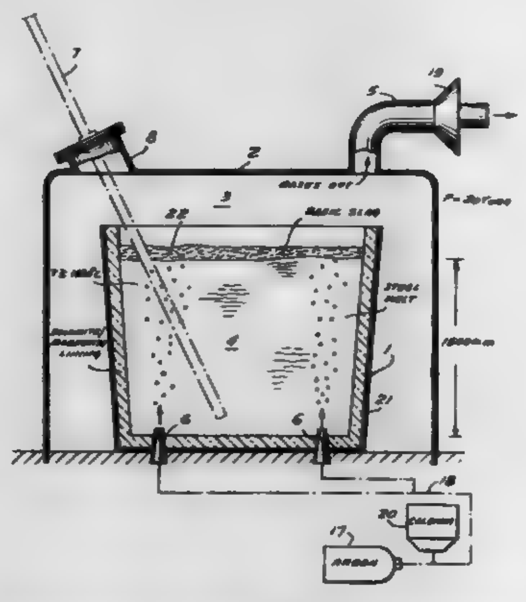
Eckehard Förster; Helmut Richter; Edgar Spetzler; Jochen Wendorff, all of Oberhausen; Wilhelm Klapdar, Essen, and Heinrich-Wilhelm Rommerswinkel, Mulheim (Ruhr), all of Germany, assignors to Thyssen Niederrhein AG Hutten- und Walzwerke, Oberhausen, Germany

Filed Apr. 17, 1974, Ser. No. 461,714

Claims priority, application Germany, Apr. 28, 1973, 2321644

Int. Cl.^{2} C21C *7/10*; C22C *33/00*

U.S. Cl. 75—49 5 Claims



1. A method of desulfurizing a ferrous melt comprising the steps of applying suction to the upper surface of said melt to subject it to subatmospheric pressure of substantially 15 to 25 Torr; simultaneously introducing a particulate additive consisting essentially of calcium and vaporizable at the temperature of said melt into said melt at a depth of substantially 1200 to 1800 mm below said surface thereof permitting vaporization of said additive; and vaporizing the introduced additive at the melt temperature while suction continues to be applied at said upper surface.

3,980,470
METHOD OF SPRAY SMELTING COPPER

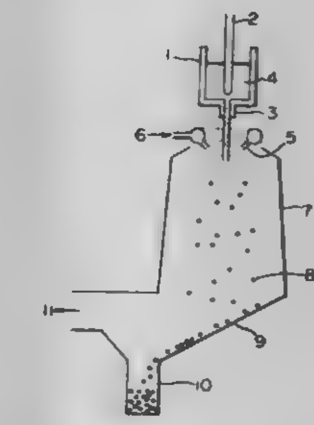
Hiroshi Kametani, Tokyo, and Chikabumi Yamauchi, Yokohama, both of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Mar. 17, 1975, Ser. No. 559,152

Claims priority, application Japan, Mar. 30, 1974, 49-35173

Int. Cl.^{2} C22B *15/00*

U.S. Cl. 75—74 3 Claims



1. An improved method of forming blister copper particles, suitable for use in an electrolytic refining process, from the cuprous sulfide rich matte or white metal obtained in the smelting of copper ore by melting raw copper ore or roasted copper ore with a flux in a furnace and separating the cuprous sulfide rich matte or white metal from the melt, said method comprising

- causing said matte or white metal containing cuprous sulfide to freely flow downwardly in a molten state, and
- blowing oxygen, air or oxygen-enriched air in an amount, measured in terms of oxygen, at least equal to the stoichiometric quantity necessary to completely oxidize the cuprous sulfide contained in the matte or white metal according to the reaction formula

$$Cu_2S + O_2 \rightarrow 2Cu + SO_2$$

- at a flow velocity in the range of from 3 meters per second to 100 meters per second against the downwardly flowing stream of matte or white metal at a temperature in the range of from 900°C. to 1300°C.;
- thereby simultaneously dividing the stream of matte or white metal into fine particles and oxidatively smelting the fine particles of matte or white metal to obtain finely divided molten blister copper particles of relatively narrow size distribution.

3,980,471
PROCESS FOR CLASS III-B METALS ORE REDUCTION

Paul Franklin Taylor, P.O. Box 468, Crossville, Tenn. 38555

Filed June 17, 1974, Ser. No. 479,882

Int. Cl.^{2} C22C *61/02*, *61/00*

U.S. Cl. 75—84.1 R 7 Claims

1. A method of reducing Class III-B and Lanthanide and Actinide metal series ore oxides individually and in combinations to powder and alloy forms comprising the steps of: (A) Adding powdered Class III-B oxides to materials selected from the group consisting of sugar and starch and a base hydroxide,

(B) mixing, and adding to a reduction container, (C) applying heat to the mixture until combustible materials burn, (D) adding water, boiling and flushing, (E) leaching with hydrochloric acid and hydrocarbon solvents, (F) again adding water, boiling and flushing, then (G) drying, and (H) smelting the remaining material to produce Class III-B metal powder and ingot.

3,980,472

DENTAL AMALGAM

Kamal Asgar, and Steven H. Reichman, both of Ann Arbor, Mich., assignors to Special Metals Corporation, New Hartford, N.Y.

Filed July 16, 1975, Ser. No. 596,399

Int. Cl.² C22C *7/00*

U.S. Cl. 75—169 **7 Claims**

1. A metal powder for use in the preparation of dental restorations and the like by trituration with mercury comprising a mechanical mixture containing about 55% to about 90% of a first powder comprised of a silver-base amalgamatable alloy and about 10% to about 45% of a second powder composed of a substantially non-amalgamatable silver-containing alloy, said first powder consisting essentially of at least about 65% silver, up to about 6% copper, up to about 2% zinc and at least about 25% tin, said second powder consisting essentially of about 1% to about 20% tin, silver as the major alloying agent, and a third alloying constituent individually selected from the group consisting of 5% to 50% cadmium, 5% to 50% zinc, 5% to 50% aluminum, copper in an amount to provide a silver-to-copper ratio of about 2.6:1, up to 30% indium in combination with copper wherein the latter is present in an amount to provide a silver-to-copper ratio of about 2.6:1; said first and said second powder being of an average particle size of less than about 100 microns.

7. A dental amalgam consisting essentially of a continuous matrix composed of an amalgam having dispersed therethrough a plurality of discrete phases chemically bonded by said continuous matrix, said amalgam containing from about 40% to about 60% mercury, from about 22% to about 54% of an amalgamatable alloy powder containing at least about 65% silver, up to about 6% copper, up to about 2% zinc, and greater than about 25% tin; said discrete phases comprising about 4% to about 27% of said amalgam consisting essentially of an alloy containing silver, from about 1% to about 20% tin, and the balance an alloying constituent individually selected from the group consisting of 5% to 50% cadmium, 5% to 50% zinc, 5% to 50% aluminum, copper in an amount to provide a silver-to-copper ratio of about 2.6:1, up to 30% indium in combination with copper wherein the latter is present in an amount to provide a silver-to-copper ratio of about 2.6:1; said discrete phases being of a size less than about 100 microns.

3,980,473

ULTRA HIGH STRENGTH, CARBIDE-STRENGTHENED, COBALT-BASE SUPERALLOY

Darryl J. Costin, Columbus, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

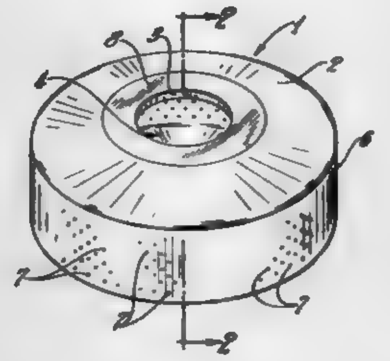
Filed July 28, 1975, Ser. No. 599,555

Int. Cl.² C22C *19/07*

U.S. Cl. 75—171 **10 Claims**

1. A composition of matter consisting essentially of the following elements in amounts expressed in weight percent:

Chromium — from about 31.5 to about 40.5
Nickel — from about 5.0 to about 18.5
Wolfram — from about 4.0 to about 11.0
Tantalum — from about 3.2 to about 8.5
Zirconium — from about 0.75 to about 3.0
Silicon — from about 0.50 to about 2.5
Carbon — from about 0.40 to about 1.2
Titanium — from about 0.25 to about 1.5
Iron — from about 0.01 to about 8.0
Dysprosium — from about 0.005 to about 0.20
Yttrium — from about 0.07 to about 0.50
Cobalt — balance



the weight ratio of wolfram to tantalum being within the range of from about 1.2 to about 3.4, the weight ratio of zirconium to titanium being within the range of from about 1 to about 6, and the total quantity of yttrium plus dysprosium being not less than about 0.10 weight percent of said composition.

3,980,474

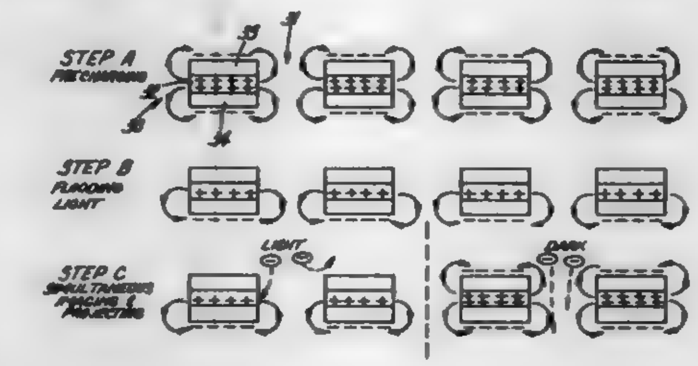
METHOD OF ION IMAGING WITH ADDITIONAL CONTROL FIELDS

Jerome E. Jackson, Shaker Heights, Ohio, assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Oct. 16, 1974, Ser. No. 515,172

Int. Cl.² G03G *13/22*

U.S. Cl. 96—1 R **12 Claims**



1. A process for producing a latent electrostatic image corresponding to a graphic original upon a dielectric surface which comprises

precharging substantially the entire surface of an ion modulator situated between a source of ions of a certain polarity and said dielectric surface and having a photoconductive coating thereon, uniformly illuminating the photoconductive surface of said modulator to dissipate the resulting precharge on said photoconductive surface, and

projecting ions of said certain polarity from said source towards said modulator and said dielectric surface while simultaneously exposing said modulator to a pattern of light and dark areas corresponding to said original, whereby said ions are selectively passed through said modulator and deposited upon said dielectric surface to form a latent electrostatic image corresponding to said original.

3,980,475

PROCESS OF TRANSFERRING AN ELECTROSTATIC LATENT IMAGE TO A DIELECTRIC SUPPORT

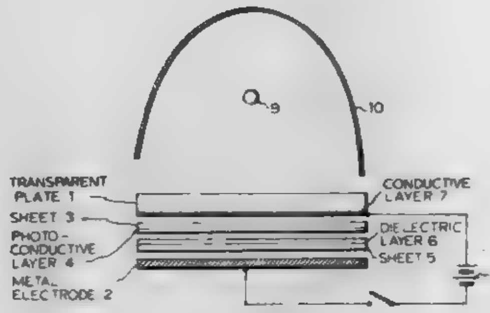
Pham Kim Quang, Dieppe, and Guy Weber, Arques la Bataille, both of France, assignors to La Cellophane, Paris, France

Continuation of Ser. No. 378,695, July 12, 1973, abandoned. This application July 11, 1975, Ser. No. 595,149

Claims priority, application France, July 27, 1972, 72.27027

Int. Cl.² G03G *13/18*

U.S. Cl. 96—1 TE **5 Claims**



1. A process of electrophotographic reproduction, wherein a charged image formed on a photoconductive support having an electrically conductive layer is transferred after its formation on the photoconductive support, from the photoconductive support onto a dielectric support by placing said photoconductive support and said dielectric support in abutting relationship between two electrodes, while an electric field generated by the electrodes is maintained thereacross, and then developing the image formed on said dielectric support after separating the dielectric from the photoconductive support, the improvement comprising the step of:

discharging the photoconductive support completely during a time subsequent to transferring said charged image to said dielectric support and prior to or simultaneous with separation of the dielectric support from the photoconductive support, said discharge being effected solely by directing light energy onto said photoconductive support with an intensity sufficient to discharge said photoconductive support completely.

3,980,476

IMAGING SYSTEM

Joseph J. Wysocki, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 27, 1975, Ser. No. 544,089

Int. Cl.² G03G *16/00*

U.S. Cl. 96—1.1 **7 Claims**

1. An imaging method comprising the steps of:

a. providing an imaging member comprising a voltage or current-sensitive light modulating layer overlying a layer of photoconductive material, said photoconductive layer being physically permanently modified by exposure to UV radiation in a first imagewise pattern;
b. applying an electrical field across said imaging member; and
c. exposing said photoconductive material to a second imagewise pattern of activating radiation whereby images corresponding to said first and second imagewise patterns are formed in said imaging member.

3,980,477

PHOTOELECTROPHORESIS WITH DARK CHARGE INJECTING ELEMENT

P. Keith Watson, Rochester; Paul J. Cressman, Fairport, and Richard V. LaDonna, Irondequoit, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 26, 1974, Ser. No. 527,326

Int. Cl.² G03G *13/22*

U.S. Cl. 96—1.2 **18 Claims**

1. A photoelectrophoretic imaging process comprising the steps of providing an imaging layer comprising a suspension of particles of at least one electrically photosensitive pigment in a carrier liquid placed between a conductive electrode and a blocking electrode, said conductive electrode being at least partially transparent to electromagnetic radiation to which at least a portion of said pigment particles are sensitive and said blocking electrode being coated with a dark charge injecting agent selected from the group consisting of Bonadur Red B, 1-[1-naphthyl azo]-2-naphthol, alpha phthalocyanine, benzo-[b]-naphtho-[2,3-d]-furan-6,11-dione and dinaphtho-[1,2-b; 2',3'-d]-furan-8,13-dione, one pigment in said imaging layer being the same material as said dark charge injecting agent and wherein, when measured as described in the accompanying specification said dark charge injecting agent coating exhibits a higher voltage than any of said at least one pigment which are not the same material as said dark charge injecting agent, subjecting said suspension to an electrical field in the dark while in contact with said dark charge injecting agent whereby said pigment particles are substantially uniformly attracted to said conductive electrode, exposing said suspension to imagewise electromagnetic radiation to which at least a portion of said pigment particles are sensitive until an image is formed.

3,980,478

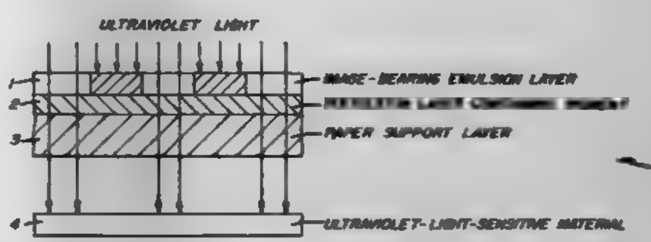
METHOD OF MAKING AN ULTRAVIOLET LIGHT IMAGE RECORDING USING A VISIBLE-LIGHT REFLECTIVE INTERMEDIATE ELEMENT

Irvin H. Crawford, Hamlin, and Ronald A. Wellman, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 5, 1974, Ser. No. 485,697

Int. Cl.² G03C *5/18*

U.S. Cl. 96—27 R **4 Claims**


ULTRAVIOLET LIGHT
1
2
3
4
IMAGE-BEARING EMULSION LAYER
PAPER SUPPORT LAYER
ULTRAVIOLET-LIGHT-SENSITIVE MATERIAL

1. A method of ultraviolet light recording of an image comprising (1) imagewise exposing with ultraviolet radiation a diazo recording material which is sensitive to ultraviolet radiation, through an image-bearing photographic intermediate comprising:

a. a paper support,
b. a silver image-bearing emulsion layer, and
c. a layer of polyolefin between said support and said emulsion layer, that contains zinc sulfide dispersed therein and is coated at a coverage from about 1.5 lbs./1000 sq. ft. to about 5 lbs./1000 sq. ft., said photographic intermediate exhibiting improved resolution of line images compared to a photographic intermediate of the same structure which is free of said zinc sulfide, and being capable of transmitting ultraviolet radiation and (2) processing such recording material to a visible image.

3,980,479

POSITIVE-WORKING IMMOBILE PHOTOGRAPHIC COMPOUNDS WHICH CLEAVE BY INTRAMOLECULAR NUCLEOPHILIC DISPLACEMENT IN ALKALI UNLESS OXIDIZED

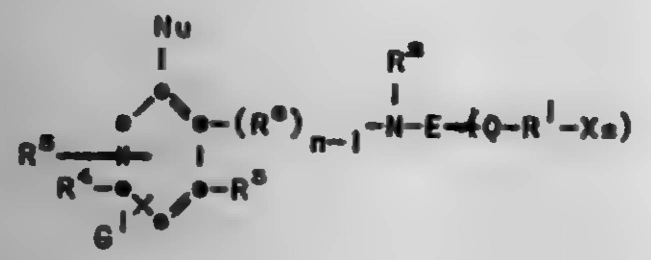
Donald Lee Fields, Rochester; Richard Paul Henzel, Webster; Philip Thiam Shin Lau, Rochester, and Richard Allan Chasman, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1974, Ser. No. 511,568

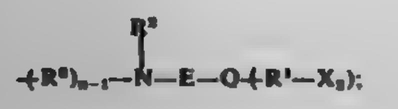
Int. Cl.² G03C *5/54, 7/00, 1/48, 1/40*

U.S. Cl. 96—29 D **44 Claims**

14. A photographic element comprising a support having thereon at least one layer containing a photographic silver halide emulsion having associated therewith an immobile compound having the formula:



wherein Nu is an oxidizable nucleophilic group or a precursor therefor; E is carbonyl or thiocarbonyl; Q is a bivalent group providing a mono atom linkage between E and R^1 wherein said mono atom is a nonmetallic atom of group VA or VIA of the periodic table in its minus 2 or minus 3 valence state; G^1 is an hydroxy group or a precursor therefor, a primary amino group or a precursor therefor, or a substituted amino group; R^6 is a bivalent alkylene group containing from 1 to 3 atoms in the bivalent linkage; n is a positive integer of 1 or 2; R^1 can be an aromatic group containing from 6 to 20 carbon atoms or an alkylene group containing 1 to 12 carbon atoms; R^2 can be an alkyl group containing from 1 to 40 carbon atoms, an aryl group containing from 6 to 20 carbon atoms, or the substituent X^1; R^3, R^4 and R^5 can beach be mono atom groups which can be hydrogen atoms, halogen atoms, or polyatomic groups which can be alkyl groups, aryl groups, carbonyl groups, sulfamyl groups, sulfonamido groups, or the substituent X^1, and the substituents for R^3 and R^5 or R^4 and R^5 when on adjacent positions on the ring may be taken together to form a 5- or 6-membered ring with the remainder of the molecule, with the provisions that, when R^1 is an alkylene group, R^3 and R^4 are polyatomic groups, and when G^1 is a substituent defined for Nu, an adjacent R^3 or R^4 can be the group:



$$-(R^6)_{n-1}-\overset{R^2}{\overset{|}{N}}-E-Q-(R^1-X_2);$$

X^1 is a ballasting group of sufficient size to render said compound immobile in an alkali-permeable layer of the photographic element or X^1 is a photographically useful moiety which is an image dye-providing material; X_2 is a group which, together with Q and R^1, can be a ballasting group or photographically useful group as defined for X^1, provided one of X^1 and $-Q-R^1-X_2)$ is said ballasting group and one of X^1 and $-Q-R^1-X_2)$ is said photographically useful group.

3,980,480

PHOTOGRAPHIC RECORDING AND REPRODUCTION OF INFORMATION PHOTOCHROMIC COMPOSITION CONTAINING POLYHALOGENATED HYDROCARBON, SPIROPYRAN COMPOUND AND HETEROCYCLIC MERCAPTO COMPOUND AND THE USE THEREOF

Urbain Leopold Laridon, Dambertenlaan 36, B 2610 Wilrijk, and Jozef Willy Van den Houte, Oostvaartdijk 46, B 1850 Grimbergen, both of Belgium

Continuation of Ser. No. 411,787, Nov. 1, 1973, abandoned, which is a continuation of Ser. No. 177,121, Sept. 1, 1971, abandoned. This application July 18, 1975, Ser. No. 597,231

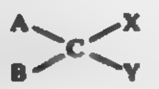
Claims priority, application United Kingdom, Sept. 1, 1970, 41749/70

Int. Cl.² G03C *5/24, 1/52*

U.S. Cl. 96—48 R **23 Claims**

14. A photosensitive recording material for the direct production of a visible image by imagewise exposure to activating ultraviolet radiation which comprises a layer of an intimate mixture consisting essentially of:

1. at least one spiropyran compound of the group consisting of a spirodibenzopyran, a spirodinaphthopyran, a spirobenzonaphthopyran, a 1,3,3-trimethylindolino-benzospiropyran, a 1,3,3-trimethylindolinonaphthospiropyran, or a spiropyran that contains a condensed anthracene or phenanthrene nucleus;
2. at least one ultra-violet light-sensitive organic polyhalogen compound capable of producing on exposure with ultra-violet light a dye salt with the spiropyran compound and having the general formula:

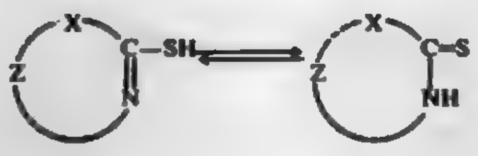


wherein:

each of A, B, X and Y is a chlorine, bromine or iodine atom; or

one of said radicals A, B, X or Y is an alkyl group, an aryl group, or an aroyl group and the other radicals are each chlorine, bromine or iodine; or two of said radicals A, B, X or Y each is an aromatic acyl group and the other radicals are each chlorine, bromine or iodine; and

3. in working relationship with said mixture a tautomeric organic nitrogen containing compound corresponding to the following general formula:



in which:

X represents oxygen, sulphur, selenium or the group

—NR

in which R is hydrogen or an alkyl, allyl, or phenyl group, and

Z represents the necessary atoms to close a 5- or 6-membered heterocyclic nitrogen-containing ring system.

3,980,481

DIRECT-POSITIVE SUPER-SENSITIZED SILVER HALIDE EMULSIONS

Theofiel Hubert Ghys; Willy Joseph Vanassche, both of Kontich, and Herman Alberik Pattyn, Kapellen, all of Belgium, assignors to AFGA-GEVAERT N.V., Mortsel, Belgium

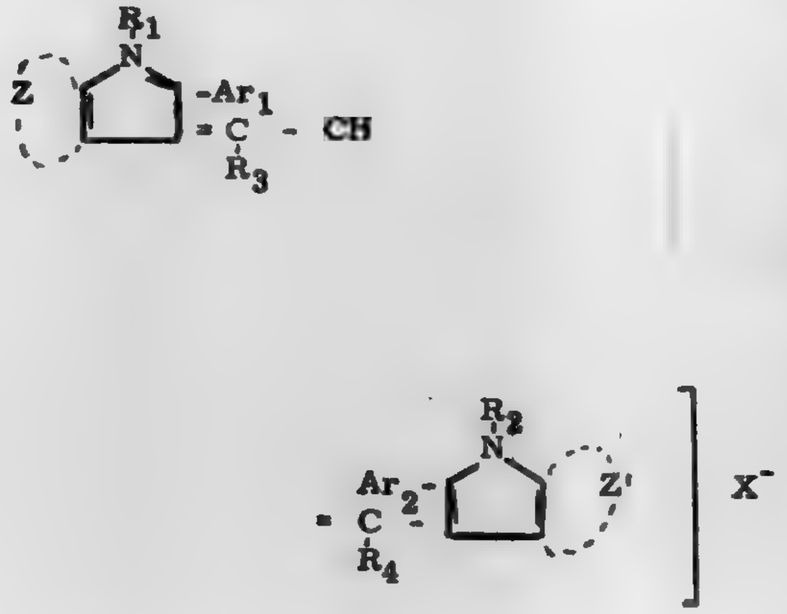
Filed Jan. 11, 1974, Ser. No. 432,534

Claims priority, application United Kingdom, Jan. 25, 1973, 3904/73

Int. Cl.² G03C *1/36*

U.S. Cl. 96—101 **8 Claims**

1. A direct-positive photographic element comprising a support and at least one direct-positive silver halide emulsion layer containing fogged silver halide grains and a non-spectrally sensitizing electron-acceptor selected from the group consisting of nitrostyryl, nitrobenzylidene, dihydropyrimidine, 2,3,5-triphenyl-2H-tetrazolium chloride, 2-(4-iodophenyl)-3-(4-nitrophenyl)-5-phenyl tetrazolium chloride, 1-methyl-8-nitroquinolinium methyl sulphate, 1-m-nitrobenzylquinolinium chloride, 1-m-nitrobenzylpyridinium chloride, 1-p-nitro-benzylisoquinolinium chloride, 1-p-nitrobenzylbenzo quinolinium chloride, and 1-methyl-2-m-nitrostyrylquinolinium methyl sulphate, wherein the emulsion includes a spectrally sensitizing dye of the formula:



wherein:

each of R_1 and R_2 represents an aliphatic hydrocarbon group, an aliphaticaromatic hydrocarbon group or an aromatic hydrocarbon group, one of said R_1 and R_2 optionally including an anion,

each of R_3 and R_4 represents hydrogen, alkyl, cycloalkyl, or a carbocyclic or heterocyclic aryl group,

each of Ar_1 and Ar_2 represents a carbocyclic aryl group,

each of Z and Z′ represents a fused on benzo group, and

X^- is an anion but is not present when R_1 or R_2 contains an anionic group, said non-spectrally sensitizing electron-acceptor and said spectrally sensitizing dye within said formula selected to provide to said direct-positive photographic element a super-sensitizing effect.

3,980,482

SENSITIZING A THERMOGRAPHIC SILVER HALIDE PHOTOGRAPHIC MATERIAL WITH MONOMERIC AMIDE

Jack E. Reece, Willernie, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 5, 1974, Ser. No. 476,450

Int. Cl.² G03C *1/02*

U.S. Cl. 96—114.1 **9 Claims**

1. In the process of making a light-sensitive heat-developable dry silver sheet material containing (a) photosensitive silver halide catalyst-forming means and (b) heat-sensitive reactant image-forming means including an organic silver salt oxidizing agent and a reducing agent for silver ion, the oxidation reduction reaction of which, to produce a visible change, is accelerated by said catalyst, the improvement comprising: mixing with the organic silver salt, prior to halidization thereof, a spectrally inert sensitizing amide, and thereafter halidizing a minor proportion of said organic silver salt, wherein said sensitizing amide is a monomeric amide having the structure:

$$R_1CONR_2R_3,\ R_1R_2NCONR_3R_4 \text{ or } (R_1R_2N)_3PO$$

wherein one of the R groups represents hydrogen or a hydrocarbon radical having no more than twelve carbon atoms and the remaining R groups represent monovalent hydrocarbon having no more than twelve carbon atoms or substituted hydrocarbon radicals having no more than twelve carbon atoms or two of said remaining R groups represent a divalent hydrocarbon radical having no more than twelve carbon atoms or hydrocarbonoxy radical having no more than twelve carbon atoms, with the proviso that none of R_1, R_2, R_3, and R_4 in the formula

$R_1R_2NCONR_3R_4$

may be hydrogen.

3,980,483

PHOTOCURABLE COMPOSITION

Tadatomi Nishikubo; Shinzi Ugai; Taro Ichijo, and Masahiko Kishida, all of Fujisawa, Japan, assignors to Nippon Oil Seal Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 352,752, April 18, 1973, abandoned. This application May 7, 1975, Ser. No. 575,426

Claims priority, application Japan, Apr. 24, 1972, 47-40377

Int. Cl.² G03C *1/58;* **C08F** *8/00*

U.S. Cl. 96—115 R **16 Claims**

1. A photocurable composition comprising:

A. the free carboxylic group-containing esterification reaction product of
  1. the addition compound of an epoxy resin and a photopolymerizable α,β-unsaturated carboxylic acid, and
  2. a dibasic carboxylic acid anhydride,

wherein the hydroxy groups formed by ring cleavages of epoxy groups in said addition compound have been esterified by said dibasic carboxylic acid anyhdride;

B. a photopolymerizable ethylenically unsaturated monomer; and

C. a photopolymerization initiator selected from the group consisting of benzophenone, acetophenone, triphenylphosphine, 2-ethyl anthraquinone, 2-tert-butyl anthraquinone, furoin, benzoin, benzoin methylether, benzoin ethylether, benzoin phenylether, benzoin acetate and decyl chloride.

3,980,484

FIBER REINFORCED STRUCTURAL MATERIAL AND METHOD OF MANUFACTURE

Terrence M. Shaw, Columbus, Ind., assignor to Edward C. Levy Company, Detroit, Mich.

Filed Feb. 28, 1975, Ser. No. 554,162

Int. Cl.² C04B *7/02, 7/35*

U.S. Cl. 106—90 **9 Claims**

1. A structural material comprising a hardenable matrix, and a plurality of randomly arranged fibers admixed in said

matrix, said fibers being fabricated of a non-metallic substance, the major portions of said fibers being of constant thickness, the opposite ends of such fiber having knobs formed thereon, the average thickness of said knobs being at least ten percent greater than said constant thickness, whereby said knobs will serve to anchor the ends of each fiber in the matrix.

3,980,485
PEAT/CEMENT AND LIKE PRODUCTS AND THEIR METHOD OF PRODUCTION

Albert Gray Edwards, Strathaven, Scotland, assignor to National Research Development Corporation, London, England

Filed Mar. 28, 1974, Ser. No. 455,723

Claims priority, application United Kingdom, Mar. 28, 1973, 14912/73

Int. Cl.^{2} C04B *7/02, 7/353*

U.S. Cl. 106—93 **5 Claims**

1. A method of forming a peat based product form raw peat having an initial content by weight of at least 90% chemically free water, comprising the steps of mixing said raw peat with a Portland cement binder, an internal draining agent for the peat selected from the group consisting of pulverized fuel ash, hydrated lime and their mixture present in an amount not less than about half the amount of binder, and pressing the resulting mix into a mold to remove at least half the chemically free water content from the mix.

3,980,486
CALCINATION OF PULVEROUS MATERIAL

Jorn Touborg, Copenhagen Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Mar. 12, 1974, Ser. No. 450,291

Claims priority, application United Kingdom, Mar. 14, 1973, 12193/73

Int. Cl.^{2} C04B *7/44*

U.S. Cl. 106—100 **24 Claims**

1. A method of heat treating a pulverous raw material at least a portion of which is in the form of lime to produce at least a partial calcination thereof, comprising:

a. preheating said pulverous raw material;

b. accumulating a quantity of said preheated pulverous raw material in a lower portion of a calcination chamber defining a lower opening surrounded by a peripheral barrier;

c. introducing a substantially incombustible gas upwardly into said calcination chamber in a manner to traverse the accumlation of said raw material from below and at sufficient velocity to fluidize the pulverous raw material and mix the gas with portions of the raw material while causing surface portions thereof to overflow said peripheral barrier, said incombustible gas further at least partially continuously entraining particles of said raw material from the accumulation and carrying them in suspension to a flame chamber defined by a space overlying said accumulation;

d. introducing into said overlying space through said lower opening, an oxygen containing gas and a fuel to at least entrain the mixture of gas and raw materials overflowing said peripheral barrier;

e. maintaining at least one flame in said overlying space by burning said fuel with said oxygen containing gas such that the heat necessary for at least partially calcining the particles of raw material suspended in the incombustible gas and oxygen containing gas is transmitted from said flame to the suspension of raw material particles;

f. conveying said mixture of combustion gases produced by said flame, carbon dioxide developed by the raw material calcination, incombustible fluidization gas, and suspended raw material particles away from said flame chamber; and

g. separating said at least partially calcined particles from said conveying gas mixture.

3,980,487
ANTICORROSIVE GYPSUM COMPOSITION

Hiroshi Akabayashi, Hoya; Nobuo Akiyama, Yokosuka, and Fumiyoshi Arima, Fuchu, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 532,154, Dec. 12, 1974, abandoned. This application June 27, 1975, Ser. No. 590,833

Claims priority, application Japan, Dec. 12, 1973, 48-139224

Int. Cl.^{2} C04B *11/14*

U.S. Cl. 106—111 **4 Claims**

1. A set plaster composition which consists essentially of 100 wt. parts of calcined gypsum, 0.1 – 10 wt. parts of calcium nitrite or a mixture of calcium nitrite and from 2 to 100% of calcium nitrate relative to the amount of calcium nitrite, 0.05 – 5 wt. parts of methyl cellulose, polyvinylalcohol, polyvinylacetate or a mixture thereof, 0.1 – 6 wt. parts of defatted soybean-hydrolysis product, zinc oxide, sodium phosphate or sodium tripolyphosphate, and 1 – 300 wt. parts of pulp, palaite, diatomaceous earth, bentonite or a mixture thereof.

3,980,488
PIGMENT CONDITIONING AND VEHICLE FLUSHING PROCESS

David W. Barrington, Chicago; Irwin B. Bernstein, Homewood; Thomas C. Rees, Park Forest South, and Anthony P. Wagener, Jr., Park Forest, all of Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed Mar. 7, 1972, Ser. No. 232,319

Int. Cl.^{2} C08J *3/20;* **C08L** *91/00, 93/00*

U.S. Cl. 106—262 **17 Claims**

1. A process for manufacturing pigmented oleoresinous coating vehicles comprising the steps of;

partially conditioning a crude organic pigment by dry milling to an extent substantially less than the amount of milling required to develop full pigmentary strength;

providing an aqueous slurry of the partially conditioned pigment;

flushing the pigment from an aqueous slurry into a soft oleoresinous vehicle by mixing the aqueous pigment slurry with the vehicle and a volatile organic liquid breaching agent which is essentially immiscible with water under the flushing conditions and which is active to develop pigmentary qualities by contacting the pigment during flushing, said breaching agent being present in an amount at least about 1 part by weight per 100 parts of dry pigment;

separating water from the flushed mass mixture of pigment, vehicle and breaching agent;

separating the volatile organic breaching agent from the flushed mass by evaporation,

thereby producing a pigmented oleoresinous vehicle having pigmentary qualities subatantially equal to that produced by incorporating a fully conditioned pigment into the vehicle.

3,980,489
SOIL STABILIZING AGENT COMPRISING A SULFURIC ACID SOURCE-CALCIUM SOURCE REACTION PRODUCT AND METHOD

Gordon L. Schneider, 4214 Cottage Circle No. 3, Las Vegas, Nev. 89109

Continuation-in-part of Ser. No. 319,455, Dec. 29, 1972, Pat. No. 3,876,439, which is a continuation-in-part of Ser. No. 89,006, Nov. 12, 1970, abandoned, which is a continuation-in-part of Ser. No. 745,957, July 19, 1968, abandoned, which is a continuation-in-part of Ser. No. 508,925, Nov. 22, 1965, abandoned, which is a continuation-in-part of Ser. No. 360,114, April 15, 1964, abandoned. This application Mar. 14, 1975, Ser. No. 558,286

The portion of the term of this patent subsequent to Apr. 8, 1992, has been disclaimed.

Int. Cl.^{2} C07G *17/00;* **C04B** *11/14*

U.S. Cl. 106—287 **17 Claims**

1. A soil stabilizing agent comprising: the reaction product of a calcium compound selected from the group consisting of calcium carbonate, calcium fluorapatite, calcium phosphate, calcium sulfate, calcium oxide, and Portland cement and sulfuric acid having not less than 45% by weight acid combined in a sufficient quantity of water to maintain fluidity of the resultant product, said constituents being combined in such type and quantity as to provide the reaction product with a pH of less than 7.

3,980,490
SOIL STABILIZING AGENT COMPRISING A SULFURIC ACID SOURCE-CALCIUM SOURCE REACTION PRODUCT AND METHOD

Gordon L. Schneider, 4214 Cottage Circle No. 3, Las Vegas, Nev. 89109

Continuation-in-part of Ser. No. 319,455, Dec. 29, 1972, Pat. No. 3,876,439, which is a continuation-in-part of Ser. No. 89,006, Nov. 12, 1970, abandoned, which is a continuation-in-part of Ser. No. 745,957, July 19, 1968, abandoned, which is a continuation-in-part of Ser. No. 508,925, Nov. 22, 1965, abandoned, which is a continuation-in-part of Ser. No. 360,114, April 15, 1964, abandoned. This application Mar. 14, 1975, Ser. No. 558,287

The portion of the term of this patent subsequent to Apr. 8, 1992, has been disclaimed.

Int. Cl.^{2} C07G *17/00;* **C04B** *11/14*

U.S. Cl. 106—287 SS **17 Claims**

1. A soil stabilizing agent comprising: the reaction product of a calcium compound selected from the group consisting of calcium carbonate, calcium fluorapatile, calcium phosphate, calcium sulfate, calcium oxide, and Portland cement and sulfuric acid sludge having not less than 45% by weight acid nor more that 35% entrained hydrocarbons combined in a sufficient quantity of water to maintain fluidity of the resultant product, said constituents being combined in such type and quantity as to provide the reaction product with a pH of less than 7.

3,980,491
BISMUTH OXYCHLORIDE-MICA NACREOUS PIGMENTS WITH ENHANCED LUSTER AND DISPERSIBILITY

Robert E. Eberts, Mahopac, N.Y., assignor to The Mearl Corporation, Ossining, N.Y.

Continuation of Ser. No. 449,032, March 7, 1974, abandoned. This application Dec. 1, 1975, Ser. No. 636,791

Int. Cl.^{2} C09C *1/00*

U.S. Cl. 106—291 **12 Claims**

1. A hydrous titanium hydroxide-containing bismuth oxychloride-mica nacreous pigment wherein the amount of hydrous titanium hydroxide, calculated as TiO$_2$, is about 1000–5000 ppm parts of the BiOCl-mica.

3,980,492
REACTIVE PIGMENTS AND METHODS OF PRODUCING THE SAME

Thomas D. Thompson, Flemington, N.J., assignor to Yara Engineering Corporation, Elizabeth, N.J.

Filed June 13, 1975, Ser. No. 586,558

Int. Cl.^{2} C09C *1/42;* **B41M** *5/22*

U.S. Cl. 106—308 N **10 Claims**

1. A reactive pigment for manifold copy systems consisting essentially of the solid reaction product of a polyvalent cation, a ligand, a member selected from the group consisting of bentonite and montmorillonite and a kaolinite.

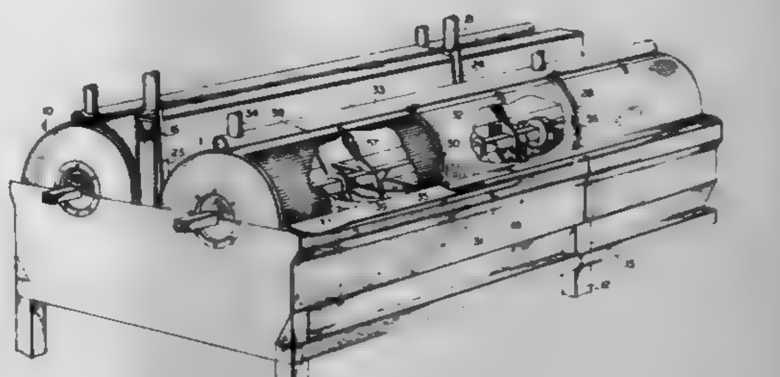
3,980,493
METHOD AND APPARATUS FOR THE TREATMENT OF WHEAT FLOUR

Gerald J. Dunne, Baie d'Urfe, and Thomas Walter Roberts, Thunder Bay, both of Canada, assignors to The Ogilvie Flour Mills Company, Limited, Montreal, Canada

Filed Apr. 8, 1975, Ser. No. 566,132

Int. Cl.^{2} C13L *1/00, 1/02*

U.S. Cl. 127—24 **10 Claims**



1. In an apparatus for extracting starch and gluten from wheat flour dough, comprising an elongated treatment vessel having a substantially semicircular, at least partly perforated bottom, dough treatment members mounted on a rotatable shaft extending longitudinally within the vessel, means for adding wash liquid to the vessel, means for withdrawing this wash liquid together with extracted starch via the perforations, means for introducing dough at one end of the vessel and means for discharging gluten at an opposite end, the improvement which comprises treatment members in the form of rotatable radial blades having angularly disposed faces adapted to lift and advance the dough while substantially avoiding pressing of the dough against the perforated bottom, said blades also having sharpened leading edges adapted to co-operate with fixed cutter bars extending transversely across the vessel, whereby the dough is lifted by the rotatable blades and is cut by a scissors action between the rotatable blades and fixed bars to expose a fresh surface for contact with the wash liquid.

3,980,494
METHOD OF REDUCING FRICTION IN BLADE CLEANING OF IMAGING SURFACES

Charles L. Beatty, 130 Graystone Lane, Brighton, N.Y. 14618; Nero R. Lindblad, R.D. 3, Palmyra, N.Y. 14522, and Henry R. Till, 111 Hampshire Drive, Rochester, N.Y. 14618

Division of Ser. No. 538,041, Jan. 2, 1975, Pat. No. 3,954,466. This application Oct. 29, 1975, Ser. No. 626,889

The portion of the term of this patent subsequent to May 4, 1993, has been disclaimed.

Int. Cl.^{2} B08B *1/02*

U.S. Cl. 134—6 **13 Claims**

1. A method of cleaning an electrostatographic photoreceptor comprised of a conductive substrate having a layer on its surface of a photoconductive material in operative connection with the substrate, wherein said photoreceptor contains a

plurality of abrasion resistant particles partially embedded in the layer of photoconductive material so that generally hemispherical portions of the particles protrude above the surface of said layer, said protruding portions being further defined in that they protrude to a distance of about 0.5 to 5 microns above the layer of photoconductive material and are distributed so that less than 50 percent of the photoreceptor surface is covered by the protruding portions, said cleaning method comprising the steps of:

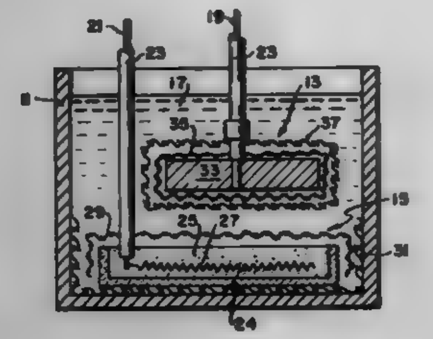
a. applying a thin edged doctor blade having a contact width equal to or greater than the maximum average distance between the peripheries of the protruding portions of the abrasion resistant particles, and

b. maintaining relative motion between the photoreceptor surface and the doctor blade.

3,980,495
CALCIUM ALLOY AS ACTIVE MATERIAL IN SECONDARY ELECTROCHEMICAL CELL

Michael F. Roche, Lombard; Sandra K. Preto, Stickney, and Allan E. Martin, Woodridge, all of Ill., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Dec. 19, 1975, Ser. No. 642,438
Int. Cl.² H01M *10/00*
U.S. Cl. 429—207 **8 Claims**

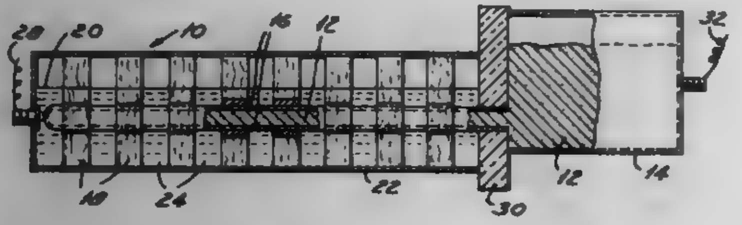


1. A secondary electrochemical cell including a positive electrode having active material selected from the group consisting of sulfur, a sulfur compound or mixtures thereof, a molten salt electrolyte including calcium ions and a negative electrode having an active material including a solid alloy of calcium and an element selected from groups 1A, 2A, 3A and 4A of the Periodic Table.

3,980,496
ENERGY CONVERSION DEVICES WITH IMPROVED ELECTRODE SHAPES

Frank A. Ludwig, Southfield; Robert W. Minck, Lathrup Village, and Steven A. Weiner, Ypsilanti, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 29, 1975, Ser. No. 545,048
Int. Cl.² H01M *4/00*
U.S. Cl. 429—103 **44 Claims**



1. An electrical conversion device comprising:

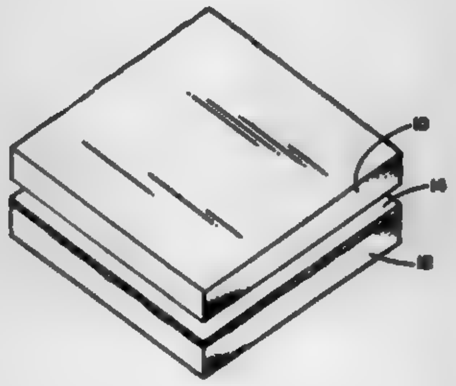
1. an anodic reaction zone containing a molten alkali metal reactant-anode in electrical contact with an external circuit;
2. a cathodic reaction zone containing (a) a liquid cathodic reactant which is electrochemically reactive with said anodic reactant and which, when said device is at least partially discharged, is an electrolyte, and (b) an electrode of porous conductive material which is at least partially immersed in said cathodic reactant; and
3. a cation-permeable barrier to mass liquid transfer interposed between and in contact with said anodic and cathodic reaction zones, said porous conductive material being in electrical contact with both said cation-permeable barrier and said external electrical circuit;

wherein the improvement comprises a plurality of channels or spaces within said cathodic reaction zone which are free of said porous conductive material and which in combination with said porous conductive material are adapted to allow flow within said cathodic zone of said cathodic reactant and cathodic reaction products during operation of said device, said porous conductive material including a plurality of arms which extend from the vicinity of said barrier to the exterior of said cathodic reaction zone and which make electrical contact with said external circuit, and at least a portion of said channels or spaces being bounded, at least in part, by said arms and the exterior of said cathodic reaction zone and extending at least to within about 1 to about 4 mm. of said barrier.

3,980,497
SEPARATORS FOR ALKALINE BATTERIES

Leland M. Gillman, Denver, and Robert E. Stark, Littleton, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Aug. 3, 1970, Ser. No. 62,224
Int. Cl.² H01M *2/14*
U.S. Cl. 429—145 **3 Claims**



1. A rechargeable electrochemical cell containing alkaline liquid electrolyte, at least one cathode, and at least one zinc anode subject to dendritic growths on charge, and in combination therewith an improved all cellulosic separator material interleaved between said anode and cathode and comprising:

a. a first microporous and uniformly permeable bibulous layer adjacent to and in contact with the anode and having the characteristic of highly retaining electrolyte in the amount from about 0.55 to about 0.95 grams of alkaline electrolyte per cubic centimeter of separator, said bibulous layer formed of cotton cellulosic fibers;

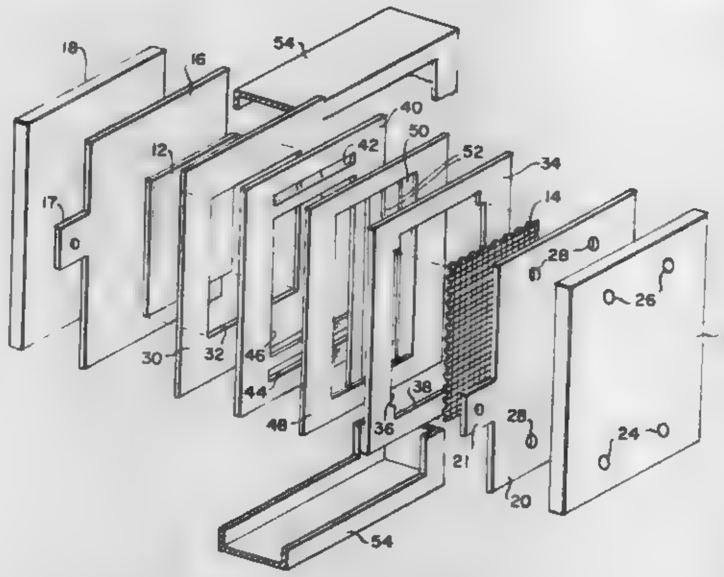
b. A second such bibulous layer adjacent to and in contact with the cathode; and

c. A semi-permeable membrane formed of regenerated cellulose interposed between said first and second bibulous layers and uniformly bonded substantially throughout its surface to each of said bibulous layers with a thin layer of gelling agent to form a composite laminated separator.

3,980,498
ELECTROCHEMICAL CELL USING LITHIUM-ALUMINUM ALLOY ANODE AND AQUEOUS ELECTROLYTE

Herman B. Urbach, Annapolis; David E. Icenhower, Glen Dale; Mark C. Cervi, Severna Park, and Robert J. Bowen, Annapolis, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 25, 1974, Ser. No. 482,980
Int. Cl.² H01M *4/40, 6/00*
U.S. Cl. 429—64 **3 Claims**



1. An electrochemical cell comprising:

an anode made of a lithium-aluminum alloy wherein the amount by weight of lithium is in the range of 15–35 percent;

a cathode made of a ferrous metal;

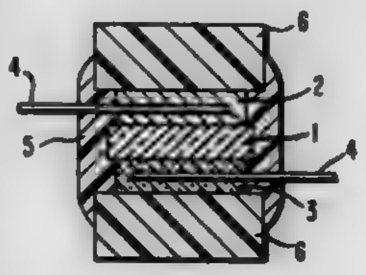
an aqueous seawater electrolyte circulated between said anode and cathode; and

an electrolyte recirculation system capable of eliminating the waste products of the cell and consumable anode.

3,980,499
DEVICE FOR USE OF LITHIUM HALOBORACITES AS SOLID ELECTROLYTES

Tom Allen Bither, Jr., and Wolfgang Karl Jeitschko, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 408,278, Oct. 23, 1973, Pat. No. 3,911,085. This application June 25, 1975, Ser. No. 590,376
Int. Cl.² H01M *6/18, 2/14*
U.S. Cl. 204—295 **10 Claims**



1. An electrochemical device which comprises

a. a lithium-containing anode which is capable of supplying lithium ions,

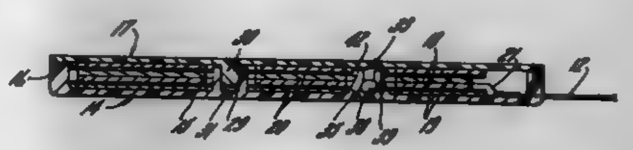
b. a cathode which is capable of removing lithium ions, said anode and cathode being separated by

c. a solid electrolyte consisting essentially of a lithium haloboracite $Li_4B_7O_{12}X$ where X is Cl, Br, I or a mixture thereof.

3,980,500
RESEALABLE VENT FOR PLASTIC BATTERY CASE

Dennis Dean Sorenson, Bloomington, Minn., and Richard Allan Erickson, New Richmond, Wis., assignors to Gould Inc., Chicago, Ill.

Filed May 30, 1975, Ser. No. 582,233
Int. Cl.² H01M *2/02, 2/12*
U.S. Cl. 429—54 **10 Claims**

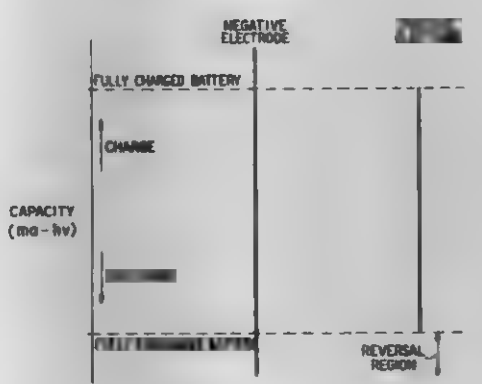


1. A resealable vent for a battery cell having a plastic case comprising, in combination, a passage defined by the interior of a hollow pin integrally formed with and projecting inwardly from one wall of said case and with the inner end thereof bonded to the opposite wall of said case for venting gaseous material from the interior of said case, said passage including an internal opening of reduced cross-sectional area and a seat surrounding said opening, a seal element disposed within said passage normally blocking said opening, and means for normally compressing said seal element against said seat, said seal element being further compressible against said means to unblock said opening and vent gaseous material out through said passage upon being subjected to an internal pressure at said opening above a predetermined level.

3,980,501
USE OF HYDROGEN-ABSORBING ELECTRODE IN ALKALINE BATTERY

David Oscar Feder, Madison, and Dean William Maurer, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 19, 1974, Ser. No. 480,703
Int. Cl.² H01M *10/34, 10/52*
U.S. Cl. 429—60 **4 Claims**

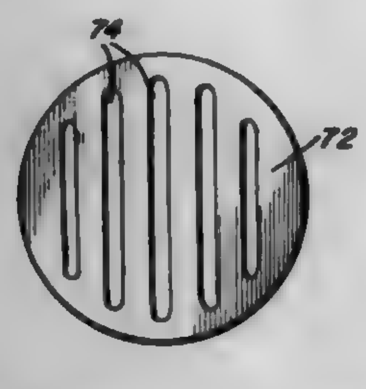


1. A sealed alkaline battery package comprising at least two cells connected in series, said cells comprising a negative cadmium electrode, a positive nickel electrode and electrolyte characterized in that a material with nominal formula LnM_5 is electrically connected to the positive electrode so that on battery reversal said LnM_5 material is converted into a hydride with nominal formula LnM_5H_6 so as to maintain electrochemical balance between the positive electrode and the negative electrode and to prevent evolution of hydrogen from the positive electrode where Ln is lanthanide metal and M is a metal selected from the group consisting of nickel and cobalt and mixtures.

,3,980,502
MICROWATT THERMOELECTRIC GENERATOR

David E. Goslee, White Marsh, and Harold N. Barr, Baltimore, both of Md., assignors to Nuclear Battery Corporation, Columbia, Md.

Filed July 18, 1974, Ser. No. 489,768
Int. Cl.² G21H ***1/10***
U.S. Cl. 136—202 **1 Claim**



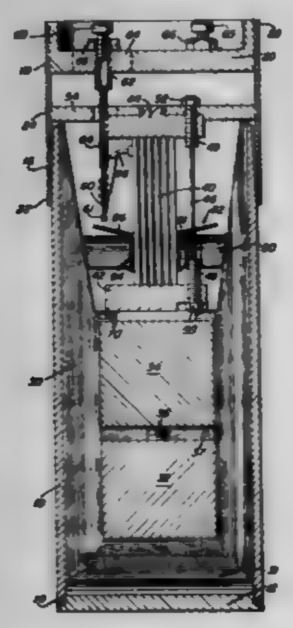
1. In a microwatt thermoelectric generator including a sealed container having a header forming part of the container, a feed-through assembly in the header for making external electric connections to the generator, a nuclear source heating a thermopile, electrical conducting means connected to the thermopile for conducting electricity from the thermopile to the feed-through assembly and a foil insulation package, the improvement comprising:

a tube extending through the feed-through assembly said tube having an open end located on the outside of the container and a closed end located on the inside of the container, the electrical conducting means being attached to said tube closed end, an electrically conductive nut fixed to said tube at said open end and an electrically conductive bolt positioned in said tube open end so that a lead positioned on said bolt may be electrically attached to the generator to effect a temporary attachment of that lead to the generator for test purposes.

3,980,503
MICROWATT THERMOELECTRIC GENERATOR

David E. Goslee, White Marsh, and Thomas S. Bustard, Ellicott City, both of Md., assignors to Nuclear Battery Corporation, Columbia, Md.

Filed July 18, 1974, Ser. No. 489,738
Int. Cl.² G21H ***1/10***
U.S. Cl. 136—202 **3 Claims**



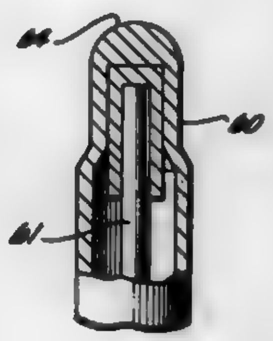
3. In a microwatt thermoelectric generator including a sealed container containing a feed-through assembly for making external electrical connection to the generator, and located inside the container a nuclear source, a thermopile having a hot plate operating at a temperature of about 200°F, getter means operating at a temperature of about 400°F, the getter and the hot plate being in axial alignment and adjacent each other in the container, and a foil insulation package in the container, the improvement comprising:

a foil separator package interposed between and separating the getter means and the thermopile hot plate, said separator package being comprised of individual foils each having an opening, one face of the foil separator package contacting the getter and the opposite face contacting the hot plate, said package being axially aligned with the getter and the hot plate so that the hot plate and the getter are in non-contacting relationship, the opening of said package forming a heat transfer path from the getter to the thermopile hot plate, such that the presence of said package between the hot plate and the getter establishes a heat transfer path the length of which is sufficient to maintain the hot plate temperature of about 200°F while the getter temperature is maintained at about 400°F.

3,980,504
THERMOCOUPLE STRUCTURE

Edmond M. Wagner, 457 N. Lima, Sierra Madre, Calif. 91024

Continuation-in-part of Ser. No. 217,505, Jan. 13, 1972, abandoned, which is a division of Ser. No. 118,757, Feb. 25, 1971, Pat. No. 3,774,297, which is a continuation-in-part of Ser. No. 82,762, Oct. 21, 1970, Pat. No. 3,741,816, which is a continuation-in-part of Ser. No. 734,512, June 3, 1968, Pat. No. 3,556,864. This application June 4, 1973, Ser. No. 366,730
Int. Cl.² H01V ***1/02***
U.S. Cl. 136—228 **8 Claims**



1. A thermocouple structure comprising:

a length of tube made from one metal;

a length of wire made from a dissimilar metal, the length of wire having a smaller diameter than the inside diameter of the tube and extending inside the tube in spaced approximate axial alignment therewith;

a metallic sleeve fitting around the wire at one end to fill the space between the wire and the tube, the sleeve being formed of a metal different from the tube metal and the wire metal, the difference between the thermoelectric coefficients of the sleeve metal and the wire metal being larger than the difference between the thermoelectric coefficients of the tube metal and the wire metal;

an electrical connector at the other end of the wire from the sleeve, the connector having first and second mutually insulated electrical paths connected respectively to the opposite end of the tube and the wire from the sleeve;

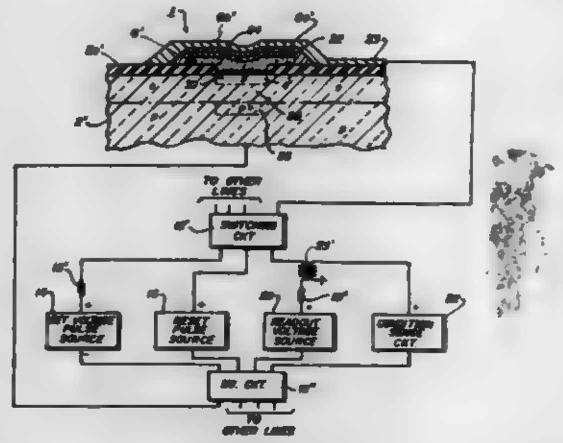
at least one thermocouple junction formed between the sleeve and the adjacent portion of the wire; and

means covering the end of the tube adjacent to the sleeve to seal the tube from the atmosphere.

3,980,505
PROCESS OF MAKING A FILAMENT-TYPE MEMORY SEMICONDUCTOR DEVICE

William D. Buckley, 1035 Kirts Road, Troy, Mich. 48084

Division of Ser. No. 396,497, Sept. 12, 1973, Pat. No. 3,886,577. This application May 22, 1975, Ser. No. 579,821
Int. Cl.² H01L ***21/22***
U.S. Cl. 148—1.5 **6 Claims**



1. A method of quickly stabilizing the threshold voltage of a memory semiconductor switch device to be used in a D.C. circuit and which includes a pair of spaced electrodes between which extends a body of high resistance amorphous memory semiconductor material of a composition which when one of more D.C. voltage set pulses are applied to said electrode there results current flow through a filamentous path in said semiconductor material termination of the voltage pulse or pulses resulting in a crystalline relatively low resistance deposit of at least one of said elements in said path, and wherein application of one or more D.C. current reset pulses of a given amplitude to said filamentous path will substantially return said filamentous path to a generally amorphous condition, and during the flow of said reset current pulses through said filamentous path there normally occurs migration of the relatively electropositive element of said composition to the negative electrode and migration of the relatively electronegative element to the positive electrode, said method comprising the steps of applying during the fabrication of the device adjacent at least one of said electrodes at the location where said filamentous path will terminate an element enriching region containing one of said elements there being in said element enriching region a greater concentration of said element than in said composition of memory semiconductor material, and said element enriching region being sufficiently thick and having a sufficient concentration of said element to effect a stabilized gradient of said element through the reset region of the semiconductor material in at most a small number of set-reset cycles, so that threshold voltage stabilization is quickly achieved.

3,980,506
PROCESS FOR MANUFACTURING HIGHLY WEAR-RESISTANT, UNDISTORTED, AXIALLY SYMMETRICAL PARTS

Franz Josef Overkott, Gevelsberg, Germany, assignor to Carl Ullrich Peddinghaus, Wuppertal-Barmen, Germany

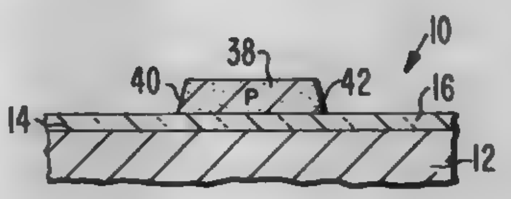
Filed Jan. 31, 1974, Ser. No. 438,415
Claims priority, application Germany, Jan. 31, 1973, 2304557
Int. Cl.² C21D ***1/48***
U.S. Cl. 148—16.5 **4 Claims**

1. A process for manufacturing highly wear-resistant, undistorted, axially symmetrical elongated chromium-containing martensitic steel parts comprising the steps of: rotating the parts about their longitudinal axis at a speed of about 500 to 1000 revolutions per minute, subjecting the rotating part to a surface pressure polishing process to increase the strength to about 110 Kg/mm², and subjecting the polished rotating part to a surface hardening process which includes exposure to a surface-hardness-producing gas, selected from the group consisting of carbonizing and nitriding gas or mixtures thereof at a temperature above the A_3 temperature of the iron-carbon equilibrium diagram.

3,980,507
METHOD OF MAKING A SEMICONDUCTOR DEVICE

Donald Raymond Carley, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 24, 1975, Ser. No. 571,106
Claims priority, application United Kingdom, Apr. 25, 1974, 18165/74
Int. Cl.² H01L ***21/225***
U.S. Cl. 148—187 **8 Claims**



1. A method of etching a layer of silicon disposed on a substrate, said layer having a surface, to remove a first surface-adjacent portion of said layer having a defined boundary in said surface while retaining a second surface-adjacent portion adjacent to said defined boundary, said second portion being of P type conductivity, comprising

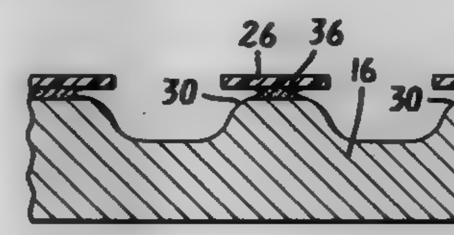
introducing donor impurities only into said first portion of said layer by diffusing said donor impurities from a source on said surface to impart N type conductivity thereto, and

contacting the entire surface of said layer with a solvent in which N type silicon is soluble but in which P type silicon is substantially insoluble for a time sufficient to remove said first portion of said layer.

3,980,508
PROCESS OF PRODUCING SEMICONDUCTOR DEVICE

Saburo Takamiya; Masaharu Hama, and Akihiro Kondo, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Oct. 1, 1974, Ser. No. 510,912
Claims priority, application Japan, Oct. 2, 1973, 48-110692
Int. Cl.² H01L ***21/225***
U.S. Cl. 148—188 **4 Claims**



1. A process of producing a semiconductor device, comprising:

a. providing a silicon wafer having a major surface;

b. disposing on a portion of said major surface a doped silicon dioxide film, said doped silicon dioxide film being doped with an impurity to impart thereto an etching rate of from about ten to about fifty times the etching rate of silicon;

c. disposing on a portion of said doped silicon dioxide film a protective film of etchant resistant material to define an etching mask for protecting portions of said doped silicon dioxide film underlying said protective film, and for protecting the corresponding portions of said major surface which underlie said portions of said doped silicon dioxide underlying said protective film; and

- d. etching portions of said doped silicon layer and underlying major surface unprotected by said protective film.

3,980,509
SOLID FLUORO-OXIDIZER SYSTEMS FOR CHEMICAL LASERS

Hyman R. Lubowitz, Hawthorne, and William G. Gaskill, Long Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Aug. 7, 1975, Ser. No. 602,628
Int. Cl.² C06B *45/10*
U.S. Cl. 149—19.3 **1 Claim**

1. A solid grain fuel for a chemical laser comprising:
- a. an oxidizing salt comprising: NF_4BF_4, NF_4SbF_6, $N_2F_3AsF_6$, $N_2F_4AsF_5$, NF_4AsF_6, NF_3HBF_4, NF_3HClF_3, $N_2F_4HBF_4$, $N_2F_3BF_4$, $KClF_4$, $LiClF_4$, $KBrF_4$, $Ba(BrF_4)_2$, SF_5NF_2, SF_3BF_4, $CsSF_5$, and mixtures thereof;
- b. a polymer fuel material comprising: polychlorotrifluoroethylene, polytetrafluoroethylene, perfluoropolybutadiene, perfluoropolyisobutylene, perfluoropolyisoprene, perfluoropolychloroprene, and perfluoropolypropylene, and mixtures thereof;
- c. an alkali metal fluoride comprising: CsF, BaF_2, KF, RbF, CaF_2, and mixtures thereof;
- d. an augmenting fuel comprising: Mg, Mg_3N_2, Al, AlN, B, C, Be, and mixtures thereof;
- e. a plasticizer comprising: polychlorotrifluoroethylene, polytetrafluoroethylene, and perdifluoroaminoperfluorobutadiene in the form of oils and greases.

3,980,510
NITROPARAFFIN EXPLOSIVE COMPOSITION CONTAINING HYDRAZINE AND DIETHYLENETRIAMINE

John Jerold Ridgeway, Paris, France, assignor to Imperial Chemical Industries Limited, London, England

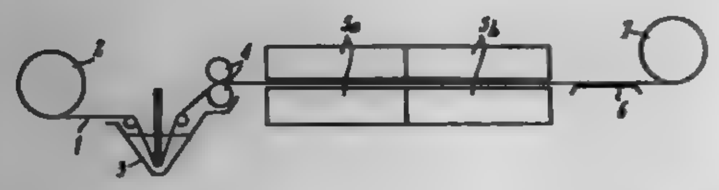
Filed Oct. 29, 1974, Ser. No. 518,888
Int. Cl.² C06B *25/36*
U.S. Cl. 149—36 **6 Claims**

1. A self-sterilising explosive composition consisting essentially of a liquid nitroparaffin selected from the group consisting of nitromethane, dinitromethane, nitroethane, dinitroethane, nitropropane and dinitropropane, sufficient hydrazine to sensitise the nitroparaffin and render it capable of detonation, and diethylenetriamine as a delayed action sterilising agent.

3,980,511
MANUFACTURE OF PRODUCTS HAVING HIGH ACOUSTIC INSULATING CHARACTERISTICS

Bernard Marie Jean Proucelle, Creil, France, assignor to Saint-Gobain Industries, Neuilly-Sur-Seine, France

Filed July 14, 1972, Ser. No. 271,667
Claims priority, application France, July 23, 1971, 71.26994
Int. Cl.² B32B *17/02*
U.S. Cl. 156—62.4 **6 Claims**

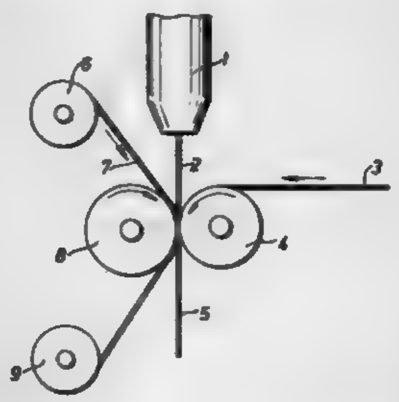


1. The method of manufacture of products having highly improved sound insulating properties, particularly impact noises, derived from mats of interlaced glass fibers having a high tractive resistance and which are impregnated with a plasticized polyvinyl chloride resin composition containing an expanding agent which is subject to decomposition by heat, which comprises
- a. providing a mat of separated glass fibers, the majority of which are of a length of approximately 50 cm., free of any adhesive therebetween but only entangled between superposed planes,
- b. impregnating the mat uniformly through its thickness with a plasticized polyvinyl chloride resin containing an expanding agent,
- c. initially heating the impregnated mat at atmospheric pressure and at a temperature of approximately 140°C., for about 2 minutes, for partially jelling the plasticized thermoplastic resin within the whole of the mat,
- d. secondarily heating the mat, in which the resin is partially jellified, at a temperature of approximately 180° to 200°C., for about two minutes, to complete the jellification of the resin and to permit a free expansion of the resin within the mat, the fibers of the superposed layers of the mat being still separated from each other in the course of the heating, to effect a substantially uniform distribution thereof and a controlled expansion of the mat in the direction of its thickness while limiting its expansion in transverse directions, and
- e. cooling the composite mat upon its reaching a predetermined density as it passes from a plastic to an elastic state, with stable dimensions except in the direction of its thickness which is flexible.

3,980,512
METHOD OF TRANSFERRING DECORATIONS TO AN EXTRUDED WEB

Jan Axel Ingemar Rausér, Lomma, Sweden, assignor to AB Ziristor, Lund, Sweden

Continuation of Ser. No. 450,054, March 11, 1974, abandoned. This application Oct. 8, 1975, Ser. No. 620,753
Claims priority, application Sweden, Mar. 21, 1973, 7303959
Int. Cl.² B44C *1/14;* **B41M** *5/26*
U.S. Cl. 156—231 **1 Claim**

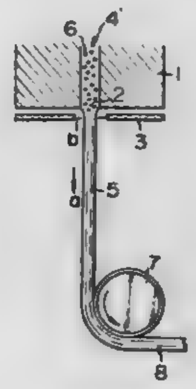


1. A continuous method of making a plastic material web having thereon a decoration including a layer of metal particles, which method consists essentially in the following sequence of steps:
- preparing a decoration film (7) by coating a carrier film 11 of a non-polar polyethylene plastics with a discontinuous layer of a printing ink (12), applying thereover a thin coating of a vapor-porous layer (10) of metal particles consisting essentially of aluminum, by vacuum-metallizing on one side thereof, said vapor-porous layer having a thickness of 100–4000 A;
- heating a body of a plastics material to an elevated temperature at which the plastics is soft and plastic;
- extruding the so-heated and softened plastics in the form of a hot, extruded web (2) of a plastics material having greater adhesion to said metal particles layer than that of said carrier film;
- bringing one surface of said freshly extruded, hot plastics web (2) into contact with the coated side of said decoration film (7) and the other surface of said plastics web (2) into contact with a carrier layer web (3);
- passing the resulting composite of decoration film (7), plastics web (2) and carrier layer web (3) between cooling and compression rollers thereby causing a metal layer (10) to penetrate and adhere to plastics web (2) and plastics web (2) to laminate with carrier layer web (3) as a final decorated material web;
- detaching said carrier film 11 from the metal layer surface of the final decorated material web; and
- recovering the so-freed carrier film and reusing it in preparing a fresh supply of decoration film.

3,980,513
PROCESS FOR MAKING LAMINATES OF SHEET-FORMED, RETICULATED FIBROUS STRUCTURES

Akira Omori; Isao Okamura; Tadasi Imoto, all of Sagamihara, and Tadayuki Katoh, Tokyo, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 263,443, June 16, 1972, abandoned, which is a division of Ser. No. 136,511, April 22, 1971, abandoned. This application July 3, 1974, Ser. No. 485,635
Int. Cl.² B29D *27/00*
U.S. Cl. 156—244 **15 Claims**

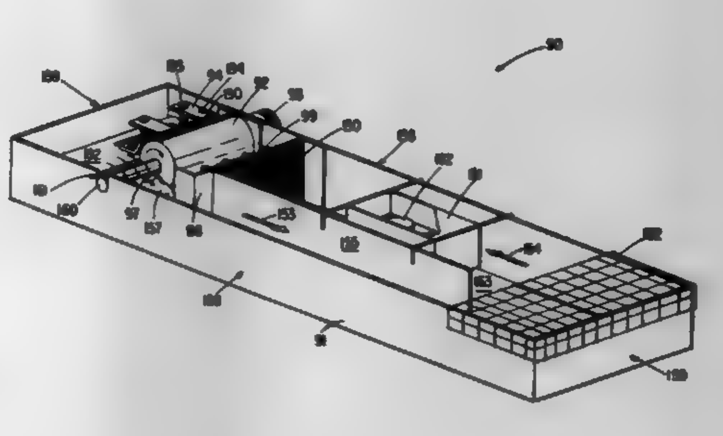


1. A process for the preparation of composite structure. which comprises:
- a. extruding a molten thermoplastic resin selected from the group consisting of styrene resins, polyamide resins, polyester resins, vinyl resins, polycarbonate resins, acrylic resins, and copolymers and blends thereof containing a foaming substance through a die with a slit clearance of 0.1 to 1.0 mm;
- b. quenching the extrudate at a point less than 5 mm away from the die surface to a temperature below the glass highest transition temperature of the resin;
- c. simultaneously taking up the extrudate at a draft ratio between the maximum draft ratio of the extrudate and one-third thereof, thereby fibrillating the extrudate just as it leaves the die exit;
- d. laminating at least two sheets of thus obtained unopened, sheet-formed and reticulated fibrous structures so that the directions of the fibers of these structures are identical to each other;
- e. pulling the laminate in the direction perpendicular to the direction of the fibers to open the same; and
- f. pressing the opened, sheet-formed laminate so obtained at a temperature lower than the lowest softening point of any constituent of said sheet-formed laminate.

3,980,514
ADHESIVE BINDING APPARATUS

Alan S. Rosette, 18 Charing Cross, Fairport, N.Y. 14450, and Robert B. Ellenson, 52 Round Trail Drive, Pittsford, N.Y. 14534

Filed Feb. 14, 1974, Ser. No. 442,588
Int. Cl.² B32B *1/00*
U.S. Cl. 156—477 B **15 Claims**



1. In an adhesive reservoir and applicator assembly comprising:
- a. a reservoir for adhesive material having an intake compartment, a discharge compartment and a pumping compartment; and
- b. a cylindrical adhesive applicator in said pumping compartment;

the improvement comprising a trough having a first end panel, a second end panel having a cutout portion, a front panel formed by the surface of said adhesive applicator, a back panel situated between said first end panel and said second end panel, a bottom panel situated between said first end panel and said second end panel, one side of said bottom panel being adjoined to said back panel and the remaining side of said bottom panel having a scraping edge for removing adhesive material from the surface of said applicator after said surface has been coated with adhesive and presented for application to an adhesive receiving article and before said surface is immersed in the reservoir wherein the adhesive material which is removed by said scraping edge flows into said trough, through said cutout portion and into said discharge compartment.

7. In an apparatus for adhesively binding together pages to form a book comprising:
- a. a movable carriage member with means to clamp pages;
- b. an elongated carriage bar member;
- c. a reservoir for adhesive material having an intake compartment, a discharge compartment and a pumping compartment; and
- d. a cylindrical adhesive applicator in said pumping compartment;

the improvement comprising a trough having a first end panel, a second end panel having a cutout portion, a front panel formed by the surface of said adhesive applicator, a back panel situated between said first end panel and said second end panel, a bottom panel situated between said first end panel and said second end panel, one side of said bottom panel being adjoined to said back panel and the remaining side of said bottom panel having a scraping edge for removing adhesive material from the surface of said applicator after said surface has been coated with adhesive and presented for application to an adhesive receiving article and before said surface is immersed in the reservoir wherein the adhesive material which is removed by said scraping edge flows into said trough, through said cutout portion and into said discharge compartment.

3,980,515
SEALING APPARATUS

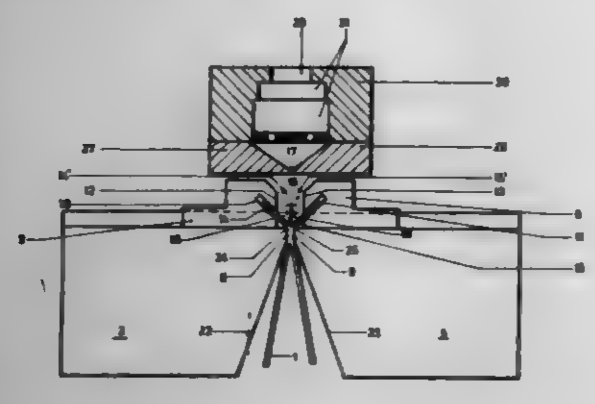
Wilhelm Reil, Bensheim-Auerbach, and Jörg Trabitzsch, Seeheim, Bergstrasse, both of Germany, assignors to Altstadter Verpackungs-Vertriebe GmbH, Pfungstadt am Hintergraben, Germany

Filed Jan. 23, 1975, Ser. No. 543,444

Claims priority, application Germany, Feb. 8, 1974, 2405943

Int. Cl.² B32B *31/00*

U.S. Cl. 156—497 **7 Claims**



1. Apparatus for sealing together portions of material having a sealable plastics coating, such apparatus comprising in combination opposed jaws between which the portions may pass; means resiliently urging the jaws together, said jaws being held apart at distance corresponding to the thickness of material passing therethrough and said material having free edges; a guide rail on each jaw; a slot in each guide rail and positioned to receive the free edge of one said portion, said slots diverging away from said jaws whereby to spread said free edges apart to expose the sealable coating, said slots forming an angle of 50° to 90°; a slit shaped nozzle means to deliver hot air directly onto the coating at the point of juncture spread of material and means for conveying the spread apart material together and pressing the softened areas to form a sealed seam.

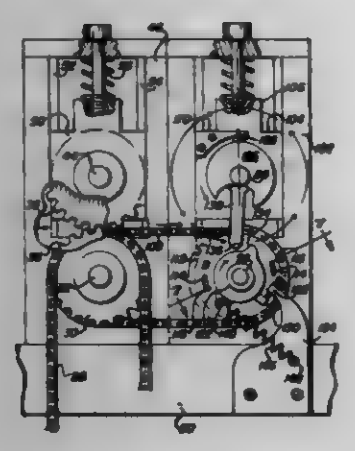
3,980,516
SIDE WELD PLASTIC BAG MANUFACTURING MACHINE

Twyman Guard, 795 S. Alton Way, Denver, Colo. 80210

Filed Nov. 18, 1974, Ser. No. 524,630

Int. Cl.² B31B *21/14, 21/60*

U.S. Cl. 156—515 **11 Claims**



1. In a plastic bag manufacturing machine; a frame; a pair of drive rollers rotatably mounted on said frame and adapted to engage folded plastic therebetween; power operated means for rotating said drive rollers; a sealer roller mounted on said frame in position to receive said folded plastic from said drive rollers; a heated sealer bar rotatably mounted on said frame and axially parallel to said sealer roller; said sealer bar having a radially projecting sealer edge portion adapted to rotate into close proximity to said sealer roller for sealingly engaging said folded plastic on said sealer roller; first means for rotating said sealer roller; second means for rotating said sealer bar such that adjacent portions of said sealer roller and said sealing edge of said sealing bar move in the same direction at a common rate; said second means also having auxillary means adapted to rotate said sealer bar at a higher rate than that of said drive rollers and said sealer rollers; a one-way clutch coupled to said sealer roller; an advancing member coupled to said sealer bar and disposed to engage and drive said one-way clutch for several degrees during each revolution of said sealer bar whereby said one-way clutch momentarily advances said sealer roller rotationally at a rate comparable to that of said sealer bar when said sealer bar is rotated at said higher rates by said auxillary means; said first means, which drives said sealer roller, having a lost motion drive mechanism allowing said sealer roller to be rotationally advanced at said higher rate during operation of said one-way clutch for several degrees of rotation; said second means having intermittently operated clutch means disposed and adapted to operate said auxillary means to thereby rotate said sealer bar intermittently; said second means adapted to rotate said sealer roller at a rotational rate common to that of said drive rollers and adapted to operate said heat seal bar at said common rotational rate until said sealing edge thereof has engaged and sealed plastic on the surface of said sealer roller and then said auxillary means is adapted to rapidly advance the rotational rate of said sealer bar to thereby also cause said advancing member to actuate said one-way clutch and to concurrently rotate said sealer roller at said higher rate whereby a heat sealed plastic bag is separated and removed away from the remaining plastic being fed toward said sealer roller by said drive rollers.

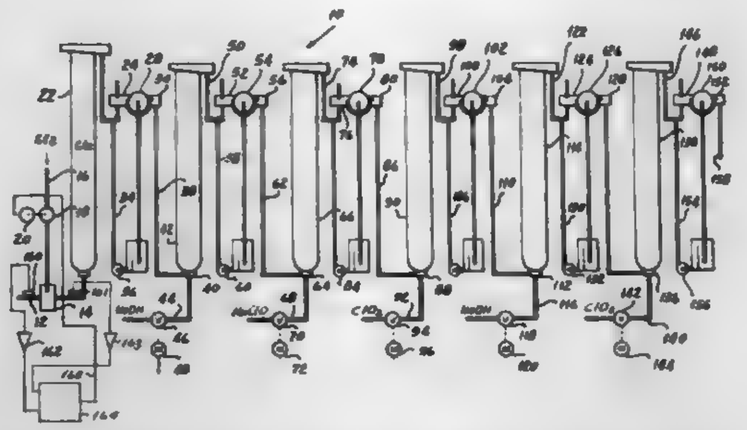
3,980,517
CONTINUOUS ON-MACHINE CONTROL OF BLEACHING CHEMICALS

John W. MacTaggart, Bolton, Canada, assignor to Sentrol Systems Ltd., Downsview, Canada

Continuation-in-part of Ser. No. 489,368, July 17, 1974, abandoned. This application Aug. 4, 1975, Ser. No. 601,288

Int. Cl.² D21C *7/14*

U.S. Cl. 162—49 **11 Claims**



1. In a bleaching system including a stage in which a bleaching agent is added to stock flowing through said stage, apparatus for controlling the addition of said bleaching agent in said stage including in combination, regulatable means for adding said bleaching agent in said stock in said stage, first brightness sensing means located upstream of said bleaching agent adding means in the direction of flow of said stock through said stage for producing a first signal representing the brightness of stock being fed to said stage prior to the addition of said bleaching agent in said stage, second brightness sensing means located downstream of said bleaching agent adding means in the direction of flow of said stock through said stage for producing a second signal representing the brightness of said stock following the addition of said bleaching agent, means for combining said first and second signals to provide a control signal, and means responsive to said control signal for regulating said means for adding said bleaching agent.

10. In a bleaching process in which a bleaching agent is added to brown stock, the steps of measuring the brightness of said brown stock adding said bleaching agent to said brown stock measuring the brightness of said stock after the addition of said bleaching agent, combining said measurements, and controlling the addition of said bleaching agent in response to said combination.

3,980,518
DEVICE FOR LIQUID-TREATING A RUNNING FIBER WEB, INCLUDING AN ARC-SHAPED DUCT

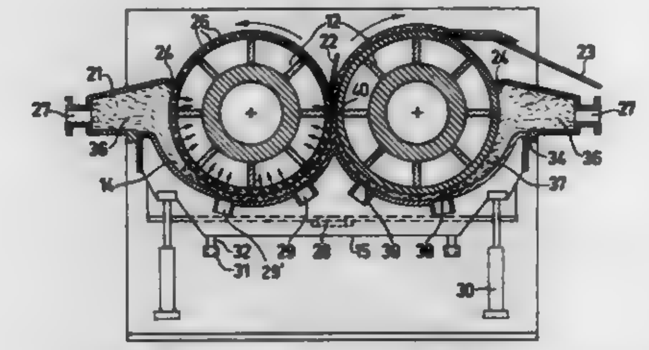
Bernt Johan Ljung, Sundsbruk, and Karl-Erik Lennart Svensson, Sundsvall, both of Sweden, assignors to Sunds Aktiebolag, Sundsvall, Sweden

Filed Mar. 4, 1975, Ser. No. 555,086

Claims priority, application Sweden, Mar. 4, 1974, 7402863

Int. Cl.² D21F *1/08*

U.S. Cl. 162—302 **17 Claims**



1. A device for carrying out liquid treatment of a fiber pulp suspension to form a running fiber web, said device comprising an arc-shaped duct, said duct including a first duct portion having a converging cross-section for compressing the fiber pulp suspension to form the fiber web, a second duct portion having diverging cross-section for the expansion of the fiber web, said second portion including a supply line for introducing treatment liquid, and a third duct portion having a converging cross-section for compressing the fiber web, said duct being defined inwardly by a rotary cylindrical screen member and radially outwardly by a stationary wall member.

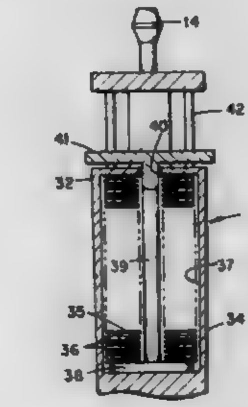
3,980,519
DAMPER MECHANISM FOR NUCLEAR REACTOR CONTROL ELEMENTS

William Elwood Taft, Los Gatos, Calif., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed June 4, 1974, Ser. No. 476,183

Int. Cl.² G21C *7/08, 7/20*

U.S. Cl. 176—36 R **3 Claims**



1. In a control assembly for a nuclear reactor having a guide tube mounted within an outer casing forming an annulus therebetween and having a control element normally retained for insertion under scram conditions into the reactor core through the guide tube having fluid therein, the improvement comprising: a damper mechanism secured to said control element and composed of a dashram assembly working in sequence with a spring hydraulic damper assembly; said spring hydraulic damper assembly being located within said dashram assembly; said dashram assembly including a tapered outer surface which cooperates with a portion of said guide tube causing a dashpot effect and decelerating movement of said control element; said spring hydraulic damper assembly including a member contacting said portion of said guide tube thereby activating said damper assembly causing final damping of control element movement said dashram assembly comprising an annular housing having said tapered outer surface thereon and defining a chamber therein, said portion of said guide tube defining a down stop member having an internal annular diameter larger than said tapered outer surface of said housing to define a decreasing cross-sectional annulus therebetween as said housing passes through said down stop member, said spring hydraulic damper assembly comprising a series of spring load discs positioned within said chamber of said dashram assembly housing, said housing being closed at opposite ends except for a centrally located opening in one end, a support plate positioned intermediate one end of said chamber and said discs, a rod means connected to said support plate and extending through said series of discs and outwardly through said opening in said housing, and a spider member secured to said rod means, said spider member being of a cross-section greater than said housing and said internal annular diameter of said down stop member, said chamber being adapted to contain a fluid, whereby downward movement of said damper mechanism causes said spider member to contact said down stop member causing said discs to be forced together by movement of said housing with respect to said piston expelling fluid from between said discs causing a damping action.

3,980,520
PROCESS FOR THE PRODUCTION OF L-MALIC ACID BY MICROBIOLOGICAL FERMENTATION AND MEANS SUITABLE FOR CARRYING OUT THE SAME

Ludwig Degen; Nicola Oddo, both of Rome, and Roberto Olivieri, Mentana, all of Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Filed Dec. 21, 1973, Ser. No. 427,340

Claims priority, application Italy, Dec. 27, 1972, 33567/72

Int. Cl.² C12D *1/02*

U.S. Cl. 195—30 **5 Claims**

1. A process for the production of L-malic acid which comprises inoculating a culture with the organism Paracolobactrum aerogenoides, said culture comprising a salt solution that contains a fumarate, a nitrogen source and a carbon source, and fermenting said culture under aerobic conditions at a temperature ranging from 20° to 40°C for a period of 18 to 36 hours at a pH of 5.5 to 8, and thereafter recovering said L-malic acid.

3,980,521
IMMOBILIZATION OF GLUCOSE ISOMERASE

Shmuel Amotz, Malev; Tage Kjaer Nielsen, Herlev, and Niels Otto Thiesen, Lyngby, all of Denmark, assignors to Novo Industri A/S, Bagsvaerd, Denmark

Filed Aug. 28, 1974, Ser. No. 501,292

Int. Cl.² C07G *7/02;* **C12K** *1/00*

U.S. Cl. 195—68 **11 Claims**

1. A method for production of an enzymatically active physically stable water insoluble glucose isomerase product from microorganism cells exhibiting glucose isomerase activity which comprises:

a. concentrating and homogenizing the microorganism cells into a homogenized cell concentrate containing ruptured

cells and having a dry matter content containing from 3–30% weight by volume;
- b. reacting said cell concentrate with from 0.01–1.0 parts by weight of glutaraldehyde per part of dry matter content to form thereby a coherent solid product; and
- c. thereafter removing water and shaping the coherent product into a subdivided form.

3,980,522
PRODUCTION OF A NEW ANTIBIOTIC, CALVATIC ACID

Hamao Umezawa; Tomio Takeuchi; Hironobu Iinuma, all of Tokyo, and Osamu Tanabe, Kowata Ugi, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

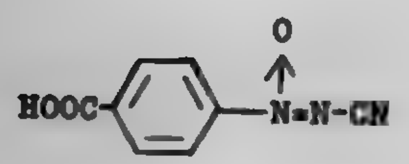
Division of Ser. No. 503,553, Sept. 5, 1974. This application Aug. 25, 1975, Ser. No. 607,641

Claims priority, application Japan, Sept. 14, 1973, 48-103200

Int. Cl.² C12D *9/04*

U.S. Cl. 195—81 **4 Claims**

1. The process for the production of the compound having the formula



which comprises cultivating *Calvatia craniforms* (Shw.) Fr. at a temperature of about 25° to 35° C. for at least two days under aerobic conditions in an aqueous assimilable carbohydrate solution containing an assimilable nitrogenous nutrient until a substantial amount of said compound is produced in said solution and then recovering said compound.

3,980,523
METHOD OF PROPAGATING MICROORGANISMS

Richard B. Rimler, 200 Kings Circle, and Richard B. Davis, Rte. 3, Box 321 C, both of Athens, Ga. 30601

Filed Mar. 14, 1975, Ser. No. 558,457

Int. Cl.² C12K *5/00*; C12B *3/14, 1/08*

U.S. Cl. 195—96 **10 Claims**

1. A medium for propagating *Haemophilus gallinarum* comprising assimilable sources of carbon and nitrogen in water, the medium further containing as essential ingredients at least the equivalent of sodium ions provided by 5.0 grams per liter of sodium chloride, and reduced nicotinamide adenine dinucleotide in an amount of at least 0.006 grams, per liter, the medium being characterized further by the absence of serum and meat infusion.

4. A process of propagating *Haemophilus gallinarum* comprising incubating *Haemophilus gallinarum* in a medium comprised of assimilable sources of nitrogen and carbon in water, the medium further containing sodium ions and reduced nicotinamide adenine dinucleotide, the incubation taking place under an atmosphere comprised of 5 to 15 percent carbon dioxide in air until a product containing at least 10^8 CFU/ml is obtained.

3,980,524
AIR TESTING DEVICE

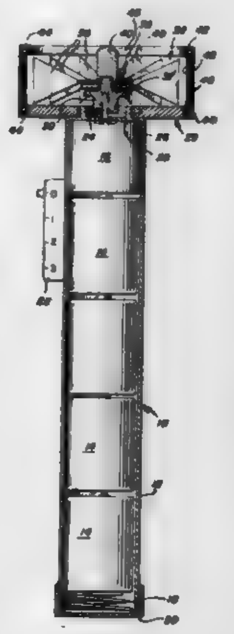
Adolf Karl Reuter, Marburg, Germany, assignor to Filba Adolf Reuter Kommanditgesellschaft Marburg an der Lahn, Marburg, Germany

Filed Jan. 4, 1974, Ser. No. 431,143

Claims priority, application Germany, Jan. 12, 1973, 2301385

Int. Cl.² C12B *1/00*

U.S. Cl. 195—139 **11 Claims**



1. Hand-held apparatus for testing a body of gaseous fluid for matter suspended therein, said apparatus comprising: casing means wherein said casing means serves as a handle, energy means contained therein; switch means disposed on said casing means and controlling said energy means; rotary drive means within said casing means having a rotary shaft and energized from said energy means through said switch means, said rotary shaft extending from said rotary drive means;
- cylindrical container means having its central axis aligned with said rotary shaft and having one container end secured to a surface of said casing adjacent said rotary drive means, the other end being open to said gaseous body;
- impelling means disposed on said rotary shaft and driven thereby, wherein said impelling means is disposed within said container means; and
- substrate means on at least one internal surface of said container means, said impeller means drawing said fluid through said open end and impelling said fluid against said substrate means.

3,980,525
INCREASING ETHYLENE FEEDSTOCK GASES PRODUCED BY QUENCHING EFFLUENT ZONE ABOVE COKE BED WITH COOLING LIQUID

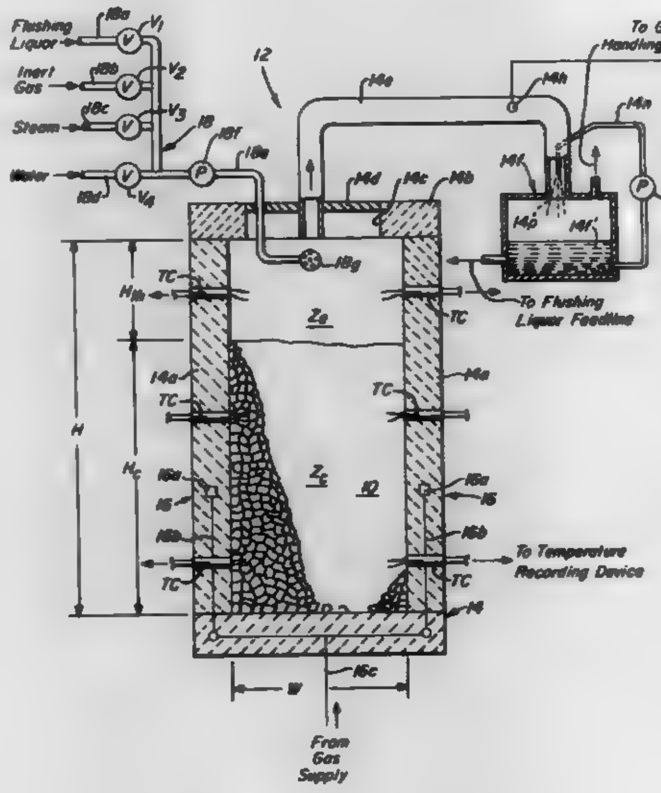
Everett W. Knell, Pleasant Hills Boro, Allegheny County; Philip X. Masciantonio, Penn Township, Westmoreland County; Joseph P. McGinness, McKeesport, and George T. Saniga, Penn Hills Township, Allegheny County, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 371,108, June 18, 1973, abandoned, which is a continuation of Ser. No. 107,661, Jan. 19, 1971, abandoned. This application Nov. 7, 1974, Ser. No. 521,811

Int. Cl.² C07C *11/02, 11/04, 3/30*; C10G *37/02*

U.S. Cl. 201—29 **14 Claims**

1. A method of increasing yields of recoverable ethylene feedstock gases produced and evolved into an effluent zone immediately above and in open communication with a coke bed during the manufacture of coke from a raw material selected from the group consisting of coal, and green or pitch coke in a coking apparatus during a coking cycle, comprising the steps of:
- a. heating said raw material to its coking temperature of about 2000°F to cause evolvement of said recoverable gases in the effluent zone in said coking apparatus above said raw material;
- b. simultaneously introducing a cooling fluid consisting of liquid water or liquid aqueous flushing liquor into said effluent zone from a location above the coke bed at the rate of about 1.0 to 3.0 gallons/hour/ton of raw material during about the first eight hour period of said coking cycle to maintain the temperature of said recoverable gases in said effluent zone below their decomposition temperature, thereby increasing the yield of said recoverable gases from said coking apparatus while maintaining maximum coke-producing rates in said coking apparatus, said cooling fluid being introduced in a generally horizontal direction and at a distance sufficiently far above the coke that substantially all the fluid is vaporized so that there is no effect on the underlaying coke; and
- c. continuously withdrawing from said effluent zone said cooled recoverable gases and any injected cooling fluid during said coking cycle.



3,980,526
LIQUID DISTILLATION APPARATUS

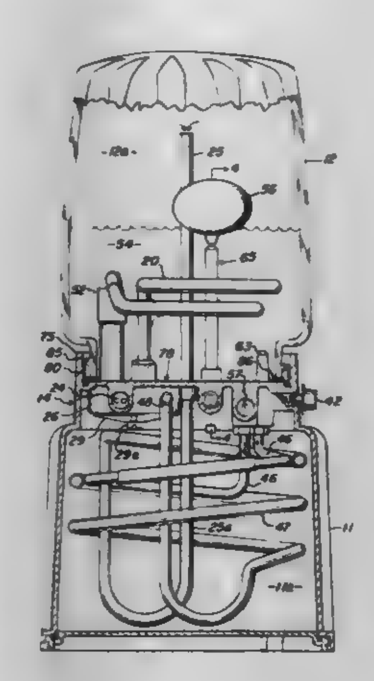
John D. Kirschmann, 933 Anderson St., Bismarck, N. Dak. 58501

Filed Aug. 11, 1975, Ser. No. 603,723

Int. Cl.² C02B *1/08*

U.S. Cl. 202—83 **33 Claims**

1. Liquid distillation apparatus comprising:
- a boiler container having outlet orifice means for draining mineral residue solution therefrom;
- means for conducting raw liquid into said boiler container; heater means for evaporating said raw liquid thereby producing vapor; means for condensing said vapor, said condenser means having a distillate output;
- vapor passage means extending between said boiler container and said condenser means; and
- means for maintaining uninterrupted mineral residue solution flow through said outlet orifice means in response to agitation by fluid within said boiler container.



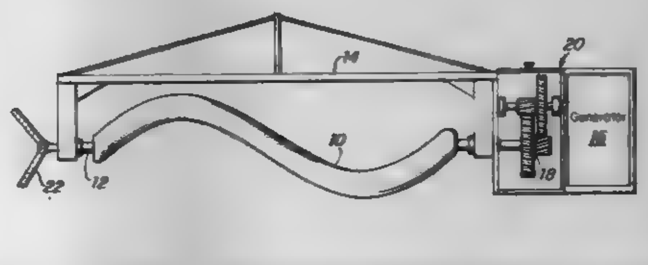
3,980,527
DISTILLATION SYSTEM HAVING BOUYANT ROTARY HELICAL CONVERSION MEANS

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Continuation-in-part of Ser. No. 148,775, June 1, 1971, abandoned. This application June 25, 1973, Ser. No. 373,441

Int. Cl.² B01D *3/00, 3/14*

U.S. Cl. 202—175 **8 Claims**



1. Apparatus for manufacturing fresh water from wea water, said apparatus comprising in combination:
- means for containing a quantity of said sea water;
- means for converting the motion of gravity waves in sea water to heat so as to raise the temperature of said quantity of sea water with said heat, said conversion means comprising an elongated buoyant member curved about an axis to form a helix and means mounting said helical buoyant member for rotation about said axis, said mounting means including means for suspending said helican buoyant member so as to enable said member to float partially submerged with respect to the crests of said gravity waves;
- means couplable to said buoyant member for converting the rotation of the latter to heat energy;
- means for applying said heat energy to said quantity of sea water;
- condensing means; and
- means for collecting water vapor formed above the heated quantity of sea water and for directing said collected water vapor to said condensing means for condensation into a fresh water supply.

3,980,528

SOLVENT SEPARATION OF DIOLEFINS FROM MIXTURES CONTAINING THE SAME

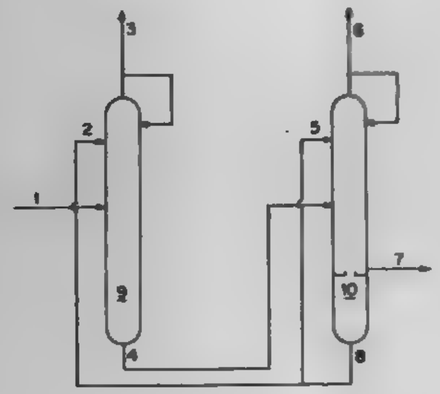
Carlo Rescalli, San Donato Milanese, and Alessandro Vetere, Milan, both of Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Filed July 19, 1974, Ser. No. 489,919

Claims priority, application Italy, July 20, 1973, 26816/73

Int. Cl.² C07C ***7/08;*** **B01D** ***11/04***

U.S. Cl. 203—58 5 Claims



1. The method of separating a diolefin from a mixture thereof with other hydrocarbons which comprises, feeding said mixture to a first extractive distillation column at a point intermediate its ends, feeding to said first extractive distillation column at a point adjacent its upper end a solvent for said diolefin selected from the members of the group consisting of the saturated and unsaturated derivatives of imidazole having a methyl or ethyl group bound to at least one nitrogen atom and mixtures thereof with each other and with water, withdrawing substantially all of said other hydrocarbons from the upper end of said column and withdrawing the solvent, substantially all of said diolefin and the balance of the other hydrocarbons as bottom product from said first extractive distillation column, feeding said bottom product to a second extractive distillation column, withdrawing said diolefin from the upper end of the second distillation column in substantially pure form, withdrawing said balance of the other hydrocarbons and said solvent from the second extractive distillation column, and recycling said solvent to said first and second extractive distillation columns.

3,980,529

PROCESS FOR SEPARATING AND RECOVERING RESIDUAL MONOMERS FROM AQUEOUS SUSPENSIONS OF ACRYLONITRILE POLYMERS

Gerd Wilhelm, Norf; Karl Hurm; Rolf-Burkhard Hirsch, both of Dormagen; Artur Jäschke, Cologne, and Herbert Marzolph, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

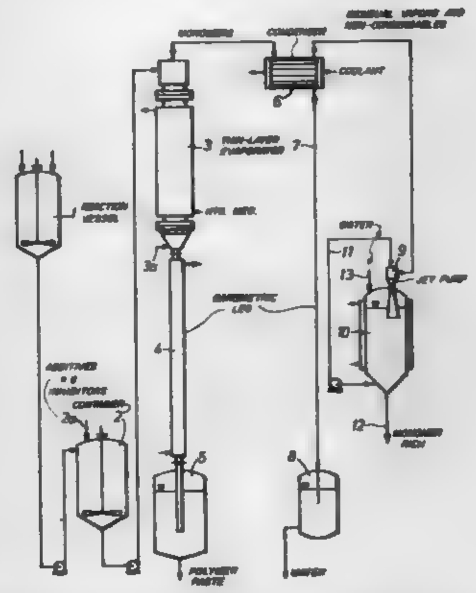
Filed Apr. 21, 1975, Ser. No. 569,932

Claims priority, application Germany, Apr. 27, 1974, 2420471

Int. Cl.² B01D ***3/00, 1/22;*** **C08F** ***220/42***

U.S. Cl. 203—89 9 Claims

1. A process for the separation and recovery of unreacted acrylonitrile and comonomers with a boiling point below 99°C under normal conditions from an aqueous polymer dispersion of a filament-forming acrylonitrile polymer, wherein a filterable polymer dispersion, the liquid phase of which may contain up to 7% by weight of residual monomer, is subjected continuously and uniformly to straightforward distillation in a thin-layer evaporator, the pressure prevailing inside the thin-layer evaporator being regulated so that the temperature of the evaporating liquid phase of the polymer dispersion does not exceed 95°C, the average residence time of the polymer dispersion in the evaporator does not exceed 5 minutes, and the evaporation rate of the liquid phase amounts to up to 30% by weight, wherein the vapours given off during evaporation are condensed in a condenser initially under substantially the same pressure which prevails in the thin-layer evaporator and at temperatures above 0°C, after which the vapours which have not been condensed in the condenser are compressed to a pressure higher than that prevailing in the condenser, and wherein the monomer-rich phases obtained, following separation of the aqueous phases, are returned to the polymerisation process.



3,980,530

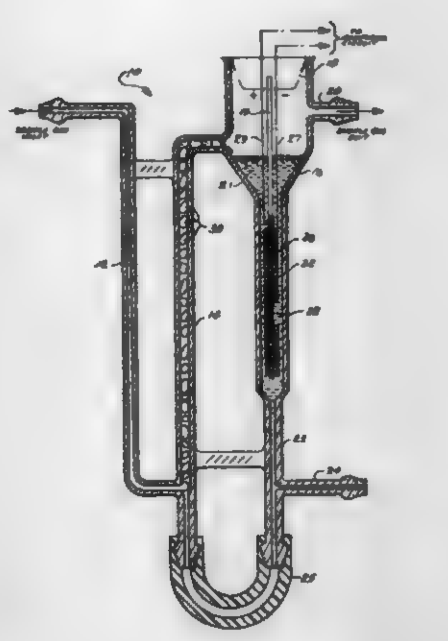
TWO-ELECTRODE GAS ANALYSIS METHOD FOR ELECTRICALLY SENSING AND CONTROLLING REDOX REACTIONS

Rudolph L. Hueser, 1300 Fair Way, Space 23, Calistoga, Calif. 94515

Division of Ser. No. 398,006, Sept. 17, 1973, Pat. No. 3,912,613. This application July 10, 1975, Ser. No. 594,714

Int. Cl.² G01N ***27/46***

U.S. Cl. 204—1 T 12 Claims



1. In a method of determining the amount of a reactant gas in a sample gas stream that will reduce the concentration of halogen, the steps of

passing the sample gas stream through a body of aqueous halide electrolyte contained in a cell so the amount of reactant gas contained in the sample gas will react with free halogen dissolved in the electrolyte and reduce its electrical conductivity in an amount proportional to the amount of reactant gas in the sample gas stream,

disposing a cathode and an anode in spaced apart relation in the aqueous electrolyte in the cell,

producing a first voltage pulse between the cathode and the anode by a sensing circuit to monitor the electrical resistance of the electrolyte present between the cathode and the anode, and

producing a second voltage pulse between the cathode and the anode, immediately following said first voltage pulse, by a generating circuit which is either sufficient to electrolyze the halide and form free halogen if the monitored electrical resistance of the electrolyte is within a first range or is insufficient to electrolyze the halide if the monitored electrical resistance of the electrolyte is within a second range.

3,980,531

BATH AND PROCESS FOR THE ELECTROLYTIC SEPARATION OF RARE METAL ALLOYS

Rolf Ludwig, and Josif Culjkovic, both of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Filed July 3, 1975, Ser. No. 592,819

Claims priority, application Germany, Sept. 20, 1974, 2445538

Int. Cl.² C25D ***3/62, 3/64, 3/56, 3/50***

U.S. Cl. 204—43 R 9 Claims

1. A cyanide-free aqueous bath comprising as its essential components at least 1g/liter of an alkali thiosulfate and at least 2 electrodepositable metals in the form of compounds selected from the group consisting of trisodium dithiosulfate argentate, tetrasodium trithiosulfate argentate, trisodium dithiosulfate aurate, tetrasodium trithiosulfate aurate, dodecasodium heptathiosulfate diaurate, dipotassium dithiosulfate palladate and tetrasodium trithiosulfate palladate, the concentration of said metal compounds being from about 0.01 to about 70 g/liter, said bath having a pH value between about 4 and about 13.

3,980,532

DEPOSITION OF BRASS BY ELECTROPLATING

Charles N. Abbott, Dayton, Ohio, assignor to Abbco, Inc., Dayton, Ohio

Filed Mar. 28, 1975, Ser. No. 562,836

Int. Cl.² C25D ***3/58, 3/24***

U.S. Cl. 204—44 3 Claims

1. In the process of electrodepositing brass from an an aqueous alkaline cyanide electrolyte containing a water-soluble manganous compound in an amount sufficient to provide 0.00005 – 0.1 g/l of manganese and 0.001 – 10 g/l of a water-soluble chelating or sequestering agent, the improvement which comprises incorporating in said electrolyte a water-soluble nickel compound in an amount sufficient to provide 0.0001 – 0.1 g/l of nickel.

3,980,533

BRASS PLATING

Charles N. Abbott, Dayton, Ohio, assignor to Abbco, Inc., Dayton, Ohio

Filed Feb. 21, 1975, Ser. No. 551,595

Int. Cl.² C25D ***3/56, 3/58***

U.S. Cl. 204—44 4 Claims

1. In an aqueous alkaline cyanide bath for electrodeposition of brass containing 4.45–8.56 oz/gal of sodium cyanide, 3.70–5.00 oz/gal of sodium hydroxide, 2.01–3.62 oz/gal of copper as cyanide and 1.37–2.79 oz/gal of zinc as cyanide, the improvement which consists in incorporating in said aqueous bath a water-soluble manganous compound in an amount sufficient to provide 0.00005–0.1 g/l of manganese.

3,980,534

ELECTROCHEMICAL FLUORINATION AND AN ELECTRODE FOR USE THEREIN

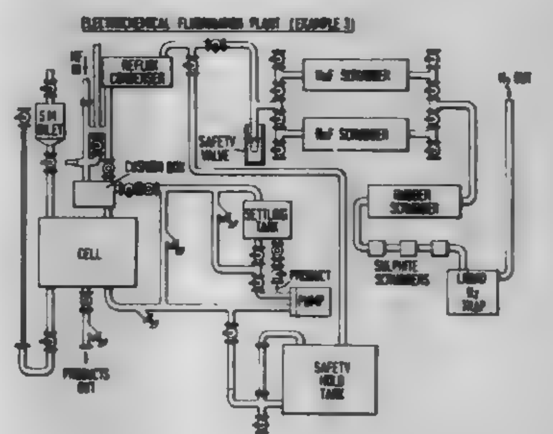
Frederick Gerald Drakesmith, Bryn-Awelon, Mold, Wales, assignor to The Electricity Council, London, England

Filed Apr. 9, 1974, Ser. No. 459,448

Claims priority, application United Kingdom, Apr. 11, 1973, 17441/73

Int. Cl.² C25B ***3/08, 11/04***

U.S. Cl. 204—59 F 15 Claims



1. A process for electrochemical fluorination of a substrate employing a cell comprising a cathode and a nickel anode, said nickel anode being selected from the group consisting of nickel mesh and nickel foam, immersed in hydrogen fluoride electrolyte and a reference electrode, which process comprises initially conditioning said nickel anode prior to introduction of a substrate to be fluorinated into the electrolyte, said conditioning being conducted by passing a current through said hydrogen fluoride electrolyte between a cathode and said nickel anode at least until the current density ceases to increase with time to provide said nickel anode with a layer of nickel fluoride which provides a reproducible electrode surface, placing at least a portion of said substrate in the electrolyte, and fluorinating said substrate by passing a current through the electrolyte during a reaction phase of said process, and controlling between fixed values the potential difference between said anode and said reference electrode during said initial conditioning and fluorinating steps.

3,980,535

PROCESS FOR PRODUCING SULFONES

Dierk Knittel, and Bertel Kastening, both of Julich, Germany, assignors to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Germany

Filed May 29, 1974, Ser. No. 474,167

Claims priority, application Germany, June 2, 1973, 2328196

Int. Cl.² C25B ***3/00;*** **C07C** ***147/02***

U.S. Cl. 204—59 R 4 Claims

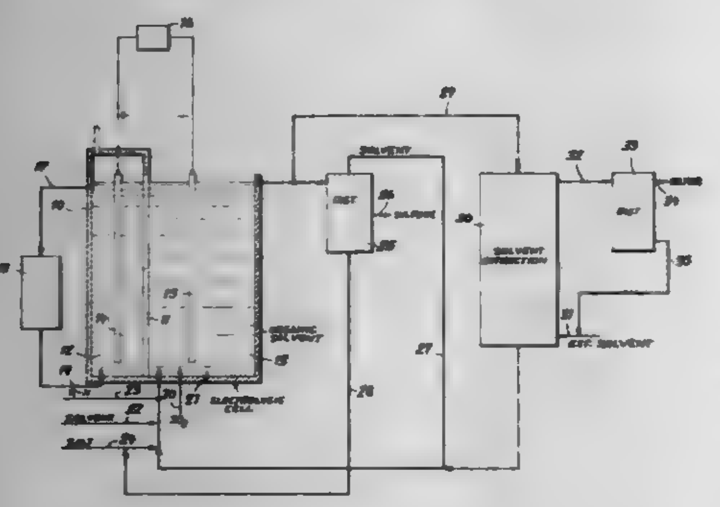
1. A process for the production of a sulfone, comprising the steps of:

a. introducing into an electrolysis cell, subdivided by an anion-exchange membrane or a diaphragm into an anode compartment and a cathode compartment, a reaction system consisting essentially of an aprotic organic solvent having dissolved therein a conductivity-promoting salt, SO_2, and an organic component selected from the group which consists of an organic halogen compound in which the halogen is chlorine, bromine, or iodine;

b. maintaining the SO_2 concentration in said system at least at 0.1 moles/liter;

c. electrolyzing said system in said cell at a current density, temperature and voltage sufficient to form SO_2^--ions from the SO_2 of said system and effecting a reaction of the SO_2^- with said component in said cathode compartment to form the corresponding organic sulfone therein; and

d. preventing the electrolysis current from exceeding the maximum current density for production of SO_2^- by providing in the electrolysis cell a reference electrode not traversed by the electrolysis current and controlling the voltage between the reference electrode and the cathode so that with respect to the standard potential of the SO_2/SO_2^- redox couple the potential does not exceed 0.1 volt.



3,980,536
PROCESS FOR PRODUCING MAGNESIUM METAL FROM MAGNESIUM CHLORIDE BRINES

David G. Braithwaite, Brookhaven, Miss., and William P. Hettinger, Jr., Iselin, N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed Apr. 11, 1975, Ser. No. 567,365
Int. Cl.² C25C *3/04*; **C01F** *5/30, 5/34*
U.S. Cl. 204—70 **20 Claims**

1. In a process for producing magnesium metal by electrolysis of a magnesium chloride electrolyte prepared from naturally occurring brines wherein a naturally occurring brine is treated in a succession of evaporation and concentration steps to form a magnesium chloride concentrate which is dehydrated by spray drying and chlorinated to remove occluded magnesium oxide the improvement comprising: treating a brine consisting essentially of from 7.0 to 7.5% Mg, water and trace amounts of metal impurities including from 400 to 550 ppm boron with an extractant to remove a major portion of the boron from the brine, desulfating and concentrating the partially deboronated brine, incorporating a gelling agent in said partially deboronated brine and homogenizing the brine-gellant mix to convert the brine to a magnesium chloride containing gel, chlorinating said gel by spray drying said gel in the presence of gaseous HCl to form a dried product comprising discrete particles of partially deboronated magnesium chloride substantially free of MgO, MgOHCl, and H_2O and having a bulk density in the range of from 20 to 48 pounds per cubic foot, thereafter introducing said dried product without melting and chlorinating the same into an electrolytic cell and melting said dried product directly in said cell in the presence of fluoride ions to form a magnesium chloride electrolyte.

3,980,537
PRODUCTION OF ALUMINUM-SILICON ALLOYS IN AN ELECTROLYTIC CELL

Curtis Jefferson McMinn, Florence, and Alton Theodore Tabereaux, Jr., Sheffield, both of Ala., assignors to Reynolds Metals Company, Richmond, Va.

Filed Oct. 3, 1975, Ser. No. 619,376
Int. Cl.² C25C *3/36*; **C22C** *21/02*
U.S. Cl. 204—71 **20 Claims**

1. The method of operating an aluminum reduction cell to produce an aluminum-silicon alloy, including the steps of feeding alumina and silica into a molten salt bath of the cell and passing electric current through the bath, wherein:

a. said feeding of alumina comprises introducing approximately equal incremental amounts of alumina effective in the aggregrate to supply the cell's alumina requirements,

b. said feeding of silica comprises introducing approximately equal incremental amounts of silica effective in the aggregate to supply the cell's corresponding requirements of silica to produce an alloy of the desired silicon content, and

c. these incremental feeding operations are conducted on a coordinated basis such that at times substantially only alumina is added to the bath and the feeding of silica is deferred, while at other times both alumina and silica are added to the bath.

14. The method of operating an aluminum reduction cell to produce an aluminum-silicon alloy, including the steps of feeding alumina and silica into the molten salt bath of said cell and passing electric current through the bath, which method comprises:

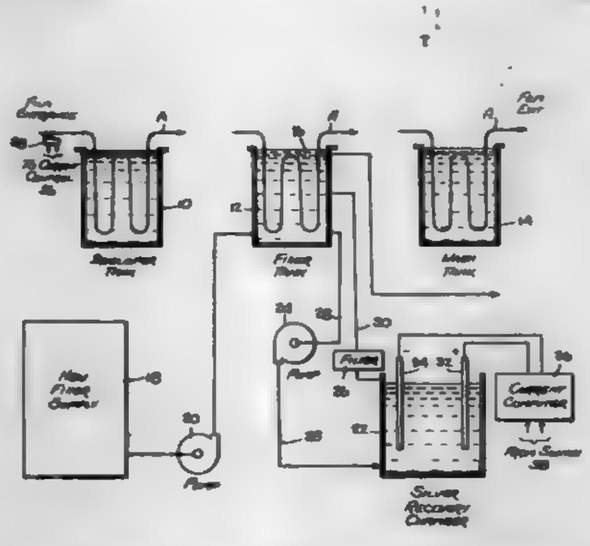
introducing incremental amounts of alumina into the bath n times during each 24-hour period of operation, wherein n is an integer from 4 to 15, with each such amount representing about $1/n$th of the cell's daily requirement of alumina; and

introducing incremental amounts of silica effective in the aggregate to supply the cell's corresponding daily requirements of silica to produce an alloy of the desired silicon content, with each such amount not exceeding about 2 percent of the weight of the molten bath, the number of said incremental feedings of silica being no more than n-2, for $n \leq 6$; and being only about n-4, for $6<n<15$.

3,980,538
METHOD FOR THE ELECTROLYTIC RECOVERY OF METALS

David L. Higgins, Palos Verdes Estates, Calif., assignor to Ag-Met, Inc., Lofty, Pa.

Filed Dec. 19, 1974, Ser. No. 534,159
Int. Cl.² C25C *1/20*
U.S. Cl. 204—109 **6 Claims**



1. A method for the recovery of silver from photographic films comprising the steps of providing a bath having an electrolyte solution capable of dissolving off silver materials from said films, passing said films successively through said bath, maintaining a continuous flow of electrical direct current through a pair of electrodes immersed in said bath, causing said direct current through said electrodes to increase steadily at a first predetermined rate while each film moves into said bath, said first predetermined rate corresponding to the rate of increase in silver concentration in the solution as each film passes therethrough, and causing said direct current through said electrodes to decrease steadily at a second predetermined rate during each interval between movement of successive films into said bath, said second predetermined rate corresponding to the rate of decrease in silver concentration in said solution caused by the plating of silver from the solution onto one of said electrodes.

3,980,539
PROCESS FOR ELECTROLYTIC GRAINING OF ALUMINUM

Mark C. Lloyd, Harrow, and Stuart C. Parish, Ruislip, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 30, 1975, Ser. No. 600,668
Claims priority, application United Kingdom, Aug. 7, 1974, 34844/74
Int. Cl.² C25F *3/02, 3/04*
U.S. Cl. 204—129.75 **3 Claims**

1. In a process for electrolytically graining aluminum in an aqueous electrolyte solution containing hydrochloric acid and boric acid, the improvement wherein the electrolytic current density is greater than 10 A/dm^2 and up to 40 A/dm^2, the concentration of hydrochloric acid is 2 to 2.5% by volume, and the concentration of boric acid is 1.5 to 4% by weight, whereby a fine even grain that is substantially free from pits is obtained.

3,980,540
VERTICAL GEL SLAB ELECTROPHORESIS APPARATUS AND METHOD

Stanton A. Hoefer, San Francisco, Calif., assignor to Hoefer Scientific Instruments, San Francisco, Calif.

Division of Ser. No. 455,871, March 28, 1975, Pat. No. 3,932,265. This application Aug. 18, 1975, Ser. No. 605,242
Int. Cl.² G01N *27/26*
U.S. Cl. 204—180 G **4 Claims**

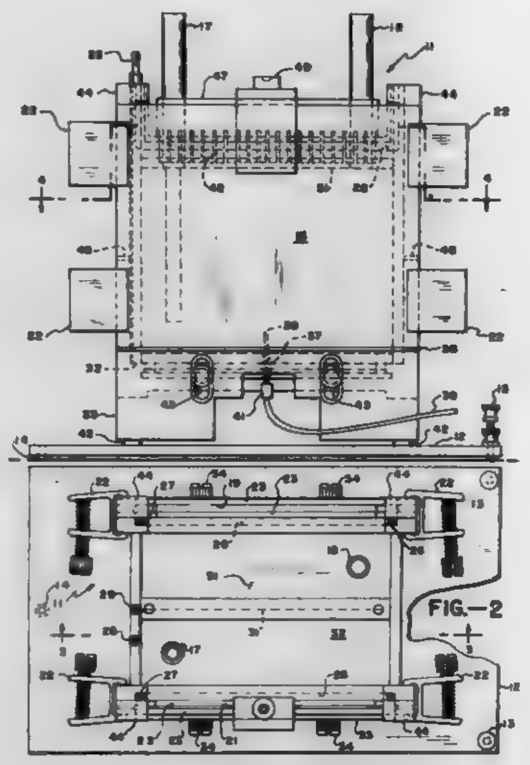


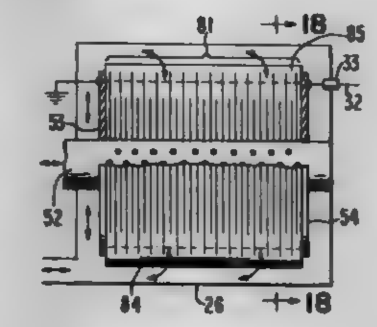
FIG.—2

1. A method of preparing a vertical gel slab for use in electrophoresis without disturbing the gel slab until electrophoresis is completed comprising the steps of forming a gel slab chamber having hydrophilic walls, orienting the gel slab chamber in a vertical direction, sealing the bottom of the gel slab chamber filling the gel slab chamber from the bottom with a separating gel solution while the gel slab chamber is in a vertical position, polymerizing the separating gel solution, removing the seal from the lower end of the gel slab chamber, placing the gel slab chamber in a container with the bottom of the gel slab in contact with a buffer solution, placing the upper end of the gel slab in contact with a separate buffer solution, underlaying a sample beneath the separate buffer solution above the gel slab, applying an electrical potential between the buffer solution and the separate buffer solution, whereby the sample is separated electrophoretically in the gel slab.

3,980,541
ELECTRODE STRUCTURES FOR ELECTRIC TREATMENT OF FLUIDS AND FILTERS USING SAME

Harry E. Aine, 1804 Stierlin Road, Mountain View, Calif. 94043

Continuation-in-part of Ser. No. 643,489, June 5, 1967, abandoned. This application May 6, 1971, Ser. No. 140,937
Int. Cl.² B03C *5/00*; **B01D** *13/02*
U.S. Cl. 204—186 **44 Claims**

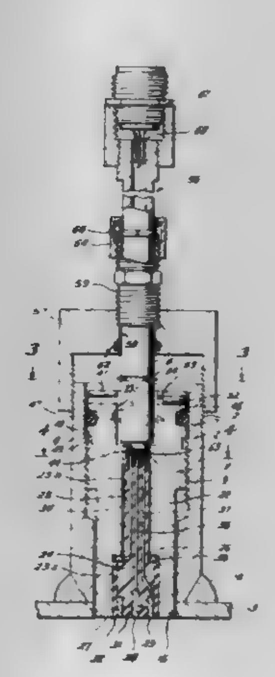


1. In an electrical fluid treating apparatus for treating non-electrolytic fluids, first and second electrode means spaced apart to define at least a portion of a composite electrode structure having an electrical treatment region through which a stream of non-electrolytic fluid is to pass for treatment, insulator means for insulating said first electrode from said second electrode to permit an electrical field to be established between said electrodes in said treatment region, resistive means incorporated in at least one of said electrode means in such a manner that, in the presence of an electrical short between said electrodes through the non-electrolytic fluid to be treated in said treatment region, said resistive means drops the applied potential across said resistive means in a localized portion of said resistive electrode structure such that less than one-tenth of said treatment region is effectively shorted by said electrical short.

3,980,542
FLUSH MOUNTED PROBE FOR CORROSION TESTING

Joseph D. Winslow, Jr., and Weldon D. Mayse, both of Houston, Tex., assignors to Petrolite Corporation

Filed July 14, 1975, Ser. No. 595,989
Int. Cl.² G01N *27/46, 27/30*
U.S. Cl. 204—195 C **13 Claims**

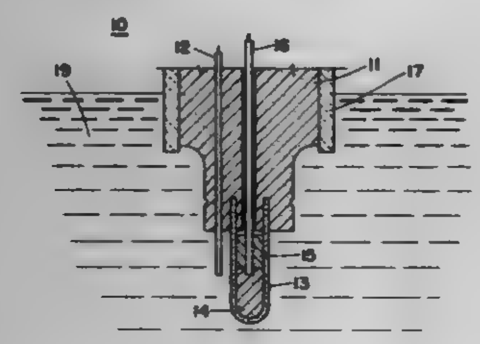


1. A flush mounted probe for performing corrosion tests by assembly into a nipple secured to a pipeline which has an opening through its sidewall in axial alignment with the nipple, and the nipple has a first portion with a smooth-walled inner

surface, a second portion forming an abutment means, and a third portion carrying interior threads comprising:

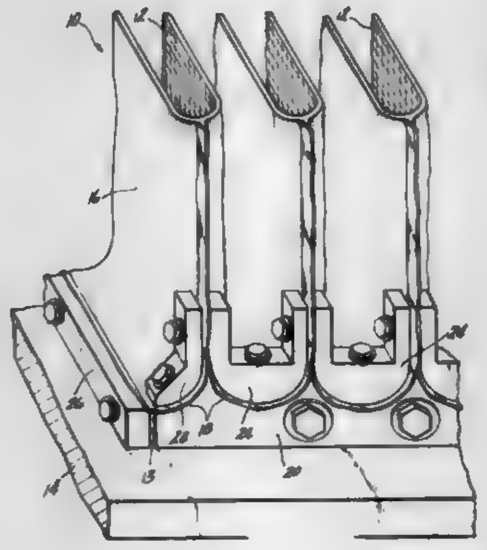
a. a cylindrical metallic body with a terminal planar surface formed by an insulating medium at a first end thereof,
b. a plurality of metallic electrodes disposed within said body and in electrical isolation relative to one another, said electrodes residing in a spaced apart relationship with the intervening spaces filled by said insulating medium and said electrodes having flat surfaces coinciding with said planar surface;
c. exterior threads on said body between said first end and a second end thereof for engaging the threads on the third portion of said nipple for mounting the probe in the nipple;
d. sealing means carried circumferentially about said body between said exterior threads and said second end thereof to cooperate with the straight-walled inner surface of the first portion on the nipple for forming a fluid tight seal between said body and the nipple;
e. stop means carried on said body to engage the abutment means on the nipple whereby said planar surface of said body is positioned adjacent the interior sidewall surface of the pipeline;
f. drive member means formed on said body at said second end and adapted to be engaged by a tool for transmitting rotary force to said body wherein said drive member means is provided by a coaxial opening extending into said second end of said body and said opening having a polygonal cross section;
g. latching means carried by said body in said coaxial opening for selectively securing the tool to said drive member [illegible]
h. terminals carried by said body within an axial opening extending from said terminals to said coaxial opening in the second end of said body and said terminals interconnected by electrically conductive means to said electrodes, and
i. indexing means on said body adjacent said terminals and having a predetermined orientation with respect to said terminals.

3,980,543
ELECTROCHEMICAL CELL STRUCTURE
Edgar L. Eckfeldt, Ambler, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.
Filed Dec. 4, 1974, Ser. No. 529,414
Int. Cl.^{2} G01N *27/46*; H01M *27/16*
U.S. Cl. 204—195 S **10 Claims**



1. An assembly for immersion into a bath of molten steel to form therewith a concentration cell for determining the concentration of manganese in said bath, said assembly comprising body structure capable of withstanding insertion into said bath for a length of time necessary to obtain a measurement, a first electrically conductive element of refractory material having one end protruding from said body structure for contact upon insertion into said bath with said bath and an end thereof inside said body structure electrically connected to means for connecting said element to a measuring instrument, a closed end tubular structure of refractory material projecting from said body structure and having at least a portion of the projecting end of an electrolyte material comprising a fired mixture of an ionically conductive compound of manganese and a porous component of silica, alumina or zirconium silicate, said porous component having a melting point above the temperature of the molten steel and acting as a support for said compound of manganese, a manganese reference material in its liquid state at the operating temperature of said cell contained within said tubular structure in electrically conductive relation with said electrolyte material, a second electrically conductive element extending within said tubular structure and with an end thereof in electrically conductive relation with said reference material and said electrolyte material, the other end of said second electrically conductive element being electrically connected within said body structure to means for connecting said second electrically conductive element to a measuring instrument, and means preventing the ingress of molten steel into said body structure.

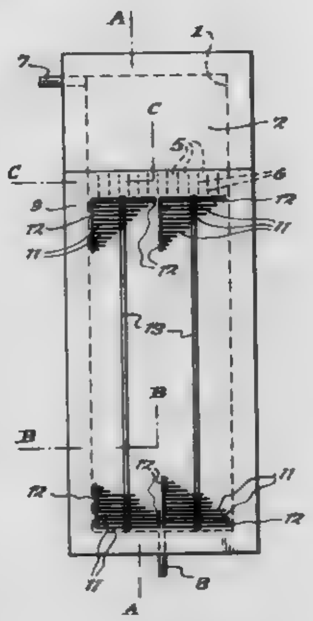
3,980,544
APPARATUS AND METHOD FOR SECURING A FABRICATED DIAPHRAGM TO ELECTRODES IN AN ELECTROLYTIC CELL
John O. Adams, Englewood; Kenneth E. Woodard, Jr., and Steven J. Specht, both of Cleveland, all of Tenn., assignors to Olin Corporation, New Haven, Conn.
Filed July 14, 1975, Ser. No. 595,976
Int. Cl.^{2} C25B *9/02*, *1/26*
U.S. Cl. 204—286 **12 Claims**



1. Apparatus for securing a fabricated diaphragm to each of a plurality of foraminous electrodes positioned substantially parallel to each other and having a space between each of said electrodes, said electrodes forming an electrode section, said electrode section having four adjoining sides, a first side opposite a third side, and a second side opposite a fourth side, said diaphragm enclosing each of said electrodes and having an open end with two adjoining edges, wherein said apparatus is comprised of:

1. two bars, one of said bars being positioned along said first side and the other being positioned along said third side of said electrode section,
2. a plurality of clamping elements wherein each said clamping element is positioned in said space between two of said electrodes and adjacent to one of said bars,
3. attachment means for attaching each of said clamping elements to one of said bars wherein one said adjoining edge of each of two adjacent diaphragms is sealed between said clamping elements and said bars.

3,980,545
BIPOLAR ELECTRODES WITH INCORPORATED FRAMES
Hubert de Lachaux, Courevoie; Pierre Bouy, Enghien-les-Bains, and Michel Conan, Rueil-Malmaison, all of France, assignors to Rhone-Progil, Courbevoie, France
Filed June 12, 1974, Ser. No. 478,605
Claims priority, application France, July 6, 1973, 73.25917
Int. Cl.^{2} C25B *9/00*, *11/00*, *1/26*
U.S. Cl. 204—286 **8 Claims**



1. A bipolar electrode for electrolysis cells of the filter-press type, said bipolar electrodes having cathode and anode frames and a bimetallic base plate characterized by the fact that the cathode and/or anode frames are integrated with the bimetallic base plate of said bipolar electrode, which base plate serves as a reference plane, the perpendicularity with respect to said plane being assured with respect to the cathode and anode portions by the current leads to which they are welded, said current leads serving as stiffeners and resulting in the planarity of these electrode portions of their parallelism with respect to the reference plane formed by the bimetallic base plate said current leads passing through said bimetallic base plate of said bipolar electrode to insure the positioning of the surface of said anode portion.

3,980,546
MICROPREPARATIVE ELECTROPHORESIS APPARATUS
Francis A. Caccavo, 1984 W. 8 St., Brooklyn, N.Y. 11223
Filed June 27, 1975, Ser. No. 591,179
Int. Cl.^{2} G01N *27/26*, *27/28*
U.S. Cl. 204—299 R **4 Claims**

1. A micropreparative electrophoresis apparatus, comprising

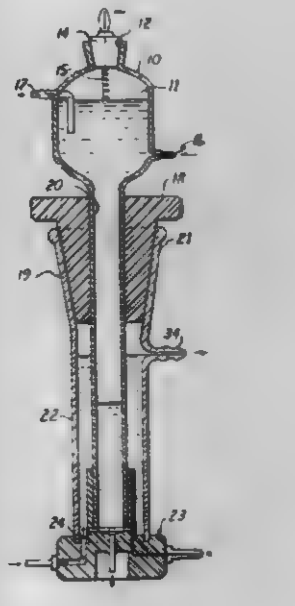
a first vessel provided with an upper chamber with an inlet and outlet for the circulation of a buffer solution through said chamber, a downwardly extended tubular shaped portion for containing a gel during its downward migration and said tubular shaped portion open at its lower end, said first vessel provided with an inlet opening at the top of the upper chamber and a plug for said opening, an electrode extending through said plug, said downwardly extending tubular shaped portion provided with a stopper shaped element mounted in a tight sealed relationship about the exterior of said tube below said upper chamber

a second vessel having a funnel shaped top to fit about the stopper and provide a seal, said second vessel generally tubular and extending downwardly approximately the same distance as the tubular portion of said first vessel,

said tubular ends of said first vessel and second vessel abutting a base,

said base provided with a circular depression on its upper surface to fit about the tubelike end of said second vessel and sealed in this relationship to form an elution chamber, said base also provided with a lesser radius raised hollow circular well like portion into which the tubular end of said first vessel fits and rests upon the surface of said base, said base hollowed out to form a coneshaped area below the tubular end of said first vessel and said coneshaped area connected to an outlet port under said base,

said first vessel provided with a plurality of small ports about the periphery of the lower neck portion of the tubular end and said base provided with ports aligned with each of the lower neck ports, said base ports connected to the inner space between said tubular body portion of said first vessel and the tubular body of said second vessel, said inner space or chamber of said second vessel connected to an inlet port in said base and an outlet



port situated well above said base, an electrode mounted in said base and extending up into the well like (elution) portion of said base,

means to fill said tubular portion of said first vessel with a gel to be separated into its components,

means to circulate a buffer solution through said first vessel and

means to circulate a buffer solution through the lower end of the tubular portion of said second vessel and produce a cooling of the extended lower end of the first vessel and at the same time a D.C. circuit between the first and second vessels through the gel produces an electrophoresis and a migration of the components of the gel downward

and means to support the gell column in the tubular portion of said first vessel with the lower buffer solution

and means to slice off the lower end of the migrating components as they reach the bottom of their downward migration and collect the desired separated component.

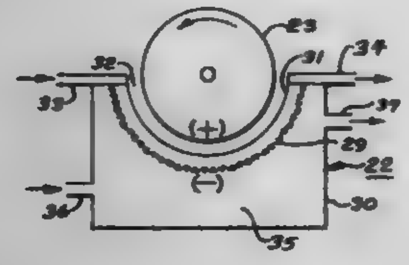
3,980,547
ELECTROKINETIC CELL

Albert C. Kunkle, Macon, Ga., assignor to J. M. Huber Corporation, Locust, N.J.

Continuation of Ser. No. 436,414, Jan. 25, 1974, abandoned, and a continuation-in-part of Ser. No. 403,191, Sept. 26, 1973, abandoned, and a continuation-in-part of Ser. No. 263,376, June 5, 1972, abandoned. This application Dec. 13, 1974, Ser. No. 532,660

Int. Cl.^{2} B01D *13/02*

U.S. Cl. 204—301 **9 Claims**



1. An electrokinetic cell for separating solids from aqueous suspensions thereof comprising:
- an anode,
- a cathode,
- a semi-permeable membrane impermeable to solid particles arranged between the anode and cathode, the space between the anode and the membrane providing an anodic chamber and the space between the cathode and the membrane providing a cathodic chamber,
- inlet means to feed an aqueous suspensions of solid particles to the anodic chamber,
- outlet means to discharge solid particle depleted effluent from the anodic chamber,
- means, independent of said outlet means, to supply and discharge electrolyte to and from the cathodic chamber, [illegible]
- means for applying a direct current field between the anode and cathode.

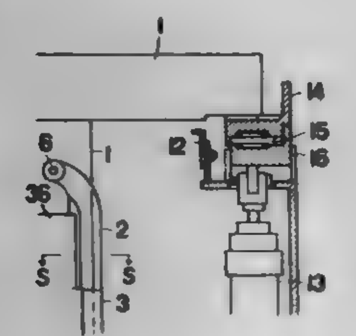
3,980,548
AUTOMATIC APPARATUS FOR STRIPPING DEPOSITED METAL FROM A CATHODE PLATE IN ELECTROWINNING PROCESS

Kunio Sekine; Yukio Kamata, both of Akita, and Yoshio Yamaishi, Kosaka, all of Japan, assignors to The Dowa Mining Co., Ltd., Tokyo, Japan

Division of Ser. No. 301,219, Oct. 26, 1972, Pat. No. 3,847,779. This application June 10, 1974, Ser. No. 477,978

Int. Cl.^{2} C25C *7/08*

U.S. Cl. 204—281 **3 Claims**



1. A cathode holder assembly on apparatus for stripping deposited metal from a cathode plate in an electrolytic metal winning process including a plurality of operating stations, said cathode plate being electrolytically insulated over substantially the entire length of its peripheral edge portion with the exception of a relatively small edge portion left uninsulated, said cathode holder assembly comprising a cathode holder having a pair of walls including a pair of facing inner sides defining therebetween a slot with an opening through which said uninsulated peripheral edge portion of said cathode plate may be received within said slot between said inner sides, said pair of walls also including a pair of outer sides facing away from said slot with each of said outer sides having a tapering configuration converging toward said opening of said slot, said tapering configuration causing formation of an upturned edge portion of the metal deposited on said cathode plate when said metal is deposited with said uninsulated peripheral edge portion of said cathode plate positioned within said slot, means pivotally mounting said cathode holder on said cathode plate, and means for pivoting said cathode holder relative to said cathode plate for inserting and removing said uninsulated peripheral edge portion of said cathode plate into and out of said slot.

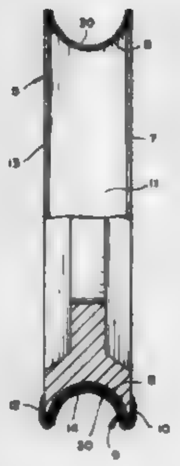
3,980,549
METHOD OF COATING FORM WHEELS WITH HARD PARTICLES

Zigmund R. Grutza, Detroit, Mich., assignor to Di-Coat Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 388,152, Aug. 14, 1973, abandoned, which is a continuation-in-part of Ser. No. 156,090, June 23, 1971, Pat. No. 3,762,882. This application Jan. 6, 1975, Ser. No. 538,713

Int. Cl.^{2} C25D *15/00, 15/02*

U.S. Cl. 204—16 **3 Claims**



1. A method of forming an abrasive layer of hard particles secured in a metal matrix on the annular peripheral surface of a grinding wheel comprising, providing an annular cover of flexible, resilient, porous, woven material capable of two-way differential stretching and the minimum diameter of which when unstretched is less than the minimum diameter of said peripheral surface so that when stretched over said peripheral surface said cover will follow the transverse as well as the circumferential contour thereof, retaining said particles about said peripheral surface by stretching said cover over said peripheral surface so that said stretched cover resiliently presses said particles against said peripheral surface, and, while said particles are held against said peripheral surface by said cover as aforesaid, depositing a matrix of said metal onto said peripheral surface to hold said particles in said matrix by making said wheel a cathode in an electroplating bath of the matrix metal and electrolyzing said bath.

3,980,550
CATALYTIC HYDRODEWAXING

Robert L. Gorring, Washington Crossing, Pa., and George F. Shipman, Trenton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 539,655, Jan. 9, 1975, abandoned. This application Dec. 8, 1975, Ser. No. 638,386

Int. Cl.^{2} C10G *13/02;* **B01J** *29/28*

U.S. Cl. 208—111 **7 Claims**

1. In the process of dewaxing gas oil which comprises contacting such at an elevated temperature with an aluminosilicate zeolite catalyst having a silica to alumina ratio of at least about 12, a constraint index of about 1 to 12 and a crystal density of not substantially below about 1.6 grams per cubic centimeter whereby to reduce the pour point of said gas oil; the improvement which comprises utilizing a catalyst comprising said zeolite having at least one multi valent transition metal and at least one Group VIII noble metal incorporated therewith.

3,980,551
REFINING OF WASTE LUBE OIL TO PREPARE USABLE LUBESTOCK

Ronald H. Wolk, San Jose, Calif., assignor to Hydrocarbon Research, Inc., Morristown, N.J.

Filed Dec. 18, 1975, Ser. No. 640,093

Int. Cl.^{2} C10M *11/00*

U.S. Cl. 208—179 **3 Claims**

1. The process of hydrotreating a waste lube oil to prepare a clean lubestock which comprises contacting said oil in liquid phase with a hydrogen rich gas in a contact zone containing an ebullated bed of a particulate demetallization hydrogenation catalyst of from 3 to 60 mesh and at a hydrogen pressure of 1000 to 3000 psi and at a temperature of 700° to 950°F while maintaining a hydrogen rich gas velocity in the order of 1 to 20 standard cubic feed per pound of hydrocarbon charge, withdrawing a reaction effluent containing a substantial amount of liquid from the upper part of the contact zone and separating that effluent by vacuum distillation to produce a clean lubestock and a heavy residue containing sludge and heavy metals from said waste lube oil.

3,980,552
HYDRODESULFURIZATION OF RESIDUAL PETROLEUM OIL WITH A SULFIDED COBALT-MOLYBDENUM-ALUMINA CATALYST

Grant A. Mickelson, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed May 5, 1975, Ser. No. 574,538

Int. Cl.^{2} C10G *23/02*

U.S. Cl. 208—216 **8 Claims**

1. A process for the hydrodesulfurization of a residual petroleum feedstock containing 1–20 weight-percent asphaltenes and 10–500 ppm metals, which comprises contacting said feedstock in admixture with 500–8,000 SCF/B of hydrogen at a temperature of 650°–850°F and a pressure of 1000–3000 psig, with a catalyst consisting essentially of a sulfided composite of 1–7 weight-percent CoO and 5–20 weight-percent MoO_3 supported on a carrier consisting essentially of activated alumina, said catalyst being further characterized by:

- a. a total surface area between 150 and 350 m^2/g;
- b. a pore volume between 0.3 and 0.8 ml/g;
- c. an average pore diameter between 40 and 100 A;
- d. a pore volume in pores above 100 A diameter of between 0.01 and 0.1 ml/g; and
- e. a particle-form shape having a ratio of external surface area to volume of between 70 and 160 reciprocal inches;

said catalyst having been prepared by the steps of:

1. slurrying an alumina hydrogel in an aqueous solution of ammonium molybdate;
2. spray drying the resulting slurry to a water content of about 10–40 weight-percent;
3. mulling the spray-dried composite with water and sufficient acid to give a pH between 3.6 and 6.0;
4. extruding the mulled composite into extrudates having a maximum overall diameter between 0.03 and 0.06 inches and a length between 0.1 and 0.25 inches;
5. calcining the resulting extrudates at a temperature between 900° and 1400°F;
6. impregnating the calcined extrudates with an aqueous solution of a thermally decomposable cobalt compound; and
7. calcining the impregnated extrudates at a temperature between 900° and 1400°F.

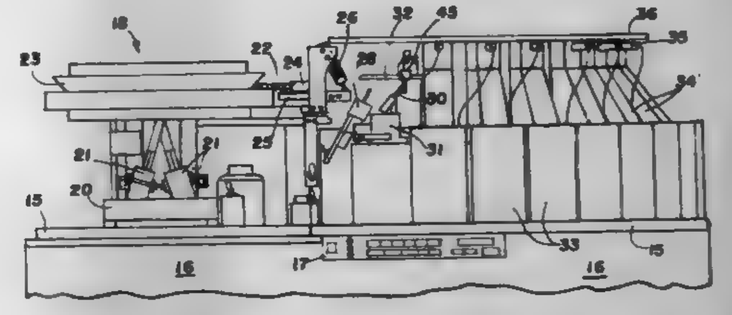
3,980,553
AUTOMATIC FEEDING AND SORTING EQUIPMENT FOR ELECTRICAL COMPONENTS

Peter W. Quinn, Danbury, Conn., assignor to Lorlin Industries Inc., Danbury, Conn.

Filed May 9, 1975, Ser. No. 576,157

Int. Cl.^{2} B07C *5/08*

U.S. Cl. 209—73 **10 Claims**



1. A testing and sorting machine for processing electrical components responsive to electrical test results comprising: alignment and feeding means for moving a plurality of components into a test position; a testing wheel for supporting the components during a test and sorting operation, said testing wheel being supported at its periphery by at least two fluid streams moving perpendicular to the wheel surface for supporting the wheel and for dampening rotary vibrations of said wheel; a loading means including a clamping finger for securing each of said components to the edge of said testing wheel in a test position; a stepper motor coupled to the testing wheel for moving the wheel by angular increments and for advancing the components through loading, test, and sorting positions; a test circuit including input terminals for making contact with a component and for determining a value responsive to the test results; a memory circuit connected to said test circuit for storing the results of a testing operation; and, a sorting means responsive to the memory circuit for sorting the tested components into bins.

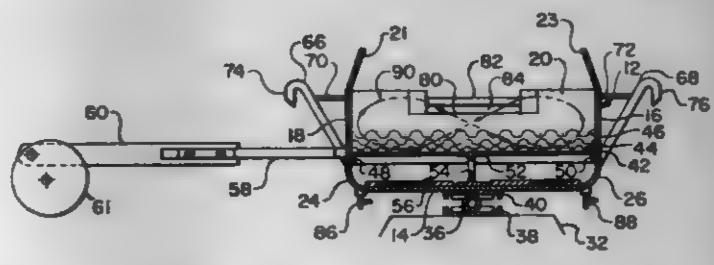
3,980,554
ORE WASHING MACHINE

Kenneth C. Jobson, 1117 J St., Sacramento, Calif. 95814

Filed May 12, 1975, Ser. No. 576,593

Int. Cl.^{2} B07B *1/28*

U.S. Cl. 209—240 **4 Claims**



1. In an ore washing machine, the combination of an elongate box having a bottom wall, a pair of spaced sidewalls, and a pair of spaced end walls, a plurality of horizontal screens

mounted juxtaposed together in stacked relationship within the box at substantially the mid-span of the side and end walls, means forming inwardly concave surfaces for joining the bottom wall with the side and end walls, said concave surfaces having radii sized within the range of one-fourth to one-half of the vertical distance of the lowermost screen from the bottom wall, roller means disposed along an axis which is below the mid-span of the bottom wall and is parallel with the longitudinal axis of the box for supporting the box for simultaneous rolling and rocking movement in a direction transverse of said longitudinal axis, operating arm means connected with a sidewall of the box at a position substantially on the level of the lowermost screen, drive means for imparting a reciprocating force having periodically varying horizontal and vertical components to the arm means for simultaneously rolling and rocking the box on the roller means, means for directing a charge of ore material and water into one end of the box above the screens whereby the particles or ore and water in the charge are caused to move transversely of the box in substantially a figure eight path by the coaction of the concave surfaces with said rolling and rocking movement of the box with the lower portion of said path passing through the screens whereby a volume of the charge is successively moved back and forth through the screens, a discharge chute at the other end of the box for discharging coarse material from the charge which does not pass through the screens, and at least one fine ore discharge spout connected through one of said sidewalls at a position below said screens and which spout extends upwardly therefrom for discharging ore fines from the box.

3,980,555
REPLACABLE SCREEN WITH FRAME

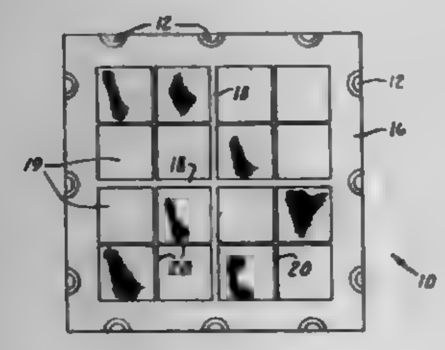
Manfred Franz Axel Freisle, Johannesburg, South Africa, assignor to Screenex Wire Weaving Manufacturers Limited, Alberton, Transvaal, South Africa

Filed July 25, 1974, Ser. No. 491,789

Claims priority, application South Africa, Aug. 24, 1973, 73/5815; Jan. 2, 1974, 74/0027

Int. Cl.^{2} B07B *1/46*

U.S. Cl. 209—408 **4 Claims**



1. A rectangular screen deck comprising a support frame having a plurality of frame elements defining a plurality of apertures therein and a plurality of unitary screening panels each panel having a peripheral surface abutting the peripheral surface of adjacent panels in side by side and edge to edge relationship, each panel being disposed on the support frame element over each aperture therein, said support frame elements being provided with spaced openings around each aperture, each screen panel comprising a wear resistant plastic material and having a plurality of screening apertures inwardly of its peripheral region and including a plurality of spigot-like protrusions spaced along its peripheral region, the protrusions projecting transversely to the plane of said panel and being integral with the panel and of the same material as the panel and solid where they project from the panel, said protrusions matingly engaging the corresponding openings in said support frame elements for replaceably securing said panel to said support frame, said protrusions each having a shoulder below and adjacent a lower edge of said opening for resisting withdrawl from the openings.

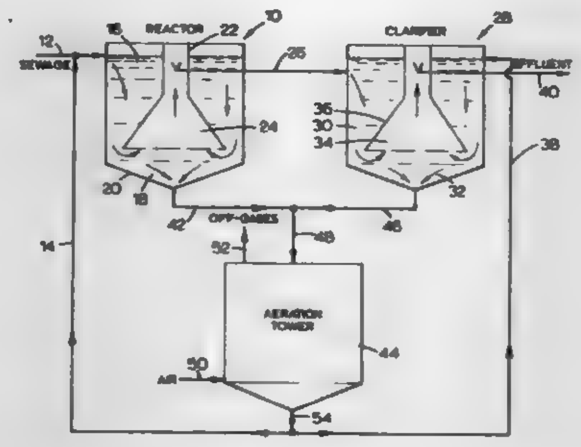
3,980,556
ABSORPTION BIOOXIDATION TREATMENT OF WASTE WATERS TO REMOVE CONTAMINANTS THEREFROM

Ferdinand Besik, Mississauga, Canada, assignor to Ontario Research Foundation, Sheridan Park, Canada

Continuation-in-part of Ser. No. 436,480, Jan. 25, 1974, abandoned. This application Jan. 13, 1975, Ser. No. 540,513

Int. Cl.^{2} C02C *1/04*

U.S. Cl. 210—6 **11 Claims**



1. A process for the treatment of waste water containing biodegradable carbonaceous materials and nitrogenous materials mainly in non-nitrite and non-nitrate form in a single upright reaction tank, which comprises:

separating the reaction tank into a first vertically extending zone extending the height of the reaction tank and a second vertically extending zone extending through the reaction tank to a location adjacent to and vertically spaced from the lower end of the tank and in fluid flow communication with said first zone at the lower end thereof only,

establishing a liquid level in each of said zones and a flow path of liquid through said reaction zone downwardly through said first zone and upwardly through said second zone,

mixing said waste water with recycled activated sludge in admixture with activated carbon and having sufficient molecular oxygen absorbed therein to oxidize substantially completely all the biodegradable carbonaceous material of said waste water,

introducing the mixture formed thereby to said flow path at the upper liquid level in said first zone,

flowing said mixture along said flow path downwardly through said first zone,

controlling the rate of flow of said mixture through said first zone to carry out during said passage of said mixture downwardly through said first zone the reactions of:

i. simultaneously (a) biologically oxidizing part of said biodegradable carbonaceous material to carbon dioxide by adsorbing said part of said biodegradable carbonaceous material on said activated sludge and oxidizing said adsorbed material using part of said oxygen absorbed in said activated sludge and (b) biologically oxidizing non-nitrite and/or non-nitrate nitrogenous material to nitrite and/or nitrate form using part of said oxygen absorbed in said activated sludge, said biooxidations substantially depleting said oxygen absorbed in said activated sludge, whereby said biological oxidation of said non-nitrite and/or non-nitrate nitrogenous material results in residual unoxidized biodegradable carbonaceous material, and

ii. after said depletion of said oxygen absorbed in said activated sludge biologically reducing to nitrogenous gases nitrate and/or nitrite nitrogenous material under the resulting anaerobic conditions while simultaneously oxidizing substantially all said residual unoxidized biodegradable carbonaceous material to carbon dioxide by adsorption thereof on said activated sludge and

using chemically-bound oxygen in said nitrate and/or nitrite nitrogenous material, whereby said oxygen used in said biological oxidation of said non-nitrite and/or non-nitrate nitrogenous material is used during said anaerobic biological reduction to oxidize substantially all the residual unoxidized biodegradable carbonaceous material,

said reactions of biological oxidation and biological reduction occuring simultaneously in said first zone with aerobic reactions predominating in the upper levels of liquid in said first zone and anaerobic reactions predominating in the lower levels of liquid in said first zone,

allowing said carbon dioxide and nitrogenous gases to rise through said first zone countercurrently to said liquid flow,

separating said carbon dioxide and nitrogenous materials from the upper level of the liquid phase in said first zone,

settling activated sludge having a depleted oxygen content resulting from said reactions in said first zone in the bottom of said reaction tank,

flowing liquor purified by said reactions in said first zone and having a depleted biodegradable carbonaceous materials-and nitrogenous materials-content in said flow path from said first zone and into and upwardly through said second zone, whereby said purified liquor and activated sludge having a depleted oxygen content are substantially completely separated and said settled activated sludge accumulates in the bottom of said reaction tank,

withdrawing said purified liquor from said reaction tank at the downstream end of said flow path,

removing settled activated sludge from the accumulation thereof substantially at a rate equivalent to the rate of mixing of activated sludge with said waste water,

contacting said removed activated sludge with oxygen to reactivate the same and absorb sufficient oxygen therein to oxidize substantially all the biodegradable carbonaceous material of said waste water, and

recycling said reactivated sludge to said mixing step to constitute said recycled activated sludge.

3,980,557
PHOSPHORUS REMOVAL FROM WASTEWATER

Irving Yall; Norval Arthur Sinclair; Frank Andrew Roinestad, and Charles Francis Russ, all of Tucson, Ariz., assignors to University Patents, Inc., Stamford, Conn. 06905

Filed Dec. 18, 1974, Ser. No. 534,083

Int. Cl.^{2} C02B *1/06*

U.S. Cl. 210—15 **15 Claims**

1. A process for enhancing the orthophosphate removal capacity of a continuous culture activated sludge sewage treatment system, said process comprising:

introducing, into the sludge of the system, a bacterial inoculant comprising a cultured growth of the microorganism *Acinetobacter phosphadevorus* (NRRL B-8058).

3,980,558
METHOD OF DISPOSING SLUDGES CONTAINING SOLUBLE TOXIC MATERIALS

Steve R. Thompson, Houston, Tex., assignor to Browning-Ferris Industries, Inc.

Filed July 7, 1975, Ser. No. 593,542

Int. Cl.^{2} C02C *5/02*

U.S. Cl. 210—59 **7 Claims**

1. A process for permanently disposing of liquid or semi-liquid wastes containing soluble toxic materials to prevent said soluble toxic materials from being leached to the surrounding environment comprising the steps of:

admixing a liquid or semi-liquid waste containing soluble toxic materials and a solidifying agent consisting essentially of a hydraulic cement, said liquid or semi-liquid waste and hydraulic cement being admixed in an amount of at least about 9 lbs. hydraulic cement per gallon of said waste based upon the waste containing from about 30 to about 40 volume % solids; and

allowing the admixture to set to a contiguous rock-like solid insoluble in water whereby said toxic materials are entrapped and prevented from leaching into the surrounding environment.

3,980,559
METHOD AND AN APPARATUS FOR COLLECTING SUBSTANCES AND OBJECTS ON A LIQUID SURFACE

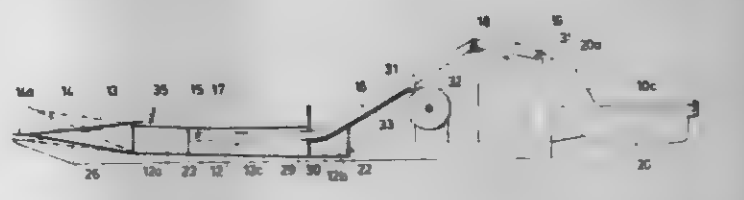
Ernst Sune Netzell, Selmedalsvagen 222, 126 58 Hagersten, Sweden

Filed Sept. 9, 1974, Ser. No. 504,221

Claims priority, application Sweden, Sept. 10, 1973, 7312288

Int. Cl.^{2} E02B *15/04*

U.S. Cl. 210—83 **15 Claims**



1. Apparatus for collecting material floating on the surface of a body of water, said apparatus being characterized by

spaced apart pontoon members which form between them an inlet section that is adapted to conduct a collected liquid layer between said pontoon members, said liquid layer containing material floating thereon,

endless belt means located between said pontoon members and constructed and arranged so that the rear discharge end of said endless belt means is at a higher elevation than the generally horizontal front end portion of said endless belt means,

transferring means for transferring the liquid collected through said inlet section between said pontoon members onto the upper surface of the front end portion of said endless belt means,

said transferring means including a generally horizontal distribution surface that is disposed above the generally horizontal front end portion of said endless belt means, said transferring means being in fluid communication with said inlet section between said pontoon members,

said generally horizontal distribution surface including discharge means for discharging liquid downwardly from said horizontal distribution surface onto the top of the front end portion of said endless belt means, and

means for removing collected material from the discharge end of said endless belt means and depositing it in a receptacle located adjacent the discharge end of the endless belt means.

3,980,560
FILTER CONSTRUCTION

Allison Winston Eades, Willingboro, N.J., assignor to DeLaval Turbine Inc., Princeton, N.J.

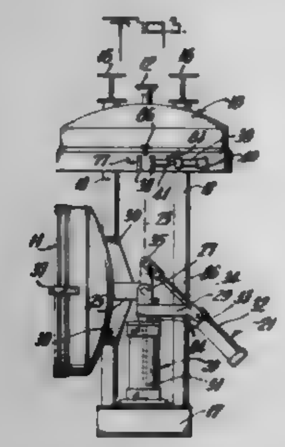
Filed Jan. 27, 1975, Ser. No. 544,302

Int. Cl.^{2} B01D *33/34*, *35/08*

U.S. Cl. 210—141 **19 Claims**

1. A flow-operative filter construction comprising upper and lower cupped casing members having axially removable sealed peripheral engagement at the rims of their open ends, an inlet connection to the upper casing member, filter-screen support means at the upper open end of the lower casing member and an outlet connection to said lower casing member beneath and offset from said filter-support means, means fixedly mounting the upper casing member with its open end facing downwardly, support means for the lower casing member and including a vertical guide and first actuating means including an upstanding connection located under said lower

casing member for selectively positioning said lower casing member between an upper position of peripherally sealed engagement to said upper casing member and a lower position in substantial axial clearance relation to said upper casing member, said upstanding connection including first and second elements hingedly related to each other on a horizontal hinge axis, the first element being secured to said lower casing member and the second element being guided by said vertical guide, and second actuating means reacting between said elements and offset from said hinge axis and operative for the



lower position of said lower casing member for selectively positioning said lower casing member about said hinge axis between a first position in which said lower casing member is vertically aligned with and facing said upper casing member and a second position in which the open end and filter-screen support means of said lower casing member face generally laterally outwardly of the axis of said vertical guide, whereby a filter cake on a filter screen mounted to said filter-screen support means may be placed in up-ended orientation laterally offset from said support means for discharge to permit recycled use of the filter screen.

3,980,561
DEVICE FOR PURIFYING SEWAGE

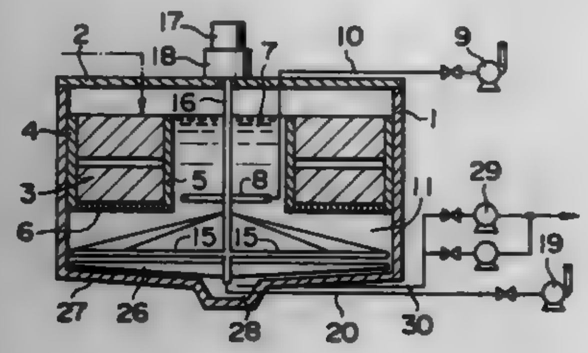
Toru Miyagi; Nobuyoshi Katakai; Masanori Narita; Tatsuya Uchida, all of Shimodate, and Minoudo Kimura, Inazawa, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Mar. 11, 1975, Ser. No. 557,351

Claims priority, application Japan, Mar. 12, 1974, 49-28418

Int. Cl.^{2} C02C *1/04*

U.S. Cl. 210—151 **10 Claims**



1. A device for purifying sewage comprising a vessel having inlet and outlet ports and adapted to receive sewage and form a sewage bath therein, an annular microorganism-carrying bed structure disposed in said vessel, said annular bed structure defining a first space located at the center thereof and a second space located below said bed structure, said first and second spaces operating as an aeration chamber and a settling chamber, respectively, a first air supply means disposed in said aeration chamber for supplying air thereto in a manner to dissolve oxygen in the sewage contained in said aeration chamber and to cause a circulation of sewage flow in the upward direction through said aeration chamber and downward through said annular bed structure, and a second air supply means including at least one radial pipe rotatably disposed around the central axis of said annular bed structure within said settling chamber, said pipe having a plurality of air injection nozzles adapted to supply a mass of air bubbles which rise toward and through said annular bed structure thereby causing an agitating flow which traverses said bed structure in the upward direction and scales off a portion of the microorganiams from said bed.

3,980,562
MAGNETIC DISK SEPARATOR WITH SCRAPER MEANS

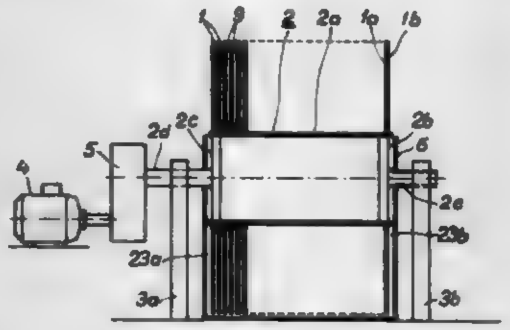
Harald Nilsson, Helsingborg, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Mar. 31, 1975, Ser. No. 563,502

Claims priority, application Sweden, Apr. 22, 1974, 7405351

Int. Cl.^{2} B01D *35/06*

U.S. Cl. 210—222 **3 Claims**



1. Magnetic separator comprising a rotatable shaft, a plurality of substantially parallel filter discs which are attached along said shaft and located in planes substantially perpendicular thereto with gaps between the discs for passage of medium which is to be cleaned, said medium when entering the separator containing a ferromagnetic particulate material, said discs containing permanent magnets producing local magnetic field inhomogeneities in the gaps between the discs and the separator being provided with a scraper means for the particulate material which adheres to the discs when the medium passes the gaps, wherein the scraper means comprises a plurality of stationary upwardly open channel members having their opposite edges engaging opposed faces of the discs, and a plurality of endless transport belts which run within the channel members and enter the gaps between the discs and extend outside the discs to a point of discharge of the particulate material, said separator having means to drive the shaft of the separator and the transport belts, said transport belts surrounding the separator shaft and having upper and lower runs, said upper runs moving outwardly with respect to the discs.

3,980,563
SHAPED SIEVE BODY

Albert Greutert, Sonnhalde, Switzerland, and Ernst Heidborn, Ifang, Germany, assignors to Interelectric AG, Sonnhalde, Switzerland

Filed Oct. 27, 1972, Ser. No. 301,373

Claims priority, application Germany, Oct. 28, 1971, 2153901

Int. Cl.^{2} B01D *25/04*

U.S. Cl. 210—232 **6 Claims**

1. A shaped sieve body comprising at least one perforated metal foil segment having opposite end portions adapted to be brought together for the formation of said sieve body, anchoring means on said end portions, and a plastic connecting member for said end portions having said anchoring means embedded therein with the anchoring means and end portions in spaced apart relationship within said plastic connecting member.

3,980,564
MEMBRANE SUPPORT-PLATES FOR FLUID SEPARATING APPARATUS AND APPARATUS USING SUCH SUPPORT-PLATES

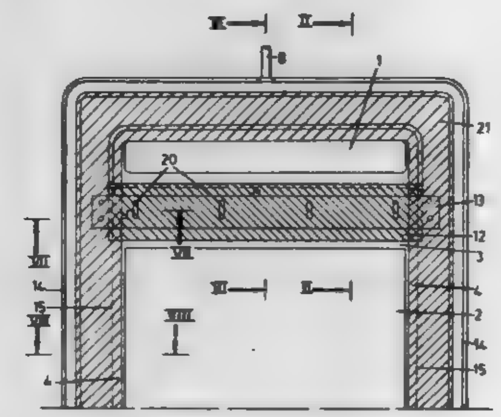
Robert Bardin, Vienne, and André Toulouze, Lyon, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed May 29, 1974, Ser. No. 474,345

Claims priority, application France, May 29, 1973, 73.19532

Int. Cl.^{2} B01D *31/00*

U.S. Cl. 210—321 R **16 Claims**



1. A membrane support plate for fluid separation apparatus, said support plate comprising, in combination:

a. two elementary plates of generally rectangular configuration of stamped sheet metal stock and substantially constant wall thickness, said elementary plates having opposite ends and faces, said elementary plates being tied together;
b. at least one elongated orifice near one of the ends of each plate, the orifices of one plate being in register with the orifices of the other plate, and serving for the passage of fluid to be treated;
c. at least one cell on the outer face of at least one of said elementary plates, said cell having two transverse edges;
d. a membrane covering said at least one cell;
e. means communicating said cell with the exterior for discharging permeate which is passed through said membrane;
f. at least one elongated cavity on said at least one face adjacent each transverse edge of the cell extending transversely across said plate and situated between the transverse edge of the cell and the nearest elongated orifice;
g. a bottom surface to said cavity having said membrane thereon; and
h. a detachable device positioned in said cavity, said detachable device holding said membrane over its entire width against the bottom surface of said cavity.

3,980,565
CELL HAVING CATALYTIC LAYER FOR COALESCING OIL DROPLETS

Leslie L. Fowler, 1722 E. 59th St., Tulsa, Okla. 74105

Filed Nov. 26, 1971, Ser. No. 202,378

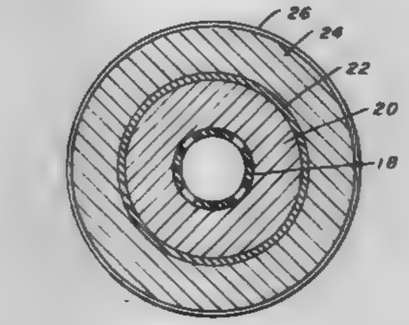
Int. Cl.^{2} B01D *27/00*

U.S. Cl. 210—489 **3 Claims**

1. A cell having a catalytic layer for coalescing oil droplets dispersed in a water emulsion comprising:

an elongated perforated core into which the emulsion is injected;

a layer of emulsion breaking fibrous material wound about said core through which the emulsion is forced to pass; and



a catalytic layer of porous material wound about said layer of fibrous material, said catalytic layer being formed of a porous flexible substrate and a layer of metal particles adhered to the porous substrate, the metal particles being selected from the class consisting of copper, tin, aluminum, nickel, zinc and alloys and mixtures thereof.

3,980,566
COMPOSITION FOR REMOVAL OF IMMISCIBLE FLUIDS FROM WATER SURFACES AND LAKE BEDS

Earl C. Peterson, Minneapolis, Minn., assignor to Electrolysis Pollution Control Inc., Minneapolis, Minn.

Division of Ser. No. 477,276, June 7, 1974, Pat. No. 3,933,632, which is a continuation-in-part of Ser. No. 362,317, May 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 296,789, Oct. 12, 1972, abandoned, which is a continuation-in-part of Ser. No. 143,713, May 26, 1971, abandoned. This application June 5, 1975, Ser. No. 583,881

Int. Cl.^{2} B01D *39/02*

U.S. Cl. 252—430 **3 Claims**

1. An oil adsorbant compound consisting of an admixture of from between about 30 and 70% by weight of particulate lead slag mineral wool coated with an oil soluble-hydrophobic film, balance of from between about 70 and 30% finely divided natural stone substance selected from the group consisting of basalt and gabbro.

3,980,567
OPTICAL CIGARETTE END INSPECTION METHOD AND DEVICE

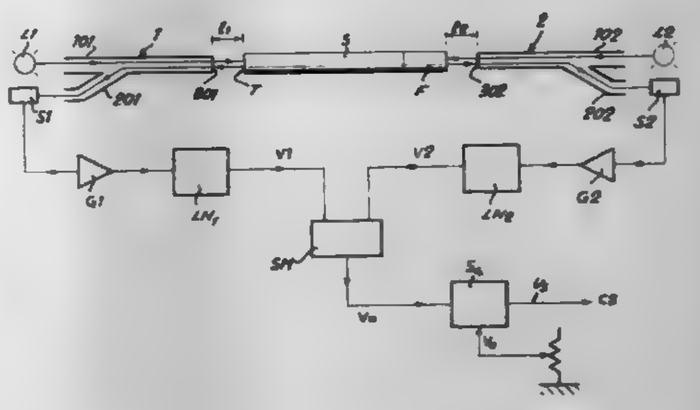
Fernando Benini, Bologna, Italy, assignor to AMF Incorporated, White Plains, N.Y.

Filed Mar. 18, 1975, Ser. No. 559,615

Claims priority, application Italy, Mar. 22, 1974, 12646/74

Int. Cl.^{2} G01D *21/04*

U.S. Cl. 250—223 R **9 Claims**



1. A method for optical end inspection of cigarettes sequentially arranged in a row, comprising the steps of providing a pair of axially aligned optical probes fixedly spaced axially from one another; passing a row of cigarettes to be tested laterally one after the other between, and substantially

through the axis of, the pair of probes; providing light beams which are guided by said pair of probes for illuminating both ends of each cigarette being tested substantially at the same time by guided light beams; receiving reflected light from the ends of the cigarette being tested by the probes; converting the light reflected by both cigarette ends to generate a single reject signal when the total reflected light differs from a predetermined threshold, thereby indicating the existance of faults detectable by light in at least one of the ends of each cigarette tested.

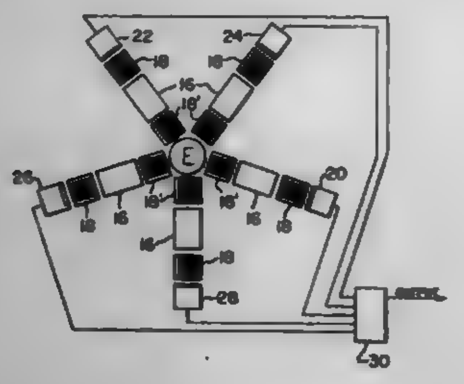
3,980,568
RADIATION DETECTION SYSTEM

Arthur H. Pitchford, Bethel Park, and Robert A. Cianflone, Mount Lebanon, both of Pa., assignors to Hankison Corporation, Canonsburg, Pa.

Filed Oct. 17, 1975, Ser. No. 623,418

Int. Cl.² G01N *23/20*; G21K *1/00*, *7/00*

U.S. Cl. 250—276 7 Claims



1. A radiation detection device comprising:

A. a radiation source for emitting radiation particles onto a sample;

B. a plurality of crystals, each positioned about the radiation source to simultaneously receive reflected radiation particles from the sample and reflect a given wavelength from an elemental constituent of the sample;

C. a plurality of radiation detectors, each positioned with respect to a crystal to simultaneously detect the given wavelength;

D. summing means for receiving signals representative of each of said detected wavelengths from said detectors and for summing said signals into an output signal; and

E. identifying means for receiving said output signal from the summing means and utilizing said summed signal to identify a compositional characteristic of the sample.

3,980,569
DISPERSANTS AND PROCESS FOR THEIR PREPARATION

John Francis Pindar, Euclid; Jerome Martin Cohen, University Hts., and Charles Peterson Bryant, Euclid, all of Ohio, assignors to The Lubrizol Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 451,644, March 15, 1974, abandoned. This application Jan. 13, 1975, Ser. No. 540,470

Int. Cl.² C10M *1/32*, *3/26*; C10L *1/22*

U.S. Cl. 252—51.5 R 28 Claims

1. A lubricating composition comprising a major amount of a lubricating oil and a minor amount of a nitrogen-containing composition made by the method which comprises

1. reacting at least one hydroxyaromatic compound containing an aliphatic or alicyclic substituent of at least about six carbon atoms with at least one aldehyde or precursor thereof in the presence of an alkaline reagent, at a temperature up to about 125°C.; then
2. substantially neutralizing the intermediate thus formed at a temperature up to about 150°C.; and then
3. reacting the neutralized intermediate with at least one amino compound which contains one or more amino groups having hydrogen directly bonded to amino nitrogen.

13. A fuel composition comprising a major amount of a normally liquid fuel and a minor amount of a nitrogen-containing composition made by the method which comprises

1. reacting at least one hydroxyaromatic compound containing an aliphatic or alicyclic substituent of at least about six carbon atoms with at least one aldehyde or precursor thereof in the presence of an alkaline reagent, at a temperature up to about 125°C.; then
2. substantially neutralizing the intermediate thus formed at a temperature up to about 150°C.; and then
3. reacting the neutralized intermediate with at least one amino compound which contains one or more amino groups having hydrogen directly bonded to amino nitrogen.

3,980,570
SLIDING MEMBER HAVING ANTI-FRICTIONAL AND ANTI-STATIC PROPERTIES FOR A CASSETTE

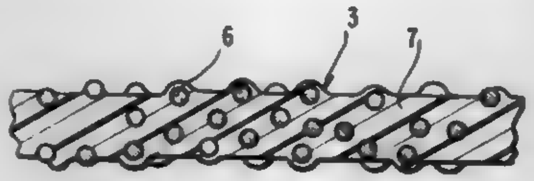
Kensuke Okuda, No. 8, Ichigayadai, Shinjuku, Tokyo; Tadaaki Yoshida, No. 10-13, Nerima 3-Chome, Nerima, Tokyo, and Koji Kase, No. 3-10, Umegaoka, Setagaya, Tokyo, all of Japan

Continuation-in-part of Ser. No. 417,332, Nov. 17, 1973, abandoned, which is a division of Ser. No. 154,376, June 18, 1971, abandoned. This application Mar. 3, 1975, Ser. No. 554,830

Claims priority, application Japan, June 18, 1970, 45-59987

Int. Cl.² C10M *5/00*, *7/00*; B20C *17/00*; B20B *11/08*

U.S. Cl. 252—12.4 5 Claims



1. A sheet-like sliding member having anti-frictional and anti-static properties for use with a tape or film cassette comprising a thermoplastic resin containing 5 to 90% by weight of carbon fiber, and formed so as to have an uneven surface comprising microscopic concavities and convexities with minute projections of carbon fiber on the surfaces, said member having a surface resistance of less than $10^8\Omega$ and a coefficient of dynamic friction of 0.07 to 0.15, said carbon fiber having a diameter of 3 – 30 microns.

3,980,571
SYNTHETIC LUBRICANT FOR MACHINING AND CHIPLESS DEFORMATION OF METALS

Joachim Marx, Schwerinstrasse 34, Mulheim (Ruhr)-Styrum, Germany

Continuation of Ser. No. 47,209, June 18, 1970, abandoned. This application Feb. 16, 1973, Ser. No. 333,426

Int. Cl.² C10M *1/44*

U.S. Cl. 252—32.5 9 Claims

1. An aqueous lubricant composition having improved properties in metal working as in metal deformation or cutting, capable of higher cutting speeds, higher load capacity and decreased tool wear, comprising an aqueous solution of from 0.1 to 90 weight percent of a mixture of a copolymer of ethylene oxide and a higher alkylene oxide having from 3 to 8 carbon atoms, said ethylene oxide copolymers having a molecular weight from about 1000 to about 6000 and wherein said copolymer contains at least about 15% of ethylene oxide and, from 0.1 to 5.0 weight percent of a polymeric additive selected from the group consisting of: polyvinyl pyrrolidinone having a molecular weight of from about 100,000 to about 1,000,000 polyvinyl alcohol, polyacrylates of alcohols of from 1 to 12 carbon atoms, polymethacrylates of alcohols of from 1 to 12 carbon atoms and copolymers of polyacrylates and polymethacrylates of alcohols of from 1 to 12 carbon atoms.

7. An aqueous lubricant composition having improved properties in metal working as in metal deformation or cutting, capable of higher cutting speeds, higher load bearing capacity and decreased tool wear, comprising an aqueous solution of from 0.1 to 90 weight percent of a mixture of a copolymer of ethylene oxide and a higher alkylene oxide having from 3 to 8 carbon atoms, said ethylene oxide copolymers having a molecular weight from about 1000 to about 6000 and wherein said copolymer contains at least about 15% of ethylene oxide and, a polymeric additive selected from the group consisting of: from 0.1 to 5 weight percent of polyvinyl pyrrolidinone having a molecular weight from about 100,000 to about 1,000,000. from 0.1 to 5.0 weight percent of polyvinyl alcohol, 0.5 to 5.0 weight percent of a polyacrylate of alcohols of from 1 to 12 carbon atoms, 0.5 to 5.0 weight percent of a polymethacrylate of alcohols of from 1 to 12 carbon atoms and 0.5 to 5.0 weight percent of copolymers of polyacrylates and polymethacrylates of alcohols of from 1 to 12 carbon atoms, said composition further containing from 0.1 to 2.0 weight percent of a corrosion inhibitor selected from the group consisting of phosphates, benzoates and morpholine, wherein said phosphates or benzoates are the salts of di-or tri-ethanolamine.

3,980,572
GREASE COMPOSITION

Toshinori Dodo, and Makoto Ikeda, both of Ichihara, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed July 28, 1975, Ser. No. 599,340

Claims priority, application Japan, July 31, 1974, 49-87031

Int. Cl.² C10M *1/24*, *3/18*, *5/14*, *7/20*

U.S. Cl. 252—36 7 Claims

1. A lubricating grease composition comprising a major amount of a lubricating base oil and lithium salt of a blended fatty acid prepared by mixing (a) 5 to 15% by weight, based on the weight of the grease composition, of a natural fatty acid selected from the group consisting of stearic acid and 12-hydroxystearic acid with (b) a mixture of synthetic fatty acids having 8 to 24 carbon atoms in an amount of 0.5 to 50%, based on the weight of said natural fatty acid.

2. A lubricating grease composition according to claim 1, containing aluminum stearate in an amount of from 0.5 to 5%.

3,980,573
SUBSTITUTED DIMERCAPTO THIADIAZOLES AND LUBRICANT COMPOSITIONS CONTAINING SAME

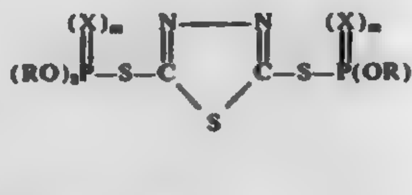
Abraham O. M. Okorodudu, West Deptford, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed July 24, 1975, Ser. No. 598,953

Int. Cl.² C10M *1/48*, *3/42*, *5/24*, *7/46*

U.S. Cl. 252—46.7 7 Claims

1. A lubricant composition comprising a major proportion of a lubricant and an antiwear or corrosion inhibiting amount of a compound of the formula:



wherein:

R is C_1–C_{18} hydrocarbyl;

X is oxygen or sulfur; and

m is zero or 1.

3,980,574
LUBRICANT CONTAINING DIORGANOPHOSPHORUS DERIVATIVES OF URETHANE AS ANTIWEAR AGENTS

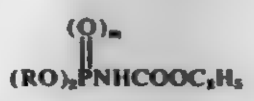
Abraham O. M. Okorodudu, West Deptford, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed June 12, 1975, Ser. No. 586,462

Int. Cl.² C10M *1/10*, *3/02*, *5/02*, *7/02*

U.S. Cl. 252—49.9 8 Claims

1. A lubricant composition comprising a major proportion of a lubricant and a minor amount sufficient to impart load carrying properties thereto of a diorganophosphorus compound of the formula:



$$(RO)_2\overset{(O)_m}{\overset{\|}{P}}NHCOOC_2H_5$$

wherein R is a C_1–C_{25} hydrocarbyl and *m* is zero or one.

3,980,575
ELECTROPHOTOGRAPHIC TONER COMPOSITION

Pierre Richard De Roo, Wilrijk; Jozef Leonard Van Engeland, St. Katelijne-Waver, and Gaston Eduard Van der Auwerner, Mechelen, all of Belgium, assignors to AFGA-GEVAERT N.V., Mortsel, Belgium

Filed May 10, 1973, Ser. No. 358,913

Claims priority, application United Kingdom, May 22, 1972, 24030/72

Int. Cl.² G03G *9/00*

U.S. Cl. 252—62.1 P 11 Claims

1. A toner material for use in the development of electrostatic charge patterns consisting essentially of carbon black as a colouring material, polystyrene as a thermoplastic resin binder and at least one diester of orthophthalic or metaphthalic acid that is solid at room temperature as a plasticizer, wherein said polystyrene binder has a molecular weight ranging from about 30,000 and about 70,000, the proportion by weight of the carbon black to the binder is from about 5:100 and about 20:100, and the proportion by weight of said plasticizer to said binder is from about 2:100 and about 15:100.

3,980,576
SOLID TONER COMPOSITIONS AS USED IN DEVELOPMENT POWDERS

Bheema Rao Vijayendran, Bethel, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jan. 10, 1975, Ser. No. 540,130

Int. Cl.² G03G *9/00*

U.S. Cl. 252—62.1 P 18 Claims

1. A solid toner for use in electrostatic printing to develop latent electrostatic images, the combination comprising:

a. a coloring agent, and

b. a polymeric blend composed of 10–60% prepolymerized copolymer of vinyltoluene-butadiene and 40–90% of a prepolymerized copolymer selected from the group consisting of styrene-acrylate and styrene-methacrylate.

5. A solid toner for use in electrostatic printing to develop latent electrostatic images, the combination comprising:

a. a coloring agent, and

b. a polymeric blend composed of 40–90% prepolymerized copolymer of styrene-methacrylates and 10–60% prepolymerized copolymer of vinyltoluene-butadiene, said methacrylate being selected from the group consisting of butyl, isobutyl, ethyl, propyl and isopropyl.

9. A development powder for use in electrostatic printing to develop latent electrostatic images, the combination comprising:

a. a solid triboelectrically chargeable carrier particle;

b. a coloring agent, and

c. a polymeric blend composed of 10–60% prepolymerized copolymer of vinyltoluene-butadiene and 40–90% of a prepolymerized copolymer selected from the group consisting of styrene-acrylate and styrene-methacrylate.

3,980,577

DIPHENYLMETHANE ELECTROPHOTOGRAPHIC LIQUID DEVELOPER

Seiji Hotta, Hirakata, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 18, 1973, Ser. No. 407,486

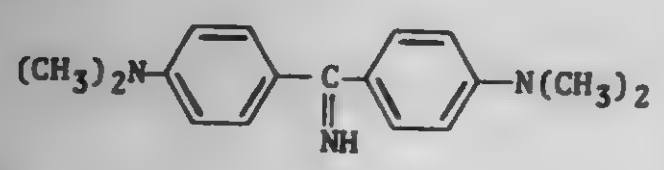
Claims priority, application Japan, Oct. 21, 1972, 47-105661

Int. Cl.^{2} G03G *9/00, 13/00*

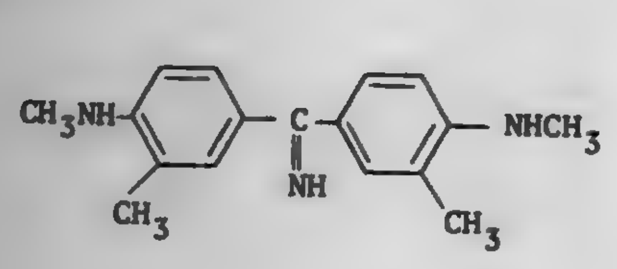
U.S. Cl. 252—62.1 L **5 Claims**

1. An electrophotographic liquid developer comprising (1) a carrier liquid having above $10^{14}\Omega$ cm of volume resistivity, (2) a resinous, waxy or varnish substance selected from the group consisting of oil-modified alkyd resins, rosin-modified phenolformaldehyde resins, polyhydric alcohol esters of hydrogenated rosins, polyacryl ester resins, polymethacryl ester resins, polyvinyl acetate and polystyrene, and (3) a lake of the diphenylmethane C.I. Basic Yellow No. 2 or No. 3 having, respectively, the following formulae:

Yellow No. 2:



Yellow No. 3:



3,980,578

METAL SEQUESTERING METHOD AND COMPOSITION USING α,α'-CARBOXYALKOXY SUCCINIC ACID COMPOUNDS

Gunner E. Nelson, and Tillmon H. Pearson, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 153,816, June 16, 1971, Pat. No. 3,784,486. This application Aug. 3, 1973, Ser. No. 385,545

Int. Cl.^{2} C02B *5/06*

U.S. Cl. 252—180 **7 Claims**

1. An aqueous solution which contains a sequestrant selected from the group consisting of:

a. α,α'-carboxyalkoxy succinic acid, wherein the carboxyalkoxy radicals contain from 2 to about 7 carbon atoms,

b. water soluble salts of said acids; and

c. mixtures of (a) and (b).

3,980,579

CATALYTICALLY STABLE HALOGENATED POLYOL COMPOSITION

Allan H. Syrop, Hamden, and Peter P. Priga, Derby, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 18, 1974, Ser. No. 516,023

Int. Cl.^{2} C08G *18/24;* **B01J** *23/14*

U.S. Cl. 252—182 **17 Claims**

1. A catalytically stable polyol composition, for use in the preparation of polyurethane foam, which comprises a halogenated polyol, a tertiary alkyl amine catalyst, and a catalyst stabilizing proportion of a dimethyltin bisalkylmercaptoacetate in which the alkyl group contains from 1 to 8 carbon atoms.

3,980,580

OXYGEN CARRIER COMPOSITION

Dale B. Fox; Talmage D. McMinn, Jr., both of St. Louis; Rodney D. Beckham, Bridgeton, and Phillip D. Montgomery, Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 2, 1974, Ser. No. 430,282

Int. Cl.^{2} B01J *21/02, 21/10, 23/14*

U.S. Cl. 252—186 **7 Claims**

1. An oxygen carrier composition which comprises oxygen and the metals lead, magnesium and aluminum represented by the empirical formula

$$Pb_aMg_bAl_cO_d$$

where *a* is a number from 0.005 to 1.0, *b* is a number from 0.5 to 1.5. *c* is a number from 0.5 to 5.0 and *d* is a number which satisfies the oxidation states of the metals and their quantities contained in the composition.

3,980,581

TEMPERATURE INDICATING COMPOSITIONS

Frank W. Godsey, Jr., St. Petersburg, Fla., and Ghazi Khattab, Parsippany, N.J., assignors to Bio-Medical Sciences, Inc., Fairfield, N.J.

Continuation-in-part of Ser. No. 197,752, Jan. 11, 1971, abandoned. This application Oct. 5, 1972, Ser. No. 295,235

Int. Cl.^{2} C09K *3/34*

U.S. Cl. 252—408 **13 Claims**

1. A composition of matter comprising a solid solution of two organic compounds, which solution is capable of undergoing repeated change of state between liquid and solid phases, and from about 0.1 to about 50 weight per cent, based on said solid solution, of a resolidification nucleating agent, said nucleating agent being chemically and physically inert with respect to said solid solution and having a melting point considerably higher than the temperature at which the solid solution changes from solid to liquid state, and said nucleating agent having a monoclinic structure, and at least one *a/b*, *a/c* or *c/b* unit cell ratio, and a space group substantially identical to those of the solid solution.

3,980,582

METHOD AND CATALYST FOR REMOVING MERCAPTANS AND MERCAPTIDE COMPOUNDS FROM AQUEOUS ALKALINE SOLUTIONS

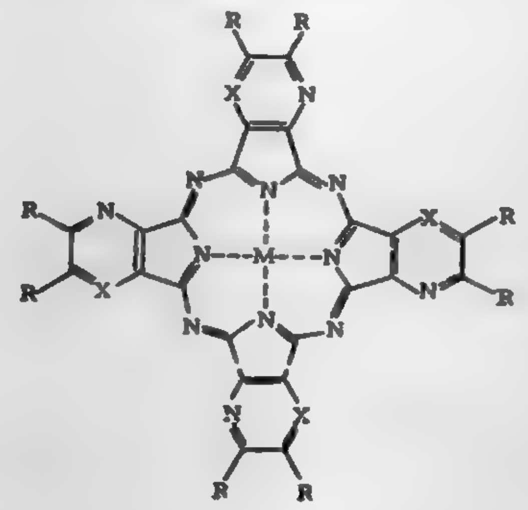
Gilbert P. Anderson, Jr., Ashland, and Clifford Ward, Louisa, both of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 395,256, Sept. 7, 1973, Pat. No. 3,923,645. This application Mar. 3, 1975, Ser. No. 554,492

Int. Cl.^{2} B01J *31/18*

U.S. Cl. 252—428 **16 Claims**

1. A catalyst for oxidizing alkali mercaptide compounds to disulfide in an aqueous alkaline solution comprising: a caustic-inert carrier having impregnated thereon a metal compound of tetrapyridinoporphyrazine or substituted derivatives thereof having the structural formula:



where M is a metal selected from the group consisting of iron, manganese, chromium, magnesium, copper, nickel, zinc, titanium, hafnium, thorium, tin, lead, columbium, tantalum, antimony, bismuth, molybdenum, palladium, platinum, silver. mercury, vanadium and cobalt, R is selected from the group consisting of hydrogen, methyl, ethyl, propyl, iso-butyl, phenyl, benzyl and napthyl groups, and X is a nitrogen atom, or a carbon atom having one R group attached thereto.

3,980,583

COMPLEXED METALS BONDED TO INORGANIC OXIDES

Thomas Owen Mitchell, West Trenton, and Darrell Duayne Whitehurst, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 19, 1974, Ser. No. 443,557

Int. Cl.^{2} B01J *31/18*

U.S. Cl. 252—430 **11 Claims**

1. A catalytic material which comprises a substrate of a porous refractory oxide, said substrate having surface hydroxyl groups, a minimum surface area of about 10 m^2/g and pores with a minimum pore diameter of about 5 Angstrom Units, said substrate being modified by at least one amine functional member, containing the element silicon, coordinated to a metal function of a transition metal selected from the group consisting of Group VIII metals of the Periodic Table of Elements, said amine functional member acting as a bridging member between said substrate and said metal function, as a ligand covalently bonded to said substrate.

3,980,584

CARRIER AND CATALYST FOR CHEMICAL PROCESSES AND METHOD OF PREPARING SAID CATALYST

Alexei Efimovich Dronov, ulitsa Chapaeva, 12a, kv. 21; Nikolai Nikitovich Axenov, ulitsa Druzhby, 19a, kv. 26; Lolly Ivanovich Kozlov, ulitsa Komsomolskaya, 39, kv. 39, all of Novomoskovsk Tulskoi oblasti; Vladimir Petrovich Semenov, Vatkovsky pereulok, 4/6, kv. 69, Moscow; Viktor Stanislavovich Sobolevsky, ulitsa Moskovskaya, 2/14, kv. 5, Novomoskovsk Tulskoi oblasti; Viktor Ivanovich Yagodkin, ulitsa Kalinina, 32, kv. 15, Novomoskovsk, Tulskoi oblasti; Evgeny Zinovievich Golosman, ulitsa L. Tolstogo, 1/46, kv. 1, Novomoskovsk, Tulskoi oblasti; Arkady Mefodievich Alexeev, pereulok Obukha, 4, kv. 98, Moscow; David Borisovich Chistozvonov, ulitsa Kirova, 4, kv. 51, Novomoskovsk, Tulskoi oblasti; Tsezar Iosifovich Shumlyakovsky, ulitsa Lisichanskaya, 20, kv. 60, and Nikolai Savelievich Ulyanov, ulitsa Komsomolskaya, 20, kv. 12, both of severodonetsk, Voroshilovgradskoi oblasti, all of U.S.S.R.

Filed Aug. 21, 1974, Ser. No. 499,196

Int. Cl.^{2} B01J *21/02, 21/04, 21/06, 23/84*

U.S. Cl. 252—432 **8 Claims**

1. A carrier for catalysts used in catalytic chemical processes which consists of a metallurgical slag, consisting of a fused mixture of oxides formed in the production of ferrotitanium, ferroboral, ferrochromoboron, nickel-boron and ferroboron, taken in the following quantities:

	weight %
aluminium oxide	50–80
nickel oxide	0–10
titanium oxide	0–18
magnesium oxide	1–10
calcium oxide	3–25
iron oxides	1–20
silicon oxide	1–4
boron oxide	0–15
and chromium oxide	0–1.

3,980,585

CATALYST AND PROCESS FOR PREPARING MALEIC ANHYDRIDE FROM C_4 HYDROCARBONS

Ralph O. Kerr, and Bruno J. Barone, both of Houston, Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Filed May 28, 1974, Ser. No. 473,489

Int. Cl.^{2} B01J *27/18*

U.S. Cl. 252—437 **3 Claims**

1. An improved vanadium-phosphorus-oxygen catalyst complex for the oxidation of n-C_4 hydrocarbons to produce maleic anhydride, consisting essentially of active components in the atom ratios vanadium 1 : phosphorus 0.90 to 1.3 : copper 0.005 to 0.3 : Me 0.005 to 0.25 wherein Me consists essentially of Te said catalyst complex further containing as an active component an alkali or alkaline earth metal in the atomic ratio of 0.001 to 0.1 per atom of V.

2. An improved vanadium-phosphorous-oxygen catalyst complex for the oxidation of n-C_4 hydrocarbons to produce maleic anhydride, consisting essentially of active components in the atom ratios vanadium 1 : phosphorus 0.90 to 1.3 : copper 0.005 to 0.3 : Me 0.005 to 0.25 wherein Me is Te and Hf.

3. An improved vanadium-phosphorus-oxygen catalyst complex for the oxidation of n-C_4 hydrocarbons to produce maleic anhydride, consisting essentially of active components in the atom ratios vanadium 1 : phosphorus 0.90 to 1.3 : copper 0.005 to 0.3 : Me 0.005 to 0.25 wherein Me consists essentially of U.

3,980,586

MODIFIED SOLID CATALYST MATERIALS

Thomas Owen Mitchell, West Trenton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 28, 1974, Ser. No. 501,323

Int. Cl.^{2} B01J *29/06, 23/08*

U.S. Cl. 252—455 R **11 Claims**

1. In a refractory metal oxide solid material selected from the group consisting of alumina, silica-alumina and aluminosilicates, characterized by the presence of surface hydroxyl groups, said material having been modified by being subjected to the steps of (1) silylating said solid material with an organic- or halogen-substituted silane at a temperature of between about 25°C and about 500°C to effect bonding between said silane and the surface hydroxyl groups of said solid material, (2) calcining said solid material by heating at a temperature in the range of greater than about 350°C to about 700°C and (3) steaming said solid material by contacting it with an atmosphere containing at least 2 volume percent steam at a temperature of between about 900°F and about 1600°F for at least about one-half hour, the improvement which comprises conducting the modification steps sequentially in the order of silylating said solid material, calcining the product solid material of said silylating step and steaming the product solid material of said calcining step, said calcining step comprising heating the resulting solid material from said silylating step for a time sufficient to remove substantially all of any organic or halogen substituent introduced to the solid material during said silylating step.

3,980,587
STRIPPER COMPOSITION

Terrence P. Sullivan, Northfield, Minn., assignor to G. T. Schjeldahl Company, Northfield, Minn.

Filed Aug. 16, 1974, Ser. No. 497,880

Int. Cl.^{2} C11D *3/33*

U.S. Cl. 252—546 **3 Claims**

1. The method of stripping a resist coating from the surface of a metallic surface, wherein the resist coating consists essentially of polyvinyl chloride, which method consists essentially of exposing said resist coating to an aqueous working solution of a concentrate, wherein the concentrate has a composition as follows:

Component	Parts by Weight
Alkaline stripper	15 to 35
Sodium salt of ethylenediaminetetraacetic acid selected from di, tri, and tetrasodium salts of ethylenediaminetetraacetic acid and mixtures thereof	0.5 to 1.5
Acetic acid	4 to 12
Ethylene glycol monobutyl ether	30 to 100

and wherein said concentrate is dispersed in aqueous solution in an amount ranging from between about 10 lbs. per gallon to about 30 lbs. per gallon.

3,980,588
DETERGENTS CONTAINING OLEFIN SULFONATE

Joseph Rubinfeld, Northport, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 231,367, March 2, 1972, abandoned, which is a division of Ser. No. 56,123, July 2, 1970, abandoned, which is a continuation of Ser. No. 553,622, May 31, 1966, abandoned. This application Feb. 27, 1974, Ser. No. 446,228

Int. Cl.^{2} C11D *3/07*

U.S. Cl. 252—548 **4 Claims**

1. A detergent mixture suitable for use in aqueous liquid detergent compositions consisting essentially of (a) a water-soluble, anionically active olefin sulfonate product having 12 to 21 carbon atoms in the olefin molecular structure, (b) a water-soluble higher alkyl poly (ethenoxy) ether sulfate having 10 to 20 carbon atoms in the higher alkyl group and 1 to 5 ethenoxy groups per molecule, said olefin sulfonate product and said ether sulfate being in the form of a salt selected from the group consisting of sodium, potassium, ammonium and ethanolammonium and (c) a higher fatty acid diethanolamide in which the higher fatty acyl radical has 10 to 14 carbon atoms, the weight ratio of said sulfate to said sulfonate being in the range of 90:10 to 30:70, said diethanolamide being present in an amount of about ½ to 10% by weight and being effective to improve the foam stability as compared with the same composition as defined above which does not contain said diethanolamide.

3,980,589
METHOD FOR PREPARING A CATALYST COMPRISING RUTHENIUM SUPPORTED ON A GROUP IIA OXIDE

Lawrence Lee Murrell, Elizabeth, and David J. C. Yates, Westfield, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed June 3, 1975, Ser. No. 583,507

Int. Cl.^{2} B01J *23/46, 23/58*

U.S. Cl. 252—466 PT **9 Claims**

1. A process for preparing catalysts comprising ruthenium supported on a porous, Group IIA oxide, said catalyst being characterized as having said ruthenium in high surface area, which comprises adsorbing a ruthenium precursor from a nonaqueous solvent selected from the group consisting of aldehydes, ketones, ethers and organic nitrogen bases, said nonaqueous solvent being present in a volume in excess of the volume necessary to fill the pores of said Group IIA oxide, removing said nonaqueous solvent, and reducing said ruthenium precursor substantially to ruthenium metal.

3. The process of claim 1 wherein said non-aqueous solvent is selected from the group consisting of acetone, acetonitrile, N,N-dimethyl formamide, hexamethyl phosphoramide, diethylether, tetrahydrofuran, dioxane, methylethyl ketone, and acetaldehyde.

3,980,590
RECOVERY OF PARTICULATE CARBON FROM SYNTHESIS GAS

Charles P. Marion, Mamaroneck, N.Y., assignor to Texaco Development Corporation, New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,605

Int. Cl.^{2} C01B *2/14*

U.S. Cl. 252—373 **18 Claims**

1. In a process for the production of gaseous mixtures comprising H_2 and CO by the partial oxidation of a hydrocarbonaceous fuel or a slurry of solid carbonaceous fossil fuel with a free-oxygen containing gas in the reaction zone of the free-flow noncatalytic gas generator at a temperature in the range of about 1300° to 3500°F and a pressure in the range of about 1 to 300 atmospheres in the presence of a temperature moderator to produce an effluent gas stream comprising H_2 and CO, and containing entrained particulate carbon and at least one member of the group CO_2, H_2O, CH_4, N_2, A, COS, and H_2S, and from which effluent gas stream said carbon particles are removed by scrubbing with water in a gas-scrubbing zone to produce a carbon-water dispersion, the improved method of separating particulate carbon from said carbon-water dispersion which comprises:

1. contacting said carbon-water dispersion with a liquid organic extractant comprising a mixture of the liquid organic by-products from an oxo or oxyl process comprising at least one alcohol and at least one ester in admixture with at least one constituent selected from the group consisting of aldehydes, ketones, ethers, acids, olefins, saturated hydrocarbons, and water, in admixture with 0 to 25 weight percent of a light liquid hydrocarbon fuel having a gravity in degrees API of 20° and higher and a carbon number in the range of about 5 to 16, wherein the amount of liquid organic extractant introduced is sufficient to render all of the carbon particles in said carbon-water dispersion hydrophobic and to resolve said carbon-water dispersion, and by decanting, removing a stream of clarified water and a separate stream of pumpable carbon-extractant dispersion having a carbon content of about 0.5 to 5 weight percent from a separating zone at a temperature in the range of 180°–700°F and a sufficient pressure to maintain said liquid organic extractant and said clarified water in liquid phase;
2. mixing the carbon-extractant dispersion from (1) with liquid hydrocarbon fuel having a gravity in degrees API in the range of about −20 to 100 and in the amount of about 0.02 to 40 lbs. of fresh liquid hydrocarbon fuel per lb. of extractant in said carbon-extractant dispersion, and with about 0 to 0.25 lbs. of said mixture of the liquid organic by-products from the oxo or oxyl process per lb. of said carbon-extractant dispersion plus liquid hydrocarbon fuel, and introducing said mixture into a fractional distillation zone, removing a light fraction from said distillation zone and introducing same into (1) as at least a portion of said liquid organic extractant, removing a pumpable bottoms slurry containing said particulate carbon and the unvaporized portion of said liquid hydrocarbon fuel and any unvaporized portion of said mixture of the liquid organic by-products from the oxo or oxyl process from said distillation zone and introducing same into said gas generator as at least a portion of said fuel, and recycling said clarified water from (1), to said gas-scrubbing zone to scrub the effluent gas stream from the gas generator.

3,980,591
RECOVERY OF PARTICULATE CARBON FROM SYNTHESIS GAS

Charles P. Marion, Mamaroneck, N.Y., assignor to Texaco Development Corporation, New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,606

Int. Cl.^{2} C01B *2/14*

U.S. Cl. 252—373 **17 Claims**

1. In a process for the production of gaseous mixtures comprising H_2 and CO by the partial oxidation of a hydrocarbonaceous fuel or a slurry of solid carbonaceous fuel with a free-oxygen containing gas in the reaction zone of a free-flow noncatalytic gas generator at a temperature in the range of about 1300° to 3500°F and a pressure in the range of about 1 to 300 atmospheres in the presence of a temperature moderator to produce an effluent gas stream comprising H_2 and CO, and containing entrained particulate carbon and at least one member of the group CO_2, H_2O, CH_4, N_2, A, COS, and H_2S; and from which said effluent gas stream carbon particles are removed by scrubbing with water in a gas-scrubbing zone to produce a carbon-water dispersion, the improved method of recovering particulate carbon from said carbon-water dispersion which comprises: contacting said carbon-water dispersion with a liquid organic extractant comprising a mixture of the liquid organic by-products from the oxo or oxyl process comprising at least one alcohol and at least one ester in admixture with at least one constituent selected from the group consisting of aldehydes, ketones, ethers, acids, olefins, and saturated hydrocarbons, wherein the amount of liquid organic extractant introduced is at least sufficient to render all of the carbon particles in said carbon-water dispersion hydrophobic and to resolve said carbon-water dispersion; and by decanting, separately removing a pumpable stream of carbon-extractant dispersion having a carbon content of about 0.5 to 5 weight %, and a stream of clarified water in a separating zone at a temperature in the range of 180° to 700°F and a pressure sufficient to maintain both the extractant and water in liquid phase.

3,980,592
RECOVERY OF PARTICULATE CARBON FROM SYNTHESES GAS

Charles P. Marion, Mamaroneck, N.Y., assignor to Texaco Development Corporation, New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,607

Int. Cl.^{2} C01B *2/14*

U.S. Cl. 252—373 **11 Claims**

1. In a process for continuously producing clean gaseous mixtures comprising H_2 and CO by the partial oxidation of a hydrocarbonaceous fuel or slurry of carbonaceous fuel with a free oxygen-containing gas in the reaction zone of a free-flow noncatalytic gas generator at a temperature in the range of about 1300° to 3500°F and a pressure in the range of about 1 to 300 atmospheres in the presence of a temperature moderator to produce an effluent gas stream comprising H_2 and CO and containing entrained particulate carbon and at least one member of the group CO_2, H_2O, H_2S, COS, CH_4, N_2, and A; and introducing said effluent gas stream into gas-cooling and gas-scrubbing zones in which the gas stream is cooled and contacted with water, effecting the removal of said particulate carbon from said effluent gas stream and producing a carbon-water dispersion; the improved method of separating said particulate carbon from said carbon-water dispersion which comprises: (1) contacting said carbon-water dispersion with liquid organic extractant comprising light liquid hydrocarbon fuel fraction having a gravity in degrees API in the range of over 20 to about 100 and a carbon number in the range of about 5 to 16 and produced in the distillation zone in step (3) and a thin centrifuge stream of carbon-light liquid hydrocarbon fuel dispersion produced in step (2), after removal of any waste gas; wherein the amount of said liquid organic extractant introduced is sufficient to render all of the carbon particles in said carbon-water dispersion hydrophobic and to resolve said carbon-water dispersion; and by decanting removing a stream of clarified water and a separate stream of pumpable carbon-light hydrocarbon fuel dispersion having a carbon content of about 0.5 to 5 weight % in a separating zone at a temperature in the range of about ambient to 700°F and a sufficient pressure to maintain said liquid organic extractant and said clarified water in liquid phase; (2) introducing said carbon-light liquid hydrocarbon fuel dispersion from (1) into a centrifuging zone at a temperature in the range of about ambient to 700°F and a pressure in the range of about 1 to 200 atmospheres, separately withdrawing from said centrifuging zone a thick stream of carbon-light liquid hydrocarbon fuel dispersion having a carbon content in the range of about 1 to 10 weight percent, and a comparatively thin stream of carbon-light liquid hydrocarbon fuel dispersion having a carbon content in the range of about 0.02 to 1.0 weight percent; degasifying said thin stream and introducing said stream into (1), as previously described as a portion of said liquid organic extractant, withdrawing said clarified water stream from said separating zone, and recycling said water to said gas-scrubbing zone to scrub carbon from the effluent gas stream from the gas generator, introducing said thick stream of carbon-light liquid hydrocarbon fuel dispersion in admixture with fresh heavy liquid hydrocarbon fuel having a gravity in degrees API in the range of about −20 to 20 and in the amount of about 0.02 to 40 lbs. of fresh heavy liquid hydrocarbon fuel per lb. of light liquid hydrocarbon fuel in said thick centrifuge stream into a fractional distillation zone; and (3) removing a light liquid hydrocarbon fuel fraction from said distillation zone and recycling same to (1) as a portion of said light liquid hydrocarbon fuel extractant; removing from said distillation zone a pumpable bottoms slurry comprising particulate carbon and the unvaporized portion of said heavy liquid hydrocarbon fuel and introducing same into said gas generator as at least a portion of said fuel.

3,980,593
ANTICAKING AGENT FOR INORGANIC SALTS

Helmut Knorre, Seligenstadt, and Joachim Fischer, Hanau, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

Filed Apr. 30, 1975, Ser. No. 573,335

Claims priority, application Germany, Nov. 29, 1974, 2456433

Int. Cl.^{2} A23L *1/00*

U.S. Cl. 252—383 **28 Claims**

1. An anticaking agent in the form of a powdery mixture suitable for use to prevent caking of inorganic salts and comprising (A) a complex iron cyanide, (B) a water insoluble inorganic, inert, finely divided hydroxyl group containing material, or a material which forms this in the production of the anticaking agent, at least one active material from (C) and (D) where (C) is a hydrophobizing material and (D) is a hydrophilizing material, said materials (A), (C) and (D) being present on B together with (E) water in an amount of 20 to 50 weight percent of the total powdery mixture.

3,980,594
TRIMERIZATION OF AROMATIC ISOCYANATES CATALYZED BY CERTAIN AMMONIUM SALTS

Hubert J. Fabris, Akron; Edwin M. Maxey, Kent, and Heinz Ulelmann, Tallmadge, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Apr. 23, 1975, Ser. No. 570,680

Int. Cl.^{2} C08G *18/00*

U.S. Cl. 260—2.5 AC **8 Claims**

1. A method which comprises reacting organic isocyanates in contact with at least 0.01 part by weight of said isocyanates of a compound displaying catalytic activity for exothermic

cyclic trimerization of organic isocyanates and for urethane formation, said compound corresponding to the structural formula $(NR_4)_y A$ in which

- A is an anion derived from an acid having a pK value, in aqueous solution at substantially room temperature, of 2.0 or greater and being free of substituents which can react with isocyanates under conditions of trimerization and being selected from the group consisting of inorganic oxygen acids, carboxylic acids and carbonic acid,
- each R is any organic group other than A and free of any substituents and functional groups which can react with isocyanates under conditions of trimerization, no more than one R per N containing an aromatic ring attached directly to N, and
- y is a whole number equal in value to the valence of A.

3,980,595
POLYURETHANE ELASTOMERS MODIFIED WITH HYDROCARBON RUBBER

Steven E. Schonfeld; William L. Hergenrother, and Byron H. Werner, all of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 335,612, Feb. 26, 1973, abandoned. This application Nov. 14, 1974, Ser. No. 523,940
Int. Cl.² B29H *17/22;* C08L *7/00, 75/04*
U.S. Cl. 260—3 18 Claims

1. A liquid castable modified polyurethane elastomer composition consisting essentially of:

- A. from about 95% to about 65% by weight of said modified polyurethane elastomer composition of a polyurethane formable from;
  - a. an isocyanate terminated linear polyether or linear polyester prepolymer having a molecular weight in the range of from 500 to 5000 and an NCO content of from 1% to 10% by weight; and
  - b. a linear extending, curing agent for said prepolymer, said curing agent being present in a molar ratio of XH_n/NCO wherein X is oxygen or nitrogen and n is 1 or 2 in the range of from about 1.0 to about 1.2;
- B. from about 5% to about 35% by weight of said modified polyurethane elastomer composition of a rubber material dispersed in said prepolymer and isocyanate curing agent therefor, said rubber material being formable from;
  - a. a hydrocarbon rubber free of functionality other than unsaturation and having a molecular weight in the range of from 20,000 to 300,000; and
  - b. from 0.01 to 50 parts by weight of the hydrocarbon rubber of a separate and different rubber curing agent for said hydrocarbon rubber;
- C. said modified polyurethane elastomer composition being liquid castable and, upon curing said modified polyurethane elastomer composition, said hydrocarbon rubber being present in the matrix of the linearly extended polyurethane elastomer as a fine dispersion which renders the modified polyurethane elastomer composition melt-free under conditions of high shear.

3,980,596
PROCESS FOR REDUCING FILLER LOSS

Glenn Frederick Leverett, Vienna, W. Va., assignor to E. I. Du Pont de Nemours and Co., Wilmington, Del.

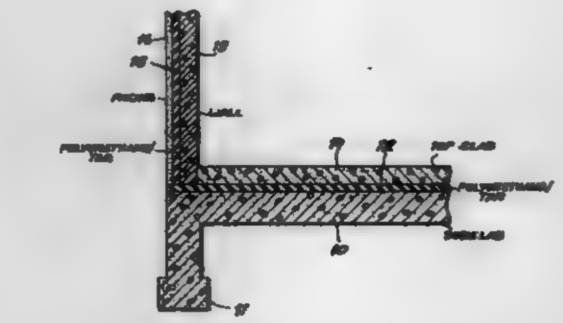
Filed Apr. 11, 1975, Ser. No. 567,411
Int. Cl.² C08K *3/10;* C08L *91/00*
U.S. Cl. 260—23 XA 7 Claims

1. In the process for preparing filled agglomerated granules of non-melt-fabricable granular tetrafluoroethylene polymer in which the filler is a particulate metal-containing filler present in an amount of between about 5 and 40% by volume of the total volume, by agitating a finely-divided blend of said polymer and said filler in which the particle size of the finely-divided tetrafluoroethylene polymer averages numerically between about 5 microns and about 200 microns and in which the filler is present in an amount of between about 5 and 40% by volume, in a two-phase liquid medium consisting essentially of water and an organic liquid which is soluble in water up to at most 15% by weight at the operating temperature of the process and which has a surface tension no greater than about 40 dynes/cm. at 25°C., and in which the organic liquid is present in an amount of 0.1 to 0.5 cc per gram of said blend, followed by separating the resulting agglomerated granules from the liquid medium; the improvement wherein said liquid medium contains an additive selected from a monocarboxylic hydrocarbon acid containing between about 12 and about 20 carbon atoms or its salt in which the cation of the salt is a Group II metal of the Periodic Table, said acid or salt being present in an amount of between 0.01 and 1 part per 1000 parts by weight of water present.

3,980,597
MAKING A SEALING COMPOSITION AND A SEALING COMPOSITION FOR ROOFS AND THE LIKE

Musa Shihadeh, Kearny, N.J., assignor to Guard Polymer & Chemical, Inc., Kearny, N.J.

Filed May 24, 1971, Ser. No. 146,203
Int. Cl.² C08L *95/00*
U.S. Cl. 260—28 R 5 Claims



1. A moisture-curable sealing composition comprising a polyurethane prepolymer, a dehydrated and deacidified bitumen selected from the group which consists of dehydrated and deacidified tars, pitches and asphalts, said bitumen being a tar having a boiling point between about 195° and 340°C and said polyurethane prepolymer having a molecular of 1000 to 12,000 and an isocyanate NCO content of up to 20% by weight, and a dehydrating agent mixed into said composition in an amount in excess of that theoretically required to remove all of the moisture of said bitumen, said dehydrating agent being selected from the group which consists of barium, calcium, magnesium and aluminum oxides and mixtures thereof.

3,980,598
MIXTURES BASED ON ETHYLENE COPOLYMERS AND ASPHALT

Dieter Moorwessel, Mannheim; Rudolf Glaser, Ludwigshafen; Günther Pfirrmann, Ludwigshafen, and Rudolf Konopka, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Aug. 21, 1975, Ser. No. 606,442
Claims priority, application Germany, Aug. 28, 1974, 2441203
Int. Cl.² C08L *91/00*
U.S. Cl. 260—28.5 AS 7 Claims

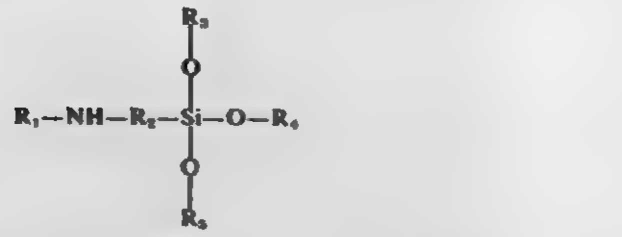
1. A mixture comprising an ethylene copolymer and asphalt in a weight ratio of from 3 : 97 to 97 : 3, wherein the asphalt used is a precipitated asphalt which has a penetration, measured according to DIN 1,995, of from 0 to 8 at 25°C and a softening point, measured according to DIN 1,995 (ring and ball method), of from 50° to 85°C.

3,980,599
AMINO SILANE WITH EPOXY SILOXANE AS TREATING AGENT FOR FIBER

Takamitsu Kondo, and Mikio Tashiro, both of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

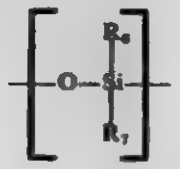
Continuation-in-part of Ser. No. 546,906, Feb. 4, 1975, abandoned. This application Aug. 12, 1975, Ser. No. 604,047
Claims priority, application Japan, Feb. 12, 1974, 49-16312
Int. Cl.² C08G *77/26*
U.S. Cl. 260—29.2 M 6 Claims

1. A treating agent for filling synthetic fibers, said treating agent comprising (a) 1 part by weight of an aminosilane of the formula (I)



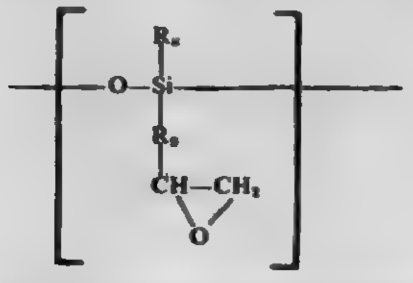
$$R_1—NH—R_2—\overset{\overset{\displaystyle R_3}{|}\atop \overset{\displaystyle O}{|}}{\underset{\underset{\displaystyle R_5}{|}\atop\underset{\displaystyle O}{|}}{Si}}—O—R_4 \qquad (I)$$

wherein R_1 is a hydrogen atom, an alkyl group containing 1 to 4 carbon atoms, or a phenyl group, R_2 is an alkylene group containing 1 to 4 carbon atoms, and R_3, R_4, and R_5, independently from each other, represent an alkyl group containing 1 to 4 carbon atoms,
and (b) 1 to 20 parts by weight of an epoxysiloxane containing at least one structural unit of the formula (II)



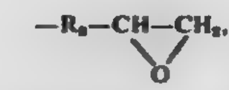
$$\left[—O—\overset{\displaystyle R_6}{\underset{\displaystyle R_7}{\overset{|}{\underset{|}{Si}}}}—\right] \qquad (II)$$

wherein R_6 and R_7, independently from each other, represent an alkyl group containing 1 to 3 carbon atoms,
and at least two structural units of the formula (III)



(III)

wherein R_8 is an alkyl group containing 1 to 3 carbon atoms or the group



R_9 being an alkylene group containing 2 to 5 carbon atoms or a substituted or unsubstituted arylene group containing 6 to 10 carbon atoms.

3,980,600
PROCESS FOR REMOVING RESIDUAL MERCAPTAN FROM HIGH NITRILE POLYMERS

Gerald P. Coffey, Cleveland Heights, Ohio, assignor to Standard Oil Company, Cleveland, Ohio

Filed Sept. 20, 1974, Ser. No. 504,463
Int. Cl.² C08F *220/44*
U.S. Cl. 260—29.6 AN 2 Claims

1. A process for the removal of residual t-butyl mercaptan modifier from the latex of a nitrile-containing polymer which contains some unreacted olefinic nitrile monomer wherein said nitrile-containing polymer composition results from the polymerization in an aqueous medium of 100 parts by weight of

- A. from 70 to 90% by weight of at least one member selected from the group consisting of acrylonitrile and methacrylonitrile, and
- B. from 30 to 10% by weight of styrene, and

wherein (A) and (B) are copolymerized in the presence of from 0 to 40 parts by weight of

- C. a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and optionally a comonomer selected from the group consisting of styrene, acrylonitrile and methacrylonitrile, said rubbery polymer containing from 50 to 100% by weight of polymerized conjugated diene and from 0 to 50% by weight of comonomer comprising adjusting the pH of the latex to within the range of from about 9 to about 10.5 with an aqueous solution of hydroxide ions of a metal selected from the Groups IA, IB, IIA, and IIB of the Periodic Table at a temperature of from about 20°C to about 60°C for a period of from about 20 to about 60 minutes.

3,980,601
THERMOSTABLE COATING, IMPREGNATING AND BONDING AGENTS

Matthias Marx, Bad Duerkheim; Jenoe Kovacs, Bobenheim-Roxheim, and Gerhard Storck, Ruchheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Continuation of Ser. No. 337,471, March 2, 1973, abandoned. This application Mar. 10, 1975, Ser. No. 557,047
Claims priority, application, Mar. 4, 1972, 2210484
Int. Cl.² C08L *79/08*
U.S. Cl. 260—29.6 NR 4 Claims

1. A thermostable coating, impregnating or bonding agent which consists essentially of a dispersion of

- A. water;
- B. a water-insoluble or at most slightly water-swellable thermostable polyesterimide binder; and
- C. a suspension agent dissolved in water, the component (B) having a long-term service termperature of more than 100°C and being present in the form of particles having a particle diameter of from 0.1 to 150 microns and the component (C) consisting essentially of a high molecular weight vinyl pyrrolidone homopolymer or copolymer containing a major amount of vinyl pyrrolidone and having a viscosity of from 0.5 to 50 centipoises in an 0.015% aqueous solution at 20°C, wherein said coating, impregnating or bonding agent includes from 45 to 80% by weight of component (A); from 20 to 55% by weight of component (B); and from 0.01 to 5% by weight of component (C) the sum of the percentages of (A), (B) and (C) being 100.

3,980,602
ACRYLIC POLYMER DISPERSANT FOR AQUEOUS ACRYLIC COATING COMPOSITIONS

Henry L. Jakubauskas, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 28, 1975, Ser. No. 554,225
Int. Cl.² C08F *1/13*
U.S. Cl. 260—29.6 TA 10 Claims

1. An acrylic polymer dispersant for dispersing pigments in aqueous acrylic paints consisting essentially of about

1. 46–62% by weight, based on the weight of acrylic polymer, of constituents selected from the group consisting of styrene, an alkyl methacrylate or a mixture of styrene and an alkyl methacrylate; wherein the alkyl methacrylate is selected from the group consisting of methyl methacrylate, isodecyl methacrylate or stearyl methacrylate;
2. 28–34% by weight, based on the weight of the acrylic polymer, of an alkyl acrylate having 2–12 carbon atoms in the alkyl group; and
3. 10–20% by weight, based on the weight of the acrylic polymer, of acrylic acid or methacrylic acid; and

wherein the acrylic polymer has a glass transition temperature of about −90°C to 70°C and a weight average molecular weight of about 500–30,000.

3,980,603

MICROSUSPENSION POLYMERIZATION PROCESS TO YIELD VINYL HALIDE POLYMER LATEX INVOLVING DELAYED ADDITION OF BULK MONOMER MIX

Basil John Bradley, Barry; Peter James Craig, Dinas Powis, and Geoffrey James Gammon, Wenvoe, all of Wales, assignors to BP Chemicals International Limited, London, England

Filed Dec. 20, 1974, Ser. No. 534,798

Claims priority, application United Kingdom, Dec. 26, 1973, 30163/73

Int. Cl.² C08F *114/06*

U.S. Cl. 260—29.6 R **9 Claims**

1. The batch process for the production of a vinyl halide polymer latex which comprises subjecting a polymerization mixture of a vinyl halide-containing monomeric material to homogenization, polymerizing said mixture in aqueous microsuspension in the presence of a monomer-soluble free radical initiator, and, after at least 40% and before 80% of the original monomeric material has been converted to polymer, adding not more than 40% by weight based on the weight of the original monomeric material of bulk vinyl halide-containing monomeric material at a rate and in a quantity such as to maintain the stability of the latex.

3,980,604

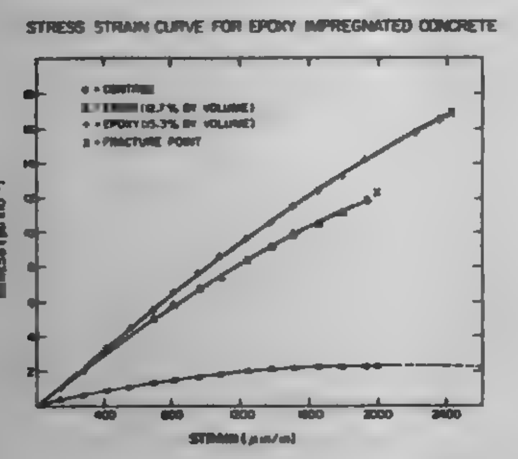
RESIN IMPREGNATION OF SILICEOUS MATERIALS

David A. Whiting, 126 E. Fairmount Ave.; Paul R. Blankenhorn, 87 Hilltop Trailer Park, and Donald E. Kline, 1210 E. Branch Road, all of State College, Centre County, Pa. 16801

Filed June 8, 1973, Ser. No. 368,651

Int. Cl.² C08K *5/15*

U.S. Cl. 260—30.4 EP **5 Claims**



1. A high strength, chemically inert, cured concrete composition of reduced porosity consisting essentially of concrete and an epoxy resin composition distributed essentially completely through said concrete composition, said concrete composition having a porosity of from about 4 to about 11% and said epoxy resin composition being obtained by curing in situ in a concrete previously dried to a moisture level of from about 1 to about 3% by weight a composition consisting essentially of a mixture of epoxy resin obtained by condensation of epichlorohydrin with a bisphenol or glycerine, from about 15 to about 35 parts per one hundred parts of resin of a reactive diluent for epoxy resins selected from the group consisting of styrene oxide, phenyl glycidyl ether, butyl glycidyl ether, octylene oxide, allyl glycidyl ether, 1,2,7,8-diepoxyoctane, and the diglycidyl ether of butanediol, and a curing agent with a long pot life selected from the group of aliphatic, aromatic and heterocyclic tertiary amines containing not more than one primary amine group.

3,980,605

SEMI-PERMEABLE MEMBRANE COMPOSITIONS BASED ON BLENDS OF POLYAMIDES AND POLYVINYL ALCOHOLS

Edward F. Steigelmann, and Robert D. Hughes, both of Park Forest, Ill., assignors to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 288,781, Sept. 13, 1972, Pat. No. 3,758,605, and a continuation-in-part of Ser. No. 288,782, Sept. 13, 1972, Pat. No. 3,844,735, and a continuation-in-part of Ser. No. 335,012, Feb. 23, 1973, abandoned. This application Sept. 7, 1973, Ser. No. 395,055

Int. Cl.² B01D *51/06;* **C08L** *77/10*

U.S. Cl. 260—30.8 DS **37 Claims**

1. An extrusible composition which is of extrusion consistency at temperatures in the range of about 60° to 150°C. and suitable for forming a semi-permeable membrane, consisting essentially of polymer and di(lower alkyl) sulfoxide solvent, said polymer consisting essentially of nylon polymer and sufficient water-soluble polyvinyl alcohol to enhance the hydrophilic properties of the nylon polymer, the amount of said solvent present providing an intimate, compatible mixture of said nylon polymer and polyvinyl alcohol having said extrusion consistency, and the amounts of nylon polymer and polyvinyl alcohol present being such to provide upon extrusion a hydrophilic, semi-permeable membrane.

3,980,606

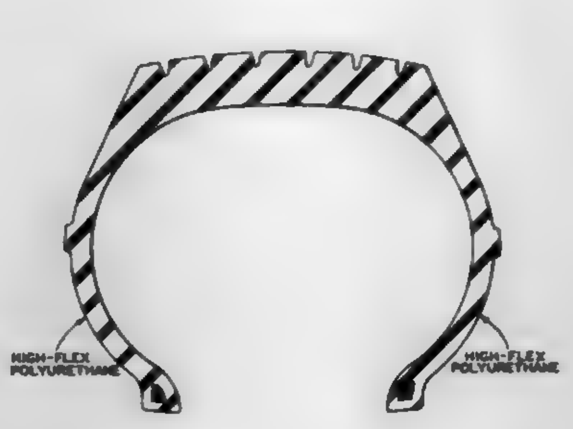
POLYURETHANE ELASTOMERS HAVING PROLONGED FLEX LIFE AND TIRES MADE THEREFROM

Byron H. Werner, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Feb. 24, 1975, Ser. No. 552,384

Int. Cl.² C08K *5/12;* **C08G** *18/48, 18/32*

U.S. Cl. 260—31.8 R **13 Claims**



1. A pneumatic tire the sidewalls of which are composed essentially of a cured mixture of (A) 95 to 75 parts by weight of a polyurethane prepolymer with a molecular weight of 950 to 1850, which is the reaction product of substantially one mole of poly(tetramethylene ether) glycol and substantially 2 moles of a toluene diisocyanate and (B) 5 to 25 parts by weight of a prepolymer which is the reaction product of substantially 1 mole of polypropylene glycol or triol and substantially 2 or 3 moles, respectively, of a toluene diisocyanate, which prepolymer B has a molecular weight of 2350 to 4000, said mixtures being cured by a hindered aromatic diamine and producing a polyurethane in which the NH_2/NCO ratio is 0.95–1.20.

3,980,607

POWDERED COATING MATERIALS

Gerhard Johannes, Taunusstein, Bleidenstadt, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 324,982, Jan. 19, 1973, abandoned. This application July 1, 1974, Ser. No. 485,016

Claims priority, application Germany, Jan. 22, 1972, 2203024

Int. Cl.² C09D *5/00*

U.S. Cl. 260—37 EP **6 Claims**

1. A process for producing a powdered fusible coating material comprising the steps of:

1. mixing under a protective gaseous atmosphere a mixture comprising finely divided particles of:
   - A. a hardenable synthetic resin selected from the group consisting of epoxy resins, alkyd melamine precondensates, polyester resins, polyurethane resins, acrylic resins and mixtures thereof wherein the synthetic resin has a particle size up to 5 mm
   - B. a hardener for said hardenable synthetic resin having a particle size in the range of 1 to 50 μ
   - C. a pigment selected from the group consisting of aluminum, copper, copper-zinc alloy, mica and a mixture of mica and titanium dioxide having a particle size of 1 to 50 μ and being present in an amount equaling 1 to 30 percent by weight of the mixture
   - D. a flow agent selected from the group consisting of polyacrylates, silicone oil, silicone greases and plasticizers
2. plasticising the mixture at a temperature of 100°C to 140°C to produce a viscous plasticised mixture, and
3. homogenizing the plasticised mixture at a temperature of 100° to 160°C under shearing forces to produce a powdered fusible coating material.

3,980,608

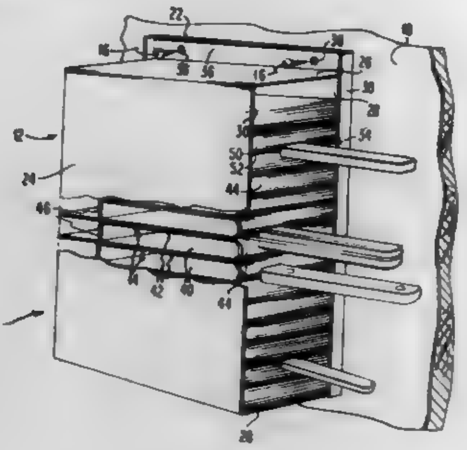
KNIFE RACK WHICH SELF-ADJUSTS TO BLADE THICKNESS

Edward J. Faltersack, 19517 Almadon Road, San Jose, Calif. 95120

Filed June 23, 1975, Ser. No. 589,033

Int. Cl.² A47G *21/14*

U.S. Cl. 248—37.3 **6 Claims**



1. A rack for holding knives comprising:

a housing including parallel first and second sidewalls interconnected by a base and having an opening therebetween;

means for fastening said housing to an associated surface such that said sidewalls are vertically oriented; and

a plurality of partition members disposed in a stacked relationship on said base between and vertically movable within said sidewalls, each member being formed from a unitary body of resilient material and including an elongated portion having a blade-holding surface, a bottom portion, a bight portion interconnecting said bottom and said elongated portions and disposed in a facing relationship to said opening, and a spacer portion, said spacer portion and said bight portion serving to maintain said elongated and bottom portions in a substantially parallel relationship, and said bight portion serving to normally bias said elongated portion in a direction away from said bottom portion, the blade-holding surface of a first partition member being disposed subjacent the bottom portion of a second partition member and cooperating therewith to form a blade-holding recess, whereby when the blade of a knife is inserted into the rack said bight portion and said bottom portion serve to guide the tip of the blade into said recess forcing the members above the knife upward to accommodate the blade, the weight of the members above the knife serving to maintain the blade in said recess and whereby said blade-holding surface of said first partition exerts an upwardly directed force which also serves to maintain the blade in said recess.

3,980,609

PROCESS FOR THE BULK DYEING OF POLYESTERS

Rutger Neeff, and Heinz Dietrich Jordan, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

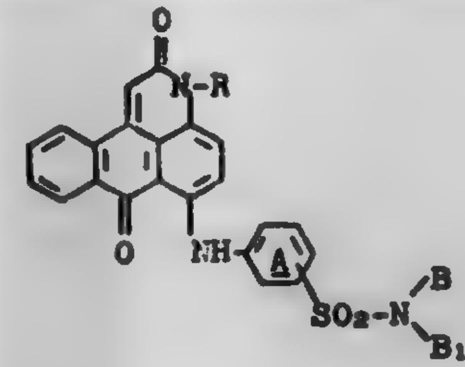
Filed Apr. 28, 1975, Ser. No. 572,325

Claims priority, application Germany, May 3, 1974, 2421375

Int. Cl.² C08L *67/00*

U.S. Cl. 260—40 P **5 Claims**

1. Process for bulk dyeing synthetic linear polyesters, characterised in that one or more dyestuffs of the formula



wherein

R denotes a straight-chain or branched-chain alkyl group with 1–4 C atoms,

B and B_1 independently of one another denote hydrogen or optionally substituted alkyl, alkenyl, cycloalkyl, aralkyl, aryl or heteroaryl radicals or conjointly and together with the N atom form a ring which is optionally interrupted by hetero-atoms and the ring A can be substituted by 1 – 3 non-ionic substituents,

are used.

3,980,610

UNSATURATED POLYESTER-1,2 POLYBUTADIENE MOLDING COMPOUND

Wendell R. Conard, Kent, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 25, 1974, Ser. No. 526,548

Int. Cl.² C08K *7/26;* **C08L** *67/06*

U.S. Cl. 260—40 R **8 Claims**

1. A cured blend of 50 to 95 parts by weight of a polyester of an unsaturated aliphatic acid and 50 to 5 parts of polybutadiene which is essentially a butadiene homopolymer or butadiene copolymer with 0 to 40 per cent of styrene, the molecular weight of the polybutadiene resin being 10,000 to 85,000, as determined by intrinsic viscosity, and at least 80 per cent by weight of its repeating diene units being of the 1,2-configuration, the heat distortion temperature and the adaptability to molding being increased by the presence of an effective amount, not over .200 parts by weight, of calcium silicate.

3,980,611

FILLED THERMOPLASTIC FILMS

Jerrel Charles Anderson; Richard Jay England, both of Circleville, Ohio, and Gunter Friedrich Meier, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 151,899, June 10, 1971, abandoned, which is a continuation-in-part of Ser. No. 53,018, July 7, 1970, abandoned. This application Jan. 18, 1973, Ser. No. 324,876

Int. Cl.² C08K *3/22, 3/32, 3/36*

U.S. Cl. 260—40 R **15 Claims**

1. A thermoplastic film having dispersed therein an inert material selected from the group consisting of silica, kaolin, china clay, an aluminosilicate, diatomaceous earth, calcium phosphate, and mixtures thereof, the inert material consisting essentially of

1. coarse particles having a size of 2.5 to about 10 microns in a concentration determined by the formula

$$C_1 = K_{coarse}/T^{0.6}$$

where C_1 is the concentration of coarse particles in parts per million, K_{coarse} is at least equal to an empirically determined value of K_{coarse} at the minimum concentration of coarse particles which permits escape of air during the film windup and T is film thickness in mils,

2. medium particles having a size of 1 to 2.5 microns in a concentration determined by the formula

$$C_2 = K_{medium}/T^{0.6}$$

where C_2 is the concentration of medium particles in parts per million, K_{medium} is no greater than an empirically determined value of K_{medium} at the concentration of medium particles in a film having a clarity of 70%, and T is film thickness in mils, [illegible]

3. fine particles having a size less than 1 micron in a concentration determined by the formula:

$$C_3 = K_{fine}/T^{0.6}$$

where C_3 is the concentration of fine particles in parts per million, K_{fine} is at least equal to an empirically determined value of K_{fine} at an effective concentration of fine particles to give a film static coefficient of friction less than about 1, and T is film thickness in mils, with the provisos that:

a. the total $K_{total} = K_{coarse} + K_{medium} + K_{fine}$ is equal to or less than about 2,510, and

b. the ratio of K_{medium}/K_{total} is equal to or less than about 0.3.

3,980,612

PROCESS FOR REDUCING FILLER LOSS DURING POLYTETRAFLUOROETHYLENE AGGLOMERATION

Subhash Vishnu Gangal, Parkersburg, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 11, 1975, Ser. No. 567,412

Int. Cl.² C08K *3/10*

U.S. Cl. 260—42.22 **5 Claims**

1. In the process for preparing filled agglomerated granules of non-melt-fabricable granular tetrafluoroethylene polymer in which the filler is a particulate metal-containing filler present in an amount of between about 5 and 40% by volume of the total volume, by agitating a finely-divided blend of said polymer and said filler in which the particle size of the finely-divided tetrafluoroethylene polymer averages numerically between about 5 microns and about 200 microns and in which the filler is present in an amount of between about 5% and 40% by volume, in a two-phase liquid medium consisting essentially of water and an organic liquid which is soluble in water up to at most 15% by weight at the operating temperature of the process and which has a surface tension no greater than about 40 dynes/cm. at 25°C., and in which the organic liquid is present in an amount of 0.1 to 0.5 cc per gram of said blend, followed by separating the resulting agglomerated granules from the liquid medium; the improvement wherein said liquid medium contains from between about 0.001 part by weight per part of water to about 0.075 parts by weight per part of water, of an aqueous dispersion of non-melt-fabricable tetrafluoroethylene polymer resin particles prepared by the aqueous dispersion method, said dispersion containing between about 5 and 60% solids by weight.

3,980,613

METHOD OF MANUFACTURING ELECTROLYSIS CELL DIAPHRAGMS

Jean Bachot, Sceaux; Pierre Bouy, Enghien-les-Bains, and Michel Juillard, Orsay, all of France, assignors to Rhone-Progil, Courbevoie, France

Filed May 14, 1974, Ser. No. 469,808

Claims priority, application France, May 18, 1973, 73.18805

Int. Cl.² B29D *27/04*

U.S. Cl. 264—45.3 **12 Claims**

1. A method of manufacturing uniform, porous, homogeneous diaphragms of deposited asbestos, having uniform pore sizes, which are consolidated by a fluorinated polymer resin, characterized by agitating a suspension of asbestos fibers in water, a sulfonic anionic surfactant, a fluorinated polymer resin latex and a solid mineral pore-former to form a stable, homogeneous suspension, depositing and filtering said suspension on a screen or grid to form a preform, drying the resulting preform, sintering it by heat alone at a temperature above the crystalline melting point of the fluorinated polymer resin, and finally removing said solid mineral pore-former to form a uniform, porous, homogeneous diaphragm.

3,980,614

FLAME RETARDING PLASTIC MATERIALS

Siegfried Noetzel, Kelkheim, Taunus; Walter Herwig, Neuenhain, Taunus; Rudolf Kern, and Werner Lotz, both of Mainz, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

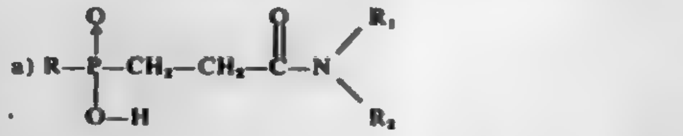
Filed Oct. 6, 1975, Ser. No. 620,247

Claims priority, application Germany, Mar. 14, 1975, 2511185

Int. Cl.² C08J *3/20*

U.S. Cl. 260—45.9 NC **4 Claims**

1. A polymer molding composition containing a flameproofing agent, wherein the flameproofing agent is a phosphinic acid or a salt thereof corresponding to the formulae



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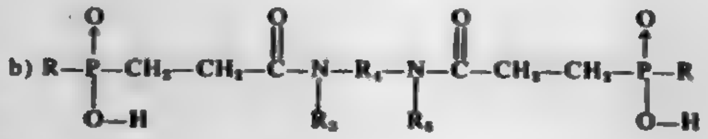

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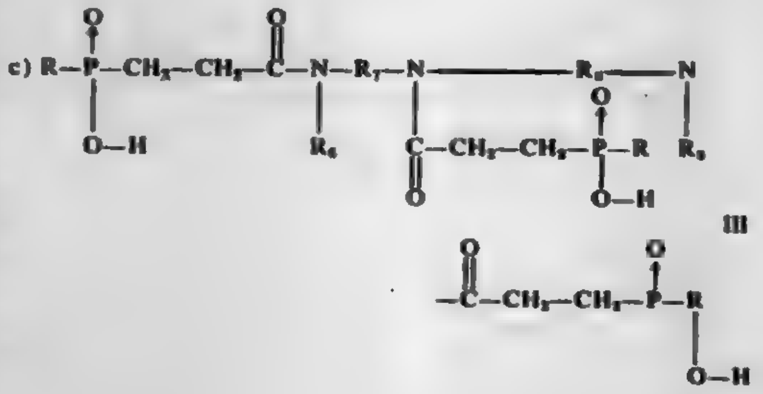


III

wherein

R is an alkyl radical having from 1 to 8 carbon atoms,

R_1 is hydrogen or an open-chain or cyclic alkyl radical having from 1 to 18 carbon atoms, which optionally contains halogen atoms, or an aryl or aralkyl radical optionally being substituted by halogen atoms,

R_2 is an open-chain or cyclic alkyl radical having from 1 to 18 carbon atoms, which optionally contains halogen atoms, or an aryl or aralkyl radical optionally being substituted by halogen atoms,

R_3 is hydrogen or an open-chain or cyclic alkyl radical having from 1 to 18 carbon atoms, which optionally contains halogen atoms,

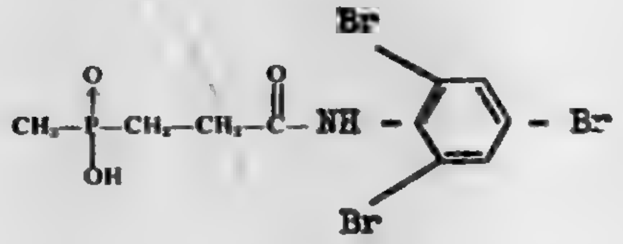
R_4 is an open-chain alkylene radical having from 1 to 18 carbon atoms or a cyclic alkylene, arylene, arylalkylene, arylene-alkylene or arene-bisalkylene radical having from 1 to 6 carbon atoms in the alkylene radical,

R_5, R_6, R_9 are as defined for R_3, and

R_7 and R_8 are as defined for R_4;

the radicals R_3, R_5, R_6 and R_9 on the one hand, and R_4, R_7 and R_8 on the other hand being identical or different.

4.



3,980,615

FLAME RETARDING PLASTIC MATERIALS

Siegfried Noetzel, Kelkheim, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

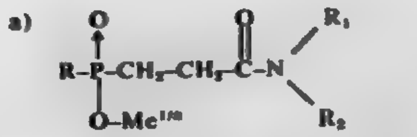
Filed Oct. 6, 1975, Ser. No. 620,142

Claims priority, application Germany, Oct. 7, 1974, 2447726

Int. Cl.² C08J *3/20*

U.S. Cl. 260—45.75 R **2 Claims**

1. A polymer molding composition containing a flameproofing agent, wherein the flameproofing agent is a phosphinic acid salt corresponding to the formulae



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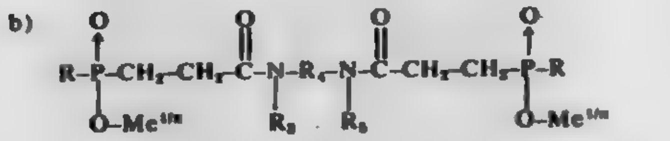

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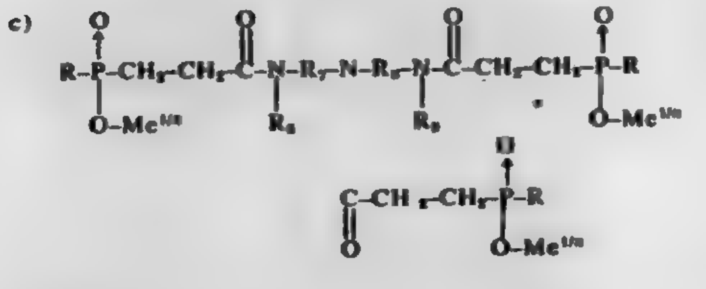

III

wherein

Me is an alkali metal or a metal of the second or third main or subgroup of the Periodic System,

n indicates the valency of the metal Me,

R is an alkyl radical having from 1 to 8 carbon atoms,

R_1 is hydrogen or an open-chain or cyclic alkyl radical having from 1 to 18 carbon atoms and containing optionally halogen atoms, or an aryl or aralkyl radical optionally being substituted by halogen atoms,

R_2 is an open-chain or cyclic alkyl radical having from 1 to 18 carbon atoms and containing optionally halogen atoms, or an aryl or aralkyl radical optionally being substituted by halogen atoms,

R_3 is hydrogen or an open-chain or cyclic alkyl radical having from 1 to 18 carbon atoms and containing optionally halogen atoms,

R_4 is an open-chain alkylene radical having from 1 to 18 carbon atoms or a cyclic alkylene, arylene, arylalkylene, arylene-alkylene or arene-bisalkylene radical having from 1 to 6 carbon atoms in the alkylene radical,

R_5, R_6, R_9 are as defined for R_3, and R_7 and R_8 are as defined for R_4;

the radicals R_3, R_5, R_6 and R_9 on the one hand, and R_4, R_7 and R_8 on the other hand being identical or different,

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3,980,616

FLAMEPROOFING AGENT FOR POLYAMIDE RESINS

Tsuneo Kimura, and Katsuhisa Koyama, both of Kita-Kyushu, Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Nov. 12, 1974, Ser. No. 523,043

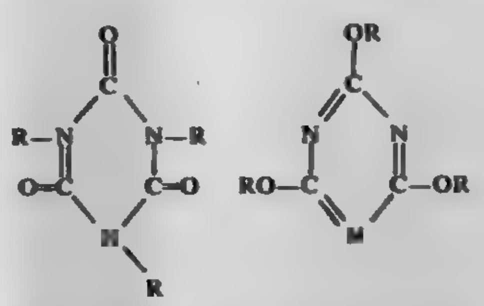
Claims priority, application Japan, Nov. 12, 1973, 48-127085; Jan. 14, 1974, 49-7241; Oct. 1, 1974, 49-112986

Int. Cl.² C08K *5/20, 5/34*

U.S. Cl. 260—45.8 NT **9 Claims**

1. A flame resistant polyamide resin having recurring amide groups as integral parts of the main polymer chain prepared by a process, which comprises the steps of:

melting said polyamide at a temperature between the softening point of said polyamide and 250°C; adding a flame proofing quantity of a flameproofing agent to said melt; and thereafter solidfying said melt whereby said polyamide is flameproof to an extent of UL-94, said flameproofing agent being selected from the group consisting of



wherein R is the same or different and represents hydrogen or lower alkyl, formamide and mixtures thereof.

3,980,617

ANTI-SOLAR POLYMERS, METHOD OF MAKING THE SAME AND COSMETIC COMPOSITIONS CONTAINING THE SAME

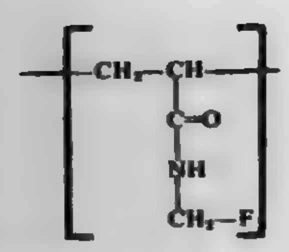
Bernard Jacquet, Antony; Christos Papantoniou, Epinay-sur-Seine; Pierre Dufaure, and Claude Mahieux, both of Paris, all of France, assignors to L'Oreal, Paris, France

Filed June 27, 1973, Ser. No. 374,058

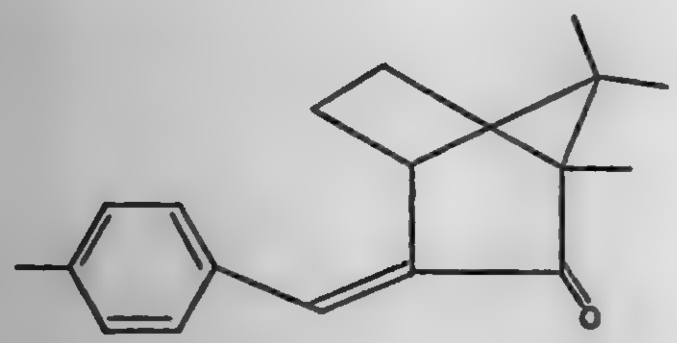
Int. Cl.² A61K *7/42*

U.S. Cl. 260—47 UA **10 Claims**

1. Anti-solar polymer having in the macromolecular chain thereof from 10 to 100% by weight of units of the formula


$$-\!\!\left[CH_2-\underset{\underset{\underset{\underset{CH_2-F}{|}}{NH}}{|}}{\underset{|}{C=O}}{CH}\right]\!\!-$$

wherein F represents



and from 90% to 0% by weight of units derived from an ethylenically unsaturated monomer, said anti-solar polymer having an average molecular weight between about 2,000 and 1,000,000.

3,980,618
CYCLIC ORGANOPHOSPHORUS AMIDES

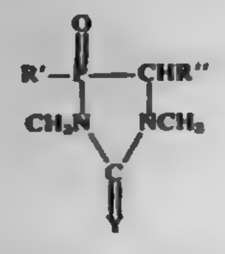
Gail H. Birum, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 385,933, Aug. 6, 1973, Pat. No. 3,904,654. This application June 2, 1975, Ser. No. 582,963

Int. Cl.² C07F *9/24, 9/44*

U.S. Cl. 260—551 P **6 Claims**

1. Cyclic organophosphorus amides having the structure:



where R′ is phenyl or naphthyl, R″ is hydrogen, phenyl, and substituted phenyl forms where the substituent is fluorine, chlorine, bromine or mixtures of such substituents, and Y is O or S.

3,980,619
POLYESTERIFICATION

Robert J. Sauer, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 23, 1974, Ser. No. 499,874

Int. Cl.² C08G *63/68*

U.S. Cl. 260—75 H **7 Claims**

1. A process for producing a brominated polyester which comprises condensing, at a temperature ranging from 84°C to 160°C, at least a stoichiometric amount of at least one diol and at least one dibrominated diacid or its anhydride wherein the process is carried out in the presence of a sufficient amount of toluene to produce a polyester having an acid number less than 100 and to produce a toluene/water azeotrope with at least a part of the water produced by the process.

3,980,620
POLYESTERAMINES WITH IMPROVED DYE AFFINITY AND PROCESS FOR THEIR PRODUCTION

Yves Vaginay, Lyon, France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed Oct. 15, 1974, Ser. No. 514,784

Claims priority, application France, Oct. 15, 1973, 73.36977; Mar. 11, 1974, 74.08425

Int. Cl.² C08G *63/20, 63/68*

U.S. Cl. 260—75 N **7 Claims**

1. White spinnable and moldable polyesteramine with good dye affinity for anionic dyestuffs derived from

a. at least an aromatic dicarboxylic diacid and possibly a small amount of an aliphatic diacid,
b. at least a diol selected from the group consisting of an aliphatic diol, a saturated alicyclic diol and a cycloaliphatic diol, said diol having at least three carbon atoms in the molecule, and
c. at least a compound of the formula

NR_3

where R, being the same or different, is alkyl, saturated alicyclic, cycloalkyl or arylaliphatic, or
where two R groups form a cycle between them;
said NR_3 compound having 1, 2 or 3 R groups containing 0, 1, 2 or 3 ester generating groups with the total number of ester generating groups being 1 to 3;
said NR_3 compound having no mire than two R groups being arylaliphatic or cycloaliphatic which have only one carbon atom between the cycle and the nitrogen atom or being saturated alicyclic;
said NR_3 compound having at least 3 or more carbon atoms between each said ester generating group and the nitrogen atom; and
the total amount of said NR_3 compound being present so that the percentage of nitrogen fixed on the polymer is from 0.3% to 1.0% by weight of the polymer.

3,980,621
POLYAMIDES OF TEREPHTHALIC ACID AND 5-METHYL-1,9-NONANEDIAMINE AND FIBERS THEREOF

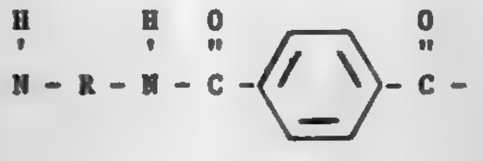
Robert W. Campbell, and Harold Wayne Hill, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 13, 1972, Ser. No. 234,031

Int. Cl.² C08G *69/26*

U.S. Cl. 260—78 R **27 Claims**

1. A fiber of a terephthalamide polymer with at least 80 weight percent of the polymer being composed of recurring structural units of the formula



wherein the R in each of at least 50 percent of said recurring structural units is 5-methylnonamethylene, and the R in each of the balance, if any, of said recurring structural units is individually selected from the group consisting of 2,4-dimethyloctamethylene and 2,4,6-trimethylheptamethylene, said fiber having a boiling water shrinkage of less than 30 percent.

3,980,622
POLYMERIZABLE EMULSIFYING AGENT AND APPLICATION THEREOF

Ko Kozuka, Takasago; Shigeru Kobayashi, Akashi; Akira Watanabe, Kobe; Yoshio Iki, Akashi, and Masaaki Yokoe, Takasago, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

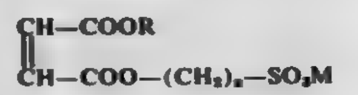
Division of Ser. No. 399,128, Sept. 20, 1973, Pat. No. 3,907,870. This application May 23, 1975, Ser. No. 580,422

Claims priority, application Japan, Sept. 20, 1972, 47-94797

Int. Cl.² C08F *28/02;* **C08G** *75/20*

U.S. Cl. 260—79.3 M **9 Claims**

1. In a process for polymerizing an α,β-ethylenically-unsaturated monomer and a polymerizable emulsifying agent by aqueous emulsion polymerization in the presence of a water-soluble polymerization initiator, the improvement which comprises polymerizing 93 to 99.5 % by weight of α,β-ethylenically unsaturated monomer having a solubility in water of not more than 10 % by weight at 35°C., 0 to 2 % by weight of α,β-ethylenically unsaturated monomer having a solubility in water of more than 10 % by weight at 35°C. and 0.5 to 5 % by weight of polymerizable anionic emulsifying agent having the following general formula:


$$\begin{array}{l}CH-COOR\\ \|\\ CH-COO-(CH_2)_n-SO_3M\end{array}$$

wherein R is an alkyl group having 6 to 22 carbon atoms, M is H, Li, Na, K or NH_4 and n is an integer of 2 to 4, inclusive.

3,980,623
PROCESS FOR ETHYLENE-PROPYLENE-DIENE TERPOLYMERS USING VCl_4 AS CATALYST AND AS COCATALYST (1) R_3Al AND (2) $RAlCl_2$ IN ADMIXTURE

John H. Staib, Plainfield, and Joseph Wagensommer, Westfield, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 2, 1974, Ser. No. 494,021

Int. Cl.² C08F *210/18*

U.S. Cl. 526—154 **11 Claims**

1. In a process for preparing a copolymer of ethylene, a higher alpha olefin and a nonconjugated diene, the improvement which comprises using a catalyst system comprising (1) VCl_4 as the catalyst and (2) a cocatalyst comprising an equimolar ratio of alkyl aluminum dichloride and tri-isobutyl aluminum wherein the alkyl aluminum dichloride is ethyl aluminum dichloride or isobutyl aluminum dichloride.

3,980,624
PROCESS FOR PRODUCING RUBBERY POLYMERS AND COPOLYMERS HAVING BRANCHED STRUCTURES

Saburo Minekawa; Sigeru Yonekawa; Haruro Tabata, all of Yokohama; Takashi Ishida, Kamakura; Satoshi Tsuchida, Yokohama, and Kiyoshi Yamada, Kawasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

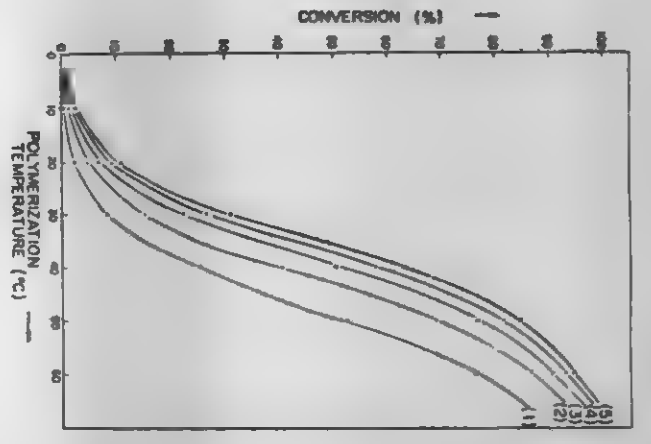
Continuation of Ser. No. 267,682, June 29, 1972, abandoned, continuation of Ser. No. 52,057, July 2, 1970, abandoned, and a continuation-in-part of Ser. No. 689,139, Dec. 8, 1967, abandoned. This application Mar. 14, 1974, Ser. No. 451,281

Claims priority, application Japan, Dec. 16, 1966, 41-82030

Int. Cl.² C08F *236/10, 136/06*

U.S. Cl. 526—173 **14 Claims**

1. Process for producing rubbery polymer having desired degree of branching which comprises subjecting a member selected from the group consisting of a conjugated diene selected from 1,3-butadiene and 1,3-pentadiene and a mixture of said conjugated diene and a monovinyl substituted aromatic compound to a low temperature condition within a temperature range of −5°C. to below about 20°C. for from 1 to 5 hours in the presence of a catalyst consisting of an alkyllithium in a hydrocarbon diluent to initiate the reaction and to polymerize up to about 10 percent of said monomer, and thereafter subjecting the resulting reaction mixture to a polymerization temperature of from 40°C. to 80°C. to complete the polymerization reaction, thereby giving a polymer having desired branched structures.



3,980,625
METHOD FOR PRODUCING NOVEL RUBBERY POLYMERS FROM DIENE MONOMERS

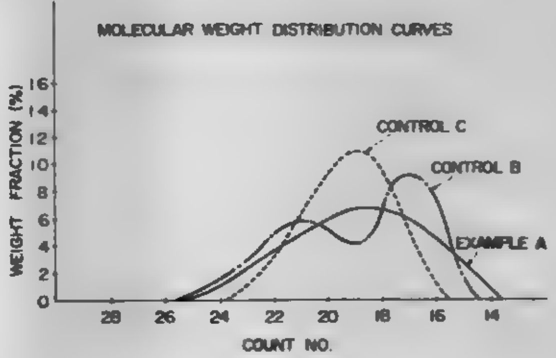
Kuniaki Sakamoto; Toshio Ibaragi, both of Kawasakishi, and Osamu Suzuki, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

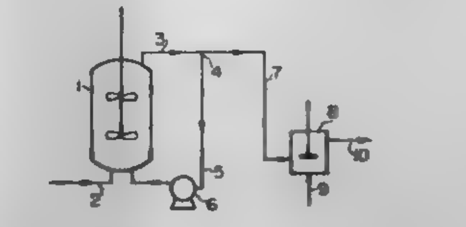
Continuation-in-part of Ser. No. 145,812, May 21, 1971, abandoned. This application Jan. 15, 1974, Ser. No. 433,605

Claims priority, application Japan, May 25, 1970, 45-43981

Int. Cl.² C08D *1/20, 3/08*

U.S. Cl. 526—67 **5 Claims**





1. In the production of a polymer wherein a conjugated diolefin monomer is polymerized with up to about 30% by weight of a monovinyl aromatic hydrocarbon monomer by supplying monomer to a polymerized together with a solvent to a polymerizer together with a catalyst selected from the group consisting of lithium, methyl lithium, ethyl lithium, butyl lithium, amyl lithium, hexyl lithium, 2-ethylhexyl lithium, phenyl lithium, tolyl lithium, xylyl lithium, naphthyl lithium, methylene dilithium, tetramethylene dilithium, dilithium benzene and dilithium naphthalene, at a temperature of

about 20° to 150°C and a pressure sufficient to keep the solvent in liquid state, withdrawing from said polymerizer a solution of living polymer substantially free of monomer, recirculating to said polymerizer some of the withdrawn polymer-containing solution, and subsequently removing the solvent from the withdrawn polymer-containing solution, the improvement which comprises supplying said monomer continuously, withdrawing said polymer-containing solution continuously, continuously recirculating said withdrawn solution to the extent of about 20 to 80%, and discontinuing polymerization of the balance of the withdrawn solution, whereby the final polymer has a broad monomodal molecular weight distribution, a ratio of weight average molecular weight to number average molecular weight of 3 to 10, a Mooney viscosity of about 30 to 150 and a 1,4-linkage conjugated diolefin unit content of at least about 60%.

3,980,626

POLYALKENMERS FROM MONOMERS OF NORBORNENE STRUCTURE CONTAINING POLAR GROUPS

Paul Hepworth, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 264,874, June 21, 1972, Pat. No. 3,859,265. This application Oct. 25, 1974, Ser. No. 518,215

Claims priority, application United Kingdom, July 2, 1971, 31123/71

Int. Cl.² C08F *32/08, 132/08, 232/08*

U.S. Cl. 526—297 **5 Claims**

1. A polymer prepared by the ring-opening polymerization of a 5-substituted-norbornene-2 in which the 5-substituent is a nitrile group or a nitrile group pendant that is positioned through a methylene radical.

3,980,627

ANAEROBIC SEALANT COMPOSITION AND METHOD OF PREPARATION

Donald J. McDowell, Riverside, and Purshottam S. Patel, Elk Grove Village, both of Ill., assignors to Felt Products Mfg. Co., Skokie, Ill.

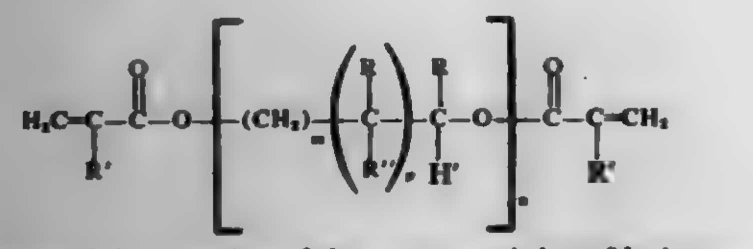
Filed Apr. 17, 1975, Ser. No. 568,990

Int. Cl.² C08F *218/00, 220/00, 120/02, 222/00*

U.S. Cl. 526—328 **41 Claims**

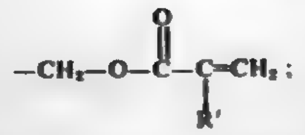
1. An anaerobic sealant composition having an extended shelf life in the presence of air and capable of polymerization upon exclusion of air which comprises;

a polyacrylic ester monomer represented by the general formula



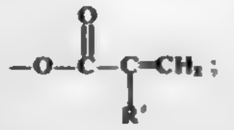
$$H_2C{=}\underset{R'}{C}-\overset{O}{\overset{\|}{C}}-O-\left[(CH_2)_m-\left(\underset{R''}{\overset{R}{C}}\right)_p-\underset{H'}{\overset{R}{C}}-O\right]_n-\overset{O}{\overset{\|}{C}}-\underset{R'}{C}{=}CH_2$$

wherein R is a member of the group consisting of hydrogen, alkyl containing 1 to 4 carbon atoms, inclusive, hydroxy alkyl containing 1 to 4 carbon atoms, inclusive, and



$$-CH_2-O-\overset{O}{\overset{\|}{C}}-\underset{R'}{C}{=}CH_2\,;$$

R′ is a member of the group consisting of hydrogen, halogen, and alkyl containing 1 to 4 carbon atoms, inclusive; R″ is a member of the group consisting of hydrogen, alkyl containing 1 to 4 carbon atoms, inclusive, hydroxy, and



$$-O-\overset{O}{\overset{\|}{C}}-\underset{R'}{C}{=}CH_2\,;$$

m is an integer having a value of at least 1; *n* is an integer having a value of at least 1; and *p* is an integer having a value of 0 or 1;

an inorganic salt which is the sole polymerization initiator which is a member of the group consisting of ammonium perchlorate, alkali metal perchlorate, alkaline earth metal perchlorate, ammonium persulfate, alkali metal persulfate, and alkaline earth metal persulfate, present in an amount sufficient to initiate polymerization of the monomer in the absence of air;

an accelerator present in an amount sufficient to accelerate polymerization of the monomer in the absence of air; and

a polymerization inhibitor in an amount sufficient to retrd polymerization of the monomer during storage of the composition in the presence of air.

3,980,628

LARGE CAPACITY EXTERNAL COOLED VINYL HALIDE POLYMERIZATION REACTOR

Wayne R. Sorenson, Ridgefield; Peter A. Schwab, Bethel; Robert S. Allen, Danbury, all of Conn.; George Tillson, and David J. Lorine, both of Oklahoma City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Division of Ser. No. 241,817, April 6, 1972, abandoned, which is a continuation-in-part of Ser. No. 228,089, Feb. 22, 1972, abandoned. This application Feb. 18, 1975, Ser. No. 550,890

Int. Cl.² C08F *2/18, 14/06, 14/00*

U.S. Cl. 526—64 **3 Claims**

1. A process for polymerizing in a liquid phase aqueous dispersion system normally solid uniform polymer particles from monomers consisting substantially of at least one vinyl halide monomer comprising

a. charging a generally cylindrical reaction zone with liquid polymerization medium consisting of water, surfactant, and monomer at a temperature and pressure sufficient to permit polymerization;

b. then adding catalyst to initiate polymerization of the monomer;

c. agitating the polymerization medium with a rotatable agitation means in a manner to provide substantially laminar flow along a circular path about a generally vertical centrally located axis in the reaction zone;

d. agitating the polymerization medium near the reaction zone periphery with stator type agitation means in a manner to provide localized turbulent mixing near the periphery of the reaction zone; and

e. maintaining the liquid polymerization medium at a temperature in the range of about 80°–400°F. and the reaction zone at a pressure in the range of about 50–250 p.s.i.g. by controlling heat flow of the polymerization by a substantially vertical condensing tube flush-mounted with the interior surface of the reaction zone above the reaction zone.

3,980,629

ORGANIC PEROXIDES DERIVED FROM UNSATURATED COMPOUNDS

Egeo Sacrini, and Claudio Cavallotti, both of Milan, Italy, assignors to The B. F. Goodrich Company, Akron, Ohio

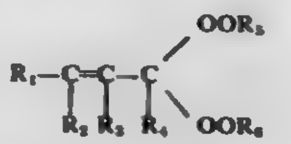
Continuation of Ser. No. 53,267, July 8, 1970, Pat. No. 3,896,176. This application Mar. 3, 1975, Ser. No. 554,472

Claims priority, application Italy, July 29, 1969, 20222/69

Int. Cl.² C08C *19/28;* **C08F** *8/06, 291/02, 255/04*

U.S. Cl. 526—20 **15 Claims**

1. A vulcanizable composition comprising an elastomer and an organic peroxide having the formula:



wherein R_1 is selected from the group consisting of unsubstituted, alkyl substituted and halogen substituted cycloalkyl radicals having 5–30 C; unsubstituted, alkyl substituted, hydroxy substituted and halogen substituted phenyl radicals having 6–26 C; and unsubstituted, alkyl substituted and halogen substituted heterocyclic radicals having 4–15 C; R_2 is selected from the group consisting of hydrogen, alkyl radicals having 1–12 C, unsubstituted, alkyl substituted and halogen substituted cycloalkyl radicals having 5–20 C, halogen substituted alkyl radical having 1–12 C; and unsubstituted, alkyl substituted and halogen substituted phenyl radicals; and R_1 and R_2 together with the carbon atom to which they are bonded may form a cycloaliphatic ring selected from the group consisting of unsubstituted and alkyl, phenyl, phenylalkyl, alkylidene and phenylalkylidene substituted cycloaliphatic rings having 5–30 C; R_3 and R_4 are each selected from the group consisting of hydrogen, alkyl radicals having 1–12 C, unsubstituted, alkyl substituted and halogen substituted cycloalkyl radicals having 5–20 C; unsubstituted, alkyl substituted and halogen substituted phenyl radicals having 6–20 C; halogen substituted alkyl radicals having 1–12 C, and halogen substituted phenylalkyl radicals having 7–20 C; and R_3 and R_4 taken together with the two adjacent carbon atoms to which they are respectively bonded may form a cycloaliphatic ring selected from the group consisting of unsubstituted and alkyl, phenyl, phenylalkyl, alkylidene, phenylalkylidene and hydroxy phenyalkylidene substituted cycloaliphatic rings having 5–25 C; R_5 and R_6 are each selected from the group consisting of alkyl radicals having 4–12 C, phenylalkyl radicals having 9–18 C; unsubstituted, alkyl substituted and halogen substituted cycloalkyl radicals having 5–21 C; unsubstituted, alkyl substituted and halogen substituted phenylcycloalkyl radicals having 9–25 C; halogen substituted alkyl radicals having 4–12 C, and halogen substituted phenylalkyl radicals having 9–18 C.

3,980,630

METHOD FOR PREPARATION OF EMULSIFIER FOR EMULSION POLYMERIZATION

Masahisa Ishigami, and Yoshikazu Inoue, both of Kakogawa, Japan, assignors to Harima Chemicals Inc., Kakogawa, Japan

Filed Apr. 30, 1975, Ser. No. 573,006

Claims priority, application Japan, Aug. 26, 1974, 49-98177

Int. Cl.² C09F *1/00*

U.S. Cl. 260—106 **10 Claims**

1. Method of preparing an emulsifier, comprising the steps of disproportionation reacting rosin, polyunsaturated fatty acid, or mixture thereof, in the presence of a catalyst of 0.01 to 5 weight percent iron iodide, and neutralizing the resulting product with alkali.

3,980,631

NOVEL ANALOGS OF DEAMINO-VASOPRESSIN WITH A MODIFIED DISULFIDE BRIDGE AND MANUFACTURING PROCESS THEREOF

Zdenko Procházka, Upice; Tomislav Barth, Roztoky; Joseph Henry Cort, Prague; Karel Jošt, Prague, and Frantisek Sorm, Prague, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

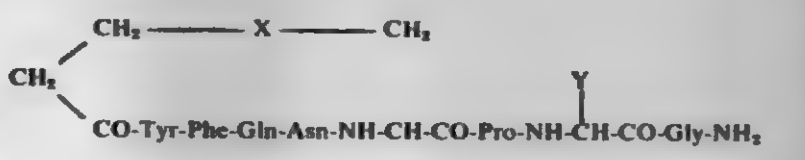
Filed Oct. 7, 1974, Ser. No. 512,429

Claims priority, application Czechoslovakia, Nov. 9, 1973, 7700-73

Int. Cl.² C07C *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 R **3 Claims**

1. An analog of deamino-vasopressin having a modified disulfide bridge and having the formula



(I)

wherein X is —S—CH₂— and Y is an aliphatic group containing 2, 3 or 5 carbon atoms, in which group the α-carbon atom possesses L- or D-configuration and the terminal ω-carbon atom carries a member selected from the group consisting of amino and guanidino; and the hydroxy group on the tyrosine residue is optionally protected by a tert-butyl group.

3,980,632

BASIC AZO DYES HAVING A QUATERNIZED S-TRIAZOLO-[2,3-A]-PYRIMIDINE DIAZO COMPONENT RADICAL

Beat Henzi, Neuallschwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

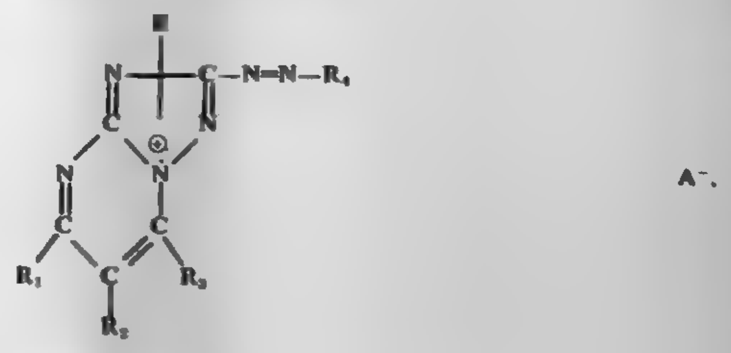
Continuation-in-part of Ser. No. 327,715, Jan. 29, 1973, abandoned. This application May 16, 1974, Ser. No. 471,365

Claims priority, application Switzerland, Feb. 3, 1972, 1607/72; Mar. 10, 1972, 3559/72

Int. Cl.² C09B *29/08, 29/12, 29/36, 29/38*

U.S. Cl. 260—146 D **46 Claims**

1. A basic dye of the formula



or a mixture thereof,

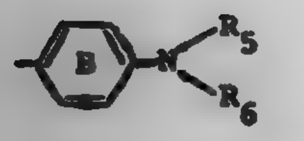
wherein

R is alkyl of 1 to 18 carbon atoms; alkyl of 1 to 18 carbon atoms monosubstituted by phenyl, hydroxy or carbamoyl or alkenyl of 2 to 18 carbon atoms,

each of

R_1 and R_3 is independently hydrogen; hydroxy; halo; alkyl of 1 to 18 carbon atoms; alkyl of 1 to 18 carbon atoms monosubstituted by phenyl; aryl; cycloalkyl of 5 to 7 carbon atoms; alkoxy of 1 to 6 carbon atoms; aryloxy; amino; dialkylamino each alkyl radical of which independently has 1 to 4 carbon atoms or alkylthio of 1 to 6 carbon atoms,

R_2 is hydrogen, alkyl of 1 to 18 carbon atoms, aryl or cycloalkyl of 5 to 7 carbon atoms, R_4 is



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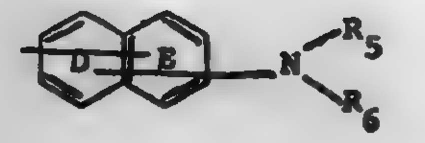

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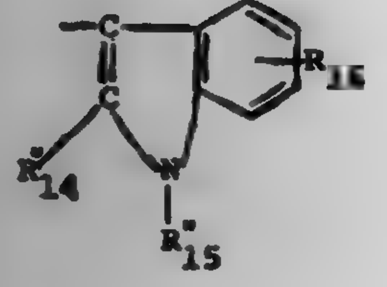

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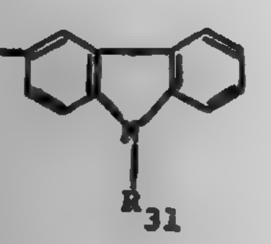

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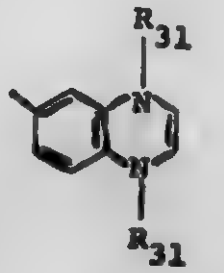

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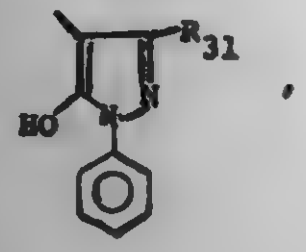

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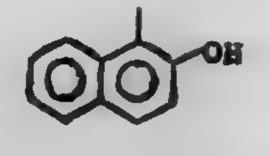

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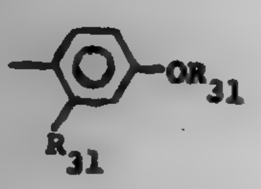

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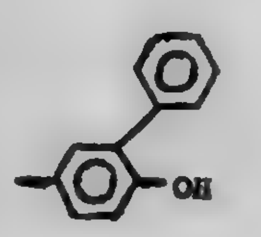

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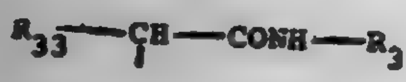
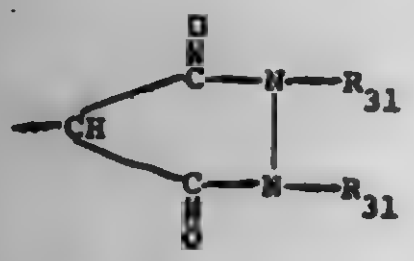


$R_{33}-\underset{|}{C}H-CONH-R_{32}$,



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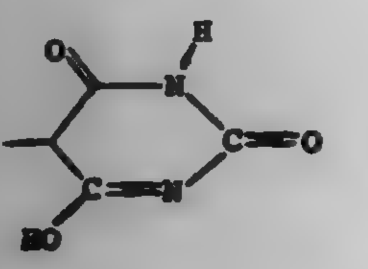
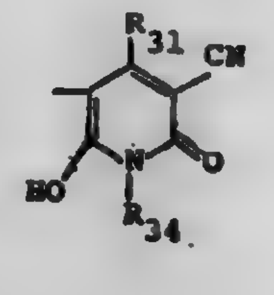


or



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wherein each of

R_5 and R_6 is independently hydrogen; alkyl of 1 to 6 carbon atoms; alkyl of 1 to 6 carbon atoms monosubstituted by halo, hydroxy, cyano, aryl, aroyloxy, dihalobenzoyloxy, aryloxy, alkoxy, cyanoalkoxy, N-phenylcarbamoyloxy, N,N-dialkylcarbamoyloxy, alkylcarbonyloxy or alkoxycarbonyl; 3-halo-2-hydroxypropyl; aryl or alkoxyphenyl, or

R_5 and R_6 taken together and with the nitrogen atom to which they are joined are morpholino, piperazino, aziridino, pyrrolidino or piperidino,

R_{14}'' is hydrogen, alkyl, phenyl or benzyl,

R_{15}'' is hydrogen, alkyl, phenyl or benzyl,

R_{16} is hydrogen, halo, alkyl or alkoxy,

each

R_{31} is alkyl,

R_{32} is phenyl or naphthyl,

R_{33} is cyano, alkylcarbonyl or benzoyl, and

R_{34} is alkyl or alkoxyalkyl,

wherein each of Rings B, D and E is further unsubstituted or further substituted, any further substituent being halo, nitro, amino, cyano, thiocyano, hydroxy, alkyl, alkoxy, trifluoroalkyl, trichloroalkyl, phenyl, phenoxy, alkylamino, dialkylamino, carbamoyloxy, alkylsulfonyl, arylsulfonyl, sulfamoyl, alkylslfamoyl, dialkylsulfamoyl, arylsulfamoyl or arylazo; and A^- is an anion,

wherein

each halo is independently fluoro, chloro, bromo or iodo,

each aryl and aryl moiety is independently phenyl, biphenylyl or naphthyl, and

each alkyl, alkoxy, alkyl moiety and alkoxy moiety independently has 1 to 4 carbon atoms unless otherwise indicated.

3,980,633

4-AMINO PYRIDAZINIUM COMPOUNDS HAVING PHARMACALOGICAL PROPERTIES

Rudolf Kropp, Limburgerhof; Franz Reicheneder; August Amann, both of Ludwigshafen, and Hubert Giertz, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

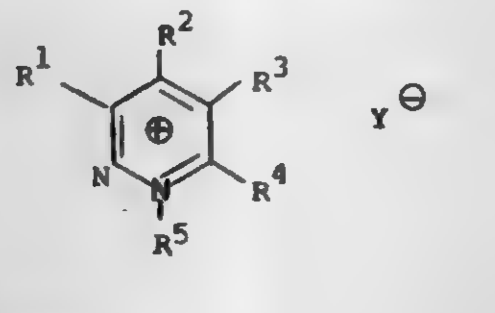
Filed Sept. 12, 1973, Ser. No. 396,615

Claims priority, application Germany, Sept. 15, 1972, 2245248

Int. Cl.² C07D *237/20, 403/04, 413/04*

U.S. Cl. 260—250 A 3 Claims

1. A pyridazinium compound of the formula:



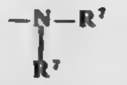
in which

R^1 is hydrogen;

R^2 is amino;

R^3 is hydrogen:

R^4 is



$-\underset{\underset{R^7}{|}}{N}-R^7$

in which both radicals R^7 are methyl or are together with the nitrogen pyrrolidino;

R^5 is phenyl; and,

Y^- is a pharmaceutically acceptable anion of an inorganic or organic acid selected from the group consisting of perchloric acid, hydrochloric acid, hydrobromic acid, hydroiodic acid, phosphoric acid, carbonic acid, sulfuric acid, methylsulfuric acid, ethylsulfuric acid, trifluoromethylsulfonic acid, nitric acid or fluoboric acid, formic acid, acetic acid, trifluoroacetic acid, propionic acid, glycolic acid, lactic acid, pyruvic acid, oxalic acid, malonic acid, succinic acid, maleic acid, fumaric acid, malic acid, tartaric acid, citric acid, ascorbic acid, benzoic acid, phenylacetic acid, 4-amino-benzoic acid, 4-hydroxybenzoic acid, anthranilic acid, cinnamic acid, mandelic acid, salicylic acid, 4-aminosalicylic acid, 2-acetoxysalicylic acid, p-toluenesulfonic acid, isonicotinic acid, nicotinic acid, methionine, tryptophan, lysine and arginine.

3,980,634

PHTHALIMIDYL-AZO ANILINE TYPE COMPOUNDS AND POLYESTER FIBERS DYED THEREWITH

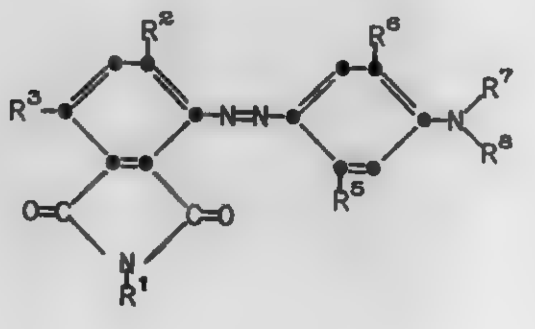
Max Allen Weaver, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 2, 1973, Ser. No. 376,048

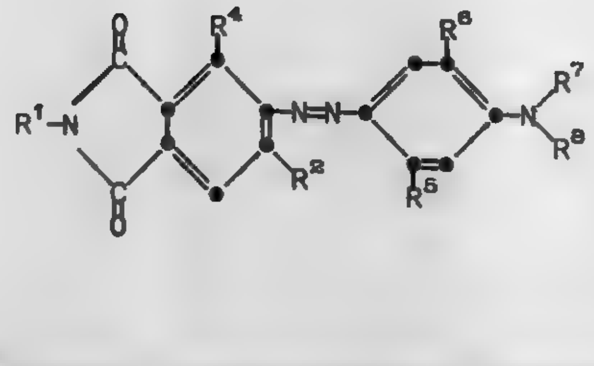
Int. Cl.² C09B *29/08, 29/36;* D06P *3/52*

U.S. Cl. 260—152 8 Claims

1. A compound having the formula



or



wherein

R^1 is hydrogen; lower alkyl; arylmethy; cyclohexylmethyl; 2-cyanoethyl; 2-carbamoylethyl; aryl; cyclohexyl; or —Z—R^{17} in which Z is ethylene, propylene, or trimethylene and R^{17} is succinimido, glutarimido, phthalimido, hydroxy, lower alkanoyloxy, 2-pyrrolidinone, or lower alkoxy;

R^2 is lower alkyl, chlorine, bromine, nitro, lower alkylsulfonyl, arylsulfonyl, arylthio, aryl-lower-alkylthio, cyclohexylthio, lower alkoxy, aryloxy, 2-benzothiazolythio, 2-thiazolylthio, 2-thiadiazolythio, 2-oxadiazolythio, 1,2,4-triazol-3-ylthio, or 2-pyrimidinylthio;

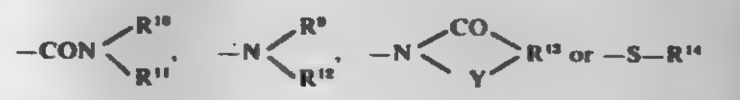
R^3 is chlorine, bromine or nitro;

R^4 is hydrogen, halogen, cyano, nitro, lower alkylsulfonyl, arylsulfonyl, arylthio, cyclohexylthio, lower alkoxy, aryloxy, 2-benzothiazolylthio, 2-thiazolythio, 2-thiadiazolylthio, 2-oxadiazolylthio, 1,2,4-triazol-3-ylthio, or 2-pyrimidinylthio;

R^5 is hydrogen, lower alkyl, lower alkoxyl, halogen or -NH-R^9 in which R^9 is formyl, lower alkanoyl, lower alkylsulfonyl, aroyl, lower alkoxycarbonyl, carbamoyl, lower alkylcarbamoyl, or lower alkanoyl substituted with halogen, aryl, cyano, lower alkoxy, aryloxy, benzyloxy, lower alkylthio, lower alkylsulfonyl or lower alkanoyloxy;

R^6 is hydrogen, lower alkyl or lower alkoxy;

R^7 individually is alkyl containing one to eight carbon atoms; cyclohexyl; cyclohexyl substituted with lower alkyl; or lower alkyl substituted with lower alkoxy, aryl, aryloxy, cyclohexyl, cyano, lower alkanoyloxy, lower alkoxycarbonyl, lower alkoxycarbonyloxy, aroyloxy, lower alkylcarbamoyloxy, arylcarbamoyloxy, or



$-\mathrm{CON}\begin{matrix}R^{10}\\R^{11}\end{matrix},\quad -\mathrm{N}\begin{matrix}R^{9}\\R^{12}\end{matrix},\quad -\mathrm{N}\begin{matrix}\mathrm{CO}\\Y\end{matrix}R^{13}\text{ or }-S-R^{14}$

wherein

R^{10} individually is hydrogen, lower alkyl or aryl;

R^{11} individually is hydrogen or lower alkyl;

R^{10} and R^{11} taken together are $-(CH_2)_5$ or $-CH_2CH_2OCH_2CH_2-$;

R^9 is defined above;

R^{12} is hydrogen, lower alkyl, aryl, or cyclohexyl;

R^{13} is ethylene, propylene, trimethylene o-cyclohexylene, or o-arylene, or when X is —CO—, R^{13} also can be $-NHCH_2-$, $-N(\text{lower alkyl})CH_2-$, $-SCH_2-$, $-OCH_2-$, or $-CH_2OCH_2-$;

Y is $-CH_2$, —CO—, or $-SO_2-$; and

R^{14} is aryl, benzyl, cyclohexyl, 1,2,4-triazol-3-yl, or 2-benzothiazolyl;

R^8 individually is hydrogen; lower alkyl; lower alkyl substituted with lower alkoxy, aryl, aryloxy, cyclohexyl, lower alkanoyloxy, lower alkoxycarbonyl or lower alkoxycarbonyloxy; allyl; or aryl;

R^7 and R^8 taken together is $-CH_2CH_2-Y-CH_2CH_2-$ in which Y is $-CH_2-$, $-N(R^9)$, —O—, —S—, —SO—, or $-SO_2-$;

in which each aryl moiety is phenyl, tolyl, anisyl, ethoxyphenyl, or chlorophenyl.

3,980,635

NOVEL FORM OF THE DISAZO PIGMENT FROM BISDIAZOTIZED 3,3′-DICHLOROBENZIDINE AND 1-(P-TOLYL)-3-METHYLPYRAZOL-5-ONE

Klaus Hunger, Kelkheim, Taunus; Joachim Ribka, Offenbach, Main, and Wolfgang Rieper, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

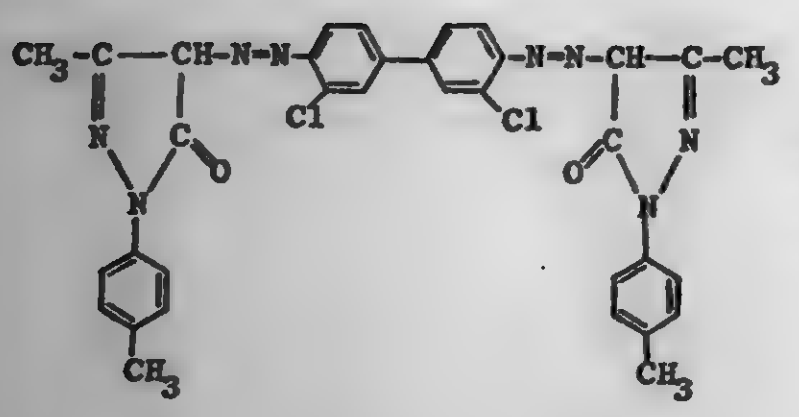
Continuation of Ser. No. 434,038, Jan. 17, 1974, abandoned. This application Sept. 24, 1975, Ser. No. 616,250

Claims priority, application Germany, Jan. 19, 1973, 2302482

Int. Cl.² C09B *43/00*

U.S. Cl. 260—161 1 Claim

1. A disazo pigment of the formula



characterized by a specific surface of 12–30 m²/g, a maximum of the grain size distribution of between 250 and 500 nm and a proportion of these grain sizes in the total distribution of 35–65 percent.

3,980,636
PHENYL-AZO-ANILINE DYES

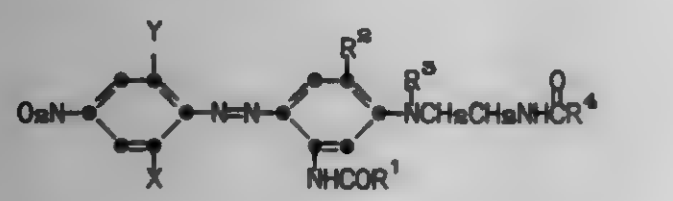
Max A. Weaver, and Clarence A. Coates, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 194,000, Oct. 29, 1971, abandoned. This application Oct. 7, 1974, Ser. No. 512,637

Int. Cl.² C09B *29/06, 29/24, 29/36;* **D06P** *3/52*

U.S. Cl. 260—207.1 **8 Claims**

1. A compound having the formula



wherein
- X is hydrogen, chlorine, bromine, cyano, lower alkylsulfonyl, nitro;
- Y is hydrogen or cyano;
- R^1 is lower alkyl; lower alkyl substituted with chlorine, hydroxy, lower alkoxy, lower alkanoyloxy, cyano or carbamoyl; or a group represented by R^4;
- R^2 is hydrogen, lower alkyl or lower alkoxy;
- R^3 is hydrogen or alkyl of up to eight carbon atoms; and
- R^4 is aryl, cyclohexyl, lower alkoxy, benzyl, or the group —R^5—O—Z in which R^5 is alkylene of up to six carbon atoms and Z is aryl;

in which
  each aryl group is phenyl or phenyl substituted with lower alkyl, lower alkoxy, chlorine, or bromine.

3,980,637
PRODUCTION OF AMOXICILLIN

Joseph H. Grossman, and Glenn A. Hardcastle, Jr., both of Syracuse, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Mar. 17, 1975, Ser. No. 558,763

Int. Cl.² C07D *499/68*

U.S. Cl. 260—239.1 **15 Claims**

1. In the process for the production of amoxicillin trihydrate which comprises the consecutive steps of
   a. silylating 6-aminopenicillanic acid in an anhydrous solvent in the presence of a strong base,
   b. acylating said silylated 6-aminopenicillanic acid with D-(-)-2-para-hydroxyphenylglycine chloride hydrochloride in the presence of a weak base and its hydrochloride,
   c. hydrolyzing and neutralizing the product of said acylation to produce amoxicillin trihydrate and
   d. recovering the amoxicillin trihydrate

the improvement which comprises mixing the products of the acylation reaction of step (b) with water at a highly acidic pH below 2 to form and precipitate solid amoxicillin hydrochloride and then collecting said solid amoxicillin hydrochloride and converting it to amoxicillin trihydrate.

3,980,638
TESTOSTERONE DERIVATIVES

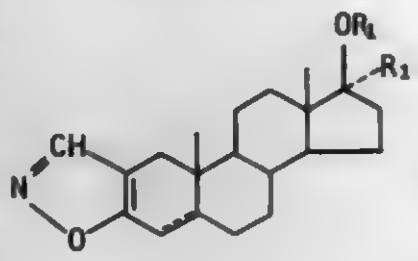
John C. Babcock, and J. Allan Campbell, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Sept. 20, 1974, Ser. No. 507,690

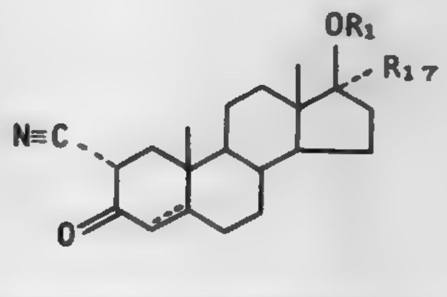
Int. Cl.² C07J *17/00*

U.S. Cl. 260—239.55 R **5 Claims**

1. A compound of the group consisting of



and



where the broken line in ring A denotes a double bond or the 5α structure,
- R_1 = lower alkyl of 1 to 5 carbon atoms, cycloalkyl of 3 to 12 carbon atoms and aralkyl of 7 to 12 carbon atoms,
- R_{17} = hydrogen or alkyl of 1 to 5 carbon atoms, alkenyl of 2 to 5 carbon atoms.

3,980,639
AMOXICILLIN DERIVATIVES

Dennis Anthony Love, Redhill, England, assignor to Beecham Group Limited, Great Britain

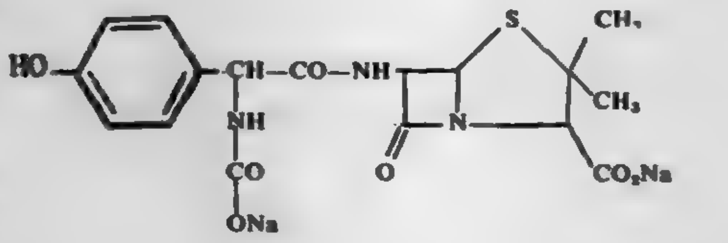
Filed Sept. 8, 1975, Ser. No. 611,199

Claims priority, application United Kingdom, Sept. 18, 1974, 40661/74

Int. Cl.² C07D *499/68*

U.S. Cl. 260—239.1 **2 Claims**

1. A comound of the formula:



(I)

3,980,640
SCHIFF BASES DERIVED FROM PHENANTHRENE-9,10-DIAMINES AND ORTHO-HYDROXY ALDEHYDES

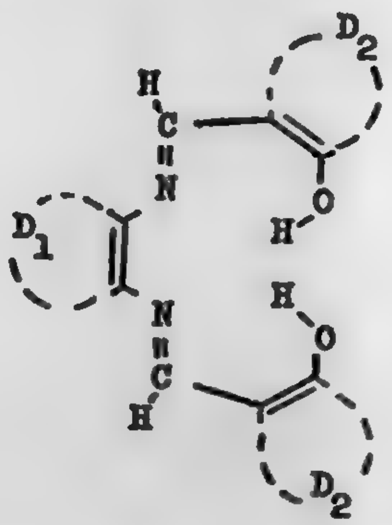
Pritam Singh Dhaliwal, Edison, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 535,140, Dec. 20, 1974, Pat. No. 3,928,328, which is a division of Ser. No. 313,359, Dec. 8, 1972, Pat. No. 3,903,118. This application June 13, 1975, Ser. No. 586,745

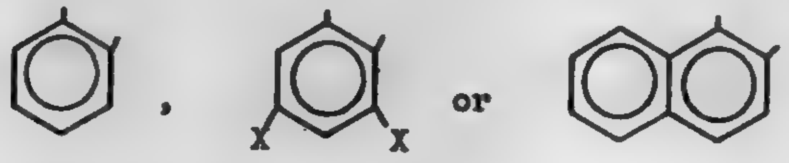
Int. Cl.² C07C *119/00*

U.S. Cl. 260—240 G **1 Claim**

1. A Schiff base of structural formula:



wherein D_1 represents the atoms necessary to complete a phenanthrene nucleus having the indicated nitrogen atoms attached to the 9,10-positions and D_2 represents the atoms necessary to complete a nucleus of the formula:



wherein X is chlorine or bromine.

3,980,641
PROCESS FOR THE PREPARATION OF 14-HYDROXYMORPHINANS

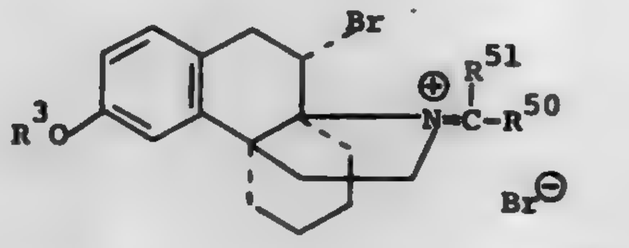
Ivo Monkovic; Henry Wong, and Gary Lim, all of Candiac, Canada, assignors to Bristol-Myers Company, New York, N.Y.

Filed July 31, 1975, Ser. No. 600,702

Int. Cl.² C07D *209/44*

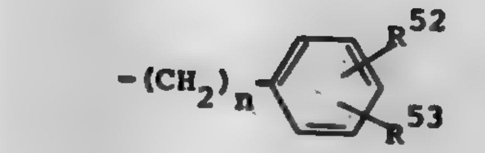
U.S. Cl. 260—240 F **3 Claims**

1. The compound having the formula

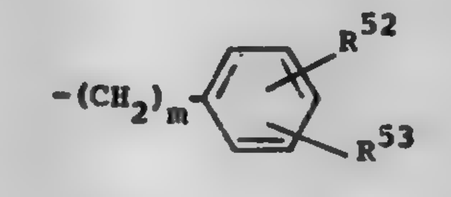


Vb

in which R^3 is (lower)alkyl, R^{50} is (lower)alkyl or a moiety having the formula



in which *n* is 0 to 5 inclusive, R^{52} and R^{53} are alike or different and each is H, NO_2, Cl, OH, bromo, fluoro, (lower)alkyl or (lower)alkoxy; R^{51} is H, (lower)alkyl or an aralkyl group having the formula



in which *m* is an integer of 1 to 5 and R^{52} and R^{53} are as defined above.

3,980,642
15-SUBSTITUTE D-ω-PENTANORPROSTAGLANDINS

Hans-Jurgen E. Hess, Old Lyme; Michael R. Johnson, Gales Ferry; Jasjit S. Bindra, Groton, and Thomas K. Schaaf, Old Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

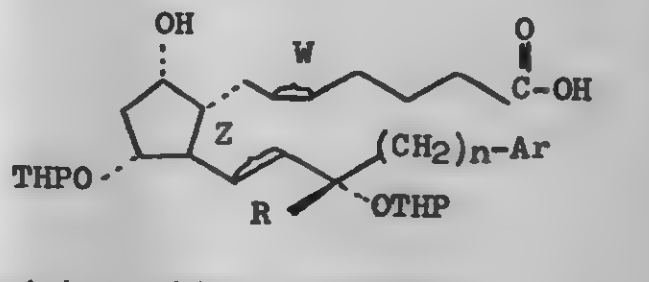
Division of Ser. No. 485,596, July 3, 1974, Pat. No. 3,965,284, which is a continuation-in-part of Ser. No. 271,220, July 13, 1972, abandoned, and Ser. No. 425,517, Dec. 17, 1973, abandoned.

This application Nov. 19, 1975, Ser. No. 633,374

Int. Cl.² C07C *177/00*

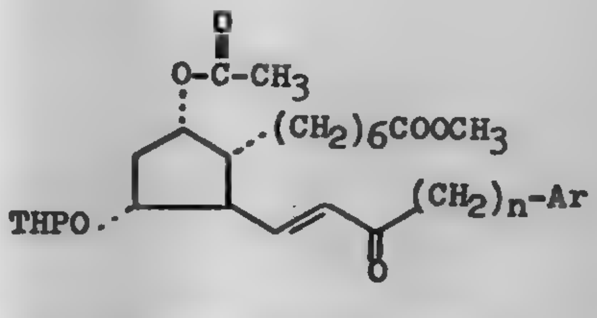
U.S. Cl. 260—240 R **5 Claims**

1. A compound of the structure:



wherein Ar is α- or β-furyl; α- or β-thienyl;
- R is hydrogen or lower alkyl;
- THP is 2-tetrahydropyranyl;
- *n* is an integer from 0 to 5; with the proviso that when *n* is zero, Z is a single bond;
- W is a single bond or a cis double bond;
- and Z is a single bond or trans double bond.

3. A compound of the formula:



wherein Ar is α- or β-furyl; or α- or β-thienyl;
- *n* is an integer from 1 to 5;
- and THP is 2-tetrahydropyranyl.

3,980,643

NOVEL PIPERAZINE- AND HOMOPIPERAZINE-MONOALKANOL ESTERS AND A PROCESS OF PRODUCTION THEREOF

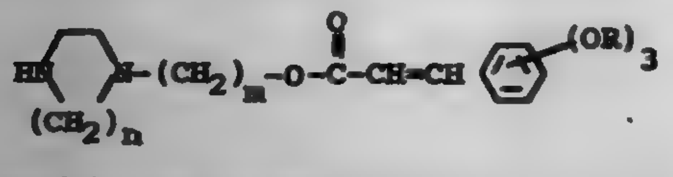
Hideo Kato; Takaaki Mouri, and Tomoyasu Nishikawa, all of Katsuyama, Japan, assignors to Hokuriku Pharmaceutical Co., Ltd., Japan

Filed Jan. 4, 1974, Ser. No. 430,925

Int. Cl.² C07D *295/04, 243/08*

U.S. Cl. 260—240 J 4 Claims

1. A compound represented by the formula:



wherein R is a methyl or ethyl group and *n* is 2 or 3 and *m* is 3, and salts thereof.

3,980,644

PENTAVALENT PHOSPHORUS AMIDES OF CEPHALOSPORINS AND SEPARATION PROCESS USING SAME

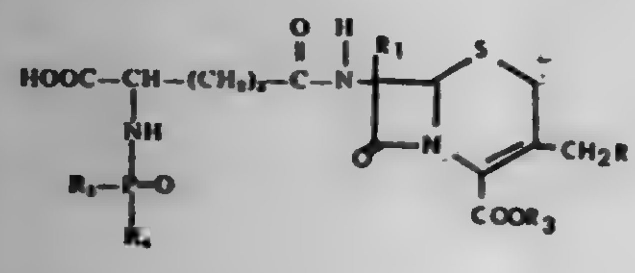
William H. W. Lunn, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 353,258, April 23, 1973, abandoned, which is a continuation of Ser. No. 105,673, Jan. 11, 1971, abandoned. This application Feb. 24, 1975, Ser. No. 552,093

Int. Cl.² C07D *501/22, 501/28, 501/40*

U.S. Cl. 260—243 C 14 Claims

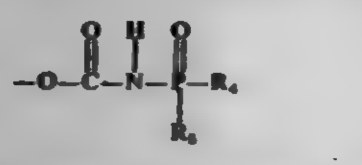
1. The cephalosporin pentavalent phosphorus amide derivative of the formula



wherein

R₁ is hydrogen or methoxyl;

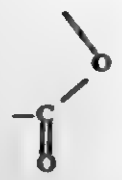
R'₂ when taken separately is hydrogen, hydroxy, acetoxy,



$$-O-\overset{O}{\overset{\|}{C}}-\overset{H}{\overset{|}{N}}-\overset{O}{\overset{\|}{\underset{R_5}{\underset{|}{P}}}}-R_4$$

R₃ when taken separately is hydrogen, an alkali metal cation, or a zinc or cadmium cation,

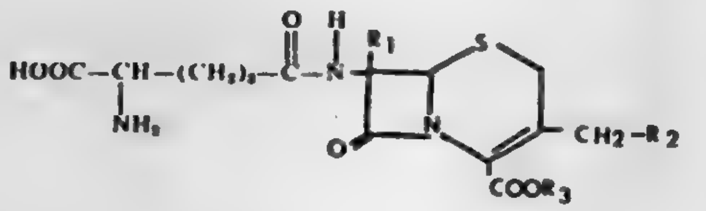
R'₂ and R₃ when taken together from a the group consisting of of the formula



R₄ and R₅ are each selected from the group consisting of -hydrocarbon and —O-hydrocarbon radicals containing from 1 to 15 carbon atoms, which radicals are free of aliphatic unsaturation;

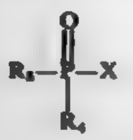
and when R₃ is hydrogen, the cyclohexylamine salts thereof.

6. The process for recovering from aqueous media a cephalosporin compound of the formula



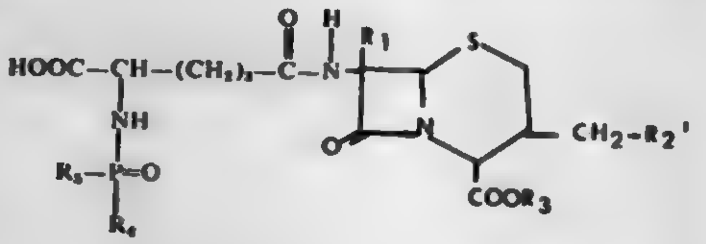
which comprises

a. reacting said cephalosporin compound in said aqueous media at a pH between about pH 7.5 and pH 12 with a phosphorus halide of the formula



$$R_5-\overset{O}{\overset{\|}{\underset{R_4}{\underset{|}{P}}}}-X$$

to form a pentavalent phosphoramide derivative of the formula



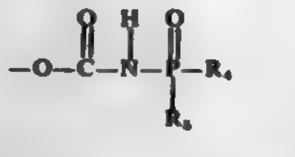
a. adjusting the pH of the reaction solution to less than pH 5.0 and

c. extracting the cephalosporin phosphoramide from said reaction solution with cyclohexanone;

wherein R₁ is hydrogen or methoxyl;

R₂ when taken separately is hydrogen, hydroxy, acetoxy, or carbamoyloxy;

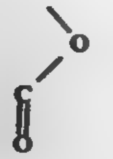
R₂' when taken separately is hydrogen, hydroxy, acetoxy, or a group of the formula



$$-O-\overset{O}{\overset{\|}{C}}-\overset{H}{\overset{|}{N}}-\overset{O}{\overset{\|}{\underset{R_5}{\underset{|}{P}}}}-R_4$$

R₃ when taken separately is hydrogen, an alkali metal cation, or a zinc or cadmium cation;

R₂ and R₃ when taken together form a lactone group of the formula



and R₄ and R₅ are each selected from the group consisting of -hydrocarbon and -O-hydrocarbon radicals containing from 1 to 15 carbon atoms which radicals are free of aliphatic unsaturation.

3,980,645

FUSED QUINAZOLINONES AND A PROCESS FOR PRODUCTION THEREOF

Shigeho Inaba, Takarazuka; Michihiro Yamamoto, Toyonaka; Kikuo Ishizumi, Ikeda; Kazuo Mori, Kobe; Masao Koshiba, Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

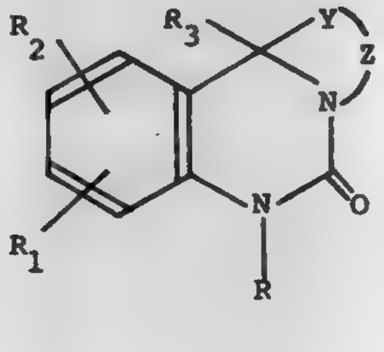
Division of Ser. No. 381,571, July 23, 1973, Pat. No. 3,891,638, which is a continuation-in-part of Ser. No. 172,562, Aug. 17, 1971, abandoned. This application Nov. 7, 1974, Ser. No. 521,768

Claims priority, application Japan, Aug. 27, 1970, 45-75817; Sept. 16, 1970, 45-81593

Int. Cl.² C07D *265/00, 273/00, 295/00*

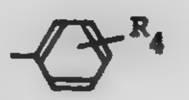
U.S. Cl. 260—244 R 2 Claims

1. A process for producing a quinazolinone derivative of the formula

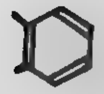


(I)

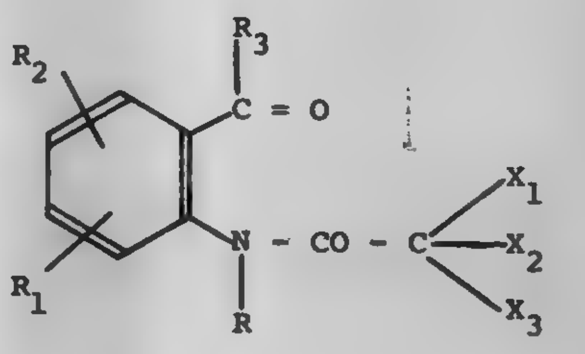
wherein R₁ and R₂ are individually a hydrogen atom, a C_{1-4} alkyl group, a C_{1-4} alkoxy group, a nitro group, a C_{1-4} alkylsulfonyl group or a halogen atom; R₃ is a pyridyl group, a thienyl group or a group of the formula



wherein R₄ is a hydrogen or a halogen atom; R is a hydrogen atom or a C_{1-4} alkyl group; Y is an oxygen atom or a group of the formula >N — R₅, wherein R₅ is a hydrogen atom or a C_{1-4} alkyl group; and Z is a C_{2-6} alkylene, which may optionally contain one oxygen atom among the chain carbon atoms, and may be optionally substituted by one or two C_{1-4} alkyl or a group of the formula



which comprises contacting in a solvent selected from the group consisting of ethanol and dimethyl sulfoxide in the presence or absence of potassium hydroxide at a temperature of from room temperature to the boiling point of the solvent used a trihaloacetamidophenyl ketone derivative of the formula,



(II)

wherein R₁, R₂, R₃ and R are the same as defined above, and X₁, X₂ and X₃ are same or different halogen atoms, with an amine of the formula,

$$HY-Z-NH_2 \tag{III}$$

wherein Y and Z are as defined above.

3,980,646

3-METHYLPYRAZOLE-5-CARBOXYLATES AND MEDICAMENTS CONTAINING THESE COMPOUNDS

Günter Brenner, Tannenweg; Karl Credner, Dusseldorf; Joachim Göring, and Manfred Tauscher, both of Gronau, Leine, all of Germany, assignors to Johann A. Wulfing, Dusseldorf and Neuss, Germany

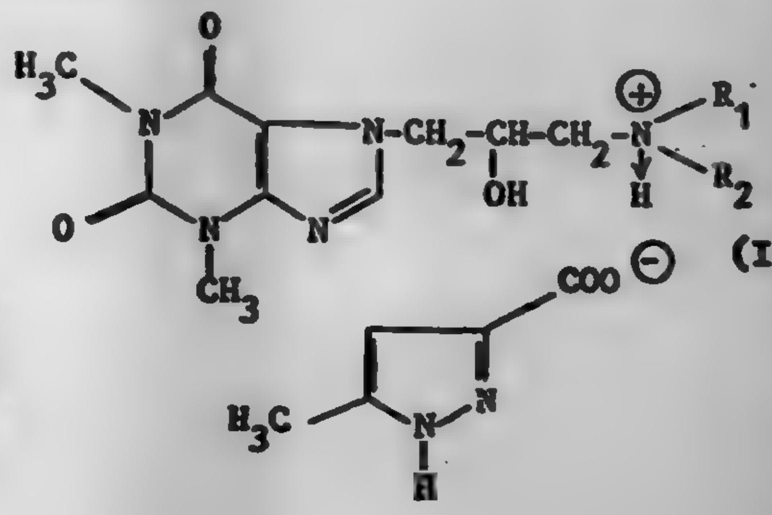
Filed Aug. 1, 1975, Ser. No. 601,316

Claims priority, application Germany, Aug. 14, 1974, 2439137

Int. Cl.² C07D *473/06;* A61K *31/535, 31/52*

U.S. Cl. 260—247.2 A 3 Claims

1. A 3-Methylpyrazole-5-carboxylate corresponding to the general formula



(I)

in which R_1 and R_2 when taken separately represents hydrogen, a straight-chain or branched alkyl radical with 1 to 5 carbon atoms, a hydroxyalkyl radical with 1 to 5 carbon atoms, an alkoxyalkyl radical of 1 to 5 carbon atoms in each of the alkoxy and alkyl groups thereof, a phenylethyl group or norbornyl group or, R_1 and R_2, when taken together with the nitrogen atom to which they are attached, represent a morpholine radical.

step of reacting a 2-quinoxalinecarboxaldehyde N^1,N^4-dioxide nitrone with an equimolar proportion of methyl carbazate in a reaction-inert solvent inthe presence of a strong acid catalyst selected from the group consisting of hydrochloric acid, hydrobromic acid, sulfuric acid, phosphoric acid, p-toluenesulfonic acid and trifluoroacetic acid.

3,980,647
ADDUCTS OF POLYGLYCIDYL COMPOUNDS AND DIALKOXYPHOSPHONO-METHYL DERIVATIVES OF CYCLIC UREIDES

Daniel Porret, Binningen, and Jurgen Habermeier, Pfeffingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 3, 1973, Ser. No. 385,616

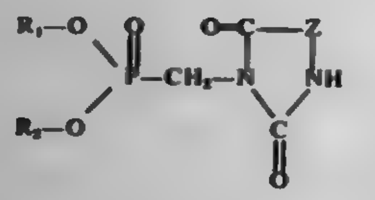
Claims priority, application Switzerland, Aug. 10, 1972, 11845/72

The portion of the term of this patent subsequent to Mar. 23, 1993, has been disclaimed.

Int. Cl.^{2} C07D *233/40*

U.S. Cl. 260—248 NS **7 Claims**

1. An adduct, containing epoxide groups, prepared by the reaction of triglycidylisocyanurate, and a compound of the formula



wherein Z is methylene, methylene substituted by alkyl of 1–6 carbon atoms, cyclohexylidene, cyclopentylidene, ethylene, or ethylene substituted by alkyl of 1 to 4 carbon atoms, and R_1 and R_2 each denote alkyl of 1 to 4 carbon atoms, alkenyl of up to 4 carbon atoms, or monochloroethyl, or together denote an alkylene of 2 to 5 carbon atoms, wherein the amount of phosphorous compound relative to the polyglycidyl compound in the adduct is from 0.05 to 0.5 molecule per epoxide group and wherein said reaction is conducted in the presence of a catalyst selected from the group consisting of alkalis, amines, ammonium salts and alkali metal salts.

3,980,648
PROCESS FOR PRODUCING QUINOXALINE-DI-N-OXIDES

Hermann Faubl, Mystic, and Banavara Lakshmana Mylari, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 349,805, April 10, 1973, abandoned. This application Mar. 12, 1975, Ser. No. 557,531

Int. Cl.^{2} C07D *241/52*

U.S. Cl. 260—250 Q **2 Claims**

1. A process for the preparation of methyl 3-(2-quinoxalinylmethylene)carbazate N^1,N^4-dioxide which comprises the

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3,980,649
PROCESS FOR THE MANUFACTURE OF PYRIMIDINE DERIVATIVES

Siegfried Herrling, Stolberg, Rhineland, Germany, assignor to Chemie Grunenthal GmbH, Stolberg, Rhineland, Germany

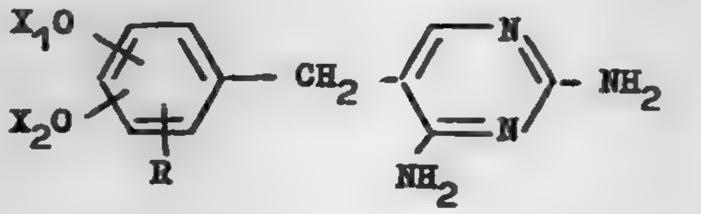
Filed Aug. 27, 1974, Ser. No. 500,960

Claims priority, application Germany, Aug. 29, 1973, 2343419

Int. Cl.^{2} C07D *239/30, 239/48*

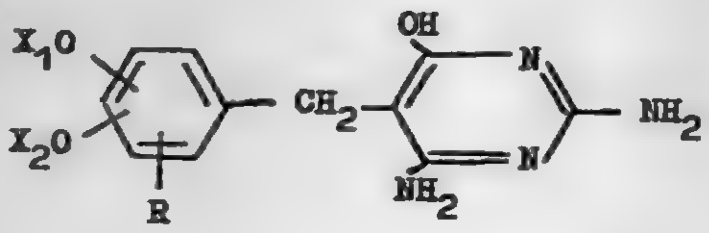
U.S. Cl. 260—256.4 N **9 Claims**

1. The process for the manufacture of a pyrimidine derivative of formula I



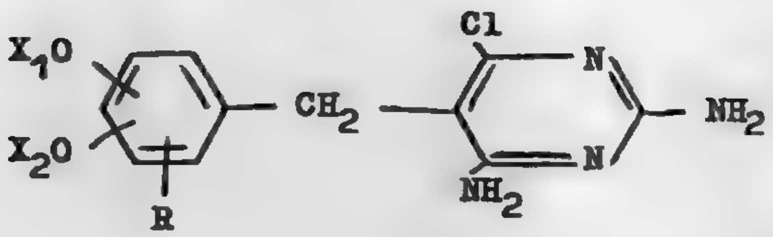
I

wherein X_1 and X_2 are the same or different alkyl of one to three carbons or together are alkylene of one or two carbons and wherein R is hydrogen or alkoxy of one to three carbons, which comprises the steps of reacting a compound of formula II



II

or the hydrochloride thereof by heating with phosphoryl chloride while steadily passing into the reaction mixture a stream of dry hydrogen chloride to form the compound of formula III



III

which is isolated and subjected to a hydrogenolysis in presence of a palladium hydrogenation catalyst to form the compound of formula I.

3,980,650
4-AMINO-PYRIMIDINE DERIVATIVES

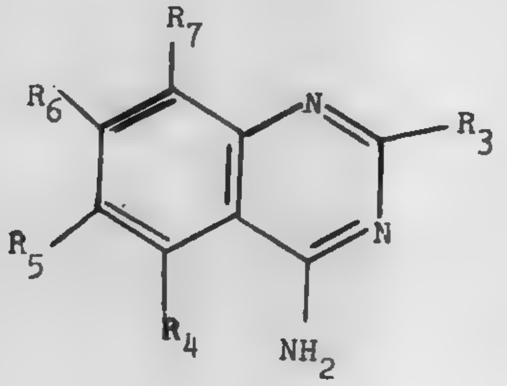
Wijbe Thomas Nauta, Nieuw Loosdrecht, Netherlands, assignor to N.V. Koninklijke Pharmaceutische Fabrieken v/h Brocades-Stheeman en Pharmacia, Netherlands

Continuation of Ser. No. 250,614, May 5, 1972, abandoned. This application May 20, 1974, Ser. No. 471,590

Int. Cl.^{2} C07D *239/94*

U.S. Cl. 260—256.4 Q **6 Claims**

1. 4-Aminoquinazolines of the formula VI:



VI

wherein:

R_3 represents a saturated or unsaturated heterocyclic ring of 5 to 7 ring atoms selected from the group consisting of pyridyl, piperidyl, piperazinyl, morpholinyl, pyrrolyl and azepinyl, said ring being unsubstituted or substituted by one lower alkyl, R_3 being attached to the quinazoline nucleus through a ring carbon; and R_5 and R_6 are the same or different and each represents hydrogen, halogen, lower alkyl or lower alkoxy group and R_4 and R_7 represent hydrogen, the total number of carbon atoms in said alkyl or alkoxy being not more than four; and the pharmaceutically acceptable acid addition and quaternary ammonium salts thereof.

3,980,651
WATER-INSOLUBLE BARBITURIC ACID-SUBSTITUTED NAPHTHALACTAM DYESTUFF

Alfred Brack, Odenthal, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

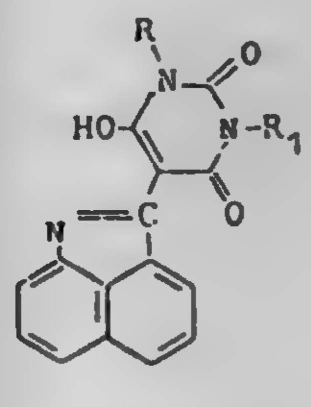
Filed Aug. 8, 1974, Ser. No. 495,904

Claims priority, application Germany, Aug. 17, 1973, 2341657

Int. Cl.^{2} C07D *239/10, 403/04*

U.S. Cl. 260—256.4 C **9 Claims**

1. A compound which in one of its possible tautomeric forms corresponds to the formula



R is C_1–C_6-alkyl, CF_3, C_3–C_6-alkenyl, cyclohexyl, 3,3,5-trimethylcyclohexyl, cyclopentyl, norbornylmethyl, p-methoxybenzyl, phenyl-C_1–C_4-alkyl, phenyl, or napthyl;

R_1 is C_4–C_6-alkyl, C_3–C_6-alkenyl, cyclohexyl, 3,3,5-trimethylcyclohexyl, cyclopentyl, norbornylmethyl, p-methoxybenzyl, phenyl-C_1–C_4-alkyl, phenyl, or napthyl;

and wherein R, R_1 and the napthalone ring in the above formula are unsubstituted or monosubstituted with C_1–C_4-alkoxy, fluorine, chlorine, hydroxy, cyano, bromine, amino, amino substituted with C_1–C_4-alkyl, acetylamino, methylsulfonylamino, phenylsulfonylamino, dimethylamino, phenylamino, benzoylamino, benzylamino, β-methoxyethoxy, β-cyanoethoxy, methylsulfonyl, phenylsulfonyl, methoxycarbonyl, ethoxycarbonyl carbamoyl, nitrile, or, on rings, C_1–C_4-alkyl.

3,980,652
2-(4-METHYL-PIPERAZINO)-3 OR 5 CYANO PYRIDINE

Jacques E. Delarge, Dolembreux; Leopold N. Thunus, Liege; Charles León Lapiére, Tongeren, and André H. Georges, Ottignies, all of Belgium, assignors to A. Christiaens Societe Anonyme, Brussels, Belgium

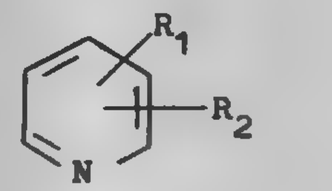
Continuation-in-part of Ser. No. 459,987, April 11, 1974, which is a continuation-in-part of Ser. No. 197,139, Nov. 9, 1971, Pat. No. 3,819,639. This application Sept. 26, 1975, Ser. No. 617,129

Claims priority, application United Kingdom, Nov. 11, 1970, 53675/70

Int. Cl.^{2} C07D *401/04*

U.S. Cl. 260—268 H **1 Claim**

1. A compound of the formula:



(I)

wherein R_1 in the 3- or 5-position of the pyridine nucleus represents the cyano group, wherein R_2 in the 2-position represents N-methyl-piperazino or the pharmaceutically acceptable acid addition salts thereof.

3,980,653
PROCESS FOR THE PRODUCTION OF 3,6-BIS-(2-METHYLMERCAPTOETHYL)-2,5-PIPERAZINEDIONE

Hans Wagner, Constance and Alfred Maierhofer, Allensbach, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Filed June 26, 1975, Ser. No. 590,821

Claims priority, application Germany, June 26, 1974, 2430817

Int. Cl.^{2} C07D *241/00*

U.S. Cl. 260—268 DK **12 Claims**

1. A process for the production of 3,6-bis-(2-methylmercaptoethyl)-2,5-piperazinedione comprising heating 5-(2-methylmercaptoethyl)-hydantoin in the presence of water to a temperature of 100° to 200 °C. at an elevated pressure.

3,980,654
COPPER (II) COMPLEXES

Henry J. Gysling, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 409,828, Oct. 26, 1973, Pat. No. 3,880,724. This application Jan. 27, 1975, Ser. No. 544,096

Int. Cl.^{2} C07F *1/08;* **C07D** *213/00*

U.S. Cl. 260—270 PY **10 Claims**

1. A copper (II) complex having the formula:

$$[CuL_n](BAr_4)_2$$

wherein L is a ligand selected from the group consisting of monodentate or polydentate neutral Lewis bases containing a nitrogen or oxygen donor atom, Ar is aryl containing from 6 to 12 carbon atoms, and *n* is 4 when L is a monodentate ligand and *n* is 2 when L is a polydentate ligand.

3,980,655
BASICALLY SUBSTITUTED 1,4-DIHYDRO-2H-ISOQUINOLINE DERIVATIVES AND PROCESS FOR PREPARING THEM

Rudolf Kunstmann, Hofheim, Taunus, and Joachim Kaiser, Bad Soden, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

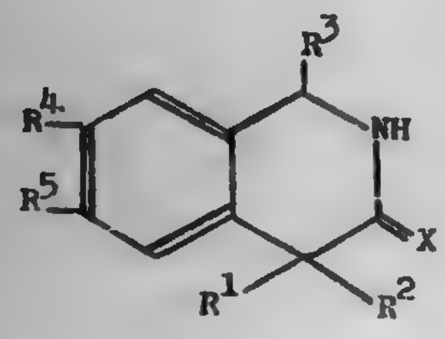
Filed Oct. 17, 1974, Ser. No. 515,659

Claims priority, application Germany, Oct. 20, 1973, [illegible]

Int. Cl.^{2} C07D *217/24, 401/06*

U.S. Cl. 260—288 A **3 Claims**

1. A 1,4-dihydro-2H-isoquinoline compound of the formula



and physiologically tolerated salts thereof, wherein R^1 is hydrogen or straight-chain or branched alkyl of 1 to 6 carbon atoms; R^2 is di-lower alkyl-amino-lower alkyl wherein the alkyl groups of the dialkylamino group may also form a piperidine or pyrrolidine ring with the nitrogen atom to which they are attached; R^3 is pyridyl, phenyl, or phenyl mono- or di-substituted by halo, nitro, amino, alkanoylamino having 1 to 4 carbon atoms or alkyl having 1 to 4 carbon atoms; R^4 and R^5, which may be the same or different, are hydrogen or alkoxy having 1 to 4 carbon atoms; and X is oxygen or sulfur.

3,980,656
PARTIALLY HYDROGENATED 1H-INDENO[1,2-b]-PYRIDINE DERIVATIVES

Rudolf Kunstmann, Hofheim, Taunus, and Ernold Granzer, Kelkheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

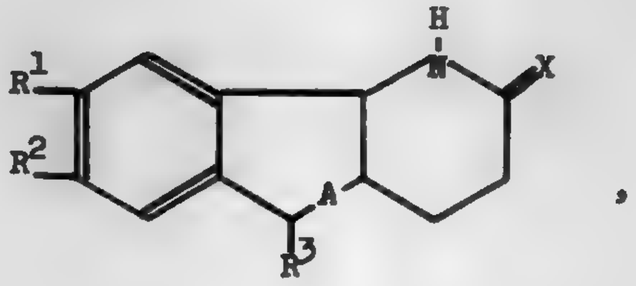
Filed May 16, 1974, Ser. No. 470,667

Claims priority, application Germany, May 19, 1973, 2325501

Int. Cl.^{2} C07D *221/16*

U.S. Cl. 260—293.54 **9 Claims**

1. A partially-hydrogenated 1H-indeno-[1,2-b]-pyridine compound of the formula



and physiologically tolerated salts thereof, wherein

R^1 and R^2, which are the same or different, are hydrogen, halogen, or alkoxy having 1–4 carbon atoms; R^3 is pyridyl, phenyl, or phenyl mono- or di-substituted by halogen, nitro, amino, or alkoxy having 1–4 carbon atoms; A is a single or double bond; and X is oxygen or sulfur.

3,980,657
OXOALKYLPYRIDINES

Georges Haas, and Alberto Rossi, both of Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

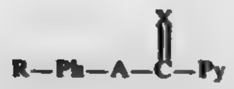
Filed Feb. 19, 1974, Ser. No. 443,289

Claims priority, application Switzerland, Feb. 19, 1973, 2381/73; Oct. 23, 1973, 14936/73

Int. Cl.^{2} C07D *213/50*

U.S. Cl. 260—297 R **10 Claims**

1. A pyridine compound of the formula I



$$R-Ph-A-\overset{\overset{X}{\|}}{C}-Py$$

wherein R denotes a monocyclic cycloalkyl or cycloalkenyl residue with 4 to 12 ring members, a bicyclic cycloalkyl or cycloalkenyl residue with 5 or 6 ring members both individual rings having 1 to 4 carbon atoms in common or an adamantyl residue, which residue is unsubstituted or substituted by lower alkyl, alkenyl, alkoxy, lower-alkanoyloxy or benzoyloxy which is unsubstituted or substituted by lower alkyl, lower alkoxy, halogen, trifluoromethyl or nitro groups, hydroxy or oxo groups, or N-mono- or N,N-di-lower alkylated amino groups, Ph denotes a p-phenylene radical which is unsubstituted or substituted by amino, lower alkanoylamino, nitro, trifluoromethyl or hydroxyl groups or lower alkyl or alkoxy groups or halogen atoms, A denotes a 1,1-, 1,2- or 1,3-alkylene radical with up to 7 C atoms, X denotes an oxo group or a ketalised or thioketalised oxo group and Py denotes a pyridyl radical which is unsubstituted or substituted by lower alkyl or alkoxy radicals, quaternised by a lower alkyl or alkenyl radical and/or N-oxidised, or a therapeutically acceptable acid addition salt thereof.

3,980,658
(INDOLYL-PIPERIDINO OR -1,2,5,6-TETRAHYDRO-PYRIDYL)-p-FLUOROBUTYROPHENONES AND SALTS THEREOF

Genus Possanza, Dorval; Kurt Freter, Beaconsfield, both of Canada, and Sven Luttke, Gau-Algesheim, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

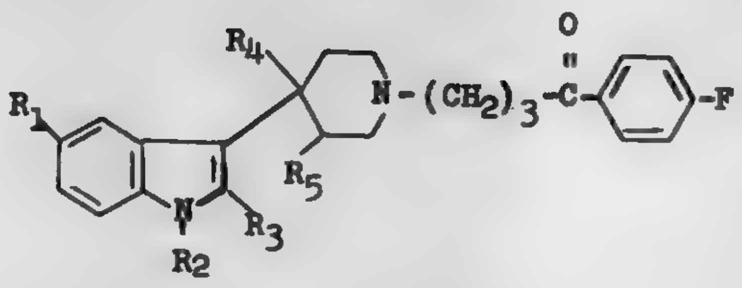
Filed May 6, 1974, Ser. No. 467,497

Claims priority, application Germany, May 4, 1973, 2322706

Int. Cl.^{2} C07D *401/04*

U.S. Cl. 260—293.61 **10 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen, chlorine, methyl or methoxy,
R_2 is hydrogen or methyl,
R_3 is methyl or phenyl, and
R_4 and R_5 together form a double bond or, when
R_1 is chlorine or methyl, are also hydrogen, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,980,659
CERTAIN 6-AMINO-4-HYDROCARBYL-NICOTINAMIDES

Erwin Fleckenstein, Hofheim, Taunus; Ernst Heinrich, Frankfurt am Main-Fechenheim, and Reinhard Mohr, Offenbach-Rumpenheim, all of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Germany

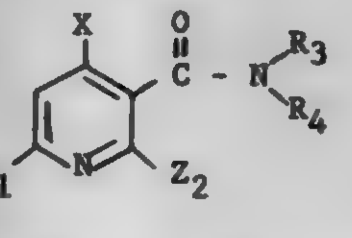
Division of Ser. No. 372,024, June 21, 1973. This application Nov. 6, 1974, Ser. No. 521,442

Claims priority, application Germany, June 22, 1972, 2230392

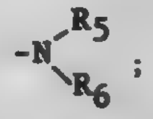
Int. Cl.^{2} C07D *213/44*

U.S. Cl. 260—294.8 G **7 Claims**

1. A compound of the formula



wherein X is alkyl having 1 to 6 carbon atoms, alkenyl having 2 to 6 carbon atoms, cycloalkyl having 3 to 8 carbon atoms, phenyl or benzyl; Z_1 is



$$-N\begin{matrix}R_5\\R_6\end{matrix}\ ;$$

Z_2 is mercapto, $-SR_{12}$ or $-SO_2R_{12}$; R_3 and R_4 are alkyl having 1 to 6 carbon atoms, cycloalkyl having 3 to 8 carbon atoms, phenyl, benzyl, phenethyl or hydrogen; R_5 and R_6 are alkyl having 1 to 6 carbon atoms, cycloalkyl having 3 to 8 carbon atoms, phenyl, benzyl, phenethyl or hydrogen and R_{12} is alkyl having 1 to 6 carbon atoms, alkenyl having 2 to 6 carbon atoms, cycloalkyl having 3 to 8 carbon atoms, phenyl, benzyl or phenethyl.

3,980,660
N,N''(PYRIDINEDIYL)DIOXAMATE COMPOUNDS

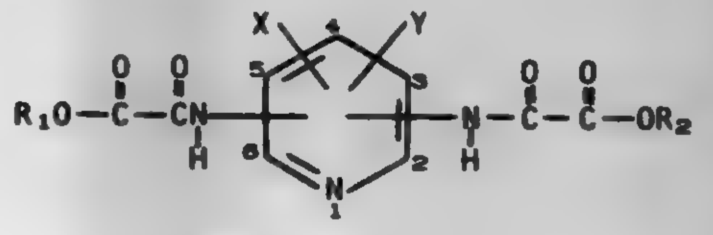
John B. Wright; Charles M. Hall, and Anthony A. Sinkula, all of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed June 10, 1974, Ser. No. 477,814

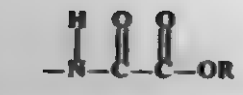
Int. Cl.^{2} C07D *213/75*

U.S. Cl. 260—295 PA **15 Claims**

1. Compound of the formula



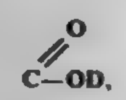
and N-oxides thereof wherein each



$-N(H)-C(=O)-C(=O)-OR$

group is located anywhere on the carbon ring with the proviso that one group cannot be ortho to the other group;

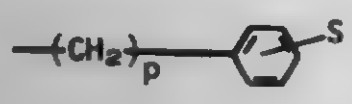
X and Y are the same or different and are selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, inclusive, phenyl, alkoxy from 1 to 4 carbon atoms, inclusive, nitro, amino, trifluoromethyl, halogen, [illegible]



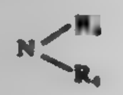
$C(=O)-OD,$

wherein D is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms, inclusive, and a physiologically acceptable metal or amine cation;

R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen; a physiologically acceptable metal or amine cation; alkyl of 7 to 12 carbon atoms, inclusive; cycloalkyl of 4 to 8 carbon atoms, inclusive;

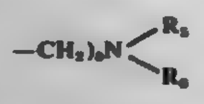


wherein *p* is an integer of 0 to 4, inclusive, and S is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms, inclusive, phenyl, halogen, trifluoromethyl, hydroxy, alkoxy of 1 to 4 carbon atoms, inclusive, amino, nitro, carboxy, and



$N(R_3)(R_4)$

wherein R_3 and R_4 are the same or different and are selected from the group consisting of hydrogen and alkyl of one to four carbon atoms, inclusive; with the proviso that when *p* is zero, S is not hydrogen; and



$-CH_2)_bN(R_5)(R_6)$

wherein *b* is an integer of 2 to 4, inclusive, and R_5 and R_6 are the same or different and are selected from the group consisting of hydrogen and alkyl of one to four carbon atoms, inclusive, with the further proviso that when one of R_1 and R_2 is hydrogen or a physiologically acceptable metal or amine cation, the other variable is not hydrogen or a metal or amine cation; and physiologically acceptable acid addition salts thereof.

3,980,661

HYDROLYSIS OF NITRILES

David W. Smith, and Julian Feldman, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Nov. 5, 1974, Ser. No. 521,013

Int. Cl.² C07C *102/08*

U.S. Cl. 260—295.5 A **12 Claims**

1. In a method for the liquid phase catalytic hydrolysis of a nitrile to the corresponding amide, the improvement which comprises employing an effective catalytic amount of the unsupported reaction product of rhodium chloride and a trialkyl trithiophosphite prepared by contact of said rhodium chloride and said trialkyl trithiophosphite in a solvent medium at an elevated temperature.

3,980,662

PROCESS FOR PREPARING ACID AMIDES

Yoshihiro Watanabe, Takatsuki; Takeshi Yamahara, Itami; Shun Inokuma, and Tooru Tokumaru, both of Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed June 12, 1974, Ser. No. 478,613

Claims priority, application Japan, June 19, 1973, 48-69555; July 28, 1973, 48-85222; Aug. 3, 1973, 48-87891

Int. Cl.² C07D *213/82;* **C07C** *102/08*

U.S. Cl. 260—295.5 A **17 Claims**

1. A process for preparing a carboxylic acid amide by hydrating a nitrile compound with water in the presence of a catalyst comprising a copper-containing polymer obtained (1) by contacting a copper salt or a copper complex having a replaceable ligand with a polymerized material having a basic nitrogenous group in the polymer chain or linked with the polymer chain or (2) by polymerizing a vinyl monomer containing a copper salt or a copper complex having a basic nitrogenous group bonded to the copper atom as a ligand and heat-treating the resulting copper-containing polymer at a temperature of from about 50° to 400°C.

3,980,663

ABSORBENT ARTICLES AND METHODS FOR THEIR PREPARATION FROM CROSSLINKABLE SOLUTIONS OF SYNTHETIC CARBOXYLIC POLYELECTROLYTES

James R. Gross, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 371,909, June 20, 1973, abandoned. This application May 9, 1974, Ser. No. 468,794

Int. Cl.² C08L *31/02, 33/02*

U.S. Cl. 260—29.6 TA **11 Claims**

1. A composition useful to form water swellable absorbent articles which comprises

1. a solution of a carboxylic synthetic polyelectrolyte wherein the solution comprises water, lower alcohols, or mixtures thereof and about 5 to about 60% by weight of a carboxylic polyelectrolyte containing sufficient carboxylate functionality to impart water-solubility to the salt form, and
2. at least about 0.1% by weight based on the polyelectrolyte of a difunctional crosslinking agent reactive with carboxylate groups through nucleophilic displacement.

3,980,664

1-[(5-NITRO-2-FUROYL)METHYL]-2(1H) PYRIDONE

Robert J. Alaimo, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jan. 2, 1976, Ser. No. 646,165

Int. Cl.² C07D *211/32*

U.S. Cl. 260—297 Z **2 Claims**

1. 1-[(5-nitro-2-furoyl)methyl]-2(1H) pyridone.

3,980,665

OPTICALLY ACTIVE SALT OF PROTECTED D-PENICILLAMINE AND L-LYSINE

Rudolf Fahnenstich, Mombris; Joachim Heese, and Heribert Offermanns, both of Grossauheim, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

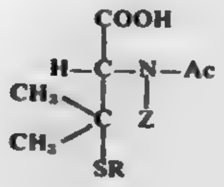
Filed Jan. 25, 1974, Ser. No. 436,743

Claims priority, application Germany, Jan. 27, 1973, 2304054

Int. Cl.² C07D *277/06*

U.S. Cl. 260—306.7 C **14 Claims**

1. The optically active salt of a protected D-form of penicillamine and L-lysine where the protected penicillamine has the formula



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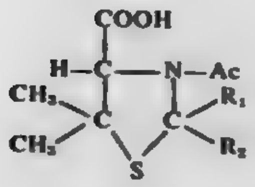


II

where Ac is benzoyl, tosyl, nitrophenyl-sulfenyl, formyl, acetyl or propionyl, R is hydrogen, benzyl or Ac, R_1 and R_2 are hydrogen, alkyl of 1 to 8 carbon atoms, cycloalkyl of 5 to 8 carbon atoms, phenyl or tolyl or R_1 and R_2 together with the adjacent carbon atoms of the thiazoline ring form a cycloalkylene ring of 5 to 8 carbon atoms and Z is hydrogen or together with Ac is phthaloyl.

3,980,666

PROCESS FOR THE RESOLUTION OF D,L-PENICILLAMINE AND SALTS FORMED DURING SAID PROCESS

Paul Scherberich, Dietzenbach, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

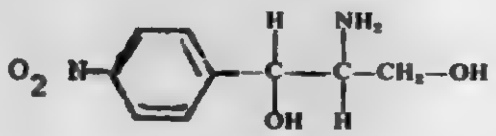
Filed Dec. 16, 1974, Ser. No. 532,936

Claims priority, application Germany, Dec. 17, 1973, 2362687

Int. Cl.² C07D *277/06*

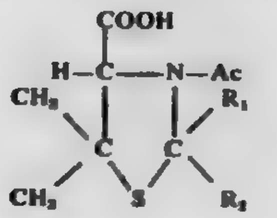
U.S. Cl. 260—306.7 C **24 Claims**

1. A salt of an optical isomer of threo-1-(p-nitrophenyl)-2-amino-propanediol-1,3 of the formula:



I

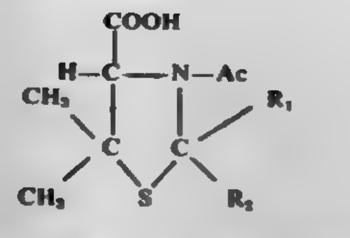
and a protected penicillamine of the formula:



II

wherein Ac is benzoyl, tosyl, nitrophenylsulfenyl, formyl or acetyl and R_1 and R_2 are hydrogen, alkyl of 1 to 8 carbon atoms or R_1 and R_2 together are polymethylene of 3 to 9 carbon atoms.

10. In a process for the recovery of an optically active protected penicillamine including the step of crystallizing out of solution the salt of an optically active base with either the protected D-penicillamine or protected L-penicillamine having the formula



III

wherein Ac is benzoyl, tosyl nitrophenylsulfenyl, formyl or acetyl and R_1 and R_2 are hydrogen, alkyl of 1 to 8 carbon atoms or R_1 and R_2 together are polymethylene of 3 to 9 carbon atoms, the improvement comprising reacting the protected D,L-penicillamine of formula II with the optical isomer of (1)threo-1-p-nitrophenyl)-2-amino-propanediol-1,3 or (2) a salt thereof.

3,980,667

ANTI-ARRHYTHMIC 5-ENDO-SUBSTITUTED OXY-N-(AMINOLOWERALKYL)BICYCLE [2.2.2.]OCTANE-2,3-DI-ENDO-CARBOXYLIC ACID IMIDES

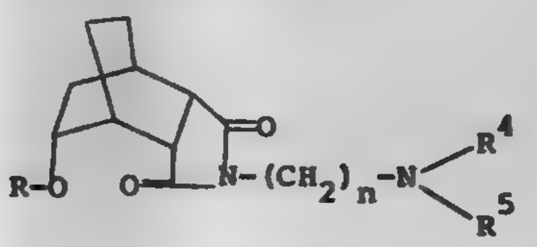
Richard Anthony Partyka; Henry Michael Holava, both of Liverpool, N.Y., and Alex Michael Jelenevsky, Greensboro, N.C., assignors to Bristol-Myers Company, New York, N.Y.

Filed Mar. 5, 1975, Ser. No. 555,651

Int. Cl.² C07D *209/48*

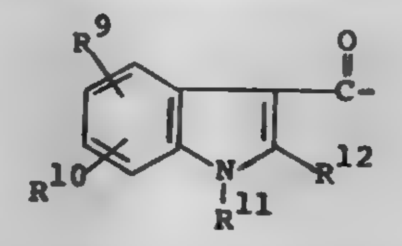
U.S. Cl. 260—326 C **6 Claims**

1. A compound having the formula

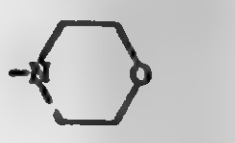


I

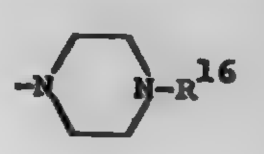
wherein R is a radical having the formula



wherein R^{11} is hydrogen or (lower)alkyl, R^{12} is chloro, bromo, fluoro, hydrogen or (lower)alkyl and R^9 and R^{10} are alike or different and each is H, Cl, Br, F, (lower)alkyl, nitro, CF_3, OH or (lower)alkoxy; *n* is an integer of 2 to 4 inclusive and R^4 or R^5 are alike or different and each is H, (lower)alkyl or when taken together with the nitrogen a radical of the formula



,



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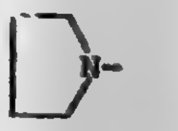
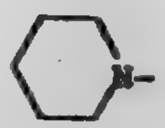


or



in which R^{16} is (lower)alkyl; or a pharmaceutically acceptable acid addition salt thereof.

3,980,668

ANTI-ARRHYTHMIC 5-ENDO-(3-INDOLECARBONYLOXY)-N-[AMINO-(LOWER)ALKYL]BICYCLO[2,2,1]HEPTANE-2,3-DI-ENDO-CARBOXYLIC ACID IMIDES

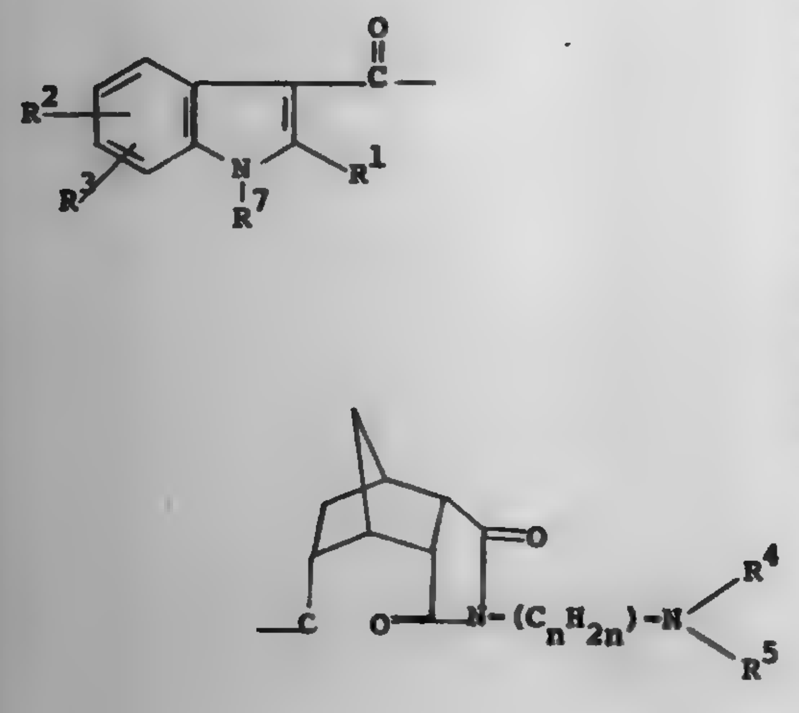
Ronald Leslie Buchanan, Fayetteville, N.Y., and Alex Michael Jelenevsky, Greensboro, N.C., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 507,029, Sept. 18, 1974, abandoned. This application July 10, 1975, Ser. No. 594,918

Int. Cl.² C07D *209/76*

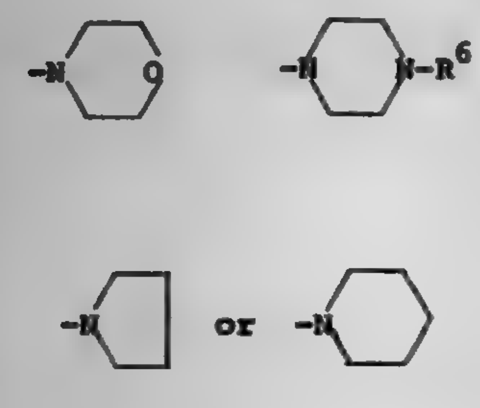
U.S. Cl. 260—326 C **18 Claims**

1. A compound having the formula



I

wherein R¹ is H, Cl, Br, F or (lower)alkyl, R⁷ is H or methyl, R² and R³ are alike or different and each is H, Cl, Br, F, (lower)alkyl, nitro, CF_3, OH or (lower)alkoxy, n is an integer of 2 to 4 inclusive and R⁴ and R⁵ are alike or different and each is H, (lower)alkyl or when taken together with the nitrogen a radical of the formula



in which R⁶ is (lower)alkyl; or a pharmaceutically acceptable acid addition salt thereof.

3,980,669

CONTINUOUS PROCESS FOR MANUFACTURING GAMMA SULTONES

Bjorn Sundby, Piscataway, and James R. Trowbridge, Westfield, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 224,924, Feb. 9, 1972, abandoned, which is a continuation-in-part of Ser. No. 848,457, Aug. 8, 1969, abandoned. This application Apr. 10, 1974, Ser. No. 459,509

Int. Cl.² C07D *327/04*

U.S. Cl. 260—327 S **7 Claims**

1. A continuous process for preparing gamma sultones which comprises the steps of (A) reacting from 1 to 1.5 moles of gaseous sulfur trioxide with a thin, flowing film of one mole of an olefin of 8 to 25 carbon atoms and an α-olefin content above 70 percent by weight while maintaining the reaction temperature between 10° C. and 70° C. to form an acid mix containing gamma and delta sultones, alkene sulfonic acids, alkene disulfonic acids and virtually no olefin starting materials; (B) diluting the acid mix with an organic solvent selected from the group consisting of hydrocarbons having from 4 to 8 carbon atoms, halohydrocarbons having 1 to 8 carbon atoms and 1 to 8 halogen groups, lower alcohols having 1 to 4 carbon atoms and lower ketones having 3 to 4 carbon atoms to form a solvent-acid mix solution having a solvent-to-acid mix ratio between 1:1 and 5:1 at a temperature between 15° C. and 35° C.; (C) cooling the solvent-acid mix solution to a temperature below 10° C., thereby precipitating the gamma sultone from the acid mix as crystals; and (D) removing the gamma sultone crystals from said solvent-acid mix solution, said crystals being substantially free of contamination with other sulfonation reaction products.

3,980,670

MANUFACTURE OF METHACRYLIC ACID AND BUTYROLACTONE

Rudolf Kummer, Frankenthal; Rolf Platz, Mannheim, and Kurt Schwirten, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Feb. 25, 1975, Ser. No. 552,734

Claims priority, application Germany, Mar. 11, 1974, 2411440

Int. Cl.² C07D *307/32*

U.S. Cl. 260—343.6 **8 Claims**

1. A process for the manufacture of methacrylic acid and butyrolactone, wherein allyl esters of lower fatty acids are hydroformylated by a conventional method with carbon monoxide and hydrogen at elevated temperatures and under superatmospheric pressure in the presence of rhodium carbonyl complexes and of liquid organic solvents which are inert under the reaction conditions, and the reaction mixture thus obtained is then treated, without removing the rhodium catalysts, with molecular oxygen or gases containing molecular oxygen at 20°–80°C at atmospheric to five atmospheres pressure in the presence of lower fatty acids, and the mixture of 4-acyloxy-n-butyric acid and 3-acyloxy-iso-butyric acid thus obtained is passed, as a vapor, at from 150° to 500°C, over aluminum oxide, titanium dioxide, silicon dioxide, silicates of metals of main groups 1 to 3 of the periodic table or active charcoal, as the catalyst.

3,980,671

PROCESS FOR THE MANUFACTURE OF VINYL ACETIC ACID AND OPTIONALLY OF γ-BUTYROLACTONE

Hans Fernholz, Fischbach, Taunus, and Dieter Freudenberger, Diedenbergen, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 9, 1973, Ser. No. 348,992

Claims priority, application Germany, Apr. 12, 1972, 2217534; Jan. 27, 1973, 2303997

Int. Cl.² C07D *307/32*; C07C *51/10*

U.S. Cl. 260—343.6 **17 Claims**

1. A process for the manufacture of vinyl acetic acid comprising the step of reacting allyl ether, allyl ester of saturated aliphatic carboxylic acid of 2 to 18 carbon atoms or allyl ester of aromatic carboxylic acid of 7 to 11 carbon atoms with carbon monoxide to form vinyl acetic acid, the reaction being conducted at a pressure of about 0.5 to about 500 atmospheres (gauge) and a temperature of about 50°C. to about 300°C. in the presence of about 0.02 to about 5 grams per mol of said allyl compound of a catalyst that is molybdenum, tungsten, manganese, rhenium, iron, cobalt, nickel ruthenium, rhodium, palladium, osmium, iridium, platinum or a carbonyl or halide compound of one of said metals, and about 0.01 to about 20 mols of water per mol of said allyl compound, and separating the formed vinyl acetic acid and from the reaction mixture.

3,980,672

METHOD OF MANUFACTURING FUNGIBLE POLYTETRAMETHYLENE ETHER GLYCOL

Hideo Tomomatsu, Crystal Lake, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Division of Ser. No. 506,968, Sept. 18, 1974, Pat. No. 3,935,252. This application July 23, 1975, Ser. No. 598,400

Int. Cl.² C07D *307/08*

U.S. Cl. 260—346.1 R **2 Claims**

1. A method of purifying tetrahydrofuran comprising contacting liquid tetrahydrofuran containing n-butyl aldehyde and having a water content of less than 0.5 percent, with a molecular sieve having a nominal pore size in the range of about 4–5 Angstroms inclusive, and having a water heat of adsorption of about 1800 ± 100 btu/pound H_2O, continuing said contacting until said n-butyl aldehyde is completely removed from the liquid tetrahydrofuran, and separating liquid tetrahydrofuran from the molecular sieve.

3,980,673

CERTAIN 2,3-DIHYDROBENZOFURANYL ESTERS OF CERTAIN N-SULFENYLATED CARBAMIC ACIDS

Peter Siegle, Cologne; Engelbert Kuhle, Bergedorf-Gladbach; Ingeborg Hammann, Cologne; Wolfgang Behrenz, Overath-Steinenbrueck, and Bernhard Homeyer, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

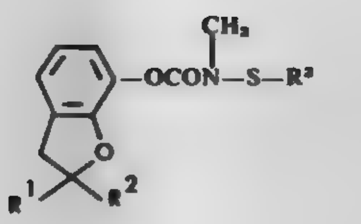
Filed Aug. 19, 1974, Ser. No. 498,675

Claims priority, application Germany, Sept. 1, 1973, 2344175

Int. Cl.² C07D *307/86*

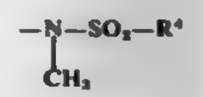
U.S. Cl. 260—346.2 R **4 Claims**

1. An N-sulfenylated 2,3-dihydrobenzofuranyl-7-N-methylcarbamate of the formula



in which

R¹ is hydrogen or C_1–C_6 alkyl,
R² is C_1–C_6 alkyl, and
R³ is methoxycarbonyl; or the radical



$$-\underset{\underset{CH_3}{|}}{N}-SO_2-R^4$$

wherein

R_4 is lower alkylamino, di-lower alkylamino, phenyl, or phenyl substituted by at least one of halogen, C_1–C_6 alkyl or trihalogenomethyl.

3,980,674

2,3-DISUBSTITUTED 7-OXABICYCLO-[2.2.1]-5-HEPTENE

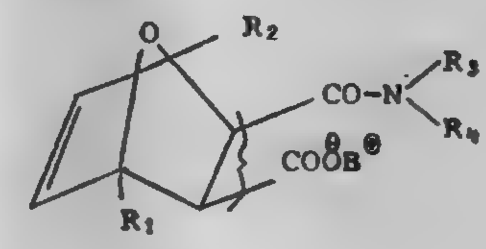
Rudolf Kubela, Cote St. Luc, and Lise A. Hughes, Ville de Lery, both of Canada, assignors to Delmar Chemicals Limited, Ville LaSalle, Canada

Filed Jan. 28, 1974, Ser. No. 437,162

Int. Cl.² C07D *307/00*

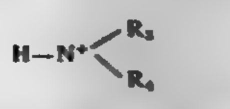
U.S. Cl. 260—347.3 **6 Claims**

1. A 2,3-di-exo-substitute 7-oxabicyclo-[2.2.1]-5-heptene derivative of the formula:



wherein

R_1 and R_2 each individually represent a hydrogen atom or a lower alkyl;
R_3 and R_4 each individually represent a hydrogen atom or a lower alkyl; and
B represents an ammonium ion of the formula:



$$H-N^{+}\begin{matrix}\nearrow R_3\\ \searrow R_4\end{matrix}$$

where R_3 and R_4 are defined above and the sodium cation.

3,980,675

PROCESS FOR PREPARING 2,5-DIMETHYL-3-(2H)-FURANONE

Carlo Venturello, Turin, and Rino D'Aloisio, Novara, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Feb. 14, 1975, Ser. No. 550,137

Claims priority, application Italy, Feb. 15, 1974, 41004/74

Int. Cl.² C07D *307/58*

U.S. Cl. 260—347.8 **3 Claims**

1. The process for preparing 2,5-dimethyl-3-(2H)-furanone which comprises subjecting diacetyl dimer, 5-acetyl-tetrahydro-2-hydroxy-2,5-dimethyl-3-oxofurane, to hydrolysis in an aqueous solution containing the dimer in a concentration of from 3 to 11 grams thereof per 100 cc of the solution and from

0.04 to 4.0 grams of an acidic catalyst per 100 cc of solution, at a temperature of from 20°C to 120°C, and for a reaction time of from 1 to 8 hours.

3,980,676
METHOD FOR CONTINUOUS PRODUCTION OF PROPYLENE OXIDE

Georges Biola, Venissieux; Alain Fabre, Meyzieu, and Gerard Schneider, Caluire, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Mar. 7, 1975, Ser. No. 556,406

Claims priority, application France, Mar. 13, 1974, 74.09151

Int. Cl.² C07D *301/06, 301/32*

U.S. Cl. 260—348.5 V **7 Claims**

1. The method for the preparation of propylene oxide, which method comprises oxidizing propylene in liquid phase with molecular oxygen or an oxygen containing gas and thence washing the gaseous stream of said reaction with a neutral ester of phosphoric acid at a temperature below the degradation temperature of said ester whereby a greater portion of the oxidation products, propylene and solvent in said gaseous stream is absorbed by said ester of phosphoric acid.

3,980,677
ANTHRAQUINONE DYESTUFFS CONTAINING SULPHONIC ACID GROUPS

Walter Hohmann; Klaus Wunderlich, both of Leverkusen, and Hans-Samuel Bien, Burscheid, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

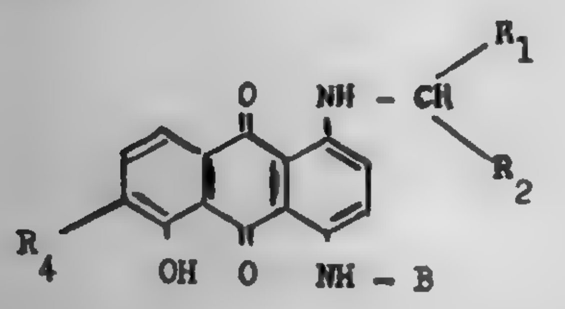
Continuation of Ser. No. 407,784, Oct. 19, 1973, which is a division of Ser. No. 49,156, June 23, 1970, Pat. No. 3,823,168. This application Sept. 18, 1975, Ser. No. 614,524

Claims priority, application Germany, June 27, 1969, 1932647

Int. Cl.² C09B *1/52*

U.S. Cl. 260—373 **2 Claims**

1. Dyestuff which contains sulfonic acid groups and has the following formula:



wherein

- R_1 and R_2 are alkyl of 1–3 carbon atoms or substituted alkyl of 1–3 carbon atoms where the substituent is hydroxy or sulphato;
- R_4 is hydrogen or sulfonic acid; and
- B is alkyl of 1–6 carbon atoms, allyl, hydroxyethyl, methoxyethyl, aminoethyl, methylaminoethyl, w-carboxypropyl, cyanoethyl, sulphatoethyl, cyclohexyl, hydroxycyclohexyl, 4-methoxycyclohexyl, 3-methylcyclohexyl, 4-methylcyclohexyl, or 4-aminocyclohexyl; and B must contain sulfonic acid group when R_4 is hydrogen.

3,980,678
ANTHRAQUINONE DISPERSE DYES

Eiji Yamada, Ibaragi; Masao Nishikuri, Hirakata; Ryuji Kanou, Minoo, and Taizo Ohshima, Sakai, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

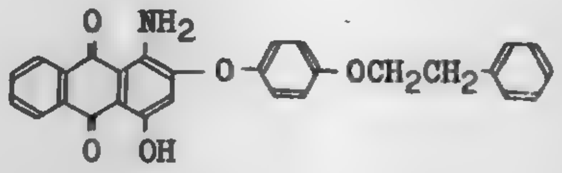
Filed Jan. 28, 1974, Ser. No. 436,896

Claims priority, application Japan, Jan. 31, 1973, 48-13098; Sept. 14, 1973, 48-104060

Int. Cl.² C07C *97/26*

U.S. Cl. 260—380 **2 Claims**

1. A compound of the formula,



3,980,679
PROCESS FOR THE MANUFACTURE OF GLYCIDYL ETHERS OF MONOHYDRIC OR POLYHYDRIC PHENOLS, HAVING IMPROVED PROPERTIES

Wilhelm Becker, Hamburg, Germany, assignor to Hoechst Aktiengesellschaft, Germany

Filed Jan. 17, 1974, Ser. No. 433,995

Claims priority, application Switzerland, Jan. 29, 1973, 1219/73; Oct. 9, 1973, 14340/73

Int. Cl.² C07D *301/28*

U.S. Cl. 260—348.6 **8 Claims**

1. In a process for manufacturing glycidyl ethers from monohydric or polyhydric phenols and excess epichlorohydrin, relative to the amount of phenolic hydroxyl groups, in the presence of a catalyst which is specific for the formation of chlorohydrin ethers from the phenol and epichlorohydrin and from 0.2 to 8 percent by weight of water, based upon the weight of the reaction medium, and then the chlorohydrin is reacted by heating with 0.9 to 1.15 equivalent of solid alkali metal hydroxide per phenolic hydroxyl group to give glycidyl ethers in the presence of 0.001 to 5 percent by weight, based on the amount of phenol employed, of a divalent tin compound, the improvement which comprises

a. in the first stage, conducting the reaction between phenol and the excess epichlorohydrin in the presence of the catalyst specific to the formation of the chlorohydrin in an alkali-free medium at from 50° to 100°C for from 1 to 4 hours, until 50 to 90 percent, based on the phenolic hydroxyl groups, of the chlorohydrin is formed, and thereafter

b. in a second stage, adding to the reaction mixture from stage (a) from 10 to 90 percent by weight of the solid alkali metal hydroxide over the course of 18 to 90 percent of the total time of addition of the solid alkali metal hydroxide, which time is 30 to 300 minutes, while removing the heat of reaction by cooling the mixture or distillation under reflux under reduced pressure in the presence of water of reaction or added water, and thereafter

c. in a third stage, adding the remainder of the solid alkali metal hydroxide, with removal of the heat of reaction and water of reaction or added water from the mixture by azeotropic distillation, and thereafter

d. distilling the excess epichlorohydrin from the glycidyl ether product.

3,980,680
PROCESS FOR THE PREPARATION OF 21-DESOXY-17-ACYLOXY-4-PREGNENES AND OF 21-IODO-21-DESOXY-17-ACYL OXY-4-PREGNENE INTERMEDIATES USEFUL THEREIN

Michael J. Green, East Brunswick, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Aug. 14, 1975, Ser. No. 604,671

Int. Cl.² C07J *5/00*

U.S. Cl. 260—397.45 **10 Claims**

1. The process for the preparation of a 21-desoxy-17-acyloxy-20-ketopregnene which comprises the reaction of a pregnane derivative selected from the group consisting of 17,21-dihydroxy-20-ketopregnene 17,21-orthoester and a 21-iodo-21-desoxy-17-acyloxy-20-ketopregnene with an iodide reagent selected from the group consisting of triphenylsilyl iodide, tri-lower alkylsilyl iodide and triphenylmethyl iodide, in an organic solvent.

3,980,681
PROCESS FOR THE PREPARATION OF 11-β-NITRO-OXYSTEROIDS

Peter Job Sykes, Dept. of Chemistry, University of Edinburgh, West Mains Road, Edinburgh 9N; Gordon Hanley Phillipps, 8, Sudbury Hill Close, Wembley, Middlesex; Stuart Bruce Laing, 10, Burwell Ave., Greenford, Middlesex, and John Peter Turnbull, 56 Grange Park, Ealing, London W 5, all of England

Continuation of Ser. No. 341,104, March 14, 1973, abandoned, which is a continuation of Ser. No. 91,548, Nov. 20, 1970, abandoned. This application Aug. 19, 1974, Ser. No. 498,470

Claims priority, application United Kingdom, Nov. 21, 1969, 57084/69; Oct. 27, 1970, 51028/70

Int. Cl.² C07J *5/00, 1/00*

U.S. Cl. 260—397.45 **14 Claims**

1. A process for the preparation of a 9α-hydroxy-11β-nitrooxy steroid having an aromatic A-ring and carrying at the 1-, 4- and 13-positions H or C_1–C_6 alkyl; at the 3-position C_1–C_6 alkoxy; C_1–C_6 alkoxy substituted by phenyl or nitrophenyl; phenoxy; phenoxy substituted by nitro or methyl; sulphate nitrate, phosphate; or acyloxy selected from the group consisting of R.CO.O— where R is C_1–C_6 alkyl, C_1–C_6 alkyl substituted by phenyl or halo, phenyl or phenyl substituted by nitro or methyl and $R^1SO_2.O$— where R^1 is C_1–C_6 alkyl or phenyl or phenyl substituted by methyl; at the 16 position H, halo, methylene or C_1–C_6 alkyl; and at the 17-position keto or (a) H together with H, C_1–C_6 alkyl, C_1–C_6 alkyl substituted by at least one of keto, protected keto, hydroxy or acyloxy as defined for the 3-position, or (b) C_1–C_6 acyloxy as defined for the 3-position together with H, C_1–C_6 alkyl or C_1–C_6 alkyl substituted by at least one of keto, protected keto, hydroxy or acyloxy as defined for the 3-position, or (c) hydroxy together with H, C_1–C_6 alkyl or C_1–C_6 alkyl substituted by hydroxy or acyloxy as defined for the 3-position, which process comprises oxidising a corresponding 9,11-unsubstituted or 9,11-dehydro steroid with ceric ions in the presence of nitrate ions, provided that the A-ring of said 9,11-unsubstituted or 9,11-dehydro steroid does not carry an ether group together with a methyl group oxidisable under the reaction conditions.

3,980,682
AMINO-CONTAINING POLYMERS

Bernard Danner, Riedisheim, France, and Richard Hochreuter, Oberwil, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Apr. 1, 1974, Ser. No. 456,977

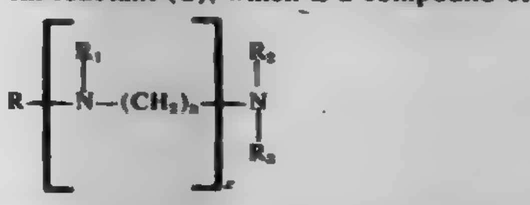
Claims priority, application Switzerland, Apr. 3, 1973, 4740/73

Int. Cl.² C08F *8/06, 8/32*

U.S. Cl. 260—404.5 **28 Claims**

1. A synthetic polymer obtained by a process comprising the steps of:

1. condensing reactant (a), which is a carboxyl group bearing oxidized polyethylene having a molecular weight of between 700 and 7000 and an acid value of between 10 and 120, with reactant (b), which is a primary aliphatic amine containing 1 to 6 hydroxyl groups, at a temperature between 100°C. and 200°C. and in a molar ratio of 0.8 to 1.2 mols of reactant (b) per mol equivalent of carboxyl of reactant (a);
2. condensing the resulting condensate with reactant (c), which is an epihalohydrin, at a temperature between 95°C. and 140°C. and in a molar ratio of 0.5 to 1.2 mols of reactant (c) per mol equivalent of hydroxyl in the condensate of reactants (a) and (b); and
3. condensing the condensate of reactants (a), (b), and (c) with reactant (d), which is a compound of the formula I



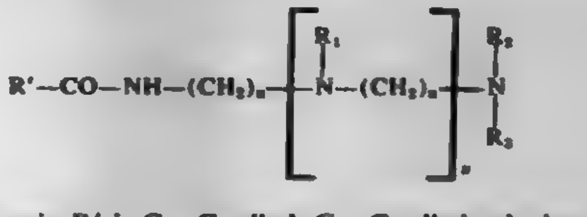
$$R-\left[\overset{\displaystyle R_1}{\overset{|}{N}}-(CH_2)_n\right]_x-\underset{\displaystyle R_3}{\underset{|}{\overset{\displaystyle R_2}{\overset{|}{N}}}} \qquad I$$

wherein R is C_{12}–C_{22}alkyl, C_{12}–C_{22}alkyl substituted by hydroxyl, C_{12}–C_{22}alkenyl or C_{12}–C_{22}alkenyl substituted by hydroxyl,

R_1, R_2 and R_3 are each, independently, hydrogen, C_1–C_3alkyl, C_1–C_3alkyl substituted by hydroxyl or a radical of the formula $(CH(R_4)—CH_2—O)_r—H$ or $(CH_2—CH(R_4)—O)_r—H$ wherein R_4 is hydrogen, methyl or ethyl and r is an integer 2 to 30,

n is an integer 2 or 3, and

x is 0 or an integer 1 to 4, or a compound of formula II



$$R'-CO-NH-(CH_2)_n-\left[\overset{\displaystyle R_1}{\overset{|}{N}}-(CH_2)_n\right]_y-\underset{\displaystyle R_3}{\underset{|}{\overset{\displaystyle R_2}{\overset{|}{N}}}} \qquad II$$

wherein R′ is C_{11}–C_{21}alkyl, C_{11}–C_{21}alkyl substituted by hydroxyl, C_{11}–C_{21}alkenyl or C_{11}–C_{21}alkenyl substituted by hydroxyl,

R_1, R_2, R_3 and n are as defined above with respect to formula I, and

y is 0 or an integer 1 to 3, at a temperature between 100°C. and 150°C. and in a molar ratio of 0.8 to 1.2 mols of reactant (d) per mol equivalent of halohydrin in the condensate of reactants (a), (b) and (c).

3,980,683
PROCESS FOR CARBOXYLATION OF OLEFINS

Hiroshi Ise; Takeo Inagaki, both of Yachiyo; Nobuo Kojima, and Isamu Kadoya, both of Tokyo, all of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Jan. 27, 1975, Ser. No. 544,229

Claims priority, application Japan, Feb. 9, 1974, 49-16663

Int. Cl.² C11C *3/02, 1/00;* **C07C** *67/04*

U.S. Cl. 260—410.9 R **7 Claims**

1. In a process for preparing carboxylic acids, or esters thereof, which comprises the steps of reacting an olefin or a mixture of olefins having from 3 to 30 carbon atoms and either water or an alcohol having up to 20 carbon atoms, wherein the molar ratio of olefin/water or alcohol is in the range of from 0.1*n* to 10*n*/1 and wherein *n* is the number of the hydroxyl groups in said water or alcohol, under a carbon monoxide pressure of at least 5 kg/cm², in the presence of a cobalt carbonyl catalyst, the improvement which comprises: the reaction is carried out in the presence of (a) from 0.5 to 30 moles, per gram atom of cobalt contained in the catalyst calculated as the metal, of pyridine or an alkyl-substituted pyridine or mixture thereof, wherein said alkyl-substituted pyridine has from one to 3 alkyl groups having not more than 3 carbon atoms with the proviso that there is no alkyl group

in the α-position, and in the presence of (b) from 0.5 to 10 moles, per gram atom of cobalt contained in the catalyst calculated as the metal, of vinyl-substituted pyridine.

3,980,684
METALLOCENE INTERCALATES

Martin B. Dines, Westfield, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Nov. 26, 1974, Ser. No. 527,191

Int. Cl.² C07F *7/00, 7/28, 11/00, 13/00*

U.S. Cl. 260—429 CY 23 Claims

1. A composition of matter of the formula

$$TZ_2[M(C_5H_{m-q}X_q)_2]_n$$

in which TZ_2 is a layered metal dichalcogenide in which T is a member of Group IVb, Vb, Sn or mixtures thereof, or is a mixture of Group Vb and VIb wherein Vb is at least 50% of the mixture, and Z is sulfur, selenium or mixtures thereof and in which $[M(C_5H_{m-q}X_q)_2]_n$ is the intercalated metallocene in which M is cobalt, chromium, iridium, rhodium or mixtures thereof, *n* is 0.10 to 0.40, *m* is 5, *q* is 0 to 5 and X is an organic radical which may be the same or different and is selected from the group consisting of C_1–C_{12} linear and branched hydrocarbyls, C_1–C_{12} alkoxy and C_6–C_{18} aryloxy.

3,980,685
MAGNESIUM-ALUMINUM CONTAINING COMPLEXES OF ORGANIC ANIONS OF CENTRAL NERVOUS SYSTEM AFFECTING COMPOUNDS

Shigeo Miyata; Michiko Takata, and Akira Okada, all of Takamatsu, Japan, assignors to Kyowa Chemical Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 499,920, Aug. 23, 1974, abandoned, which is a continuation of Ser. No. 241,009, April 4, 1972, abandoned. This application Sept. 30, 1974, Ser. No. 510,553

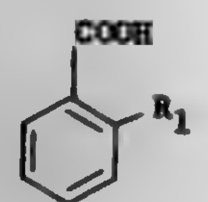
Int. Cl.² C07F *5/06*

U.S. Cl. 260—448 R 4 Claims

1. A compound having a composition of the formula

$$Mg_xAl_y(OH)_{2x+3y-nz}(A)_z \cdot aROH$$

wherein A is a member selected from a mono- or bi-valent anion of a compound of the formula



wherein R_1 is a member selected from the group consisting of hydroxyl, acetyloxy, salicyloxy, 3-trifluoromethylphenylamino and 2,3-dimethylphenylamino; and a combination of said mono- or bivalent anion of the compound and not more than 50 mol %, based on the total anions, of an ion selected from the group consisting of halogen, nitrate, carbonate and sulfate ions, R is a member of the group consisting of hydrogen and ethyl, and *x*, *y*, *z* and *a* are each a positive number satisfying the following relationships:

x is a number from 3 to 10 when *y* is 2;

z is a number from 1.5 to 2.5 when A is a monovalent anion, and from 0.75 to 1.25 when A is a bivalent anion; and

a is a number from 2.5 to 6;

said compound having an X-ray diffraction pattern substantially identical to that indicated below:

dA	hkl
7.62 ~ 21.02	003
3.93 ~ 9.40	006
2.11 ~ 6.91	102
2.34 ± 0.5	105
2.00 ± 0.5	108
1.53 ± 0.05	110
1.50 ± 0.05	113

3,980,686
PROCESS FOR THE PREPARATION OF CHLOROSILANE

Marcel Lefort, Caluire, and Gilbert Marin, Sainte-Foy-les-Lyon, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed July 23, 1975, Ser. No. 598,268

Claims priority, application France, July 26, 1974, 74.26083

Int. Cl.² C07F *7/12*

U.S. Cl. 260—448.2 P 9 Claims

1. Process for the preparation of dichlorosilane and phenyltrichlorosilane, which comprises reacting trichlorosilane and diphenyldichlorosilane in the presence of aluminium chloride, as catalyst, and a small proportion of a co-catalyst which is selected from hydrochloric acid and alumina and mixtures thereof, isolating the dichlorosilane from the reaction medium as it is formed and isolating the phenyltrichlorosilane obtained at the end of the reaction.

3,980,687
INTERMEDIATES FOR THE PREPARATION OF 17-SUBSTITUTED-Δ^4-GONENES

Julien Warnant, Neuilly-sur-Seine; Jean Jolly, Clichy-sous-Bois, and Robert Joly, Montmorency, all of France, assignors to Roussel-UCLAF, Romainville, France

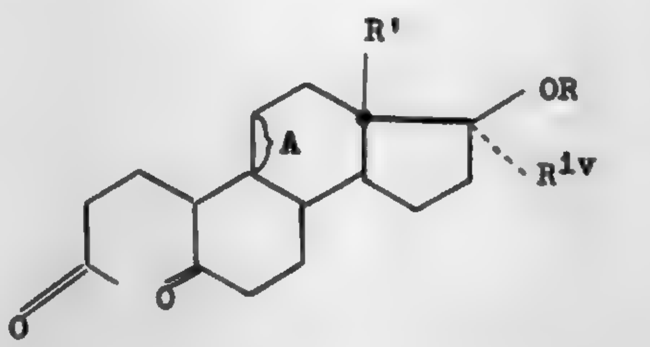
Division of Ser. No. 267,364, June 29, 1972, Pat. No. 3,843,686, which is a division of Ser. No. 63,277, Aug. 12, 1970, Pat. No. 3,702,334, which is a continuation-in-part of Ser. No. 640,507, May 23, 1967, Pat. No. 3,591,606. This application July 18, 1974, Ser. No. 489,616

Claims priority, application France, May 26, 1966, 66.63086; Aug. 30, 1966, 66.74629

Int. Cl.² C07C *69/145, 69/24, 69/61, 69/74*

U.S. Cl. 260—488 B 4 Claims

1. 13β-alkyl-17α-R^{IV}-17β-OR-4,5-seco-gonane-3,5-diones of the formula



wherein R is a member selected from the group consisting of hydrogen and the acyl of an organic carboxylic acid having from 1 to 18 carbon atoms selected from the group consisting of alkanoic acids, alkenoic acids, cycloalkylcarboxylic acids, cycloalkyl-alkanoic acids, phenylalkanoic acids, phenoxyalkanoic acids, and β-ketoalkanoic acids, R' represents an alkyl having from 1 to 4 carbon atoms, R^{IV} is a member selected from the group consisting of lower alkenyl and lower alkynyl, and A is selected from the group consisting of two hydrogens and a double bond.

3,980,688
POLYSILOXANE-POLYOXYALKYLENE BLOCK COPOLYMERS

Carl J. Litteral, Marietta, Ohio, and David L. Mullins, Parkersburg, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sept. 20, 1974, Ser. No. 507,998

Int. Cl.² C07F *7/18*

U.S. Cl. 260—448.8 R 26 Claims

1. A polysiloxane-poly)oxyethylene-oxypropylene) block copolymer consisting essentially of from about 15 to about 35 percent by weight of polysiloxane blocks and from about 85 to about 65 percent by weight of polyoxyalkylene blocks, and further consisting essentially of siloxy units of the formula R_2SiO, siloxy units selected from the group consisting of those of the formulas (R) (Q)SiO and RSiO3/2 and terminal siloxy units selected from the class consisting of those of the formulas $R_3SiO1/2$ and (R_2) (Q)SiO1/2, wherein the average number of total siloxy units per molecule of the polysiloxane-polyoxyalkylene block copolymer ranges from about 20 to about 200, wherein from about 6 to about 15 percent of said total siloxy units are selected from the group consisting of (R) (Q)SiO and (R_2) (Q)SiO1/2 and wherein there are no more than about four RSiO3/2 siloxy units per average polysiloxane molecule, wherein each R individually represents a monovalent hydrocarbon radical or a substituted monovalent hydrocarbon radical, said radicals being free from aliphatic multiple carbon to carbon bonds, and wherein each Q individually represents a polyoxyalkylene polyether block having the formula —MX wherein each M is a bridging group individually selected from the class consisting of —O— and $—C_nH_{2n}O—$ wherein n has a value of 2 or 3, and X is a polyoxyalkylene radical consisting essentially of an admixture of Units A and B of the formula $C_2H_4O)_x(C_3H_6O)_yZ$ wherein Z is a terminal group selected from the class consisting of alkyl, aryl and araklyl radicals, with the proviso that when M is $—C_nH_{2n}O—$ as defined above, Z can also be a terminal acyl radical, the values of *x* and *y* being determined by the following conditions prevailiing for Units A and B;

Unit A representing from about 20 to about 80 percent by weight of low molecular weight polyoxyalkylene polyether based on the total weight of Units A and B in said admixture; said polyether being selected from the class consisting of (i) a polyoxyalkylene copolymer having an average molecular weight in the range of from about 800 to about 2300 wherein about 20 to about 60 weight percent of the oxyalkylene groups of said copolymer are oxyethylene, the remainder of the oxyalkylene groups being oxypropylene, and (ii) a blend of at least two polyoxyalkylene copolymers having different average molecular weights in the range of from about 500 to about 2900 and wherein about 20 to about 60 weight percent of the oxyalkylene groups of the copolymers in said blend are oxyethylene, the remainder of the oxyalkylene groups being oxypropylene, with the proviso that said blend has an average molecular weight in the range of from about 800 to about 2300; and

Unit B representing from about 80 to about 20 percent by weight of high molecular weight polyoxyalkylene polyether based on the total weight of Units A and B in said admixture said polyether being selected from the class consisting of (i) a polyoxyalkylene copolymer having an average molecular weight in the range of from about 3400 to about 5500 wherein about 20 to about 60 weight percent of the oxyalkylene groups of said copolymer are oxyethylene, the remainder of the oxyalkylene groups being oxypropylene, and (ii) a blend of at least two polyoxyalkylene copolymers having different average molecular weights in the range of from about 3000 to about 5500 and wherein about 20 to about 60 weight percent of the oxyalkylene groups of the copolymers in said blend are oxyethylene, the remainder of the oxyalkylene groups being oxypropylene, with the proviso that said blend has an average molecular weight in the range of from about 3400 to about 5500; and with the added proviso that said admixture of units A and B has an average molecular weight in the range of from about 1600 to about 2900.

3,980,689
N-(2,5-DICHLORO-4-THIOCYANATOPHENYL)-β-ALANINE

Stanford S. Pelosi, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Dec. 3, 1975, Ser. No. 637,164

Int. Cl.² C07C *161/03*

U.S. Cl. 260—454 1 Claim

1. The compound N-(2,5-dichloro-4-thiocyanatophenyl)-β-alanine.

3,980,690
PROCESS FOR THE CARBOXYLATION OF ALCOHOLS IN HETEROGENEOUS PHASE

Gioacchino Cipriani, and Emilio Perrotti, both of San Donato Milanese, Italy, assignors to Snamprogetti S.p.A., San Donato Milanese, Italy

Filed July 25, 1974, Ser. No. 491,862

Claims priority, application Italy, Aug. 1, 1973, 27388/73

Int. Cl.² C07C *69/96*

U.S. Cl. 260—463 4 Claims

1. A process of carboxylating an alcohol into the corresponding carbonate by reacting the alcohol with oxygen and carbon monoxide in the presence of a catalyst in the disperse phase, wherein said reactants are fed to a reactor charged with a catalyst consisting of a complex of copper chloride and poly-4-vinylpyridine, causing said reactants to flow over said catalyst, and then withdrawing reaction products and unconsumed reactants from the reactor.

3,980,691
RACEMIC PROSTAGLANDINS OF THE 2-SERIES AND ANALOGS THEREOF

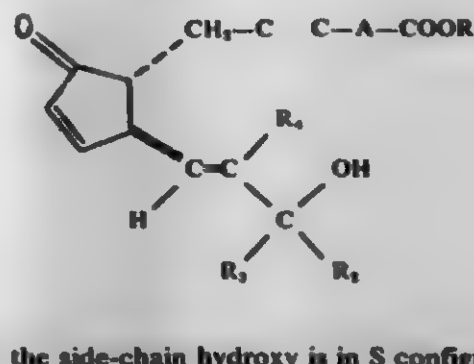
William P. Schneider, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 807,405, March 14, 1969, abandoned. This application Dec. 6, 1974, Ser. No. 530,435

Int. Cl.² C07C *177/00*

U.S. Cl. 260—468 D 12 Claims

1. A racemic compound of the combination of the formula:



wherein the side-chain hydroxy is in S configuration, and the mirror image of that formula; wherein R_1 is hydrogen, alkyl of 1 to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with 1 to 3 chloro or alkyl of 1 to 4 carbon atoms, inclusive; wherein R_2 is $—(CH_2)_a—CH_3$ wherein *a* is 2, 3, 4, 5, or 6, or $—(CH_2)_d—X$ wherein *d* is zero, 1, 2, 3, or 4 and X is isobutyl, tert-butyl, 3,3-difluorobutyl, 4,4-difluorobutyl, or 4,4,4-trifluorobutyl; wherein R_3 and R_4 are hydrogen or alkyl of 1 to 4 carbon atoms, inclusive; wherein A is trimethylene or $—CH_2—Z—$ wherein Z is ethylene substituted with 1 or 2 fluoro, methyl, or ethyl; and pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,980,692
5-OXA-17,18-DEHYDROPROSTAGLANDIN-E$_1$-TYPE ANALOGS

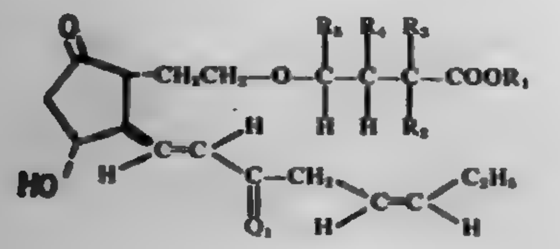
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 361,991, May 21, 1973, Pat. No. 3,931,279. This application Dec. 6, 1974, Ser. No. 530,230

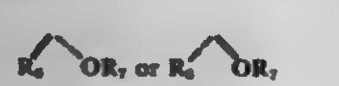
Int. Cl.^{2} C07C *61/38, 69/74, 177/00*

U.S. Cl. 260—468 D 10 Claims

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein Q_1 is



wherein R_6 and R_7 are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different; wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; wherein R_3 is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro; wherein R_2 is hydrogen or fluoro, with the proviso that R_2 is fluoro only when R_3 is hydrogen or fluoro; and wherein R_4 and R_5 are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different, with the proviso that no more than one of R_3, R_4, and R_5 is alkyl; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,980,693
N-(TRIHALOMETHYLTHIO)-CARBAMIC ACID OXIME ESTERS

Engelbert Kuhle, Bergisch Gladbach; Erich Klauke, Odenthal-Hahnenberg; Brigitte Hamburger, Cologne, and Hans Scheinpflug, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

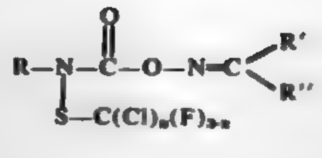
Division of Ser. No. 392,832, Aug. 29, 1973, Pat. No. 3,890,386. This application Feb. 24, 1975, Ser. No. 552,509

Claims priority, application Germany, Sept. 6, 1972, 2243626

Int. Cl.^{2} C07C *149/20, 149/40*

U.S. Cl. 260—470 9 Claims

1. An N-(trihalomethylthio)carbamic acid oxime ester of the formula



$$R-\underset{S-C(Cl)_n(F)_{3-n}}{\underset{|}{N}}-\overset{O}{\overset{\|}{C}}-O-N=C\begin{matrix}R'\\R''\end{matrix}$$

in which

R is alkyl of up to 4 carbon atoms; or phenyl optionally carrying at least one halogen, nitro, C_1–C_6 alkyl, trifluoromethyl or C_1–C_6 alkoxy radical;

R′ is alkyl or alkenyl of up to 20 carbon atoms optionally substituted by an alkoxycarbonyl with a total of up to 5 carbon atoms or an amidocarbonyl radical; cyclohexyl; phenyl optionally carrying at least one halogen, nitro, trifluoromethyl, C_1–C_6 alkyl or C_1–C_6 alkoxy radical; halogen; alkoxycarbonyl with a total of up to 7 carbon atoms; or amidocarbonyl;

R″ is alkyl or alkenyl of up to 20 carbon atoms substituted by an alkoxycarbonyl with a total of up to 5 carbon atoms; or alkoxycarbonyl with a total of up to 7 carbon atoms; and

n is 0, 1, 2 or 3.

3,980,694
4-OXA PHENYL-SUBSTITUTED PGA COMPOUNDS

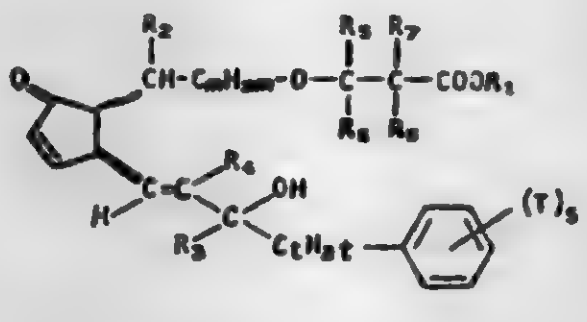
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 459,759, April 11, 1974, Pat. No. 3,931,289, which is a continuation of Ser. No. 185,448, Sept. 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 103,338, Dec. 31, 1970, abandoned. This application Oct. 23, 1975, Ser. No. 625,178

Int. Cl.^{2} C07C *69/76*

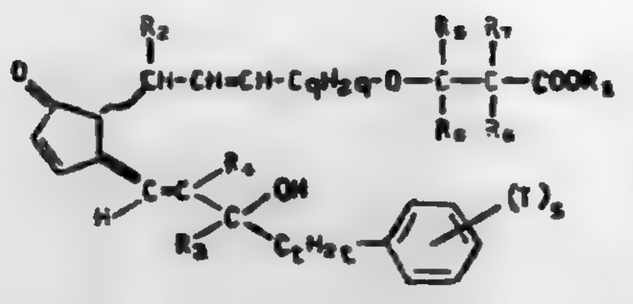
U.S. Cl. 260—473 A 28 Claims

1. A compound of the formula:



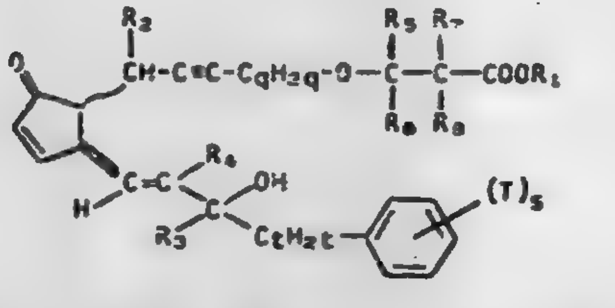
wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the 3-position with 3 chloro, 2 or 3 bromo, or 1, 2, or 3 iodo; wherein R_2, R_3, R_4, R_5, R_6, R_7, and R_8 are hydrogen or alkyl of one to 4 carbon atoms; inclusive; wherein C_mH_{2m} is alkylene of one to 9 carbon atoms, inclusive, with one to 4 carbon atoms, inclusive, between —CHR_2— and —O—; wherein C_tH_{2t} represents (1) a valence bond or (2) alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between —CR_3OH— and the ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_9, wherein R_9 is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or tetrahydropyranyl, and *s* is zero, one, 2, or 3, with the proviso that no more than two T are other than alkyl; and wherein ~ indicates attachment of the group to the ring in alpha or beta configuration; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

23. A compound of the formula:



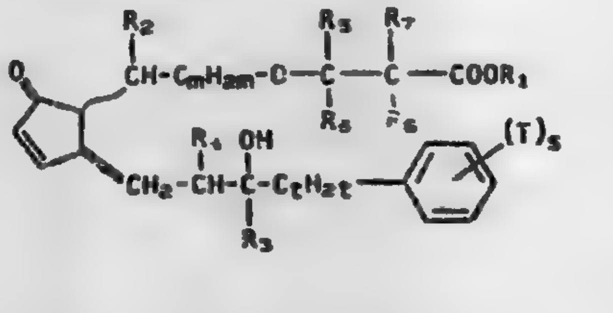
wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3 chloro, 2 or 3 bromo, or 1, 2, or 3 iodo; wherein R_2, R_3, R_4, R_5, R_6, R_7, and R_8 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein C_qH_{2q} is alkylene of one to 7 carbon atoms, inclusive, with one or 2 carbon atoms between —CH═CH— and —O—; wherein C_tH_{2t} represents (1) a valence bond or (2) alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between —CR_3OH— and the ring; wherein T is alkyl of one to 4 carbon atoms. inclusive, fluoro, chloro, trifluoromethyl, or —OR_9, wherein R_9 is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or tetrahydropyranyl, and *s* is zero, one, 2, or 3, with the proviso that no more than two T are other than alkyl; and wherein ~ indicates attachment of the group to the ring in alpha or beta configuration; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen,

25. A compound of the formula:



wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3 chloro, 2 or 3 bromo, or 1, 2, or 3 iodo; wherein R_2, R_3, R_4, R_5, R_6, R_7, and R_8 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein C_qH_{2q} is alkylene of one to 7 carbon atoms, inclusive, with one or 2 carbon atoms between —C C— and —O—; wherein C_tH_{2t} represents (1) a valence bond or (2) alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between —CR_3OH— and the ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_9, wherein R_9 is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or tetrahydropyranyl, and *s* is zero, one, 2, or 3, with the proviso that no more than two T are other than alkyl; and wherein ~ indicates attachment of the group to the ring in alpha or beta configuration; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

27. A compound of the formula:



wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3 chloro, 2 or 3 bromo, or 1, 2 or 3 iodo; wherein R_2, R_3, R_4, R_5, R_6, R_7, and R_8 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein C_mH_{2m} is alkylene of one to 9 carbon atoms, inclusive, with one to 4 carbon atoms, inclusive, between —CHR_2— and —O—; wherein C_tH_{2t} represents (1) a valence bond or (2) alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between —CR_3OH— and the ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or—OR_9, wherein R_9 is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or tetrahydropyranyl, and *s* is zero, one, 2, or 3, with the proviso that no more than two T are other than alkyl; and wherein ~ indicates attachment of the group to the ring in alpha or beta configuration; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,980,695
METHYL-PENTENYL SULPHONES

Pierre Chabardés, Lyon; Marc Julia, Paris, and Albert Menet, La Mulatiere, all of France, assignors to Rhone-Poulenc S.A., Paris, France

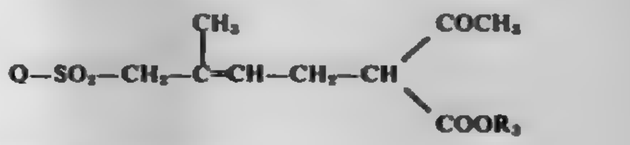
Filed Apr. 16, 1973, Ser. No. 351,342

Claims priority, application France, Apr. 18, 1972, 72.13588

Int. Cl.^{2} C07C *147/02, 147/04*

U.S. Cl. 260—481 R 3 Claims

1. A sulphone of the formula:



$$Q-SO_2-CH_2-\overset{CH_3}{\overset{|}{C}}=CH-CH_2-CH\begin{matrix}COCH_3\\COOR_3\end{matrix}$$

in which R_3 is ethyl and

Q is 3-methylbut-2-enyl or geranyl.

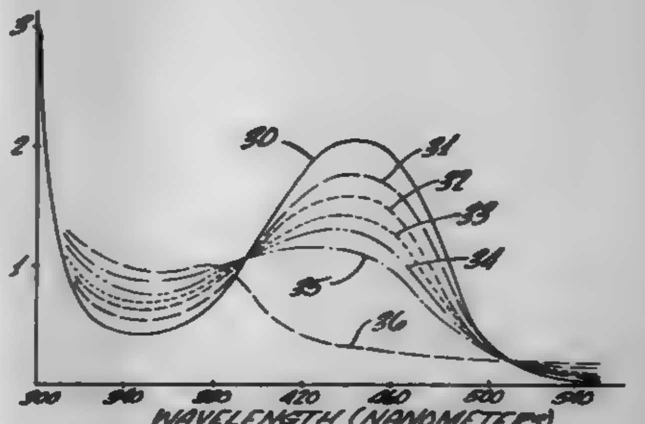
3,980,696
PHOTODOSIMETER FILM BADGE

Robert J. Anderson, Villa Park, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed July 25, 1974, Ser. No. 491,875

Int. Cl.^{2} B32B *27/06, 27/36*

U.S. Cl. 428—483 10 Claims



1. A dosimeter for use in the treatment of hyperbilirubinemia by phototherapy comprising:

a. a thin film of uniform thickness comprising dissolved bilirubin bound in a polymeric base, said bilirubin being substantially only the IX-alpha isomer thereof in sufficient concentration to cause a detectable change in the optical density of said film upon exposure to light having a wavelength of about 425–500 nanometers; and,

b. an optically transparent substrate impervious to the passage of oxygen and sealing said film whereby oxygen is excluded from contacting said film while light striking said film will cause photodecomposition of the bilirubin without transforming the bilirubin into biliverdin.

3. A dosimeter according to claim 1 having an action spectrum which is the same as the action spectrum for the photodecomposition of serum bilirubin in the human body.

3,980,697
BUTYRIC ACID ESTERS

Moustafa El-Chahawi, Troisdorf; Uwe Prange, Neiderkassel-Ranzel; Hermann Richtzenheim, Much-Schwellenbach, and Wilhelm Vogt, Cologne-Sulz, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Cologne, Germany

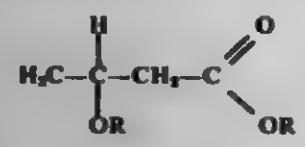
Filed Jan. 24, 1975, Ser. No. 544,022

Claims priority, application Germany, Feb. 1, 1974, 2404776

Int. Cl.² C07C *69/66*

U.S. Cl. 260—484 R **19 Claims**

1. Method of preparing butyric acid ester of the formula:



$$H_3C-\underset{OR}{\overset{H}{C}}-CH_2-C\overset{\displaystyle /\!\!/ O}{\underset{\displaystyle \backslash OR}{}}$$

wherein each R is alkyl, alkyl having an alkoxy substituent, or cycloalkyl, and the R's are the same, which comprises contacting an allyl halide with carbon monoxide, and alcohol of the formula ROH wherein R is as above, and an alkali alcoholate of the same alcohol at a temperature and pressure and for a time sufficient for reaction thereof to produce said butyric acid ester, in the presence of a catalyst for the reaction comprising cobalt or metal carbonyl, at a pH of 10 – 14.

3,980,698
RESOLUTION OF AMINES

Yoshio Suzuki, Amagasaki, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

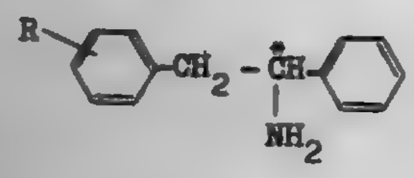
Filed Apr. 27, 1970, Ser. No. 32,397

Claims priority, application Japan, May 14, 1969, 44-37208

Int. Cl.² C07C *101/22*

U.S. Cl. 260—501.12 **6 Claims**

1. A process for the optical resolution of dl-α-phenyl-β-(lower alkylphenyl)ethylamine, which comprises contacting a dl-α-phenyl-β-(lower alkylphenyl)ethylamine of the formula,



wherein R is a lower alkyl having 1 to 4 carbon atoms, with L-aspartic acid to form diastereoisomeric salts of d-α-phenyl-β-(lower alkylphenyl)ethylammonium L-aspartate and l-α-phenyl-β-(lower alkylphenyl)ethylammonium-L-aspartate, subjecting the formed diastereoisomeric salts to the fractional crystallization in an aqueous mixture composed of water and a water-miscible organic solvent to separate the d-amine salt from the l-amine salt, and then contacting the individual diastereoisomeric salt with alkali to give d-α-phenyl-β-(lower alkylphenyl)ethylamine and l-α-phenyl-β-(lower alkylphenyl)ethylamine.

3,980,699
2-NAPHTHYL ACETIC ACID DERIVATIVES

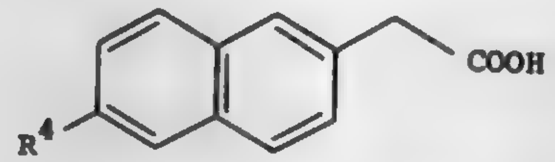
John H. Fried, and Ian T. Harrison, both of Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama

Division of Ser. No. 195,878, Nov. 4, 1974, Pat. No. 3,896,157, which is a division of Ser. No. 694,771, Dec. 7, 1967, abandoned, which is a continuation-in-part of Ser. No. 608,997, Jan. 13, 1967, abandoned. This application Aug. 5, 1974, Ser. No. 494,652

Int. Cl.² C07C *63/592, 69/76*

U.S. Cl. 260—515 R **4 Claims**

1. A compound selected from the group of compounds represented by the formula:



(XI)

wherein R^4 is cycloalkyl having 3 to 7 carbon atoms; the alkyl esters thereof where the alkyl moiety has 1 to 12 carbon atoms; and the pharmaceutically acceptable addition salts thereof.

3,980,700
PROSTAGLANDIN INTERMEDIATES AND OPTICALLY ACTIVE ISOMERS THEREOF

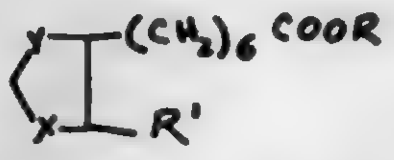
Masateru Miyano, Morton Grove, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 187,508, Oct. 7, 1971, Pat. No. 3,888,905, which is a continuation-in-part of Ser. No. 799,965, Feb. 17, 1969, abandoned. This application Mar. 24, 1975, Ser. No. 561,647

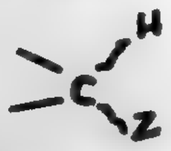
Int. Cl.² C07C *65/14*

U.S. Cl. 260—520 B **6 Claims**

1. A compound of the formula



wherein R is hydrogen or a lower alkyl, R′ is a, α,β-dihydroxyphenethyl, or phenethyl radical, Y is carbonyl, hydroxyiminomethylene, or semicarbazonomethylene radical, and X is a carbonyl radical or a radical of the formula



with Z being hydroxy, (−)-menthoxyacetoxy, (−)-O-methylmendeloxy, (+)-Omethylmandeloxy, (lower alkanoyl)oxy or chloro(lower alkanoyl)oxy and the wavy lines represent the α and β stereochemical configuration or the racemic mixture.

3,980,701
EXTRACTION OF CARBOXYLIC ACIDS FROM DILUTE AQUEOUS SOLUTIONS

Robert R. Grinstead, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 467,328, May 6, 1974, which is a division of Ser. No. 285,546, Aug. 31, 1972, Pat. No. 3,816,524. This application Nov. 4, 1975, Ser. No. 628,620

Int. Cl.² C07C *51/48, 121/407*

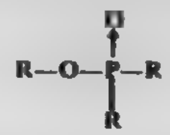
U.S. Cl. 260—527 R **2 Claims**

1. A process for the recovery of lower carboxylic acids from dilute aqueous solution, comprising:

contacting said aqueous solution with a water-immiscible, liquid organic solvent for said acid,

said aqueous solution having a lower carboxylic acid content of two percent or less by weight, said content consisting of one or more two or four carbon mono- or dicarboxylic acids substituted with from zero to three chlorines or fluorines, or with zero or one hydroxyl, oxo, cyano, methoxyl or ethoxy group, the carbon to oxygen atomic ratio in each of said acids being not less than 1.0 nor greater than 2.0,

said organic solvent comprising a total of at least one weight percent of one or more polar extractants of the formula:



$$R-O-\underset{R}{\overset{O\atop\uparrow}{P}}-R$$

wherein each R is a C_2 to C_{12} alkyl group and the total number of carbons in the molecule is from 10 to 36,

and separating the resulting loaded extractant and raffinate solutions.

3,980,703
EXTRACTION OF CARBOXYLIC ACIDS FROM DILUTE AQUEOUS SOLUTIONS

Robert R. Grinstead, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 467,328, May 6, 1974, which is a division of Ser. No. 285,546, Aug. 31, 1972, Pat. No. 3,816,524. This application Nov. 4, 1975, Ser. No. 628,616

Int. Cl.² C07C *51/48, 121/407*

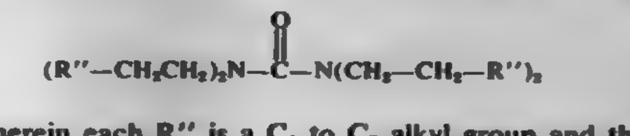
U.S. Cl. 260—527 R **2 Claims**

1. A process for the recovery of lower carboxylic acids from dilute aqueous solution, comprising:

contacting said aqueous solution with a water-immiscible, liquid organic solvent for said acid,

said aqueous solution having a lower carboxylic acid content of two percent or less by weight, said content consisting of one or more two to four carbon mono- or dicarboxylic acids substituted with from zero to three chlorines or fluorines, or with zero or one hydroxyl, oxo, cyano, methoxyl or ethoxyl group, the carbon to oxygen atomic ratio in each of said acids being not less than 1.0 nor greater than 2.0,

said organic solvent comprising a total of at least one weight percent of one or more polar extractants of the formula:



$$(R''-CH_2CH_2)_2N-\overset{O}{\overset{\|}{C}}-N(CH_2-CH_2-R'')_2$$

wherein each R″ is a C_1 to C_7 alkyl group and the total number of carbons in the molecule is from 12 to 36,

and separating the resulting loaded extractant and raffinate solutions.

3,980,702
EXTRACTION OF CARBOXYLIC ACIDS FROM DILUTE AQUEOUS SOLUTIONS

Robert R. Grinstead, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 467,328, May 6, 1974, which is a division of Ser. No. 285,546, Aug. 31, 1972, Pat. No. 3,816,524. This application Nov. 4, 1975, Ser. No. 628,707

Int. Cl.² C07C *51/48, 121/407*

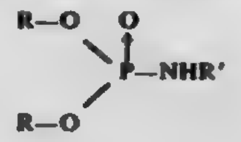
U.S. Cl. 260—527 R **3 Claims**

1. A process for the recovery of lower carboxylic acids from dilute aqueous solution, comprising:

contacting said aqueous solution with a water-immiscible, liquid organic solvent for said acid,

said aqueous solution having a lower carboxylic acid content of two percent or less by weight, said content consisting of one or more two or four carbon mono- or dicarboxylic acids substituted with from zero to three chlorines or fluorines, or with zero or one hydroxyl, oxo, cyano, methoxyl or ethoxyl group, the carbon to oxygen atomic ratio in each of said acids being not less than 1.0 nor greater than 2.0,

said organic solvent comprising a total of at least one weight percent of one or more polar extractants of the formula:



wherein each R is a C_2 to C_{12} alkyl and R′ is cyclohexyl,

and separating the resulting loaded extractant and raffinate solutions.

3,980,704
EXTRACTION OF CARBOXYLIC ACIDS FROM DILUTE AQUEOUS SOLUTIONS

Robert R. Grinstead, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 467,328, May 6, 1974, which is a division of Ser. No. 285,546, Aug. 31, 1972, Pat. No. 3,816,524. This application Nov. 4, 1975, Ser. No. 628,615

Int. Cl.² C07C *51/48, 121/407*

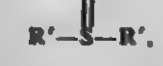
U.S. Cl. 260—527 R **3 Claims**

1. A process for the recovery of lower carboxylic acids from dilute aqueous solution, comprising:

contacting said aqueous solution with a water-immiscible, liquid organic solvent for said acid,

said aqueous solution having a lower carboxylic acid content of two percent or less by weight, said content consisting of one or more two to four carbon mono- or dicarboxylic acids substituted with from zero to three chlorines or fluorines, or with zero or one hydroxyl, oxo, cyano, methoxyl or ethoxyl group, the carbon to oxygen atomic ratio in each of said acids being not less than 1.0 nor greater than 2.0,

said organic solvent comprising a total of at least one weight percent of one or more polar extractants of the formula:



$$R'-\overset{O}{\overset{\|}{S}}-R',$$

wherein each R′ is a C_3 to C_{12} alkyl group and the total number of carbons in the molecule is at least 8;

and separating the resulting loaded extractant and raffinate solutions.

3,980,705
PURIFICATION OF ROBENIDINE HYDROCHLORIDE

Don Wesley Long, Trenton, and Robert Arthur Ralston, Lebanon, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 19, 1975, Ser. No. 578,574
Int. Cl.² C07C *133/10*

U.S. Cl. 260—564 F **5 Claims**

1. The process of purifying crude 1,3-bis(4-chlorobenzylideneamino)guanidine hydrochloride contaminated with 1,2,3-tris(4-chlorobenzylideneamino)guanidine hydrochloride which comprises the steps of:

a. slurrying the crude 1,3-bis(4-chlorobenzylideneamino)-guanidine hydrochloride in a suitable stirred solvent;
b. adjusting the apparent pH of said slurry to about 4.6;
c. adding to said slurry from 1 to 4 molar equivalents of a suitable base selected from the group consisting of sodium hydroxide, potassium hydroxide, sodium bicarbonate, sodium carbonate, triethylamine, trimethylamine, and 1,3-bis(4-chlorobenzylideneamino)guanidine per mole of 1,2,3-tris(4-chlorobenzylideneamino)guanidine hydrochloride present in said crude 1,3-bis-(4-chlorobenzylideneamino)guanidine hydrochloride over a period of from 10 minutes to about a few hours;
d. stirring said slurry at from about 20°C. to about 30°C. for a period of from about 10 minutes to about a few hours after the addition of the base is completed; and
e. recoverying the insoluble 1,3-bis(4-chlorobenzylideneamino)guanidine hydrochloride therefrom.

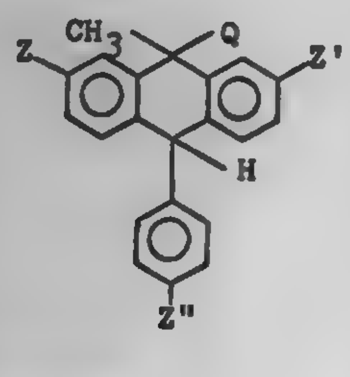
3,980,706
SYNTHESIS OF 2,7-BISDIMETHYLAMINO-10-P-DIMETHYLAMINOPHENYL-9,10-DIHYDRO-9,9-DIMETHYLANTHRACENE

Peter J. Mendron, Cleveland, Ohio, assignor to Horizons Incorporated a division of Horizons Research Incorporated, Cleveland, Ohio

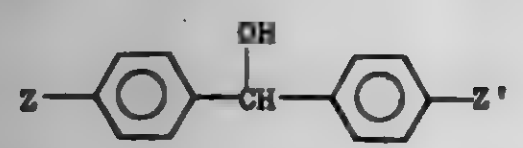
Filed Nov. 6, 1975, Ser. No. 629,236
Int. Cl.² C07C *85/24*

U.S. Cl. 260—576 **3 Claims**

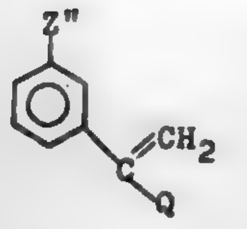
1. A method for synthesizing a 2,7-bis-alkylamine-9,10-dihydro-9,9-dialkylanthracene represented by the general formula:



which comprises reacting:



wherein Z and Z' are each selected from the group consisting of H and dialkylamino and at least one of Z and Z' is a dialkylamino group; with



wherein Z'' is selected from the group consisting of H and dialkylamino; Q represents an alkyl group, and thereafter pouring the reacted mixture into concentrated sulfuric acid, maintained at the temperature of melting ice;

then neutralizing the resulting product with a mixture of alkali and cracked ice; and

recovering the resulting anthracene.

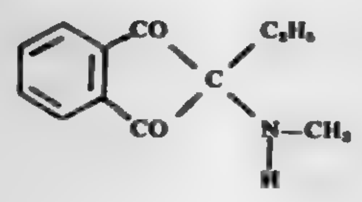
3,980,707
METHYLAMINO DERIVATIVE OF 2-ETHYLINDANDIONE-1,3 AND THE HYDROCHLORIDE THEREOF

Gustav Yanovich Vanags, deceased, late of Riga, U.S.S.R.; Yan-Voldemar Yanovich Ozol, Riga, U.S.S.R.; Avgust Karlovich Aren, Riga, U.S.S.R.; Skaidrite Karlovna German, Riga, U.S.S.R.; by Yan-Voldemar Yanovich Ozol, administrator, Riga, U.S.S.R.; by Avgust Karlovich Aren, administrator, Riga, U.S.S.R.; by Skaidrite Karlovna German, administrator, Riga, U.S.S.R.; by Gunar Gustavovich Vanags, administrator, Riga, U.S.S.R., and by Elga Vilgelmovna Vanagas, administratrix, Riga, U.S.S.R., assignors to Institut Organicheskogo Sinteza, Riga, U.S.S.R.

Continuation of Ser. No. 697,278, Dec. 27, 1967, abandoned. This application May 22, 1973, Ser. No. 362,761
Int. Cl.² C07C *97/10*

U.S. Cl. 260—577 **2 Claims**

1. The compound



3,980,708
PROCESS FOR PREPARING ALPHA-SUBSTITUTED ACETALDEHYDES

Alan Owen Pittet, Atlantic Highlands, and Erich Manfred Klaiber, Neptune, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 507,414, Sept. 19, 1974. This application July 8, 1975, Ser. No. 594,100
Int. Cl.² C07C *45/00*

U.S. Cl. 260—598 **4 Claims**

1. A process for preparing 2,2,6-trimethyl-1-cyclohexen-1-ylacetaldehyde consisting essentially of the step of intimately admixing hydrogen peroxide, an inorganic base and beta-ionone, said hydrogen peroxide being in the form of from 10 up to 50% aqueous hydrogen peroxide; said inorganic base being selected from the group consisting of alkali metal hydroxides and alkali metal carbonates; and the mole ratio of hydrogen peroxide:beta ionone being from about 1.1:1 up to about 3:1.

3,980,709
CATALYST FOR PREPARATION OF α,β-UNSATURATED ALDEHYDES AND PROCESS FOR PREPARING THE ALDEHYDES

Masayoshi Kubo, and Kazuyuki Matsuoka, both of Saitama, Japan, assignors to Daicel, Ltd., Osaka, Japan

Filed Dec. 9, 1974, Ser. No. 530,747

Claims priority, application Japan, Dec. 11, 1973, 48-139335

Int. Cl.² B01J *23/78*; C07C *45/04*

U.S. Cl. 260—604 R **6 Claims**

1. In a catalyst composition consisting essentially of oxides of elements as active catalyst constituents, wherein said elements comprise molybdenum, bismuth, at least one transition metal selected from the group consisting of iron, nickel and cobalt, and potassium, said catalyst composition being prepared by mixing aqueous solutions of water-soluble salts of said elements, and then drying the mixture to obtain the solids and calcining the solids to obtain the catalyst composition, the improvement which comprises: said catalyst composition is prepared by incorporatingammonium rhodanide into at least one of said aqueous solutions.

3,980,710
METHYLTRICARBORANYLMETHYL PERCHLORATE

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Scretary of the Army, Washington, D.C.

Filed Dec. 23, 1974, Ser. No. 535,333
Int. Cl.² C07F *5/02*

U.S. Cl. 260—606.5 B **1 Claim**

1. Methyltricarboranylmethyl perchlorate.

3,980,711
PRODUCTION OF METHYLPHOSPHINE OXIDES

Bernd Lippsmeier, Hurth-Knapsack; Klaus Hestermann, Erftstadt Bliesheim, and Gero Heymer, Erftstadt Liblar, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

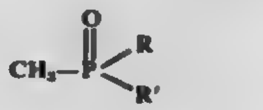
Filed Feb. 12, 1975, Ser. No. 549,174

Claims priority, application Germany, Feb. 16, 1974, 2407460

Int. Cl.² C07F *9/02*

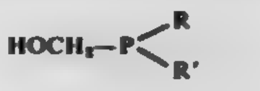
U.S. Cl. 260—606.5 P **9 Claims**

1. A process for making methylphosphine oxides of the general formula (I)



$$CH_3-\overset{O}{\overset{\|}{P}}{<}^{R}_{R'} \qquad (I)$$

from hydroxymethylphosphines of the general formula (II)



$$HOCH_2-P{<}^{R}_{R'} \qquad (II)$$

in which formula R and R' each stand for identical or different alkyl-, cycloalkyl-, aralkyl- or aryl groups having from 1 to 18 carbon atoms,

or carrying substituents being inert under the reaction conditions, or in which R or R' stands for CH_2OH-groups, which process comprises subjecting the hydroxy-methylphosphines to a rearrangement reaction with the aid of radical forming agents selected from the group consisting of peroxy compounds, azo-compounds, ultra violet light and gamma rays.

3,980,712
ORGANIC PEROXIDES THEIR PREPARATION AND THEIR APPLICATIONS

Egeo Sacrini, and Claudio Cavallotti, both of Milan, Italy, assignors to The B. F. Goodrich Company, Akron, Ohio

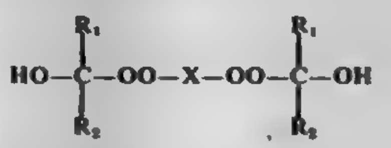
Division of Ser. No. 62,128, Aug. 8, 1970, Pat. No. 3,775,465. This application June 26, 1973, Ser. No. 374,009

Claims priority, application Italy, Aug. 12, 1969, 20839/69

Int. Cl.² C07C *179/00*

U.S. Cl. 260—610 R **8 Claims**

1. A peroxide of the formula:



$$HO-\overset{R_1}{\underset{R_2}{\overset{|}{\underset{|}{C}}}}-OO-X-OO-\overset{R_1}{\underset{R_2}{\overset{|}{\underset{|}{C}}}}-OH$$

wherein each R_1 is alkyl having 1–5 carbon atoms; each R_2 is alkylene alkoxy carbonyl, wherein each alkylene and alkoxy have 1–4 carbon atoms; and X is phenylene or phenylenedialkylene.

3,980,713
STYRYL COMPOUNDS AND PROCESS FOR PRODUCING THE SAME

Daisaku Matsunaga, Yono, and Mitsukuni Sumitani, Chuo Soka, both of Japan, assignors to Nippon Kayaku Co., Ltd., Tokyo, Japan

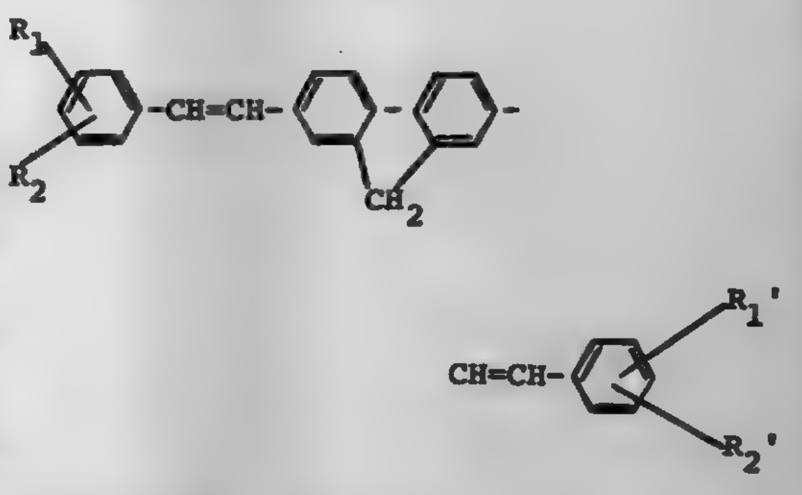
Filed May 17, 1973, Ser. No. 361,127

Claims priority, application Japan, May 19, 1972, 47-49120

Int. Cl.² C07C *43/20*

U.S. Cl. 260—612 R **3 Claims**

1. A compound of the formula,



wherein R_1 and R_1' may be the same or different, representing a substituent selected from the group consisting of hydrogen, chlorine, lower alkyl, methoxy and ethoxy, and R_2 and R_2' may be the same or different, representing a substituent selected from the group consisting of hydrogen, chlorine and lower alkyl.

3,980,714
2,2,2-TRIFLUORO-1-CHLOROETHYL ETHERS AND PROCESS FOR PREPARING THEM

Günther Siegemund, Hofheim, Taunus, and Roman Muschaweck, Frankfurt am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 8, 1974, Ser. No. 495,898

Claims priority, application Germany, Aug. 10, 1973, 2340561

Int. Cl.² C07C *43/12*

U.S. Cl. 260—614 F **3 Claims**

1. A 2,2,2-trifluoro-1-chloroethyl ether of the formula

$CF_3CHCl—OR,$

wherein R is methyl or ethyl.

3,980,715

NONIONIC FLUOROCHEMICAL SURFACTANTS

Alex J. Szur, North Plainfield, N.J., assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Mar. 21, 1975, Ser. No. 560,698

Int. Cl.^{2} C07C *43/12*

U.S. Cl. 260—615 F **1 Claim**

1. The surfactant of the formula

$(CF_3)_2CFO(CH_2)_3O(CH_2CH_2O)_yH$

wherein y is an integer of from about 1 to about 20.

3,980,716

PRODUCTION OF ORTHO-PHENYLPHENOL FROM CYCLOHEXANONE

Christopher Stuart Elliott, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 805,028, March 6, 1969, abandoned. This application Apr. 2, 1973, Ser. No. 346,857

Claims priority, application United Kingdom, Oct. 28, 1968, 51086/68; Mar. 15, 1968, 12646/68

Int. Cl.^{2} C07C *45/00, 37/06*

U.S. Cl. 260—620 **12 Claims**

1. In a process for the production of orthophenylphenol which comprises reacting, in a first stage, cyclohexanone to produce 2-(1-cyclohexenyl) cyclohexanone, separating the 2-(1-cyclohexenyl) cyclohexanone produced thereby, and, in a second stage, dehydrogenating the separated 2-(1-cyclohexenyl) cyclohexanone so produced to orthophenylphenol;

the improvement in which, in the first stage, the cyclohexanone is reacted at a temperature in the range of 50° to 250°C in the liquid phase with a catalytic amount of a metal compound in which the metal is selected from the group consisting of titanium, vanadium, chromium, manganese, iron, cobalt, nickel, copper, zinc, zirconium, molybdenum, cadmium, tin and tungsten and the compound is selected from the group consisting of a metal salt of a hydrocarbon aliphatic carboxylic acid, the metal salt of naphthenic acid, a metal alkoxide, a polyacid of the metal, heteropolyacid of the metal, the acetylacetonate complex of the metal, and an organic complex of the metal with ethylenediamine tetra-acetic acid.

3,980,717

MANUFACTURE OF PARA-NITRO-META-CRESOL FROM META/PARA-CRESOL MIXTURES

Lee A. Sublushey, Hockessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed June 30, 1971, Ser. No. 158,594

Int. Cl.^{2} C07C *79/26*

U.S. Cl. 260—622 R **11 Claims**

1. A process for separating m-cresol moiety and p-cresol moiety in a mixture of m- and p-cresols, which comprises subjecting said mixture to nitration whereby a reaction mixture comprising at least p-nitro-m-cresol is formed, and separating from said reaction mixture a product consisting essentially of p-nitro-m-cresol.

3,980,718

PRODUCTION OF ALCOHOLS BY REDUCTION OF CARBONYL COMPOUNDS WITH A CRYSTALLINE ALUMINOSILICATE-ISOPROPANOL SYSTEM

Joseph Shabtai, Rehovot, Israel, and Gerhard Martin Julius Schmidt, deceased, late of Rehovot, Israel, by Ester Schmidt, executrix, assignors to Yeda Research & Development Co. Ltd., Rehovot, Israel

Filed Jan. 10, 1972, Ser. No. 216,767

Claims priority, application Israel, Jan. 13, 1971, 35994; June 16, 1971, 37077

Int. Cl.^{2} C07C *47/20, 47/02*

U.S. Cl. 260—631.5 **12 Claims**

1. A process for the production of 3 to 20 carbon atom unsubstituted aliphatic alcohols which are saturated or contain an unconjugated double bond which comprises reducing at a temperature in the range of 25° to 250° C. and a space velocity between 0.5 and 20 liters per hour a member of the group consisting of the corresponding 3 to 20 carbon atom unsubstituted aliphatic aldehydes and ketones by means of a two component hydrogen transfer system comprising a porous crystalline aluminosilicate (molecular sieve zeolite) having an intracrystalline channel system with a pore size of 5 to 13 A and having adsorbed therein isopropanol, which compound acts within the intracrystalline channel system of the molecular sieve as a hydrogen-donor agent.

3,980,719

PROCESS FOR OBTAINING XYLITOL FROM NATURAL PRODUCTS CONTAINING XYLAN

Hans Buckl, Freising; Rudolf Fahn, Moosburg, and Carl Ernst Hofstadt, Munich, all of Germany, assignors to Sud-Chemie AG, Munich, Germany

Continuation of Ser. No. 112,481, Feb. 3, 1971, abandoned. This application Jan. 4, 1974, Ser. No. 430,840

Claims priority, application Germany, Feb. 9, 1970, 2006851

Int. Cl.^{2} C07C *29/00, 29/24*

U.S. Cl. 260—635 C **7 Claims**

1. Process for preparing xylitol which consists essentially of:

a. acid hydrolyzing a xylan containing material to produce a solution containing xylose and acetic acid;
b. recovering unhydrolyzed organic residues by filtration.
c. removing hydrolyzing acid;
d. removing most, if any, proteins, tannins and pectins from said solution by contacting the same with an adsorbent;
e. evaporating said purified solution under vacuum to a viscous, virtually water-free syrup, thereby removing substantially all of the acetic acid in said solution;
f. diluting said syrup with water and adjusting the pH of the resulting diluted solution to a value of from about 6.5 to about 7.5;
g. hydrogenating xylose in said diluted solution in the presence of a Raney nickel hydrogenation catalyst under pressure to produce a solution containing xylose; and
h. recovering xylitol from the xylitol containing solution.

3,980,720

METHOD OF PRODUCING DIOL BY HYDROGENOLYSIS OF PEROXIDE POLYMERS WITH REACTIVATION OF RANEY NICKEL CATALYST

Shunsuke Mabuchi; Kenji Tsuzuki; Hideaki Matsunaga; Sadami Shimizu, and Makoto Sumita, all of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Division of Ser. No. 427,683, Dec. 26, 1973, Pat. No. 3,896,051. This application Dec. 20, 1974, Ser. No. 535,125

Claims priority, application Japan, Dec. 25, 1972, 47-129219

The portion of the term of this patent subsequent to July 22, 1992, has been disclaimed.

Int. Cl.^{2} C07C *29/00;* **B01J** *25/04*

U.S. Cl. 260—635 R **6 Claims**

1. A method for the hydrogenolysis of an organic peroxide polymer which comprises mixing a solution of the organic peroxide polymer with Raney nickel; hydrogenating the organic peroxide polymer with hydrogen to form a diol product; separating the poisoned Raney nickel; reactivating the poisoned Raney nickel by contacting with a 0.1–5 N aqueous or lower alcohol solution of an activating reagent selected from the group consisting of ammonia, alkaline earth metal hydroxides, alkali metal carbonates, alkaline earth metal carbonates and alkali metal carboxylates containing from 1 to 4 carbon atoms, and alkaline earth metal carboxylates containing from 1 to 4 carbon atoms at 20°–200°C under an inert gas atmosphere from 2 to 8 hours, and recycling the reactivated Raney nickel by mixing with a solution of the organic peroxide polymer.

3,980,721

CATALYST PARTICULARLY USEFUL FOR DEHYDROGENATING SATURATED HYDROCARBONS

Bernard Juguin, and Jean-Francois Le Page, both of Rueil-Malmaison, France, assignors to Institut Francaise du Petrole, des Carburants et Lubrifiants et Entreprise de Recherches et d'Activies Petrolieres Elf, Rueil-Malmaison, France

Division of Ser. No. 304,543, Nov. 7, 1972, Pat. No. 3,887,495. This application Apr. 3, 1975, Ser. No. 564,838

Claims priority, application France, Nov. 19, 1971, 71.41426

Int. Cl.^{2} C07C *15/00*

U.S. Cl. 260—668 D **26 Claims**

1. In a process comprising dehydrogenating a saturated hydrocarbon containing 3–40 carbon atoms per molecule in contact with a dehydrogenation catalyst, wherein the improvement comprises employing as said dehydrogenation catalyst: (a) alumina, (b) rhenium and (c) at least one metal from groups III A, IV A and V A of the periodic classification of the elements, selected from the group consisting of gallium, indium, thallium, germanium, tin, lead, antimony and bismuth, said catalyst having a specific surface of about 20 to 80 m^2/g and a neutralization heat by ammonia adsorption lower than about 10 calories per gram of catalyst at 320°C and under a pressure of 300 mm of mercury, the total content by weight of rhenium being from 0.01 to 1% and the total content by weight of metals from groups III A, IV A and V A being from 0.01 to 0.5%, said catalyst being essentially free of group VIII metals.

3,980,722

PRODUCTION OF BROMOSTYRENE, DIBROMOSTYRENE AND ALKYL BROMIDES

Ella Cohen, Ramat Hasharon; Stephen Daren, Rehovot; Moshe Levy, Rehovot, and David Vofsi, Rehovot, all of Israel, assignors to Yeda Research & Development Co. Ltd., Rehovot, Israel

Filed July 3, 1973, Ser. No. 376,171

Claims priority, application Israel, July 4, 1972, 39817

The portion of the term of this patent subsequent to Feb. 18, 1992, has been disclaimed.

Int. Cl.^{2} C07C *25/28*

U.S. Cl. 260—650 R **6 Claims**

1. A process for the production of bromostyrene and a lower alkyl bromide, which comprises reacting bromoethyl bromobenzene with a lower alkanol at a temperature in the range of 400°C. to 550°C.

3,980,723

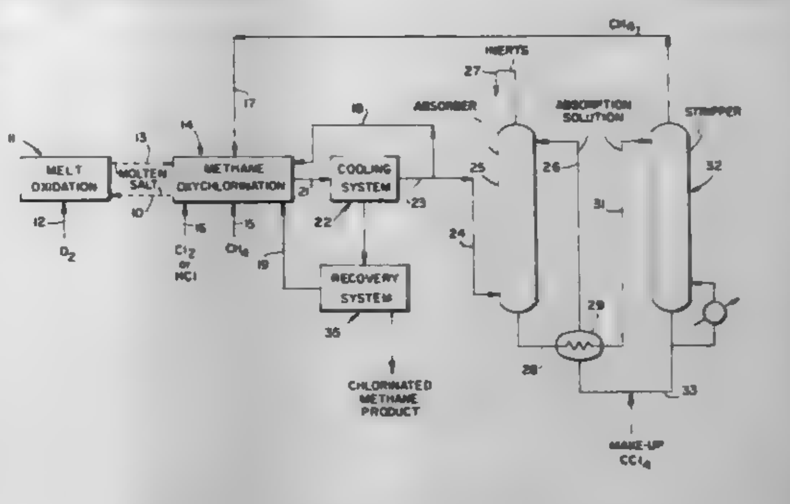
PURGING OF INERTS IN CHLORINATED HYDROCARBON PRODUCTION

Herbert Riegel, Maplewood, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Dec. 23, 1974, Ser. No. 535,728

Int. Cl.^{2} C07C *21/04*

U.S. Cl. 260—654 A **8 Claims**



1. In a process for producing chlorinated hydrocarbons wherein an effluent containing chlorinated hydrocarbons, unreacted hydrocarbon and inert gas selected from the group consisting of carbon monoxide, nitrogen and mixtures thereof is withdrawn from a chlorinated hydrocarbon production reaction zone, the improvement comprising:

recovering from the effluent a gaseous stream comprising unreacted hydrocarbon and said inert gas; contacting said gaseous stream with a liquid absorbent comprising a chlorinated hydrocarbon having a number of carbon atoms equal to the number of carbon atoms of the unreacted hydrocarbon to absorb unreacted hydrocarbon from said gaseous stream, said contacting being effected at a temperature of from 80°F to 200°F and a pressure of from 50 to 400 psig; separating the liquid absorbent containing absorbed unreacted hydrocarbon from the gaseous stream; stripping unreacted hydrocarbon from the liquid absorbent; and recycling stripped unreacted hydrocarbon to the reaction zone.

3,980,724

DIHALOGENATION OF DOUBLY BRANCHED ALKANES

Abraham Schneider, Overbrook Hills, Pa., assignor to Sun Ventures, Inc., St. Davids, Pa.

Continuation-in-part of Ser. No. 129,993, March 31, 1971, abandoned. This application Sept. 10, 1975, Ser. No. 611,941

Int. Cl.^{2} C07C *17/10*

U.S. Cl. 260—658 R **11 Claims**

1. Process of preparing dihalogenated alkanes which comprises:

A. establishing a two-phase admixture of
  1. a phase comprising (a) a C_8–C_{30} alkane having a chain length of at least 6 carbon atoms and two unbranched alkyl substituents of 1–3 carbon atoms each attached to different chain carbon atoms separated from each other by 1–3 carbon atoms, and (b) a tertiary C_4–C_5 alkyl halide which is chloride, bromide or fluoride in a molar ratio to said alkane of at least 2:1,
  2. and as a second phase 90–100% sulfuric acid;
B. contacting said phases at a temperature above the freezing point of the acid phase and below 50°C., whereby a hydrogen-halogen interchange reaction between the tertiary alkyl halide and said alkane occurs to form a dihalo derivative;
C. and recovering a dihalide product having halogen and an alkyl substituent at each of two chain carbons which are separated from each other by two other carbon atoms.

3,980,725
MESO-1,2,3,4-TETRACHLOROBUTANE PRODUCTION

Billy J. Lovelace, Baytown, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Continuation of Ser. No. 484,575, July 1, 1974, abandoned. This application June 9, 1975, Ser. No. 585,194

Int. Cl.² C07C *17/04*

U.S. Cl. 260—658 R **17 Claims**

1. In a process for the production of meso-1,2,3,4-tetrachlorobutane by contacting in a reaction zone trans-1,4-dichlorobutene-2 in the liquid phase with chlorine at a temperature of from about 25°C. to about 150°C. in the substantial absence of oxygen, the improvement which comprises:
effecting said contacting of trans-1,4-dichlorobutene-2 and chlorine in the presence of an effective amount of nitric oxide.

3,980,726
DEHYDROGENATION WITH A NONACIDIC MULTIMETALLIC CATALYST

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 365,877, June 1, 1973, Pat. No. 3,856,870, which is a continuation-in-part of Ser. No. 27,457, April 10, 1970, abandoned. This application Dec. 20, 1974, Ser. No. 535,078

Int. Cl.² C07C *15/10, 3/34, 5/40*

U.S. Cl. 260—668 D **14 Claims**

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbons at dehydrogenating conditions with a nonacidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to 2 wt. % iridium, about 0.01 to about 5 wt. % tin or lead, and about 0.1 to about 5 wt. % of an alkali or alkaline earth metal, wherein the platinum or palladium, iridium, tin or lead, and alkali or alkaline earth metal are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum or palladium and iridium are present in the corresponding elemental metallic state, wherein substantially all of the tin or lead is present in an oxidation state above that of the elemental metal, wherein substantially all of the alkali or alkaline earth metal is present in an oxidation state above that of the elemental metal, and wherein the atomic ratio of tin or lead to platinum or palladium is about 0.05:1 to about 10:1, wherein the atomic ratio of iridium to platinum or palladium is about 0.1:1 to about 2:1 and wherein the atomic ratio of the alkali or alkaline earth metal to platinum or palladium is about 5:1 to 50:1.

3,980,727
PROCESS FOR PRODUCING XYLENES OF HIGH PARA-XYLENE CONTENT

Christian Marcilly, Montesson; Germain Martino, Poissy, and Jean-Pierre Franck, Bougival, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants et Entreprise de Recherches et d'Activities Petrolieres Elf, Rueil-Malmaison, France

Filed Mar. 19, 1975, Ser. No. 559,796

Claims priority, application France, Mar. 20, 1974, 74.09795

Int. Cl.² C07C *3/62*

U.S. Cl. 260—672 T **13 Claims**

1. Process for transalkylating toluene with a poly-methyl benzene hydrocarbon containing from 10 to 12 carbon atoms in the presence of a catalyst obtained by contacting a catalyst carrier with at least one group VIII noble metal or compound thereof and with a hydrocarbyl aluminum halide of the formula $AlX_yR_{(3-y)}$ in which *y* is 1 or 2, X is halogen and R is a monovalent hydrocarbon radical.

3,980,728
METHOD OF CO-PRODUCING ISOPRENE AND 2-METHYL-1-BUTENE

Khachik Egorovich Khcheyan, Prospekt Mira, 118-a, kv. 190; Olga Mikhailovna Revenko, B.Pirogovskaya 29/31, kv. 107, and Margarita Petrovna Tikhonova, ulitsa Grekova, 18, korpus 3, kv. 120, all of Moscow, U.S.S.R.

Continuation of Ser. No. 383,458, July 27, 1973, abandoned. This application Aug. 25, 1975, Ser. No. 607,812

Int. Cl.² C07C *3/00*

U.S. Cl. 260—680 R **6 Claims**

1. A method of co-producing isoprene and 2-methyl-1-butene, comprising reacting isobutylene with an alkane having from 1 to 3 carbon atoms at 600° to 800°C in the presence of an initiating agent which is oxygen alone or in the form of air, taken in an amount of 1 to 20 percent by volume of the initial reaction mixture calculated as oxygen wherein the isobutylene to alkane molar ratio is from 1:1 to 1:15.

3,980,729
SILICONE RESIN COMPOSITIONS

Kiyoshi Yokokawa; Jyun Koizumi, both of Annaka, and Kesayuki Yanagisawa, Matsuida, all of Japan, assignors to Shin-Etsu Chemical Company Limited, Tokyo, Japan

Filed June 13, 1975, Ser. No. 586,634

Claims priority, application Japan, June 19, 1974, 49-69968

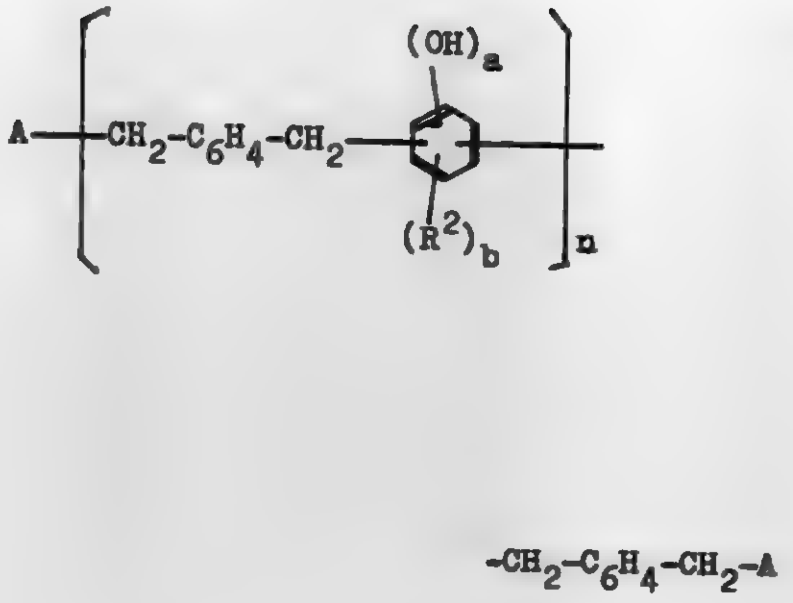
Int. Cl.² C08L *43/04, 83/00*

U.S. Cl. 260—826 **9 Claims**

1. A silicone resin composition which comprises
a. 100 parts by weight of an organopolysiloxane resin represented by the average unit formula

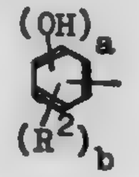
$$R^1_m SiO_{\frac{4-m}{2}}$$

wherein R^1 is a substituted or unsubstituted monovalent hydrocarbon group and *m* is a positive number from 0.5 to 1.8, and having at least 0.25% by weight of residual hydroxy groups directly bonded to silicon atoms,
b. from 5 to 300 parts by weight of a phenolic prepolymer expressed by the general formula



$$A-\left[-CH_2-C_6H_4-CH_2-\underset{(R^2)_b}{\overset{(OH)_a}{C_6}}-\right]_n-CH_2-C_6H_4-CH_2-A$$

where A is a halogen atom, an alkoxy group or a monovalent organic group expressed by the general formula



$$\underset{(R^2)_b}{\overset{(OH)_a}{C_6}}-\ ,$$

R^2 is an organic group or an amino group, *a* is 1, 2, or 3, *b* is 0, 1 or 2 with the proviso that the total value of *a* and *b* is equal to or less than 4 and *n* is a positive integer,
c. a silanol-condensation catalyst, and
d. a curing catalyst for phenol resins.

3,980,730
MOLYBDENUM AND TUNGSTEN COMPOUNDS

Francois Dawans, Bougival, and Emmanuel Goldenberg, Poissy, both of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants et Entreprise de Recherches et d'Activities Petrolieres Elf, Rueil-Malmaison, France

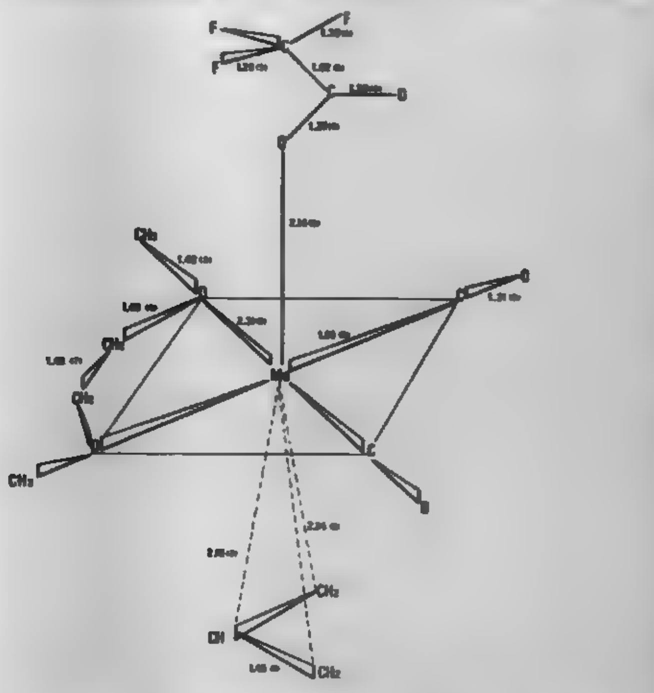
Division of Ser. No. 429,209, Dec. 28, 1973, Pat. No. 3,931,242, and a continuation-in-part of Ser. No. 215,424, Jan. 4, 1972, abandoned. This application Jan. 9, 1975, Ser. No. 539,823

Claims priority, application France, Jan. 18, 1971, 71.00583; Jan. 18, 1971, 71.00584

Int. Cl.² C07F *11/00*

U.S. Cl. 260—429 L **14 Claims**

1. A compound of the formula $(H_{3-n}X_n)C-CO_2M-(CO)_m(R)_p(L)_q$ in which X is fluorine, bromine or chlorine with the provision that at least one X is fluorine, n is an integer selected from 1, 2 and 3, M is a metal selected from the group consisting of molybdenum and tungsten, R is selected from the group consisting of a hydride ion, or a methyl, ethyl, allyl, methallyl, crotyl, phenyl or benzyl group, L is a Lewis base selected from the group consisting of aliphatic monoethers, aliphatic diethers, aliphatic monoether-monoalcohols, and aliphatic mono- and diketones, *m* is an integer from 1 to 3 inclusive, *p* is 1 and *q* is an integer selected from the values 1 to 2, with the proviso that the values of *m*, *p* and *q* are such that, in the valence shell of said metal M, the sum of the



number of electrons contributed by said metal M and the number of electrons contributed by the ligands is 18.

3,980,731
POLYESTER COMPOSITIONS WITH CARBONYL-CONTAINING COMPOUNDS

Franciscus Rutgerus Josef Willemse, Bathmen, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

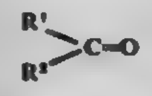
Filed May 23, 1974, Ser. No. 472,875

Claims priority, application Netherlands, June 29, 1973, 7309060

Int. Cl.² C08L *63/02;* **C08F** *218/10*

U.S. Cl. 260—837 R **20 Claims**

1. A process for the preparation of a polymerizable or copolymerizable composition which comprises incorporating into one or more polyesters containing a vinyl or vinylidene group and prepared by the polycondensation of an α,β-unsaturated monocarboxylic acid with a diol or polyol or epoxy compound, or a mixture comprising such a polyester and a monomer copolymerizable therewith and containing one or more vinyl or vinylidene groups, a free radical generating peroxidic initiator and a carbonyl containing compound having the formula:



$$\begin{matrix}R^1\\R^2\end{matrix}\!\!>C=O$$

wherein R^1 represents a hydrogen atom or a branched or unbranched alkyl, cycloalkyl, hydroxycarboalkylene, hydroxycarbocycloalkylene or hydroxycarboalkenylene group or a substituted aryl, aralkyl or hydroxycarboarylene group, R^2 is a hydrogen atom or hydroxyl, hydroxylperoxy, alkoxy or aryloxy group, or R^1 and R^2 together form a substituted or unsubstituted alkylenecarboxy, alkenylenecarboxy or arylenecarboxy group, in an amount sufficient to prevent the formation of gas during the polymerization or copolymerization of the composition.

3,980,732
POWDER COATING RESIN PROCESS

Robert A. Isaksen, Chardon, Ohio; Frederic J. Locke, East Longmeadow, Mass.; John L. Smith, Springfield, Mass., and George T. Spitz, Longmeadow, Mass., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 318,292, Dec. 26, 1972, abandoned. This application Oct. 4, 1974, Ser. No. 511,957

Int. Cl.² C08L *61/26, 61/28*

U.S. Cl. 260—850 **4 Claims**

1. A process for preparing a curable powder resin composi-

tion with sintering temperature above 40°C. and curable in the temperature range of 120° to 220°C., comprising:

- A. condensing a methylolamino compound with an aliphatic alcohol and an aliphatic diamide of number average molecular weight less than 500 to produce an aminoplast condensate with a glass transition temperature in the range of −10° to 100°C., wherein the methylolamino compound is selected from the group consisting of methylolureas and methylolaminotriazines and contains no more than one unmethylolated N-H bond per molecule, wherein the aliphatic alcohol contains from 1 to 4 carbon atoms, wherein at least about 50 percent of the methylol groups of the methylolamino compound have been condensed with the aliphatic alcohol or the aliphatic diamide, wherein the molar ratio of the aliphatic alcohol to the methylolamino compound is at least 2, and wherein the molar ratio of the methylolamino compound to the aliphatic diamide is from about 1:0.5 to about 1:1.5,
- B. blending from about 15 to about 30 parts by weight of the aminoplast condensate with from about 85 to 70 parts by weight of a polyester resin or an acrylic resin, wherein the resin has a glass transition temperature in the range of from 60° to 100°C. and a number average molecular weight in the range of 500 to 25,000 and contains alcoholic hydroxyl groups, carboxyl groups or amide groups heat reactive with the aminoplast condensate, wherein the polyester resin has an acid number in the range of 1 to 25 or a hydroxyl number in the range of 11 to 200, and wherein the acrylic resin contains from 0.13 to 18 weight percent of hydroxyl, carboxyl or amide groups, and
- C. crushing the blend to form a powder of average particle size in the range of 20 to 150 microns.

3,980,733
POWDER COATING RESIN PROCESS

Robert A. Isaksen, Chardon, Ohio; Frederic J. Locke, East Longmeadow, Mass.; John L. Smith, Springfield, Mass., and George T. Spitz, Longmeadow, Mass., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 317,901, Dec. 26, 1972, abandoned. This application Oct. 4, 1974, Ser. No. 511,953

Int. Cl.² C08L *61/24, 61/26, 61/28*

U.S. Cl. 260—850 **6 Claims**

1. A curable powder resin composition with a sintering temperature above 40°C. and curable in the temperature range of 120° to 220°C., comprising:

- A. from about 15 to 30 parts by weight of a condensate of a methylolamino compound, an aliphatic alcohol containing from 1 to 4 carbon atoms and an aromatic sulfonamide of number average molecular weight less than 500; wherein the methylolamino compound is a methylolurea or methylolaminotriazine containing no more than one unmethylolated N-H bond per molecule, wherein the molar ratio of aliphatic alcohol to methylolamino compound is at least 2, wherein the molar ratio of the methylolamino compound to the aromatic sulfonamide is from about 1:0.5 to about 1:2 when the reactive compound contains one reactive group per molecule and is from about 1:0.5 to about 1:1.5 when the aromatic sulfonamide contains 2 or more reactive groups per molecule, wherein at least about 50 percent of the methylol groups of the methylolamino compound have been condensed with the aliphatic alcohol or the aromatic sulfonamide and wherein the glass transition temperature of the condensate is in the range of from −10° to 100°C.; and
- B. from about 85 to 70 parts by weight of a polyester resin or an acrylic resin wherein the resin has a glass transition temperature in the range of from 60° to 100°C., and a number average molecular weight in the range of 500 to 25,000, and contains alcoholic hydroxyl groups, carboxyl groups or amide groups, heat reactive with the condensate of the methylolamino compound, wherein the polyester resin has an acid number in the range of 1 to 25 or a hydroxyl number in the range of 11 to 200, and wherein the acrylic resin contains from 0.13 to 18 percent by weight of hydroxyl, carboxyl, or amide groups.

3,980,734
THERMOPLASTIC MOULDING COMPOSITIONS BASED ON POLY (OXYMETHYLENE)

Karlheinz Burg, Langenhain, Taunus; Rudolf Kern, Mainz, and Heinz Schmidt, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 376,232, July 3, 1973, abandoned. This application May 21, 1975, Ser. No. 579,472

Claims priority, application Germany, July 6, 1972, 2233143

Int. Cl.² C08L *67/00, 23/00*

U.S. Cl. 260—860 **13 Claims**

1. A thermoplastic molding composition consisting essentially of a mixture of

- A. 99.9 to 90 percent by weight of a mixture of
  - (a) 99.999 to 90 percent by weight of linear poly(oxymethylene) having chemically stabilized end groups and
  - (b) as a nucleating agent therefor 0.001 to 10 percent by weight of a branched or crosslinked poly(oxymethylene), and
- B. as an additional modifying component, 01. to 10 percent by weight of a polymer having an average molecular weight of from 1,000 to 1,000,000, the softening point of which is below the crystallite melting point of the poly(oxymethylene) of (a) and the second order transition temperature of which is −120 to +30°C, said additional component being present in the mixture as particles having diameters of from 0.1 to 5 microns, the weight percentages of (a) and (b) being calculated on the sum of (a) and (b), and the weight percentages of A. and B. calculated on the sum of A. and B.

3,980,735
HOT MELT ADHESIVE COMPOSITION

Yujiro Kosaka; Noriaki Emura, and Syuzo Watanabe, all of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin-nanyo, Japan

Filed Mar. 24, 1975, Ser. No. 561,417

Claims priority, application Japan, June 11, 1974, 49-65607

Int. Cl.² C08L *67/06*

U.S. Cl. 260—873 **6 Claims**

1. A hot melt adhesive composition, which comprise of: a modified ethylene-vinylacetate copolymer produced by heating a mixture of 99.7 – 20 parts by weight of an ethylene — vinyl acetate copolymer having a vinyl acetate content of 5–50 wt. % and a melt index of 1–400 g/10 min.; 0.3–80 parts by weight of an unsaturated alkyd resin having a number average molecular weight of 500–5000 produced by esterification of a polyhydric alcohol and an unsaturated dicarboxylic acid or anhydride or a mixture of unsaturated dicarboxylic acid or anhydride with a saturated dicarboxylic acid or anhydride; 0.05–5 parts by weight of an organic peroxide wherein the mixture is heated above the decomposition temperature of the organic peroxide.

3,980,736
HOMOGENEOUS POLYOLEFIN AND ARYLVINYL-POLYMER-BASED COMPOSITIONS

Elias Agouri, Pau; Raymond Catte, Billere, and Jean-Louis Dauba, Pau, all of France, assignors to Societe Anonyme Ato Chimie, Paris, France

Division of Ser. No. 211,667, Dec. 23, 1971, Pat. No. 3,894,117. This application Sept. 9, 1974, Ser. No. 504,149

Int. Cl.² C08L *51/00*

U.S. Cl. 260—876 B **5 Claims**

1. A homogeneous polymer composition comprising one member of the group consisting of monoolefin polymer and polystyrene, and at least one polymonoolefin-polystyrene block copolymer containing one polymonoolefin and one polystyrene sequence wherein said block copolymer is present in an amount of 0.6 % to 80 % based on the total weight of said block copolymer and said member of the group.

3,980,737
HALOGENATED ESTERS OF PHOSPHORUS-CONTAINING ACIDS

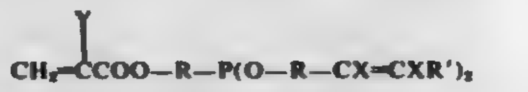
Gaetano F. D'Alelio, 2011 E. Cedar St., South Bend, Ind. 46617

Division of Ser. No. 383,583, July 30, 1973, Pat. No. 3,886,236, which is a continuation-in-part of Ser. No. 179,543, Sept. 10, 1971, Pat. No. 3,780,144, which is a continuation-in-part of Ser. No. 785,335, Dec. 19, 1968, abandoned. This application Jan. 9, 1975, Ser. No. 539,813

Int. Cl.² C07F *9/48*

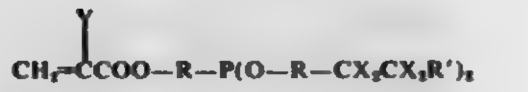
U.S. Cl. 260—952 **14 Claims**

1. A phosphorus-halogen-containing compound having a formula selected from the class consisting of



$$CH_2{=}\overset{Y}{C}COO{-}R{-}P(O{-}R{-}CX{=}CXR')_2$$

and



$$CH_2{=}\overset{Y}{C}COO{-}R{-}P(O{-}R{-}CX_2CX_2R')_2$$

wherein;

- Y represents H, CH_3 or Cl;
- X represents Cl or Br;
- R represents a divalent hydrocarbon radical of 1–20 carbon atoms;
- R′ represents H, X or R″; and
- R″ represents a monovalent hydrocarbon radical of 1–20 carbon atoms.

3,980,738
PROCESS FOR THE PREPARATION OF (THIO)PHOSPHORIC (PHOSPHONIC) ACID ESTERS

Dieter Arlt, Cologne, and Kurt Ley, Odenthal, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

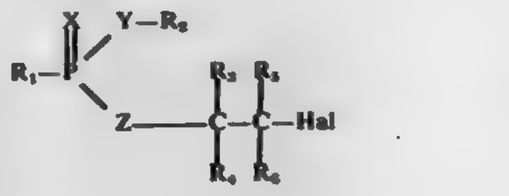
Filed Mar. 12, 1975, Ser. No. 557,725

Claims priority, application Germany, Apr. 9, 1974, 2417143

Int. Cl.² C07F *9/09, 9/165*

U.S. Cl. 260—971 **17 Claims**

1. A process for the preparation of a (thio)-phosphoric (phosphonic) acid ester of the formula

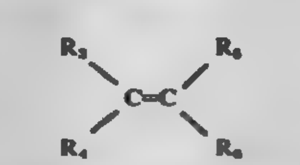


(I)

in which

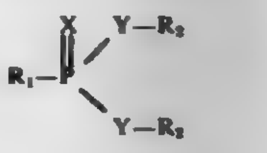
- R_1 is a straight-chain or branched alkyl, alkylmercapto or alkoxy group with up to 8 carbon atoms,
- R_2 is alkyl with 1 to 8 carbon atoms optionally substituted by chlorine,
- R_4 and R_6 each individually is hydrogen, C_1-C_4-alkyl or halogen.
- X, Y and Z each individually is oxygen or sulfur,
- Hal is chlorine or bromine, and
- R_3 and R_5 each individually is hydrogen; halogen; a C_1-C_{18}-alkyl, acyloxy or C_2-C_{18}-alkenyl radical which can be substituted by halogen, an acyloxy or alkoxy group with up to 18 carbon atoms, isocyano, dichloroisocyano, chlorocarbonyl, cyano, chlorosulfonyl, a carbalkoxy group with up to 8 carbon atoms in the alkoxy moiety, or an optionally substituted carbamino group with up to 12 carbon atoms; phenyl; halogen-substituted phenyl; or C_1-C_4-alkyl-substituted phenyl; or
- R_3 and R_5 together form a 4- to 12-membered aliphatic or heterocyclic ring, or
- R_5 may alternatively be chlorocarbonyl; cyano; a carbalkoxy or an optionally substituted carbamino group with up to 9 carbon atoms; an alkylcarbonyl, alkylsulfonyl, arylcarbonyl or arylsulfonyl group, each with up to 7 carbon atoms; or an aldehyde group,

which comprises reacting at a temperature of about −50°C to 120°C an olefin of the formula



(II)

in a one-step process with a halogenating agent and at least an equivalent amount of a (thio)phosphoric (phosphonic) acid ester of the formula



(III)

3,980,739
METHOD OF PURIFYING TRIARYL PHOSPHITES

Jean-Marie Frey, Pontoise, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Jan. 27, 1975, Ser. No. 544,394

Claims priority, application France, Jan. 25, 1974, 74.02497

Int. Cl.² C07F *9/145*

U.S. Cl. 260—989 **10 Claims**

1. A method of purifying crude triaryl phosphites having color, acid and odor, prepared by reacting phosphorous trichloride with an excess of a phenol, characterized in that the color, acid and odor are simultaneously reduced by treating the crude with a small quantity of at least one hydrogen compound of nitrogen, of a basic character selected from the group consisting of monoazotized (H NH_2) and diazotized (NH_2-NH_2) with the formation of a precipitate, and then separating the precipitate from the purified triaryl phosphites.

3,980,740
DEVICES FOR AERATING LIQUIDS

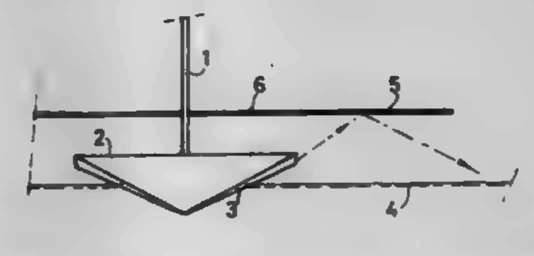
Sietjo B. Bos, Sneek, Netherlands, assignor to Landustrie Sneek, Machinefabriek Elektrotechniek B.V., Sneek, Netherlands

Filed Dec. 5, 1974, Ser. No. 529,842

Claims priority, application Netherlands, Dec. 12, 1973, 7316997

Int. Cl.² B01F *3/04*

U.S. Cl. 261—91 **1 Claim**



1. In a device for aerating liquid within an open tank,
a rotatable body having vanes,
shaft means mounting the body such that the body contacts the surface of the liquid, said shaft means extending vertically and being rotatably driven whereby to cause the

body to agitate the liquid surface, said vanes being unconfined externally whereby liquid droplets are displaced upwardly and outwardly from the liquid surface during rotation of the body, and

a splash guard mounted above the body and extending in a plane generally parallel to the surface of the liquid to provide a surface facing the surface of the liquid, said splash guard being stationary and having a central opening, the width of said opening being substantially equal to the diameter of the body, said shaft extending through said opening, the height of the guard above the surface of the liquid, and the lateral extent of the guard being such that said liquid droplets displaced upwardly and outwardly from the liquid surface impinge against the said surface of the guard to be reflected thereby downwards into the liquid within the tank, said guard having a plurality of portions inclined to the plane of the guard, each of said portions being in the form of a solid slat having an undersurface which faces inwardly of the guard towards said surface to reflect liquid droplets downwards into the liquid, said portion being substantially continuous and extending around substantially the entire outer periphery of the guard and being spaced from another one of said portions of the guard adjacent thereto, said central opening and the space defined between the said solid portions and the said adjacent portions of the guard constituting air flow openings.

3,980,741

METHOD FOR THE PROCESSING OF BLACK POWDER

Kjell Loveid, Nittedal, Norway, assignor to Dyno Industrier A.S., Oslo, Norway

Filed Apr. 21, 1975, Ser. No. 569,681

Claims priority, application Norway, Apr. 22, 1974, 1437/74

Int. Cl.² C06B *21/00*

U.S. Cl. 264—3 C **3 Claims**

1. A continuous process for treating meal black powder in order to produce black powder suitable for use in fuses, which comprises blending meal black powder with about 20% by weight of water, compressing the moist powder to a sufficient degree so as to obtain a coherent body, and thereafter rubbing through a sieve, agglomerating said sieved powder to spherical grains which are dried to a moisture content of about 1% and seiving to a grain size lying between 0.3 and 1.0 mm.

3,980,742

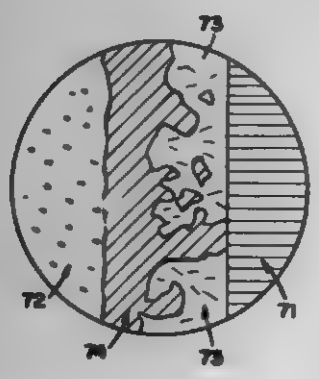
PROTECTION FOR EXTERNALLY HEATED CAST IRON VESSEL USED TO CONTAIN A REACTIVE MOLTEN METAL

Andrew Geza Szekely, Yorktown Heights, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 323,785, Jan. 15, 1973, Pat. No. 3,870,511, which is a division of Ser. No. 211,950, Dec. 27, 1971, Pat. No. 3,743,263. This application Dec. 23, 1974, Ser. No. 536,954

Int. Cl.² F27D *1/16;* C22B *21/06*

U.S. Cl. 264—30 **6 Claims**



1. A process for making a vessel, comprised of an externally heated cast iron shell, resistant to attack by reactive molten metal selected from the group consisting of aluminum, tin, and zinc contained therein, comprising the steps of:

a. lining the inside surface of said shell with a plurality of self-supporting, refractory plates which are inert with respect to said molten metal, in such manner that said plates are free to move along their joints relative to each other, as well as relative to the inner surface of said shell, upon thermal expansion of said vessel,

b. filling the vessel with said reactive molten metal,

c. maintainig the temperature of said vessel at about the melting point of said molten metal by externally heating said vessel,

d. permitting said molten metal to penetrate behind said lining through the joints and crevices therein opened by thermal expansion, and thereby

e. producing a refractory layer, in situ in the space between said lining and the inside surface of said cast iron shell, comprising a solid reaction product of iron and said molten metal, thereby preventing further direct contact between the molten metal in the vessel and any fresh cast iron surface of said shell.

3,980,743

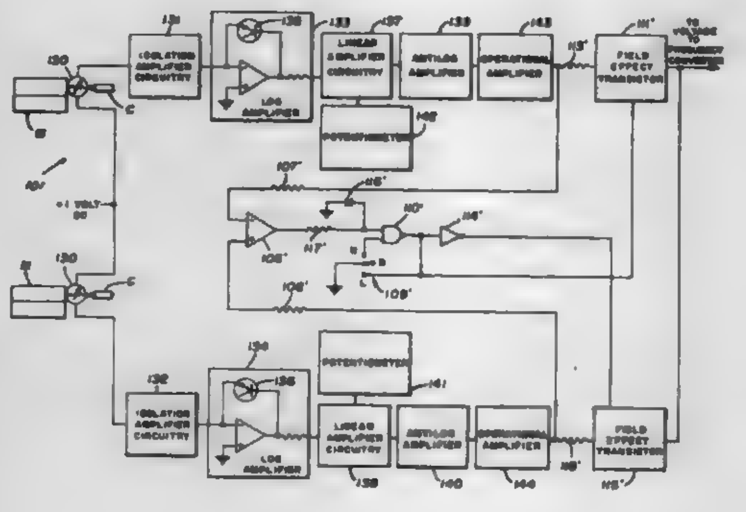
METHOD OF TIRE CURE CONTROL

Thomas W. Smith, Akron, Ohio, assignor to McNeil Corporation, Akron, Ohio

Division of Ser. No. 137,427, April 26, 1971. This application Oct. 3, 1973, Ser. No. 403,118

Int. Cl.² B29H *5/02*

U.S. Cl. 264—40.2 **7 Claims**



1. A method for controlling the steps in the curing of a rubber compound in a mold, the rate of cure being governed by the Arrhenius equation, comprising the steps of closing the mold with the rubber compound therein, heating the mold to initiate the cure, introducing a probe whose electrical resistance varies with temperature into the rubber compound, sensing the rate of cure of the rubber compound directly by the probe by placing a constant voltage across the probe to generate a current signal related to the Arrhenius equation and by adjusting said current signal to produce a current signal directly proportional to the rate of cure, controlling and sequencing the steps in the curing process as a function of time, at the same time calculating the state of cure from the sensed rate of cure, and terminating the cure and opening the mold at a desired state of cure regardless of the condition of the cure as a function of time.

3,980,744

EXTRUSION OF HOLLOW ARTICLES THROUGH A LUBRICATED DIE

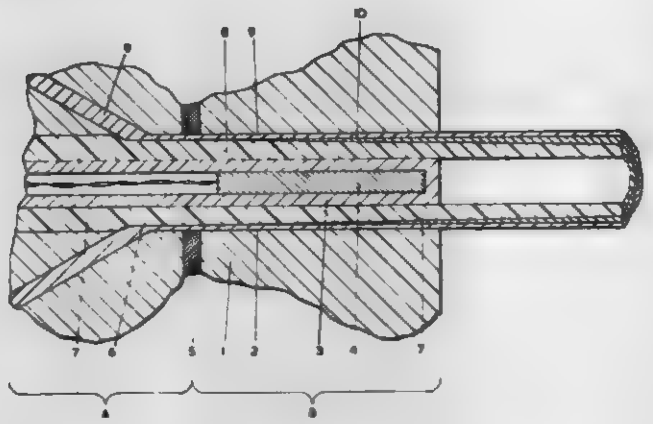
Frederic Neil Cogswell, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 8, 1974, Ser. No. 513,177

Claims priority, application United Kingdom, Oct. 26, 1973, 49896/73

Int. Cl.² B29C *17/07*

U.S. Cl. 264—96 **5 Claims**



1. A method for producing hollow articles which comprises extruding a thermoplastic polymeric material, initially in a molten state, through a die having a mandrel for constraining the material into a tubular shape and producing thereby a tubular extrudate having and outer surface and an inner surface; coextruding between the die and the outer surface of the polymeric material, a liquid having a freezing temperature lower than that of the polymeric material; cooling the liquid and the outer surface of the polymeric material during their passage through the die, to a temperature below the freezing temperature of the polymeric material but above the freezing temperature of the liquid, while maintaining the inner surface of the polymeric material molten, squeezing the extrudate at suitable intervals to fuse the molten inner surface together and thereby seal discrete lengths, and inflating the sealed lengths to conform to a surrounding mould to thereby produce the shaped article.

3,980,745

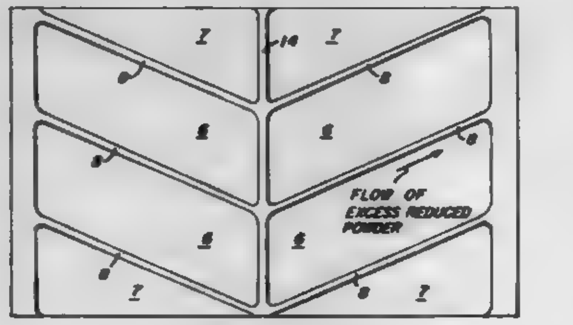
BRIQUETTE MOLD POCKET CONFIGURATION

Luther G. Hendrickson, Churchill Borough, Allegheny County, and Dino Ravasio, McKeesport, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 483,997, June 28, 1974, Pat. No. 3,883,110. This application Dec. 4, 1974, Ser. No. 529,424

Int. Cl.² B29F *5/00;* B22F *3/02, 3/12*

U.S. Cl. 264—109 **1 Claim**



1. In a method of making iron ore briquettes by compressing reduced particulate ore in mating cavities in the nip between pairs of rotating tangential rolls, the improvement comprising:

compressing said ore in the nip between a pair of rolls having generally rhomboid mating cavities in their peripheral surfaces, each of said cavities on a roll being separated from at least one other cavity along the roll length by a central raised land, said cavities having a generally herringbone configuration on the roll surface, and causing a portion of said ore to be directed, within said cavities, upwardly with respect to said nip and generally outwardly with respect to said land, thereby achieving even distribution of said ore throughout said cavities.

3,980,746

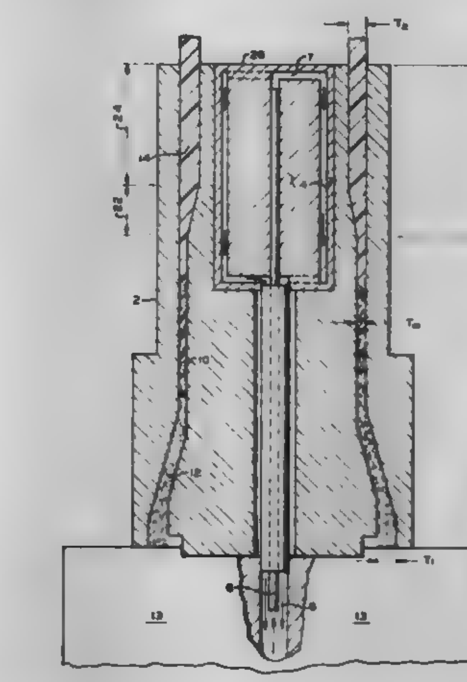
METHOD AND APPARATUS FOR FORMING A THICK-WALLED TUBULAR PRODUCT

Guy E. Carrow, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 76,100, Sept. 28, 1970, abandoned. This application Oct. 30, 1972, Ser. No. 301,899

Int. Cl.² B29F *3/08;* B29D *23/04*

U.S. Cl. 264—209 **3 Claims**



1. A method for forming a thick-walled tubular product having a wall thickness greater than about ¼ inch, comprising:

extruding from a dynamic extruder a volume of plastic material into the annulus of a mandrel and bushing sizing die assembly at the first end portion thereof;

reducing the thickness of the plastic material passing through a middle portion of the annulus of the assembly to within the range of about 25 to about 50 percent of the greatest thickness of the first end portion of the annulus;

passing a cooling fluid through the mandrel adjacent at least the middle portion of the annulus for cooling said plastic material;

increasing the thickness of the plastic material passing through the annulus at a second end portion of the mandrel and bushing die assembly, said thickness being progressively increased uniformly over a preselected length to a thickness greater than about ¼-inch and greater than the thickness of the middle portion of the annulus; and

discharging the thick-walled tubular product from the mandrel and bushing die assembly.

3,980,747

PRODUCTION OF SYNTHETIC RESIN SPINNERETTE

Kazumi Nakagawa; Keitaro Shimoda; Nobuhiro Tsutsui, and Keiichi Zoda, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Continuation of Ser. No. 822,393, May 7, 1969, abandoned. This application Oct. 14, 1972, Ser. No. 189,402

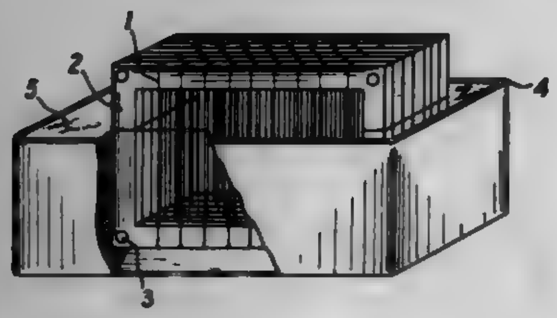
Claims priority, application Japan, May 30, 1968, 43-37292

Int. Cl.² B29C *1/14*

U.S. Cl. 264—221 **6 Claims**

1. A method of producing synthetic resin spinnerettes having orifices each with a smaller diameter portion and a larger diameter portion characterized by vertically extending syn-

thetic filaments passed taut around and fixed to a frame structure vertically separable into upper and lower sections, placing the frame structure in a mold, pour-molding a first layer of thermosetting synthetic resin having a thermal conductivity of 1 × 10^{-3} cal.cm^{-1} .sec^{-1}.°C^{-1} or less after setting in said mold to a thickness not reaching the junction of said frame sections and allowing it to set, pulling up the upper frame section to stretch the synthetic filaments exposed above the first resin layer, pour-molding a second layer of the aforesaid synthetic resin in the mold and above the first layer and allowing it to set, taking the cured article out of the mold to obtain a resin body surrounding and embedding the synthetic filaments therein, and then removing the filaments to form said orifices.



3,980,748
PRODUCTION OF POLYETHYLENE TEREPHTHALATE FILM HAVING IMPROVED RESISTANCE TO CLEAVAGE

Hiroshi Okuyama; Hisao Takahashi, and Akira Hasegawa, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 207,970, Dec. 14, 1971, abandoned. This application June 18, 1974, Ser. No. 480,325

Claims priority, application Japan, Dec. 14, 1970, 45-111584

Int. Cl.² B29D *7/24*

U.S. Cl. 264—289 **3 Claims**

1. A process for the production of a polyethylene terephthalate film consisting essentially of polyethylene terephthalate, said film having improved resistance to cleavage, characterized by carrying out heat setting said film consisting essentially of polyethylene terephthalate after a biaxial elongation by a factor of at least three in the lateral and longitudinal directions so that the heat set temperature and heat set time satisfy one of the following relationships:

heat set temperature	140–213°C
$\log t \geqq -0.0470T + 10.99$	
heat set temperature	213–223°C
$\log t \geqq -0.14T + 30.8$	
heat set temperature	223–255°C
$\log t \geqq -0.0186T + 3.73$	

in which T is a heat set temperature (°C) and *t* is a heat set time (min).

3,980,749
PARTIALLY CROSSLINKED LINEAR AROMATIC POLYESTERS

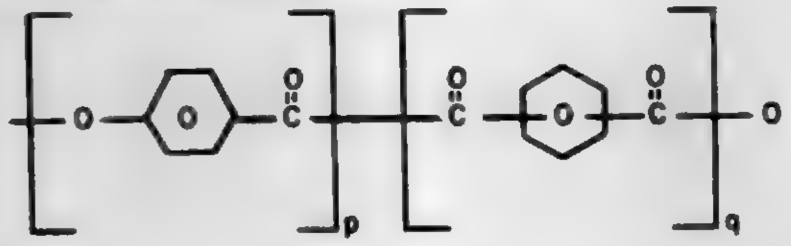
Steve G. Cottis, Amherst; James Economy, Eggertsville, and Arnold A. Wesilait, Grand Island, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

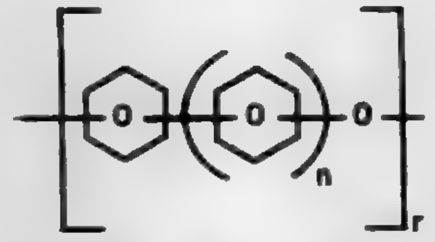
Division of Ser. No. 393,705, Aug. 31, 1973, Pat. No. 3,884,876. This application Mar. 3, 1975, Ser. No. 554,938

Int. Cl.² C08G *17/02*

U.S. Cl. 264—331 **9 Claims**

1. A method of molding a partially crosslinked polyester of recurring moieties of the formula





wherein *n* is 0 or 1; and *p*, *q* and *r* are integers which total 30 to 600; and wherein the crosslinking is between susceptible moieties in the polymer chain and adjacent polymer chains, said crosslinking being limited so as to retain thermoplasticity and moldability of the polymer, but being sufficient so that the polymer made is not able to be melt drawn or spun to a fiber nor able to be deposited as a film; which comprises

1. raising the moldable, partially crosslinked polyester to a temperature of between 300°C and 500°C;
2. molding the moldable, partially crosslinked polyester at a pressure of from 2000 to 20,000 lbs./sq. in.; and
3. removing the molded polyester from the mold.

3,980,750
METHOD OF SELECTIVE STRIPPING OF PLUTONIUM FROM AN ORGANIC SOLVENT CONTAINING PLUTONIUM AND IN SOME CASES URANIUM BY REDUCTION OF SAID PLUTONIUM

Gérard Cousinou, Manosque, and Michel Ganivet, Aix-en-Provence, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 21, 1973, Ser. No. 427,352

Claims priority, application France, Dec. 28, 1972, 72.46656

Int. Cl.² B01D *11/00*

U.S. Cl. 423—9 **14 Claims**

1. A method of selective stripping of plutonium from an organic solvent containing plutonium comprising countercurrently contacting said organic solvent with a solution containing a reducing agent for plutonium, said reducing agent being an aromatic organic compound selected from the group consisting of substituted hydrazines, polyamines and aminophenols and an agent for removing the nitrites which are formed.

3,980,751
ION EXCHANGE CHROMATE REMOVAL

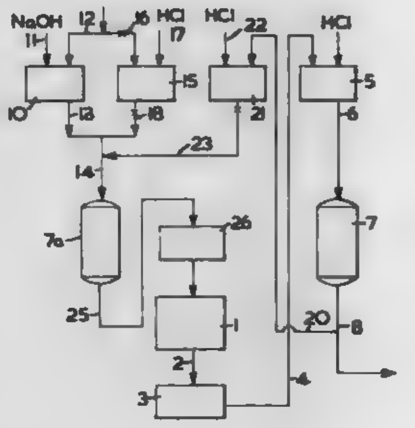
Frank R. Foulkes, Toronto, Canada, assignor to Huron Chemicals Limited, Kingston, Canada

Filed Nov. 20, 1975, Ser. No. 633,831

Claims priority, application Canada, Nov. 20, 1974, 214231

Int. Cl.² C01G *37/14;* **C01B** *11/02;* **C25B** *1/26*

U.S. Cl. 423—54 **13 Claims**



1. A method of removing chromate from aqueous solutions of alkali metal chlorate and alkali metal chloride which comprises in an exhaustion stage (1) passing said aqueous solution of alkali metal chlorate and alkali metal chloride acidified with hydrochloric acid to a pH of not less than 0.5 through an anion exchange resin bed to remove chromate therefrom and produce an essentially chromate free aqueous solution containing alkali metal chlorate and alkali metal chloride, and in a regeneration stage (2) passing an aqueous solution of alkali metal hydroxide and alkali metal chloride through said resin bed to remove chromate therefrom, (3) passing an aqueous solution of alkali metal chloride acidified with hydrochloric acid to a low pH through said resin bed to convert said resin to acid form and (4) passing an aqueous solution of essentially chromate free alkali metal chlorate and alkali metal chloride acidified with hydrochloric acid to a pH value not less than 0.5, through said resin bed to saturate said resin bed with alkali metal chlorate.

3,980,752
PRECIPITATION OF NICKEL, COBALT, LEAD SULPHIDES IN PRESENCE OF IRON OXIDES OR HYDROXIDES

Simon Otto Fekete, Falconbridge; Quentin Reginald Chapman, Toronto, and Lynn Shapley Price, Weston, all of Canada, assignors to Falconbridge Nickel Mines Limited, Toronto, Canada

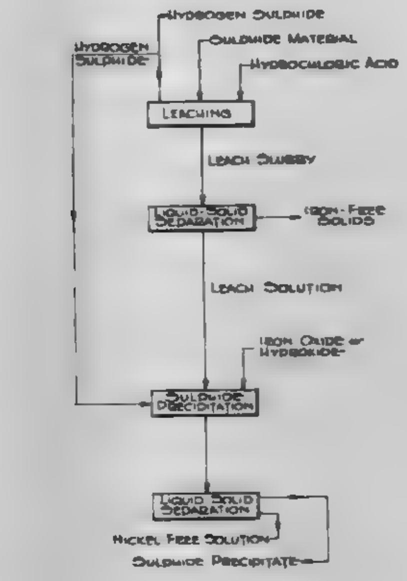
Division of Ser. No. 278,322, Aug. 7, 1972, abandoned. This application Dec. 9, 1974, Ser. No. 530,571

Claims priority, application United Kingdom, Sept. 2, 1971, 42021/71

Int. Cl.² C01G *21/00, 51/00, 53/00*

U.S. Cl. 423—92 **7 Claims**

1. In a process for precipitating non-ferrous metals selected from the group consisting of nickel, cobalt and lead as sulphides from mineral aqueous acidic solution, at atmospheric pressure and at temperatures below the boiling point of the solution, in the presence of hydrogen sulphide and a neutralizing agent, the improvement comprising introducing to the solution a particulate iron-bearing substance containing iron oxides, hydroxides. or combinations thereof as the neutralizing agent wherein the iron content is substantially stoichiometrically equivalent to the non-ferrous metals which are to be precipitated and dissolving substantially all of said iron from said iron-bearing substance by reaction with the free acid present in the aqueous solution and that free acid generated during precipitation of non-ferrous metals therefrom.



3,980,753
INDUSTRIAL PROCESS OF PREPARING MAGNESIA OF HIGH PURITY

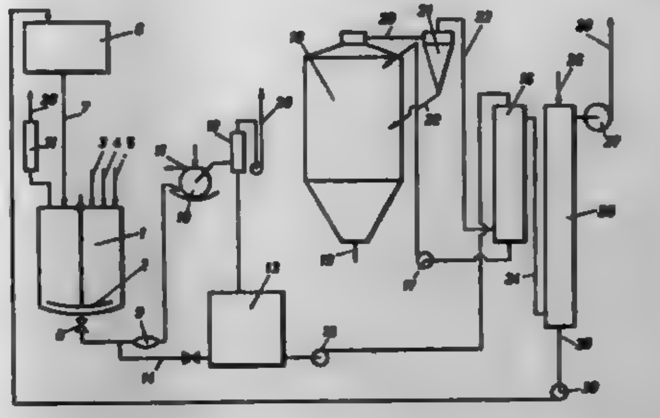
Michael Grill, and Georg Bouvier, both of Loeben-Goess, Austria, assignors to Veitscher Magnesitwerke-Aktiengesellschaft, Vienna, Austria

Continuation of Ser. No. 112,110, Feb. 3, 1971, abandoned. This application Nov. 29, 1974, Ser. No. 528,034

Claims priority, application Austria, Feb. 20, 1970, 1587/70

Int. Cl.² C01F *5/02*

U.S. Cl. 423—161 **12 Claims**



1. An industrial process of preparing magnesia containing more than 98% MgO and less than 0.1% each of the oxides of Fe, Al, Cr, Mn, Si, Ti, Na, K, and B, all percentage values being by weight, which comprises:

1. dissolving a starting material at a first temperature of more than 70° in an amount of aqueous hydrochloric acid sufficient to produce an acidic solution,
   a. said starting material essentially consisting of magnesium carbonate, magnesium oxide, magnesium hydroxide, or mixtures thereof, and containing, as impurities, at least one compound of members of a first group consisting of iron, aluminum, chromium, and manganese, and at least one compound of members of a second group consisting of silicon, titanium, and boron,
   b. the starting material being treated until the ratio in said solution of the combined weight of the compounds of said first group, calculated as Fe_2O_3+Al_2O_3+Cr_2O_3+Mn_3O_4, to the combined weight of the compounds of said second group, calculated as SiO_2+TiO_2+B_2O_3, is changed to at least 1 : 3, and

- c. the concentration of said hydrochloric acid being 15% to 32% by weight,
2. adding to said acidic solution a magnesium or calcium compound sufficiently alkaline to raise the pH of said solution to the range of 4 to 9 and to substantially completely precipitate the compounds of members of said first group as hydroxides, the compounds of members of said second group being coprecipitated therewith;
3. separating the precipitate from the residual purified magnesium chloride solution;
4. heating said solution to a second temperature between about 400°C and 900°C, whereby the magnesium chloride therein is decomposed in the presence of water to magnesia and gaseous hydrochloric acid;
5. recovering said magnesia;
6. converting said gaseous hydrochloric acid to aqueous hydrochloric acid having said concentration of 15% to 32% by weight, and
7. dissolving an additional amount of said starting material in said last mentioned aqueous hydrochloric acid.

3,980,754

PURIFICATION OF ALKALI CARBONATE CONTAINING A FLUORINE COMPOUND

Susumo Otsuki; Junji Arika; Mitsunobu Kashibe, and Kosuke Takeshige, all of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Filed Aug. 8, 1975, Ser. No. 603,107

Claims priority, application Japan, Nov. 16, 1974, 49-132224

Int. Cl.² C01B *1/28;* C01D *1/32, 7/26*

U.S. Cl. 423—185 **7 Claims**

1. A process for purification of an alkali carbonate containing a fluoride impurity which comprises dissolving the crude alkali carbonate in an aqueous solution or suspension of magnesium bicarbonate in order to transfer the fluoride impurity into the resulting colloidal flocculated precipitate without formation of MgF_2, whereby the fluoride impurity is separated from the aqueous solution of the alkali carbonate.

3,980,755

SYSTEM FOR REMOVING CHLOROMETHYL ETHER AND BIS-CHLOROMETHYL ETHER FROM AIR CONTAMINATED THEREWITH

Ronald F. Black, Philadelphia, Pa.; Clarence P. Kurtz, Cherry Hill, N.J., and Robert J. Pasek, Langhorne, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 551,230, Feb. 19, 1975, abandoned. This application Dec. 24, 1975, Ser. No. 644,015

Int. Cl.² B01D *53/34*

U.S. Cl. 423—240 **10 Claims**

1. A method of removing chloromethyl methyl ether and/or bis-chloromethyl ether from inert gasses, such as air, contaminated with small amounts of such ether which comprises contacting the contaminated gas containing a small amount by volume of water vapor with an adsorbent bed comprising silica gel or activated alumina, or mixtures thereof, at such a temperature that said ether component of the gas is hydrolized.

3,980,756

AIR POLLUTION CONTROL SYSTEM

Donn Lewis Dixon, Granby, and Carl Richard Bozzuto, Enfield, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 28, 1974, Ser. No. 437,455

Int. Cl.² C01B *17/00*

U.S. Cl. 423—242 **7 Claims**

1. A method of removing SO_2 from a flue gas stream from a furnace comprising the steps of:

- a. contacting said flue gas in a scrubbing zone of a scrubber with an aqueous scrubbing medium containing solid alkaline earth metal carbonate, seed crystals of alkaline earth metal sulfate and dissolved alkaline earth metal carbonate and sulfate and having a pH of from 6.0 to 6.5 whereby said SO_2 reacts with said aqueous scrubbing medium to form sulfites and bisulfites;
- b. contacting an oxygen-containing gas with said aqueous scrubbing medium in said scrubbing zone, the amount of said oxygen being such that said oxygen reacts with only a portion of said sulfite to form sulfate thereby reducing the pH to 4.5;
- c. withdrawing said aqueous scrubbing medium from said scrubbing zone;
- d. contacting an oxygen-containing gas with said withdrawn aqueous scrubbing medium and introducing into said withdrawn aqueous scrubbing medium an additive material selected from the group consisting of alkaline earth metal carbonate and an alkaline earth metal oxide formed by calcining alkaline earth metal carbonate in said furnace, the amount of said additive material being selected to replace the amount of precipitated alkaline earth metals separated in step (g) and the amount of said oxygen-containing gas being such that said oxygen reacts with only a portion of the remaining sulfite to form sulfate and whereby the pH is maintained from 6.0 to 6.5;
- e. recycling a portion of said aqueous scrubbing medium from step (d) to step (a);
- f. contacting an oxygen-containing gas with the remaining portion of said aqueous scrubbing medium from step (d) to convert substantially all of the remaining sulfite to sulfate;
- g. separating precipitated alkaline earth metal sulfate from said oxidized remaining portion of said aqueous medium from step (f); and
- h. recycling said aqueous scrubbing medium from step (g) to step (d).

3,980,757

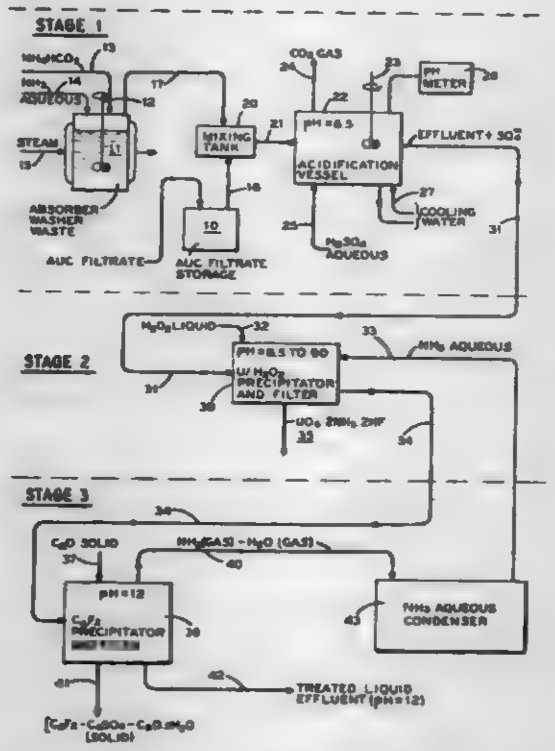
PROCESS FOR URANIUM SEPARATION AND PREPARATION OF $UO_4.2NH_3.2HF$

Halit Z. Dokuzoguz, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.

Continuation-in-part of Ser. No. 304,425, Nov. 6, 1972, abandoned. This application Sept. 14, 1973, Ser. No. 397,459

Int. Cl.² C01G *43/00*

U.S. Cl. 423—253 **9 Claims**



1. A process for producing $UO_4.2NH_3.2HF$ from a uraniferous mixture that is produced in converting uranium hexafluoride into uranium dioxide by way of an intermediate $(NH_4)_4UO_2(CO_3)_3$ wherein the mixture has a titratable basicity of 2.0 to 2.5 equivalents per liter (eq/l) and a hydronium concentration that corresponds to a pH of about 9.0 to 9.5, and which also contains carbonates, fluorides and ammonium, comprising the steps of adding sulfuric acid to the mixture until the combined mixture has a pH that is between 6.5 to 7, cooling and mixing the combined mixture while said sulfuric acid is being added in order to release the carbonates from the combined mixture until the carbonate concentration in the resulting mixture is reduced to less than 5 g/l, and to leave sulfate ions therein, adding ammonia to the resulting mixture to produce a pH between 8.4 to 9, adding an excess hydrogen peroxide to each liter of the resulting basic mixture to separate said residual basic mixture into a precipitate of $UO_4.2NH_3.2HF$ and an essentially uranium free material that contains said sulfate ions, separating said precipitate from said material as a new uranium and fluoride chemical compound.

3,980,758

PROCESS FOR THE COMBUSTION OF CHLORINE CONTAINING WASTES

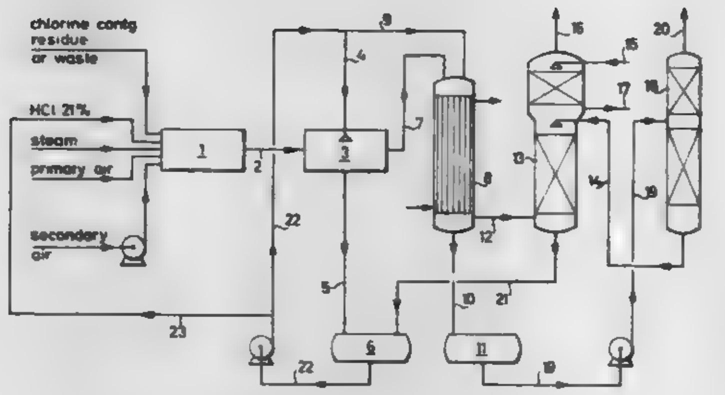
Reinhard Krumböck, Altotting, and Wenzel Kühn, Burgkirchen, Alz, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 424,715, Dec. 14, 1973, abandoned. This application Apr. 29, 1975, Ser. No. 572,755

Claims priority, application Germany, Dec. 22, 1972, 2262875

Int. Cl.² C01B *7/08*

U.S. Cl. 423—481 **2 Claims**



1. A process for the combustion of chlorine-containing residues or wastes with simultaneous recovery of the hydrogen chloride gas formed by said combustion, which comprises:

- a. burning the chlorine-containing residues or wastes at temperatures of from 600° to 1500°C in a combustion zone in the presence of excess air,
- b. simultaneously with said burning injecting azeotropic hydrochloric acid into the combustion zone and cooling same,
- c. washing the hydrogen chloride gas-containing combustion gases with azeotropic hydrochloric acid whereby the hydrogen chloride gas is absorbed by the azeotropic hydrochloric acid yielding hydrochloric acid of higher than azeotropic concentration,
- d. recovering hydrogen chloride gas and azeotropic hydrochloric acid from the hydrochloric acid of higher than azeotropic concentration, and
- e. recycling the recovered azeotropic hydrochloric acid to steps (b) and (c) above.

3,980,759

RECOVERY OF SULFUR DIOXIDE FROM GAS MIXTURES

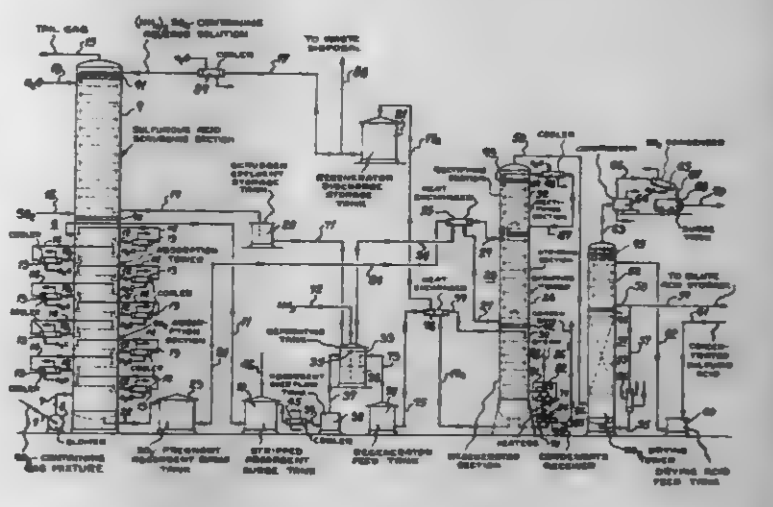
James M. Henderson, New Brunswick, N.J., and William H. Wetherill, Staten Island, N.Y., assignors to Asarco Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 446,081, Feb. 26, 1974. This application Jan. 17, 1975, Ser. No. 541,835

The portion of the term of this patent subsequent to May 25, 1993, has been disclaimed.

Int. Cl.² C01B *17/48*

U.S. Cl. 423—539 **27 Claims**



25. In a process for recovering sulfur dioxide from a gas mixture containing the same comprising absorbing sulfur dioxide from the gas mixture by contacting the gas mixture in an absorption zone with a liquid water-insoluble aromatic amine absorbent capable of releasing the sulfur dioxide upon subsequent treatment, treating sulfur dioxide-pregnant aromatic amine absorbent withdrawn from the absorption zone to cause the sulfur dioxide to be released from the liquid absorbent, and recovering the thus-released sulfur dioxide, the improvement which comprises scrubbing the sulfur dioxide-impoverished effluent gas which is enriched in gaseous aromatic amine absorbent from the sulfur dioxide absorption zone in a sulfurous acid scrubbing zone with sulfurous acid aqueous solution in the presence of ammonium sulfate also contained therein to remove substantially all aromatic amine absorbent from the gas, the sulfurous acid-and ammonium sulfate-containing aqueous solution being formed in the sulfurous acid scrubbing zone by supplying sulfur dioxide-containing gas into the scrubbing zone which is in addition to sulfur dioxide contained in the sulfur dioxide-impoverished effluent gas passing into the sulfurous acid scrubbing zone from the absorption zone, and supplying at least a portion of a liquid aqueous solution consisting essentially of ammonium sulfate withdrawn from an absorbent regenerating zone into said sulfurous acid scrubbing zone, the sulfur dioxide being dissolved in the water of the liquid aqueous ammonium sulfate-containing solution in the last-mentioned scrubbing zone to form the sulfurous acid-and ammonium-sulfate containing aqueous solution, and discharging the sulfur dioxide-impoverished, substantially aromatic amine absorbent-free effluent gas from the sulfurous acid scrubbing zone without any additional scrubbing of said effluent gas with sulfuric acid solution.

3,980,760
RECOVERY OF SULFUR DIOXIDE FROM GAS MIXTURES

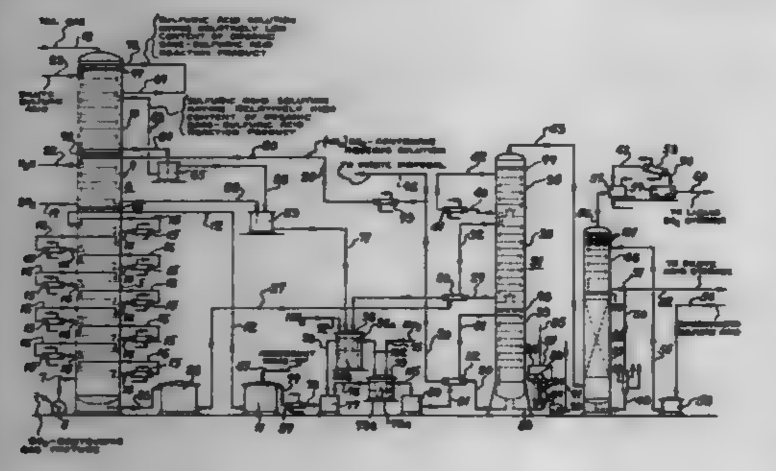
James M. Henderson, New Brunswick, N.J., and William H. Wetherill, Staten Island, N.Y., assignors to Asarco Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 446,081, Feb. 26, 1974. This application Sept. 3, 1974, Ser. No. 503,012

The portion of the term of this patent subsequent to May 25, 1993, has been disclaimed.

Int. Cl.² C01B *17/48*

U.S. Cl. 423—539 **32 Claims**



1. In a process for recovering sulfur dioxide from a gas mixture containing the same which comprises absorbing sulfur dioxide from the gas mixture by contacting the gas mixture in an absorption zone with a liquid, water-insoluble aromatic amine absorbent capable of releasing the sulfur dioxide upon subsequent treatment, scrubbing sulfur dioxide-impoverished effluent gas containing gaseous aromatic amine absorbent from said absorption zone with dilute sulfuric acid solution in an upright sulfuric acid scrubbing zone to remove residual aromatic amine absorbent from the gas, stripping sulfur dioxide from sulfur dioxide-pregnant aromatic amine absorbent in a stripping zone, and recovering the liberated sulfur dioxide from the stripping zone, the improvement which comprises subsequent to the sulfur dioxide absorbing step and prior to the sulfuric acid scrubbing, scrubbing the sulfur dioxide-impoverished effluent gas containing gaseous aromatic amine absorbent from the absorption zone in a sulfurous acid scrubbing zone with a sulfurous acid-and ammonium sulfate-containing aqueous solution, the presence of the ammonium sulfate in the aqueous solution resulting in an appreciably greater recovery of the aromatic amine in said sulfurous acid scrubbing zone than in the absence of the ammonium sulfate, the sulfurous acid-and ammonium sulfate-containing aqueous solution being formed in the sulfurous acid scrubbing zone by supplying sulfur dioxide-containing gas into said sulfurous acid scrubbing zone, the sulfur dioxide-containing gas supplied into the sulfurous acid scrubbing zone being in addition to sulfur dioxide contained in sulfur dioxide-impoverished effluent gas passing into said sulfurous acid scrubbing zone from said absorption zone, supplying a liquid aqueous solution consisting essentially of dissolved ammonium sulfate from a regenerating zone into said sulfurous acid scrubbing zone, the sulfur dioxide being dissolved in the water of the liquid aqueous solution consisting essentially of ammonium sulfate to form the sulfurous acid-and ammonium sulfate-containing aqueous solution, withdrawing liquid sulfuric acid solution containing a higher concentration of aromatic amine sulfate from a lower portion of the upright, sulfuric acid scrubbing zone and passing a portion of this withdrawn sulfuric acid solution back to an intermediate or upper portion of said sulfuric acid scrubbing zone and introducing the same therein, the higher concentration of aromatic amine sulfate in the sulfuric acid solution withdrawn from the lower portion of the sulfuric acid scrubbing zone being relative to a lower concentration of aromatic amine sulfate in a sulfuric acid solution withdrawn from an intermediate or upper portion of the sulfuric acid scrubbing zone above the point of introduction therein of the returned sulfuric acid solution containing the higher concentration of aromatic amine sulfate as hereafter specified, withdrawing the liquid sulfuric acid solution containing the lower concentration of aromatic amine sulfate from an intermediate or upper portion of the upright, sulfuric acid scrubbing zone above the point of introduction therein of the returned sulfuric acid solution having the higher concentration of aromatic amine sulfate and passing this withdrawn sulfuric acid solution having the lower concentration of aromatic amine sulfate back to a top portion of the sulfuric acid scrubbing zone and introducing the same therein, combining scrubbing aqueous solution containing aromatic amine sulfite and scrubbing aqueous solution containing aromatic amine sulfate from the sulfurous acid and sulfuric acid scrubbing zones respectively, adding ammonia to the combined scrubbing solutions in a separating zone, the ammonia being added to the combined solutions in amount sufficient to result in the release of the aromatic amine from the aromatic amine sulfate therein and formation of ammonium sulfate in said separating zone, separating the liquid aromatic amine from an aqueous liquid phase containing the ammonium sulfate and aromatic amine sulfite in said separating zone, withdrawing separated liqud aromatic amine from the separating zone and returning the withdrawn liquid aromatic amine ultimately to the sulfur dioxide absorbing step in the absorption zone, withdrawing aqueous liquid phase containing the aromatic amine sulfite from said separating zone and passing the aqueous liquid phase to the regenerating zone, heating said aqueous liquid phase in the regenerating zone to decompsoe the aromatic amine sulfite and liberate gaseous aromatic amine and sulfur dioxide gas and generate steam, passing the gaseous aromatic amine, sulfur dioxide gas and steam into the stripping zone, and withdrawing a liquid aqueous solution consisting essentially of dissolved ammonium sulfate from the regenerating zone and passing more than 50% by volume of the withdrawn liquid aqueous solution consisting essentially of dissolved ammonium sulfate for supply into the sulfurous acid scrubbing zone as aforesaid, a reduced amount of sulfuric acid solution being required for removal of the residual aromatic amine absorbent from the gas in the sulfuric acid scrubbing zone due to the scrubbing removal of the aromatic amine from the gas with the sulfurous acid-and ammonium sulfate-containing aqueous solution in the sulfurous acid scrubbing zone than in the absence of the ammonium sulfate.

3,980,761
PRODUCTION OF FINELY DIVIDED, LOW DEFECT, STOICHIOMETRIC TITANIUM DISULFIDE

Arthur H. Thompson, and Fred R. Gamble, both of New Providence, N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed May 9, 1975, Ser. No. 575,999

Int. Cl.² C01G *23/00*

U.S. Cl. 423—565 **11 Claims**

1. A process for preparing finely divided, substantially stoichiometric titanium disulfide which comprises heating metallic titanium to a reaction temperature between about 400° and 1000°C., contacting the heated titanium with less than stoichiometric amounts of elemental sulfur to form finely divided titanium-rich, non-stoichiometric titanium disulfide which corresponds to the formula Ti_xS_2 wherein x is a numerical value between about 1.05 and 1.25 and then annealing the titanium-rich non-stoichiometric titanium sulfide at an annealing temperature between about 400° and 600°C. in an atmosphere having a sulfur partial pressure substantially equal to the equilibrium sulfur partial pressure over titanium disulfide at the annealing temperature whereby the sulfur content of the finely divided titanium-rich, non-stoichiometric titanium disulfide is increased to form substantially stoichiometric titanium disulfide which corresponds to the formula Ti_yS_2, wherein y is a numerical value between about 1.00 and 1.02 and having a particle size distribution of about 100% less than about 2 microns and about 100% greater than about 0.1 micron.

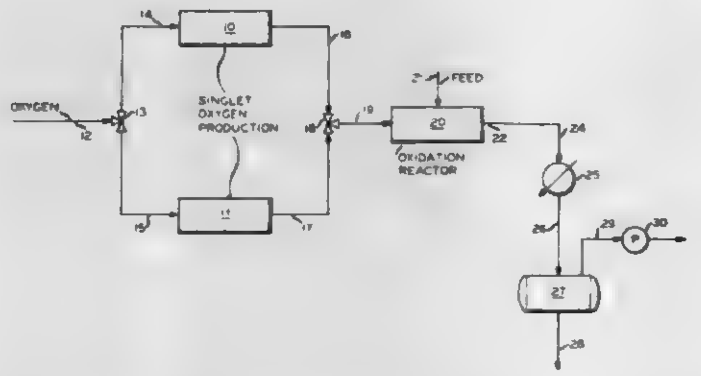
3,980,762
PRODUCTION OF SINGLET OXYGEN

Clifford M. Shiblom, Jr., and Jack P. Guillory, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 19, 1975, Ser. No. 559,890

Int. Cl.² C01B *13/00*

U.S. Cl. 423—579 **6 Claims**



1. The method of producing singlet oxygen which consists of contacting in a reactor oxygen with a calcined mixture comprising tin, phosphorus, lithium and oxygen, the tin comprising 15–75 weight percent of the mixture, the phosphorus comprising 0.1 to 16 weight percent of the mixture, the lithium comprising 0.1 to 10 weight percent of the mixture and the oxygen comprising at least 15 weight percent of the mixture, the temperature of said reactor being greater than about 550° C.; and recovering from the reactor the singlet oxygen so produced.

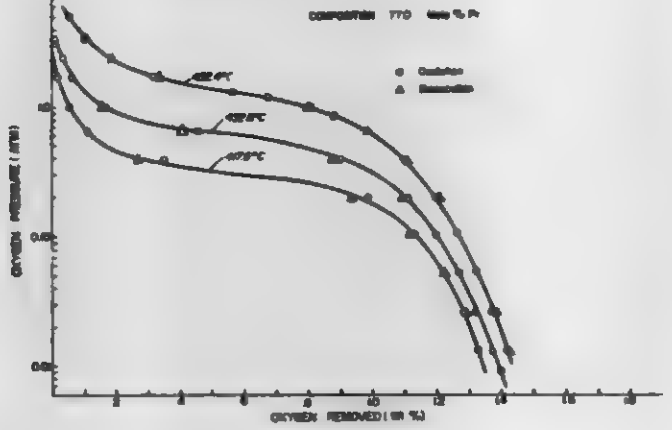
3,980,763
PROCESS AND COMPOSITION FOR SEPARATION OF OXYGEN FROM AIR USING Pr-Ce OXIDES AS THE CARRIER

Joseph Timothy Mullhaupt, Waldwick, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Oct. 25, 1973, Ser. No. 409,604

Int. Cl.² C01B *13/00*; B01J *23/10*

U.S. Cl. 423—579 **11 Claims**



1. A process for separating oxygen from an oxygen-containing gas mixture comprising the steps of:

1. oxidizing a reaction mass comprising a praseodymium-cerium oxide in a dissociated state containing about 33–92 mole % Pr by contacting it with said oxygen containing gas mixture thereby converting at least a portion of said reaction mass to a relatively more oxidized state,
2. separating the oxidized reaction mass from the oxygen-depleted gas mixture,
3. dissociating at least a portion of said oxidized reaction mass to form a relatively more reduced state of praseodymium-cerium oxide, thereby liberating oxygen, and
4. separating said liberated oxygen from said reduced state of praseodymium-cerium oxide.

8. A reaction mass comprising a non-stoichiometric oxide solid solution of praseodymium and cerium containing about 33–92 mole % Pr having the general formula:

$$(Pr_xCe_y)O_z$$

where:

the sum of x and y equals 1.0, and z varies from 1.5 to 2.0
and containing at least one surface dopant selected from the group consisting of silver, vanadium, manganese, copper, molybdenum, tungsten, platinum, thallium, lead and bismuth.

3,980,764
POLYMERIC COMPETITIVE PROTEIN BINDING ADSORBENTS FOR RADIOASSEY

Raymond J. Adams, Anaheim, Calif., assignor to Curtis Nuclear Corporation, Los Angeles, Calif.

Filed Nov. 5, 1973, Ser. No. 412,918

Int. Cl.² A61K *43/00, 39/00, 37/06*

U.S. Cl. 424—1 **10 Claims**

1. A tablet useful in radioassay for detecting the presence of a serum constituent comprising in minor effective radioassay proportion a specific adsorbent for said serum consituent comprising a copolymer of globulin and, as a comonomer, a specific binding protein for said serum constituent.

3,980,765
HALOGENATED IMMUNOADSORBENT

George L. Broussalian, 233 S. Brookhurst, Anaheim, Calif. 92804

Filed Oct. 1, 1973, Ser. No. 402,179

Int. Cl.² A61K *43/00, 39/00;* G01N *31/08, 33/16*

U.S. Cl. 424—1 **19 Claims**

1. A halogenated immunoadsorbent comprising: a halogenated proteinaceous material polymerized with an immunologically reactive protein, which immunologically reactive protein has a specific immune response, said halogenated proteinaceous material containing an amount of halogen sufficient to cause said halogenated immunoadsorbent to be a readily filterable, fine granular precipitate in water at a pH of about 7 and a temperature of about 25 degrees centigrade.

19. A physical admixture comprising:

polymerized halogenated proteinaceous material and an immunoadsorbent, said immunoadsorbent consisting essentially of a protein material polymerized with an immunologically reactive protein which immunologically reactive protein has a specific immune response, said polymerized halogenated proteinaceous material being formed by polymerizing halogenated proteinaceous material and containing an amount of halogen sufficient to cause said polymerized halogenated proteinaceous material to be a fine granular precipitate in water at a pH of about 7 and a temperature of about 25° centigrade, said immunoadsorbent being a near colloidal suspension in water at a pH of about 7 and a temperature of about 25° centigrade.

3,980,766

ORALLY ADMINISTERED DRUG COMPOSITION FOR THERAPY IN THE TREATMENT OF NARCOTIC DRUG ADDICTION

Irving F. Shaw, East Rockaway, and Jerome Berk, New Rochelle, both of N.Y., assignors to West Laboratories, Inc., Long Island City, N.Y.

Division of Ser. No. 387,712, Aug. 13, 1973, Pat. No. 3,885,027, which is a continuation-in-part of Ser. No. 133,344, April 12, 1971, abandoned. This application Jan. 27, 1975, Ser. No. 544,360

Int. Cl.² A61K *31/135*

U.S. Cl. 424—10 **2 Claims**

1. A solid composition for the oral treatment of narcotic addiction which is dispersible for dissolution before ingestion, said composition comprising:

a. an effective amount of methadone or its acid salts, and

b. an ingestible solid in a weight ratio of 10:1 to 40:1 per part of methadone in an amount sufficient to cause a rapid increase in viscosity during evaporation of an aqueous solution of the composition, wherein said ingestible solid is lactose, sucrose, mannitol, sorbitol, starch, microcrytalline cellulose, sodium carboxymethyl cellulose, methylcellulose ethylcellulose, carrageenin, gum tragacanth, gum acacia or polyvinylpyrrolidone.

3,980,767

GEL TOOTHPASTES

James Philip Chown, Stokes Poges, and John Maxwell Healey, Byfleet, both of England, assignors to Beecham Group Limited, Great Britain

Continuation of Ser. No. 299,540, Oct. 20, 1974, abandoned, which is a continuation of Ser. No. 149,783, June 3, 1971, abandoned, which is a continuation-in-part of Ser. No. 843,621, July 22, 1969, abandoned. This application Oct. 15, 1974, Ser. No. 514,376

Claims priority, application United Kingdom, July 23, 1968, 35109/68

Int. Cl.² A61K *7/18*

U.S. Cl. 424—52 **7 Claims**

1. A toothpaste consisting essentially of a first transparent gel body substantially free of dental abrasive and a second gel body or bodies comprising a solid finely divided dentally acceptable abrasive, said second gel body or bodies being partially or wholly disposed within the first gel body, the first gel body and second gel body or bodies having similar rheological properties.

3,980,768

METHOD OF PREPARING A HAIR CARE COMPOSITION

Lee Nell White, 17609 Coyle, Detroit, Mich. 48035

Filed July 26, 1974, Ser. No. 492,159

Int. Cl.² A61K *7/06*

U.S. Cl. 424—70 **4 Claims**

1. A method for the preparation of a hair care composition which comprises:

combining two teaspoons of sulphur and two teaspoons of quinine powder;
mixing the same with two egg yolks;
mixing the resulting mixture with one pound of petrolatum;
transferring the resulting mixture to a cooking utensil;
heating said mixture;
cooling said mixture;
straining said mixture;
adding one tablespoon of alcohol;
stirring; and
adding six drops of oil of cinnamon or cloves.

3,980,769

SHAMPOO CONTAINING A WATER-SOLUBLE CATIONIC POLYMER

Giuliana Ghilardi, and Claire Fiquet, both of Paris, France, assignors to L'Oreal, Paris, France

Filed Sept. 4, 1973, Ser. No. 394,346

Claims priority, application Luxemburg, Sept. 5, 1972, 65997

Int. Cl.² A61K *7/06*

U.S. Cl. 424—70 **14 Claims**

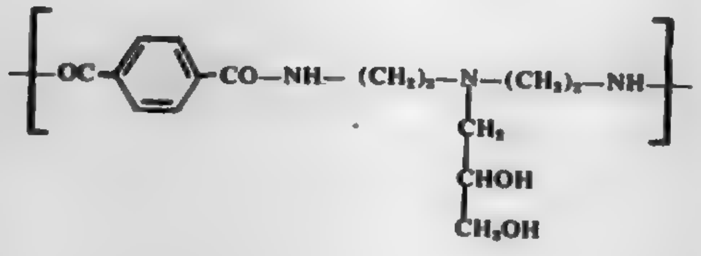
1. An aqueous detergent composition for use as a hair shampoo consisting essentially of

a. at least one anionic surface-active agent in an amount of 5 to 50% by weight of the total composition

b. at least one of an amphoteric surface active agent or polar nonionic surface-active agent, which polar nonionic is $R_1R_2R_3N$-O wherein R_1 is alkyl, alkenyl or monohydroxyalkyl of 10 to 16 carbon atoms, each of R_2 and R_3 is methyl, ethyl, propyl, hydroxyethyl or hydroxypropyl, in an amount of 0.5 to 4.9% by weight of the total composition and

c. a water soluble nitrogen-containing polymer having a molecular weight between 600 and 5,000,000, said polymer being present in an amount of 0.05 to 4% by weight of the total composition and selected from the group consisting of

i. polyamide-polyamine polymer having monomeric units of the formula



ii. vinylpyrrolidone quaternary copolymer having as structural groups:

49–90 mole percent vinylpyrrolidone,

5–40 mole percent dialkyl lower aminoalkyl acrylate or methacrylate, or dialkyl lower aminohydroxyalkyl acrylate or methacrylate, and

0–50 mole percent a copolymerizable vinyl monomer.

3,980,770

POLYMERIZATION PRODUCTS CONTAINING AMINO GROUPS USEFUL IN SERUM CHOLESTEROL LEVEL CONTROL

Björn G.-A. Ingelman; Bernt J. Lindberg; Jan G. Rosengren, all of Uppsala, and Dag E. S. Campbell, Sigtuna, all of Sweden, assignors to Pharmacia Aktiebolag, Uppsala, Sweden

Continuation of Ser. No. 257,734, May 30, 1972, abandoned. This application Dec. 5, 1974, Ser. No. 529,987

Claims priority, application Sweden, June 4, 1971, 7219/71

Int. Cl.² A61K *31/74;* **A01N** *9/20, 9/24*

U.S. Cl. 424—79 **14 Claims**

1. A pharmaceutical product for oral administration to mammals and birds having an elevated serum cholesterol level in their blood, which product contains a physiologically acceptable carrier and a cholesterol lowering amount of a waterinsoluble polymer containing amino groups and which polymer

a. contains residues of at least one diamine of the general formula

$H_2N.CH_2$.phenylene.$CH_2.NH_2$ (I)

which residues are interconnected by bridges between the residues to form a three-dimensional network, the bridges being bound to nitrogen atoms in the residues (I) and comprise straight or branched aliphatic, saturated hydrocarbon chains substituted with one to four hydroxyl groups and containing 3 – 16 carbon atoms and which are unbroken or broken by one to four oxygen atoms, the amino groups being present in a free form or in the form of the cation portion of a non-toxic salt, and

b. is insoluble in water, but capable of swelling in water to a gel, 1 g of the dry polymer in the form of the hydrochloride in the presence of water swelling to a volume within the range of 5 to 50 ml, inclusive, and

c. is in grain form having a particle size within the range of 1 to 1000 μ, and

d. has an ion-exchange capacity within the range of 0.2 to 1 milliequivalent chloride ions per 100 mg of dry gel.

3,980,771

PHEROMONE

Geertruida M. Meijer, Delft; Fridolin J. Ritter, Waddinxveen; Albert K. Minks, Zetten; Simon Voerman, Wageningen, and Cornelis J. Persoons, Pijnacker, all of Netherlands, assignors to Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel en Verkeer, The Hague, Netherlands

Division of Ser. No. 245,199, April 18, 1972, Pat. No. 3,866,349. This application Jan. 10, 1975, Ser. No. 540,257

Claims priority, application United Kingdom, Apr. 27, 1971, 11634/71

Int. Cl.² A01N *17/14*

U.S. Cl. 424—84 **2 Claims**

1. A synergistic composition for attracting the male summerfruit tortrix moth Adoxophyes orana comprising about one part cis-11-tetradecenyl acetate, and about three to nine parts cis-9-tetradecenyl acetate, in combination with a liquid carrier material, said composition containing less than 15% of the corresponding trans compounds.

3,980,772

METHODS OF DISSOLVING BLOOD CLOTS AND THE LIKE WITH STREPTOKINASE CHEMICALLY BONDED TO A CARBOHYDRATE MATRIX

Leonard George Ginger, Glenview, and Adaline Nicoles Mather, Evanston, both of Ill., assignors to Baxter Laboratories, Inc., Deerfield, Ill.

Division of Ser. No. 881,632, Dec. 2, 1969, Pat. No. 3,638,213. This application Sept. 30, 1971, Ser. No. 185,423

Int. Cl.² A61K *37/48*

U.S. Cl. 424—94 **6 Claims**

1. The process of dissolving blood clots and the like present in a living subject which comprises bringing into contact with said clot a composition of matter which comprises one part by weight of streptokinase chemically bonded to from ten to 200 parts by weight of a water soluble dextran support medium, said composition of matter being in the form of a colloidal solution having a particle size of less than 2 microns.

3,980,773

RUMINANT REPELLENT FROM FRESH LIPOIDAL MATERIAL

John H. Oh, and Katashi Oita, both of Seattle, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed June 10, 1974, Ser. No. 477,859

Int. Cl.² A61K *35/12, 35/56*

U.S. Cl. 424—95 **32 Claims**

1. A method for discouraging ruminants from browsing material eaten by ruminants comprising:

contacting at least the region adjacent said material with an amount of a repellent composition effective to discourage browsing of said material by ruminants, said repellent composition containing a phospholipid as an active repellent ingredient.

3,980,774

METHOD OF VIRAL CHEMOPROPHYLAXIS AND COMPOUNDS THEREFOR

Charles Paul Hegarty, Radnor, and Helen C. Pietryk, Havertown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 808,989, March 20, 1969, abandoned. This application Dec. 9, 1974, Ser. No. 530,888

Int. Cl.² A61K *33/02*

U.S. Cl. 424—166 **3 Claims**

1. A method of controlling a virus infection in a host suffering from a virus infection in which the virus is selected from the group consisting of Herpes simplex, Vaccinia, Influenza A(PR8), Influenza A_1 (Ann Arbor), Influenza A_2 (Taiwan), Influenza B (Mass.), Influenza B (Maryland), Mengo, Columbia SK polio, and Neurovaccinio comprising orally administering to the animal host from 250 picograms to 250 micrograms per kilogram of host body weight of a compound selected from the group consisting of:

A. Hydrazine
B. Hydralazine
C. sym-Dimethylhydrazine
D. unsym-Dimethylhydrazine
Methylhydrazine

and the pharmaceutically acceptable acid addition salts thereof.

3,980,775

COMPOUND FOR SKIN TREATMENT

Joseph Taylor, North Vancouver, Canada, assignor to Sebetrol Canada Inc., Vancouver, Canada

Filed Mar. 18, 1975, Ser. No. 559,583

Int. Cl.² A61K *31/00, 31/045, 31/05;* **A01N** *9/00*

U.S. Cl. 424—167 **5 Claims**

1. A synergistic compound for treatment of seborrheoa, psoriasis, pityriases, simplex, steatoides, simple dandruff and persistent scalp itch comprising a mixture, expressed in volumetric percentage, of

liquor picis carbonis	.5 percent to 4.0 percent
resorcin	.5 percent to 4.0 percent
menthol	.5 percent to 4.0 percent
pure water	5.0 percent to 20.0 percent
isopropanol	68.0 percent to 95.5 percent.

3,980,776

COMPOSITION CONTAINING DOUBLE STRANDED RNA FROM BASIDIOMYCETES AND METHOD OF USE

Nakao Ishida, and Mikio Kikuchi, both of Sendai, Japan, assignors to Nakao Ishida, Sendai, Japan

Division of Ser. No. 37,698, May 15, 1970, Pat. No. 3,907,778. This application Mar. 13, 1975, Ser. No. 557,971

Claims priority, application Japan, May 26, 1969, 44-40404

Int. Cl.² A61K *31/715, 45/02, 31/70*

U.S. Cl. 424—181 **9 Claims**

1. A pharmaceutical composition for viral infection inhibitory substance induction containing pharmaceutical carrier and as an active ingredient an effective amount of double stranded RNA substance prepared by extracting and isolating the double stranded RNA fraction out of the spore or mycelium of basidiomycetes.

3,980,777

O-ALKYL-O-[2-ALKYLTHIO-IMIDAZOL(4)YL](THIONO)-PHOSPHORIC(PHOSPHONIC) ACID ESTERS AND ESTER-AMIDES

Hellmut Hoffmann, Wuppertal; Ingeborg Hammann, Cologne, and Bernhard Homeyer, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

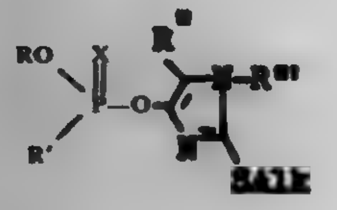
Filed June 20, 1975, Ser. No. 588,922

Claims priority, application Germany, July 2, 1974, 2431848

Int. Cl.^{2} C07F *9/65*

U.S. Cl. 424—200 **10 Claims**

1. An O-alkyl-O-[2-alkylthio-imidazol(4)yl]-(thiono)-phosphoric(phosphonic) acid ester or esteramide of the formula



in which

R is alkyl with 1 to 6 carbon atoms,

R′ is alkyl, alkoxy, or mono- or dialkylamino with 1 to 6 carbon atoms in each alkyl or alkoxy moiety,

R'' is cyano or carbalkoxy with 1 to 5 carbon atoms in the alkoxy chain,

R''' is alkyl or alkenyl each with up to 6 carbon atoms,

Alk is alkyl with 1 to 5 carbon atoms, and

X is oxygen or sulfur.

9. A method of combating insects, acarids or nematodes which comprises applying to the insects, acarids or nematodes or to a habitat thereof an insecticidally, acaricidally or nematicidally effective amount of a compound according to claim 1.

3,980,778

ANTI-INFLAMMATORY STEROID

Donald E. Ayer; Carl A. Schlagel, both of Kalamazoo, and Gordon L. Flynn, Ann Arbor, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 409,427, Oct. 25, 1973, abandoned, and a continuation-in-part of Ser. No. 316,973, Dec. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 233,337, March 9, 1972, abandoned. This application May 20, 1975, Ser. No. 579,177

Int. Cl.^{2} A61K *31/56*

U.S. Cl. 424—243 **12 Claims**

1. The chemical compound 6α,9α-difluoro-11β,17α,21-trihydroxy-16β-methylpregna-1,4-diene-3,20-dione.

2. A therapeutic composition for topical or local application for treatment of inflammation of skin or mucous membrane comprising from about 0.001% w/w to about 1.0% w/w of 6α,9α-difluoro-11β,17α,21-trihydroxy-16β-methylpregna-1,4-diene-3,20-dione 17,21-diacetate in association with a pharmaceutical carrier.

3,980,779

3-AMINO-1,2,4-BENZOTRIAZINE-1,4-DI-N-OXIDE COMPOSITIONS AND METHOD OF USING SAME

Kurt Ley, Odenthal-Globusch; Florin Seng, Schildgen, and Karl Georg Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

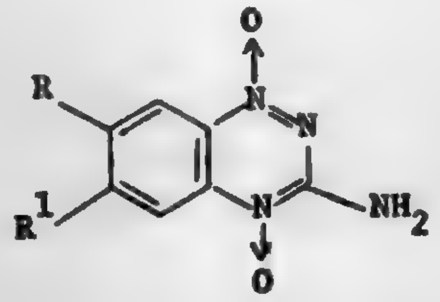
Division of Ser. No. 326,389, Jan. 24, 1973, Pat. No. 3,868,371. This application Apr. 29, 1974, Ser. No. 465,165

Claims priority, application Germany, Feb. 1, 1972, 2204574

Int. Cl.^{2} A61K *31/53*

U.S. Cl. 424—249 **34 Claims**

1. A pharmaceutical composition useful for the treatment of bacterial infections in humans and animals which comprises an antibacterially effective amount of a compound of the formula:



or an isomeric mixture thereof, wherein

R is hydrogen, halogeno, lower alkyl, halo(lower alkyl), lower alkoxy, carbamyl, sulfonamido, carboxy or carbo(-lower alkoxy), and

R^1 is hydrogen, halogeno, lower alkyl, halo(lower alkyl), lower alkoxy, carbamyl, sulfonamido, carboxy or carbo(-lower alkoxy),

in combination with a pharmaceutically acceptable nontoxic inert diluent or carrier.

3,980,780

N-METHYL-IMIDAZOLE DERIVATIVES FOR TREATING MYCOTIC INFECTIONS

Wilfried Draber; Karl Heinz Buchel; Erik Regel, and Manfred Plempel, all of Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Germany

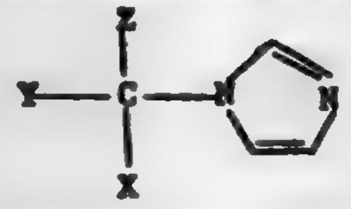
Division of Ser. No. 474,873, May 31, 1974, which is a division of Ser. No. 310,423, Nov. 29, 1972, which is a division of Ser. No. 120,333, March 2, 1971, Pat. No. 3,787,415. This application Feb. 28, 1975, Ser. No. 554,203

Claims priority, application Germany, Mar. 23, 1970, 2013793

Int. Cl.^{2} A61K *31/495*

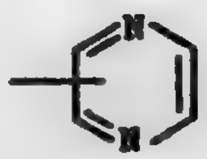
U.S. Cl. 424—250 **20 Claims**

1. A pharmaceutical composition for treating mycotic infections in humans and animals which comprises an antimycotically effective amount of a compound of the formula:



or a pharmaceutically-acceptable, nontoxic salt thereof, wherein

X is a 6-membered heteroaromatic moiety of the formula



Y is a cylopropyl, cyclohexyl, phenyl unsubstituted or substituted by 1 or 2 members selected from the group consisting of fluorine, chlorine, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, thioalkyl of 1 to 4 carbon atoms, trifluoromethyl and nitro; and

Z is pyridyl, phenyl, phenyl substituted by fluorine or chlorine, naphthyl or alkoxycarbonyl of 1 to 4 carbon atoms in the alkoxy moiety;

in combination with a pharmaceutically-acceptable, nontoxic, inert diluent or carrier.

3,980,781

FUNGICIDAL COMPOSITION AND METHOD CONTAINING 2-AMINO-PYRIMIDINES

Brian Kenneth Snell; Richard Stewart Elias, and Peter Frank Hilary Freeman, all of Bracknell, England, assignors to Imperial Chemical Industries Limited, London, England

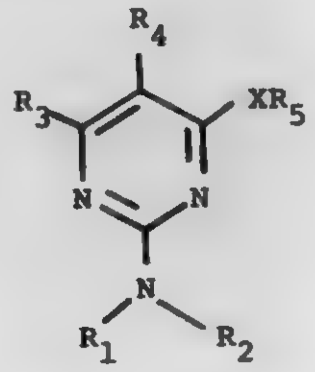
Continuation-in-part of Ser. No. 741,254, July 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 619,607, March 1, 1967, abandoned. This application Dec. 31, 1971, Ser. No. 207,530

Claims priority, application United Kingdom, Mar. 31, 1966, 14271/66; June 30, 1967, 30348/67; June 30, 1967, 30354/67

Int. Cl.^{2} A01N *9/22*

U.S. Cl. 424—251 **9 Claims**

1. A process for combatting powdery mildew which comprises applying to the locus of the plants or to the seeds thereof or to soil in which the seeds are to be planted, which plants are susceptible to attack by powdery mildew, a fungicidally effective amount of a systemically active pyrimidine derivative of the formula:



or a salt thereof, wherein R_1 and R_2 are hydrogen or lower alkyl; R_3 is lower alkyl; R_4 is lower alkyl or lower alkenyl; X is oxygen or sulfur and R_5 is hydrogen.

3,980,782

INHIBITION OF GASTRIC ACID SECRETION WITH PHENYL-SUBSTITUTED PERIMIDINES

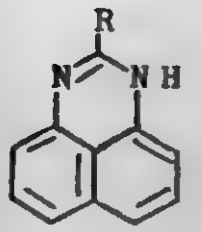
Vasken Paragamian, Dresher, Pa., and Russell J. Taylor, Jr., Palmyra, N.J., assignors to McNeil Laboratories, Incorporated, Fort Washington, Pa.

Continuation-in-part of Ser. No. 417,670, Nov. 20, 1973, abandoned. This application Mar. 5, 1975, Ser. No. 555,663

Int. Cl.^{2} A61K *31/505*

U.S. Cl. 424—251 **9 Claims**

1. The method of inhibiting gastric acid secretion which comprises internally administering to a gastric hyperacidic subject an effective gastric acid secretion inhibiting amount of a member selected from the group consisting of a 2-arylperimidine having the formula:



wherein R is a member selected from the group consisting of phenyl and hydroxyphenyl and a pharmaceutically acceptable acid addition salt thereof.

3,980,783

O-ALKYL-S-[3-OXO-TRIAZOLO-(4,3-α-PYRIDIN(2)YL-METHYL]-(THIONO)THIOL-PHOSPHORIC(PHOSPHONIC) ACID ESTERS AND ESTER-AMIDES

Walter Lorenz, Wuppertal; Ingeborg Hammann, Cologne, and Bernhard Homeyer, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

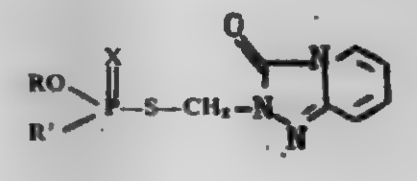
Filed May 9, 1975, Ser. No. 576,073

Claims priority, application Germany, May 21, 1974, 2424571

Int. Cl.^{2} C07D *213/44;* **A01N** *9/22*

U.S. Cl. 424—263 **10 Claims**

1. An 0-alkyl-S-[3-oxo-triazolo-(4,3-α)-pyridin-(2) ylmethyl]-(thiono)thiol-phosphoric(phosphonic) acid ester or ester-amide of the formula



in which

R is alkyl with 1 to 6 carbon atoms,

R′ is alkyl or alkoxy each with 1 to 6 carbon atoms, and

X is oxygen or sulfur.

3,980,784

CONTROL OF ANIMAL PARASITES WITH BENZIMIDAZOLES

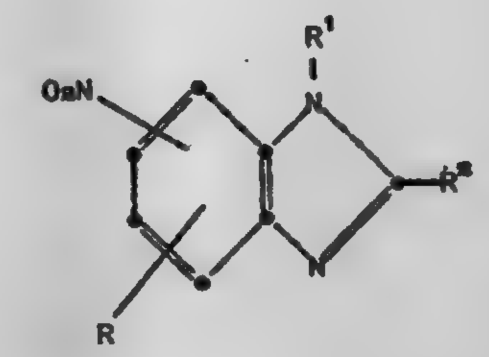
Lance George Peterson, Fresno, Calif., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 528,606, Dec. 2, 1974, abandoned, which is a continuation-in-part of Ser. No. 450,128, March 11, 1974, abandoned. This application June 12, 1975, Ser. No. 584,991

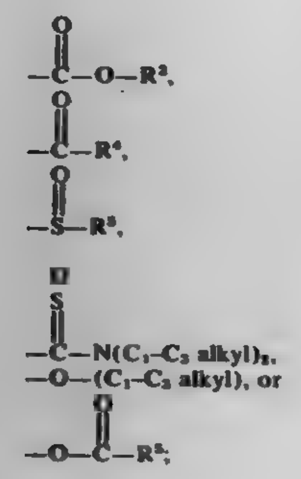
Int. Cl.^{2} A61K *31/415*

U.S. Cl. 424—273 **16 Claims**

1. A method of killing insect and acarina parasites which consume living tissues of a host animal which comprises orally or percutaneously administering to a host animal infested with such parasites a parasiticidally-effective amount of a compound of the formula



wherein R represents
  chloro,
  trifluoromethyl,
  difluoromethyl, or
  chlorodifluoromethyl;
R^1 represents
  hydrogen,
  hydroxy,



$$-\overset{\overset{O}{\|}}{C}-O-R^2,\quad -\overset{\overset{O}{\|}}{C}-R^4,\quad -\overset{\overset{O}{\|}}{S}-R^5,\quad -\overset{\overset{S}{\|}}{C}-N(C_1-C_3\ alkyl)_2,\quad -O-(C_1-C_3\ alkyl),\ or\quad -O-\overset{\overset{O}{\|}}{C}-R^5;$$

R^2 represents
  chlorodifluoromethyl,
  trifluoromethyl,
  1,1,2,2-tetrafluoroethyl,
  pentafluoroethyl,
  heptafluoropropyl, or
  heptafluoroisopropyl;
R^3 represents
  C_1–C_6 alkyl,
  C_2–C_3 alkenyl,
  phenyl, or
  benzyl;
R^4 represents
  C_1–C_5 alkyl,
  phenyl,
  chlorophenyl,
  anisyl, or
  tolyl;
R^5 represents
  C_1–C_3 alkyl, or
  phenyl;

or the ammonium, alkali metal, or alkaline earth metal salts of the above compounds wherein R^1 represents hydrogen.

3,980,785

SECONDARY AND TERTIARY-2-PHENYLBICYCLO[2,2,2]OCT-3-YL ALKYLAMINES AND COMPOSITION THEREOF

Eric Wildsmith, Lancaster, England, assignor to Lilly Industries, Ltd., London, England

Continuation-in-part of Ser. No. 411,881, Nov. 1, 1973. This application Aug. 11, 1975, Ser. No. 603,230

Claims priority, application United Kingdom, Nov. 4, 1972, 505931/72

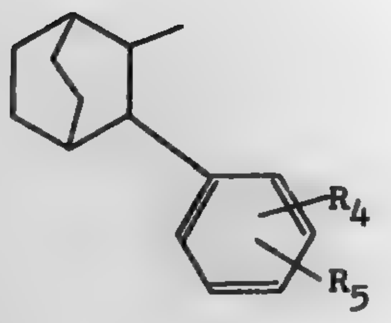
Int. Cl.^{2} A61K *31/455*

U.S. Cl. 424—266 16 Claims

14. Pharmaceutical composition in dosage unit form comprising as active ingredient a chemotherapeutically effective amount of a compound of the formula:

$$R-(CH_2)_n-NR_1R_2 \qquad I.$$

or a pharmaceutically acceptable acid-addition salt thereof, wherein n is an integer from 1 to 3, R_1 is C_{1-4} alkyl, R_2 is hydrogen or C_{1-4} alkyl and R is a trans 2-phenybicyclo[2,2,2] oct-3-yl group of formula:



(II)

wherein R_4 and R_5 represent the same or a different substituent selected from hydrogen, halogen, nitro, amino, mono- or di-C_{1-4} alkylamino, C_{1-4} alkyl or C_{1-4} alkoxy, associated with a pharmaceutically acceptable carrier therefor.

3,980,786

1,3-DIHYDRO-3-PHENYL-1'-(2-PROPYNYL)-SPIRO[ISOBENZOFURAN]S

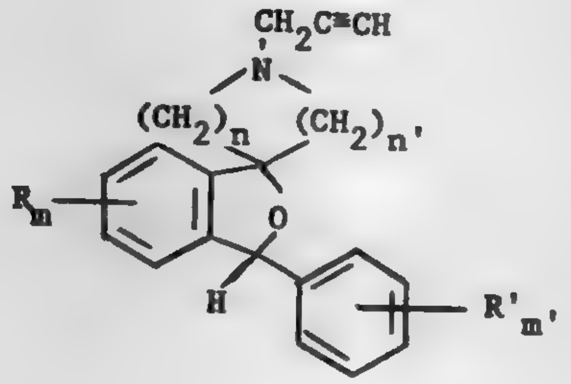
Brian J. Duffy, Flanders, N.J., assignor to American Hoechst Corporation, Bridgewater, N.J.

Filed July 15, 1975, Ser. No. 596,163

Int. Cl.^{2} C07D *405/04*

U.S. Cl. 424—267 15 Claims

1. A compound of the formula



wherein R and R' are lower alkyl, lower alkoxy, halogen, hydroxy; m and m' are the integers 0, 1 or 2; n and n' are integers from 1 to 3 with the sum of n and n' being 3, 4 or 5; and the pharmaceutically acceptable acid addition salts thereof.

3,980,787

3-PHENYLSPIRO[ISOBENZOFURAN-1,4'-PIPERIDINE]-SULFENAMIDES AND DERIVATIVES

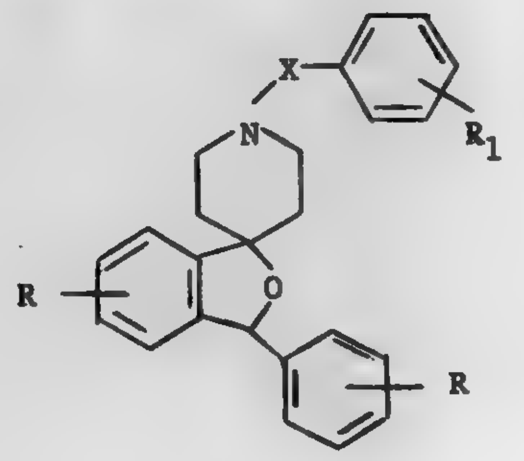
Solomon S. Klioze, Flemington, and William J. Novick, Jr., Lebanon, both of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Filed Aug. 25, 1975, Ser. No. 607,600

Int. Cl.^{2} C07D *405/04*

U.S. Cl. 424—267 15 Claims

1. A compound of the formula



wherein R is hydrogen, methyl, methoxy, halogen or hydroxy; R_1 is hydrogen, methyl, methoxy, halogen, nitro or amino; and X is —S—, —SO— or —SO_2—.

3,980,788

PHARMACEUTICAL COMPOSITIONS AND METHODS OF INHIBITING GASTRIC ACID SECRETION

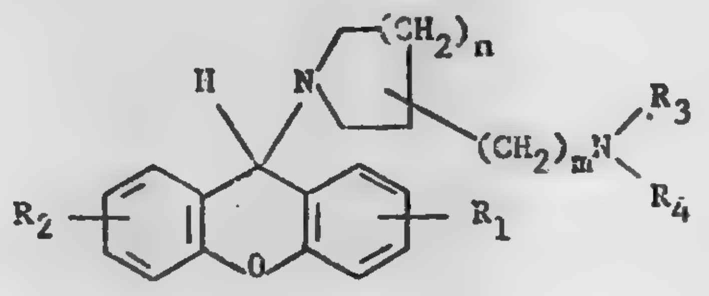
Paul E. Bender, Willingboro, N.J., and Bernard Loev, Broomall, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Sept. 15, 1975, Ser. No. 613,689

Int. Cl.^{2} C07D *405/04*

U.S. Cl. 424—267 20 Claims

1. A pharmaceutical composition having gastric acid secretion inhibitory activity, in dosage unit form, comprising a pharmaceutical carrier in a xanthenyl compound of the formula:



in which:
  n is 1 or 2;
  m is 0, 1, 2 or 3;
  R_1 is hydrogen, halogen, hydroxy, lower alkyl or lower alkoxy;
  R_2 is hydrogen, halogen, lower alkyl or lower alkoxy;
  R_3 is lower alkyl;
  R_4 is hydrogen, lower alkyl or lower alkanoyl or a pharmaceutically acceptable acid addition salt thereof, with the proviso that when m is 0, the amino group is not attached at the 2-position.

3,980,789

8-CHLORO-1-METHYL-6-PHENYL-4H-S-TRIAZOLO[4,3-a][1,4[-BENZODIAZEPINE COMPOSITIONS AND METHOD OF TREATMENT

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 129,273, March 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 872,394, Oct. 29, 1969, which is a continuation-in-part of Ser. No. 807,933, March 17, 1969, abandoned. This application June 19, 1972, Ser. No. 266,521

The portion of the term of this patent subsequent to Sept. 14, 1993, has been disclaimed.

Int. Cl.^{2} A61K *31/41*

U.S. Cl. 424—269 6 Claims

1. A pharmaceutical composition for inducing sleep comprising, in unit dosage form, from about 0.5 mg. to about 10.0 mg. of 8-chloro-1-methyl-6-phenyl-4H-s-triazolo[4,3-a][1,4]benzodiazepine or a pharmacologically acceptable acid addition salt thereof in combination with a pharmaceutical carrier.

3,980,790

8-CHLORO-1-METHYL-6-(o-CHLOROPHENYL)-4H-S-TRIAZOLO[4,3-a]-[1,4]BENZODIAZEPINE COMPOSITIONS AND METHOD OF TREATMENT

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 129,272, March 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 872,394, Oct. 29, 1969, which is a continuation-in-part of Ser. No. 807,933, March 17, 1969, abandoned. This application Aug. 4, 1972, Ser. No. 278,141

Int. Cl.^{2} A61K *31/41*

U.S. Cl. 424—269 6 Claims

1. A pharmaceutical composition for inducing sleep comprising, in unit dosage form, from about 0.1 mg. to about 10.0 mg. of 8-chloro-1-methyl-6-(o-chlorophenyl)-4H-s-triazolo[4,3-a][1,4]-benzodiazepine or a pharmacologically acceptable acid addition salt thereof in combination with a pharmaceutical carrier.

3,980,791

TETRAMISOLE AND LEVAMISOLE POUR-ON ANTHELMINTIC COMPOSITIONS AND METHODS OF USE

Hans Peter Schulz, Wuppertal, and Herbert Voege, Opladen-Bruchhausen, both of Germany, assignors to Bayer Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 480,110, June 17, 1974, abandoned. This application Dec. 13, 1974, Ser. No. 532,595

Claims priority, application Germany, June 22, 1973, 2331793

Int. Cl.^{2} A61K *31/425*

U.S. Cl. 424—270 47 Claims

1. A pour-on veterinary composition useful for the treatment of helminthic infestations in animals which comprises from 1 to 20 percent by weight of tetramisole, levamisole or a nontoxic acid addition salt thereof in combination with ethanol or isopropanol as diluent suitable for pour-on therapy.

3,980,792

UREIDOACETAMIDO-PENICILLINS

Hans-Bodo Konig; Wilfried Schrock, both of Wuppertal-Elberfeld; Hans Disselnkotter, Cologne, and Karl Georg Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

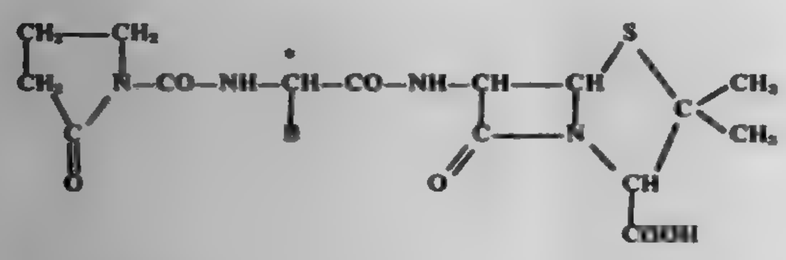
Division of Ser. No. 426,188, Dec. 19, 1973, Pat. No. 3,939,149, which is a division of Ser. No. 145,809, May 21, 1971, abandoned, which is a division of Ser. No. 145,877, May 21, 1971, abandoned. This application Apr. 16, 1975, Ser. No. 568,477

Claims priority, application Germany, May 25, 1970, 2025414; May 25, 1970, 2025415

Int. Cl.² A61K *31/43*

U.S. Cl. 424—271 9 Claims

1. A pharmaceutical composition for treating bacterial infections comprising an effective amount of a penicillin of the formula:



wherein

the carbon atom designated by * constitutes a center of chirality; and

B is phenyl or tolyl;

or a pharmaceutically acceptable nontoxic salt thereof, in combination with a pharmaceutically acceptable nontoxic, inert diluent or carrier.

3,980,793

CARBONATE ESTERS OF PENICILLINS AND COMPOSITIONS AND METHODS FOR TREATMENT OF BACTERIAL INFECTIONS

Sven Erik Dahlen, Huddinge; Bertil Ake Ekstrom, and Berndt Olof Harald Sjoberg, both of Sodertalje, all of Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

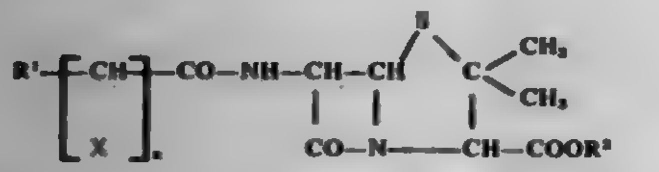
Continuation-in-part of Ser. No. 337,720, March 2, 1973, abandoned. This application Sept. 9, 1974, Ser. No. 504,177

Claims priority, application United Kingdom, Mar. 13, 1972, 11687/72

Int. Cl.² A61K *31/43*

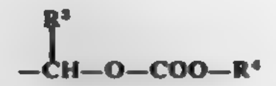
U.S. Cl. 424—271 14 Claims

1. A method for treatment of bacterial infection in a mammal comprising oral administration to said mammal of an anti-bacterially effective amount of a pharmaceutical composition containing, as an active ingredient in a pharmaceutically acceptable carrier, at least 1% (w/w) of a carbonate ester of the structural formula



(I)

or a therapeutically acceptable salt thereof, in which formula R¹ is phenyl which may be unsubstituted or substituted with one or more members of the group consisting of amino, alkyl groups containing from 1 to 4 carbon atoms, halogen, and phenyl; R² represents the group



$$-\overset{\displaystyle R^3}{\overset{|}{C}}H-O-COO-R^4$$

in which formula R³ is selected from the group consisting of hydrogen and methyl, and R⁴ is selected from the group consisting of alkyl groups containing from 1 to 8 carbon atoms, cycloalkyl groups containing from 3 to 7 carbon atoms, benzyl, and phenyl, whereby the alkyl, cycloalkyl, benzyl, and phenyl groups may be unsubstituted or substituted with one or more groups selected from the class consisting of amino, methylamino, diethylamino, and nitro; X is selected from the group consisting of hydrogen and hydroxy; and *n* is 0 or 1, provided that X is hydroxy when n is 1 and R⁴ is an unsubstituted alkyl group.

3,980,794

METHOD FOR PROMOTING GROWTH OF POULTRY WITH 3-(5-NITRO-2-IMIDAZOLYL)PYRAZOLES

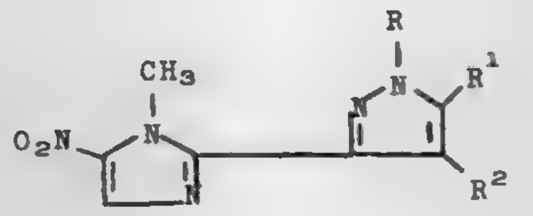
John Pomfret Verge, Henley-on-Thames; Martin Charles Neville, Tadley, both of England, and Henry Friedman, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 469,176, May 13, 1974, Pat. No. 3,947,467, which is a continuation-in-part of Ser. No. 385,136, Aug. 2, 1973, abandoned. This application Mar. 14, 1975, Ser. No. 558,591

Int. Cl.² A61K *31/415*; A23K *1/16*

U.S. Cl. 424—273 3 Claims

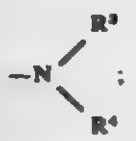
1. A method for promoting the growth of poultry which comprises administering thereto a growth-promoting amount of a compound of the formula



wherein

R is C_1-C_3 alkyl, halo(C_1-C_3)alkyl, or hydroxy(C_1-C_3)alkyl;

R¹ is



$$-N\begin{matrix}\diagup R^3\\ \diagdown R^4\end{matrix}\ ;$$

R² is cyano;

R³ and R⁴ are the same or different and are hydrogen or C_1-C_3 alkyl.

3,980,795

PYRAZOLIDINONES AND A PROCESS FOR THEIR PREPARATION

Joachim Gante; Hans-Adolf Kurmeier; Erich Schacht; Werner Mehrhof, and Albrecht Wild, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

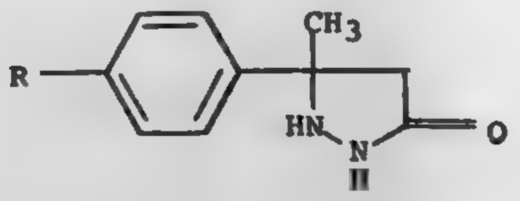
Filed Nov. 5, 1975, Ser. No. 628,933

Claims priority, application Germany, Nov. 8, 1974, 2452946

Int. Cl.² C07D *231/08*; A61K *31/415*

U.S. Cl. 424—273 14 Claims

1. A pyrazolidinone of the formula



wherein R is phenyl, phenoxy or a corresponding group monosubstituted or polysubstituted by at least one of F, Cl and Br.

3,980,796

SUBSTITUTED 2-ALKOXYCARBONYLAMINE-5-(6)-PHENYLMERCAPTO-BENZIMIDAZOLES

Günter Karl Wilhelm Otto Dransch, deceased, late of Eschborn, Taunus, Germany; by Annelise Klara Helene Wiesenhütter, heiress, Eschborn, Taunus, Germany; Johanna Mathilde Flersheim, heiress, Berlin, Germany; Hilmar Mildenberger, Kelkheim, Taunus, Germany; Dieter Düwel, Hofheim, Taunus, Germany, and Reinhard Kirsch, Niederjosbach, Taunus, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

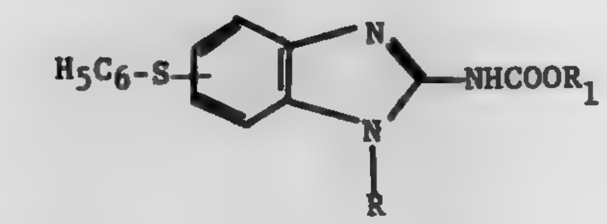
Filed May 27, 1975, Ser. No. 582,227

Claims priority, application Germany, May 28, 1974, 2425704

Int. Cl.² C07D *235/32*

U.S. Cl. 424—273 6 Claims

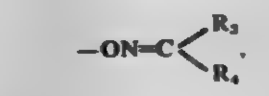
1. A substituted phenylmercapto-benzimidazole of the formula



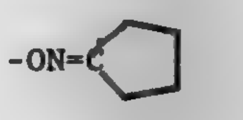
wherein R_1 is alkyl of 1 to 4 carbon atoms and R is an alkanoyl of the formula

$$O{=}C{-}R_2,$$

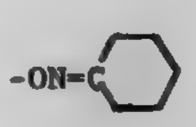
wherein R_2 is alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkoxyalkyl of 2 to 4 carbon atoms, alkoxyalkoxy of 2 to 4 carbon atoms, in which the alkyl may be substituted by up to 4 halogen atoms, or phenyl, cyclohexyl, phenoxy, cyclohexyloxy, phenoxyalkyl or cyclohexyloxyalkyl wherein the alkyl is of 1 to 4 carbon atoms, and in which the phenyl or cyclohexyl moieties may be substituted by alkyl of 1 or 2 carbon atoms, haloalkyl of 1 or 2 carbon atoms, alkoxy of 1 or 2 carbon atoms, haloalkoxy of 1 or 2 carbon atoms, halogen, or a combination thereof, or R_2 is



$$-ON{=}C\begin{matrix}\diagup R_3\\ \diagdown R_4\end{matrix},$$



or



wherein R_3 and R_4 are independently alkyl of 1 to 4 carbon atoms; or wherein R is a substituent of the formula

$$CCl_3{-}CHNHCOR_5,$$

wherein R_5 is hydrogen, alkyl of 1 to 4 carbon atoms, cycloalkyl of 5 or 6 carbon atoms or phenyl, in which phenyl may be substituted by alkyl of 1 or 2 carbon atoms, haloalkyl of 1 or 2 carbon atoms, alkoxy of 1 or 2 carbon atoms, haloalkoxy of 1 or 2 carbon atoms, halogen, or a combination thereof.

3,980,797

HEXAHYDRO-DIAZEPINO-INDOLE DERIVATIVES

Rochus Jonas; Helmut Müller-Calgan, and Hans-Jochen Schliep, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

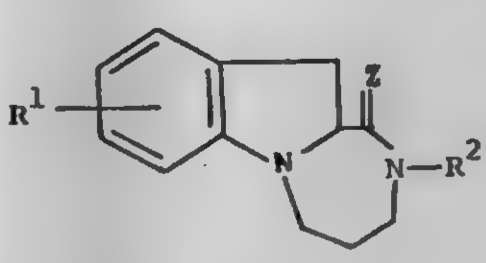
Filed June 13, 1975, Ser. No. 586,808

Claims priority, application Germany, June 14, 1974, 2428691

Int. Cl.² C07D *487/04*

U.S. Cl. 424—274 32 Claims

1. A hexahydrodiazepinoindole of the formula



wherein R¹ is H, F, Cl, CF_3, alkyl or alkoxy each of 1 to 3 carbon atoms; R² is H, alkyl, cycloalkyl or alkenyl each of up to 6 carbon atoms, or alkyl of 1–6 carbon atoms substituted by one of oxo oxygen, (b) amino, alkylamino or dialkyl amino of 2 to 6 carbon atoms, (c) phenyl or alkyl phenyl of 6 to 8 carbon atoms, or (d) one each of two or three of (a), (b), and (c); and Z is O or (H,H), and physiologically acceptable acid addition salts thereof.

30. A pharmaceutical composition adapted for oral ingestion comprising an amount from 1 to 500 mg. per dosage unit effective to induce a CNS-depressant effect of a compound of claim 1 in admixture with a pharmaceutically acceptable carrier.

31. A method for inducing a CNS-depressant effect in a mammal which comprises administering to a mammal a CNS-depressant effective amount of a compound of claim 1.

3,980,798
DICHLOROMALEIC IMIDES FOR FUNGICIDAL COMPOSITION AND METHOD

Hans Moser, Magden, AG; Elmar Sturm, Aesch, and Raphael Menassé, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

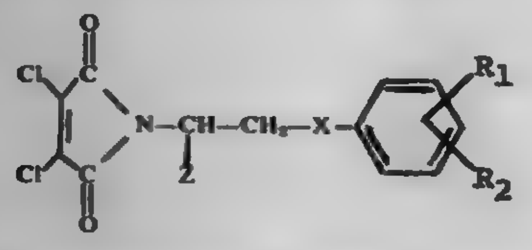
Division of Ser. No. 321,624, Jan. 8, 1973, Pat. No. 3,894,043. This application Apr. 17, 1975, Ser. No. 568,946

Claims priority, application Switzerland, Jan. 12, 1972, 438/72; Dec. 4, 1972, 17626/72

Int. Cl.² A01N *9/22*

U.S. Cl. 424—274 13 Claims

1. A fungicidal composition which comprises a fungicidally effective amount of a compound of the formula



wherein Z represents hydrogen or methyl, X represents oxygen, sulphur or the group NR_3, in which R_3 represents hydrogen or methyl, R_1 represents hydrogen, chlorine, bromine or trifluoromethyl, and R_2 represents hydrogen, halogen, methyl or trifluoromethyl, together with a suitable inert carrier therefor.

3,980,799
USE OF OXIME-ETHERS AS A SYNERGISTICALLY ACTING ADDITIVE TO INSECTICIDALLY AND/OR ACARICIDALLY ACTIVE SUBSTANCES

Henry Martin, Basel, Switzerland; Georg Pissiotas, Loerrach, Germany, and Volker Dittrich, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

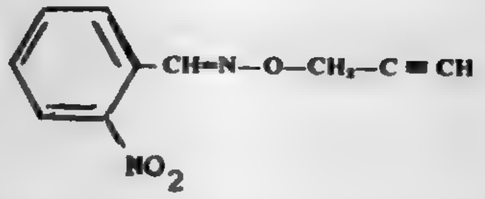
Filed Apr. 1, 1970, Ser. No. 24,890

Claims priority, application Switzerland, Apr. 14, 1969, [illegible]

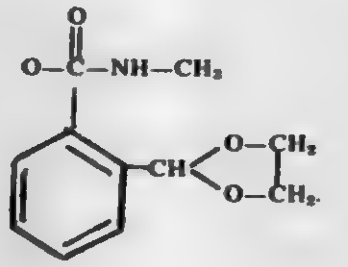
Int. Cl.² A01N *9/20, 9/28*

U.S. Cl. 424—278 1 Claim

1. An insecticidal and acaricidal composition which comprises substantially equal amounts of (1) the oxime ether of the formula:



and (2) the carbamic acid derivative of the formula:



3,980,800
POLYMERS OF N-(CHLOROALKOXYMETHYL)ACRYLAMIDES, QUATERNARY AMMONIUM DERIVATES

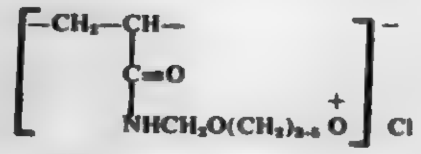
Daniel Elmer Nagy, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 479,337, June 14, 1974, Pat. No. 3,957,869. This application Sept. 25, 1975, Ser. No. 616,515

Int. Cl.² C08F *26/00, 126/08, 226/00, 18/00*

U.S. Cl. 526—23 3 Claims

1. A water-soluble cationic polymer consisting essentially of 70 to 99 mol percent of acrylamide units and 30 to 1 mol percent of vinyl quaternary ammonium units of the formula



$$\left[\begin{array}{l}-CH_2-CH-\\ \qquad\quad\;\, |\\ \qquad\quad\;\, C=O\\ \qquad\quad\;\, |\\ \qquad\quad\;\, NHCH_2O(CH_2)_{2-6}\overset{+}{Q}\end{array}\right]^{-} Cl$$

wherein Q is the residue of a water-soluble tertiary amine.

ELECTRICAL

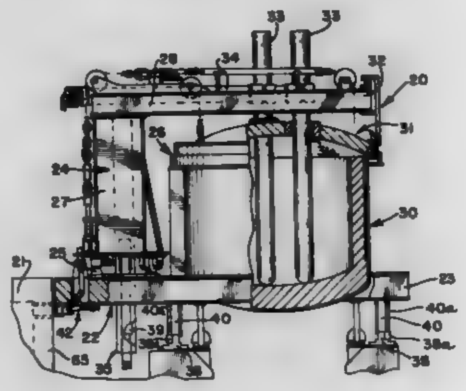
3,980,801
TILT AND SWING LOCK MECHANISM FOR ELECTRIC FURNACE

Algimantas Milasius, Chicago Heights, Ill., assignor to Whiting Corporation, Harvey, Ill.

Filed Sept. 5, 1975, Ser. No. 610,693

Int. Cl.² F27B *14/02*

U.S. Cl. 13—10 11 Claims



1. In a top charge tiltable direct-arc electric furnace including

a foundation,
a framework tiltably mounted on said foundation,
a furnace body mounted on said framework, and a roof which is swingable on said framework for opening and closing said body,
the improvement comprising
mechanically interconnected means for preventing said furnace body from tilting and for preventing said roof from being horizontally swung from over said body, and
the engagement of said means for preventing said tilting being substantially overlapped with the engagement of said means for preventing said swinging whereby simultaneous displacement of said means allowing tilting and swinging is prevented.

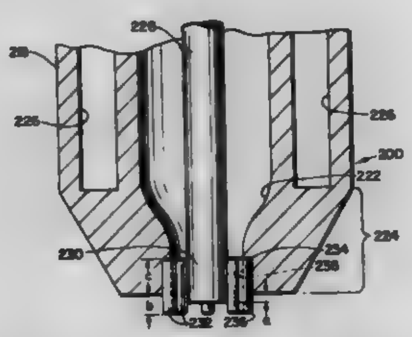
3,980,802
METHOD OF ARC CONTROL IN PLASMA ARC FURNACE TORCHES

Boris Evgenievich Paton, Apt. 21, 11/13, Kotsubinskogo Str.; Victor Iosifovich Lakomsky, Bastionoja, ul. 10; Gary Alexandrovich Melnik, ul. Prazhskaya 3, kv. 169; Anatoli Ivanovich Chvertko, Blvd. Lesiga, Ukrainka 2, and Alfred Iosifovich Bukalo, Apt. 69, 8/2, Zaporozhtsa Str., all of Kiev, U.S.S.R.

Division of Ser. No. 409,329, Oct. 24, 1973, Pat. No. 3,849,584. This application Aug. 20, 1974, Ser. No. 498,937

Int. Cl.² H05H *1/26*

U.S. Cl. 13—18 9 Claims



1. A method of preventing operational destruction of a plasma arc torch for use in making ingots by plasma arc remelting wherein the plasma arc torch has a center electrode, a hollow water-cooled elongate torch body and a nozzle end structure which is fastened to the end of the torch body and has a hollow water-cooled nozzle body surrounding and spaced from the lower end of the electrode to form an annular nozzle channel, comprising: substantial elimination of ablation of nozzle structure and burnthrough of nozzle structure by providing a plurality of electrically conductive heat sink material means mounted in the interior of the nozzle body, around and radially spaced from the electrode, and disposing each heat sink material means so that it provides heat sink material extending axially along the outer wall of the nozzle channel and disposed closer to the electrode than any surface portion of the nozzle body in the vicinity of the nozzle channel, to thereby control and direct the current path of intermittent arcing which occurs from electrode to nozzle structure during remelting to area and zones of the nozzle structure whereat ablation of material is minimized and burnthrough of nozzle walls does not occur.

3,980,803
LINEAR PHENYLMETHYLSILICONE OIL AS DIELECTRIC FOR STATIONARY ELECTRIC DEVICE

Sachio Yasufuku, Fujisawa; Yasuaki Ishioka, Yokohama; Takeshi Tanii, Yokosuka, and Sigeo Nakayama, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Sept. 30, 1974, Ser. No. 510,568

Claims priority, application Japan, Oct. 1, 1973, 48-109287

Int. Cl.² H01K *5/00;* **H01B** *3/18*

U.S. Cl. 174—17 LF 8 Claims

1. In a stationary electric device containing as an impregnating oil a straight-chain phenylmethylsilicone oil whose organic radical consists of methyl radicals and phenyl radicals, the improvement wherein said phenylmethylsilicone oil has a kinematic viscosity at 25°C in the range of 30–120 centistokes and the ratio of the phenyl radical to the whole organic radical is 0.5–9.0 mol %.

3,980,804
HIGH TENSION COAXIAL CABLE WITH END STRUCTURE FOR PREVENTING GLOW DISCHARGES

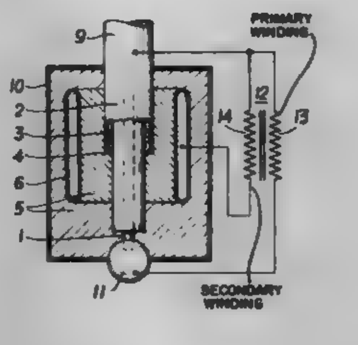
Heribert Schneider, 14/13 Wurthgasse, A-1190 Vienna, Austria

Filed Mar. 28, 1975, Ser. No. 562,945

Claims priority, application Austria, Mar. 29, 1974, 2599/74

Int. Cl.² H01T *19/00*

U.S. Cl. 174—73 R 8 Claims

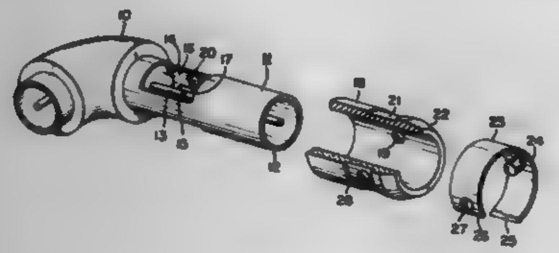


1. In combination, a high-tension electric appliance having at least two spaced main electrodes with a dielectric material disposed therebetween, and means on said appliance for preventing glow discharges on said main electrodes, said means comprising at least one auxiliary electrode extending parallel to said main electrodes and located in spaced relationship therefrom, and means for producing an auxiliary voltage having a potential opposite to the potential of the voltage of one of said main electrodes and applied to the auxiliary electrode.

3,980,805

QUICK RELEASE SLEEVE FASTENER

Dominic Timothy Lipari, Reynoldsburg, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 31, 1975, Ser. No. 563,617
Int. Cl.² H01R *5/02*
U.S. Cl. 174—88 C **3 Claims**

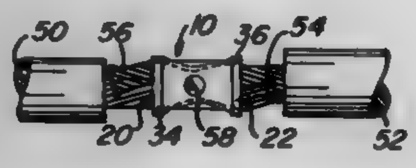


1. An electrical connector assembly comprising an outer tubular conductor, an inner conductor coaxial within said outer conductor, said outer conductor having at least one port for permitting access to said inner conductor and a first aperture, a shielding sleeve slidably positioned about said outer conductor over said port, said sleeve having a second aperture aligned with said first aperture, and means for removably securing said shielding sleeve comprising an open-sided spring clip encircling said sleeve, said clip having a substantially inwardly directed pin means at its closed side fitted in said aligned first and second apertures, said sleeve also having at least an indentation formed therein substantially in circumferential alignment with said first aperture, said clip having provided at one of its open ends an inwardly directed protrusion engaging said indentation.

3,980,806

CABLE SPLICE JOINING A PAIR OF FLEXIBLE CONDUCTING CABLES

Francis A. May, Pittsburgh, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 179,445, Sept. 10, 1971, abandoned. This application Mar. 26, 1975, Ser. No. 562,228
Int. Cl.² H01R *5/10*
U.S. Cl. 174—90 **7 Claims**



1. A cable splice joining a pair of flexible conducting cables comprising,

end portions of said pair of cables being disposed in a cylindrical metallic sleeve having opposite end portions and a continuous cylindrical body portion of a preselected thickness,

a shaped annular portion positioned adjacent each said opposite end portions,

each said shaped annular portion including an outwardly flared inner surface intersecting an outer cylindrical surface positioned substantially parallel to said cylindrical body portion,

each said shaped annular portion having a thickness less than the thickness of said cylindrical body portion of said metallic sleeve,

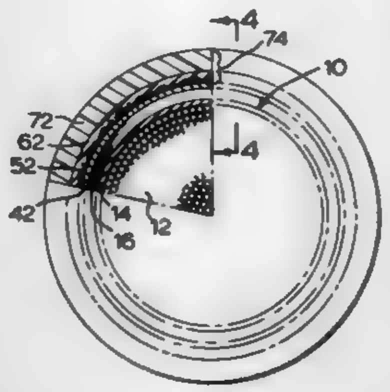
said cable end portions extending into said opposite end portions of said sleeve in overlapping relation with each other, and

said body portion being crimped in a single circumferential band of crimping indentations into compressing contact with said overlapping cable end portions.

3,980,807

POLYURETHANE JACKETING OF METAL SHEATHED CABLE

Leo Victor Woytiuk, Point-Claire, Canada, assignor to Northern Electric Company Limited, Montreal, Canada
Filed Mar. 17, 1975, Ser. No. 559,175
Int. Cl.² H01B *7/18*
U.S. Cl. 174—107 **3 Claims**

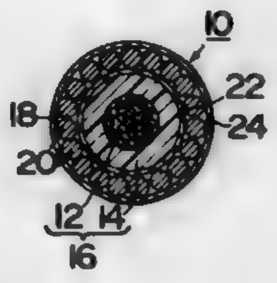


1. In an electric cable having a core and a corrugated metal sheath, a layer of fabric circumscribing the sheath and embedded in thermosetting polyurethane resin, and a jacket of thermoplastic polyurethane resin circumscribing the sheath and overlaying the layer of fabric, and thermosetting polyurethane bonding the jacket to the sheath.

3,980,808

ELECTRIC CABLE

Koji Kikuchi; Hiroshi Suzuki, and Toshio Nomura, all of Yokohama, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan
Filed Sept. 19, 1974, Ser. No. 507,394
Int. Cl.² H01B *7/02, 7/18*
U.S. Cl. 174—110 SR **7 Claims**



1. An electric cable comprising electrical conductor means and a fiber reinforced plastic reinforcing member including a roving of strands of reinforcing elongated fibers and synthetic resin of 15 to 50 percent by weight as compared with said strands, said strands of said roving being bonded by said synthetic resin, characterized in that said synthetic resin has glass powder of at most 16 percent by weight added thereto.

3,980,809

ENCODING LOGIC FOR REDUCED BANDWIDTH PICTORIAL DATA TRANSMISSION SYSTEM

William Christopher Cook, Rockville, Md., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of Ser. No. 379,523, July 16, 1973, abandoned. This application Mar. 6, 1975, Ser. No. 555,756
Int. Cl.² H04N *7/12*
U.S. Cl. 178—6 **4 Claims**

1. An apparatus for encoding a two dimensional fixed image in a data image transmission system, where the image is subdivided into a plurality of individual elemental areas forming a matrix of elements each having attributed thereto a binary value for black or white contents therein and said elements being allocated into adjacent data blocks of *n* by *m* elements, comprising:

a data block register connected to an input line for receiving an n by m element data block;

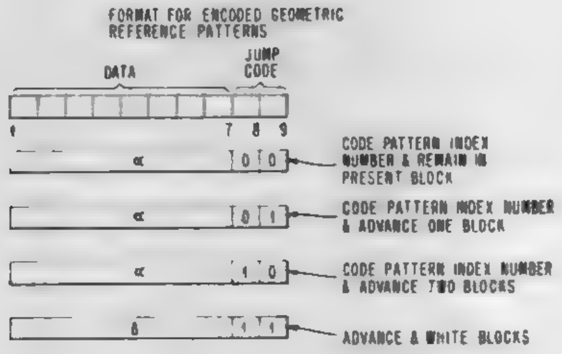
an *n* by *m* bit comparator having an input connected to the output of said data block register;

a reference pattern register having an output connected to the input of said bit comparator;

a reference pattern storage having an output connected to the input of said reference pattern register, for storing a plurality of simple geometric block patterns which are sequentially loaded by the pattern storage into the reference pattern generator in the order of greatest to least black element population;

said bit comparator comparing each reference pattern loaded into said reference pattern register to determine a match of all populated elements in the reference pattern to black elements which appear in the data block registers;

encoding means having an input connected to said bit compare means and said pattern storage for encoding an index number associated with a reference pattern which is matched by means of said bit comparator;


FORMAT FOR ENCODED GEOMETRIC REFERENCE PATTERNS
DATA
JUMP CODE
1
7
8
9
α
0
0
CODE PATTERN INDEX NUMBER & REMAIN IN PRESENT BLOCK
α
0
1
CODE PATTERN INDEX NUMBER & ADVANCE ONE BLOCK
α
1
0
CODE PATTERN INDEX NUMBER & ADVANCE TWO BLOCKS
δ
1
1
ADVANCE δ WHITE BLOCKS

said encoding means connected to an output line for outputting said encoded reference pattern to a utilization means;

said encoding means supplying an indication in said output word that the present data block is completely encoded if there are no further population elements in the data block which are left unmatched with the first reference pattern;

said bit comparator storing the location of each encoded element for said first reference pattern if further population elements in the data block are left unmatched with the first reference pattern and said encoding means supplying an indication in said encoded output word that a next encoded reference pattern will follow which is to be combined with the first reference pattern in a composite shape upon decoding;

whereby each data block in the pictorial image is encoded as a composite of simple geometric block patterns.

3,980,810

DEVICE FOR LOCALLY POSITIONING A FLEXIBLE ROTATING DISC

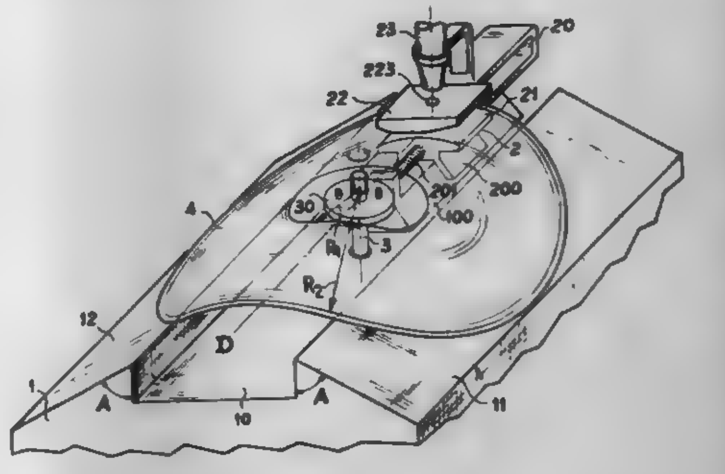
Claude Tinet, Paris, France, assignor to Thomson-CSF, Paris, France
Continuation of Ser. No. 321,304, Jan. 5, 1973, abandoned. This application Oct. 30, 1974, Ser. No. 519,189
Claims priority, application France, Jan. 11, 1972, 72.00789
Int. Cl.² H04N *5/76;* G11B *17/32*
U.S. Cl. 178—6.6 DD **28 Claims**

1. A positioning device for constraining one face of a flexible disc spinning about a rotation axis to pass through a predetermined point,

said positioning device comprising rotating means for rotating said disc, at least a first, a second and a third surface and an elongated channel separating from one another said first and said second surface;

said first and said second surface being fixed, said predetermined point being integral with said third surface and said rotation axis being located within said channel;

rotation of said disc applying said disc in close vicinity of said first, second and third surfaces and generating a first, second and third air bearing interposed between said disc and respectively said first, second and third surfaces;



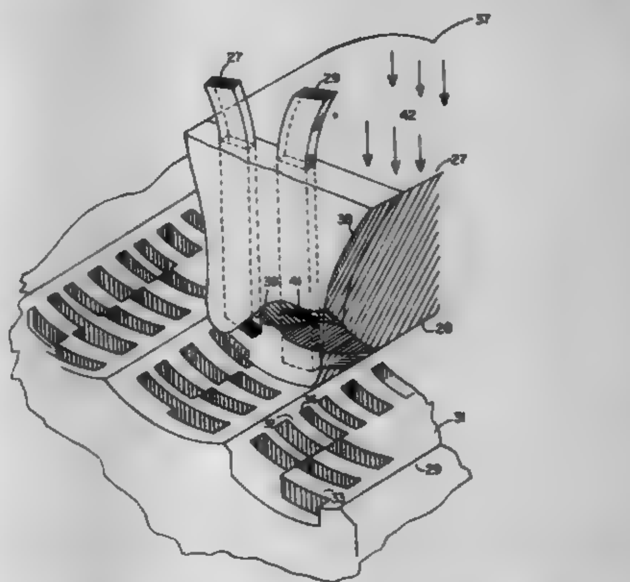
said first and second surfaces being arranged for imposing a bend to said disc while rotating, said bend being located plumb above said channel;

and said third surface facing the convex side of said bend.

3,980,811

CONTACTING PICKUP OPTICAL REPRODUCTION SYSTEM

Louis F. Schaefer, Palo Alto; Philip J. Rice, Atherton, and Hugh F. Frohbach, Sunnyvale, all of Calif., assignors to Nihon Denshi Kabushiki Kaisha, Tokyo and Sharp Kabushiki Kaisha, Osaka, both of, Japan
Filed Sept. 3, 1974, Ser. No. 502,810
Int. Cl.² G11B *11/12*
U.S. Cl. 178—6.6 R **5 Claims**



1. In a contacting pickup optical reproduction system for reproducing information carried on an information path formed on a recording medium of the type having pits formed along the information path and where the information is carried as a function of the pit dimensions and spacing along the path the system comprising a pickup body having a tip with a surface adapted to slidably contact the information path formed along the recording medium and a trailing face substantially perpendicular said contact surface, means in said pickup body for directing illumination into the pits adjacent said face, a single optical waveguide means formed on and carried by said face for each information path for receiving illumination reflected towards said face by said pits, said waveguide means extending to said contacting surface of said

tip to contact the information path and having thickness in the direction of the path which is short enough to resolve the highest spatial frequency recorded along said path, and an optical-to-electrical energy transducer coupled to said optical waveguide means.

3,980,812

METHOD AND MEANS FOR ELECTRONIC IMAGE ANALYSIS WITHIN A RASTER-SCANNED FIELD

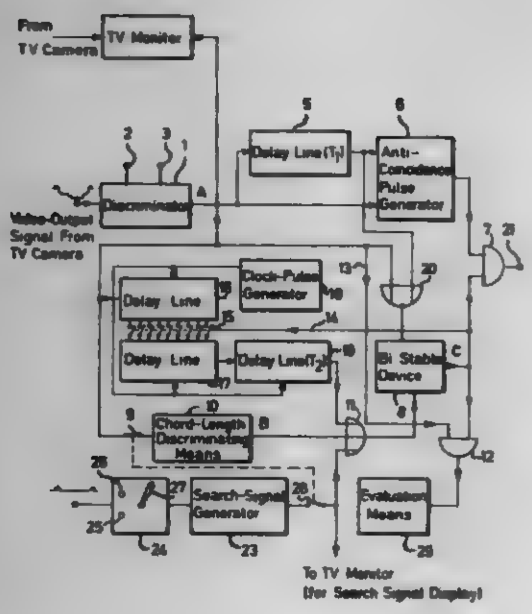
Rudolf Grosskopf, Koenigsbronn, and Hubert Jager, Koenigsbronn-Zang, both of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Germany

Filed Jan. 17, 1975, Ser. No. 542,012

Claims priority, application Germany, Jan. 25, 1974, 2403502

Int. Cl.² H04M *7/18*

U.S. Cl. 178—6.8 17 Claims



1. In the method of electronic-image analysis within a field of raster-scanned subject matter in which each scanning line lying within the boundaries of an object to be evaluated supplies by means of a discriminator a binary signal corresponding to the line length between object-boundary intercepts for the particular line, the improvement which comprises producing a localized search signal synchronized with raster scanning such that the search signal is effectively located within at least part of the scan-line coverage of the object; using said search signal to start an output signal which at the same time controls the delay time of said binary signal of the same line for a period lying between a scan line period T_1 and a minimum time T_2, such delay time being for each scan line within said object to be evaluated a function of the time interval between (*a*) the start of said binary signal of said each scan line and (*b*) said output signal of the preceding scan line, and said delay time having at least the minimum value T_2; the output signal in each succeeding scan line being started by the delayed output signal of the preceding scan line; further delaying the binary signal of each scan line by one scan line period, and producing an anticoincidence pulse when said delayed signal and the signal coming from the line just scanned do not overlap; and generating an evaluation-output signal when said output signal and said anticoincidence pulse coincide.

3,980,813

APERTURE CORRECTION CIRCUIT

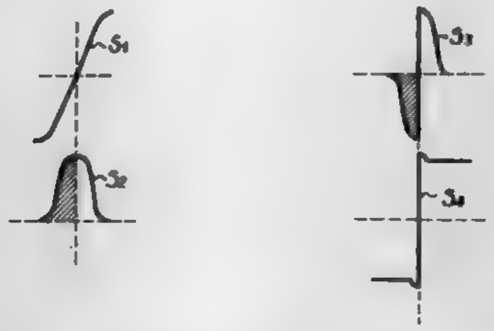
Kinya Shinkai, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 9, 1974, Ser. No. 531,050

Claims priority, application Japan, Dec. 17, 1973, 48-141644

Int. Cl.² H04N *5/14*

U.S. Cl. 178—7.1 6 Claims



1. An aperture correction circuit comprising:

A. a differentiating circuit for differentiating an input signal;

B. polarity determining means for separating the differentiated signal into corresponding first and second signals of opposed respective polarities said first signal consisting of:

   1. those portions of said differentiated signal produced when the differential of said input signal is positive and inverted reproductions of those portions of said differentiated signal produced when the differential of said input signal is negative, and
   2. said second signal consisting of those portions of said differentiated signal produced when the differential of said input signal is negative and inverted reproductions of those portions of said differentiated signal produced when the differential of said input signal is positive;

C. switching means operative to alternately conduct selected intervals of said first and second signals;

D. switch control means responsive to said differentiated signal to control said switching means so that the ouput signal of the latter corresponds to said second signal during those intervals when the second differential of said input signal is positive and corresponds to said first signal during those intervals when the second differential of said input signal is negative; and

E. an adding circuit which adds said output signal of the switching means to said input signal for obtaining an aperture corrected signal from said adding circuit.

3,980,814

MULTIPLE IMAGE SCANNING

John Alfred Crawley, Great Chishill, near Royston, England, assignor to Image Analysing Computers Limited, Royston, England

Filed Nov. 21, 1973, Ser. No. 417,726

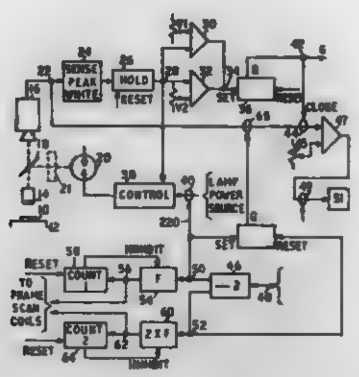
Claims priority, application United Kingdom, Nov. 21, 1972, 53743/72

Int. Cl.² H04N *3/16*

U.S. Cl. 178—7.2 4 Claims

1. Apparatus for analyzing microscopically a specimen containing a few widely spaced small features comprising, in combination, a microscope, a moveable stage for presenting different regions of a specimen mounted thereon to the microscope and a television camera having the final image of the microscope focused onto its target, means for stepping the stage of the microscope to present different fields of view thereto, means for flash illuminating each different field of view, circuit means for generating *n* control signals for the means for stepping the stage and the means for flash illuminating the field of view, additional circuit means for inhibiting at least the frame scan deflection signals normally supplied to the television camera during the *n* different fields of view, further

circuit means for inhibiting the video signal output from the television camera during said *n* different fields and still further



circuit means for generating deflection signals to perform a read scan of said television camera and a succession of erase scans after said *n* fields have been presented thereto.

3,980,815

WHITE LEVEL CLIPPING CIRCUIT

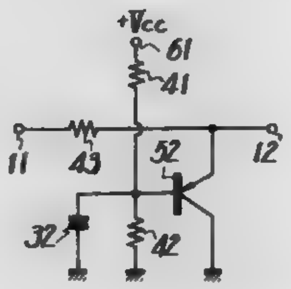
Shinji Kaneko, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 31, 1975, Ser. No. 563,518

Claims priority, application Japan, Apr. 4, 1974, 49-38180

Int. Cl.² H04N *5/16*

U.S. Cl. 178—7.3 DC 3 Claims



1. In a recording circuit of a video tape recorder in which a video signal is passed through a white level clipping circuit to a frequency modulator to provide a frequency modulated video signal to be recorded: said white level clipping circuit comprising input and output terminals with a conductive path therebetween for carrying the video signal from said input terminal to said output terminal; an impedance element interposed in said conductive path; a PNP-type transistor having emitter, base and collector electrodes, said emitter electrode being connected to said conductive path between said impedance element and said output terminal, and said collector electrode being directly connected to ground; and means for applying a predetermined bias voltage to said base electrode so that said transistor is turned ON to by-pass the white peak portion of the video signal to ground only when the instant level of the video signal exceeds the sum of said bias voltage and the base-emitter voltage of said transistor.

3,980,816

A.G.C. CIRCUIT FOR A VIDEO SIGNAL

Tsutomu Niimura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed July 1, 1975, Ser. No. 592,178

Claims priority, application Japan, July 8, 1974, 49-77968

Int. Cl.² H04N *5/52*

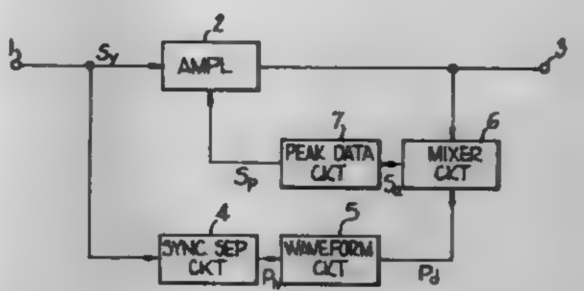
U.S. Cl. 178—7.3 R 7 Claims

1. An automatic gain control circuit for a video signal, said circuit comprising:

A. a gain-controlled amplifier;

B. signal forming means comprising:

   1. a circuit for integrating the synchronizing signal portion of the video signal, and
   2. a circuit to compare the integrated signal with a reference signal and to generate a pulse signal within the horizontal blanking interval of the video signal;



C. means for combining the pulse signal with the video signal in opposite polarity relative to the synchronizing signal portion of the video signal; and

D. a control circuit connected to said last-named means for deriving therefrom a control signal having a magnitude that is a function of at least the synchronizing signal portion of the video signal, said control circuit being connected to said amplifier to control the gain thereof.

3,980,817

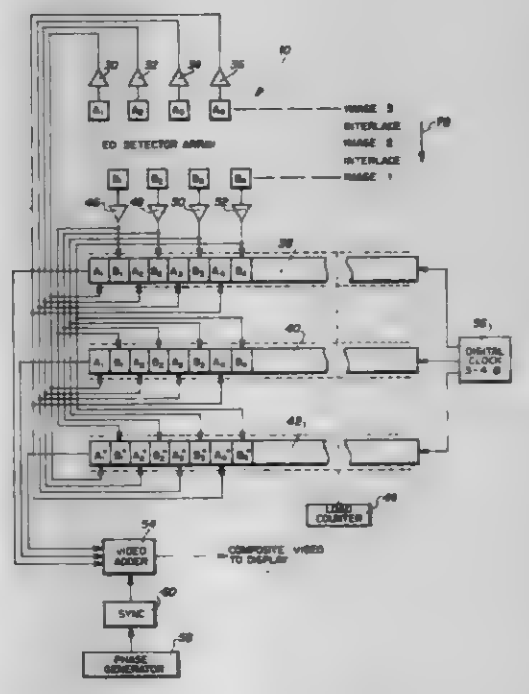
CHARGE COUPLED DEVICE MULTIPLEXING SYSTEM FOR IMAGE SENSORS

Thomas Clifton Penn, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 30, 1974, Ser. No. 510,263

Int. Cl.² H04N *5/30*

U.S. Cl. 178—6 12 Claims



5. A multiplexing system for an image detection array comprising:

- first and second rows of image detectors for generating analog electrical signals representative of sensed images,
- said second row of image detectors laterally staggered relative to said first row and spaced away from said first row,
- first and second charge coupled device analog shift registers each having a plurality of channel inlets spaced along the length thereof,
- means operable during a first clock period for parallel loading analog electrical signals from said first row of detectors into a first set of alternate ones of said channel inlets of said first analog shift register for storage within alternate stages of said first shift register,

means operable during a second clock period for parallel loading analog electrical signals from said second row of detectors into a second set of alternate ones of said channel inlets of said first analog shift register for storage in said first shift register between electrical signals from said first row of detectors,

means operable during said second clock period for parallel loading analog electrical signals from said first row of detectors into a first set of alternate ones of said channel inlets of said second analog shift register for storage within alternate stages of said second shift register,

means operable during a third clock period for parallel loading analog electrical signals from said second row of detectors into a second set of alternate ones of said channel inlets of said second analog shift register for storage in said second shift register between analog electrical signals from said first row of detectors, and

means for selectively serially clocking said stored analog electrical signals from the outputs of said first and second analog shift registers for providing a composite display representative of the sensed images.

3,980,818

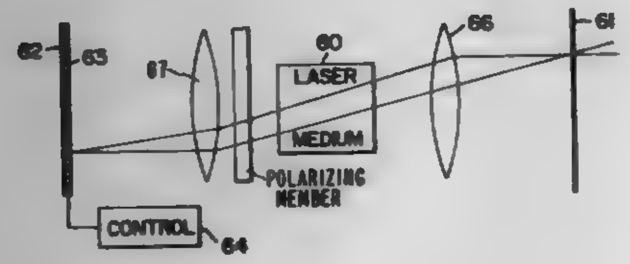
RECORDER AND REPRODUCER SYSTEM

Iben Browning, Santa Clara, Calif., assignor to Sydnor-Barent, Inc., Albuquerque, N. Mex.

Continuation of Ser. No. 754,298, Aug. 21, 1968, abandoned. This application June 27, 1974, Ser. No. 483,748

Int. Cl.^{2} H04N *5/76*; G01D *15/14*; G11B *7/00*

U.S. Cl. 178—6.6 R **3 Claims**



1. A disc recorder and reproducer system comprising: a record disc including an energy absorbing information storage medium and having formed on at least one side thereof a helical needle tracking groove and land intermediate and adjacent the groove; objective lens means having a tracking needle securely affixed thereto adapted to follow the helical needle tracking groove of the record disc and position the objective lens with respect to record disc so that the land lies within the focal plane and field of view of the objective lens; means generating a coherent light beam and means directing said coherent light beam onto said objective lens means; and binary coded shutter array means interposed in the path of the generated beam of coherent light whereby the coherent light beam is selectively transmitted through said binary coded shutter array and focused by said objective lens means onto the record disc land to selectively ablate the record disc land and store binary coded information.

2. A recorder and reproducer system comprising: a record including an information storage medium having formed on at least one side thereof a needle tracking groove and a land adjacent the needle tracking groove; a high resolution objective lens means having a tracking needle securely fixed thereto adapted to follow the needle tracking groove of the record and position the objective lens means over the record land so that a portion of the record between adjacent grooves lies within the focal plane and field of view of the objective lens means; means generating a beam of light and means for directing the beam of light through said objective means; modulating means for modulating the beam of light; means providing relative motion between the record and tracking needle whereby stored information is selectively produced; and means to regulate the relative motion of said record and said tracking needle comprising a row of equally spaced slots formed in the record land adjacent the needle tracking groove.

3,980,819

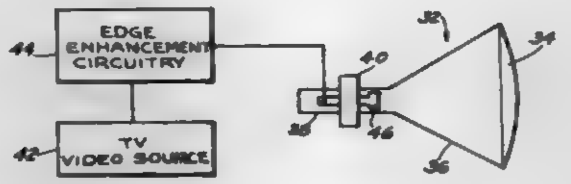
EDGE ENHANCEMENT FOR TELEVISION IMAGES

James W. Schwartz, Deerfield, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Nov. 1, 1974, Ser. No. 519,980

Int. Cl.^{2} H04N *5/14*

U.S. Cl. 178—7.5 R **29 Claims**



1. A method of enhancing the edges of video images displayed on a cathode ray tube having electron gun means for generating at least one electron beam which is caused to scan a phosphor screen in line-by-line fashion at a predetermined nominal scan velocity and which has a spot size at the screen which grows with increasing beam current, said method comprising modulating the scanning velocity of said electron beam such that, when a video amplitude transition occurs, the beam is deflected in the direction of normal scan at a rate which corresponds to the rate of change in the size of the diameter of the spot for substantially the entire duration of said transition so as to substantially arrest the trailing edge of the spot in the case of a video amplitude transition which causes an increase in spot size, and so as to substantially arrest the leading edge of the spot in the case of a video amplitude transition which causes a decrease in spot size, and thereafter restoring said nominal scan velocity whereby displayed video transitions have better defined edges.

3,980,820

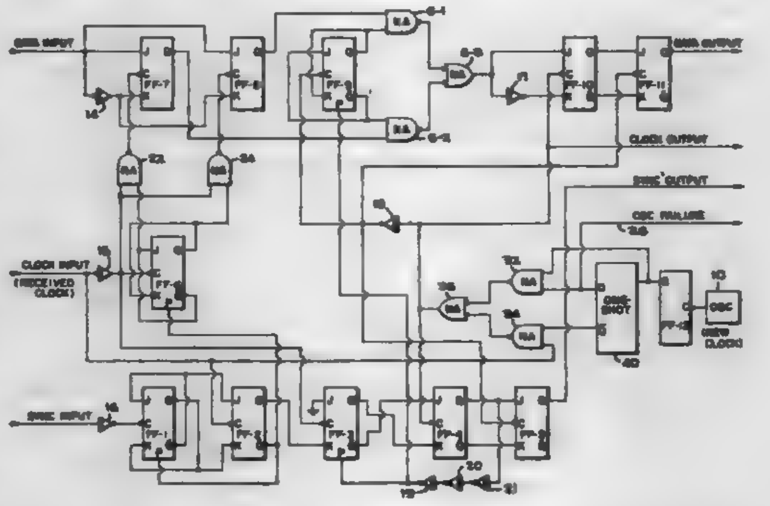
CLOCK PHASING CIRCUIT

Bill H. Niemi, Brooklyn Park; Mark D. Ryan, Fridley, and George W. Miller, Anoka, all of Minn., assignors to FMC Corporation, San Jose, Calif.

Filed June 17, 1975, Ser. No. 587,778

Int. Cl.^{2} H04L *7/00*

U.S. Cl. 178—69.5 R **11 Claims**



1. A clock phasing circuit for aligning serial digital data which is transmitted by a first clock running at a particular frequency with a second clock running at essentially the same frequency as the first clock but having a time varying phase relationship, said circuit comprising a plurality of bit storage elements for sequentially storing the data bits transmitted by

said first clock, a plurality of first logic gates with each of said gates having an input connected to receive the output of a respective one of said bit storage elements, a second logic gate having its inputs connected to the outputs of each of said first logic gates, and means connected to said second clock for controlling the operation of said first logic gates so that said data bits are transferred through said second logic gate in the proper sequence whereby said data is reformed in phase shifted relationship.

3,980,821

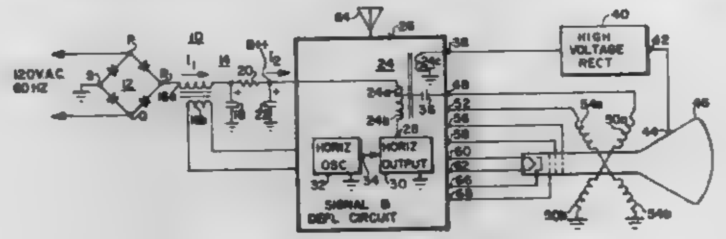
POWER SUPPLY FOR A TELEVISION RECEIVER

John Charles Peer, and David Warren Luz, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 29, 1975, Ser. No. 609,319

Int. Cl.^{2} H04N *3/18*, *5/44*

U.S. Cl. 178—7.5 R **9 Claims**



1. In a television receiver, including means for developing a viewable display on a kinescope, a power supply comprising:

rectifying means adapted to be coupled to a first source of alternating current potential for developing a pulsating direct current potential;

means, including a first inductor, coupled to said rectifying means and said means for developing a viewable display for filtering said pulsating direct current potential to provide a first source of direct current potential to said means for developing a viewable display; said first inductor having a predetermined inductance value and providing for a relatively constant level of said direct current potential with a predetermined range of direct current being supplied to said means for developing a viewable display and a relatively constant level of pulsating direct current potential; and

a second inductor magnetically coupled to said first inductor and coupled to said means for developing a viewable display for providing a second alternating current potential, greater than a first predetermined level, to said means for developing a viewable display; said second alternating current potential level decreasing to a level below said first predetermined level when the inductance of said first inductor decreases to a value less than said predetermined inductance value, for rendering said kinescope unviewable.

3,980,822

AUTOMATIC BRIGHTNESS CONTROL CIRCUIT

Toshio Suzuki, and Masaru Sato, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 1, 1974, Ser. No. 447,329

Claims priority, application Japan, Feb. 28, 1973, 48-25320[U]

Int. Cl.^{2} H04N *5/68*; H01J *29/52*

U.S. Cl. 178—7.5 R **7 Claims**

1. An automatic brightness limiter for a cathode ray tube, comprising:

A. a brightness current circuit through which flows a current proportional to the brightness of an image displayed on said cathode ray tube;

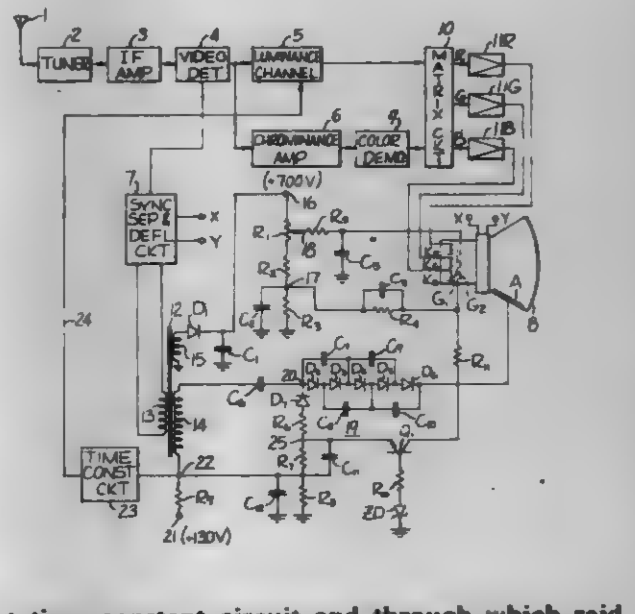
B. brightness control means responsive to control signals applied thereto for controlling the brightness of said displayed image;

C. a first automatic brightness limiter circuit coupled to said brightness current circuit to respond to brightness current in excess of a first threshold brightness current level for producing a first control signal to limit said brightness current to said first threshold level, said first automatic brightness limiter circuit comprising a first time constant circuit through which said first control signal is applied to said brightness control means;

D. a second automatic brightness limiter circuit coupled to said brightness current circuit to respond to brightness current only in excess of a second threshold brightness current level higher than said first threshold level for producing a second control signal to limit said brightness current to said second threshold level, said second automatic brightness limiter circuit comprising a second time constant circuit having a lower time constant value than said first time constant circuit and through which said second control signal is applied to said brightness control means such that said brightness control means is responsive to second control signal frequencies higher than the maximum frequency of said first control signal; and in which said brightness current circuit includes:

a. a source of said brightness current; and

b. a voltage divider connected to said source of brightness current, said first automatic brightness limiter circuit being connected to a first connection point on said divider and said second automatic brightness limiter circuit being connected to a second connection point on said divider, said second point being positive relative to said first point.



3,980,823

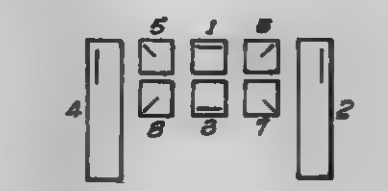
KEYBOARD FOR BAR MATRIX CODE

Lawrence K. Howard, 14812 Addison St., Sherman Oaks, Calif. 91403

Filed June 9, 1975, Ser. No. 585,250

Int. Cl.^{2} H04L *21/02*; B41J *7/54*

U.S. Cl. 178—30 **8 Claims**



1. In a keyboard for producing bar matrix coded alphanumeric data, with the bar matrix comprising four outer bars in a rectangular pattern and four inner bars radiating from the center of the rectangle to the corners of the rectangle, the combination of five sets of keys in side by side relation for actuation by the respective five fingers of an operator's hand,

the first set comprising a key corresponding to the left vertical bar of said matrix, the second set comprising at least one key positioned to the right of said first set and corresponding to the two left inner bars of said matrix,

the third set comprising at least one key positioned to the right of said second set and corresponding to the upper and lower horizontal bars of said matrix,

the fourth set comprising at least one key positioned to the right of said third set and corresponding to the two right inner bars of said matrix, and

the fifth set comprising a key positioned to the right of said fourth set and corresponding to the right vertical bar of said matrix.

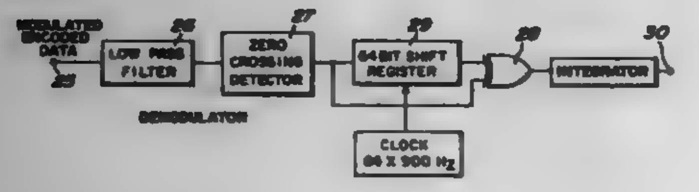
3,980,824
MODULATOR DEMODULATOR FOR BINARY DIGITALLY ENCODED MESSAGES

James A. Lamb, Hoffman Estates, and Donald J. Nieglos, Arlington Heights, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 29, 1974, Ser. No. 518,860

Int. Cl.² H04L *27/18*

U.S. Cl. 178—67 **5 Claims**



4. In a communications system utilizing phase shift keyed binary messages in the audio frequency range, modulating-demodulating apparatus comprising:

a. wave shaping means connected to receive a phase shift modulated, differentially encoded, binary message;

b. a one bit delay circuit connected to receive the message from said wave shaping means and delay the message a predetermined time, said delay circuit including a N-bit shift register clocked at a rate of N times per bit; and

c. a two input phase comparing circuit having one input connected to said delay circuit to receive the delayed message and the second input connected to said wave shaping means to receive the message for comparing the message and delayed message to remove the modulation and differential encoding.

3,980,825
SYSTEM FOR THE TRANSMISSION OF SPLIT-PHASE MANCHESTER CODED BIVALENT INFORMATION SIGNALS

Albertus Marinus Morrien, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

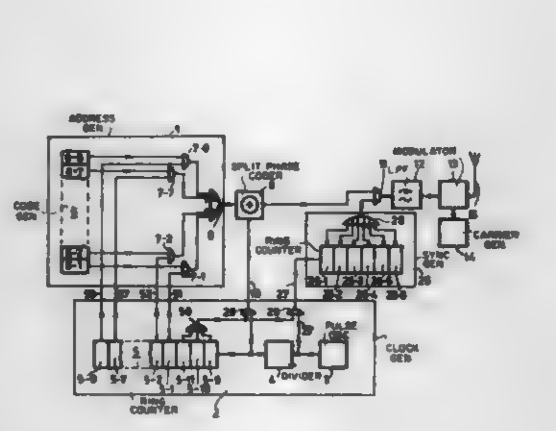
Filed Jan. 10, 1974, Ser. No. 432,281

Claims priority, application Netherlands, Feb. 12, 1973, 7301930

Int. Cl.² H04L *27/18*

U.S. Cl. 178—67 **4 Claims**

1. A transmitter comprising means for transmitting split-phase Manchester coded bivalent information signals, and means for generating and adding a synchronisation signal to said transmitted information signal which directly preceeds a series of these information signals, the synchronisation signal having a first signal level for a period of time which corresponds to at least three successive half bit times of the information signals and a second signal level, different from the first signal level, for a subsequent period of time which also corresponds to at least three half bit times of the information signals.



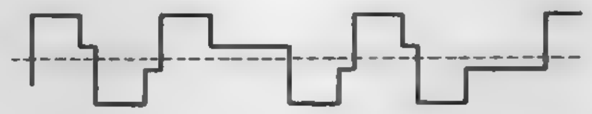
3,980,826
MEANS OF PREDISTORTING DIGITAL SIGNALS

Albert Xavier Widmer, Katonah, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 396,964, Sept. 12, 1973, abandoned. This application Oct. 24, 1975, Ser. No. 625,621

Int. Cl.² H04L *27/02*

U.S. Cl. 178—68 **7 Claims**



1. In a binary encoded data transmission system, an apparatus for predistorting the endoded wave form over a transmission line in a manner to minimize phase distortion due to the transmission line, said predistorting apparatus comprising:

input means for accepting a source of bipolar signals comprising a sequence of short and long pulses having periods T and 2T, respectively, and representing a binary code,

push-pull line driver means connected to said input means and controlled by said bipolar signals for driving said transmission line,

gated electrical source means connected to said line driver means for intermittently supplying a first driving signal thereto,

steady-state electrical source means connected to said line driver means for supplying a second driving signal thereto in the range of 20 to 50% of said first driving signal, and

gating means connected to said input means and responsive to said bipolar signal for gating said gated electrical source means on for a time period less than or equal to T after each polarity reversal in said bipolar signal.

3,980,827
DIVERSITY SYSTEM FOR NOISE-MASKING

Ludwig W. Sepmeyer, 1862 Comstock Ave., Los Angeles, Calif. 90025, and John P. Jarvis, 19120 Nordhoff St., Northridge, Calif. 91324

Filed Dec. 19, 1974, Ser. No. 534,214

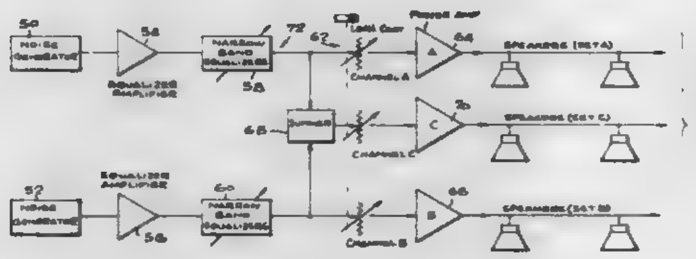
Int. Cl.² H04R *3/00*

U.S. Cl. 179—1 P **11 Claims**

1. A system for noise-masking having a noise generation and masking system consisting of:

first and second noise generators for producing random noise;

first and second narrow band equalizers respectively connected to the outputs of said first and second noise generators for producing electronic signals equivalent to equalized audio-noise in first and second channels; and



means connected to both said first and second channels for receiving and combining signals from said first and second channels to produce a third channel of electronic signal corresponding to equalized audio-noise, said electronic signals of said first, second and third channels being for controlling speakers for directing non-localizable masking noise into a work space.

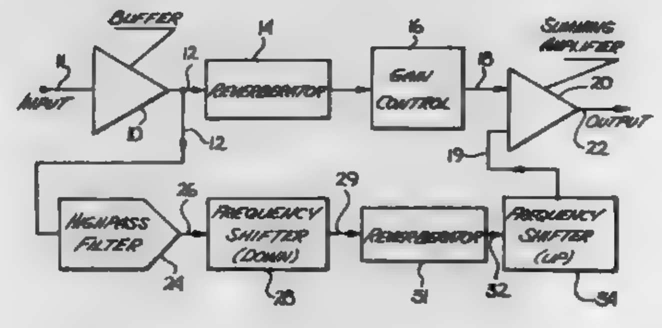
3,980,828
REVERBERATION SYSTEM WITH EXTENDED FREQUENCY RESPONSE

Robert A. Orban, Menlo Park, Calif., assignor to Kurt Orban Company, Menlo Park, Calif.

Filed Oct. 3, 1975, Ser. No. 619,258

Int. Cl.² H04R *3/00*

U.S. Cl. 179—1 J **15 Claims**



1. A reverberation system for providing reverberation to an input signal comprising:

a first frequency shifting means for receiving said input signal and for frequency shifting said input signal to a lower frequency range;

a reverberation means for providing reverberation, coupled to said first frequency shifting means; and

a second frequency shifting means for frequency shifting a signal to a higher frequency range, said second frequency shifting means being coupled to said reverberator means;

whereby an input signal may be shifted to a lower frequency range such that the new frequency band is compatible with said reverberator means, and whereby the output of said reverberator means may be shifted back to its original frequency band with reverberation from said reverberation means.

3,980,829
WIDE ANGLE CYLINDRICAL WAVE LOUDSPEAKER EXTENDING APPROXIMATELY FROM FLOOR TO CEILING HEIGHT WITH A LENS

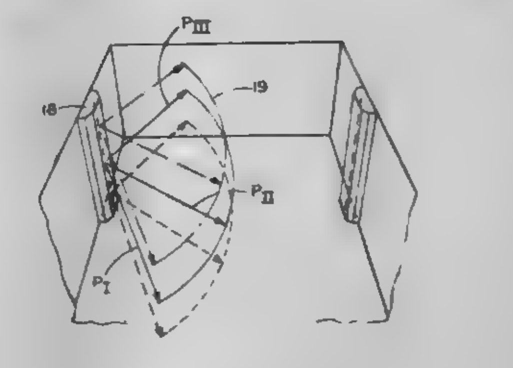
Harold Norman Beveridge, 1616 Franceschi Road, Santa Barbara, Calif. 93103

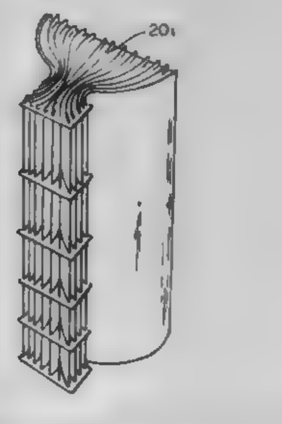
Filed June 5, 1973, Ser. No. 367,157

The portion of the term of this patent subsequent to June 6, 1989, has been disclaimed.

Int. Cl.² H04R *5/02, 1/34*

U.S. Cl. 179—1 GA **6 Claims**

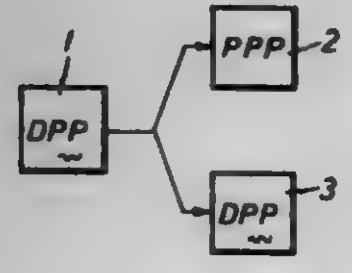




1. A stereophonic loudspeaker system for a room having an end wall and left and right side walls as viewed from a listener region, said system including left and right loudspeakers each comprising a cylindrical wave generator comprising an elongated sound transducer means emitting through a lens structure, said lens structure formed by a series of walls which are parallel to the axis of said generator and form a series of channels, said channels, in cross-section perpendicular to said axis, including substantially straight central channels and relatively curved outer channels which first converge toward each other to a constricted throat region and thereafter diverge to an outlet aperture, said generator capable of generating a uniform cylindrical sound wave that includes the entire audible frequency range, said cylindrical wave generator having an emitting arc for said uniform wave of at least 150°, said wave generator having a vertical axis and a sound emitting extent for said uniform wave approximating the floor to ceiling height of said room and said loudspeaker adapted for placement against a wall of said room in the manner that said wave is emitted away from said wall, to illuminate the room with said frequencies, said loudspeakers positioned along respective side walls, each spaced from the end wall, and said loudspeakers directed toward each other, the arc of radiation of each of said speakers including the listener region, the opposite side wall and the end wall, each of said speakers constructed and positioned to emit sound directly along a first path toward said listener region and along respective second and third paths; for said left speaker: said second path extending from said speaker to said end wall thence to the listener region and said third path extending from said speaker to said right side wall thence to the listener region; and for the said right speaker: said second path extending from said speaker to said end wall thence to said listener region and said third path extending from said speaker to said left wall thence to the listener region, said first, second and third paths differing in length from each other at least by the distance equivalent to the separate-source discrimination time.

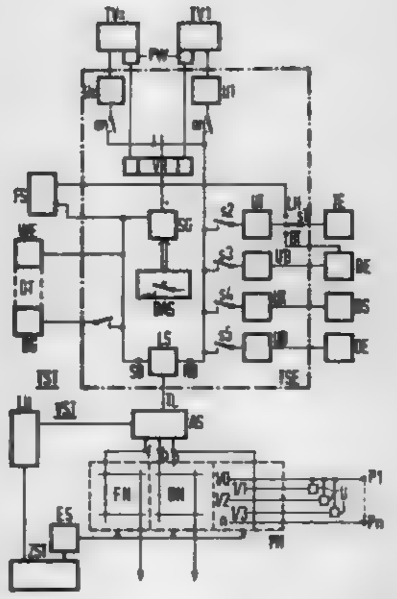
4. A primary production loudspeaker for use in a room of limited size such as a room of a home comprising a cylindrical wave generator comprising an elongated sound transducer means emitting through a lens structure, said lens structure formed by a series of walls which are parallel to the axis of said generator and form a series of channels, said channels, in cross-section perpendicular to said axis, including substantially straight central channels and relatively curved outer channels which first converge toward each other to a constricted throat region and thereafter diverge to an outlet aperture, said generator characterized by the capability of generating at its output aperture a cylindrical sound wave that includes essentially the entire audible frequency range and that has essentially uniform intensity for the length of the generator axis in planes through said axis, said wave generator being arranged vertically and having a sound emitting extent approximating the floor to ceiling height of said room, and said cylindrical wave generator having an emitting arc over the horizontal plane of at least 150°,the boundaries of said room cooperative with said wave generator to enable said cylindrical wave form to persist throughout the listener area with attenutation occurring in said area over said frequency range substantially on the basis of 1/R where R is the distance from the wave generator.

3,980,830
COMPATIBLE PICTUREPHONE SYSTEM
Broder Wendland, Ay; Iller, and Franz May, Ulm (Danube), both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany
Filed May 2, 1975, Ser. No. 574,242
Claims priority, application Germany, May 3, 1974, 2421444
Int. Cl.² H04M *11/00;* H04N *7/14*
U.S. Cl. 179—2 TV 7 Claims



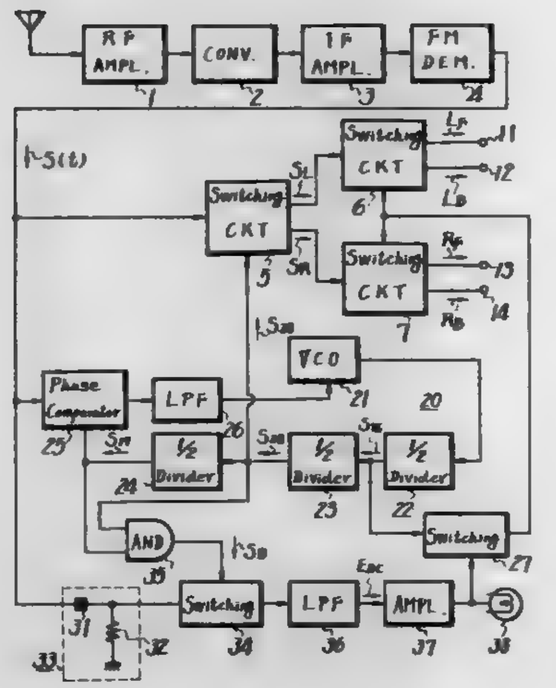
1. In a compatible picture telephone system for the digital transmission of narrowband installation and broadband signals from a broadband installation, the system being selectively connectable to narrowband or broadband picture recording and playback installations, the improvement wherein the number of lines, the line scanning frequency and the frame rate are the same in the narrowband installation as in the broadband installation and the scanning of the subject image and playback of a picture are effected with a wave-shaped line scan for playback in the broadband installation, and said system comprises means for splitting the broadband video signals produced by the transmitter portion of a broadband installation before they are coded, into low frequency and high frequency video signals, the coded low frequency signals being identical to the coded signals produced by the transmitter portion of a narrowband installation, and the coded high frequency signals being relevant signals which, when decoded and combined with the low frequency signals in the receiving portion of a broadband installation, produce the video signal of the broadband installation.

3,980,831
DATA SWITCHING SYSTEM
Heinz Mertel, Hohenschaftlarn, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Apr. 30, 1975, Ser. No. 573,600
Claims priority, application Germany, Apr. 30, 1974, 2421002
Int. Cl.² H04M *11/06, 11/08*
U.S. Cl. 179—2 R 13 Claims



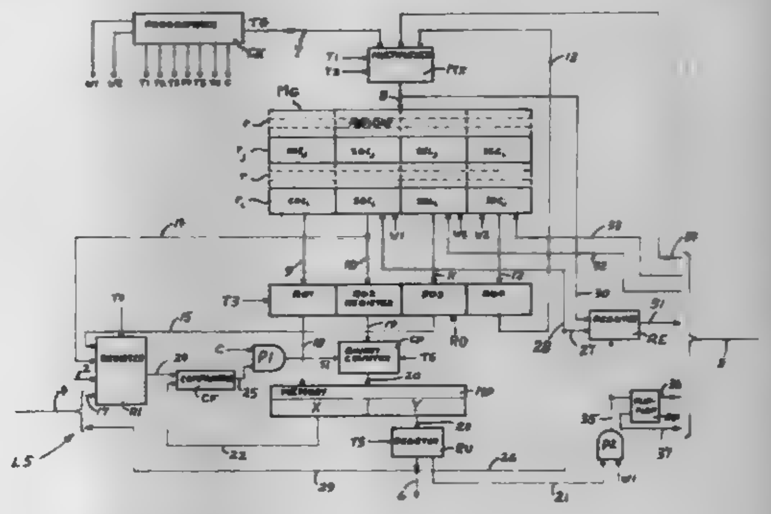
1. In a data switching system having a plurality of subscriber sets, each connected to a switching center by a transmission line having a bandwidth sufficiently great to be capable of handling frequencies in a range permitting transmission of telephony frequencies, radio and television program frequencies, video telephone signals and data communications between connected subscriber sets, the improvement comprising:
- telephone circuit means, character generator means, video transmitter and receiver means, data terminal means, common control means and a common trunk circuit in each said subscriber set,
- said common control means including means for selectively connecting one or more than one of the others of said means constituting said subscriber set in accordance with the selected modes of operation to said common trunk circuit,
- a common subscriber line having one end connected to said common trunk circuit,
- said switching center including a multisectional switching network having a section for receiving and switching telephone traffic, a section for receiving and switching television and radio program traffic and a section including an input for operating alone or in conjunction with said telephone switching section for receiving video telephone and other data signals, said sections of said multisectional switching network being, respectively, independently operable and a common line termination circuit having an output terminal connected to the other end of said common subscriber line and inputs connected, respectively, to outputs from said sections of said multisectional switching network.

3,980,832
DECODER FOR FOUR CHANNEL FM STEREOPHONIC COMPOSITE SIGNAL HAVING AN INDICATING SIGNAL WHEREIN THE INDICATING SIGNAL IS DETECTED AND USED IN THE DECODING OF THE FOUR CHANNEL COMPOSITE SIGNAL
Hideo Nakamura, Komae, and Teruo Sato, Yamato, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Feb. 21, 1975, Ser. No. 551,705
Claims priority, application Japan, Feb. 25, 1974, 49-22145
Int. Cl.² H04H *5/00*
U.S. Cl. 179—15 BT 8 Claims



1. A decoder for four channel FM stereophonic composite signals which include a first pilot signal, a main channel signal, a first sub-channel signal suppressed carrier amplitude modulated on a first subcarrier having a frequency twice the frequency of said first pilot signal, a second sub-channel signal suppressed carrier amplitude modulated on a second subcarrier having the same frequency as said first subcarrier and having 90° phase difference with respect to said first subcarrier, a third sub-channel signal suppressed carrier amplitude modulated on a third subcarrier having a frequency twice that of the first subcarrier, and a second pilot signal indicative of four channel stereophonic signal broadcasting mode and having a frequency three times that of said first pilot signal, said decoder comprising:
- signal generating means for detecting said first pilot signal and for producing first and second control signals in predetermined phase relation to said first pilot signal with said first and second control signals having frequencies which are respective equal to, and twice the frequency of said first pilot signal, means responsive to said first and second control signals for producing a corresponding switching signal, and switching means receiving the four channel FM stereophonic composite signals and being operated by said switching signal for detecting said second pilot signal as an indication of the reception of four channel stereophonic broadcast transmissions.

3,980,833
CALL MONITOR FOR TELECOMMUNICATION EXCHANGE
Piero Calcagno, Collegno (Turin), and Enzo Garetti, Turin, both of Italy, assignors to CSELT - Centro Studi e Laboratori Telecommunicazioni SpA, Turin, Italy
Filed Apr. 28, 1975, Ser. No. 572,336
Claims priority, application Italy, Apr. 26, 1974, 68311/74
Int. Cl.² H04J *3/14*
U.S. Cl. 179—15 AT 8 Claims



1. A call monitor for an exchange serving a multiplicity of telecommunication lines through a set of line links which are periodically sampled by a scanner in respective time slots of a recurrent cycle for the establishment of connections therebetween by a switching network under the control of a central processor responsive to signals picked up from the sampled line links, comprising:
- a first memory with a multiplicity of phases respectively assigned to said line links for storing data relating to the activities thereof;
- programming means synchronized with said scanner for addressing successive phases of said first memory during time slots assigned to the sampling of the respective line links;
- a second memory containing a multiplicity of evolutionary codes identifying all possible states in the progress of a connection between subscriber lines coupled to respective line links;
- circuit means connecting said first memory with said processor for exchanging information therebetween;
- temporary storage means for incoming code signals indicative of the activity of a line link during a time slot assigned thereto;
- comparison means controlled by said programming means for reading out successive evolutionary codes from said second memory in the course of a time slot until the code signals entered in said temporary storage means match an evolutionary code thus read out, at least some of said evolutionary codes being accompanied in said second memory by instruction codes read out simultaneously therewith;
- output means connected to said second memory for storing an instruction code accompanying a matching evolutionary code;
- updating means connected to said output means and controlled by said programming means for inscribing the stored instruction code in a currently explored phase of said first memory as an activity information available during a subsequent cycle for starting the readout of evolutionary codes from said second memory;
- discriminating means connected to said output means for determining from the nature of the stored instruction code whether same is pertinent to said processor; and
- transfer means responsive to said discriminating means for relaying a pertinent instruction code to said processor.

3,980,834
MULTI-STAGE CONNECTION SWITCH FRAME

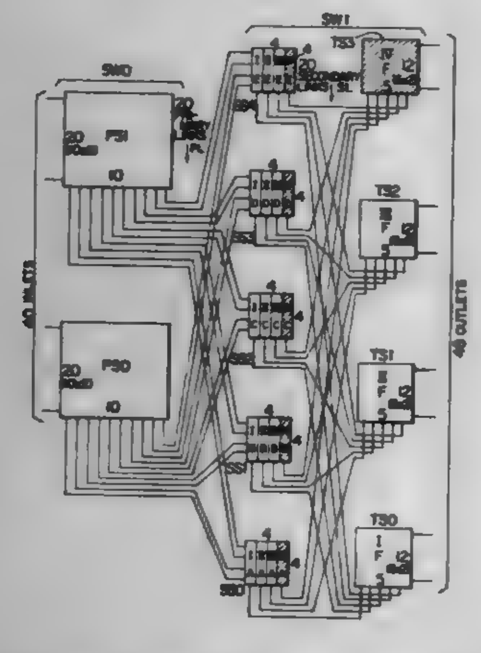
Tadahiko Akiyama, Yokohama; Shogo Nishigori, Kanagawa, and Kenji Mochizuki, Kamakura, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 31, 1975, Ser. No. 546,125

Claims priority, application Japan, Feb. 4, 1974, 49-13731

Int. Cl.² H04Q *1/16*

U.S. Cl. 179—98 **5 Claims**



1. A multi-stage connection switch frame comprising lattices, each of said lattices being composed of crossbar switch verticals being connected by horizontals, said lattices being arrayed in at least three stages, and links for connecting said lattices in the stages to one another, wherein said multi-stage connection switch frame includes two adjacent stages of lattices comprising a plurality of verticals each connected by horizontals and being sectioned into an upper partial vertical and a lower partial vertical, each of said lattices included in one of said two adjacent stages comprising a vertical group of said upper partial verticals in which all of the upper partial verticals within said group are connected by horizontals, and each of the lattices in the other of said two adjacent stages comprises corresponding lower partial verticals from each one of said vertical groups in which each corresponding lower partial vertical is connected by horizontals, whereby said two adjacent stages are linked by said plurality of verticals.

3,980,835
DIGITAL NETWORK SYNCHRONIZING SYSTEM

Paul Anthony Mitchell, Stowmarket, and William Bunn, Ipswich, both of England, assignors to The Post Office, London, England

Filed May 27, 1975, Ser. No. 580,942

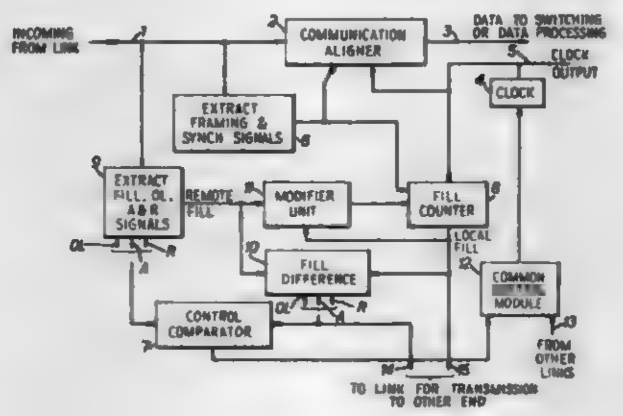
Claims priority, application United Kingdom, May 29, 1974, 23714/74

Int. Cl.² H04J *3/06*

U.S. Cl. 179—15 BS **13 Claims**

1. A digital communication system having at least two stations connected by at least one link, in which each of said stations includes

- a local clock oscillator for timing operations in the said station,
- a communication aligner for the link including storage means into which signal digits are entered as they arrive at the said station over the link and from which signal digits are read in response to signals from the local clock oscillator,
- a fill counter for said link for recording a total dependent on the number of digits stored in the storage means of the communication aligner,
- means for transmitting an indication of the total in the fill counter over the link to the station at the remote end of the link and for receiving an indication of the total in the fill counter in the station at the remote end of the link,
- means for forming the difference between the totals in the fill counters at the two ends of the link, and



- means responsive to the difference between the totals to adjust the frequency of the local clock oscillator in a sense tending to reduce the difference,
- wherein each said station also includes means for periodically modifying the total in the fill counter of the particular station so that the total lies within a predetermined range of values.

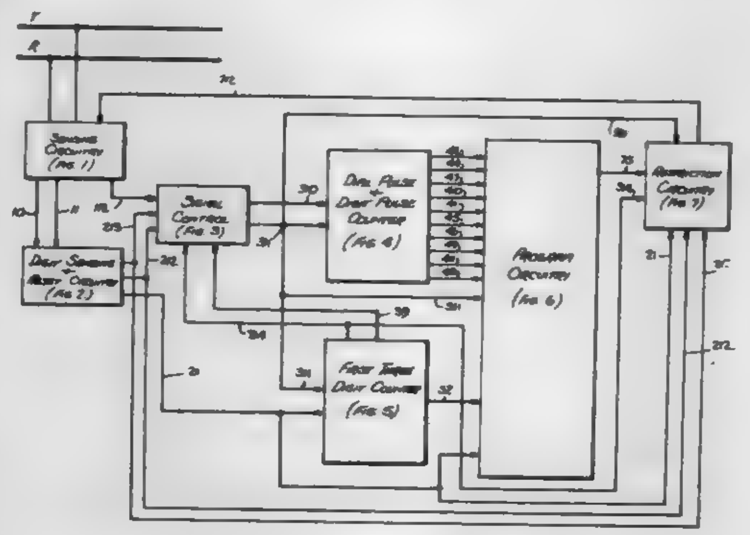
3,980,836
TOLL RESTRICTING METHOD AND APPARATUS

Richard Lik-Chuen Chan, New York, N.Y., and Ove Villadsen, Wall, N.J., assignors to International Components Corporation and TIE/Communications, Inc., both of Stamford, Conn.

Filed May 5, 1975, Ser. No. 574,474

Int. Cl.² H04M *1/66*

U.S. Cl. 179—18 DA **22 Claims**


T
R
Sensing Circuitry (Fig 1)
Signal Control (Fig 3)
Dial Pulse to Digit Pulse Counter (Fig 4)
Program Circuitry (Fig 6)
Restriction Circuitry (Fig 7)
First Three Digit Counter (Fig 5)

1. Toll restricting apparatus to prohibit toll telephone calls from being made on a restricted telephone instrument providing loop disconnect outputs, said instrument being connected to a central office by means of tip and ring signal path leads, said toll restricting apparatus being connected to said tip and ring signal path leads at a point between said central office and said instrument, said apparatus comprising,

- sensing means responsive to signaling and dialing pulses on said tip and ring leads for generating sensing signals,
- first counting means responsive to said sensing signals for counting the number of digits dialed and generating a first restrict signal, if said number of digits dialed is greater than a first predetermined number of digits,
- second counting means responsive to said sensing signals for counting the number of dialing pulses for each digit dialed up to a second predetermined number of digits, and generating a second restrict signal, if said number of dialing pulses for any of said digits up to said second predetermined number of digits dialed is equal to predetermined number of pulses,
- means for generating inhibiting signals indicating that predetermined absorb digits have been dialed before a non-absorb digit has been dialed,
- inhibiting means responsive to said inhibiting signals for inhibiting said first counting means from beginning a digit count and for inhibiting said second counting means from beginning digit pulse counting until a non-absorb digit has been dialed, and
- means responsive to said first or second restrict signals for opening said tip and ring signal path.

3,980,837
APPARATUS FOR PULSING IN TELEPHONE SETS

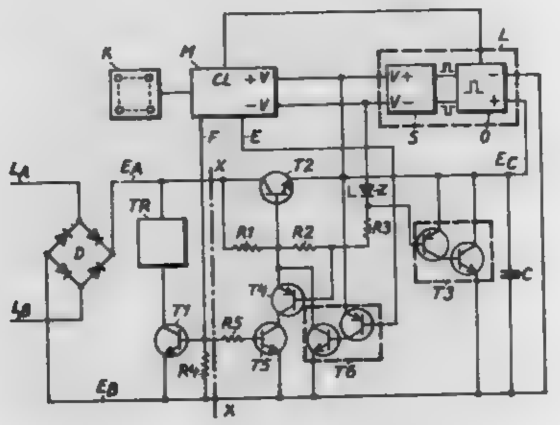
Lars Erik Jakobsson, Enskede, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Mar. 12, 1975, Ser. No. 557,655

Claims priority, application Sweden, Mar. 29, 1974, 74042789

Int. Cl.² H04M *1/272*

U.S. Cl. 179—90 K **3 Claims**



1. Key telephone set for connection to an exchange equipped for dialling by means of sending break pulses through the subscriber's line comprising a telephone instrument with speech transmitting and receiving circuits, a push button dial pad, an electronic circuit for storing the digits dialled on said push buttons and for converting said stored digits to a sequence of dial pulse trains having a pulse frequency, pulse ratio and pulse train as required by the pulse receiving means of the exchange, a DC converter comprising oscillator means and voltage multiplying means having an input connected to the subscriber's line in the hook-off state and an output connected to supply voltage terminals on said electronic circuit, said oscillator supplying timing pulses to said electronic circuit.

3,980,838
PLURAL ELECTRET ELECTROACOUSTIC TRANSDUCER

Nobuo Yakushiji, Yokohama, and Kenji Suehiro, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

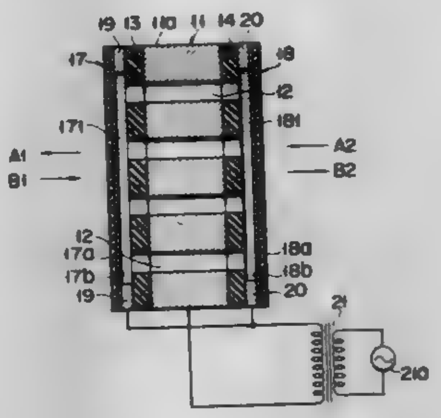
Filed Feb. 14, 1975, Ser. No. 549,928

Claims priority, application Japan, Feb. 20, 1974, 49-20160; Feb. 20, 1974, 49-20162; Aug. 31, 1974, 49-100062

Int. Cl.² H04R *19/00*

U.S. Cl. 179—111 E **6 Claims**

1. An electroacoustic transducer comprising a stationary electrode plate including a plate-like rear electrode; a pair of electret films superposed one on each side of the rear electrode and having a plurality of through holes; a pair of electrode diaphragms disposed one at each side of the stationary electrode, spaced at a predetermined interval from each of those surfaces of the stationary electrode plate which confront the electrode diaphragms, respectively, and acoustically coupled to each other through the through holes of the stationary electrode; the electrets being charged to opposite polarities with respect to each other and an output signal of a signal source being supplied between each of the diaphragms and the rear electrode with one end of the signal source being electrically connected in common with the pair of electrode diaphragms and the other end connected with the stationary electrode plate.



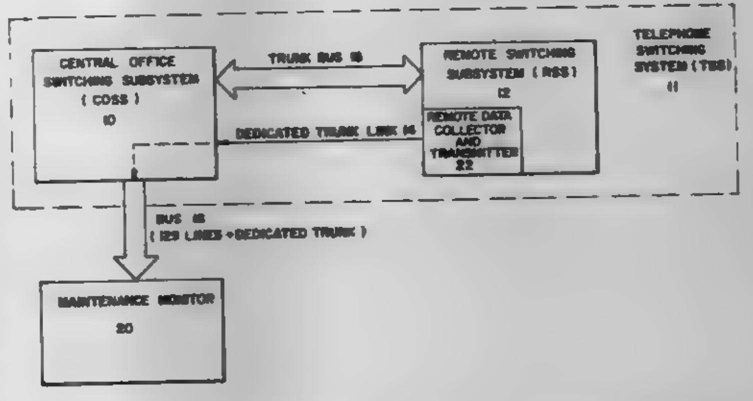
3,980,839
MAINTENANCE MONITOR FOR TELEPHONE SWITCHING SYSTEMS

Alan G. Hutcheson, Reno, Nev., assignor to Lynch Communication Systems, Inc., Reno, Nev.

Filed Dec. 9, 1974, Ser. No. 530,960

Int. Cl.² H04M *3/24*

U.S. Cl. 179—175.2 R **26 Claims**


CENTRAL OFFICE SWITCHING SUBSYSTEM (COSS) 10
TRUNK BUS 18
REMOTE SWITCHING SUBSYSTEM (RSS) 12
TELEPHONE SWITCHING SYSTEM (TSS) 11
DEDICATED TRUNK LINK 16
REMOTE DATA COLLECTOR AND TRANSMITTER 22
BUS 18
(129 LINES + DEDICATED TRUNK)
MAINTENANCE MONITOR 20

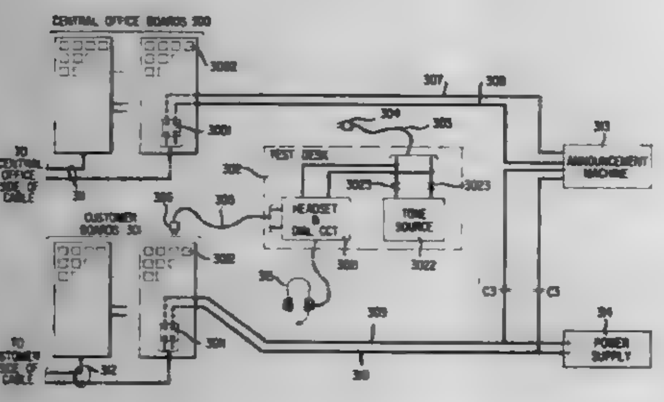
22. A data processing system for the monitoring and maintenance of an electronic telephone switching system wherein said processing system obtains data from said switching system, said processing system existing and operating apart from said switching system, and wherein the processing system detects and diagnoses operation errors based on the form of said data and communicates these results to maintenance personnel, said processing system comprising:

- a. microprocessor means comprising a microprocessor and state decoder means for analyzing and testing the telephone switching system data to thereby detect and diagnose operation errors occuring in the said switching system;
- b. system controller means for controlling the nature and sequence of the analysis done by said microprocessor means;
- c. memory means for storage of telephone switching system status and temporary storage of current switching system data being analyzed;
- d. data input means for inputting and temporarily storing data supplied by said switching system, including means for coupling said input data to the memory means when said data is requested by said microprocessor means; and
- e. error output means for the communication of detected telephone switching system operation errors to maintenance personnel.

3,980,840
CONDUCTOR IDENTIFICATION ARRANGEMENT FOR A CABLE RESTORATION SYSTEM

Frederick Henry Koster, Granite Springs, N.Y., assignor to American Telephone and Telegraph Company, New York, N.Y.

Filed Mar. 27, 1975, Ser. No. 562,987
Int. Cl.² H04B *3/46*
U.S. Cl. 179—175.3 A 11 Claims

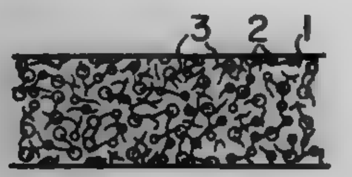


1. In a cable restoration system for temporarily providing service to telephone customers whose normal service has been interrupted by a break in a multiconductor cable connecting said customers to their serving central office, said system having means for identifying a service requesting customer line at said cable break and for ascertaining the directory number thereof and means connected to a test line appearing at said serving central office for dialing said directory number into said central office, said central office thereupon applying ringing to the line corresponding to said directory number, an arrangement for identifying the central office line at said cable break corresponding to said directory number comprising:
- means for tripping said ringing, said central office thereupon connecting said test line to said line corresponding to said directory number;
- means for applying a tone signal to said test line, said tone signal passing through said central office and appearing on said line corresponding to said directory number;
- means connected to each pair of conductors in said cable for detecting said tone signal; and
- indicating means responsive to the detection of said tone signal at said line corresponding to said directory number for locating said line.

3,980,841
SPEAKER EDGE

Hiroshi Okamura; Hisao Sato, both of Tokyo, and Isamu Iwasaki, Yono, all of Japan, assignors to K.K. Fujita Shoten and Hisao Sato, both of Tokyo, Japan

Filed May 23, 1975, Ser. No. 580,524
Int. Cl.² H04R *7/12*
U.S. Cl. 179—181 R 12 Claims

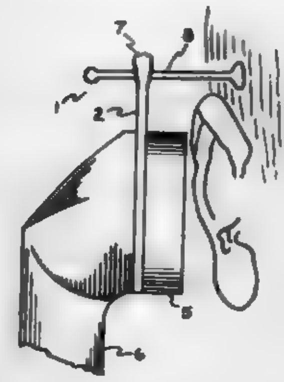


1. An acoustic material suitable for use as a speaker edge comprising an expanded plastic and minute collagen fibers wherein the content of the collagen fibers is 25 – 40% based on the weight of the expanded plastic, and the length of the fibers is equal to or less than 1 mm.

3,980,842
TELEPHONE LISTENING COMFORT ADAPTOR (TLCA)

Alfred L. Weisbrich, 113 Lake Road, Pocantico Hills, N. Tarrytown, N.Y. 10591

Filed Mar. 5, 1975, Ser. No. 555,549
Int. Cl.² H04R *1/10*
U.S. Cl. 179—182 R 5 Claims

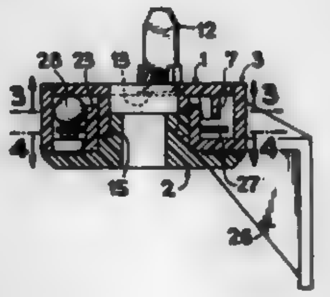


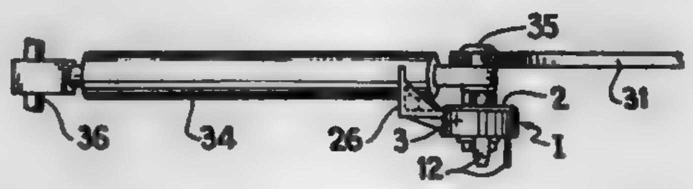
1. A telephone listening comfort adaptor comprising:
a device of sound conducting material, being attachable to a telephone receiver unit, as in a telephone handset, providing for a pivot arm and rest, the latter to be placed under normal use against the bony part of the head peripheral to an ear and said device being intended to conduct audio transmission of sound from the receiver to the intended listener via bone conduction of sound through said device contacting a bony region peripheral to an ear, and to serve as a distinct singular pivoting device and means about which the telephone handset may be pivoted in virtually any direction while still maintaining contact with the listener and yet maintaining a space between said handset and the ear and furthermore maintaining thereby conduction of sound from said receiver through the specified device to the intended listener.

3,980,843
ROTARY ELECTRIC SWITCH IN PARTICULAR FOR AN AUTOMOBILE VEHICLE LUGGAGE BOOT

Yves Germain, Hericourt, France, assignor to Automobiles Peugeot, Paris and Regie Nationale des Usines Renault, Boulogne-Billancourt, both of, France

Filed Feb. 26, 1975, Ser. No. 553,316
Claims priority, application France, Mar. 11, 1974, 74.08219
Int. Cl.² H01H *3/16, 21/28*
U.S. Cl. 200—11 EA 7 Claims



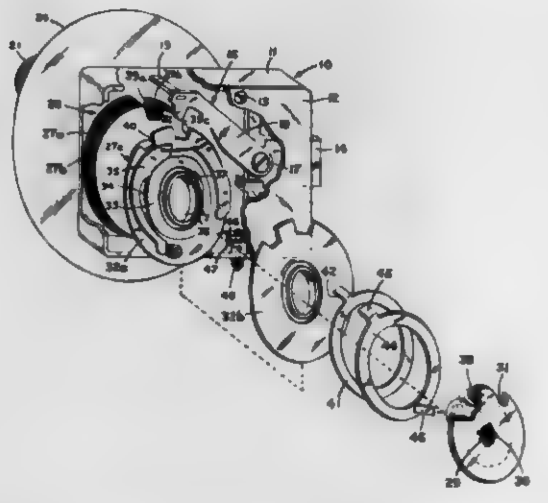


1. A rotary electric switch comprising in combination a body having a disc configuration, electric contacts fixed relative to the body, a movable element having a base and rotatably mounted in the body, the body comprising a barrel integral with the disc and defining an aperture in the centre of the disc, curved ribs integral with the disc and of substantially identical radii substantially evenly spaced around the barrel and defining between the ribs free spaces at least two of which free spaces are partly occupied by the fixed contacts, electrically conductive balls disposed in the spaces, said ribs having edges which limit said spaces and act as abutments for said balls, said movable element including an inner ring and an outer ring interconnected by said base, said inner ring of said movable element surrounding said barrel of said body, elastically yieldable means carried by said base, an electrically conductive ring bearing against the elastically yieldable means, the balls being interposed between the conductive ring and the disc and being capable of contacting the fixed contacts upon rotation of the movable element so that the electrical connection between said fixed contacts is established through said balls and said conductive ring, said switch further comprising means for maintaining said movable element assembled with said body.

3,980,844
COMBINATION LOCK AND SWITCH DEVICE

Eric L. Bianco, 120 E. Price St., Linden, N.J. 07036

Continuation-in-part of Ser. No. 458,200, April 5, 1974, abandoned. This application Apr. 22, 1975, Ser. No. 570,432
Int. Cl.² H01H *27/10*
U.S. Cl. 200—43 5 Claims

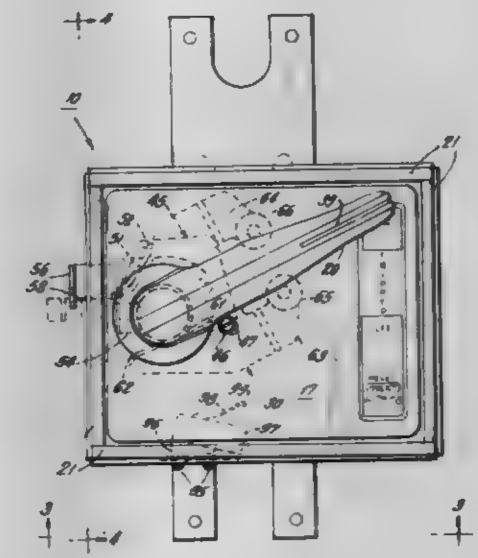


1. A combination lock and switch device including,
a. a housing,
b. a plurality of tumblers in said housing adapted to be rotated in accordance with a given combination,
c. each of said plurality of tumblers having at least one notch in the peripheral edge thereof,
d. means to rotate said tumblers relative to each other according to a given first combination to bring the respective peripheral notches into alignment with each other,
e. a locking dog disposed to coact with said aligned peripheral notches according to said first combination,
f. one of said tumblers having a second notch in the periphery spaced an angular distance from the first notch therein,
g. each of said plurality of tumblers adapted to be aligned according to a second combination so as to bring the peripheral notches of the tumblers into alignment with the second notch on said one tumbler and to permit coaction with said locking dog in the aligned position for the second combination and,
h. switch means operatively associated with said second notch in said one tumbler and with the locking dog when said plurality of tumblers are aligned in the second combination position whereby said switch means can actuate an associated electrical system.

3,980,845
CIRCUIT BREAKER OPERATOR WITH DEFEATES INTERLOCK MECHANISM

Carl E. Gryctko, Haddon Heights, N.J., and Kenneth D. Ball, Warminster, Pa., assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed Mar. 4, 1975, Ser. No. 555,166
Int. Cl.² H01H *9/22*
U.S. Cl. 200—50 A 10 Claims



1. Circuit breaker operator mechanism including a frame constructed to be fixedly mounted to an enclosure having a circuit breaker therein with a main section operatively positionable in front of and generally parallel to a circuit breaker housing surface having an operating handle extending forward thereof, a main operating handle including a manually engageable portion positioned in front of said main section and pivotally mounted with respect thereto, a cam unit disposed to the rear of said main section and connected to said main operating handle for operation thereby about a main axis generally at right angles to said main section, said cam unit including a portion engageable with a circuit breaker handle mounted for movement in a plane generally at right angles to said main section, a latch unit positioned behind said main section and including a cover latch portion for engaging and holding closed a cover of a circuit breaker enclosure, said cam unit including means to engage said latch unit and operate said cover latch portion to a cover releasing position when said main operating handle is in a first position, biasing means urging said latch unit to a blocking position, said cam unit having means engageable with said latch unit in its blocking position to prevent operation of said main operating handle to a second or circuit breaker closing position, said latch unit being moved to an unblocking position by engagement of said cover latch portion with an enclosure cover when the latter is in its closed position.

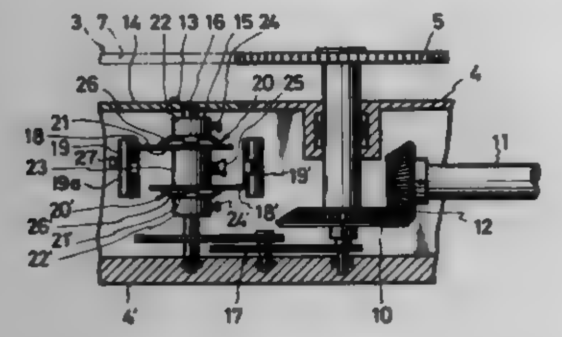
3,980,846
ELECTRIC CONTACT ACTUATING MECHANISM FOR AN AUTOMATIC DOOR

Kenji Yoshida, Tokyo, Japan, assignor to Jupiter Corporation; Shinmei Sangyo Co., Ltd. and Solic Co., Ltd., all of Tokyo, Japan

Filed Jan. 2, 1975, Ser. No. 538,001
Int. Cl.² H01H *3/16*
U.S. Cl. 200—61.39 1 Claim

1. In an electrical contact actuating mechanism for an automatic sliding door, said mechanism having:
a. a base member (4) supporting a longitudinal door-driving device (3) including driving and driven gears (5,6) at opposed ends of said device (3), an endless chain (7) engaging said gears (5,6) with a connection (9) for driving a door (8), and motor drive means (1,2); and

b. a rotary operator (15) interlocked with the door-driving device (3) having a rotary shaft (16) supported on said base member (4), the improvement therein comprising:
c. a predetermined number of radial working arms (18, 18') with outer ends mounted on said rotary shaft (16) so that said working arms are rotatable thereon, said outer ends traveling along a defined periphery, spring means (20) between said rotary shaft (16) and said working arms (18, 18') so that said working arms (18, 18') will only rotate separately when the rotational force applied thereto exceeds a predetermined value, adjusting means (22, 22', 23, 24, 25) to adjust the position of said working arms (18, 18'), switch enabling working elements (19, 19') held at said outer ends, said working elements including a contact buffer zone, switch elements (27, 27') corresponding to said switch enabling working elements (19, 19') mounted on said base member (4) disposed at predetermined locations near said defined periphery so as to be enabled as said switch enabling working elements (19, 19') pass before said switch elements, and, a stopper (28) on said base member (4) along said defined periphery at a predetermined location for stopping the rotation of said working arms (19, 19') so that the sliding movement of a door operated by said mechanism can be readily adjusted by adjusting the position of said working arms.



3,980,847

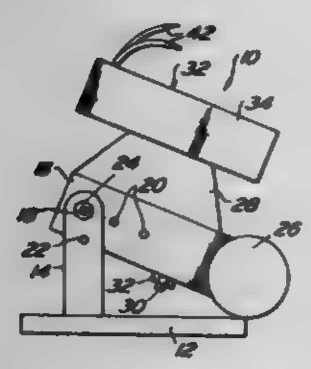
PIGGY BACK ELECTRIC FLOAT SWITCH

Kenneth S. Mines, 516 NW. 179th St., Miami, Fla. 33169; Irving Mines, 400 Kings Point Drive, No. 610, and Guy Goulet, 400 Kings Point Drive, both of N. Miami Beach, Fla. 33164

Filed Nov. 13, 1974, Ser. No. 523,197

Int. Cl.² H01H *35/18*

U.S. Cl. 200—84 B 3 Claims



1. An electrical switch means operable by the rising and falling level of a body of water, comprising a base, standards mounted on said base and extending upwardly therefrom, a shaft having at least one transverse aperture therethrough, said aperture being positioned adjacent one end of said shaft, a pivot pin extending through said standards and through said transverse aperture in said shaft to form a pivotal connection between said shaft and said standards, a float mounted at the end of said shaft opposite the end to which said aperture is adjacent, a support mounted on said shaft and extending upwardly therefrom, said support having an upper surface which is positioned in vertically spaced relation to the upper plane of said float, an elongated mercury switch housing mounted on said upper surface of said support, said switch housing being substantially parallel to said shaft, said switch housing containing a mercury switch comprising a ball of mercury in a tube, said tube extending generally parallel to said shaft but being bent at its median portion to form opposed downwardly-inclined sections, said tube having leads at one end to which are connected electrical wires for connection to a device to be electrically actuated and deactuated by movement of said mercury switch, said wires extending laterally from said tube through a lateral opening in said switch housing, said lateral opening being on the side of said housing remote from said support, said mercury switch being movable from an actuating to a deactuating position by pivotal movement of said shaft resulting from rising and falling of said float as said float rests on said body of water.

3,980,848

DEVICE FOR THE REMOTE CONTROL OF MOTIONS AND OPERATIONS OF MICROSURGICAL EQUIPMENT

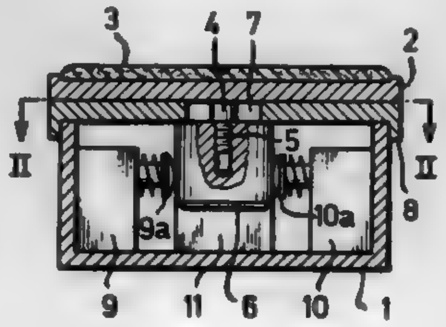
Kurt Schulz, and Gunther Sümmerer, both of Oberkochen, Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Germany

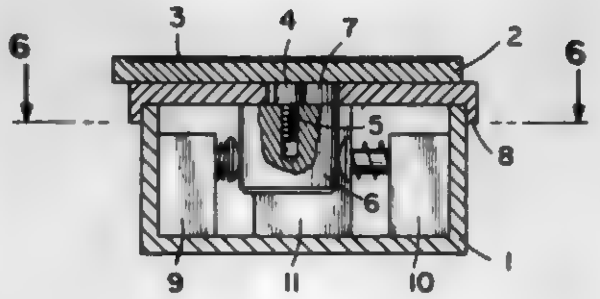
Division of Ser. No. 405,482, Oct. 11, 1973, abandoned. This application Nov. 21, 1974, Ser. No. 525,972

Claims priority, application Germany, Oct. 16, 1972, 379125

Int. Cl.² H01H *3/14*

U.S. Cl. 200—86.5 3 Claims





1. In an operating chair for surgical operations under a microscope, having a control panel on which the chair is mounted, a plurality of switch assemblies mounted in the upper surface of said panel and arranged for operation by a surgeon's foot for the remote control of motions and operations of surgical and microscopical equipment, each of said switch assemblies comprising a housing, a cover plate for said housing, said cover plate having an aperture extending therethrough, a control member mounted above said cover plate and being laterally slidable thereon, said control member having a stud secured thereto which extends downwardly through said aperture, the diameter of said stud being less than the diameter of said aperture, a plurality of switches mounted within said housing and arranged around said stud, and means carried by said stud for actuating any selected one of said switches on lateral movement of said control member and stud in a direction transverse to the axis of said stud and toward said selected switch.

3,980,849

FOOT CONTROLLER SWITCH ASSEMBLY FOR DENTAL APPLIANCES

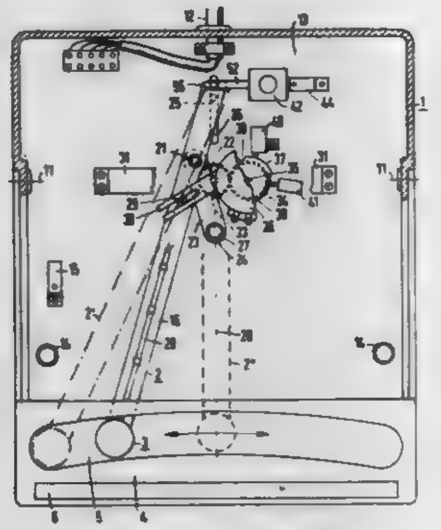
Reinhard Straihammer, Kirschhausen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed June 19, 1973, Ser. No. 371,545

Claims priority, application Germany, June 26, 1972, 2231120

Int. Cl.² H01H *3/14;* G05G *9/00*

U.S. Cl. 200—86.5 9 Claims



1. Foot control installation comprising a housing; actuating means supported in said housing and having an end portion projecting therefrom, said actuating means being horizontally movable between an initial inoperative position and at least one operative position; means for normally biasing said actuating means into its initial position; foot contact means mounted on the projecting portion of said actuating means; control and switching element means operatively connected to said actuating means and adapted to be actuated upon displacement of actuating means from its initial position; first support means proximate to said foot contact means for supporting said actuating means in said housing; and second support means remote from said foot contact means for supporting said actuating means in said housing; said first support means including a first portion arranged on said actuating means and being movable along a concavely curved path as viewed from said foot contact means, and a support portion of said second support means being arranged on said actuating means at a spaced relationship to the first support means and being movable along a path so as to move to such an extent in the direction of said foot contact means in the initial position of said actuating means upon the latter being displaced from its initial position as to cause the projecting end of said actuating means to move in a generally linear path, a base plate for supporting said installation, said second support comprising cooperative guide means including a slide way projecting means extending into the said slide way and adapted to be guided therein, one part of said cooperative guide means being intergral with said base plate and the other part being integral with said actuating means.

3,980,850

VACUUM INTERRUPTER WITH CUP-SHAPED CONTACT HAVING AN INNER ARC CONTROLLING ELECTRODE

Clive W. Kimblin, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

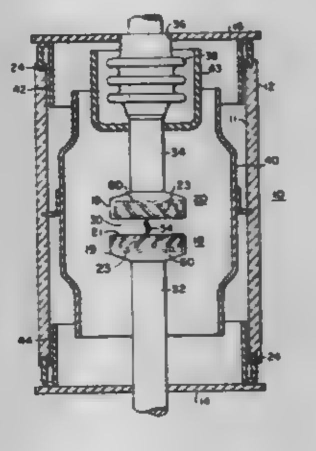
Filed Dec. 19, 1974, Ser. No. 534,550

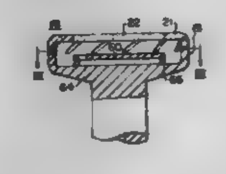
Int. Cl.² H01H *33/66, 1/06*

U.S. Cl. 200—144 B 13 Claims

1. A vacuum circuit interrupter comprising:

a highly evacuated insulating envelope;
a first contact disposed within said insulating envelope;
a second contact disposed within said insulating envelope being relatively movable with respect to said first contact between a closed position in engagement with said first contact and an open position separated from said first contact to form an arcing gap therebetween, across which an arc is formed during circuit interruption;
said first contact comprising a base portion, a side wall portion extending from said base portion defining a hollow right circular cylinder, an annular contact surface formed at the free end of the side wall portion, an insert portion disposed within and recessed from the contact surface being spaced apart from the base portion and having circumferential and radial extending slots formed therein; and,
said second contact comprising a flat circular base portion, a side wall portion extending from the base portion defining a hollow right circular cylinder, an annular contact surface formed at the free end of the side wall portion, an insert portion disposed within and recessed from the annular contact surface being spaced apart from the base portion and having circumferential and radial extending slots formed therein.





3,980,851

HIGH AMPERAGE SWITCHING APPARATUS WITH BI-METALLIC ARCING CONTACTS

Leo G. Evans, Tonawanda, and Michael B. Bykowski, Eggertsville, both of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

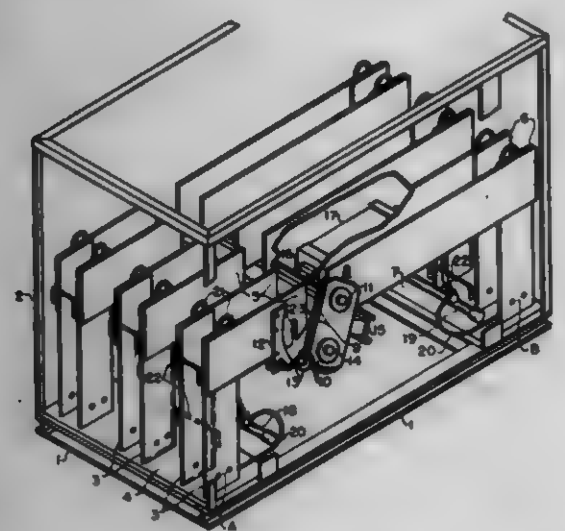
Filed Aug. 1, 1974, Ser. No. 493,940

Int. Cl.² H01H *33/12*

U.S. Cl. 200—146 R 10 Claims

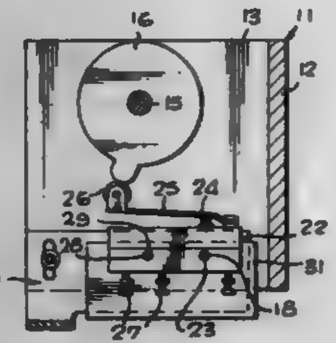
1. In a high amperage switching apparatus comprising multiple, spaced apart, stationary first terminals, each in interruptable circuit communication with corresponding multiple, spaced apart, stationary second terminals, said communication being by movable knife type circuit interrupting means pivotably attached to each second terminal such that it will contact the corresponding first terminal at some point in the pivot arc, the improvement comprising removably and conductively attaching to at least one stationary first terminal, at least one primary sacrificial, bimetallic contact, having a highly conductive lower attachment section and a highly resistant contact tip and removably and conductively attaching to at least one corresponding movable circuit interrupting means at least one secondary sacrificial bimetallic contact, said secondary sacrificial bimetallic contact comprised of multiple

copper/silver laminates, separated by at least one tension laminate, backed by a spring compression laminate, the copper/silver laminate being slotted to comprise multiple contact fingers, and having a highly resistant metal tip, said primary and secondary sacrificial bimetallic contacts being so attached to said first terminal and interrupting means that under high amperage current, when closing said switch, contact is made between the resistant tips of said primary and secondary sacrificial contacts prior to the initiation of arcing between the first terminal and the movable interrupting means, contact between the sacrificial contacts being maintained throughout the closing of the switch and when opening said switch, contact is maintained between the primary and secondary sacrificial contacts until the interrupting means is so far removed from the first terminal that arcing therebetween may not occur.



3,980,852
ADJUSTABLE HIGH DENSITY CAM-SWITCH ASSEMBLY

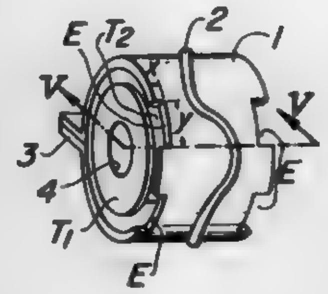
Charles L. Redfield, Woodridge, Ill., assignor to Litton Industrial Products, Inc., Elk Grove Village, Ill.
Filed Jan. 20, 1975, Ser. No. 542,362
Int. Cl.² H01H *21/28*
U.S. Cl. 200—153 LB **6 Claims**



1. A cam-switch assembly comprising:
a pivot rod located on an axis;
a plurality of cam-switches, each cam-switch including a cam follower responsive to a respective cam for actuating a switch;
a plurality of mounting brackets each having means for supporting a cam-switch, said mounting brackets being pivotally supported on said second pivot rod;
said mounting brackets further including means for individually adjusting the angular position of each bracket and cam-switch with respect to said cams, said means further including means for adjustably positioning said bracket with respect to a fixed surface adjacent to said mounting brackets, said positioning means comprising a first wall having an elongated slot extending therethrough for adjustably receiving a locking screw; and
each mounting bracket further including locking means for providing a fixed surface for an adjacent mounting bracket, said locking means comprising a second wall having a threaded bore for securedly receiving a locking screw.

3,980,853
INDUCTIVE BODY FOR HIGH FREQUENCY INDUCTION HEATING

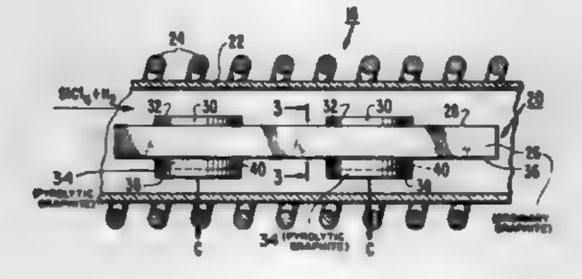
Nobukazu Morisaki, Aichi, Japan, assignor to Daido Metal Company, Ltd., Nagoya, Japan
Continuation-in-part of Ser. No. 405,112, Oct. 10, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,129
Claims priority, application Japan, July 12, 1973, 48-78842
Int. Cl.² H05B *9/02*
U.S. Cl. 219—10.79 **3 Claims**

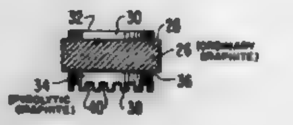


1. A single-layer cylindrical induction coil for high-frequency heating of a cylindrical metal work piece for making slide bearing having at least an end collar on the circumference at the axial end thereof; the induction coil completely surrounding the work piece, the axial length of the induction coil being equal to that of the work piece, and having at least at the axial end thereof opposing to the end collar of the work piece which is rotatable during heating a portion defining at least a rectangular notch axial length *x* of which is in a range of from one third to four times the axial length of the collar of the work piece while the circumferential length *y* or sum of the circumferential lengths *y* of said rectangular notch or notches are in a range of one quarter to three quarters of the length of the circumference of the induction coil.

3,980,854
GRAPHITE SUSCEPTOR STRUCTURE FOR INDUCTIVELY HEATING SEMICONDUCTOR WAFERS

Samuel Berkman, Florham Park, and John George Martin, Fanwood, both of N.J., assignors to RCA Corporation, New York, N.Y.
Filed Nov. 15, 1974, Ser. No. 524,123
Int. Cl.² H05B *5/08;* **C23C** *13/08;* **B05C** *13/02*
U.S. Cl. 219—10.49 **9 Claims**



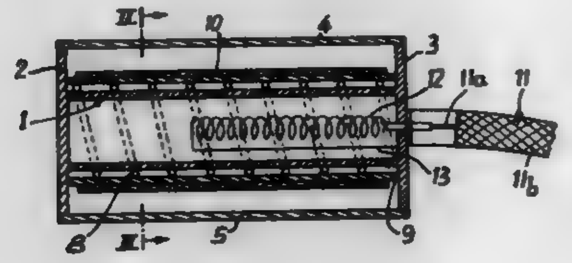


1. In a susceptor of the type adapted to support a substrate to be heated on one surface of a wall of the susceptor, the improvement comprising:

a heat shield disposed on an opposite surface to said one surface of said wall, said heat shield positioned directly behind said substrate and having an area substantially co-extensive and in alignment with the area of said substrate, and
said heat shield having a lower heat conductivity than that of said wall along a direction transverse to said opposite surface.

3,980,855
METHOD AND APPARATUS FOR DISSIPATING HIGH FREQUENCY ENERGY INSIDE A MATERIAL TO BE TREATED

Georges Boudouris, Grenoble; Gregoire Kalopissis, Paris; Paul Roussopoulos, Paris, and Jean-Luc Levesque, Paris, all of France, assignors to L'Oreal, Paris, France
Continuation-in-part of Ser. No. 196,122, Nov. 5, 1971, abandoned. This application Mar. 22, 1973, Ser. No. 344,048
Int. Cl.² H05B *9/06*
U.S. Cl. 219—10.55 A **14 Claims**

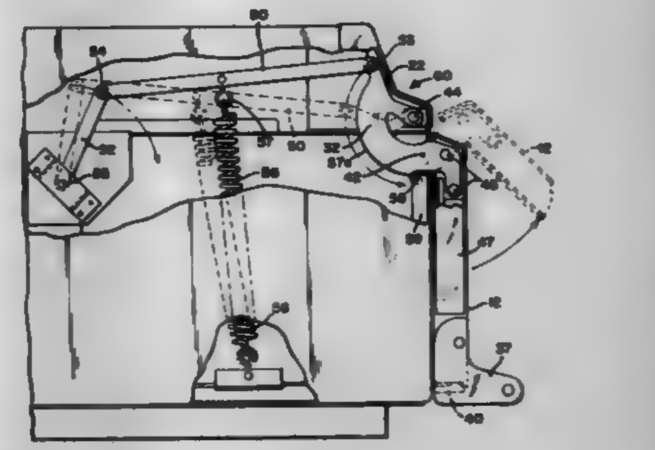


1. Device for dissipating high frequency electromagnetic energy from a high frequency electromagnetic generator operating at between about 10 and about 2000 megahertz inside a material which device comprises in combination:
an elongated cavity resonator comprising an electrically conductive substantially closed outer jacket, an electrically conductive helical coil and means coaxially locating said helical coil inside said outer jacket, in a position spaced inwardly from the inner wall of said jacket,
electrically insulating means for locating the material to be treated between the wall of said jacket and said helical coil,
a coaxial line adapted to be connected at one end to said generator and comprising an external conductor connected at the other end of said line to said jacket, and a central conductor,
coupling means for transferring energy from the central conductor to said helical coil and for radiating energy inside said jacket for dissipation inside said material to be treated,
the total impedance presented by said resonator and said material to be treated being matched to that of the coaxial line and the high frequency generator.

3,980,856
COUNTERBALANCE LINKAGE FOR A MICROWAVE OVEN DOOR

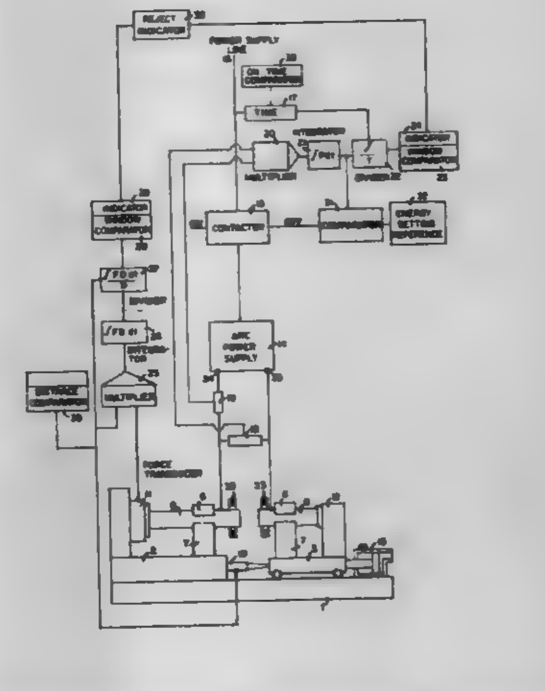
Kenneth D. Allen, Dayton, Ohio, and Coy M. Tippy, New Iberia, La., assignors to Hobart Corporation, Troy, Ohio
Filed Feb. 14, 1975, Ser. No. 549,921
Int. Cl.² H05B *9/06*
U.S. Cl. 219—10.55 D **6 Claims**

1. In a microwave oven which includes a cabinet defined by side, top, bottom, rear walls, and a front wall with a substantially vertically arranged aperture therein, said walls defining a heating cavity accessible through said aperture, and a source of microwave energy coupled to the interior of said cavity, the improvement comprising:
a cavity closing door movable in an arcuate path about an axis adjacent to the upper portion of said door from a closed lower position covering said aperture through an intermediate neutral position to an open upper position above said aperture,
pivotal supporting means mounted behind said front wall and including connecting arm means extending through the plane of said front wall and rigidly connected to said door, and
spring biased linkage means including a multiple link and spring mechanism located behind the plane of said front wall and attached to said connecting arm means, said linkage means being related to said pivotal supporting means such that said door is biased to its open upper position above said aperture when said door is raised beyond said intermediate neutral position.



3,980,857
CONTROL AND MONITOR FOR ROTATING ARC WELDER

David Sciaky, Chicago, Ill., assignor to Welding Research, Inc., Chicago, Ill.
Filed Oct. 29, 1974, Ser. No. 518,796
Int. Cl.² B23K *11/02*
U.S. Cl. 219—100 **8 Claims**

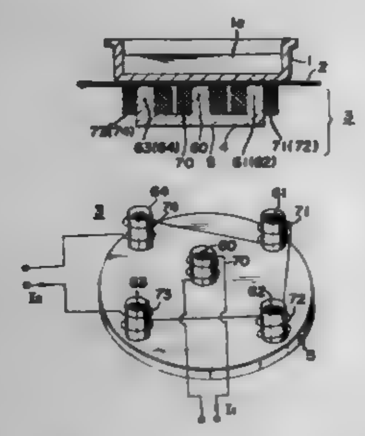


1. A method of monitoring the parameters which affect the quality of welds produced in parts being welded by the rotating arc process comprising the steps, after initiation of the arc voltage and current, of;
generating a voltage which represents the time average of electrical energy delivered to parts being welded;
generating a voltage which represents the average mechanical work per unit of displacement of the platens supporting the parts, which is performed on the parts during the

forging operation as they move with respect to one another;
causing the said voltages to be compared respectively with ranges of preset voltages which represent respectively values of electrical energy per unit time and values of mechanical work per unit distance which, when delivered to the said parts, result in acceptable welds,
developing from said comparison an aural or visual signal when either of said voltages are outside the preset range of voltages to which they are compared.

3,980,858
EXCITER FOR INDUCTION HEATING APPARATUS

Masahiro Hibino, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 22, 1974, Ser. No. 499,756
Claims priority, application Japan, Aug. 22, 1973, 48-94044
Int. Cl.² H05B *5/04*
U.S. Cl. 219—10.49 **7 Claims**

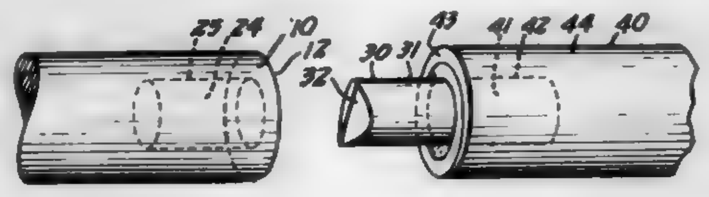


1. Induction heating apparatus comprising:
a central magnetic pole,
a plurality of peripheral magnetic poles positioned equidistant from the central magnetic pole,
a yoke for positionally disposing the central magnetic pole and the peripheral magnetic poles,
a cover plate supported by the peripheral magnetic poles,
a heated element supported by the cover plate,
a central excitation winding wound about the central magnetic poles,
a plurality of peripheral excitation windings wound about the peripheral magnetic poles,
a first excitation circuit comprising the central excitation winding,
means connecting the peripheral excitation windings to form a second excitation circuit.
means for energizing the first excitation circuit with a first excitation current and for energizing the second excitation circuit with a second excitation current having a difference in phase with respect to the first excitation current of 70°–110° to generate an electromagnetic force perpendicular to the cover plate so that no turning force is applied to the heated element and so that vertical vibration is prevented while at the same time generating eddy currents in the heated element from alternating magnetic fluxes to heat the heated element.

3,980,859
CORED WIRE JUNCTION

Joseph Charles Leonard, Huntington, W. Va., assignor to Huntington Alloys, Inc., Huntington, W. Va.
Continuation-in-part of Ser. No. 472,543, May 23, 1974, abandoned. This application Aug. 22, 1975, Ser. No. 607,066
Int. Cl.² B23K *11/02, 35/40*
U.S. Cl. 219—104 **10 Claims**

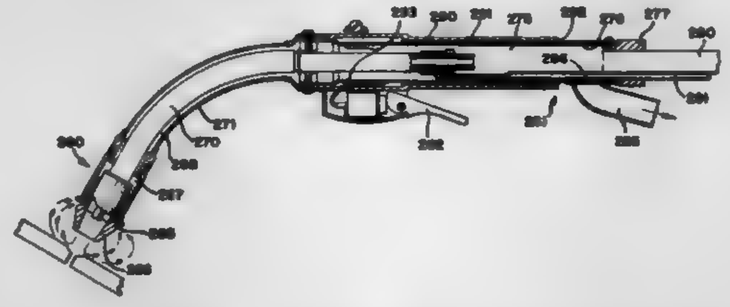
1. A process for joining two ends of two segments of composite wire each having a ductile metal sheath around a core of dielectric material comprising:
a. preparing perpendicular, essentially planar, end faces on two ends of the metal sheaths to be joined;
b. removing core material from each of the perpendicular faced ends to form two longitudinal cavities at the two ends while maintaining the integrity of the metal sheaths;
c. inserting into one of the cavities a ductile metal rider pin having a composition compatible with the sheaths and positioning the rider pin to extend within and protrude longitudinally from the cavity;



d. assembling the second segment onto the rider pin in a junction position having the perpendicular faced ends of the metal sheaths of the segments in mutually abutting contact and having said metal pin extending into both of the cavities in the ends of the sheaths;
e. resistance upset welding the abutting sheath ends to join the ends of each other; and thereafter
f. surface finishing the wire at the upset resistance welded portion to provide a uniform diameter along the exterior surface of the joined segments.

3,980,860
FUME EXTRACTING TORCH HANDLE

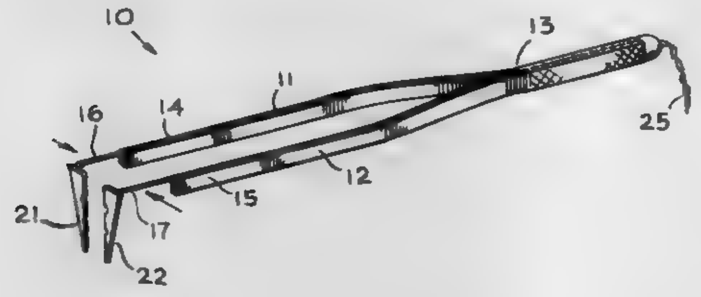
Donald L. Howell, West Milton, and Leo E. Wildenthaler, Troy, both of Ohio, assignors to Hobart Brothers Company, Troy, Ohio
Continuation of Ser. No. 195,568, Nov. 4, 1971, abandoned. This application Feb. 19, 1974, Ser. No. 443,906
Int. Cl.² B23K *9/00*
U.S. Cl. 219—130 **1 Claim**

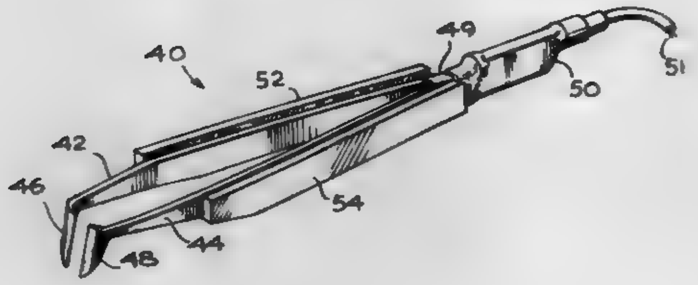


1. A torch for use in welding operations during which smoke and/or fumes are created, said torch comprising
a welding head having a longitudinal axis and an axial end adjacent which welding occurs,
means defining a smoke and/or fume extraction opening in said head extending substantially entirely therearound and communicating with the exterior of the head for receiving said smoke and/or fumes,
an annular ring on said head located rearwardly of said axial end and forwardly of said opening and extending radially outwardly to inhibit the direct flow of gas from the region of the weld and to cause smoke and/or fumes from the weld first to flow outwardly and then be drawn laterally inwardly into said opening,
means defining a chamber within said head connected to said opening for receiving said smoke and/or fumes therefrom,
a handle including a forward part connected to said head and a rearward part,
an inner conduit extending through said handle and having one end thereof extending into said head,
a shielding gas supply conduit within said inner conduit extending at least partially through said handle and having one end thereof extending through said head and provided with a discharge orifice adjacent said axial end of said head,
an exhaust jacket extending from said head and surrounding said inner conduit to define therebetween a fume passageway in communication with said chamber within said head,
said exhaust jacket and said inner conduit being concentric from said head through at least part of said handle,
means for connecting a source of negative pressure to said fume passageway at the rearward part of said handle whereby air flow may be induced into said opening in said head, and
means for cooling said exhaust jacket within said handle including a housing surrounding said exhaust jacket and means for directing air through the space between said housing and said exhaust jacket and means for exhausting said air to the exterior of said handle thereby to remove heat from said jacket and said handle.

3,980,861
ELECTRICALLY HEATED MINIATURE THERMAL IMPLEMENT

Akio Fukunaga, 2055 Colby Ave., Los Angeles, Calif. 90025
Continuation-in-part of Ser. No. 344,945, March 26, 1973, abandoned. This application Feb. 4, 1974, Ser. No. 439,562
Int. Cl.² H05B *1/00;* **H02G** *1/12*
U.S. Cl. 219—230 **18 Claims**

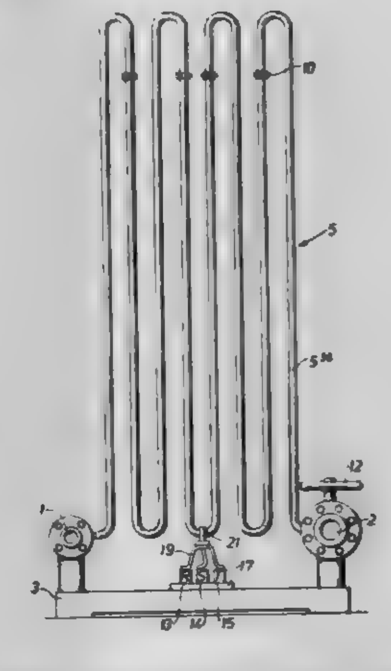




1. A miniature thermal implement comprising:
a pair of heating elements each encased within a protective sheath;
a pair of edged blade members supported in abutting alignment with each other for approximation along their respective edges;
means affixing each sheath to a corresponding blade member in proximity to the edge thereof such that the heating element and sheath are generally aligned with the edge of the corresponding blade member;
electrical circuit means electrically connected to opposite ends of the heating elements to establish an electrical circuit for connection to a source of electrical power; and
spring biased support means attached to said blade members for maintaining them in alignment for operative engagement of their respective edges;
the blade members being laterally displaced and extending toward each other from the associated support means with the edge of each blade member being located remote from its associated support means.

3,980,862
APPARATUS FOR ELECTRIC HEATING OF FLUIDS

Gunnar Hernborg, Trosa, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden
Filed Jan. 30, 1974, Ser. No. 437,939
Int. Cl.² H05B *3/00;* **F22B** *1/28*
U.S. Cl. 219—300 **9 Claims**



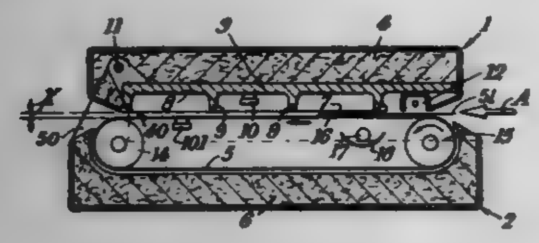
1. An apparatus for high power electric heating of a fluid, the apparatus comprising an inlet pipe and an outlet pipe each formed of an electrically conducting material, a number of pipe coils formed of an electrically conducting material and connected to and extending between said inlet and outlet pipes for flowing the fluid from said inlet pipe to said outlet pipe, each said pipe coil being arranged in a vertical plane with the vertical planes of said pipe coils disposed in parallel relation, each said pipe coils being serpentine shaped and comprising a plurality of vertically extending laterally spaced pipe sections arranged approximately parallel and U-bends connecting the ends of the pipe sections together to form a single continuous pipe coil, a restriction located in each said pipe coil at its connection to said inlet pipe, an alternating current source for supplying electric current to each of said pipe coils for resistive heating thereof and thereby of the fluid flowing therethrough, said alternating current source having *n* phases and said plurality of pipe coils being a multiple of *n*, means connecting each of the phases of said alternating current sources to a different 1/*n* of said plurality of pipe coils substantially at the central points thereof located midway along the pipes of the pipe coils between said inlet and outlet pipes, and means associated with the ends of each of said pipe coils for completing the circuit to the respective phases of the alternating current source.

3,980,863
ELECTROPHOTOGRAPHIC COPYING MACHINES

Helmut Wulz, and Paul Heinzer, both of Zurich, Switzerland, assignors to Wifo Wissenschaftliches Forschungs-Institut A.G., Zurich, Switzerland
Filed Nov. 8, 1974, Ser. No. 522,128
Claims priority, application Switzerland, Nov. 16, 1973, 16141/73
Int. Cl.² F27B *9/06*
U.S. Cl. 219—388 **18 Claims**

1. An apparatus for fixing electrophotographic images on sheets of electrophotographic material which comprises a thermally insulated lower housing section, drums mounted for rotation about spaced-apart, horizontal axes disposed in said lower housing section, a thin metal conveyor belt guided around said drums and having a substantially horizontal upper surface operative to hold and transport said sheets through the apparatus, a thermally insulated upper housing section spaced apart from and supported by said lower housing section, and

defining an inlet end and an outlet end, an electrical heater of planar configuration mounted in said upper housing section, said electrical heater having a lower surface which extends substantially parallel to the upper surface of said conveyor belt and disposed close to but not in contact with the sheets disposed on said upper surface of said conveyor belt, said spaced-apart upper and lower housing sections defining a conveying channel between the lower surface of the electrical heater and said sheets for the circulation of heated air therethrough, means for moving upwardly and downwardly the upper housing section substantially parallel to the lower housing section for adjusting the size of said conveying channel, and means for causing adhesion of said sheets to said upper surface of said conveyor belt so that said sheets are caused to lie flat on said conveyor belt as they are conveyed beneath the electrical heater from the inlet end to the outlet end thereof.



3,980,864

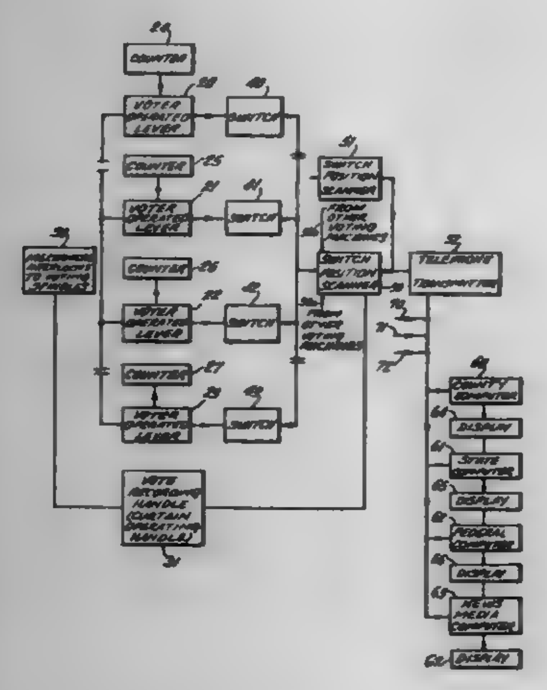
AUTOMATIC MECHANICAL VOTING MACHINE WITH ELECTRONIC READOUT

Earl H. Smith, Jr., Levittown, Pa., assignor to International Election Systems Corporation, Burlington, N.J.

Division of Ser. No. 370,835, June 18, 1973, Pat. No. 3,904,854. This application Aug. 18, 1975, Ser. No. 605,601

Int. Cl.² G07C *13/00*

U.S. Cl. 235—54 F **9 Claims**



1. A voting machine comprising, in combination:

a plurality of individual and manually operable vote casting members disposed in a given array and being manually operable between a no vote and a vote position;

a vote recording member operable from a vote enabling position to a vote recording position for recording the votes cast by a given voter by operating the said plurality of vote casting members;

a plurality of mechanical extension means connected to and extending from each of said plurality of vote casting members, respectively, and being mechanically operated between a first and a second position in response to the movement of their said respective vote casting member from said no vote and vote positions, respectively;

mechanical interlock means connected to at least selected ones of said plurality of vote casting members, whereby only a preselected number of said selected ones of said vote casting members can be placed in their said vote position at one time;

a printed circuit board means stationarily mounted with respect to said plurality of mechanical extension means and carrying circuit conductor means and a plurality of first circuit switching means thereon;

a plurality of second circuit switching means connected to said plurality of mechanical extension means, respectively; each of said plurality of second circuit switching means being operable by their said respective mechanical extension means between a first and a second switching position in response to movement of said each of said respective mechanical extension means between their said respective first and second positions; each of said plurality of second switching means being disposed for cooperation with a respective one of said plurality of first switching means;

each of said plurality of first and second switching means respectively defining a respective open circuit with said circuit conductor means when their respective one of said plurality of vote casting members is in one of its no vote or vote positions, and a closed circuit with said circuit conductor means when their said respective one of said plurality of vote casting members is in the other of its no vote or vote positions;

electronic scanning means connected to said circuit conductor means and operable to scan the condition of each of said plurality of first and second switching means when said vote recording member is operated to its said vote recording position;

and electronic data processing means connected to said scanning means for tabulating and displaying the total votes cast by each of said plurality of vote casting members.

3,980,865

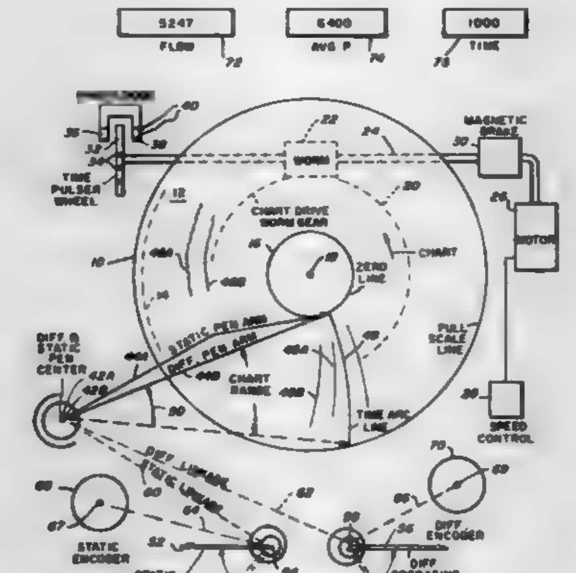
ELECTRONIC INTEGRATOR FOR GAS VOLUME CALCULATIONS

Elmer S. Messer, and Donald K. Mitchell, both of Tulsa, Okla., assignors to Flow Measurement Company, Inc., Tulsa, Okla.

Filed June 2, 1975, Ser. No. 582,611

Int. Cl.² G06K *15/00;* G06F *15/56*

U.S. Cl. 235—61.6 A **8 Claims**



1. An integrator for transcribing circular chart records of pressure (P) and differential pressure (H) and calculating the integral of instantaneous flow rate to provide a value of total flow, comprising:

a. chart drive means including means to provide pulses at selected incremental angles of rotation of said chart;

b. two rotatable pen arms, one for tracking the trace of P, and the other for tracking the trace of H, on said chart, manual operating arms for rotating said pen arms, and means separately to digitally encode the angles of rotation of said pen arms;

c. means to convert the output of said digital encoders to digital numbers representative of the instantaneous values of (P + A) and H, where A is a measure of atmospheric pressure;

d. means to extract the square roots of said digital numbers to obtain digital values of $\sqrt{(P+A)}$ and $\sqrt{H}$; and

e. means to multiply $\sqrt{(P+A)}$ times $\sqrt{H}$;

and means to accumulate the product thereof through a selected angle of said chart.

3,980,866

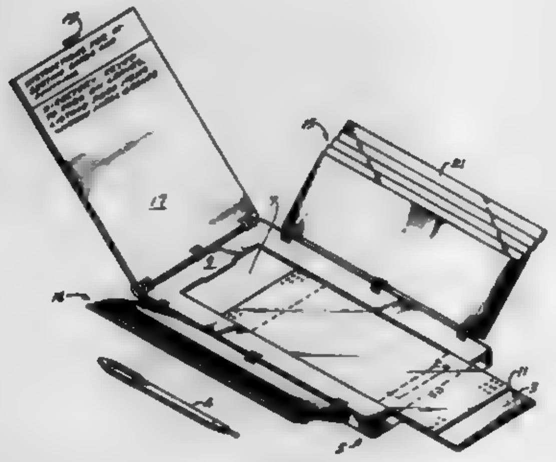
DIETARY AID

David H. Blankenhorn, 1165 Afton St., Pasadena, Calif. 91103

Filed Mar. 6, 1974, Ser. No. 448,494

Int. Cl.² G06K *19/06, 7/10*

U.S. Cl. 235—61.12 N **4 Claims**



1. A method of individually accumulating oral consumption information concerning a plurality of patients, which comprises:

individually displaying to each patient a plurality of item representations of items for oral consumption, each item representation comprising a written description of the represented item and a picture illustrating both the nature of the represented item and a unit quantity thereof, and in association with each represented item, indicia describing discrete selectable quantities of the represented item with the described quantities bearing fixed ratios to the illustrated unit quantity;

individually recording information in machine readable form comprising multiple-choice entries, each multiple-choice entry indicating as a selected one of the selectable quantities the one corresponding to the amount of consumption by the patient of one of the represented items; and

inputting into a digital data processing system the recorded information for processing thereof.

3,980,867

TRAFFIC SIGNAL LOOP MONITORING SYSTEM

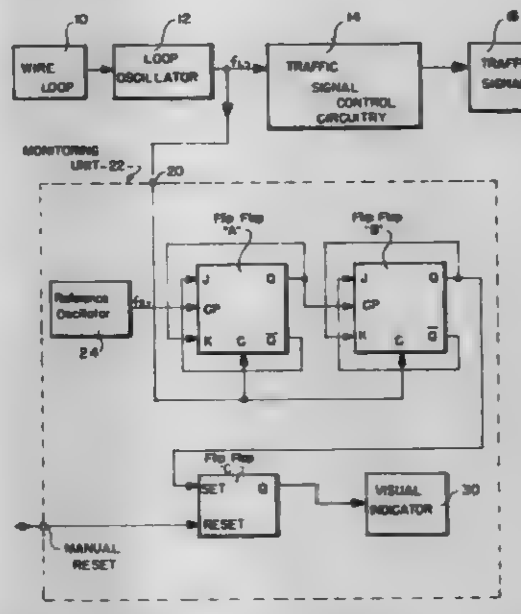
Thomas R. Potter, Los Alamitos, Calif., assignor to Indicator Controls Corporation, Gardena, Calif.

Filed Dec. 19, 1974, Ser. No. 534,634

Int. Cl.² H03K *21/30*

U.S. Cl. 235—92 TC **12 Claims**

1. A monitoring system for detecting a failure condition in an electrical network, said network including an inductive loop, a loop oscillator and a lead-in circuit connecting the inductive loop to the oscillator to cause the oscillator to generate a loop signal having a frequency (f_L) determined by the inductance of the loop and lead-in circuit, said monitoring system including: control circuit means connected to said loop oscillator and including a reference source and comparator means coupled to the reference source and to the output of the loop oscillator and responsive to the loop signal for producing an output signal having a first value in the presence of said loop signal and a second value in the absence of said loop signal.



3,980,868

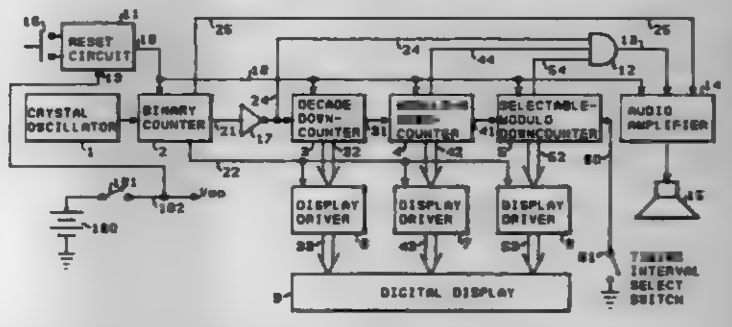
DIGITAL YACHT RACING TIMING SYSTEM

Francis T. Thompson, 3482 Treeline Drive, Murrysville, Pa. 15668

Filed Apr. 4, 1975, Ser. No. 565,085

Int. Cl.² H03K *21/18, 21/36*

U.S. Cl. 235—92 T **12 Claims**



1. A digital timing system for providing yacht race timing information to an individual comprising:

time-base reference means for producing timing pulses; electronic counting means including:

a. a chain of recyclable downcounter means connected to said time-base reference means and responsive to said timing pulses for providing output signals indicative of a decreasing count value,

b. automatic recylcing means coupled to said downcounter means and responsive to a reference count value to set said downcounter means to a preselected count value from which said timing pulses cause said downcounter means to count down to said reference count value;

actuator means connected to said electronic counting means for setting said downcounter means to an initial count value;

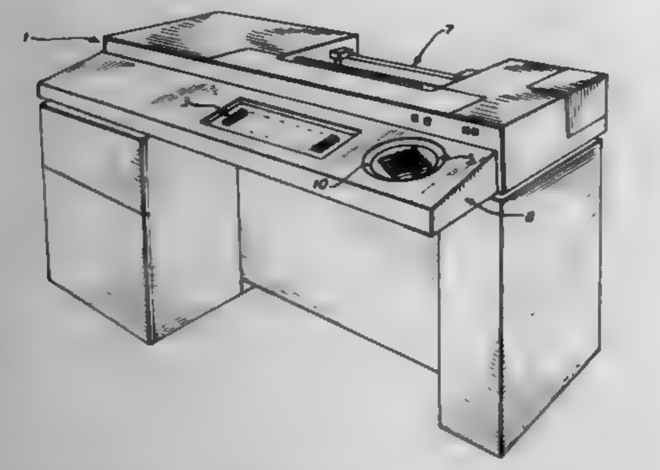
digital display means connected to said electronic counting means being operable to provide a visual display corresponding to said decreasing count value; and

output means connected to said electronic counting means for producing output signals in response to a predetermined sequence of count values.

3,980,869
ROTATABLE KEYBOARD

Paul A. Lombardino, Berkeley Heights; Jean H. Wickstead, Wayne, and Edward E. Schroeder, New Providence, all of N.J., assignors to Litton Business Systems, Inc., Morris Plains, N.J.

Filed Nov. 25, 1974, Ser. No. 526,527
Int. Cl.^{2} G06C *7/02*
U.S. Cl. 235—146 8 Claims

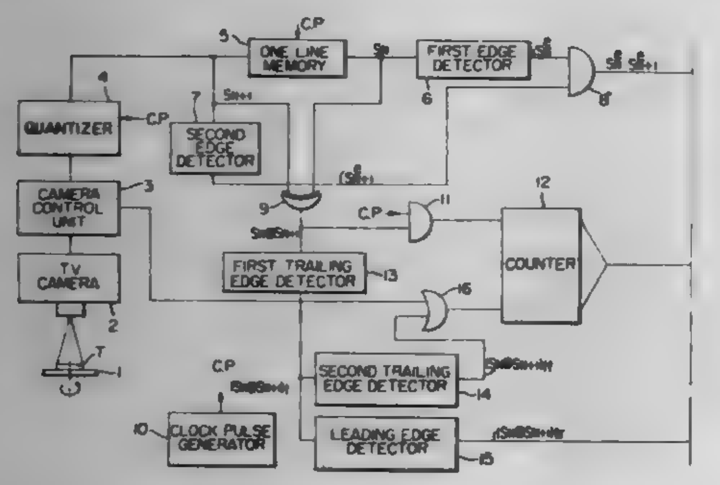


1. A keyboard for a data processing unit comprising:
a rotatable circular keyboard mask panel, and a keyboard unit, attached to said keyboard mask panel.

3,980,870
DEVICE FOR MEASURING CONTOUR LENGTH OF A TWO-DIMENSIONAL PATTERN

Atsushi Kawahara, Yokohawa, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed May 8, 1975, Ser. No. 575,718
Claims priority, application Japan, May 14, 1974, 49-52861
Int. Cl.^{2} G01B *11/00;* G06K *9/10*
U.S. Cl. 235—151.3 4 Claims



1. A device for measuring the contour length of a two-dimensional pattern comprising:

a. means (2, 3, 4) for scanning the pattern and sampling each scanned line at a predetermined length to produce an output including pulses, thereby converting the pattern into digitally coded patterns;

b. rotary means (1, 35) for intermittently rotating the pattern relative to said scanning means to enable said scanning means to scan and sample the pattern at each position of rotation, thereby attaining the uniform spatial distribution of the pattern;

c. means (5, 6, 7, 8) for detecting coincidence of the pulse edge of the output from said scanning means when said scanning means samples one scanned line and the pulse edge of the output from said scanning means when it samples the scanned line adjacent to said one scanned line, to produce an output when said detecting means detects said coincidence;

d. means (5, 9) for comparing the output from said scanning means when it samples said one scanned line with the output from said scanning means when it samples said adjacent scanned line, and for measuring the difference between said two outputs of said scanning means to produce an output involving digital information (N_1, N_2 ...) into which the contour line segment of said pattern interposed between said two adjacent scanned lines is quantized;

e. means for discriminating that said digital information corresponds to a number of times (N_1, N_2 . . .) as large as said predetermined length;

f. first means for multiplying the output of said detecting means by a predetermined weighting coefficient (L_O);

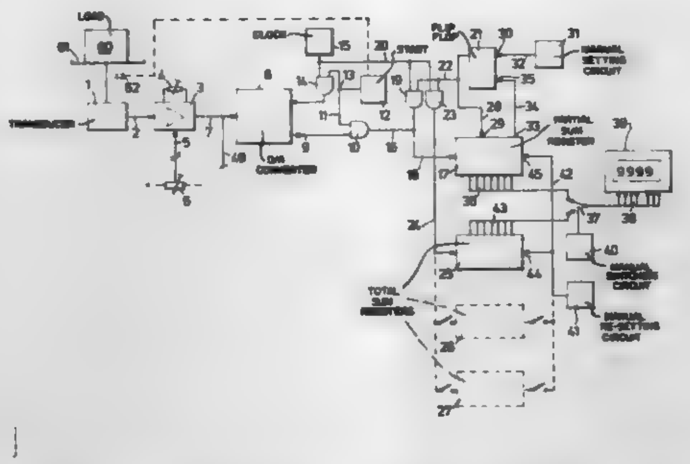
g. second means for multiplying the information of said comparing means by predetermined weighting coefficients according to the number of times (or the result of discrimination); and

h. means for averaging the outputs of said first and second means to obtain the average of the contour length of the pattern at each position of rotation.

3,980,871
DEVICE FOR REGISTERING AND INDICATING THE SIZE OF A LOAD ACTING ON A TRANSDUCER

Roland Lindström, Morogatan 30, Skelleftea, and Kjell Lidström, Norra Kustvagen 13, Burea, both of Sweden

Filed Feb. 4, 1975, Ser. No. 546,963
Claims priority, application Sweden, Feb. 4, 1974, 7401401
Int. Cl.^{2} G01G *19/00;* G06F *15/20*
U.S. Cl. 235—151.33 9 Claims



1. A device for registering and indicating the size of a load, comprising:

a transducer on which the load acts, said transducer generating an analogue voltage signal corresponding to the load,

an analogue/digital converter connected to receive said analogue voltage signal, said analogue/digital converter producing a digital output proportional to the amplitude of said analogue voltage signal,

a partial sum register,

at least one total sum register,

control means for first connecting the digital output of said analogue/digital converter to said partial sum register to store the digital output representing the size of the load prevailing at the moment and thereafter transferring the content of said partial sum register to said total sum register, said total sum register being operable to accumulate a plurality of transfers from said partial sum register,

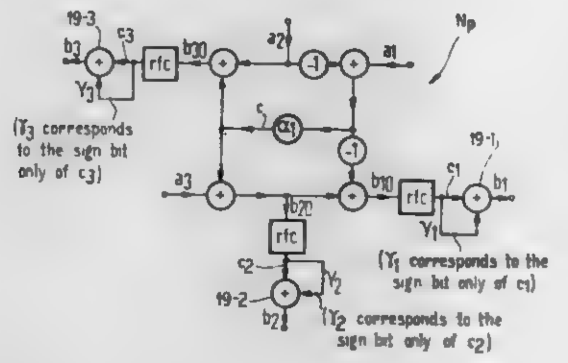
a numerical indicating device, and

selector means for selectably connecting the output of said partial sum register or the output of said total sum register to said numerical indicating device.

3,980,872
DIGITAL FILTER FOR ELECTRICAL SIGNALS

Alfred Fettweis, Bochum, and Klaus Meerkoetter, Herne, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 17, 1975, Ser. No. 569,306
Claims priority, application Germany, Apr. 19, 1974, 2418923
Int. Cl.^{2} G06F *15/34;* H03H *7/10*
U.S. Cl. 235—152 7 Claims


19-3
b3
c3
γ3
rfc
b30
a2
a1
Np
(γ3 corresponds to the sign bit only of c3)
a3
5
19-1
c1
b1
b20
rfc
b10
γ1
c2
19-2
b2
γ2
(γ1 corresponds to the sign bit only of c1)
(γ2 corresponds to the sign bit only of c2)

1. A digital computer filter for electrical signals comprising at least one circuit section without delay elements in the form of a multiport circuit, with a positive port admittance at each port and with an input and output signal quantity at each port at the respective operating times, characterized in that signal quantity modifying port circuits for rounding or chopping of the numbers representing signal quantities are provided in the multiport circuit, and are designed in such a way that the pseudo power $p(t_m)$ received by the multiport circuit at every time t_m and which satisfies the relation

$$p(t_m) = \sum_{\nu=1}^{n} G_\nu[a_\nu^2(t_m) - b_\nu^2(t_m)]$$

where

ν = number of ports (1, 2, . . . n)
$a_\nu(t_m)$ = input signal quantity at the time t_m in the ν th port
$b_\nu(t_m)$ = output signal quantity at the time t_m in the ν th port
G_ν = port admittance of the ν th port

is equivalent or only slightly greater than that value of the pseudo power function which results if, by omitting the rounding or chopping circuits, the arithmetic operations are executed with precise accuracy.

3,980,873
DIGITAL CONVOLUTIONAL FILTER

Anthony Mattei, Philadelphia, Pa., assignor to Aeronutronic Ford Corporation, Dearborn, Mich.

Filed June 27, 1975, Ser. No. 591,229
Int. Cl.^{2} G06F *7/38*, *15/34*
U.S. Cl. 235—156 6 Claims

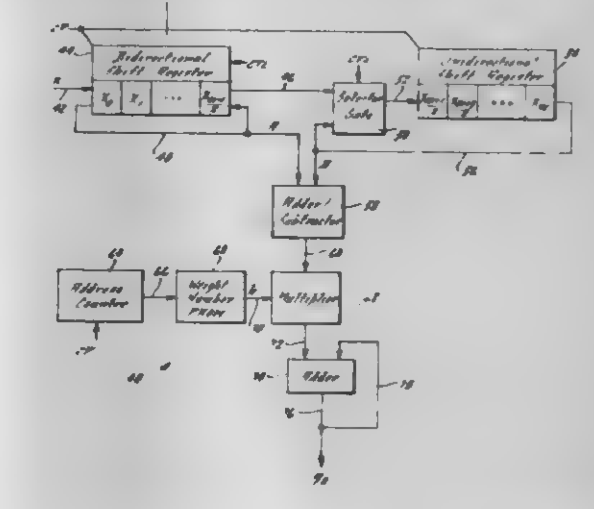
1. A digital convolutional filter for filtering a series of binary number electrical signals, each binary number electrical signal representing the amplitude of a sample of an analog electrical signal which is sampled at a predetermined rate, said digital convolutional filter comprising:

a bidirectional shift register having an input stage to be supplied with said series of binary number electrical signals and having an output stage coupled to said input stage to permit shifting of a binary number electrical signal in said input stage toward or into said output stage;

a second shift register having an input stage coupled to said output stage of said bidirectional shift register to permit shifting of a binary number electrical signal in said output stage of said bidirectional shift register toward or into said input stage of said second shift register, said output stage of said second shift register being coupled to said input stage of said second shift register to permit shifting of a binary number electrical signal in said output stage of said second shift register toward or into said input stage thereof;

means for combining a binary number electrical signal in said input stage of said bidirectional shift register with a binary number electrical signal in said output stage of said second shift register;

means for storing or generating a plurality of binary number electrical signals representative of constants;



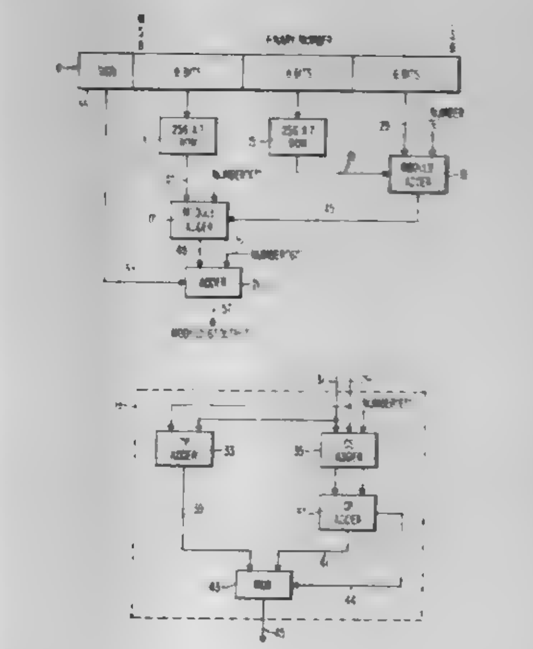
means for multiplying a binary number electrical signal, representative of a constant selected from said means for storing or generating a plurality of binary number electrical signals representative of constants, by a binary number electrical signal produced by said combining means, said multiplying means thus producing a product binary number electrical signal; and

means for summing product binary number electrical signals produced by said multiplying means.

3,980,874
BINARY TO MODULO M TRANSLATION

Chandrakant R. Vora, Audubon, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 9, 1975, Ser. No. 576,002
Int. Cl.^{2} G06F *7/385;* H03K *13/24*
U.S. Cl. 235—175 11 Claims

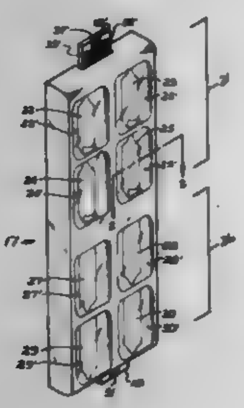


1. An apparatus for translating to modulo M a binary number of value greater than a number M, said number M being relatively prime to said binary number, said apparatus comprising:

means having two inputs for summing modulo M binary numerical data conveyed thereto;
means for conveying to a first of said two inputs a first portion of said binary number, said first portion being binary numerical data of value less than said number M;
means including a memory for translating to modulo M a second portion of said binary number, said second portion being said binary number minus said first portion; and
means for conveying to a second of said two inputs said translated second portion.

3,980,875
MULTIPLE FLASH LAMP UNIT

Paul T. Coté, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed July 3, 1974, Ser. No. 485,422
Int. Cl.^{2} G03B *15/02*
U.S. Cl. 240—1.3 20 Claims

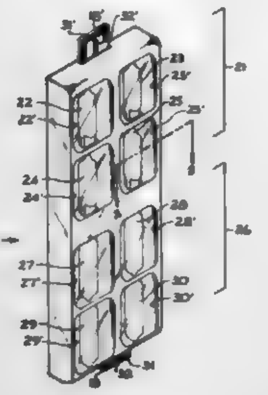


6. A multiple flash lamp unit comprising a plurality of photoflash lamps of the electrically fired type having lead-in conductors, said unit including a connector having a substantially flat surface thereon terminating at an end thereof spaced from the remainder of the unit, a group of electrical connector terminals for connection to a source of firing pulses, said terminals extending along said surface of the connector toward said end thereof, and circuitry connected between said terminals and said lead-in conductors of the lamps, said circuitry connected to a first one of the terminals having relatively more stray capacitance to ground than that connected to the other terminals of said group, said first terminal extending closer to said end of the connector than do the other of said terminals so as to be more readily touched than the other terminals when the unit is handled whereby any electrostatic charge applied to said first terminal will tend to become dissipated to ground via said relatively more stray capacitance rather than causing any of said lamps to flash.

3,980,876
PROTECTIVE TERMINAL FOR MULTIPLE FLASH LAMP UNIT

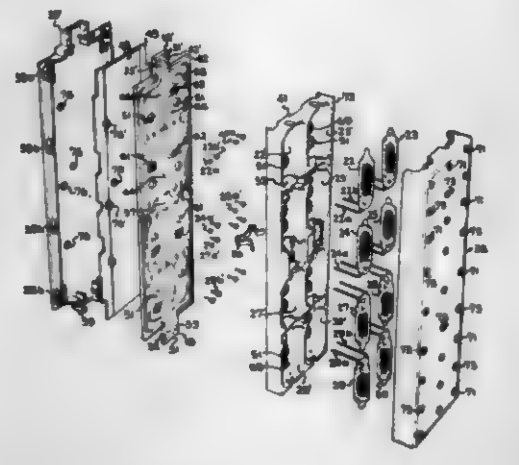
Paul T. Coté, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed July 3, 1974, Ser. No. 485,460
Int. Cl.^{2} G03B *15/02*
U.S. Cl. 240—1.3 25 Claims

8. Photoflash apparatus comprising a coupler having contacts electrically connected to a firing pulse source, and a flash lamp unit having a connector adapted to be joined removably with said coupler, said connector having electrical terminals located thereon adapted to engage said coupler contacts when said connector and coupler are joined, wherein the flash lamp unit is characterized by means on said connector for (a) creating an electrical short across said coupler contacts during initial joining of said connector and said coupler and prior to said connector terminals electrically engaging with said coupler contacts and (b) removing said electrical short during final joining of said connector and said coupler to place said connector terminals into electrical engagement with said coupler contacts.



3,980,877
PHOTOFLASH ARRAY WITH DISCHARGE PATH FOR ELECTROSTATICALLY CHARGED PERSON

Paul T. Coté, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed Oct. 1, 1975, Ser. No. 618,595
Int. Cl.^{2} G03B *15/02*
U.S. Cl. 240—1.3 7 Claims

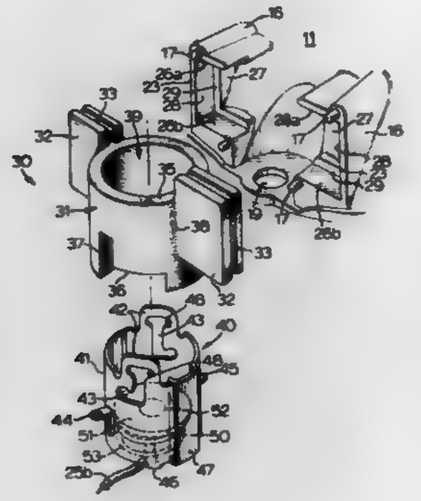


1. A flash lamp array comprising a hollow walled housing containing flash lamps and circuitry including electrical ground, and one or more openings through the wall of said housing adjacent to said electrical ground in order to provide a discharge path for electrostatic charges to said electrical ground and reduce the possibility of accidental flashing of lamps by said electrostatic charges.

3,980,878
VEHICULAR SIGNAL LAMP

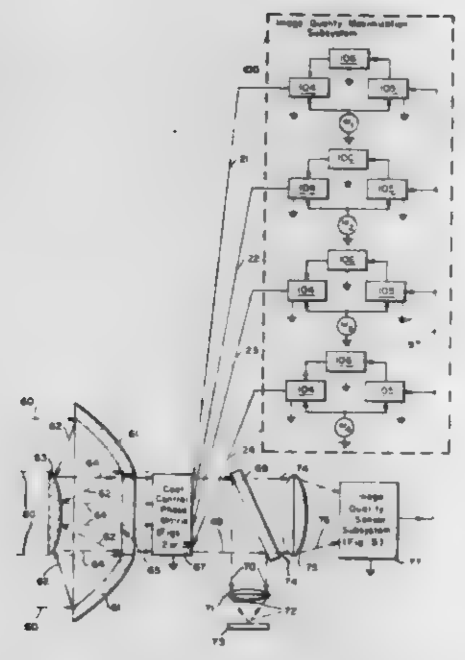
Kenneth J. Crompton, Willowdale, Calif., assignor to Dominion Auto Accessories Limited, Toronto, Canada
Filed Jan. 17, 1975, Ser. No. 541,846
Int. Cl.^{2} F21V *15/04*
U.S. Cl. 240—7.1 R 16 Claims

1. In a vehicle signal lamp, the combination comprising
a housing having an open end,
a lens closing the open end of the housing,
a bulb holder assembly comprising a bulb socket holder member of resilient material and a relatively rigid socket member,
said bulb socket holder member comprising a tubular portion and a pair of integral solid ears extending axially along said tubular portion and radially from said tubular portion and having generally flat opposed surfaces,
said housing having radially inwardly opening recesses complementary to said ears,
the dimensions of said recesses and said ears being such that said ears substantially fill said recesses,
and means for clamping said ears and said recesses against movement between said ears and said recesses,
said socket member comprising a tubular section telescoped within said tubular portion of said resilient member,
such that upon vibration or shock of said signal lamp, the resiliency in the intermediate portion joining said ears to said tubular portion of said resilient member protects the bulb filament against vibration and shock.



3,980,879
ADAPTIVE IMAGING TELESCOPE WITH NONLINEAR QUADRANT SENSING AND ELECTRO-OPTICAL PHASE SHIFTING

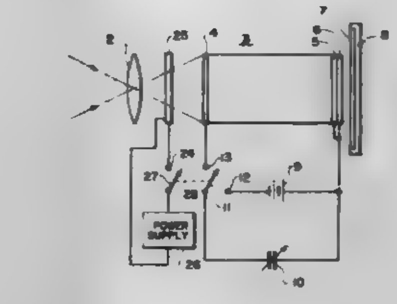
Thomas R. O'Meara, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed June 24, 1974, Ser. No. 482,187
Int. Cl.^{2} G01J *1/20*
U.S. Cl. 250—201 21 Claims



1. In an adaptive imaging telescope for detecting an optical beam received thereby, comprising in combination:
a phase shifter, including a planar crystal having two major surfaces and a plurality of electrodes attached to the major surfaces, which phase shifter is positioned in a focal plane, which focal plane is one of the planes within the depth of focus region of the aperture of the telescope, responsive to an optical image communicated by said optical beam;
first means optically coupled to the phase shifter, comprising a nonlinear quadrant detector where each quadrant of the quadrant detector is responsive to light from the optical image, said quadrant detector comprising photocells which are positioned substantially orthogonally to said optical beam in a plane defined by X and Y ordinates, and a network to which said photocells are connected, for providing electrical error signals as output of said network; and
second means, electrically coupling said network to the first means, for providing phase modulation of said optical beam.

3,980,880
AUTOMATIC EXPOSURE CONTROL CIRCUIT FOR AN IMAGE INTENSIFIER CAMERA

John A. D'Agostino, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Apr. 4, 1974, Ser. No. 457,867
Int. Cl.^{2} H01J *31/50*
U.S. Cl. 250—213 VT 1 Claim



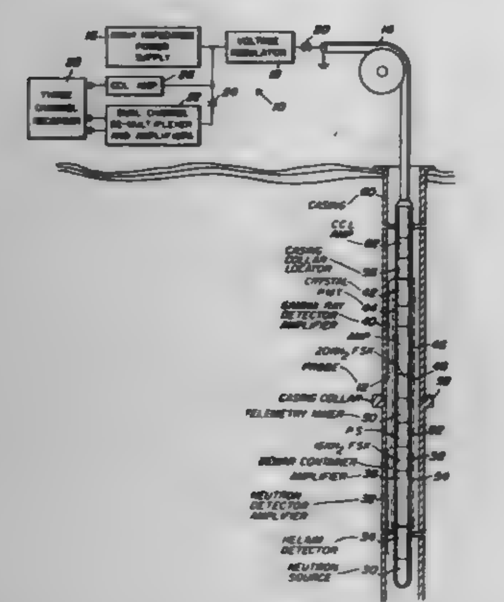
1. In combination with a camera having an image intensifier tube including a photocathode, an anode and phosphor screen, and characterized by variable resistance that is a function of light intensity incident on the photocathode when the photocathode is exposed to light, an automatic exposure control system comprising:
a direct current power source;
a variable capacitor; and
switching means operable for connecting said variable capacitor across said power source to charge said variable capacitor from said power source, and operable for disconnecting the charged variable capacitor from the power source and for connecting the charged variable capacitor in series with the photocathode and anode and phosphor screen for discharging said variable capacitor through said image intensifier tube and wherein the rate of discharge is dependent continuously on the light intensity incident to the photocathode during the discharge.

3,980,881
SIMULTANEOUS LOGGING SYSTEM FOR DEEP WELLS

Charley L. Veach, Alvord; Wesley E. Ferguson, and Ralph Wiley, both of Fort Worth, all of Tex., assignors to The Western Company of North America, Fort Worth, Tex.
Filed Nov. 1, 1974, Ser. No. 519,987
Int. Cl.^{2} G01V *1/22, 1/40, 5/00*
U.S. Cl. 250—261 27 Claims

1. In a telemetry system having a remote unit connected to a base unit by means of a single cable, a system for simultaneously transferring power from said base unit to said remote unit and telemetry signals from said remote unit to said base unit via said cable, a transmission system comprising:

- a power source having a high impedance for providing a substantially constant current output terminal located at said base unit;
- a voltage regulator circuit connected in tandem with said high impedance power source and said cable, said voltage regulator circuit having an input connected to the output



terminal of said power source and an output connected to said cable, the impedance of the output voltage regulator circuit being substantially lower than the impedance of said power source; and
- a telemetry monitoring circuit connected to the junction of the output terminal of said power source and the input of said voltage regulator circuit.

3,980,882
METHODS AND APPARATUS FOR THE CHEMICAL ANALYSIS OF FLOWING MATERIALS

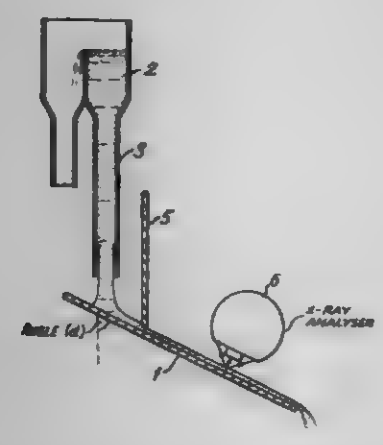
Kenneth Garfield Carr-Brion, Broom, and Angela Wendy Williams, Knebworth, both of England, assignors to National Research Development Corporation, London, England

Filed Apr. 18, 1974, Ser. No. 462,077

Claims priority, application United Kingdom, May 16, 1973, [illegible]

Int. Cl.² G01N *23/20*

U.S. Cl. 250—272 **5 Claims**



1. An apparatus for use in the analytical determination of a given substance in a flowing material, said apparatus comprising:
- a member having an upwardly facing substantially planar surface;
- means for causing a stream of said material to flow in a substantially invariant manner over said surface in the form of a thin film; and

an analytical system comprising means selectively responsive to electromagnetic radiation of at least one wavelength which corresponds to a spectral characteristic of said given substance, said selectively responsive means being disposed in fixed relationship to said surface out of contact with said film for receiving radiation travelling from the vicinity of a given portion of said film.

3,980,883
X-RAY DIFFRACTION GRATINGS

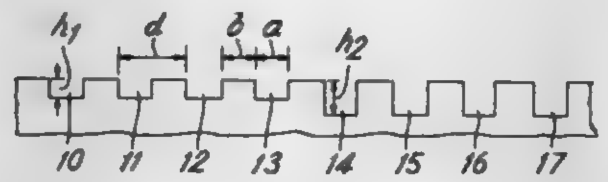
Albert Franks, London, England, assignor to National Research Development Corporation, London, England

Continuation-in-part of Ser. No. 469,867, May 14, 1974, abandoned. This application Oct. 3, 1975, Ser. No. 619,358

Claims priority, application United Kingdom, May 15, 1973, 23103/73

Int. Cl.² G01N *23/20*

U.S. Cl. 250—272 **1 Claim**



1. An x-ray diffraction grating consisting of a structure having a surface capable of reflecting x-rays, said surface being grooved so that in cross-section that profile of said surface alternates regularly between geometrically similar lines with the height of the alternation varying significantly over the area of said surface.

3,980,884
PROCESS AND APPARATUS FOR DETERMINING THE CONCENTRATION OF A SUSPENSION

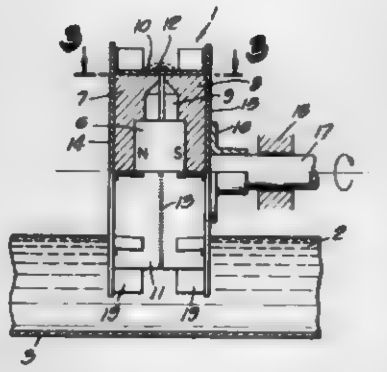
Hans Link, Reutlingen, Germany, assignor to Institut Dr. Friedrich Forster, Prufgeratebau, Reutlingen, Germany

Filed Mar. 24, 1975, Ser. No. 561,193

Claims priority, application Germany, Mar. 25, 1974, 2414314

Int. Cl.² G01R *33/12;* G01T *1/161*

U.S. Cl. 250—302 **13 Claims**



1. A process for determining the concentration of a suspension of magnetic powder particles in a fluid carrier to which fluorescent or luminous pigments have been added, the improvement comprising:
- directing a continuous magnetic field of predetermined uniform character outwardly from a surface;
- flowing the suspension along and in contact with the surface from which the magnetic field extends to produce a relative movement between the surface and the suspension; and
- measuring the luminous intensity of the particles accumulating on the surface under the influence of the magnetic field where it extends from the surface.

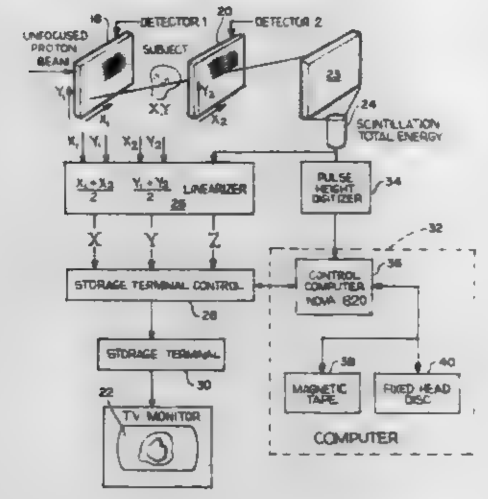
3,980,885
DIAGNOSIS BY PROTON BOMBARDMENT

Vincent William Steward, 1414 E. 59th St., Apt. No. 753, Chicago, Ill. 60637, and Andreas Martin Koehler, 40 Strawberry Hill Road, Concord, Mass. 01742

Filed Sept. 6, 1974, Ser. No. 503,619

Int. Cl.² G01N *23/00*

U.S. Cl. 250—307 **6 Claims**



1. A new use for charged ion particle beams in the field of diagnostic radiology comprising the steps of:
- selecting a region of the living human body for radiological study,
- producing a monoenergetic charged ion particle beam, said beam exhibiting a peak in ionization towards the end of the charged ion particle range in the average number of ion particles produced per unit distance along the beam,
- locating said region of the living human body upstream of the position of the peak in the average number of ion particles produced per unit distance along said monoenergetic charged ion particle beam,
- passing said monoenergetic charged ion particle beam through said region of said living human body,
- producing an image of said monoenergetic charged ion beam subsequent to its passage through said region of said living human body; and
- diagnosing abnormal conditions in said region of said living human body in reliance upon said image.

3,980,886
GAMMA CAMERA DISPLAY SYSTEM

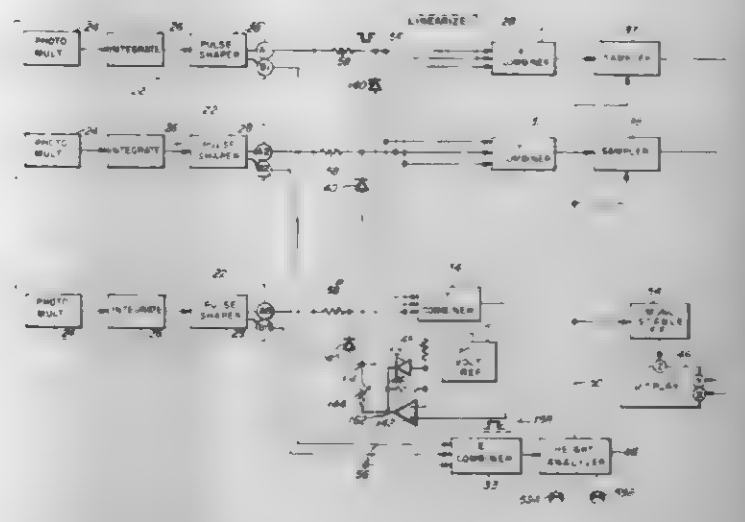
Karl J. Stout, Hudson, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation-in-part of Ser. No. 418,157, Nov. 21, 1973, Pat. No. 3,914,611. This application Oct. 17, 1975, Ser. No. 623,538

Int. Cl.² G01T *1/164*

U.S. Cl. 250—369 **4 Claims**

1. In a camera system, the combination comprising:
- an array of detectors positioned in a predetermined pattern for detecting radiant energy emanating from points defining a subject, each of said detectors providing a signal upon being illuminated with such energy;
- means for combining signals of said detectors, said combining means including means for weighting signals of said detectors in accordance with the positions of individual ones of said detectors in said array to provide the coordinate positions of points in an image of said subject; and
- means coupled between individual ones of said detectors and said combining means for linearizing the correspondence between points of said image and points of said subject, said linearizing means including means for coupling individual ones of said detector signals with a feedback signal, and a nonlinear summing circuit for summing said detector signals to produce said feedback signal.



3,980,887
SILICON SENSITIZED RARE EARTH OXYSULFIDE PHOSPHORS

James J. Mattis, Long Valley, and Melvin Tecotzky, Mendham, both of N.J., assignors to U.S. Radium Corporation, Morristown, N.J.

Division of Ser. No. 392,108, Aug. 27, 1973, Pat. No. 3,904,546, which is a continuation-in-part of Ser. No. 185,891, Oct. 1, 1971. This application Apr. 11, 1975, Ser. No. 567,200

Int. Cl.² G01T *1/00*

U.S. Cl. 250—483 **3 Claims**

1. An X-ray intensifying screen comprising a substrate having coated on a surface thereof a plurality of particles of a rare earth oxysulfide phosphor consisting essentially of a rare earth oxysulfide matrix of the formula $M_{2-x}O_2S{:}xA$ wherein M is at least one rare earth element selected from the group consisting of lanthanum, gadolinium and yttrium, A is at least one rare earth activator selected from the group consisting of praseodymium, neodymium, samarium, europium, terbium, dysprosium, holmium, erbium, ytterbium, and thulium, and x is 0.001 to 0.1, silicon incorporated in said matrix in an amount from about 10 to 1,000 p.p.m. based on phosphor weight and, when M is gadolinium or yttrium, fluorine incorporated in said matrix in an amount from about 20 to 500 p.p.m.

3,980,888
SELF-SUPPORTING LUMINESCENT SCREENS

Friedrich Gudden, Erlangen; Wolfgang Schubert, Frauenaurach, and Peter Romer, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 17, 1973, Ser. No. 396,927

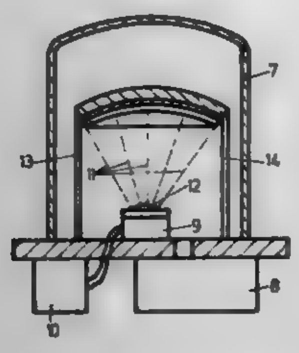
Claims priority, application Germany, Sept. 28, 1972, 2247524

Int. Cl.² H01J *1/62;* C09K *1/00*

U.S. Cl. 250—483 **6 Claims**

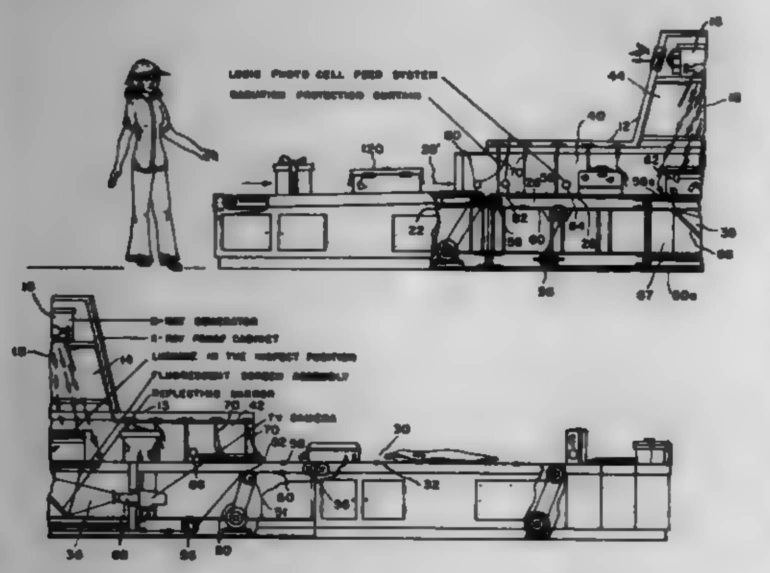
1. Self-supporting luminescent screens devoid of carriers, produced by applying upon a temporary supporting structure, having the desired shape of the screen, a temporary layer of releasing agent bound with a binding substance that is volatile at the evaporating temperature of a luminescent material, then depositing a layer of the luminescent material by evaporation onto the prepared supporting structure, which layer constitutes a luminescent screen, until the deposited layer of luminescent material reaches a desired thickness, the front surface of said luminescent screen being on its side that is turned away from said temporary supporting structure and

said temporary layer of releasing agent, and eventually removing the produced luminescent screen from said temporary



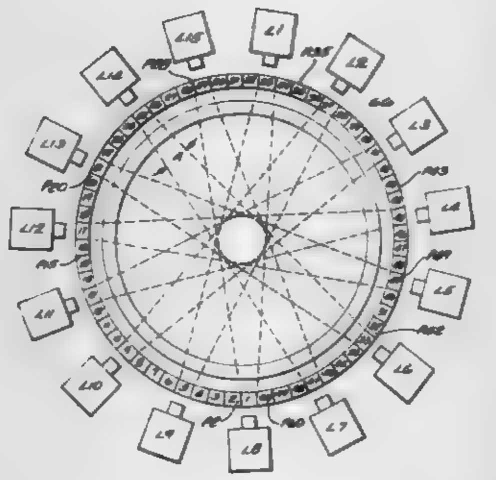
supporting structure having at least a portion of said temporary layer of releasing agent thereon.

3,980,889
ARTICLE TRANSFER AND INSPECTION APPARATUS
David J. Haas, Stamford, Conn.; Aaron Blaustein, Oysterbay, N.Y.; Chester D. Rudd, Westwood, N.J.; Ray C. Lapof, New York, and William C. Schimpf, Forest Hill, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.
Continuation of Ser. No. 458,801, April 8, 1974, abandoned. This application Oct. 6, 1975, Ser. No. 619,955
Int. Cl.² G01T *1/00*
U.S. Cl. 250—492 R **19 Claims**



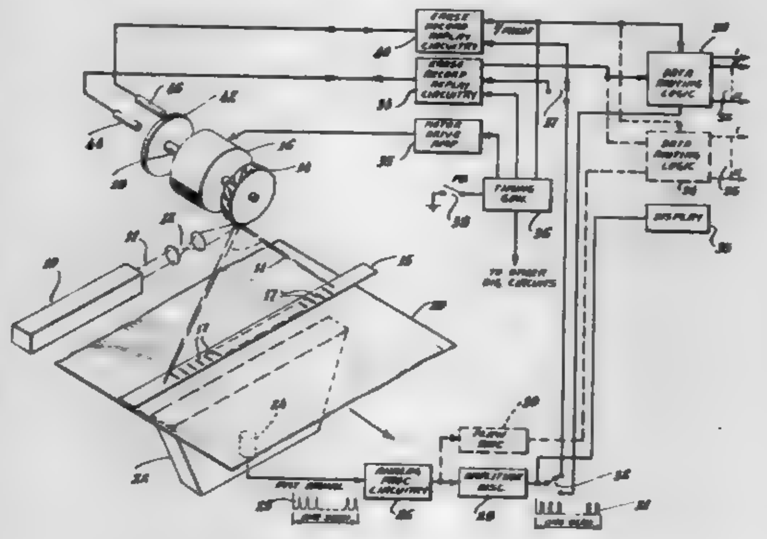
1. An article inspection apparatus capable of continuous operation for at least part of the operating time thereof, comprising:
- a. chamber defining means substantially impermeable to x-rays;
- b. entry and exit portions connected with said chamber which is located between said entry and exit portions;
- c. flexible x-ray shielding means disposed at said entry and exit portions;
- d. an x-ray source for directing x-rays to a first portion of said chamber;
- e. first conveyor means for introducing an article into said chamber;
- f. means for driving said first conveyor means at a fist speed;
- g. an inspection conveyor system having at least a portion thereof disposed at said chamber first portion and serving to carry said article through said chamber first portion;
- h. means for driving said inspection conveyor system at a second speed exceeding said first speed;
- i. second conveyor means for removing said article from said chamber; and
- j. means for converting said x-rays passing through said first portion and said article into a visual image.

3,980,890
OPTICAL THICKNESS DETECTING AND COMPARING METHOD AND APPARATUS
William F. Heckrodt, Menasha, and Norman J. Van Hulle, Green Bay, both of Wis., assignors to Presto Products, Incorporated, Appleton, Wis.
Filed Mar. 19, 1975, Ser. No. 559,995
Int. Cl.² G01N *21/30*
U.S. Cl. 250—560 **24 Claims**



1. A method of detecting differences in the wall thickness of a hollow object comprising the steps of directing radiant electromagnetic waves through one side of said object, sensing the intensity of said electromagnetic waves where they emerge from another side of the object, said method being characterized by sensing the intensity of said waves at two adjacent measurement areas at said other side of the object and comparing the intensity of said waves at said measurement areas to ascertain any difference in wall thickness between said measurement areas.

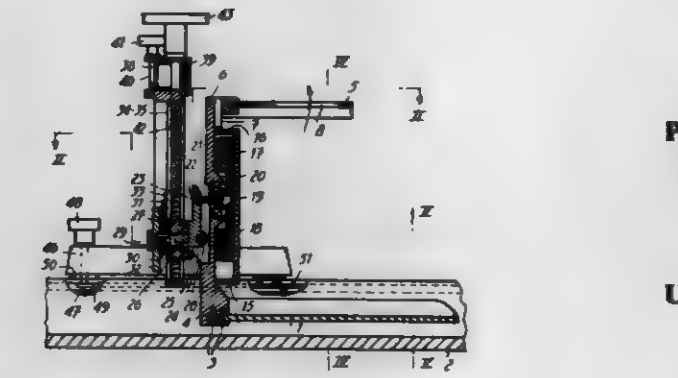
3,980,891
METHOD AND APPARATUS FOR A ROTARY SCANNER FLAW DETECTION SYSTEM
Frank A. Slaker, Norwalk, Conn., assignor to Intec Corporation, Norwalk, Conn.
Filed May 16, 1975, Ser. No. 578,276
Int. Cl.² G01N *21/32*
U.S. Cl. 250—563 **8 Claims**



1. A rotary scanner flaw detection system for detecting flaws in material being examined, comprising in combination

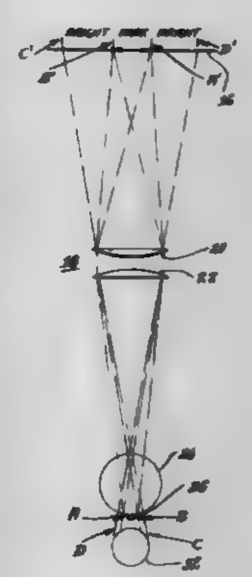
- a. a source of radiation
- b. a rotary scanner means for scanning said source in a predetermined scan path over the material being examined,
- c. a receiver having detector means positioned for receiving radiation applied by said source from the material being examined, said detector means producing signals in response to the intensity of the source of radiation applied thereto from the material,
- d. flaw discrimination means coupled to said detector means for passing flaw signals of predetermined characteristics in accordance with the requirements of said discriminator means,
- e. a record-bearing medium driven synchronously with said rotary scanner means,
- f. means for recording predetermined signals on said record-bearing medium which represent predetermined positions of said source in said predetermined scan path over the material being examined,
- g. data-routing logic circuit means coupled to said flaw discrimination means for sorting flaw signals applied thereto into predetermined outputs representing the occurrences of flaws on different predetermined sections of the material being examined,
- h. means for deriving said predetermined signals from said recording medium, and
- i. means for applying said predetermined signals to said data-routing logic circuit means, whereby said flaw signals are sorted and routed by said data sorting logic circuit means in accordance with the position of flaws in the material being examined.

3,980,892
SKULL CLAMP, MAINLY FOR X-RAY APPARATUS
Jozef Munch, Edegem, Belgium, assignor to C. G. R. -Benelux N.V.
Continuation of Ser. No. 301,353, Oct. 27, 1972, abandoned. This application Aug. 18, 1975, Ser. No. 605,659
Claims priority, application Belgium, Oct. 28, 1971, 51413/71
Int. Cl.² G01M *23/00*
U.S. Cl. 250—456 **8 Claims**



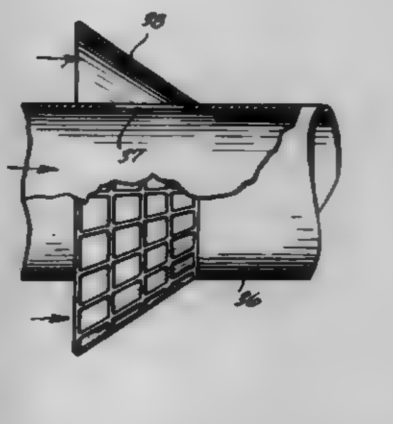
1. Skull clamp, mainly for X-ray apparatus, comprising a carrier plate of a material which is permeable to X-ray and upon which rests the skull which has to be radiographed, means for strapping the skull to said carrier plate, a bridge above the bed of the X-ray apparatus and which can be displaced longitudinally with respect to aforesaid bed, means suspending said carrier plate from said bridge and capable of laterally displacing said carrier plate with respect to said bridge, means for adjusting the height of said carrier plate, means for adjusting in a transverse plane said carrier plate to an angle and means for adjusting in a longitudinal plane the position of said carrier plate to an angle.

3,980,893
ALIGNMENT MEANS FOR A FLAW DETECTION SYSTEM EMPLOYING A LIGHT COLLECTOR ROD
Monty M. Merlen, Stamford, Conn., assignor to Intec Corporation, Norwalk, Conn.
Filed May 29, 1975, Ser. No. 581,806
Int. Cl.² G01N *21/32*
U.S. Cl. 250—572 **1 Claim**



1. An alignment means for aligning a light collector rod with a scanning light beam in a flaw detection system comprising, in combination,
- a. means for producing a light beam,
- b. means for scanning said light beam over a material which is being examined for flaws,
- c. light collector rod means having a diffusing stripe thereon positioned to receive light from the material being examined,
- d. optical means for applying light from said material onto said diffusing stripe,
- e. an alignment light source positioned on the opposite side of said stripe from the side from which light is applied to said stripe by said optical means from said material,
- f. means for selectively actuating said alignment light source whereby said alignment light source when actuated applies light from said alignment light source to said stripe which stripe is projected by said optical means onto said material in the form of a dark line for aligning the light collector rod means and said light beam.

3,980,894
FLOW TUBES FOR PRODUCING ELECTRIC ENERGY
Philip Vary, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of, New York, N.Y. 10007
Filed July 2, 1974, Ser. No. 485,166
Int. Cl.² H02P *9/04*
U.S. Cl. 290—54 **2 Claims**



1. An electricity generating power plant, comprising a tube submerged in water in combination with an electric generator mounted therein having a rotatable shaft in said tube in com-

bination with an impeller mounted on said shaft whereby water flow through said tube provides an impelling force against said impeller in further combination with circumferentially spaced ports through said tube upstream of said impeller, further including a conical baffle surrounding said ports and flaring externally from said tube in an upstream direction whereby water flow external to said tube is directed into said ports and against the impeller to provide an impelling force, additional to that provided by said water flow through said tube, including a second impeller mounted on said axle spaced upstream from said first baffle.

3,980,895

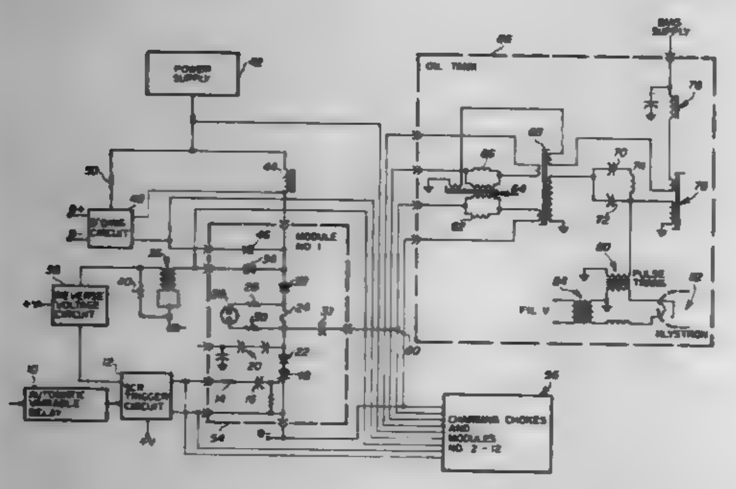
SEMICONDUCTOR MAGNETIC MODULATOR FOR USE WITH A MOVING TARGET INDICATOR RADAR SYSTEM

Elliott G. Schrader, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 3, 1973, Ser. No. 421,171

Int. Cl.² H03K *3/00*

U.S. Cl. 307—106 **9 Claims**



1. A semiconductor magnetic modulator for a moving target indicator radar having a transmitter power tube comprising:

a. a source of dc power;

b. a plurality of capacitor charging modules coupled together to discharge in parallel, each of said modules including a capacitor charging means connected to the dc power source, a capacitor connected to the charging means for charging the capacitor, an SCR operably coupled to a triggering source, and a module disconnect means coupled between the SCR and capacitor, said SCR operably responsive to a trigger pulse to cause the capacitor to discharge and said module disconnect means operably responsive to a fault to disconnect the module from the source of power and the remaining operative capacitor charging modules whereby the modulator continues operation with a slight decrease in power level;

c. an energy dissipating circuit connected to each of said charging capacitor modules, said energy dissipating cicuit including means for selectively sensing the voltage level across said capacitors and means for dissipating energy above a predetermined threshold level for operative modules and the output of the charging means for any faulty modules; and

d. a means responsive to said charging capacitors for forming high voltage modulator signals.

3,980,896

INTEGRATED CIRCUIT DEVICE

Mitsuharu Kato, Aichi, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 9, 1975, Ser. No. 566,322

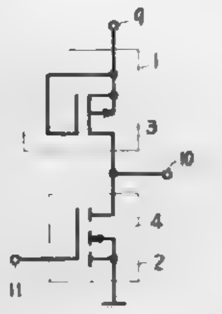
Claims priority, application Japan, Apr. 10, 1974, 49-41252

Int. Cl.² H03K *19/08, 19/20;* **H03B** *5/04*

U.S. Cl. 307—205 **10 Claims**

1. An integrated circuit device including a MOS logic element in combination with a power source, wherein said MOS logic element comprises:

a driving MOS transistor circuit including an enhancement type MOS transistor of a specific polarity, and



a load MOS transistor circuit connected to said enhancement type MOS transistor and including a depletion type MOS transistor having its polarity opposite to that of said enhancement type MOS transistor with a threshold voltage about two times higher than that of said enhancement type MOS transistor.

3,980,897

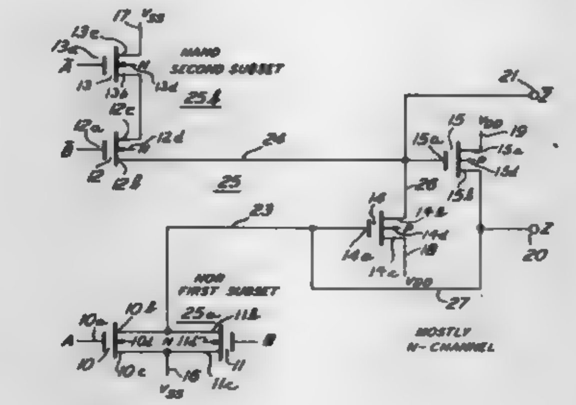
LOGIC GATING SYSTEM AND METHOD

Edward H. Arnold, King of Prussia, Pa., assignor to Solid State Scientific, Inc., Montgomeryville, Pa.

Filed July 8, 1974, Ser. No. 486,450

Int. Cl.² H03K *19/08, 19/20, 3/286, 3/353*

U.S. Cl. 307—205 **25 Claims**



1. A logic gate to which are applied a plurality of logic signals comprising:

a first and a second subset of semiconductor devices, first and second additional semiconductor devices and source means therefor, said devices of said first and second subsets being of one conductivity type and said first and second additional devices both being of another conductivity type, said logic signals being applied to inputs of said first and second subsets, the logic signals applied to said first subset being the complements of the logic signals applied to said second subset,

said devices of said first subset being connected in parallel paths, means coupling an output of said first subset to an input of said first additional device,

said devices of said second subset being connected in series circuit, means coupling an output of said second subset to an input of said second additional device, and

outputs of said first and second additional devices being cross connected respectively to inputs of said second and first additional devices to form a circuit without storage states and for producing at said first and second additional device outputs the complements of the signals appearing respectively at said first and second additional device inputs.

3,980,898

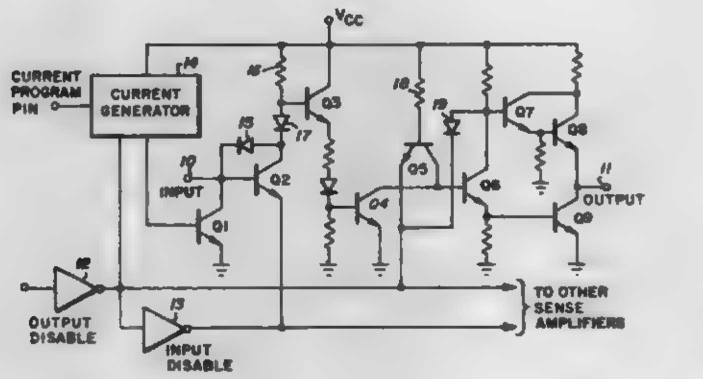
SENSE AMPLIFIER WITH TRI-STATE BUS LINE CAPABILITIES

Ury Priel, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 12, 1975, Ser. No. 557,597

Int. Cl.² H03K *19/08, 19/38, 19/40, 5/08*

U.S. Cl. 307—209 **16 Claims**



1. A logic circuit comprising:

a signal receiving input means comprising an input transistor adapted to be coupled to an input data bus,

an output terminal adapted to be coupled to a driven logic circuit,

an output sourcing switch coupled to said output terminal for operating at times to couple a first voltage source to said output terminal,

an output sinking switch coupled to said output terminal for operating at times to couple a second voltage source to said output terminal,

switching means coupled to said signal receiving input means and to said sourcing and sinking switches for selectively switching said two switches in response to the application of one or the other of two signals to said signal receiving input means from said input data bus to provide a coupling of said first or second voltage sources to said output terminal, and

a current controlled means coupled to said input transistor for controlling the threshold at which said input transistor will operate to produce a switching of said switching means.

3,980,899

WORD LINE DRIVER CIRCUIT IN MEMORY CIRCUIT

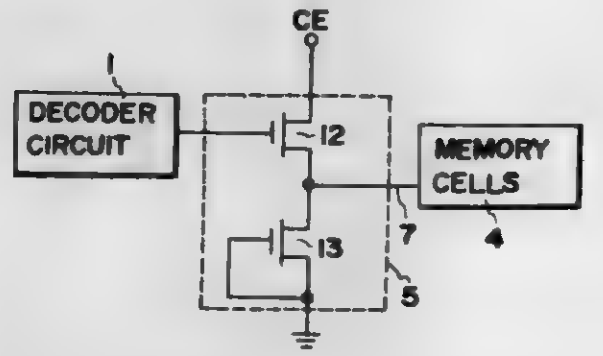
Shunji Shimada, and Tsuneo Ito, both of Kodaira, Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 6, 1975, Ser. No. 547,494

Claims priority, application United Kingdom, Oct. 30, 1974, 46957/74

Int. Cl.² H03K *5/18;* **G11C** *7/00;* **H03K** *3/353*

U.S. Cl. 307—238 **8 Claims**



1. In a memory circuit including:

at least one memory cell for storing information;

a first circuit for supplying memory cell selection signals for accessing a memory cell;

an address signal source for generating an address signal to control said at least one memory cell; and

a driver circuit, connected between said first circuit and said at least one memory cell, for selectively gating said address signal to said at least one memory cell, in response to said selection signals;

the improvement wherein said driver circuit comprises

switching means, connected between said first circuit and said at least one memory cell, for selectively switching said address signal into said memory cells, and

bias means, coupled between the connection point of said switching means and a source of reference potential, comprising together with said switching means a source follower, and operating independently of the output of said first circuit, for preventing the potential of said connection point from floating at least when said switching means is turned off.

3,980,900

MULTIPURPOSE SWITCHING CIRCUITS UTILIZING A NOVEL SEMICONDUCTOR DEVICE

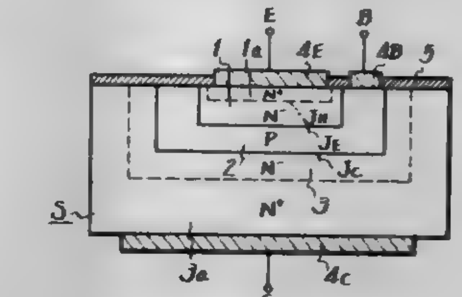
Yoshio Ishigaki, Tokyo, and Takashi Okada, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

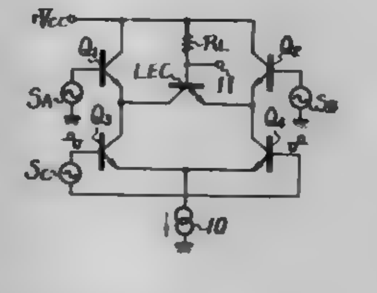
Filed Mar. 26, 1975, Ser. No. 562,176

Claims priority, application Japan, Apr. 2, 1974, 49-37118

Int. Cl.² H03K *17/66;* **H01L** *29/50*

U.S. Cl. 307—243 **11 Claims**





1. A switching circuit comprising;

a. first and second current paths each formed with switching means and signal input means connected to said switching means,

b. a current sink connected in common to both said first and second current paths,

c. means for supplying a switching signal to both said switching means of the first and second current paths to cause them to switch alternately,

d. a semiconductor device comprising a first semiconductor region of one type, a second semiconductor region of the other type adjacent said first region with a first semiconductor junction therebetween, a third semiconductor region of the same type as said first region adjacent said second region with a second semiconductor junction therebetween, said first region being provided therein with a potential barrier having energy higher than that of minority carriers injected from the second region to the first region at the position facing said first junction and apart from the same by a distance smaller than a diffusion distance of the minority carriers, and first, second and third terminals led from said first, second and third regions, respectively, said first and third terminals being connected to connection points between said switching means and said signal input means of both of said current paths, respectively, and

e. signal output means connected to said second terminal of said semiconductor device for deriving therefrom a signal supplied through said signal input means in accordance with the switching operation of said switching means.

3,980,901
TRIGGER PULSE GENERATOR CIRCUIT

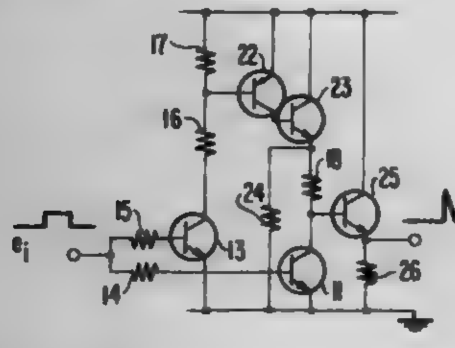
Kazuo Tokuda, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Jan. 31, 1975, Ser. No. 546,174

Claims priority, application Japan, Feb. 1, 1974, 49-13983

Int. Cl.² H03K *17/00*

U.S. Cl. 307—300 **13 Claims**



1. A trigger pulse generator circuit comprising:

an input terminal;

a ground potential terminal;

a power supplying terminal;

a first transistor of a first conduction type having its emitter and base electrically coupled with said ground potential terminal and said input terminal, respectively, and having its collector connected to said power supplying terminal through a first and a second resistors;

a second transistor of said conduction type having its emitter and base electrically coupled with said ground potential terminal and said input terminal, respectively, and having a collector, the electrical state between said emitter and said collector of said second transistor becoming conductive in response to an input pulse supplied to said input terminal and assuming a first state and non-conductive in response to said input pulse assuming a second state;

a third transistor of a second conduction type having its emitter connected to said power supplying terminal, its base to the junction point of said first and second resistors, and its collector to said collector of said second transistor through a third resistor, the electrical state between said emitter and said collector of said third transistor becoming conductive in response to said input pulse assuming said first state and non-conductive in response to said input pulse assuming said second state but after a predetermined time from the time when said electrical state between said emitter and said collector of said second transistor becomes non-conductive;

a fourth resistor connected between said ground potential and said collector of said second transistor, siad fourth resistor releasing a charge stored in said third transistor during said predetermined time when said electrical state between said emitter and said collector of said third transistor is conductive but that of said second transistor is non-conductive; and

an output terminal connected to said collector of said second transistor;

whereby a sharp trigger pulse is generated at said output terminal due to the release of said charge.

7. A trigger pulse generator circuit comprising:

a first and a second switching means connected in series between a fixed potential terminal and a power source terminal, said first and said second switching means each having a control terminal;

an input terminal connected to each of said control terminals of said first and said second switching means; and

an output terminal coupled with the junction point of said first and said second switching means;

said first switching means becoming conductive in response to the input pulse assuming a first state received at said input terminal and non-conductive in response to said input pulse assuming a second state, said second switching means becoming conductive in response to said input pulse assuming said first state and non-conductive in response to said input pulse assuming said second state but after a predetermined time from the time when said first switching means becomes non-conductive, said second switching means including a charge-storage means for storing charge during the conductive state of said second switching means, said circuit further comprising a discharge means connected to said output terminal for releasing said charge stored in said charge-storage means during said predetermined time when said second switching means is conductive but said first switching means is non-conductive;

whereby a sharp trigger pulse is generated at said output terminal due to the release of said charge.

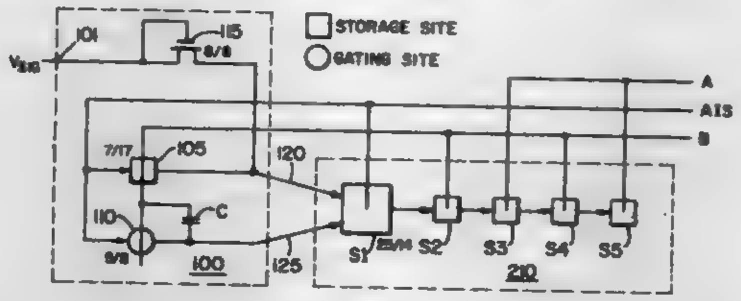
3,980,902
CHARGE INJECTORS FOR CCD REGISTERS

Wallace E. Tchon, Phoenix, Ariz., assignor to Honeywell Information Systems, Inc., Phoenix, Ariz.

Filed June 30, 1975, Ser. No. 592,147

Int. Cl.² H03K *3/353;* H01L *29/78*

U.S. Cl. 307—304 **22 Claims**



1. In combination with a CCD register driven by first and second clocked source signals operated in overlapping clock made with respect to each other, an integrated circuit device for injecting charge into said CCD register comprising:

first means for receiving said first clocked source signal;

second means coupled to said first means and responsive to said second clocked source signals, said second means for developing packets of charge; and

third means responsive to logic level signals which represent data bits for varying the amount of charge delivered to said CCD register, said third means controllably coupling said second means to said CCD register.

3,980,903
OPTICAL-ELECTRONIC RELAY

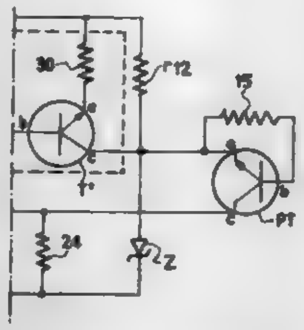
Jean Jamée, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 25, 1975, Ser. No. 561,870

Claims priority, application France, Mar. 29, 1974, 74.11329

Int. Cl.² H03K *17/00*

U.S. Cl. 307—311 **6 Claims**



1. An optical-electronic relay comprising a main transistor (T), having three electrodes, respectively an emitter, a base and a collector, which, in an electrical circuit, by opening or closing thereof, through the action of an electrical signal applied to its base, enables a current to flow, or interrupts such current, said circuit having two terminals, the first connected to the emitter and the second, across a resistor, to the collector of said transistor, and comprising at least one electrical energy source (S) and a load (R) connected in series, said electrical signal being created, under the action of an electromagnetic radiation source (13), by a phototransistor (PT) arranged opposite said source, wherein said phototransistor having its collector connected to the common point of a divider bridge connected between said two terminals, and constituted by two resistive elements arranged in series, the resistance of at least one of said elements being variable, and being controlled by said current, so achieving safely, in respect of said opening and closing operations, a constant current through the phototransistor.

3,980,904
ELASTIC SURFACE WAVE DEVICE

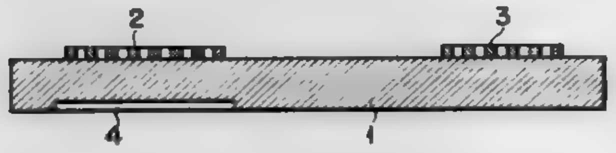
Toshihiro Onodera, Kawasaki, and Shigehumi Morishita, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Oct. 24, 1974, Ser. No. 517,774

Claims priority, application Japan, Oct. 26, 1974, 48-119997; July 8, 1974, 49-78020; July 8, 1974, 49-78021; July 12, 1974, 49-79935

Int. Cl.² H01L *41/08*

U.S. Cl. 310—8.1 **10 Claims**



1. An elastic surface wave device comprising a piezoelectric body and input and output conductors formed on the piezoelectric body and consisting of a pair of multi-fingered electrodes insulated from each other, arranged close to each other in an interdigital fashion and adapted to effect conversion between electric signal and a surface wave, said piezoelectric body having at least one groove formed in a surface opposite to the surface on which the conductor is formed, said groove being elongated in a direction in which a surface wave is propagated and at least a part of said groove being located in a portion of said body corresponding to the input conduction so as to interact with a surface wave and suppress spurious responses.

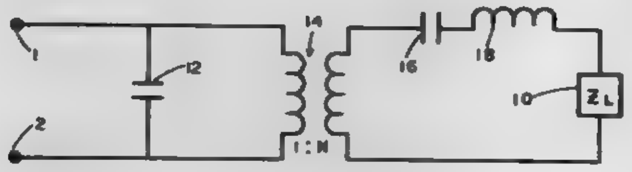
3,980,905
APPARATUS AND METHOD FOR TUNING A BROAD BANDWIDTH TRANSDUCER ARRAY

Harry B. Miller, Niantic, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 19, 1973, Ser. No. 408,136

Int. Cl.² H01L *41/08*

U.S. Cl. 310—8.1 **8 Claims**



1. A tuning and driving apparatus comprising:

a piezoelectric electroacoustic transducer element having a first terminal and a second terminal;

a passive half-Tee network including a first inductor having a first terminal and a second terminal and a second inductor having a first terminal and a second terminal, with the second terminal of said first inductor being connected to the first terminal of said second inductor and to the first terminal of said transducer element, and the second terminal of said second inductor being connected to the second terminal of said transducer element; and

an amplifier having frequency dependent variable output impedance and having a first output terminal and a second output terminal, with the first output terminal of said amplifier being connected to the first terminal of said first inductor and the second output terminal of said amplifier being connected to the second terminal of said second inductor.

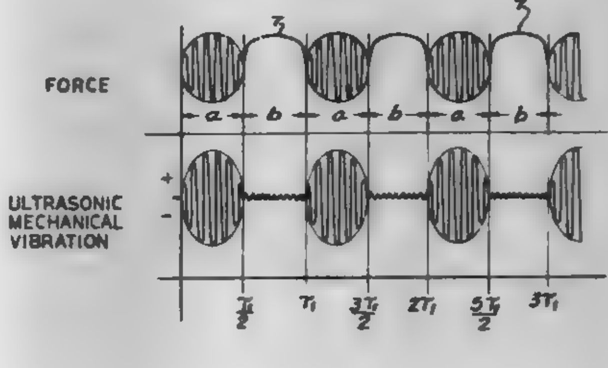
3,980,906
ULTRASONIC MOTOR-CONVERTER SYSTEMS

Arthur Kuris, Riverdale; Lewis Balamuth, Southampton, and Manuel Karatjas, Glen Oaks, all of N.Y., assignors to Xygiene, Inc., Panama, Panama

Division of Ser. No. 318,428, Dec. 26, 1972, Pat. No. 3,828,770. This application Mar. 14, 1974, Ser. No. 451,174

Int. Cl.² C07C *41/08*

U.S. Cl. 310—8.1 **24 Claims**



1. An ultrasonic system for transmitting energy for performing work at a surface comprising:

A. driving circuit means for producing a driving signal consisting of bursts of ultrasonic oscillations of a frequency in the range of 10KHz to 1,000KHz repeated at sonic intervals of a frequency in the range of 10Hz to 1,000Hz;

B. ultrasonic instrument means adapted to be hand held by the user thereof including,

  1. a housing,
  2. an ultrasonic motor supported in said housing and electrically coupled to said driving circuit means for receiving said driving signal therefrom, said ultrasonic motor having a vibrating portion transmitting bursts of ultrasonic mechanical vibrations repeating at said sonic rate; and
  3. applicator means having at least a portion extending beyond said housing for engagement against said surface, said applicator means being mechanically coupled to said vibrating portion of said ultrasonic motor for receiving and transmitting said bursts of ultrasonic mechanical vibrations at said sonic rate, said ultrasonic instrument means being adapted so that sonic rate vibrations are tactilly detectable by a user holding said instrument means to provide an indication of the operation of the instrument means.

3,980,907

METHOD AND APPARATUS FOR GENERATING ELECTRICITY MAGNETO HYDRODYNAMICALLY

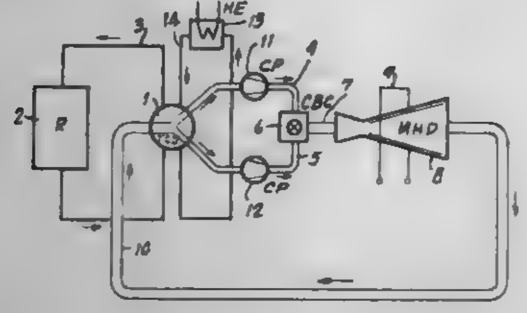
Takashi Nakamura, Mitaka, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 13, 1975, Ser. No. 540,331

Claims priority, application Japan, Jan. 16, 1974, 49-7017; Apr. 8, 1974, 49-38926

Int. Cl.² H02N *4/02*

U.S. Cl. 310—11 16 Claims



1. A closed cycle process for magnetohydrodynamic power generation which comprises the steps of:

1. thermally decomposing water to generate hydrogen and oxygen utilizing a primary heat source,
2. recombining said hydrogen and oxygen in a combustion chamber to form high temperature, high pressure water,
3. utilizing a first portion of the thermal energy in the high temperature, high pressure water to produce electrical energy by forcing the water through a magnetohydrodynamic generator thereby to produce an effluent stream of water, and
4. returning said effluent stream to said thermal decomposing means to supplement the heat energy from said primary heat source.

3,980,908

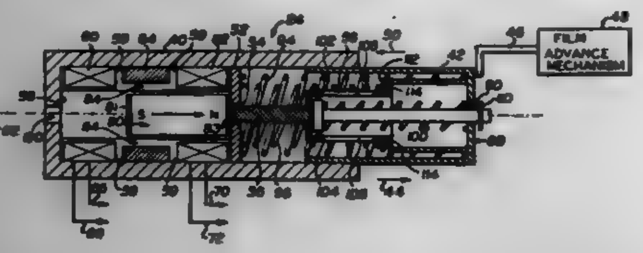
EXPOSURE CONTROL SYSTEM

Richard D. McClintock, Washington Road, Woodbury, Conn. 06798

Division of Ser. No. 496,765, Aug. 12, 1974. This application July 1, 1975, Ser. No. 592,112

Int. Cl.² H02K *35/02*

U.S. Cl. 310—14 15 Claims



1. A solenoid comprising a solenoid coil, a movable armature means whose movement is controlled by said solenoid coil, and a magnetic stator means, said solenoid armature means being magnetically latched to said magnetic stator means in a first position until said solenoid coil is energized, said energized solenoid coil overcoming said magnetic latch to enable said unlatched armature means to move to a second position, said armature means comprising a movable magnetic member and a biasing means connected to said movable member for biasing said movable magnetic member away from said magnetic latch position with said magnetic stator means with a biasing force insufficient by itself to overcome said magnetic latch but sufficient to enable said armature means movement to said second position in the absence of said magnetic latch, said magnetic latch being a result of the magnetic flux between said magnetic stator means and said armature means movable magnetic member, said solenoid coil being juxtaposed with said magnetic stator for producing a magnetic flux substantially equal to and opposite to said magnetic latch magnetic flux when said coil is energized for neutralizing said magnetic latch flux, said movable magnet member effectuating said armature movement to said second position due to said biasing means when said magnetic latch magnetic flux is neutralized.

3,980,909

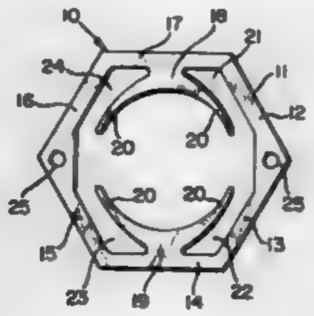
UNIVERSAL AND D.C. MOTORS WITH IMPROVED FIELD STRUCTURE FOR PORTABLE TOOLS AND APPLIANCES

Henry Klein, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Aug. 1, 1972, Ser. No. 277,090

Int. Cl.² H02K *7/14*

U.S. Cl. 310—50 25 Claims



1. In a light-weight, hand-held appliance including an enclosure, an electric motor within said enclosure driving an output shaft, said motor having a two-pole wound field and a commutated armature, an improvement in said field comprising a substantially hexagonal yoke structure surrounding said armature; a pair of poles disposed within said yoke structure at diametrically opposed locations; each of said poles being located in the center of one side of said hexagonal yoke structure; a pair of pole tips extending from each of said poles; and a winding slot defined between each of said pole tips and the portion of said yoke structure adjacent thereto.

3,980,910

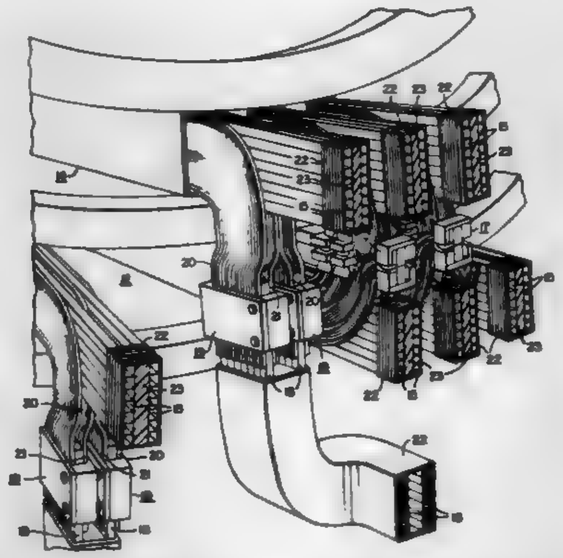
PHASE LEAD CONNECTOR

Kurt H. Steinebronn, North Huntingdon, and Frank P. Fidei, Pittsburgh, both of Pa., assigners to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 16, 1974, Ser. No. 533,406

Int. Cl.² H02K *11/00*

U.S. Cl. 310—71 7 Claims



1. In a dynamoelectric machine having a magnetic core member and a winding disposed in slots upon said core member, said winding including a plurality of conductors arranged in spaced apart relation on said core member and having end

portions disposed adjacent to each other for connection to a phase lead, the combination with said winding of an improved connector for providing mechanical and electrical connection between selected ones of said conductor end portions and one or more of said phase leads, said combination comprising:

a first L-shaped plate having a shoulder portion and a crown portion extending at a right angle from said shoulder portion;

a second L-shaped plate having a shoulder portion and a crown portion extending at a right angle from said shoulder portion;

means joining said first plate with said second plate, the crown portion of said first plate being joined with but not engaging the shoulder portion of said second plate and the crown portion of said second plate being joined with but not engaging the shoulder portion of said first plate whereby a gap is defined between the confronting surfaces of said crown and shoulder portions, the assembled crown and shoulder portions of said first and second plates defining a rectangular opening for receiving and confining preselected ones of said conductors and phase leads;

said conductors and phase leads being arranged in an overlapping relationship within said opening and being engaged by said crown and shoulder portions, the width of said opening being arbitrarily less than the combined width of said overlapping conductors and phase leads so that a compressive load is directed upon said conductors and phase leads in a direction normal to the inner surface of said shoulder portions and parallel with the inner surface of said crown portions by said first and second plates as said shoulder and crown portions are drawn together by said plate connecting means.

3,980,911

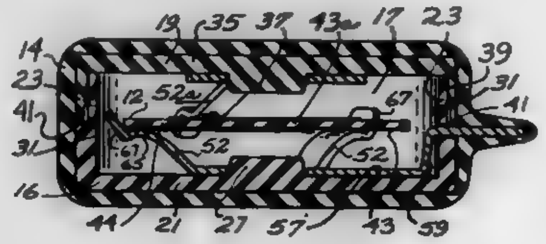
SUPPORT STRUCTURE AND HOUSING FOR PIEZOELECTRIC CRYSTAL

Jack A. English, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Feb. 11, 1974, Ser. No. 441,463

Int. Cl.² H01L *41/04*

U.S. Cl. 310—9.4 9 Claims



1. In a piezoelectric crystal unit, the combination of a housing containing a plurality of walls, including a pair of opposed walls, defining a cavity, an embossed portion integral with each of the opposed walls and centered thereon, a piezoelectric crystal element containing a pair of opposed faces and a peripheral edge connecting the faces, an electrode deposited on each of the faces of the crystal element, each of the electrodes having a circular center section and a fantail portion extending from the circular center section toward the peripheral edge of the crystal element, a first and a second terminal means extending outwardly from the housing, each of the terminal means having a leg, a first set of three cradle means and a second set of three cradle means suspending the crystal element within the cavity of the housing, each of the first set of three cradle means being disposed adjacent the peripheral edge and one face of the crystal element at spaced intervals and each of the second set of three cradle means being disposed adjacent the peripheral edge and the other face of the crystal element at spaced intervals, the cradle means of the first and second sets being disposed in staggered relationship, each of the cradle means comprising restraining means limiting movement of the crystal element within the cavity, a first circular alignment member connected to the leg of the first terminal means, a second circular alignment member connected to the leg of the second terminal means, the legs extending outwardly from the circular alignment members, a resilient leg connected to each of said first set of three cradle means and to the first circular alignment member, and a resilient leg connected to each of said second set of three cradle means and to the second circular alignment member, the resilient legs being equally spaced around the circumference of the circular alignment members and extending outwardly therefrom, each of the circular alignment members being disposed around one of the embossed portions of the opposed walls, the fantail portion of the electrode on said one face of the crystal element making electrical contact with one of said first set of three cradle means and the fantail portion of the electrode on said other face of the crystal element making electrical contact with one of said second set of three cradle means.

3,980,912

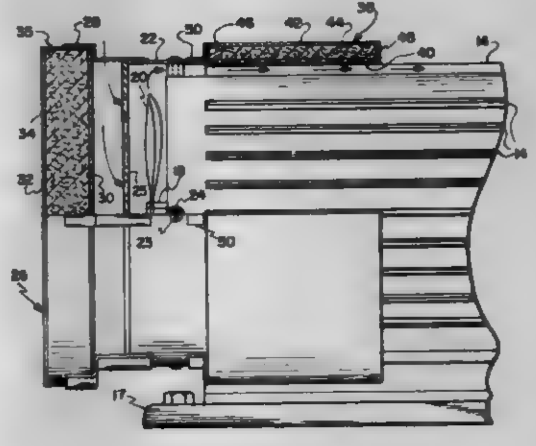
SILENCER FOR A FAN-COOLED ELECTRIC MOTOR

Michael J. Panza, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed May 27, 1975, Ser. No. 581,311

Int. Cl.² H02K *5/24*

U.S. Cl. 310—51 10 Claims



1. In an electric motor having a motor housing, a fan at one end of said housing driven by the motor, and means for directing air exhausted from the fan along the length of the motor housing to cool the motor, the air directing means including a cap which surrounds the motor housing adjacent said one end of the housing and which has sides that are spaced from and extend only part way along the length of the motor housing, the improvement of a silencer comprising:

a. an acoustical end panel disposed transversely of the longitudinal axis of the motor housing and spaced axially from said one end of the housing and the fan; and

b. an acoustical side panel configured to define an open-ended member at least partially surrounding the motor housing, said side panel being mounted at one end on the cap adjacent an end of the cap closest to the other end of the housing, said side panel also being spaced from the motor housing and extending beyond the cap at least part way along the length of the housing,

each acoustical panel including a layer of air-permeable sound absorbing material and an air-impermeable sheet disposed adjacent to the sound absorbing material on a side thereof opposite the motor housing, air drawn in by the fan passing radially inwardly of the longitudinal axis of the motor housing along the acoustical end panel and the air exhausted by the fan passing between the motor housing and the acoustical side panel.

3,980,913

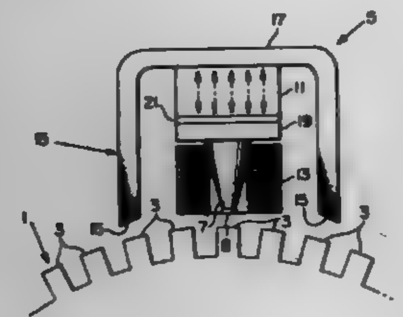
MAGNETIC SPEED SENSOR

Arnold Duane Peterson, Bainbridge, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 20, 1975, Ser. No. 560,075

Int. Cl.^{2} H02K *21/38*

U.S. Cl. 310—155 **21 Claims**



1. A device for providing signals corresponding to rotation of a rotating body, comprising a tone wheel rotated by the rotating body, a magnetic sensor having a sensing pole proximate the tone wheel, coil means surrounding the sensing pole, means for magnetizing the sensing pole to induce a signal voltage in the coil means corresponding to the rotation of the rotating body, and means for automatically controlling the magnetomotive force gradient between the sensing pole and the tone wheel to minimize variations in signal voltage amplitude normally caused by variations in the length of the air gap between the sensing pole and the tone wheel.

3,980,914

BRUSHES FOR ROTATING ELECTRIC MACHINES

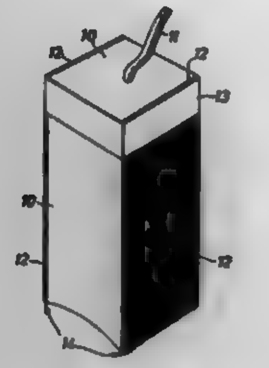
James Cunningham, Glamorgan, Wales, assignor to Morganite Carbon Limited, England

Filed Dec. 18, 1972, Ser. No. 315,781

Claims priority, application United Kingdom, Dec. 20, 1971, 59023/71

Int. Cl.^{2} H02K *13/00*

U.S. Cl. 310—251 **4 Claims**



1. A brush for an electric machine, which brush comprises a solid carbon body which has an end contact surface with an entering edge and a leaving edge and has electrically-conductive fibres lying against and extending lengthwise of at least one of the lengthwise extending surfaces of the brush containing the entering edge and the leaving edge, respectively, the fibres being secured at their ends remote from the respective one of said edges in good electrically-conductive contact with the brush body and having their opposite ends adjacent to the respective one of the entering and leaving edges and free from the body to make flexing contact in use close to that edge with a cooperating conductor of said electric machine.

3,980,915

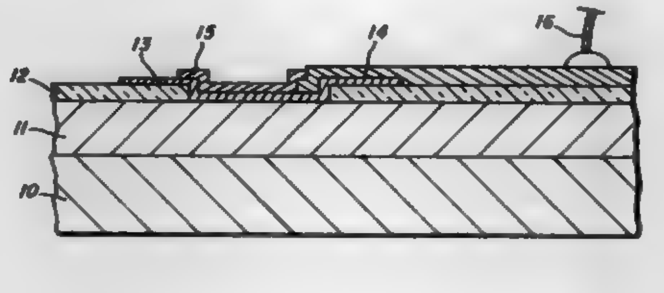
METAL-SEMICONDUCTOR DIODE INFRARED DETECTOR HAVING SEMI-TRANSPARENT ELECTRODE

Richard A. Chapman, Dallas; Milo R. Johnson, Richardson, and Henry B. Morris, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 27, 1974, Ser. No. 446,185

Int. Cl.^{2} H01J *39/02, 29/45*

U.S. Cl. 313—101 **19 Claims**



1. A metal-semiconductor diode infrared detector comprising:

a body of narrow band gap semiconductor material,

insulating layer means disposed on said body,

said insulating layer means being provided with at least one opening therethrough exposing a selected portion of said body,

a relatively thin metal layer disposed in said opening in contact with and covering the selected portion of said body to form a metal-semiconductor diode therewith, said relatively thin metal layer being at least partially transparent to infrared radiation and comprising a semi-transparent electrode, and

electrical conductor means connected to said semi-transparent electrode.

3,980,916

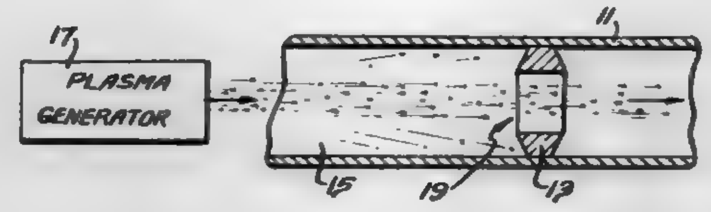
BEAM LIMITER FOR THERMONUCLEAR FUSION DEVICES

Manfred S. Kaminsky, Hinsdale, Ill., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed July 22, 1975, Ser. No. 598,101

Int. Cl.^{2} H01J *17/26*

U.S. Cl. 313—231.3 **7 Claims**



1. In a beam limiter for inhibiting collision between a plasma and the interior surface of a hollow body containing said plasma wherein said beam limiter comprises a solid member disposed about the interior surface of said body in intimate engagement therewith to form an opening through which said plasma may pass, the improvement wherein said solid member having a proximal surface in intimate engagement with said interior surface of said body, a distal surface opposite to but of greater width than said proximal surface, and oppositely facing side surfaces interconnecting said distal and proximal surfaces, said proximal, distal and side surfaces defining a cross section of increasing width over a major portion of the thickness from said proximal to said distal surfaces.

3,980,917

PHOTO-ELECTRODE STRUCTURE

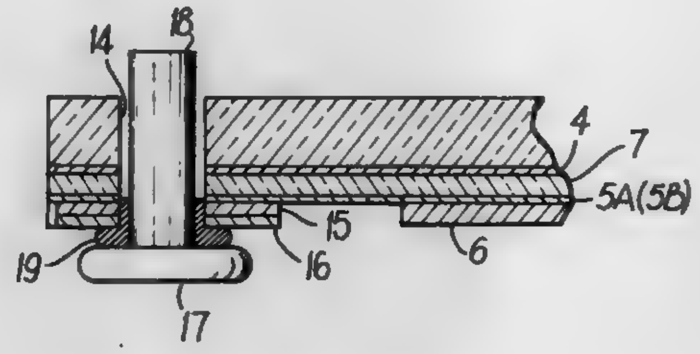
Takehiro Kakizaki, Yokohama, and Yasuharu Kubota, Fujisawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 6, 1975, Ser. No. 575,027

Claims priority, application Japan, May 23, 1974, 49-59232[U]

Int. Cl.^{2} H01J *29/02, 29/08, 31/46, 29/90*

U.S. Cl. 313—383 **6 Claims**



1. An electrode structure comprising:

a. a fragile transparent non-conductive substrate;

b. a transparent electrode on one surface of said substrate;

c. a first metal layer on the exposed surface of a section of said electrode, said first metal layer being selected from the group consisting of iron, chromium, and nickel;

d. a second metal layer on the exposed surface of said first metal layer, said second metal layer being selected from the group of noble metals consisting of gold, silver, platinum and palladium;

e. a hole extending through both of said metal layers and the electrode underneath and the substrate;

f. a metal pin; and

g. solder encircling said pin and solidified into joining relationship with said pin and said second layer.

3,980,918

ELECTRON GUN ASSEMBLY FOR COLOR PICTURE TUBE

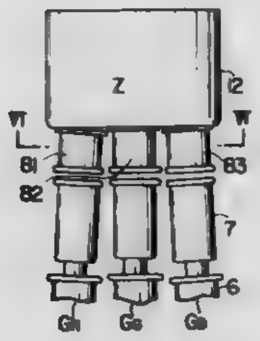
Masaaki Yamauchi, Mobara, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 11, 1974, Ser. No. 450,188

Claims priority, application Japan, Oct. 5, 1973, 48-111447

Int. Cl.^{2} H01J *29/46, 29/51*

U.S. Cl. 313—417 **7 Claims**



1. An electron gun assembly for the color picture tube comprising three electron guns each including a plurality of electrodes and juxtaposed in the same plane, a plurality of supports for supporting said electron guns, and a pole piece cup arranged on the final-electrode side of said electron guns; wherein only the final electrode of the central electrode gun among said three electron guns is fixed on said pole piece cup.

3,980,919

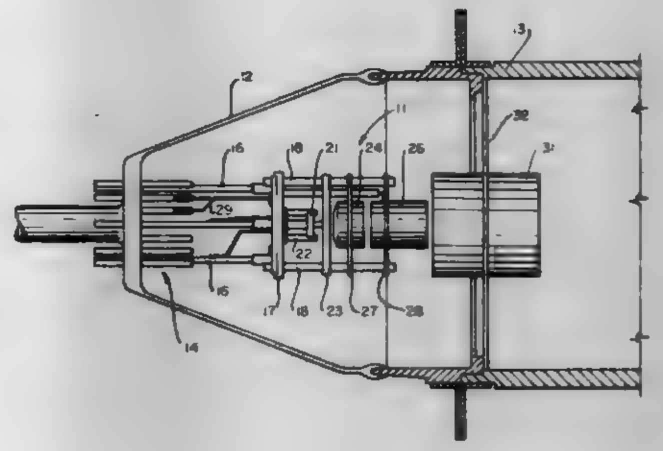
RECTANGULAR BEAM LAMINAR FLOW ELECTRON GUN

David J. Bates, Los Altos, Calif.; Aris Silzars, Portland, Oreg., and Lester A. Roberts, Palo Alto, Calif., assignors to Watkins-Johnson Company, Palo Alto, Calif.

Filed Dec. 20, 1974, Ser. No. 535,098

Int. Cl.^{2} H01J *29/46*

U.S. Cl. 313—453 **6 Claims**



1. An electron gun for providing a rectangular laminar flow beam comprising a wide cathode having an elongated, narrow electron emitting surface, a control electrode having a narrow, elongated aperture surrounding and substantially equally spaced from all sides of said cathode, said control electrode having a surface cooperating with said cathode surface to provide a surface which is substantially a continuation of the surface of the cathode, an anode having a narrow, elongated aperture which is longer than that of the control electrode, said anode being spaced in the direction of the beam from said cathode and control electrodes and being at a more positive potential than said cathode and control electrode to cooperate therewith to accelerate electrons at said cathode all at substantially the same velocity to provide a substantially uniform parallel laminar flow of electrons from the electron emitting surface in a rectangular beam flowing towards said anode, an additional electrode with a narrow, elongated aperture which is larger than that of the anode, cooperating with said anode and at a more positive potential for receiving and further accelerating said rectangular laminar flow beam and also serving to cooperate with said anode to provide an electrostatic lens for focusing said rectangular laminar flow beam across its narrow dimension, said electrodes cooperating with the rectangular beam to maintain substantially parallel flow in the wide dimension of the rectangular beam, and means cooperating with said electrode further focusing said beam across its narrow dimension to focus the beam upon a target.

3,980,920

MULTI-RESONATOR MICROWAVE OSCILLATOR

Kenneth W. Dudley, Sudbury; George H. MacMaster, Lexington, and Lawrence J. Nichols, Burlington, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed July 2, 1975, Ser. No. 592,590

Int. Cl.^{2} H01J *25/34*

U.S. Cl. 315—39.3 **3 Claims**

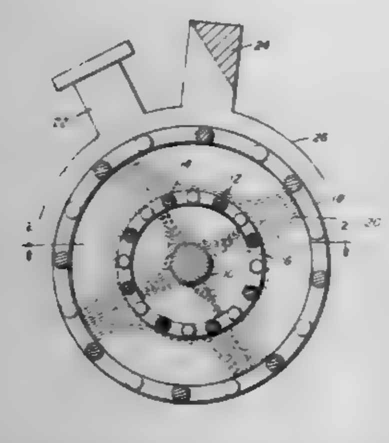
1. A microwave oscillator comprising:

means for emitting electrons;

first reentrant resonant means spaced from and concentric said electron emitting means and adapted to generate oscillations at a predetermined microwave frequency;

said first resonant means being fabricated of a material capable of emitting secondary electrons in response to impingement of said electrons thereon;

a second resonant means spaced from and concentric with said first resonant means and interacting with said secondary electrons to generate microwave frequency oscillations; and



means for coupling said microwave energy from said second resonant means.

3,980,921
ILLUMINATING DEVICE FOR A MICROSCOPE

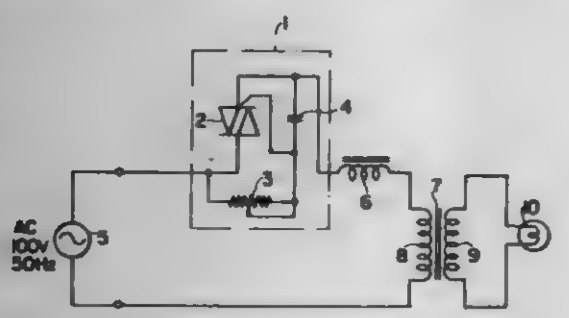
Masao Izawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 381,384, July 23, 1973, abandoned. This application Jan. 21, 1975, Ser. No. 542,866

Claims priority, application Japan, July 25, 1972, 47-87684

Int. Cl.² H03F *37/00*

U.S. Cl. 315—206 **3 Claims**



1. In an illuminating arrangement for a microscope including a light and an AC power source, a lighting control circuit coupling the power source to the light, said lighting control circuit comprising a solid-state voltage-controlled switching device, said switching device including firing angle adjustment means for changing the firing angle of said switching device to adjust the amount of power supplied to the light, a transformer including a primary winding and a secondary winding, said secondary winding connected to the light, and an inductance means, said inductance means connected between said solid-state voltage-controlled switching device and said primary winding of said transformer and having an inductance value sufficient to prevent current from rising steeply when said switching device is fired to thereby substantially prevent generation of audio frequencies by the firing of said voltage-controlled switching device.

3,980,922
CAPACITANCE DISCHARGE TYPE BREAKERLESS IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Mitsuo Katsumata; Katsuo Murakami, and Mitsunori Miyamoto, all of Numazu, Japan, assignors to Kokusan Denki Co., Ltd., Numazu, Japan

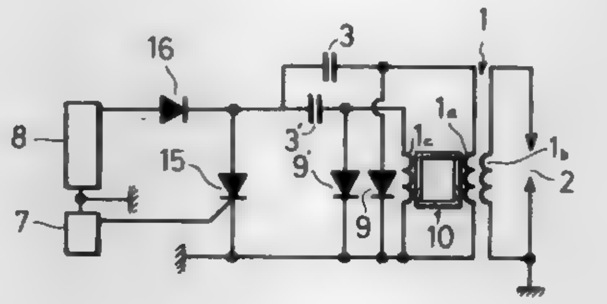
Filed Jan. 27, 1975, Ser. No. 544,326

Claims priority, application Japan, Jan. 30, 1974, 49-12502 [U]; Jan. 30, 1974, 49-12503[U]

Int. Cl.² H05B *37/02;* **F02P** *3/02*

U.S. Cl. 315—209 CD **9 Claims**

1. A capacitance discharge type breakerless ignition system for an internal combustion engine comprising ignition coil means, including a main primary coil, an auxiliary primary coil and a secondary coil, at least one ignition plug connected to said secondary coil, a first capacitance connected in series with said main primary coil, a second capacitance connected in series with said auxiliary primary coil, controlled semiconductor switching means for discharging said first and second capacitances through said main and auxiliary primary coils, respectively when said semiconductor switching means conducts at the ignition time of an internal combustion engine, and a signal source for supplying a control signal in time with rotation of the engine to said controlled semiconductor switching means, a series circuit of said main primary coil and said first capacitance having a short time constant so as to provide an abruptly rising voltage across said secondary coil, and a series circuit of said auxiliary primary coil and said second capacitance having a long time constant so as to provide a long duration of voltage across said secondary coil.



3,980,923
PHOTOGRAPHIC FLASH APPARATUS WITH MULTIPLE UNITS

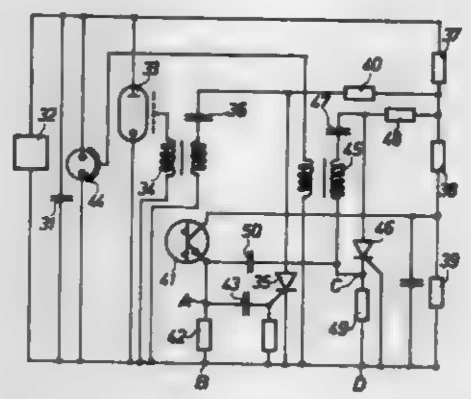
Arthur Schneider, Volkenrode, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed Apr. 10, 1975, Ser. No. 566,682

Claims priority, application Germany, Apr. 11, 1974, 2417673

Int. Cl.² H05B *37/02;* **G03B** *15/03*

U.S. Cl. 315—241 P **9 Claims**



9. A photographic flash unit comprising a storage capacitor, a source of current for charging said capacitor, a flash tube connected to said capacitor and adapted to produce a flash of light upon discharge of a charge from said capacitor through said tube, means for initiating a flash of light from said tube in response to a sudden rise of light flux falling on said flash unit from a source external to said unit, and means for terminating said flash of light in response to a sudden decrease in light flux falling on said flash unit from said external source, so that said flash unit may be used as a supplementary flash unit to produce an additional light flash starting concomitantly with the start of another light flash of variable length produced by another flash source and terminating concomitantly with the termination of such other light flash.

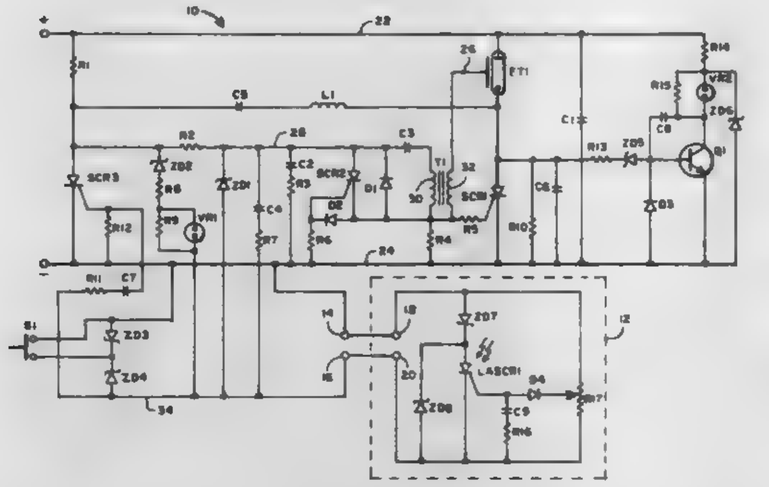
3,980,924
REMOTE LIGHT SENSOR FOR ELECTRONIC FLASH UNITS

Dennis J. Wilwerding, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 19, 1975, Ser. No. 642,282

Int. Cl.² H05B *41/32;* **G01J** *1/16*

U.S. Cl. 315—241 P **27 Claims**



1. For use with an electronic flash unit, a light sensing means comprising:

first and second terminals for receiving a reference potential and a signal line potential, respectively, the signal line potential exhibiting a first change with respect to the reference potential when the electronic flash unit is selectively rendered operative;

first control signal generating means for providing a first control signal in response to light received;

switching means having a control electrode, the switching means for providing a second change in the signal line potential with respect to the reference potential when the first control signal attains a predetermined value; and

biasing means connected to the control electrode for providing a bias signal to prevent the first control signal from attaining the predetermined value until after the first change.

3,980,925
BEAM MISLANDING CORRECTING SYSTEM

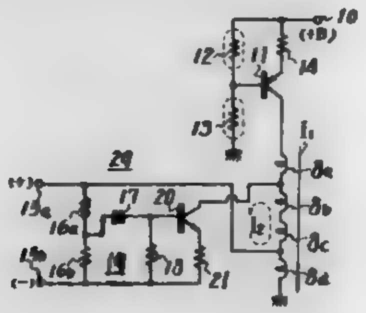
Yoriyoshi Awata, and Kiyoyuki Takagawa, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 9, 1975, Ser. No. 584,813

Claims priority, application Japan, June 20, 1974, 49-72186

Int. Cl.² H01J *29/76*

U.S. Cl. 315—370 **7 Claims**



1. A system for correcting mislanding of electron beams on the color phosphor screen of a color cathode ray tube which contains a beam selecting structure through which the electron beams pass for landing on the screen, said system comprising:

a. electromagnetic means including coil means for producing magnetic field in response to a current flowing in said coil means, said electromagnetic means being located adjacent said tube so as to change the paths of said beams through said beam selecting structure and thereby correct mislanding of the electric beams on said screen;

b. first circuit means for supplying a first correcting current to said coil means, said first circuit means including first control means for varying said first correcting current in accordance with changes in the temperature of said beam selecting structure during the operation of said tube; and

c. second circuit means for supplying a second correcting current to said coil means, said second circuit means including second control means for varying said second correcting current so as to provide a predetermined change in value thereof during the initial warm-up period of said tube upon said operation thereof.

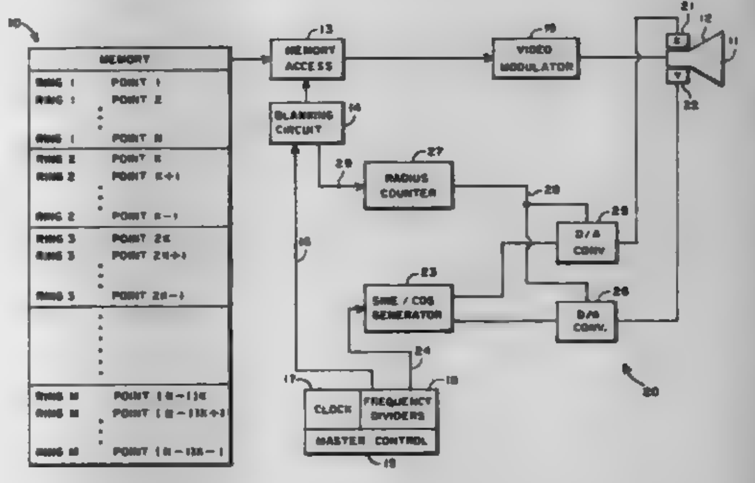
3,980,926
SPIRAL SCAN DISPLAY APPARATUS WITH TRANSIENT SUPPRESSION MEANS

Thomas Allen Krueger, Los Angeles, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 30, 1974, Ser. No. 437,794

Int. Cl.² H01J *29/78*

U.S. Cl. 315—378 **9 Claims**



7. Spiral scan display apparatus for generating a visual presentation from stored video data comprising:

a display device including a display area and display writing means which can be positioned at any point on the display area by appropriate deflection signals, the display writing means being responsive to video data signals to produce a visual presentation;

deflection means for supplying deflection signals which cause the display writing means to trace a circular path;

radius control means for changing the radius of the circular path at intervals which exceed by at least a blanking interval the time required for a complete revolution of the display writing means, whereby the display writing means scans the entire display area;

blanking means for alternately preventing the display writing means from generating a visual presentation during the blanking interval immediately following each change in radius of the circular path, and then permitting generation of a visual presentation for at least a complete revolution of the display writing means;

memory means including a plurality of memory locations for storing video data;

data retrieval means for retrieving video data from said memory means in the order required by the display writing means, the retrieved data being only data sequentially required during unblanked intervals; and

means for supplying video data signals indicative of the retrieved data to the display writing means.

3,980,927
DEFLECTION CIRCUIT

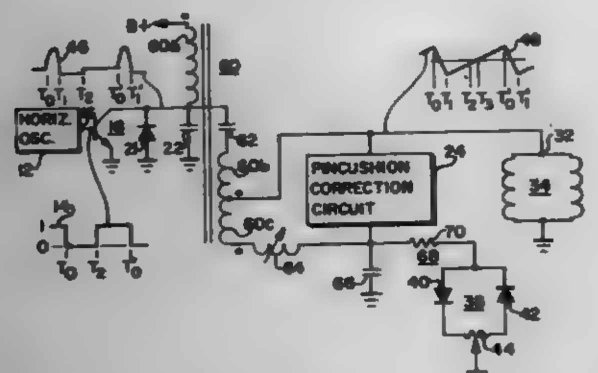
Peter Eduard Haferl, Adliswil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Feb. 10, 1975, Ser. No. 548,183

Claims priority, application United Kingdom, Dec. 20, 1974, 55149/74

Int. Cl.² H01J *29/70, 29/76*

U.S. Cl. 315—399 **4 Claims**



1. A deflection circuit comprising:
a transformer including first, second and third magnetically coupled windings;
a first capacitor;
switching means coupled to said first winding and said first capacitor for developing a flux field in said first winding and for providing bypassing of said first capacitor during a trace portion of a deflection cycle and for providing for a collapse of said flux field during a retrace portion of said deflection cycle;
means including a second capacitor, said second winding and said third winding in a series combination, said means being coupled in parallel with said first capacitor; and
a deflection winding coupled in parallel with said third winding.

3,980,928
FIRE DETECTORS

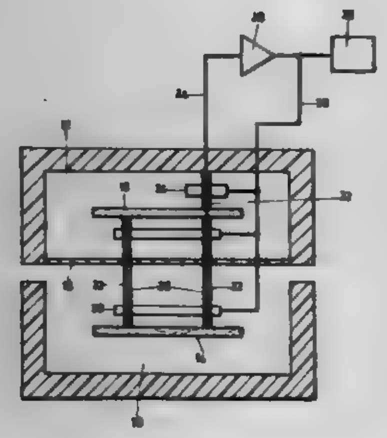
Timothy J. Newington, 70 Greenfield Road, Greenside, and Lourens P. Swanepoel, 194 Randbourne, Mondeor, both of Johannesburg, South Africa

Filed July 22, 1974, Ser. No. 490,781

Claims priority, application South Africa, July 23, 1973, 73/4991

Int. Cl.² H02H *3/16*

U.S. Cl. 317—10 **1 Claim**



1. A fire detector including a smoke chamber adapted to be at a first electrical potential, at least one element made of an insulating material located in and attached to the chamber, an electrical grid located in the chamber and supported therein by the insulating element, the grid being adapted to be at a second electrical potential, and at least one electrically conductive element surrounding the insulating element and circumferentially in contact therewith, the electrically conductive element being adapted to be at the second electrical potential to prevent surface leakage currents from the grid to the chamber via the insulating element, said detector comprising a single chamber detector, the grid being supported in the chamber by a plurality of the insulating elements, each insulating element having one of the electrically conductive elements fitted to it, said grid being connected to an electronic unit through an impedance converter, the electrically conductive element being connected to the output of the impedance converter.

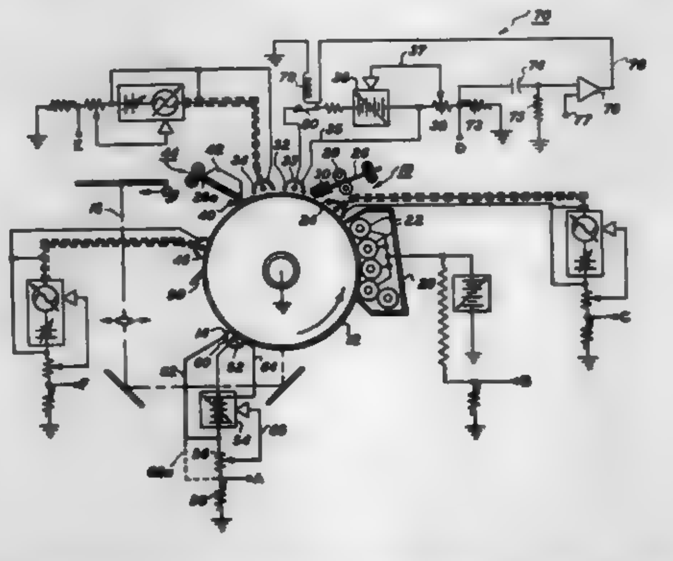
3,980,929
CORONA CURRENT INTERRUPTER

Herbert L. Bresnick, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed July 7, 1975, Ser. No. 593,914

Int. Cl.² H02H *3/08*

U.S. Cl. 317—16 **15 Claims**



1. In electrostatographic copying apparatus wherein a reusable imaging surface is charged by one or more corona current emitting electrodes connected to high voltage power supplies providing high voltage corona currents to said electrodes, wherein signal means associated with the power supply provides an electrical signal in response to said corona current from the power supply, the improvement comprising:
trigger circuit means connected to said signal means for providing a trigger signal in response to an electrical signal from said signal means indicative of a rapid change in said corona current from said power supply, and
fast operating high voltage interruption means operating in response to said trigger signal from said trigger circuit means for interrupting said high voltage corona current to said corona electrode from said power supply.

3,980,930
PROTECTION CIRCUIT

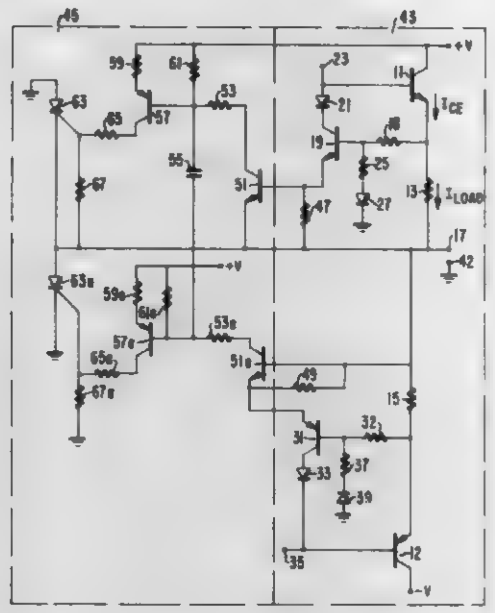
Miroslav Glogolja, Hillsborough, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 1, 1975, Ser. No. 573,733

Int. Cl.² H02H *7/20*

U.S. Cl. 317—16 **11 Claims**

1. A protective circuit for protecting an output transistor of an amplifier driving an inductive load, said output transistor having a collector electrode connected to a terminal for a source of operating voltage, an emitter electrode, and a base electrode receptive of an input signal, said amplifier further including a first output terminal coupled to the emitter electrode of said output transistor, and a second output terminal, said inductive load being connected between these terminals, comprising:
limiting means coupled between the emitter and base electrodes of said output transistor, responsive to power dissipation of greater than a given value of said output transistor, for limiting the amplitude of the input signal coupled to the base electrode of said output transistor, and for providing a control signal at such times, said limiting of the amplitude of said input signal, when it occurs, resulting in a reduction in current flow to said inductive load and a corresponding relatively high-level voltage spike produced by said inductive load which can, if sufficient current is still passing through said output transistor, damage said transistor; and
circuit means responsive to said control signal for suppressing the production of said voltage spike, said means comprising means for placing a low impedance between said output terminals.



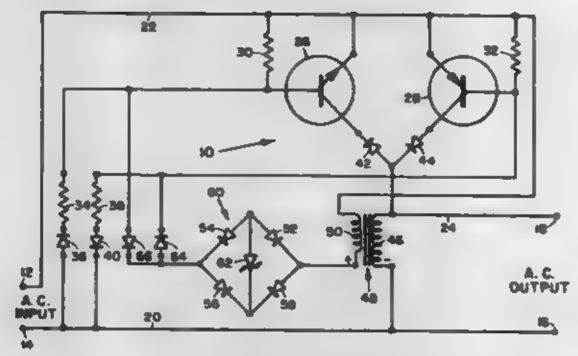
3,980,931
OVER VOLTAGE PROTECTOR

Norvel Jeff McLellan, 1002 N. Main St., Pleasanton, Tex. 78064

Filed May 30, 1975, Ser. No. 582,280

Int. Cl.² H02H *9/04*

U.S. Cl. 317—31 **10 Claims**



1. A regulator for controlling voltage delivered to a load from an alternating voltage, said regulator comprising:
a pair of transistor means for connecting to a voltage source;
first means for biasing a first of said transistor means into conduction during one of the half cycles of said alternating voltage;
second means for biasing a second of said transistor means into conduction during the other of the half cycles of said alternating voltage;
outputs of said transistor means being connected to a first winding of an output transformer for producing an output voltage thereacross, said first winding being an output side of said output transformer;
a second winding of said output transformer being connected in series with a voltage control means, both said second winding and said voltage control means being connected in parallel with said first and second biasing means to prevent a bias voltage in excess of a predetermined level thereby preventing said output voltage from exceeding a predetermined absolute voltage.

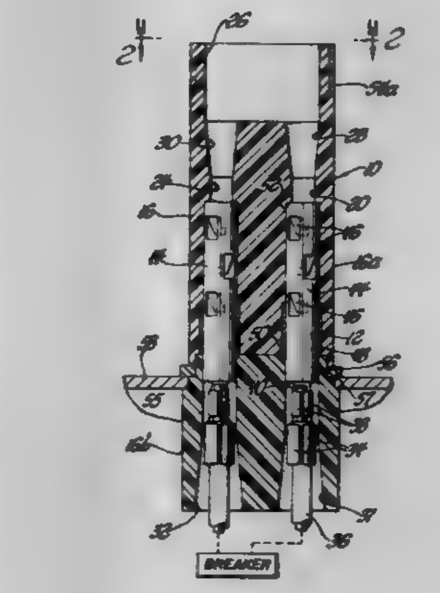
3,980,932
ELECTRICAL SERVICE CENTER WITH PANEL-MOUNTED CIRCUIT CONNECTORS

Robert L. Schultz, Tecumseh, Mich., assignor to Modular Circuitry Inc., Tecumseh, Mich.

Continuation of Ser. No. 303,178, Nov. 2, 1972, abandoned. This application Feb. 10, 1975, Ser. No. 548,532

Int. Cl.² H02B *1/08*

U.S. Cl. 317—120 **3 Claims**



1. Electrical apparatus for facilitating the wiring of electrical circuit breaker panels comprising: a housing including an electrical circuit breaker, said housing having at least one rigid panel with an aperture formed therein, an insulative block secured within said aperture and carried by said panel and having a tubular passage extending therethrough and having one end within said housing, and another end accessible from outside said housing, a one-piece conductive connector securely disposed within said passage of said block and comprising a tubular body coaxial with said passage for receiving a stripped, solid conductor wire, electrical wiring extending from said circuit breaker to the connector through said one end of said passage and being substantially permanently electrically connected thereto; said one-piece connector having securing means adjacent the other end receiving and nonremovably securing external bare-end electrical wiring and completing a circuit from said breaker to said external wiring, said securing means including inwardly projecting barbs formed in said tubular body for permitting insertion of a bare-end, solid conductor wire from said other end and operative on said wire to prevent subsequent removal thereof, said conductive connector being recessed inwardly from said other end of the insulative block, and the portion of the passage immediately adjacent said other end being of larger diameter than the one-piece connector whereby the connector holds said bare-end electrical wiring and said larger diameter portion of said passage accommodates insulation on said electrical wiring spaced away from said bare-end portion to permit said electrical wiring to be jammed into the connector and passage.

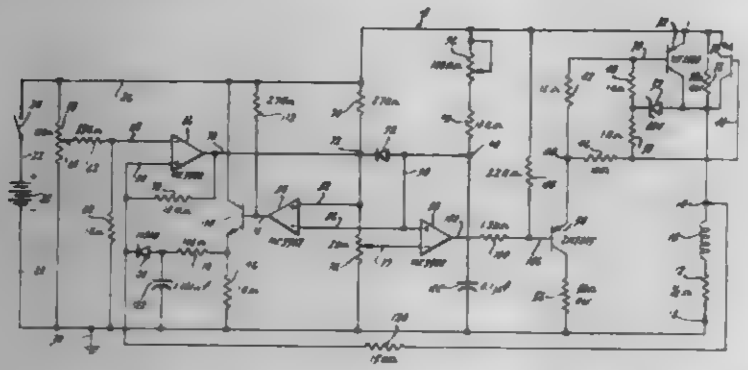
3,980,933
CONTROL CIRCUIT FOR VARIABLE RELUCTANCE MOTOR

Philip Piatkowski, Jr., Fraser, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 19, 1974, Ser. No. 534,514

Int. Cl.² H02K *29/00*

U.S. Cl. 318—138 **13 Claims**



1. A control circuit for a variable reluctance motor having an electrical winding and a magnetic circuit which retains residual magnetism in the absence of current flow through said motor winding, said control circuit comprising, in combination:

a solid state switching device having an output circuit and a control electrode, said output circuit being coupled to said motor winding to control the flow of current therethrough; and

circuit means, coupled to said motor winding and to said control electrode of said switching device, for sensing the EMF induced in said motor winding while said motor is rotating and said switching device output circuit is nonconductive, said EMF resulting from the presence of said residual magnetism, and for rendering said switching device output circuit in a state of conductivity causing current to flow through said motor winding when said EMF reaches a predetermined potential.

3,980,934
CONTROL CIRCUITS FOR ELECTRICALLY DRIVEN VEHICLES

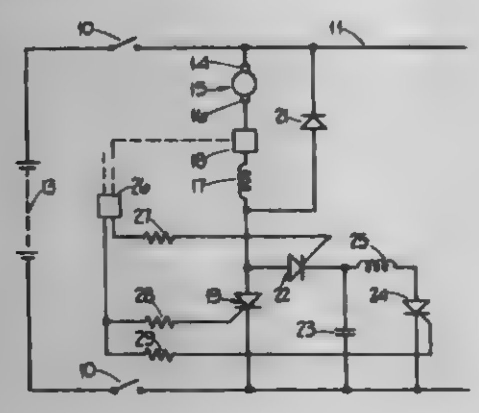
Maurice James Wright, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 14, 1974, Ser. No. 479,526

Claims priority, application United Kingdom, June 30, 1973, 31305/73; June 30, 1973, 31302/73; June 30, 1973, 31304/73

Int. Cl.² H02P *1/22*

U.S. Cl. 318—139 **5 Claims**



1. A control circuit for an electrically driven vehicle comprising in combination a traction motor for driving the vehicle, a regulator controlling the armature current of the traction motor, contactors associated with the motor to determine the direction of operation of the motor, switches means controlling the contactors, and current sensitive means operable to prevent the opening of the contactors when said switch means is actuated for reverse operation of the motor, until the current flowing through the motor is below a predetermined level.

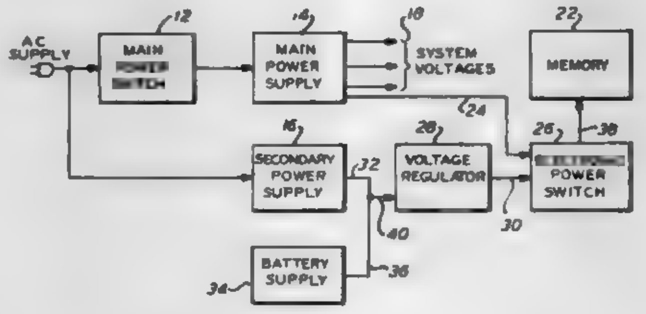
3,980,935
VOLATILE MEMORY SUPPORT SYSTEM

Bernard I. Worst, 6 Burnham Place, Flanders, N.J. 07836

Filed Dec. 16, 1974, Ser. No. 532,867

Int. Cl.² G11C *11/40*

U.S. Cl. 340—173 R **6 Claims**



1. A volitile memory support system for use with a volitile memory requiring a maintenance voltage to retain its bistable state and an operating voltage to permit it to alter its bistable state, said support system comprising: a primary power supply capable of providing system-operating voltages including said operating voltage coupled to said volitile memory; a secondary power supply capable of providing said maintenance voltage; a battery supply capable of providing said memory maintenance voltage; and switching means coupled to said secondary power supply, said battery supply and said memory to provide said memory with said maintenance voltage when said operating voltages are not being applied to said memory.

3,980,936
D.C. CONTROL CIRCUITS

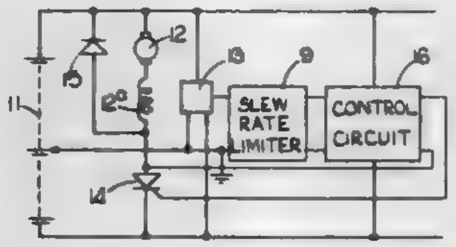
Maurice James Wright, Solihull, England, assignor to Joseph Lucas Limited, Birmingham, England

Filed Apr. 15, 1975, Ser. No. 568,257

Claims priority, application United Kingdom, Apr. 19, 1974, 17116/74

Int. Cl.² H02P *5/16*

U.S. Cl. 318—246 **5 Claims**



1. A d.c. control circuit including switch means in series with a load, current sensing means producing a monitoring waveform representing the current flow in the load, and control means for turning the switch means off when the current reaches a first level and turning the switch means on when the current falls to a second and lower level, characterised by means limiting the rate of change of the monitoring waveform to a level in excess of the normal maximum rate of change of load current.

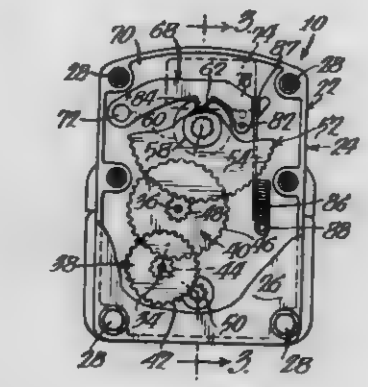
3,980,937
FRACTIONAL HORSEPOWER GEAR MOTOR

Harry H. Bostrom, Chicago, and John T. Joyce, Palatine, both of Ill., assignors to Molon Motor and Coil Corporation, Rolling Meadows, Ill.

Filed Oct. 24, 1974, Ser. No. 517,406

Int. Cl.² H02P *3/00*

U.S. Cl. 318—466 **3 Claims**



1. In a gear motor of the type having a gear box containing a gear reducer and an output gear driven from a motor drive pinion or the like, where the output gear includes means for coupling the same to auxiliary apparatus for driving and positioning such apparatus in accordance with the rotational movement and position of the output gear, the improvement comprising, in combination, switch means secured in said gear box and operable when de-actuated to deenergize said motor, and output gear having cam means rigidly connected thereto to provide a positive rotational relation between said output gear and said cam means, said cam means comprising a cam surface rotatable about the axis of said output gear, a pivotally mounted lever having follower means in engagement with said cam surface, at least one recess formed in said cam surface to define off positions for said output gear and said auxiliary driven apparatus and to receive said follower means when said output gear is in a predetermined off position, switch-actuating means on said lever arm engageable with said switch means for operating the same, said lever arm being pivotally movable between a first position wherein it actuates said switch means when said follower means is engaged on said cam surface and a second position wherein said switch means is de-actuated thereby deenergizing said motor when said follower means is disposed in said recess thereby controlling the deenergization of said motor in accordance with predetermined positions of said output gear and auxiliary driven apparatus, and yieldable means biasing said lever arm into engagement with said cam means causing said follower means also to function in cooperation with said recess as a detent for location of said output gear and auxiliary driven apparatus in predetermined off positions after each operation of said motor.

3,980,938
SCALE CONTROL DEVICE FOR USE IN PROFILING MACHINE TOOL

Noboru Nakagoshi, Kyoto, and Saburo Watanabe, Shimizu, both of Japan, assignors to Yoneda Tekkosho Ltd., Osaka, Japan

Filed Dec. 11, 1974, Ser. No. 531,666

Claims priority, application Japan, Apr. 22, 1974, 49-44452; Apr. 22, 1974, 49-44453

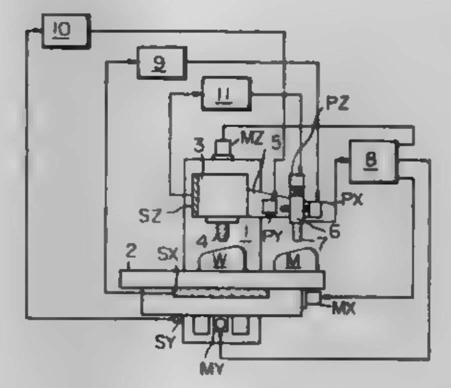
Int. Cl.² G05B *19/36*

U.S. Cl. 318—578 **3 Claims**

2. In a profiling machine tool including a tracer head displaceable relative to a model; a tool head displaceable relative to a work; a stylus held by said tracer head and adapted to contact the model; a tool carried on said tool head and machining said work; and a profiling control means for detecting the contact of said stylus with the model and controlling the position of said tool head relative to said work; a scale control device comprising:

a table for resting thereon said work and model;

relative displacement detecting means for detecting a relative displacement and a moving direction of said table with respect to said tool head and producing output signals including the data of both relative displacement and the moving direction;



feedback signal producing means for receiving the output signals from said relative displacement detecting devices and converting said output signals into feedback signals frequency-divided at a pre-set desired ratio; and

tracer head drive mechanisms for displacing said tracer head relative to said tool head in a direction the same as or reverse to the moving direction of said tool head with respect to said table, in response to said feedback signals and in proportion to a relative movement of said tool head to the table.

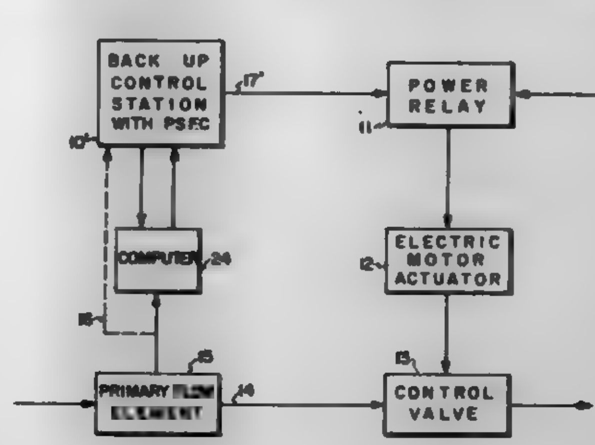
3,980,939
PROCESS CONTROL SYSTEM USING A TWO WIRE REMOTE CONTROL SYSTEM

Homer L. Greer, Bryn Athyn, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 13, 1974, Ser. No. 469,345

Int. Cl.² G05B *11/28*

U.S. Cl. 318—599 **13 Claims**



1. In a process control system having means to produce a signal that is variable in accordance with changes in a process and provided with a final control means arranged to be operated by a coupled reversible electrical motor for adjustment of said final control means, and thereby said process, in a direction to bring said process-variable signal into accord with a set point signal, the rate of said adjustment being dependent upon the extent of deviation of said process-variable and set point signals, a circuit comprising:

an electronic controller for comparing said process-variable and set point signals to produce a time-proportioned direct current signal of a first polarity characteristic when said process variable signal is less than said set point signal and of a second or opposite polarity characteristic when said process-variable signal is greater than said set point signal, the proportion of time on to time off of said signal being variable in accordance with the extent of deviation of said process-variable and set point signals,

a power relay connected to and controlled by said electronic controller, said power relay including a pair of semi-conductor switch means each of which normally is in an off state, the first of which switch means is adapted to be fired to an on state when said time-proportioned signal is of said one polarity characteristic and the second of which switch means is adapted to be fired to an on state when said time-proportioned signal is of said second polarity characteristic, the proportion of time on state to time off state of said switch means being determined by the time-proportioning of said signal,

means connecting said semi-conductor switch means and said reversible motor to a source of alternating current for energization of said motor for rotation in one direction when one of said semi-conductor switch means is fired and for energization of said motor for rotation in the opposite direction when the other of said semi-conductor switch means is fired, the speed of said motor being determined by the proportion of time on to time off of the state of said semi-conductor switch means, and

first and second normally disabled firing circuit means controlled by said time-proportioned signal, each of said firing circuit means being operable when enabled to provide a triggering signal to an associated one of said semi-conductor switch means.

3,980,940
BATTERY EQUALIZING SYSTEM

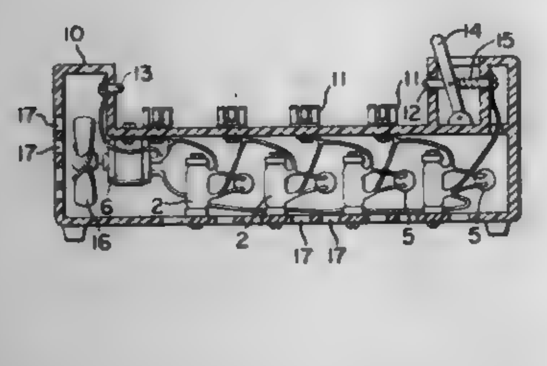
Kenichi Mabuchi, and Kogiro Komatsu, both of Tokyo, Japan, assignors to Mabuchi Motor Co. Ltd., Tokyo, Japan

Filed Apr. 8, 1974, Ser. No. 458,875

Claims priority, application Japan, Apr. 10, 1973, 48-40685; Apr. 10, 1973, 48-40686

Int. Cl.^{2} H02J *7/00*

U.S. Cl. 320—2 **1 Claim**



1. A discharger comprising a housing having a recess therein to receive a battery cassette holding therein a plurality of series connected cells, cassette engagement terminals, at least one of which being movably provided in said recess, a plurality of cell contact terminals each cell contact terminal contacting a single terminal from a respective one of the series connected cells held in said cassette, and self-discharge circuits formed between said terminals for permitting the discharge of the cells therethrough and for stopping the discharge of current at a predetermined voltage level which is lower than the charged voltage across each cell, inclusive of zero voltage, said self-discharge circuits each including, in series, a load circuit and a voltage controlled switch conducting above said predetermined voltage and non-conducting below said predetermined voltage, and, further comprising a fan for removing heat developed in said self-discharge circuits during discharge of cells, said fan being driven by the terminal voltage of the cassette mounted in the recess and stopping when the cells stop discharging.

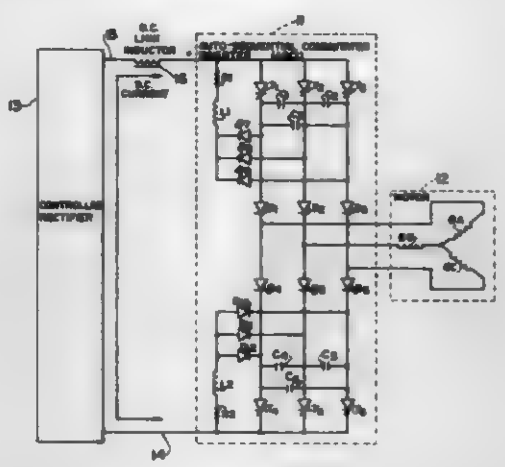
3,980,941
RESET CIRCUIT FOR AUTO-SEQUENTIAL COMMUTATED INVERTER

Ronald F. Griebel, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed June 18, 1975, Ser. No. 587,975

Int. Cl.^{2} H02M *7/515*

U.S. Cl. 321—45 R **22 Claims**



1. In an auto-sequential commutated controlled current inverter for driving a multi-phase load from a source of controlled magnitude direct current, said auto-sequential commutated inverter comprising a plurality of parallel connected branch sub-circuits with each branch sub-circuit comprising at least one gate controlled power thyristor device connected in series circuit relationship with a respective power diode, each of the respective branch sub-circuits thus comprised being connected between a respective phase input to the multi-phase load and a common direct current power supply terminal for connection to the source of controlled magnitude direct current, and a respective commutating capacitor interconnected between the juncture of the power thyristor and the power diode of each respective branch sub-circuit and the juncture of the power thyristor and power diode of the next adjacent branch sub-circuit; the improvement comprising a reset circuit for improving the frequency characteristics of said auto-sequential commutated inverter with minimum size power components, said reset circuit comprising a common impedance for assisting in the discharge of energy stored in said commutating capacitors, said common impedance comprising a common inductive reactance including resistance for dissipating energy stored in the common inductive reactance and having one terminal connected to the common direct current power supply terminal, a plurality of coupling diodes, there being one coupling diode for each phase of the multi-phase load being supplied with each coupling diode having one terminal connected in common with the corresponding terminals of the remaining coupling diodes to the remaining terminal of the common impedance and the remaining terminals of each respective coupling diode being connected respectively to the juncture of the power thyristor and power diode of a respective branch sub-circuit.

3,980,942
APPARATUS FOR THE CONTROL OF ELECTRICAL HEATING OF A SEMICONDUCTOR ROD

Hans Stut, Groebenzell, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

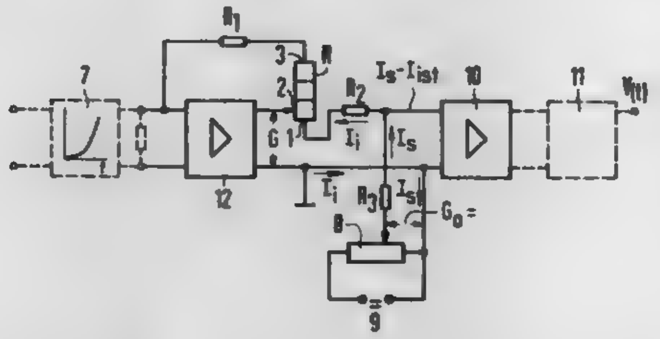
Filed Oct. 24, 1972, Ser. No. 299,942

Claims priority, application Germany, Oct. 27, 1971, 2153566

Int. Cl.^{2} G05F *1/46*

U.S. Cl. 323—19 **4 Claims**

1. In an arrangement for electrically heating a semiconductor rod which is simultaneously growing due to the deposition of semiconductor material thereon from the gas phase in which a heating current source supplies alternating current U(t) having a period T to the rod and an electronic switch is controllable by a time variable auxiliary voltage for applying the alternating current to the rod, the auxiliary voltage being derived in a control loop which includes a transformer connected between the heating current circuit and a rectifier, a filter connected to the rectifier and amplifying means connected between the filter and the electronic switch, the improvement therein comprising: a circuit interposed between the filter and the amplifying means including a preamplifier and a first potentiometer, said first potentiometer including a pair of fixed terminals and a movable tap, said preamplifier including an input connected to the filter and an output connected to said movable tap, one of said fixed terminals of said first potentiometer connected in a feedback circuit to said input of said preamplifier and the other fixed terminal of said first potentiometer connected to the amplifying means which controls the electronic switch, said preamplifier providing an output direct voltage to the subsequent amplifying means, and means, including a second potentiometer, for supplying a reference voltage connected to the output of said preamplifier and to the input of said amplifying means for comparing the reference voltage with the output voltage of said preamplifier whereby the difference between the reference voltage and the output voltage of the preamplifier is effective for operating the subsequent amplifying means.



3,980,943
POWER SUPPLY WITH COMPLEMENTARY SWITCHING OF POWER TO MAIN AND AUXILIARY LOADS

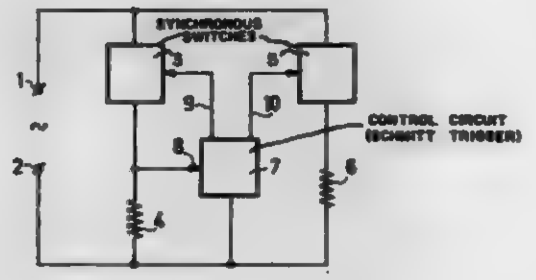
Philippe Cailleux, Evreux, and Claude Mothiron, Evreux-St-Michel, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 27, 1971, Ser. No. 137,878

Claims priority, application France, Apr. 30, 1970, 70.15916

Int. Cl.^{2} G05F *1/44, 1/56*

U.S. Cl. 323—22 SC **19 Claims**



2. A device for controlling the power drawn from an AC energy supply source by a variable main load exhibiting substantial and frequent variations of the required power during operation comprising, main synchronous switching means connected between the AC supply and the variable main load, control circuit means with an input coupled to the load and an output coupled to said switching means for controlling and regulating the load power, and auxiliary synchronous switching means arranged between the AC energy source and an auxiliary load.

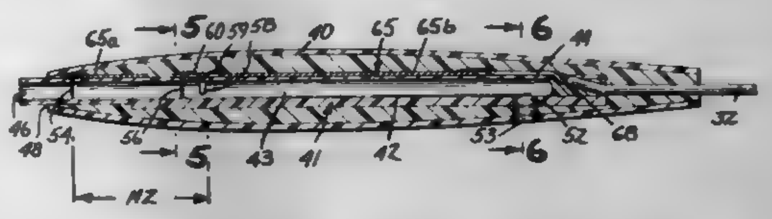
3,980,944
PORTABLE CONDUCTIVITY METER FOR ARTIFICIAL KIDNEY MACHINES

Stuart L. Gallant, Minneapolis, and Louis C. Cosentino, Wayzata, both of Minn., assignors to Renal Systems, Inc., Minneapolis, Minn.

Filed Nov. 8, 1974, Ser. No. 522,102

Int. Cl.^{2} G01N *27/30*

U.S. Cl. 324—30 R **14 Claims**



1. An improved portable dialystate conductivity meter for use with artificial kidney apparatus, comprising:

a. an elongated probe of pen-like dimensions suitable for immersion within a dialysate bath, comprising:
    i. a sample tube having a wall enclosing an internal chamber for holding a sample of said dialysate, said internal chamber defining an elongate, generally cylindrical meausrement zone adjacent a first end of said pen-like probe, for isolating a fixed volume of said dialysate sample therein, said sample tube having an outer surface having an elongate flattened portion extending along said measurement zone;
    ii. a pair of spaced apart electrodes fixedly mounted to the flattened portion of said sample tube wall for projection within the meausrement zone of said internal chamber and having conductor terminals extending through said wall;
    iii. a thermistor fixedly mounted to the flattened portion of said sample tube wall for projection within the measurement zone of said internal chamber and having conductor terminals extending through said wall;
    iv. a flattened circuit pattern secured to said outer flattened portion of said sample tube wall and forming a plurality of conductors operatively connected to said conductor terminals of said thermistor and said pair of electrodes; and
    v. port means for said wall of said sample tube comprising an inlet port and an air release port respectively leading to opposite ends of said measurement zone, said inlet port providing a passageway for said dialysate to enter said measurement zone and said air release port providing a passageway for air to be displaced from said measurement zone, so as to operatively immerse said electrode pair and said thermistor whenever said probe is immersed a predetermined longitudinal depth within said dialysate; and

b. AC excitation and measurement means operatively connected to said circuit pattern on said probe and to said pair of electrodes and said thermistor, for energizing said electrodes and said thermistor and for providing a conductivity output signal responsive to said energization which is accurately proportional to the electrical conductivity of that portion of said dialysate sample between said pair of electrodes.

3,980,945
DIGITAL COMMUNICATIONS SYSTEM WITH IMMUNITY TO FREQUENCY SELECTIVE FADING

William J. Bickford, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

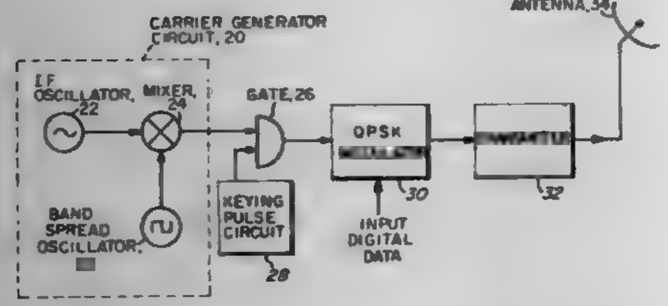
Filed Oct. 7, 1974, Ser. No. 512,654

Int. Cl.^{2} H04B *3/04;* **H04L** *27/10*

U.S. Cl. 325—30 **11 Claims**

1. A digital communications system with improved immunity to frequency selective fading in a communications channel comprising in combination:

a first oscillator for producing an intermediate frequency substantially sine wave shaped signal;
a second oscillator for producing a square wave band spreading signal of lower frequency than said sine wave signal;
means for multiplying said sine wave shaped signal by said square wave signal, a carrier signal being produced as an output of said multiplying means;
means for gating said carrier signal on and off at a predetermined rate;



means for phase shift modulating the gated carrier signal;
a differentially adaptive receiver, said receiver comprising means for deriving a reference signal having substantially the same complex envelope as the envelope of received signals; and
means for producing digital output signals from said received signals comprising means for comparing said received signals with said reference signal.

3,980,946
APPARATUS FOR MEASURING THE ELECTRICAL CONDUCTIVITY OF A LIQUID

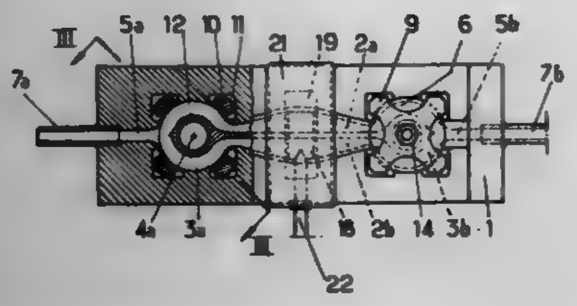
Jacques Fleury, Paris, France, assigner to Societe Anonyme Automobiles Citroen, Paris, France

Filed Apr. 4, 1975, Ser. No. 565,112

Claims priority, application France, Apr. 5, 1974, 74.12699

Int. Cl.² G01N *27/42*

U.S. Cl. 324—30 A **4 Claims**



1. An apparatus for measuring the electrical conductivity of a liquid, comprising means having an inlet for said liquid, an outlet for said liquid and a pair of parallel channels independent from one another and interconnecting said inlet and said outlet; and an induction coil and a measuring coil, one of said coils being disposed at the junction of said channels with said inlet and the other of said coil being disposed at the junction of said channels with said outlet whereby said induction coil induces a current in said liquid through said channels and said measuring coil detects the current induced in said liquid at a location offset from said induction coil with respect to the direction of flow of said liquid from said inlet to said outlet.

3,980,947
METHOD OF ENERGIZING A MAGNETIC STRESS TRANSDUCER TO REDUCE THE CREEP OF THE MEASURING SIGNAL

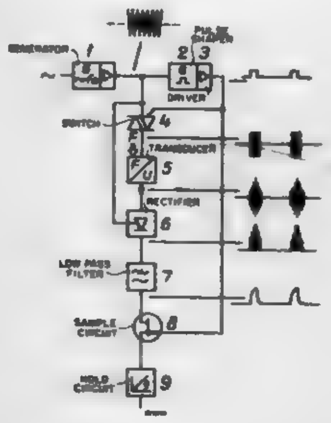
Nils Ove Bielsten; Orvar Dahle; Ronald Grek, all of Vasteras; Bertil Hoffman, Kolback; Sture Siby, and Ake Widehn, both of Vasteras, all of Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed May 1, 1975, Ser. No. 573,797

Claims priority, application Sweden, June 20, 1974, 7408157

Int. Cl.² G01R *33/18*

U.S. Cl. 324—34 ST **2 Claims**



1. Method for measuring mechanical stresses in an object of hardened and tempered steel using a magnetic transducer of the type which comprises a magnetizing circuit for generating a magnetic field in the object and a measuring circuit for sensing the changes in the magnetic field which occur in the object when it is subjected to mechanical forces, which comprises energizing the magnetizing circuit with electric energy in the form of short pulses of AC current, the pulse length of which is sufficiently low to reduce the creep of the measuring signal to a value which is negligible in comparison with the value of the creep when the magnetizing circuit is energized with continuous AC current.

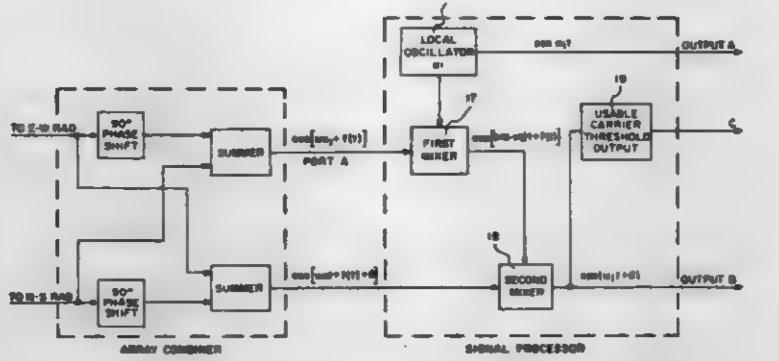
3,980,948
SYSTEM AND PROCESS FOR LOCATING SOURCES OF RADIATION

George A. Olive, 229 Mill Run Court, Moorestown, N.J. 08057

Filed June 17, 1974, Ser. No. 480,106

Int. Cl.² G01R *25/00*

U.S. Cl. 324—83 D **3 Claims**



1. Signal processing apparatus for processing first and second input signals differing in phase and having common frequency variations to remove the frequency variations for subsequent improved phase measurements comprising:
a first mixing device having the first input signal as its first input;
signal generating means providing a signal as the first output of the signal processing apparatus and the second input to the first mixing device; and
a second mixing device having its first input the difference output from the first mixer and its second input the second input signal to provide a second difference output of the signal processing device in which the frequency variations are removed and which differs from the first output only by the initial phase difference.

3,980,949
MAGNETO-OPTICAL MEASURING TRANSDUCER FOR VERY HIGH CURRENTS/VOLTAGES

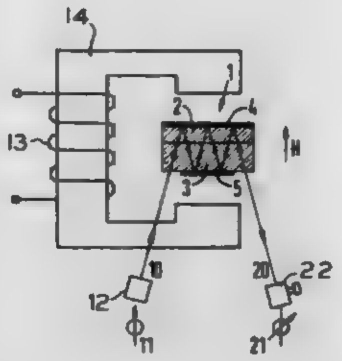
Ernst Feldtkeller, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sept. 13, 1974, Ser. No. 505,674

Claims priority, application Germany, Sept. 17, 1973, 2346722

Int. Cl.² G01R *19/00*; G02F *1/09*

U.S. Cl. 324—96 **5 Claims**



1. A unitary magneto-optical measuring transducer for use as a Faraday rotator in a device for measuring high currents at high voltages, responsive to a magnetic field produced by a current which is to be measured for rotating the direction of polarization of a beam of polarized light which passes therethrough, said transducer comprising a first magnetically saturable part and a second part which has a diamagnetic or paramagnetic behavior, said first and second parts being formed as two parts of a single unitary structure and arranged to be traversed by the polarized beam of light, said second part comprising a gadolinium-gallium-garnet plate having a thickness substantially greater than the thickness of said first part.

3,980,950
METHOD OF DETERMINING THE DISPLACEMENT ANGLE OF AN ELECTRIC MOTOR AND MEANS FOR EFFECTING SAME

Vitaly Mikhailovich Kutsevalov, ulitsa Ierikju, 43, kv. 28, Riga; Valery Konstantinovich Kanter, p/o Adazhi, dom "Vizmas", Rizhsky raion; Georgy Sazonovich Kornilov, ulitsa Rickstu, 16, kv. 102; Vitaly Ivanovich Ozols, ulitsa Maskavas, 250/10, kv. 89, both of Riga; Vladimir Ivanovich Frolov, ulitsa Oktyabrskaya, 49, kv. 25, Leningrad, Kolpino; Alexandr Timofeevich Glushkov, ulitsa Oktyabrskaya, 13, kv. 6, Leningrad, Kolpino; Igor Vitalievich Leontiev, ulitsa Pavlovskaya, 84, kv. 114, Leningrad Kolpino; Vladislav Alexandrovich Elizarov, ulitsa Vokzalnaya 23, kv. 47, Leningrad,Pushkino; Jury Petrovich Bobylev, prospekt Lenina, 40, kv. 43, Leningrad, Kolpino; Viktor Georgievich Mednitsky, prospekt Lenina, 9/15, kv. 15, Leningrad, Kolpino, and Viktor Vasilievich Bushuev, ulitsa Tverskaya, 1/13, kv. 11, Leningrad, Kolpino, all of U.S.S.R.

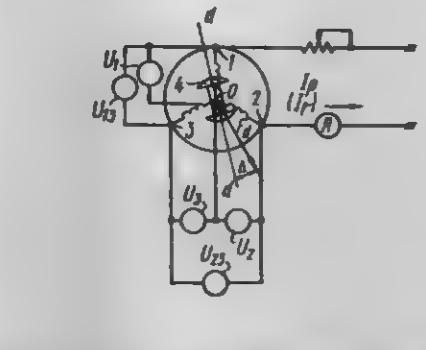
Filed Nov. 26, 1974, Ser. No. 527,262

Claims priority, application U.S.S.R., Dec. 3, 1973, 1976379; Feb. 4, 1974, 1999301

Int. Cl.² G01R *31/00*

U.S. Cl. 324—158 MG **5 Claims**

1. A method of determining the displacement angle of a synchronous reluctance motor operating in braking duty, with a three-phase star-connected stator winding arrangement with two series-connected working phase windings and a free third phase winding, said motor being generally used as an actuating motor in the drive of control and protection systems of nuclear power reactors, comprising the steps of:
passing a pulsating current of a predetermined magnitude through said stator working phase windings to determine the relationships between the displacement angle and phase voltages and line voltages across said stator windings:



measuring the phase voltages and line voltages across the stator windings during the operation of the motor, while maintaining said predetermined magnitude of the current through said working phase windings; whereby the required displacement angle is determined from said relationships.

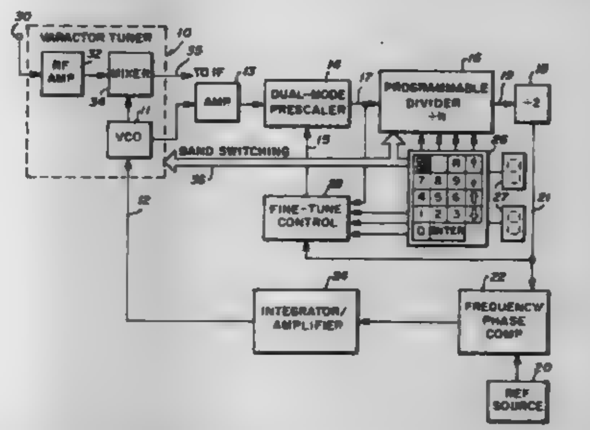
3,980,951
ELECTRONIC TUNING CONTROL SYSTEM FOR TELEVISION

Eric Breeze, Los Altos, and Peter Alfke, Los Altos Hills, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Aug. 13, 1975, Ser. No. 604,415

Int. Cl.² H04B *1/16*

U.S. Cl. 325—464 **10 Claims**



1. Electronic tuning control apparatus for a television receiver having a tuner with a voltagecontrolled local oscillator, comprising:
fine-tune control means for developing a fine-tune control signal having a first characteristic for no fine tune adjustment, a second characteristic for frequency decrease adjustment, or a third characteristic for frequency increase adjustment;
prescaler circuit means responsive to said fine-tune control signal and operative to divide the local oscillator frequency by a selected prescale integer to develop a first divided signal having a frequency corresponding to said local oscillator frequency divided by;
a first integer when said fine-tune control signal has said first characteristic,
a second integer when said fine-tune control signal has said second characteristic, and
a third integer when said fine-tune control signal has said third characteristic;
encoder means for developing a divider control signal corresponding to a particular television channel;
programmable divider means responsive to said divider control signal and operative to divide the frequency of

said first divided signal by a divider integer selected from a set of integers each of which correspond to a particular television channel to produce a second divided signal;
means responsive to said second divided signal and operative to develop a square wave signal having a frequency which is a sub-multiple of said local oscillator frequency;
a reference source for generating a reference signal having a reference frequency; and
means for comparing said square wave signal to said reference signal to develop a tuner control signal commensurate with any difference therebetween, said tuner control signal being applied to the local oscillator to control said local oscillator frequency.

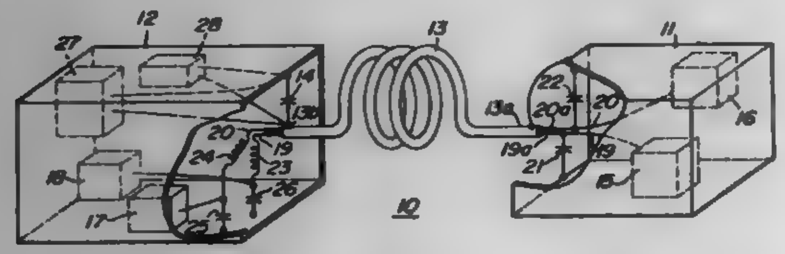
3,980,952
DIPOLE ANTENNA SYSTEM HAVING CONDUCTIVE CONTAINERS AS RADIATORS AND A TUBULAR MATCHING COIL

William Rapshys, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 7, 1975, Ser. No. 565,329

Int. Cl.^{2} H01B *1/38*; H01G *9/16*

U.S. Cl. 325—16 **11 Claims**



1. An improved dipole antenna system for use at predetermined frequencies, comprising:
first and second conductive containers being spatially separated and located in fixed positions with respect to one another, and thereby forming an effective input impedance therebetween at said predetermined frequencies;
impedance network means for matching said effective input impedance to a predetermined impedance level at said predetermined frequencies;
said network means including metallic coil means mechanically disposed and electrically coupled between said containers;
radio apparatus for processing signals disposed in each of said containers; and
at least one wire means passing between said containers for electrically interconnecting said radio apparatus at frequencies substantially below said predetermined frequencies, said wire means being mechanically disposed adjacent to said coil means while passing between said containers.

3,980,953
DELTA MODULATION SYSTEM EMPLOYING DIGITAL FRAME AVERAGING

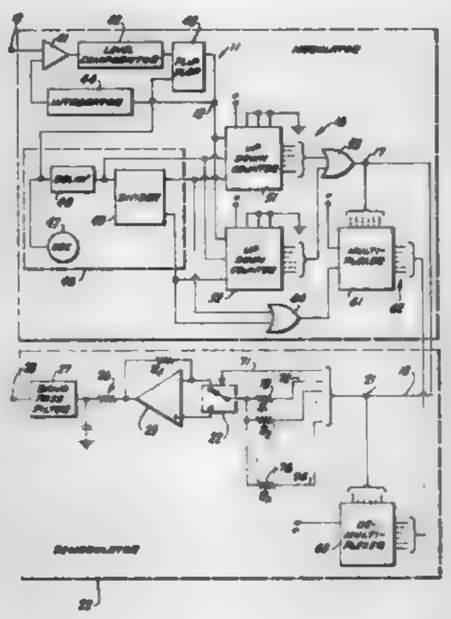
W. Franklin Nance, Orange, and Ronald J. Surprenant, Anaheim, both of Calif., assignors to NS Electronics, Fresno and Lear Siegler, Inc., Santa Monica, both of, Calif., part interest in each

Continuation-in-part of Ser. No. 359,864, May 14, 1973, Pat. No. 3,872,255. This application Mar. 17, 1975, Ser. No. 559,177

Int. Cl.^{2} H03K *13/11*

U.S. Cl. 325—38 B **4 Claims**

1. An improved delta modulation system comprising
a non-adaptive delta modulator producing a binary bit stream from an analog input waveform at a sample pulse rate,
a pair of up-down counters alternately enabled at a predetermined frame rate to count the algebraic sum of binary input signals from said delta modulator during alternate frames and each storing the count thereof and transmitting upon a transmission system the binary algebraic sum count during the preceding frame,
an amplifier connected to said transmission system through gain-adjusting means for producing a pulse train having



pulse heights determined by said binary algebraic sum count, and
an integrator connected to the output of said amplifier for reconstructing at the integrator output the analog waveform applied to said delta modulator.

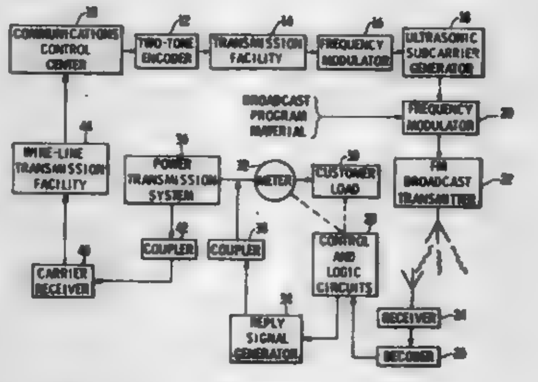
3,980,954
BIDIRECTIONAL COMMUNICATION SYSTEM FOR ELECTRICAL POWER NETWORKS

Ian A. Whyte, Churchill Borough, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 25, 1975, Ser. No. 616,711

Int. Cl.^{2} H04M *11/02*

U.S. Cl. 325—48 **8 Claims**



1. A bidirectional communication system for electrical power systems, comprising:
a communications control terminal capable of generating a first communication signal;
means for generating electromagnetic radiation;
means for transferring the first communication signal from the control terminal to the means for generating electromagnetic radiation;
means responsive to the communication signal for modulating the electromagnetic radiation;
means located at a power customer location for receiving the modulated electromagnetic radiation;
means located at the customer location for demodulating and processing the received electromagnetic radiation and generating a second communication signal;
means for applying the second communication signal to a power line carrier signal transmitter;

means for connecting the signal transmitter to the power line at the customer location; and
means for remotely receiving the second communication signal from the power system and applying it to a wire line;
said wire line transferring the second communication signal to the communications control terminal.

3,980,955
CONTROL DEVICE

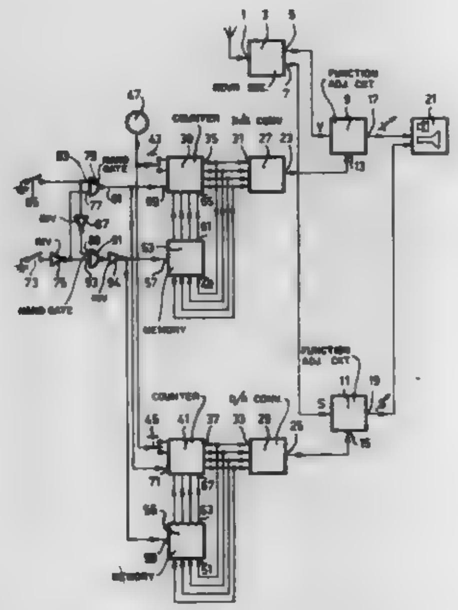
Kian Kie Ong, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 3, 1975, Ser. No. 564,790

Claims priority, application Netherlands, Apr. 19, 1974, 7405304

Int. Cl.^{2} H03K *25/00*

U.S. Cl. 325—390 **2 Claims**



1. Control device for adjusting at least one function, which device comprises a counter having a plurality of outputs, a digital-to-analog converter coupled to said outputs of the counter and having an output, a function adjustment circuit having an adjusting signal input coupled to said converter output, a control correction member means for immediately setting said counter into a selected state, a memory means coupled to said counter outputs for supplying the digital setting for said desired state, and a write-in control member means for providing that information from said counter outputs is written into said memory.

3,980,956
COUNTER TYPE REMOTE CONTROL RECEIVER INCLUDING NOISE IMMUNITY SYSTEM

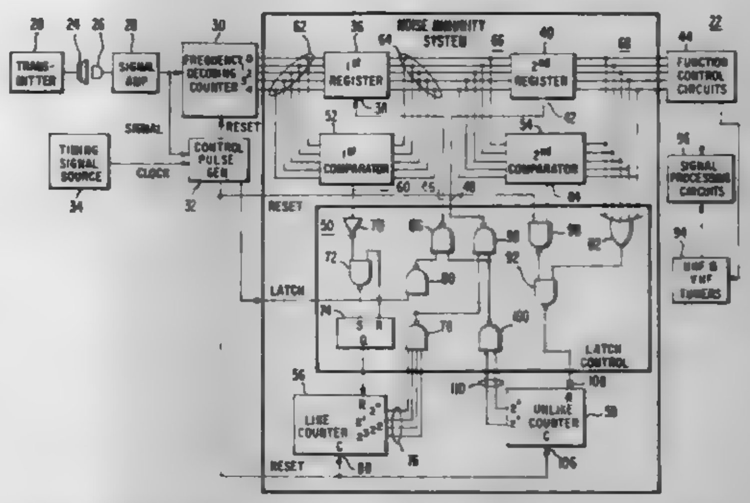
Kenneth Rae Woolling, Jr., Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 25, 1975, Ser. No. 607,700

Int. Cl.^{2} H04B *1/06*

U.S. Cl. 325—391 **8 Claims**

1. In a remote control receiver for processing signals representative of a plurality of commands, each command being identified by control signals lying in a respective band of frequencies, the combination comprising:
means for supplying timing reference signals recurring at predetermined time intervals;
counter means responsive to said timing reference signals and to said control signals for providing output signals representative of a command;
means for comparing successive ones of said output signals and for identifying continued reception of like signals in successive time intervals;
control means responsive to said output signals for executing said commands; and
switching means coupled to said comparing means for coupling said output signals to said control means only after a first predetermined number of like output signals have



been sensed and for decoupling said output signals from said control means when said output signals deviate in a predetermined manner from said like output signals.

3,980,957
CIRCUIT ARRANGEMENT FOR TUNING AND RANGE OR BAND SWITCHING OF AN RF RESONANT CIRCUIT

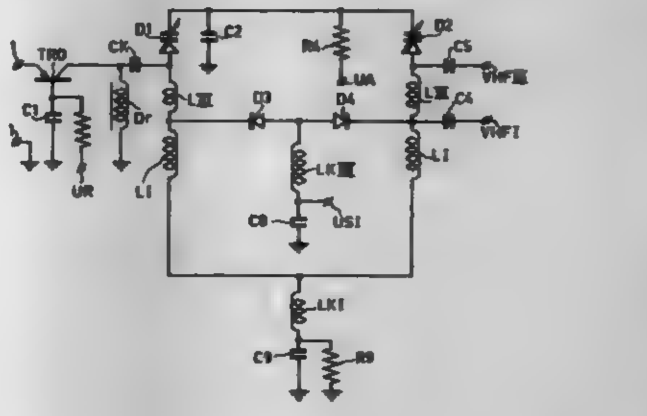
Walter Pützer, Krefeld, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 14, 1975, Ser. No. 558,217

Claims priority, application Germany, Mar. 16, 1974, 2412689

Int. Cl.^{2} H04B *1/06*

U.S. Cl. 325—459 **5 Claims**



1. A circuit arrangement for tuning and range for band switching of an RF resonant circuit, comprising a variable capacity diode which can be controlled by a tuning voltage for tuning the resonant circuit, a switching diode controlled by a switching voltage for short-circuiting part of the resonant circuit inductor for range switching and a switching voltage generator controlled by the tuning voltage for generating the switching voltage for the switching diode, characterized in that a reset voltage derived from the switching voltage is applied in addition to the tuning voltage to the variable capacity diode, which reset voltage resets the voltage across the variable capacity diode to approximately 0 V when a new range is switched on.

3,980,958
SIGNAL SEEKING TUNING SYSTEM WITH ILLEGAL CHANNEL DETECTION MEANS

Akio Tanaka, Evanston, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed July 29, 1974, Ser. No. 492,365

Int. Cl.^{2} H04B *1/32*

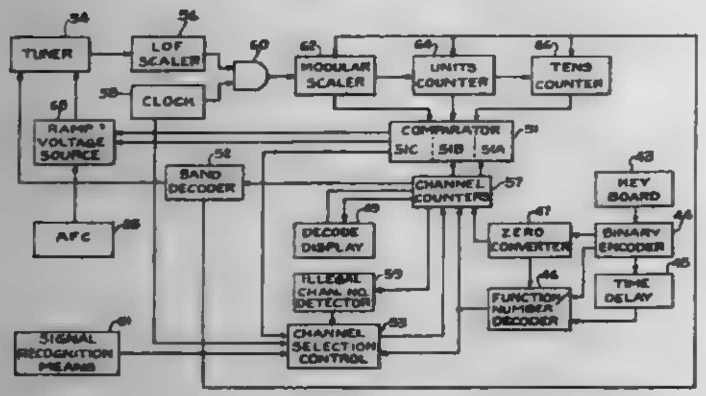
U.S. Cl. 325—470 **11 Claims**

1. A signal seeking television tuning system including a voltage controlled tunable element operable in the FCC allocated television frequency bands containing a plurality of

discrete fixed frequency bandwidth television signals identifiable with a corresponding FCC allocated channel number, comprising:

channel selecting means for sequentially selecting channel information related to said television signals;

ramp voltage generating means responsive to said channel selecting means for applying voltages for tuning said tunable element to receive corresponding ones of said television signals;



recognition means for determining the presence of television signals and terminating the operation of said channel selecting means when a television signal is detected; and

illegal channel information detection means preventing terminating the operation of said channel selection means when the selected channel information does not correspond to any of said plurality of discrete television signals.

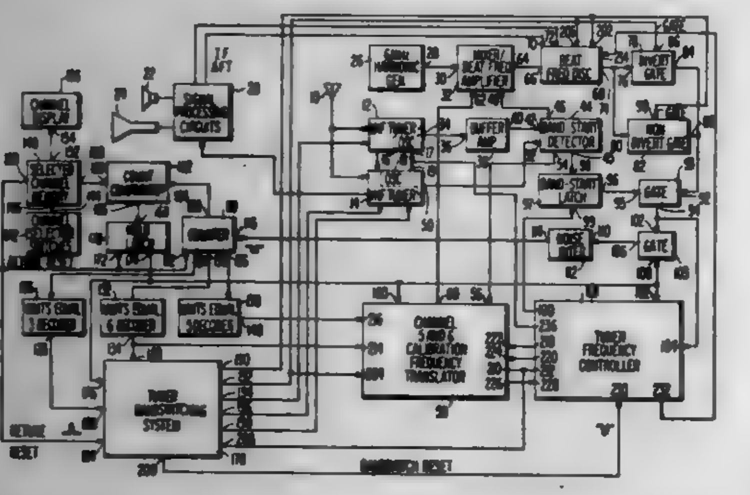
3,980,959
TUNER BANDSWITCHING SYSTEM FOR A TELEVISION TUNING SYSTEM

John Barrett George, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed June 3, 1974, Ser. No. 476,083

Int. Cl.² H04B *1/32*

U.S. Cl. 325—470 **8 Claims**



1. In a television tuning system for selecting any one of a plurality of television channels in at least first and second bands of frequencies by sweeping an oscillator through at least third and fourth bands of frequencies, a system for controlling the operating frequency range of said tuning system, comprising:

channel selector means for providing signals representative of a selected television channel number;

counting means for counting the number of times said oscillator passes through a frequency related in a predetermined manner to a television channel oscillator frequency;

storage means coupled to said channel selector means for storing numerical data representative of said selected channel number;

count comparison means for producing a hold signal when data in said counting means and said storage means are equal;

control signal generating means for providing control signals in response to simultaneous presence in said counting means of a count representative of a channel at one end of at least said first band of frequencies and absence of said hold signal; and

switching means responsive to said control signals for switching the operating range of said oscillator at least from said third band to said fourth band of frequencies.

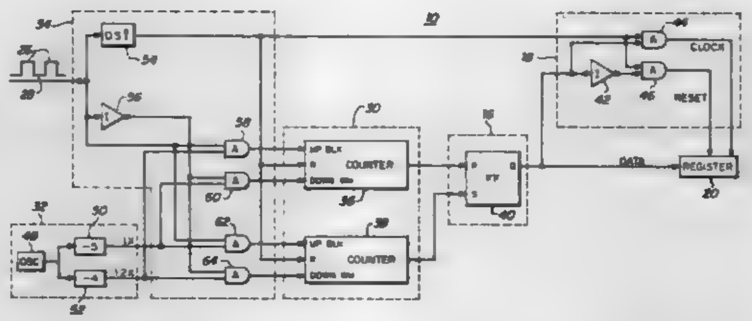
3,980,960
SIGNAL WIDTH AND WIDTH RATIO DETERMINING APPARATUS

Edward Hynes Hutchinson, Medford, Mass., assignor to Computer Identics Corporation, Westwood, Mass.

Filed Oct. 9, 1975, Ser. No. 621,004

Int. Cl.² H03K *5/20*

U.S. Cl. 328—112 **4 Claims**



1. Apparatus for determining whether the ratio of the widths of a pair of signals is within acceptable limits comprising:

integrator means, including a first integrator responsive to a first signal to integrate in a first direction at a first rate and to a second signal to integrate in the opposite direction at a second rate and a second integrator responsible to a first signal to integrate in said first direction at said second rate and to a second signal to integrate in the opposite direction at said first rate;

indicator means, responsible to said integrator means, for providing a data signal representative of the first and second signals having the proper ratio beginning in response to said second integrator reaching a first predetermined level and ending in response to said first integrator reaching a second predetermined level; and

control means responsive to the end of said second signal, occurring during the presence of said data signal to provide a clock signal validating said data signal and to the end of said second signal occurring separately of said data signal to reject said data signal.

3,980,961
FREQUENCY DEMODULATOR FOR A FSK DATA TRANSMISSION SYSTEM

Loic Bernard Yves Guidoux, Saint-Michel-sur-Orge, and Daniel José Francois Lommer, Velizy, both of France, assignors to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

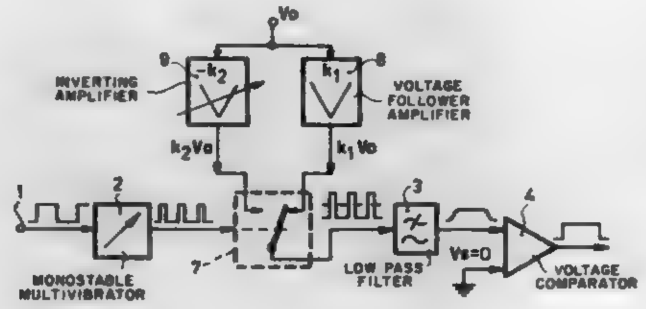
Filed June 16, 1975, Ser. No. 587,268

Claims priority, application France, July 23, 1974, 74.25486

Int. Cl.² H03D *3/00*

U.S. Cl. 329—104 **4 Claims**

1. Frequency demodulator in a system for transmitting data signals by means of frequency-shift-keying, which demodulator comprises a cascade arrangement of a monostable circuit operated by edges of a rectangular signal corresponding to the signal to be demodulated, a lowpass filter and a decision circuit which compares the output signal of the lowpass filter with a threshold voltage and restores the data signal, wherein the demodulator comprises a switching circuit which is operated by the signal supplied by the monostable circuit and according to the value of this signal supplies to the lowpass filter one or the other of two voltages derived from the same voltage supply source and having different polarities, while for correcting the bias distortion means are provided for adjusting at least one of the said two voltages, the threshold voltage being fixed at earth potential.



3,980,962
DEMODULATORS

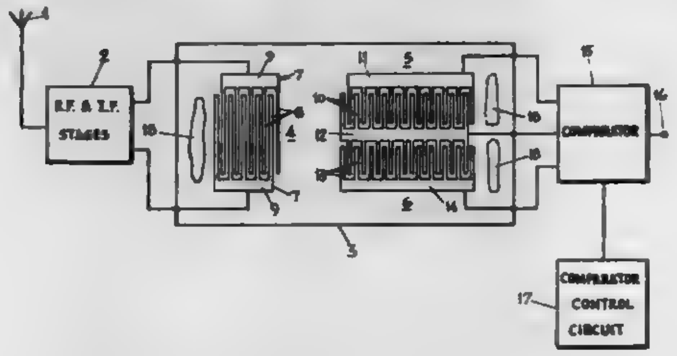
Dennis George Scotter, Wembley, England, assignor to The General Electric Company Limited, London, England

Filed Feb. 4, 1975, Ser. No. 547,004

Claims priority, application United Kingdom, Feb. 15, 1974, 6958/74

Int. Cl.² H03K *9/04*

U.S. Cl. 329—117 **8 Claims**



1. A demodulator, for use in a communication system employing digital code differential phase shift modulation, comprising:

A. a substrate;

B. an input transducer on the substrate for launching onto the substrate surface acoustic waves corresponding to a digital code differential phase shift modulated signal;

C. a plurality of output transducers on the substrate,
  i. each of which comprises a number of parts spaced along a substrate propagation path of said acoustic waves so as to produce respective outputs in response to surface waves respectively corresponding to said number of successive code elements of said signal,
  ii. each output transducer being positioned with respect to the input transducer so that its parts are responsive to acoustic waves representing the same successive code elements at any given time,
  iii. each output transducer further comprising
    a. a pair of output terminals between which said parts of that output transducer are connected,
  iv. the parts of each output transducer contributing, to the output appearing between the associated output terminals, signals whose phases are differently related for each output transducer, for any particular phase relation between said successive code elements,
    a. so that each output transducer produces a larger output signal, in a predetermined sense, than any other output transducer when said successive elements have a particular phase relation, different for each output transducer; and

D. comparator means connected with said output transducers to indicate which output transducer has said larger output signal.

3,980,963
STABILIZED TRANSISTOR AMPLIFIER

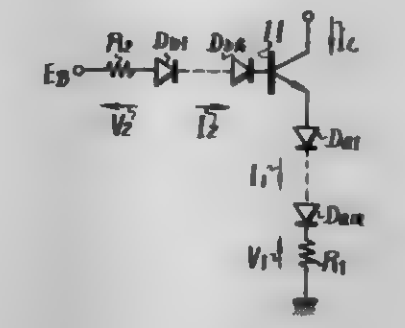
Toshitada Doi, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sept. 23, 1974, Ser. No. 508,338

Claims priority, application Japan, Sept. 27, 1973, 48-108761

Int. Cl.² H03F *3/04*

U.S. Cl. 330—23 **9 Claims**



6. A stabilized amplifier comprising:

A. a transistor having base, emitter, and collector electrodes;

B. first means comprising a resistor connecting said emitter to a reference voltage terminal, said resistor having a temperature co-efficient K_E;

C. an input voltage source having a voltage E_B and an increment of ΔE_B per degree of temperature at a pre-selected temperature, said transistor having a base-emitter voltage drop V_{BE} that changes at an increment ΔV_{BE} per degree of temperature change at said pre-selected temperature; and

D. second means connecting said base to said input voltage source, where

$\alpha V_{18} + \gamma = 1$,

$\alpha = - K_E/\Delta V_{BE}$,

$\gamma = \Delta E_B/\Delta V_{BE}$, and

V_{18} is the voltage drop across the resistor at said pre-selected temperature.

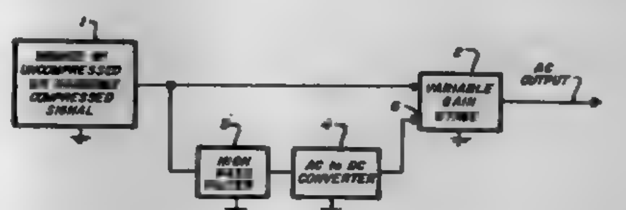
3,980,964
NOISE REDUCTION CIRCUIT

Robert M. Grodinsky, 4448 W. Howard St., Skokie, Ill. 60076

Continuation-in-part of Ser. No. 471,194, May 20, 1974, abandoned. This application June 20, 1975, Ser. No. 588,604

Int. Cl.² H03G *3/30*

U.S. Cl. 330—29 **18 Claims**



1. A noise reduction and expander circuit for uncompressed and randomly compressed audio signals encompassing the low, middle and upper frequency range, said circuit comprising: main audio signal input terminal means at which said audio signals are applied, audio signal level varying means forming part of an expander circuit and having input terminal means coupled to said main audio signal input terminal means, control terminal means and output terminal means, the signal level varying means providing an output signal level at said output terminal means which signal varies in response to the

magnitude of a control signal fed to said control terminal means, said signal level varying means being substantially non-frequency selective over the useful audio range for all operative levels of the control signal fed thereof, and control means for generating and feeding a control signal to said control terminal means of said signal level varying means and including means including filter means coupled to a source of said audio signal encompassing said low, middle and upper frequencies for passing the higher audio signal frequencies above said low frequencies which higher frequencies contain appreciable energy content of the harmonics of the audio signal and for eliminating or substantially reducing the low frequencies fed thereto and effecting the coupling to said control terminal means of a control signal resulting from the signal passed by said filter means, which control signal expands the audio signal fed to the input terminal means of said signal level varying means in proportion to the amplitude of the resultant signal passed by said filter means.

3,980,965

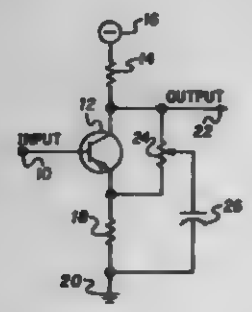
FREQUENCY RESPONSE CONTROL CIRCUIT APPARATUS

Vernon R. Cunningham, Melissa, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 16, 1975, Ser. No. 578,250

Int. Cl.² H03F *3/04*

U.S. Cl. 330—31 **8 Claims**



8. Apparatus for linearly controlling and varying the low frequency response of a transistor amplifier stage having the signal output derived from the collector thereof consisting, in combination:

means for inductively coupling a first terminal means to ground through one portion of a variable resistor and for inductively coupling a second terminal means to ground through the remaining portion of said variable resistor; and

means for connecting said first and second terminal means to said emitter and collector respectively of said transistor amplifier stage wherein the linear control circuit is not resonant over the frequency response control range.

3,980,966

CIRCUIT ARRANGEMENT FOR THE RECEIVING OF BINARY DIRECT CURRENT SIGNALS WHICH ARE TRANSMITTED WITH LOW TRANSMISSION VOLTAGE OVER GALVANICALLY CONNECTED LINES

Reiner Gieck, Munich, and Karl-Georg Dieter, Konigsdorf Zellwies, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 76,429, Sept. 29, 1970, abandoned. This application Mar. 5, 1973, Ser. No. 338,025

Int. Cl.² H03F *3/45*

U.S. Cl. 330—69 **4 Claims**

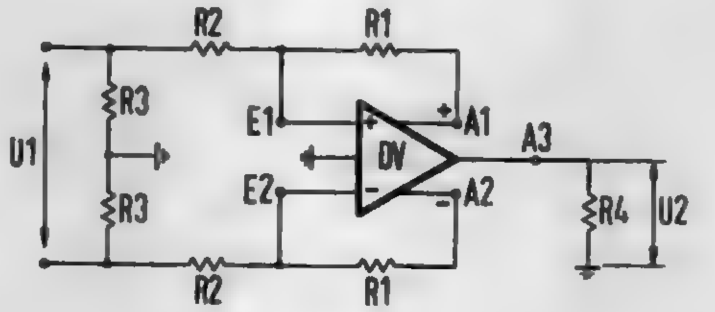
1. A circuit arrangement for receiving low voltage level direct current binary data signals having interfereing voltages superimposed thereon and for regenerating therefrom pulse-shaped binary data signals comprising:

input terminals,

operational amplifier means having first and second inputs and first and second outputs which deliver, respectively, amplified versions of signals coupled to said first and second inputs and including a third output for delivering a binary output signal, relative to a reference value, having a value proportional to the difference between the values of signals applied to said first and second inputs,

first feedback means including a series connected first impedance connecting said first output to said first input of said operational amplifier means for providing positive feedback,

second feedback means including a series connected second impedance connecting said second output to said second input of said operational amplifier means for providing positive feedback and



first and second voltage dividers each comprising, respectively, third and fourth impedances, said first voltage divider having said third impedance therein connected to a first of said input terminals and to said reference value and having said fourth impedance therein connected to said first of said input terminals and to said first input of said operational amplifier means, said second voltage divider having said third impedance therein connected to a second of said input terminals and to said reference value and having said fourth impedance therein connected to said second of said input terminals and to said second input of said operational amplifier means.

3,980,967

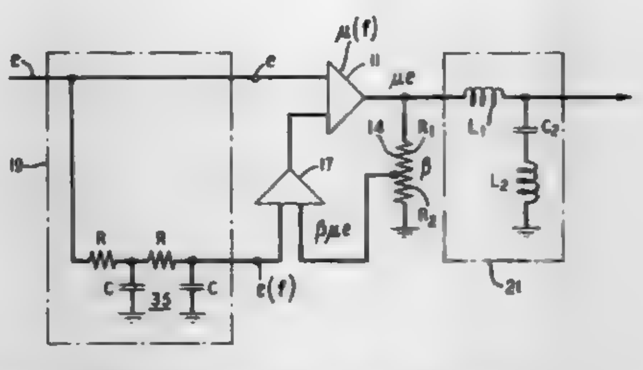
DIFFERENTIAL FEEDBACK AMPLIFIER WITH FREQUENCY-SHAPED REFERENCE SIGNAL

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 14, 1975, Ser. No. 558,202

Int. Cl.² H03F *1/28*

U.S. Cl. 330—149 **5 Claims**



1. A differential feedback amplifier comprising

a principal amplifier having a given gain-vs-frequency characteristic which varies as a function of frequency;

means for comparing a portion of the output signal derived from said principal amplifier with a reference signal and for forming a difference signal;

means for amplifying and injecting said difference signal into the input end of said principal amplifier;

characterized in that:

the frequency characteristic of said reference signal follows essentially the gain-vs-frequency characteristic of said principal amplifier.

3,980,968

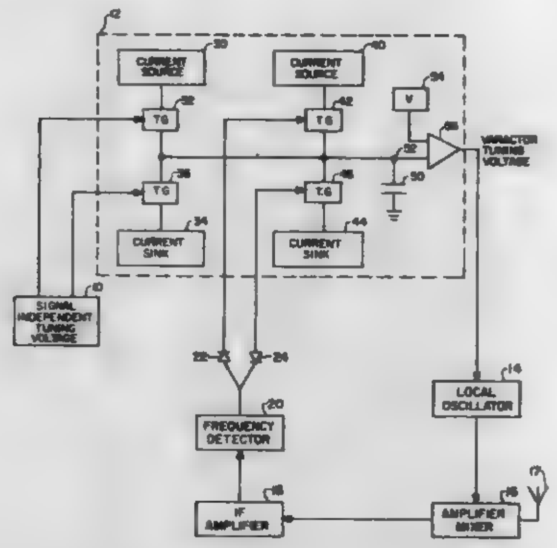
NON-PROPORTIONATE AFC SYSTEM

John Y. Ma, Glenview, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Jan. 2, 1975, Ser. No. 538,222

Int. Cl.² H03B *3/04*

U.S. Cl. 331—17 **7 Claims**



1. In a television tuning system including a variable frequency local oscillator, means determining the frequency of said local oscillator independently of broadcast television signals, mixing means mixing the local oscillator signal with a received television signal to produce an IF signal, an IF signal amplifier and tuning control means for said local oscillator, received signal tracking means comprising:

detector means coupled between said IF amplifier and said tuning control means for developing an error signal as a function of the frequency difference between said IF signal and a reference frequency, and means in said tuning control means for producing a constant magnitude correction signal for said local oscillator in response to said error signal.

3,980,969

PHASE-LOCKING LOOP WITH VARIABLE BANDWIDTH FILTER

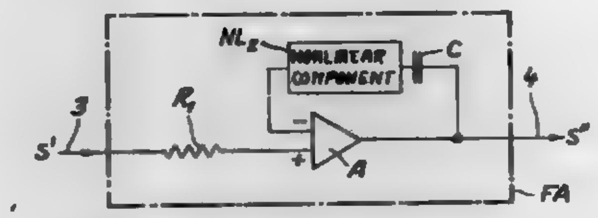
Renato Stengel, Milan, Italy, assignor to CSELT - Centro Studi e Laboratori Telecommunicazioni SpA, Torino, Italy

Filed Apr. 14, 1975, Ser. No. 567,529

Claims priority, application Italy, Apr. 12, 1974, 68173/74

Int. Cl.² H03B *3/04*

U.S. Cl. 331—17 **2 Claims**



1. In a signaling system including a transmission channel carrying an incoming wave of predetermined frequency, a phase comparator provided with a first and a second input, said first input being connected to said channel for receiving said incoming wave therefrom, an adjustable local oscillator delivering to said second input a matching oscillation of substantially the same frequency as said incoming wave, and circuit means including a low-pass filter connected in a signal path between an output of said phase comparator and a control input of said oscillator for applying to the latter a control voltage varying with a phase difference between said incoming wave and said matching oscillation to modify the frequency of said matching oscillation in a sense tending to reduce said phase difference, said filter comprising an operational amplifier provided with a capacitive feedback circuit, the improvement wherein said circuit means includes nonlinear impedance means in said feedback circuit rising in magnitude with increasing values of said control voltage for enlarging the effective bandwidth of said circuit means during an acquisition period in comparison with steady-state operation by lowering the effective series resistance of said signal path in the presence of higher values of said control voltage.

3,980,970

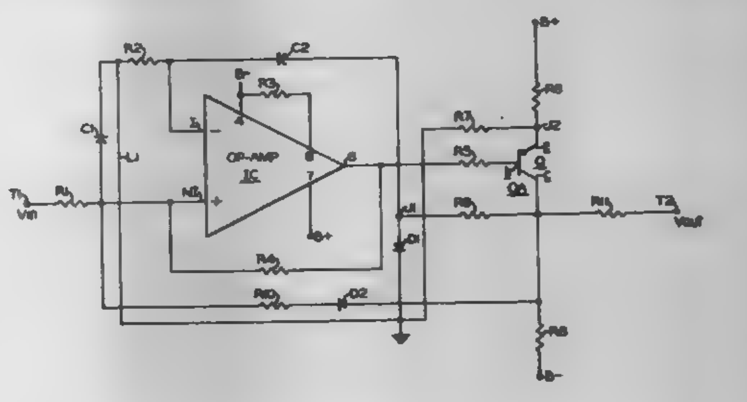
VOLTAGE CONTROLLED OSCILLATOR CIRCUIT

Reed H. Grundy, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Feb. 10, 1975, Ser. No. 548,424

Int. Cl.² H03K *3/26*

U.S. Cl. 331—108 D **10 Claims**



1. A voltage controlled oscillator circuit comprising, an operational amplifier having a first and a second input terminal and an output terminal, a first resistor connected between said first input terminal and a reference potential, a current limiting resistor connected between said second input terminal and an input signal voltage, a charging capacitor connected between one end of said first resistor and said second input terminal, a series connected diode and capacitor connected between the other end of said first resistor and the reference potential, a feedback resistor connected between said output terminal and said second input terminal, a solid state output amplifier having an input and an output circuit, said output terminal coupled to said input circuit of said solid state output amplifier, said output circuit resistively coupled to the junction of said series connected diode and capacitor, and a series connected diode and resistor connected between said output circuit of said solid state output amplifier and said charging capacitor, whereby a dead band zone occurs until the input signal voltage on said second input terminal reaches a predetermined value for toggling said operational amplifier and for producing output signals having a frequency proportional to the amplitude of the input signal voltage.

3,980,971

MODULATOR FOR HYBRID MODULATION BY MORE AND LESS SIGNIFICANT DIGITAL SIGNALS IN SUCCESSION IN EACH CLOCK INTERVAL AND COUNTERPART DEMODULATOR

Yoichi Sato, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Aug. 27, 1974, Ser. No. 500,905

Claims priority, application Japan, Sept. 5, 1973, 48-99933

Int. Cl.² H03C *1/02*

U.S. Cl. 332—10 **3 Claims**

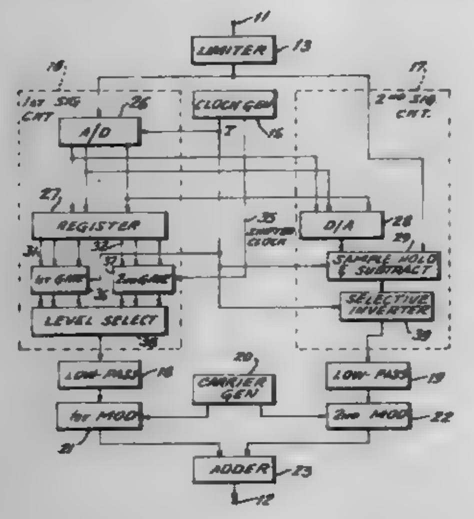
1. A modulator for quadrature amplitude modulating a carrier signal having in-phase and quadrature-phase components with an input signal, comprising:

a source of clock pulses defining a succession of equal clock intervals, digital signal deriving means responsive to said clock pulses for sampling and quantizing said input signal into a digital signal having a plurality of bits,

error signal deriving means responsive to said clock pulses and said input and digital signals for deriving an error signal representative of a quantization error of said digital signal in an associated clock interval,

first means for separating said digital signal into more and less significant signals, said more significant signal comprising a predetermined number of the more significant bits of said plurality of bits, said less significant signal comprising the remaining less significant bits of said plurality of bits,

second means responsive to said clock pulses for deriving a first signal by arranging said more and less significant signals in time succession in each of said clock intervals,



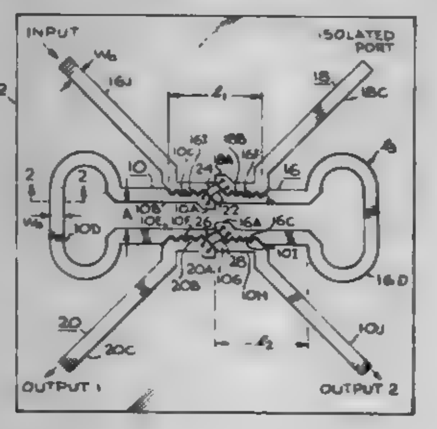
third means responsive to said clock pulses for deriving a second signal by inverting said error signal in a predetermined half of each of said clock intervals and by arranging said error signal and the inverted said error signal in time succession in each said clock interval, and

means for simultaneously amplitude modulating each of said in-phase and quadrature-phase components of said carrier signal by one of said first and second signals to generate a quadrature amplitude modulated output signal.

3,980,972
PROXIMITY COUPLER

Allen F. Podell, Los Altos, Calif.; Leo Young, Bethesda, Md.; Arthur Karp, Palo Alto, and Donald R. Chambers, Menlo Park, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed July 14, 1975, Ser. No. 595,396
Int. Cl.² H01P *5/18*
U.S. Cl. 333—10 5 Claims

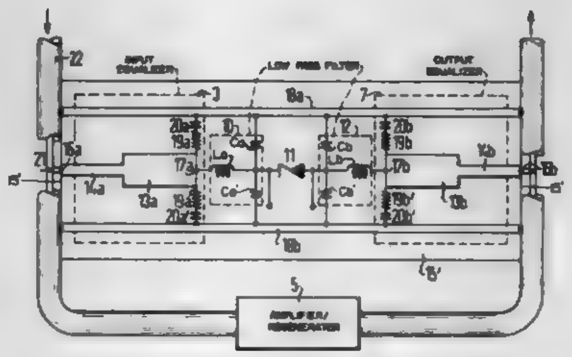


1. A microwave frequency coupler circuit comprising
a dielectric substrate,
a plurality of conductor means deposited on one surface of said substrate in the form of the cross section of a hollow dumbbell intersected at its center portion by an X,
said plurality of conductor means including a first and a second conductor respectively forming two oppositely extending arms of said X and left and right halves of said dumbbell,
said first and second conductors coextending spaced apart for a predetermined distance at said center portion for establishing a first coupling region therebetween, and
said plurality of conductor means including a third and fourth conductor respectively forming the remaining two oppositely extending arms of said X and respectively being coextensive with and being spaced apart from said respective first and second conductors at said central portion over a predetermined distance where said first and second conductors are not coextensive, for establishing a second coupling region therebetween.

3,980,973
LINE DEVICE FOR TRANSMISSION LINES HAVING COAXIAL CABLES FOR THE TRANSMISSION OF DIGITAL OR ANALOG SIGNALS

Rudolf P. Hecken, Andover, Mass., assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 5, 1975, Ser. No. 574,649
Claims priority, application Germany, May 6, 1974, 2421784
Int. Cl.² H04B *3/14;* H03H *7/14*
U.S. Cl. 333—28 R 27 Claims

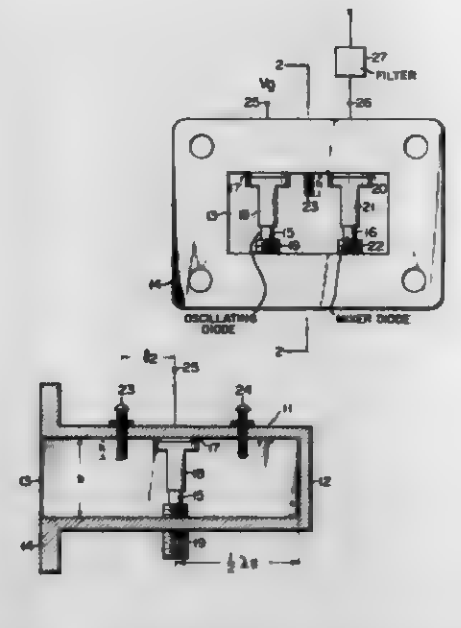


1. A line for transmission paths having coaxial cables for the transmission of digital signals, comprising:
an input equalizer, in the form of a line section, connected to the transmission path;
a first circuit means connected to said input equalizer and dividing the transmission path into a communications transmission path and a long distance current supply path;
a regenerator in said communications transmission path;
a series circuit in said long distance current supply path, said series circuit including a first low pass filter, an element producing a voltage drop for the current supply of said regenerator and a second low pass filter;
a second circuit means rejoining said communications transmission path and said long distance current supply path; and
an output equalizer, in the form of a line section, connecting said second circuit means to said transmission path, each of said line sections including at least two sub-sections having different wave resistances and at least one of said sub-sections having a preset wave resistance, and a terminating resistance for each of said line sections.

3,980,974
COMPACT, WAVEGUIDE-TYPE MICROWAVE TRANSMIT-RECEIVE APPARATUS

Sadamu Yamamoto, Yokohama; Michio Kashiwagi, Tokyo; Koichi Nishio, Sagamihara, and Kunio Akada, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 31, 1975, Ser. No. 563,827
Claims priority, application Japan, Apr. 1, 1974, 49-35616
Int. Cl.² H01P *1/20;* G01S *9/44*
U.S. Cl. 333—33 11 Claims

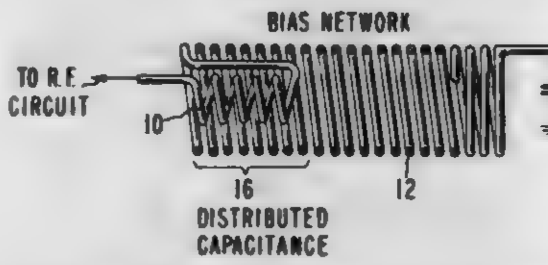


1. A microwave transmitting and receiving apparatus comprising a rectangular waveguide having one end closed by a short-circuiting plate and having top, bottom and side walls and an oscillating diode and a mixer diode juxtaposed with each other at a position within said waveguide which is spaced from said short-circuiting plate by a distance equal to an integral multiple of half the wavelength of a microwave within said waveguide, said mixer diode being mounted at a position deviated from the center of the top wall (H plane) of said rectangular waveguide toward the side wall (E plane) of said rectangular waveguide.

3,980,975
BROADBAND MICROWAVE BIAS NETWORK

Thomas Gerald Maxon, Jr., Georgetown, and James Francis Reynolds, Beverly, both of Mass., assignors to Varian Associates, Palo Alto, Calif.

Filed Sept. 8, 1975, Ser. No. 611,584
Int. Cl.² H03H *7/04*
U.S. Cl. 333—70 S 10 Claims

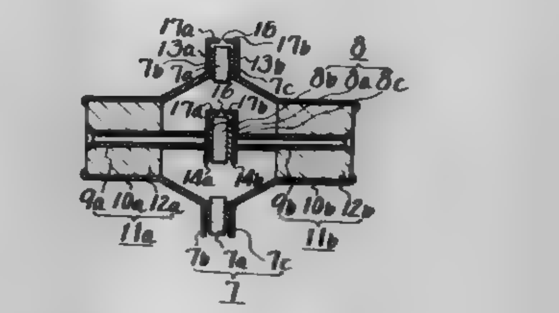


1. A broadband microwave bias network comprising a relatively large helical inductor, a relatively small helical inductor positioned within said large inductor so as to create a distributed capacitance between said inductors, and means connecting said inductors in series, said distributed capacitance and inductors forming a filter network for applying low frequency signals to a microwave circuit.

3,980,976
COAXIAL CONNECTOR

Motomu Tadama, Yokohama, and Yasunori Takahashi, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 21, 1975, Ser. No. 560,876
Claims priority, application Japan, Mar. 28, 1974, 49-35800[U]
Int. Cl.² H03H *7/06, 7/14;* H01R *13/66;* H01T *1/00*
U.S. Cl. 333—73 C 11 Claims



6. A coaxial connector, comprising:
a first plate of dielectric material having first electrodes on opposite surfaces thereof;
a circular plate of dielectric material having second electrodes on opposite surfaces thereof, said circular plate being coaxial with said first plate;
a first coaxial receptacle having an inner conductor in contact, at one of its ends, with a first electrode on one surface of said first plate, and an outer conductor in contact, at one of its ends, with a second electrode on one surface of said circular plate, said outer conductor being coaxial with said inner conductor; and
a second coaxial receptacle having an inner conductor in contact, at one of its ends, with a first electrode on the other surface of said first plate, and an outer conductor in contact, at one of its ends, with a second electrode on the other surface of said circular plate, said outer conductor of said second coaxial receptacle being coaxial with said inner conductor thereof; and the other end of each conductor of said first and second coaxial receptacles being adapted for electrical connection to further electrical components.

3,980,977
SPIRAL OPERATING MECHANISM FOR HIGH VOLTAGE SWITCH

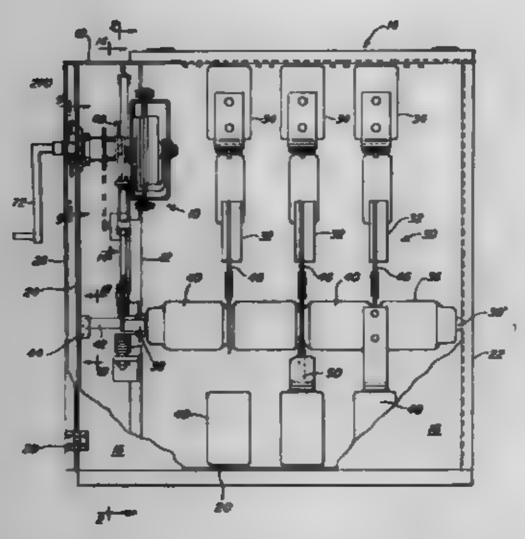
David M. Evans, Palatine, Ill., assignor to S & C Electric Company, Chicago, Ill.

Filed Apr. 1, 1975, Ser. No. 563,964
Int. Cl.² H01H *3/00, 9/00, 51/00*
U.S. Cl. 335—76 20 Claims

1. An improved mechanism for operating a switch from opened to closed, and from closed to opened positions comprising:
a pivotably mounted toggle lever operably connected to the switch;
a pivotably mounted drive lever pivoted about the same axis as said toggle lever;
spring means coaxial with an interconnecting said toggle and said drive levers;
first main latch means for releasably holding said toggle lever in the switch-closed position;
second main latch means for releasably holding said toggle lever in the switch-opened position;
biasing means connected to said drive lever for pivoting said drive lever in a first direction to bias said spring means for switch opening and in a second direction to bias said spring means for switch closing;
a first stop latch means for engaging and holding said drive lever in a spring biased position for switch opening when

said biasing means pivots said drive lever in the first direction;

a second stop latch means for engaging and holding said drive lever in a spring-biased position for switch closing when said biasing means pivots said drive lever in the second direction;



first operator means for causing said first main latch means to release said toggle lever so that said toggle lever will pivot under the biasing of said spring means to open the switch;

second operator means for causing said second latch means to release said toggle lever so that said toggle lever will pivot under the biasing of said spring means to close the switch.

3,980,978
ELECTROMAGNETIC RELAY

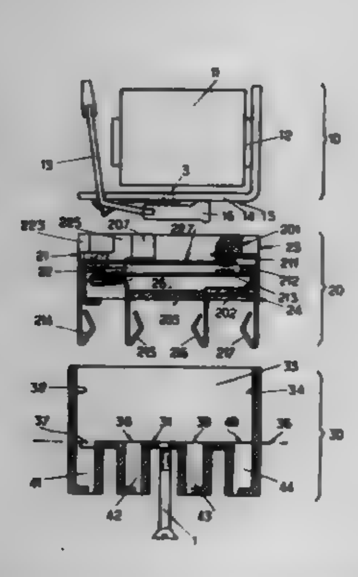
Guy Lacan, Carrieres-sous-Bois, France, assignor to La Telemecanique Electrique, France

Filed May 13, 1975, Ser. No. 577,126

Claims priority, application France, June 25, 1974, 74.22016

Int. Cl.² H01H *63/02*

U.S. Cl. 335—132 6 Claims



1. A relay comprising a base for receiving the connecting terminals, an electromagnetic motor for actuating the contacts and means for holding the fixed and movable contacts, whereby the said means are positioned and held in place between the base and the motor by means of a fixing member, wherein the means comprise a set of insulated supports each integral with a set of flexible blades which carry the fixed or movable contacts, wherein these supports are positioned in recesses of an insulated arcing box which has the same number of switching chambers as there are cooperating contacts and wherein these supports are maintained in their particular recess by walls fixed respectively to the electromagnetic motor and the base.

3,980,979
MAGNETICALLY OPERATED SWITCH UNIT

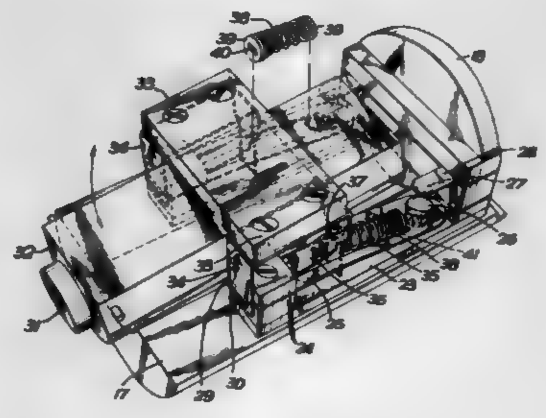
Paul E. Prosser, Hitchin, and Alan F. J. Hookway, Slough, both of England, assignors to Bestobell Mobrey Limited, Slough, England

Filed Mar. 21, 1975, Ser. No. 560,709

Claims priority, application United Kingdom, Mar. 25, 1974, 13127/74

Int. Cl.² H01H *5/00*

U.S. Cl. 335—188 7 Claims



1. A magnetically operated electrical switch of the kind comprising of a magnetic actuator, a switch magnet which is pivotally mounted and adapted to rock to and fro with a snap action under the influence of said magnetic actuator, at least one switch contact which is moved between two end positions relative to at least one complementary switch contact upon rocking of said magnet, wherein said magnet is a bar magnet fixed in a carrier between two fixed supports by means of two mounting portions of said carrier lying one on each side of said magnet and cooperating with said supports to provide two coaxial fulcra about which said magnet is pivoted, with the axis of said fulcra extending transversely to said magnet, two flexible leaves extend one on each side of said magnet from said support and carry at the free ends thereof at least one of said movable contacts, and at least one spring acts between said magnet carrier and said leaves adjacent to the other ends thereof whereby said magnet carrier and said at least one spring act as at least one over center spring toggle to cause said at least one movable contact to snap over between the end positions thereof as said magnet rocks to and fro.

3,980,980
SWITCHING DEVICE

Dov Zioni, and Levi Halperin, both of Jerusalem, Israel, assignors to Shaare Zedek Hospital, Jerusalem, Israel

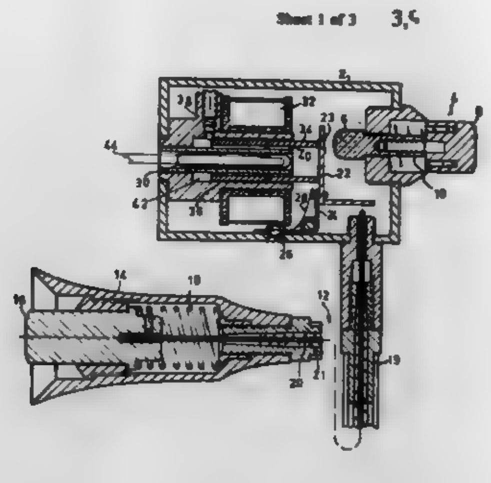
Filed July 11, 1974, Ser. No. 487,770

Claims priority, application Israel, Aug. 22, 1973, 43049

Int. Cl.² H01H *36/00*

U.S. Cl. 335—205 16 Claims

1. An indirectly activated electrical switching device comprising manipulating member, an impulsing means, a circuit completion means adapted to be activated by said impulsing means and a displaceable shielding means shielding said circuit completion means from the impulses produced by said impulsing means, said manipulating member being moved from an initial position to a displaced position as a result of manual manipulation, and means to return said member automatically from its displaced position to its initial position, the arrangement of said member and said shielding means being such that upon manipulation of said member the shielding means is displaced and the circuit completion means is not actuated, and upon the automatic return of said manipulating member said circuit completion means is actuated to cause the activation of an external system.



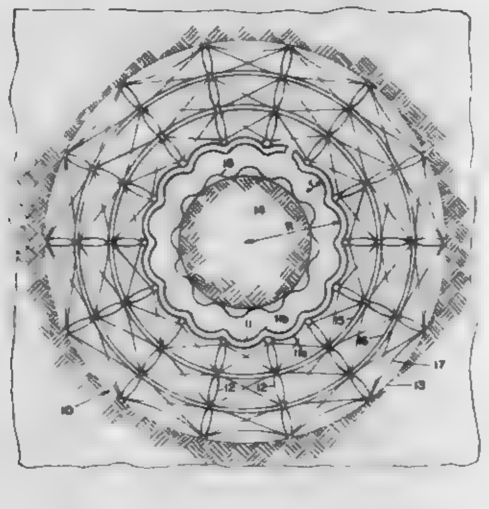
3,980,981
SUPPORT STRUCTURE FOR RIPPLED SUPERCONDUCTING MAGNET

Roger W. Boom; Harold A. Peterson, and Warren C. Young, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Aug. 5, 1974, Ser. No. 494,712

Int. Cl.² H01F *7/22*

U.S. Cl. 335—216 6 Claims



1. An electrical magnet, comprising:

a. at least one turn of composite conductor having outwardly bowed ripples therein and inner portions between said ripples, each of said ripples lying substantially in a plane normal to the net magnetic field experienced by said ripples when current is flowing in said composite conductor, said composite conductor being formed of a superconducting material and a normal conducting material;

b. a support wall formed of structural material which substantially surrounds the outer periphery of said turn of composite conductor in spaced relation thereto; and

c. a plurality of support members composed of a low thermal conductivity material, at least one support member attached to each of said inner portions of said composite conductor, said support members extending from said composite conductor to attachment with said support wall.

3,980,982
METHOD OF ASSEMBLY OF THE SUPPORT FOR THE MAGNETIC CORE OF A SHELL-TYPE, FORM-FIT TRANSFORMER

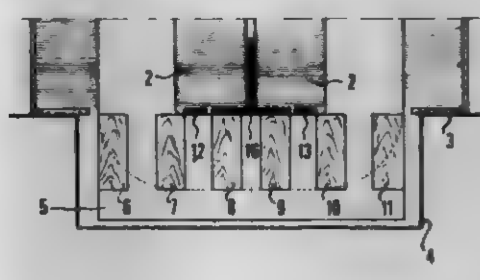
Roger Crozet, Tassin la Demi Lune, France, assignor to Jeumont-Schneider, Puteaux, France

Filed Mar. 31, 1975, Ser. No. 563,828

Claims priority, application France, Mar. 29, 1974, 74.11089

Int. Cl.² H01F *27/06*

U.S. Cl. 336—92 5 Claims



5. A transformer comprising:

a. a housing base having at least a pair of edges,

b. a winding in said base,

c. a plurality of parallel bars secured to a pair of opposite edges of said base,

d. a generally T-shaped beam positioned on said base between said bars,

e. a plurality of wedge means in said base below said bars and beam for tensioning said bars,

f. a plurality of iron sheets being stacked on said beam, bar and edges.

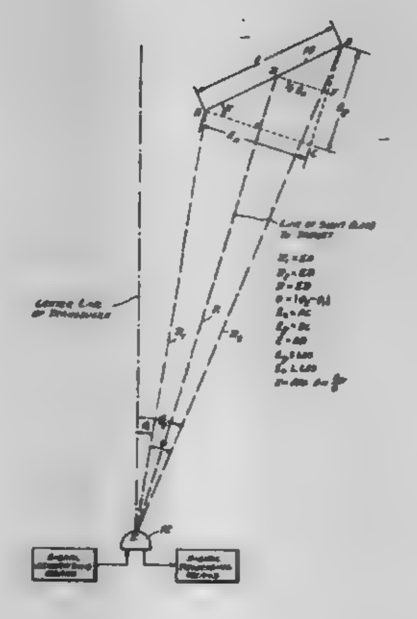
3,980,983
MEASUREMENT AND PRESENTATION OF ACOUSTIC TARGET LENGTH AND ASPECT

James V. Shannon, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 10, 1969, Ser. No. 857,636

Int. Cl.² G01S 9/66

U.S. Cl. 340—3 R 10 Claims



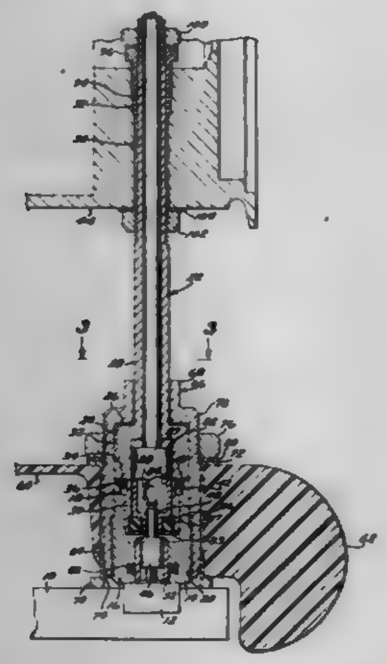
1. A method for measuring the length of a longitudinal object where said object is irradiated by a short pulse of energy from a transducer comprising the steps of:

receiving an echo pulse from said object;
utilizing said echo pulse to obtain the values of the nearest-point range (R_1) of said object, the farthest-point range (R_2), the angle from the center line of the transducer to the nearest-range line (ϕ_1), and the angle from the center line of the farthest-range line (ϕ_2);
feeding these values to a computer; and
utilizing said computer to operate upon these variables (R_1, R_2, ϕ_1, and ϕ_2) and obtain the angle between the nearest and farthest range lines (ϕ), the average range (R), the projected length of the object on the line of sight (l_y), the projected length of the object on the normal to the line of sight (l_x), and the length of the object (l).

3,980,984
UNDERWATER CONNECTOR

Robert M. Bridges, Northridge, Calif., assignor to The Bendix Corporation, North Hollywood, Calif.

Filed Sept. 18, 1972, Ser. No. 290,203
Int. Cl.² H04B *13/00*
U.S. Cl. 340—8 R **5 Claims**

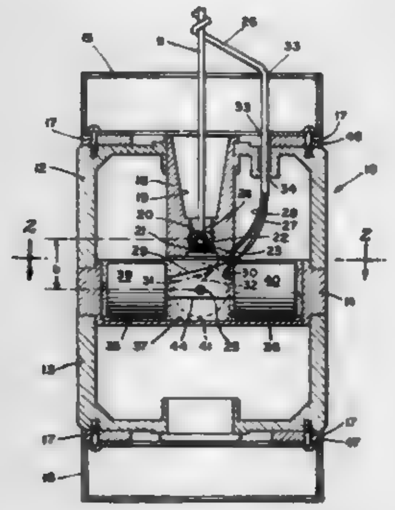


1. In a submersible sonar apparatus of the type in which a central housing is surrounded by a baffle which is spaced from the housing and which carries a number of radially spaced sonic transducer devices on its outer surface, an improved connector by which the sonic transducer elements are electrically connected to the interior of the housing and by which the sonic transducer devices, baffle and housing are mechanically connected, the improved connector comprising:
a first cup-shaped mating element having a stem in the form of a tube extending axially from the exterior of its bottom wall;
a second cup-shaped mating element opening toward the opening of said first element having its bottom wall capable of fixed connection to a sonic transducer device;
the side wall of said second element being threaded in the region adjacent its bottom wall;
a coupler having cup-shaped threads on its side wall arranged to threadedly engage the threads of said second element, and a bottom wall having an axial opening;
the first element being assembled with the coupler such that the stem extends from the cup-shaped portion of said first element through the opening in the bottom wall of the coupler from the interior of the coupler;
a sealing annulus encompassing one of said first and second elements;
said elements, said annulus and said coupler having dimensions such that the annulus is compressed between the elements when the coupler is threadedly engaged with said second element with its bottom wall in compression with the bottom wall of said first element, the second element and the coupler having outer dimensions, when assembled, to extend through the wall of said baffle; and
fastening means carried by the assembly of said elements and coupler for clamping the baffle into engagement with the sonic transducer and for fixing the stem to said housing;
one of said cup-shaped mating members being formed such that the forward section of its side wall has reduced diameter to fit slidably within the side wall of the other of said cup-shaped mating members and such that a mating shoulder is formed at the junction of the forward and rearward sections of its side wall which mating shoulder engages with a cooperating peripheral shoulder of the other mating member when they are assembled together;
said mating members being formed such that a first annular cavity is formed between them upon their being assembled, said sealing annulus being disposed in said first cavity.

3,980,985
SUSPENSION SYSTEM FOR DIRECTIONAL HYDROPHONES

John R. Dale, Willow Grove; William F. Brenner, Chalfont; James F. McEachern, Hatboro, all of Pa.; Walter L. Leupold, Hadden Heights, N.J., and Edward A. McDemus, Ambler, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 1, 1974, Ser. No. 458,927
Int. Cl.² H04B *13/00*
U.S. Cl. 340—8 S **6 Claims**



1. Suspension apparatus comprising:
a hydrophone having a cavity extending from the outer surface thereof to the center of rotation, wherein the center of rotation is determined with respect to the center of gravity of said hydrophone according to the frequency equation for a compound pendulum; and
suspension means extending freely into said cavity and attached to said hydrophone at the center of rotation for oscillation of said hydrophone thereabout at a desired predetermined frequency.

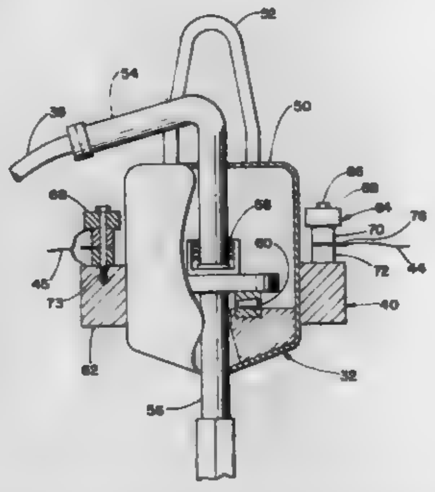
3,980,986
OIL WELL SURVEY TOOL

Charles Baird, 77 Olive St., Oak View, Calif. 93022, and William B. Plum, 611 Colina Vista, Ventura, Calif. 93003

Filed June 13, 1974, Ser. No. 478,907
Int. Cl.² G01V *1/00;* **E21B** *47/02*
U.S. Cl. 340—18 R **1 Claim**

1. An oil well survey tool comprising:
a. a drill stem having one end above ground and the other end terminating in a drill bit,
b. a swivel terminating the upper end of said drill stem,

c. a heavy metal collar secured to the nonrotating body of said swivel,
d. a plurality of driving transducers secured to said collar, said transducers comprising:
aa. first and second generally cyindrical piezoelectric elements metallized on the flat end surfaces,
bb. a bolt securing said first and second piezoelectric elements in end to end relationship to said collar,
cc. and inertial slug secured by said bolt at the end of said piezoelectric elements away from said collar,



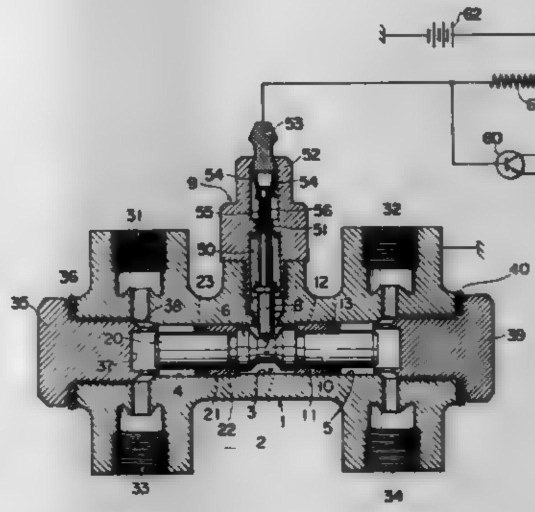
dd. a first power supply lead connected to the juncture of the metallized surfaces of said piezoelectric elements, and
ee. a second power supply lead connected in common to the metallized end surface adjacent said collar and to the metallized end surface adjacent said inertial slug,
e. a plurality of transducers disposed on the surface around said drill stem and adapted to pick up signals through the earth transmitted by said drill bit from the vertical motion imparted by said driving means, and
f. display means driven by the output of said transducers effective to present information on depth and position of said drill bit.

3,980,987
BRAKE FAILURE INDICATOR

Noriakira Ishigami, Chiryu; Asao Kozakai, Okazaki; Masakazu Ishikawa, Toyota, and Takaaki Ota, Okazaki, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Dec. 2, 1974, Ser. No. 528,881
Claims priority, application Japan, Dec. 5, 1973, 48-141373[U]
Int. Cl.² H01H *35/38*
U.S. Cl. 340—52 C **5 Claims**

1. In a brake system for a vehicle having two sets of brake, the improvement comprising
a failure indicating means in response to a failure of either of the sets of brakes, said failure indicating means comprising
a fluid pressure differential-responsive means normally being in a first position in response to pressures in both sets of brakes, said first position being approximately normal and being shifted to a second position in response to fluid pressure differential between the two sets of brakes,
a displaceable means operatively connected to said pressure differential responsive means, and
an electrically operable signal means associated with and controlled by said displaceable means,
said electrically operable signal means comprising
a normally active current circuit,
a first switching member in the normally active current circuit operatively connected to said displaceable means,
a second switching member responsive to the potential of the normally active current circuit,
a signal device, and
an operating current-supplying circuit for energizing the signal device,
said second switching member forming the operating current-supplying circuit in order thereby to indicate occurrence of such pressure differential in the pressure differential responsive means;

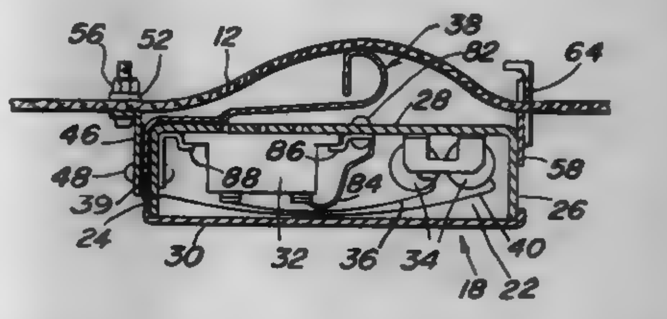


said displaceable means comprising a plunger having a conductor portion and an electrically insulating portion to form the first switching member, said conductor portion forming the normally active circuit while said insulating portion blocking the normally active current circuit in dependency upon displacement of the displaceable means.

3,980,988
ALARM SYSTEM FOR VEHICLE SHOULDER HARNESS

Anthony M. Spizzo, 1824 S. 48th Court, Cicero, Ill. 60650

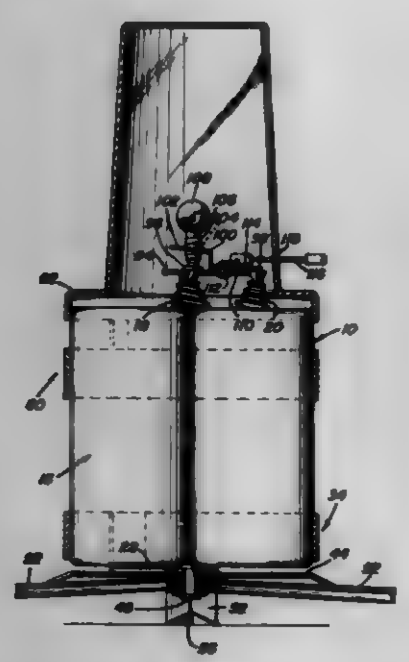
Filed Nov. 27, 1974, Ser. No. 527,709
Int. Cl.² B60R *21/10;* **G08B** *21/00*
U.S. Cl. 340—52 E **2 Claims**



1. An alarm system secured to a safety shoulder harness for drivers of vehicles comprising a web having two ends and latching means for the ends of said web in combination with a housing having a top wall, side and end walls, an alarm affixed to said top wall interiorally of said housing, a source of direct current, a movable switch lever secured at one end to said top wall exteriorally of said housing and electrically connected to said source and having a free end, a stationary contact on said top wall cooperatively associated with said switch lever and electrically connected to said alarm, means on one end wall of said housing for removably securing said housing to said web and guide means on the other end wall of said housing forming a guideway for said web, said switch lever canted upwardly towards said guide means and the free end of the lever bent upwardly and rearwardly to form a loop, said web between said securing means and said guide means being loosely placed over said switch lever, whereby said web lies aove said top wall, and when said web is tightened, it will

cause the switch lever to engage the stationary contact to set off the alarm.

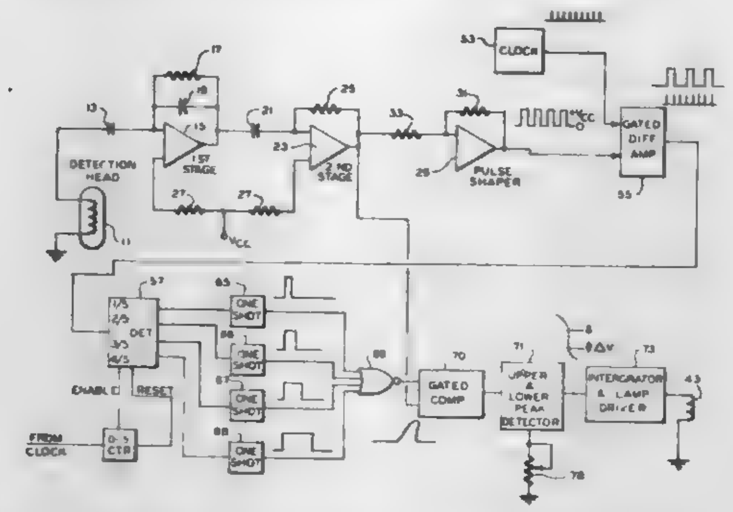
3,980,989
SIGNAL LIGHT AND BASE
Otto J. Blahm, 118 Adolph St., Wausau, Wis. 54401
Filed July 10, 1974, Ser. No. 487,253
Int. Cl.² B60Q *7/00*
U.S. Cl. 340—84 **6 Claims**



1. A signal lamp structure including an upstanding storage battery whose upper end includes a pair of horizontally spaced apart upwardly and outwardly projecting contact terminal defining resilient coil springs, a terminal mount assembly comprising a generally horizontal body of dielectric material including a pair of spaced contacts secured through said body, said contacts including lower portions projecting below said body and diverging downwardly away from each other, said lower ends being telescoped downwardly into the upper ends of said coil springs with said upper ends being at least slightly biased away from each other and retained in position by engagement of said lower ends therewith, whereby said body is releasably supported from said coil springs, said body including electric bulb socket defining means and an electric bulb supported therefrom including first and second terminal portions, said spaced contacts being electrically connected to said first and second terminal portions.

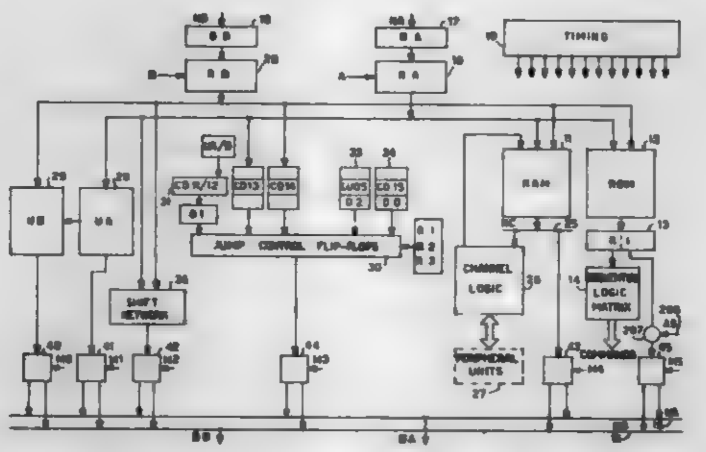
3,980,990
FERROMAGNETIC CURRENCY VALIDATOR
Arthur A. Berube, 11 Hudson St., Methuen, Mass. 01844
Filed Sept. 12, 1974, Ser. No. 505,260
Int. Cl.² H04Q *3/00*
U.S. Cl. 340—149 R **8 Claims**

1. A currency validator comprising:
a. means to magnetize the magnetic ink on a bill to be validated;
b. detection means for detecting the level of magnetization and providing an output signal proportional thereto;
c. means to amplify said output signal, said amplification means being capacitively coupled to said detection means;
d. means for pulse shaping having its input coupled to the output of said means to amplify:
e. means for determining the rate of relative movement between the bill and said detection means having an input coupled to said pulse shaping means;
f. means having an input coupled to the output of said means for determining for providing a pulse output of length proportional to the time required to traverse a magnetic line on a bill, said means also being adapted to delay said output such that it occurs at the time when said detection means will be passing over another line based on the output from said means for determining;
g. first gating means having as in enabling input the output of said means providing a pulse output and as a second input the output of said means to amplify;



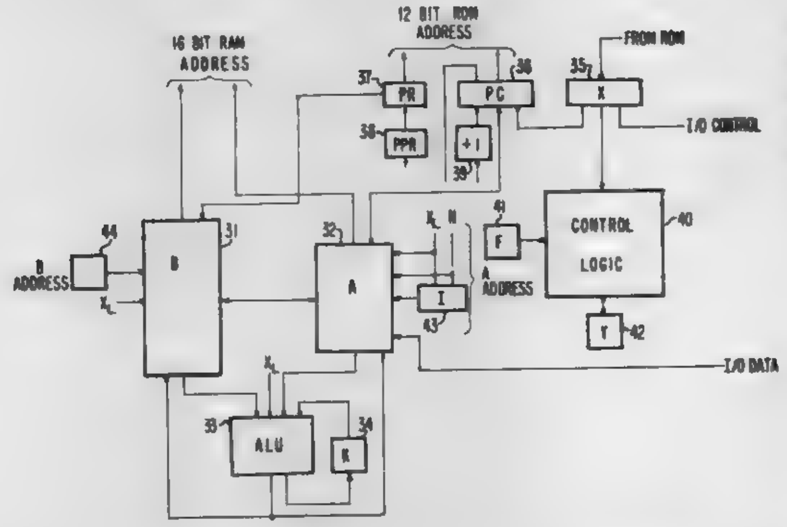
h. peak detecting means having as an input the output of said first gating means and providing an output;
i. integrating means coupled to the output of said peak detecting means;
j. an indicator lamp;
k. means having an input from said integrating means coupled to drive said indicator lamp.

3,980,991
APPARATUS FOR CONTROLLING MICROPROGRAM JUMPS IN A MICROPROGRAMMABLE ELECTRONIC COMPUTER
Luigi Mercurio, Ivrea (Turin), Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy
Filed Nov. 29, 1974, Ser. No. 527,975
Claims priority, application Italy, Dec. 28, 1973, 70874/73
Int. Cl.² G06F *9/16*
U.S. Cl. 340—172.5 **2 Claims**



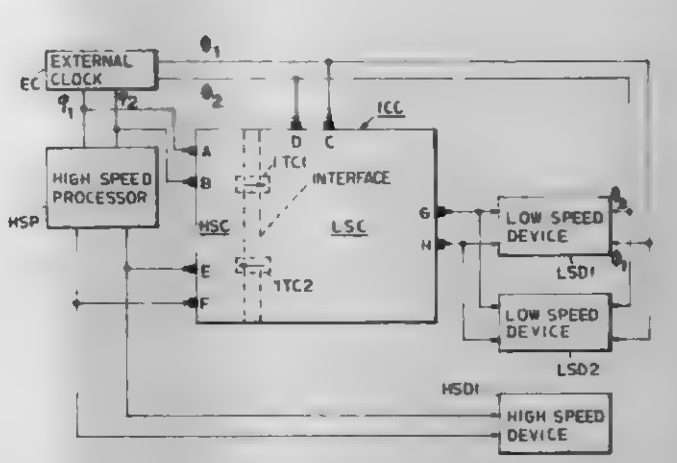
1. In a microprogrammable electronic computer:
means for storing data comprising a plurality of bistable circuits;
means for storing a plurality of microinstructions;
means for generating state defining words;
means for transferring a selected state defining word to the bistable circuits in response to the execution of one of said plurality of microinstructions by the computer;
means for selecting one of the bistable circuits which have the selected state word stored therein and setting or resetting same according to one of said plurality of microinstructions to define a jump condition; and
means controlled by a jump microinstruction for executing a conditional jump or a jump address specified by said jump microinstruction, said means comprising
first means controlled by a first field of said jump microinstruction for addressing any one of said bistable circuits,
second means controlled by a second field of said jump microinstruction for generating a condition signal for specifying a predetermined jump condition,
third means responsive to said first and second means, for testing whether the state of the condition signal corresponds to the state of the addressed bistable circuit, and
fourth means responsive to the correspondence in said third means for executing a jump at said jump address specified by said jump instruction.

3,980,992
MULTI-MICROPROCESSING UNIT ON A SINGLE SEMICONDUCTOR CHIP
Bernardo Navarro Levy, Ann Arbor, Mich., and David Chin-Chung Lee, San Diego, Calif., assignors to Burroughs Corporation, Detroit, Mich.
Filed Nov. 26, 1974, Ser. No. 527,358
Int. Cl.² G06F *9/16, 9/18*
U.S. Cl. 340—172.5 **10 Claims**



8. A data processing system for executing a plurality of concurrent processes, said system comprising:
a first memory to store sets of encoded microinstructions, each set of microinstructions to execute a different process; and
a semiconductor chip, said chip including:
a first plurality of sets of registers to temporarily store sets of data, each set of data to be processed by a different process;
a logic unit connected to said first plurality of sets of registers to receive data and perform logical operations thereon;
a control unit including a control memory in which sets of control signals are stored in the form of unpacked microinstructions, said control memory being connected to said first memory to receive encoded microinstructions therefrom and to said first plurality of sets of registers and said logic unit to provide said sets of control signals thereto in response to the decoding of encoded microinstructions; and
addressing means coupled to said first memory and including a second plurality of registers to store microinstruction addresses to select from said first memory, in a sequential order, one encoded microinstruction from each set of encoded microinstructions for transfer to said control unit to fetch sets of control signals in the form of an unpacked microinstruction and activate said logic unit to receive and perform logic operations upon said data according to said sequential order, each set of data being fetched from said first plurality of sets of registers in response to said sets of control signals.

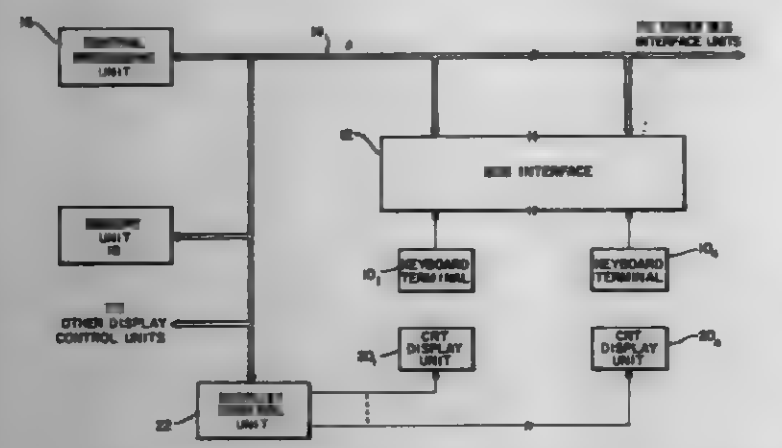
3,980,993
HIGH-SPEED/LOW-SPEED INTERFACE FOR DATA PROCESSING SYSTEMS
Guy Bredart, Lessines, and Alain Gilot, Feluy, both of Belgium, assignors to Burroughs Corporation, Detroit, Mich.
Filed Oct. 17, 1974, Ser. No. 515,693
Int. Cl.² G06F *5/06, 3/00*
U.S. Cl. 340—172.5 **19 Claims**



1. In a data processing system having a first data-handling unit clocked by a low-speed clock and a second data-handling unit clocked by a high-speed clock, a single integrated circuit chip for transferring data in one direction either from said first unit to said second unit or from said second unit to said first unit, said integrated circuit chip comprising:
A. a first portion fabricated to include low-speed circuitry to be clocked by a low-speed clock for processing data supplied thereto by a said first unit, said low-speed circuitry being connected to a first data input terminal, a first data output terminal and a low-speed clock input terminal;
B. a second portion fabricated to include high-speed circuitry to be clocked by a high-speed clock for processing data supplied thereto by said second unit, said high-speed clock having a predetermined phase relationship to the low-speed clock and a pulse repetition frequency which is a whole number multiple of the pulse repetition frequency of the low-speed clock, said high speed circuitry being connected to a second data input terminal, a second data output terminal, and a high-speed clock input terminal; and
C. a third portion fabricated to include interface circuitry for implementing the transfer of processed data in one direction from the low-speed circuitry to the high-speed circuitry or from the high-speed circuitry to the low-speed circuitry, said interface circuitry comprising:
i. a first section including (a) first sampling means connected to receive processed data from one of either said high-speed circuitry said low-speed circuitry and connected to be clocked along with the circuitry from which it receives said processed data, said first sampling means serving to sample said processed data when it is clocked and (b) first storage means connected to said first sampling means for storing the sampled processed data, and having an output representative of the stored processed data; and
ii. a second section including
  a. second sampling means connected to receive the output of the first storage means and connected to be clocked along with the other of said high-speed circuitry or said low-speed circuitry, the second sampling means serving to sample the first storage means output when said second sampling means is clocked and
  b. second storage means connected to said second sampling means for storing the sampled first storage means output, and having an output representative of the stored sampled output, said second storage means being further connected to deliver its output to said other circuitry.

3,980,994
TEXT EDITING AND DISPLAY SYSTEM HAVING TEXT INSERT CAPABILITY

Charles W. Ying, Andover, and Richard Ying, Brookline, both of Mass., assignors to Atex, Incorporated, Bedford, Mass.
Filed Feb. 27, 1975, Ser. No. 553,750
Int. Cl.² G06F *3/14*
U.S. Cl. 340—172.5 7 Claims



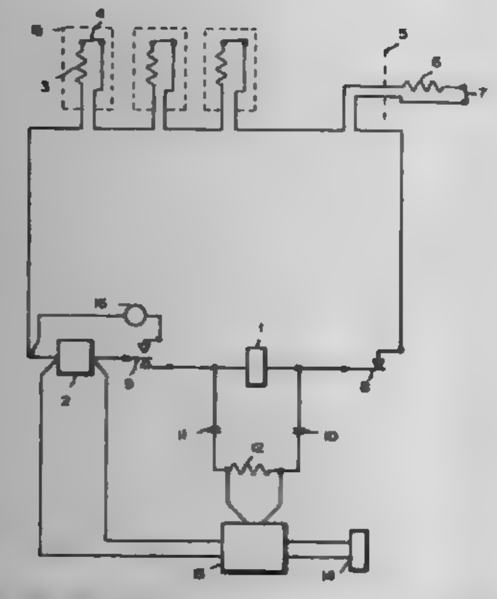
1. A text editing and display system having an input terminal for entering display characters into the system, a central processing unit, and a memory unit, the input terminal, central processing unit and memory unit connected for enabling data transfers, said system including:

A. input means at the input terminal for generating character words, each character word including a character code defining a selected display character and an insert code indicating whether or not the character is to be inserted into the text,

B. means for transmitting each character word to the central processing unit, whereby the central processing unit utilizes the insert code to selectively initiate an insert routine by which a code representing the display character is entered into the memory unit at a selected location and the addresses of adjacent display characters are altered accordingly.

3,980,995
ALARM SYSTEM

Tulio Vasquez, Carrera 43A No. 30-91, Medellin, Colombia
Filed Dec. 17, 1974, Ser. No. 533,704
Int. Cl.² G08B *19/00*
U.S. Cl. 340—213 R 3 Claims



1. In a closed circuit alarm system including a power source, alarm generating means and a main alarm relay having a first relay coil, the improvement comprising:

a plurality of detector elements in a series connection with said main alarm relay;

a resistance element associated with each of said detector elements and in a series connection therewith;

sensing means connected in parallel with said first relay coil for sensing a change in the current flowing through said first relay coil and generating a signal in response to said change, said sensing means including first and second capacitors, said first capacitor being electrically connected to one side of said first relay coil and said second capacitor being electrically connected to the other side of said first relay coil;

a resistance element electrically connected to said first and second capacitors in series with said first relay coil;

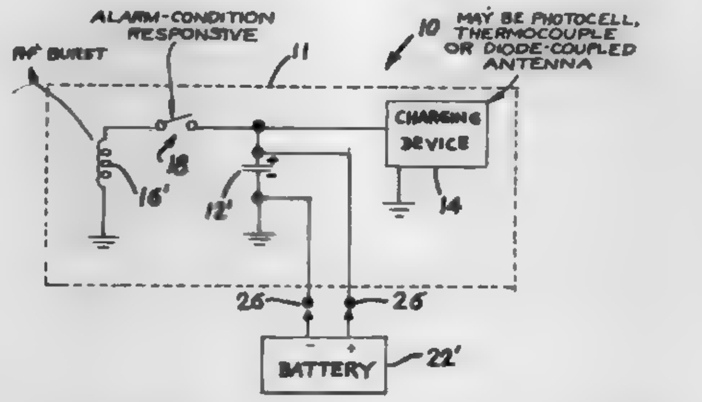
amplifying means connected to said resistance element for amplifying the voltage across said resistance element and generating said signal, said signal corresponding to the voltage across said resistance element; and

a second relay connected to said sensing means for deenergizing said main alarm relay in response to said signal;

whereby said alarm relay is activated when said detector elements are cut or shunted.

3,980,996
SELF-SUSTAINING ALARM TRANSMITTER DEVICE

Myron Greenspan, 154 Girard St., Brooklyn, N.Y. 11235, and Abraham Friedman, 2205 E. 27th St., Brooklyn, N.Y. 11229
Filed Sept. 12, 1973, Ser. No. 396,539
Int. Cl. G08b *21/00*
U.S. Cl. 340—224 9 Claims


ALARM-CONDITION RESPONSIVE
RF BURST
11
10
MAY BE PHOTOCELL, THERMOCOUPLE OR DIODE-COUPLED ANTENNA
CHARGING DEVICE
18
16'
12'
14
26
26
BATTERY
22'

1. Alarm condition transmitter device comprising rechargeable storage means for storing electrical charge; energy conversion means connected to said storage means for connecting a predetermined form of energy into electrical energy and for charging said storage means; output circuit means for transmitting an alarm signal when energized; and switch means connecting said storage means to said output circuit means for energizing the latter with the charge stored on the former only upon the occurrence of an alarm condition and for disconnecting all loads from said storage means prior to the occurrence of an alarm condition, whereby said storage means is continuously charged when said predetermined form of energy is available and is in standby mode for energizing said output circuit means upon the occurrence of an alarm condition, and whereby said storage means is charged during nonalarm conditions by removal of all loading conditions therefrom until an alarm condition occurs.

3,980,997
SMOKE DETECTOR

Charles Berns, New Milford, and Vaclav O. Podany, Norwalk, both of Conn., assignors to General Signal Corporation, Stamford, Conn.
Filed July 17, 1974, Ser. No. 489,076
Int. Cl.² G08B *17/10*
U.S. Cl. 340—237 S 14 Claims

1. Apparatus for detecting the presence of smoke, comprising:

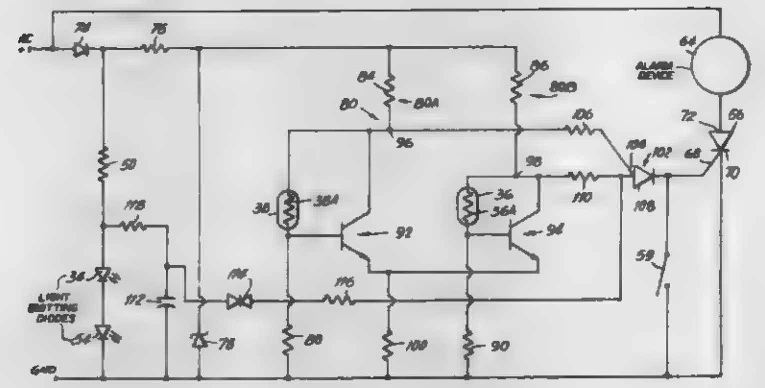
a. a housing defining an enclosure for the detector;

b. a detection chamber within the enclosure for permitting a continuous air flow so that smoke present therein may be monitored;

c. a solid state, low-level light source mounted within said enclosure so as to provide a predetermined illumination within said detection chamber;

d. first and second light receiving means mounted within the enclosure and adapted to receive a normal illumination in the absence of smoke, each of said light receiving means including a photoresistor;

e. a sensing circuit, in which said first and second light receiving means are connected, for sensing the presence of smoke in said chamber by responding to a change in the normal illumination received by either of said light receiving means, said sensing circuit including two parallel branches, each of which has an output junction point, the photoresistors of the first and second light receiving means being connected in said branches to the respective output junction points between which there is substantially no difference of potential under normal illumination;



f. a threshold device, having at least two input electrodes connected to said respective output junction points in said parallel branches, said threshold device being responsive to the difference in potential between said junction points resulting from said change in the normal illumination received by said light receiving means;

g. alarm signal means connected to said threshold means and actuated thereby to produce an alarm signal.

3,980,998
INTRUSION ALARMS

Lawrie G. McIntosh, Etobicoke, Canada, assignor to Contronic Controls Limited, Mississauga, Canada
Filed Sept. 5, 1975, Ser. No. 610,906
Int. Cl.² G08B *13/18*
U.S. Cl. 340—258 B 6 Claims

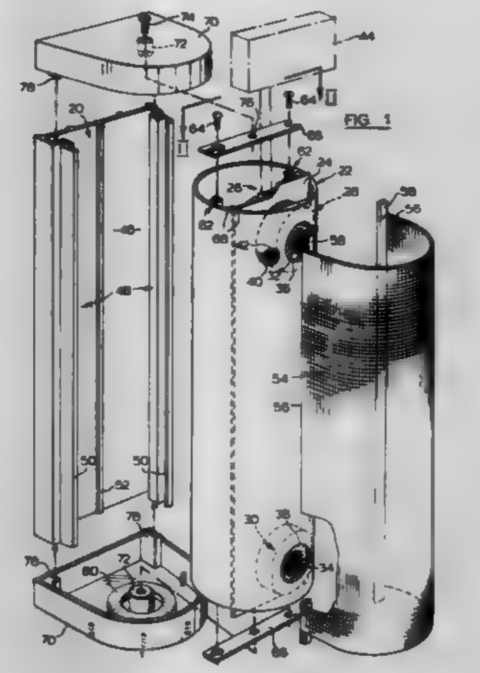
1. An intrusion alarm transducer mounting comprising:

a base;

a hollow cylindrical housing having a longitudinal axis and arranged in contact with said base for turning movement about said axis;

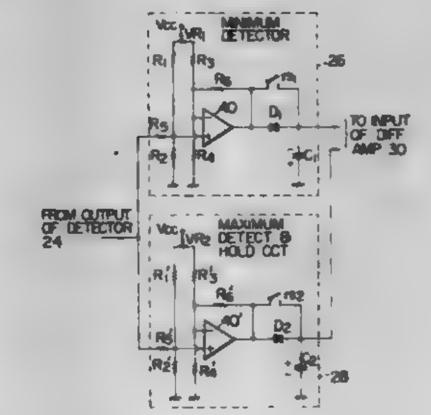
directional radiation transducer means located in said housing and positioned so that the housing can be turned about said axis to direct the transducer means; and

sheet-form screening means having opposite longitudinal margins coupled to said base and extending around said housing so as to conceal the housing from view whilst turnably retaining the same in contact with the base, said screening means being at least substantially transparent to said radiation.



3,980,999
ARRANGEMENT FOR DETECTING RELATIVE ANGULAR MOVEMENT OF A STEERING WHEEL

Tetsuji Nishioka, and Takayuki Yanagishima, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Aug. 20, 1975, Ser. No. 666,277
Claims priority, application Japan, Aug. 26, 1974, 49-97689
Int. Cl.² G08B *21/00*
U.S. Cl. 340—279 6 Claims



1. Arrangement for detecting the relative angular movement of the steering wheel of a motor vehicle, comprising:

a transducer for translating the angular position of said steering wheel into an electrical signal of correspondingly varying voltage;

first means responsive to a decreasing portion of said electrical signal for detecting the minimum voltage of said decreasing portion and storing the electrical signal at the detected minimum voltage;

second means responsive to an increasing portion of said electrical signal for detecting the maximum voltage of said increasing portion and storing the electrical signal at the detected maximum voltage;

means for detecting the difference between the stored signals at the minimum and maximum voltages;

means for comparing said difference with a reference value to provide an output when said difference reaches the reference value; and

means responsive to said output for resetting the voltage of the stored electrical signals to the instantaneous value of said electrical signal at the instant of occurrence of said output.

3,981,000

SYSTEM FOR CONTROLLING A NUMERAL DISPLAY

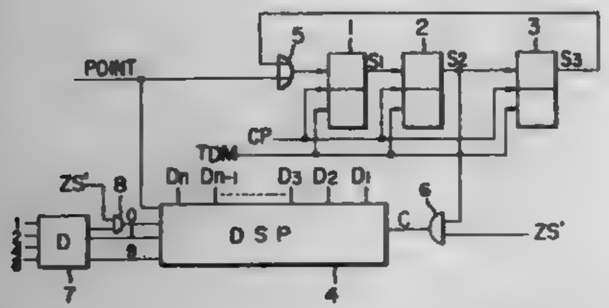
Ichiro Sado, and Mitsuaki Seki, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 430,567, Jan. 3, 1974. This application Aug. 13, 1975, Ser. No. 604,192

Claims priority, application Japan, Jan. 16, 1973, 48-7175; Jan. 23, 1973, 48-9727

Int. Cl.² G06F *3/14*

U.S. Cl. 340—324 R **29 Claims**



1. A system for controlling a numeral display comprising:
- a numeral display device (4, 20) having a plurality of numeral display units arrayed in parallel, each of which comprises digit display segments (A – G), a decimal point segment (P) and a digit position marking segment (H) located adjacent to and at the upper left side of said digit display segments;
- means including a digit position marking signal generator for controlling said numeral display device to display numeral information;
- a register (10) for storing the numeral information to be displayed in said numeral display device;
- means for discriminating a zero or zeros, unnecessary to display, stored in said register and for generating from a signal (ZS) having a first level representative of a display instruction and second level representative of a display suppression, a signal (ZS') converted for a most significant digit of the numeral information from the first level to the second level; and
- means for combining an output from said signal (ZS') generating means with a digit position marking signal generated in said digit position marking signal generator of said control means.

3,981,001

MULTI-PART DISPLAY PANEL AND SYSTEM FOR OPERATING THE PANEL

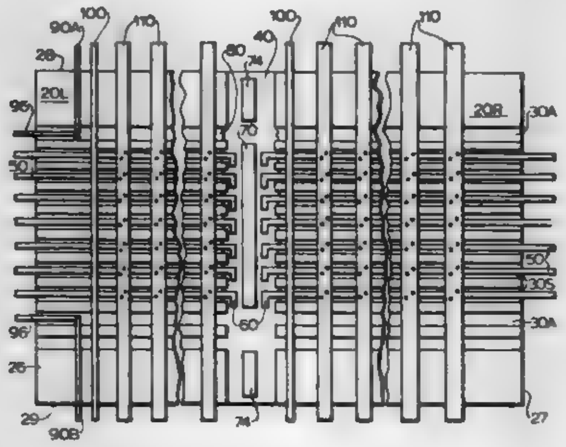
James A. Ogle, Neshanic Station, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 17, 1975, Ser. No. 541,735

Int. Cl.² G06F *3/14*

U.S. Cl. 340—324 M **3 Claims**

1. A system for operating a display panel wherein the display panel comprises, in a single gas-filled envelope,
- a first portion and a second portion, each said portion including an array of scanning cells disposed in rows and columns and an array of display cells disposed in rows and columns, each scanning cell communicating with a display cell, there being a first column of scanning cells and display cells, a last column of scanning cells and display cells, and intermediate columns of scanning cells and display cells in said first and second portions,
- a column of reset cells adjacent to the first column of scanning cells in each said array,
- an array of scanning anodes and scanning cathodes associated with each set of scanning cells, and
- an array of display anodes and display cathodes associated with each set of display cells, and anode and cathode electrodes associated with each column of reset cells, said system comprising
- first circuit means coupled to the scanning anodes and scanning cathodes of said array of scanning cells of said first portion of said panel, said first circuit means also being coupled to the scanning anodes and scanning cathodes of said array of scanning cells of said second portion of said panel, said first circuit means scanning said columns of scanning cells of said first and second portions of said panel sequentially and simultaneously beginning with the first and ending with the last, and
- second circuit means coupled to said display anodes of both portions of said panel for causing selected display cells to glow as said columns of scanning cells are energized.



3,981,002

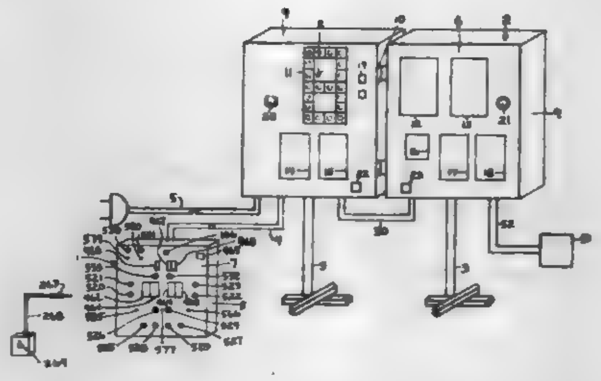
PORTABLE ELECTRONIC DISPLAY DEVICE

Mark R. Gardner, Box 2015, Stn. A, Champaign, Ill. 61820

Filed Mar. 18, 1974, Ser. No. 452,192

Int. Cl.² G08B *5/36*

U.S. Cl. 340—334 **5 Claims**



1. An electronic, portable display device comprising
1. a portable control member comprising a housing, a face panel on said housing, and a plurality of stationary electrically actuatable illumination elements adjacent to said face panel, said illumination elements being adapted, when energized to illuminate pre-determined segment areas of said face panel to define, by combinations of the resultant illuminated segment areas, indicia visible on said panel face,
2. a portable, remote display member comprising a housing, a face panel on said housing, and a plurality of stationary electrically actuatable illumination elements adjacent to said face panel, said remote display illumination elements being adapted, when energized, to illuminate pre-determined segment areas of said remote display face panel to define, by a combination of said illuminatinated segment areas, indicia identical to selected indicia displayed on said control member face panel,
3. first power circuit means having an output to said control member comprising a pulse having a frequency providing a timer signal,
4. second power circuit means having an output to said control member comprising a pulse providing a binary data-carrying signal,
5. circuit means, positioned in said control member, including:
   - a. timer signal counter circuits adapted to receive an input signal from said timer circuit, and containing means for a binary counting of input signals thereto, and being adapted, on signal, to output the binary counting of input signals thereto, and being adapted, on signal, to output the binary data in the counter means thereof,
   - b. a plurality of separate data signal counter circuits, each of said data counter circuits being adapted to receive an input signal from said second power circuit, each of said data signal counter circuits comprising means for the binary counting of the input signals thereto, and being adapted, on signal, to output simultaneously signals corresponding to the binary data in the counters thereof,
   - c. decoding circuits adapted to receive output signals from said data signal counter circuits, said decoding circuits including recoding-circuits for converting signals received from said data signal counter circuits into re-coded binary data for which the segment illumination pattern-coding of said illumination elements in said face panel of said control member and remote display member produce indicia corresponding to set values of output signals from said data signal counter circuits, said decoding circuits being adapted, on signal, to output simultaneously signals corresponding to said decoded binary data,
   - d. first latch circuits, said first latch circuits being adapted, to receive and store separately binary information transmitted thereto by simultaneous input signals and being responsive, on signal, to receive the outputs of said decoding circuits, and being adapted, on signal to serially output signals corresponding to binary data stored therein, as a data chain having a bit length corresponding to the number of said stored data bits therein,
   - e. illumination element driving circuits adapted for receiving output signal from said decoding circuits, and, on signal, effecting the energizing of said illumination elements in said control member face panel,
6. on-off manual switch means, positioned on the face panel of said control member for energizing and de-energizing each of said first power circuit, said second power circuit, said timer signal counter circuits, and said data signal counter circuits,
7. circuit means, positioned in said remote display member comprising:
   - a. signal receiver-register circuits adapted to receive and store separately information transmitted thereto in serial binary pulse bits, said signal receiver-register circuits to sense a peculiar signal indicating a receipt thereby of a complete binary data chain, and thereupon, to output binary data bits stored therein with simultaneous signals,
   - b. second latch circuits adapted to receive and store binary data bits, said second latch circuit means being adapted to receive on signal simultaneous output signals of said signal receiver-register circuits and being adapted on signal, to output simultaneously signals corresponding to the binary data stored therein,
   - c. illumination element driving circuits adapted for receiving output signals from said second latch circuits and, on signal, effecting an energizing of illumination elements in said remote member face panel,
8. transmitter means for simultaneous transmitting timing signals to said signal receiver-register circuits and, by serial transmission, binary data containing output signals from said first latch circuits to said signal receiver-register circuits, and said binary data-containing signal, when said serial transmission is complete to effect signal outputs from said signal receiver-register circuits.

3,981,003

DIGITAL DISPLAY DEVICE

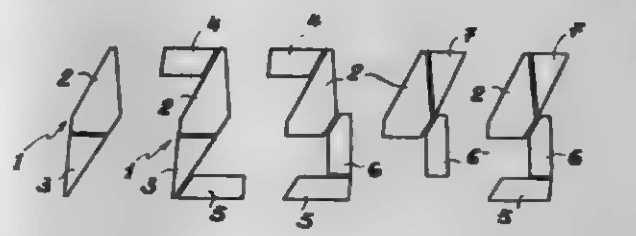
Freddy Huguenin, Lausanne, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

Filed Feb. 18, 1975, Ser. No. 550,175

Claims priority, application Switzerland, Mar. 22, 1974, 4010/74

Int. Cl.² G09F *9/32*

U.S. Cl. 340—336 **12 Claims**



1. A digit display device in which each of the digits 0, 1, 2 . . . 9 is formed by a combination of elements, said device comprising:
- a. an upper horizontal element and a lower horizontal element, said horizontal elements appearing or not depending on the digit displayed,
- b. a substantially vertical left upper element and a substantially vertical right lower element, said substantially vertical elements appearing or not depending on the digit displayed; and
- c. a diagonal surface element, said diagonal surface element comprising at least two superimposed portions of which the upper portion is common to all of the digits 0, 1, 2 . . 0. 9 and appears for the display of each of said digits, while the lower portions thereof appears or not depending on the digit displayed.

3,981,004

DEVICE FOR APPLYING AN A.C. VOLTAGE WITHOUT D.C. COMPONENT TO A LIQUID CRYSTAL DISPLAY PANEL

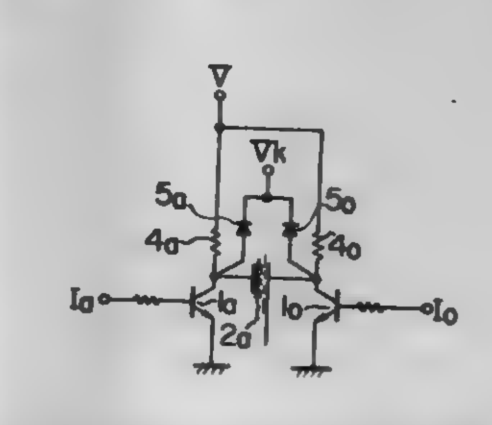
Kazuhiko Shimizu, Osaka, and Kenichi Suenami, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 15, 1974, Ser. No. 524,213

Claims priority, application Japan, Nov. 20, 1973, 48-134427[U]

Int. Cl.² G09F *9/32*

U.S. Cl. 340—336 **3 Claims**



1. An A.C. drive device for a liquid crystal display panel including a plurality of separated segments, a common segment facing said plurality of segments and liquid crystal layers

interposed between said plurality of segments and said common segment, said liquid crystal display panel displaying characters, numerals or the like by the scatter in the liquid crystal layer corresponding to a selected one of said plurality of segments when an A.C. voltage applied to said selected segment is out of phase with respect to an A.C. voltage applied to said common segment, said drive device comprising a clamp circuit to clamp the voltages applied to said plurality of segments and said common segment to a predetermined fixed voltage thereby preventing a D.C. component from appearing in said applied voltage.

3,981,005

TRANSMITTING APPARATUS USING A/D CONVERTER AND ANALOG SIGNAL COMPRESSION AND EXPANSION

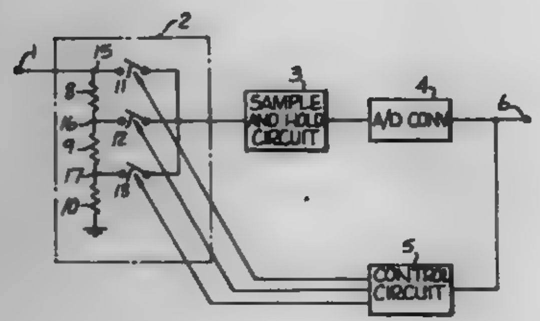
Jun Takayama, and Takenori Sonoda, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 21, 1974, Ser. No. 481,804

Claims priority, application Japan, June 21, 1973, 48-70123

Int. Cl.^{2} H03K *13/02*

U.S. Cl. 340—347 AD 11 Claims



1. In a signal transformation system for converting between a first type of signal and a corresponding value of a second type of signal, one of said types being an analog signal and the other of said types being a digital signal within a range of values between zero and a miximum value, apparatus comprising:

A. amplitude adjustment means for adjusting the amplitude of said analog signal, said means having at least first and second settings, the output amplitude of said analog signal from said adjustment means being greater in said first setting than in said second setting by a predetermined ratio; and

B. control means comprising:

1. a multi-section digit register to receive said digital signals,
2. a first circuit comprising an AND gate connected to said digit register to respond to a "1" condition in all sections of said register, and
3. an up-down counter to memorize first and second count conditions, said counter being connected to said AND circuit and connected to said amplitude adjustment means to set said amplitude adjustment means to said second setting in response to a 1 signal from said AND circuit and to respond to change of the most significant bit of the digital signal from 1 to 0 to set said amplitude adjustment means from said second setting to said first setting.

3,981,006

SIGNAL TRANSMITTING APPARATUS USING A/D CONVERTER AND MONOSTABLE CONTROL CIRCUIT

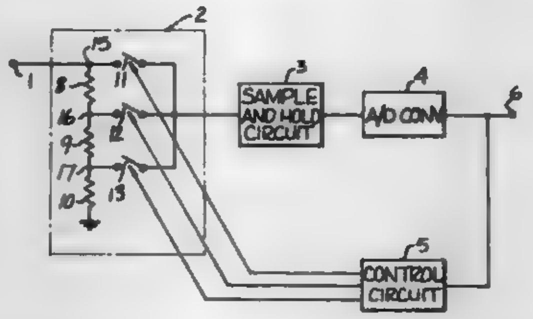
Jun Takayama, Kokubunji; Takenori Sonoda, and Shoichi Nakamura, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 21, 1974, Ser. No. 481,806

Claims priority, application Japan, July 6, 1973, 48-76392

Int. Cl.^{2} H03K *13/02*

U.S. Cl. 340—347 AD 6 Claims



1. In a signal transformation system for converting between a first type of signal and a corresponding value of a second type of signal, one of said types being an analog signal and the other of said types being a digital signal within a range of values between zero and a maximum value, apparatus comprising:

A. amplitude adjustment means for adjusting the amplitude of said analog signal, said means having at least first and second settings, the output amplitude of said analog signal from said adjustment means being greater by a predetermined ratio in said first setting than in said second setting; and

B. control means comprising a monostable circuit having a stable condition and a unstable condition in which it remains for a predetermined time after it is actuated, said control means being connected to said amplitude adjustment means and responsive to said maximum digital value of said digital signal when said monostable circuit is in said stable condition to actuate said monostable circuit to change to said unstable condition to set said amplitude adjustment means to said second setting for the duration of the time said monostable circuit remains in its unstable condition said control means comprising a multisection digit register to receive said digital signals, an AND gate connected to said digit register to respond to a 1 condition in each section of said register, and a monostable multivibrator connected to said AND circuit to respond to 1 signals therefrom to set said amplitude adjustment means to said second setting.

3,981,007

INDUSTRIAL CONTROL FOR AUDIBLE ELECTRONIC WARNING SYSTEM

Richard F. Cieslak, Algonquin, and John V. Balding, Palatine, both of Ill., assignors to Industrial Electronics Service Co., Schaumburg, Ill.

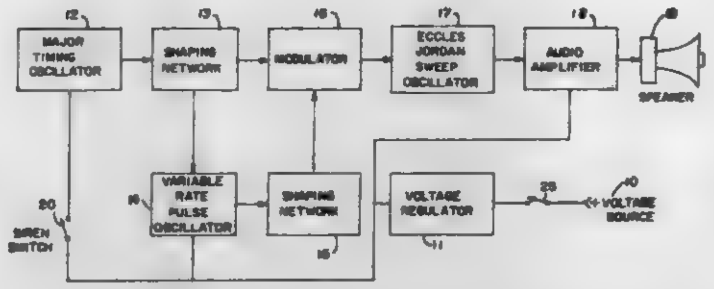
Continuation-in-part of Ser. No. 377,644, July 9, 1973, Pat. No. 3,889,256. This application Feb. 18, 1975, Ser. No. 550,219

The portion of the term of this patent subsequent to June 10, 1992, has been disclaimed.

Int. Cl.^{2} G08B *3/00*

U.S. Cl. 340—384 E 11 Claims

1. An electronic siren system having an audio section projecting a square form sound wave at continual maximum audio output, electronic means including a voltage controlled sweep oscilator generating said sound wave of square form and of rising and falling frequency on a major cycle different from that of predominant ambient sound, electronic means including a timing oscillator for generating an adjustable major cyclic voltage, a first variable rate oscillator to pulse said major cyclic voltage and generate minor cycles to produce variable frequencies in said sound wave, and a second variable rate oscillator further to pulse said major cyclic voltage and provide further variations in said sound wave.



3,981,008

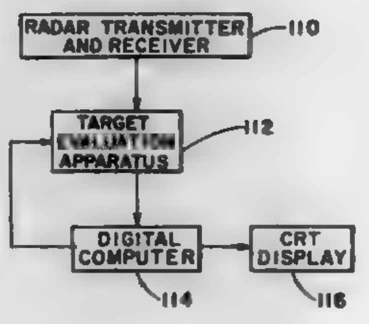
NAVIGATIONAL AND COLLISION AVOIDANCE APPARATUS

John Russell Mann, Bedford, Mass., assignor to Iotron Corporation, Bedford, Mass.

Continuation-in-part of Ser. No. 885,234, Dec. 15, 1969, abandoned. This application Apr. 13, 1972, Ser. No. 243,646

Int. Cl.^{2} G01S *7/44, 9/02*

U.S. Cl. 343—5 DP 10 Claims



6. Target evaluation apparatus for use with marine surface radar processing equipment providing digitized target range signal pulses at a plurality of ranges

said apparatus comprising

discriminating means responsive to said signal pulses for discriminating against at least a major portion of landmass targets of greater than a predetermined length in azimuth while providing output signals responsive to targets of less than said predetermined length representing possible ship targets,

said discriminating means being responsive to a maximum number of successive azimuthal target pulses, said maximum number decreasing at successively increasing ranges, for discriminating against landmass targets of greater than a predetermined actual length in azimuth representing maximum ship length.

3,981,009

BERNOULLI-DEMOIVRE SLIDING WINDOW FRIEND-ACCEPT DECIDER

Walton B. Bishop, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 26, 1975, Ser. No. 617,227

Int. Cl.^{2} G01S *9/00*

U.S. Cl. 343—5 VQ 6 Claims

6. A method for determining whether replies to interrogations appear to come from a friend or an enemy comprising the steps of:

counting the number of interrogations;

counting the number of correct replies in a sequence W of last responses;

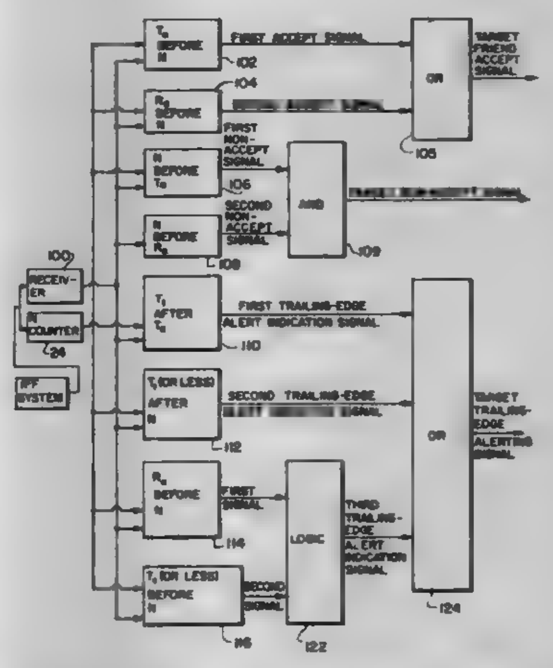
counting the number of incorrect replies in a sequence W of last responses;

subtracting the number of incorrect replies from the number of correct replies to produce a difference quantity T;

indicating that the replies appear to come from a friend if the difference quantity T becomes equal to or greater than a predetermined threshold T_a before a predetermined number N or interrogations are counted;

counting the number of consecutive correct replies to accumulate a run-sum R;

indicating that the replies appear to come from a friend if said run-sum reaches or exceeds a predetermined number R_a before a predetermined number N or interrogations are counted;



indicating that the replies do not appear to come from a friend if said predetermined number N or replies are counted before a friend indication occurs; and

indicating that the responding signals constitute a trailing edge when said difference T is equal to or greater than a predetermined number T_t before a predetermined number N or interrogations are counted;

or when said difference T is equal to T_t after being at a greater predetermined number T_a;

or when said run-sum reaches or exceeds a predetermined number R_a and said difference T is equal to or less than a predetermined number T_t before a predetermined number N or interrogations are counted.

3,981,010

OBJECT LOCATING SYSTEM

Paul F. Michelsen, Kensington, Md., assignor to RMC Research Corporation, Bethesda, Md.

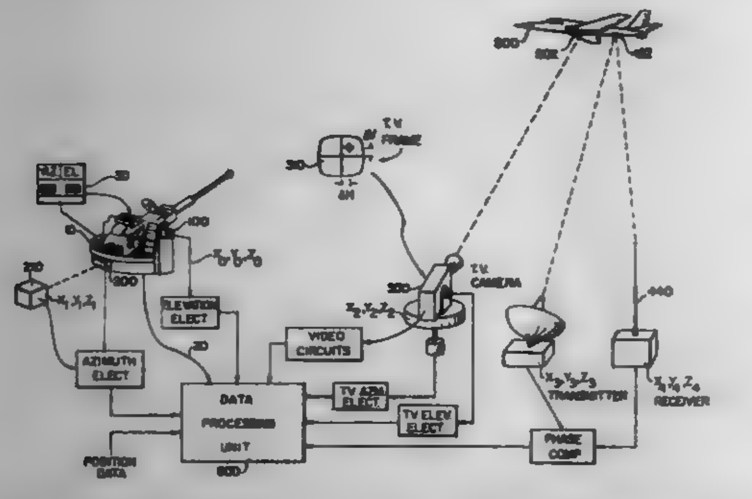
Division of Ser. No. 268,632, July 3, 1972, Pat. No. 3,798,795. This application Mar. 22, 1974, Ser. No. 453,973

Int. Cl.^{2} G01S *9/04*

U.S. Cl. 343—6 TV 15 Claims

1. The method of registering the instantaneous position of an object at a distance from a given point comprising transmitting electromagnetic radiation from a position fixed relative to said given point to said target and inducing returned electromagnetic radiation from said target, receiving said returned radiation at a position fixed relative to said given point, and measuring the distance of said object by measuring the effect of the distance traversed on said transmitted and received radiations, and registering said distance, and determining the direction of said object in a fixed reference system at a given point by directing a television camera toward said object at a position fixed relative to said given point, registering the direction of aim of said television camera, measuring vertical and horizontal coordinates of the position of the image of said object on the sensitive surface of said television camera rela-

tive to the axis of said television camera, and determining the direction of said object from the direction of aim of said television camera and the position of the image of said object

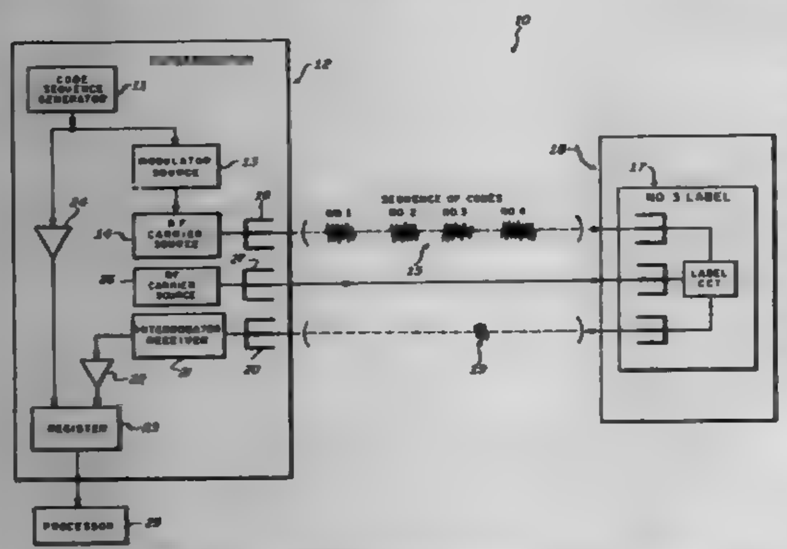


on said sensitive surface, so that the location of said object at any instant is determined by the distance measured and the direction of the object from the given point.

3,981,011
OBJECT IDENTIFICATION SYSTEM USING AN RF ROLL-CALL TECHNIQUE

William W. Bell, III, Bayside, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 31, 1975, Ser. No. 564,002
Int. Cl.² G01S *9/56*
U.S. Cl. 343—6.5 LC 13 Claims



1. A system for identifying each object in a multitude of objects comprising:

transmitter means for illuminating each object with a first electromagnetic signal which contains a sequence of codes and wherein each object is associated with a code in the sequence;

transponder means associated with each of the objects comprising first antenna means for receiving the first electromagnetic signal containing the sequence of codes; first resonant circuit means coupled to the first antenna means and responsive to the carrier frequency of the first electromagnetic signal; demodulating means coupled to the first resonant circuit means for separating the sequence of codes from the carrier frequency; memory means for storing a preselected internal code; means, coupled to said memory means and to said demodulating means for comparing the preselected internal code with each code in the sequence and for generating a signal when a match is detected between the preselected internal code and the associated code in the sequence; and signal generator means, coupled to an output antenna means for transmitting an acknowledge signal in response to the signal from said comparing means;

receiving means responsive to the acknowledge signals for detecting coincidence between an acknowledge signal and the code in the sequency whose transmission immediately preceded receipt of the acknowledge signal, thereby identifying each object in the multitude of objects.

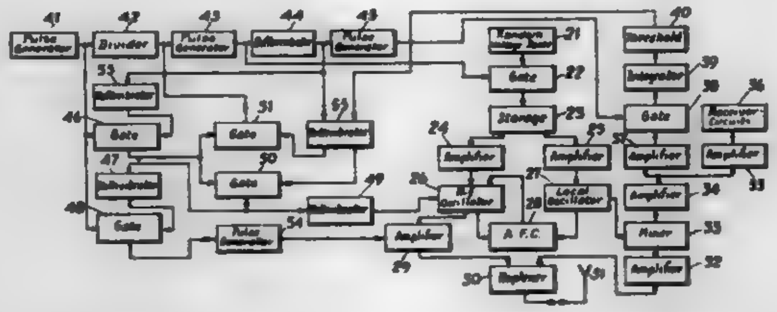
3,981,012
RANDOM FREQUENCY RADAR SYSTEMS

Yves Brault, and Paul Jome, both of Paris, France, assignors to Compagnie Generale de Telegraphie, Paris, France

Filed June 29, 1961, Ser. No. 125,906

Claims priority, application France, July 8, 1960, 60.832389

Int. Cl.² G01S *7/28*
U.S. Cl. 343—17.1 R 5 Claims

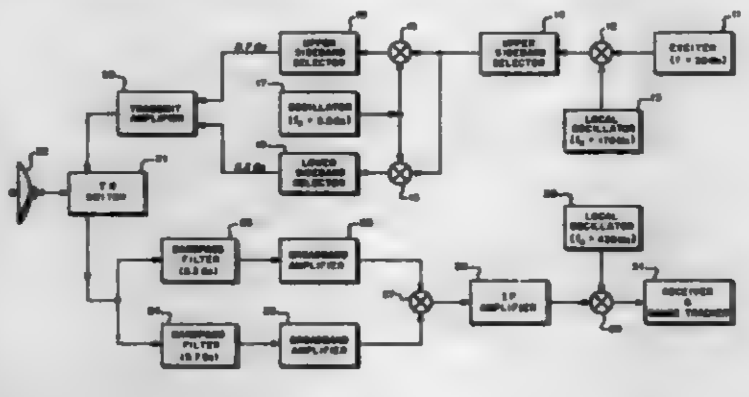


1. A random frequency radar system comprising: a normally blocked transmitting channel including a radio frequency oscillator; a receiving channel including a mixer and a local oscillator feeding said mixer; means for selecting a random pair of associated frequencies F_b and F_l differing by a fixed value; means for tuning said radio frequency oscillator and said local oscillator respectively on said selected frequencies F_b and F_l; a normally blocked auxiliary channel connected in parallel with said receiving channel at a point thereof beyond said mixer, said auxiliary channel having an output and including a threshold device for translating to said output only signals above a predetermined level; first means for temporarily unblocking said auxiliary channel, and second means connected to said auxiliary channel output for blocking and unblocking the normal operation of said radar system at said selected pair of associated frequencies and a timing circuit for successively making operative said selecting means, said first means, and said second means.

3,981,013
NON-JAMMABLE PLURAL FREQUENCY RADAR SYSTEM

Christensen, James L., Beverly, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 31, 1966, Ser. No. 576,782
Int. Cl.² G01S *7/36*
U.S. Cl. 343—17.1 R 8 Claims



1. A radar system comprising:

a first oscillator providing a first carrier frequency;

means for deriving from said first carrier frequency simultaneous signals of different frequency respectively comprising upper and lower sideband signals of said first carrier frequency;

a first selector means receiving said sideband signals and providing an output signal at only one of said different frequencies;

a second oscillator providing a second carrier frequency;

means combining said output signal wih said second carrier frequency for producing a plurality of signals of different frequency to be simultaneously radiated, which signals comprise upper and lower sidebands of said second carrier frequency;

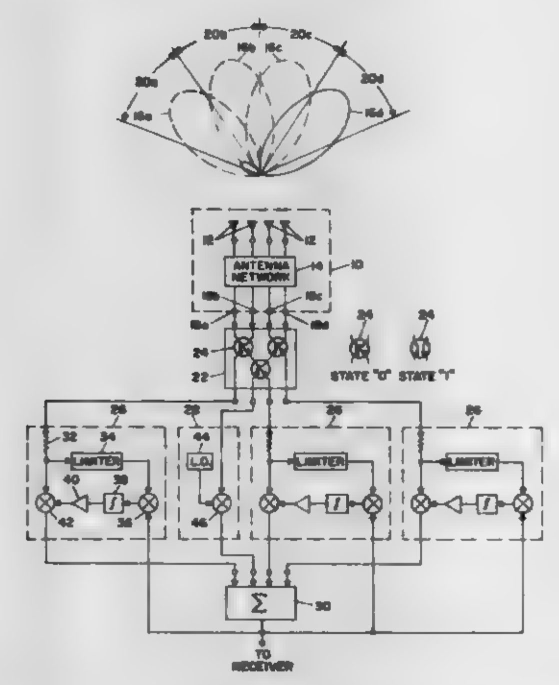
means simultaneously radiating said upper and lower sidebands of said second carrier frequency; and

means receiving said second carrier frequency upper and lower sideband signals after reflection from reflecting objects and providing range information about said objects only in the presence of simultaneous signal reflections.

3,981,014
INTERFERENCE REJECTION SYSTEM FOR MULTI-BEAM ANTENNA

Raymond J. Masak, East Northport, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed Aug. 12, 1974, Ser. No. 496,494
Int. Cl.² H04B *7/00*
U.S. Cl. 343—100 LE 5 Claims



1. A system for receiving desired wave energy signals from at least one angular region of space within the area covered by the system and for suppressing interfering signals from at least one other angular region, comprising:

antenna means, having a first plurality of antenna elements and a second plurality of output ports, for receiving wave energy signals from said coverage area and for developing at each of said output ports a signal primarily representative of the wave energy signals received from a corresponding predetermined different angular region of said coverage area whereby said coverage area is effectively subdivided into a second plurality of angular regions, each of which is represented by the signal developed at a corresponding one of said output ports;

means for combining supplied signals in accordance with a predetermined function to develop an output signal;

means for coupling signals, including desired and interfering signal components, from at least one selected output port of said antenna means to an input of said combining means;

means for developing a correction signal comprising:

means for mixing the output signal from said combining means and signals from another output port of said antenna means corresponding to said other angular region thereby to develop a control signal;

means for mixing said control signal and the signals from said other output port of said antenna means thereby to develop a correction signal;

and means for coupling said correction signal to an input of said combining means thereby causing suppression of said interfering signal components in said output signal.

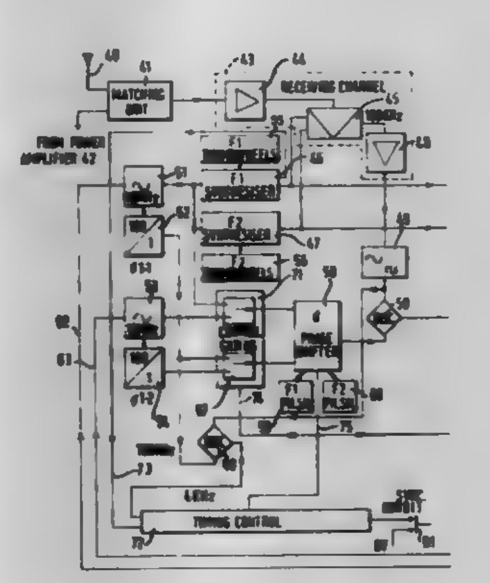
3,981,015
PHASE LOCKING OF TIME-SEQUENTIAL TRANSMISSION FROM SPACED TRANSMITTERS IN A PHASE COMPARISON NAVIAGATION SYSTEM

Derek John Phipps, London, England, assignor to Decca Limited, London, England

Filed Nov. 15, 1974, Ser. No. 524,124

Claims priority, application United Kingdom, Nov. 16, 1973, 53183/73

Int. Cl.² G01S *1/30*
U.S. Cl. 343—105 R 15 Claims



1. In a phase comparison radio navigation system having a prime transmitting station and one or more secondary transmitting stations which are spaced apart and radiate phase-locked signals of the same frequency in a time-shared sequence; the provision at a secondary station of a single antenna, a receiver coupled to said antenna for receiving signals from the antenna, a transmitter coupled to said antenna for transmitting the secondary station signals, and oscillator to provide a prime signal phase memory, a phase discriminator arranged to compare the phase of the signal at the antenna with the output of said oscillator to provide a phase control signal, a phase controller connected to the phase discriminator output to be responsive to said phase control signal, timing control means providing timing signals, synchronising means arranged to synchronise the timing means with received signals from the prime station, and switching means controlled by said timing means in synchronism with the transmission from the prime station and from the secondary station at which the switching means are located, which switching means are operative, during periods of transmission from the prime station, to switch the phase controller to control the oscillator in accordance with the output of the phase discriminator so that the oscillator is phase-locked to the received signals, said switching means further being operative, during periods of transmission from the secondary station at which the switching means are located, to switch the phase controller to control the phase of the transmitted secondary signals at the antenna in accordance with the output of the phase discriminator.

3,981,016
ANTENNA APPARATUS FOR DETECTING AN OPTIMUM DIRECTIVITY

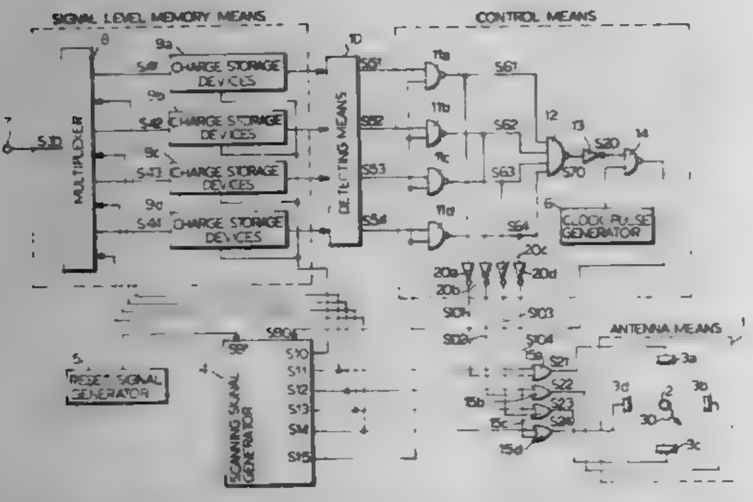
Hideo Iwata, Neyagawa; Hiroshi Ohyama, and Atsushi Oyama, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 7, 1975, Ser. No. 539,225

Claims priority, application Japan, Mar. 6, 1974, 49-26501; Mar. 7, 1974, 49-26881

Int. Cl.² G01S *3/44*

U.S. Cl. 343—117 R 15 Claims



1. An antenna apparatus for detecting an optimum directivity, comprising: an antenna means capable of having plural directivities at predetermined directions, said antenna means having an omni-directional radiator and a plurality of parasitic elements arranged around said radiator in directions from said radiator corresponding to said predetermined directions and each of which acts as a reflector or a director depending on whether or not a scanning signal is applied thereto; scanning signal generating means operatively coupled to said antenna means for generating a scanning signal for scanning said parasitic elements from the first to the last; signal level memory means for memorizing plural memorized signals proportional to output signal levels of said antenna means at said plural directivities, respectively, when said plural parasitic elements are scanned by said scanning signal; detecting means operatively coupled to said signal level memory means for detecting a maximum level memorized signal from among said plural memory signals after said scanning; and control means operatively coupled between said scanning signal generating means and said detecting means for controlling said scanning signal generating means in response to said maximum level memorized signal so as to fix the directivity of said antenna means at the directivity corresponding to said maximum level memorized signal.

3,981,017
CENTER FED VERTICAL GAIN ANTENNA

Richard Stephen Kommrusch, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 31, 1975, Ser. No. 563,536

Int. Cl.² H01Q *9/16*

U.S. Cl. 343—792 17 Claims

1. An improved gain antenna for use with a ground plane at predetermined frequencies, comprising:

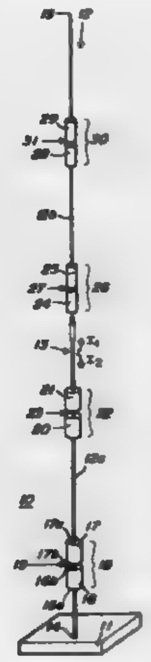
conductor means having a predetermined length for radiating an electrical signal therealong,

said conductor means having first and second ends spaced apart and a feed point located substantially centrally thereof,

means located adjacent to said first end for positioning said first end adjacent to said ground plane and electrically connecting said first end to said ground plane,

said second end being adapted to be positioned substantially away from said ground plane, and

at least one phasing means coupled to said conductor means for producing along the length of said conductor means a predetermined current distribution having a shortened out of phase section and a current maximum occurring at the connection between the ground plane and said first end.



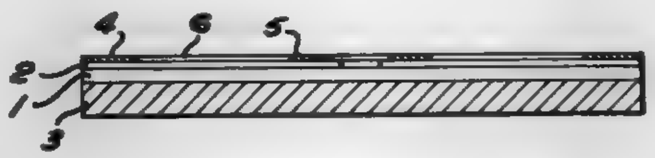
3,981,018
THERMOPLASTIC RECORDER WITH A HEATING SUPPORT

Graham Stuart Plows, and Pauline Margaret Toms, both of London, England, assignors to Decca Limited, London, England

Filed Oct. 17, 1974, Ser. No. 515,558

Int. Cl.² G03G *16/00*

U.S. Cl. 346—74 TP 2 Claims



1. A method of recording information on a thin film of thermoplastics material over a substantially circular recording area which comprises the steps of placing the film on a support which includes a conductive plate, said conductive plate having a thickness which, at least within a substantially circular region of the plate, decreases with increasing radius from the center of said region of the plate, the local resistance per unit area of the plate at any point within said region of the plate being proportional to the square of the radius of that point from the center of said region and the thickness of the conductive plate at any point in the substantially circular region being inversely proportional to the square of the radius of that point from the center of the region with said region of the plate being in contact with the film; directing a focussed, modulated beam of electrons on to the film; simultaneously moving the film so that the beam deposits a track of electric charge which follows a spiral path, and heating the film by passing an electric current radially through the conductive plate of the support, the current being circumferentially uniform so that the heat generated per unit area by the passage of the current through the conductive plate is uniform.

3,981,019
CHARGING SIGNAL SUPPLY CIRCUIT FOR INK JET SYSTEM PRINTER

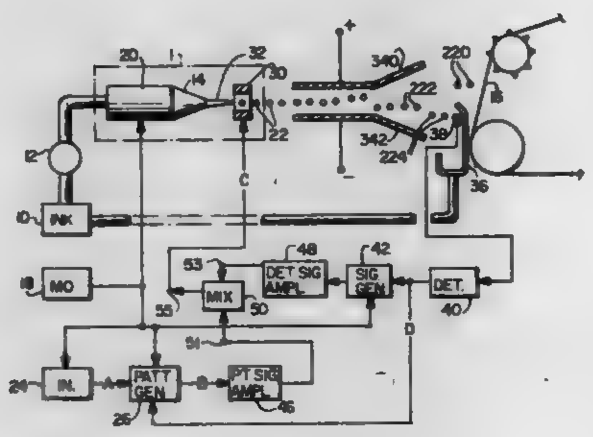
Isao Fujimoto, Kunitachi; Takeshi Kasubuchi, and Masahiko Aiba, both of Nara, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo and Sharp Kabushiki Kaisha, Osaka, both of, Japan, part interest to each

Filed Sept. 26, 1974, Ser. No. 509,561

Claims priority, application Japan, Sept. 26, 1973, 48-108777

Int. Cl.² G01D *18/00*

U.S. Cl. 346—75 2 Claims



1. In an ink jet system printer for making a record on a writing medium by means of ink drops charged by application of first signals of one polarity to an ink drop issuance unit of said printer, wherein a predetermined phase relation is established between the application of the first signals and ink drop formation through the use of additional ink drops not contributable to writing procedure, the additional ink drops being charged by application of second signals of the opposite polarity to said first signals, said first and second signals occurring during mutually exclusive intervals:

means for mixing said first signals and said second signals having the different polarities, the mixture thereof being supplied to the ink drops issuance unit; and

said mixing means comprising first and second amplifier means responsive, respectively, to said first and second signals to amplify same, and first and second switch means responsive, respectively, to said amplifier first and second signals to supply same to said ink drop issuance unit;

wherein said ink drop issuance unit includes a charging electrode for charging said ink drops;

wherein said first and second switch means interconnected said first and second amplifiers with said charging electrode to apply said amplified first and second signals to said charging electrode;

wherein said first and second switch means comprise first and second transistors of respectively opposite polarity; and

wherein each of said transistors have an input and an output electrode and each said switch means further includes diode means interconnecting said input and output electrodes, the forward direction of each said diode means being opposed to said amplified signal transmitted by its respectively associated transistor to preclude stray capacitance loss in said signals.

3,981,020
INK DUST REMOVAL FOR INK JET SYSTEM PRINTER

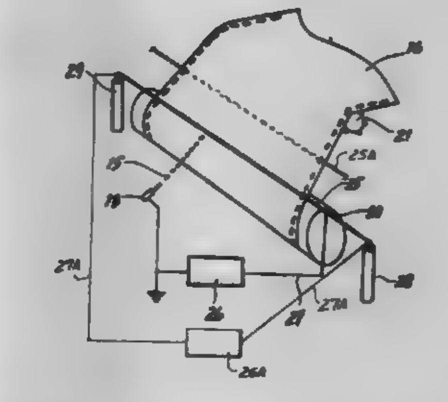
Rikuo Takano, Musashino; Yuji Sumitomo, Nara; Toshio Kobayashi, Osaka; Yoichi Yamamoto, and Tomoo Makita, both of Nara, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo and Sharp Kabushiki Kaisha, Osaka, both of, Japan

Filed Sept. 26, 1974, Ser. No. 509,700

Claims priority, application Japan, Sept. 26, 1973, 48-108779; Sept. 27, 1973, 48-109040

Int. Cl.² G01D *15/18*

U.S. Cl. 346—75 3 Claims



1. In combination with an ink jet system printer which emits charged ink droplets from a nozzle toward a recording paper and selectively deflects said ink droplets by deflection means and records desired symbols on said recording paper with said selectively deflected ink droplets, an ink dust remover comprising:

electrode means for generating an electrostatic field for directing ink dust diffused from said recording paper away from said deflection means, whereby the deleterious effects of ink dust on the ink jet system printer are minimized;

first voltage generating means for applying an electric potential to said electrode means of an opposite polarity to the charges carried by said ink droplets; and

second voltage generating means coupled to said electrode means for passing electric current therethrough, said current being of a sufficient magnitude to cause evaporation of ink dust collected on said electrode means.

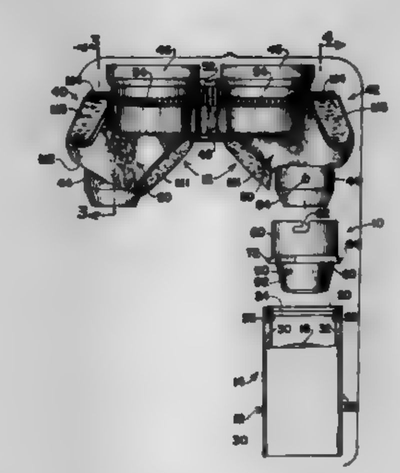
3,981,021
BINOCULAR ADAPTER FOR A CAMERA HAVING A RECESSED LENS

William J. Beecher, 1960 Lincoln Park West, Chicago, Ill. 60614

Filed June 27, 1975, Ser. No. 591,060

Int. Cl.² G02B *23/12*; G03B *17/48*

U.S. Cl. 354—79 10 Claims



1. An adapter for releasably connecting one eyepiece barrel of a binocular to a camera of the recessed lens type for photographic impression of an image on the camera film, said eye-

piece barrel having an eye lens at its front end, said camera having a relatively deep lens recess in its front portion and a camera lens disposed in said recess, said adapter embodying an image diverter in the form of a tubular open-ended lens holder designed for reception in the recess and axial interpositioning thereof between said eye lens and the camera lens, the longitudinal extent of said lens holder being substantially equal to the depth of the camera recess whereby, when the holder is disposed in the recess, its front end and the camera lens are in contiguity, and an optical lens system disposed within said lens holder and effective when the rear region of the holder is disposed in contiguity with the eye lens of said eyepiece barrel and the holder is in the recess to increase the eye relief of said eyepiece barrel and carry the image established thereby rearwardly to the camera lens for subsequent impression on the camera film.

3,981,022
CAMERA HAVING AN ELECTRIC DRIVING DEVICE

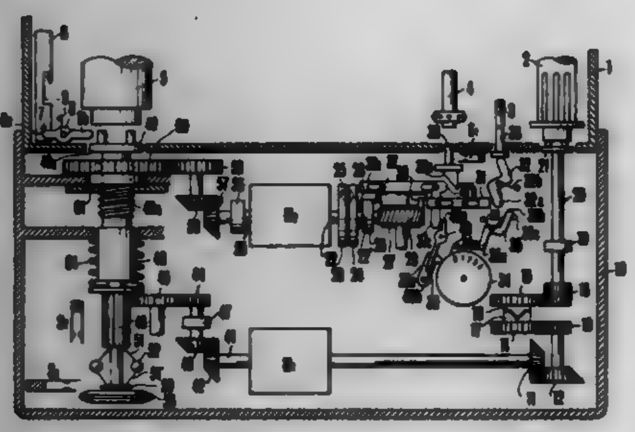
Tomonori Iwashita, Chofu; Hiroshi Aizawa, Machida; Susumu Kozuki, Yokohama, and Masanori Uchidoi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1974, Ser. No. 495,247

Claims priority, application Japan, Aug. 10, 1973, 48-89839; Aug. 10, 1973, 48-89840; Aug. 10, 1973, 48-89841; Aug. 10, 1973, 48-89842

Int. Cl.² G03B *1/18*

U.S. Cl. 354—171 **5 Claims**



1. A camera having an electric driving device for automatically conducting photographing operations such as film winding-up, shutter releasing, preparatory film rewinding, and film rewinding, comprising:

a film wind-up means, a shutter release means, a preparatory film rewinding means, a film rewinding means and a motor for driving all of said means respectively;

a first switch means for detecting completion signals of film winding-up operation so as to discontinue the drive for the film wind-up means as well as to start the shutter releasing operation;

a second switch means for detecting completion signals of the shutter releasing operation and to start the film winding-up operation;

means for detecting completion of photographing a predetermined length of film;

means for conducting preparatory film rewinding operation interlocking with said detection means;

third switch means for detecting completion of said preparatory operation to start the film rewinding operation; and

fourth switch means for detecting completion signals of the film rewinding operation so as to discontinue the film rewinding means.

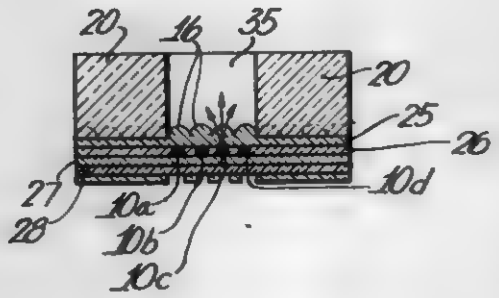
3,981,023
INTEGRAL LENS LIGHT EMITTING DIODE

Frederick David King, Smith Falls, and Anthony John Springthorpe, Richmond, both of Canada, assignors to Northern Electric Company Limited, Montreal, Canada

Filed Sept. 16, 1974, Ser. No. 506,095

Int. Cl.² H01L *33/00*

U.S. Cl. 357—17 **6 Claims**



1. An integral lens light emitting diode structure, said light emitting diode comprising a substrate of semiconductor material of one conductivity type and sequential layers of semiconductor material on one surface of said substrate, said layers comprising a first confining layer on said substrate, an active layer on said first confining layer and a second confining layer on said active layer, said first confining layer of the same conductivity type as said substrate, said second confining layer of the opposite conductivity type to said first confining layer, and said active layer of either conductivity type to produce a p-n junction between said active layer and one of said confining layers;

contact means on said substrate and said second confining layer to define a light emitting region in said active layer;

an aperture through said substrate to said first confining layer, in alignment with said light emitting region; and

a lens structure on said first confining layer, said lens structure extending into said aperture, integral with and forming part of said first confining layer.

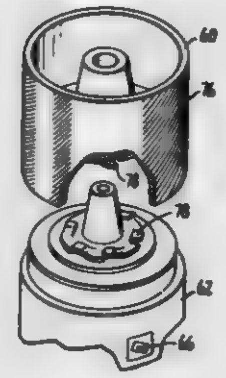
3,981,024
HELICAL SCAN HEAD DRUM WITH HELICAL GROOVES FOR GENERATING AN AIR BEARING

Frank S. C. Mo, Cupertino, and Vernon R. Natwick, Woodside, both of Calif., assignors to International Video Corporation, Santa Clara, Calif.

Division of Ser. No. 354,227, April 25, 1973, Pat. No. 3,890,641, which is a continuation-in-part of Ser. No. 285,923, Sept. 1, 1972, abandoned. This application May 21, 1975, Ser. No. 579,694

Int. Cl.² G11B *15/64, 5/60*

U.S. Cl. 360—130 **1 Claim**



1. A tape transport system for transporting magnetic tape comprising:

A scanner assembly having a rotating cylindrical drum with a plurality of grooves on the cylindrical surface of the drum for floating a magnetic tape across a portion of the surface of the drum on an air bearing when the drum is rotated, said grooves oriented helically on the surface of said drum, said grooves having a leading face and a trailing face, the trailing face of said grooves being substantially chordal to the circumference of the drum, said trailing face defining a V-notch relative to the circumference of said drum,

means for rotating the cylindrical drum,

transport means for moving a magnetic tape across the rotating drum, and

a vacuum collar which partially encircles but is displaced from said rotating drum having air evacuation means for displacing a magnetic tape from the surface of the rotating drum when said transport means is stopped.

3,981,025
CONTAINER FOR A DISC-SHAPED RECORDING MEDIUM AND A DRIVE UNIT FOR USE THEREWITH

Klaus Schoettle, Ludwigshafen; Heinrich Wittkamp, Mannheim, and Friedrich Domas, Altlussheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Nov. 21, 1973, Ser. No. 418,071

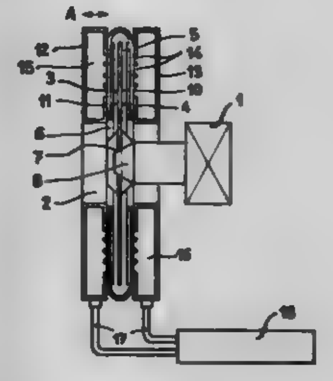
Claims priority, application Germany, Nov. 25, 1972, 2257946

Int. Cl.² G11B *25/04, 5/82, 17/28, 3/58*

U.S. Cl. 360—135 **9 Claims**

1. A container for a disc-shaped magnetic recording medium, for use with a drive unit comprising means for driving and means for scanning said recording medium in the recording and/or playback of electrical signals while said recording medium is enclosed by said container;

said container having apertures for admitting said driving means and said scanning means for cooperation with said recording medium; being flexible in a direction generally perpendicular to said recording medium; and having two mutually facing walls, inner surfaces of which are normally spaced from each other, at least in parts, by a distance smaller than the thickness of the recording medium so as to normally engage the two sides, respectively, of said recording medium; and



there being provided expanding means for urging said walls, while the container and the recording medium therein are in a position on said drive unit, apart by a distance sufficient to release the recording medium from engagement by said inner surfaces of the walls.

DESIGN PATENTS

GRANTED SEPTEMBER 14, 1976

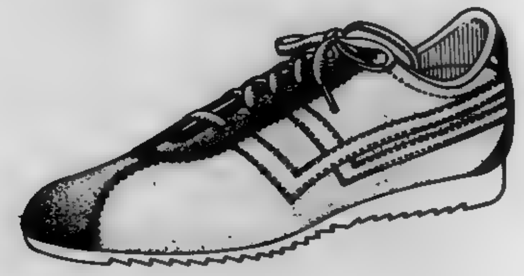
ERRATA

For CLASS	See PATENT NO.
015–055	241,406
025–049	241,425
025–077	241,426
025–072	241,429
011–152	241,453
011–155	241,455
011–152	241,462
015–126	241,463
011–040	241,464
025–067	241,469
026–014 R	241,471
015–076	241,473
015–069	241,474

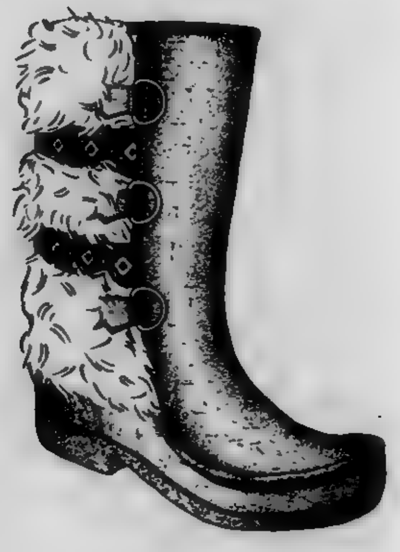
DESIGNS

SEPTEMBER 14, 1976

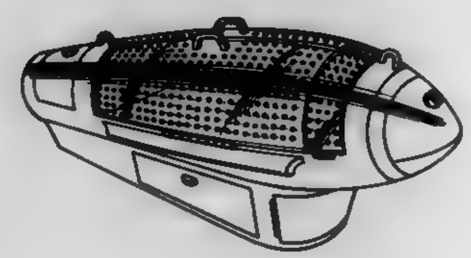
241,383
SHOE
Dennis P. Dolinsky, Naugatuck, Conn., assignor to Uniroyal, Inc.
Filed Apr. 16, 1975, Ser. No. 568,637
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309



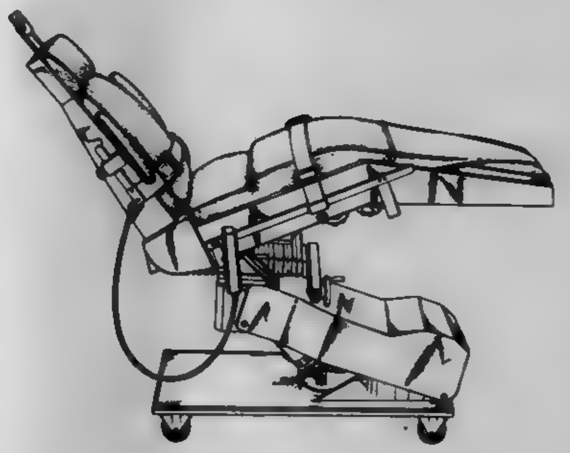
241,384
BOOT
James F. Summa, Naugatuck, and John R. White, Woodbridge, Conn., assignors to Uniroyal, Inc.
Filed Apr. 17, 1975, Ser. No. 569,127
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—272



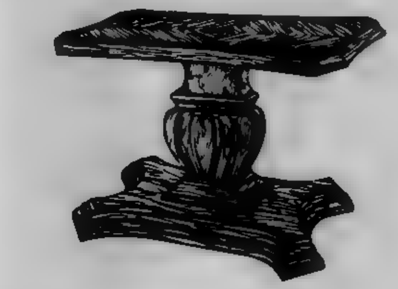
241,385
COMBINED BABY BED AND STORAGE UNIT
Dorothy Roden, Murphy Subdivision, Branson, Mo. 65616
Filed Dec. 30, 1974, Ser. No. 537,414
Term of patent 14 years
Int. Cl. D6—*14*
U.S. Cl. D6—14



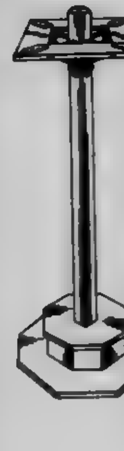
241,386
MEDICAL CHAIR
Eric Alan Robin Lawrence, London, England, assignor to Conebest Limited, Sussex, England
Filed Dec. 10, 1974, Ser. No. 531,281
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—22



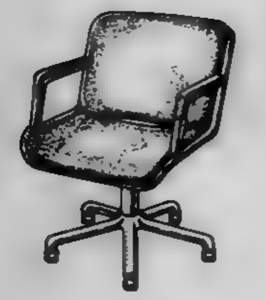
241,387
TABLE
Ludovic Perl, 781 100th Ave., Chomedey, Laval, Quebec, Canada; Arpad Szabo, 5150 Macdonald Ave., Montreal, Quebec, Canada; and Stanley Cohen, 4th Ave., Chomedey, Laval, Quebec, Canada
Filed Dec. 26, 1974, Ser. No. 536,628
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—27



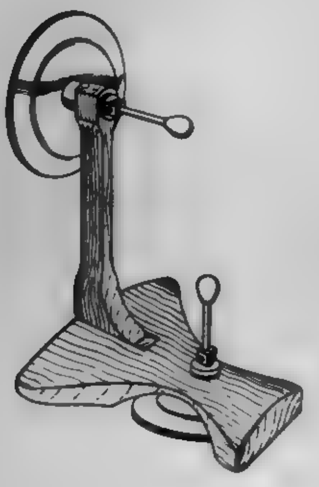
241,388
STAND FOR POTTED PLANTS
Roger U. McClung and Mary S. McClung, both of R.R. 1, Liberty, Mo. 64068
Filed Dec. 15, 1975, Ser. No. 641,694
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—28



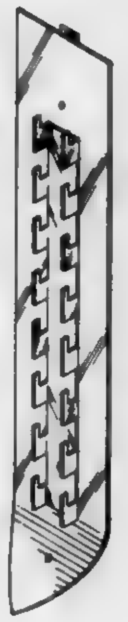
241,389
CHAIR
Douglas C. Ball, Senneville, Quebec, Canada, assignor to Sunar Limited, Waterloo, Ontario, Canada
Filed Apr. 21, 1975, Ser. No. 570,526
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31



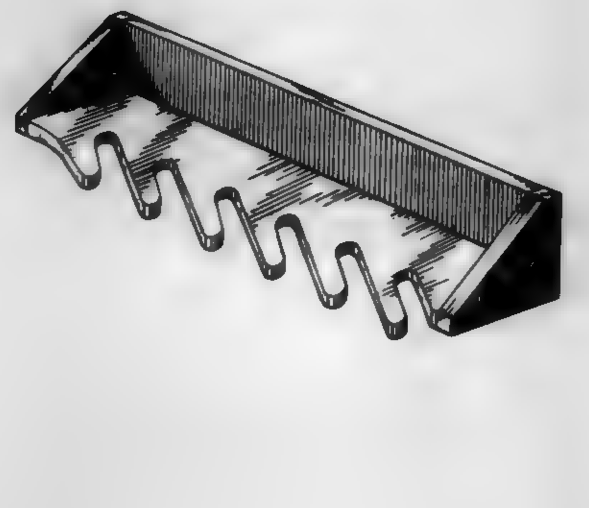
241,390
MIRROR SUPPORT
Benny C. Moon, 3135 Spalding Drive, Atlanta, Ga. 30338
Filed Mar. 14, 1975, Ser. No. 558,438
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—85



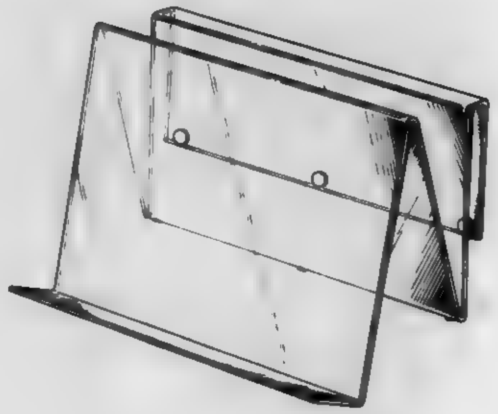
241,391
WALL MOUNTED RACK
George Weisenfeld and David Halpern, Studio City, Calif., assignors to International Tropic-Cal, Inc., Los Angeles, Calif.
Filed Mar. 20, 1975, Ser. No. 560,397
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—114



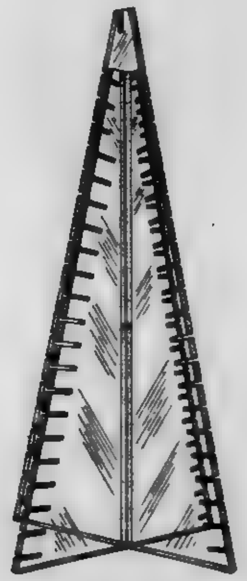
241,392
SPORTS RACKET HOLDER
Ronald W. Taylor, 1762 Pitcairn, Costa Mesa, Calif. 92622
Filed Nov. 6, 1975, Ser. No. 629,314
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—125



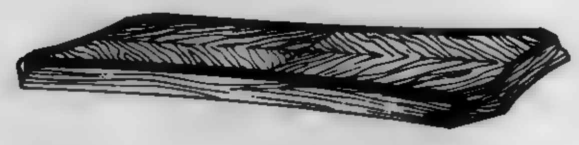
241,393
AUXILIARY MUSIC HOLDER FOR ATTACHMENT TO A PIANO OR SIMILAR ARTICLE
Val St. Regis, 157 Geary St., San Francisco, Calif. 94108
Filed Jan. 30, 1975, Ser. No. 545,361
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—184



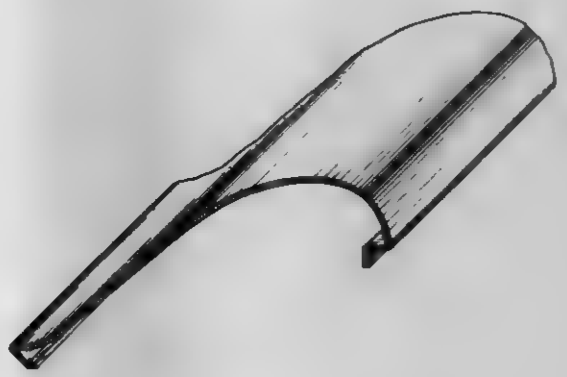
241,394
CARD STAND
Melba C. Widdowson, 819 Fabrique, Wichita, Kans. 67218
Continuation-in-part of abandoned design application Ser. No. 271,992, July 14, 1972. This application May 6, 1974, Ser. No. 467,844
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—188



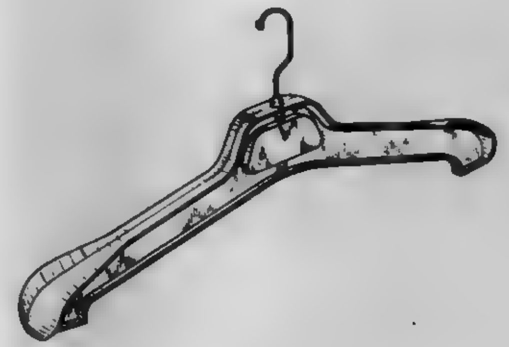
241,395
TABLE TOP
Ludovic Perl, 781 100th Ave., Chomedey, Laval, Quebec, Canada; Arpad Szabo, 5150 Macdonald Ave., Montreal, Quebec, Canada; and Stanley Cohen, 4th Ave., Chomedey, Laval, Quebec, Canada
Filed Dec. 26, 1974, Ser. No. 536,627
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192



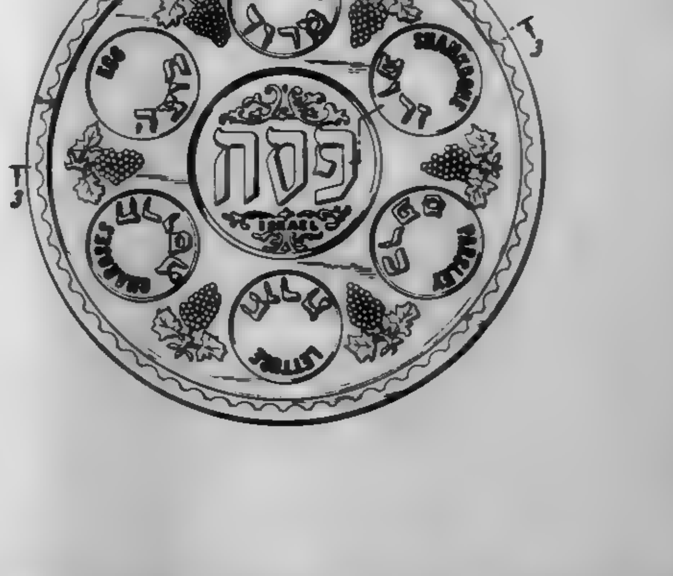
241,396
FRAME MOLDING
Greg Copeland, 114 Beach Terrace, Wayne, N.J. 07470
Filed Dec. 3, 1974, Ser. No. 529,187
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—232



241,397
GARMENT HANGER
Ludovic Perl, 781 100th Ave., Chomedey, Laval, Quebec, Canada, and Arpad Szabo, 5130 Macdonald Ave., Montreal, Quebec, Canada
Filed Aug. 25, 1975, Ser. No. 607,829
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—247

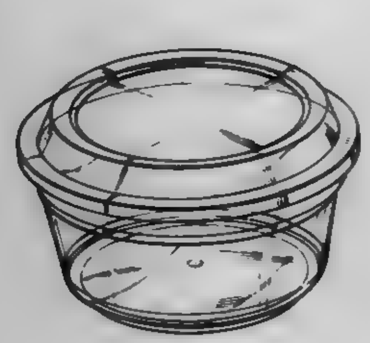


241,398
PASSOVER SEDER PLATE
Daniel J. Frucher, Lawrence, N.Y., assignor to Educational and Recreational Associates Ltd., New York, N.Y.
Filed Mar. 3, 1975, Ser. No. 554,749
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—26



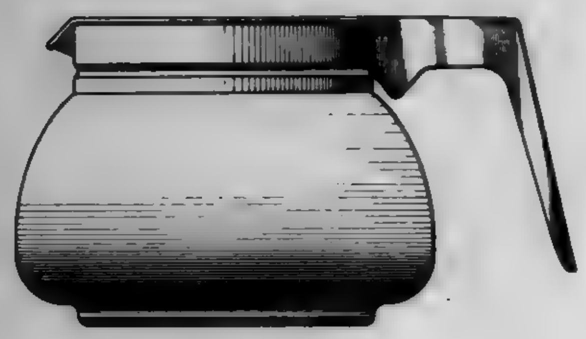
241,399
COVERED FOOD DISH

Hubert E. Christian, Phoenix, Ariz., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Dec. 27, 1974, Ser. No. 536,757
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—17



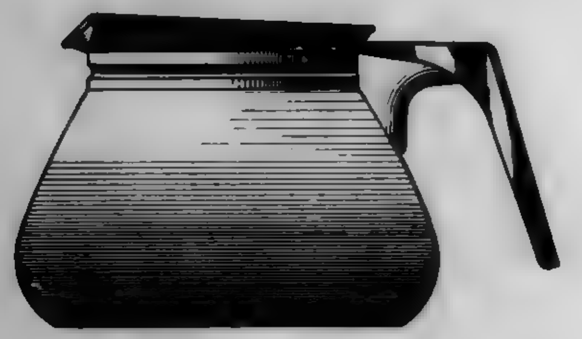
241,400
CARAFE

David Painter, Glenview, Ill., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Apr. 28, 1975, Ser. No. 572,550
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—64



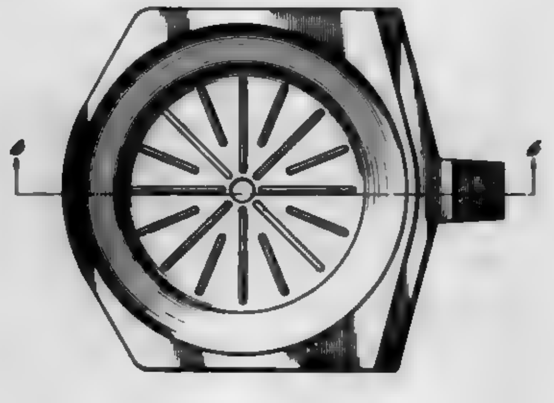
241,401
CARAFE

David Painter, Glenview, Ill., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Apr. 28, 1975, Ser. No. 572,549
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—64



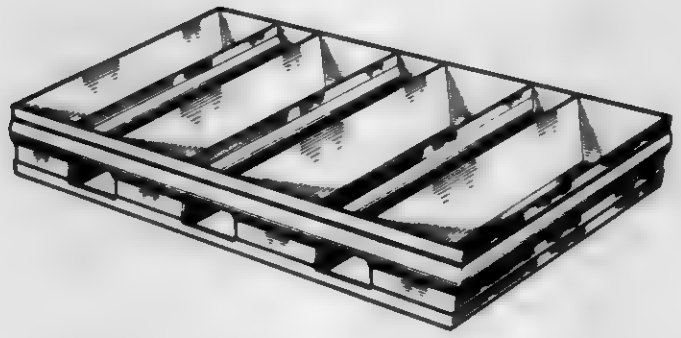
241,402
COFFEE BASKET

David Painter, Glenview, Ill., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Apr. 28, 1975, Ser. No. 572,548
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—68



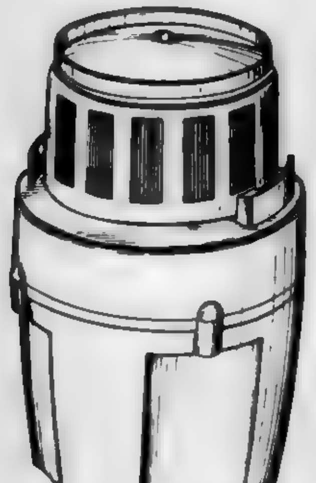
241,403
BAKING MOLD FOR BREAD

Magnus Allan Holmqvist, 2–114 Amanuensvagen, S–104 05 Stockholm, Sweden
Filed July 22, 1974, Ser. No. 490,642
Term of patent 14 years
Int. Cl. D7—*02;* D8—*05*
U.S. Cl. D7—96



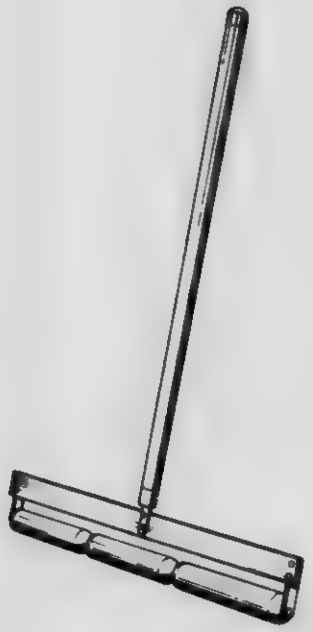
241,404
FOOD CUTTER

Jean Mantelet, Paris, France, assignor to Moulinex, Societe Anonyme, Paris, France
Filed Nov. 29, 1974, Ser. No. 528,395
Claims priority, application France June 13, 1974
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—153



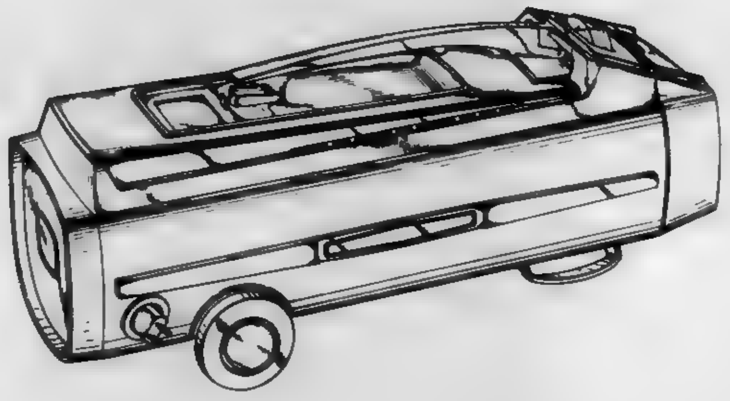
241,405
DRYING DEVICE FOR TENNIS COURTS AND THE LIKE

Paul James Burchett, Corona del Mar, Calif., assignor to Sports Educational Devices Company, Inc., Newport Beach, Calif.
Filed July 16, 1974, Ser. No. 489,071
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—161



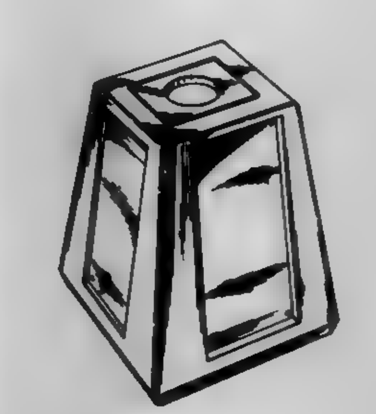
241,406
VACUUM CLEANER

John J. Kowalewski, deceased, late of Riverside, Conn., by Stephanie H. Kowalewski, executrix, Riverside, George Schnick, Trumbull, and Robert C. Lampe, Stamford, Conn., assignors to Consolidated Foods Corporation, Chicago, Ill.
Filed Apr. 9, 1975, Ser. No. 566,443
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—55



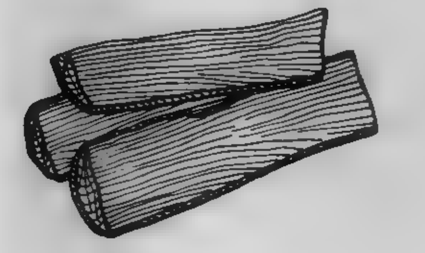
241,407
TRASH RECEPTACLE

Henry Douglas Johnson, Unionville, Conn., assignor to Random Industries, Inc., Farmington, Conn.
Filed Mar. 21, 1975, Ser. No. 560,835
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—189



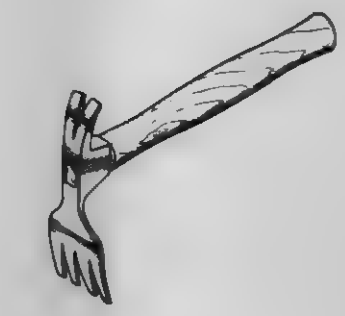
241,408
CERAMIC ARTIFICIAL SPLIT LOG

John G. Matchulat, East Aurora, N.Y., assignor to Ferro Corporation, Cleveland, Ohio
Filed Oct. 21, 1974, Ser. No. 516,861
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—206



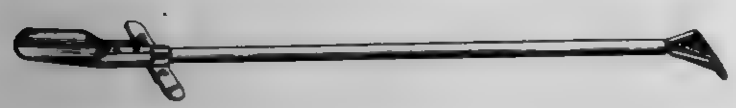
241,409
GARDENING TOOL

Anton B. L. Lopizich, 3058 Capri Lane, Costa Mesa, Calif. 92626
Filed Jan. 31, 1975, Ser. No. 545,824
Term of patent 14 years
Int. Cl. D8—*01, 02*
U.S. Cl. D8—6



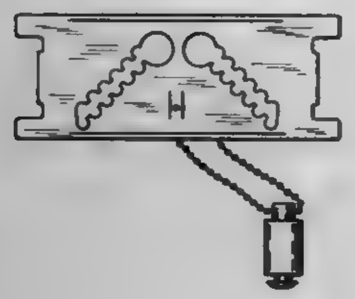
241,410
COMBINATION FURROW FORMING, SEED PLANTING, FURROW CLOSING AND WEEDING TOOL

Wallace E. Atkinson, Petersburg, Va., assignor to Long Manufacturing Company, Inc., Petersburg, Va.
Filed June 24, 1975, Ser. No. 589,754
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—13



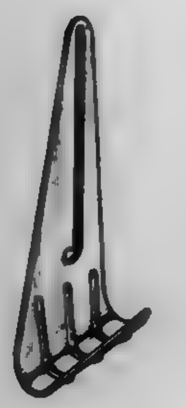
241,411
DOOR LOCK

Kenneth H. Briggs, P.O. Box 769
Berkeley, Calif. 94701
Filed Oct. 6, 1975, Ser. No. 619,584
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—131



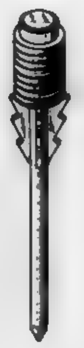
241,412
LADDER SUPPORTING BRACKET

Enedar Trotter, 3341 Betula Place, Victoria, British Columbia, Canada V9C 2N7
Filed Mar. 4, 1975, Ser. No. 555,099
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—246



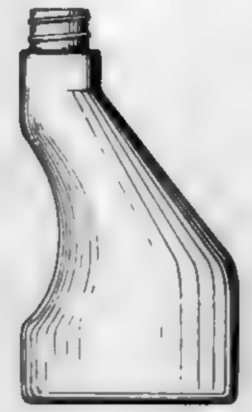
241,413
COMBINATION NAIL AND BOLT

Warren Drake, 1205 Langdon Blvd., Rockville Centre, N.Y. 11570
Filed Feb. 4, 1976, Ser. No. 655,118
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—264



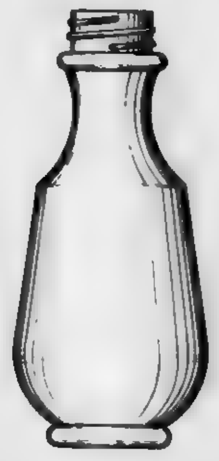
241,414
BOTTLE OR SIMILAR ARTICLE

Victor Koenigsberg, Franklin Square, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Mar. 25, 1975, Ser. No. 561,810
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—61



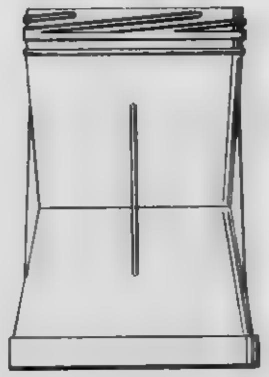
241,415
BOTTLE

Victor Koenigsberg, Franklin Square, N.Y. (% Colgate-Palmolive Co., 300 Park Ave., New York, N.Y. 10022)
Filed Apr. 10, 1975, Ser. No. 566,898
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—116



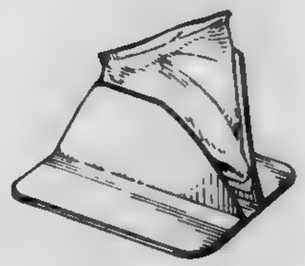
241,416
JAR OR SIMILAR ARTICLE

Robert J. Aul, Perrysburg, Ohio, Robert S. Babington, McLean, Va., and Glenn H. Dunlap, Maumee, and Wayne J. Zitkus, Toledo, Ohio, assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed May 14, 1975, Ser. No. 577,527
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—125



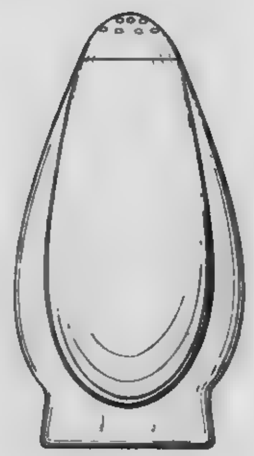
241,417
PACKAGING CONTAINER

Darrell R. Morrow, Old Bridge, N.J. (7 Pamela Court, East Brunswick, N.J. 08816), and Michael Schuler, Edison, N.J. (62C Old New Brunswick Road, Piscataway, N.J. 08854)
Filed July 18, 1974, Ser. No. 489,750
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—180



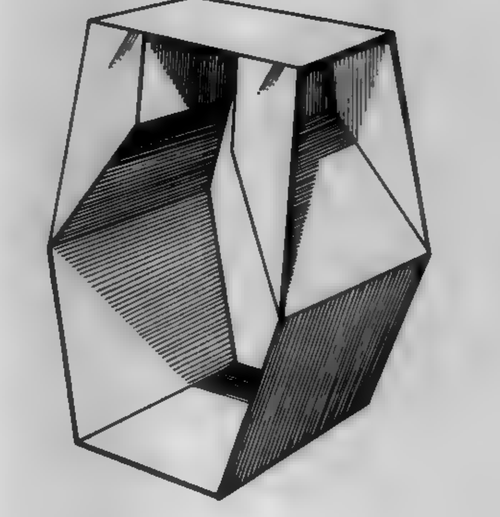
241,418
DISPENSING CONTAINER

Victor Koenigsberg, Franklin Square, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Mar. 24, 1975, Ser. No. 561,598
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—207



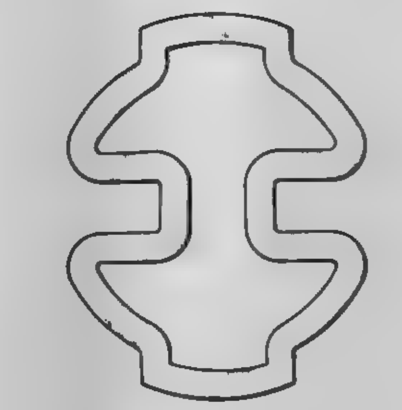
241,419
PACKAGING CARTON

William W. Wilson and George G. Pappas, Norwich, Ohio, assignors to Lumi-Lite Candle Company, Inc., Norwich, Ohio
Filed Mar. 28, 1975, Ser. No. 563,191
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224

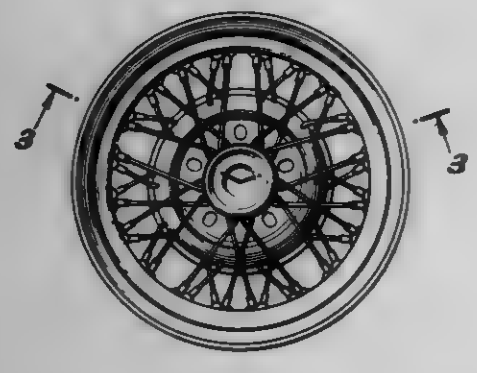


241,420
SPRING FOR SHOCK ABSORBING DEVICES IN WATCHES AND OTHER PRECISION INSTRUMENTS

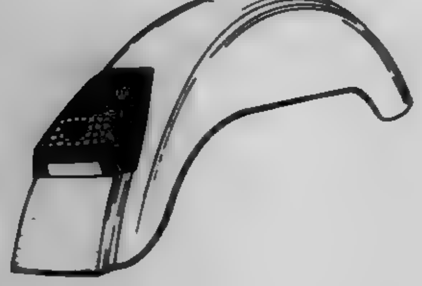
Francois Voumard, Le Locle, Switzerland, assignor to Seitz S.A., Les Brenets, Switzerland
Original design application Mar. 22, 1974, Ser. No. 454,017. Divided and this application June 30, 1975, Ser. No. 583,166
Claims priority, application Switzerland Sept. 25, 1973
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D10—128



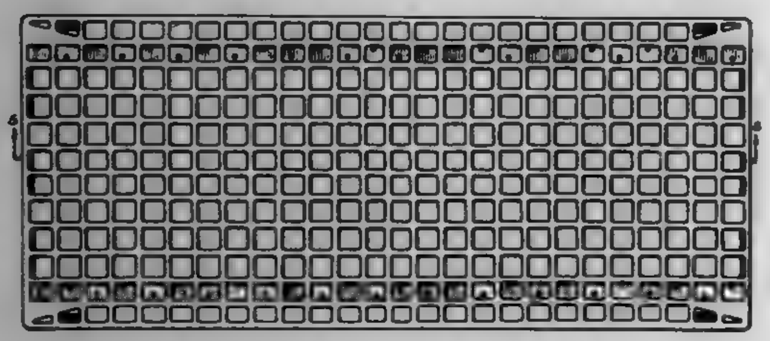
241,421
SPOKED VEHICLE WHEEL
Kurt W. Lohmeyer, 300 E. Las Palmas,
Fullerton, Calif. 92635
Filed Oct. 9, 1974, Ser. No. 513,451
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—205



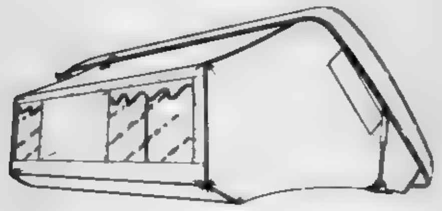
241,422
COMBINED MOTORCYCLE FENDER AND TAIL LIGHT
Preston L. Petty, 403 N. Main St.; and Albert F. Harreld, 2409 Hawthorne Drive, both of Newberg, Oreg. 97132; and Gary M. Scott, 193 NW. Alpine, Dundee, Oreg. 97115
Filed Dec. 9, 1974, Ser. No. 530,857
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—186



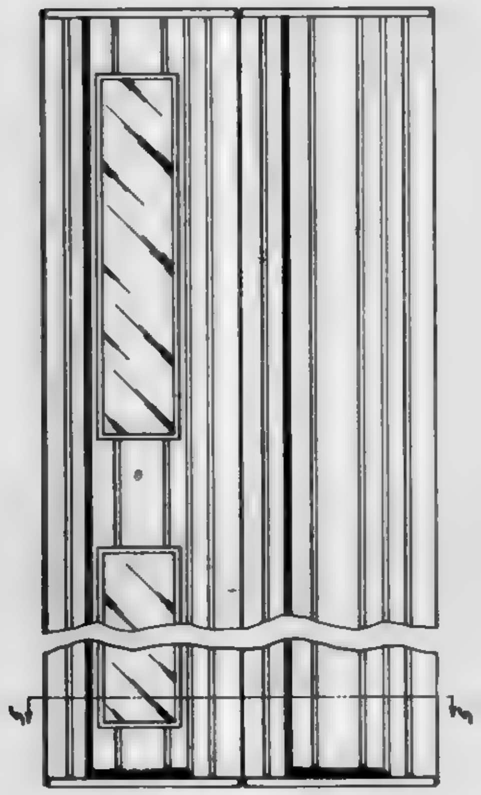
241,423
SKATEWHEEL CONVEYOR PALLET
Theodor M. Box, 1108 Aileen Road,
Brielle, N.J. 08730
Filed Apr. 2, 1975, Ser. No. 564,420
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D12—53

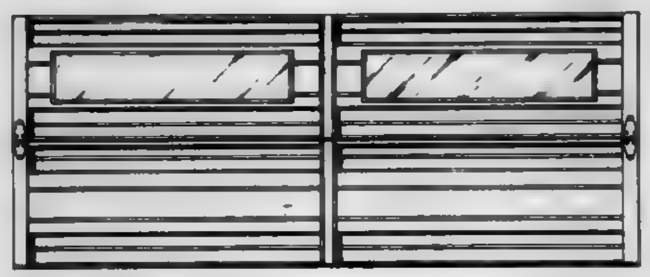


241,424
COMBINED VEHICLE ELEVATING ROOF AND ENCLOSURE UNIT
David Lee, Northchurch House, Northchurch,
Hertfordshire, England
Filed Apr. 17, 1975, Ser. No. 568,801
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156

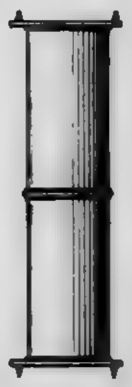


241,425
GARAGE DOOR
Morris W. Bailey, Fort Worth, Tex., assignor to Overhead Door Corporation, Dallas, Tex.
Filed Mar. 19, 1974, Ser. No. 452,629
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—49

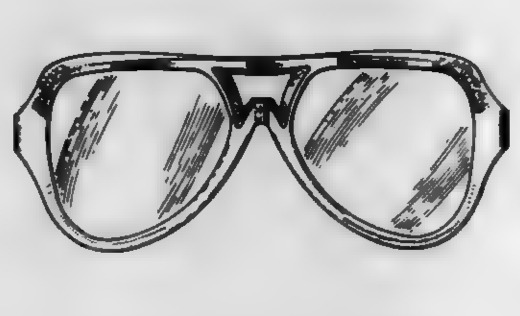




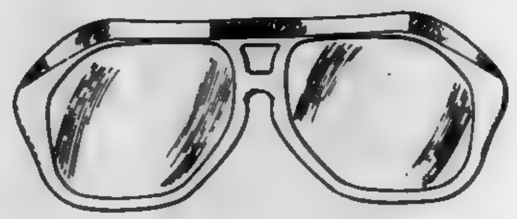
241,426
STRUCTURAL COLUMN
Kenneth J. Davis, 529 Brier Road,
Kenilworth, Ill. 60043
Filed Apr. 23, 1975, Ser. No. 570,623
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—77



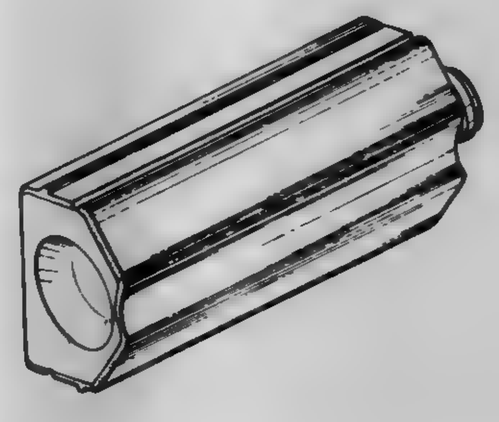
241,427
SPECTACLE FRONT
Jack Bloch, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.
Filed Nov. 27, 1974, Ser. No. 527,557
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—78



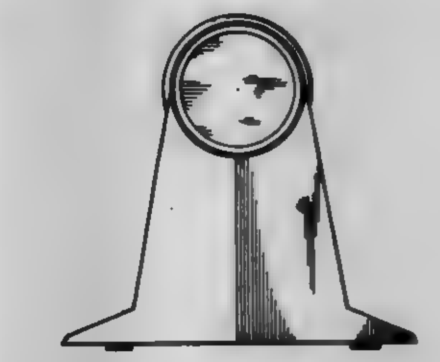
241,428
SPECTACLE FRONT
Jack Bloch, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.
Filed Nov. 27, 1974, Ser. No. 527,722
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—78

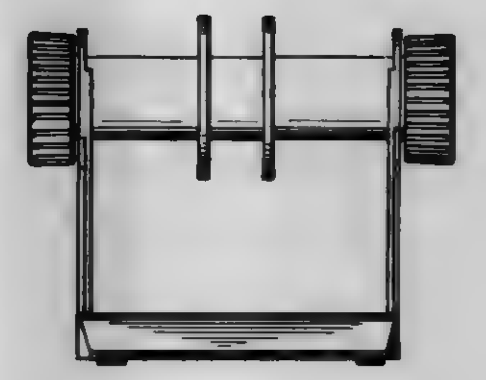


241,429
TRANSLUCENT BUILDING ELEMENT
Maximilian Gustav Alfred Cecil Michaelis, 13 quai
Saint-Michel, Paris 5e, France
Filed Feb. 12, 1974, Ser. No. 441,751
Term of patent 7 years
Int. Cl. D25—*01*
U.S. Cl. D25—72

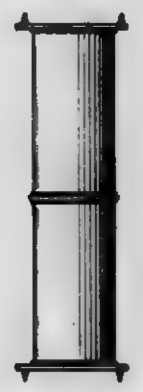


241,430
ROTARY CARD FILE
Joseph P. Maruca, Coventry, R.I., and Robert A. Chieda, Westport, Conn., assignors to Textron Inc., Providence, R.I.
Filed Aug. 28, 1973, Ser. No. 392,356
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76

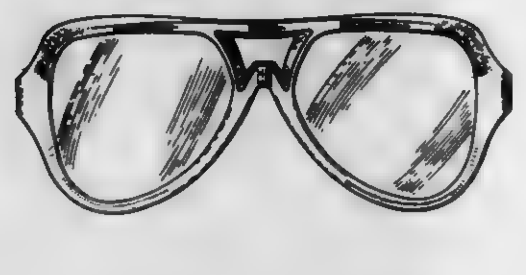




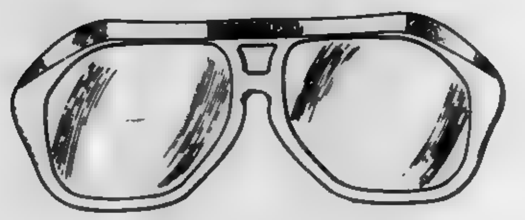
241,426
STRUCTURAL COLUMN
Kenneth J. Davis, 529 Brier Road,
Kenilworth, Ill. 60043
Filed Apr. 23, 1975, Ser. No. 570,623
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—77



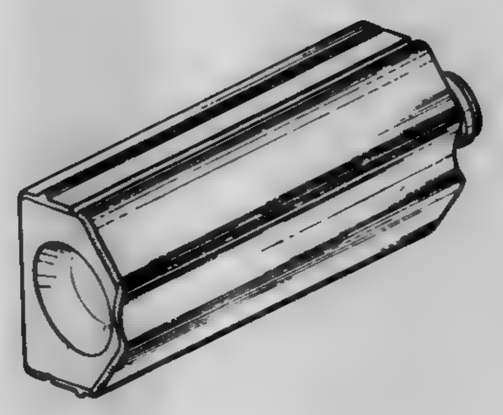
241,427
SPECTACLE FRONT
Jack Bloch, Leominster, Mass., assignor to Foster
Grant Co., Inc., Leominster, Mass.
Filed Nov. 27, 1974, Ser. No. 527,557
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—78



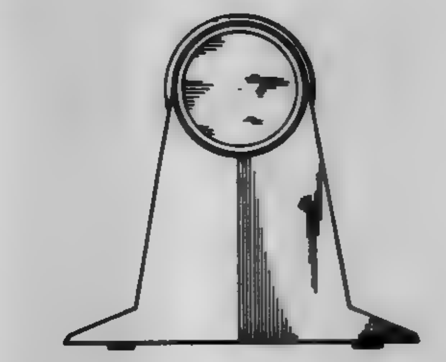
241,428
SPECTACLE FRONT
Jack Bloch, Leominster, Mass., assignor to Foster
Grant Co., Inc., Leominster, Mass.
Filed Nov. 27, 1974, Ser. No. 527,722
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—78

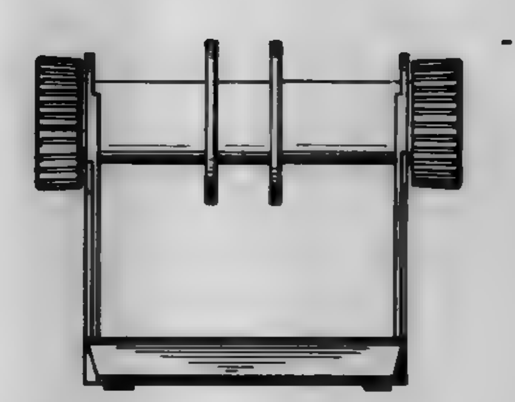


241,429
TRANSLUCENT BUILDING ELEMENT
Maximilian Gustav Alfred Cecil Michaelis, 13 quai
Saint-Michel, Paris 5e, France
Filed Feb. 12, 1974, Ser. No. 441,751
Term of patent 7 years
Int. Cl. D25—*01*
U.S. Cl. D25—72

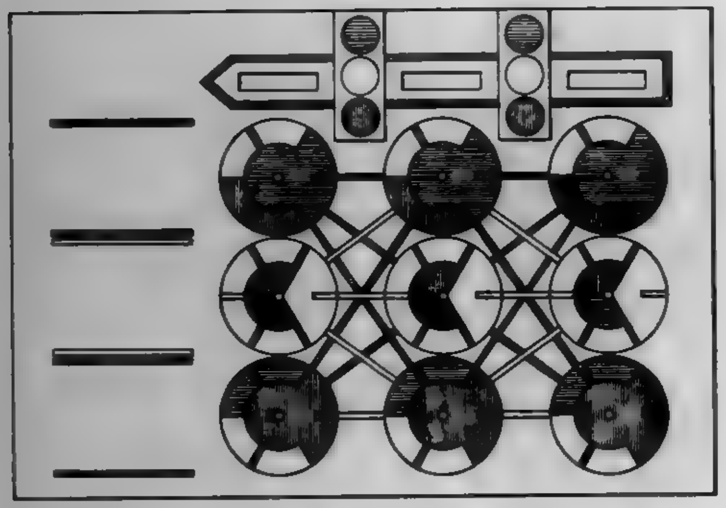


241,430
ROTARY CARD FILE
Joseph P. Maruca, Coventry, R.I., and Robert A. Chieda, Westport, Conn., assignors to Textron Inc., Providence, R.I.
Filed Aug. 28, 1973, Ser. No. 392,356
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76

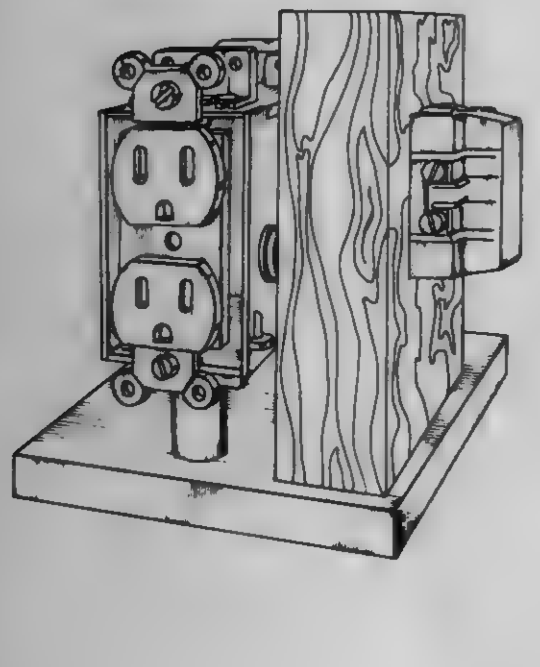




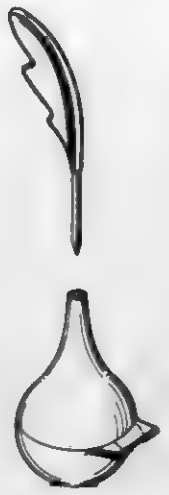
241,431
TRANSACTIONAL ANALYSIS TEACHING AID BOARD
Edward J. Johnson, Redondo Beach, Calif.
(7390 W. Manchester Ave., Los Angeles, Calif. 90045)
Filed June 17, 1974, Ser. No. 480,126
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—59



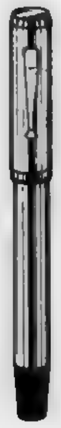
241,432
ELECTRICAL OUTLET TRAINING DEVICE
Jack N. Holcomb, Fort Lauderdale, Fla., assignor to
National Intelligence Academy
Filed Oct. 30, 1974, Ser. No. 519,067
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—62



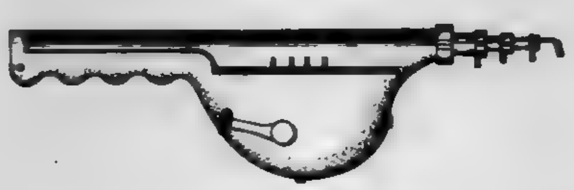
241,433
COMBINED NOTE PAPER DISPENSER AND PEN HOLDER WITH PEN
Matthew A. Moustakas, Mercerville, N.J., assignor to
CBS Inc., New York, N.Y.
Filed Mar. 24, 1975, Ser. No. 561,670
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—78



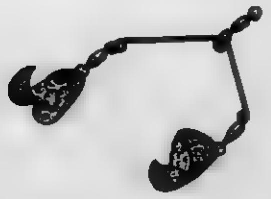
241,434
BALL POINT PEN
Richard Schenk, 933 Knollwood Road,
White Plains, N.Y. 10603
Filed Apr. 16, 1975, Ser. No. 568,414
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—49



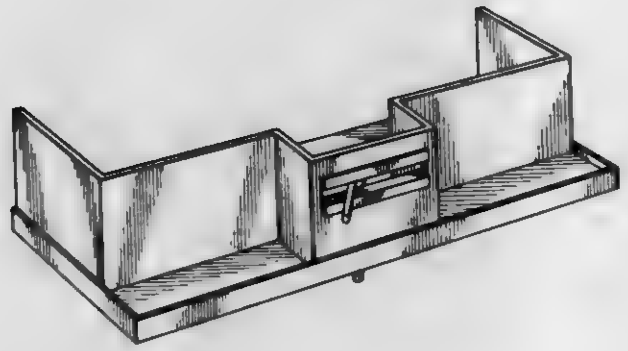
241,435
COMBINATION FISHING ROD AND REEL
Kerry Yuen, 17 Crowson Bay, Winnipeg,
Manitoba, Canada
Filed Mar. 4, 1975, Ser. No. 555,157
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—26



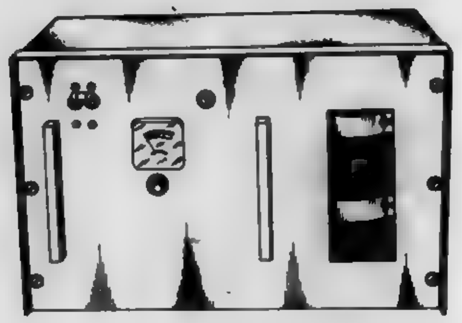
241,436
TWIN SPINNER BLADES
William O. Williams, Jr., 1309 Lynhurst Drive,
Gastonia, N.C. 28053
Filed June 6, 1975, Ser. No. 584,514
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29



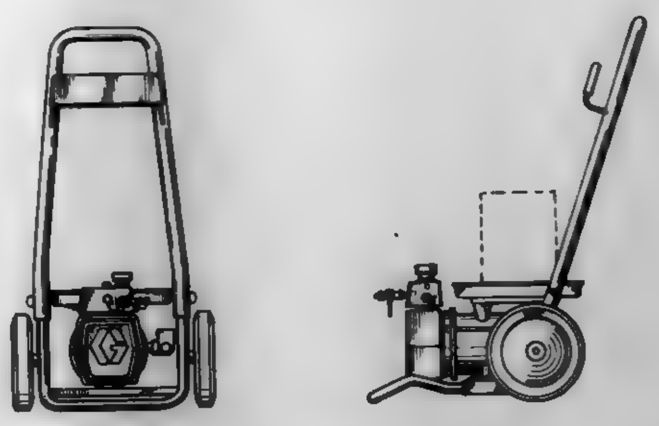
241,437
CABINET FOR A WATER PURIFICATION UNIT
Lawrence C. Oakley, 13647 Calais Drive,
Del Mar. Calif. 92014
Filed Sept. 24, 1973, Ser. No. 400,151
Term of patent 3½ years
Int. Cl. D23—*01*
U.S. Cl. D23—3



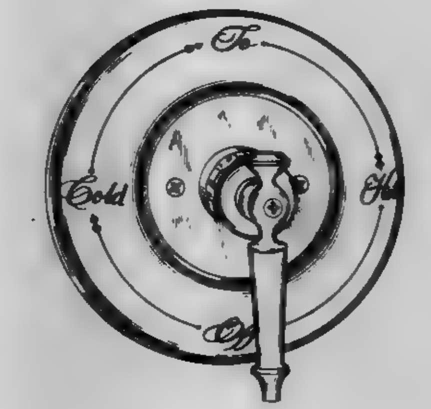
241,438
CHLORINATOR UNIT
Woo Chung Kim, 8601 International Ave., Apt. 256,
Canoga Park, Calif. 91304
Filed Dec. 19, 1974, Ser. No. 534,191
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



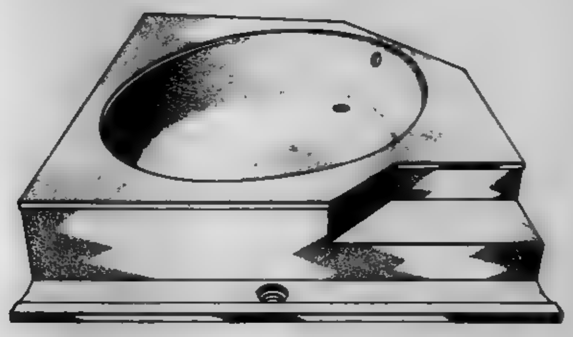
241,439
PORTABLE SPRAY UNIT
Lyle A. Ware, Bloomington, and Lawrence L. Lanerd, Crystal, Minn., assignors to Graco Inc., Minneapolis, Minn.
Filed Mar. 14, 1975, Ser. No. 558,208
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—18



241,440
COMBINED WATER CONTROL HANDLE AND ESCUTCHEON FOR A BATHTUB OR THE LIKE
Donald W. Doman, Janesville, Wis., assignor to
Kohler Co., Kohler, Wis.
Filed Feb. 6, 1976, Ser. No. 655,764
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—31

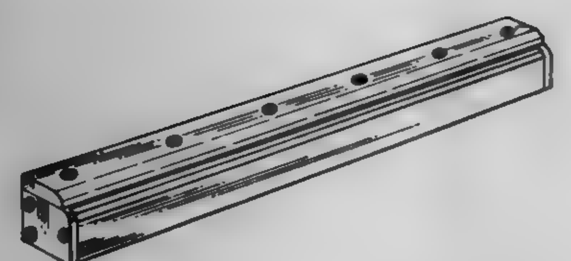


241,441
BATHTUB
Robert I. Rosenhaus, 1805 NE. 118th Road,
North Miami, Fla. 33161
Filed July 3, 1974, Ser. No. 485,388
Term of patent 3½ years
Int. Cl. D23—*02*
U.S. Cl. D23—55



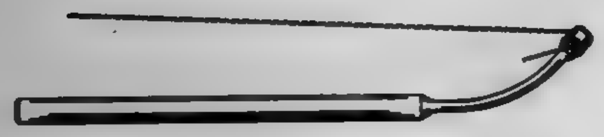
241,442
DEVICE FOR PRODUCING AN AIR CURTAIN

David A. Whitbread, Luton, England, assignor to F. Brauer Limited, Harpenden, England
Filed Sept. 17, 1974, Ser. No. 506,861
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151



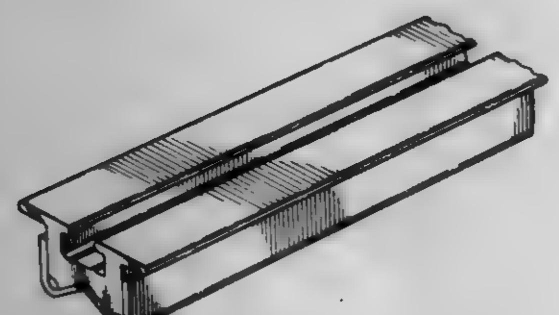
241,443
DENTAL FLOSS APPLICATOR

Charles R. Russell, 3071 Marilyn Way, Santa Barbara, Calif. 93105
Filed Sept. 24, 1974, Ser. No. 508,745
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—1 D



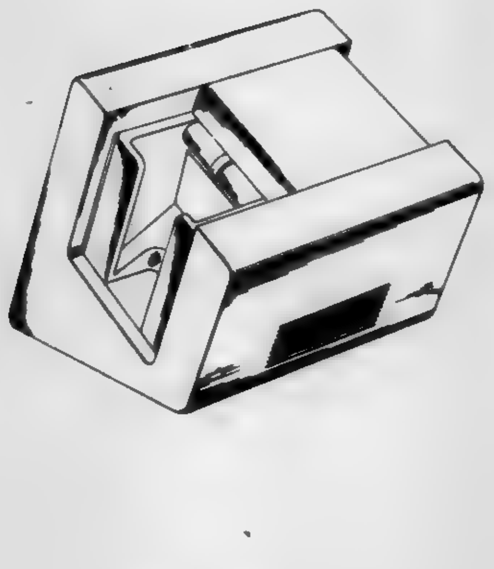
241,444
ELECTRICAL CONDUCTOR

Ronald J. Kilburg, Belmont, Calif., assignor to The Rucker Company, Oakland, Calif.
Filed Oct. 30, 1974, Ser. No. 519,100
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 A



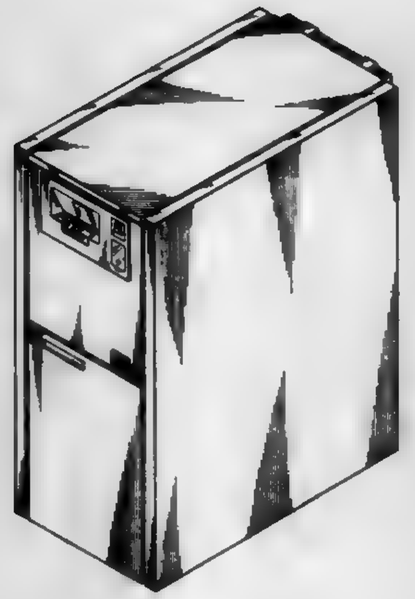
241,445
CARD READER

Charles A. Pycha, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 23, 1974, Ser. No. 535,641
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



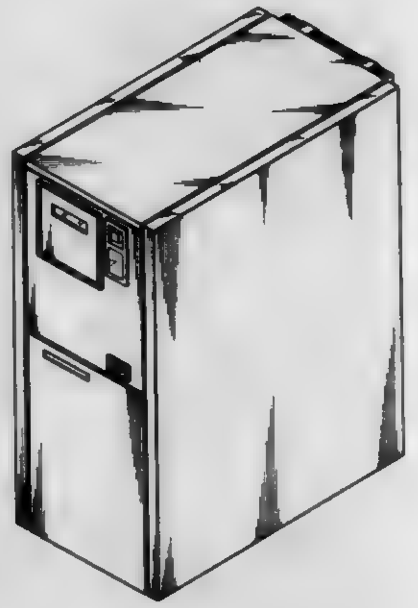
241,446
SINGLE MAGNETIC CARD-CONSOLE UNIT FOR AN ELECTRONIC TYPING SYSTEM

Robert A. Clowe, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 22, 1974, Ser. No. 526,296
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



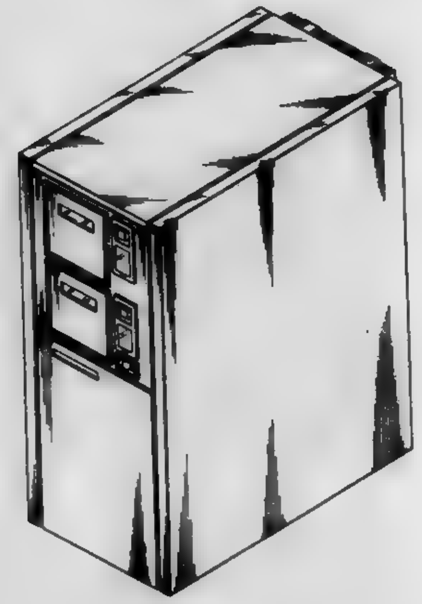
241,447
SINGLE MAGNETIC TAPE-CONSOLE UNIT FOR AN ELECTRONIC TYPING SYSTEM

Robert A. Clowe, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 22, 1974, Ser. No. 526,297
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



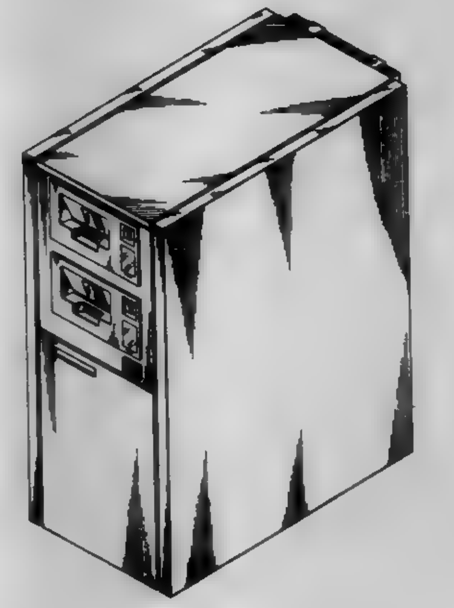
241,448
DUAL MAGNETIC TAPE-CONSOLE UNIT FOR AN ELECTRONIC TYPING SYSTEM

Robert A. Clowe, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 22, 1974, Ser. No. 526,295
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



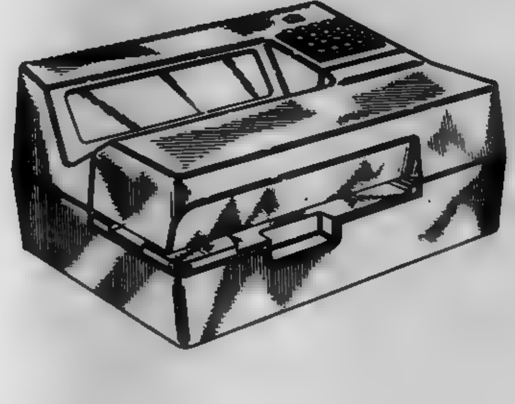
241,449
DUAL MAGNETIC CARD-CONSOLE UNIT FOR AN ELECTRONIC TYPING SYSTEM

Robert A. Clowe, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 22, 1974, Ser. No. 526,294
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

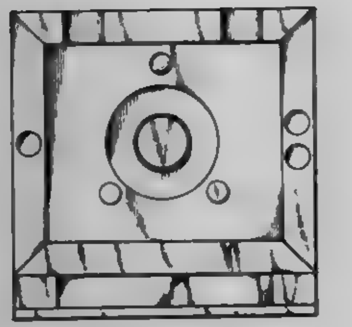


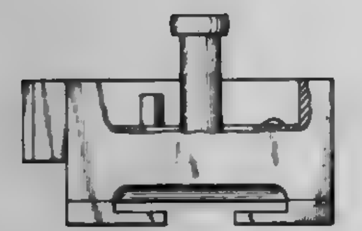
241,450
FUNDS TRANSFER TERMINAL OR SIMILAR ARTICLE

William L. King, Dayton, and Thomas L. Hermann, Springfield, Ohio, assignors to NCR Corporation, Dayton, Ohio
Filed Dec. 20, 1974, Ser. No. 534,971
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D26—5 C

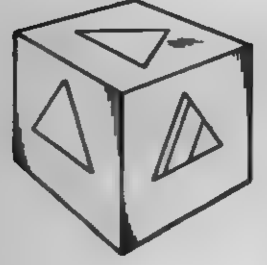


241,451
COMBINED PIPE-KNOCKER AND CADDY
Walter Edlund, 1234 Spear St.,
South Burlington, Vt. 05401
Filed Nov. 1, 1974, Ser. No. 520,097
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—25

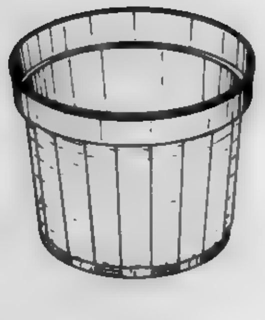


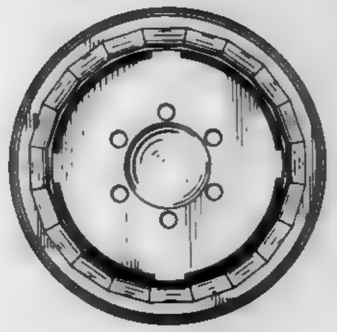


241,452
DIE
Snyder M. Zegel, 108 Monell Ave., Islip, N.Y. 11751
Filed July 24, 1974, Ser. No. 491,538
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 DT

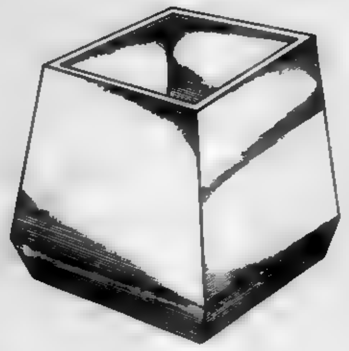


241,453
FLOWER POT OR SIMILAR ARTICLE
James H. Schwartzburg and Downer P. Dykes, Lawrence, Kans., assignors to Packer Plastics, Inc., Lawrence, Kans.
Filed July 2, 1975, Ser. No. 592,408
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—152

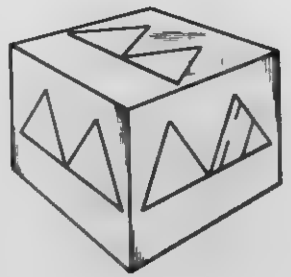




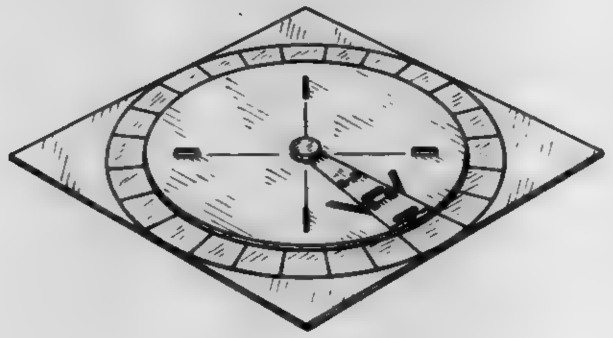
241,454
PLANT POT
James Pressley Craft III and Alan G. Blizzard, Claremont, Calif., assignors to Thermal Hydraulics Corporation
Filed Jan. 20, 1976, Ser. No. 650,722
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—155



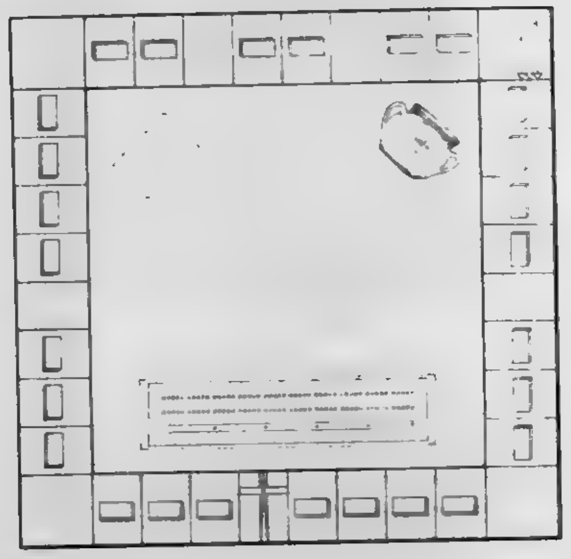
241,455
DIE
Snyder M. Zegel, 108 Monell Ave., Islip, N.Y. 11751
Filed July 24, 1974, Ser. No. 491,537
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 DT



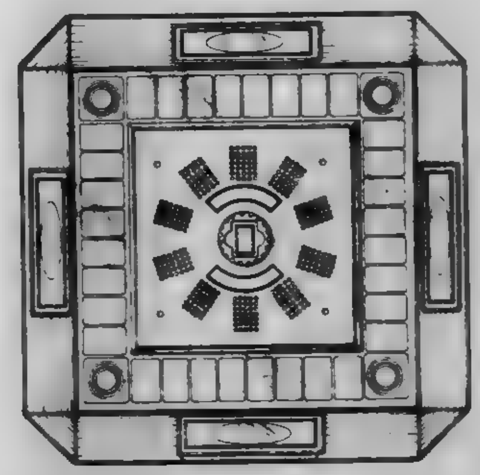
241,456
QUESTION AND ANSWER GAME BOARD
Robert E. Harris, 5366 N. Edgewood Drive,
Provo, Utah 84601
Filed Apr. 3, 1975, Ser. No. 564,961
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



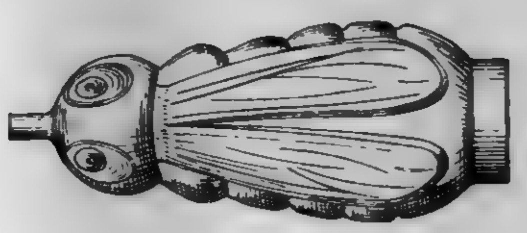
241,457
STOCK MARKET GAME BOARD
Gordon Ernest Hall, 410 E. 4th St.,
Pomona, Calif. 91766
Filed Mar. 24, 1975, Ser. No. 561,177
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



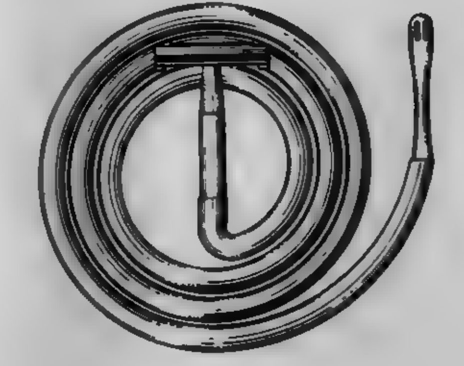
241,458
GAME BOARD
Robert Harold Hudson, Seekonk, Mass., and Robert Lucien Carignan, Providence, R.I., assignors to Hasbro Development Corp.
Filed June 2, 1975, Ser. No. 582,992
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



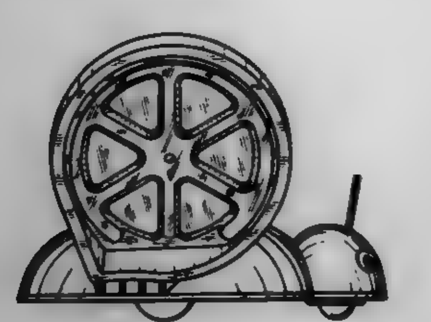
241,459
BUBBLE-BLOWING TOY
Harold D. Versten, Chicago, Ill., assignor to
Chemtoy Corporation, Cicero, Ill.
Filed Nov. 11, 1974, Ser. No. 522,429
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 H



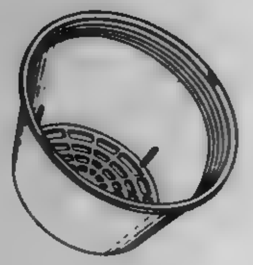
241,460
NOVELTY TOY RAZOR
John S. Holzli, Newton, N.J., assignor to
J. J. Jesk Company, Newton, N.J.
Filed Mar. 28, 1974, Ser. No. 455,886
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 R



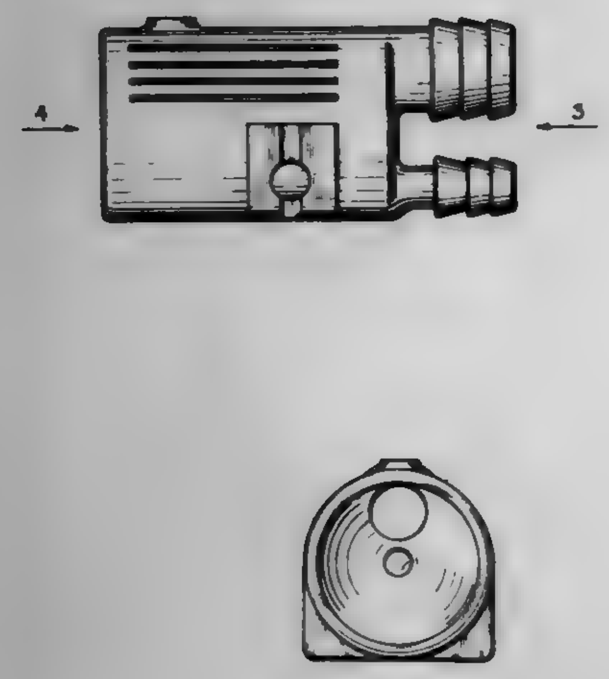
241,461
ANIMAL FIGURE TOY
Gregory Lambert, 12-58 5th St.,
Fair Lawn, N.J. 07410
Filed Feb. 10, 1975, Ser. No. 548,461
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 B



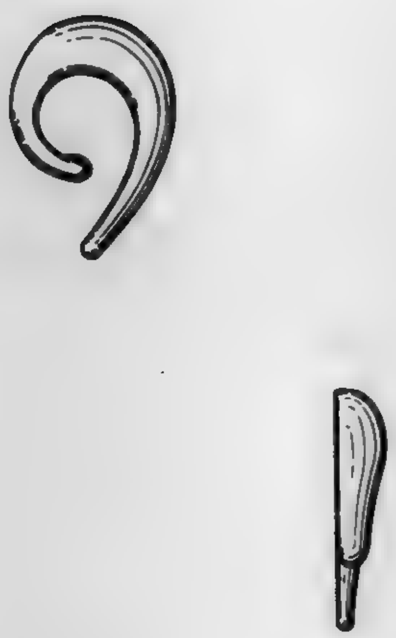
241,462
FLOWER POT
Frank T. Criscitiello, Jr., 1080 Prospect Ave.,
Mountainside, N.J. 07092
Filed Jan. 21, 1976, Ser. No. 651,046
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—152



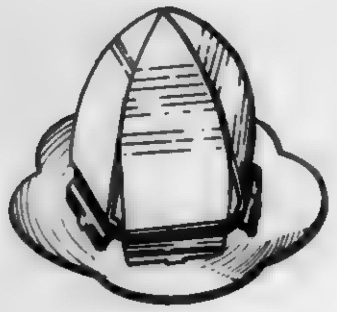
241,463
SANDBLAST GUN BODY
Stewart Ives Ashworth, Vale, Guernsey, Channel Islands, assignor to Abrasive International Limited, Henley-in-Arden, England
Filed Apr. 21, 1975, Ser. No. 570,132
Claims priority, application Great Britain Jan. 14, 1975
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—126



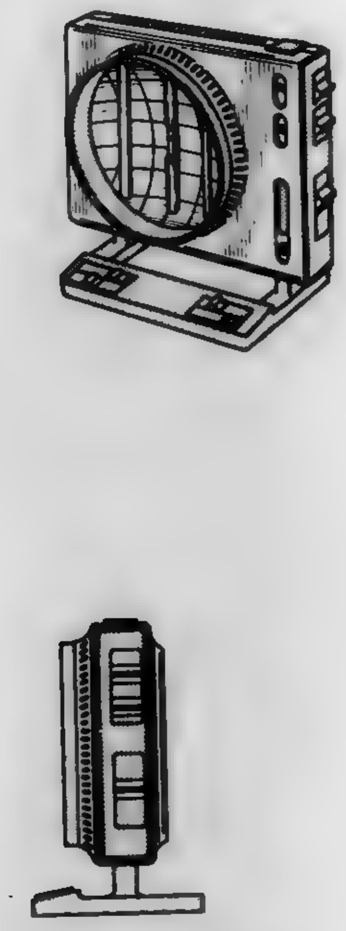
241,464
EARRING
Morty S. Ravkind, Great Neck, N.Y., assignor to Richton International Corporation
Filed June 23, 1975, Ser. No. 589,783
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—40



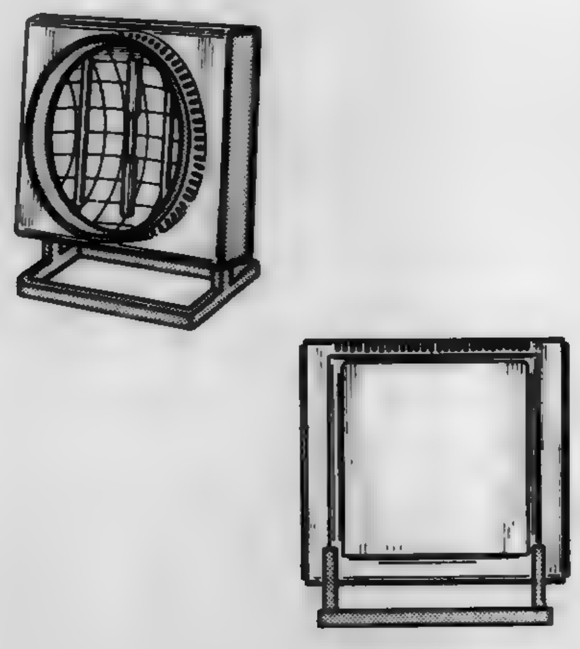
241,465
COMBINED CANDLE HOLDER AND EXTINGUISHER
Bengt Olof Petersson, Hisings Backa, Sweden, assignor to Bengt Petersson New Products Investment AB, Goteborg, Sweden
Filed Jan. 16, 1975, Ser. No. 541,586
Claims priority, application Sweden Aug. 14, 1974
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D48—2



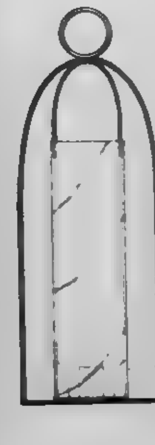
241,466
THERAPEUTIC LAMP
Petrus Jacobus Johanna Nagelkerke, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 11, 1974, Ser. No. 504,909
Claims priority, application Netherlands Mar. 18, 1974
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D48—20 H



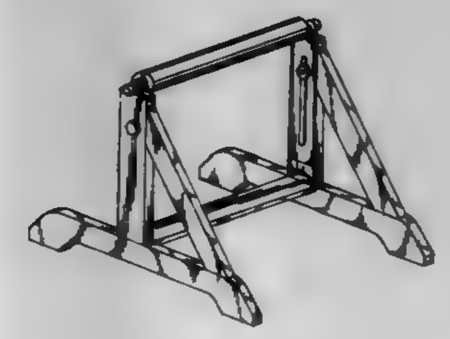
241,467
THERAPEUTIC LAMP
Petrus Jacobus Johanna Nagelkerke, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 11, 1974, Ser. No. 504,910
Claims priority, application Netherlands Mar. 18, 1974
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D48—20 H



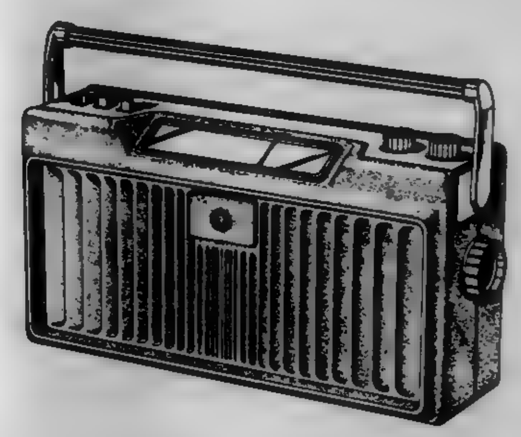
241,468
HURRICANE LAMP
Allen H. Green II, 1211 Prince Edward St.,
Fredericksburg, Va. 22401
Filed July 5, 1974, Ser. No. 486,093
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



241,469
ADJUSTABLE SAW HORSE FOR BENCH SAWS
James A. Crabtree, 391 SW. Forest Drive,
Issaquah, Wash. 98027
Filed Dec. 9, 1974, Ser. No. 531,145
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—67

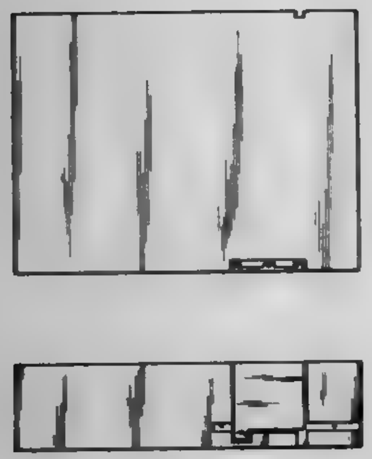


241,470
PORTABLE RADIO
Masanori Hamada, Moriguchi, Osaka, and Tomio Fugiwara, Osaka, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Dec. 18, 1974, Ser. No. 534,116
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



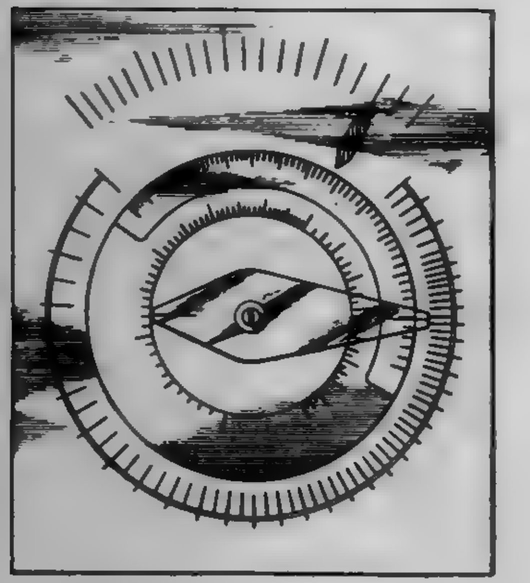
241,471
FILM CARTRIDGE

Thomas R. Wells, Des Plaines, Ill., assignor to
Bell & Howell Company, Chicago, Ill.
Filed Dec. 16, 1974, Ser. No. 532,809
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D26—14 R



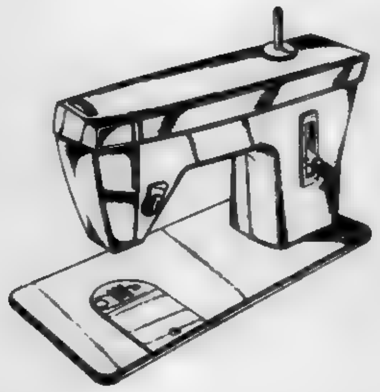
241,472
CALCULATOR FOR DETERMINING STARCH CONSUMPTION IN THE PRODUCTION OF CORRUGATED PAPER BOARD

John De Ligt, Covington, Va., assignor to
Westvaco Corporation, New York, N.Y.
Filed Sept. 13, 1974, Ser. No. 505,921
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D64—11 B



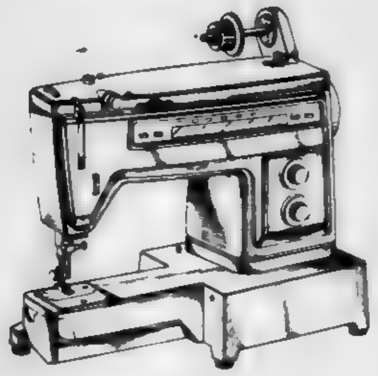
241,473
SEWING MACHINE FRAME OR SIMILAR ARTICLE

Donald Michael Genaro, Haworth, N.J., assignor to
The Singer Company
Filed Aug. 21, 1975, Ser. No. 606,396
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—76



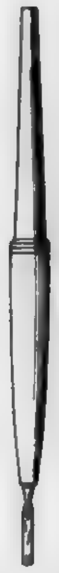
241,474
SEWING MACHINE FRAME OR SIMILAR ARTICLE

Donald Michael Genaro, 501 Contant Ave., Haworth, N.J. 07641, and Cristian Julian Felix, 43—32 170th St., Flushing, N.Y. 11358
Filed Sept. 4, 1975, Ser. No. 610,521
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—69



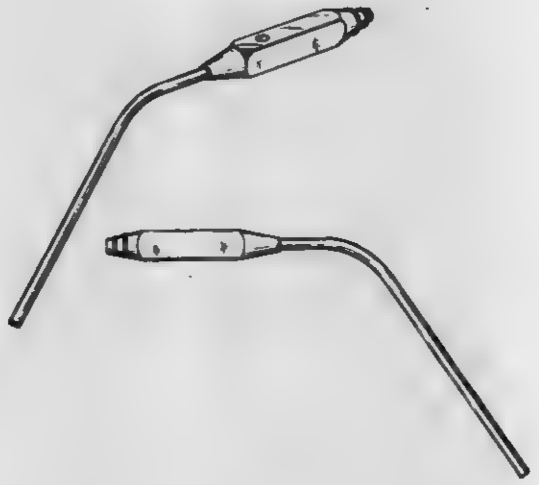
241,475
HIGH FREQUENCY ELECTRO-SURGERY KNIFE

David E. Staub, Clearwater, Fla., assignor to
Concept, Inc., Clearwater, Fla.
Filed Sept. 13, 1974, Ser. No. 505,568
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 B



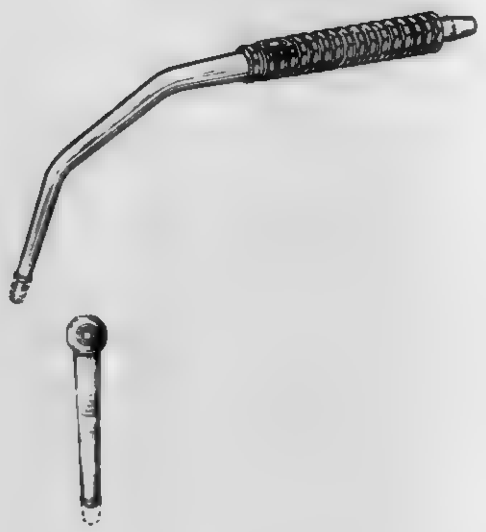
241,476
MEDICAL SUCTION INSTRUMENT

Charles A. Lahay, Fayette, Ala., assignor to Dart
Industries Inc., Los Angeles, Calif.
Filed Feb. 6, 1975, Ser. No. 547,513
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R



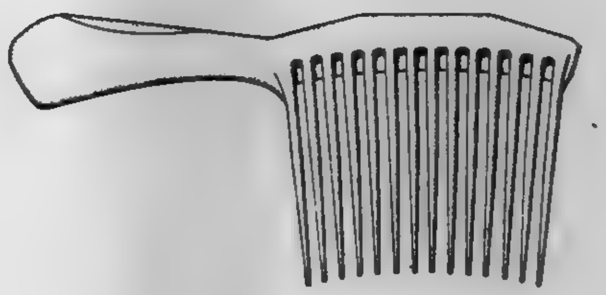
241,477
MEDICAL SUCTION INSTRUMENT

Charles A. Lahay, Fayette, Ala., assignor to Dart
Industries Inc., Los Angeles, Calif.
Filed Feb. 6, 1975, Ser. No. 547,532
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R



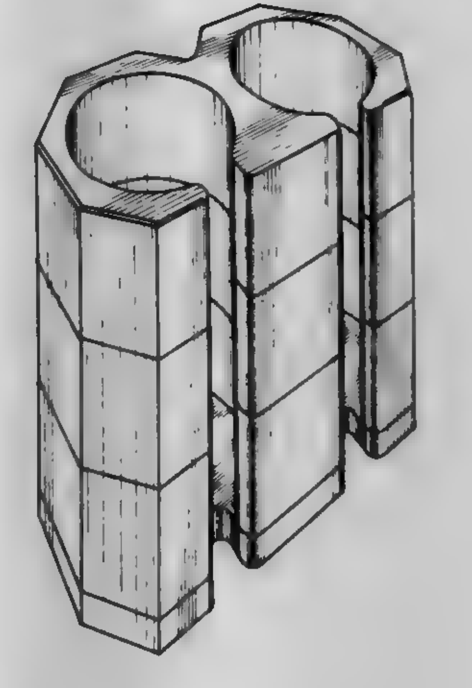
241,478
COMB

Anthony R. Romani, Hollidaysburg, Pa. (% Antonio's Manufacturing Inc., P.O. Box 1803, Altoona, Pa. 16603)
Filed Mar. 5, 1974, Ser. No. 448,278
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8

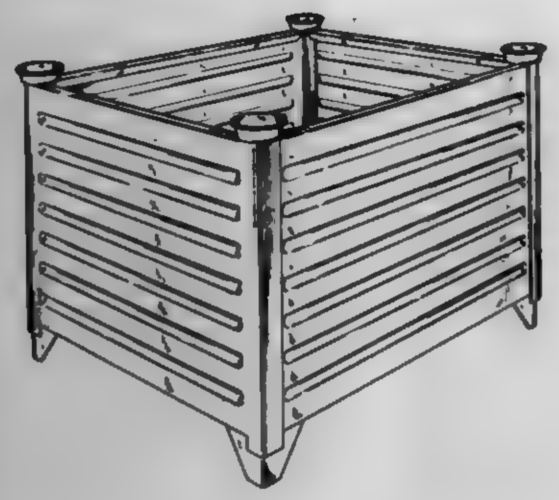


241,479
CONTAINER FOR TAPE ROLLS

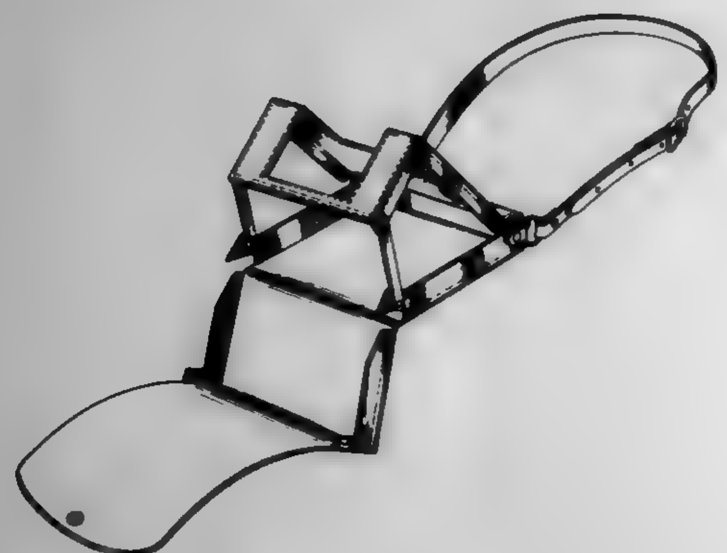
Curtis F. Mueller, Rte. 1, Highway PF,
Prairie du Sac, Wis. 53578
Filed Apr. 1, 1974, Ser. No. 456,798
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D



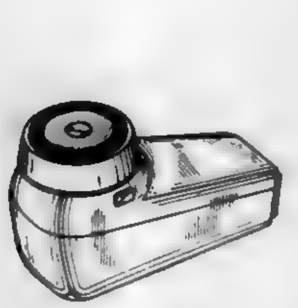
241,480
MATERIAL HANDLING BOX
Robert L. Silver and Bert R. Eisenhut, Racine, Wis., assignors to The Triple E Corporation, Racine, Wis.
Filed Mar. 21, 1975, Ser. No. 560,809
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



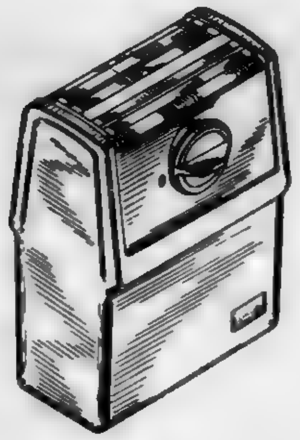
241,481
CAMERA CARRYING CASE OR SIMILAR ARTICLE
Richard R. Wareham, Marblehead, Mass., assignor to Polaroid Corporation
Filed Sept. 26, 1974, Ser. No. 509,796
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—5 E



241,482
DRY SHAVER OR SIMILAR ARTICLE
Jan Wassenaar, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 7, 1974, Ser. No. 440,596
Claims priority, application Switzerland Aug. 13, 1973
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



241,483
ELECTRIC SHAVER
Robert A. Chieda, Westport, Conn., assignor to Sperry Rand Corporation, Bridgeport, Conn.
Filed Feb. 24, 1975, Ser. No. 552,632
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF SEPTEMBER, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. Christiaens Societe Anonyme: *See*—
  - Delarge, Jacques E.; Thunus, Leopold N.; Lapiere, Charles Leon; and Georges, Andre H., 3,980,652.
- A-Lok Corporation: *See*—
  - Ditcher, John, 3,980,311.
- A/S Raufoss Ammunisjonsfabrikker: *See*—
  - Strandli, Kare Roald, 3,980,020.
  - Strandli, Kare Roald, 3,980,021.
- AB Svensk Varmematning CB-System: *See*—
  - Bornstein, Josef; and Karlsson, Stig Ingvar, 3,979,952.
- AB Ziristor: *See*—
  - Rauser, Jan Axel Ingemar, 3,980,512.
- Abbco, Inc.: *See*—
  - Abbott, Charles N., 3,980,532.
  - Abbott, Charles N., 3,980,533.
- Abbott, Charles N., to Abbco, Inc. Deposition of brass by electroplating. 3,980,532, Cl. 204-44.000.
- Abbott, Charles N., to Abbco, Inc. Brass plating. 3,980,533, Cl. 204-44.000.
- Abdel-Latif, Mohamed Abdel-Fattah: *See*—
  - Blomstrom, Gary D.; Cochran, Thomas E.; Abdel-Latif, Mohamed Abdel-Fattah; and York, Lyle E., 3,980,149.
- Abt, Jurgen: *See*—
  - Wessel, Wolf; Sautter, Wilfried; Abt, Jurgen; and Handtmann, Dieter, 3,980,062.
- Aciers, Ugine: *See*—
  - Pinettes, Jacques; and Hily, Guy, 3,980,425.
- Ackerman, William R., Jr., to W. R. Weaver Company. Adjustable base and mount for firearm optical sight. 3,979,848, Cl. 42-1.00S.
- Acuncius, Dennis S.: *See*—
  - Rosof, Barry H.; Klein, H. Joseph; and Acuncius, Dennis S., 3,980,468.
- Adams, John O.; Woodard, Kenneth E., Jr.; and Specht, Steven J., to Olin Corporation. Apparatus and method for securing a fabricated diaphragm to electrodes in an electrolytic cell. 3,980,544, Cl. 204-286.000.
- Adams, Raymond J., to Curtis Nuclear Corporation. Polymeric competitive protein binding adsorbents for radioassey. 3,980,764, Cl. 424-1.000.
- Addressograph Multigraph Corporation: *See*—
  - Jackson, Jerome E., 3,980,474.
- Adiletta, Joseph G., to Pall Corporation. Filter nozzle for air gun. 3,980,238, Cl. 239-590.300.
- Adolf Jerger KG: *See*—
  - Dorflinger, Helmut; Ropertz, Erich; and Ruf, Bruno, 3,979,900.
- Aeronutronic Ford Corporation: *See*—
  - Mattei, Anthony, 3,980,873.
- Affiliated Hospital Products, Inc.: *See*—
  - Mitchell, Larry D.; and Tanner, Murray Q., III, 3,980,288.
- AFGA-GEVAERT N.V.: *See*—
  - De Roo, Pierre Richard; Van Engeland, Jozef Leonard; and Van der Auweraer, Gaston Eduard, 3,980,575.
  - Dierckx, Peter Gerard, 3,980,417.
  - Ghys, Theofiel Hubert; Vanassche, Willy Joseph; and Pattyn, Herman Alberik, 3,980,481.
- Ag-Met, Inc.: *See*—
  - Higgins, David L., 3,980,538.
- Agouri, Elias; Catte, Raymond; and Dauba, Jean-Louis, to Societe Anonyme Ato Chimie. Homogeneous polyolefin and arylvinyl-polymer-based compositions. 3,980,736, Cl. 260-876.00B.
- Ahlgren, Nils Harald. Method of supporting bridge structures and like heavy-weight rigid structures upon displacement thereof. 3,979,787, Cl. 14-75.000.
- Aiba, Masahiko: *See*—
  - Fujimoto, Isao; Kasubuchi, Takeshi; and Aiba, Masahiko, 3,981,019.
- Aine, Harry E. Electrode structures for electric treatment of fluids and filters using same. 3,980,541, Cl. 204-186.000.
- Air Preheater Company, Inc., The: *See*—
  - Stockman, Richard Franklin, 3,980,128.
- Aisin Seiki Kabushiki Kaisha: *See*—
  - Ishigami, Noriakira; Kozakai, Asao; Ishikawa, Masakazu; and Ota, Takaaki, 3,980,987.
  - Kuromitsu, Hiromu, 3,979,912.
  - Murakami, Noboru, 3,979,974.
  - Sakai, Toshimitsu; and Miyao, Takayuki, 3,979,972.
- Aizawa, Hiroshi: *See*—
  - Iwashita, Tomonori; Aizawa, Hiroshi; Kozuki, Susumu; and Uchidoi, Masanori, 3,981,022.
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  - Hernborg, Gunnar, 3,980,862.
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- Alderson, Loren L., to Cessna Aircraft Company, The. Priority flow valve. 3,979,908, Cl. 60-422.000.
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  - Dronov, Alexei Efimovich; Axenov, Nikolai Nikitovich; Kozlov, Lolly Ivanovich; Semenov, Vladimir Petrovich; Sobolevsky, Viktor Stanislavovich; Yagodkin, Viktor Ivanovich; Golosman, Evgeny Zinovievich; Alexeev, Arkady Mefodievich; Chistozvonov, David Borisovich; Shumlyakovsky, Taezar Iosifovich; and Ulyanov, Nikolai Savelievich, 3,980,584.
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- Aller, Edmund R.; and Arndt, Richard W., to General American Transportation Corporation. Hopper unloading system. 3,980,212, Cl. 222-485.000.
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- Bardin, Robert; and Toulouze, Andre, to Rhone-Poulenc S.A. Membrane support-plates for fluid separating apparatus and apparatus using such support-plates. 3,980,564, Cl. 210-321.00R.
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  - Schoettle, Klaus; Wittkamp, Heinrich; and Domas, Friedrich, 3,981,025.
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- Baysinger, Robert L.; and Love, John J., to Emerson Electric Co. Burner control system for domestic gas range ovens. 3,980,420, Cl. 431-78.000.
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  - Lipari, Dominic Timothy, 3,980,805.
  - Seidel, Harold, 3,980,967.
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  - Greenfield, Walter; and Berg, Raymond, 3,980,436.
- Bergandi Manufacturing Company, Inc.: *See—*
  - Evers, Jack Rolf; and Rohrbacher, Herbert Edward, 3,980,108.
- Bergdahl, Knut. Heat exchange in ventilation installation. 3,980,129, Cl. 165-17.000.
- Bergen, Richard F.: *See—*
  - Pollack, Joel M.; and Bergen, Richard F., 3,980,396.
- Berk, Jerome: *See—*
  - Shaw, Irving F.; and Berk, Jerome, 3,980,766.
- Berkenkamp, Hans: *See—*
  - Franke, Friedrich; Wenzel, Werner; Meraikib, Mohamed; and Berkenkamp, Hans, 3,980,447.
- Berkman, Samuel; and Martin, John George, to RCA Corporation. Graphite susceptor structure for inductively heating semiconductor wafers. 3,980,854, Cl. 219-10.490.
- Berney, Joseph C. Container accumulating apparatus. 3,979,878, Cl. 53-61.000.
- Berns, Charles; and Podany, Vaclav O., to General Signal Corporation. Smoke detector. 3,980,997, Cl. 340-237.00S.
- Bernstein, Irwin B.: *See—*
  - Barrington, David W.; Bernstein, Irwin B.; Rees, Thomas C.; and Wagener, Anthony P., Jr., 3,980,488.
- Berry, Hollis M.: *See—*
  - Gilchrist, Henry R.; and Berry, Hollis M., 3,979,872.
- Berthoud, Andre, to Technicair S.A. Apparatus for purifying a gaseous stream. 3,980,458, Cl. 55-248.000.
- Berti, Giovanni: *See—*
  - Gelli, Edo; and Berti, Giovanni, 3,979,893.
- Berube, Arthur A. Ferromagnetic currency validator. 3,980,990, Cl. 340-149.00R.
- Besik, Ferdinand, to Ontario Research Foundation. Adsorption biooxidation treatment of waste waters to remove contaminants therefrom. 3,980,556, Cl. 210-6.000.
- Bessi, Giovanni. Knitting machines. 3,979,927, Cl. 66-9.00R.

Best, Thomas, to Tyler Manufacturing Co. Apparatus for converting a flat blade band saw for use with spiral blades. 3,979,988, Cl. 83-820.000.

Bestobell Mobrey Limited: *See*—
  Prosser, Paul E.; and Hookway, Alan F. J., 3,980,979.

Beuttenmuller, Oscar: *See*—
  Bellati, Hans; Beuttenmuller, Oscar; and Huber, Hans, 3,980,357.

Beveridge, Harold Norman. Wide angle cylindrical wave loudspeaker extending approximately from floor to ceiling height with a lens. 3,980,829, Cl. 179-1.0GA.

Bianco, Eric L. Combination lock and switch device. 3,980,844, Cl. 200-43.000.

Bickford, William J., to Raytheon Company. Digital communications system with immunity to frequency selective fading. 3,980,945, Cl. 325-30.000.

Bielsten, Nils Ove; Dahle, Orvar; Grek, Ronald; Hoffman, Bertil; Siby, Sture; and Widehn, Ake, to Allmanna Svenska Elektriska Aktiebolaget. Method of energizing a magnetic stress transducer to reduce the creep of the measuring signal. 3,980,947, Cl. 324-34.0ST.

Bien, Hans-Samuel: *See*—
  Hohmann, Walter; Wunderlich, Klaus; and Bien, Hans-Samuel, 3,980,677.

Bieri Pumpenbau A.G.: *See*—
  Strausak, Benedikt, 3,979,788.

Biester, Robert E.; and Balciunas, Eugene T., to Sherwin-Williams Company, The. Apparatus and process for protecting machinery. 3,979,980, Cl. 83-13.000.

Big Three Industries, Inc.: *See*—
  Plummer, Ray A.; and Johnson, Charles W., 3,980,136.

Bindra, Jasjit S.: *See*—
  Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., 3,980,642.

Bio-Medical Sciences, Inc.: *See*—
  Godsey, Frank W., Jr.; and Khattab, Ghazi, 3,980,581.

Bio-Medicus, Inc.: *See*—
  Kletschka, Harold D.; and Rafferty, Edson D., 3,980,086.

Biola, Georges; Fabre, Alain; and Schneider, Gerard, to Rhone-Poulenc Industries. Method for continuous production of propylene oxide. 3,980,676, Cl. 260-348.50V.

Birdsall, John D., to Hasbro Development Corporation. Pencil sharpener. 3,980,113, Cl. 144-28.600.

Birum, Gail H., to Monsanto Company. Cyclic organophosphorus amides. 3,980,618, Cl. 260-551.00P.

Bishop, Walton B., to United States of America, Navy. Bernoulli-DeMoivre sliding window friend-accept decider. 3,981,009, Cl. 343-5.0VQ.

Bisk, Max. Plastic hanger. 3,980,228, Cl. 223-88.000.

Bither, Tom Allen, Jr.; and Jeitschko, Wolfgang Karl, to Du Pont de Nemours, E. I., and Company. Device for use of lithium haloboracites as solid electrolytes. 3,980,499, Cl. 204-295.000.

Bitonti, Paul A., to Ross Operating Valve Company. Safety valve for tailgates or the like. 3,980,336, Cl. 298-23.00M.

Black and Decker Manufacturing Company, The: *See*—
  Klein, Henry, 3,980,909.

Black, James A. Stencil screen coating apparatus. 3,980,017, Cl. 101-127.000.

Black, Ronald F.; Kurtz, Clarence P.; and Pasek, Robert J., to Rohm and Haas Company. System for removing chloromethyl ether and bis-chloromethyl ether from air contaminated therewith. 3,980,755, Cl. 423-240.000.

Blanie, Paul Marie Michel Jean. Drug interaction system. 3,979,839, Cl. 35-17.000.

Blankenhorn, David H. Dietary aid. 3,980,866, Cl. 235-61.12N.

Blankenhorn, Paul R.: *See*—
  Whiting, David A.; Blankenhorn, Paul R.; and Kline, Donald E., 3,980,004.

Blaustein, Aaron: *See*—
  Haas, David J.; Blaustein, Aaron; Rudd, Chester D.; Lapof, Ray C.; and Schimpf, William C., 3,980,889.

Bliss & Laughlin Ind., Inc.: *See*—
  Schrepferman, John R., 3,980,179.

Blomstrom, Gary D.; Cochran, Thomas E.; Abdel-Latif, Mohamed Abdel-Fattah; and York, Lyle E., to Caterpillar Tractor Co. Stress-relieved axle mounting for track-type vehicles. 3,980,149, Cl. 180-9.100.

Blonde, Guy; and Lefebvre, Louis, to Societe Outinord-St-Amand. Tunnel framing for poured concrete. 3,979,919, Cl. 61-45.00C.

Bluhm, Otto J. Signal light and base. 3,980,989, Cl. 340-84.000.

Bobylev, Jury Petrovich: *See*—
  Kutsevalov, Vitaly Mikhailovich; Kanter, Valery Konstantinovich; Kornilov, Georgy Sazonovich; Ozols, Vitaly Ivanovich; Frolov, Vladimir Ivanovich; Glushkov, Alexandr Timofeevich; Leontiev, Igor Vitalievich; Elizarov, Vladislav Alexandrovich; Bobylev, Jury Petrovich; Mednitsky, Viktor Georgievich; and Bushuev, Viktor Vasilievich, 3,980,950.

Boehringer Ingelheim GmbH: *See*—
  Pomanza, Genus; Freter, Kurt; and Luttke, Sven, 3,980,658.

Boeing Company, The: *See*—
  Simeon, Peter Eberhard, 3,980,258.
  Smith, Howard Warren, 3,979,949.

Bofinger, Peter. Interlocking system for roadway traffic barriers. 3,980,279, Cl. 256-13.100.

Boggs, Beryl Aaron, to Allied Chemical Corporation. Screw jet pack for textile fibers. 3,980,176, Cl. 206-392.000.

Bolton, Douglas R., to Cadaco, Inc. Game structure. 3,980,303, Cl. 273-93.000.

Bond, Raymond E.: *See*—
  Jakes, Gerald A.; and Bond, Raymond E., 3,980,170.

Bone, Clive, to Post Office, The. Electrical connector. 3,980,379, Cl. 339-91.000.

Bongartz, Heinz Bertram; Wolfertz, Gunter; Stanik, Reimund; and Kraft, Gottfried, to Schaeffer-Homberg GmbH, Firma. Snap fastener. 3,979,802, Cl. 24-213.00R.

Bonham, David C. Hair seizure and implantation method. 3,980,090, Cl. 132-5.000.

Boniuk, Vivien, to Revlon, Inc. Intraocular lens and supporting system therefor. 3,979,780, Cl. 3-13.000.

Boom, Clarence O.: *See*—
  Roos, Henry H.; and Boom, Clarence O., 3,980,144.

Boom, Roger W.; Peterson, Harold A.; and Young, Warren C., to Wisconsin Alumni Research Foundation. Support structure for rippled superconducting magnet. 3,980,981, Cl. 335-216.000.

Boot, Phillip Handford; and Ellen, Peter Edington, to H.H. Boot & Sons Pty. Limited. Building construction formed of stackable building cells. 3,979,865, Cl. 52-236.000.

Boothe, Richard A. Adaptor. 3,979,784, Cl. 5-343.000.

Bornstein, Josef; and Karlsson, Stig Ingvar, to AB Svensk Varmematning CB-System. Device for measuring heat consumption in individual apartments in a centrally heated building. 3,979,952, Cl. 73-193.00R.

Bos, Sietjo B., to Landustrie Sneek, Machinefabriek Elektrotechniek B.V. Devices for aerating liquids. 3,980,740, Cl. 261-91.000.

Bostrom, Harry H.; and Joyce, John T., to Molon Motor and Coil Corporation. Fractional horsepower gear motor. 3,980,937, Cl. 318-466.000.

Boudouris, Georges; Kalopissis, Gregoire; Roussopoulos, Paul; and Leveaque, Jean-Luc, to L'Oreal. Method and apparatus for dissipating high frequency energy inside a material to be treated. 3,980,855, Cl. 219-10.55A.

Bourgoin, Rene Leon Clement: *See*—
  Proner, Raymond Louis; and Bourgoin, Rene Leon Clement, 3,980,189.

Bouteille, Daniel; and Nicolas, Michel, to La Telemecanique Electrique. Swivelling coupling for fluid. 3,980,324, Cl. 285-179.000.

Bouvier, Georg: *See*—
  Grill, Michael; and Bouvier, Georg, 3,980,753.

Bouwkamp, Gerald R., to Stanadyne, Inc. Fuel injection nozzle. 3,980,234, Cl. 239-533.000.

Bouy, Pierre: *See*—
  Bachot, Jean; Bouy, Pierre; and Juillard, Michel, 3,980,613.
  de Lachaux, Hubert; Bouy, Pierre; and Conan, Michel, 3,980,545.

Bowe, James M.: *See*—
  Swartz, Richard H.; Pearce, Richard J.; and Bowe, James M., 3,980,143.

Bowen, Robert J.: *See*—
  Urbach, Herman B.; Icenhower, David E.; Cervi, Mark C.; and Bowen, Robert J., 3,980,498.

Boyreau, Marcel, to Exchange National Bank of Chicago. Method of recording and identifying intelligence on bank checks by category and of indexing cancelled bank checks by category for subsequent use. 3,980,323, Cl. 283-57.000.

Bozhko, Valery Pavlovich: *See*—
  Kononenko, Vadim Grigorievich; Bozhko, Valery Pavlovich; Stelmakh, Viktor Alexeevich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Bukin, Jury Mikhailovich; Novikov, Anatoly Egorovich; Shaipova, Sania Fatyakhovna; Filyanov, Anatoly Nikolaevich; Shalbaian, Armais Semenovich; Grechka, Vitaly Dmitrievich; Tsyban, Nikolai Grigorievich; Gilmutdinov, Abdulla Gilmutdinovich; Regida, Fedor Ivanovich; Kazanovich, Lidia Evgenievna; Gertsuk, Nikolai Andreevich; Kolokolov, Boris Alexeevich; Morgolenko, Anatoly Sergeevich; Livanov, Vladimir Alexandrovich; Berezko, Anatoly Mikhailovich; Petrenko, Anatoly Avraamovich; Mikhin, Trofim Andrianovich; Fedotov, Mikhail Nikitich; Zakirov, Robert Sharafutdinovich, deceased; and Zakirova, Ganna Fedgrovna, administratix, 3,980,413.

Bozzuto, Carl Richard: *See*—
  Dixson, Donn Lewis; and Bozzuto, Carl Richard, 3,980,756.

BP Chemicals International Limited: *See*—
  Bradley, Basil John; Craig, Peter James; and Gammon, Geoffrey James, 3,980,603.

Brack, Alfred, to Bayer Aktiengesellschaft. Water-insoluble barbituric acid-substituted naphthalactam dyestuff. 3,980,651, Cl. 260-256.40C.

Brackmann, Warren A.; and Dilaani, Daniel, to Rothmans of Pall Mall Canada Limited. Cigarette making machine. 3,980,088, Cl. 131-84.00B.

Bradley, Basil John; Craig, Peter James; and Gammon, Geoffrey James, to BP Chemicals International Limited. Microsuspension polymerization process to yield vinyl halide polymer latex involving delayed addition of bulk monomer mix. 3,980,603, Cl. 260-29.60R.

Braithwaite, David G.; and Hettinger, William P., Jr., to NL Industries, Inc. Process for producing magnesium metal from magnesium chloride brines. 3,980,536, Cl. 204-70.000.

Brault, Yves; and Josse, Paul, to Compagnie Generale de Telegraphie. Random frequency radar systems. 3,981,012, Cl. 343-17.10R.

Bredart, Guy; and Gilot, Alain, to Burroughs Corporation. High-speed/low-speed interface for data processing systems. 3,980,993, Cl. 340-172.500.

Bredeson, Dean K., to French Oil Mill Machinery Company, The. Split worm for screw press. 3,980,013, Cl. 100-117.000.

Breeze, Eric; and Alfke, Peter, to Fairchild Camera and Instrument Corporation. Electronic tuning control system for television. 3,980,951, Cl. 325-464.000.

Brenner, Gunter; Credner, Karl; Goring, Joachim; and Tauscher, Manfred, to Wulfing, Johann A. 3-Methylpyrazole-5-carboxylates and medicaments containing these compounds. 3,980,646, Cl. 260-247.20A.

Brenner, William F.: *See*—
  Dale, John R.; Brenner, William F.; McEachern, James F.; Leupold, Walter L.; and McDemus, Edward A., 3,980,985.

Breslow, Jeffrey D., to Marvin Glass & Associates. Concealed playing piece apparatus. 3,980,298, Cl. 273-1.00R.

Breslow, Jeffrey D.; and Jaworski, Eugene, to Marvin Glass & Associates. Simulated bowling apparatus. 3,980,305, Cl. 273-102.0AP.

Bresnick, Herbert L., to Xerox Corporation. Corona current interrupter. 3,980,929, Cl. 317-16.000.

Bridges, Robert M., to Bendix Corporation, The. Underwater connector. 3,980,984, Cl. 340-8.00R.

Bristol-Myers Company: *See*—
  Buchanan, Ronald Leslie; and Jelenevsky, Alex Michael, 3,980,668.
  Grossman, Joseph H.; and Hardcastle, Glenn A., Jr., 3,980,637.
  Monkovic, Ivo; Wong, Henry; and Lim, Gary, 3,980,641.
  Partyka, Richard Anthony; Holava, Henry Michael; and Jelenevsky, Alex Michael, 3,980,667.

British Aircraft Corporation Limited: *See*—
  Greenhalgh, Richard David; Saunders, Ronald Alexander; and Seyfang, George Reginald, 3,980,259.

British Insulated Callender's Cables Limited: *See*—
  Dutton, David; and Moss, James, 3,979,940.

British Petroleum Company Limited, The: *See*—
  Battersby, John; and Forbes, Eric Simon, 3,980,450.

British Steel Corporation: *See*—
  Foster, George Ernest, 3,979,943.

Broad, Bernard Henry, to English Clays Lovering Pochin & Company Limited. Plate filter presses. 3,980,012, Cl. 100-115.000.

Brodbeck, Brunhilde. Massaging and relaxing device. 3,980,079, Cl. 128-57.000.

Brookfield, Richard A. Device for measuring the pitch diameter of gears. 3,979,834, Cl. 33-147.00M.

Broussalian, George L. Halogenated immunoadsorbent. 3,980,765, Cl. 424-1.000.

Browall, Warella R., to General Electric Company. Method for sealing breaches in multi-layer ultrathin membrane composites. 3,980,456, Cl. 55-158.000.

Brown, George M., to Lawrence Peska Associates, Inc., a part interest. Snow removal device. 3,979,794, Cl. 37-12.000.

Brown, Maurice H.: *See*—
  Anderson, Matthew E.; and Brown, Maurice H., 3,980,019.

Brown, Robert Leon, to Lawrence Peska Associates, Inc., a part interest. Tennis game apparatus kit. 3,980,299, Cl. 273-29.00R.

Browning-Ferris Industries, Inc.: *See*—
  Thompson, Steve R., 3,980,558.

Browning, Iben, to Sydnor-Barent, Inc. Recorder and reproducer system. 3,980,818, Cl. 178-6.60R.

Bruning, William E., to Omni Corporation. Grain door and method of installation. 3,980,124, Cl. 160-368.00G.

Bryant, Charles Peterson: *See*—
  Pindar, John Francis; Cohen, Jerome Martin; and Bryant, Charles Peterson, 3,980,569.

Buchanan, Ronald Leslie; and Jelenevsky, Alex Michael, to Bristol-Myers Company. Anti-arrhythimic 5-endo-(3-indolecarbonyloxy)-N-[amino-(lower)alkyl]bicyclo[2,2,1]heptane-2,3-di-endo-carboxylic acid imides. 3,980,668, Cl. 260-326.00C.

Buchel, Karl Heinz: *See*—
  Draber, Wilfried; Buchel, Karl Heinz; Regel, Erik; and Plempel, Manfred, 3,980,780.

Buck K.G., Firma: *See*—
  Schiessl, Alois; and Van Acken, Rudiger, 3,979,850.

Buckl, Hans; Fahn, Rudolf; and Hofstadt, Carl Ernst, to Sud-Chemie AG. Process for obtaining xylitol from natural products containing xylan. 3,980,719, Cl. 260-635.00C.

Buckley, William D. Process of making a filament-type memory semiconductor device. 3,980,505, Cl. 148-1.500.

Budden, Robert G.: *See*—
  Butlak, Eugene W.; and Budden, Robert G., 3,980,069.

Bukalo, Alfred Iosifovich: *See*—
  Paton, Boris Evgenievich; Lakomsky, Victor Iosifovich; Melnik, Gary Alexandrovich; Chvertko, Anatoli Ivanovich; and Bukalo, Alfred Iosifovich, 3,980,802.

Bukin, Jury Mikhailovich: *See*—
  Kononenko, Vadim Grigorievich; Bozhko, Valery Pavlovich; Stelmakh, Viktor Alexeevich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Bukin, Jury Mikhailovich; Novikov, Anatoly Egorovich; Shaipova, Sania Fatyakhovna; Filyanov, Anatoly Nikolaevich; Shalbaian, Armais Semenovich; Grechka, Vitaly Dmitrievich; Tsyban, Nikolai Grigorievich; Gilmutdinov, Abdulla Gilmutdinovich; Regida, Fedor Ivanovich; Kazanovich, Lidia Evgenievna; Gertsuk, Nikolai Andreevich; Kolokolov, Boris Alexeevich; Morgolenko, Anatoly Sergeevich; Livanov, Vladimir Alexandrovich; Berezko, Anatoly Mikhailovich; Petrenko, Anatoly Avraamovich; Mikhin, Trofim Andrianovich; Fedotov, Mikhail Nikitich; Zakirov, Robert Sharafutdinovich, deceased; and Zakirova, Ganna Fedgrovna, administratix, 3,980,413.

Bulso, Joseph D., Jr.; and Lewers, William Russell, to Redicon Corporation. Method and apparatus for feeding sheets to a treating machine in overlapped relation. 3,980,297, Cl. 271-269.000.

Bundy, Gordon L., to Upjohn Company, The. 4-Oxa phenyl-substituted PGA compounds. 3,980,694, Cl. 260-473.00A.

Bunker Ramo Corporation: *See*—
  Cieniawa, Edward A.; and Palecek, Vincent J., 3,980,380.

Bunn, William: *See*—
  Mitchell, Paul Anthony; and Bunn, William, 3,980,835.

Bunting Company, Inc., The: *See*—
  Marhefka, Matthew D., 3,980,335.

Buonaiuto, Robert B. Synthetic plastic foam carton liners. 3,980,005, Cl. 93-36.010.

Burch, Elsward K.; and Pedersen, Pete B., to Pettibone Corporation. Material mixing apparatus. 3,980,282, Cl. 259-168.000.

Burckhardt, Manfred H., to Daimler-Benz Aktiengesellschaft. Apparatus for controlling a two-circuit brake installation for motor vehicles. 3,980,344, Cl. 303-6.00C.

Burdorf, Donald L.; and Gertz, Robert L. Cassette loading apparatus. 3,980,253, Cl. 242-192.000.

Burg, Karlheinz; Kern, Rudolf; and Schmidt, Heinz, to Hoechst Aktiengesellschaft. Thermoplastic moulding compositions based on poly (oxymethylene). 3,980,734, Cl. 260-860.000.

Burgess, Roy Patrick; and Cox, Alan James, to National Research Development Corporation. Sealing means. 3,979,920, Cl. 61-84.000.

Burkland, James R. Collapsible boom for vehicles. 3,980,276, Cl. 254-139.100.

Burroughs Corporation: *See*—
  Bredart, Guy; and Gilot, Alain, 3,980,993.
  Levy, Bernardo Navarro; and Lee, David Chin-Chung, 3,980,992.
  Ogle, James A., 3,981,001.
  Przybylek, George J., 3,980,366.
  Vora, Chandrakant R., 3,980,874.

Bushuev, Viktor Vasilievich: *See*—
  Kutsevalov, Vitaly Mikhailovich; Kanter, Valery Konstantinovich; Kornilov, Georgy Sazonovich; Ozols, Vitaly Ivanovich; Frolov, Vladimir Ivanovich; Glushkov, Alexandr Timofeevich; Leontiev, Igor Vitalievich; Elizarov, Vladislav Alexandrovich; Bobylev, Jury Petrovich; Mednitsky, Viktor Georgievich; and Bushuev, Viktor Vasilievich, 3,980,950.

Bustard, Thomas S.: *See*—
  Goslee, David E.; and Bustard, Thomas S., 3,980,503.

Butlak, Eugene W.; and Budden, Robert G., to Roberts-Gordon Appliance Corporation. Insert for a radiant heating system. 3,980,069, Cl. 126-91.00A.

Buttner, Franz. Ski containing a coating strip on its sliding surface. 3,980,312, Cl. 280-610.000.

Butts, Ernest O.; and Hall, John S., to Hambro Structural Systems Ltd. Composite concrete and steel floor construction. 3,979,868, Cl. 52-334.000.

Bykowski, Michael B.: *See*—
  Evans, Leo G.; and Bykowski, Michael B., 3,980,851.

C.A.T. Ary-France: *See*—
  Gandillet, Andre, 3,979,992.

C.A.V. Limited: *See*—
  Hollins, William John, 3,980,066.

C. G. R. -Benelux N.V.: *See*—
  Munch, Jozef, 3,980,892.

C.R.C. Packaging Limited: *See*—
  White, David Leslie, 3,980,193.

Cabot Corporation: *See*—
  Rosof, Barry H.; Klein, H. Joseph; and Acuncius, Dennis S., 3,980,468.

Caccavo, Francis A. Micropreparative electrophoresis apparatus. 3,980,546, Cl. 204-299.00R.

Cadaco, Inc.: *See*—
  Bolton, Douglas R., 3,980,303.

Cailleux, Philippe; and Mothiron, Claude, to U.S. Philips Corporation. Power supply with complementary switching of power to main and auxiliary loads. 3,980,943, Cl. 323-22.0SC.

Cain, Clyde R. Cargo container interlock system. 3,980,185, Cl. 214-10.50R.

Cain, Earl S.; Carlson, Jerome A.; Crummett, James G.; and Goodrich, George E., to Tribotech Incorporated. Flow metering device. 3,980,110, Cl. 141-351.000.

Cairns, David W.: *See*—
  George, Harvey F.; Marrara, Charles G.; Oppenheimer, Robert H.; and Cairns, David W., 3,979,948.

Calcagno, Piero; and Garetti, Enzo, to CSELT - Centro Studi e Laboratori Telecommunicazioni SpA. Call monitor for telecommunication exchange. 3,980,833, Cl. 179-15.0AT.

Califano, Frank L.; Stepien, George, Jr.; and Russell, Thomas E., deceased (by Russell, Florence P., executrix), to Flintkote Company, The. Product and method for reducing water loss through soil by seepage. 3,979,916, Cl. 61-1.00R.

California Traders: *See*—
  Dunlap, Jesse Lee, 3,979,967.

Camacho, Salvador L.; and Magor, James K. Method of operating a batch type annealing furnace using a plasma heat source. 3,980,467, Cl. 75-10.00R.

Camerik, Eduard; and Siteur, Johannus Alphonsus Hendrikus, to U.S. Philips Corporation. Clamping device for a rotatable information-carrying record. 3,980,308, Cl. 274-9.00R.

Campagna, Benjamin J.: *See*—
  Campagna, Samuel A., Jr.; and Campagna, Benjamin J., 3,979,976.

Campagna, Samuel A., Jr.; and Campagna, Benjamin J., to Campagna, Benjamin J. Ring expander device. 3,979,976, Cl. 81-3.00R.
Campbell, Dag E. S.: *See*—
  Ingelman, Bjorn G.-A.; Lindberg, Bernt J.; Rosengren, Jan G.; and Campbell, Dag E. S., 3,980,770.
Campbell, J. Allan: *See*—
  Babcock, John C.; and Campbell, J. Allan, 3,980,638.
Campbell, Robert W.; and Hill, Harold Wayne, Jr., to Phillips Petroleum Company. Polyamides of terephthalic acid and 5-methyl-1,9-nonanediamine and fibers thereof. 3,980,621, Cl. 260-78.00R.
Campbell, William Murray. Fire escape. 3,980,155, Cl. 182-49.000.
Canada Wire and Cable Limited: *See*—
  Leuenberger, Urs; and LeRoy, Rodney Lash, 3,979,910.
Canadian Industries, Ltd.: *See*—
  Janssen, Wladimir; and Prime, Harley Corey, 3,979,958.
Canon Kabushiki Kaisha: *See*—
  Iwashita, Tomonori; Aizawa, Hiroshi; Kozuki, Susumu; and Uchidoi, Masanori, 3,981,022.
  Sado, Ichiro; and Seki, Mitsuaki, 3,981,000.
Capece, William M.: *See*—
  Klett, George J.; Capece, William M.; and Devine, Martin J., 3,979,896.
Carbone, Ugine: *See*—
  Pinettes, Jacques; and Hily, Guy, 3,980,425.
Carborundum Company, The: *See*—
  Cottis, Steve G.; Economy, James; and Wosilait, Arnold A., 3,980,749.
Carl Zeiss-Stiftung: *See*—
  Grosskopf, Rudolf; and Jager, Hubert, 3,980,812.
  Schulz, Kurt; and Summerer, Gunther, 3,980,848.
Carley, Donald Raymond, to RCA Corporation. Method of making a semiconductor device. 3,980,507, Cl. 148-187.000.
Carlson, Jerome A., to Tribotech Incorporated. Spring bearing assembly. 3,980,352, Cl. 308-73.000.
Carlson, Jerome A.: *See*—
  Cain, Earl S.; Carlson, Jerome A.; Crummett, James G.; and Goodrich, George E., 3,980,110.
Carr-Brion, Kenneth Garfield; and Williams, Angela Wendy, to National Research Development Corporation. Methods and apparatus for the chemical analysis of flowing materials. 3,980,882, Cl. [illegible]
Carrier Corporation: *See*—
  Herb, Carl C., 3,980,007.
Carrow, Guy E., to Phillips Petroleum Company. Method and apparatus for forming a thick-walled tubular product. 3,980,746, Cl. 264-209.000.
Cassella Farbwerke Mainkur Aktiengesellschaft: *See*—
  Fleckenstein, Erwin; Heinrich, Ernst; and Mohr, Reinhard, 3,980,659.
Castonguay, Roger A.; Cohen, Martin L.; Menashi, Wilson P.; Wenckus, Joseph F.; and VonThuna, Peter C., to Arthur D. Little, Inc. Apparatus for forming semiconductor crystals of essentially uniform diameter. 3,980,438, Cl. 23-273.0SP.
Caterpillar Mitsubishi Ltd.: *See*—
  Wada, Hideo, 3,979,998.
Caterpillar Tractor Co.: *See*—
  Blomstrom, Gary D.; Cochran, Thomas E.; Abdel-Latif, Mohamed Abdel-Fattah; and York, Lyle E., 3,980,149.
  Collignon, Gerard M. G. J., 3,979,994.
  Hamilton, Thomas R., 3,980,321.
  Huebner, Robert J.; Lynnes, Carman P.; Matzelle, Ralph A.; and Sears, Richard L. M., 3,980,003.
  Mitchell, Thomas L.; and Stump, Ronald C., 3,980,132.
  Yates, Jan Beryl, 3,980,316.
Catte, Raymond: *See*—
  Agouri, Elias; Catte, Raymond; and Dauba, Jean-Louis, 3,980,736.
Cavallotti, Claudio: *See*—
  Sacrini, Egeo; and Cavallotti, Claudio, 3,980,629.
  Sacrini, Egeo; and Cavallotti, Claudio, 3,980,712.
Coccherini, Vittorio, to Industria Napoletana Costruzione Autoveicoli Alfa Romeo Alfasud S.p.A. Slack adjustment and take-up device for kinematic couplings of the rack and pinion type. 3,979,968, Cl. [illegible]
Cervi, Mark C.: *See*—
  Urbach, Herman B.; Icenhower, David E.; Cervi, Mark C.; and Bowen, Robert J., 3,980,498.
Ceskoslovenska akademie ved: *See*—
  Prochazka, Zdenko; Barth, Tomislav; Cort, Joseph Henry; Jost, Karel; and Sorm, Frantisek, 3,980,631.
Cessna Aircraft Company, The: *See*—
  Alderson, Loren L., 3,979,908.
Chabardes, Pierre; Julia, Marc; and Menet, Albert, to Rhone-Poulenc S.A. Methyl-pentenyl sulphones. 3,980,695, Cl. 260-481.00R.
Chambers, Donald R.: *See*—
  Podell, Allen F.; Young, Leo; Karp, Arthur; and Chambers, Donald R., 3,980,972.
Champion International Corporation: *See*—
  Barnes, Donald E., 3,980,107.
Chan, Richard Lik-Chuen; and Villadsen, Ove, to International Components Corporation; and TIE/Communications, Inc. Toll restricting method and apparatus. 3,980,836, Cl. 179-18.0DA.
Chapman, Quentin Reginald: *See*—
  Fekete, Simon Otto; Chapman, Quentin Reginald; and Price, Lynn Shapley, 3,980,752.
Chapman, Richard A.; Johnson, Milo R.; and Morris, Henry B., to Texas Instruments Incorporated. Metal-semiconductor diode infrared detector having semi-transparent electrode. 3,980,915, Cl. 313-101.000.
Chas. Olson & Sons Incorporated: *See*—
  Olson, Buford W., Sr.; Nelson, Eldrid W.; and Davidson, Albin A., 3,980,025.
Chasman, Richard Allan: *See*—
  Fields, Donald Lee; Henzel, Richard Paul; Shin Lau, Philip Thiam; and Chasman, Richard Allan, 3,980,479.
Cheak, Edward G., to Norfield Manufacturing Co. Door hinge applying method. 3,979,817, Cl. 29-434.000.
Chemie Grunenthal GmbH: *See*—
  Herrling, Siegfried, 3,980,649.
Chemische Werke Huls Aktiengesellschaft: *See*—
  Wulf, Horst-Dieter; List, Ferdinand; Wember, Kurt; and Wilke, Norbert, 3,980,441.
Chiarappa, Ralph F., to Vapor Corporation. Totally enclosed door check. 3,979,790, Cl. 16-84.000.
Chistozvonov, David Borisovich: *See*—
  Dronov, Alexei Efimovich; Axenov, Nikolai Nikitovich; Kozlov, Lolly Ivanovich; Semenov, Vladimir Petrovich; Sobolevsky, Viktor Stanislavovich; Yagodkin, Viktor Ivanovich; Golosman, Evgeny Zinovievich; Alexeev, Arkady Mefodievich; Chistozvonov, David Borisovich; Shumlyakovsky, Tsezar Iosifovich; and Ulyanov, Nikolai Savelievich, 3,980,584.
Chown, James Philip; and Healey, John Maxwell, to Beecham Group Limited. Gel toothpastes. 3,980,767, Cl. 424-52.000.
Christensen, James L., to United States of America, Navy. Nonjammable plural frequency radar system. 3,981,013, Cl. 343-17.10R.
Chugunov, Viktor Dmitrievich: *See*—
  Grigoriev, Vladimir Konstantinovich; Chugunov, Viktor Dmitrievich; Tsipkis, Alexandr Moiseevich; Kudryakov, Mikhail Nikolaevich; Yakovlev, Vladimir Germogenovich; Tumarkin, Vladimir Borisovich; Bashilov, Jury Borisovich; Kulaev, Jury Mikhailovich; Feldman, Vladimir Yakovlevich; Semikozov, Vyacheslav Fedorovich; Badin, Viktor Ivanovich; and Sheveleva, Vladislava Vladislavovna, 3,980,142.
Chvertko, Anatoli Ivanovich: *See*—
  Paton, Boris Evgenievich; Lakomsky, Victor Iosifovich; Melnik, Gary Alexandrovich; Chvertko, Anatoli Ivanovich; and Bukalo, Alfred Iosifovich, 3,980,802.
Chzo, Inc.: *See*—
  Courtright, Burr, 3,980,098.
Cianflone, Robert A.: *See*—
  Pitchford, Arthur H.; and Cianflone, Robert A., 3,980,568.
Ciba-Geigy AG: *See*—
  Martin, Henry; Pissiotas, Georg; and Dittrich, Volker, 3,980,799.
Ciba-Geigy Corporation: *See*—
  Haas, Georges; and Rossi, Alberto, 3,980,657.
  Moser, Hans; Sturm, Elmar; and Menasse, Raphael, 3,980,798.
  Porret, Daniel; and Habermeier, Jurgen, 3,980,647.
Cieniawa, Edward A.; and Palecek, Vincent J., to Bunker Ramo Corporation. Electrical connectors with plural simultaneously-actuated insulation-piercing contacts. 3,980,380, Cl. 339-99.00R.
Cieslak, Richard F.; and Balding, John V., to Industrial Electronics Service Co. Industrial control for audible electronic warning system. 3,981,007, Cl. 340-384.00E.
Cipriani, Gioacchino; and Perrotti, Emilio, to Snamprogetti S.p.A. Process for the carboxylation of alcohols in heterogeneous phase. 3,980,690, Cl. 260-463.000.
Cipywnyk, Harold Z., to Steel Company of Canada, Limited, The. Ultrasonic plate inspection system. 3,979,946, Cl. 73-71.5US.
Citizen Watch Co., Ltd.: *See*—
  Yoshida, Masateru; and Nakao, Yoshio, 3,979,899.
Clarke, George E.; and Hoeg, Joseph G., to United States of America, Navy. Quick release latch. 3,979,803, Cl. 24-248.00D.
Clayson, N.V.: *See*—
  Vansteelant, Marc G., 3,979,889.
Cleveland Hardware & Forging Co.: *See*—
  O'Brien, Raymond A., 3,979,969.
Clever, Gerhard: *See*—
  Schulte, Fritz; Clever, Gerhard; and Kuhfs, Gunter, 3,979,955.
Cline, Harvey E.: *See*—
  Anthony, Thomas R.; and Cline, Harvey E., 3,979,820.
Cluett, Peabody & Co., Inc.: *See*—
  Lawrence, Jackson; and Troope, Walter S., 3,980,429.
Coates, Clarence A., Jr.: *See*—
  Weaver, Max A.; and Coates, Clarence A., Jr., 3,980,636.
Cochran, Thomas E.: *See*—
  Blomstrom, Gary D.; Cochran, Thomas E.; Abdel-Latif, Mohamed Abdel-Fattah; and York, Lyle E., 3,980,149.
Codding, Elias H.: *See*—
  Hoover, Michael C.; and Codding, Elias H., 3,980,181.
Coe, Donald K., to Loc-Coe. Manhole cover lock. 3,980,329, Cl. 292-251.000.
Coffey, Gerald P., to Standard Oil Company. Process for removing residual mercaptan from high nitrile polymers. 3,980,600, Cl. 260-29.6AN.
Cogswell, Frederic Neil, to Imperial Chemical Industries Limited. Extrusion of hollow articles through a lubricated die. 3,980,744, Cl. 264-96.000.
Cohen, Abraham B.; and Krawacki, Michael J., to Du Pont de Nemours, E. I., and Company. Automatic toning device. 3,980,047, Cl. 118-608.000.

Cohen, Ella; Daren, Stephen; Levy, Moshe; and Vofsi, David, to Yeda Research & Development Co. Ltd. Production of bromostyrene, dibromostyrene and alkyl bromides. 3,980,722, Cl. 260-650.00R.
Cohen, Jerome Martin: *See*—
  Pindar, John Francis; Cohen, Jerome Martin; and Bryant, Charles Peterson, 3,980,569.
Cohen, Martin L.: *See*—
  Castonguay, Roger A.; Cohen, Martin L.; Menashi, Wilson P.; Wenckus, Joseph F.; and VonThuna, Peter C., 3,980,438.
Cole, Lawrence S. Apparatus for slicing and dispensing jellied food products from cans and collecting the dispensed slices. 3,979,982, Cl. 83-150.000.
Coles, Manson Ivor, to Mancole Company Limited. Extending boom construction. 3,979,873, Cl. 52-632.000.
Colgate-Palmolive Company: *See*—
  Rubinfeld, Joseph, 3,980,588.
  Sundby, Bjorn; and Trowbridge, James R., 3,980,669.
Collar, Roland W., to Roean Industries. Bulk loading plastic compound dispensing device. 3,980,209, Cl. 222-323.000.
Collignon, Gerard M. G. J., to Caterpillar Tractor Co. Pivot pin including detachable pilot section. 3,979,994, Cl. 85-5.00N.
Collin, Robert Frederick Dura, to Alcan Booth Industries Limited. Window hinges. 3,979,791, Cl. 16-135.000.
Collinucci, Luigi. Cooking spit. 3,980,010, Cl. 99-421.00H.
Combustion Engineering, Inc.: *See*—
  Dixson, Donn Lewis; and Bozzuto, Carl Richard, 3,980,756.
Commissariat a l'Energie Atomique: *See*—
  Cousinou, Gerard; and Ganivet, Michel, 3,980,750.
Compagnie Generale de Telegraphie: *See*—
  Brault, Yves; and Josse, Paul, 3,981,012.
Computer Identics Corporation: *See*—
  Hutchinson, Edward Hynes, 3,980,960.
Conan, Michel: *See*—
  de Lachaux, Hubert; Bouy, Pierre; and Conan, Michel, 3,980,545.
Conard, Wendell R., to Firestone Tire & Rubber Company, The. Unsaturated polyester-1,2 polybutadiene molding compound. 3,980,610, Cl. 260-40.00R.
Conrad, Rene A., to Dynaloc Corporation. Closed loop ribbed belt/grooved pulley conveyor system. 3,980,174, Cl. 198-835.000.
Conrad, Robert R.: *See*—
  Simmons, Harold C.; Conrad, Robert R.; and Orav, Mihkel, 3,980,233.
Consolidated Devices, Inc.: *See*—
  Grabovac, Bosko, 3,979,942.
  Grabovac, Bosko, 3,979,979.
  Vuceta, Ivan N., 3,979,965.
Consolidation Coal Company: *See*—
  May, Francis A., 3,980,806.
Continental Oil Company: *See*—
  Sorenson, Wayne R.; Schwab, Peter A.; Allen, Robert S.; Tillson, George; and Lorine, David J., 3,980,628.
  Wimberley, Jerry W., 3,980,435.
Control Concepts, Inc.: *See*—
  Jarman, Alonzo B.; and Zeuner, Kenneth W., 3,980,002.
Contronic Controls Limited: *See*—
  McIntosh, Lawrie G., 3,980,998.
Converters Incorporated: *See*—
  Welch, Archibald H., 3,980,006.
Cook, Robert D., to Crane Co. Anti-skid brake control system. 3,980,349, Cl. 303-21.0BE.
Cook, William Christopher, to International Business Machines Corporation. Encoding logic for reduced bandwidth pictorial data transmission system. 3,980,809, Cl. 178-6.000.
Coon, Donald B.; and Katanik, Timothy M., to Western Reserve Electronics, Inc. Film strip leader alignment aid. 3,980,254, Cl. 242-195.000.
Cornell, Paul A., to Electro-Clamp Corporation. Cable connector. 3,980,381, Cl. 339-100.000.
Cort, Joseph Henry: *See*—
  Prochazka, Zdenko; Barth, Tomislav; Cort, Joseph Henry; Jost, Karel; and Sorm, Frantisek, 3,980,631.
Corte, Herbert; Heller, Harold; Lange, Peter Michael; and Netz, Otto, to Bayer Aktiengesellschaft. Fertilizer for long term supply of plants with chelated micronutrients. 3,980,462, Cl. 71-1.000.
Cosentino, Louis C.: *See*—
  Gallant, Stuart L.; and Cosentino, Louis C., 3,980,944.
Costa, Allan. Safety closure cap for a container having a neck portion. 3,980,194, Cl. 215-223.000.
Costin, Darryl J., to Owens-Corning Fiberglas Corporation. Ultra high strength, carbide-strengthened, cobalt-base superalloy. 3,980,473, Cl. 75-171.000.
Cotabish, Harry N.; and Davison, Ellison Lloyd, to Mine Safety Appliances Company. Self-rescue breathing apparatus. 3,980,081, Cl. 128-147.000.
Cote, Paul T., to General Electric Company. Multiple flash lamp unit. 3,980,875, Cl. 240-1.300.
Cote, Paul T., to General Electric Company. Protective terminal for multiple flash lamp unit. 3,980,876, Cl. 240-1.300.
Cote, Paul T., to General Electric Company. Photoflash array with discharge path for electrostatically charged person. 3,980,877, Cl. 240-1.300.
Cottis, Steve G.; Economy, James; and Wosilait, Arnold A., to Carborundum Company, The. Partially crosslinked linear aromatic polyesters. 3,980,749, Cl. 264-331.000.
Council of Livestock Protection, Inc.: *See*—
  Prince, Ralph P.; Belanger, Paul E.; Giger, Walter, Jr.; and Johnson, David H., 3,979,792.
Courtright, Burr, to Chzo, Inc. Power assist structure for side roll wheel lines. 3,980,098, Cl. 137-344.000.
Cousinou, Gerard; and Ganivet, Michel, to Commissariat a l'Energie Atomique. Method of selective stripping of plutonium from an organic solvent containing plutonium and in some cases uranium by reduction of said plutonium. 3,980,750, Cl. 423-9.000.
Couzens, Roy George Swain: *See*—
  Trueman, Frederick Ranson; Couzens, Roy George Swain; and Islip, Brian Henry, 3,980,109.
Cox, Alan James: *See*—
  Burgess, Roy Patrick; and Cox, Alan James, 3,979,920.
Coy, Thomas Charles: *See*—
  Debenham, Michael; and Coy, Thomas Charles, 3,980,034.
Craft, James Alexander; and Rogers, James Charles, to International Business Machines Corporation. Duplicating machine employing image reversing optical paths with front edge document alignment on document input and output. 3,980,296, Cl. 271-251.000.
Crafton, Paul A. Omnidirectional drilling system. 3,979,917, Cl. 61-42.000.
Craig, Peter James: *See*—
  Bradley, Basil John; Craig, Peter James; and Gammon, Geoffrey James, 3,980,603.
Crall, Donald H. Roller furling assembly. 3,980,036, Cl. 114-106.000.
Crane Co.: *See*—
  Cook, Robert D., 3,980,349.
Crawford, Irvin H.; and Wellman, Ronald A., to Eastman Kodak Company. Method of making an ultraviolet light image recording using a visible-light reflective intermediate element. 3,980,478, Cl. 96-27.00R.
Crawley, John Alfred, to Image Analysing Computers Limited. Multiple image scanning. 3,980,814, Cl. 178-7.200.
Credner, Karl: *See*—
  Brenner, Gunter; Credner, Karl; Goring, Joachim; and Tauscher, Manfred, 3,980,646.
Cressman, Paul J.: *See*—
  Watson, P. Keith; Cressman, Paul J.; and LaDonna, Richard V., 3,980,477.
Crompton, Kenneth J., to Dominion Auto Accessories Limited. Vehicular signal lamp. 3,980,878, Cl. 240-7.10R.
Crossley, Warren P.: *See*—
  Koch, Leland C.; Crossley, Warren P.; and Scheller, Donald M., 3,980,257.
Crow, David Edward, to United Technologies Corporation. Aerodynamic seal for a rotary machine. 3,980,411, Cl. 415-1.000.
Crozet, Roger, to Jeumont-Schneider. Method of assembly of the support for the magnetic core of a shell-type, form-fit transformer. 3,980,982, Cl. 336-92.000.
Crummett, James G.: *See*—
  Cain, Earl S.; Carlson, Jerome A.; Crummett, James G.; and Goodrich, George E., 3,980,110.
CSELT - Centro Studi e Laboratori Telecommunicazioni SpA: *See*—
  Calcagno, Piero; and Garetti, Enzo, 3,980,833.
  Stengel, Renato, 3,980,969.
CTS Corporation: *See*—
  English, Jack A., 3,980,911.
Cubbler, Ralph J., Jr.; and Lucas, Kyle E., to Alabama Metal Industries Corporation. Suspended ceiling system and runner joints therefor. 3,979,874, Cl. 52-664.000.
Cuenod, Gerard: *See*—
  Knight, Michael John; Cuenod, Gerard; and Bechet, Louis Marius Andre, 3,980,168.
Culjkovic, Josif: *See*—
  Ludwig, Rolf; and Culjkovic, Josif, 3,980,531.
Cunningham, James, to Morganite Carbon Limited. Brushes for rotating electric machines. 3,980,914, Cl. 310-251.000.
Cunningham, McCleery B.; and LeHardy, Clement D., to Sonoco Products Company. High speed carrier with deckled underply. 3,980,249, Cl. 242-118.310.
Cunningham, Vernon R., to Rockwell International Corporation. Frequency response control circuit apparatus. 3,980,965, Cl. 330-31.000.
Curran, John J. Cellular structure for cartons. 3,980,223, Cl. 229-28.00R.
Curtis Nuclear Corporation: *See*—
  Adams, Raymond J., 3,980,764.
Custom Iron & Specialties, Inc.: *See*—
  Youngblood, Gurney V., 3,980,099.
Cyphelly, Ivan Jaroslav. Reversing valve operated by a pilot valve. 3,980,001, Cl. 91-420.000.
D.B. Enterprises, Inc.: *See*—
  Stember, Daniel L., 3,979,797.
Daghe, Joseph L.: *See*—
  Ellis, Daniel A.; and Daghe, Joseph L., 3,980,096.
D'Agnolo, Armando; and Favero, Giovanni, to Officine Savio, S.p.A. Device for aligning cops which withdraws them in bulk. 3,980,175, Cl. 198-410.000.
D'Agostino, John A., to United States of America, Army. Automatic exposure control circuit for an image intensifier camera. 3,980,880, Cl. 250-213.0VT.
Dahle, Orvar: *See*—
  Bielsten, Nils Ove; Dahle, Orvar; Grek, Ronald; Hoffman, Bertil; Siby, Sture; and Widehn, Ake, 3,980,947.

Dahlen, Sven Erik; Ekstrom, Bertil Ake; and Sjoberg, Berndt Olof Harald, to Astra Lakemedel Aktiebolag. Carbonate esters of penicillins and compositions and methods for treatment of bacterial infections. 3,980,793, Cl. 424-271.000.
Dahlquist, Kenneth J. Container with concealed pouring spout having sealing flanges. 3,980,214, Cl. 222-541.000.
Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Kan, Osamu, 3,980,225.
Daicel, Ltd.: *See—*
Kubo, Masayoshi; and Matsuoka, Kazuyuki, 3,980,709.
Daido Metal Company, Ltd.: *See—*
Morisaki, Nobukazu, 3,980,853.
Daimler-Benz Aktiengesellschaft: *See—*
Burckhardt, Manfred H., 3,980,344.
Hoffmann, Friedrich; and von Kamp, Wilhelm, 3,980,160.
Kopf, Wolfgang, 3,980,314.
Dale, John R.; Brenner, William F.; McEachern, James F.; Leupold, Walter L.; and McDemus, Edward A., to United States of America, Navy. Suspension system for directional hydrophones. 3,980,985, [illegible].
D'Alelio, Gaetano F. Halogenated esters of phosphorus-containing acids. 3,980,737, Cl. 260-952.000.
D'Aloisio, Rino: *See—*
Venturello, Carlo; and D'Aloisio, Rino, 3,980,675.
Daniels, Dennis, to U.S. Amada, Ltd. Workpiece-handling apparatus. 3,979,983, Cl. 83-277.000.
Daniels, Dennis, to U.S. Amada, Ltd. Contouring apparatus. 3,979,984, Cl. 83-410.000.
Daniels, Dennis, to U.S. Amada, Ltd. Sheet transfer between a turret punch press and an adjacent apparatus. 3,979,985, Cl. 83-410.000.
Danner, Bernard; and Hochreuter, Richard, to Sandoz Ltd. Amino-containing polymers. 3,980,682, Cl. 260-404.500.
Danner, Bill A.: *See—*
Orr, Bobby J.; Schaffner, Donald L.; and Danner, Bill A., 3,980,351.
Dansk Andels Aegexport: *See—*
Petersen, Gunnar Christian; Thisgaard, Ole; and Wiig, Steen, 3,980,069.
Daren, Stephen: *See—*
Cohen, Elia; Daren, Stephen; Levy, Moshe; and Vofsi, David, 3,980,722.
Dasher, George F.; O'Cull, Kathleen A.; and Schamper, Thomas J., to Alberto Culver Company. Quaternary ammonium compounds in pretreatment of hair before shampooing with an anionic shampoo. 3,980,091, Cl. 132-7.000.
Dashew, Stanley A.; and Sutton, Charles D., to Omnithruster, Inc. Hose and mooring line positioning system. 3,980,038, Cl. 114-230.000.
Datastrip Corporation: *See—*
Janssen, Alexander Patton, 3,979,845.
Dauba, Jean-Louis: *See—*
Agouri, Elias; Catte, Raymond; and Dauba, Jean-Louis, 3,980,736.
Davidson, Albin A.: *See—*
Olson, Buford W., Sr.; Nelson, Eldrid W.; and Davidson, Albin A., 3,980,025.
Davis, Lawrence P., to Sperry Rand Corporation. Axial vibration damper for floating bearings. 3,980,358, Cl. 308-173.000.
Davis, Richard B.: *See—*
Rimler, Richard B.; and Davis, Richard B., 3,980,523.
Davison, Ellison Lloyd: *See—*
Cotabish, Harry N.; and Davison, Ellison Lloyd, 3,980,081.
Dewans, Francois; and Goldenberg, Emmanuel, to Institut Francais du Petrole, des Carburants et Lubrifiants et Entreprise de Recherches et d'Activities Petrolieres Elf. Molybdenum and tungsten compounds. 3,980,730, Cl. 260-429.00L.
Dayco Corporation: *See—*
Benham, Robert L., 3,980,112.
Dean, Carl J.; McCallum, Donald B.; and May, Norman C., Sr., to Barry Wright Corporation. Storage system. 3,980,363, Cl. 312-194.000.
Dearling, Harry S. Fragrance dispenser. 3,980,203, Cl. 221-96.000.
Debenham, Michael; and Coy, Thomas Charles. Method of producing an easy-opening closure. 3,980,034, Cl. 113-121.00C.
Decca Limited: *See—*
Phipps, Derek John, 3,981,015.
Plows, Graham Stuart; and Toms, Pauline Margaret, 3,981,018.
Dechavanne, Jacques. Two-part scraper-type shaft-seal. 3,980,309, Cl. 277-24.000.
Decker, Herbert; and Nowak, Gerald, to Triumph Werke Nurnberg A.G. Impact control for single element printer. 3,980,169, Cl. 197-53.000.
de Feudis, Sergio, to Aktiebolaget Svenska Flaktfabriken. Device for dumping chute. 3,980,166, Cl. 193-34.000.
De Gaudemaris, Gabriel: *See—*
Haemmerle, Bernard; Sillion, Bernard; and De Gaudemaris, Gabriel, 3,980,443.
Degen, Ludwig; Oddo, Nicola; and Olivieri, Roberto, to Snam Progetti S.p.A. Process for the production of l-malic acid by microbiological fermentation and means suitable for carrying out the same. 3,980,520, Cl. 195-30.000.
Degood, Maynard J., to Rapistan, Incorporated. Low line pressure accumulator. 3,980,172, Cl. 198-781.000.
Dekuh, Inc.: *See—*
Delehoy, Billy G., 3,980,245.
de Lachaux, Hubert; Bouy, Pierre; and Conan, Michel, to Rhone-Progil. Bipolar electrodes with incorporated frames. 3,980,545, Cl. 204-286.000.
Delarge, Jacques E.; Thunus, Leopold N.; Lapiere, Charles Leon; and Georges, Andre H., to A. Christiaens Societe Anonyme. 2-(4-Methyl-piperazino)-3 or 5 cyano pyridine. 3,980,652, Cl. 260-268.00H.
DeLaval Turbine Inc.: *See—*
Eades, Allison Winston, 3,980,560.
Delehoy, Billy G., to Dekuh, Inc. Dispenser-holder for a ring of sticker-tape. 3,980,245, Cl. 242-55.200.
Deletzke, Norman E. H., Jr. Automatic tape winding system. 3,980,246, Cl. 242-56.00R.
Deli, Joseph; and Stevens, Henry C., to PPG Industries, Inc. Control of weeds with 5-propionylamino-3-methylisothiazole. 3,980,464, Cl. 71-90.000.
Dell Holdings Limited: *See—*
Elias, Murray A., 3,980,278.
della Porta, Paolo; and Giorgi, Tiziano A., to S.A.E.S. Getters S.p.A. Wall structure for vacuum enclosure. 3,980,446, Cl. 29-191.400.
Delmar Chemicals Limited: *See—*
Kubela, Rudolf; and Hughes, Lise A., 3,980,674.
Dennis, John S., to HED Industries, Inc. Oil injection means for liquid fuel burner. 3,980,422, Cl. 431-116.000.
Dennison Manufacturing Company: *See—*
Merser, Francis G.; Kooistra, Philip A.; and Lankton, Gordon B., 3,979,799.
De Roo, Pierre Richard; Van Engeland, Jozef Leonard; and Van der Auweraer, Gaston Eduard, to AFGA-GEVAERT N.V. Electrophotographic toner composition. 3,980,575, Cl. 252-62.10P.
Detroit Marine Engineering Corporation: *See—*
Wrigley, Robert A., 3,980,157.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Fahnenstich, Rudolf; Heese, Joachim; and Offermanns, Heribert, 3,980,665.
Knorre, Helmut; and Fischer, Joachim, 3,980,593.
Scherberich, Paul, 3,980,666.
Wagner, Hans; and Maierhofer, Alfred, 3,980,653.
Devine, Martin J.: *See—*
Klett, George J.; Capece, William M.; and Devine, Martin J., 3,979,896.
Dhaliwal, Pritam Singh, to Du Pont de Nemours, E. I., and Company. Schiff bases derived from phenanthrene-9,10-diamines and ortho-hydroxy aldehydes. 3,980,640, Cl. 260-240.00G.
Di-Coat Corporation: *See—*
Grutza, Zigmund R., 3,980,549.
Diamond Shamrock Corporation: *See—*
Szur, Alex J., 3,980,715.
Dickey, Larry Wayne; and Ramsey, Edward Lewis, Jr., to Bell Telephone Laboratories, Incorporated. Multiplane terminal block. 3,980,383, Cl. 339-198.00R.
Dierckx, Peter Gerard, to AFGA-GEVAERT N.V. Apparatus for incinerating non-halogenated waste liquids. 3,980,417, Cl. 431-284.000.
Dieter, Karl-Georg: *See—*
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Dines, Martin B., to Exxon Research and Engineering Company. Metallocene intercalates. 3,980,684, Cl. 260-429.0CY.
Director General, Printing Bureau, Ministry of Finance: *See—*
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Disselnkotter, Hans: *See—*
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Ditcher, John, to A-Lok Corporation. Joint assembly for vertically aligned sectionalized manhole structures incorporating D-shaped gaskets. 3,980,311, Cl. 277-226.000.
Dittrich, Volker: *See—*
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Dmitriev, Jury Iosifovich: *See—*
Aleshin, Vasily Alexeevich; Bazarova, Galina Petrovna; Gromova, Serafima Pavlovna; Dmitriev, Jury Iosifovich; Kuteminsky, Jury Arkadievich; Komolova, Iza Ivanovna; Leschinsky, Georgy Olegovich; Sorokin, Vsevolod Konstantinovich; Sazonova, Galina Ivanovna; Silaev, Alexandr Fedorovich; Tikhonov, Grigory Fedorovich; and Schekin, Valery Mikhailovich, 3,980,445.
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Dodo, Toshinori; and Ikeda, Makoto, to Idemitsu Kosan Co., Ltd. Grease composition. 3,980,572, Cl. 252-36.000.
Doerfler, Roger E., to Kelsey-Hayes Company. Metering and proportioning valve mechanism. 3,980,345, Cl. 303-6.00C.
Doi, Toshitada, to Sony Corporation. Stabilized transistor amplifier. 3,980,963, Cl. 330-23.000.
Dokuzoguz, Halit Z., to Babcock & Wilcox Company, The. Process for uranium separation and preparation of $UO_2.2NH_3.2HF$. 3,980,757, Cl. 423-253.000.

Domaracki, John F.: *See—*
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Domas, Friedrich: *See—*
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Dorflinger, Helmut; Ropertz, Erich; and Ruf, Bruno, to Adolf Jerger KG. Device for connecting two parts of a clock. 3,979,900, Cl. 58-52.00R.
Dorma, Edward. Power tool. 3,979,977, Cl. 81-57.130.
Dow Chemical Company, The: *See—*
Grinstead, Robert R., 3,980,701.
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Draber, Wilfried; Buchel, Karl Heinz; Regel, Erik; and Plempel, Manfred, to Bayer Aktiengesellschaft. N-Methyl-imidazole derivatives for treating mycotic infections. 3,980,780, Cl. 424-250.000.
Drakesmith, Frederick Gerald, to Electricity Council, The. Electrochemical fluorination and an electrode for use therein. 3,980,534, Cl. 204-59.00F.
Dransch, Gunter Karl Wilhelm Otto, deceased; by Wiesenhutter, Anneliese Klara Helene, heiress; Flersheim, Johanna Mathilde, heiress; Mildenberger, Hilmar; Duwel, Dieter; and Kirsch, Reinhard, to Hoechst Aktiengesellschaft. Substituted 2-alkoxycarbonylamine-5-(6)-phenylmercapto-benzimidazoles. 3,980,796, Cl. 424-273.000.
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Drugge, Bengt Roland, to Luossavaara-Kiirunavaara Aktiebolag. Method of operating a shaft furnace for the production of sintered iron ore pellets. 3,980,466, Cl. 75-5.000.
Drzewiecki, Tadeusz M., to United States of America, Army. Fluidic resistive element. 3,980,103, Cl. 137-828.000.
DuBroff, Warren; and Ettlinger, Ralph, Jr., to Avant Industries, Inc. Tray dispenser apparatus. 3,980,204, Cl. 221-222.000.
Dudley, Kenneth W.; MacMaster, George H.; and Nichols, Lawrence J., to Raytheon Company. Multi-resonator microwave oscillator. 3,980,920, Cl. 315-39.300.
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Duffy, Brian J., to American Hoechst Corporation. 1,3-Dihydro-3-phenyl-1'-(2-propynyl)spiro[isobenzofuran]s. 3,980,786, Cl. 424-267.000.
Dunaj, Raymond C. Can opener. 3,979,824, Cl. 30-21.500.
Dunham, George A. Auger type mining machine. 3,980,342, Cl. 299-56.000.
Dunlap, Jesse Lee, to California Traders. Shift control device. 3,979,967, Cl. 74-475.000.
Dunne, Gerald J.; and Roberts, Thomas Walter, to Ogilvie Flour Mills Company, Limited, The. Method and apparatus for the treatment of wheat flour. 3,980,493, Cl. 127-24.000.
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Bither, Tom Allen, Jr.; and Jeitschko, Wolfgang Karl, 3,980,499.
Cohen, Abraham B.; and Krawacki, Michael J., 3,980,047.
Dhaliwal, Pritam Singh, 3,980,640.
Gangal, Subhash Vishnu, 3,980,612.
Jakubauskas, Henry L., 3,980,602.
Leverett, Glenn Frederick, 3,980,596.
Mayer, Albert Louis, 3,980,439.
Nailor, William Kirby, III, 3,980,388.
Duran, John A., to Avibank Mfg. Inc. Latching mechanism. 3,980,327, Cl. 292-252.000.
Durand, Francois. Winch for cable car. 3,980,163, Cl. 192-7.000.
Dutton, David; and Moss, James, to British Insulated Callender's Cables Limited. Wire drawing machinery. 3,979,940, Cl. 72-279.000.
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E. J. Brooks Company: *See—*
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Eberle, William J., to General Battery Corporation. Automated post burn station. 3,980,126, Cl. 164-271.000.
Ebert, Jack Edward. Carpet stretcher holder. 3,980,274, Cl. 254-57.000.
Eberts, Robert E., to Mearl Corporation, The. Bismuth oxychloride-mica nacreous pigments with enhanced luster and dispersibility. 3,980,491, Cl. 106-291.000.
Eckel Industries, Inc.: *See—*
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Eckfeldt, Edgar L., to Leeds & Northrup Company. Electrochemical cell structure. 3,980,543, Cl. 204-195.00S.
Economy, James: *See—*
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Edward C. Levy Company: *See—*
Shaw, Terrence M., 3,980,484.
Edwards, Albert Gray, to National Research Development Corporation. Peat/cement and like products and their method of production. 3,980,485, Cl. 106-93.000.
Edwards, Edna H. Organizer for purse, handbag or the like. 3,980,116, Cl. 150-30.000.
Edwards, William John; and Easey, John Frederick, to John Lysaght (Australia) Limited. Strip shape measuring device. 3,979,935, Cl. 72-16.000.
Ehrler, Peter; Seidel, Adolf; and Joas, Wolfgang, to Institute fur Textil- und Faserforschung Stuttgart. Pinch ring for yarn balloons. 3,979,895, Cl. 57-106.000.
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Peterson, Lance George, 3,980,784.
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Elias, Murray A., to Dell Holdings Limited. Interlocking safety fence post and panel. 3,980,278, Cl. 256-59.000.
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- Ellen, Peter Edington: *See*—
  - Boot, Phillip Handford; and Ellen, Peter Edington, 3,979,865.
- Ellenson, Robert B.: *See*—
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- Elliott, Christopher Stuart, to Imperial Chemical Industries Limited. Production of ortho-phenylphenol from cyclohexanone. 3,980,716, Cl. 260-620.000.
- Elliott, Phillip M., to Illinois Tool Works Inc. Medicament infusor unit. 3,980,083, Cl. 128-220.000.
- Ellis, Daniel A.; and Daghe, Joseph L., to Mueller Co. Fire hydrant. 3,980,096, Cl. 137-283.000.
- Ellis, Daniel A., to Mueller Co. Fire hydrant with drain valve and backflow preventer mechanism. 3,980,097, Cl. 137-283.000.
- Ellis, Joseph O. Circular column mold having an upper alignment ring. 3,980,268, Cl. 249-49.000.
- Emenaker, Richard G., to Nichols, Harry S., Jr.; and Powers, Karen (Emenaker), part interest to each. Fluid cylinder having self-locking means. 3,979,999, Cl. 91-44.000.
- Emerson Electric Co.: *See*—
  - Baysinger, Robert L.; and Love, John J., 3,980,420.
  - Turner, Warren E.; Homeyer, Arthur C.; and Dreibelbis, Richard C., 3,980,273.
- Emura, Noriaki: *See*—
  - Kosaka, Yujiro; Emura, Noriaki; and Watanabe, Syuzo, 3,980,735.
- Endura Manufacturing Corporation: *See*—
  - Hubbs, Allan; and Weiss, Bert, 3,979,807.
- Energy Research & Generation, Inc.: *See*—
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  - Anderson, Jerrel Charles; England, Richard Jay; and Meier, Gunter Friedrich, 3,980,611.
- English Clays Lovering Pochin & Company Limited: *See*—
  - Broad, Bernard Henry, 3,980,012.
- English, Jack A., to CTS Corporation. Support structure and housing for piezoelectric crystal. 3,980,911, Cl. 310-9.400.
- Enkner, Bernhard, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Tiltable converter. 3,980,285, Cl. 266-246.000.
- Enoksson, Bertil Petrus, to Nitro-Nobel A.B. Device for fence consisting of a number of posts with electrically conducting conductors and a high tension unit. 3,980,277, Cl. 256-10.000.
- Enomoto, Syunzi: *See*—
  - Hishinuma, Yukio; Tamura, Zensuke; and Enomoto, Syunzi, 3,980,434.
- Enterprise Machine and Development Corporation: *See*—
  - Hoffsommer, Walter A.; Poiney, Richard J.; and Price, Samuel T., 3,979,805.
- Entreprise d'Equipements Mecaniques Hydrauliques E.M.H.: *See*—
  - Tuson, Samuel, 3,980,037.
- Entrikin, Ronald K.; and Livingston, Richard D., to Amerock Corporation. Roller bracket assembly for drawers. 3,980,364, Cl. 312-341.00R.
- Erickson, Richard Allan: *See*—
  - Sorenson, Dennis Dean; and Erickson, Richard Allan, 3,980,500.
- Ernst, Kenneth L.: *See*—
  - Martin, Robert W.; and Ernst, Kenneth L., 3,980,008.
- Esser, Gustav; and Schroder, Eckhard, to Oswald Forst Maschinenfabrik und Apparatebauanstalt. Workpiece handling device in an internal broaching machine. 3,980,182, Cl. 214-1.0BB.
- Etablissements Callebaut-du Blicquy S.A.: *See*—
  - Schyns, Pierre, 3,979,930.
- Ethyl Corporation: *See*—
  - Nelson, Gunner E.; and Pearson, Tillmon H., 3,980,578.
- Ettlinger, Ralph, Jr.: *See*—
  - DuBroff, Warren; and Ettlinger, Ralph, Jr., 3,980,204.
- Euzarraga, Rosendo, to Alpha Nova Development Corporation. Poster supporting device. 3,979,846, Cl. 40-125.00G.
- Evans, David M., to S & C Electric Company. Spiral operating mechanism for high voltage switch. 3,980,977, Cl. 335-76.000.
- Evans, Leo G.; and Bykowski, Michael B., to Hooker Chemicals & Plastics Corporation. High amperage switching apparatus with bimetallic arcing contacts. 3,980,851, Cl. 200-146.00R.
- Evans, Robert Burns. Speedometer with speed warning indicator and method of providing the same. 3,980,041, Cl. 116-116.000.
- Evers, Jack Rolf; and Rohrbacher, Herbert Edward, to Bergandi Manufacturing Company, Inc. Round mesh weaving machine and multioutput power transmission unit therefor. 3,980,108, Cl. 140-92.800.
- Ex-Cell-O Corporation: *See*—
  - Miller, Robert L., 3,979,859.
- Exchange National Bank of Chicago: *See*—
  - Boyreau, Marcel, 3,980,323.
- Exxon Research and Engineering Company: *See*—
  - Dines, Martin B., 3,980,684.
  - Flory, John F., 3,979,785.
  - Murrell, Lawrence Lee; and Yates, David J. C., 3,980,589.
  - Staib, John H.; and Wagensommer, Joseph, 3,980,623.
  - Thompson, Arthur H.; and Gamble, Fred R., 3,980,761.
- F. B. Mercer, Limited: *See*—
  - Huggett, Wallace A., 3,980,029.
- F. L. Smidth & Co.: *See*—
  - Touborg, Jorn, 3,980,486.
- Fabbri, Sergio; and Frauenknecht, Josef, to Sandoz Ltd. Dyeing process. 3,980,428, Cl. 8-92.000.
- Fabre, Alain: *See*—
  - Biola, Georges; Fabre, Alain; and Schneider, Gerard, 3,980,676.
- Fabris, Hubert J.; Maxey, Edwin M.; and Uelzmann, Heinz, to General Tire & Rubber Company, The. Trimerization of aromatic isocyanates catalyzed by certain ammonium salts. 3,980,594, Cl. 260-2.5AC.
- Fagerstedt, Per-Erik; and Solin, Pekka, to Oy Lillja Pile AB. Fiber feeding device for a pile fabric knitting machine. 3,979,926, Cl. 66-9.000.
- Fahn, Rudolf: *See*—
  - Buckl, Hans; Fahn, Rudolf; and Hofstadt, Carl Ernst, 3,980,719.
- Fahnenstich, Rudolf; Heese, Joachim; and Offermanns, Heribert, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Optically active salt of protected D-penicillamine and L-lysine. 3,980,665, Cl. 260-306.70C.
- Fairbank, William M.: *See*—
  - Wikswo, John P., Jr.; Fairbank, William M.; and Opfer, James E., 3,980,076.
- Fairchild Camera and Instrument Corporation: *See*—
  - Breeze, Eric; and Alfke, Peter, 3,980,951.
- Falconbridge Nickel Mines Limited: *See*—
  - Fekete, Simon Otto; Chapman, Quentin Reginald; and Price, Lynn Shapley, 3,980,752.
- Falkner, Raimund; and Grune, Heinz, to Rapena Patent- und Verwaltungs AG. Method of continuously processing metal bands into hollow rails. 3,979,808, Cl. 29-155.00R.
- Fallot, Alan Clyde, to International Telephone and Telegraph Corporation. Separable splice connector. 3,980,374, Cl. 339-60.00C.
- Faltersack, Edward J. Knife rack which self-adjusts to blade thickness. 3,980,608, Cl. 248-37.300.
- Faubl, Hermann; and Mylari, Banavara Lakshmana, to Pfizer Inc. Process for producing quinoxaline-di-N-oxides. 3,980,648, Cl. 260-250.00Q.
- Favero, Giovanni: *See*—
  - D'Agnolo, Armando; and Favero, Giovanni, 3,980,175.
- Fawcett Engineering Limited: *See*—
  - Read, Brian, 3,980,040.
- Fawcett, William E.; and Gulibon, Robert S., to Kennametal Inc. Method and apparatus for removing tread material from radial belted tires. 3,980,120, Cl. 157-13.000.
- Feder, David Oscar; and Maurer, Dean William, to Bell Telephone Laboratories, Incorporated. Use of hydrogen-absorbing electrode in alkaline battery. 3,980,501, Cl. 429-60.000.
- Fedotov, Mikhail Nikitich: *See*—
  - Kononenko, Vadim Grigorievich; Bozhko, Valery Pavlovich; Stelmakh, Viktor Alexeevich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Bukin, Jury Mikhailovich; Novikov, Anatoly Egorovich; Shaipova, Sania Fatyakhovna; Filyanov, Anatoly Nikolaevich; Shalbaian, Armais Semenovich; Grechka, Vitaly Dmitrievich; Tsyban, Nikolai Grigorievich; Gilmutdinov, Abdulla Gilmutdinovich; Regida, Fedor Ivanovich; Kazanovich, Lidia Evgenievna; Gertsuk, Nikolai Andreevich; Kolokolov, Boris Alexeevich; Morgolenko, Anatoly Sergeevich; Livanov, Vladimir Alexandrovich; Berezko, Anatoly Mikhailovich; Petrenko, Anatoly Avraamovich; Mikhin, Trofim Andrianovich; Fedotov, Mikhail Nikitich; Zakirov, Robert Sharafutdinovich, deceased; and Zakirova, Ganna Fedgrovna, administratix, 3,980,413.
- Feess, Erich; Ong, Sienling; and Steuernagel, Hans Helmut, to Hoechst Aktiengesellschaft. Process for printing or pad-dyeing cellulose/polyester mixed fabrics. 3,980,426, Cl. 8-21.00C.
- Fekete, Simon Otto; Chapman, Quentin Reginald; and Price, Lynn Shapley, to Falconbridge Nickel Mines Limited. Precipitation of nickel, cobalt, lead sulphides in presence of iron oxides or hydroxides. 3,980,752, Cl. 423-92.000.
- Feldman, Julian: *See*—
  - Smith, David W.; and Feldman, Julian, 3,980,661.
- Feldman, Vladimir Yakovlevich: *See*—
  - Grigoriev, Vladimir Konstantinovich; Chugunov, Viktor Dmitrievich; Tsipkin, Alexandr Moiseevich; Kudryakov, Mikhail Nikolaevich; Yakovlev, Vladimir Germogenovich; Tumarkin, Vladimir Borisovich; Bashilov, Jury Borisovich; Kulaev, Jury Mikhailovich; Feldman, Vladimir Yakovlevich; Semikozov, Vyacheslav Fedorovich; Badin, Viktor Ivanovich; and Sheveleva, Vladislava Vladislavovna, 3,980,142.
- Feldtkeller, Ernst, to Siemens Aktiengesellschaft. Magneto-optical measuring transducer for very high currents/voltages. 3,980,949, Cl. 324-96.000.
- Felt Products Mfg. Co.: *See*—
  - McDowell, Donald J.; and Patel, Purshottam S., 3,980,627.
- Ferguson, Wesley E.: *See*—
  - Veach, Charley L.; Ferguson, Wesley E.; and Wiley, Ralph, 3,980,881.
- Ferneau, Richard H.; and Weil, Burt, to Weil, Burt. All level cart with swivel casters. 3,980,334, Cl. 296-20.000.
- Fernholz, Hans; and Freudenberger, Dieter, to Hoechst Aktiengesellschaft. Process for the manufacture of vinyl acetic acid and optionally of γ-butyrolactone. 3,980,671, Cl. 260-343.600.
- Ferro Corporation: *See*—
  - Heasley, James H.; and King, Alan G., 3,980,393.
- Fettweis, Alfred; and Meerkoetter, Klaus, to Siemens Aktiengesellschaft. Digital filter for electrical signals. 3,980,872, Cl. 235-152.000.
- Fiat-Allis Construction Machinery, Inc.: *See*—
  - Orr, Bobby J.; Schaffner, Donald L.; and Danner, Bill A., 3,980,351.
- Fidei, Frank P.: *See*—
  - Steinebronn, Kurt H.; and Fidei, Frank P., 3,980,910.

- Fields, Donald Lee; Henzel, Richard Paul; Shin Lau, Philip Thiam; and Chasman, Richard Allan, to Eastman Kodak Company. Positive-working immobile photographic compounds which cleave by intramolecular nucleophilic displacement in alkali unless oxidized. 3,980,479, Cl. 96-29.00D.
- Filba Adolf Reuter Kommanditgesellschaft Marburg an der Lahn: *See*—
  - Reuter, Adolf Karl, 3,980,524.
- Fillmore, William E., to Owens-Illinois, Inc. Tamper-proof closure. 3,980,195, Cl. 215-256.000.
- Filyanov, Anatoly Nikolaevich: *See*—
  - Kononenko, Vadim Grigorievich; Bozhko, Valery Pavlovich; Stelmakh, Viktor Alexeevich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Bukin, Jury Mikhailovich; Novikov, Anatoly Egorovich; Shaipova, Sania Fatyakhovna; Filyanov, Anatoly Nikolaevich; Shalbaian, Armais Semenovich; Grechka, Vitaly Dmitrievich; Tsyban, Nikolai Grigorievich; Gilmutdinov, Abdulla Gilmutdinovich; Regida, Fedor Ivanovich; Kazanovich, Lidia Evgenievna; Gertsuk, Nikolai Andreevich; Kolokolov, Boris Alexeevich; Morgolenko, Anatoly Sergeevich; Livanov, Vladimir Alexandrovich; Berezko, Anatoly Mikhailovich; Petrenko, Anatoly Avraamovich; Mikhin, Trofim Andrianovich; Fedotov, Mikhail Nikitich; Zakirov, Robert Sharafutdinovich, deceased; and Zakirova, Ganna Fedgrovna, administratix, 3,980,413.
- Fiquet, Claire: *See*—
  - Ghilardi, Giuliana; and Fiquet, Claire, 3,980,769.
- Firestone Tire & Rubber Company, The: *See*—
  - Conard, Wendell R., 3,980,610.
  - Schonfeld, Steven E.; Hergenrother, William L.; and Werner, Byron H., 3,980,595.
  - Werner, Byron H., 3,980,606.
- Fischer, Joachim: *See*—
  - Knorre, Helmut; and Fischer, Joachim, 3,980,593.
- Fischer, Jochen; and Schrudde, Reinhold. Device for producing piped openings in garment parts. 3,980,030, Cl. 112-121.150.
- Fleckenstein, Erwin; Heinrich, Ernst; and Mohr, Reinhard, to Cassella Farbwerke Mainkur Aktiengesellschaft. Certain 6-amino-4-hydrocarbyl-nicotinamides. 3,980,659, Cl. 260-294.80G.
- Flersheim, Johanna Mathilde, heiress: *See*—
  - Dransch, Gunter Karl Wilhelm Otto, deceased; Wiesenhutter, Annelise Klara Helene, heiress; Flersheim, Johanna Mathilde, heiress; Mildenberger, Hilmar; Duwel, Dieter; and Kirsch, Reinhard, 3,980,796.
- Fleury, Jacques, to Societe Anonyme Automobiles Citroen. Apparatus for measuring the electrical conductivity of a liquid. 3,980,946, Cl. 324-30.00A.
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  - Califano, Frank L.; Stepien, George, Jr.; and Russell, Thomas E., deceased, 3,979,916.
- Flory, John F., to Exxon Research and Engineering Company. Combined catenary and single anchor leg mooring system. 3,979,785, Cl. 9-8.00P.
- Flow Measurement Company, Inc.: *See*—
  - Messer, Elmer S.; and Mitchell, Donald K., 3,980,865.
- Flynn, Gordon L.: *See*—
  - Ayer, Donald E.; Schlagel, Carl A.; and Flynn, Gordon L., 3,980,778.
- FMC Corporation: *See*—
  - Niemi, Bill H.; Ryan, Mark D.; and Miller, George W., 3,980,820.
  - Shelmire, Donald W., 3,980,293.
- Forbes, Eric Simon: *See*—
  - Battersby, John; and Forbes, Eric Simon, 3,980,450.
- Ford Motor Company: *See*—
  - Ludwig, Frank A.; Minck, Robert W.; and Weiner, Steven A., 3,980,496.
  - Piatkowski, Philip, Jr., 3,980,933.
- Forster, Eckehard; Richter, Helmut; Spetzler, Edgar; Wendorff, Jochen; Klapdar, Wilhelm; and Rommerswinkel, Heinrich-Wilhelm, to Thyssen Niederrhein AG Hutten- und Walzwerke. Method of desulfurization of a steel melt. 3,980,469, Cl. 75-49.000.
- Fortune, William S. Vacuum desoldering system. 3,980,218, Cl. 228-20.000.
- Foss America, Inc.: *See*—
  - Rutgerson, Robert J.; and Mills, Malcom J., 3,979,957.
- Foster, George Ernest, to British Steel Corporation. Belt weighing machines. 3,979,943, Cl. 73-1.00B.
- Foster Wheeler Energy Corporation: *See*—
  - McMahon, Joseph F., 3,980,451.
- Foulkes, Frank R., to Huron Chemicals Limited. Ion exchange chromate removal. 3,980,751, Cl. 423-54.000.
- Fowler, Leslie L. Cell having catalytic layer for coalescing oil droplets. 3,980,565, Cl. 210-489.000.
- Fox, Dale B.; McMinn, Talmage D., Jr.; Beckham, Rodney D.; and Montgomery, Phillip D., to Monsanto Company. Oxygen carrier composition. 3,980,580, Cl. 252-186.000.
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  - Marcilly, Christian; Martino, Germain; and Franck, Jean-Pierre, 3,980,727.
- Franke, Friedrich; Wenzel, Werner; Meraikib, Mohamed; and Berkenkamp, Hans, to Rheinische Braunkohlenwerke AG. Process for the manufacture of brown coal briquettes. 3,980,447, Cl. 44-10.00D.
- Franks, Albert, to National Research Development Corporation. X-ray diffraction gratings. 3,980,883, Cl. 250-272.000.
- Franz, Charles F. Evacuateable bag. 3,980,226, Cl. 229-62.500.
- Franz, James N. Shaping head apparatus for producing improved edible shells. 3,980,419, Cl. 425-459.000.
- Frauenknecht, Josef: *See*—
  - Fabbri, Sergio; and Frauenknecht, Josef, 3,980,428.
- Frechette, Thomas E., to Royal Business Machines, Inc. Ribbon cartridge. 3,980,171, Cl. 197-151.000.
- Freedman, David: *See*—
  - Perle, Abe J.; and Freedman, David, 3,980,131.
- Freeman, Peter Frank Hilary: *See*—
  - Snell, Brian Kenneth; Elias, Richard Stewart; and Freeman, Peter Frank Hilary, 3,980,781.
- Freissle, Manfred Franz Axel, to Screenex Wire Weaving Manufacturers Limited. Replacable screen with frame. 3,980,555, Cl. 209-408.000.
- Fremont, Robert S., to McGraw-Edison Company. Adapter for power distribution system. 3,980,368, Cl. 339-21.00R.
- French Oil Mill Machinery Company, The: *See*—
  - Bredeson, Dean K., 3,980,013.
- Freter, Kurt: *See*—
  - Possanza, Genus; Freter, Kurt; and Luttke, Sven, 3,980,658.
- Freudenberger, Dieter: *See*—
  - Fernholz, Hans; and Freudenberger, Dieter, 3,980,671.
- Frey, Jean-Marie, to Rhone-Poulenc Industries. Method of purifying triaryl phosphites. 3,980,739, Cl. 260-989.000.
- Fried, John H.; and Harrison, Ian T., to Syntex Corporation. 2-Naphthyl acetic acid derivatives. 3,980,699, Cl. 260-515.00R.
- Friedman, Abraham: *See*—
  - Greenspan, Myron; and Friedman, Abraham, 3,980,996.
- Friedman, Henry: *See*—
  - Verge, John Pomfret; Neville, Martin Charles; and Friedman, Henry, 3,980,794.
- Frohbach, Hugh F.: *See*—
  - Schaefer, Louis F.; Rice, Philip J.; and Frohbach, Hugh F., 3,980,811.
- Frolov, Vladimir Ivanovich: *See*—
  - Kutsevalov, Vitaly Mikhailovich; Kanter, Valery Konstantinovich; Kornilov, Georgy Sazonovich; Ozols, Vitaly Ivanovich; Frolov, Vladimir Ivanovich; Glushkov, Alexandr Timofeevich; Leontiev, Igor Vitalievich; Elizarov, Vladislav Alexandrovich; Bobylev, Jury Petrovich; Mednitsky, Viktor Georgievich; and Bushuev, Viktor Vasilievich, 3,980,950.
- Fromme, Klaus; Schulz, Bruno; and Walther, Bernd, to Justin Huppe, Firma. Two-sheet folding wall or folding door of laminar elements. 3,979,861, Cl. 52-71.000.
- Froscher, Peter: *See*—
  - Vogelsberg, Dieter; Reil, Horst; and Froscher, Peter, 3,979,897.
- Frost, Walter Wade; and Hunter, John P., Jr., to Oxford Industries, Inc. Placket buttonhole system. 3,980,033, Cl. 112-264.000.
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  - Okuyama, Hiroshi; Takahashi, Hisao; and Hasegawa, Akira, 3,980,748.
- Fuji Photo Optical Co., Ltd.: *See*—
  - Tominaga, Hiroshi, 3,980,078.
- Fujimori, Yoshiaki: *See*—
  - Miyasaka, Tsutomu; Fujimori, Yoshiaki; and Okakura, Youjiro, 3,979,902.
- Fujimoto, Isao; Kasubuchi, Takeshi; and Aiba, Masahiko, to Nippon Telegraph and Telephone Public Corporation; and Sharp Kabushiki Kaisha, part interest to each. Charging signal supply circuit for ink jet system printer. 3,981,019, Cl. 346-75.000.
- Fukuda, Heijiro. Laminated resinoid wheels, method for continuously producing same and apparatus for use in the method. 3,980,453, Cl. 51-297.000.
- Fukunaga, Akio. Electrically heated miniature thermal implement. 3,980,861, Cl. 219-230.000.
- Funk, Welker W. Air blast spraying apparatus. 3,980,232, Cl. 239-77.000.
- Furukawa Electric Co., Ltd., The: *See*—
  - Kikuchi, Koji; Suzuki, Hiroshi; and Nomura, Toshio, 3,980,808.
- Fury, Charles M., to Lawrence Peska Associates, Inc., a part interest. Range triggered animal training system. 3,980,051, Cl. 119-29.000.
- Futer, Rudolph E. Air propelled vehicle transportation system. 3,980,024, Cl. 104-155.000.
- G. D. Searle & Co.: *See*—
  - Miyano, Masateru, 3,980,700.
- G. D. Societa per Azioni: *See*—
  - Seragnoli, Enzo, 3,979,880.
  - Seragnoli, Enzo, 3,979,881.
- G & H Technology, Inc.: *See*—
  - McCormick, Larry L.; and Selk, Ben F., 3,980,373.
- G. Schwartz & Co.: *See*—
  - Pazderka, Cyril, 3,979,939.
- G. T. Schjeldahl Company: *See*—
  - Sullivan, Terrence P., 3,980,587.
- Gabriel, Michel; and Maeder, Claude, to Pont-A-Mousson S.A. Apparatus capable of being automatically uncoupled for the manual operation of a rotary shaft, in particular a valve actuating shaft. 3,979,970, Cl. 74-625.000.
- Gaines, John W.: *See*—
  - Packard, Norman M.; and Gaines, John W., 3,980,310.
- Gallant, Stuart L.; and Cosentino, Louis C., to Renal Systems, Inc. Portable conductivity meter for artificial kidney machines. 3,980,944, Cl. 324-30.00R.
- Gamble, Fred R.: *See*—
  - Thompson, Arthur H.; and Gamble, Fred R., 3,980,761.

- Gammon, Geoffrey James: *See—*
  - Bradley, Basil John; Craig, Peter James; and Gammon, Geoffrey James, 3,980,603.
- Gandillet, Andre, to C.A.T. Ary-France. Bows for stringed instruments. 3,979,992, Cl. 84-282.000.
- Gandrud, Merlin H.: *See—*
  - Karsten, Lee L.; and Gandrud, Merlin H., 3,980,068.
- Gangal, Subhash Vishnu, to Du Pont de Nemours, E. I., and Company. Process for reducing filler loss during polytetrafluoroethylene agglomeration. 3,980,612, Cl. 260-42.220.
- Ganivet, Michel: *See—*
  - Cousinou, Gerard; and Ganivet, Michel, 3,980,750.
- Gante, Joachim; Kurmeier, Hans-Adolf; Schacht, Erich; Mehrhof, Werner; and Wild, Albrecht, to Merck Patent Gesellschaft mit beschrankter Haftung. Pyrazolidinones and a process for their preparation. 3,980,795, Cl. 424-273.000.
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  - Roos, Henry H.; and Boom, Clarence O., 3,980,144.
- Gardner, Mark R. Portable electronic display device. 3,981,002, Cl. [redacted]
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  - Calcagno, Piero; and Garetti, Enzo, 3,980,833.
- Garrett, Henry U., to Schlumberger Technology Corporation. Self-contained, retrievable valving assembly. 3,980,135, Cl. 166-224.00A.
- Garufi, Tino. Hairpiece apparatus. 3,980,092, Cl. 132-53.000.
- Gaskill, William G.: *See—*
  - Lubowitz, Hyman R.; and Gaskill, William G., 3,980,509.
- Gasparoli, Robert E., to General Electric Company. Fluid flow control system. 3,980,100, Cl. 137-487.500.
- Gates Rubber Company, The: *See—*
  - Gillman, Leland M.; and Stark, Robert E., 3,980,497.
- GCOE Corporation: *See—*
  - Gray, William W., 3,980,137.
- Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H.: *See—*
  - Weber, Karl-Heinz, 3,980,338.
- Gelli, Edo; and Berti, Giovanni. Mechanical system and method for continuous working woolen type yarn from cards to spinning frame. 3,979,893, Cl. 57-50.000.
- General Aluminum Corporation: *See—*
  - Vago, Louis N., 3,980,123.
- General American Transportation Corporation: *See—*
  - Aller, Edmund R.; and Arndt, Richard W., 3,980,212.
- General Atomic Company: *See—*
  - Morse, David C.; and Howard, William W., 3,980,440.
- General Battery Corporation: *See—*
  - Eberle, William J., 3,980,126.
- General Electric Company: *See—*
  - Anthony, Thomas R.; and Cline, Harvey E., 3,979,820.
  - Browall, Warella R., 3,980,456.
  - Cote, Paul T., 3,980,875.
  - Cote, Paul T., 3,980,876.
  - Cote, Paul T., 3,980,877.
  - Gasparoli, Robert E., 3,980,100.
  - Griebel, Ronald F., 3,980,941.
  - Hull, Thomas Neil, Jr.; and Warren, Robert Evans, 3,979,903.
- General Electric Company Limited, The: *See—*
  - Scotter, Dennis George, 3,980,962.
- General Signal Corporation: *See—*
  - Berns, Charles; and Podany, Vaclav O., 3,980,997.
- General Tire & Rubber Company, The: *See—*
  - Fabris, Hubert J.; Maxey, Edwin M.; and Uelzmann, Heinz, 3,980,594.
  - Kinas, Kenneth P., 3,980,118.
- Generke, William A.; and O'Connor, Hugh W., to Hills-McCanna Company. Differential drive. 3,979,971, Cl. 74-626.000.
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  - Heald, David D.; McKinnell, John C.; and Lekas, Mitchell A., 3,980,339.
- George, Harvey F.; Marrara, Charles G.; Oppenheimer, Robert H.; and Cairns, David W., to Gravure Research Institute, Inc. Apparatus for determining the dynamic complex hardness of resilient roll coverings. 3,979,948, Cl. 73-78.000.
- George, John Barrett, to RCA Corporation. Tuner bandswitching system for a television tuning system. 3,980,959, Cl. 325-470.000.
- Georges, Andre H.: *See—*
  - Delarge, Jacques E.; Thunus, Leopold N.; Lapiere, Charles Leon; and Georges, Andre H., 3,980,652.
- Georgia-Pacific Corporation: *See—*
  - Howe, William J., 3,979,882.
- Geosource Inc.: *See—*
  - Hoover, Michael C.; and Codding, Elias H., 3,980,181.
- Germain, Yves, to Automobiles Peugeot; and Regie Nationale des Usines Renault. Rotary electric switch in particular for an automobile vehicle luggage boot. 3,980,843, Cl. 200-11.0EA.
- German, Skaidrite Karlovna: *See—*
  - Vanags, Gustav Yanovich, deceased; Ozol, Yan-Voldemar Yanovich; Aren, Avgust Karlovich; German, Skaidrite Karlovna; Ozol, Yan-Voldemar Yanovich, administrator; Aren, Avgust Karlovich, administrator; German, Skaidrite Karlovna, administrator; Vanags, Gunar Gustavovich, administrator; and Vanga, Elga Vilgelmovna, administratrix, 3,980,707.
- German, Skaidrite Karlovna, administrator: *See—*
  - Vanags, Gustav Yanovich, deceased; Ozol, Yan-Voldemar Yanovich; Aren, Avgust Karlovich; German, Skaidrite Karlovna; Ozol, Yan-Voldemar Yanovich, administrator; Aren, Avgust Karlovich, administrator; German, Skaidrite Karlovna, administrator; Vanags, Gunar Gustavovich, administrator; and Vanga, Elga Vilgelmovna, administratrix, 3,980,707.
- Gertsuk, Nikolai Andreevich: *See—*
  - Kononenko, Vadim Grigorievich; Bozhko, Valery Pavlovich; Stelmakh, Viktor Alexeevich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Bukin, Jury Mikhailovich; Novikov, Anatoly Egorovich; Shaipova, Sania Fatyakhovna; Filyanov, Anatoly Nikolaevich; Shalbaian, Armais Semenovich; Grechka, Vitaly Dmitrievich; Tsyban, Nikolai Grigorievich; Gilmutdinov, Abdulla Gilmutdinovich; Regida, Fedor Ivanovich; Kazanovich, Lidia Evgenievna; Gertsuk, Nikolai Andreevich; Kolokolov, Boris Alexeevich; Morgolenko, Anatoly Sergeevich; Livanov, Vladimir Alexandrovich; Berezko, Anatoly Mikhailovich; Petrenko, Anatoly Avraamovich; Mikhin, Trofim Andrianovich; Fedotov, Mikhail Nikitich; Zakirov, Robert Sharafutdinovich, deceased; and Zakirova, Ganna Fedgrovna, administratix, 3,980,413.
- Gertz, Robert L.: *See—*
  - Burdorf, Donald L.; and Gertz, Robert L., 3,980,253.
- Gervase Instruments, Limited: *See—*
  - Bennett, Arthur Joseph, 3,979,956.
- Gesellschaft zur Forderung der Eisenhuttentechnik mbH: *See—*
  - Steinmetz, Eberhard; and Kuhn, Jurgen, 3,980,283.
- Ghilardi, Giuliana; and Fiquet, Claire, to L'Oreal. Shampoo containing a water-soluble cationic polymer. 3,980,769, Cl. 424-70.000.
- Ghys, Theofiel Hubert; Vanassche, Willy Joseph; and Pattyn, Herman Alberik, to AFGA-GEVAERT N.V. Direct-positive super-sensitized silver halide emulsions. 3,980,481, Cl. 96-101.000.
- Giallorenzi, Thomas G.; and Schnur, Joel M., to United States of America, Navy. Liquid crystal switch for optical waveguide. 3,980,395, Cl. 350-160.0LC.
- Gibbs Bright & Co.: *See—*
  - Hamilton, Clive Gordon; Horley, John Norman; and Moss, Graham, 3,979,862.
- Gieck, Reiner; and Dieter, Karl-Georg, to Siemens Aktiengesellschaft. Circuit arrangement for the receiving of binary direct current signals which are transmitted with low transmission voltage over galvanically connected lines. 3,980,966, Cl. 330-69.000.
- Giertz, Hubert: *See—*
  - Kropp, Rudolf; Reicheneder, Franz; Amann, August; and Giertz, Hubert, 3,980,633.
- Giger, Walter, Jr.: *See—*
  - Prince, Ralph P.; Belanger, Paul E.; Giger, Walter, Jr.; and Johnson, David H., 3,979,792.
- Gigli, Mario. Motorcycle auxiliary support system. 3,980,150, Cl. [redacted]
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- Gilles, Bartolome. Bearing boxes for rotary shafts subjected to twisting moments. 3,980,355, Cl. 308-181.000.
- Gillman, Leland M.; and Stark, Robert E., to Gates Rubber Company, The. Separators for alkaline batteries. 3,980,497, Cl. 429-145.000.
- Gilmutdinov, Abdulla Gilmutdinovich: *See—*
  - Kononenko, Vadim Grigorievich; Bozhko, Valery Pavlovich; Stelmakh, Viktor Alexeevich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Bukin, Jury Mikhailovich; Novikov, Anatoly Egorovich; Shaipova, Sania Fatyakhovna; Filyanov, Anatoly Nikolaevich; Shalbaian, Armais Semenovich; Grechka, Vitaly Dmitrievich; Tsyban, Nikolai Grigorievich; Gilmutdinov, Abdulla Gilmutdinovich; Regida, Fedor Ivanovich; Kazanovich, Lidia Evgenievna; Gertsuk, Nikolai Andreevich; Kolokolov, Boris Alexeevich; Morgolenko, Anatoly Sergeevich; Livanov, Vladimir Alexandrovich; Berezko, Anatoly Mikhailovich; Petrenko, Anatoly Avraamovich; Mikhin, Trofim Andrianovich; Fedotov, Mikhail Nikitich; Zakirov, Robert Sharafutdinovich, deceased; and Zakirova, Ganna Fedgrovna, administratix, 3,980,413.
- Gilot, Alain: *See—*
  - Bredart, Guy; and Gilot, Alain, 3,980,993.
- Ginger, Leonard George; and Mather, Adaline Nicoles, to Baxter Laboratories, Inc. Methods of dissolving blood clots and the like with streptokinase chemically bonded to a carbohydrate matrix. 3,980,772, Cl. 424-94.000.
- Ginsburg, Arnold P.: *See—*
  - O'Neill, Michael W.; and Ginsburg, Arnold P., 3,980,304.
- Ginsburg, Leon. Interchangeable see-through and opaque inserts for muffle furnace. 3,980,028, Cl. 110-173.00R.
- Giorgi, Tiziano A.: *See—*
  - della Porta, Paolo; and Giorgi, Tiziano A., 3,980,446.
- Girling Limited: *See—*
  - Harrison, Anthony William, 3,980,348.
  - Jones, Peter; and McDonald, Colin, 3,980,004.
- Glaser, Rudolf: *See—*
  - Moorwessel, Dieter; Glaser, Rudolf; Pfirrmann, Gunther; and Konopka, Rudolf, 3,980,598.
- Globe Linings, Inc.: *See—*
  - Kays, William B., 3,980,199.
- Glogolja, Miroslav, to RCA Corporation. Protection circuit. 3,980,930, Cl. 317-16.000.
- Gloucester Engineering Co. Inc.: *See—*
  - Schott, Charles M., Jr., 3,980,418.
- Glushkov, Alexandr Timofeevich: *See—*
  - Kutsevalov, Vitaly Mikhailovich; Kanter, Valery Konstantinovich; Kornilov, Georgy Sazonovich; Ozols, Vitaly Ivanovich; Frolov, Vladimir Ivanovich; Glushkov, Alexandr Timofeevich; Leontiev, Igor Vitalievich; Elizarov, Vladislav Alexandrovich; Bobylev, Jury Petrovich; Mednitsky, Viktor Georgievich; and Bushuev, Viktor Vasilievich, 3,980,950.

- Godsey, Frank W., Jr.; and Khattab, Ghazi, to Bio-Medical Sciences, Inc. Temperature indicating compositions. 3,980,581, Cl. 252-408.000.
- Goettl, Adam D. Adjustable V belt pulley. 3,979,963, Cl. 74-230.300.
- Goldenberg, Emmanuel: *See—*
  - Dawans, Francois; and Goldenberg, Emmanuel, 3,980,730.
- Golosman, Evgeny Zinovievich: *See—*
  - Dronov, Alexei Efimovich; Axenov, Nikolai Nikitovich; Kozlov, Lolly Ivanovich; Semenov, Vladimir Petrovich; Sobolevsky, Viktor Stanislavovich; Yagodkin, Viktor Ivanovich; Golosman, Evgeny Zinovievich; Alexeev, Arkady Mefodievich; Chistozvonov, David Borisovich; Shumlyakovsky, Tsezar Iosifovich; and Ulyanov, Nikolai Savelievich, 3,980,584.
- Gomco Surgical Manufacturing Corporation: *See—*
  - Baumgarten, Carl B., 3,980,198.
- Goncalves, Carlos Alberto de Castro; Neves, Romeu Almeida; and Drucker, Jose Bernardo, to Petroleo Brasileiro S.A.-Petrobras. Oil burner for oil-wells. 3,980,416, Cl. 431-202.000.
- Gonzalez-Hernandez, Angel. Safety plug-in jack base. 3,980,370, Cl. 339-40.000.
- Goodrich, George E.: *See—*
  - Cain, Earl S.; Carlson, Jerome A.; Crummett, James G.; and Goodrich, George E., 3,980,110.
- Goring, Joachim: *See—*
  - Brenner, Gunter; Credner, Karl; Goring, Joachim; and Tauscher, Manfred, 3,980,646.
- Gorring, Robert L.; and Shipman, George F., to Mobil Oil Corporation. Catalytic hydrodewaxing. 3,980,550, Cl. 208-111.000.
- Goslee, David E.; and Barr, Harold N., to Nuclear Battery Corporation. Microwatt thermoelectric generator. 3,980,502, Cl. 136-202.000.
- Goslee, David E.; and Bustard, Thomas S., to Nuclear Battery Corporation. Microwatt thermoelectric generator. 3,980,503, Cl. 136-202.000.
- Gould Inc.: *See—*
  - Sorenson, Dennis Dean; and Erickson, Richard Allan, 3,980,500.
- Goulet, Guy: *See—*
  - Mines, Kenneth S.; Mines, Irving; and Goulet, Guy, 3,980,847.
- Grabovac, Bosko, to Consolidated Devices, Inc. Torque tool tester. 3,979,942, Cl. 73-1.00C.
- Grabovac, Bosko, to Consolidated Devices, Inc. Drive socket. 3,979,979, Cl. 81-121.00R.
- Grachev, Leonid Pavlovich: *See—*
  - Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,980,183.
- Granzer, Ernold: *See—*
  - Kunstmann, Rudolf; and Granzer, Ernold, 3,980,656.
- Grassmann, Hans-Christian, to Siemens Aktiengesellschaft. Method and apparatus for the high-frequency treatment of moist material. 3,979,836, Cl. 34-1.000.
- Gravesteyn, Elbert, to Heineken Technisch Beheer B.V. Cap-lifter. 3,979,885, Cl. 53-381.00R.
- Gravure Research Institute, Inc.: *See—*
  - George, Harvey F.; Marrara, Charles G.; Oppenheimer, Robert H.; and Cairns, David W., 3,979,948.
- Gray, William W., to GCOE Corporation. Steam injector apparatus for wells. 3,980,137, Cl. 166-303.000.
- Grechka, Vitaly Dmitrievich: *See—*
  - Kononenko, Vadim Grigorievich; Bozhko, Valery Pavlovich; Stelmakh, Viktor Alexeevich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Bukin, Jury Mikhailovich; Novikov, Anatoly Egorovich; Shaipova, Sania Fatyakhovna; Filyanov, Anatoly Nikolaevich; Shalbaian, Armais Semenovich; Grechka, Vitaly Dmitrievich; Tsyban, Nikolai Grigorievich; Gilmutdinov, Abdulla Gilmutdinovich; Regida, Fedor Ivanovich; Kazanovich, Lidia Evgenievna; Gertsuk, Nikolai Andreevich; Kolokolov, Boris Alexeevich; Morgolenko, Anatoly Sergeevich; Livanov, Vladimir Alexandrovich; Berezko, Anatoly Mikhailovich; Petrenko, Anatoly Avraamovich; Mikhin, Trofim Andrianovich; Fedotov, Mikhail Nikitich; Zakirov, Robert Sharafutdinovich, deceased; and Zakirova, Ganna Fedgrovna, administratix, 3,980,413.
- Green, Bernard S. Boiler tube extractor and method. 3,979,816, Cl. 29-427.000.
- Green, Michael J., to Schering Corporation. Process for the preparation of 21-desoxy-17-acyloxy-4-pregnenes and of 21-iodo-21-desoxy-17-acyl oxy-4-pregnene intermediates useful therein. 3,980,680, Cl. 260-397.450.
- Greenfield, Walter; and Berg, Raymond, to Sci-Med Laboratories, Inc. Analytic test device. 3,980,436, Cl. 23-253.00R.
- Greenhalgh, Richard David; Saunders, Ronald Alexander; and Seyfang, George Reginald, to British Aircraft Corporation Limited. Aircraft recovery methods. 3,980,259, Cl. 244-139.000.
- Greenspan, Myron; and Friedman, Abraham. Self-sustaining alarm transmitter device. 3,980,996, Cl. 340-224.000.
- Greer, Homer L., to Honeywell Inc. Process control system using a two wire remote control system. 3,980,939, Cl. 318-599.000.
- Gregg, Frank M., to Lawrence Peska Associates, Inc., a part interest. Swim helmet. 3,979,777, Cl. 2-68.000.
- Grek, Ronald: *See—*
  - Bielsten, Nils Ove; Dahle, Orvar; Grek, Ronald; Hoffman, Bertil; Siby, Sture; and Widehn, Ake, 3,980,947.
- Greutert, Albert; and Heidborn, Ernst, to Interelectric AG. Shaped sieve body. 3,980,563, Cl. 210-232.000.
- Griebel, Ronald F., to General Electric Company. Reset circuit for auto-sequential commutated inverter. 3,980,941, Cl. 321-45.00R.
- Griesenbrock, Karl-Heinz, to Eaton Corporation. Fail-safe braking system. 3,980,347, Cl. 303-6.00R.
- Grigoriev, Vladimir Konstantinovich; Chugunov, Viktor Dmitrievich; Tsipkis, Alexandr Moiseevich; Kudryakov, Mikhail Nikolaevich; Yakovlev, Vladimir Germogenovich; Tumarkin, Vladimir Borisovich; Bashilov, Jury Borisovich; Kulaev, Jury Mikhailovich; Feldman, Vladimir Yakovlevich; Semikozov, Vyacheslav Fedorovich; Badin, Viktor Ivanovich; and Sheveleva, Vladislava Vladislavovna. Drilling boom. 3,980,142, Cl. 173-43.000.
- Grill, Michael; and Bouvier, Georg, to Veitscher Magnesitwerke-Aktiengesellschaft. Industrial process of preparing magnesia of high purity. 3,980,753, Cl. 423-161.000.
- Grinstead, Robert R., to Dow Chemical Company, The. Extraction of carboxylic acids from dilute aqueous solutions. 3,980,701, Cl. 260-527.00R.
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- Groch, Steve W.; and Jarvis, Harold F., to Shaw Pipe Industries Ltd. Method of thermally insulating pipe. 3,979,818, Cl. 29-455.00R.
- Grodinsky, Robert M. Noise reduction circuit. 3,980,964, Cl. 330-29.000.
- Gromova, Serafima Pavlovna: *See—*
  - Aleshin, Vasily Alexeevich; Bazarova, Galina Petrovna; Gromova, Serafima Pavlovna; Dmitriev, Jury Iosifovich; Kuteminsky, Jury Arkadievich; Komolova, Iza Ivanovna; Leschinsky, Georgy Olegovich; Sorokin, Vsevolod Konstantinovich; Sazonova, Galina Ivanovna; Silaev, Alexandr Fedorovich; Tikhonov, Grigory Fedorovich; and Schekin, Valery Mikhailovich, 3,980,445.
- Gross, James R., to Dow Chemical Company, The. Absorbent articles and methods for their preparation from crosslinkable solutions of synthetic carboxylic polyelectrolytes. 3,980,663, Cl. 260-29.6TA.
- Grosskopf, Rudolf; and Jager, Hubert, to Carl Zeiss-Stiftung. Method and means for electronic image analysis within a raster-scanned field. 3,980,812, Cl. 178-6.800.
- Grossman, Joseph H.; and Hardcastle, Glenn A., Jr., to Bristol-Myers Company. Production of amoxicillin. 3,980,637, Cl. 260-239.100.
- Gruenwald, Nancy K., to Lawrence Peska Associates, Inc., a part interest. Disposable bib. 3,979,776, Cl. 2-49.00R.
- Grundman, Thomas B. Method and means for establishing the corners of a multiple-sided lot. 3,979,833, Cl. 33-138.000.
- Grundy, Reed H., to Westinghouse Air Brake Company. Voltage controlled oscillator circuit. 3,980,970, Cl. 331-108.00D.
- Grune, Heinz: *See—*
  - Falkner, Raimund; and Grune, Heinz, 3,979,808.
- Grutza, Zigmund R., to Di-Coat Corporation. Method of coating form wheels with hard particles. 3,980,549, Cl. 204-16.000.
- Gryctko, Carl E.; and Ball, Kenneth D., to I-T-E Imperial Corporation. Circuit breaker operator with defeates interlock mechanism. 3,980,845, Cl. 200-50.00A.
- GTE Laboratories Incorporated: *See—*
  - Oxley, Vincent C., 3,980,377.
- GTE Sylvania Incorporated: *See—*
  - Woodard, Harold Santford, 3,979,806.
- Guard Polymer & Chemical, Inc.: *See—*
  - Shihadeh, Musa, 3,980,597.
- Guard, Twyman. Side weld plastic bag manufacturing machine. 3,980,516, Cl. 156-515.000.
- Gudden, Friedrich; Schubert, Wolfgang; and Romer, Peter, to Siemens Aktiengesellschaft. Self-supporting luminescent screens. 3,980,888, Cl. 250-483.000.
- Guidoux, Loic Bernard Yves; and Lommer, Daniel Jose Francois, to Telecommunications Radioelectriques et Telephoniques T.R.T. Frequency demodulator for a FSK data transmission system. 3,980,961, Cl. 329-104.000.
- Guillory, Jack P.: *See—*
  - Shiblom, Clifford M., Jr.; and Guillory, Jack P., 3,980,762.
- Gulibon, Robert S.: *See—*
  - Fawcett, William E.; and Gulibon, Robert S., 3,980,120.
- Gysling, Henry J., to Eastman Kodak Company. Copper (II) complexes. 3,980,654, Cl. 260-270.0PY.
- H.H. Boot & Sons Pty. Limited: *See—*
  - Boot, Phillip Handford; and Ellen, Peter Edington, 3,979,865.
- Haas, David J.; Blaustein, Aaron; Rudd, Chester D.; Lapof, Ray C.; and Schimpf, William C., to North American Philips Corporation. Article transfer and inspection apparatus. 3,980,889, Cl. 250-492.00R.
- Haas, Georges; and Rossi, Alberto, to Ciba-Geigy Corporation. Oxoalkylpyridines. 3,980,657, Cl. 260-297.00R.
- Habegger, Willy: *See—*
  - Hirsig, Emil, 3,980,158.
- Habermeier, Jurgen: *See—*
  - Porret, Daniel; and Habermeier, Jurgen, 3,980,647.
- Hadaway, Harry William, to London Transport Executive. Speed governors. 3,980,261, Cl. 246-182.00R.

Haemmerle, Bernard; Sillion, Bernard; and De Gaudemaris, Gabriel, to Institut Francais du Petrole, des Carburants et Lubrifiants et Entreprise de Recherches et d'Activities Petrolieres Elf. Organic compounds for use as fuel additives. 3,980,448, Cl. 44-63.000.
Haferl, Peter Eduard, to RCA Corporation. Deflection circuit. 3,980,927, Cl. 315-399.000.
Hafner, Wolfgang; and Hufnagel, Walter, to Lever Brothers Company. PVC bottles and method for the manufacture thereof. 3,980,192, Cl. 215-1.00C.
Hall, Charles M.: *See*—
  Wright, John B.; Hall, Charles M.; and Sinkula, Anthony A., 3,980,550.
Hall, John S.: *See*—
  Butts, Ernest O.; and Hall, John S., 3,979,868.
Halm, Richard. Process of manufacturing an electric motor. 3,979,822, Cl. 29-596.000.
Halperin, Levi: *See*—
  Zioni, Dov; and Halperin, Levi, 3,980,980.
Halverson, Gilbert: *See*—
  Johns, Douglas A.; and Halverson, Gilbert, 3,979,953.
Hama, Masaharu: *See*—
  Takamiya, Saburo; Hama, Masaharu; and Kondo, Akihiro, 3,980,508.
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  Butts, Ernest O.; and Hall, John S., 3,979,868.
Hamburger, Brigitte: *See*—
  Kuhle, Engelbert; Klauke, Erich; Hamburger, Brigitte; and Scheinpflug, Hans, 3,980,693.
Hamilton, Clive Gordon; Horley, John Norman; and Moss, Graham, to Gibbs Bright & Co. Building structure. 3,979,862, Cl. 52-90.000.
Hamilton, Thomas R., to Caterpillar Tractor Co. Hitch pin assembly for a tractor-scraper vehicle and the like. 3,980,321, Cl. 280-515.000.
Hammann, Ingeborg: *See*—
  Hoffmann, Hellmut; Hammann, Ingeborg; and Homeyer, Bernhard, 3,980,777.
  Lorenz, Walter; Hammann, Ingeborg; and Homeyer, Bernhard, 3,980,783.
  Siegle, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 3,980,673.
Hancock, Charlie L., to White-Westinghouse Corporation. Dishwasher wetting agent dispenser. 3,980,206, Cl. 222-156.000.
Handtmann, Dieter: *See*—
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Hankison Corporation: *See*—
  Pitchford, Arthur H.; and Cianflone, Robert A., 3,980,568.
Hardcastle, Glenn A., Jr.: *See*—
  Grossman, Joseph H.; and Hardcastle, Glenn A., Jr., 3,980,637.
Harima Chemicals Inc.: *See*—
  Ishigami, Masahisa; and Inoue, Yoshikazu, 3,980,630.
Harm, Alson Robert, to Procter & Gamble Company, The. Interfolding apparatus. 3,980,289, Cl. 270-40.000.
Harris Corporation: *See*—
  Loane, Raymond M., 3,980,291.
Harrison, Anthony William, to Girling Limited. Fluid flow control valves. 3,980,348, Cl. 303-21.00F.
Harrison, Ian T.: *See*—
  Fried, John H.; and Harrison, Ian T., 3,980,699.
Harter, B. Wayne. Position finding and course determining instrument. 3,980,362, Cl. 312-231.000.
Hasbro Development Corporation: *See*—
  Birdsall, John D., 3,980,113.
Hasegawa, Akira: *See*—
  Okuyama, Hiroshi; Takahashi, Hisao; and Hasegawa, Akira, 3,980,748.
Haskins, Jerry D. Bolt action for repeating rifle. 3,979,849, Cl. 42-16.000.
Hauser, Raimund: *See*—
  von Belvard, Peter Revy, 3,980,398.
Hayasaka, Isao, to Takeda Riken Kogyo Kabushiki Kaisha. Method of manufacturing a resistor having a low temperature coefficient. 3,979,823, Cl. 29-610.00R.
Hayes, John C., to Universal Oil Products Company. Dehydrogenation with a nonacidic multimetallic catalyst. 3,980,726, Cl. 260-668.00D.
Hazeltine Corporation: *See*—
  Masak, Raymond J., 3,981,014.
Hazenbroek, Jacobus E., to Barker International, Inc. Poultry eviscerating apparatus. 3,979,793, Cl. 17-11.000.
Heald, David D.; McKinnell, John C.; and Lekas, Mitchell A., to Geokinetics, Inc. Process for recovery of carbonaceous materials from subterranean deposits. 3,980,339, Cl. 299-2.000.
Healey, John Maxwell: *See*—
  Chown, James Philip; and Healey, John Maxwell, 3,980,767.
Heasley, James H.; and King, Alan G., to Ferro Corporation. Retroreflective device. 3,980,393, Cl. 350-103.000.
Hocken, Rudolf P., to Siemens Aktiengesellschaft. Line device for transmission lines having coaxial cables for the transmission of digital or analog signals. 3,980,973, Cl. 333-28.00R.
Heckrodt, William F.; and Van Hulle, Norman J., to Presto Products, Incorporated. Optical thickness detecting and comparing method and apparatus. 3,980,890, Cl. 250-560.000.
HED Industries, Inc.: *See*—
  Dennis, John S., 3,980,422.
Heeman, Andreas Maria; and Steeghs, Piet Jan Maria, to U.S. Philips Corporation. Flash lamp unit. 3,980,421, Cl. 431-93.000.
Heese, Joachim: *See*—
  Fahnenstich, Rudolf; Heese, Joachim; and Offermanns, Heribert, 3,980,665.
Heese, William Elisa: *See*—
  Meyer, Kenneth Herbert; and Heese, William Elisa, 3,979,909.
Hefren, Fred W. Stabilizer apparatus for road vehicles. 3,980,315, Cl. 180-94.000.
Hegarty, Charles Paul; and Pietryk, Helen C., to American Home Products Corporation. Method of viral chemoprophylaxis and compounds therefor. 3,980,774, Cl. 424-166.000.
Hehl, Karl. Fluidizer for feeding flowable material to a production machine. 3,980,208, Cl. 222-193.000.
Heidborn, Ernst: *See*—
  Greutert, Albert; and Heidborn, Ernst, 3,980,563.
Heineken Technisch Beheer B.V.: *See*—
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Heinrich, Ernst: *See*—
  Fleckenstein, Erwin; Heinrich, Ernst; and Mohr, Reinhard, 3,980,659.
Heinzer, Paul; and Wulz, Helmut, to Wito Wissenschaftliches Forschungs-Institut A.G. Photocopying machines. 3,980,294, Cl. 271-197.000.
Heinzer, Paul: *See*—
  Wulz, Helmut; and Heinzer, Paul, 3,980,863.
Heller, Harold: *See*—
  Corte, Herbert; Heller, Harold; Lange, Peter Michael; and Netz, Otto, 3,980,462.
Henault, Claude, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Devices for recirculating exhaust gases in internal combustion engines. 3,980,063, Cl. 123-119.00A.
Henderson, James M.; and Wetherill, William H., to Asarco Incorporated. Recovery of sulfur dioxide from gas mixtures. 3,980,759, Cl. 423-539.000.
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Hendrickson, Luther G.; and Ravasio, Dino, to United States Steel Corporation. Briquette mold pocket configuration. 3,980,745, Cl. 264-109.000.
Henkel & Cie G.m.b.H.: *See*—
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Hennessey, Robert D.: *See*—
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Henning, Andrew R., to Shakespeare Company. Electrically operated bow mount for trolling motor. 3,980,039, Cl. 115-41.00R.
Henry Manufacturing Company: *See*—
  McEwen, Stephen N.; and LaFayette, William S., 3,980,014.
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  Fields, Donald Lee; Henzel, Richard Paul; Shin Lau, Philip Thiam; and Chasman, Richard Allan, 3,980,479.
Henzi, Beat, to Sandoz Ltd. Basic azo dyes having a quaternized s-triazolo-[2,3-a]-pyrimidine diazo component radical. 3,980,632, Cl. 260-146.00D.
Heotis, James P.: *See*—
  Mertz, James L.; Olivard, Joanne; and Heotis, James P., 3,980,434.
Hepworth, Paul, to Imperial Chemical Industries Limited. Polyalkenmers from monomers of norbornene structure containing polar groups. 3,980,626, Cl. 526-297.000.
Herb, Carl C., to Carrier Corporation. Air conditioning terminal. 3,980,007, Cl. 98-40.00D.
Hercules Incorporated: *See*—
  Subluskey, Lee A., 3,980,717.
Hergenrother, William L.: *See*—
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Hermans, Willem Frederik, to Stork Amsterdam B.V. Sterilizing apparatus comprising a pressure reducing valve. 3,980,011, Cl. 99-453.000.
Hernborg, Gunnar, to Aktiebolaget Atomenergi. Apparatus for electric heating of fluids. 3,980,862, Cl. 219-300.000.
Herrling, Siegfried, to Chemie Grunenthal GmbH. Process for the manufacture of pyrimidine derivatives. 3,980,649, Cl. 260-256.40N.
Herwig, Walter: *See*—
  Noetzel, Siegfried; Herwig, Walter; Kern, Rudolf; and Lotz, Werner, 3,980,614.
Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., to Pfizer Inc. 15-Substitute D-ω-pentanorprostaglandins. 3,980,642, Cl. 260-240.00R.
Hester, Jackson B., Jr., to Upjohn Company, The. 8-Chloro-1-methyl-6-phenyl-4H-s-triazolo[4,3-a][1,4]-benzodiazepine compositions and method of treatment. 3,980,789, Cl. 424-269.000.
Hester, Jackson B., Jr., to Upjohn Company, The. 8-Chloro-1-methyl-6-(O-chlorophenyl)-4H-s-triazolo[4,3-a]-[1,4]benzodiazepine compositions and method of treatment. 3,980,790, Cl. 424-269.000.
Hestermann, Klaus: *See*—
  Lippmeier, Bernd; Hestermann, Klaus; and Heymer, Gero, 3,980,711.
Hettinger, William P., Jr.: *See*—
  Braithwaite, David G.; and Hettinger, William P., Jr., 3,980,536.
Heule, James E., to Audronics, Inc. Photoelectric physiological measuring apparatus. 3,980,075, Cl. 128-2.05R.
Heymer, Gero: *See*—
  Lippmeier, Bernd; Hestermann, Klaus; and Heymer, Gero, 3,980,711.
Hi-Lo Powered Stirrups, Inc.: *See*—
  Mauldin, William E., 3,980,161.

Hibino, Masahiro, to Mitsubishi Denki Kabushiki Kaisha. Exciter for induction heating apparatus. 3,980,858, Cl. 219-10.490.
Higgins, David L., to Ag-Met, Inc. Method for the electrolytic recovery of metals. 3,980,538, Cl. 204-109.000.
Hill, Edward Grant, to Electromask, Inc. Shutter plate movement. 3,980,407, Cl. 355-71.000.
Hill, Harold Wayne, Jr.: *See*—
  Campbell, Robert W.; and Hill, Harold Wayne, Jr., 3,980,621.
Hill, Jeffrey: *See*—
  Hind, Robert Duncan; and Hill, Jeffrey, 3,980,271.
Hill, Joseph Henry, to Vandervell Products Limited. Bearings. 3,980,353, Cl. 308-92.000.
Hills-McCanna Company: *See*—
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Hily, Guy: *See*—
  Pinettes, Jacques; and Hily, Guy, 3,980,425.
Hinago, Yasuhiro, to Nippon Gakki Seizo Kabushiki Kaisha. Keyboard arrangement in electronic musical instrument. 3,979,990, Cl. 84-1.240.
Hind, Robert Duncan; and Hill, Jeffrey, to United States Steel Corporation. Pouring of molten metals. 3,980,271, Cl. 251-144.000.
Hirokawa, Kazuaki; and Anbo, Tsugio, to Shinagawa Automotive Electric Wire Co., Ltd. Electrical connector. 3,980,385, Cl. 339-217.00S.
Hirsch, Rolf-Burkhard: *See*—
  Wilhelm, Gerd; Hurm, Karl; Hirsch, Rolf-Burkhard; Jaschke, Artur; and Marzolph, Herbert, 3,980,529.
Hirsig, Emil, to Habegger, Willy. Brake apparatus with variable brake force for aerial cableways. 3,980,158, Cl. 188-42.000.
Hishinuma, Yukio; Tamura, Zensuke; and Enomoto, Syunzi, to Hitachi, Ltd.; and Babcock-Hitachi K.K. Adsorption method. 3,980,454, Cl. 55-73.000.
Hitachi Chemical Company, Ltd.: *See*—
  Miyagi, Toru; Katakai, Nobuyoshi; Narita, Masanori; Uchida, Tatsuya; and Kimura, Minondo, 3,980,561.
Hitachi, Ltd.: *See*—
  Akiyama, Tadahiko; Nishigori, Shogo; and Mochizuki, Kenji, 3,980,834.
  Hishinuma, Yukio; Tamura, Zensuke; and Enomoto, Syunzi, 3,980,454.
  Shimada, Shunji; and Ito, Tsuneo, 3,980,899.
  Tatsuno, Yujiro; and Ikeda, Takatoshi, 3,980,405.
  Yamauchi, Masaaki, 3,980,918.
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Hobart Corporation: *See*—
  Allen, Kenneth D.; and Tippy, Coy M., 3,980,856.
Hobbs, Milton M., to Westinghouse Electric Corporation. Combined cycle electric power plant and a gas turbine having improved liquid fuel flow detection. 3,979,904, Cl. 60-39.140.
Hobgood, Eugene, to Lawrence Peska Associates, Inc. Exercise shoe. 3,979,841, Cl. 36-11.500.
Hochreuter, Richard: *See*—
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  Dransch, Gunter Karl Wilhelm Otto, deceased; Wiesenbutter, Anneliese Klara Helene, heiress; Flersheim, Johanna Mathilde, heiress; Mildenberger, Hilmar; Duwel, Dieter; and Kirsch, Reinhard, 3,980,796.
  Feess, Erich; Ong, Sienling; and Steuernagel, Hans Helmut, 3,980,426.
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  Johannes, Gerhard, 3,980,607.
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Hoefer, Stanton A., to Hoefer Scientific Instruments. Vertical gel slab electrophoresis apparatus and method. 3,980,540, Cl. 204-180.00G.
Hoeg, Joseph G.: *See*—
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Hoette, Harold: *See*—
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Hoffmann, Friedrich; and von Kamp, Wilhelm, to Daimler-Benz Aktiengesellschaft. Partial lining disk brake, especially for motor vehicles. 3,980,160, Cl. 188-73.500.
Hoffmann, Hellmut; Hammann, Ingeborg; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. O-alkyl-O-[2-alkylthio-imidazol(4)yl](thiono)-phosphoric(phosphonic) acid esters and ester-amides. 3,980,777, Cl. 424-200.000.
Hoffsommer, Walter A.; Polney, Richard J.; and Price, Samuel T., to Enterprise Machine and Development Corporation. Resiliently supported baffle for yarn texturing air jet. 3,979,805, Cl. 28-1.400.
Hofstadt, Carl Ernst: *See*—
  Buckl, Hans; Fahn, Rudolf; and Hofstadt, Carl Ernst, 3,980,719.
Hohmann, Walter; Wunderlich, Klaus; and Bien, Hans-Samuel, to Bayer Aktiengesellschaft. Anthraquinone dyestuffs containing sulphonic acid groups. 3,980,677, Cl. 260-373.000.
Hokuriku Pharmaceutical Co., Ltd.: *See*—
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Hokushin Electric Works, Ltd.: *See*—
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Holava, Henry Michael: *See*—
  Partyka, Richard Anthony; Holava, Henry Michael; and Jelenevsky, Alex Michael, 3,980,667.
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Holliday, Robert G., to Xerox Corporation. Microform information storage arrangement. 3,980,402, Cl. 353-27.00A.
Hollins, William John, to C.A.V. Limited. Fuel injection pumping apparatus. 3,980,066, Cl. 123-140.00R.
Homan, John D., to Raymond Lee Organization, Inc., The, a part interest. Paper hanger's paste applicator. 3,980,046, Cl. 118-405.000.
Homeyer, Arthur C.: *See*—
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  Lorenz, Walter; Hammann, Ingeborg; and Homeyer, Bernhard, 3,980,783.
  Siegle, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 3,980,673.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
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Honeywell Inc.: *See*—
  Greer, Homer L., 3,980,939.
  Krueger, Thomas Allen, 3,980,926.
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  Wilwerding, Dennis J., 3,980,924.
Honeywell Information Systems, Inc.: *See*—
  Tchon, Wallace E., 3,980,902.
Hood, Charles R., to Procter & Gamble Company, The. Longitudinally partitioned tubular body. 3,980,222, Cl. 229-22.000.
Hooker Chemicals & Plastics Corporation: *See*—
  Evans, Leo G.; and Bykowski, Michael B., 3,980,851.
Hookway, Alan F. J.: *See*—
  Prosser, Paul E.; and Hookway, Alan F. J., 3,980,979.
Hoover, Michael C.; and Codding, Elias H., to Geosource Inc. Color sorting apparatus. 3,980,181, Cl. 209-111.600.
Horizons Incorporated a division of Horizons Research Incorporated: *See*—
  Mondron, Peter J., 3,980,706.
Horley, John Norman: *See*—
  Hamilton, Clive Gordon; Horley, John Norman; and Moss, Graham, 3,979,862.
Hornsby, James R., Jr. Amusement ball. 3,980,300, Cl. 273-58.00B.
Horvath, Stephen, to Beeston Company Limited. Fuel supply apparatus for internal combustion engines. 3,980,053, Cl. 123-3.000.
Hotta, Seiji, to Sumitomo Chemical Company, Limited. Diphenylmethane electrophotographic liquid developer. 3,980,577, Cl. 252-62.10L.
Howard, Lawrence K. Keyboard for bar matrix code. 3,980,823, Cl. 178-30.000.
Howard, William W.: *See*—
  Morse, David C.; and Howard, William W., 3,980,440.
Howden, Harry, to U.S. Philips Corporation. Aspheric optical elements. 3,980,399, Cl. 350-189.000.
Howe, William J., to Georgia-Pacific Corporation. Packaging glass bottles and other rigid containers. 3,979,882, Cl. 53-24.000.
Howell, Donald L.; and Wildenthaler, Leo E., to Hobart Brothers Company. Fume extracting torch handle. 3,980,860, Cl. 219-130.000.
Hruza, Denis E.: *See*—
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Hubbs, Allan; and Weiss, Bert, to Endura Manufacturing Corporation. Tufting assembly for upholstered furniture. 3,979,807, Cl. 29-91.400.
Huber, Hans: *See*—
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Huebner, Robert J.; Lynnes, Carman P.; Matzelle, Ralph A.; and Sears, Richard L. M., to Caterpillar Tractor Co. Variable hydrostatic bearing between barrel and head of axial piston units. 3,980,003, Cl. 91-487.000.
Hueser, Rudolph L. Two-electrode gas analysis method for electrically sensing and controlling redox reactions. 3,980,530, Cl. 204-1.00T.
Hufnagel, Walter: *See*—
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- Hughes, Robert D.: *See—*
  - Steigelmann, Edward F.; and Hughes, Robert D., 3,980,605.
- Huguenin, Freddy, to Ebauches S.A. Digital display device. 3,981,003, Cl. 340-336.000.
- Huignard, Jean Pierre; Roy, Anne-Marie; and Slezak, Christian, to Thomson-CSF. Electro-optical deflection apparatus using holographic grating. 3,980,389, Cl. 350-3.500.
- Hull, Thomas Neil, Jr.; and Warren, Robert Evans, to General Electric Company. Gas turbine engine with booster stage. 3,979,903, Cl. [redacted]
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- Hunter, John P., Jr.: *See—*
  - Frost, Walter Wade; and Hunter, John P., Jr., 3,980,033.
- Huntington Alloys, Inc.: *See—*
  - Leonard, Joseph Charles, 3,980,859.
- Hurley, Julius; and Sommers, Alex, to Bearingwall Systems, Inc. Modular precast concrete wall panels in building construction. 3,979,863, Cl. 52-92.000.
- Hurm, Karl: *See—*
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- Huron Chemicals Limited: *See—*
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- Hutcheson, Alan G., to Lynch Communication Systems, Inc. Maintenance monitor for telephone switching systems. 3,980,839, Cl. 179-175.20R.
- Hutchinson, Edward Hynes, to Computer Identics Corporation. Signal width and width ratio determining apparatus. 3,980,960, Cl. 328-112.000.
- HydraPower Inc.: *See—*
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- Hydro Optics, Inc.: *See—*
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- I-T-E Imperial Corporation: *See—*
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- Ichikawa, Ieyasu, to Director General, Printing Bureau, Ministry of Finance. Special intaglio printing process for preventing forgery of securities. 3,980,018, Cl. 101-170.000.
- Ide, Hirofumi; and Kobayashi, Tamotsu, to Hokushin Electric Works, Ltd. Karman vortex flowmeter. 3,979,954, Cl. 73-194.0VS.
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- Iijima, Katsuhiko; and Jomen, Katsumasa, to Mitsubishi Jukogyo Kabushiki Kaisha. Control system for a hydraulic clamping device. 3,980,000, Cl. 91-411.00R.
- Iinuma, Hironobu: *See—*
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- Ikuno, Yuji, to Olympus Optical Co., Ltd. High frequency apparatus for heat treatment of biological tissue. 3,980,085, Cl. 128-303.170.
- Illinois Tool Works Inc.: *See—*
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- Image Analysing Computers Limited: *See—*
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- Imamaru, Fumio: *See—*
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  - Elliott, Christopher Stuart, 3,980,716.
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  - Ridgeway, John Jerold, 3,980,510.
  - Snell, Brian Kenneth; Elias, Richard Stewart; and Freeman, Peter Frank Hilary, 3,980,781.
  - Taylor, Thomas, 3,980,016.
- Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; Koshiba, Masao; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Fused quinazolinones and a process for production thereof. 3,980,645, Cl. 260-244.00R.
- Inagaki, Takeo: *See—*
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- Indicator Controls Corporation: *See—*
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- Industria Napoletana Costruzione Autoveicoli Alfa Romeo Alfasud S.p.A.: *See—*
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- Industrial Electronics Service Co.: *See—*
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- Information Terminals Corporation: *See—*
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- Ing. C. Olivetti & C., S.p.A.: *See—*
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- Ingelman, Bjorn G.-A.; Lindberg, Bernt J.; Rosengren, Jan G.; and Campbell, Dag E. S., to Pharmacia Aktiebolag. Polymerization products containing amino groups useful in serum cholesterol level control. 3,980,770, Cl. 424-79.000.
- Inner-Tite (Division of Yara Engineering Corporation): *See—*
  - King, Karl G., Sr., 3,980,332.
- Inokuma, Shun: *See—*
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- Inoue, Yoshikazu: *See—*
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- Institut Dr. Friedrich Forster, Prufgeratebau: *See—*
  - Link, Hans, 3,980,884.
- Institut Francais du Petrole, des Carburants et Lubrifiants et Entreprise de Recherches et d'Activities Petrolieres Elf: *See—*
  - Dawans, Francois; and Goldenberg, Emmanuel, 3,980,730.
  - Haemmerle, Bernard; Sillion, Bernard; and De Gaudemaris, Gabriel, 3,980,448.
  - Marcilly, Christian; Martino, Germain; and Franck, Jean-Pierre, 3,980,727.
- Institut Francaise du Petrole, des Carburants et Lubrifiants et Entreprise de Recherches et d'Activites Petrolieres Elf: *See—*
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- Institut Organicheskogo Sinteza: *See—*
  - Vanags, Gustav Yanovich, deceased; Ozol, Yan-Voldemar Yanovich; Aren, Avgust Karlovich; German, Skaidrite Karlovna; Ozol, Yan-Voldemar Yanovich, administrator; Aren, Avgust Karlovich, administrator; German, Skaidrite Karlovna, administrator; Vanags, Gunar Gustavovich, administrator; and Vanga, Elga Vilgelmovna, administratrix, 3,980,707.
- Institute fur Textil-und Faserforschung Stuttgart: *See—*
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- Intec Corporation: *See—*
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  - Slaker, Frank A., 3,980,891.
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- International Basic Economy Corporation: *See—*
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- International Business Machines Corporation: *See—*
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  - Craft, James Alexander; and Rogers, James Charles, 3,980,296.
  - Widmer, Albert Xavier, 3,980,826.
- International Components Corporation: *See—*
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- International Election Systems Corporation: *See—*
  - Smith, Earl H., Jr., 3,980,864.
- International Flavors & Fragrances Inc.: *See—*
  - Pittet, Alan O.; Pascale, John V.; and Hruza, Denis E., 3,980,089.
  - Pittet, Alan Owen; and Klaiber, Erich Manfred, 3,980,708.
- International Harvester Company: *See—*
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- International Lead Zinc Research Organization, Inc.: *See—*
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- International Telephone and Telegraph Corporation: *See—*
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  - Panek, George J., 3,980,369.
  - Sumption, Richard F.; and Wallace, Charles H., 3,979,835.
- International Video Corporation: *See—*
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- Iotron Corporation: *See—*
  - Mann, John Russell, 3,981,008.
- Isa, Hiroshi; Inagaki, Takeo; Kojima, Nobuo; and Kadoya, Isamu, to Lion Fat & Oil Co., Ltd. Process for carboxylation of olefins. 3,980,683, Cl. 260-410.90R.
- Isaksen, Robert A.; Locke, Frederic J.; Smith, John L.; and Spitz, George T., to Monsanto Company. Powder coating resin process. 3,980,732, Cl. 260-850.000.
- Isaksen, Robert A.; Locke, Frederic J.; Smith, John L.; and Spitz, George T., to Monsanto Company. Powder coating resin process. 3,980,733, Cl. 260-850.000.
- Isenmann, Robert L., to Penn Corporation. Separable key holder. 3,979,934, Cl. 70-459.000.

- Ishida, Nakao; and Kikuchi, Mikio, to Ishida, Nakao. Composition containing double stranded RNA from basidiomycetes and method of use. 3,980,776, Cl. 424-181.000.
- Ishida, Takashi: *See—*
  - Minekawa, Saburo; Yonekawa, Sigeru; Tabata, Haruro; Ishida, Takashi; Tsuchida, Satoshi; and Yamada, Kiyoshi, 3,980,624.
- Ishigaki, Yoshio; and Okada, Takashi, to Sony Corporation. Multipurpose switching circuits utilizing a novel semiconductor device. 3,980,900, Cl. 307-243.000.
- Ishigami, Masahisa; and Inoue, Yoshikazu, to Harima Chemicals Inc. Method for preparation of emulsifier for emulsion polymerization. 3,980,630, Cl. 260-106.000.
- Ishigami, Noriakira; Kozakai, Asao; Ishikawa, Masakazu; and Ota, Takaaki, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Brake failure indicator. 3,980,987, Cl. 340-52.00C.
- Ishii, Makoto: *See—*
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- Ishikawa, Masakazu: *See—*
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- Ishioka, Yasuaki: *See—*
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- Ishizumi, Kikuo: *See—*
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- ITL Industries, Inc.: *See—*
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- Ito, Tsuneo: *See—*
  - Shimada, Shunji; and Ito, Tsuneo, 3,980,899.
- Iwasaki, Isamu: *See—*
  - Okamura, Hiroshi; Sato, Hisao; and Iwasaki, Isamu, 3,980,841.
- Iwashita, Tomonori; Aizawa, Hiroshi; Kozuki, Susumu; and Uchidoi, Masanori, to Canon Kabushiki Kaisha. Camera having an electric driving device. 3,981,022, Cl. 354-171.000.
- Iwata, Hideo; Ohyama, Hiroshi; and Oyama, Atsushi, to Matsushita Electric Industrial Co., Ltd. Antenna apparatus for detecting an optimum directivity. 3,981,016, Cl. 343-117.00R.
- Izawa, Masao, to Olympus Optical Co., Ltd. Illuminating device for a microscope. 3,980,921, Cl. 315-206.000.
- J.A. Henckels Zwillingswerk Aktiengesellschaft: *See—*
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- J. I. Case Company: *See—*
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- J. M. Huber Corporation: *See—*
  - Kunkle, Albert C., 3,980,547.
- Jachmann, Rolf D. Construction element. 3,980,408, Cl. 403-19.000.
- Jackson, Jerome E., to Addressograph Multigraph Corporation. Method of ion imaging with additional control fields. 3,980,474, Cl. 96-1.00R.
- Jacobs, Eugene A. Ventilating and cooling apparatus. 3,980,072, Cl. 126-299.00B.
- Jacobsen Manufacturing Company: *See—*
  - Karsten, Lee L.; and Gandrud, Merlin H., 3,980,068.
- Jacquet, Bernard; Papantoniou, Christos; Dufaure, Pierre; and Mahieux, Claude, to L'Oreal. Anti-solar polymers, method of making the same and cosmetic compositions containing the same. 3,980,617, Cl. 260-47.0UA.
- Jager, Hubert: *See—*
  - Grosskopf, Rudolf; and Jager, Hubert, 3,980,812.
- Jakes, Gerald A.; and Bond, Raymond E., to Reliance Electric Company. Drive system for an annealing lehr. 3,980,170, Cl. 198-782.000.
- Jakobsson, Lars Erik, to Telefonaktiebolaget L M Ericsson. Apparatus for pulsing in telephone sets. 3,980,837, Cl. 179-90.00K.
- Jakubauskas, Henry L., to Du Pont de Nemours, E. I., and Company. Acrylic polymer dispersant for aqueous acrylic coating compositions. 3,980,602, Cl. 260-29.6TA.
- Jamee, Jean, to Thomson-CSF. Optical-electronic relay. 3,980,903, Cl. 307-311.000.
- Jamieson, John A. Transmissive article sorting apparatus. 3,980,180, Cl. 209-111.600.
- Janssen, Alexander Patton, to Datastrip Corporation. Visible index systems. 3,979,845, Cl. 40-64.00R.
- Janssen, Wladimir; and Prime, Harley Corey, to Canadian Industries, Ltd. Apparatus for determining interface levels in ground cavities or containers containing liquid or gel-like material. 3,979,958, Cl. 73-290.00R.
- Japan Exlan Company Limited: *See—*
  - Nakagawa, Kazumi; Shimoda, Keitaro; Tsutsui, Nobuhiro; and Zoda, Keiichi, 3,980,747.
- Jarman, Alonzo B.; and Zeuner, Kenneth W., to Control Concepts, Inc. Two stage solenoid actuated valve, system, and method of actuation. 3,980,002, Cl. 91-461.000.
- Jarvis, Harold F.: *See—*
  - Groch, Steve W.; and Jarvis, Harold F., 3,979,818.
- Jarvis, John P.: *See—*
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- Jaschke, Artur: *See—*
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- Jaworski, Eugene: *See—*
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- Jeitschko, Wolfgang Karl: *See—*
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- Jelenevsky, Alex Michael: *See—*
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  - Partyka, Richard Anthony; Holava, Henry Michael; and Jelenevsky, Alex Michael, 3,980,667.
- Jennings, John H. Preassembled refrigerant subcooling unit. 3,979,923, Cl. 62-184.000.
- Jeumont-Schneider: *See—*
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- Joas, Wolfgang: *See—*
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- Jobson, Kenneth C. Ore washing machine. 3,980,554, Cl 209-240.000.
- Jockel, Heinz: *See—*
  - Krumm, Hagen; Jockel, Heinz; von Walter, Klaus; Restin, Kurt; and Kuhn, Robert, 3,980,452.
- Johannes, Gerhard, to Hoechst Aktiengesellschaft. Powdered coating materials. 3,980,607, Cl. 260-37.0EP.
- Johansson, Sten E. Attitude control devices for stern drive power boats. 3,980,035, Cl. 114-66.50H.
- John Lysaght (Australia) Limited: *See—*
  - Edwards, William John; and Easey, John Frederick, 3,979,935.
- John T. Hepburn Limited: *See—*
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- Johns, Douglas A.; and Halverson, Gilbert, to Scientific Instruments, Inc. Mass flow meter for cryogenic fluid. 3,979,953, Cl. 73-194.00M.
- Johns, Robert W., to World Oil Mining Ltd. Method for longwall mining with side-by-side arch sections. 3,980,340, Cl. 299-11.000.
- Johnson, Charles W.: *See—*
  - Plummer, Ray A.; and Johnson, Charles W., 3,980,136.
- Johnson, David H.: *See—*
  - Prince, Ralph P.; Belanger, Paul E.; Giger, Walter, Jr.; and Johnson, David H., 3,979,792.
- Johnson, Gilbert C. Fishing pole mounting device. 3,979,852, Cl. 43-16.000.
- Johnson & Johnson: *See—*
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- Johnson, Michael R.: *See—*
  - Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., 3,980,642.
- Johnson, Milo R.: *See—*
  - Chapman, Richard A.; Johnson, Milo R.; and Morris, Henry B., 3,980,915.
- Johnson, Rubein V. Cabinet for improving the sound output of an amplifier. 3,980,154, Cl. 181-199.000.
- Johnson, William Lafayette; and Lindell, Carl William. Saddle overlying horse blanket. 3,979,886, Cl. 54-79.000
- Jolicoeur, Jean-Charles. Nozzle attachment for toilet bowl. 3,979,781, Cl. 4-1.000.
- Jolly, Jean: *See—*
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- Joly, Robert: *See—*
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- Jomen, Katsumasa: *See—*
  - Iijima, Katsuhiko; and Jomen, Katsumasa, 3,980,000.
- Jonas, Rochus; Muller-Calgan, Helmut; and Schliep, Hans-Jochen, to Merck Patent Gesellschaft mit beschrankter Haftung. Hexahydrodiazepino-indole derivatives. 3,980,797, Cl. 424-274.000.
- Jones, Peter; and McDonald, Colin, to Girling Limited. Piston and seal assemblies. 3,980,004, Cl. 92-182.000.
- Jones, Robert E. Desk top work support device. 3,980,266, Cl. 248-454.000.
- Jordan, Heinz Dietrich: *See—*
  - Neeff, Rutger; and Jordan, Heinz Dietrich, 3,980,609.
- Joseph Lucas (Industries) Limited: *See—*
  - Wright, Maurice James, 3,980,934.
- Joseph Lucas Limited: *See—*
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- Jost, Karel: *See—*
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- Joyce, John T.: *See—*
  - Bostrom, Harry H.; and Joyce, John T., 3,980,937.
- Judd, O'Dean P.; and Suydam, Bergen R., to United States of America. Energy Research and Development Administration. Diffraction smoothing aperture for an optical beam. 3,980,397, Cl 350-162.00R.
- Juguin, Bernard; and Le Page, Jean-Francois, to Institut Francaise du Petrole, des Carburants et Lubrifiants et Entreprise de Recherches et d'Activites Petrolieres Elf. Catalyst particularly useful for dehydrogenating saturated hydrocarbons. 3,980,721, Cl. 260-668.00D.
- Juillard, Michel: *See—*
  - Bachot, Jean; Bouy, Pierre; and Juillard, Michel, 3,980,613.
- Julia, Marc: *See—*
  - Chabardes, Pierre; Julia, Marc; and Menet, Albert, 3,980,695.

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K-Line Industries, Inc.: *See—*

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Kabai, Deszo, to Interdisciplin Forschungsgesellschaft m.b.H. Entwicklungs K.G. Hose or pipe for sprinkling or irrigation. 3,980,104, Cl. 138-103.000.

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Okamura, Hiroshi; Sato, Hisao; and Iwasaki, Isamu, 3,980,841.

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Kabushiki Kaisha Kyoto Daiichi Kagaku: *See—*

Kishimoto, Shinichi; and Yamamoto, Hiroshi, 3,980,437.

Kabushiki Kaisha Suwa Seikosha: *See—*

Miyasaka, Tsutomu; Fujimori, Yoshiaki; and Okakura, Youjiro, 3,979,902.

Kadoya, Isamu: *See—*

Isa, Hiroshi; Inagaki, Takeo; Kojima, Nobuo; and Kadoya, Isamu, 3,980,683.

Kahn, Bernard I.; Dodge, Donald; and Dietz, Ernest W., to Pacific Electricord. Safety electrical outlet. 3,980,371, Cl. 339-40.000.

Kaiser, Joachim: *See—*

Kunstmann, Rudolf; and Kaiser, Joachim, 3,980,655.

Kakimi, Tsuneo: *See—*

Nakanose, Megumi; Kakimi, Tsuneo; and Shiraishi, Michiyoshi, 3,979,815.

Kakizaki, Takehiro; and Kubota, Yasuharu, to Sony Corporation. Photo-electrode structure. 3,980,917, Cl. 313-383.000.

Kalopissis, Gregoire: *See—*

Boudouris, Georges; Kalopissis, Gregoire; Roussopoulos, Paul; and Levesque, Jean-Luc, 3,980,855.

Kamata, Yukio: *See—*

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Kamaya, Kazuo: *See—*

Muramoto, Noboru; Okamoto, Yukikazu; Kamaya, Kazuo; Kawaji, Kunihiro; and Shiraki, Makoto, 3,980,463.

Kametani, Hiroshi; and Yamauchi, Chikabumi, to National Research Institute for Metals. Method of spray smelting copper. 3,980,470, Cl. 75-74.000.

Kaminsky, Manfred S., to United States of America, Energy Research and Development Administration. Beam limiter for thermonuclear fusion devices. 3,980,916, Cl. 313-231.300.

Kamiya, Yozi: *See—*

Nomura, Kenzi; Kamiya, Yozi; and Yoshioka, Kengo, 3,979,819.

Kammeraad, James A., to K-Line Industries, Inc. Overhead camshaft and valve train insertion and removal tools. 3,979,811, Cl. 29-215.000.

Kan, Osamu, to Dai Nippon Insatsu Kabushiki Kaisha. Self-standing bag. 3,980,225, Cl. 229-57.000.

Kanakis, Dorothy M. Foliage and floral preservation and material therefor. 3,979,837, Cl. 34-9.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*

Kozuka, Ko; Kobayashi, Shigeru; Watanabe, Akira; Iki, Yoshio; and Yokoe, Masaaki, 3,980,622.

Kaneko, Dentaro: *See—*

Nishida, Reijiro; Takeda, Kunio; Kaneko, Dentaro; and Uchida, Kunio, 3,980,465.

Kaneko, Shinji, to Sony Corporation. White level clipping circuit. 3,980,815, Cl. 178-7.3DC.

Kanou, Ryuji: *See—*

Yamada, Eiji; Nishikuri, Masao; Kanou, Ryuji; and Ohshima, Taizo, 3,980,678.

Kansai Nissan Chemicals Ltd.: *See—*

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Kanter, Valery Konstantinovich: *See—*

Kutsevalov, Vitaly Mikhailovich; Kanter, Valery Konstantinovich; Kornilov, Georgy Sazonovich; Ozols, Vitaly Ivanovich; Frolov, Vladimir Ivanovich; Glushkov, Alexandr Timofeevich; Leontiev, Igor Vitalievich; Elizarov, Vladislav Alexandrovich; Bobylev, Jury Petrovich; Mednitsky, Viktor Georgievich; and Bushuev, Viktor Vasilievich, 3,980,950.

Karatjas, Manuel: *See—*

Kuris, Arthur; Balamuth, Lewis; and Karatjas, Manuel, 3,980,906.

Karita, Mitsuji: *See—*

Shigihara, Shigeyuki; Karita, Mitsuji; and Ikeguchi, Hideo, 3,980,784.

Karlsson, Stig Ingvar: *See—*

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Karp, Arthur: *See—*

Podell, Allen F.; Young, Leo; Karp, Arthur; and Chambers, Donald R., 3,980,972.

Karsten, Lee L.; and Gandrud, Merlin H., to Jacobsen Manufacturing Company. Gasoline powered machine having two electric circuit switches. 3,980,068, Cl. 123-198.0DC.

Kasai, Yasuhiko: *See—*

Tamura, Zenzo; Tanimura, Takenori; and Kasai, Yasuhiko, 3,980,433.

Kase, Koji: *See—*

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Kashibe, Mitsunobu: *See—*

Otsuki, Susumo; Arika, Junji; Kashibe, Mitsunobu; and Takeshige, Kosuke, 3,980,754.

Kashiwagi, Michio: *See—*

Yamamoto, Sadamu; Kashiwagi, Michio; Nishio, Koichi; and Akada, Kunio, 3,980,974.

Kasper, Willi; and Licht, Helmut. Resilient railway wheel. 3,980,333, Cl. 295-11.000.

Kastening, Bertel: *See—*

Knittel, Dierk; and Kastening, Bertel, 3,980,535.

Kasubuchi, Takeshi: *See—*

Fujimoto, Isao; Kasubuchi, Takeshi; and Aiba, Masahiko, 3,981,019.

Katakai, Nobuyoshi: *See—*

Miyagi, Toru; Katakai, Nobuyoshi; Narita, Masanori; Uchida, Tatsuya; and Kimura, Minondo, 3,980,561.

Katanik, Timothy M.: *See—*

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Kato, Hideo; Mouri, Takaaki; and Nishikawa, Tomoyasu, to Hokuriku Pharmaceutical Co., Ltd. Novel piperazine- and homopiperazine-monoalkanol esters and a process of production thereof. 3,980,643, Cl. 260-240.00J.

Kato, Mitsuharu, to Nippondenso Co., Ltd. Integrated circuit device. 3,980,896, Cl. 307-205.000.

Kato, Taizo. Shaft-coupling device preventable from over-torque transmission. 3,979,925, Cl. 64-29.000.

Katoh, Tadayuki: *See—*

Omori, Akira; Okamura, Isao; Imoto, Tadasi; and Katoh, Tadayuki, 3,980,513.

Katsumata, Mitsuo; Murakami, Katsuo; and Miyamoto, Mitsunori, to Kokusan Denki Co., Ltd. Capacitance discharge type breakerless ignition system for an internal combustion engine. 3,980,922, Cl. 315-209.0CD.

Kawaguchi, Munetaka: *See—*

Yamamoto, Yutaka; and Kawaguchi, Munetaka, 3,980,390.

Kawahara, Atsushi, to Nippon Kogaku K.K. Device for measuring contour length of a two-dimensional pattern. 3,980,870, Cl. 235-151.300.

Kawaji, Kunihiro: *See—*

Muramoto, Noboru; Okamoto, Yukikazu; Kamaya, Kazuo; Kawaji, Kunihiro; and Shiraki, Makoto, 3,980,463.

Kawamoto, Kinji, to Matsushita Electric Industrial Co., Ltd. Electronic expression device for producing tremulant effect. 3,979,991, Cl. 84-1.250.

Kays, William B., to Globe Linings, Inc. Gas venting for floating cover. 3,980,199, Cl. 220-227.000.

Kazanovich, Lidia Evgenievna: *See—*

Kononenko, Vadim Grigorievich; Bozhko, Valery Pavlovich; Stelmakh, Viktor Alexeevich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Bukin, Jury Mikhailovich; Novikov, Anatoly Egorovich; Shaipova, Sania Fatyakhovna; Filyanov, Anatoly Nikolaevich; Shalbaian, Armais Semenovich; Grechka, Vitaly Dmitrievich; Tsyban, Nikolai Grigorievich; Gilmutdinov, Abdulla Gilmutdinovich; Regida, Fedor Ivanovich; Kazanovich, Lidia Evgenievna; Gertsuk, Nikolai Andreevich; Kolokolov, Boris Alexeevich; Morgolenko, Anatoly Sergeevich; Livanov, Vladimir Alexandrovich; Berezko, Anatoly Mikhailovich; Petrenko, Anatoly Avraamovich; Mikhin, Trofim Andrianovich; Fedotov, Mikhail Nikitich; Zakirov, Robert Sharafutdinovich, deceased; and Zakirova, Ganna Fedgrovna, administratix, 3,980,413.

Kebach, Alex. Bicycle gear shift derailleur. 3,979,962, Cl. 74-217.00B.

Keiji, Taniuchi. Pop-top can lid. 3,980,201, Cl. 220-270.000.

Keller, Roman, to Siemens Aktiengesellschaft. Clip connection. 3,980,378, Cl. 339-95.00R.

Kelsey-Hayes Company: *See—*

Doerfler, Roger E., 3,980,345.

Stelzer, William, 3,980,343.

Kennametal Inc.: *See—*

Fawcett, William E.; and Gulibon, Robert S., 3,980,120.

McCreery, James W., 3,980,443.

Kennedy, Thomas E.; and Kinney, James F., to Tyler Refrigeration Corporation. Door check and hold-open device. 3,980,331, Cl. 192-268.000.

Kern, Rudolf: *See—*

Burg, Karlheinz; Kern, Rudolf; and Schmidt, Heinz, 3,980,734.

Noetzel, Siegfried; Herwig, Walter; Kern, Rudolf; and Lotz, Werner, 3,980,614.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*

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Kerr, Ralph O.; and Barone, Bruno J., to Petro-Tex Chemical Corporation. Catalyst and process for preparing maleic anhydride from C_4 hydrocarbons. 3,980,585, Cl. 252-437.000.

Kesselmark, Mats; and Morner, Bengt. Device in connection with centrifugal couplings. 3,980,165, Cl. 192-105.0CE.

Khaidurov, Efim Leontievich; and Razorenov, Vladimir Alexandrovich. Firearm having a slide damper and energy absorber. 3,979,997, Cl. 89-198.000.

Khattab, Ghazi: *See—*

Godsey, Frank W., Jr.; and Khattab, Ghazi, 3,980,581.

Khcheyan, Khachik Egorovich; Revenko, Olga Mikhailovna; and Tikhonova, Margarita Petrovna. Method of co-producing isoprene and 2-methyl-1-butene. 3,980,728, Cl. 260-680.00R.

Kheifets, Rafail Efimovich: *See—*

Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,980,183.

Kiesow, Lutz A., to Baxter Laboratories, Inc. Mixing valve. 3,980,102, Cl. 137-625.480.

Kikuchi, Koji; Suzuki, Hiroshi; and Nomura, Toshio, to Furukawa Electric Co., Ltd., The. Electric cable. 3,980,808, Cl. 174-110.0SR.

Kikuchi, Mikio: *See—*

Ishida, Nakao; and Kikuchi, Mikio, 3,980,776.

Kimberly-Clark Corporation: *See—*

Neubauer, Howard A., 3,980,050.

Kimblin, Clive W., to Westinghouse Electric Corporation. Vacuum interrupter with cup-shaped contact having an inner arc controlling electrode. 3,980,850, Cl. 200-144.00B.

Kimura, Minondo: *See—*

Miyagi, Toru; Katakai, Nobuyoshi; Narita, Masanori; Uchida, Tatsuya; and Kimura, Minondo, 3,980,561.

Kimura, Tsuneo; and Koyama, Katsuhisa, to Mitsubishi Chemical Industries Ltd. Flameproofing agent for polyamide resins. 3,980,616, Cl. 260-45.8NT.

Kimura, Yoshio: *See—*

Mitsuoka, Hiroshi; and Kimura, Yoshio, 3,980,133.

Kinas, Kenneth P., to General Tire & Rubber Company, The. Tread configuration for automotive tire. 3,980,118, Cl. 152-209.00R.

King, Alan G.: *See—*

Heasley, James H.; and King, Alan G., 3,980,393.

King, Frederick David; and Springthorpe, Anthony John, to Northern Electric Company Limited. Integral lens light emitting diode. 3,981,023, Cl. 357-17.000.

King, Karl G., Sr., to Inner-Tite (Division of Yara Engineering Corporation). Seals for meters and the like. 3,980,332, Cl. 292-320.000.

Kinney, James F.: *See—*

Kennedy, Thomas E.; and Kinney, James F., 3,980,331.

Kinoton GmbH: *See—*

Kotte, Jan Jakob, 3,979,966.

Kirk, Norman. Fire extinguishing bomb for putting out fires. 3,980,139, Cl. 169-28.000.

Kirkpatrick, Elwood L., to R and L Accessories, Inc. Folding step for high ground clearance vehicles. 3,980,319, Cl. 280-166.000.

Kirsch, Reinhard: *See—*

Dransch, Gunter Karl Wilhelm Otto, deceased; Wiesenhutter, Annelise Klara Helene, heiress; Flersheim, Johanna Mathilde, heiress; Mildenberger, Hilmar; Duwel, Dieter; and Kirsch, Reinhard, 3,980,796.

Kirschmann, John D. Liquid distillation apparatus. 3,980,526, Cl. 202-83.000.

Kishida, Masahiko: *See—*

Nishikubo, Tadatomi; Ugai, Shinzi; Ichijo, Taro; and Kishida, Masahiko, 3,980,483.

Kishimoto, Shinichi; and Yamamoto, Hiroshi, to Kabushiki Kaisha Kyoto Daiichi Kagaku. Test strips and methods and apparatus for using the same. 3,980,437, Cl. 23-253.0TP.

Klaiber, Erich Manfred: *See—*

Pittet, Alan Owen; and Klaiber, Erich Manfred, 3,980,708.

Klapdar, Wilhelm: *See—*

Forster, Eckehard; Richter, Helmut; Spetzler, Edgar; Wendorff, Jochen; Klapdar, Wilhelm; and Rommerswinkel, Heinrich-Wilhelm, 3,980,469.

Klaue, Hermann. Starting device for heavy vehicles. 3,979,973, Cl. 74-740.000.

Klauke, Erich: *See—*

Kuhle, Engelbert; Klauke, Erich; Hamburger, Brigitte; and Scheinpflug, Hans, 3,980,693.

Kleid, Robert E., to Pitney-Bowes, Inc. Skew eliminating sheet feeding mechanism. 3,980,295, Cl. 271-242.000.

Klein, Gerald B. Sealant for pushdown gate in a can lid. 3,980,200, Cl. 220-268.000.

Klein, H. Joseph: *See—*

Rosof, Barry H.; Klein, H. Joseph; and Acuncius, Dennis S., 3,980,468.

Klein, Henry, to Black and Decker Manufacturing Company, The. Universal and D.C. motors with improved field structure for portable tools and appliances. 3,980,909, Cl. 310-50.000.

Kleinschmidt, Johann Otto; and Niem, Wolfgang, to Union Special Maschinenfabrik G.m.b.H. Sewing machine having automatic feed control system. 3,980,032, Cl. 112-209.000.

Kletschka, Harold D.; and Rafferty, Edson D., to Bio-Medicus, Inc. Fluid conveying surgical instrument. 3,980,086, Cl. 128-318.000.

Klett, George J.; Capece, William M.; and Devine, Martin J., to United States of America, Navy. Impregnated and encapsulated wire rope and cable. 3,979,896, Cl. 57-149.000.

Kligerman, Alan E. Measuring and dispensing device for fluent material. 3,980,210, Cl. 222-456.000.

Kline, Donald E.: *See—*

Whiting, David A.; Blankenhorn, Paul R.; and Kline, Donald E., 3,980,604.

Klioze, Solomon S.; and Novick, William J., Jr., to American Hoechst Corporation. 3-Phenylspiro[isobenzofuran-1,4'-piperidine]sulfenamides and derivatives. 3,980,787, Cl. 424-267.000.

Knell, Everett W.; Masciantonio, Philip X.; McGinness, Joseph P.; and Saniga, George T., to United States Steel Corporation. Increasing ethylene feedstock gases produced by quenching effluent zone above coke bed with cooling liquid. 3,980,525, Cl. 201-29.000.

Knight, Michael John; Cuenod, Gerard; and Bechet, Louis Marius Andre. Method and apparatus for authenticating and identifying coins. 3,980,168, Cl. 194-100.00A.

Knittel, Dierk; and Kastening, Bertel, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Process for producing sulfones. 3,980,535, Cl. 204-59.00R.

Knopik, Duane L. Underground fluid recovery device. 3,980,138, Cl. 166-314.000.

Knorre, Helmut; and Fischer, Joachim, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Anticaking agent for inorganic salts. 3,980,593, Cl. 252-383.000.

Kobayashi, Shigeru: *See—*

Kozuka, Ko; Kobayashi, Shigeru; Watanabe, Akira; Iki, Yoshio; and Yokoe, Masaaki, 3,980,622.

Kobayashi, Tamotsu: *See—*

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Kobayashi, Toshio: *See—*

Takano, Rikuo; Sumitomo, Yuji; Kobayashi, Toshio; Yamamoto, Yoichi; and Makita, Tomoo, 3,981,020.

Kobe Steel Ltd.: *See—*

Nishida, Reijiro; Takeda, Kunio; Kaneko, Dentaro; and Uchida, Kunio, 3,980,465.

Kobylarz, John R., to Raymond Lee Organization, Inc., The, a part interest. Razor blade sharpener. 3,979,857, Cl. 51-109.0BS.

Koch, Leland C.; Crossley, Warren P.; and Scheller, Donald M., to United States of America, Navy. Extensible-retractable wing. 3,980,257, Cl. 244-43.000.

Koch, Ulf, to J.A. Henckels Zwillingswerk Aktiengesellschaft. Scissors. 3,979,826, Cl. 30-341.000.

Koehler, Andreas Martin: *See—*

Steward, Vincent William; and Koehler, Andreas Martin, 3,980,885.

Kohler Ludwig, to Kraftwerk Union Aktiengesellschaft. Method and apparatus for sizing nuclear fuel rod cladding tubes. 3,979,936, Cl. 72-56.000.

Koizumi, Jyun: *See—*

Yokokawa, Kiyoshi; Koizumi, Jyun; and Yanagisawa, Kesayuki, 3,980,729.

Kojima, Nobuo: *See—*

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Kokusan Denki Co., Ltd.: *See—*

Katsumata, Mitsuo; Murakami, Katsuo; and Miyamoto, Mitsunori, 3,980,922.

Kolbe, Joachim. Vehicle banking arm construction. 3,980,317, Cl. 280-112.00A.

Kollmorgen Corporation: *See—*

Noodleman, Samuel, 3,979,821.

Kolokolov, Boris Alexeevich: *See—*

Kononenko, Vadim Grigorievich; Bozhko, Valery Pavlovich; Stelmakh, Viktor Alexeevich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Bukin, Jury Mikhailovich; Novikov, Anatoly Egorovich; Shaipova, Sania Fatyakhovna; Filyanov, Anatoly Nikolaevich; Shalbaian, Armais Semenovich; Grechka, Vitaly Dmitrievich; Tsyban, Nikolai Grigorievich; Gilmutdinov, Abdulla Gilmutdinovich; Regida, Fedor Ivanovich; Kazanovich, Lidia Evgenievna; Gertsuk, Nikolai Andreevich; Kolokolov, Boris Alexeevich; Morgolenko, Anatoly Sergeevich; Livanov, Vladimir Alexandrovich; Berezko, Anatoly Mikhailovich; Petrenko, Anatoly Avraamovich; Mikhin, Trofim Andrianovich; Fedotov, Mikhail Nikitich; Zakirov, Robert Sharafutdinovich, deceased; and Zakirova, Ganna Fedgrovna, administratix, 3,980,413.

Komatsu, Kogiro: *See—*

Mabuchi, Kenichi; and Komatsu, Kogiro, 3,980,940.

Kommrusch, Richard Stephen, to Motorola, Inc. Center fed vertical gain antenna. 3,981,017, Cl. 343-792.000.

Komnatny, Igor Pavlovich: *See—*

Kononenko, Vadim Grigorievich; Bozhko, Valery Pavlovich; Stelmakh, Viktor Alexeevich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Bukin, Jury Mikhailovich; Novikov, Anatoly Egorovich; Shaipova, Sania Fatyakhovna; Filyanov, Anatoly Nikolaevich; Shalbaian, Armais Semenovich; Grechka, Vitaly Dmitrievich; Tsyban, Nikolai Grigorievich; Gilmutdinov, Abdulla Gilmutdinovich; Regida, Fedor Ivanovich; Kazanovich, Lidia Evgenievna; Gertsuk, Nikolai Andreevich; Kolokolov, Boris Alexeevich; Morgolenko, Anatoly Sergeevich; Livanov, Vladimir Alexandrovich; Berezko, Anatoly Mikhailovich; Petrenko, Anatoly Avraamovich; Mikhin, Trofim Andrianovich; Fedotov, Mikhail Nikitich; Zakirov, Robert Sharafutdinovich, deceased; and Zakirova, Ganna Fedgrovna, administratix, 3,980,413.

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Kondo, Akihiro: *See—*

Takamiya, Saburo; Hama, Masaharu; and Kondo, Akihiro, 3,980,508.

Kondo, Takamitsu; and Tashiro, Mikio, to Teijin Limited. Amino silane with epoxy siloxane as treating agent for fiber. 3,980,599, Cl. 260-29.20M.

Konig, Hans-Bodo; Schrock, Wilfried; Disselnkotter, Hans; and Metzger, Karl Georg, to Bayer Aktiengesellschaft. Ureidoacetamido-penicillins. 3,980,792, Cl. 424-271.000.

Kono, Toshiyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Stratified combustion rotary piston engine with a fuel injection system. 3,980,054, Cl. 123-8.130.

Kononenko, Vadim Grigorievich; Bozhko, Valery Pavlovich; Stelmakh, Viktor Alexeevich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Bukin, Jury Mikhailovich; Novikov, Anatoly Egorovich; Shaipova, Sania Fatyakhovna; Filyanov, Anatoly Nikolaevich; Shalbaian, Armais Semenovich; Grechka, Vitaly Dmitrievich; Tsyban, Nikolai Grigorievich; Gilmutdinov, Abdulla Gilmutdinovich; Regida, Fedor Ivanovich; Kazanovich, Lidia Evgenievna; Gertsuk, Nikolai Andreevich; Kolokolov, Boris Alexeevich; Morgolenko, Anatoly Sergeevich; Livanov, Vladimir Alexandrovich; Berezko, Anatoly Mikhailovich; Petrenko, Anatoly Avraamovich; Mikhin, Trofim Andrianovich; Fedotov, Mikhail Nikitich; Zakirov, Robert Sharafutdinovich, deceased; and by Zakirova, Ganna Fedgrovna, administratix. Device for briquetting loose materials. 3,980,413, Cl. 425-1.000.

Konopka, Rudolf: *See—*
Moorwessel, Dieter; Glaser, Rudolf; Pfirrmann, Gunther; and Konopka, Rudolf, 3,980,598.

Kooistra, Philip A.: *See—*
Merser, Francis G.; Kooistra, Philip A.; and Lankton, Gordon B., 3,979,799.

Kopf, Wolfgang, to Daimler-Benz Aktiengesellschaft. Safety steering for motor vehicles. 3,980,314, Cl. 280-87.00C.

Kopito, Louis; Schuster, Samuel R.; and Kosasky, Harold, to Ovutime, Inc. Eccentric viscometer for testing biological and other fluids. 3,979,945, Cl. 73-60.000.

Kornilov, Georgy Sazonovich: *See—*
Kutsevalov, Vitaly Mikhailovich; Kanter, Valery Konstantinovich; Kornilov, Georgy Sazonovich; Ozols, Vitaly Ivanovich; Frolov, Vladimir Ivanovich; Glushkov, Alexandr Timofeevich; Leontiev, Igor Vitalievich; Elizarov, Vladislav Alexandrovich; Bobylev, Jury Petrovich; Mednitsky, Viktor Georgievich; and Bushuev, Viktor Vasilievich, 3,980,950.

Kosaka, Yujiro; Emura, Noriaki; and Watanabe, Syuzo, to Toyo Soda Manufacturing Co., Ltd. Hot melt adhesive composition. 3,980,735, Cl. 260-873.000.

Kosasky, Harold: *See—*
Kopito, Louis; Schuster, Samuel R.; and Kosasky, Harold, 3,979,945.

Koshiba, Masao: *See—*
Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; Koshiba, Masao; and Yamamoto, Hisao, 3,980,645.

Koster, Frederick Henry, to American Telephone and Telegraph Company. Conductor identification arrangement for a cable restoration system. 3,980,840, Cl. 179-175.30A.

Kotte, Jan Jakob, to Kinoton GmbH. Clutch device for either intermittent or continuous driving of perforated film. 3,979,966, Cl. [illegible].

Kovacs, Jenoe: *See—*
Marx, Matthias; Kovacs, Jenoe; and Storck, Gerhard, 3,980,601.

Koyama, Katsuhisa: *See—*
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Kozakai, Asao: *See—*
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Kozlov, Lolly Ivanovich: *See—*
Dronov, Alexei Efimovich; Axenov, Nikolai Nikitovich; Kozlov, Lolly Ivanovich; Semenov, Vladimir Petrovich; Sobolevsky, Viktor Stanislavovich; Yagodkin, Viktor Ivanovich; Golosman, Evgeny Zinovievich; Alexeev, Arkady Mefodievich; Chistozvonov, David Borisovich; Shumiyakovsky, Tsezar Iosifovich; and Ulyanov, Nikolai Savelievich, 3,980,584.

Kozuka, Ko; Kobayashi, Shigeru; Watanabe, Akira; Iki, Yoshio; and Yokoe, Masaaki, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Polymerizable emulsifying agent and application thereof. 3,980,622, Cl. 260-79.30M.

Kozuki, Susumu: *See—*
Iwashita, Tomonori; Aizawa, Hiroshi; Kozuki, Susumu; and Uchidoi, Masanori, 3,981,022.

Kraft, Gottfried: *See—*
Bongartz, Heinz Bertram; Wolfertz, Gunter; Stanik, Reimund; and Kraft, Gottfried, 3,979,802.

Kraftwerk Union Aktiengesellschaft: *See—*
Kohler, Ludwig, 3,979,936.

Kraus, Werner. Fuel injection device. 3,980,056, Cl. 123-27.00A.

Krawacki, Michael J.: *See—*
Cohen, Abraham B.; and Krawacki, Michael J., 3,980,047.

Krips, Herbert; and Podhorsky, Miroslav, to Balcke-Durr Aktiengesellschaft. Method of hermetically swaging tubes into tube plates. 3,979,810, Cl. 29-157.400.

Kronogard, Sven Olof, to United Turbine AB and Co., Kommanditbolag. Power plant for a crawler vehicle. 3,979,915, Cl. 60-718.000.

Kropp, Rudolf; Reicheneder, Franz; Amann, August; and Giertz, Hubert, to BASF Aktiengesellschaft. 4-Amino pyridazinium compounds having pharmacalogical properties. 3,980,633, Cl. 260-250.00A.

Kross, Robert D., to Hydro Optics, Inc. Ostomy gasket. 3,980,084, Cl. [illegible]

Krueger, Thomas Allen, to Honeywell Inc. Spiral scan display apparatus with transient suppression means. 3,980,926, Cl. 315-378.000.

Krumbock, Reinhard; and Kuhn, Wenzel, to Hoechst Aktiengesellschaft. Process for the combustion of chlorine containing wastes. 3,980,758, Cl. 423-481.000.

Krumm, Hagen; Jockel, Heinz; von Walter, Klaus; Restin, Kurt; and Kuhn, Robert, to Metallgesellschaft Aktiengesellschaft. Process for supplying heat to chemical reactions. 3,980,452, Cl. 48-215.000.

Krupa, Calvin S., to Scotty Manufacturing Company. Heating pack containing a granular chemical composition. 3,980,070, Cl. 126-263.000.

Kubela, Rudolf; and Hughes, Lise A., to Delmar Chemicals Limited. 2,3-Disubstituted 7-oxabicyclo-[2.2.1]-5-heptene. 3,980,674, Cl. 260-347.300.

Kubo, Masayoshi; and Matsuoka, Kazuyuki, to Daicel, Ltd. Catalyst for preparation of α,β-unsaturated aldehydes and process for preparing the aldehydes. 3,980,709, Cl. 260-604.00R.

Kubota Tekko Kabushiki Kaisha: *See—*
Murayama, Yoshinobu; Sada, Kenzou; and Kutomi, Mitsuhiro, 3,980,151.

Kubota, Yasuharu: *See—*
Kakizaki, Takehiro; and Kubota, Yasuharu, 3,980,917.

Kucera, Joseph B., to Lowell, Rudolph L., a part interest. Machine for forming large round bales. 3,979,892, Cl. 56-341.000.

Kudryakov, Mikhail Nikolaevich: *See—*
Grigoriev, Vladimir Konstantinovich; Chugunov, Viktor Dmitrievich; Tsipkis, Alexandr Moiseevich; Kudryakov, Mikhail Nikolaevich; Yakovlev, Vladimir Germogenovich; Tumarkin, Vladimir Borisovich; Bashilov, Jury Borisovich; Kulaev, Jury Mikhailovich; Feldman, Vladimir Yakovlevich; Semikozov, Vyacheslav Fedorovich; Badin, Viktor Ivanovich; and Sheveleva, Vladislava Vladislavovna, 3,980,142.

Kuenzig, Frederick J. Chain breaker. 3,979,812, Cl. 29-260.000.

Kugelfischer Georg Schafer & Co.: *See—*
Lamprecht, Horst, 3,980,354.

Kuhfs, Gunter: *See—*
Schulte, Fritz; Clever, Gerhard; and Kuhfs, Gunter, 3,979,955.

Kuhle, Engelbert; Klauke, Erich; Hamburger, Brigitte; and Scheinpflug, Hans, to Bayer Aktiengesellschaft. N-(Trihalomethylthio)-carbamic acid oxime esters. 3,980,693, Cl. 260-470.000.

Kuhle, Engelbert: *See—*
Siegle, Peter; Kuhle, Engelbert; Hammann, Ingeborg; Behrenz, Wolfgang; and Homeyer, Bernhard, 3,980,673.

Kuhlman, Harvey G. Food cutting apparatus. 3,980,235, Cl. 241-84.000.

Kuhlthau, Hans-Peter, to Bayer Aktiengesellschaft. Process for dyeing anionically modified synthetic fiber materials. 3,980,430, Cl. 8-168.00R.

Kuhn, Jurgen: *See—*
Steinmetz, Eberhard; and Kuhn, Jurgen, 3,980,283.

Kuhn, Robert: *See—*
Krumm, Hagen; Jockel, Heinz; von Walter, Klaus; Restin, Kurt; and Kuhn, Robert, 3,980,452.

Kuhn, Wenzel: *See—*
Krumbock, Reinhard; and Kuhn, Wenzel, 3,980,758.

Kulaev, Jury Mikhailovich: *See—*
Grigoriev, Vladimir Konstantinovich; Chugunov, Viktor Dmitrievich; Tsipkis, Alexandr Moiseevich; Kudryakov, Mikhail Nikolaevich; Yakovlev, Vladimir Germogenovich; Tumarkin, Vladimir Borisovich; Bashilov, Jury Borisovich; Kulaev, Jury Mikhailovich; Feldman, Vladimir Yakovlevich; Semikozov, Vyacheslav Fedorovich; Badin, Viktor Ivanovich; and Sheveleva, Vladislava Vladislavovna, 3,980,142.

Kummer, Rudolf; Platz, Rolf; and Schwirten, Kurt, to BASF Aktiengesellschaft. Manufacture of methacrylic acid and butyrolactone 3,980,670, Cl. 260-343.600.

Kunkle, Albert C., to J. M. Huber Corporation. Electrokinetic cell. 3,980,547, Cl. 204-301.000.

Kunstmann, Rudolf; and Kaiser, Joachim, to Hoechst Aktiengesellschaft. Basically substituted 1,4-dihydro-2H-isoquinoline derivatives and process for preparing them. 3,980,655, Cl. 260-288.00A.

Kunstmann, Rudolf; and Granzer, Ernold, to Hoechst Aktiengesellschaft. Partially hydrogenated 1H-indeno-[1,2-b]-pyridine derivatives. 3,980,656, Cl. 260-293.540.

Kuntziger, Ernest P.: *See—*
Mahr, Rene N.; and Kuntziger, Ernest P., 3,980,286.

Kurioka, Takakiyo. Valve for swiveling faucet. 3,980,101, Cl. 137-616.500.

Kuris, Arthur; Balamuth, Lewis; and Karatjas, Manuel, to Xygiene, Inc. Ultrasonic motor-converter systems. 3,980,906, Cl. 310-8.100.

Kurmeier, Hans-Adolf: *See—*
Gante, Joachim; Kurmeier, Hans-Adolf; Schacht, Erich; Mehrhof, Werner; and Wild, Albrecht, 3,980,795.

Kuromitsu, Hiromu, to Aisin Seiki Kabushiki Kaisha. Brake booster utilizing a pump of a power steering device. 3,979,912, Cl. 60-547.000.

Kurt Orban Company: *See—*
Orban, Robert A., 3,980,828.

Kurtz, Clarence P.: *See—*
Black, Ronald F.; Kurtz, Clarence P.; and Pasek, Robert J., 3,980,755.

Kuszyncki, Gregory G.; Wright, William S., Jr.; and Tanaka, Akira, to American Safety Equipment Corporation. Safety belt retractor. 3,980,247, Cl. 242-107.40B.

Kuteminsky, Jury Arkadievich: *See—*
Aleshin, Vasily Alexeevich; Bazarova, Galina Petrovna; Gromova, Serafima Pavlovna; Dmitriev, Jury Iosifovich; Kuteminsky, Jury Arkadievich; Komolova, Iza Ivanovna; Leschinsky, Georgy Olegovich; Sorokin, Vsevolod Konstantinovich; Sazonova, Galina Ivanovna; Silaev, Alexandr Fedorovich; Tikhonov, Grigory Fedorovich; and Schekin, Valery Mikhailovich, 3,980,445.

Kutomi, Mitsuhiro: *See—*
Murayama, Yoshinobu; Sada, Kenzou; and Kutomi, Mitsuhiro, 3,980,151.

Kutsevalov, Vitaly Mikhailovich; Kanter, Valery Konstantinovich; Kornilov, Georgy Sazonovich; Ozols, Vitaly Ivanovich; Frolov, Vladimir Ivanovich; Glushkov, Alexandr Timofeevich; Leontiev, Igor Vitalievich; Elizarov, Vladislav Alexandrovich; Bobylev, Jury Petrovich; Mednitsky, Viktor Georgievich; and Bushuev, Viktor Vasilievich. Method of determining the displacement angle of an electric motor and means for effecting same. 3,980,950, Cl. 324-158.0MG.

Kyowa Chemical Industry Co., Ltd.: *See—*
Miyata, Shigeo; Takata, Michiko; and Okada, Akira, 3,980,685.

La Cellophane: *See—*
Quang, Pham Kim; and Weber, Guy, 3,980,475.
Weber, Guy; and Quang, Pham Kim, 3,980,048.

La Telemecanique Electrique: *See—*
Bouteille, Daniel; and Nicolas, Michel, 3,980,324.
Lacan, Guy, 3,980,978.

Labat, Pierre; and Oudard, Michel, to Societe Anonyme de Vehicules Industriels et d'Equipments Mecaniques Saviem. Transmission synchronizer and dog-clutch unit. 3,980,164, Cl. 192-53.00E.

Labbe, Francis Auguste Maurice, to Molins Limited. Tobacco feed systems. 3,980,087, Cl. 131-84.00R.

Lacan, Guy, to La Telemecanique Electrique. Electromagnetic relay. 3,980,978, Cl. 335-132.000.

LaDonna, Richard V.: *See—*
Watson, P. Keith; Cressman, Paul J.; and LaDonna, Richard V., 3,980,477.

LaFayette, William S.: *See—*
McEwen, Stephen N.; and LaFayette, William S., 3,980,014.

Laing, Stuart Bruce: *See—*
Sykes, Peter Job; Phillipps, Gordon Hanley; Laing, Stuart Bruce; and Turnbull, John Peter, 3,980,681.

Laitram Corporation, The: *See—*
Lapeyre, James M., 3,980,527.

Lajoie, Bernard; and Lajoie, Marcel. Pipe fitting device. 3,979,814, Cl. 29-272.000.

Lajoie, Marcel: *See—*
Lajoie, Bernard; and Lajoie, Marcel, 3,979,814.

Lakomsky, Victor Iosifovich: *See—*
Paton, Boris Evgenievich; Lakomsky, Victor Iosifovich; Melnik, Gary Alexandrovich; Chvertko, Anatoli Ivanovich; and Bukalo, Alfred Iosifovich, 3,980,802.

LaMarche, Frederick W., to Sheldahl, Inc. Connector for flexible circuitry. 3,980,375, Cl. 339-61.00M.

Lamb, James A.; and Nieglos, Donald J., to Motorola, Inc. Modulator demodulator for binary digitally encoded messages. 3,980,824, Cl. 178-67.000.

Lamb, Joe H. Swimming pool cover. 3,979,782, Cl. 4-172.140.

Lamprecht, Horst, to Kugelfischer Georg Schafer & Co. Welded-together roller bearing. 3,980,354, Cl. 308-174.000.

Landustrie Sneek, Machinefabriek Elektrotechniek B.V.: *See—*
Bos, Sietjo B., 3,980,740.

Landwehr, Gunter. Trimming mechanism for sewing machines. 3,980,031, Cl. 112-122.000.

Lang, Richard F., to Xerox Corporation. Duplex imaging system. 3,980,406, Cl. 355-24.000.

Lange, Peter Michael: *See—*
Corte, Herbert; Heller, Harold; Lange, Peter Michael; and Netz, Otto, 3,980,462.

Lankton, Gordon B.: *See—*
Merser, Francis G.; Kooistra, Philip A.; and Lankton, Gordon B., 3,979,799.

Lapeyre, James M., to Laitram Corporation, The. Distillation system having bouyant rotary helical conversion means. 3,980,527, Cl. 202-175.000.

Lapi, Angeline, to Raymond Lee Organization, Inc., The, a part interest. Clothing article or the like employing crocheted material. 3,979,929, Cl. 66-170.000.

Lapiere, Charles Leon: *See—*
Delarge, Jacques E.; Thunus, Leopold N.; Lapiere, Charles Leon; and Georges, Andre H., 3,980,652.

Lapof, Ray C.: *See—*
Haas, David J.; Blaustein, Aaron; Rudd, Chester D.; Lapof, Ray C.; and Schimpf, William C., 3,980,889.

Laridon, Urbain Leopold; and Van den Houte, Jozef Willy. Photographic recording and reproduction of information photochromic composition containing polyhalogenated hydrocarbon, spiropyran compound and heterocyclic mercapto compound and the use thereof. 3,980,480, Cl. 96-48.00R.

Laserson, Gregory L.; and Iantorno, James, to Sealectro Corporation. Electrical connector for joining conductors attached to printed circuit boards. 3,980,367, Cl. 339-17.00R.

Laske, Louis Lawrence, to Vonco Products, Inc. Inflatable kite. 3,980,260, Cl. 244-153.00R.

Latone, Salvatore, to Xerox Corporation. Fuser cleaning roll assembly. 3,980,423, Cl. 432-75.000.

Latone, Salvatore, to Xerox Corporation. Fuser cleaning roller. 3,980,424, Cl. 432-75.000.

Lawrence, Jackson; and Troope, Walter S., to Cluett, Peabody & Co., Inc. Continuous process for the liquid ammonia treatment of fabrics. 3,980,429, Cl. 8-125.000.

Lawrence Peska Associates, Inc.: *See—*
Brown, George M., 3,979,794.
Brown, Robert Leon, 3,980,299.
Fury, Charles M., 3,980,051.
Gregg, Frank M., 3,979,777.
Gruenwald, Nancy K., 3,979,776.
Hobgood, Eugene, 3,979,841.
Maniscalki, Peter, 3,980,114.
Pizzi, Dominick, 3,980,265.
Texidor, Genaro, 3,979,842.

Lawson, Gustaf Rudolph, to AMP Incorporated. Terminal block. 3,980,384, Cl. 339-198.0GA.

Lear Siegler, Inc.: *See—*
Nance, W. Franklin; and Surprenant, Ronald J., 3,980,953.

Lee, David Chin-Chung: *See—*
Levy, Bernardo Navarro; and Lee, David Chin-Chung, 3,980,992.

Lee, Harvey H., to Rilco, Division Sadler Industrial Services, Inc. Pipe insulation load bearing support. 3,980,262, Cl. 248-65.000.

Lee, John L. Flail-type material spreader. 3,980,239, Cl. 239-658.000.

Leeds & Northrup Company: *See—*
Eckfeldt, Edgar L., 3,980,543.

Leeming, Carol Anne: *See—*
Munden, Dennis Lawrence; and Leeming, Carol Anne, 3,979,951.

Lefebvre, Louis: *See—*
Blonde, Guy; and Lefebvre, Louis, 3,979,919.

Lefort, Marcel; and Marin, Gilbert, to Rhone-Poulenc Industries. Process for the preparation of chlorosilane. 3,980,686, Cl. 260-448.20P.

LeHardy, Clement D.: *See—*
Cunningham, McCleery B.; and LeHardy, Clement D., 3,980,249.

Leiber, Heinz, to Teldix GmbH. Anti-locking control system for simultaneous regulation of steered wheels or wheels on a diagonal of vehicle. 3,980,346, Cl. 303-6.00R.

Leith, Duane A., to Supreme Farmstead Equipment, Inc. Silage handling apparatus. 3,980,186, Cl. 214-17.0DB.

Lekas, Mitchell A.: *See—*
Heald, David D.; McKinnell, John C.; and Lekas, Mitchell A., 3,980,339.

Leland Stanford Junior University, The Board of Trustees of: *See—*
Wikswo, John P., Jr.; Fairbank, William M.; and Opfer, James E., 3,980,076.

Lemos, Albano, to Bell Bur, Inc. Apparatus for preparing a tooth stump for a crown. 3,979,829, Cl. 32-49.000.

Leonard, Joseph Charles, to Huntington Alloys, Inc. Cored wire junction. 3,980,859, Cl. 219-104.000.

Leontiev, Igor Vitalievich: *See—*
Kutsevalov, Vitaly Mikhailovich; Kanter, Valery Konstantinovich; Kornilov, Georgy Sazonovich; Ozols, Vitaly Ivanovich; Frolov, Vladimir Ivanovich; Glushkov, Alexandr Timofeevich; Leontiev, Igor Vitalievich; Elizarov, Vladislav Alexandrovich; Bobylev, Jury Petrovich; Mednitsky, Viktor Georgievich; and Bushuev, Viktor Vasilievich, 3,980,950.

Le Page, Jean-Francois: *See—*
Juguin, Bernard; and Le Page, Jean-Francois, 3,980,721.

LeRoy, Rodney Lash: *See—*
Leuenberger, Urs; and LeRoy, Rodney Lash, 3,979,910.

Leschinsky, Georgy Olegovich: *See—*
Aleshin, Vasily Alexeevich; Bazarova, Galina Petrovna; Gromova, Serafima Pavlovna; Dmitriev, Jury Iosifovich; Kuteminsky, Jury Arkadievich; Komolova, Iza Ivanovna; Leschinsky, Georgy Olegovich; Sorokin, Vsevolod Konstantinovich; Sazonova, Galina Ivanovna; Silaev, Alexandr Fedorovich; Tikhonov, Grigory Fedorovich; and Schekin, Valery Mikhailovich, 3,980,445.

Leuenberger, Urs; and LeRoy, Rodney Lash, to Canada Wire and Cable Limited. Closed circuit hydraulic control system. 3,979,910, Cl. 60-476.000.

Leupold, Walter L.: *See—*
Dale, John R.; Brenner, William F.; McEachern, James F.; Leupold, Walter L.; and McDemus, Edward A., 3,980,985.

Le Vasseur, Arnold P., to Possis Corporation. Apparatus for automatic production of armatures. 3,980,184, Cl. 214-8.50H.

Lever Brothers Company: *See—*
Hafner, Wolfgang; and Hufnagel, Walter, 3,980,192.

Leverett, Glenn Frederick, to Du Pont de Nemours, E. I., and Company. Process for reducing filler loss. 3,980,596, Cl. 260-23.0XA.

Levesque, Jean-Luc: *See—*
Boudouris, Georges; Kalopissis, Gregoire; Roussopoulos, Paul; and Levesque, Jean-Luc, 3,980,855.

Levy, Bernardo Navarro; and Lee, David Chin-Chung, to Burroughs Corporation. Multi-microprocessing unit on a single semiconductor chip. 3,980,992, Cl. 340-172.500.

Levy, Moshe: *See—*
Cohen, Ella; Daren, Stephen; Levy, Moshe; and Vofsi, David, 3,980,722.

Lewers, William Russell: *See—*
Bulso, Joseph D., Jr.; and Lewers, William Russell, 3,980,297.

Ley, Kurt; Seng, Florin; and Metzger, Karl Georg, to Bayer Aktiengesellschaft. 3-Amino-1,2,4-benzotriazine-1,4-di-N-oxide compositions and method of using same. 3,980,779, Cl. 424-249.000.

Ley, Kurt: *See—*
Arlt, Dieter; and Ley, Kurt, 3,980,738.

Li, Tingye, to Bell Telephone Laboratories, Incorporated. Method for manufacturing optical fibers having eccentric longitudinal index inhomogeneity. 3,980,459, Cl. 65-18.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Wendland, Broder; and May, Franz, 3,980,830.

Licht, Helmut: *See—*
Kasper, Willi; and Licht, Helmut, 3,980,333.

Lidstrom, Kjell: *See—*
Lindstrom, Roland; and Lidstrom, Kjell, 3,980,871.

Lightstone, John Bernard; and Mazzarella, Richard Benedict, to Union Carbide Corporation. Cryogenic shearing of metal. 3,979,981, Cl. 83-15.000.

Lilly Industries, Ltd.: *See*—
Wildsmith, Eric, 3,980,785.

Lim, Gary: *See*—
Monkovic, Ivo; Wong, Henry; and Lim, Gary, 3,980,641.

Lindberg, Bernt J.: *See*—
Ingelman, Bjorn G.-A.; Lindberg, Bernt J.; Rosengren, Jan G.; and Campbell, Dag E. S., 3,980,770.

Lindblad, Nero R.: *See*—
Beatty, Charles L.; Lindblad, Nero R.; and Till, Henry R., 3,980,494.

Lindell, Carl William: *See*—
Johnson, William Lay-Fayette; and Lindell, Carl William, 3,979,886.

Lindstrom, Roland; and Lidstrom, Kjell. Device for registering and indicating the size of a load acting on a transducer. 3,980,871, Cl. 235-151.330.

Link, Hans, to Institut Dr. Friedrich Forster, Prufgeratebau. Process and apparatus for determining the concentration of a suspension. 3,980,884, Cl. 250-302.000.

Lion Fat & Oil Co., Ltd.: *See*—
Isa, Hiroshi; Inagaki, Takeo; Kojima, Nobuo; and Kadoya, Isamu, 3,980,683.

Lipari, Dominic Timothy, to Bell Telephone Laboratories, Incorporated. Quick release sleeve fastener. 3,980,805, Cl. 174-88.00C.

Lippsmeier, Bernd; Hestermann, Klaus; and Heymer, Gero, to Hoechst Aktiengesellschaft. Production of methylphosphine oxides. 3,980,711, Cl. 260-606.50P.

List, Ferdinand: *See*—
Wulf, Horst-Dieter; List, Ferdinand; Wember, Kurt; and Wilke, Norbert, 3,980,441.

Litteral, Carl J.; and Mullins, David L., to Union Carbide Corporation. Polysiloxane-polyoxyalkylene block copolymers. 3,980,688, Cl. [illegible].

Litton Business Systems, Inc.: *See*—
Lombardino, Paul A.; Wickstead, Jean H.; and Schroeder, Edward E., 3,980,869.

Litton Industrial Products, Inc.: *See*—
Redfield, Charles L., 3,980,852.

Litton Systems, Inc.: *See*—
Spadoni, Frank G., Jr., 3,980,386.

Livanov, Vladimir Alexandrovich: *See*—
Kononenko, Vadim Grigorievich; Bozhko, Valery Pavlovich; Stelmakh, Viktor Alexeevich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Bukin, Jury Mikhailovich; Novikov, Anatoly Egorovich; Shaipova, Sania Fatyakhovna; Filyanov, Anatoly Nikolaevich; Shalbaian, Armais Semenovich; Grechka, Vitaly Dmitrievich; Tsyban, Nikolai Grigorievich; Gilmutdinov, Abdulla Gilmutdinovich; Regida, Fedor Ivanovich; Kazanovich, Lidia Evgenievna; Gertsuk, Nikolai Andreevich; Kolokolov, Boris Alexeevich; Morgolenko, Anatoly Sergeevich; Livanov, Vladimir Alexandrovich; Berezko, Anatoly Mikhailovich; Petrenko, Anatoly Avraamovich; Mikhin, Trofim Andrianovich; Fedotov, Mikhail Nikitich; Zakirov, Robert Sharafutdinovich, deceased; and Zakirova, Ganna Fedgrovna, administratix, 3,980,413.

Livingston, Richard D.: *See*—
Entrikin, Ronald K.; and Livingston, Richard D., 3,980,364.

Ljung, Bernt Johan; and Svensson, Karl-Erik Lennart, to Sunds Aktiebolag. Device for liquid-treating a running fiber web, including an arc-shaped duct. 3,980,518, Cl. 162-302.000.

Lloyd, Mark C.; and Parish, Stuart C., to Eastman Kodak Company. Process for electrolytic graining of aluminum. 3,980,539, Cl. 204-129.750.

Loase, Raymond M., to Harris Corporation. Machine for folding a continuous web assembly. 3,980,291, Cl. 270-73.000.

Loc-Coe: *See*—
Coe, Donald K., 3,980,329.

Locke Frederic J.: *See*—
Isaksen, Robert A.; Locke, Frederic J.; Smith, John L.; and Spitz, George T., 3,980,732.
Isaksen, Robert A.; Locke, Frederic J.; Smith, John L.; and Spitz, George T., 3,980,733.

Locke, Helmut: *See*—
Zeibig, Anton; and Locke, Helmut, 3,979,779.

Loev, Bernard: *See*—
Bender, Paul E.; and Loev, Bernard, 3,980,788.

Lombardino, Paul A.; Wickstead, Jean H.; and Schroeder, Edward E., to Litton Business Systems, Inc. Rotatable keyboard. 3,980,869, Cl. 235-146.000.

Lommer, Daniel Jose Francois: *See*—
Guidoux, Loic Bernard Yves; and Lommer, Daniel Jose Francois, 3,980,961.

London Transport Executive: *See*—
Hadaway, Harry William, 3,980,261.

Long, Don Wesley; and Ralston, Robert Arthur, to American Cyanamid Company. Purification of robenidine hydrochloride. 3,980,705, Cl. 260-564.00F.

Longo, Paul. Golf club separators for golf bag. 3,980,115, Cl. 150-1.50R.

Lord Corporation: *See*—
Panza, Michael J., 3,980,912.

L'Oreal: *See*—
Boudouris, Georges; Kalopissis, Gregoire; Roussopoulos, Paul; and Levesque, Jean-Luc, 3,980,855.
Ghilardi, Giuliana; and Fiquet, Claire, 3,980,769.
Jacquet, Bernard; Papantoniou, Christos; Dufaure, Pierre; and Mahieux, Claude, 3,980,617.

Lorenz, Walter; Hammann, Ingeborg; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. O-Alkyl-S-[3-oxo-triazolo-(4,3-α-pyridin(2)yl-methyl]-(thiono)thiol-phosphoric(phosphonic) acid esters and ester-amides. 3,980,783, Cl. 424-263.000.

Lorine, David J.: *See*—
Sorenson, Wayne R., Schwab, Peter A.; Allen, Robert S.; Tillson, George; and Lorine, David J., 3,980,628.

Lorlin Industries Inc.: *See*—
Quinn, Peter W., 3,980,553.

Lotz, Werner: *See*—
Noetzel, Siegfried; Herwig, Walter; Kern, Rudolf; and Lotz, Werner, 3,980,614.

Love, Dennis Anthony, to Beecham Group Limited. Amoxicillin derivatives. 3,980,639, Cl. 260-239.100.

Love, John J.: *See*—
Baysinger, Robert L.; and Love, John J., 3,980,420.

Lovelace, Billy J., to Petro-Tex Chemical Corporation. Meso-1,2,3,4-tetrachlorobutane production. 3,980,725, Cl. 260-658.00R.

Lovold, Kjell, to Dyno Industrier A.S. Method for the processing of black powder. 3,980,741, Cl. 264-3.00C.

Lowell, Rudolph L.: *See*—
Kucera, Joseph B., 3,979,892.

Lubowitz, Hyman R.; and Gaskill, William G., to TRW Inc. Solid fluoro-oxidizer systems for chemical lasers. 3,980,509, Cl. 149-19.300.

Lubrizol Corporation, The: *See*—
Pindar, John Francis; Cohen, Jerome Martin; and Bryant, Charles Peterson, 3,980,569.

Lucas, Kyle E.: *See*—
Cubbler, Ralph J., Jr.; and Lucas, Kyle E., 3,979,874.

Ludwig, Frank A.; Minck, Robert W.; and Weiner, Steven A., to Ford Motor Company. Energy conversion devices with improved electrode shapes. 3,980,496, Cl. 429-103.000.

Ludwig Grefe GmbH: *See*—
Schulte, Fritz; Clever, Gerhard; and Kuhfs, Gunter, 3,979,955.

Ludwig, Rolf; and Culjkovic, Josif, to Schering Aktiengesellschaft. Bath and process for the electrolytic separation of rare metal alloys. 3,980,531, Cl. 204-43.00R.

Lummus Company, The: *See*—
Riegel, Herbert, 3,980,723.

Lundberg, George: *See*—
Moberg, Sigurd Manfred; and Lundberg, George, 3,980,337.

Lungo, Antonio. Filter device for high acceleration applications. 3,980,022, Cl. 102-70.20R.

Lunn, William H. W., to Eli Lilly and Company. Pentavalent phosphorus amides of cephalosporins and separation process using same. 3,980,644, Cl. 260-243.00C.

Luossavaara-Kiirunavaara Aktiebolag: *See*—
Drugge, Bengt Roland, 3,980,466.

Luttke, Sven: *See*—
Possanza, Genus; Freter, Kurt; and Luttke, Sven, 3,980,658.

Lutz, Helene P. Method and apparatus for altering clothing patterns. 3,979,831, Cl. 33-17.00R.

Luz, David Warren: *See*—
Peer, John Charles; and Luz, David Warren, 3,980,821.

Lynch Communication Systems, Inc.: *See*—
Hutcheson, Alan G., 3,980,839.

Lynnes, Carman P.: *See*—
Huebner, Robert J.; Lynnes, Carman P.; Matzelle, Ralph A.; and Sears, Richard L. M., 3,980,003.

Ma, John Y., to Zenith Radio Corporation. Non-proportionate AFC system. 3,980,968, Cl. 331-17.000.

Mabuchi, Kenichi; and Komatsu, Kogiro, to Mabuchi Motor Co. Ltd. Battery equalizing system. 3,980,940, Cl. 320-2.000.

Mabuchi Motor Co. Ltd.: *See*—
Mabuchi, Kenichi; and Komatsu, Kogiro, 3,980,940.

Mabuchi, Shunsuke; Tsuzuki, Kenji; Matsunaga, Hideaki; Shimizu, Sadami; and Sumita, Makoto, to Toyo Soda Manufacturing Co., Ltd. Method of producing diol by hydrogenolysis of peroxide polymers with reactivation of Raney nickel catalyst. 3,980,720, Cl. 260-635.00R.

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MacDonald, Paul M., to P. X. Industries, Inc. Panel mounting clip. 3,979,796, Cl. 24-73.0PF.

MacDonald, Paul M.: *See*—
MacDonald, Francis X.; and MacDonald, Paul M., 3,980,365.

MacMaster, George H.: *See*—
Dudley, Kenneth W.; MacMaster, George H.; and Nichols, Lawrence J., 3,980,920.

MacTaggart, John W., to Sentrol Systems Ltd. Continuous on-machine control of bleaching chemicals. 3,980,517, Cl. 162-49.000.

Maeder, Claude: *See*—
Gabriel, Michel; and Maeder, Claude, 3,979,970.

Maes, Charles-Henri Marie, to Oreevrert D'Ercuis. Display table for ornamental objects. 3,980,027, Cl. 108-103.000.

Magor, James K.: *See*—
Camacho, Salvador L.; and Magor, James K., 3,980,467.

Mahieux, Claude: *See*—
Jacquet, Bernard; Papantoniou, Christos; Dufaure, Pierre; and Mahieux, Claude, 3,980,617.

Mahr, Rene N.; and Kuntziger, Ernest P., to S.A. des Anciens Etablissements Paul Wurth. Tuyere feed lines. 3,980,286, Cl. 266-270.000.

Maida, Osamu, to Nippon Kogaku K.K. Electromagnetic trigger device in motor-driven camera capable of bulb exposure. 3,980,400, Cl. 352-169.000.

Maierhofer, Alfred: *See*—
Wagner, Hans; and Maierhofer, Alfred, 3,980,653.

Makita, Tomoo: *See*—
Takano, Rikuo; Sumitomo, Yuji; Kobayashi, Toshio; Yamamoto, Yoichi; and Makita, Tomoo, 3,981,020.

Man, Tsui Wai. Padlock with double shackle lock. 3,979,931, Cl. 70-38.00A.

Mancole Company Limited: *See*—
Coles, Manson Ivor, 3,979,873.

Maniscalki, Peter, to Lawrence Peska Associates, Inc. Combined pencil clip and sharpener. 3,980,114, Cl. 145-3.310.

Mann, John Russell, to Iotron Corporation. Navigational and collision avoidance apparatus. 3,981,008, Cl. 343-5.0DP.

Manor, Robert T. Air powered vehicle. 3,980,152, Cl. 180-66.00B.

Marchello, John L. Bicycle support stand. 3,980,320, Cl. 280-293.000.

Marcilly, Christian; Martino, Germain; and Franck, Jean-Pierre, to Institut Francais du Petrole, des Carburants et Lubrifiants et Entreprise de Recherches et d'Activities Petrolieres Elf. Process for producing xylenes of high para-xylene content. 3,980,727, Cl. 260-672.00T.

Marhefka, Matthew D., to Bunting Company, Inc., The. Reclining chair. 3,980,335, Cl. 297-90.000.

Marin, Gilbert: *See*—
Lefort, Marcel; and Marin, Gilbert, 3,980,686.

Marion, Charles P., to Texaco Development Corporation. Recovery of particulate carbon from synthesis gas. 3,980,590, Cl. 252-373.000.

Marion, Charles P., to Texaco Development Corporation. Recovery of particulate carbon from synthesis gas. 3,980,591, Cl. 252-373.000.

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Marrara, Charles G.: *See*—
George, Harvey F.; Marrara, Charles G.; Oppenheimer, Robert H.; and Cairns, David W., 3,979,948.

Martin, Allan E.: *See*—
Roche, Michael F.; Preto, Sandra K.; and Martin, Allan E., 3,980,495.

Martin, Henry; Pissiotas, Georg; and Dittrich, Volker, to Ciba-Geigy AG. Use of oxime-ethers as a synergistically acting additive to insecticidally and/or acaricidally active substances. 3,980,799, Cl. 424-278.000.

Martin, John George: *See*—
Berkman, Samuel; and Martin, John George, 3,980,854.

Martin, Robert W.; and Ernst, Kenneth L., to Northwestern Steel and Wire Company. Ladle canopy. 3,980,008, Cl. 98-115.0VM.

Martino, Germain: *See*—
Marcilly, Christian; Martino, Germain; and Franck, Jean-Pierre, 3,980,727.

Maruyama, Shuzo: *See*—
Ariga, Hajime; and Maruyama, Shuzo, 3,980,064.

Marvin Glass & Associates: *See*—
Breslow, Jeffrey D., 3,980,298.
Breslow, Jeffrey D.; and Jaworski, Eugene, 3,980,305.
Meyer, Burton C., 3,980,302.

Marx, Joachim. Synthetic lubricant for machining and chipless deformation of metals. 3,980,571, Cl. 252-32.500.

Marx, Matthias; Kovacs, Jenoe; and Storck, Gerhard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Thermostable coating, impregnating and bonding agents. 3,980,601, Cl. 260-29.6NR.

Marzolph, Herbert: *See*—
Wilhelm, Gerd; Hurm, Karl; Hirsch, Rolf-Burkhard; Jaschke, Artur; and Marzolph, Herbert, 3,980,529.

Masak, Raymond J., to Hazeltine Corporation. Interference rejection system for multi-beam antenna. 3,981,014, Cl. 343-100.0LE.

Masaki, Kenji; Nagaishi, Hatuo; and Ookubo, Yoshio, to Nissan Motor Co., Ltd. Thermal reactor. 3,979,905, Cl. 60-289.000.

Masciantonio, Philip X.: *See*—
Knell, Everett W.; Masciantonio, Philip X.; McGinness, Joseph P.; and Saniga, George T., 3,980,525.

Mason, Joseph W. Expansion power pack. 3,979,911, Cl. 60-509.000.

Masuda, Kengo. Buckle. 3,979,800, Cl. 24-191.000.

Masuda, Senichi. Particle charging device and an electric dust collecting apparatus making use of said device. 3,980,455, Cl. 55-105.000.

Mather, Adaline Nicoles: *See*—
Ginger, Leonard George; and Mather, Adaline Nicoles, 3,980,772.

Matsui, Takashi; Umeda, Kazuo; and Nakada, Yujiro, to Kansai Nissan Chemicals Ltd. Method of fire prevention in fields. 3,980,140, Cl. 169-45.000.

Matsunaga, Daisaku; and Sumitani, Mitsukuni, to Nippon Kayaku Co., Ltd. Styryl compounds and process for producing the same. 3,980,713, Cl. 260-612.00R.

Matsunaga, Hideaki: *See*—
Mabuchi, Shunsuke; Tsuzuki, Kenji; Matsunaga, Hideaki; Shimizu, Sadami; and Sumita, Makoto, 3,980,720.

Matsuoka, Kazuyuki: *See*—
Kubo, Masayoshi; and Matsuoka, Kazuyuki, 3,980,709.

Matsushita Electric Industrial Co., Ltd.: *See*—
Iwata, Hideo; Ohyama, Hiroshi; and Oyama, Atsushi, 3,981,016.
Kawamoto, Kinji, 3,979,991.
Shimizu, Kazuhiko; and Suenami, Kenichi, 3,981,004.

Mattei, Anthony, to Aeronutronic Ford Corporation. Digital convolutional filter. 3,980,873, Cl. 235-156.000.

Mattis, James J.; and Tecotzky, Melvin, to U.S. Radium Corporation. Silicon sensitized rare earth oxysulfide phosphors. 3,980,887, Cl. 250-483.000.

Matzelle, Ralph A.: *See*—
Huebner, Robert J.; Lynnes, Carman P.; Matzelle, Ralph A.; and Sears, Richard L. M., 3,980,003.

Mauldin, William E., to Hi-Lo Powered Stirrups, Inc. Safety lock for a hoisting mechanism that ascends and descends a cable. 3,980,161, Cl. 188-188.000.

Maurer, Dean William: *See*—
Feder, David Oscar; and Maurer, Dean William, 3,980,501.

Maurino, William J.; and Putzer, Raymond M., to Precision Flexmold, Inc. Molding apparatus including a one-piece flexible mold having male and female forming members. 3,980,269, Cl. 249-139.000.

Maxey, Edwin M.: *See*—
Fabris, Hubert J.; Maxey, Edwin M.; and Uelzmann, Heinz, 3,980,594.

Maxon, Thomas Gerald, Jr.; and Reynolds, James Francis, to Varian Associates. Broadband microwave bias network. 3,980,975, Cl. 333-70.00S.

Maxwell, Lloyd R. Brake testing method. 3,979,950, Cl. 73-126.000.

May, Francis A., to Consolidation Coal Company. Cable splice joining a pair of flexible conducting cables. 3,980,806, Cl. 174-90.000.

May, Franz: *See*—
Wendland, Broder; and May, Franz, 3,980,830.

May, Norman C., Sr.: *See*—
Dean, Carl J.; McCallum, Donald B.; and May, Norman C., Sr., 3,980,363.

May, Walter R.: *See*—
Zetlmeisl, Michael J.; May, Walter R.; and Annand, Robert R., 3,980,449.

Mayer, Albert Louis, to Du Pont de Nemours, E. I., and Company. Fluidizing apparatus with foraminous member. 3,980,439, Cl. 23-284.000.

Mayhew, Thomas H.; and Rice, Marvin G. Guide square apparatus for power tools having a blade. 3,979,987, Cl. 83-745.000.

Mayse, Weldon D.: *See*—
Winslow, Joseph D., Jr.; and Mayse, Weldon D., 3,980,542.

Mazzarella, Richard Benedict: *See*—
Lightstone, John Bernard; and Mazzarella, Richard Benedict, 3,979,981.

McAlister, Roy E. Fuel injection-spark ignition system for an internal combustion engine. 3,980,061, Cl. 123-32.0AE.

McAvoy, Dennis J. Power transmission. 3,980,095, Cl. 137-117.000.

McCallum, Donald B.: *See*—
Dean, Carl J.; McCallum, Donald B.; and May, Norman C., Sr., 3,980,363.
Wright, David M.; and McCallum, Donald B., 3,980,360.

McClain, Edward L.: *See*—
Sjoman, Carl F.; and McClain, Edward L., 3,980,290.

McClintock, Richard D. Exposure control system. 3,980,908, Cl. 310-14.000.

McCordall, Derek D., to Neil and Spencer Limited. Power transmission devices. 3,979,964, Cl. 74-242.800.

McCormick, Eugene C. Snap ring groove vents. 3,979,804, Cl. 24-256.000.

McCormick, Larry L.; and Selk, Ben F., to G & H Technology, Inc. Electrical connector. 3,980,373, Cl. 339-45.00M.

McCreery, James W., to Kennametal Inc. Tool holder. 3,980,443, Cl. 29-96.000.

McDemus, Edward A.: *See*—
Dale, John R.; Brenner, William F.; McEachern, James F.; Leupold, Walter L.; and McDemus, Edward A., 3,980,985.

McDonald, Colin: *See*—
Jones, Peter; and McDonald, Colin, 3,980,004.

McDonnell Douglas Corporation: *See*—
Wiggins, Edwin W., 3,980,106.

McDowell, Donald J.; and Patel, Purshottam S., to Felt Products Mfg. Co. Anaerobic sealant composition and method of preparation. 3,980,627, Cl. 526-328.000.

McEachern, James F.: *See*—
Dale, John R.; Brenner, William F.; McEachern, James F.; Leupold, Walter L.; and McDemus, Edward A., 3,980,985.

McEwen, Stephen N.; and LaFayette, William S., to Henry Manufacturing Company. Briquetting machine. 3,980,014, Cl. 100-127.000.

McGinness, Joseph P.: *See*—
Knell, Everett W.; Masciantonio, Philip X.; McGinness, Joseph P.; and Saniga, George T., 3,980,525.

McGraw-Edison Company: *See*—
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McGregor, Walter, to Johnson & Johnson. Controlled release suture. 3,980,177, Cl. 206-63.300.

McIntosh, Lawrie G., to Contronic Controls Limited. Intrusion alarms. 3,980,998, Cl. 340-258.00B.

McKee, Donald S., to Scott & Fetzer Company, The. Bracket for use in a retractable awning. 3,980,121, Cl. 160-71.000.

McKinnell, John C.: *See*—
Heald, David D.; McKinnell, John C.; and Lekas, Mitchell A., 3,980,339.

McLellan, Norvel Jeff. Over voltage protector. 3,980,931, Cl. 317-31.000.

- McMahon, Joseph F., to Foster Wheeler Energy Corporation. Gasification process. 3,980,451, Cl. 48-197.00R.
- McMinn, Curtis Jefferson; and Tabereaux, Alton Theodore, Jr., to Reynolds Metals Company. Production of aluminum-silicon alloys in an electrolytic cell. 3,980,537, Cl. 204-71.000.
- McMinn, Talmage D., Jr.: *See*—
  - Fox, Dale B.; McMinn, Talmage D., Jr.; Beckham, Rodney D.; and Montgomery, Phillip D., 3,980,580.
- McNeil Corporation: *See*—
  - Smith, Thomas W., 3,980,743.
- McNeil Laboratories, Incorporated: *See*—
  - Paragamian, Vasken; and Taylor, Russell J., Jr., 3,980,782.
- McShirley, Robert C. Dental amalgam carrier. 3,979,830, Cl. [illegible]
- Mearl Corporation, The: *See*—
  - Eberts, Robert E., 3,980,491.
- Mechanics, Inc.: *See*—
  - Baxendale, Charles L., 3,980,159.
- Mednitsky, Viktor Georgievich: *See*—
  - Kutsevalov, Vitaly Mikhailovich; Kanter, Valery Konstantinovich; Kornilov, Georgy Sazonovich; Ozols, Vitaly Ivanovich; Frolov, Vladimir Ivanovich; Glushkov, Alexandr Timofeevich; Leontiev, Igor Vitalievich; Elizarov, Vladislav Alexandrovich; Bobylev, Jury Petrovich; Mednitsky, Viktor Georgievich; and Bushuev, Viktor Vasilievich, 3,980,950.
- Meerkoetter, Klaus: *See*—
  - Fettweis, Alfred; and Meerkoetter, Klaus, 3,980,872.
- Mehrhof, Werner: *See*—
  - Gante, Joachim; Kurmeier, Hans-Adolf; Schacht, Erich; Mehrhof, Werner; and Wild, Albrecht, 3,980,795.
- Meier, Gunter Friedrich: *See*—
  - Anderson, Jerrel Charles; England, Richard Jay; and Meier, Gunter Friedrich, 3,980,611.
- Meijer, Geertruida M.; Ritter, Fridolin J.; Minks, Albert K.; Voerman, Simon; and Persoons, Cornelis J., to Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel en Verkeer. Pheromone. 3,980,771, Cl. [illegible]
- Meinecke, Clarence A., Jr., to Multi-Products, Inc. Quick-unloading camper unit. 3,980,313, Cl. 280-81.00R.
- Melnik, Gary Alexandrovich: *See*—
  - Paton, Boris Evgenievich; Lakomsky, Victor Iosifovich; Melnik, Gary Alexandrovich; Chvertko, Anatoli Ivanovich; and Bukalo, Alfred Iosifovich, 3,980,802.
- Menashi, Wilson P.: *See*—
  - Castonguay, Roger A.; Cohen, Martin L.; Menashi, Wilson P.; Wenckus, Joseph F.; and VonThuna, Peter C., 3,980,438.
- Menasse, Raphael: *See*—
  - Moser, Hans; Sturm, Elmar; and Menasse, Raphael, 3,980,798.
- Menet, Albert: *See*—
  - Chabardes, Pierre; Julia, Marc; and Menet, Albert, 3,980,695.
- Meraikib, Mohamed: *See*—
  - Franke, Friedrich; Wenzel, Werner; Meraikib, Mohamed; and Berkenkamp, Hans, 3,980,447.
- Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
  - Gante, Joachim; Kurmeier, Hans-Adolf; Schacht, Erich; Mehrhof, Werner; and Wild, Albrecht, 3,980,795.
  - Jonas, Rochus; Muller-Calgan, Helmut; and Schliep, Hans-Jochen, 3,980,797.
- Mercurio, Luigi, to Ing. C. Olivetti & C., S.p.A. Apparatus for controlling microprogram jumps in a microprogrammable electronic computer. 3,980,991, Cl. 340-172.500.
- Merlen, Monty M., to Intec Corporation. Alignment means for a flaw detection system employing a light collector rod. 3,980,893, Cl. [illegible]
- Merser, Francis G.; Kooistra, Philip A.; and Lankton, Gordon B., to Dennison Manufacturing Company. Interlocking attachment device. 3,979,799, Cl. 24-159.0FP.
- Mertel, Heinz, to Siemens Aktiengesellschaft. Data switching system. 3,980,831, Cl. 179-2.00R.
- Mertz, James L.; Olivard, Joanne; and Heotis, James P., to Morton-Norwich Products, Inc. Method for determining furazolidone in animal tissue. 3,980,434, Cl. 23-230.00B.
- Messer, Elmer S.; and Mitchell, Donald K., to Flow Measurement Company, Inc. Electronic integrator for gas volume calculations. 3,980,865, Cl. 235-61.60A.
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  - Krumm, Hagen; Jockel, Heinz; von Walter, Klaus; Restin, Kurt; and Kuhn, Robert, 3,980,452.
- Meteor AG: *See*—
  - Schmid, Hans, 3,980,219.
- Metzger, Karl Georg: *See*—
  - Konig, Hans-Bodo; Schrock, Wilfried; Disselnkotter, Hans; and Metzger, Karl Georg, 3,980,792.
  - Ley, Kurt; Seng, Florin; and Metzger, Karl Georg, 3,980,779.
- Meyer, Burton C., to Marvin Glass & Associates. Surface projectile game device. 3,980,302, Cl. 273-87.200.
- Meyer, Hans H. Eyelet. 3,979,798, Cl. 24-141.000.
- Meyer, Kenneth Herbert; and Heese, William Elisa, to HydraPower Inc. Hydraulic actuator. 3,979,909, Cl. 60-458.000.
- Michael Schiavone & Sons, Inc.: *See*—
  - Schiavone, Michael; and Hoette, Harold, 3,980,191.
- Michelsen, Paul F., to RMC Research Corporation. Object locating system. 3,981,010, Cl. 343-6.0TV.
- Mickelson, Grant A., to Union Oil Company of California. Hydrodesulfurization of residual petroleum oil with a sulfided cobalt-molybdenum-alumina catalyst. 3,980,552, Cl. 208-216.000.
- Mid-Continent Pipeline Equipment Company: *See*—
  - Auxer, Marvin L., 3,979,941.
- Midland-Ross Corporation: *See*—
  - Pomper, Anthony W., deceased, 3,980,043.
- Mikhin, Trofim Andrianovich: *See*—
  - Kononenko, Vadim Grigorievich; Bozhko, Valery Pavlovich; Stelmakh, Viktor Alexeevich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Bukin, Jury Mikhailovich; Novikov, Anatoly Egorovich; Shaipova, Sania Fatyakhovna; Filyanov, Anatoly Nikolaevich; Shalbaian, Armais Semenovich; Grechka, Vitaly Dmitrievich; Tsyban, Nikolai Grigorievich; Gilmutdinov, Abdulla Gilmutdinovich; Regida, Fedor Ivanovich; Kazanovich, Lidia Evgenievna; Gertsuk, Nikolai Andreevich; Kolokolov, Boris Alexeevich; Morgolenko, Anatoly Sergeevich; Livanov, Vladimir Alexandrovich; Berezko, Anatoly Mikhailovich; Petrenko, Anatoly Avraamovich; Mikhin, Trofim Andrianovich; Fedotov, Mikhail Nikitich; Zakirov, Robert Sharafutdinovich, deceased; and Zakirova, Ganna Fedgrovna, administratix, 3,980,413.
- Mikuni, Satoru: *See*—
  - Okabayashi, Takashi; and Mikuni, Satoru, 3,980,281.
- Milasius, Algimantas, to Whiting Corporation. Tilt and swing lock mechanism for electric furnace. 3,980,801, Cl. 13-10.000.
- Mildenberger, Hilmar: *See*—
  - Dransch, Gunter Karl Wilhelm Otto, deceased; Wiesenhutter, Annelise Klara Helene, heiress; Flersheim, Johanna Mathilde, heiress; Mildenberger, Hilmar; Duwel, Dieter; and Kirsch, Reinhard, 3,980,796.
- Miller, George W.: *See*—
  - Niemi, Bill H.; Ryan, Mark D.; and Miller, George W., 3,980,820.
- Miller, Harry B., to United States of America, Navy. Apparatus and method for tuning a broad bandwidth transducer array. 3,980,905, Cl. 310-8.100.
- Miller, Robert L., to Ex-Cell-O Corporation. Method of making tooth generating tool. 3,979,859, Cl. 51-325.000.
- Miller, William. Venous pressure indicator. 3,980,082, Cl. 128-214.00R.
- Mills, Malcom J.: *See*—
  - Rutgerson, Robert J.; and Mills, Malcom J., 3,979,957.
- Minami, Hidehiro: *See*—
  - Nakagawa, Ryoichi; Nambu, Shuya; and Minami, Hidehiro, 3,980,058.
- Minck, Robert W.: *See*—
  - Ludwig, Frank A.; Minck, Robert W.; and Weiner, Steven A., 3,980,496.
- Mine Safety Appliances Company: *See*—
  - Cotabish, Harry N.; and Davison, Ellison Lloyd, 3,980,081.
- Minekawa, Saburo; Yonekawa, Sigeru; Tabata, Haruro; Ishida, Takashi; Tsuchida, Satoshi; and Yamada, Kiyoshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing rubbery polymers and copolymers having branched structures. 3,980,624, Cl. 526-173.000.
- Mines, Irving: *See*—
  - Mines, Kenneth S.; Mines, Irving; and Goulet, Guy, 3,980,847.
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- Minks, Albert K.: *See*—
  - Meijer, Geertruida M.; Ritter, Fridolin J.; Minks, Albert K.; Voerman, Simon; and Persoons, Cornelis J., 3,980,771.
- Minnesota Mining and Manufacturing Company: *See*—
  - Reece, Jack E., 3,980,482.
- Minoshima, Manji. Manufacturing method for thermoplastics. 3,980,248, Cl. 242-118.700.
- Misevich, Kenneth W., to Remington Arms Company, Inc. Payload carrying tubular projectile. 3,980,023, Cl. 102-92.600.
- Mitchell, Donald K.: *See*—
  - Messer, Elmer S.; and Mitchell, Donald K., 3,980,865.
- Mitchell, Larry D.; and Tanner, Murray Q., III, to Affiliated Hospital Products, Inc. Operating table or the like, with improved slidable top arrangement. 3,980,288, Cl. 269-325.000.
- Mitchell, Paul Anthony; and Bunn, William, to Post Office, The. Digital network synchronizing system. 3,980,835, Cl. 179-15.0BS.
- Mitchell, Thomas L.; and Stump, Ronald C., to Caterpillar Tractor Co. Heat exchanger with self-adjusting snap-on fan shroud. 3,980,132, Cl. 165-76.000.
- Mitchell, Thomas Owen; and Whitehurst, Darrell Duayne, to Mobil Oil Corporation. Complexed metals bonded to inorganic oxides. 3,980,583, Cl. 252-430.000.
- Mitchell, Thomas Owen, to Mobil Oil Corporation. Modified solid catalyst materials. 3,980,586, Cl. 252-455.00R.
- Mitchell, William O.: *See*—
  - Moore, Billy R.; Williams, J. David; and Mitchell, William O., 3,979,876.
- Mitsubishi Chemical Industries Ltd.: *See*—
  - Kimura, Tsuneo; and Koyama, Katsuhisa, 3,980,616.
- Mitsubishi Denki Kabushiki Kaisha: *See*—
  - Hibino, Masahiro, 3,980,858.
  - Mitsuoka, Hiroshi; and Kimura, Yoshio, 3,980,133.
  - Takamiya, Saburo; Hama, Masaharu; and Kondo, Akihiro, 3,980,508.
  - Yoshida, Masateru; and Nakao, Yoshio, 3,979,899.
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  - Iijima, Katsuhiko; and Jomen, Katsumasa, 3,980,000.

- Mitsubishi Petrochemical Company Limited: *See*—
  - Yasuda, Jyunichi, 3,980,224.
- Mitsuoka, Hiroshi; and Kimura, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. Heat transferring apparatus utilizing phase transition. 3,980,133, Cl. 165-105.000.
- Miyagi, Toru; Katakai, Nobuyoshi; Narita, Masanori; Uchida, Tatsuya; and Kimura, Minondo, to Hitachi Chemical Company, Ltd. Device for purifying sewage. 3,980,561, Cl. 210-151.000.
- Miyahara, Kingo, to Dowa Co., Ltd. Burner for burning liquid fuel in gasified form. 3,980,415, Cl. 431-168.000.
- Miyakawa, Seiichi: *See*—
  - Tatsumi, Susumu; and Miyakawa, Seiichi, 3,980,049.
- Miyamoto, Mitsunori: *See*—
  - Katsumata, Mitsuo; Murakami, Katsuo; and Miyamoto, Mitsunori, 3,980,922.
- Miyano, Masateru, to G. D. Searle & Co. Prostaglandin intermediates and optically active isomers thereof. 3,980,700, Cl. 260-520.00B.
- Miyao, Takayuki: *See*—
  - Sakai, Toshimitsu; and Miyao, Takayuki, 3,979,972.
- Miyasaka, Tsutomu; Fujimori, Yoshiaki; and Okakura, Youjiro, to Kabushiki Kaisha Suwa Seikosha. Mounting of a case band and a crystal bezel in a watch. 3,979,902, Cl. 58-91.000.
- Miyata, Shigeo; Takata, Michiko; and Okada, Akira, to Kyowa Chemical Industry Co., Ltd. Magnesium-aluminum containing complexes of organic anions of central nervous system affecting compounds. 3,980,685, Cl. 260-448.00R.
- Mo, Frank S. C.; and Natwick, Vernon R., to International Video Corporation. Helical scan head drum with helical grooves for generating an air bearing. 3,981,024, Cl. 360-130.000.
- Moberg, Sigurd Manfred; and Lundberg, George, to E. J. Brooks Company. Locking seal. 3,980,337, Cl. 292-319.000.
- Mobil Oil Corporation: *See*—
  - Gorring, Robert L.; and Shipman, George F., 3,980,550.
  - Mitchell, Thomas Owen; and Whitehurst, Darrell Duayne, 3,980,583.
  - Mitchell, Thomas Owen, 3,980,586.
  - Okorodudu, Abraham O. M., 3,980,573.
  - Okorodudu, Abraham O. M., 3,980,574.
- Mochizuki, Kenji: *See*—
  - Akiyama, Tadahiko; Nishigori, Shogo; and Mochizuki, Kenji, 3,980,834.
- Modular Circuitry Inc.: *See*—
  - Schultz, Robert L., 3,980,932.
- Moeckel, Peter, to Siemens Aktiengesellschaft. Method of manufacturing a preform for use in drawing glass fibers. 3,980,461, Cl. 65-36.000.
- Mohr, Reinhard: *See*—
  - Fleckenstein, Erwin; Heinrich, Ernst; and Mohr, Reinhard, 3,980,659.
- Mohrhoff, Jack, to Raymond Lee Organization, Inc., The, a part interest. Fuel tank filler cap lock. 3,979,933, Cl. 70-164.000.
- Molins Limited: *See*—
  - Labbe, Francis Auguste Maurice, 3,980,087.
- Molon Motor and Coil Corporation: *See*—
  - Bostrom, Harry H.; and Joyce, John T., 3,980,937.
- Mondron, Peter J., to Horizons Incorporated a division of Horizons Research Incorporated. Synthesis of 2,7-bisdimethylamino-10-P-dimethylaminophenyl-9,10-dihydro-9,9-dimethylanthracene. 3,980,706, Cl. 260-576.000.
- Monkovic, Ivo; Wong, Henry; and Lim, Gary, to Bristol-Myers Company. Process for the preparation of 14-hydroxymorphinans. 3,980,641, Cl. 260-240.00F.
- Monsanto Company: *See*—
  - Birum, Gail H., 3,980,618.
  - Fox, Dale B.; McMinn, Talmage D., Jr.; Beckham, Rodney D.; and Montgomery, Phillip D., 3,980,580.
  - Isaksen, Robert A.; Locke, Frederic J.; Smith, John L.; and Spitz, George T., 3,980,732.
  - Isaksen, Robert A.; Locke, Frederic J.; Smith, John L.; and Spitz, George T., 3,980,733.
- Montedison S.p.A.: *See*—
  - Venturello, Carlo; and D'Aloisio, Rino, 3,980,675.
- Montgomery, Phillip D.: *See*—
  - Fox, Dale B.; McMinn, Talmage D., Jr.; Beckham, Rodney D.; and Montgomery, Phillip D., 3,980,580.
- Monyak, Arnold; and Spector, George. Garbage can cover retainer. 3,980,202, Cl. 220-318.000.
- Moore, Alvin Edward. Light-weight, insulated construction element and wall. 3,979,870, Cl. 52-577.000.
- Moore, Billy R.; Williams, J. David; and Mitchell, William O., to Oxford Industries, Inc. Carton sealer system. 3,979,876, Cl. 53-38.000.
- Moorwessel, Dieter; Glaser, Rudolf; Pfirrmann, Gunther; and Konopka, Rudolf, to BASF Aktiengesellschaft. Mixtures based on ethylene copolymers and asphalt. 3,980,598, Cl. 260-28.5AS.
- Morganite Carbon Limited: *See*—
  - Cunningham, James, 3,980,914.
- Morgolenko, Anatoly Sergeevich: *See*—
  - Kononenko, Vadim Grigorievich; Bozhko, Valery Pavlovich; Stelmakh, Viktor Alexeevich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Bukin, Jury Mikhailovich; Novikov, Anatoly Egorovich; Shaipova, Sania Fatyakhovna; Filyanov, Anatoly Nikolaevich; Shalbaian, Armais Semenovich; Grechka, Vitaly Dmitrievich; Tsyban, Nikolai Grigorievich; Gilmutdinov, Abdulla Gilmutdinovich; Regida, Fedor Ivanovich; Kazanovich, Lidia Evgenievna; Gertsuk, Nikolai Andreevich; Kolokolov, Boris Alexeevich; Morgolenko, Anatoly Sergeevich; Livanov, Vladimir Alexandrovich; Berezko, Anatoly Mikhailovich; Petrenko, Anatoly Avraamovich; Mikhin, Trofim Andrianovich; Fedotov, Mikhail Nikitich; Zakirov, Robert Sharafutdinovich, deceased; and Zakirova, Ganna Fedgrovna, administratix, 3,980,413.
- Mori, Kazuo: *See*—
  - Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; Koshiba, Masao; and Yamamoto, Hisao, 3,980,645.
- Morisaki, Nobukazu, to Daido Metal Company, Ltd. Inductive body for high frequency induction heating. 3,980,853, Cl. 219-10.790.
- Morishita, Shigehumi: *See*—
  - Onodera, Toshihiro; and Morishita, Shigehumi, 3,980,904.
- Morita Pump Kabushiki Kaisha: *See*—
  - Terayama, Fusaji; and Nakagawa, Seiichi, 3,980,156.
- Morner, Bengt: *See*—
  - Kesselmark, Mats; and Morner, Bengt, 3,980,165.
- Morrien, Albertus Marinus, to U.S. Philips Corporation. System for the transmission of split-phase Manchester coded bivalent information signals. 3,980,825, Cl. 178-67.000.
- Morris, Henry B.: *See*—
  - Chapman, Richard A.; Johnson, Milo R.; and Morris, Henry B., 3,980,915.
- Morse, David C.; and Howard, William W., to General Atomic Company. Catalyst tube assembly for steam-hydrocarbon reformer. 3,980,440, Cl. 23-288.00M.
- Morton-Norwich Products, Inc.: *See*—
  - Alaimo, Robert J., 3,980,664.
  - Mertz, James L.; Olivard, Joanne; and Heotis, James P., 3,980,434.
  - Pelosi, Stanford S., Jr., 3,980,689.
- Moser, Hans; Sturm, Elmar; and Menasse, Raphael, to Ciba-Geigy Corporation. Dichloromaleic imides for fungicidal composition and method. 3,980,798, Cl. 424-274.000.
- Moss, Graham: *See*—
  - Hamilton, Clive Gordon; Horley, John Norman; and Moss, Graham, 3,979,862.
- Moss, James: *See*—
  - Dutton, David; and Moss, James, 3,979,940.
- Mothiron, Claude: *See*—
  - Cailleux, Philippe; and Mothiron, Claude, 3,980,943.
- Motorola, Inc.: *See*—
  - Kommrusch, Richard Stephen, 3,981,017.
  - Lamb, James A.; and Nieglos, Donald J., 3,980,824.
  - Rapshys, William, 3,980,952.
- Motosugi, Katsuhiko: *See*—
  - Noguchi, Masaaki; Tanaka, Yukiyasu; Sekiya, Setsuro; and Motosugi, Katsuhiko, 3,980,060.
- Mouri, Takaaki: *See*—
  - Kato, Hideo; Mouri, Takaaki; and Nishikawa, Tomoyasu, 3,980,643.
- MPR Associates, Inc.: *See*—
  - Weems, Sterling J., 3,980,188.
- Mueller Co.: *See*—
  - Ellis, Daniel A.; and Daghe, Joseph L., 3,980,096.
  - Ellis, Daniel A., 3,980,097.
- Muller-Calgan, Helmut: *See*—
  - Jonas, Rochus; Muller-Calgan, Helmut; and Schliep, Hans-Jochen, 3,980,797.
- Mullhaupt, Joseph Timothy, to Union Carbide Corporation. Process and composition for separation of oxygen from air using Pr-Ce as the carrier. 3,980,763, Cl. 423-579.000.
- Mullins, David L.: *See*—
  - Litteral, Carl J.; and Mullins, David L., 3,980,688.
- Multi-Contact A.G.: *See*—
  - Neidecker, Rudolf, 3,980,387.
- Multi-Products, Inc.: *See*—
  - Meinecke, Clarence A., Jr., 3,980,313.
- Multivac Sepp Haggenmueller KG: *See*—
  - Vetter, Arthur, 3,979,877.
- Munch, Jozef, to C. G. R. -Benelux N.V. Skull clamp, mainly for X-ray apparatus. 3,980,892, Cl. 250-456.000.
- Munden, Dennis Lawrence; and Leeming, Carol Anne. Testing fabric sewing properties. 3,979,951, Cl. 73-159.000.
- Murakami, Katsuo: *See*—
  - Katsumata, Mitsuo; Murakami, Katsuo; and Miyamoto, Mitsunori, 3,980,922.
- Murakami, Noboru, to Aisin Seiki Kabushiki Kaisha. Planetary transmission. 3,979,974, Cl. 74-759.000.
- Muramoto, Noboru; Okamoto, Yukikazu; Kamaya, Kazuo; Kawaji, Kunihiro; and Shiraki, Makoto, to Sumitomo Chemical Company, Limited. Process for producing granular composition for use in agriculture and horticulture. 3,980,463, Cl. 71-86.000.
- Murayama, Yoshinobu; Sada, Kenzou; and Kutomi, Mitsuhiro, to Kubota Tekko Kabushiki Kaisha. Front wheel drive assembly for four-wheel drive tractor. 3,980,151, Cl. 180-43.00A.
- Murrell, Lawrence Lee; and Yates, David J. C., to Exxon Research and Engineering Company. Method for preparing a catalyst comprising ruthenium supported on a group IIA oxide. 3,980,589, Cl. 252-466.0PT.
- Musannif, Ahmed Asim Bilgin; and Eden, Joseph Folkard, to National Research Development Corporation. Breaking up of concrete surface layers or the like. 3,980,341, Cl. 299-36.000.
- Muschaweck, Roman: *See*—
  - Siegemund, Gunther; and Muschaweck, Roman, 3,980,714.
- Muto, Rudolph. Air filtration gas mass. 3,980,080, Cl. 128-146.600.
- Mylari, Banavara Lakshmana: *See*—
  - Faubl, Hermann; and Mylari, Banavara Lakshmana, 3,980,648.

Myskowski, Edwin T., to Hitco. Laminated article comprising pyrolytic graphite and a composite substrate therefor. 3,980,105, Cl. 138-140.000.
Nagaishi, Hatuo: *See—*
Masaki, Kenji; Nagaishi, Hatuo; and Ookubo, Yoshio, 3,979,905.
Nagy, Daniel Elmer, to American Cyanamid Company. Polymers of N-(chloroalkoxymethyl)acrylamides, quaternary ammonium derivates. 3,980,800, Cl. 526-23.000.
Nailor, William Kirby, III, to Du Pont de Nemours, E. I., and Company. Battery snap terminal. 3,980,388, Cl. 339-228.000.
Nakada, Yujiro: *See—*
Matsui, Takashi; Umeda, Kazuo; and Nakada, Yujiro, 3,980,140.
Nakagawa, Kazumi; Shimoda, Keitaro; Tsutsui, Nobuhiro; and Zoda, Keiichi, to Japan Exlan Company Limited. Production of synthetic resin spinnerette. 3,980,747, Cl. 264-221.000.
Nakagawa, Ryoichi; Nambu, Shuya; and Minami, Hidehiro, to Nissan Motor Co., Ltd. Fuel feed control system of internal combustion engine. 3,980,058, Cl. 123-32.0SP.
Nakagawa, Seiichi: *See—*
Terayama, Fusaji; and Nakagawa, Seiichi, 3,980,156.
Nakagawa, Yasuichi, to Kabushiki Kaisha Daini Seikosha. Construction of the gear train for a timepiece. 3,979,901, Cl. 58-59.000.
Nakagoshi, Noboru; and Watanabe, Saburo, to Yoneda Tekkosho Ltd. Scale control device for use in profiling machine tool. 3,980,938, Cl. 318-578.000.
Nakai, Takao; Shimonomura, Isamu; Nakayama, Isao; and Yoshii, Yoshiyuki, to Nittan Company, Limited. Fire smoke damper. 3,980,272, Cl. 251-306.000.
Nakamura, Hideo; and Sato, Teruo, to Sony Corporation. Decoder for four channel FM stereophonic composite signal having an indicating signal wherein the indicating signal is detected and used in the decoding of the four channel composite signal. 3,980,832, Cl. 179-15.0BT.
Nakamura, Norihiko: *See—*
Sanda, Shougo; and Nakamura, Norihiko, 3,980,057.
Nakamura, Shoichi: *See—*
Takayama, Jun; Sonoda, Takenori; and Nakamura, Shoichi, 3,981,006.
Nakamura, Takashi, to Asahi Kasei Kogyo Kabushiki Kaisha. Method and apparatus for generating electricity magneto hydrodynamically. 3,980,907, Cl. 310-11.000.
Nakanose, Megumi; Kakimi, Tsuneo; and Shiraishi, Michiyoshi, to Nissan Motor Co., Ltd. Method of shaping sheet metal of inferior formability. 3,979,815, Cl. 29-423.000.
Nakao, Yoshio: *See—*
Yoshida, Masateru; and Nakao, Yoshio, 3,979,899.
Nakasaki, Eiji, to Sumitomo Rubber Industries, Ltd. Bias-ply pneumatic tires for motorcycles. 3,980,119, Cl. 152-354.000.
Nakayama, Isao: *See—*
Nakai, Takao; Shimonomura, Isamu; Nakayama, Isao; and Yoshii, Yoshiyuki, 3,980,272.
Nakayama, Sigeo: *See—*
Yasufuku, Sachio; Ishioka, Yasuaki; Tanii, Takeshi; and Nakayama, Sigeo, 3,980,803.
Nambu, Shuya: *See—*
Nakagawa, Ryoichi; Nambu, Shuya; and Minami, Hidehiro, 3,980,058.
Nance, W. Franklin; and Surprenant, Ronald J., to NS Electronics; and Lear Siegler, Inc., part interest to each. Delta modulation system employing digital frame averaging. 3,980,953, Cl. 325-38.00B.
Narita, Masanori: *See—*
Miyagi, Toru; Katakai, Nobuyoshi; Narita, Masanori; Uchida, Tatsuya; and Kimura, Minondo, 3,980,561.
National Distillers and Chemical Corporation: *See—*
Smith, David W.; and Feldman, Julian, 3,980,661.
National Gypsum Company: *See—*
Sowinski, Gerard T., 3,979,867.
National Research Development Corporation: *See—*
Burgess, Roy Patrick; and Cox, Alan James, 3,979,920.
Carr-Brion, Kenneth Garfield; and Williams, Angela Wendy, [illegible]
Edwards, Albert Gray, 3,980,485.
Franks, Albert, 3,980,883.
Musannif, Ahmed Asim Bilgin; and Eden, Joseph Folkard, 3,980,341.
National Research Institute for Metals: *See—*
Kametani, Hiroshi; and Yamauchi, Chikabumi, 3,980,470.
National Semiconductor Corporation: *See—*
Priel, Ury, 3,980,898.
Natwick, Vernon R.: *See—*
Mo, Frank S. C.; and Natwick, Vernon R., 3,981,024.
Nauta, Wijbe Thomas, to N.V. Koninklijke Pharmaceutische Fabrieken v/h Brocades-Stheeman en Pharmacia. 4-Amino-pyrimidine derivatives. 3,980,650, Cl. 260-256.40Q.
Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel en Verkeer: *See—*
Meijer, Geertruida M.; Ritter, Fridolin J.; Minks, Albert K.; Voerman, Simon; and Persoons, Cornelis J., 3,980,771.
Neeff, Rutger, to Bayer Aktiengesellschaft. Exhaust process for the dyeing of synthetic fiber materials. 3,980,427, Cl. 8-41.00R.
Neeff, Rutger; and Jordan, Heinz Dietrich, to Bayer Aktiengesellschaft. Process for the bulk dyeing of polyesters. 3,980,609, Cl. [illegible]
Neeley, Carl R.: *See—*
Shaw, Alexander F., IV, 3,980,073.
Shaw, Alexander F., IV, 3,980,077.
Neeley, Carletta M.: *See—*
Shaw, Alexander F., IV, 3,980,073.
Shaw, Alexander F., IV, 3,980,077.
Neidecker, Rudolf, to Multi-Contact A.G. Snap-type connector for battery terminal. 3,980,387, Cl. 339-228.000.
Neil and Spencer Limited: *See—*
McCordall, Derek D., 3,979,964.
Nelson, Eldrid W.: *See—*
Olson, Buford W., Sr.; Nelson, Eldrid W.; and Davidson, Albin A., 3,980,025.
Nelson, Gunner E.; and Pearson, Tillmon H., to Ethyl Corporation. Metal sequestering method and composition using α,α'-carboxyalkoxy succinic acid compounds. 3,980,578, Cl. 252-180.000.
Nelson, John L.; and Berg, Joseph S., to Owens-Corning Fiberglas Corporation. Feeder for glass melting furnaces. 3,980,460, Cl. 65-29.000.
Nelson, Norman A., to Upjohn Company, The. 5-Oxa-17,18-dehydroprostaglandin-E_1-type analogs. 3,980,692, Cl. 260-468.00D.
Netz, Otto: *See—*
Corte, Herbert; Heller, Harold; Lange, Peter Michael; and Netz, Otto, 3,980,462.
Netzell, Ernst Sune. Method and an apparatus for collecting substances and objects on a liquid surface. 3,980,559, Cl. 210-83.000.
Neubauer, Howard A., to Kimberly-Clark Corporation. Poultry litter and preparation thereof. 3,980,050, Cl. 119-1.000.
Neves, Romeu Almeida: *See—*
Goncalves, Carlos Alberto de Castro; Neves, Romeu Almeida; and Drucker, Jose Bernardo, 3,980,416.
Neville, Martin Charles: *See—*
Verge, John Pomfret; Neville, Martin Charles; and Friedman, Henry, 3,980,794.
New Brunswick Scientific Co., Inc.: *See—*
Perle, Abe J.; and Freedman, David, 3,980,131.
Newington, Timothy J.; and Swanepoel, Lourens P. Fire detectors. 3,980,928, Cl. 317-10.000.
Nichols, Harry S., Jr.: *See—*
Emenaker, Richard G., 3,979,999.
Nichols, Lawrence J.: *See—*
Dudley, Kenneth W.; MacMaster, George H.; and Nichols, Lawrence J., 3,980,920.
Nicolas, Michel: *See—*
Bouteille, Daniel; and Nicolas, Michel, 3,980,324.
Nieglos, Donald J.: *See—*
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Nielsen, Tage Kjaer: *See—*
Amotz, Shmuel; Nielsen, Tage Kjaer; and Thiesen, Niels Otto, 3,980,521.
Niem, Wolfgang: *See—*
Kleinschmidt, Johann Otto; and Niem, Wolfgang, 3,980,032.
Niemi, Bill H.; Ryan, Mark D.; and Miller, George W., to FMC Corporation. Clock phasing circuit. 3,980,820, Cl. 178-69.50R.
Nienstedt, Heinz. Device for dividing rectangular bars singly and in multiples produced in particular by dividing rectangular blocks especially of deep frozen fish. 3,979,986, Cl. 83-420.000.
Nifco Inc.: *See—*
Okuda, Seizi, 3,980,263.
Nihon Denshi Kabushiki Kaisha: *See—*
Schaefer, Louis F.; Rice, Philip J.; and Frohbach, Hugh F., 3,980,811.
Niimura, Tsutomu, to Sony Corporation. A.G.C. circuit for a video signal. 3,980,816, Cl. 178-7.30R.
Nilsson, Harald, to Allmanna Svenska Elektriska Aktiebolaget. Magnetic disk separator with scraper means. 3,980,562, Cl. 210-222.000.
Nilsson, J. Charles. Combination vise, V-block and drill jig workholder. 3,980,287, Cl. 269-87.300.
Nippon Electric Company, Ltd.: *See—*
Sato, Yoichi, 3,980,971.
Tokuda, Kazuo, 3,980,901.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Hinago, Yasuhiro, 3,979,990.
Tomisawa, Norio; Uchiyama, Yasuji; Okumura, Takatoshi; and Takeda, Toshio, 3,979,989.
Tomisawa, Norio; Uchiyama, Yasuji; Okumura, Takatoshi; and Takeda, Toshio, 3,979,996.
Nippon Kayaku Co., Ltd.: *See—*
Matsunaga, Daisaku; and Sumitani, Mitsukuni, 3,980,713.
Nippon Kogaku K.K.: *See—*
Kawahara, Atsushi, 3,980,870.
Maida, Osamu, 3,980,400.
Nippon Oil Seal Industry Co., Ltd.: *See—*
Nishikubo, Tadatomi; Ugai, Shinzi; Ichijo, Taro; and Kishida, Masahiko, 3,980,483.
Nippon Telegraph and Telephone Public Corporation: *See—*
Fujimoto, Isao; Kasubuchi, Takeshi; and Aiba, Masahiko, 3,981,019.
Takano, Rikuo; Sumitomo, Yuji; Kobayashi, Toshio; Yamamoto, Yoichi; and Makita, Tomoo, 3,981,020.
Nippondenso Co., Ltd.: *See—*
Kato, Mitsuharu, 3,980,896.
Nishida, Reijiro; Takeda, Kunio; Kaneko, Dentaro; and Uchida, Kunio, to Kobe Steel Ltd. Process for producing iron ore oxidized pellets from magnetite concentrate. 3,980,465, Cl. 75-3.000.
Nishigori, Shogo: *See—*
Akiyama, Tadahiko; Nishigori, Shogo; and Mochizuki, Kenji, 3,980,834.

Nishikawa, Tomoyasu: *See—*
Kato, Hideo; Mouri, Takaaki; and Nishikawa, Tomoyasu, 3,980,643.
Nishikubo, Tadatomi; Ugai, Shinzi; Ichijo, Taro; and Kishida, Masahiko, to Nippon Oil Seal Industry Co., Ltd. Photocurable composition. 3,980,483, Cl. 96-115.00R.
Nishikuri, Masao: *See—*
Yamada, Eiji; Nishikuri, Masao; Kanou, Ryuji; and Ohshima, Taizo, 3,980,678.
Nishio, Koichi: *See—*
Yamamoto, Sadamu; Kashiwagi, Michio; Nishio, Koichi; and Akada, Kunio, 3,980,974.
Nishioka, Tetsuji; and Yanagishima, Takayuki, to Nissan Motor Co., Ltd. Arrangement for detecting relative angular movement of a steering wheel. 3,980,999, Cl. 340-279.000.
Nissan Chemical Industries, Ltd.: *See—*
Akabayashi, Hiroshi; Akiyama, Nobuo; and Arima, Fumiyoshi, 3,980,487.
Nissan Motor Co., Ltd.: *See—*
Ariga, Hajime; and Maruyama, Shuzo, 3,980,064.
Masaki, Kenji; Nagaishi, Hatuo; and Ookubo, Yoshio, 3,979,905.
Nakagawa, Ryoichi; Nambu, Shuya; and Minami, Hidehiro, 3,980,058.
Nakanose, Megumi; Kakimi, Tsuneo; and Shiraishi, Michiyoshi, 3,979,815.
Nishioka, Tetsuji; and Yanagishima, Takayuki, 3,980,999.
Nissen, Roland Nielsen, to J. I. Case Company. Trenching chain with scoop members. 3,979,843, Cl. 37-86.000.
Nitro-Nobel A.B.: *See—*
Enoksson, Bertil Petrus, 3,980,277.
Nittan Company, Limited: *See—*
Nakai, Takao; Shimonomura, Isamu; Nakayama, Isao; and Yoshii, Yoshiyuki, 3,980,272.
NL Industries, Inc.: *See—*
Braithwaite, David G.; and Hettinger, William P., Jr., 3,980,536.
Noetzel, Siegfried; Herwig, Walter; Kern, Rudolf; and Lotz, Werner, to Hoechst Aktiengesellschaft. Flame retarding plastic materials. 3,980,614, Cl. 260-45.9NC.
Noetzel, Siegfried, to Hoechst Aktiengesellschaft. Flame retarding plastic materials. 3,980,615, Cl. 260-45.75R.
Noguchi, Masaaki; and Sumiyoshi, Masaharu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel supply installation for internal combustion engines. 3,980,052, Cl. 123-3.000.
Noguchi, Masaaki; Tanaka, Yukiyasu; and Sekiya, Setsuro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine. 3,980,059, Cl. 123-32.0ST.
Noguchi, Masaaki; Tanaka, Yukiyasu; Sekiya, Setsuro; and Motosugi, Katsuhiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine. 3,980,060, Cl. 123-32.0ST.
Nomura, Kenzi; Kamiya, Yozi; and Yoshioka, Kengo, to Toyoda Koki Kabushiki Kaisha. Machine tool with a turret head for multiple spindle units and automatic tool changing apparatus. 3,979,819, Cl. 29-568.000.
Nomura, Toshio; Ozaki, Masaaki; Ishii, Makoto; and Iiyama, Masahiko, to Honda Giken Kogyo Kabushiki Kaisha. Automatic actuator for carburetor choke valve. 3,980,065, Cl. 123-119.00F.
Nomura, Toshio: *See—*
Kikuchi, Koji; Suzuki, Hiroshi; and Nomura, Toshio, 3,980,808.
Noodleman, Samuel, to Kollmorgen Corporation. Method of manufacturing rare earth permanent magnet rotor. 3,979,821, Cl. 29-598.000.
Norfield Manufacturing Co.: *See—*
Cheak, Edward G., 3,979,817.
North American Philips Corporation: *See—*
Haas, David J.; Blaustein, Aaron; Rudd, Chester D.; Lapof, Ray C.; and Schimpf, William C., 3,980,889.
Northern Electric Company Limited: *See—*
King, Frederick David; and Springthorpe, Anthony John, 3,981,023.
Woytiuk, Leo Victor, 3,980,807.
Northwestern Steel and Wire Company: *See—*
Martin, Robert W.; and Ernst, Kenneth L., 3,980,008.
Nott, Alan J., to Anglo-American Clays Corporation. Brightening of natural calcitic ores. 3,980,240, Cl. 241-20.000.
Novick, William J., Jr.: *See—*
Klioze, Solomon S.; and Novick, William J., Jr., 3,980,787.
Novikov, Anatoly Egorovich: *See—*
Kononenko, Vadim Grigorievich; Bozhko, Valery Pavlovich; Stelmakh, Viktor Alexeevich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Bukin, Jury Mikhailovich; Novikov, Anatoly Egorovich; Shaipova, Sania Fatyakhovna; Filyanov, Anatoly Nikolaevich; Shalbaian, Armais Semenovich; Grechka, Vitaly Dmitrievich; Tsyban, Nikolai Grigorievich; Gilmutdinov, Abdulla Gilmutdinovich; Regida, Fedor Ivanovich; Kazanovich, Lidia Evgenievna; Gertsuk, Nikolai Andreevich; Kolokolov, Boris Alexeevich; Morgolenko, Anatoly Sergeevich; Livanov, Vladimir Alexandrovich; Berezko, Anatoly Mikhailovich; Petrenko, Anatoly Avraamovich; Mikhin, Trofim Andrianovich; Fedotov, Mikhail Nikitich; Zakirov, Robert Sharafutdinovich, deceased; and Zakirova, Ganna Fedgrovna, administratix, 3,980,413.
Novo Industri A/S: *See—*
Amotz, Shmuel; Nielsen, Tage Kjaer; and Thiesen, Niels Otto, 3,980,521.
Nowak, Gerald: *See—*
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NS Electronics: *See—*
Nance, W. Franklin; and Surprenant, Ronald J., 3,980,953.
Nuclear Battery Corporation: *See—*
Goslee, David E.; and Barr, Harold N., 3,980,502.
Goslee, David E.; and Bustard, Thomas S., 3,980,503.
Nuclear Power Co. (Whetstone) Limited: *See—*
Prescott, Robert Frank, 3,979,866.
N.V. Koninklijke Pharmaceutische Fabrieken v/h Brocades-Stheeman en Pharmacia: *See—*
Nauta, Wijbe Thomas, 3,980,650.
Nye, Gary G. Insulated container. 3,980,216, Cl. 224-8.00R.
Oberg, Ulf Erik, to Saab-Scania Aktiebolag. Method and device for regulating the braking cycle for an individual wheel on a vehicle. 3,980,350, Cl. 303-21.00A.
O'Brien, Raymond A., to Cleveland Hardware & Forging Co. Controlled release mechanism for railway hand brake. 3,979,969, Cl. 74-505.000.
O'Connor, Hugh W.: *See—*
Generke, William A.; and O'Connor, Hugh W., 3,979,971.
O'Cull, Kathleen A.: *See—*
Dasher, George F.; O'Cull, Kathleen A.; and Schamper, Thomas J., 3,980,091.
Oda, Gosen Kogyo Kabushiki Kaisha: *See—*
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Oddo, Nicola: *See—*
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Fahnenstich, Rudolf; Heese, Joachim; and Offermanns, Heribert, 3,980,665.
Officine Savio, S.p.A.: *See—*
D'Agnolo, Armando; and Favero, Giovanni, 3,980,175.
Ogilvie Flour Mills Company, Limited, The: *See—*
Dunne, Gerald J.; and Roberts, Thomas Walter, 3,980,493.
Ogle, James A., to Burroughs Corporation. Multi-part display panel and system for operating the panel. 3,981,001, Cl. 340-324.00M.
Oh, John H.; and Oita, Katashi, to Weyerhaeuser Company. Ruminant repellent from fresh lipoidal material. 3,980,773, Cl. 424-95.000.
Ohshima, Taizo: *See—*
Yamada, Eiji; Nishikuri, Masao; Kanou, Ryuji; and Ohshima, Taizo, 3,980,678.
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Oita, Katashi: *See—*
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Okabayashi, Takashi; and Mikuni, Satoru, to Sybron Corporation. Agitated vessel accessories with vibration suppressing stabilizers. 3,980,281, Cl. 259-107.000.
Okada, Akira: *See—*
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Okada, Kikuji. Package cushioning structure. 3,980,221, Cl. 229-14.00C.
Okada, Takashi: *See—*
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Okakura, Youjiro: *See—*
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Okamoto, Yukikazu: *See—*
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Okamura, Hiroshi; Sato, Hisao; and Iwasaki, Isamu, to K.K. Fujita Shoten; and Sato, Hisao. Speaker edge. 3,980,841, Cl. 179-181.00R.
Okamura, Isao: *See—*
Omori, Akira; Okamura, Isao; Imoto, Tadasi; and Katoh, Tadayuki, 3,980,513.
Okorodudu, Abraham O. M., to Mobil Oil Corporation. Substituted dimercapto thiadiazoles and lubricant compositions containing same. 3,980,573, Cl. 252-46.700.
Okorodudu, Abraham O. M., to Mobil Oil Corporation. Lubricant containing diorganophosphorus derivatives of urethane as antiwear agents. 3,980,574, Cl. 252-49.900.
Okuda, Kensuke; Yoshida, Tadaaki; and Kase, Koji. Sliding member having anti-frictional and anti-static properties for a cassette. 3,980,570, Cl. 252-12.400.
Okuda, Seizi, to Nifco Inc. Device for holding an elongated object such as a wire. 3,980,263, Cl. 248-73.000.
Okumura, Takatoshi: *See—*
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Tomisawa, Norio; Uchiyama, Yasuji; Okumura, Takatoshi; and Takeda, Toshio, 3,979,996.
Okuyama, Hiroshi; Takahashi, Hisao; and Hasegawa, Akira, to Fuji Photo Film Co., Ltd. Production of polyethylene terephthalate film having improved resistance to cleavage. 3,980,748, Cl. 264-289.000.
Olin Corporation: *See—*
Adams, John O.; Woodard, Kenneth E., Jr.; and Specht, Steven J., 3,980,544.
Schultes, Hermann, 3,980,322.
Syrop, Allan H.; and Priga, Peter P., 3,980,579.
Olivard, Joanne: *See—*
Mertz, James L.; Olivard, Joanne; and Heotis, James P., 3,980,434.
Olive, George A. System and process for locating sources of radiation. 3,980,948, Cl. 324-83.00D.
Olivieri, Roberto: *See—*
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- **Olson, Buford W., Sr.; Nelson, Eldrid W.; and Davidson, Albin A.,** to Chas. Olson & Sons Incorporated. Convertible rail-highway vehicle. 3,980,025, Cl. 105-215.00C.
- **Olympus Optical Co., Ltd.:** *See—*
  - Ikuno, Yuji, 3,980,085.
  - Izawa, Masao, 3,980,921.
- **O'Meara, Thomas R.,** to Hughes Aircraft Company. Adaptive imaging telescope with nonlinear quadrant sensing and electro-optical phase shifting. 3,980,879, Cl. 250-201.000.
- **Omni Corporation:** *See—*
  - Bruning, William E., 3,980,124.
- **Omnithruster, Inc.:** *See—*
  - Dashew, Stanley A.; and Sutton, Charles D., 3,980,038.
- **Omori, Akira; Okamura, Isao; Imoto, Tadasi; and Katoh, Tadayuki,** to Teijin Limited. Process for making laminates of sheet-formed, reticulated fibrous structures. 3,980,513, Cl. 156-244.000.
- **Omron Tateisi Electronics Co.:** *See—*
  - Tamura, Takanori; and Imoto, Koichi, 3,980,167.
- **O'Neill, Michael W.; and Ginsburg, Arnold P.** Portable batting practice cage. 3,980,304, Cl. 273-26.00R.
- **Ong, Kian Kie,** to U.S. Philips Corporation. Control device. 3,980,955, Cl. 325-390.000.
- **Ong, Sienling:** *See—*
  - Feess, Erich; Ong, Sienling; and Steuernagel, Hans Helmut, 3,980,426.
- **Onodera, Toshihiro; and Morishita, Shigehumi,** to Tokyo Shibaura Electric Co., Ltd. Elastic surface wave device. 3,980,904, Cl. 310-8.100.
- **Ontario Research Foundation:** *See—*
  - Besik, Ferdinand, 3,980,556.
- **Ookubo, Yoshio:** *See—*
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- **Opex Corporation:** *See—*
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- **Opfer, James E.:** *See—*
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- **Oppenheimer, Robert H.:** *See—*
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- **Orav, Mihkel:** *See—*
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- **Orban, Robert A.,** to Kurt Orban Company. Reverberation system with extended frequency response. 3,980,828, Cl. 179-1.00J.
- **Oreevrert D'Ercuis:** *See—*
  - Maes, Charles-Henri Marie, 3,980,027.
- **Orr, Bobby J.; Schaffner, Donald L.; and Danner, Bill A.,** to Fiat-Allis Construction Machinery, Inc. Track idler recoil spring assembly and method for installation and removal. 3,980,351, Cl. 305-10.000.
- **Oswald Forst Maschinenfabrik und Apparatebauanstalt:** *See—*
  - Esser, Gustav; and Schroder, Eckhard, 3,980,182.
- **Ota, Takaaki:** *See—*
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- **Otis Engineering Corporation:** *See—*
  - Amancharla, Amareswar, 3,980,134.
- **Otsuki, Susumo; Arika, Junji; Kashibe, Mitsunobu; and Takeshige, Kosuke,** to Toyo Soda Manufacturing Co., Ltd. Purification of alkali carbonate containing a fluorine compound. 3,980,754, Cl. [illegible]
- **Oudard, Michel:** *See—*
  - Labat, Pierre; and Oudard, Michel, 3,980,164.
- **Overkott, Franz Josef,** to Peddinghaus, Carl Ullrich. Process for manufacturing highly wear-resistant, undistorted, axially symmetrical parts. 3,980,506, Cl. 148-16.500.
- **Ovutime, Inc.:** *See—*
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- **Owens-Corning Fiberglas Corporation:** *See—*
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  - Nelson, John L.; and Berg, Joseph S., 3,980,460.
  - Sauer, Robert J., 3,980,619.
  - Shannon, Richard F.; and Scheuerle, Paul H., 3,980,414.
- **Owens-Illinois, Inc.:** *See—*
  - Fillmore, William E., 3,980,195.
  - Riggs, Darius O., 3,980,173.
- **Owens, Phillip J.,** to West Company, The. Pouring adaptor-closure assembly. 3,980,211, Cl. 222-478.000.
- **Oxford Industries, Inc.:** *See—*
  - Frost, Walter Wade; and Hunter, John P., Jr., 3,980,033.
  - Moore, Billy R.; Williams, J. David; and Mitchell, William O., 3,979,876.
- **Oxley, Vincent C.,** to GTE Laboratories Incorporated. Printed circuit connector. 3,980,377, Cl. 339-75.0MP.
- **Oy Lilija Pile AB:** *See—*
  - Fagerstedt, Per-Erik; and Solin, Pekka, 3,979,926.
- **Oy Tampella AB:** *See—*
  - Salmi, Pekka; and Strom, Rolf, 3,979,944.
- **Oyama, Atsushi:** *See—*
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- **Ozaki, Masaaki:** *See—*
  - Nomura, Toshio; Ozaki, Masaaki; Ishii, Makoto; and Iiyama, Masahiko, 3,980,065.
- **Ozol, Yan-Voldemar Yanovich:** *See—*
  - Vanags, Gustav Yanovich, deceased; Ozol, Yan-Voldemar Yanovich; Aren, Avgust Karlovich; German, Skaidrite Karlovna; Ozol, Yan-Voldemar Yanovich, administrator; Aren, Avgust Karlovich, administrator; German, Skaidrite Karlovna, administrator; Vanags, Gunar Gustavovich, administrator; and Vanga, Elga Vilgelmovna, administratrix, 3,980,707.
- **Ozol, Yan-Voldemar Yanovich, administrator:** *See—*
  - Vanags, Gustav Yanovich, deceased; Ozol, Yan-Voldemar Yanovich; Aren, Avgust Karlovich; German, Skaidrite Karlovna; Ozol, Yan-Voldemar Yanovich, administrator; Aren, Avgust Karlovich, administrator; German, Skaidrite Karlovna, administrator; Vanags, Gunar Gustavovich, administrator; and Vanga, Elga Vilgelmovna, administratrix, 3,980,707.
- **Ozols, Vitaly Ivanovich:** *See—*
  - Kutsevalov, Vitaly Mikhailovich; Kanter, Valery Konstantinovich; Kornilov, Georgy Sazonovich; Ozols, Vitaly Ivanovich; Frolov, Vladimir Ivanovich; Glushkov, Alexandr Timofeevich; Leontiev, Igor Vitalievich; Elizarov, Vladislav Alexandrovich; Bobylev, Jury Petrovich; Mednitsky, Viktor Georgievich; and Bushuev, Viktor Vasilievich, 3,980,950.
- **P. X. Industries, Inc.:** *See—*
  - MacDonald, Francis X.; and MacDonald, Paul M., 3,980,365.
  - MacDonald, Paul M., 3,979,796.
- **Pacific Electricord:** *See—*
  - Kahn, Bernard I.; Dodge, Donald; and Dietz, Ernest W., 3,980,371.
- **Packard, Norman M.; and Gaines, John W.,** to International Harvester Company. Ring manufacture, productive of face contact seal. 3,980,310, Cl. 277-173.000.
- **Palecek, Vincent J.:** *See—*
  - Cieniawa, Edward A.; and Palecek, Vincent J., 3,980,380.
- **Pall Corporation:** *See—*
  - Adiletta, Joseph G., 3,980,238.
- **Palmer, Evan.** Collapsible easel module. 3,980,267, Cl. 248-463.000.
- **Panek, George J.,** to International Telephone and Telegraph Corporation. Submersible pump interconnection assembly. 3,980,369, Cl. 339-28.000.
- **Panza, Michael J.,** to Lord Corporation. Silencer for a fan-cooled electric motor. 3,980,912, Cl. 310-51.000.
- **Papantoniou, Christos:** *See—*
  - Jacquet, Bernard; Papantoniou, Christos; Dufaure, Pierre; and Mahieux, Claude, 3,980,617.
- **Paragamian, Vasken; and Taylor, Russell J., Jr.,** to McNeil Laboratories, Incorporated. Inhibition of gastric acid secretion with phenyl-substituted perimidines. 3,980,782, Cl. 424-251.000.
- **Parish, Stuart C.:** *See—*
  - Lloyd, Mark C.; and Parish, Stuart C., 3,980,539.
- **Parker-Hannifin Corporation:** *See—*
  - Paul, John C., 3,979,907.
  - Simmons, Harold C.; Conrad, Robert R.; and Orav, Mihkel, 3,980,233.
  - Stedman, Hubert Q., Jr.; Steele, Gerald G.; and Smith, Robert P., 3,980,229.
- **Parkinson, Richard.** Method of determining relative moisture content of earthy material. 3,979,947, Cl. 73-73.000.
- **Parrish, Walter A., Jr.,** to Allis-Chalmers Corporation. Differential valve in fuel injection nozzle. 3,980,237, Cl. 239-533.000.
- **Partyka, Richard Anthony; Holava, Henry Michael; and Jelenevsky, Alex Michael,** to Bristol-Myers Company. Anti-arrhythmic 5-endo-substituted oxy-N-(aminoloweralkyl)bicycle [2.2.2.]octane-2,3-di-endo-carboxylic acid imides. 3,980,667, Cl. 260-326.00C.
- **Pascale, John V.:** *See—*
  - Pittet, Alan O.; Pascale, John V.; and Hruza, Denis E., 3,980,089.
- **Pasek, Robert J.:** *See—*
  - Black, Ronald F.; Kurtz, Clarence P.; and Pasek, Robert J., 3,980,755.
- **Patco Inc.:** *See—*
  - Sacks, Bernard, 3,980,127.
- **Patel, Purshottam S.:** *See—*
  - McDowell, Donald J.; and Patel, Purshottam S., 3,980,627.
- **Paterson, Patrick James.** Paving slab handling device. 3,980,190, Cl. 214-383.000.
- **Paton, Boris Evgenievich; Lakomsky, Victor Iosifovich; Melnik, Gary Alexandrovich; Chvertko, Anatoli Ivanovich; and Bukalo, Alfred Iosifovich.** Method of arc control in plasma arc furnace torches. 3,980,802, Cl. 13-18.000.
- **Patsaros, Constantine A.,** to Schoeneweis, Bruce R.; and Schoeneweis, Robert H., part interest to each. Container lid mounting device. 3,979,883, Cl. 53-306.000.
- **Patton, Orvil D.** Pneumatic fruit harvester. 3,979,891, Cl. 56-328.00R.
- **Pattyn, Herman Alberik:** *See—*
  - Ghys, Theofiel Hubert; Vanassche, Willy Joseph; and Pattyn, Herman Alberik, 3,980,481.
- **Paul, John C.,** to Parker-Hannifin Corporation. Priority control valve. 3,979,907, Cl. 60-422.000.
- **Paulyson, John T.; and Travis, John P.,** to United States Lines, Inc. Lining of containers for bulk cargo. 3,980,196, Cl. 220-1.500.
- **Pazderka, Cyril,** to G. Schwartz & Co. Apparatus for the mounting and removal of the rollers of a roll stand. 3,979,939, Cl. 72-239.000.
- **Peabody, Ralph C.; and Hennessey, Robert D.,** to Tennant Company. Dust control for power floor treating apparatus. 3,979,789, Cl. 15-349.000.
- **Pearce, Richard J.:** *See—*
  - Swartz, Richard H.; Pearce, Richard J.; and Bowe, James M., 3,980,143.
- **Pearson, Ernest A.,** to Pearson, Robert J. Doorbar system. 3,980,328, Cl. 292-256.000.

- **Pearson, Robert J.:** *See—*
  - Pearson, Ernest A., 3,980,328.
- **Pearson, Tillmon H.:** *See—*
  - Nelson, Gunner E.; and Pearson, Tillmon H., 3,980,578.
- **Peddinghaus, Carl Ullrich:** *See—*
  - Overkott, Franz Josef, 3,980,506.
- **Pedersen, Pete B.:** *See—*
  - Burch, Elsward K.; and Pedersen, Pete B., 3,980,282.
- **Peer, John Charles; and Luz, David Warren,** to RCA Corporation. Power supply for a television receiver. 3,980,821, Cl. 178-7.50R.
- **Pelosi, Stanford S., Jr.,** to Morton-Norwich Products, Inc. N-(2,5-dichloro-4-thiocyanatophenyl)-β-alanine. 3,980,689, Cl. 260-454.000.
- **Penn Corporation:** *See—*
  - Isenmann, Robert L., 3,979,934.
- **Penn, Thomas Clifton,** to Texas Instruments Incorporated. Charge coupled device multiplexing system for image sensors. 3,980,817, Cl. 178-6.000.
- **Pereda, Eugene Falero.** Nonreflecting jewels for television broadcasting use. 3,979,924, Cl. 63-32.000.
- **Perkins, Everett F.** Trap for crawling insects and the like. 3,979,854, Cl. 43-121.000.
- **Perle, Abe J.; and Freedman, David,** to New Brunswick Scientific Co., Inc. Sterilizer for culture media and laboratory ware. 3,980,131, Cl. 165-61.000.
- **Perrotti, Emilio:** *See—*
  - Cipriani, Gioacchino; and Perrotti, Emilio, 3,980,690.
- **Persoons, Cornelis J.:** *See—*
  - Meijer, Geertruida M.; Ritter, Fridolin J.; Minks, Albert K.; Voerman, Simon; and Persoons, Cornelis J., 3,980,771.
- **Persson, Leif.** Device for holding tube shaped objects. 3,980,250, Cl. 242-129.500.
- **Peruzzo, Adriano.** Machine for cutting and harvesting graminaceous plants. 3,979,888, Cl. 56-13.800.
- **Petersen, Gunnar Christian; Thisgaard, Ole; and Wiig, Steen,** to Dansk Andels Aegexport. Apparatus for preparing an elongated edible product. 3,980,009, Cl. 99-353.000.
- **Peterson, Arnold Duane,** to Bendix Corporation, The. Magnetic speed sensor. 3,980,913, Cl. 310-155.000.
- **Peterson, Earl C.,** to Electrolysis Pollution Control Inc. Composition for removal of immiscible fluids from water surfaces and lake beds. 3,980,566, Cl. 252-430.000.
- **Peterson, Harold A.:** *See—*
  - Boom, Roger W.; Peterson, Harold A.; and Young, Warren C., 3,980,981.
- **Peterson, Lance George,** to Eli Lilly and Company. Control of animal parasites with benzimidazoles. 3,980,784, Cl. 424-273.000.
- **Petrenko, Anatoly Avraamovich:** *See—*
  - Kononenko, Vadim Grigorievich; Bozhko, Valery Pavlovich; Stelmakh, Viktor Alexeevich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Bukin, Jury Mikhailovich; Novikov, Anatoly Egorovich; Shaipova, Sania Fatyakhovna; Filyanov, Anatoly Nikolaevich; Shalbaian, Armais Semenovich; Grechka, Vitaly Dmitrievich; Tsyban, Nikolai Grigorievich; Gilmutdinov, Abdulla Gilmutdinovich; Regida, Fedor Ivanovich; Kazanovich, Lidia Evgenievna; Gertsuk, Nikolai Andreevich; Kolokolov, Boris Alexeevich; Morgolenko, Anatoly Sergeevich; Livanov, Vladimir Alexandrovich; Berezko, Anatoly Mikhailovich; Petrenko, Anatoly Avraamovich; Mikhin, Trofim Andrianovich; Fedotov, Mikhail Nikitich; Zakirov, Robert Sharafutdinovich, deceased; and Zakirova, Ganna Fedgrovna, administratix, 3,980,413.
- **Petro-Tex Chemical Corporation:** *See—*
  - Kerr, Ralph O.; and Barone, Bruno J., 3,980,585.
  - Lovelace, Billy J., 3,980,725.
- **Petroleo Brasileiro S.A.-Petrobras:** *See—*
  - Goncalves, Carlos Alberto de Castro; Neves, Romeu Almeida; and Drucker, Jose Bernardo, 3,980,416.
- **Petrolite Corporation:** *See—*
  - Winslow, Joseph D., Jr.; and Mayse, Weldon D., 3,980,542.
  - Zetlmeisl, Michael J.; May, Walter R.; and Annand, Robert R., 3,980,449.
- **Pettibone Corporation:** *See—*
  - Burch, Elsward K.; and Pedersen, Pete B., 3,980,282.
- **Pfirrmann, Gunther:** *See—*
  - Moorwessel, Dieter; Glaser, Rudolf; Pfirrmann, Gunther; and Konopka, Rudolf, 3,980,598.
- **Pfizer Inc.:** *See—*
  - Faubl, Hermann; and Mylari, Banavara Lakshmana, 3,980,648.
  - Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., 3,980,642.
- **Pharmacia Aktiebolag:** *See—*
  - Ingelman, Bjorn G.-A.; Lindberg, Bernt J.; Rosengren, Jan G.; and Campbell, Dag E. S., 3,980,770.
- **Phillipps, Gordon Hanley:** *See—*
  - Sykes, Peter Job; Phillipps, Gordon Hanley; Laing, Stuart Bruce; and Turnbull, John Peter, 3,980,681.
- **Phillips Petroleum Company:** *See—*
  - Campbell, Robert W.; and Hill, Harold Wayne, Jr., 3,980,621.
  - Carrow, Guy E., 3,980,746.
  - Shiblom, Clifford M., Jr.; and Guillory, Jack P., 3,980,762.
- **Phillips, Welton E.** Shell casing resizer. 3,979,995, Cl. 86-36.000.
- **Phipps, Derek John,** to Decca Limited. Phase locking of time-sequential transmission from spaced transmitters in a phase comparison navigation system. 3,981,015, Cl. 343-105.00R.
- **Piatkowski, Philip, Jr.,** to Ford Motor Company. Control circuit for variable reluctance motor. 3,980,933, Cl. 318-138.000.
- **Piche, Paul E.** Adjustable combination lock key safe. 3,979,932, Cl. 70-63.000.
- **Pietroni, Piero,** to Technofil S.p.A. Coil winding machine for the continuous winding of coils, in particular of metal wire coils. 3,980,244, Cl. 242-25.00A.
- **Pietryk, Helen C.:** *See—*
  - Hegarty, Charles Paul; and Pietryk, Helen C., 3,980,774.
- **Pindar, John Francis; Cohen, Jerome Martin; and Bryant, Charles Peterson,** to Lubrizol Corporation, The. Dispersants and process for their preparation. 3,980,569, Cl. 252-51.50R.
- **Pinettes, Jacques; and Hily, Guy,** to Carbone, Ugine; and Aciers, Ugine. Furnace hearth. 3,980,425, Cl. 432-239.000.
- **Pissiotas, Georg:** *See—*
  - Martin, Henry; Pissiotas, Georg; and Dittrich, Volker, 3,980,799.
- **Pitchford, Arthur H.; and Cianflone, Robert A.,** to Hankison Corporation. Radiation detection system. 3,980,568, Cl. 250-276.000.
- **Pitney-Bowes, Inc.:** *See—*
  - Kleid, Robert E., 3,980,295.
  - Vijayendran, Bheema Rao, 3,980,576.
- **Pittet, Alan O.; Pascale, John V.; and Hruza, Denis E.,** to International Flavors & Fragrances Inc. Novel heterocyclic flavoring compositions and processes. 3,980,089, Cl. 131-144.000.
- **Pittet, Alan Owen; and Klaiber, Erich Manfred,** to International Flavors & Fragrances Inc. Process for preparing alpha-substituted acetaldehydes. 3,980,708, Cl. 260-598.000.
- **Pizzi, Dominick,** to Lawrence Peska Associates, Inc., a part interest. Sewing machine table accessory shelf. 3,980,265, Cl. 248-240.400.
- **Platz, Rolf:** *See—*
  - Kummer, Rudolf; Platz, Rolf; and Schwirten, Kurt, 3,980,670.
- **Plempel, Manfred:** *See—*
  - Draber, Wilfried; Buchel, Karl Heinz; Regel, Erik; and Plempel, Manfred, 3,980,780.
- **Plessey Handel und Investments A.G.:** *See—*
  - Stewart, William James, 3,980,391.
- **Plows, Graham Stuart; and Toms, Pauline Margaret,** to Decca Limited. Thermoplastic recorder with a heating support. 3,981,018, Cl. 346-74.0TP.
- **Plum, William B.:** *See—*
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- **Plummer, Ray A.; and Johnson, Charles W.,** to Big Three Industries, Inc. Fracturing well formations using foam. 3,980,136, Cl. 166-280.000.
- **Podany, Vaclav O.:** *See—*
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- **Podell, Allen F.; Young, Leo; Karp, Arthur; and Chambers, Donald R.,** to Stanford Research Institute. Proximity coupler. 3,980,972, Cl. 333-10.000.
- **Podhorsky, Miroslav:** *See—*
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- **Pollack, Joel M.,** to Xerox Corporation. Variable grating mode imaging method. 3,980,403, Cl. 353-121.000.
- **Pollock, Eugene B.** Modular floor structure. 3,979,871, Cl. 52-270.000.
- **Polney, Richard J.:** *See—*
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- **Pomper, Anthony W., deceased (by Pomper, Hortense Head, executrix),** to Midland-Ross Corporation. Pressure-type liquid coating applicator. 3,980,043, Cl. 118-60.000.
- **Pomper, Hortense Head, executrix:** *See—*
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- **Porret, Daniel; and Habermeier, Jurgen,** to Ciba-Geigy Corporation. Adducts of polyglycidyl compounds and dialkoxyphosphono-methyl derivatives of cyclic ureides. 3,980,647, Cl. 260-248.0NS.
- **Portalier, Robert,** to Societe de Vente de l'Aluminium Pechiney. Apparatus for molding at low pressure. 3,980,125, Cl. 164-154.000.
- **Possanza, Genus; Freter, Kurt; and Luttke, Sven,** to Boehringer Ingelheim GmbH. (Indolyl-piperidino or -1,2,5,6-tetrahydro-pyridyl)-P-fluoro-butyrophenones and salts thereof. 3,980,658, Cl. 260-293.610.
- **Possis Corporation:** *See—*
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  - Schulman, David A., 3,979,975.
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  - Mitchell, Paul Anthony; and Bunn, William, 3,980,835.
- **Potter, Thomas R.,** to Indicator Controls Corporation. Traffic signal loop monitoring system. 3,980,867, Cl. 235-92.0TC.
- **Powers, Karen (Emenaker):** *See—*
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- **PPG Industries, Inc.:** *See—*
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- **Prab Conveyors, Inc.:** *See—*
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- **Prange, Uwe:** *See—*
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- Presto Products, Incorporated: *See—*
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- Preto, Sandra K.: *See—*
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- Price, Lynn Shapley: *See—*
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- Priga, Peter P.: *See—*
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- Prime, Harley Corey: *See—*
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- Prince, Ralph P.; Belanger, Paul E.; Giger, Walter, Jr.; and Johnson, David H., to Council of Livestock Protection, Inc. Animal hold down/neck stretcher for kosher slaughter on a double-rail animal support system. 3,979,792, Cl. 17-1.00A.
- Pringle, Orvi C.; and Beheyt, John. Sprayer-mixer. 3,980,230, Cl. 239-61.000.
- Prochazka, Zdenko; Barth, Tomislav; Cort, Joseph Henry; Jost, Karel; and Sorm, Frantisek, to Ceskoslovenska akademie ved. Novel analogs of deamino-vasopressin with a modified disulfide bridge and manufacturing process thereof. 3,980,631, Cl. 260-112.50R.
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- Proctor, Alan Robert. Support cushion for plucked string instrument. 3,979,993, Cl. 84-327.000.
- Progar, Frank J.: *See—*
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- Proner, Raymond Louis; and Bourgoin, Rene Leon Clement, to Societe Anonyme: Ciments LaFarge. Method and apparatus for homogenizing, stockpiling and sampling particulate material. 3,980,189, Cl. 214-152.000.
- Prosser, Paul E.; and Hookway, Alan F. J., to Bestobell Mobrey Limited. Magnetically operated switch unit. 3,980,979, Cl. 335-188.000.
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- Przybylek, George J., to Burroughs Corporation. Method of making a hermetic seal therein a multi-position character display panel. 3,980,366, Cl. 316-20.000.
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- Quang, Pham Kim: *See—*
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- Rapistan, Incorporated: *See—*
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- Reeder, Larry R., to Raychem Corporation. Matched impedance coaxial cable to printed circuit board terminator. 3,980,382, Cl. 339-177.00R.
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  - Rosen, Harold, 3,980,376.
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  - Danner, Bernard; and Hochreuter, Richard, 3,980,682.
  - Fabbri, Sergio; and Frauenknecht, Josef, 3,980,428.
  - Henzi, Beat, 3,980,632.
- Saniga, George T.: *See—*
  - Knell, Everett W.; Masciantonio, Philip X.; McGinness, Joseph P.; and Saniga, George T., 3,980,525.
- Sato, Hisao: *See—*
  - Okamura, Hiroshi; Sato, Hisao; and Iwasaki, Isamu, 3,980,841.
- Sato, Masaru: *See—*
  - Suzuki, Toshio; and Sato, Masaru, 3,980,822.
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  - Nakamura, Hideo; and Sato, Teruo, 3,980,832.
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  - Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., 3,980,642.
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  - Gante, Joachim; Kurmeier, Hans-Adolf; Schacht, Erich; Mehrhof, Werner; and Wild, Albrecht, 3,980,795.
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  - Bongartz, Heinz Bertram; Wolfertz, Gunter; Stanik, Reimund; and Kraft, Gottfried, 3,979,802.
- Schaffner, Donald L.: *See—*
  - Orr, Bobby J.; Schaffner, Donald L.; and Danner, Bill A., 3,980,351.
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  - Dasher, George F.; O'Cull, Kathleen A.; and Schamper, Thomas J., 3,980,091.
- Scheinpflug, Hans: *See—*
  - Kuhle, Engelbert; Klauke, Erich; Hamburger, Brigitte; and Scheinpflug, Hans, 3,980,693.
- Schekin, Valery Mikhailovich: *See—*
  - Aleshin, Vasily Alexeevich; Bazarova, Galina Petrovna; Gromova, Serafima Pavlovna; Dmitriev, Jury Iosifovich; Kuteminsky, Jury Arkadievich; Komolova, Iza Ivanovna; Leschinsky, Georgy Olegovich; Sorokin, Vsevolod Konstantinovich; Sazonova, Galina Ivanovna; Silaev, Alexandr Fedorovich; Tikhonov, Grigory Fedorovich; and Schekin, Valery Mikhailovich, 3,980,445.
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  - Koch, Leland C.; Crossley, Warren P.; and Scheller, Donald M., 3,980,257.
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- Scherberich, Paul, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the resolution of D,L-penicillamine and salts formed during said process. 3,980,666, Cl. 260-306.70C.
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  - Ludwig, Rolf; and Culjkovic, Josif, 3,980,531.
- Schering Corporation: *See—*
  - Green, Michael J., 3,980,680.
- Scheuerle, Paul H.: *See—*
  - Shannon, Richard F.; and Scheuerle, Paul H., 3,980,414.
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  - Haas, David J.; Blaustein, Aaron; Rudd, Chester D.; Lapof, Ray C.; and Schimpf, William C., 3,980,889.
- Schlagel, Carl A.: *See—*
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- Schliep, Hans-Jochen: *See—*
  - Jonas, Rochus; Muller-Calgan, Helmut; and Schliep, Hans-Jochen, 3,980,797.
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  - Garrett, Henry U., 3,980,135.
- Schmid, Hans, to Meteor AG. Solder bath apparatus. 3,980,219, Cl. 228-34.000.
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  - Shabtai, Joseph; and Schmidt, Gerhard Martin Julius, deceased, 3,980,718.
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- Schmidt, Heinz: *See—*
  - Burg, Karlheinz; Kern, Rudolf; and Schmidt, Heinz, 3,980,734.
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- Schneider, Abraham, to Sun Ventures, Inc. Dihalogenation of doubly branched alkanes. 3,980,724, Cl. 260-658.00R.
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- Schneider, William P., to Upjohn Company, The. Racemic prostaglandins of the 2-series and analogs thereof. 3,980,691, Cl. 260-468.00D.
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  - Giallorenzi, Thomas G.; and Schnur, Joel M., 3,980,395.
- Schnur, Nicholas Joseph. Method and apparatus for propelling an object by an unbalanced centrifugal force with continuous motion. 3,979,961, Cl. 74-61.000.
- Schoeneweis, Bruce R.: *See—*
  - Patsaros, Constantine A., 3,979,883.
- Schoeneweis, Robert H.: *See—*
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- Schonfeld, Steven E.; Hergenrother, William L.; and Werner, Byron H., to Firestone Tire & Rubber Company, The. Polyurethane elastomers modified with hydrocarbon rubber. 3,980,595, Cl. 260-3.000.
- Schott, Charles M., Jr., to Gloucester Engineering Co. Inc. Guide assembly for air-expanded thermoplastic tubes. 3,980,418, Cl. 425-455.00R.
- Schrader, Elliott G., to Texas Instruments Incorporated. Semiconductor magnetic modulator for use with a moving target indicator radar system. 3,980,895, Cl. 307-106.000.
- Schrepferman, John R., to Bliss & Laughlin Ind., Inc. Nail clip arrangement. 3,980,179, Cl. 206-338.000.
- Schrock, Wilfried: *See—*
  - Konig, Hans-Bodo; Schrock, Wilfried; Dieselnkotter, Hans; and Metzger, Karl Georg, 3,980,792.
- Schroder, Eckhard: *See—*
  - Esser, Gustav; and Schroder, Eckhard, 3,980,182.
- Schroder, Fritz; and Rossel, Klaus, to Hoechst Aktiengesellschaft. Quick action slide valve. 3,980,094, Cl. 137-68.00A.
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- Schrudde, Reinhold: *See—*
  - Fischer, Jochen; and Schrudde, Reinhold, 3,980,030.
- Schubert, Wolfgang: *See—*
  - Gudden, Friedrich; Schubert, Wolfgang; and Romer, Peter, 3,980,888.
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- Schulman, David A., to Possis Corporation. Flexure mount for coil winding device. 3,980,243, Cl. 242-7.05B.

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- Schultes, Hermann, to Olin Corporation. Ski stopper. 3,980,322, Cl. 280-605.000.
- Schultz, Robert L., to Modular Circuitry Inc. Electrical service center with panel-mounted circuit connectors. 3,980,932, Cl. 317-120.000.
- Schulz, Bruno: *See—*
  - Fromme, Klaus; Schulz, Bruno; and Walther, Bernd, 3,979,861.
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- Schulz, Kurt; and Summerer, Gunther, to Carl Zeiss-Stiftung. Device for the remote control of motions and operations of microsurgical equipment. 3,980,848, Cl. 200-86.500.
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  - Kopito, Louis; Schuster, Samuel R.; and Kosasky, Harold, 3,979,945.
- Schwab, Peter A.: *See—*
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- Schwarzbauer, Harvey. Tennis ball holder. 3,980,215, Cl. 224-5.00D.
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  - Trobisch, Heiner; and Schwinn, Horst, 3,980,432.
- Schwirten, Kurt: *See—*
  - Kummer, Rudolf; Platz, Rolf; and Schwirten, Kurt, 3,980,670.
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  - Greenfield, Walter; and Berg, Raymond, 3,980,436.
- Sciaky, David, to Welding Research, Inc. Control and monitor for rotating arc welder. 3,980,857, Cl. 219-100.000.
- Scientific Instruments, Inc.: *See—*
  - Johns, Douglas A.; and Halverson, Gilbert, 3,979,953.
- Scott & Fetzer Company, The: *See—*
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- Scotter, Dennis George, to General Electric Company Limited, The. Demodulators. 3,980,962, Cl. 329-117.000.
- Scotty Manufacturing Company: *See—*
  - Krupa, Calvin S., 3,980,070.
- Screenex Wire Weaving Manufacturers Limited: *See—*
  - Freissle, Manfred Franz Axel, 3,980,555.
- Sealectro Corporation: *See—*
  - Laserson, Gregory L.; and Iantorno, James, 3,980,367.
- Sears, Richard L. M.: *See—*
  - Huebner, Robert J.; Lynnes, Carman P.; Matzelle, Ralph A.; and Sears, Richard L. M., 3,980,003.
- Sebetrol Canada Inc.: *See—*
  - Taylor, Joseph, 3,980,775.
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  - Sado, Ichiro; and Seki, Mitsuaki, 3,981,000.
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- Sekiya, Setsuro: *See—*
  - Noguchi, Masaaki; Tanaka, Yukiyasu; and Sekiya, Setsuro, 3,980,059.
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- Selk, Ben F.: *See—*
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- Semenenko, Jury Lukich; and Tumanov, Nikolai Vasilievich. Paired-roll straightening machine. 3,979,937, Cl. 72-160.000.
- Semenov, Vladimir Petrovich: *See—*
  - Dronov, Alexei Efimovich; Axenov, Nikolai Nikitovich; Kozlov, Lolly Ivanovich; Semenov, Vladimir Petrovich; Sobolevsky, Viktor Stanislavovich; Yagodkin, Viktor Ivanovich; Golosman, Evgeny Zinovievich; Alexeev, Arkady Mefodievich; Chistozvonov, David Borisovich; Shumlyakovsky, Tsezar Iosifovich; and Ulyanov, Nikolai Savelievich, 3,980,584.
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- Semones, Donald E.; and Safranek, William H., to International Lead Zinc Research Organization, Inc. Chemically accelerated metal finishing process. 3,979,858, Cl. 51-316.000.
- Seng, Florin: *See—*
  - Ley, Kurt; Seng, Florin; and Metzger, Karl Georg, 3,980,779.
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  - MacTaggart, John W., 3,980,517.
- Sepmeyer, Ludwig W.; and Jarvis, John P. Diversity system for noise-masking. 3,980,827, Cl. 179-1.00P.
- Seragnoli, Enzo, to G. D. Societa per Azioni. Control for a system of machines for processing packets. 3,979,880, Cl. 53-77.000.
- Seragnoli, Enzo, to G. D. Societa per Azioni. Device for sealing cigarette packets. 3,979,881, Cl. 53-77.000.
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- Seron Manufacturing Company: *See—*
  - Seron, Suren V., 3,979,795.
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  - Greenhalgh, Richard David; Saunders, Ronald Alexander; and Seyfang, George Reginald, 3,980,259.
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  - Zioni, Dov; and Halperin, Levi, 3,980,980.
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  - Kononenko, Vadim Grigorievich; Bozhko, Valery Pavlovich; Stelmakh, Viktor Alexeevich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Bukin, Jury Mikhailovich; Novikov, Anatoly Egorovich; Shaipova, Sania Fatyakhovna; Filyanov, Anatoly Nikolaevich; Shalbaian, Armais Semenovich; Grechka, Vitaly Dmitrievich; Tsyban, Nikolai Grigorievich; Gilmutdinov, Abdulla Gilmutdinovich; Regida, Fedor Ivanovich; Kazanovich, Lidia Evgenievna; Gertsuk, Nikolai Andreevich; Kolokolov, Boris Alexeevich; Morgolenko, Anatoly Sergeevich; Livanov, Vladimir Alexandrovich; Berezko, Anatoly Mikhailovich; Petrenko, Anatoly Avraamovich; Mikhin, Trofim Andrianovich; Fedotov, Mikhail Nikitich; Zakirov, Robert Sharafutdinovich, deceased; and Zakirova, Ganna Fedgrovna, administratix, 3,980,413.
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  - Henning, Andrew R., 3,980,039.
- Shalbaian, Armais Semenovich: *See—*
  - Kononenko, Vadim Grigorievich; Bozhko, Valery Pavlovich; Stelmakh, Viktor Alexeevich; Komnatny, Igor Pavlovich; Yatsenko, Sergei Vasilievich; Bukin, Jury Mikhailovich; Novikov, Anatoly Egorovich; Shaipova, Sania Fatyakhovna; Filyanov, Anatoly Nikolaevich; Shalbaian, Armais Semenovich; Grechka, Vitaly Dmitrievich; Tsyban, Nikolai Grigorievich; Gilmutdinov, Abdulla Gilmutdinovich; Regida, Fedor Ivanovich; Kazanovich, Lidia Evgenievna; Gertsuk, Nikolai Andreevich; Kolokolov, Boris Alexeevich; Morgolenko, Anatoly Sergeevich; Livanov, Vladimir Alexandrovich; Berezko, Anatoly Mikhailovich; Petrenko, Anatoly Avraamovich; Mikhin, Trofim Andrianovich; Fedotov, Mikhail Nikitich; Zakirov, Robert Sharafutdinovich, deceased; and Zakirova, Ganna Fedgrovna, administratix, 3,980,413.
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  - Fujimoto, Isao; Kasubuchi, Takeshi; and Aiba, Masahiko, 3,981,019.
  - Schaefer, Louis F.; Rice, Philip J.; and Frohbach, Hugh F., 3,980,811.
  - Takano, Rikuo; Sumitomo, Yuji; Kobayashi, Toshio; Yamamoto, Yoichi; and Makita, Tomoo, 3,981,020.
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- Shaw, Jerry; and Solitt, Samuel G. Expandable display system. 3,980,361, Cl. 312-223.000.
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  - Groch, Steve W.; and Jarvis, Harold F., 3,979,818.
- Shaw, Terrence M., to Edward C. Levy Company. Fiber reinforced structural material and method of manufacture. 3,980,484, Cl. 106-90.000.
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  - LaMarche, Frederick W., 3,980,375.
- Shelmire, Donald W., to FMC Corporation. Sheet feeding with rear sheet separation. 3,980,293, Cl. 271-93.000.
- Sherwin-Williams Company, The: *See—*
  - Barrington, David W.; Bernstein, Irwin B.; Rees, Thomas C.; and Wagener, Anthony P., Jr., 3,980,488.

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Smith, Charles V. Obscurely latched closures for cabinets. 3,980,326, Cl. 292-86.000.
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Spadoni, Frank G., Jr., to Litton Systems, Inc. Electrical connector with molded pin protector. 3,980,386, Cl. 339-218.00M.
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Steinebronn, Kurt H.; and Fidei, Frank P., to Westinghouse Electric Corporation. Phase lead connector. 3,980,910, Cl. 310-71.000.
Steinmetz, Eberhard; and Kuhn, Jurgen, to Gesellschaft zur Forderung der Eisenhuttentechnik mbH. Apparatus for performing a continuous metallurgical refining process. 3,980,283, Cl. 266-215.000.
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Stelzer, William, to Kelsey-Hayes Company. Load responsive proportioning valve. 3,980,343, Cl. 303-6.00C.
Stember, Daniel L., to D.B. Enterprises, Inc. Safety device for ladder climbers. 3,979,797, Cl. 24-134.00R.
Stengel, Renato, to CSELT - Centro Studi e Laboratori Telecomunicazioni SpA. Phase-locking loop with variable bandwidth filter. 3,980,969, Cl. 331-17.000.
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Stewart, William James, to Plessey Handel und Investments A.G. Optical fiber transmission compensator. 3,980,391, Cl. 350-96.00C.
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Storm, William D.; and Storm, Gary D., to Storm Plastics, Inc. Fishing lure. 3,979,853, Cl. 43-42.290.
Stout, Karl J., to Raytheon Company. Gamma camera display system. 3,980,886, Cl. 250-369.000.
Straihammer, Reinhard, to Siemens Aktiengesellschaft. Foot controller switch assembly for dental appliances. 3,980,849, Cl. 200-86.500.
Strandli, Kare Roald, to A/S Raufoss Ammunisjonsfabrikker. Projectile with delayed bursting effect. 3,980,020, Cl. 102-66.000.
Strandli, Kare Roald, to A/S Raufoss Ammunisjonsfabrikker. Projectile having at least two charges. 3,980,021, Cl. 102-66.000.
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- **Stroot, Jerome H.** Shoulder prosthesis. 3,979,778, Cl. 3-1.910.
- **Stump, Ronald C.:** *See—*
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- **Sturm, Elmar:** *See—*
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- **Stut, Hans,** to Siemens Aktiengesellschaft. Vapor deposition apparatus with computer control. 3,980,042, Cl. 118-5.000.
- **Stut, Hans,** to Siemens Aktiengesellschaft. Apparatus for the control of electrical heating of a semiconductor rod. 3,980,942, Cl. 323-19.000.
- **Subluskey, Lee A.,** to Hercules Incorporated. Manufacture of para-nitro-meta-cresol from meta/para-cresol mixtures. 3,980,717, Cl. 260-622.00R.
- **Sud-Chemie AG:** *See—*
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- **Suehiro, Kenji:** *See—*
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- **Suenami, Kenichi:** *See—*
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- **Suhr, Donald C.; Domaracki, John F.; and Arnott, Robin A.,** to ITL Industries, Inc. Pavement marker with snow plow frame. 3,980,410, Cl. 404-16.000.
- **Sullivan, Terrence P.,** to G. T. Schjeldahl Company. Stripper composition. 3,980,587, Cl. 252-546.000.
- **Sulzer Brothers Limited:** *See—*
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- **Sumita, Makoto:** *See—*
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- **Sumitomo Chemical Company, Limited:** *See—*
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  - Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; Koshiba, Masao; and Yamamoto, Hisao, 3,980,645.
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  - Suzuki, Yoshio, 3,980,698.
  - Watanabe, Yoshihiro; Yamahara, Takeshi; Inokuma, Shun; and Tokumaru, Tooru, 3,980,662.
  - Yamada, Eiji; Nishikuri, Masao; Kanou, Ryuji; and Ohshima, Taizo, 3,980,678.
- **Sumitomo Electric Industries, Ltd.:** *See—*
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- **Sumitomo Rubber Industries, Ltd.:** *See—*
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- **Summerer, Gunther:** *See—*
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- **Sumption, Richard F.; and Wallace, Charles H.,** to International Telephone and Telegraph Corporation. Method and apparatus for measuring carcasses. 3,979,835, Cl. 33-169.00B.
- **Sun Ventures, Inc.:** *See—*
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- **Sundby, Bjorn; and Trowbridge, James R.,** to Colgate-Palmolive Company. Continuous process for manufacturing gamma sultones. 3,980,669, Cl. 260-327.00S.
- **Sunds Aktiebolag:** *See—*
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- **Sunworks, Inc.:** *See—*
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- **Supprian, Ulrich:** *See—*
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- **Supreme Farmstead Equipment, Inc.:** *See—*
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- **Surprenant, Ronald J.:** *See—*
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- **Susperregui Asensio, Jose Gabriel.** Introduced in systems for coupling furniture forming modules. 3,979,875, Cl. 52-753.00D.
- **Sutliff, Wayne N.; and Downen, Jim L.** Fishing tool energizer and polymer energy storage element embodied therein. 3,980,146, Cl. 175-299.000.
- **Sutton, Charles D.:** *See—*
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- **Suydam, Bergen R.:** *See—*
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- **Suzuki, Hiroshi:** *See—*
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- **Suzuki, Osamu:** *See—*
  - Sakamoto, Kuniaki; Ibaragi, Toshio; and Suzuki, Osamu, 3,980,625.
- **Suzuki, Toshio; and Sato, Masaru,** to Sony Corporation. Automatic brightness control circuit. 3,980,822, Cl. 178-7.50R.
- **Suzuki, Yoshio,** to Sumitomo Chemical Company, Limited. Resolution of amines. 3,980,698, Cl. 260-501.120.
- **Svensson, Karl-Erik Lennart:** *See—*
  - Ljung, Bernt Johan; and Svensson, Karl-Erik Lennart, 3,980,518.
- **Swanepoel, Lourens P.:** *See—*
  - Newington, Timothy J.; and Swanepoel, Lourens P., 3,980,928.
- **Swartz, Richard H.; Pearce, Richard J.; and Bowe, James M.,** to Driltech, Inc. Holding wrench for drill strings. 3,980,143, Cl. 173-100.000.
- **Sybron Corporation:** *See—*
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  - Okabayashi, Takashi; and Mikuni, Satoru, 3,980,281.
- **Sydnor-Barent, Inc.:** *See—*
  - Browning, Iben, 3,980,818.
- **Sykes, Peter Job; Phillipps, Gordon Hanley; Laing, Stuart Bruce; and Turnbull, John Peter.** Process for the preparation of 11-β-nitrooxysteroids. 3,980,681, Cl. 260-397.450.
- **Syntex Corporation:** *See—*
  - Fried, John H.; and Harrison, Ian T., 3,980,699.
- **Syrop, Allan H.; and Priga, Peter P.,** to Olin Corporation. Catalytically stable halogenated polyol composition. 3,980,579, Cl. 252-182.000.
- **Szekely, Andrew Geza,** to Union Carbide Corporation. Protection for externally heated cast iron vessel used to contain a reactive molten metal. 3,980,742, Cl. 264-30.000.
- **Szur, Alex J.,** to Diamond Shamrock Corporation. Nonionic fluorochemical surfactants. 3,980,715, Cl. 260-615.00F.
- **Tabata, Haruro:** *See—*
  - Minekawa, Saburo; Yonekawa, Sigeru; Tabata, Haruro; Ishida, Takashi; Tsuchida, Satoshi; and Yamada, Kiyoshi, 3,980,624.
- **Tabereaux, Alton Theodore, Jr.:** *See—*
  - McMinn, Curtis Jefferson; and Tabereaux, Alton Theodore, Jr., 3,980,537.
- **Tadama, Motomu; and Takahashi, Yasunori,** to Sony Corporation. Coaxial connector. 3,980,976, Cl. 333-73.00C.
- **Tae, Margus,** to John T. Hepburn Limited. Wire rope spooling mechanism. 3,980,252, Cl. 242-158.300.
- **Taft, William Elwood,** to United States of America, Energy Research and Development Administration. Damper mechanism for nuclear reactor control elements. 3,980,519, Cl. 176-36.00R.
- **Takagawa, Kiyoyuki:** *See—*
  - Awata, Yoriyoshi; and Takagawa, Kiyoyuki, 3,980,925.
- **Takahashi, Hisao:** *See—*
  - Okuyama, Hiroshi; Takahashi, Hisao; and Hasegawa, Akira, 3,980,748.
- **Takahashi, Yasunori:** *See—*
  - Tadama, Motomu; and Takahashi, Yasunori, 3,980,976.
- **Takai, Isao,** to Oda, Gosen Kogyo Kabushiki Kaisha. False-twisting apparatus for producing crimps in filament yarns. 3,979,894, Cl. 57-77.400.
- **Takamiya, Saburo; Hama, Masaharu; and Kondo, Akihiro,** to Mitsubishi Denki Kabushiki Kaisha. Process of producing semiconductor device. 3,980,508, Cl. 148-188.000.
- **Takano, Rikuo; Sumitomo, Yuji; Kobayashi, Toshio; Yamamoto, Yoichi; and Makita, Tomoo,** to Nippon Telegraph and Telephone Public Corporation; and Sharp Kabushiki Kaisha. Ink dust removal for ink jet system printer. 3,981,020, Cl. 346-75.000.
- **Takata, Michiko:** *See—*
  - Miyata, Shigeo; Takata, Michiko; and Okada, Akira, 3,980,685.
- **Takayama, Jun; and Sonoda, Takenori,** to Sony Corporation. Transmitting apparatus using A/D converter and analog signal compression and expansion. 3,981,005, Cl. 340-347.0AD.
- **Takayama, Jun; Sonoda, Takenori; and Nakamura, Shoichi,** to Sony Corporation. Signal transmitting apparatus using A/D converter and monostable control circuit. 3,981,006, Cl. 340-347.0AD.
- **Takazawa, Ietsugu.** Curtain turning device. 3,980,122, Cl. 160-85.000.
- **Takeda, Kunio:** *See—*
  - Nishida, Reijiro; Takeda, Kunio; Kaneko, Dentaro; and Uchida, Kunio, 3,980,465.
- **Takeda Riken Kogyo Kabushiki Kaisha:** *See—*
  - Hayasaka, Isao, 3,979,823.
- **Takeda, Toshio:** *See—*
  - Tomisawa, Norio; Uchiyama, Yasuji; Okumura, Takatoshi; and Takeda, Toshio, 3,979,989.
  - Tomisawa, Norio; Uchiyama, Yasuji; Okumura, Takatoshi; and Takeda, Toshio, 3,979,996.
- **Takeshige, Kosuke:** *See—*
  - Otsuki, Susumo; Arika, Junji; Kashibe, Mitsunobu; and Takeshige, Kosuke, 3,980,754.
- **Takeuchi, Tomio:** *See—*
  - Umezawa, Hamao; Takeuchi, Tomio; Iinuma, Hironobu; and Tanabe, Osamu, 3,980,522.
- **Tamura, Takanori; and Imoto, Koichi,** to Omron Tateisi Electronics Co. Entry control device. 3,980,167, Cl. 194-4.00R.
- **Tamura, Zensuke:** *See—*
  - Hishinuma, Yukio; Tamura, Zensuke; and Enomoto, Syunzi, 3,980,454.
- **Tamura, Zenzo; Tanimura, Takenori; and Kasai, Yasuhiko.** Method for determining carboxylic acid and system for carrying out the method. 3,980,433, Cl. 23-230.00M.
- **Tanabe, Osamu:** *See—*
  - Umezawa, Hamao; Takeuchi, Tomio; Iinuma, Hironobu; and Tanabe, Osamu, 3,980,522.
- **Tanaka, Akio,** to Zenith Radio Corporation. Signal seeking tuning system with illegal channel detection means. 3,980,958, Cl. 325-470.000.
- **Tanaka, Akira:** *See—*
  - Kuszyacki, Gregory G.; Wright, William S., Jr.; and Tanaka, Akira, 3,980,247.
- **Tanaka, Yukiyasu:** *See—*
  - Noguchi, Masaaki; Tanaka, Yukiyasu; and Sekiya, Setsuro, 3,980,059.

  - Noguchi, Masaaki; Tanaka, Yukiyasu; Sekiya, Setsuro; and Motosugi, Katsuhiko, 3,980,060.
- **Tanii, Takeshi:** *See—*
  - Yasufuku, Sachio; Ishioka, Yasuaki; Tanii, Takeshi; and Nakayama, Sigeo, 3,980,803.
- **Tanimura, Takenori:** *See—*
  - Tamura, Zenzo; Tanimura, Takenori; and Kasai, Yasuhiko, 3,980,433.
- **Tanner, Murray Q., III:** *See—*
  - Mitchell, Larry D.; and Tanner, Murray Q., III, 3,980,288.
- **Tareau, Georges.** Fastening device to be used for doing-up a brassiere. 3,979,801, Cl. 24-201.0BN.
- **Tashiro, Mikio:** *See—*
  - Kondo, Takamitsu; and Tashiro, Mikio, 3,980,599.
- **Tatsumi, Susumu; and Miyakawa, Seiichi,** to Ricoh Co., Ltd. Developing unit for electrophotography. 3,980,049, Cl. 118-637.000.
- **Tatsuno, Yujiro; and Ikeda, Takatoshi,** to Hitachi, Ltd. Cathode-ray tube picture projection apparatus. 3,980,405, Cl. 355-20.000.
- **Tauscher, Manfred:** *See—*
  - Brenner, Gunter; Credner, Karl; Goring, Joachim; and Tauscher, Manfred, 3,980,646.
- **Taylor, Bill E.** Dental prosthetic device and prosthetic dentistry method. 3,979,828, Cl. 32-10.00A.
- **Taylor, Joseph,** to Sebetrol Canada Inc. Compound for skin treatment. 3,980,775, Cl. 424-167.000.
- **Taylor, Paul Franklin.** Process for class III-B metals ore reduction. 3,980,471, Cl. 75-84.10R.
- **Taylor, Russell J., Jr.:** *See—*
  - Paragamian, Vasken; and Taylor, Russell J., Jr., 3,980,782.
- **Taylor, Thomas,** to Imperial Chemical Industries Limited. Pressing apparatus. 3,980,016, Cl. 100-295.000.
- **Tchon, Wallace E.,** to Honeywell Information Systems, Inc. Charge injectors for CCD registers. 3,980,902, Cl. 307-304.000.
- **Team Industries:** *See—*
  - Sjoman, Carl F.; and McClain, Edward L., 3,980,290.
- **Technicair S.A.:** *See—*
  - Berthoud, Andre, 3,980,458.
- **Technofil S.p.A.:** *See—*
  - Pietroni, Piero, 3,980,244.
- **Tecotzky, Melvin:** *See—*
  - Mattis, James J.; and Tecotzky, Melvin, 3,980,887.
- **Teijin Limited:** *See—*
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  - Omori, Akira; Okamura, Isao; Imoto, Tadasi; and Katoh, Tadayuki, 3,980,513.
- **Teldix GmbH:** *See—*
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- **Telecommunications Radioelectriques et Telephoniques T.R.T.:** *See—*
  - Guidoux, Loic Bernard Yves; and Lommer, Daniel Jose Francois, 3,980,961.
- **Telefonaktiebolaget L M Ericsson:** *See—*
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- **Tennant Company:** *See—*
  - Peabody, Ralph C.; and Hennessey, Robert D., 3,979,789.
- **Terayama, Fusaji; and Nakagawa, Seiichi,** to Morita Pump Kabushiki Kaisha. Device for preventing jutting-out of ladder of ladder truck. 3,980,156, Cl. 182-66.000.
- **Terazawa, Yasuto; and Imamaru, Fumio.** Casing seal means for a rotary piston engine. 3,980,412, Cl. 418-149.000.
- **Texaco Development Corporation:** *See—*
  - Marion, Charles P., 3,980,590.
  - Marion, Charles P., 3,980,591.
  - Marion, Charles P., 3,980,592.
- **Texas Instruments Incorporated:** *See—*
  - Chapman, Richard A.; Johnson, Milo R.; and Morris, Henry B., 3,980,915.
  - Penn, Thomas Clifton, 3,980,817.
  - Schrader, Elliott G., 3,980,895.
- **Texidor, Genaro,** to Lawrence Peska Associates, Inc., a part interest. Athletic shoe exerciser. 3,979,842, Cl. 36-115.000.
- **Textron, Inc.:** *See—*
  - Badger, Everett H., 3,980,111.
- **Thiesen, Niels Otto:** *See—*
  - Amotz, Shmuel; Nielsen, Tage Kjaer; and Thiesen, Niels Otto, 3,980,521.
- **Thisgaard, Ole:** *See—*
  - Petersen, Gunnar Christian; Thisgaard, Ole; and Wiig, Steen, 3,980,009.
- **Thomas, Morgan Carlos.** Valve for controlling the flow of gases under high pressure from storage vessels. 3,980,270, Cl. 251-30.000.
- **Thomas, Paul P.,** to Winzeler Stamping Co. Slide assembly for extendable table. 3,980,026, Cl. 108-83.000.
- **Thomason, Harry E.; and Thomason, Harry Jack Lee, Jr.** Heat, cold and dry storage. 3,980,130, Cl. 165-18.000.
- **Thomason, Harry Jack Lee, Jr.:** *See—*
  - Thomason, Harry E.; and Thomason, Harry Jack Lee, Jr., 3,980,130.
- **Thompson, Arthur H.; and Gamble, Fred R.,** to Exxon Research and Engineering Company. Production of finely divided, low defect, stoichiometric titanium disulfide. 3,980,761, Cl. 423-565.000.
- **Thompson, Clyde W.,** to Wheeler, Carolea. Apparatus for bending thin flexible strips. 3,979,938, Cl. 72-217.000.
- **Thompson, Francis T.** Digital yacht racing timing system. 3,980,868, Cl. 235-92.00T.
- **Thompson, Steve R.,** to Browning-Ferris Industries, Inc. Method of disposing sludges containing soluble toxic materials. 3,980,558, Cl. 210-59.000.
- **Thompson, Thomas D.,** to Yara Engineering Corporation. Reactive pigments and methods of producing the same. 3,980,492, Cl. 106-308.00N.
- **Thomson-CSF:** *See—*
  - Huignard, Jean Pierre; Roy, Anne-Marie; and Slezak, Christian, 3,980,389.
  - Jamee, Jean, 3,980,903.
  - Tinet, Claude, 3,980,810.
- **Three Dimensional Circuits, Inc.:** *See—*
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- **Thunus, Leopold N.:** *See—*
  - Delarge, Jacques E.; Thunus, Leopold N.; Lapiere, Charles Leon; and Georges, Andre H., 3,980,652.
- **Thyssen Niederrhein AG Hutten- und Walzwerke:** *See—*
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- **TIE/Communications, Inc.:** *See—*
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- **Tikhonov, Grigory Fedorovich:** *See—*
  - Aleshin, Vasily Alexeevich; Bazarova, Galina Petrovna; Gromova, Serafima Pavlovna; Dmitriev, Jury Iosifovich; Kuteminsky, Jury Arkadievich; Komolova, Iza Ivanovna; Leschinsky, Georgy Olegovich; Sorokin, Vsevolod Konstantinovich; Sazonova, Galina Ivanovna; Silaev, Alexandr Fedorovich; Tikhonov, Grigory Fedorovich; and Schekin, Valery Mikhailovich, 3,980,445.
- **Tikhonova, Margarita Petrovna:** *See—*
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- **Till, Henry R.:** *See—*
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- **Tillie, Etienne Lucien,** to Tramex S.A. Device for assembling and conveying prefabricated elements for walls and partitions of buildings. 3,979,864, Cl. 52-122.000.
- **Tillson, George:** *See—*
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- **Tinet, Claude,** to Thomson-CSF. Device for locally positioning a flexible rotating disc. 3,980,810, Cl. 178-6.6DD.
- **Tippy, Coy M.:** *See—*
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- **Titan Manufacturing Company Proprietary Limited, The:** *See—*
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- **Tokuda, Kazuo,** to Nippon Electric Company, Ltd. Trigger pulse generator circuit. 3,980,901, Cl. 307-300.000.
- **Tokumaru, Tooru:** *See—*
  - Watanabe, Yoshihiro; Yamahara, Takeshi; Inokuma, Shun; and Tokumaru, Tooru, 3,980,662.
- **Tokyo Shibaura Electric Co., Ltd.:** *See—*
  - Onodera, Toshihiro; and Morishita, Shigehumi, 3,980,904.
  - Yakushiji, Nobuo; and Suehiro, Kenji, 3,980,838.
  - Yamamoto, Sadamu; Kashiwagi, Michio; Nishio, Koichi; and Akada, Kunio, 3,980,974.
  - Yasufuku, Sachio; Ishioka, Yasuaki; Tanii, Takeshi; and Nakayama, Sigeo, 3,980,803.
- **Tollefson, James T.** Spinning toy. 3,980,306, Cl. 273-109.000.
- **Tomasik, Oliver R.** Paint can and accessory holder. 3,980,264, Cl. 248-210.000.
- **Tominaga, Hiroshi,** to Fuji Photo Optical Co., Ltd. Endoscope with cleaning device. 3,980,078, Cl. 128-4.000.
- **Tomisawa, Norio; Uchiyama, Yasuji; Okumura, Takatoshi; and Takeda, Toshio,** to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument. 3,979,989, Cl. 84-1.010.
- **Tomisawa, Norio; Uchiyama, Yasuji; Okumura, Takatoshi; and Takeda, Toshio,** to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument. 3,979,996, Cl. 84-1.250.
- **Tomomatsu, Hideo,** to Quaker Oats Company, The. Method of manufacturing fungible polytetramethylene ether glycol. 3,980,672, Cl. 260-346.10R.
- **Toms, Pauline Margaret:** *See—*
  - Plows, Graham Stuart; and Toms, Pauline Margaret, 3,981,018.
- **Tonn, Martin H.** Fan motor safety feature for grain drying system. 3,979,838, Cl. 34-93.000.
- **Touborg, Jorn,** to F. L. Smidth & Co. Calcination of pulverous material. 3,980,486, Cl. 106-100.000.
- **Toulouze, Andre:** *See—*
  - Bardin, Robert; and Toulouze, Andre, 3,980,564.
- **Townsend, Robert H.,** to Xerox Corporation. Xerographic apparatus having improved fluid dispensing member. 3,980,404, Cl. 355-10.000.
- **Toyo Soda Manufacturing Co., Ltd.:** *See—*
  - Kosaka, Yujiro; Emura, Noriaki; and Watanabe, Syuzo, 3,980,735
  - Mabuchi, Shunsuke; Tsuzuki, Kenji; Matsunaga, Hideaki; Shimizu Sadami; and Sumita, Makoto, 3,980,720.
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- **Toyoda Koki Kabushiki Kaisha:** *See—*
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  - Sakai, Toshimitsu; and Miyao, Takayuki, 3,979,972.
  - Sanda, Shougo; and Nakamura, Norihiko, 3,980,057.
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- Trobisch, Heiner; and Schwinn, Horst, to Behringwerke Aktiengesellschaft. Partial thromboplastin, its use as diagnostic agent and process for preparing it. 3,980,432, Cl. 23-230.00B.
- Trombley, Bertrand N. Container for a disposable jar. 3,980,117, Cl. 150-52.00R.
- Trondsen, John M., to Eastside Spraying Service Inc. Proportioning sprayer device. 3,980,231, Cl. 239-61.000.
- Troope, Walter S.: *See—*
  - Lawrence, Jackson; and Troope, Walter S., 3,980,429.
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  - Sundby, Bjorn; and Trowbridge, James R., 3,980,669.
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- TRW Inc.: *See—*
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- Tsipkin, Alexandr Moiseevich: *See—*
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- Turner, Warren E.; Homeyer, Arthur C.; and Dreibelbis, Richard C., to Emerson Electric Co. Cartridge type control valve with plastic elements. 3,980,273, Cl. 251-366.000.
- Turner, William F., to Square D Company. Extensible tool for handling energized electric equipment. 3,980,409, Cl. 403-108.000.
- Tuson, Samuel, to Entreprise d'Equipements Mecaniques Hydrauliques E.M.H. Apparatus for mooring ships. 3,980,037, Cl. 114-230.000.
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Moulimex, Societe Anonyme: *See*—
Mantelet, Jean. 241,404.

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Perl, Ludovic, A. Szabo, and S. Cohen. Table top. 241,395, 9–14–76, Cl. D6—192.

Perl, Ludovic, and A. Szabo. Garment hanger. 241,397, 9–14–76, Cl. D6—247.

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St. Regis, Val. Auxiliary music holder for attachment to a piano or similar article. 241,393, 9–14–76, Cl. D6—184.

Schenk, Richard. Ball point pen. 241,434, 9–14–76, Cl. D19—49.

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Schuler, Michael: *See*—
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Perl, Ludovic, Szabo, and Cohen. 241,395.
Perl, Ludovic, and Szabo. 241,397.

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Nagelkerke, Petrus J. J. 241,467.
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Voumard, Francois, to Seitz S.A. Spring shock for absorbing devices in watches and other precision instruments. 241,420, 9–14–76, Cl. D10—128.

Ware, Lyle A., and L. L. Lanerd, to Graco Inc. Portable spray unit. 241,439, 9–14–76, Cl. D23—18.

Wareham, Richard R., to Polaroid Corp. Camera carrying case or similar article. 241,481, 9–14–76, Cl. D87—5.

Wassenaar, Jan, to U.S. Philips Corp. Dry shaver or similar article. 241,482, 9–14–76, Cl. D95—3.

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Wells, Thomas R., to Bell & Howell Co. Film cartridge. 241,471, 9–14–76, Cl. D26—14.

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Widdowson, Melba C. Design for a card stand. 241,394, 9–14–76, Cl. D6—188.

Williams, William O., Jr. Twin spinner blades. 241,436, 9–14–76, Cl. D22—29.

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Yuen, Kerry. Combination fishing rod and reel. 241,435, 9–14–76, Cl. D22—26.

Zegel, Snyder M. Die. 241,452, 9–14–76, Cl. D34—5.
Zegel, Snyder M. Die. 241,455, 9–14–76, Cl. D34—5.

CLASSIFICATION OF PATENTS

ISSUED SEPTEMBER 14, 1976

Note.—First number, class; second number, subclass; third number, patent number

CLASS 2	
49R	3,979,776
68	3,979,777
CLASS 3	
1.91	3,979,778
	3,979,779
13	3,979,780
CLASS 4	
1	3,979,781
172.14	3,979,782
CLASS 5	
100	3,979,783
343	3,979,784
CLASS 8	
21C	3,980,426
41R	3,980,427
92	3,980,428
125	3,980,429
168R	3,980,430
CLASS 9	
8P	3,979,785
CLASS 12	
128B	3,979,786
CLASS 13	
10	3,980,801
18	3,980,802
CLASS 14	
75	3,979,787
CLASS 15	
1.7	3,979,788
349	3,979,789
CLASS 16	
84	3,979,790
135	3,979,791
CLASS 17	
1A	3,979,792
11	3,979,793
CLASS 21	
91	3,980,431
CLASS 23	
230B	3,980,432
	3,980,434
230M	3,980,433
230R	3,980,435
253TP	3,980,437
253R	3,980,436
273SP	3,980,438
284	3,980,439
288E	3,980,441
288M	3,980,440
CLASS 24	
3C	3,979,795
73PF	3,979,796
134R	3,979,797
141	3,979,798
159FP	3,979,799
191	3,979,800
201BN	3,979,801
213R	3,979,802
248D	3,979,803
256	3,979,804
CLASS 28	
1.4	3,979,805
CLASS 29	
25.19	3,979,806
90R	3,980,442
91.4	3,979,807
96	3,980,443
155R	3,979,808
157A	3,979,809
157.4	3,979,810
182	3,980,444
	3,980,445
191.4	3,980,446
215	3,979,811
260	3,979,812
270	3,979,813
272	3,979,814
423	3,979,815
427	3,979,816
434	3,979,817
450	Re.28,959
455R	3,979,818
568	3,979,819
577	3,979,820
596	Re.28,960
	3,979,822
598	3,979,821
610R	3,979,823
624	Re.28,961
CLASS 30	
21.5	3,979,824
133	3,979,825
341	3,979,826
379	3,979,827
CLASS 32	
10A	3,979,828
14A	Re.28,962
49	3,979,829
60	3,979,830
CLASS 33	
17R	3,979,831
76R	3,979,832
138	3,979,833
147M	3,979,834
169B	3,979,835
CLASS 34	
1	3,979,836
9	3,979,837
93	3,979,838
CLASS 35	
17	3,979,839
22R	3,979,840
CLASS 36	
11.5	3,979,841
115	3,979,842
CLASS 37	
12	3,979,794
86	3,979,843
CLASS 38	
102.91	3,979,844
CLASS 40	
64R	3,979,845
125G	3,979,846
301	3,979,847
CLASS 42	
1S	3,979,848
16	3,979,849
71P	3,979,850
77	3,979,851
CLASS 43	
16	3,979,852
42.29	3,979,853
121	3,979,854
CLASS 44	
10D	3,980,447
63	3,980,448
68	3,980,449
72	3,980,450
CLASS 46	
29	3,979,855
CLASS 47	
37	3,979,856
CLASS 48	
197R	3,980,451
215	3,980,452
CLASS 51	
109BS	3,979,857
297	3,980,453
316	3,979,858
325	3,979,859
CLASS 52	
81	3,979,860
71	3,979,861
90	3,979,862
92	3,979,863
122	3,979,864
236	3,979,865
249	3,979,866
270	3,979,871
309	3,979,867
334	3,979,868
514	3,979,869
577	3,979,870
624	3,979,872
612	3,979,873
664	3,979,874
753D	3,979,875
CLASS 53	
24	3,979,882
38	3,979,876
51	3,979,877
61	3,979,878
67	3,979,879
77	3,979,880
	3,979,881
306	3,979,883
381R	3,979,884
	3,979,885
CLASS 54	
79	3,979,886
CLASS 55	
73	3,980,454
105	3,980,455
158	3,980,456
219	3,980,457
248	3,980,458
CLASS 56	
13.5	3,979,887
13.8	3,979,888
53	3,979,889
328R	3,979,890
	3,979,891
341	3,979,892
CLASS 57	
50	3,979,893
77.4	3,979,894
106	3,979,895
149	3,979,896
156	3,979,897
CLASS 58	
2	3,979,898
4A	3,979,899
52R	3,979,900
59	3,979,901
91	3,979,902
CLASS 60	
39.09P	3,979,903
39.14	3,979,904
289	3,979,905
310	3,979,906
422	3,979,907
	3,979,908
458	3,979,909
476	3,979,910
509	3,979,911
547	3,979,912
618	3,979,913
644	3,979,914
718	3,979,915
CLASS 61	
1R	3,979,916
42	3,979,917
45B	3,979,918
45C	3,979,919
84	3,979,920
85	3,979,921
CLASS 62	
97	3,979,922
184	3,979,923
CLASS 63	
32	3,979,924
CLASS 64	
29	3,979,925
CLASS 65	
18	3,980,459
29	3,980,460
36	3,980,461
CLASS 66	
9B	3,979,926
9R	3,979,927
107	3,979,928
170	3,979,929
CLASS 68	
5E	3,979,930
CLASS 70	
38A	3,979,931
63	3,979,932
164	3,979,933
459	3,979,934
CLASS 71	
1	3,980,462
86	3,980,463
90	3,980,464
CLASS 72	
16	3,979,935
56	3,979,936
160	3,979,937
217	3,979,938
239	3,979,939
279	3,979,940
466	3,979,941
CLASS 73	
1B	3,979,943
1C	3,979,942
60	3,979,945
71.5US	3,979,946
73	3,979,947
78	3,979,948
88R	3,979,949
126	3,979,950
159	3,979,951
193R	3,979,952
194VS	3,979,954
194M	3,979,953
228	3,979,955
	3,979,956
231R	3,979,957
290R	3,979,958
419	3,979,959
	3,979,960
CLASS 74	
61	3,979,961
217B	3,979,962
230.3	3,979,963
242.8	3,979,964
410	3,979,965
436	3,979,966
475	3,979,967
493	3,979,968
505	3,979,969
525	3,979,970
526	3,979,971
687	3,979,972
740	3,979,973
759	3,979,974
812	3,979,975
CLASS 75	
3	3,980,465
5	3,980,466
10R	3,980,467
	3,980,468
49	3,980,469
74	3,980,470
84.1R	3,980,471
169	3,980,472
171	3,980,473
CLASS 81	
3R	3,979,976
57.13	3,979,977
120	3,979,978
121R	3,979,979
CLASS 83	
13	3,979,980
15	3,979,981
150	3,979,982
277	3,979,983
410	3,979,984
	3,979,985
420	3,979,986
745	3,979,987
820	3,979,988
CLASS 84	
1.01	3,979,989
1.24	3,979,990
1.25	3,979,991
	3,979,996
282	3,979,992
327	3,979,993
CLASS 85	
5N	3,979,994
CLASS 86	
36	3,979,995
CLASS 89	
198	3,979,997
CLASS 91	
26	3,979,998
44	3,979,999
411R	3,980,000
420	3,980,001
461	3,980,002
487	3,980,003
CLASS 92	
182	3,980,004
CLASS 93	
36.01	3,980,005
61R	3,980,006
CLASS 96	
1TE	3,980,475
1R	3,980,474
1.1	3,980,476
1.2	3,980,477
27R	3,980,478
29D	3,980,479
48R	3,980,480
101	3,980,481
114.1	3,980,482
115R	3,980,483
CLASS 98	
40D	3,980,007
115VM	3,980,008
CLASS 99	
353	3,980,009
421H	3,980,010
453	3,980,011
CLASS 100	
115	3,980,012
117	3,980,013
127	3,980,014
233	3,980,015
295	3,980,016
CLASS 101	
129	3,980,017
170	3,980,018
CLASS 102	
7.2	3,980,019
66	3,980,020
	3,980,021
70.2R	3,980,022
92.6	3,980,023
CLASS 104	
155	3,980,024
CLASS 105	
215C	3,980,025
CLASS 106	
90	3,980,484
93	3,980,485
100	3,980,486
111	3,980,487
262	3,980,488
287SS	3,980,490
287	3,980,489
291	3,980,491
308N	3,980,492
CLASS 108	
83	3,980,026
103	3,980,027
CLASS 110	
173R	3,980,028
CLASS 111	
1	3,980,029
CLASS 112	
121.15	3,980,030
122	3,980,031
209	3,980,032
264	3,980,033
CLASS 113	
121C	3,980,034
CLASS 114	
66.5H	3,980,035
106	3,980,036
230	3,980,037
	3,980,038
CLASS 115	
41R	3,980,039
CLASS 116	
114PV	3,980,040
116	3,980,041
CLASS 118	
5	3,980,042
49.1	3,980,044
50	3,980,045
60	3,980,043
405	3,980,046
608	3,980,047
637	3,980,048
	3,980,049
CLASS 119	
1	3,980,050
29	3,980,051
CLASS 123	
3	3,980,052
	3,980,053
8.13	3,980,054
15B	3,980,055
27A	3,980,056
32AE	3,980,061
32EA	3,980,062
32F	3,980,058
32ST	3,980,059
	3,980,060
32K	3,980,057
119A	3,980,063
	3,980,064
119F	3,980,065
148R	3,980,066
187.5R	3,980,067
190DC	3,980,068
CLASS 126	
91A	3,980,069
263	3,980,070
271	3,980,071
299B	3,980,072
CLASS 127	
24	3,980,493
CLASS 128	
2A	3,980,074
2H	3,980,073
2.05F	3,980,076
2.05R	3,980,075
2.1Z	3,980,077
4	3,980,078
57	3,980,079
146.6	3,980,080
147	3,980,081
214R	3,980,082
220	3,980,083
283	3,980,084
303.17	3,980,085
318	3,980,086
CLASS 131	
84B	3,980,088
84R	3,980,087
144	3,980,089
CLASS 132	
5	3,980,090
7	3,980,091
53	3,980,092
CLASS 134	
6	3,980,494
CLASS 136	
202	3,980,502
	3,980,503
228	3,980,504
CLASS 137	
1	3,980,093
68A	3,980,094
117	3,980,095
283	3,980,096
	3,980,097
344	3,980,098
382	3,980,099
487.5	3,980,100
616.5	3,980,101
625.48	3,980,102
828	3,980,103
CLASS 138	
103	3,980,104
140	3,980,105
	3,980,106
143	3,980,107
CLASS 140	
92.8	3,980,108
CLASS 141	
71	3,980,109
351	3,980,110
367	3,980,111

391	3,980,112
CLASS 144	
28.6	3,980,113
CLASS 146	
3.31	3,980,114
CLASS 148	
1.5	3,980,505
12E	Re.28,964
16.5	3,980,506
187	3,980,507
188	3,980,508
CLASS 149	
19.3	3,980,509
36	3,980,510
CLASS 150	
1.5R	3,980,115
30	3,980,116
52R	3,980,117
CLASS 152	
209R	3,980,118
354	3,980,119
CLASS 156	
62.4	3,980,511
231	3,980,512
244	3,980,513
477B	3,980,514
497	3,980,515
515	3,980,516
CLASS 157	
13	3,980,120
CLASS 160	
71	3,980,121
85	3,980,122
201	3,980,123
368G	3,980,124
CLASS 162	
49	3,980,517
302	3,980,518
CLASS 164	
154	3,980,125
271	3,980,126
CLASS 165	
8	3,980,127
8	3,980,128
17	3,980,129
18	3,980,130
61	3,980,131
76	3,980,132
105	3,980,133
CLASS 166	
133	3,980,134
224A	3,980,135
252	Re.28,963
280	3,980,136
303	3,980,137
314	3,980,138
CLASS 169	
28	3,980,139
45	3,980,140
CLASS 172	
225	3,980,141
CLASS 173	
8	3,979,944
43	3,980,142
100	3,980,143
160	3,980,144
CLASS 174	
17LF	3,980,803
73R	3,980,804
88C	3,980,805
90	3,980,806
107	3,980,807
110SR	3,980,808
CLASS 175	
65	3,980,145
299	3,980,146
CLASS 176	
36R	3,980,519
CLASS 177	
48	3,980,147
132	3,980,148
CLASS 178	
6	3,980,809
	3,980,817
6.6DD	3,980,810
6.6R	3,980,811
	3,980,818
6.8	3,980,812
7.1	3,980,813
7.2	3,980,814
7.3DC	3,980,815
7.3R	3,980,816
7.5R	3,980,819
	3,980,821
	3,980,822
30	3,980,823
67	3,980,824
	3,980,825
68	3,980,826
69.5R	3,980,820
CLASS 179	
1GA	3,980,829
1J	3,980,828
1P	3,980,827
2TV	3,980,830
2R	3,980,831
15AT	3,980,833
15BS	3,980,835
15BT	3,980,832
18DA	3,980,836
90K	3,980,837
99	3,980,834
111E	3,980,838
175.2R	3,980,839
175.3A	3,980,840
181R	3,980,841
182R	3,980,842
CLASS 180	
9.5	3,980,149
30	3,980,150
43A	3,980,151
66B	3,980,152
69.1	3,980,153
CLASS 181	
199	3,980,154
CLASS 182	
49	3,980,155
66	3,980,156
163	3,980,157
CLASS 188	
42	3,980,158
72.7	3,980,159
73.5	3,980,160
188	3,980,161
CLASS 190	
41R	3,980,162
CLASS 192	
7	3,980,163
53E	3,980,164
105CE	3,980,165
CLASS 193	
34	3,980,166
CLASS 194	
4R	3,980,167
100A	3,980,168
CLASS 195	
30	3,980,520
65	3,980,521
81	3,980,522
95	3,980,523
139	3,980,524
CLASS 197	
55	3,980,169
131	3,980,171
CLASS 198	
339	3,980,173
410	3,980,175
781	3,980,172
782	3,980,170
835	3,980,174
CLASS 200	
11EA	3,980,843
43	3,980,844
50A	3,980,845
61.39	3,980,846
84R	3,980,847
86.5	3,980,848
	3,980,849
144B	3,980,850
146R	3,980,851
153LB	3,980,852
CLASS 201	
29	3,980,525
CLASS 202	
83	3,980,526
175	3,980,527
CLASS 203	
58	3,980,528
89	3,980,529
CLASS 204	
1T	3,980,530
16	3,980,549
43R	3,980,531
44	3,980,532
	3,980,533
59F	3,980,534
59R	3,980,535
70	3,980,536
71	3,980,537
109	3,980,538
129.75	3,980,539
180G	3,980,540
186	3,980,541
195C	3,980,542
195S	3,980,543
281	3,980,548
286	3,980,544
	3,980,545
295	3,980,499
299R	3,980,546
301	3,980,547
CLASS 206	
63.3	3,980,177
313	3,980,178
338	3,980,179
392	3,980,176
CLASS 208	
111	3,980,550
170	3,980,551
216	3,980,552
CLASS 209	
73	3,980,553
111.6	3,980,180
	3,980,181
240	3,980,554
408	3,980,555
CLASS 210	
6	3,980,556
15	3,980,557
59	3,980,558
83	3,980,559
141	3,980,560
151	3,980,561
222	3,980,562
232	3,980,563
321R	3,980,564
489	3,980,565
CLASS 214	
1BB	3,980,182
6M	3,980,183
8.5H	3,980,184
10.5R	3,980,185
17DB	3,980,186
17D	3,980,187
152	3,980,188
	3,980,189
383	3,980,190
518	3,980,191
CLASS 215	
1C	3,980,192
205	3,980,193
223	3,980,194
256	3,980,195
CLASS 219	
10.49	3,980,854
	3,980,858
10.55A	3,980,855
10.55D	3,980,856
10.79	3,980,853
100	3,980,857
104	3,980,859
130	3,980,860
230	3,980,861
300	3,980,862
388	3,980,863
CLASS 220	
1.5	3,980,196
3.6	3,980,197
8	3,980,198
227	3,980,199
268	3,980,200
270	3,980,201
318	3,980,202
CLASS 221	
96	3,980,203
222	3,980,204
CLASS 222	
70	3,980,205
156	3,980,206
186	3,980,207
193	3,980,208
323	3,980,209
456	3,980,210
478	3,980,211
485	3,980,212
	3,980,213
541	3,980,214
CLASS 223	
88	3,980,228
CLASS 224	
5D	3,980,215
8R	3,980,216
42.04	3,980,217
CLASS 228	
20	3,980,218
34	3,980,219
180	3,980,220
CLASS 229	
14C	3,980,221
22	3,980,222
28R	3,980,223
51TS	3,980,224
57	3,980,225
62.5	3,980,226
CLASS 233	
23R	3,980,227
CLASS 235	
54F	3,980,864
61.12N	3,980,866
61.6A	3,980,865
92TC	3,980,867
92T	3,980,868
146	3,980,869
151.3	3,980,870
151.33	3,980,871
152	3,980,872
156	3,980,873
175	3,980,874
CLASS 236	
12A	3,980,229
CLASS 239	
61	3,980,230
	3,980,231
77	3,980,232
172	3,980,236
400	3,980,233
533	3,980,234
	3,980,237
590.3	3,980,238
658	3,980,239
CLASS 240	
1.3	3,980,875
	3,980,876
	3,980,877
7.1R	3,980,878
CLASS 241	
20	3,980,240
33	3,980,241
84	3,980,235
CLASS 242	
4C	3,980,242
7.05B	3,980,243
25A	3,980,244
55.2	3,980,245
56R	3,980,246
107.4B	3,980,247
118.31	3,980,249
118.7	3,980,248
129.5	3,980,250
157R	3,980,251
158.3	3,980,252
192	3,980,253
195	3,980,254
198	3,980,255
199	3,980,256
CLASS 244	
43	3,980,257
129	3,980,259
153R	3,980,260
182	3,980,258
CLASS 246	
182R	3,980,261
CLASS 248	
37.3	3,980,608
65	3,980,262
73	3,980,263
210	3,980,264
240.4	3,980,265
454	3,980,266
463	3,980,267
CLASS 249	
49	3,980,268
139	3,980,269
CLASS 250	
201	3,980,879
213VT	3,980,880
221R	3,980,567
261	3,980,881
272	3,980,882
	3,980,883
276	3,980,568
302	3,980,884
307	3,980,885
369	3,980,886
456	3,980,892
483	3,980,887
	3,980,888
492R	3,980,889
560	3,980,890
563	3,980,891
572	3,980,893
CLASS 251	
30	3,980,270
144	3,980,271
306	3,980,272
366	3,980,273
CLASS 252	
12.4	3,980,570
32.5	3,980,571
36	3,980,572
46.7	3,980,573
49.9	3,980,574
51.5R	3,980,569
62.1L	3,980,577
62.1P	3,980,575
	3,980,576
180	3,980,578
182	3,980,579
186	3,980,580
373	3,980,590
	3,980,591
	3,980,592
383	3,980,593
408	3,980,581
428	3,980,582
430	3,980,566
	3,980,583
432	3,980,584
437	3,980,585
455R	3,980,586
466PT	3,980,589
546	3,980,587
548	3,980,588
CLASS 254	
57	3,980,274
67	3,980,275
139.1	3,980,276
CLASS 256	
10	3,980,277
13.1	3,980,279
59	3,980,278
CLASS 259	
2	3,980,280
107	3,980,281
168	3,980,282
CLASS 260	
2.5AC	3,980,594
3	3,980,595
23XA	3,980,596
28R	3,980,597
28.5AS	3,980,598
29.2M	3,980,599
29.6AN	3,980,600
29.6NR	3,980,601
29.6TA	3,980,602
	3,980,663
29.6R	3,980,603
30.4EP	3,980,604
30.8DS	3,980,605
31.8R	3,980,606
37EP	3,980,607
40P	3,980,609
40R	3,980,610
	3,980,611
42.22	3,980,612
45.75R	3,980,615
45.8NT	3,980,616
45.9NC	3,980,614
47UA	3,980,617
75H	3,980,619
75N	3,980,620
78R	3,980,621
79.3M	3,980,622
106	3,980,630
112.5R	3,980,631
146D	3,980,632
152	3,980,634
161	3,980,635
207.1	3,980,636
239.1	3,980,637
	3,980,639
239.55R	3,980,638
240F	3,980,641
240G	3,980,640
240J	3,980,643
240R	3,980,642
243C	3,980,644
244R	3,980,645
247.2A	3,980,646
248NS	3,980,647
250A	3,980,633
250Q	3,980,648
256.4C	3,980,651
256.4N	3,980,649
256.4Q	3,980,650
268DK	3,980,653
268H	3,980,652
270PY	3,980,654
288A	3,980,655
293.54	3,980,656
293.61	3,980,658
294.8G	3,980,659
295PA	3,980,660
295.5A	3,980,661
	3,980,662
297R	3,980,657
297Z	3,980,664
306.7C	3,980,665
	3,980,666
326C	3,980,667
	3,980,668
327S	3,980,669
343.6	3,980,670
	3,980,671
346.1R	3,980,672
346.2R	3,980,673
347.3	3,980,674
347.8	3,980,675
348.5V	3,980,676
348.6	3,980,679
373	3,980,677
380	3,980,678
397.45	3,980,680
	3,980,681
404.5	3,980,682
410.9R	3,980,683
429CY	3,980,684
429L	3,980,730
448R	3,980,685
448.2P	3,980,686
448.8R	3,980,688
454	3,980,689
463	3,980,690
468D	3,980,691
	3,980,692
470	3,980,693
473A	3,980,694
481R	3,980,695
484R	3,980,697
488B	3,980,687
501.12	3,980,698
515R	3,980,699
520B	3,980,700
527R	3,980,701
	3,980,702
	3,980,703
	3,980,704
551P	3,980,618
564F	3,980,705
576	3,980,706
577	3,980,707
598	3,980,708
604R	3,980,709
606.5B	3,980,710
606.5P	3,980,711
610R	3,980,712
612R	3,980,713
614F	3,980,714
615F	3,980,715
620	3,980,716
622R	3,980,717
631.5	3,980,718
635C	3,980,719
635R	3,980,720
650R	3,980,722
654A	3,980,723
658R	3,980,724
	3,980,725
668D	3,980,721
	3,980,726
672T	3,980,727
680R	3,980,728
826	3,980,729
837R	3,980,731
850	3,980,732
	3,980,733
860	3,980,734
873	3,980,735
876B	3,980,736
952	3,980,737
971	3,980,738
989	3,980,739
CLASS 261	
91	3,980,740
CLASS 264	
3C	3,980,741
30	3,980,742
40.2	3,980,743
45.3	3,980,613
96	3,980,744
109	3,980,745
209	3,980,746
221	3,980,747
289	3,980,748
331	3,980,749
CLASS 266	
215	3,980,283
237	3,980,284
246	3,980,285
270	3,980,286
CLASS 269	
87.3	3,980,287
325	3,980,288
CLASS 270	
40	3,980,289
66	3,980,290
73	3,980,291
CLASS 271	
11	3,980,292
93	3,980,293
197	3,980,294
242	3,980,295
251	3,980,296
269	3,980,297
CLASS 273	
1R	3,980,298
26R	3,980,304
29R	3,980,299
58B	3,980,300
80.2	3,980,301
87.2	3,980,302
95R	3,980,303
102AP	3,980,305
109	3,980,306
135C	3,980,307
CLASS 274	
9R	3,980,308
CLASS 277	
24	3,980,309
173	3,980,310
226	3,980,311

CLASS 280	
81R	3,980,313
87C	3,980,314
94	3,980,315
112A	3,980,316
	3,980,317
166	3,980,319
293	3,980,320
515	3,980,321
605	3,980,322
610	3,980,312
735	3,980,318
CLASS 283	
57	3,980,323
CLASS 285	
179	3,980,324
249	3,980,325
CLASS 290	
54	3,980,894
CLASS 292	
86	3,980,326
252	3,980,327
256	3,980,328
258	3,980,329
262	3,980,330
268	3,980,331
319	3,980,337
320	3,980,332
CLASS 295	
11	3,980,333
CLASS 296	
20	3,980,334
CLASS 297	
90	3,980,335
CLASS 298	
23M	3,980,336
CLASS 299	
1	3,980,338
2	3,980,339
11	3,980,340
36	3,980,341
56	3,980,342
CLASS 303	
6C	3,980,343
	3,980,344
	3,980,345
6R	3,980,346
	3,980,347
21BE	3,980,349
21A	3,980,350
21F	3,980,348
CLASS 305	
10	3,980,351
CLASS 307	
106	3,980,895
205	3,980,896
	3,980,897
209	3,980,898
238	3,980,899
243	3,980,900
300	3,980,901
304	3,980,902
311	3,980,903
CLASS 308	
3.8	3,980,356
73	3,980,352
78	3,980,357
92	3,980,353
173	3,980,358
174	3,980,354
181	3,980,355
187	3,980,359
CLASS 310	
8.1	3,980,904
	3,980,905
	3,980,906
9.4	3,980,911
11	3,980,907
14	3,980,908
50	3,980,909
51	3,980,912
71	3,980,910
155	3,980,913
251	3,980,914
CLASS 312	
184	3,980,360
223	3,980,361
231	3,980,362
294	3,980,363
341R	3,980,364
345	3,980,365
CLASS 313	
101	3,980,915
231.3	3,980,916
383	3,980,917
417	3,980,918
453	3,980,919
CLASS 315	
39.3	3,980,920
206	3,980,921
209CD	3,980,922
241P	3,980,923
	3,980,924
370	3,980,925
378	3,980,926
399	3,980,927
CLASS 316	
20	3,980,366
CLASS 317	
10	3,980,928
16	3,980,929
	3,980,930
31	3,980,931
120	3,980,932
CLASS 318	
138	3,980,933
139	3,980,934
246	3,980,936
466	3,980,937
578	3,980,938
599	3,980,939
CLASS 320	
2	3,980,940
CLASS 321	
45R	3,980,941
CLASS 323	
19	3,980,942
22SC	3,980,943
CLASS 324	
30A	3,980,946
30R	3,980,944
34ST	3,980,947
83D	3,980,948
98	3,980,949
158MG	3,980,950
CLASS 325	
16	3,980,952
30	3,980,945
38B	3,980,953
48	3,980,954
390	3,980,955
391	3,980,956
459	3,980,957
464	3,980,951
470	3,980,958
	3,980,959
CLASS 328	
112	3,980,960
CLASS 329	
104	3,980,961
117	3,980,962
CLASS 330	
23	3,980,963
29	3,980,964
31	3,980,965
69	3,980,966
149	3,980,967
CLASS 331	
17	3,980,968
	3,980,969
108D	3,980,970
CLASS 332	
10	3,980,971
CLASS 333	
	3,980,972
28R	3,980,973
33	3,980,974
70S	3,980,975
73C	3,980,976
CLASS 335	
76	3,980,977
132	3,980,978
188	3,980,979
205	3,980,980
216	3,980,981
CLASS 336	
92	3,980,982
CLASS 339	
17R	3,980,367
21R	3,980,368
28	3,980,369
40	3,980,370
	3,980,371
41	3,980,372
45M	3,980,373
60C	3,980,374
61M	3,980,375
75MP	3,980,376
	3,980,377
95R	3,980,378
98	3,980,379
99R	3,980,380
100	3,980,381
177R	3,980,382
198GA	3,980,384
198R	3,980,383
217S	3,980,385
218M	3,980,386
228	3,980,387
	3,980,388
CLASS 340	
3R	3,980,983
8R	3,980,984
8S	3,980,985
18R	3,980,986
52C	3,980,987
52E	3,980,988
84	3,980,989
149R	3,980,990
172.5	3,980,991
	3,980,992
	3,980,993
	3,980,994
173R	3,980,935
213R	3,980,995
224	3,980,996
237S	3,980,997
258	3,980,998
279	3,980,999
324M	3,981,001
324R	3,981,000
334	3,981,002
336	3,981,003
	3,981,004
347AD	3,981,005
	3,981,006
384E	3,981,007
CLASS 343	
5DP	3,981,008
5VQ	3,981,009
6TV	3,981,010
6.5LC	3,981,011
17.1R	3,981,012
	3,981,013
100LE	3,981,014
105R	3,981,015
117R	3,981,016
792	3,981,017
CLASS 346	
74TP	3,981,018
75	3,981,019
	3,981,020
CLASS 350	
3.5	3,980,389
96WG	3,980,390
	3,980,392
96C	3,980,391
103	3,980,393
139	3,980,394
160LC	3,980,395
	3,980,396
162R	3,980,397
167	3,980,398
169	3,980,399
CLASS 352	
169	3,980,400
CLASS 353	
27A	3,980,401
	3,980,402
121	3,980,403
CLASS 354	
79	3,981,021
171	3,981,022
CLASS 355	
10	3,980,404
20	3,980,405
24	3,980,406
71	3,980,407
CLASS 357	
17	3,981,023
CLASS 360	
130	3,981,024
135	3,981,025
CLASS 403	
19	3,980,408
108	3,980,409
CLASS 404	
16	3,980,410
CLASS 415	
1	3,980,411
CLASS 418	
149	3,980,412
CLASS 423	
9	3,980,750
54	3,980,751
92	3,980,752
161	3,980,753
185	3,980,754
240	3,980,755
242	3,980,756
253	3,980,757
481	3,980,758
539	3,980,759
	3,980,760
565	3,980,761
579	3,980,762
	3,980,763
CLASS 424	
1	3,980,764
	3,980,765
10	3,980,766
52	3,980,767
70	3,980,768
	3,980,769
79	3,980,770
84	3,980,771
94	3,980,772
95	3,980,773
166	3,980,774
167	3,980,775
181	3,980,776
200	3,980,777
243	3,980,778
249	3,980,779
250	3,980,780
251	3,980,781
	3,980,782
263	3,980,783
266	3,980,785
267	3,980,786
	3,980,787
	3,980,788
269	3,980,789
	3,980,790
270	3,980,791
271	3,980,792
	3,980,793
273	3,980,784
	3,980,794
	3,980,795
	3,980,796
274	3,980,797
	3,980,798
278	3,980,799
CLASS 425	
1	3,980,413
85	3,980,414
455R	3,980,418
459	3,980,419
CLASS 428	
483	3,980,696
CLASS 429	
54	3,980,500
60	3,980,501
64	3,980,498
103	3,980,496
145	3,980,497
207	3,980,495
CLASS 431	
78	3,980,420
93	3,980,421
116	3,980,422
168	3,980,415
202	3,980,416
284	3,980,417
CLASS 432	
75	3,980,423
	3,980,424
239	3,980,425
CLASS 526	
20	3,980,629
23	[illegible]
54	3,980,628
67	3,980,625
154	3,980,623
173	3,980,624
297	3,980,626
328	3,980,627

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D2—	272	241,384
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The Patent and Trademark Office, Department of Commerce, intends to forward only the 50 State seals plus one departmental seal for each department listed in the publication "Seals and Other Devices in Use at the Government Printing Office" ("Seals") instead of the entire publication, as indicated on page 59366 of the Federal Register of December 23, 1975.

Since the publication had been printed in 1975, it was assumed that few deletions and additions would be necessary. However, the response to the above notice, along with some necessary deletions, resulted in a large number of seals in the publication requiring deletion. This rendered the publication unacceptable for submission to the World Intellectual Property Organization (WIPO).

Therefore, the Patent and Trademark Office now intends to forward only the 50 State seals along with the departmental seal denoted "No. 1" for each department listed in the "Seals" publication. If this is not the preferred departmental or State seal, the department or State involved is requested to notify the Patent and Trademark Office by September 21, 1976. This notification should either specify the number of the preferred seal, as it appears in the "Seals" publication, or provide a clear, black and white photograph, suitable for reproduction, of the preferred seal. The seal must be no larger than 1⅓ inches in diameter.

These seals will then be forwarded to WIPO for protection under Article *6ter* of the Paris Convention for the Protection of Industrial Property.

Address all correspondence to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Dated: August 18, 1976.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

[FR Doc.76-24724; Filed 8-23-76; 8:45 am]

Patent Suits

Notices under 35 U.S.C. 290: Patent Act of 1952

2,900,150, Hirt and Martino, EJECTION SEAT CATAPULT; **3,115,220**, G. E. Hirt, same, filed Mar. 30, 1973, United States Court of Claims (District of Columbia) Doc. 78–73, *Talley Industries, Inc.* v. *The United States*. Judgment entered for plaintiff, Nov. 20, 1975.

3,052,319, R. K. Swanson, CANTILEVER SHOPPING CART AND COUNTER ASSEMBLY; **3,517,773**, same, CHECK-OUT SYSTEM AND COUNTER FOR USE WITH CANTILEVER SHOPPING CART, filed Dec. 5, 1975, D.C., C.D. Calif. (Los Angeles) Doc. CV-75-4082-LTL, *Zephyr Systems, Inc.* v. *Roblin Industries, Inc.*

3,087,005, Sabatino and Lowe, METHOD OF MAKING STORAGE BATTERY ELEMENTS; **3,229,339**, same; **3,238,579**, same, METHOD OF MAKING BATTERY ELEMENTS; **3,242,012**, A. Sabatino, STORAGE BATTERY CONSTRUCTION; **3,303,056**, Sabatino and Orlando, BATTERY TERMINAL CONSTRUCTION, **3,313,658**, same, STORAGE BATTERY CONSTRUCTION; **3,364,076**, Buttke and Orlando, ALIGNING ARRANGEMENT FOR MULTICELL BATTERIES; **3,388,007**, R. M. Fiandt, THIN WALL POLYPROPYLENE BATTERY CASE; **3,416,969**, V. M. Halsall, BATTERY CONSTRUCTION; **3,441,448**, METHOD OF MAKING AND SEALING AN ELECTRIC STORAGE BATTERY; **3,476,611**, A. Sabatino, INTERCELL CONNECTION AND METHOD OF MAKING SAME; **3,687,734**, Orlando and Smith, STORAGE BATTERY ELECTRICAL CONNECTORS; **3,897,269**, Sabatino and Orlando, STORAGE BATTERY CONSTRUCTION AND METHOD OF MAKING SAME, filed Feb. 19, 1976, D.C. Del. (Wilmington) Doc. 76–83, *General Battery Corporation* v. *Globe-Union, Inc.*

3,112,300, Natta, Pino and Mazzanti, ISOTACTIC POLYPROPYLENE, filed June 23, 1969, D.C. Del. (Wilmington) Doc. 3738, *Montecatini Edison S.p.A.* v. *Phillips Petroleum Company*. Consent order dismissing this action, Feb. 14, 1975. **Same**, filed June 24, 1969, D.C. Del. (Wilmington) Doc. 3739, *Montecatini Edison S.p.A.* v. *Diamond Shamrock Corporation*. Consent order dismissing action without prejudice to the parties, June 17, 1974.

3,115,220. (See 2,900,150.)

3,229,339. (See 3,087,005.)

3,238,579. (See 3,087,005.)

3,242,012. (See 3,087,005.)

3,285,546, D. C. Jalbert, MULTI-CELL WING TYPE AERIAL DEVICE; **3,724,789**, S. L. Snyder, RAM AIR GLIDE PARACHUTE; **Re. 26,427**, D. C. Jalbert, MULTI-CELL WING TYPE AERIAL DEVICE, filed Feb. 19, 1976, D.C.N.J. (Camden) Doc. 76–0304, *Domina C. Jalbert* v. *Para-Flite, Incorporated et al.*

3,303,056. (See 3,087,005.)

3,313,658. (See 3,087,005.)

3,364,076. (See 3,087,005.)

3,375,549, P. Geyer, METHOD AND APPARATUS FOR REFINING AND SEPARATING PLASTIC MATERIALS, filed Mar. 29, 1974, D.C., N.D. Ill. (Chicago) Doc. 74c899, *Uniroyal Incorporated* v. *Midland Ross Corporation*. Stipulation of dismissal pursuant to F.R.C.P. 41 dismissing complaint and counterclaim without prejudice, May 15, 1975.

3,388,007. (See 3,087,005.)

3,409,579, J. Robins, FOUNDRY BINDER COMPOSITION COMPRISING BENZYLIC ETHER RESIN, POLYISOCYANATE, AND TERTIARY AMINE; **3,676,392**, same, RESIN COMPOSITIONS, filed Feb. 23, 1976, D.C., E.D. Wis. (Milwaukee) Doc. 76–131, *Ashland Chemical Company* v. *Delta Oil Products Corporation.*

3,416,969. (See 3,087,005.)

3,437,715, E. Da Fano, RESIN COMPOSITION; **3,840,618**, same, filed Apr. 15, 1976, D.C., N.D. Ohio (Cleveland) Doc. C76–384, *PPG Industries, Inc.* v. *The Standard Oil Co. and Vistron Corp.*

3,441,448. (See 3,087,005.)

3,476,611. (See 3,087,005.)

3,484,909, Sands and Broome, TUBING AND PIPING OF THERMOPLASTICS MATERIAL, filed Apr. 13, 1976, D.C. (District of Columbia) Doc. 76–0613, *Robintech, Inc.* v. *Wavin Plastics Ltd.*

3,517,773. (See 3,052,319.)

3,650,460, B. P. Lokey, PAPER BAG; **Re. 28,317**, J. J. Goodrich, GUSSETED TYPE BAGS; **Re. 28,318**, same, filed Aug. 20, 1975, D.C. Del. (Wilmington) Doc. 75–247, *St. Regis Paper Company* v. *Olinkraft, Inc.* Consent order dismissing this action, Mar. 2, 1976.

3,676,392. (See 3,409,579.)

3,687,734. (See 3,087,005.)

3,724,789. (See 3,285,546.)

3,840,618. (See 9,437,715.)

3,897,269. (See 3,087,005.)

3,927,456, R. H. Dammar, COIL WINDING MACHINE WITH IMPROVED WIRE GRIPPING AND CUTTING MEANS; **3,927,460**, same, METHOD OF WINDING ARMATURES, filed Dec. 29, 1975, D.C. Minn. (Minneapolis) Doc. 4–75–C–663, *Mechaneer, Inc.* v. *Possis Corporation*. Action dismissed, Feb. 18, 1976.

3,927,460. (See 3,927,456.)

Re. 26,427. (See 3,285,546.)

Re. 28,317. (See 3,650,460.)

Re. 28,318. (See 3,650,460.)

D. 227,722, M. A. Mendlin, COMBINED BED AND STORAGE UNIT; **D. 227,723**, same, COMBINED BUNK BED AND STORAGE UNIT; **D. 227,724**, same, COMBINED BED AND STORAGE UNIT; **D. 227,725**, same, COMBINED BUNK BED AND STORAGE UNIT; **D. 232,788**, same, COMBINED BED AND STORAGE UNIT, filed Feb. 5, 1975, D.C.N.J. (Trenton) Doc. 75–182, *Bunk Trunk Distributors* v. *Sleepworld, Inc.* Consent judgment for permanent injunction against defendants and counterclaim dismissed, Sept. 2, 1975.

D. 227,723. (See D. 227,722.)

D. 227,724. (See D. 227,722.)

D. 227,725. (See D. 227,722.)

D. 232,788. (See D. 227,722.)

D. 236,758, P. R. Sollazzi, LUGGAGE; **D. 236,759**, same, COMBINED LUGGAGE FLAP AND HANDLE, filed Dec. 5, 1975, D.C.N.J. (Newark) Doc. 75–2083, *Rapid-American Corporation* v. *M & M Luggage Co., Inc.* Consent judgment for permanent injunction, filed Apr. 13, 1976.

D. 236,759. (See D. 236,758.)

PATENT NOTICES

Certificates of Correction for the Week of Sept. 21, 1976

Re. 28,755
Re. 28,811
D. 240,270
3,557,351
[illegible]
3,565,792
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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 28, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-2-76
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-2-76
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-3-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	11-17-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-8-76
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-21-75
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	11-10-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-4-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-27-76
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-8-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	6-2-75
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-10-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-20-76
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-22-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	9-11-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	1-26-76

Expiration of patents: The patents within the range of numbers indicated below expire during September 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,901,749 to 2,907,036, inclusive
Plant Patents	Numbers 1,861 to 1,869, inclusive

REISSUES

SEPTEMBER 21, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification: matter printed in italics indicates additions made by reissue.

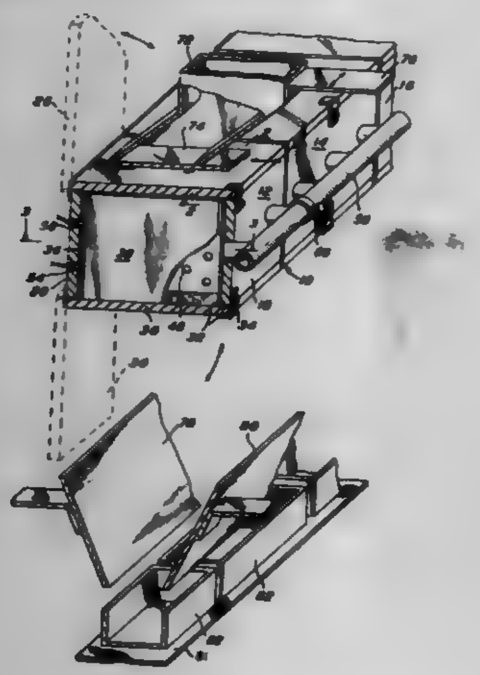
Re. 28,965
FLOW THROUGH TYPE DRYING APPARATUS

William H. Hamilton, Philadelphia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Original No. 3,238,638, dated Mar. 8, 1966, Ser. No. 178,356, Mar. 8, 1962. Application for reissue Feb. 29, 1968, Ser. No. 710,443

Int. Cl.² F26B *13/30*

U.S. Cl. 34—92 **9 Claims**



1. A product flow through drying apparatus comprising a regular parallelepiped housing, upper and lower ends of said housing having selectively movable portions so that products to be dried may be inserted into the housing from an upper end and removed from a lower end, an open ended container within said housing and supported thereby, said container being adapted to receive a product at its upper end and permit discharge of the product through its lower end, opposite sides of said container having apertures providing open communication between the interior of said container and the interior of said housing, heating panels juxtaposed to the apertured sides of said container for radiantly heating product within said container, said heating panels being disposed in spaced apart relation between the apertured opposite sides and the adjacent side walls of the housing, and means coupled to said housing for reducing the pressure within said housing and said container, said last-mentioned means including conduit means communicating with the interior of said housing through a wall perpendicular to the said adjacent walls, said conduit means being positioned on said perpendicular wall so as to be aligned in communication with the open space between said heater panels and said apertured sides of said container.

Re. 28,966
SYSTEM AND BARRIER FOR CONTAINING AN OIL SPILL

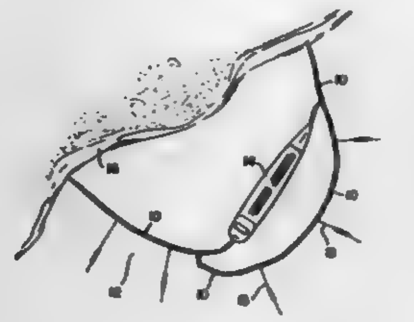
Thomas Nicholas Blockwick, McLean, Va., assignor to Ocean Systems, Inc., Reston, Va.

Original No. 3,708,982, dated Jan. 9, 1973, Ser. No. 79,997, Oct. 21, 1970. Application for reissue Jan. 24, 1974, Ser. No. 436,146

Int. Cl. E02b *15/04*

U.S. Cl. 61—1 F **19 Claims**

9. An oil containment barrier module [as defined in claim 7] *comprising a composite structure having a buoyant, substantially water impervious, upper section and a water absorbent lower section, said lower section when immersed in water representing concurrently the principal ballast for said upper section and the subsurface barrier for the module, wherein said upper and lower sections are formed from at least one material selected from the class consisting of flexible foam, porous rubber, and sponge, having low density, further comprising means for bonding said upper section to said lower section, wherein said upper section is encased within a substantially water impervious jacket*, wherein said lower section comprises two segments having adjacent surfaces, a relatively thin belt-like member located between said adjacent surfaces and means for bonding said member to said adjacent surfaces.



Re. 28,967
WORK LOCATING APPARATUS

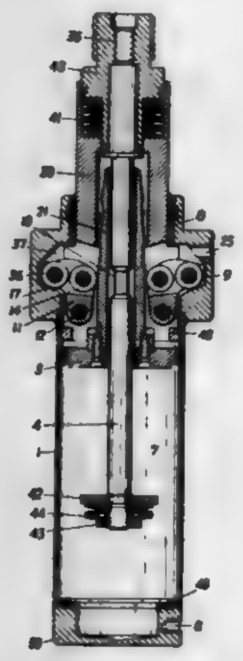
Dieter Weiss, Neckarweihingen, Germany, assignor to Weiss KG, Neckarweihingen, Germany

Original No. 3,812,766, dated May 28, 1974, Ser. No. 248,455, Apr. 28, 1972. Application for reissue Sept. 25, 1975, Ser. No. 616,844

Claims priority, application Germany, Aug. 5, 1971, 2139150

Int. Cl.² F15B *15/22*

U.S. Cl. 92—14 **22 Claims**



1. A work locating apparatus having a tension member actuated by means of a piston movable within a cylinder, particularly a pneumatic cylinder, via a starting stroke and a working stroke, in which said tension member is actuated with an amplified force by a mechanical step-up mechanism during the working stroke whereby said piston becomes releasable from said tension member and said piston actuates on the one hand, said tension member directly via said starting stroke and on the other hand, said step-up mechanism via said working stroke, the improvement comprising swinging levers hinged on said tension member, each lever being provided with an abutment portion and a guide portion, said abutment portion being guided along the cylinder wall during the starting stroke, a collet coaxial with said cylinder, said piston being connected to said collet, said collet having wedge-shaped outer surfaces which cooperate with said guide portion of said swinging levers, and said cylinder being provided with an abutment surface positioned transversely to the axis of the cylinder with said abutment portions of said swinging levers being pressed against said abutment surface during the working stroke.

Re. 28,968
STEAM SUPPLY APPARATUS

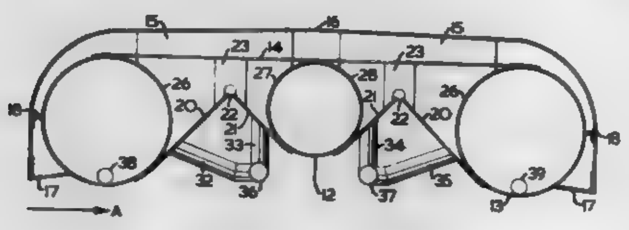
Norman F. Dove, Cranbrook, Canada, assignor to Devron Engineering Ltd., Vancouver, Canada

Original No. 3,777,781, dated Dec. 11, 1973, Ser. No. 300,490, Oct. 25, 1972. Application for reissue Dec. 5, 1974, Ser. No. 529,619

Claims priority, application Canada, Apr. 21, 1972, 140239

Int. Cl.² F26B *21/12;* **D21F** *5/18*

U.S. Cl. 137—608 **20 Claims**



1. A steam supply apparatus including at least two pipes located in spaced apart, side by side relationship, a cover member extending across the pipes and secured thereto, end members secured to the respective opposite ends of the pipes, a pair of baffles between each pair of pipes and secured thereto in a substantially V-shaped configuration with a slot between adjacent ends of the baffles, at the base of the V-shape, the base of the V-shape being directed towards the cover member, means for supplying steam to the pipes, and each pipe having a series of apertures communicating the interior of the pipe with the space between the pipes, the cover member and the baffles.

Re. 28,969
INTEGRAL RECLOSABLE BAG

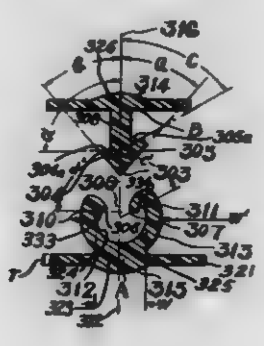
Kakuji Naito, Tokyo, Japan, assignor to Kabushiki Kaisha Seisan Nihon Sha, Ltd., Tokyo, Japan

Original No. 3,198,228, dated Aug. 3, 1965, Ser. No. 233,959, Oct. 29, 1962. Application for reissue Sept. 30, 1975, Ser. No. 618,165

Claims priority, application Japan, Nov. 27, 1961, 36-42167

Int. Cl.² B65D *33/24*

U.S. Cl. 150—3 **7 Claims**



1. A reclosable flexible container comprising,

a bag body having flexible walls formed of a plastic film having an opening therein,
releasably interlocking rib and groove elements integrally part of the walls on facing inner surfaces thereof formed of a resilient material and separable by drawing the elements apart and interlockable by pressing the elements together, external flanges on the upper exposed edges of said walls which may be gripped and drawn apart to separate said elements,
  said rib element being arrowhead shaped with the rib and groove elements having interengaging upper surfaces extending toward the outside of the bag and interengaging lower surfaces extending toward the inside of the bag with the upper engaging surface of the rib element being shorter than the lower engaging surface of the rib element so that the bag opens relatively easily from the outside and resists opening from the inside,
  said rib element surfaces being on the base of the arrowhead shaped rib element.

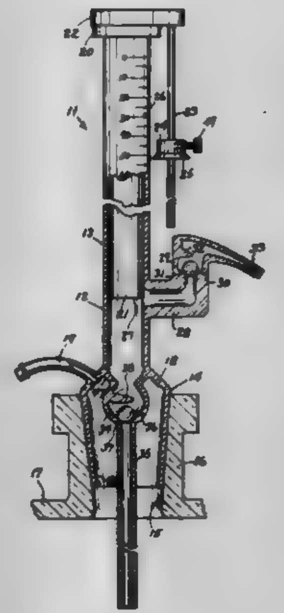
Re. 28,970
LIQUID DISPENSING DEVICE

Justin J. Shapiro, 1802 Second St., Berkeley, Calif. 94710

Original No. 3,211,335, dated Oct. 12, 1965, Ser. No. 333,068, Dec. 24, 1963. Application for reissue Feb. 25, 1975, Ser. No. 552,739

Int. Cl.² B67D *5/22*

U.S. Cl. 222—50 **2 Claims**



8. A burette device comprising a vertical cylindrical syringe chamber provided at its top end with an outwardly projecting stop flange, a vertically extending volumetric scale on said vertical syringe chamber having volume indications reading from smaller amounts to larger amounts in a downward direction, a dispensing plunger slidably and sealingly mounted in said chamber and having an enlarged horizontal top actuating portion, a depending vertical rod secured to said actuating portion and extending parallel to said chamber, a stop collar adjustably secured on said rod and being engageable with said stop flange to limit upward extension of said plunger, said stop collar serving as a mechanical stop for measuring the volume to be dispensed and, when the plunger is in its lowermost position, for accurately indicating on said scale the volume to be dispensed, a horizontal outlet conduit formed integrally with said chamber substantially at the level of the bottom of said plunger in its lowermost position, said plunger being normally in said lowermost position, a vertical upstanding check valve chamber integrally formed on the outer end of said outlet conduit and being provided with an outwardly and downwardly inclined discharge tip, said check valve chamber being provided with an upwardly facing ball valve seat, a movable valve ball on said seat, the *inner wall of the check valve chamber being integrally formed with an inwardly projecting stop lug overlying said ball and limiting upward movement thereof, means on the lower end of said syringe chamber to sealingly support the syringe chamber in the mouth of a liquid container, a check valve housing formed integrally with the lower end of said syringe chamber, a depending vertical intake tube formed integrally with and communicating with the bottom of said housing and defining a ball seat at its top end, a movable valve ball on said last-named seat, and an inwardly projecting stop lug integrally formed on the inside wall of said housing overlying said last-named valve ball and limiting upward movement thereof, wherein said sealing means comprises an outwardly projecting annular sealing rib integrally formed on the lower portion of the syringe chamber, respective annular resilient deformable sealing rings surrounding the syringe chamber above and below said rib, and an annular internally threaded cap member surrounding said sealing rings and having a top wall provided with a central aperture just large enough to pass said sealing rib.*

Re. 28,971
LIGHT MODULATOR ELEMENT

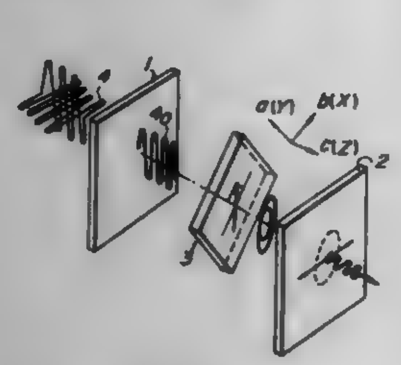
Akio Kumada; Keiichiro Aizu, and Yoshio Furuhata, all of Kodaira, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Original No. 3,586,415, dated June 22, 1971, Ser. No. 810,161, Mar. 25, 1969. Application for reissue Jan. 17, 1972, Ser. No. 218,567

Claims priority, application Japan, Mar. 30, 1968, 43-20815; Mar. 30, 1968, 43-20816

Int. Cl.² G02F *1/03*

U.S. Cl. 350—150 **12 Claims**



8. A birefringent device comprising:

a crystal element made of molybdate gadolinium oxide crystal structure given by the formula

$R_2O_3 . 3\,Mo_{1-e}W_eeO3$,

where e is a number of from 0 to 0.2, and R is an element selected from the group of Sm, Tb, Dy and Eu; and means, connected to said crystal, for placing said crystal in one of the reversibly birefringent states thereof.

Re. 28,972
5-ARYL-1H-1,5-BENZODIAZEPINE-2,4-DIONES

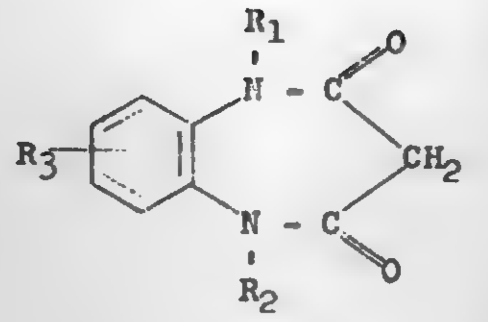
Karl-Heinz Weber, Gau-Algesheim; Herbert Merz; Karl Zeile, Ingelheim am Rhein; Rolf Giesemann, Bingen, and Peter Danneberg, Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhine, Germany

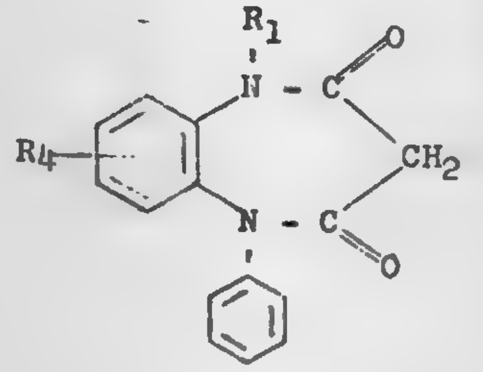
Original No. 3,660,381, dated May 2, 1972, Ser. No. 840,839, July 10, 1969. Application for reissue Dec. 4, 1975, Ser. No. 637,385

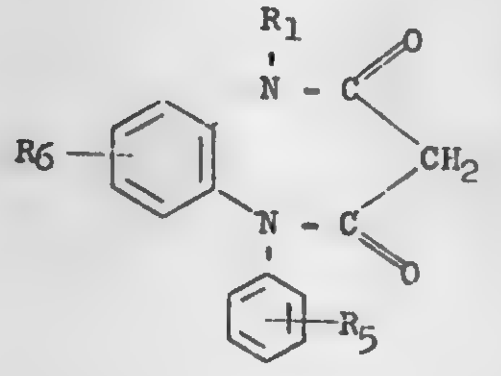
Int. Cl.² C07D *243/12*

U.S. Cl. 260—239.3 B **8 Claims**

1. A compound of a formula selected from the group consisting of







wherein

- R_1 is alkyl of 1 to 4 carbon atoms, hydroxyethyl, hydroxypropyl, acetoxyethyl, cyclohexyl, benzyl or phenyl,
- R_2 is naphthyl, pyrimidyl, thienyl, pyridyl, methyl-pyridyl or chloropyridyl,
- R_3 is chlorine, bromine, trifluoromethyl or cyano,
- R_4 is cyano , *or acetyl* or methoxycarbonyl ,
- R_5 is cyano, nitro, acetyl or methoxycarbonyl, and
- R_6 is halogen or trifluoromethyl.

Re. 28,973
3-(OMEGA-SUBSTITUTED ALKYL)-INDOLES

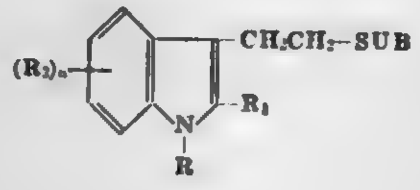
William J. Welstead, Jr., Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Original No. 3,642,803, dated Feb. 15, 1972, Ser. No. 556,879, June 13, 1966. Continuation-in-part of Ser. No. 504,087, Oct. 23, 1965. Application for reissue June 13, 1975, Ser. No. 586,699

Int. Cl.² C07D *401/06, 403/06*

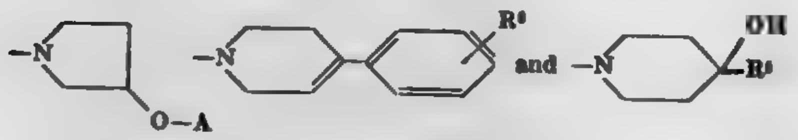
U.S. Cl. 260—293.61 **24 Claims**

2. A compound selected from the group consisting of a free base and its pharmaceutically acceptable acid addition and quaternary ammonium salts, the free base having the structural formula:



wherein:

- R is selected from the group consisting of hydrogen, lower-alkyl, lower-alkanoyl, benzoyl, benzyl, and cycloalkyl containing three to nine carbon atoms inclusive;
- R_1 is selected from the group consisting of hydrogen, lower-alkyl, and phenyl;
- R_2 is selected from the group consisting of hydrogen, halogen of atomic weight less than 80, trifluoromethyl, hydroxyl, lower-alkyl, lower-alkoxy, and benzyloxy;
- n is an integer from zero to four inclusive;
- SUB is a member selected from the group consisting of



wherein;

- A is selected from the group consisting of hydrogen, 3,4,5-trimethoxybenzoyl, 3,4,5-trimethoxyphenylcarbamoyl, p-methoxycarbamyol, and 2-methoxyphenyl;
- R^5 is a member selected from the group consisting of benzyl, phenyl and monosubstituted phenyl in which the substituent is selected from the group consisting of lower-alkyl, trifluoromethyl, and halogen of atomic weight less than 80, and
- R^6 is selected from the group consisting of trifluoromethyl and halogen of atomic weight less than 80.

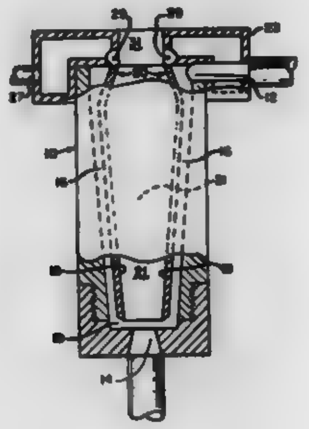
Re. 28,974
PROCESS FOR MAKING CARBON BLACK

Allan C. Morgan, Sudbury, and Merrill E. Jordan, Walpole, both of Mass., assignors to Cabot Corporation, Boston, Mass.

Original No. 3,619,140, dated Nov. 9, 1971, Ser. No. 606,665, Jan. 3, 1967. Application for reissue Nov. 2, 1973, Ser. No. 412,159

Int. Cl.² C09C *1/50*

U.S. Cl. 423—450 **7 Claims**



1. A process for making high-quality carbon black at unusually good yields and high volumetric production rates comprising

- a. burning a hydrocarbon gas in oxygen in a compact combustion zone under high-intensity conditions so as to generate a stream of combustion gases having a temperature of over 3,000° F. and moving in essentially plug flow as it leaves the downstream end of said combustion zone at an exit velocity of at least about 2,000 feet per second,
- b. injecting transversely into said exiting stream of hot combustion gases from the periphery thereof a plurality of individual *coherent* streams of hydrocarbon liquid make under sufficient pressure to cause same to enter said exiting stream at a linear velocity of more than about 100 feet per second, and
- c. quenching the resultant reaction mixture after carbon formation has occurred.

4. A process for making high-quality carbon black at unusually good yields and high volumetric production rates comprising:

- *a. establishing a turbulent, high velocity stream of combustion gases in a compact combustion zone, said stream as it exits the downstream end of said combustion zone having a temperature of over* 3,000° F. and moving in essentially plug flow at a rapid velocity capable of shearing individual streams of hydrocarbon liquid make injected thereinto as described in (b) below,
- *b. injecting transversely into said exiting stream of hot combustion gases from the periphery thereof a plurality of individual coherent streams of hydrocarbon liquid make under sufficient pressure to cause same to enter said exiting stream at a high linear velocity sufficient to assure rapid dispersal of said hydrocarbon liquid make at a position sufficiently remote from the hot walls of said injection zone to prevent smearing and coking of the injected reactant on said walls, and*
- *c. quenching the resultant reaction mixture after carbon formation has occurred.*

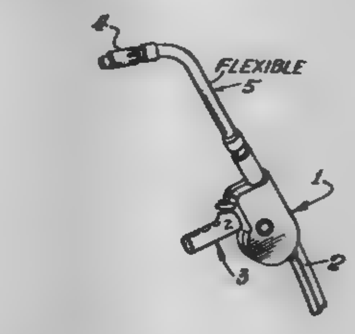
Re. 28,975
FLEXIBLE WELDING NOZZLE APPARATUS

Julius Rothman, 13702 Beach St., Cerritos, Calif. 90701; Edmond Andrew Tacconelli, 5456 Abbeyfield St., Long Beach, Calif. 90815, and Frank Vincent Buzzetta, 11399 Pinetree Lane, Stanton, Calif. 90680

Original No. 3,755,648, dated Aug. 28, 1973, Ser. No. 285,967, Sept. 5, 1972. Application for reissue Aug. 25, 1975, Ser. No. 607,712

Int. Cl.² B23K *9/00*

U.S. Cl. 219—130 **10 Claims**



1. Flexible apparatus for supplying electrical energy, welding gas and welding wire to the nozzle of a welding gun, said apparatus comprising:

- an elongate member formed of electrically-conductive wire spirally wound in a circular path to provide a tube-shaped electrode capable of being bent longitudinally and of retaining its bent position,
- a flexible support sleeve enveloping said electrode for resisting the tendency of said spiral winding to flatten during bending,
- a flexible insulating sleeve protectively surrounding said support sleeve, said sleeves being disposed in a radially-spaced disposition providing a continuous longitudinal path for said welding gas,
- welding wire guide means mounted in the bore of said tubular electrode, and
- means for operatively coupling one end of the electrode to said gun and the other to said nozzle whereby welding current is supplied to the nozzle through said electrode windings and welding wire fed to the nozzle through said electrode bore.

PATENTS

GRANTED SEPTEMBER 21, 1976

ERRATA

For CLASS	See PATENT NO.
029–182.7	3,981,062
355–003 R	3,981,085
197–063	3,981,383
235–092 FQ	3,981,440
235–150.2	3,981,442
235–156	3,981,443
264–148	3,981,484
029–025.35	3,981,687
029–156 WL	3,981,688
029–195	3,981,691
062–049	3,981,701
062–087	3,981,702
062–509	3,981,703
429–123	3,981,742
429–218	3,981,743
429–178	3,981,744
204–266	3,981,745
429–013	3,981,746
429–015	3,981,747
429–164	3,981,748
250–493	3,981,805
214–017 D	3,981,824
526–227	3,981,846
526–263	3,981,848
526–082	3,981,849
526–227	3,981,850
526–267	3,981,851
526–250	3,981,852
526–255	3,981,853
528–481	3,981,854
526–063	3,981,855
526–004	3,981,856
536–004	3,981,860
536–017	3,981,861
536–007	3,981,862
536–025	3,981,863
260–878 R	3,981,957
260–878 R	3,981,958
427–043	3,981,985
426–001	3,982,003
426–641	3,982,004
426–002	3,982,008
426–003	3,982,009
235–088 N	3,982,104
339–144 R	3,982,185

PATENTS

GRANTED SEPTEMBER 21, 1976

NOTE—A cross reference listing of applications published under the second Trial Voluntary Protest Program is located in the back of this Issue. These entries will be in numerical order by document publication number.

GENERAL AND MECHANICAL

3,981,026

WATERPROOF GARMENT OF REDUCED CUMBERSOMENESS

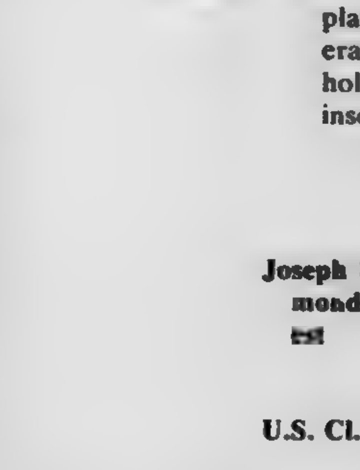
Leo Reverberi, 5, Passage de la Main d'Or, 75011 Paris, France

Filed Jan. 9, 1975, Ser. No. 539,844

Claims priority, application France, Aug. 30, 1974, 74.29601

Int. Cl.^{2} A41D *15/00*

U.S. Cl. 2—1 **5 Claims**



1. A waterproof garment for protection against rain made from thin, flexible waterproof material, having a longitudinal axis of symmetry and adapted to be folded into folds to assume the appearance of a band, wherein the folds are permanent and preformed parallel to one another, symmetrically with relation to a central fold which substantially coincides with said axis of symmetry, complementary closure means for the folded garment being located symmetrically along each of the two folds closest to the central fold, said means being spaced a distance from the central fold that is less than the spacing separating said central fold from each of the closest folds.

3,981,027

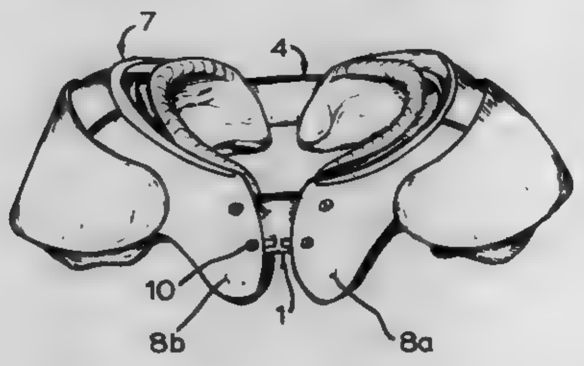
FOOTBALL SHOULDER PAD RESTRICTER

George C. Anderson, 2883 Doidge Ave., Pinole, Calif. 94564

Filed June 19, 1975, Ser. No. 588,213

Int. Cl.^{2} A41D *13/00*

U.S. Cl. 2—2 **9 Claims**



1. In football shoulder pads having epaulets, shoulder caps, body arches over each shoulder extending from front to back forming a pair of breast plates and a pair of back plates, means for hinging the various segments, body strap means for adjusting said shoulder pads, and a protective underlayer of padding,

the improvement comprising a front restricter insert positioned between said breast plates having a substantially rectangular shape, a pair of elongated horizontal slots equipositioned adjacent the lower edge of said front restricter insert, a pair of angled slots relative to said slots adjacent the lower edge each positioned adjacent the upper corners of said insert, and a

back restricter insert positioned between said back plates having a substantially rectangular shape and relatively longer than said front restricter, a pair of holes adjacent along the lower edge, a pair of angled slots each positioned adjacent the upper corner areas of said insert

each insert slidably mounted to said breast plates and back plates with mounting means, said mounting means cooperating with and communicating with said slots and said holes of said front restricter insert and said back restricter insert.

3,981,028

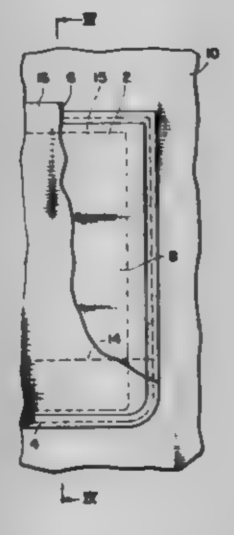
POCKET DEVICE

Joseph Siegel, Port Washington, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed June 9, 1975, Ser. No. 584,702

Int. Cl.^{2} A41D *27/20*

U.S. Cl. 2—254 **3 Claims**



1. A pocket device for an item, said pocket device comprising

an outer pocket of the item having a closed bottom and an open top;

an inner pocket affixed in the outer pocket in inverted position, said inner pocket having an open bottom spaced from and in close proximity with the bottom of the outer pocket and a closed top in the area of the top of the outer pocket whereby an article is passable alongside the inner pocket in the outer pocket and into the inner pocket via the open bottom of said inner pocket and is inaccessible to casual removal from the outer pocket.

3,981,029

DUAL LEVEL TOILET FLUSHER

Allen M. L. Johnson, Succasunna, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Sept. 24, 1975, Ser. No. 616,279

Int. Cl.^{2} E03D *1/34, 5/02;* **A61B** *19/00*

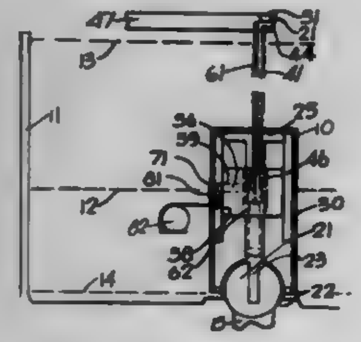
U.S. Cl. 4—67 A **2 Claims**

1. Apparatus for selectively flushing the tank of a toilet so as to cause one of two different quantities of volume of water to flush when the apparatus is operated, comprising a float which is mountable over the drain outlet of a toilet tank so as to seal the tank when the float lies against the drain opening, said float fitted at its top to a hollow sleeve, the other end of which sleeve is joined by a tension member to a first operating lever,

a ballast member formed with an axial opening of a size to freely slide over said sleeve,

said ballast member slidably mounted in a frame that may be fixed to the structure of the toilet tank,

a rod, one end of which is fixed to a knob slidably located in the interior of the sleeve, the other end of the rod being fastened by a tension member to a second operating lever,



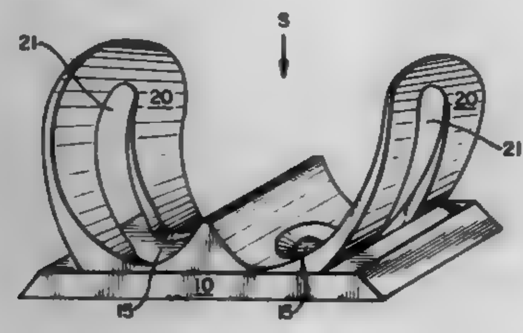
means to selectively individually rotate either one of the operating levers so as to apply tension force and lift either the hollow sleeve or the slidable knob, depending on the lever which is so rotated,

means to latch the ballast to the frame, said means linked to the motion of the said slidable knob such that the weight of the ballast is removed from the float valve when the ballast is latched to the frame causing the float to remain unseated after being lifted off the drain opening until the water level of the tank has dropped below to a first level which affords negative buoyancy to said float valve,

said ballast, when not latched to the frame serving to cause the float to seat against the drain opening when the water level of the tank reaches a second level higher than said first level.

3,981,030
SUNBATHING ACCESSORY

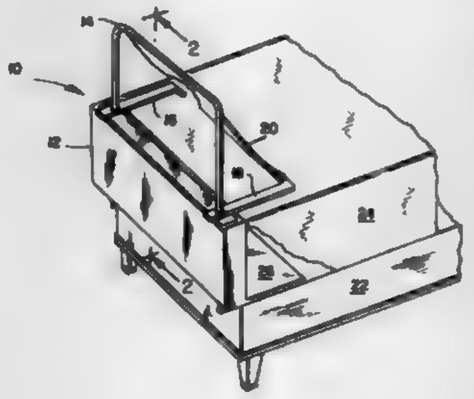
Jeanette A. Turner, P.O. Box 7204, Greensboro, N.C. 27407
Filed May 27, 1975, Ser. No. 581,108
Int. Cl.^{2} A47C *21/00*
U.S. Cl. 5—327 R **4 Claims**



1. A foot support for sunbathers comprising:
- a. a base member having an upper surface and a pair of foot retaining end walls extending upwardly from spaced points along the upper surface;
- b. said base member further including a pair of spaced depressions therein between said end walls for receiving the heels of a sunbather when in the reclined position;
- c. said end walls including a foot engaging portion adjacent the upper end and having a vertical dimension of such magnitude that, when occupied, the foot engaging portion engages only the outer edge of the sunbather's foot at a point more than half-way up from the heel toward the toes;
- d. said end walls being spaced apart a distance substantially equal to the combined width of the feet of a normally sized sunbather.

3,981,031
INCLINED BEDREST

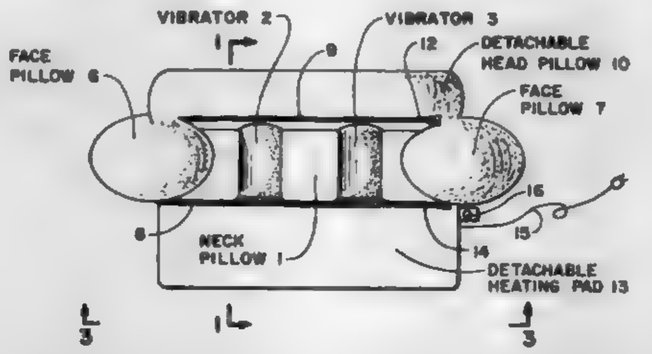
Louis L. Schacht, 278-3B Crosse Drive, Cranbury, N.J. 08512
Filed Aug. 27, 1975, Ser. No. 608,031
Int. Cl.^{2} A47C *21/00*
U.S. Cl. 5—327 B **10 Claims**



1. A portable bed attachment for providing anatomical support comprising a frame assembly, attachment means for mounting the frame assembly along a marginal edge of a bed, swing arms rotatably mounted to the frame assembly, locking means integral with the frame assembly and cooperatively interacting with the swing arms for releasably securing the frame assembly in an extended mode projecting vertically above the bed, said locking means being activated by the horizontal deployment of the swing arms, a slant sheet fastened along one edge to the frame assembly, sheet engagement means on said swing arm for grippingly receiving an opposite edge of the sheet when in said deployed position, whereby the sheet defines an inclined pillow supporting surface, said opposite edge of the sheet further being selectively releasable from engagement with the swing arms to remove the pillow support.

3,981,032
NECK PILLOW DEVICE

Susie C. Brooks, Denver, Colo., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Jan. 23, 1976, Ser. No. 651,928
Int. Cl.^{2} A61H *1/00;* A47G *9/00*
U.S. Cl. 5—338 **3 Claims**



1. A neck pillow device for supporting the neck of a reclining person, said neck pillow device comprising

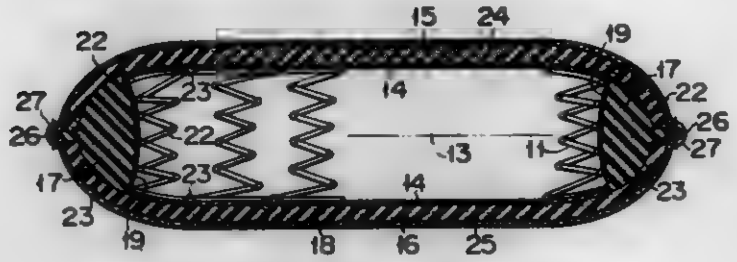
a neck pillow;

a pair of vibrators for vibrating the neck of a person resting on the neck pillow, said vibrators being mounted on the neck pillow in mutually spaced relation each on a corresponding side of the neck of the person; and

a pair of face pillows mounted on the neck pillow for supporting the face of a person lying on his side on the neck pillow, each of the face pillows being positioned alongside a corresponding one of the vibrators with said vibrators interposed between said face pillows.

3,981,033
MATTRESS

Kooichiro Toda, Hachioji, Japan, assignor to France Bed Co. Ltd., Tokyo, Japan
Filed Oct. 10, 1975, Ser. No. 621,464
Claims priority, application Japan, Oct. 12, 1974, 49-122922[U]; Oct. 12, 1974, 49-122923[U]; Apr. 25, 1975, 50-56483
Int. Cl.^{2} A47C *27/00*
U.S. Cl. 5—351 **5 Claims**

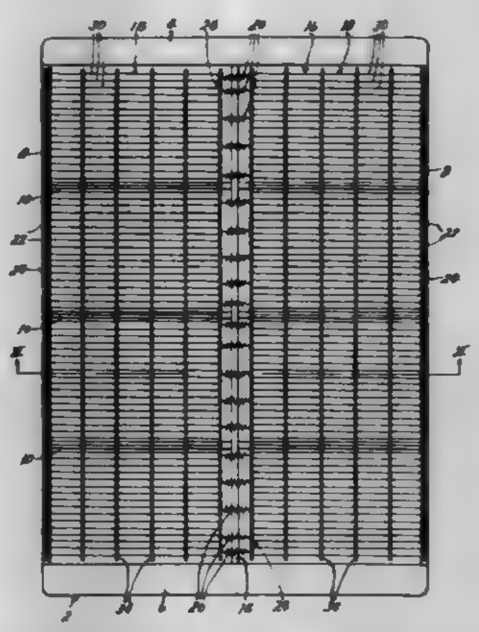


1. A mattress comprising a flat-constructed spring assembly, a pair of elastic material sheets which are attached respectively to upper and lower faces of said spring assembly and whose peripheral edge portions are so extended as to form a space at a side peripheral portion of said spring assembly and are opposed to each other at their respective tip ends, and a side-elastic material member formed, by subjecting a foamable plastic to foaming-in-place, in said space through a barrier sheet so stretched as to prevent said foamable plastic from entering said spring assembly, and a covering means for covering an elastic body consisting of said spring assembly, said elastic material sheets and said side-elastic material member, wherein the respective peripheral edge portions of said elastic material sheets are particularly longitudinally intensified by impregnating said foamable plastic into the whole portions of said respective peripheral edge portions which contact said side-elastic material member.

3,981,034
BOX SPRING ASSEMBLY

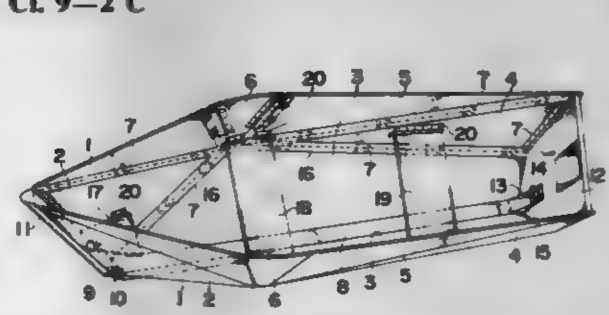
Robert D. MacMorran; Lloyd E. Tieman, and Raymond L. McQuitty, all of Carthage, Mo., assignors to Flex-O-Lators, Inc., Carthage, Mo.
Filed Mar. 24, 1975, Ser. No. 561,072
Int. Cl.^{2} A47C *27/22*
U.S. Cl. 5—354 **9 Claims**

1. A box spring assembly for a two-person bed comprising:
- a. a rigid, open, generally rectangular frame including generally parallel side rails and a rigid center rail generally parallel with and midway between said side rails,
- b. a composite sheet of flat, flexible material overlying said frame, and
- c. means securing said sheet to said side rails, said sheet being supported intermediate said side rails on said center rail, said sheet including resilient means at both sides of said center rail and operable to permit elastic extension of said sheet in its own plane in a direction transversely of said frame, whereby downward deflection of said sheet at one side of said center rail will not cause downward deflection of said sheet at the opposite side of said center rail.



3,981,035
COLLAPSIBLE HIGH SPEED BOAT

Arata Iwabuchi, Tokyo, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan
Filed May 20, 1975, Ser. No. 579,144
Claims priority, application Japan, May 21, 1974, 49-57060
Int. Cl.^{2} B63B *7/04*
U.S. Cl. 9—2 C **6 Claims**



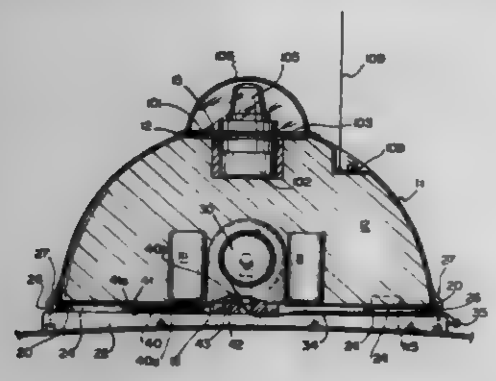
1. A collapsible high speed boat including a hull structure comprising a plurality of substantially triangular plates formed by joining in line plural inflection points on the hull, said hull structure including back and front gunwale lines and curved fan-shaped plates at gunwale portions adjacent to central portions of the hull, each of said curved fan-shaped plates joining the back and front gunwale lines in streamline relation, and a rigid keel extending from a stem portion of the hull to a stern portion of the hull in order to prevent the hull structure from being bent in the longitudinal direction thereof.

3,981,036
LIFE SAVING BUOY FOR SMALL VESSELS

William York Higgs, Gibsons, Canada, assignor to Intercontinental Marine Limited, Canada
Filed Apr. 22, 1975, Ser. No. 570,364
Claims priority, application United Kingdom, Apr. 22, 1974, 17516/74
Int. Cl.^{2} B03B *21/52*
U.S. Cl. 9—9 **14 Claims**

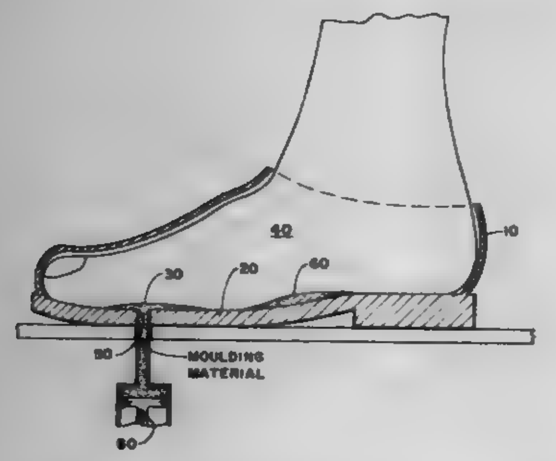
7. A life-saving buoy having a base, said buoy suitable for being carried by a vessel in a manner permitting release of the buoy should the vessel sink, and having sufficient buoyancy to cause the buoy and parts carried by the buoy to float off the vessel when the vessel sinks, and including an anchoring cable initially carried by the buoy having its free outer end attachable to the vessel and its inner end connected to the buoy, whereby upon sinking of the vessel the buoy is released from the vessel and remains on the surface of the water while the

vessel sinks with the cable being paid out from the buoy so that the cable maintains connection between the buoy and the vessel, wherein there is provided a life-boat mooring line normally totally enclosed in a space between the base of the buoy and a support therefor, the sides of said space being enclosed by a skirt extending downwardly from the sides of said buoy, said space being shallow relative to the height of the buoy and being free of any moving parts, said mooring line being of adequate strength for mooring of a boat or life-raft thereto.



3,981,037
PROCESS FOR INSTALLING AN ARCH SUPPORT IN A CONVENTIONAL SHOE

George A. McCroskey, Sr., Florence, Ala., assignor to The Raymond Lee Organization, Inc., a part interest
Filed Aug. 11, 1975, Ser. No. 603,643
Int. Cl.² A43D *00/00*; **A43B** *13/38, 13/42*
U.S. Cl. 12—146 S **2 Claims**

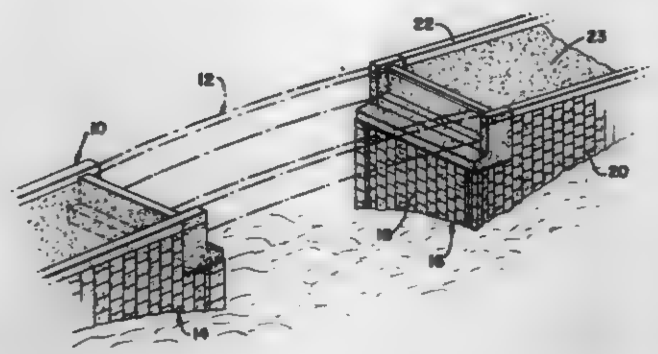


1. A process for installing arch supports in conventional shoes, comprising:
drilling a hole in the sole of the shoe at a point in the shoe which is directly beneath the metatarsal arch of the user's foot, when the foot has been placed into the shoe;
placing the user's foot into the shoe; injecting a settable and curable plastic material through the hole into the shoe directly against the user's foot to completely fill at least the area between the sole and the wser's arch to cause an arch support to be molded therebetween;
allowing said support to set; and removing the user's foot after the support has set.

3,981,038
BRIDGE AND ABUTMENT THEREFOR

Henri C. Vidal, Tour Aurore - Cedex No. 5, 92080 Paris, France
Filed June 26, 1975, Ser. No. 590,729
Int. Cl.² E02D *5/20*
U.S. Cl. 14—26 **16 Claims**

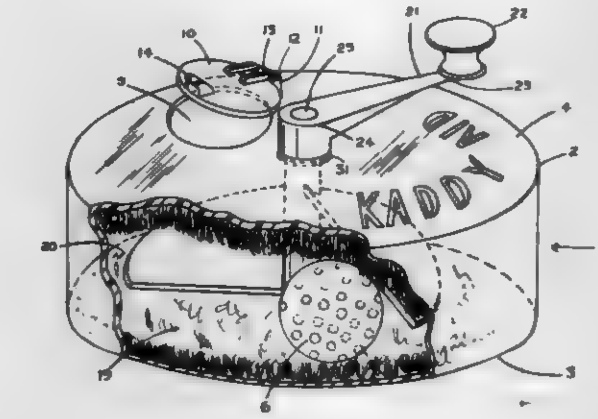
1. In a bridge having deck means spanning a distance between spaced-apart abutment means, an improved abutment means providing vertical support to an end of the deck means, comprising:
anterior wall means having an exterior surface, a top edge, generally vertical spaced-apart side edges, and being assembled from a plurality of facing elements;
a pair of side wall means, each side wall means disposed adjacent a corresponding side edge of the anterior wall means, having an exterior surface, and being assembled from a plurality of facing elements;
a plurality of elongate reinforcing members, at least one of said members being attached to each facing element, said members extending away from the exterior surface associated with the corresponding facing element, the elongate reinforcing members being arranged to define a plurality of generally horizontal layers that are spaced apart vertically from each other;



particulate material disposed between the side wall means and adjacent the anterior wall means and forming a contiguous aggregate filling the spaces between said layers and between laterally spaced members in said layers, the contiguous aggregate extending vertically above the top edge of the anterior wall means and having an upper surface; and
beam seat means for supporting an end of the deck means, said beam seat means being superimposed on the upper surface of the contiguous aggregate and spaced from said wall means,
whereby the wall means support only their own weight and the particulate material bears the weight of the end of the deck means.

3,981,039
PORTABLE GOLF BALL WASHING DEVICE

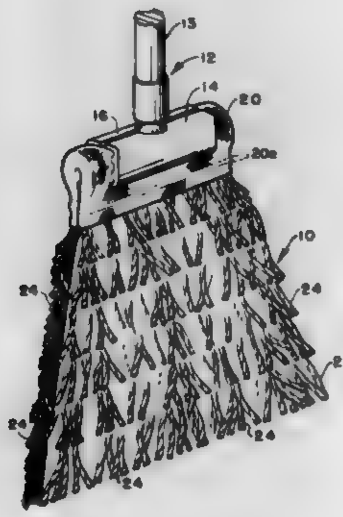
Joel D. Rumph, El Dorado Hills, Calif., assignor to D-J Enterprises, Inc., El Paso, Tex.
Filed July 18, 1975, Ser. No. 597,155
Int. Cl.² A63B *47/04*
U.S. Cl. 15—21 A **4 Claims**



1. A washing device for a small, spherical object comprising a cylindrical container having a closed top and bottom with a sealable top opening scrubbing means disposed on the interior surface of the top and bottom of the cylinder and externally rotatable means disposed within said container for moving said spherical object in a circular direction between said scrubbing means; said rotatable means comprising a spiraling inclined plane with an axis of rotation generally coincident with the perpendicular axis of the cylinder and adapted to move said spherical object between said scrubbing pads when turned in one direction and to displace said spherical object in an upward direction through said top opening when turned in the other direction.

3,981,040
WET MOP CONSTRUCTION HAVING PILE FABRIC MOPPING ELEMENT

John Walter Crofton, La Grange, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Nov. 14, 1974, Ser. No. 523,885
Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976
Int. Cl.² A47L *13/20*
U.S. Cl. 15—229 A **5 Claims**

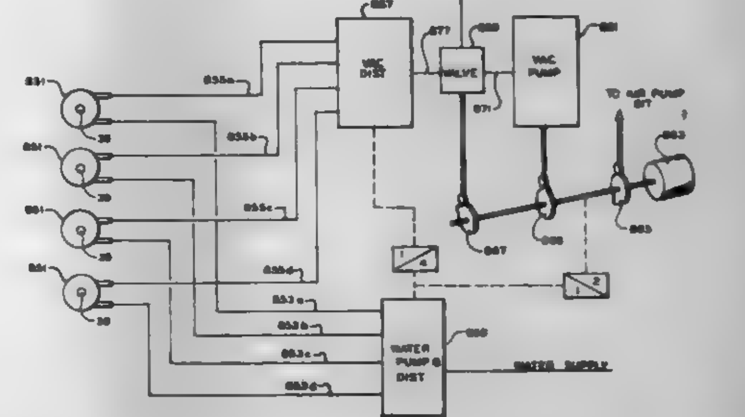


1. A wet mop construction comprising a mop head having a flexible pile fabric main body of generally trapezoidal shape with opposite parallel sides of unequal length and opposite non-parallel sides extending in flared relation therebetween, said main body pile fabric comprising a relatively dimensionally stable base sheet having water-absorbent pile yarns attached to said sheet and being disposed to extend outwardly from opposite faces of the trapezoidal shaped main body, and a headband extending along and attached to the shorter parallel side of said pile fabric main body; and support means grippingly engaging only the headband of said mop head while leaving the pile fabric main body thereof free from supporting contact by support means to thereby position said main body in flexible, free-hanging, flaring relation from said support means.

3,981,041
SPONGE IRRIGATION SYSTEM FOR AUTOMATIC ANALYSIS APPARATUS

John G. Atwood, Redding, and Lucian C. Ducret, Riverside, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Aug. 22, 1974, Ser. No. 499,856
Int. Cl.² A47L *7/00*
U.S. Cl. 15—302 **4 Claims**

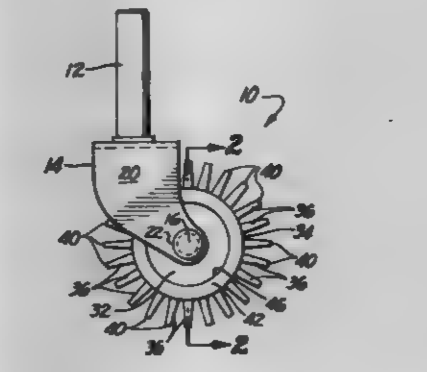
1. Sponge irrigation apparatus for irrigating a plurality of wiping sponges used in analysis apparatus comprising:
a. means at least partially enclosing each sponge to be irrigated said means having an inlet and an outlet;
b. means to sequentially supply an irrigation fluid to each of said enclosing means;



c. means to sequentially draw contaminated irrigation fluid from said enclosing means.

3,981,042
PILE CARPET CASTOR

Vernon J. Carrier, 25830 Viana St., Lomita, Calif. 90717
Filed Nov. 20, 1975, Ser. No. 633,684
Int. Cl.² B60B *33/00*
U.S. Cl. 16—47 **4 Claims**

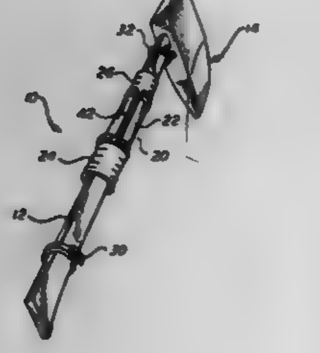


1. A castor for use with pile carpet, said castor including an elongated axle, a support means for supporting said axle, and means for contacting a carpet rotatably mounted on said axle in which the improvement comprises:
said means for contacting a carpet comprising a plurality of separate wheels, a sleeve and holding means for securing said wheels on said sleeve,
each of said wheels having parallel sides, a centrally located hole, a generally cylindrical periphery located symmetrically about said hole in each wheel, and a plurality of bosses located on its periphery so as to extend therefrom,
said bosses on each of said wheels being equally spaced from one another, being of a non-pointed configuration and being shaped so that the ends of said bosses remote from the peripheries of said wheels are smaller than the portions of the bosses at the peripheries of said wheels,
said wheels being located in side-by-side relationship to one another with said holes in alignment with one another,
said sleeve fitting around said axle so as to be rotatably mounted on said axle and fitting closely against the interior of each of said holes, said wheels fitting with respect to said sleeve so as to be capable of rotation relative to and about said sleeve,
said holding means frictionally securing said wheels with the adjacent sides of said wheels abutting against one another so that normally said wheels will rotate together as a unit and so that said wheels are capable of rotating independently of one another.

3,981,043
SLIDABLE TOOL GRIP

Christian O. Curry, 8 Block Island Drive, Sound Beach, N.Y. 11789

Filed Jan. 14, 1975, Ser. No. 541,000
Int. Cl.² B25G *1/00*
U.S. Cl. 16—110 R **9 Claims**



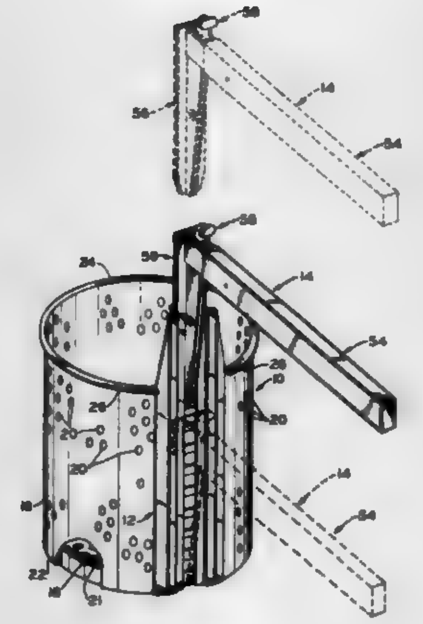
1. In combination with a tool, a gripping arrangement for use with said tool having a handle which is normally gripped by both hands of the user, said combination comprising:
- a tool;
- a handle connected to said tool;
- gripping means formed for slidable disposition on the handle of the tool and for movement therealong between positions proximate tool end of said handle and the free end of the said handle opposite the tool end thereof;
- said gripping means being of a size and configuration to accommodate one hand of the user of the tool;
- at least one stop means detachably attached near the free end of the handle at a position therein, leaving room between itself and the free end of the handle to permit grasping of the handle proximate the free end by the other hand of the user; and
- end means carried by said gripping means at the extremities thereof to protect the hand of the user from striking said stop means and the tool disposed at the tool end of the handle, said end means including means relatively incompressible in a direction perpendicular to the length of the handle but relatively compressible in a direction parallel to the length of the handle so as to absorb end shocks developed by said gripping means approaching the extremities of its travel.

3,981,044
RECEPTACLE HANDLE ASSEMBLY

Clem J. Luebke, Beloit, Wis.; Norman L. Beck, Rockton, and Lowell W. Daniels, Rockford, both of Ill., assignors to The Broaster Co., Rockton, Ill.

Filed May 27, 1975, Ser. No. 580,595
Int. Cl.² A47J *45/06*
U.S. Cl. 16—114 A **19 Claims**

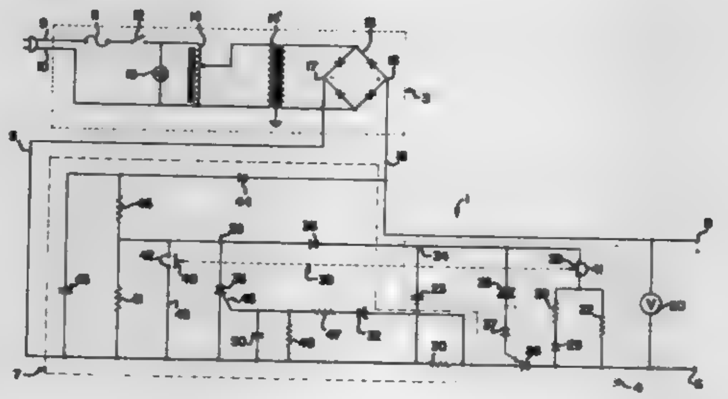
1. A handle assembly for a receptacle having a side wall comprising, a bracket mountable on said wall and having top and bottom ends with respect to said wall, a handle until selectively positionable with respect to said bracket at a plurality of locations in the direction between said top and bottom ends, said handle unit and said bracket including means cooperably interengaged to support said handle unit for sliding movement relative to said bracket in said direction, and said handle unit and said bracket further including actuable latch and keeper means releaseably interconnecting said handle unit against sliding movement when said handle unit is in each of said locations, said latch and keeper means including means interengaging to restrain actuation thereof.



3,981,045
STUNNING AND OVERLOAD CIRCUIT

John Collins, Kansas City, Mo., assignor to Jerry L. McWhirter, St. Joseph, Mo.

Filed Mar. 19, 1975, Ser. No. 559,899
Int. Cl.² A22B *3/08*
U.S. Cl. 17—1 E **15 Claims**



12. A stunning and overload protection circuit for an animal stunning apparatus having spaced first and second electrodes engageable by an animal and comprising:
- a. power supply means for providing pulsating direct current to a first and a second electrode of an animal stunning apparatus;
- b. timing circuit means electrically connected to said power supply means for activating and deactivating one electrode of an animal stunning apparatus; and
- c. circuit overload protection means electrically connected to said power supply means and to said timing circuit means whereby said one electrode is prevented from activating in the event of a circuit damaging quantity of said current being conducted through said one electrode of said stunning apparatus.

3,981,046
PROCESS FOR PRODUCTION OF SHIRRED MOISTURIZED FOOD CASINGS

Herman Chiu, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.

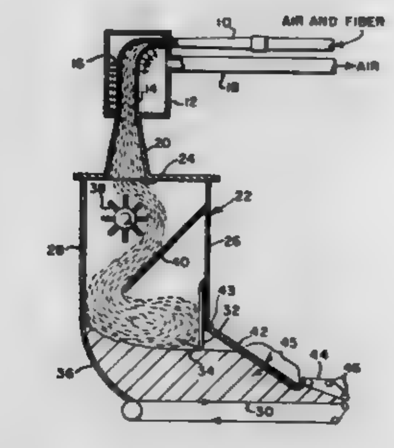
Filed May 5, 1972, Ser. No. 250,583
Int. Cl.² A22C *13/00*
U.S. Cl. 17—49 **18 Claims**

1. A process for producing shirred cellulosic casing having a predetermined uniform moisture content which comprises
- a. providing a supply of cellulosic casing stock to be moisturized;
- b. advancing said cellulosic casing about a hollow mandrel to and through a shirring apparatus;
- c. applying to the interior surface of casing stock advancing over the hollow mandrel and prior to advancing through the shirring zone of a shirring apparatus a uniform predetermined rate and quantity of an aqueous solution containing at least about 25% humectant; and
- d. shirring said moisturized casing stock thereafter.

3,981,047
APPARATUS FOR FORMING A BATT FROM STAPLE FIBERS

Rashmikant M. Contractor, Wilmington, and Sang-Hak Hwang, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 13, 1975, Ser. No. 577,056
Int. Cl.² D01G *25/00*
U.S. Cl. 19—155 **8 Claims**



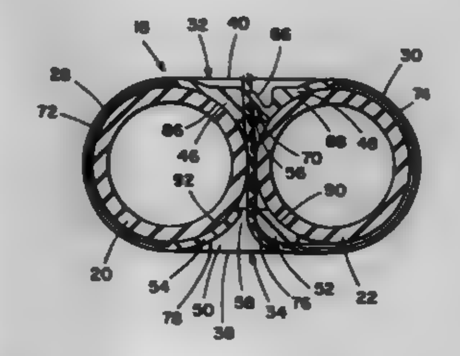
1. In an apparatus for separating staple fibers from a fiber-laden transporting air stream and depositing them on a moving conveyor belt to form a batt, a stationary chute comprising front, back and side plates forming an upright rectangular body, an entrance opening at the top for receiving fibers, an opening at the bottom closed by the conveyor belt, an exit opening in the front plate for a batt of fibers to be carried out of the chute on the conveyor belt, a weir plate positioned on the front plate with the bottom edge of the weir plate forming the top of the exit opening, a row of inwardly-directed air jets along the bottom edge of the weir plate for maintaining a constant fiber level at the exit opening, and perforations in the back plate for escape of air.

3,981,048
SMOOTH EXTERIOR DUAL CLAMP

Roy A. Moody, Flossmoor, and Ronald T. Fulton, Tinley Park, both of Ill., assignors to Panduit Corporation, Tinley Park, Ill.

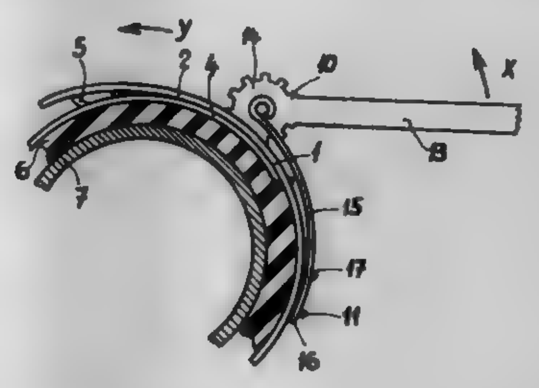
Filed Dec. 29, 1975, Ser. No. 644,694
Int. Cl.² B65D *63/00*
U.S. Cl. 24—16 PB **18 Claims**

1. A clamp for holding a pair of elongate objects such as hoses in spaced, generally parallel relationship, said clamp comprising:
- a first elongate flexible strap for engaging one of said objects;
- a second flexible strap for engaging the other of said objects; and
- a locking head disposed intermediate said straps for receiving said second strap and including locking means for holding said second strap after it has been threaded into said locking head, said first strap carrying an aperture frame adjacent its free end whereby after said first strap has been positioned to partially encompass one of the objects, said second strap can be positioned to partially encircle the other object and the free end of the second strap threaded into said frame, between the longitudinal axes of said objects, and into said locking head thereby to hold said objects in spaced, generally parallel relationship.



3,981,049
CLAMPING DEVICE WITH TIGHTENING DEVICE

Hans Oetiker, 21, Oberdorfstrasse, Horgen, Switzerland
Continuation of Ser. No. 349,697, April 10, 1973, abandoned. This application Apr. 1, 1975, Ser. No. 564,132
Claims priority, application Switzerland, Apr. 11, 1972, 5273/72; Aug. 9, 1972, 11744/72
Int. Cl.² B65D *63/02;* **B25B** *27/10, 15/00*
U.S. Cl. 24—20 TT **41 Claims**



1. A clamp for clamping a hose onto a nipple by means of a band means adapted to be closed, which is provided at its upper end with perforation apertures and at its lower end with at least one barb which engages in one of the perforation apertures when the band is placed about the hose, and in which the band is provided with further perforation apertures of similar type at its lower end on the side of the barb nearer the end thereof and is additionally provided with a slot at its upper end, at least one section of the perforation apertures disposed adjacent the lower end being located within the area of the section of the slot adjacent the upper end of the band after placing the band about the hose, characterized in that the upper end of the band is provided with at least one barb means having a tip pointing in a circumferential direction opposite the tip of the barb of the lower end of the band for eventual engagement with one of two mutually movable coupling elements of a tightening means whose other coupling element is adapted to engage in a further perforation aperture of the lower end of the band, whereby said tightening device is firmly anchored by each of said at least one barb means at the upper end of the band during assembly and disassembly of

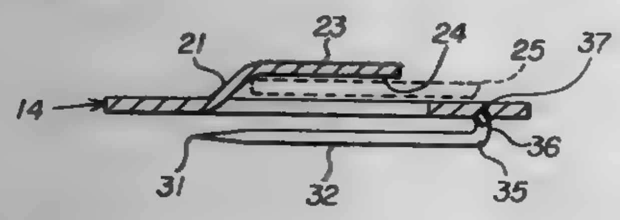
said band, and characterized in that the extreme end portion of the lower end of the band is curved radially outwardly with respect to a hose to be clamped for preventing cutting of the hose by said extreme end portion during tightening of the band.

3,981,050
SHOULDER STRAP RETAINER

Henry F. Dauphinais, P.O. Box 235, Rte. 202, Bantam, Conn. 06750

Filed Apr. 7, 1975, Ser. No. 565,779
Int. Cl.^{2} A44B *9/00, 21/00*

U.S. Cl. 24—76 **3 Claims**



1. A retainer for holding a strap on a person's shoulder and comprising:

a base plate;

a strip member comprising a spacer portion fixed to one side of said base plate adjacent to one end thereof and extending away from said one side, and a terminal portion spaced from and substantially parallel to said one side and extending toward an opposite end of said base plate so as to form a chamber with three open sides that accommodate entry and exit of the strap, said strip member comprising an original portion of said base plate severed therefrom except for an edge joining said base plate and said spacer portion and having a bend at said edge and a bend joining said spacer and terminal portions; and

securing means fixed to a side of said base plate opposite said one side, said securing means comprising solely of a pair of spaced apart substantially parallel pins with free pointed ends for penetrating clothing worn on the person's shoulder, and an attachment member joining ends of said pins and fixed within a recess in said opposite side of said base plate and adjacent said opposite end, said pins comprising spacer portions rigidly fixed to said attachment member and terminal portions joined to said spacer portions by bends and spaced from and substantially parallel to said opposite sides of said base plate and extending toward said one end.

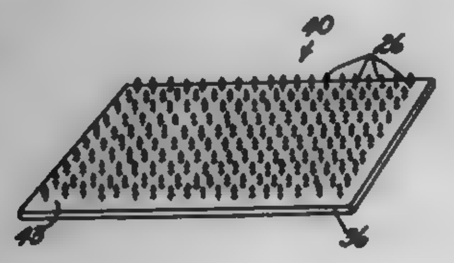
3,981,051
BRISTLE-LIKE GRIPPING DEVICE

George C. Brumlik, 154 Upper Mountain Ave., Montclair, N.J. 07042

Continuation of Ser. No. 184,172, Sept. 27, 1971, abandoned which is a continuation of Ser. No. 19,800, Mar. 16, 1970, abandoned.

This application Apr. 26, 1973, Ser. No. 354,814
Int. Cl. A44b *17/00*

U.S. Cl. 24—204 **18 Claims**



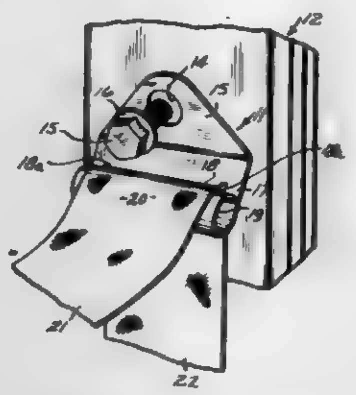
1. Self-gripping device comprising a multiplicity of thin, gripping elements having a bristle-like body uniform in cross section attached in close proximity to each other to a base, each of said gripping elements having self-gripping barbs spaced along the length thereof, said notched barbs being nicked in the body of the bristle-like gripping elements, said barbs being defined by adjoining indentations in and protrusions from said bristle-like body, and being disposed at an acute angle relative to the longitudinal axis of said gripping elements and above the longitudinal surface thereof, said gripping elements extending substantially perpendicularly from said base with at least some of said self-gripping barbs pointing towards said base and being adapted to penetrate and become lodged in a receiving layer for self-gripping engagement therewith.

3,981,052
LOW FRICTION GUIDE LOOP

Regis Victor Pilarski, Utica, Mich., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed July 23, 1975, Ser. No. 598,208
Int. Cl.^{2} A44B *11/12*; **B60R** *21/10*

U.S. Cl. 24—163 R **5 Claims**



1. A low friction guide loop comprising:

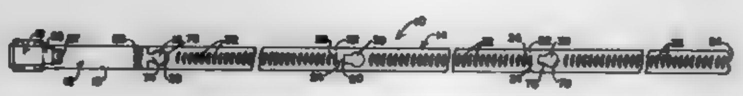
an integrally formed anchor plate ring guide member having a flat anchor tab upper end portion, a transversely bent central portion provided with an elongate webbing slot therethrough, and a lower rolled end portion in spaced-apart alignment with said webbing slot so that seat belt webbing passing through said slot is entrained over said rolled end portion, said lower rolled end portion rolled upwardly toward said upper end portion, said lower rolled end portion terminating proximate to and in spaced-apart register with said elongate webbing slot.

3,981,053
TWO-PART WORM DRIVE CLAMP WITH VARIABLE LENGTH BAND-FORMING PART

Laurence G. Kreuzer, Des Plaines, Ill., assignor to DuPage Manufacturing Company, Downers Grove, Ill.

Filed Oct. 8, 1975, Ser. No. 620,698
Int. Cl.^{2} B65D *63/02*

U.S. Cl. 24—274 R **6 Claims**



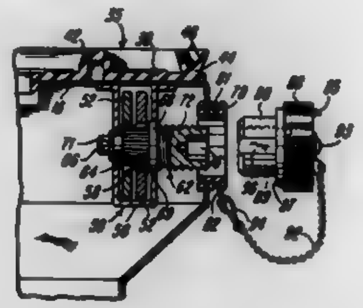
1. A two-part worm drive clamp comprising a tensioning part consisting of a comparatively short flexible strip having one end thereof terminating in a coupling tab which is of circular configuration and has an inclined narrow neck portion at its inner region, and a tensioning worm rotatably mounted on the other end of said strip, and a flexible band-forming part in the form of ribbon-like strip stock having leading and trailing ends, said band-forming part being provided adjacent to its trailing end with a tab-receiving opening which is designed for interlocking with said tab, is of keyhole configuration, and includes a relatively narrow rectangular trailing portion and a relatively wide circular leading portion the diameter of which is slightly in excess of the diameter of the tab in order that said tab may be passed sidewise through said circular leading portion of the tab-receiving opening, the width of the trailing portion of the opening being such as closely to confine said inclined narrow neck portion when the band-forming part is tensioned about an article, said band-forming part being provided with a longitudinal series of spaced apart transverse slots extending inwardly from its leading end, and said leading end of the band-forming part being designed for cooperation with said worm whereby rotation of the worm will effect engagement thereof with said transverse slots to tension the clamp about the article.

3,981,054
BURIAL CASKET WITH IMPROVED SEALING SYSTEM

George Scott Hull, Richmond; Louie V. Chaney, Centerville, and Richard Dean Watson, Richmond, all of Ind., assignors to Johnson Sheet Metal Works Corporation, Richmond, Ind.

Filed July 18, 1975, Ser. No. 597,099
Int. Cl.^{2} A61G *17/00*

U.S. Cl. 27—17 **16 Claims**



1. A burial casket comprising a base section supporting a cover section for pivotal movement between an open position and a closed position, a resilient gasket member disposed between said base section and said cover section, a latch mechanism for drawing said cover section firmly toward said base section to compress said gasket member therebetween, said latch mechanism including a rotary actuator positioned generally adjacent an opening within one of said casket sections, means for rotating said actuator to effect movement of said latch mechanism between a released position and a latched position, said rotary actuator including a coupling portion projecting generally in axial alignment with said opening, a closure member for said opening and including an annular surface adjacent a coupling portion projecting axially through said opening, means for releasably securing said coupling portion of said closure member to said coupling portion of said rotary actuator, a sealing ring positioned adjacent said opening and surrounding said coupling portion of said closure member, and said sealing ring forms a substantially fluid-tight seal between said annular surface of said closure member and said one section of said casket.

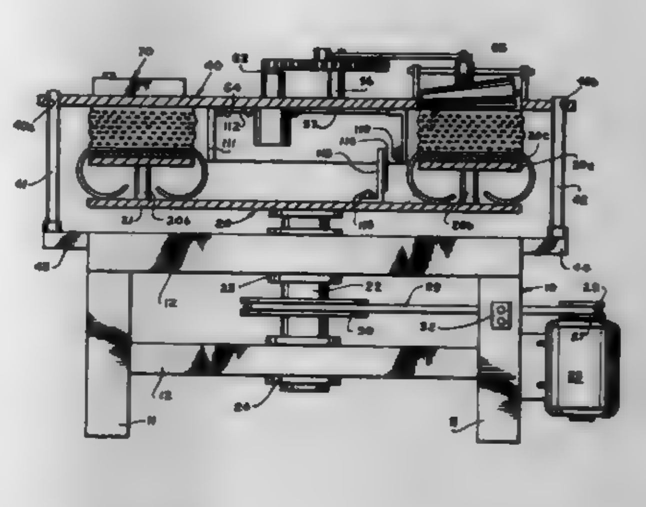
3,981,055
APPARATUS FOR FORMING A YARN PACKAGE

James H. Eakes, 12 Granger Drive, Cartersville, Ga. 30120; James G. Henderson, and James M. Henderson, both of 441 N. Hamilton St., Dalton, Ga. 30720

Filed June 17, 1974, Ser. No. 480,025
Int. Cl.^{2} B65H *54/82*

U.S. Cl. 28—21 **8 Claims**

5. Apparatus for forming a package of yarn comprising, in combination: frame support means, a turntable rotatably supported on said frame support means, means for rotating said turntable, a pressure plate non-rotatably supported on said frame support means for pressure engagement with said turntable and for axial displacement away from said turntable to provide a yarn package forming area therebetween, means for introducing a length of yarn into the area between said turntable and said pressure plate whereby the friction of said turntable causes the yarn to be pulled into the area between the turntable and the pressure plate and move with said turntable, means for reciprocating the yarn in a rectilinear path oriented approximately radially with respect to the center of said turntable during each rotation of said turntable and means for selectively varying the frequency of the reciprocation of the yarn with respect to the speed of the turntable whereby the reciprocating radial displacement of the yarn being draw into the area between the turntable and the pressure plate and simultaneous rotation of said turntable with respect to the pressure plate produces a number of sinuous shaped wave patterns in each revolution of said turntable and angular displacement about the turntable of the successive sinuous wave patterns to produce an overlapping relationship between adjacent revolutions.



3,981,056
DRIVE MECHANISMS FOR LATHE SPINDLES

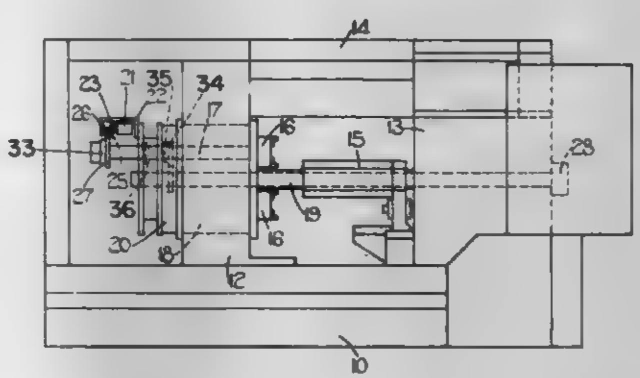
Harold James Gilbert, and Edmund Alexander McConnell, both of Coventry, England, assignors to Wickman Machine Tool Sales Limited, Coventry, England

Filed June 27, 1974, Ser. No. 483,778

Claims priority, application United Kingdom, June 27, 1973, 30663/73

Int. Cl.^{2} B23B *9/10*

U.S. Cl. 29—38 B **1 Claim**



1. In a multi-spindle lathe a drive mechanism including means for producing angular movement of a work spindle of the multi-spindle lathe comprising an electrical stepping motor connected to the spindle, disconnectible drive means optionally connecting the stepping motor with the spindle, and a brake for said spindle, the improvement in which a plurality of stepping motors are mounted on a drum, means for indexing said drum, said drum having a plurality of work spindles rotatably mounted in the drum, the respective stepping motors being drivingly engagable through said disconnectable drive means with the respective spindles.

3,981,057
CUTTING TOOL

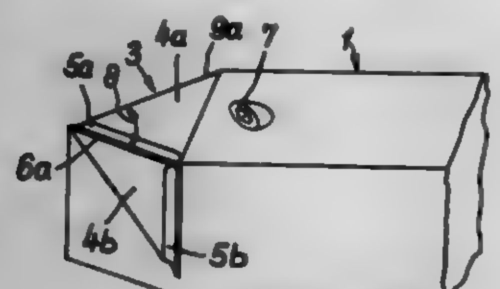
Kurt Koppers, Gummersbach, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Nov. 14, 1975, Ser. No. 632,173

Claims priority, application Germany, Nov. 23, 1974, [illegible]

Int. Cl.² B26D *1/12, 1/00*

U.S. Cl. 29—96 7 Claims



1. A cutting tool comprising
- a. a tool bit having the configuration of a hollow pyramid including an open base and three side walls; each side wall having an outer face; the adjoining outer faces defining three cutting edges converging in the apex of the pyramid;
- b. a base block including means defining a recess for receiving said tool bit; and
- c. a clamping device for tightening said tool bit, positioned in said recess, to said base block.

3,981,058
CUTTING INSERT AND CUTTING TOOL

Axel Sven Olof Roos; Kurt Heinrich Albert Erich Faber, and Sven Axel Olof Wirfelt, all of Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

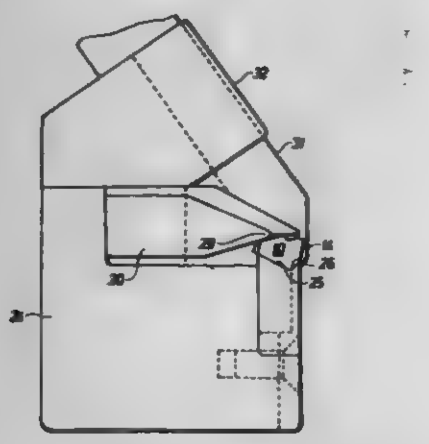
Filed Feb. 4, 1975, Ser. No. 546,911

Claims priority, application Sweden, Feb. 8, 1974, [illegible]

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² B26D *1/00*

U.S. Cl. 29—96 9 Claims



1. A tool holder and cutting insert combination consisting of a tool holder (24) and a cutting insert (10), said insert having a main cutting edge (12) and a secondary cutting edge (13) with a curved cutting tip portion (11) therebetween, the insert having around its circumference several edge surfaces extending parallel to the main cutting edge two of which edge surfaces, (15) and (16), being angularly interrelated and constituting bottom supporting surfaces, said surfaces forming an angle of 90° – 130°, preferably 100° – 120°, with each other, a third said edge surface constituting a clearance face for the main cutting edge, the insert having two opposite end surfaces, (18) and (19), one of which constituting the clearance face of the secondary cutting edge and the other constituting an end abutment surface, the top surface (20) being located opposite said angularly related edge surfaces (15, 16) and being provided with a bevel surface (23), said holder having an insert site at one of its ends, said insert site having bottom supporting surfaces (25, 26), angularly related at an angle of 90° – 130°, preferably 100° – 120°, and a side support, provided on an axially displaceable means in the holder, engaged by said angularly relates edge surfaces and said end abutment surface respectively of said cutting insert positioned therein, a movable clamping plate (29) being arranged for the clamping of the insert in said site, a movable arm (30) being secured to said clamping plate, said clamping plate being positioned over said insert and engageable with the bevel surface (23) thereof for pressing the insert against said bottom surfaces (25, 26) upon actuation of said arm by said axially displaceable means in the holder.

3,981,059
TEXTILE COT

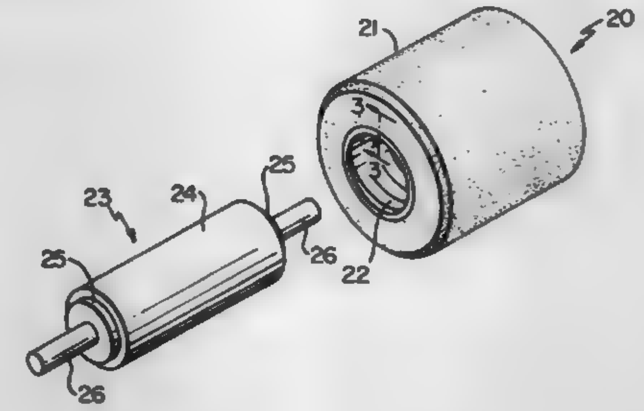
Walter L. Dodson, Canton, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Sept. 30, 1974, Ser. No. 510,855

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² B21B *31/08*

U.S. Cl. 29—127 15 Claims



1. A textile cot comprising an elastomeric outer portion and a rigid core bonded to and supporting said outer portion, said core comprised of a continuous interlocking tube capable of being expanded radially a sufficient amount to provide a press fit against an associated cylindrical supporting structure, said tube formed of elongated helically wound strip means having mechanically interlocking projections.

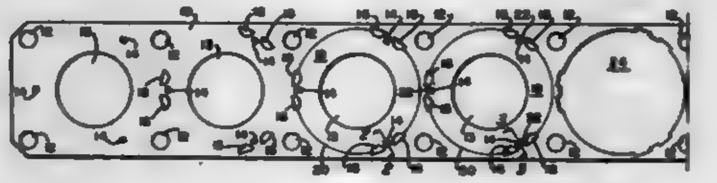
3,981,060
METHOD OF MAKING A THRUST WASHER

Richard Lassen Alling, Winchester, and Richard John Wolten, Torrington, both of Conn., assignors to The Torrington Company, Torrington, Conn.

Division of Ser. No. 506,239, Sept. 16, 1974, Pat. No. 3,937,541. This application Sept. 4, 1975, Ser. No. 610,323

Int. Cl.² B21D *53/12;* B21K *1/05;* F16C *33/64*

U.S. Cl. 29—148.4 C 2 Claims



1. A method of forming a thrust washer from sheet metal comprising: forming a plurality of circumferentially spaced pairs of cutouts in the sheet metal with the circumferential spaces separating the pairs of cutouts substantially greater than the circumferential space separating the cutouts in a pair from one another; forming a member having a substantially circular outside perimeter with the outside perimeter having the cutouts; forming a projection between the cutouts of each pair of cutouts; and bending over an outside portion adjacent said outside perimeter of the member to form an axially extending cylindrical flange which contains said projections and spaced pairs of cutouts.

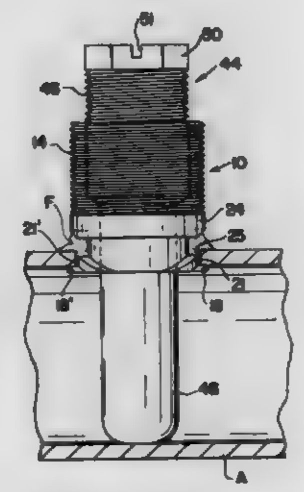
3,981,061
METHOD FOR JOINING PIPES

William M. Jackson, Allentown, and Edwin E. Peters, Schnecksville, both of Pa., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Sept. 26, 1974, Ser. No. 509,460

Int. Cl.² F16L *41/00*

U.S. Cl. 29—157 T 1 Claim



1. A method of attaching a coupling device comprising a lug pipe having a stem portion undercut about the entire periphery thereof, between a lug end and a coupling section so that the stem portion comprises a smaller diameter portion of said lug pipe, a pair of integral lugs extending respectively, from diametrically opposed points on the circumference of said lug end, locking means engageable with said lug pipe so that progressive engagement of said locking means with said lug pipe draws said lug toward said locking means into a compressive bearing relationship therewith, to interconnect a branch pipe in fluid flow communication with a main pipe in which a suitable circular hole has been formed, including the steps of
- inserting one lug of said lug pipe into said hole, rocking said lug pipe in the direction to insert the second lug into said hole,
- engaging a locator tool having a probe end with said lug pipe, progressively advancing said locator tool with respect to said lug pipe until said probe end contacts the interior surface of said main pipe opposite said hole and said lugs are in bearing contact with the interior surface of said main pipe adjacent said hole,
- engaging said locking means with said lug pipe and advancing said locking means into bearing contact relationship with said pipe whereby said lugs are maintained in bearing relationship with the interior surface of said main pipe,
- disengaging said locator tool from said lug pipe, and
- connecting said branch pipe to the coupling section of said lug pipe.

3,981,062
APEX SEAL COMPOSITION FOR ROTARY ENGINES

David Moskowitz, Southfield, and James C. Uy, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 1, 1973, Ser. No. 402,526

Int. Cl.² C22C *1/05*

U.S. Cl. 29—182.7 13 Claims

1. A seal element providing a dynamic seal between an eccentrically rotated rotor and a surrounding rotor housing for a rotary internal combustion engine, said element comprising a body of cemented carbide characterized by a weight analysis having 5–60% unalloyed nickel, 0–15% molybdenum carbide, 1–15% of an unprecipitated lubricating agent selected from the group consisting of graphite, MoS_2, and boron nitride, and the remainder being substantially a carbide of titanium, the composition being substantially free of iron or cementite.

2. An apex seal element for rotary internal combustion engine, said element constituted of a cemented carbide having additional and sufficient free carbon to form precipitated carbon rosettes uniformly distributed throughout said carbide.

12. A method of making an improved apex seal shape for use in a rotary internal combustion engine, comprising:
- a. preparing an admixture of titanium carbide powder particles with a mesh size of −300, nickel and molybdenum carbide powder having a mesh size of −180, graphite powder with a mesh size of −200, regulating said admixture to have an analysis of 10–60% nickel, 0–15% Mo_2C, 1–15% graphite, and the remainder TiC,
- b. milling said admixture for at least one and half hours,
- c. pressing said admixture into an apex seal shape having a green strength density of at least 90% of fully dense,
- d. subjecting said shape to a temperature to form a liquid phase of said nickel and molybdenum carbide powders while permitting less than 1% of said graphite powder to be dissolved in said admixture and to provide sufficient liquid phase sintering to form a strong cemented carbide having an intimate and uniform distribution of graphite rosettes, carbide particles, and nickel binder, and being substantially free of porosity.

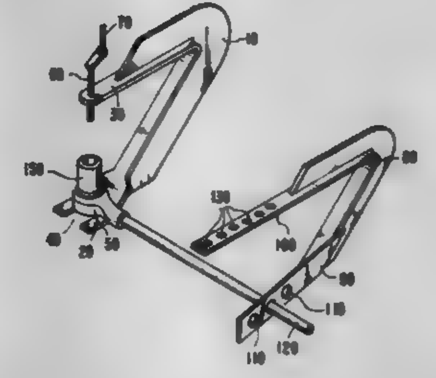
3,981,063
REDUCTION WRENCH HOLDER

Gordon R. Christensen, Calgary, Canada, assignor to The Raymond Lee Organization, Inc., a part interest

Filed Sept. 15, 1975, Ser. No. 613,108

Int. Cl.² B23Q *1/00*

U.S. Cl. 29—283 5 Claims

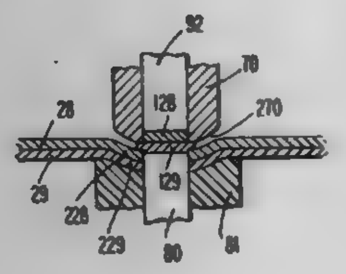


1. A reduction wrench holder for use on the cutting edges of heavy earth moving machines and the like, comprising:
- a V-shaped clamp with opposed first and second ends, the first end being designed to accommodate the head of a conventional reduction wrench;
- a threaded rod mounted in the second end of the clamp to approach the first end when rotated clockwise as viewed from the top; and
- a V-shaped bracket with first and second ends, the first end bearing a row of holes for accommodating the horizontal

handle of a conventional reduction wrench and the second end having a row of holes for accommodating a downwardly and rearwardly extending bolt.

3,981,064
METHOD AND APPARATUS FOR INTERLOCKING OVERLAPPING SHEET MATERIAL

Otto P. Hafner, 1321 Paddock Way, Cherry Hill, N.J. 08034
Continuation-in-part of Ser. No. 560,786, March 21, 1975, Pat. No. 3,934,327, which is a continuation-in-part of Ser. No. 497,884, Aug. 16, 1974, Pat. No. 3,885,299, which is a division of Ser. No. 384,494, Aug. 1, 1973, Pat. No. 3,862,485.
This application Oct. 16, 1975, Ser. No. 623,036
Int. Cl.^{2} B23P *11/00*
U.S. Cl. 29—432 4 Claims

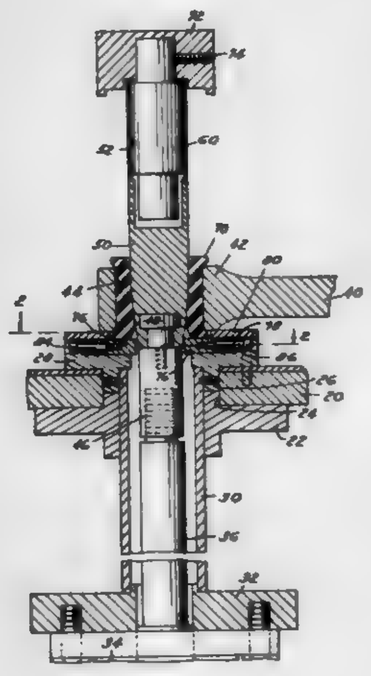


1. A method of locking together overlying sheets of metal or other material having deformable properties and including at least first and second sheets having interior and opposed exterior surfaces; said method comprising:
   - a. piercing said overlying sheets discontinuously along a boundary line defining a minor area;
   - b. displacing in one direction the material of said first and second sheets within said minor area out of the respective planes of the first and second sheet major-area sheet material to form a slot and bending in the opposite direction the edge portions of the major-area sheet material adjacent said slot, the extent of said displacement of said minor-area material being such that a substantial portion of the minor-area material of the first sheet is beyond the exterior surface of the bent edge portion of the second sheet material and a minor portion of the minor-area material of the second sheet is within said slot;
   - c. compressing together the displaced minor-area material of said first and second sheets while confining the displaced minor-area material of the second sheet to limit its outward spread and to spread outwardly said substantial portion of displaced minor-area material of the first sheet over the exterior surface of the bent edge portion of the second sheet material beyond said slot.

3. Apparatus for locking together overlying sheets of metal or other material having deformable properties and including at least first and second sheets having interior and opposed exterior surfaces; and apparatus comprising:
   - a. means for piercing said overlying sheets discontinuously along a boundary line defining a minor area;
   - b. means for displacing in one direction the material of said first and second sheets within said minor area out of the respective planes of the first and second sheet major-area sheet material to form a slot, and for bending in the opposite direction the edge portions of the major-area sheet material adjacent said slot, the extent of said displacement of said minor-area material being such that a substantial portion of the minor-area material of the first sheet is beyond the exterior surface of the bent edge portion of the second sheet material and a minor portion of the minor area material of the first sheet is within said slot,
   - c. means for compressing together the displaced minor-area material of said first and second sheets while confining the displaced minor-area material of the second sheet to limit its outward spread and to spread outwardly said substantial portion of displaced minor-area material of the first sheet over the exterior surface of the bent edge portion of the second sheet material beyond the edges of said slot.

3,981,065
METHOD AND APPARATUS FOR ASSEMBLY OF BEARING BUSHING

Donald R. Gaines, Farmington; Jon M. Smallegan, Ann Arbor, and William H. Trudeau, Brighton, all of Mich., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.
Filed Sept. 10, 1975, Ser. No. 612,016
Int. Cl.^{2} B23P *11/02*
U.S. Cl. 29—450 5 Claims

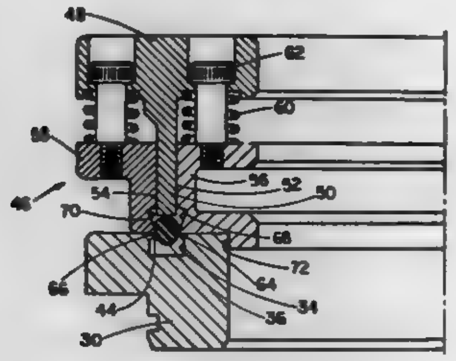


1. A method for assembling a hollow compressible bushing between two radially spaced, inner and outer bearing elements which comprises:
   - a. supporting the outer bearing element against axial displacement,
   - b. introducing the hollow bushing into the outer bearing,
   - c. supporting one end of the bushing circumferentially against axial displacement in one direction,
   - d. inserting an inner bearing member within a bearing shuttle,
   - e. moving said shuttle through the outer bearing member while expanding the bushing to a diameter larger than said inner bearing member,
   - f. arresting the motion of the inner bearing member at a final axial orientation while still within said shuttle, and
   - g. moving said shuttle further through said inner bearing member to withdraw it from the bushing to complete the assembly.

2. An apparatus for assembling a hollow compressible bushing between two radially-spaced, inner and outer bearing elements which comprises:
   - a. an axial support for an outer bearing element,
   - b. a circumferential support for a compressible bushing positioned axially adjacent said support and having portions movable radially,
   - c. a shuttle movable axially through said outer bearing element and said support having a recess to receive an inner bearing element,
   - d. means to move said shuttle forceably through a bushing in said outer bearing element shaped to expand the bushing to an inner diameter greater than the outer diameter of said inner bearing element, and
   - e. means to limit the axial motion of an inner bearing element through said outer bearing element to position said inner member in a proper axial orientation relative to said outer bearing element.

3,981,066
METHOD AND APPARATUS FOR INSERTING SEAL RINGS INTO RESTRICTED GROOVES

Martin A. Calvert, Oakland, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.
Filed Nov. 11, 1974, Ser. No. 522,335
Int. Cl.^{2} B23P *11/02*
U.S. Cl. 29—451 2 Claims



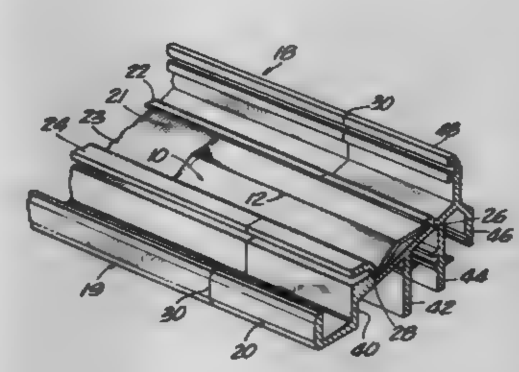
1. The method of inserting and retaining a seal ring of the O-ring type in a circular groove in a seat ring for a high pressure valve, comprising the steps of:
   - providing a seat ring with an annular groove having side walls faced apart a fixed distance and retaining lips extending inward toward each other from said sidewalls at the outer portions thereof to form a restricted opening;
   - selecting a seal ring of the O-ring type of a relatively hard material, normally of approximately the same mean diameter as said annular groove, and having a cross-section radially thereof wider than said restricted opening but narrow enough to fit loosely between said groove sidewalls;
   - placing a funneled annular chute having a delivery opening approximately as wide as said restricted opening over and in alignment with said restricted opening; and
   - squeezing said seal ring around the circumference thereof across said cross-section and parallel to said restricted opening by pushing it axially through said annular chute and past said retaining lips.

3,981,067
METHOD OF SPLICING AND PRODUCTS THEREOF

Philip R. Oiler, La Crescenta, Calif., assignor to Hehr International Inc., Los Angeles, Calif.
Filed Feb. 18, 1975, Ser. No. 550,735
Int. Cl.^{2} F16B *7/00;* E04C *2/38*
U.S. Cl. 29—522 4 Claims

1. A method of fabricating a frame adapted for receiving a closure means and adapted for installation in an aperture of a wall, comprising the steps of:
   - a. fabricating an elongated metal member having an exterior surface of elongated channel configuration at each end thereof,
     1. said fabricating step defining the channel at each end of said elongated member by the formation of a pair of spaced flanges which are integral with and upstanding from said exterior surface and which extend in parallel relation to one another in the direction of elongation of said metal member to provide the sides of said channel, the portion of said exterior surface between said flanges being formed to define a flat configuration which comprises the floor of said channel, and
     2. said fabricating step including the step of shaping the junctions between said flanges and said flat floor of said channel to define a pair of elongated grooves which extend along the opposite edges of said channel floor in facing relation to one another,
   - b. bending said elongated member into a closed-loop configuration and to position the opposite ends of said member in abutment with one another thereby to form a circumambiently shaped frame which has a single butt joint therein extending across said frame in a direction transverse to the direction of elongation of said member,
     1. said bending step including the step of aligning the channels at the opposite ends of said member as well as their respective pairs of flanges and their respective flat floors and their respective elongated grooves to form a single, common;sided, flat-bottomed straight channel which extends across said butt joint,
   - c. further fabricating an elongated rectangular metal plate having a width substantially equal to the width of the bottom of said common channel and having opposing elongated edges which are spaced from one another by a distance slightly less than the distance between the sides of said common channel,
     1. said further fabricating step including the step of shaping said elongated plate into a dihedral configuration wherein a pair of elongated rectangular planar plate sections are provided which are angularly inclined relative to one another about an elongated common bend axis located between and extending substantially parallel to the opposing elongated edges of said plate,
   - d. inserting said plate into said common channel in overlapping relation to said butt joint with the common bend axis of said plate being oriented transverse to said butt joint,
     1. said inserting step including the step of positioning said plate so that its said common bend axis extends across said butt joint with substantially half the length of said plate being located on each side of said butt joint and so that the opposing elongated edges of said plate are disposed closely adjacent to and in comparatively loose engagement with said elongated grooves; and
   - e. applying a force to the bend axis of said plate in a direction transverse to the floor of said common channel to flatten the portion of said plate overlying said butt joint toward said butt joint and to flatten the adjacent portions of said plate into surface engagement with the flatbottomed floor of said channel thereby to force said opposing edges of said plate further apart and to wedge said plate edges into outwardly directed tight locking engagement with the aligned elongated grooves on opposite sides of said butt joint,

whereby said member ends are rigidly secured to one another through said plate to maintain the circumambient shape of said frame.



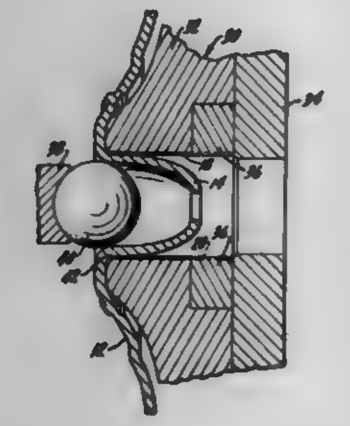
3,981,068
METHOD OF MAKING A SHEET METAL HUB ASSEMBLY

John Saxon Ivey, Bloomfield Hills, Mich., and Kenneth Albert Braybrook, Letchworth, England, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed July 23, 1975, Ser. No. 598,441

Int. Cl.² B21D *39/00;* **B23P** *11/02*

U.S. Cl. 29—523 **6 Claims**



1. A method of assembling a cylindrical bearing to a drawn hub portion of a sheet metal annular part comprising the steps of (1) semidrawing the annular part to include a partly drawn hub portion, (2) placing the bearing in a die mechanism, (3) assembling the partly drawn annular part into said die mechanism with the hub portion partially engaged within said cylindrical bearing, (4) drawing and extruding the hub by moving an object the size of the desired finished inside diameter of the hub through the hub whereby the hub is formed to shape and forced against the bearing with sufficient force to make a permanent assembly of the hub and the bearing.

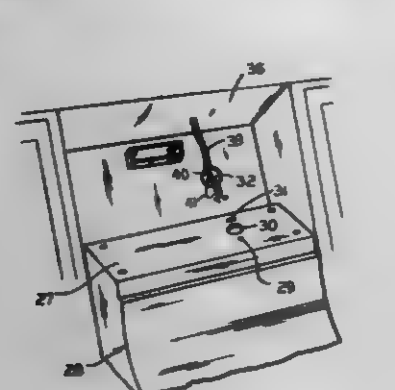
3,981,069
RANGE-HOOD ELECTRICAL WIRING CONNECTION ARRANGEMENT AND METHOD OF CONNECTING SAME

Robert J. Johansen, Glendale Heights, Ill., assignor to Aubrey Manufacturing, Incorporated, Union, Ill.

Filed Apr. 10, 1975, Ser. No. 566,738

Int. Cl.² B23P *19/00;* **H05K** *5/02, 15/02*

U.S. Cl. 29—526 **11 Claims**



1. An electrical wiring arrangement for connecting suspendable fixture means to the power lines of the buildings in which they are suspended, said arrangement comprising;

preliminary attachment means which are preliminarily coupled to the jackets of the power lines for subsequent attachment to said suspendable fixture;

first aperture means through said preliminary attachment means for enabling the passage therethrough of said jacketed power lines;

clamping means located proximate to said first aperture means for mechanically securing said jacketed power lines to said preliminary attachment means,

connecting means substantially proximate to the periphery of said attachment means for connecting said preliminary attachment means to said suspendable fixture means, in a facilitated manner, whereby said jacketed power line is secured to said suspendable fixture means, and

second aperture means in said fixture means substantially aligned with said first aperture means in said preliminary attachment means to enable said jacketed wires to enter said fixture means for electrically connecting said fixture means wiring to said power lines.

9. A method for connecting suspendable fixture means to the power lines of the buildings in which they are suspended comprising the steps of:

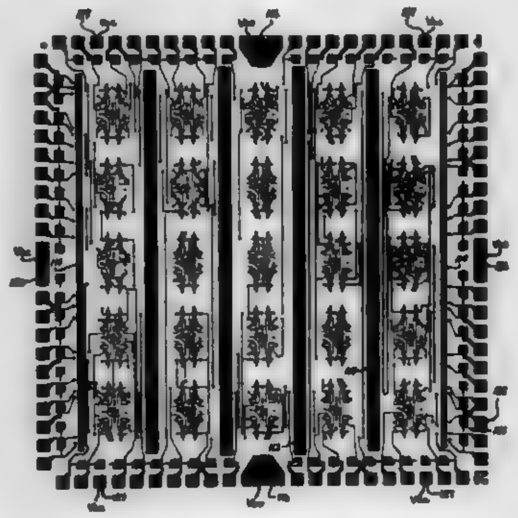
a. securing a clamping means to preliminary attachment means,
b. inserting said jacketed power lines into said clamping means,
c. tightening the clamping means around said jacketed wires so as to fixedly secure said jacketed wires to said preliminary attachment means, and
d. securing said preliminary attachment means to said suspendable fixture.

3,981,070
LSI CHIP CONSTRUCTION AND METHOD

Fred K. Buelow, Los Altos, and John J. Zasio, Sunnyvale, both of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif. Continuation of Ser. No. 348,219, April 5, 1973, abandoned, which is a division of Ser. No. 270,449, July 10, 1972, Pat. No. 3,808,475. This application July 24, 1974, Ser. No. 491,237

Int. Cl.² B01J *17/00*

U.S. Cl. 29—574 **20 Claims**



1. In a method for forming a plurality of LSI chips providing a plurality of semiconductor bodies having planar sufaces, forming diffused regions in said plurality of semiconductor bodies using the same set of common diffusion masks by subjecting said plurality of bodies to the same diffusion operations to provide a plurality of transistors and resistors in the semiconductor bodies, certain of said transistors in each of said bodies being formed so that they are substantially larger than other transistors in the same body with said substantially larger transistors being exclusively near the outer perimeter of the body and forming prior to testing of said resistors and transistors first and second layers of metallization on the surface of each of the semiconductor bodies with an insulating layer therebetween to form permanent connections to said transistors and resistors in said each semiconductor body by the use of preselected different fixed masks for said plurality of semiconductor bodies whereby the need for discretionary wiring is eliminated.

3,981,071
PROCESS OF THERMISTOR MANUFACTURE

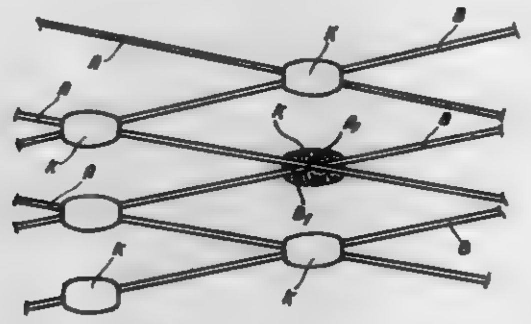
Gianfranco Cirri, and Giovanni Fidanzati, both of Florence, Italy, assignors to Fabbrica Italiana Magneti Marelli, S.p.A., Milan, Italy

Filed Mar. 25, 1975, Ser. No. 561,940

Claims priority, application Italy, May 17, 1974, 22856/74

Int. Cl.² B01J *17/00*

U.S. Cl. 29—573 **4 Claims**



1. A process of producing thermistors from semiconductor materials, the process comprising the steps of:

a. introducing into a reaction environment at least one pair of electrically conductive filiform elements, arranged to form therebetween at least one intersection, the elements being spaced a given distance apart at said intersection;
b. introducing into said reaction environment a compound of the semiconductor material, said compound being in the gaseous state, which semiconductor material is to comprise the desired thermistor, and other material required in the pyrolysis reaction of the compound;
c. individually heating each of the filiform elements so that the heat generated by each element is insufficient to induce a prylosis reaction while the heat generated by the elements in the region of the intersection is collectively sufficient to reach, only at each of the intersections, at least the minimum temperature required for a pyrolysis reaction, whereby a concentrated deposit of the semiconductor material is formed only at the intersection zones due to the pyrolysis reaction;
d. allowing the deposit of said material to grow until cores electrically and mechanically connecting the filiform elements at each intersection zones are formed;
e. removing two adjacent branches of the filiform elements projecting from each of the cores and using the remaining two branches as connection terminals of the thermistor.

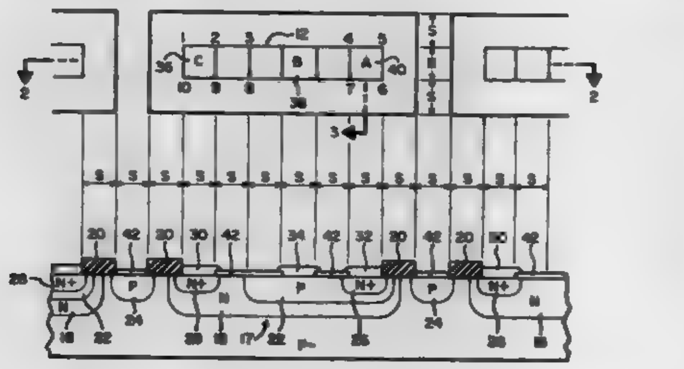
3,981,072
BIPOLAR TRANSISTOR CONSTRUCTION METHOD

James L. Buie, Panorama City, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 364,148, May 25, 1973, abandoned. This application Dec. 6, 1974, Ser. No. 530,113

Int. Cl.² B01J *17/00*

U.S. Cl. 29—578 **5 Claims**



1. A method of fabricating an integrated circuit array of bipolar transistors utilizing a triple diffusion process, comprising:

a. forming on a semiconductor substrate surface of first conductivity type a permanent masking layer of substantial thickness defining a multiplicity of rectangular openings of width S and length 6S, where S equals about 0.1 mil, with each opening surrounded by a rectangular masking region of width S, and with adjacent masking regions separated from each other by a continuous unmasked region of width S, said rectangular opening being capable of division into six zones of equal area arranged in a row and identified as zones 1 through 6 taken consecutively;
b. applying a first masking layer of etchable material substantially thinner than said permanent masking layer over the surface of said substrate defined by said continuous region;
c. diffusing an impurity of second conductivity type into surface regions of said substrate defined by all six zones of said rectangular openings to form collector regions within said substrate;
d. applying a second masking layer of said etchable material over the surface of said substrate defined by all six zones of said rectangular openings;
e. etching said etchable material from said continuous region and from zones 3 through 6 of said rectangular openings;
f. diffusing an impurity of said first conductivity type into surface regions of said substrate defined by said continuous region and said zones 3 through 6 of said rectangular openings to form isolation regions surrounding all of the collector regions of said array and to form base regions within said collector regions;
g. applying a third masking layer of said etchable material over the surface of said substrate defined by said continuous region and said zones 3 through 6 of said rectangular openings;
h. etching said etchable material from zones 1 and 6 of said rectangular openings;
i. diffusing an impurity of said second conductivity type into surface regions of said substrate defined by said zones 1 and 6 of said rectangular openings to form collector contact regions within said collector regions and emitter regions within said base regions;
j. applying a fourth masking layer of said etchable material over the surface of said substrate defined by said zones 1 and 6 of said rectangular openings;
k. etching said etchable material from zones 1, 4, and 6 of said rectangular openings; and
l. depositing metal through said zones 1, 4, and 6 of said rectangular openings to form metallic contacts to said collector contact, base, and emitter regions, respectively.

3,981,073
LATERAL SEMICONDUCTIVE DEVICE AND METHOD OF MAKING SAME

Joseph H. Dully, Cupertino, Calif., assignor to Varian Associates, Palo Alto, Calif.

Division of Ser. No. 372,464, June 21, 1973, abandoned. This application July 26, 1974, Ser. No. 492,301

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² B01J *17/00*

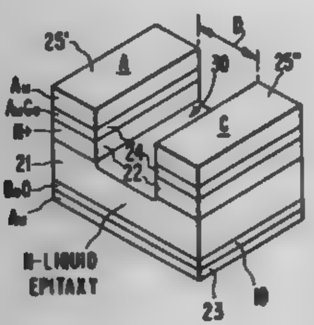
U.S. Cl. 29—580 **9 Claims**

1. In a method for fabricating a lateral type semiconductive device the steps of:

on an N+ type semiconductive wafer of sufficient thickness to be self-supporting, growing a thin N− type epitaxial layer of semiconductive material having a substantially lower N− type carrier concentration than said wafer,

depositing a barrier layer of electrically insulative material on said epitaxial material,

removing a layer of the wafer material from the side opposite said barrier layer, leaving a substantially thinned wafer, the composite of said thinned wafer, said epitaxial layer and said barrier layer being of sufficient thickness to be self-supporting depositing a layer of electrode material overlaying said wafer layer for making ohmic contact thereto; and



selectively removing areas of said layers of said electrode material and wafer material to define a pair of laterally spaced electrodes each making electrical connection to said epitaxially grown layer via an intervening layer of said wafer material.

3,981,074

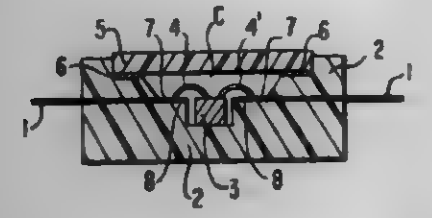
METHOD FOR PRODUCING PLASTIC BASE CAPS FOR SPLIT CAVITY TYPE PACKAGE SEMI-CONDUCTOR UNITS

Katsumi Yamamoto; Masahiro Fujimori; Masahiro Fujinawa, and Sanenobu Sonoda, all of Ibaragi, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaragi, Japan

Filed Aug. 23, 1974, Ser. No. 499,951

Int. Cl.² B01J *17/00*

U.S. Cl. 29—588 **6 Claims**



1. A method of producing a completed lead frame embedded plastic base cap for a sealed plastic split package semiconductor unit wherein said unit comprises:

split base cap and top cap sections with at least said base cap being provided with an electronic element receiving cavity facing said top cap,

an electronic element carried within said cavity,

external leads extending through the sidewalls of the base cap with their inner ends terminating within said cavity,

internal leads bonded to said element and to the ends of said external leads within said cavity,

said top cap overlying said cavity and being peripherally sealed to said base cap,

said method comprising the steps of:

providing a lower mold section with its upper face including a rectangular recess,

placing an initial rectangular base cap body whose length and width are less than that of said lower mold section recess and whose height is generally equal thereto within said recess and spaced from the sides thereof to form a lower mold section rectangular mold cavity surrounding said initial base cap body, said initial base cap being formed with a centrally located, hollow cavity on one side thereof and a peripheral land defining said cavity,

placing a lead frame on the initial base cap body in such a manner that the inner, terminal end portions of the individual leads rest on the peripheral land of said initial base cap body surrounding said central cavity of said initial base cap body, said lead frame extending at least over a portion of the upper face of said lower mold section

placing an upper mold section overlying said lower mold section, said upper mold section including a rectangular mold cavity within the lower face thereof corresponding to the rectangular mold cavity of said lower mold section, said upper mold section including a central portion sealingly engaging said initial base cap body and further including an outer portion surrounding said upper mold section rectangular mold cavity sealingly engaging said lower mold section, and

injecting molten material within said superposed molded cavity to integrally mold outer side sections to said initial base cap such that a portion of each of the external leads intermediate of the inner and outer terminal ends is embedded within said outer side sections of said base cap.

3,981,075

METHOD OF MAKING HIGH-DUTY PTC-RESISTOR

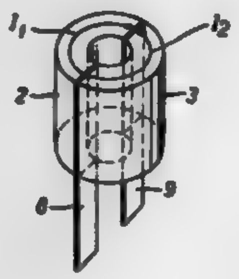
Holger Wilhelm Vind, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Division of Ser. No. 521,244, Nov. 6, 1974. This application Oct. 14, 1975, Ser. No. 621,745

Claims priority, application Germany, Nov. 14, 1973, 2356765

Int. Cl.² H01C *7/02, 7/04*

U.S. Cl. 29—612 **2 Claims**



1. A method of manufacturing a PTC resistor comprising the steps of forming a body by pressing it in one direction in a mold, dividing said body in halves along at least one plane which extends parallel to said direction to form end faces in said plane, sintering said halves, applying contact layers to said end faces, interposing contact pieces between said end faces and joining said halves.

3,981,076

METHOD OF CONNECTING ELECTRONIC MICROCOMPONENTS

Gerard Nicolas, Grenoble, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 27, 1974, Ser. No. 527,828

Int. Cl.² H05K *3/30*

U.S. Cl. 29—626 **8 Claims**

1. A method of connecting electronic microcomponents comprising the steps of:

securing wire connecting pads on a support, the position of which is adapted to the arrangement of the connections for the microcomponents;

unwinding a continuous wire over said pads to form a circuit;

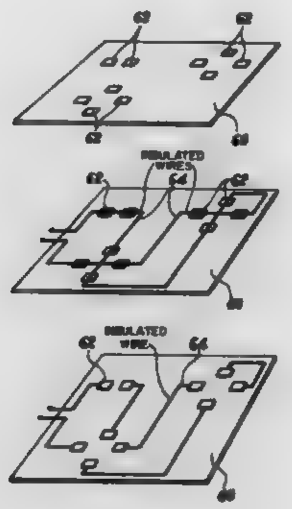
dividing said circuit into a plurality of partial circuits;

superposing said partial circuits to obtain the complete connecting circuit;

stripping the insulated wire at each pad;

securing the stripped wire portions to the corresponding pads;

cutting off those parts of the wire which do not form part of the final connecting circuit;



positioning the microcomponents so that each microcomponent is in electrical contact with one of said pads; and securing the microcomponents to their respective pads.

3,981,077

ELECTRICAL GARDEN SHEARS

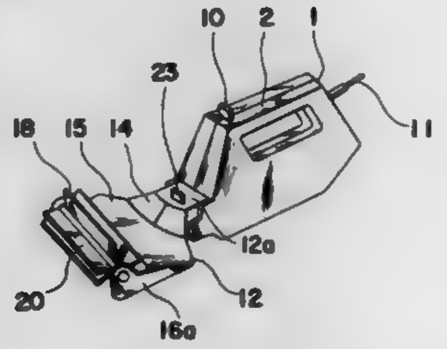
Keiji Manabe, Neyagawa, and Yoshio Ishii, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 27, 1975, Ser. No. 580,795

Claims priority, application Japan, May 31, 1974, 49-62362; July 18, 1974, 49-82785

Int. Cl.² B26B *19/38*

U.S. Cl. 30—233 **10 Claims**



1. Garden shears for cutting vegetation comprising:

a main body housing;

motor means within said housing for driving said shears;

cutting means attached to said housing and connected to said motor means for cutting vegetation in the path of said shears, said cutting means comprised of:

a fixed cutter portion attached to the bottom of said housing, said fixed cutter portion having a plurality of cutter blades at the forward end thereof, and

a movable cutter portion above said fixed cutter portion connected to said motor means and reciprocally movable thereby, said movable cutter portion having a plurality of cutter blades at the forward end thereof; and

guard means rotatably attached to the front of said housing and extending over said cutting means for preventing unwanted objects from contacting said cutting means, said guard means comprised of:

a stationary guard rotatably connected to the lower front portion of said body housing, extending forward therefrom and spaced above said cutting means, and

a rotary guard rotatably mounted to the front of said stationary guard spaced above and parallel to the front of said cutting means.

3,981,078

ELECTRIC KNIFE WITH GUIDE BLADE

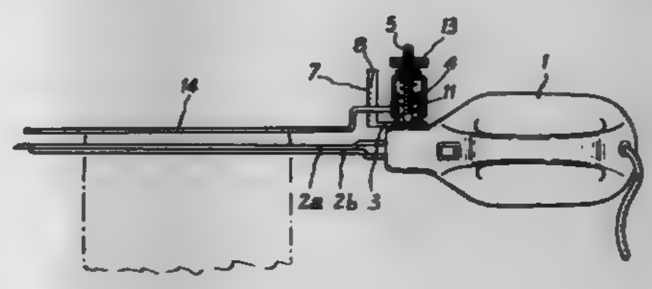
Rosette Caroline Alberti, 7 Rue Marie Bonaparte, Saint Cloud (Hauts de Seine), France

Filed Nov. 17, 1975, Ser. No. 632,717

Claims priority, application France, Dec. 3, 1974, 74.39452

Int. Cl.² B26B *29/02*

U.S. Cl. 30—293 **2 Claims**



1. An electric knife comprising two cutting blades that slide in contact with each other with alternate reciprocating movement, a handle, a guide blade parallel to and spaced from the cutting blades, means mounting said guide blade for swinging movement relative to the cutting blades about an axis perpendicular to the planes of the cutting blades, and means resiliently urging said guide blade to rotate about said axis downwardly relative to the cutting blades, said guide blade mounting and urging means comprising a cylindrical sleeve secured to said handle, a cylindrical cap slidable and rotatable on said sleeve, a coil compression and torsion spring within said cap and sleeve, one end of said coil compression spring being fixed relative to said handle, the other end of said coil compression spring being fixed relative to said cap, a screw-threaded rod coaxial within said cap and sleeve and spring and perpendicular to said cutting blades, a nut screw-threadedly disposed on said rod and bearing on the outer side of said cylindrical cap to slide said cap axially on said sleeve, said guide blade being secured to said cap, and an abutment on which said guide blade slides and against which said guide blade is urged by the torsion of said spring.

3,981,079

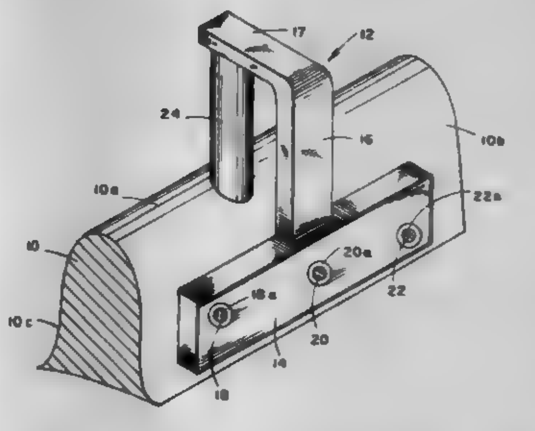
DENTAL IMPLANT AND METHOD OF MOUNTING THE SAME IN THE JAW BONE

Joseph J. Lenczycki, 89 Florence Road, Riverside, Conn. 06878

Filed Aug. 23, 1973, Ser. No. 390,770

Int. Cl.² A61C *13/00*

U.S. Cl. 32—10 A **17 Claims**



1. Dental implant assembly for maintaining a dental prosthetic device in fixed relation with respect to a jaw bone, the implant assembly comprising a support post adapted to be introduced into a complementary cavity formed in the region of the crest of the jaw bone, said support post being provided with at least one transverse aperture formed therein at an end of said support post adapted to be disposed within said cavity; at least one anchoring screw adapted to extend through a hole

drilled in the jaw bone in a direction substantially normal to said support post to threadedly engage the jaw bone and said transverse aperture formed in said support post, whereby said anchoring screw anchors and stabilizes said support post in the jaw bone; said support post being formed as a hollow cylindrical sleeve; and said at least one transverse aperture being formed through diametrically opposed wall portions of said sleeve, the aperture formed in the leading wall portion through which the anchoring screw first advances being unthreaded, and the aperture formed in the trailing wall portion into which the anchoring screw subsequently advances being threaded to threadedly receive said anchoring screw.

3,981,080

MECHANICAL DEVICE FOR ASTRONOMICAL CALCULATION

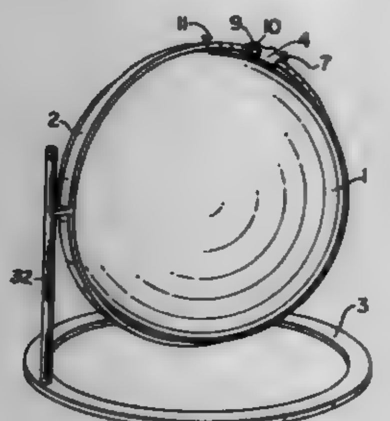
Mario Gama, Rua de Jose Acursio das Neves, No. 5-20 Esq., Lisbon, Portugal

Filed Nov. 11, 1975, Ser. No. 630,915

Claims priority, application Portugal, Nov. 12, 1974, 62921

Int. Cl.² G01C *21/24*

U.S. Cl. 33—1 SC **7 Claims**



1. A mechanical device adapted for determining the position of an observer by star sight observations, said device comprising a hollow sphere having a number of sets of pairs of holes, the two holes in each set lying at diametrical extremities, a rigid ring, means on said ring for engaging said holes to rotatably mount said sphere in said ring such that a plane through said ring passes through a great circle on said sphere, slidable carriage means on said ring for travel in the plane thereof, and marking means on said ring along a graduated quadrant starting from zero degrees, on a horizontal axis to 90° at the top of the vertical axis of the said ring for determining the position of said carriage means thereon.

3,981,081

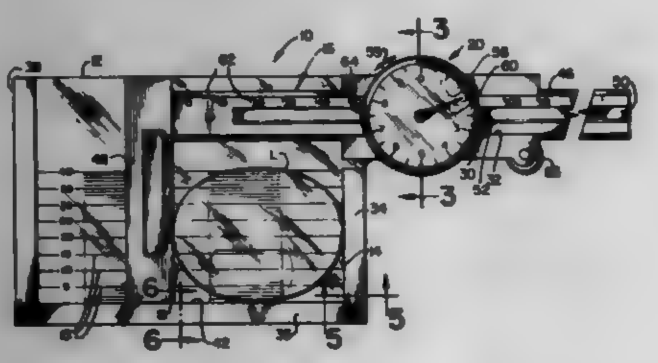
LENS MEASURING INSTRUMENT

Richard J. Welch, 33 Gloria St., Windsor, Conn. 06111

Filed May 5, 1975, Ser. No. 574,359

Int. Cl.² G01B *5/00*

U.S. Cl. 33—174 A **15 Claims**



1. A lens measuring instrument comprising a transparent base having a substantially planar parallel upper and lower lens supporting surfaces, means defining a substantially planar first reference surface fixed relative to said base and projecting above said upper surface and against which an associated portion of the peripheral edge of a lens supported by said upper surface may be abutted, means defining a second reference surface fixed relative to said base and projecting below said lower surface in normal relation thereto and against which an associated peripheral portion of a lens supported by the lower surface may be abutted, said first and second reference surfaces being disposed in a common plane, means for orienting a lens in a predetermined position on said base and relative to said first reference surface, a generally L-shaped measuring member supported on said base for movement longitudinally thereof in one and an opposite direction, said measuring member having a longitudinally extending beam and a measuring jaw projecting from one end of said beam, said measuring jaw having a substantially planar and transversely disposed measuring surface projecting above said upper surface in parallel and opposing relation to said first reference surface for movement into abutting engagement with an associated portion of the peripheral edge of a lens supported by said upper surface, supporting means on said base engaging said beam and supporting said measuring member for movement in said one and said opposite longitudinal direction, and means associated with said beam for indicating the position of said measuring surface relative to said first reference surface.

3,981,082

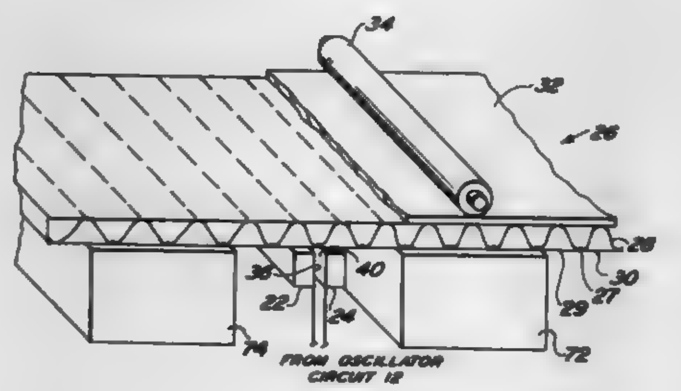
APPARATUS AND METHOD FOR MONITORING THE MOISTURE GRADIENT IN A MOVING WEB

William A. Massey, Mount Holly, N.J., assignor to Molins Machine Company, Inc., Camden, N.J.

Filed May 30, 1975, Ser. No. 582,569

Int. Cl.² F26B *3/34*

U.S. Cl. 34—1 **15 Claims**



1. Apparatus for generating a control signal representative of the moisture gradient in a moving web of material containing various amounts of moisture, comprising:

means for generating a radio frequency signal;

means for transmitting said radio frequency signal as an electromagnetic field;

means for applying said radio fequency signal to said transmitting means; and

envelope detector means for generating a low frequency signal repesentative of the envelope of an amplitude modulated radio frequency signal appearing across the transmitting elements, the envelope of said amplitude modulated signal being representative of fluctuations in the strength of said electromagnetic field due to the absorption of energy by moisture in a web moved through said field.

3,981,083

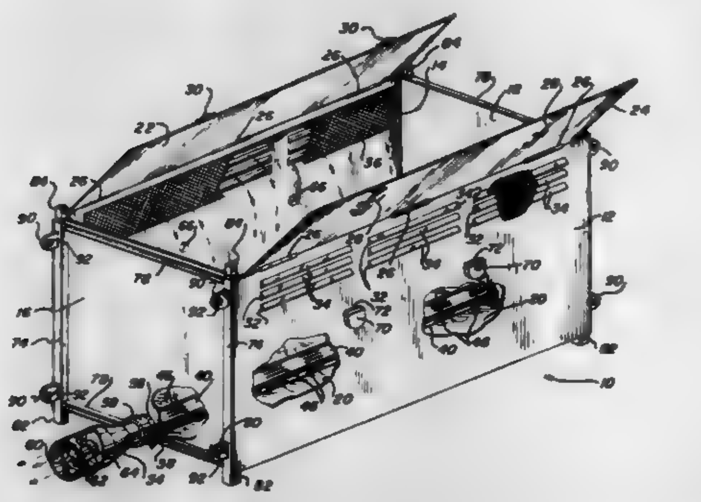
GRAIN STORAGE AND SHIPPING CONTAINERS

Jack Dewayne Danford, 1450 S. Havana - Suite 340, Aurora, Colo. 80012

Continuation-in-part of Ser. No. 488,264, July 15, 1974, Pat. No. 3,893,244. This application June 9, 1975, Ser. No. 585,023

Int. Cl.² F26B *7/00, 25/10*

U.S. Cl. 34—19 **6 Claims**



6. A method of handling grain in loose bulk form from harvest in the field to delivery at a final destination, comprising:

providing a plurality of ventilatable containers;

providing closure means in at least one wall of the containers for filling and/or discharge of grain in loose bulk form;

loading the loose grain in the field directly into the containers and securing the closure means in position;

storing the grain in the containers for predetermined periods of time;

periodically forcing streams of atmospheric air to flow through the container and through at least the major portion of the body of grain in each container for extended periods of time to remove excess moisture from the grain, repeating the procedure until the moisture content is reduced to a desired level;

loading the containers onto transport means;

and delivering the containers to their ultimate destination, with the cargos remaining in their original containers from initial loading in the field to arrival at their ultimate destination.

3,981,084

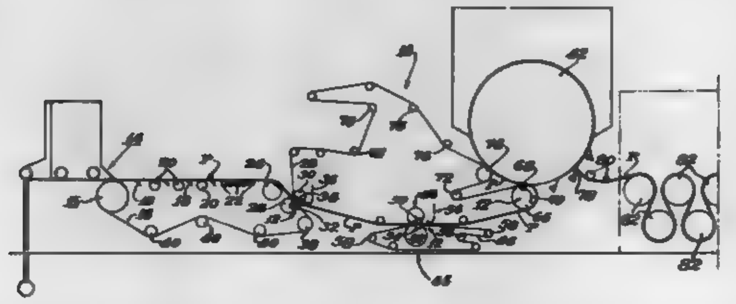
CLOSED DRAW TRANSFER SYSTEM WITH GASEOUS PRESSURE DIRECTION OF WEB

John T. Sobota, Green Bay, Wis., assignor to Fort Howard Paper Company, Green Bay, Wis.

Continuation-in-part of Ser. No. 263,798, June 19, 1972, abandoned. This application May 1, 1974, Ser. No. 465,895

Int. Cl.² D21F *5/02, 9/02*

U.S. Cl. 34—123 **4 Claims**



1. A paper making apparatus for assuring movement of paper in the desired path of travel after passing through a nip in a closed draw transfer system, said apparatus comprising, in combination, a gas permeable top pick-up felt having paper carried thereon for processing, a Yankee dryer for assisting in defining said nip with said felt, said paper being located between said felt and said Yankee dryer at said nip, said nip having an outgoing side and an incoming side, means for moving said felt and thereby said paper to said nip for processing said paper at said nip, a roller associated with said felt for cooperating in defining said nip, a chamber defined with said roller, means for communicating the outer surface of said roller with the interior of said chamber, means for substantially continuously applying gaseous pressure from within said chamber through said communicating means in a direction towards said Yankee dryer on said outgoing side of said nip through said gas permeable felt and against said paper being passed through said nip so as to urge said paper onto said Yankee dryer, only said felt carrying said paper to said nip and only said Yankee dryer carrying said paper from said nip after passing through said nip.

3,981,085

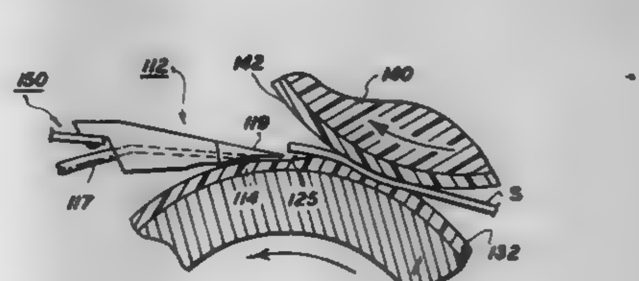
AIR STRIPPING DEVICE FOR ELASTOMERIC SURFACE

Eugene B. Franko, Marion, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 10, 1975, Ser. No. 548,477

Int. Cl.² G03G *15/20*

U.S. Cl. 355—3 R **5 Claims**



1. In an electrostatic reproduction machine in which copies are produced from document information and wherein the powder images are fixed to the copy sheets by passing the powder images on the sheets through a nip formed by an elastomeric fuser roll and a back up roll which apply heat and pressure thereby fusing the powder images onto the sheets, an improved stripping apparatus for stripping copy sheets from the surface of an elastomeric fuser roll comprising:

a stripper member positioned at a predetermined distance from an elastomeric fuser roll surface and from which copy sheets are to be stripped,

said stripper member having a tip portion having at least one aperture formed therein facing the elastomeric fuser roll surface at an acute angle relative to a tangent to the fuser roll surface,

air supply means for providing pressurized air in communication with the aperture to cause a rippled effect on the elastomeric fuser roll surface to cause separation of the copy sheet leading edge therefrom onto the stripper member,

wherein the tip portion of the stripper member is positioned at an angle ranging from about 10° to 30° relative to a tangent to the fuser roll surface.

3,981,086

CARREL APPARATUS FOR USE IN LEARNING

Irene Burns Hoeflinger, 7 Joy Drive, Manhasset Hills, N.Y. 11040, and Diana Cohen, 11 Knoll Lane, Glen Head, N.Y. 11545

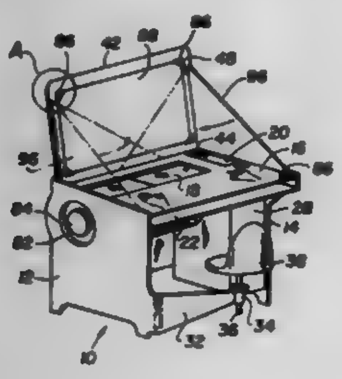
Filed Oct. 25, 1974, Ser. No. 517,939

Int. Cl.² A47B *41/00*

U.S. Cl. 35—60 **17 Claims**

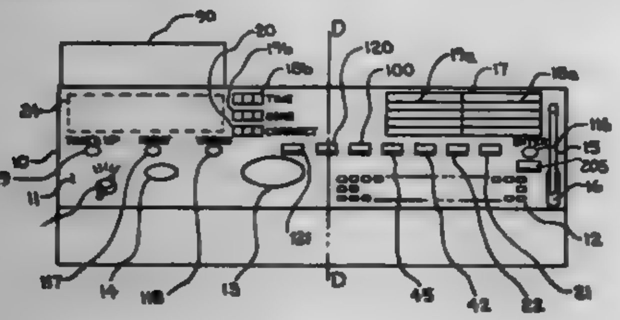
1. A learning carrel having various learning aids adapted for display on demonstration surfaces comprising a desk having

two learning areas one of which is movably connected with said desk for movement to and from an open learning position with the open position being substantially perpendicular to the other of said learning areas, means for attaching the various learning aids to the demonstration surfaces of said learning areas so that the various learning aids can be detachably affixed to said learning areas, said desk having a top side defining said other of said learning areas, a rotatable drum disposed in the carrel comprising a plurality of compartments wherein the various learning aids are selectable from said drum and storable therein, and an access window defined in said desk top side to permit access therethrough to said plurality of compartments.



3,981,087
TEACHING MACHINE

Thomas D. Sachs, 34 S. Williams St., Burlington, Vt. 05401
Continuation-in-part of Ser. No. 405,671, Oct. 11, 1973, abandoned. This application June 23, 1975, Ser. No. 589,045
Int. Cl.² G09B *7/04*
U.S. Cl. 35—9 A **52 Claims**



1. A teaching machine including a housing, a display fixed on said housing, an operable means for the input of data;

a plurality of cards positioned within said housing each of which cards has data thereon, the data being a question or concept and information related to said question or concept;

mechanical means within said housing to sort said cards, including a first stacking means to position cards on the top of an active stack, a second stacking means to stack cards into a reserve stack, and a third stacking means to stack cards into a discard stack;

display position means to position said cards in a display position associated with said display;

operable means for the input of data by the student in response to stimuli generated by the machine;

picker means to remove cards from the bottom of the active stack or alternatively from the reserve stack;

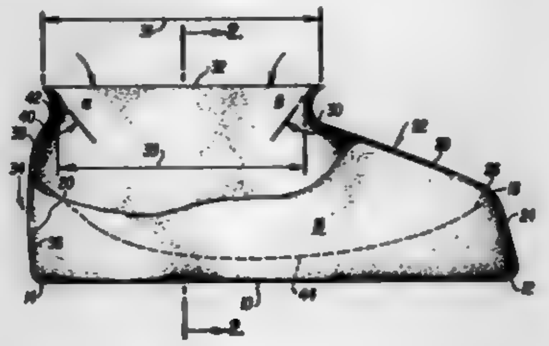
a first conveyor means to transport said cards from either the reserve stack or alternatively the active stack to said display position means;

a second conveyor means to transport cards from said display position to either the first stacking means to be placed back in the active stack in the case of an incomplete or wrong answer or an answer which is as yet insufficiently learned or alternatively to the third stacking means to be placed in the discard stack in the case of a correct answer or an answer which has been adequately learned; and

recording means to record machine readable question or concept related data and/or student record data on the cards sufficient to indicate if the question or concept has been correctly or incorrectly answered or responded to and to indicate the state of the user or student's knowledge concerning the question or concept.

3,981,088
SLIPPER-BOOT

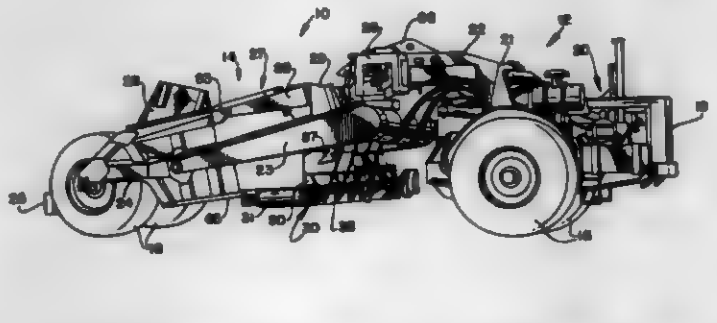
James G. Mitchell; Winalee G. Mitchell, both of Perrysburg, and Paul D. Purdy, Waterville, all of Ohio, assignors to James G. Mitchell and Winalee G. Mitchell, both of Perrysburg, Ohio
Filed Jan. 21, 1975, Ser. No. 542,750
Int. Cl.² A43B *7/14*
U.S. Cl. 36—87 **5 Claims**



1. A slipper-boot formed from a sheet of synthetic polymeric sheeting material, comprising an elongated seamless sole portion having forward and rear ends; generally upright side portions integral with said sole portion and extending upwardly therefrom, said side portions having forward edges, rear edges and top edges; said forward edges being joined by a toe seam extending generally upwardly and rearwardly from said seamless sole portion to a first location below said top edges and then turning to extend forwardly and upwardly to meet said top edges; said rear edges being joined by a heel seam extending generally upwardly and forwardly from said seamless sole portion to a second location below said top edges and then turning to extend rearwardly and upwardly to meet said top edges; said toe and heal seam each intersecting said upper edges at an angle when viewed from the side of the slipper and said toe and heel seams forming with said side portions and said top edges an upwardly flared foot-receiving throat with an upper opening having a first perimetral length along said top edges and with a lower opening having a second, smaller perimetral length below said top edges.

3,981,089
PADDING MACHINES

Norman Bruce Burrows, Rte. 2, Box 3109, Odessa, Tex. 79763
Filed Oct. 6, 1975, Ser. No. 619,948
Int. Cl.² E02F *5/22*
U.S. Cl. 37—142.5 **15 Claims**



1. A modified scraper machine for distributing padding material within a previously dug ditch, comprising:

a prime mover, a distributing section including a container for holding padding material, a conveyor means for transferring material from said container into a ditch; means, including said prime mover, for propelling said container along the surface of the ground, such that the conveyor means can follow a path of travel which is parallel to a previously dug ditch;

said container means having a bottom, opposed side walls, a movable rear wall, and a movable front wall; said side walls being affixed to and upwardly extending from said bottom, said movable rear wall including means by which it can be moved horizontally towards said front wall, said front wall including means by which it can be moved vertically respective to said bottom and side walls, thereby forming an outlet of controllable area therebetween;

said bottom, opposed side walls, movable rear wall, and movable front wall form an upwardly opening container into which padding material can be charged in order to store padding material within said container means;

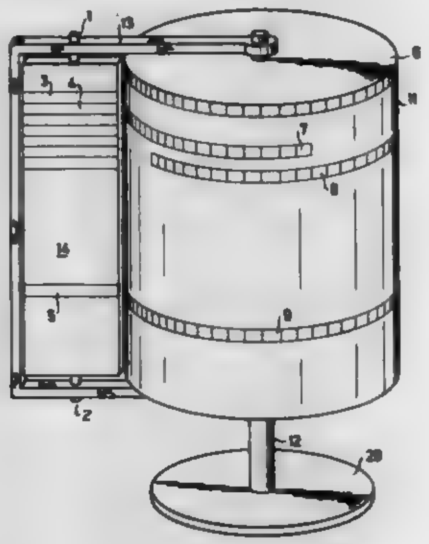
frame members having opposed ends by which said conveyor means is supported normally to the direction of travel of the machine, and in underlying relationship respective to said outlet such that padding material which may flow through said outlet is received by said conveyor means;

means by which said frame members are removably supported from said distributing section such that said conveyor means is disposed adjacent to said outlet in a position to receive padding material which may flow therethrough, and such that said conveyor means can be detached for transporting purposes;

so that padding material can be charged into said container, said front wall can be raised to form an outlet, said rear wall can be moved towards said front wall to force the material through said outlet, where it is received by said conveyor and transported into a ditch.

3,981,090
APPARATUS FOR DISPLAYING CHANGEABLE ARRANGEMENTS OF INDICIA

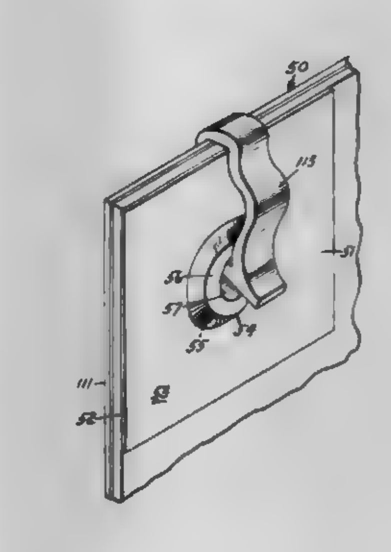
Arthur Berge, Wennerbergsgatan 6, 112 58 Stockholm, Sweden
Filed May 23, 1974, Ser. No. 472,850
Int. Cl.² G09F *11/30*
U.S. Cl. 40—64 R **4 Claims**



1. A device for information handling including a support element movable in an endless path and having column indicators thereon, vertically spaced horizontal grooves in the support element arranged to form rows, selectively positionable indicia in the grooves, and a rotatably mounted identifying plate juxtaposed with the support element wherein the plate has identifying rows on both sides of the plate aligned with the slots of the support element, a base on which said device is supported, a standard upstanding from said base, a vertical rod mounted for vertical sliding movement on and relative to said standard, said support element being secured to said rod, a frame in which said plate is rotatably mounted, said frame being movable vertically with said rod and being slidable vertically on said standard, whereby the program range of the information handling device can be doubled by rotating opposite sides of the plate into row registry with the support element and the weight of the plate and support element can be adjusted relative to said base.

3,981,091
PICTURE FRAME CONSTRUCTION

Samuel G. Wiener, Jr., 451 W. Broadway, New York, N.Y. 10012
Filed Oct. 7, 1974, Ser. No. 512,494
Int. Cl.² G09F *1/12*
U.S. Cl. 40—152.1 **2 Claims**



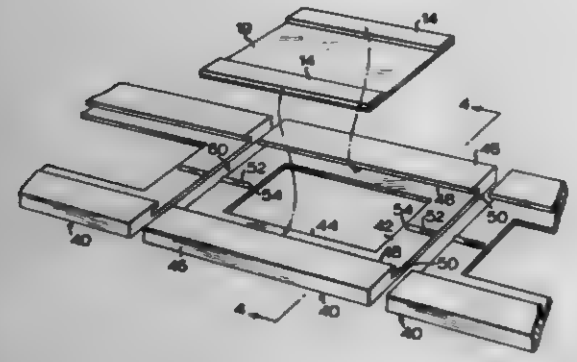
1. In a picture frame construction of a type including a transparent front panel element, a rear panel element, and clip means for interconnecting said front and rear panel elements in congruent relation to enclose a print or picture, the improvement comprising: said clip means including integrally molded synthetic resinous retaining elements, each having a channel forming member engaging the exposed surfaces of said front and rear panels at juxtaposed edges thereof, an elongated resilient portion interconnected to a portion of said channel-forming member, and a hooked member interconnected to said resilient member, said rear panel having a circular recess extending inwardly from an outer surface thereof for engaging said hooked member to thereby simultaneously position said retaining elements relative to said juxtaposed front and rear panels and place said resilient member thereof under tension; said orifices being incorporated in separate planar members adhesively affixed to said rear panel in desired locations.

3,981,092
SLIDE FRAME

Roy Ramsdale, Willowdale, Canada, assignor to Alex L. Clark Limited, Toronto, Canada
Filed May 21, 1974, Ser. No. 471,849
Int. Cl.² G09F *1/10*
U.S. Cl. 40—158 R **2 Claims**

1. A frame for use in mounting a photographic film transparency, comprising a mat having a picture aperture, means on one face of the mat forming a pair of opposed slots one in each of two first opposed sides of the aperture, the slots being open at each end thereof, and stop means carried by said one face of the mat on the second opposed sides of the aperture

transverse to the slots, said stop means comprising a rib located on each of said second opposed sides of the aperture,

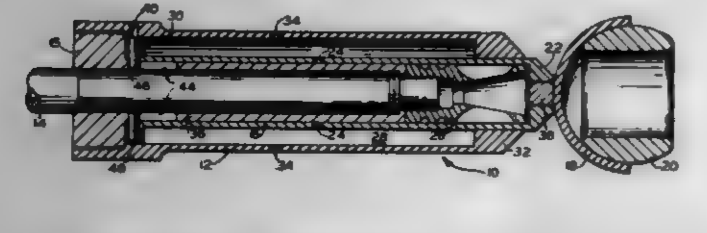


each of the ribs lying parallel to the slots centrally therebetween and terminating adjacent the aperture to define a ledge.

3,981,093
GAS OPERATED LAUNCHER

Frederick P. Reed, Davenport, Iowa, assignor to The United States of America, Washington, D.C.

Filed Apr. 7, 1975, Ser. No. 556,366
Int. Cl.² F41C *27/06*
U.S. Cl. 42—1 F **4 Claims**



1. A launching device for hurling a mass toward a target comprising:

a first cylinder having an inner wall surface extending between and open and a closed end of said cylinder,

a second cylinder concentric within said first cylinder and spaced apart therefrom to form an annular chamber between said first and second cylinders,

  said second cylinder having a closed end and an open end,

  said second cylinder being slidably movable in telescoping relationship between an extended and a retracted position relative to said first cylinder,

first sealing means on said first cylinder extending between said first and second cylinders to seal one end of said chamber,

gas generating means including an exit port within said second cylinder,

second sealing means extending between said gas generating means and said second cylinder,

an annular flange on said open end of said second cylinder, said flange having a periphery in continuous sealing contact with said inner wall of said first cylinder to seal the end of said annular chamber opposite from said one end of said chamber,

first port means in said second cylinder for communicating said gas generating means with said annular chamber when said second cylinder is at a first position intermediate said extended and retracted positions,

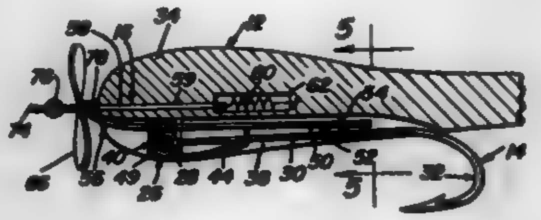
second port means on said first cylinder for communicating said chamber with outer atmosphere when said second cylinder is at a second position intermediate said extended and retracted positions, and

support means connected to said closed end of said second cylinder for supporting said mass during operation of said launching device.

3,981,094
ARTIFICIAL FISHING BAIT

Myron J. Leffel, 114 W. Jefferson St., Marshfield, Wis. 54449

Filed July 10, 1975, Ser. No. 594,683
Int. Cl.² A01K *85/02*
U.S. Cl. 43—35 **8 Claims**



1. An artificial fishing bait, comprising, in combination:

a. a body;

b. a jaw engaging hook pivotally mounted on the body;

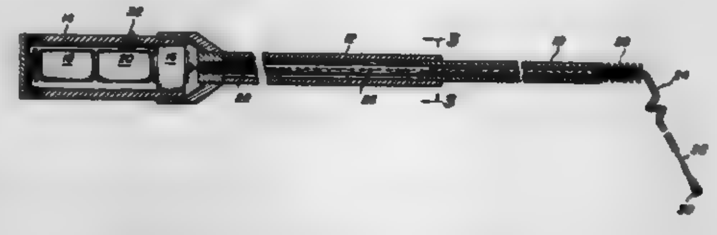
c. latching means mounted on the body for releasably engaging the jaw engaging hook and normally retaining the jaw engaging hook adjacent the body; and

d. bait hook means connected to the latching means for causing the latching means to release the jaw engaging hook when a predetermined force is applied to the bait hook means, the body being a longitudinally extending member having a pair of longitudinally spaced ends, with a longitudinal slot provided at one longitudinally spaced end and extending longitudinally along the longitudinal extent of the body, the jaw engaging hook being pivotally mounted at the one end of the body and normally partially disposed in the slot, and the latching means being disposed in the slot and extending from the slot away from the one end of the body for attachment to the bait hook means, the latching means including a longitudinally extending latching bar mounted in the slot of the body for sliding movement parallel to the longitudinal extent of the body, the jaw engaging hook including an apertured member provided on the shank of the jaw engaging hook, the bar normally engaging the apertured member, an end of the latching bar extending beyond the body, a pin slidably mounted in the body at the one end of the body, and the bait hook means and the extending end of the latching bar both being connected to the pin, with the pin being slidably moved under a predetermined force by the bait hook means, and the latching bar being slidably displaced by a sliding movement of the pin for disengagement from the apertured member.

3,981,095
SPORT-FISHING APPARATUS

Allen A. Shepherd, R.C.S. Manufacturing Company Rte. 1, Box 266A, West Columbia, S.C.

Filed May 13, 1975, Ser. No. 577,033
Int. Cl.² A01K *87/00*
U.S. Cl. 43—19.2 **5 Claims**



1. A sport-fishing apparatus, comprising:

a. an elongated hollow rod having a handle at one end and a coil spring concentrically arranged at the opposite end and extending axially therefrom;

b. a hollow control tube extending through said hollow rod having one end rigidly attached to the interior of said rod and the opposite end extending outwardly of the opposite end of said rod through said coil spring a distance substantially equal to the length of said rod;

c. a line formed of substantially torsionally stable material extending completely through said control tube;

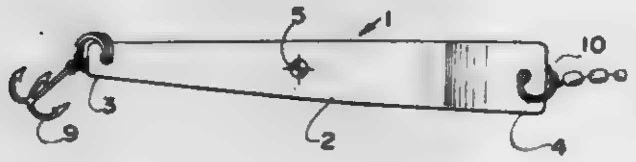
d. a motor mounted within said handle with its shaft aligned with the longitudinal axis of said rod, one end of said line being rigidly attached to said shaft; and

e. means on said handle for controlling the operation of said motor.

3,981,096
FISHING LURE

Harry Toivonen, 1170 Ramsey View Court, Apt. 216, Sudbury, Ontario, Canada (P3E 2E4)

Filed Apr. 18, 1975, Ser. No. 569,181
Claims priority, application Canada, May 2, 1974, 198719
Int. Cl.² A01K *85/00*
U.S. Cl. 43—42.39 **7 Claims**

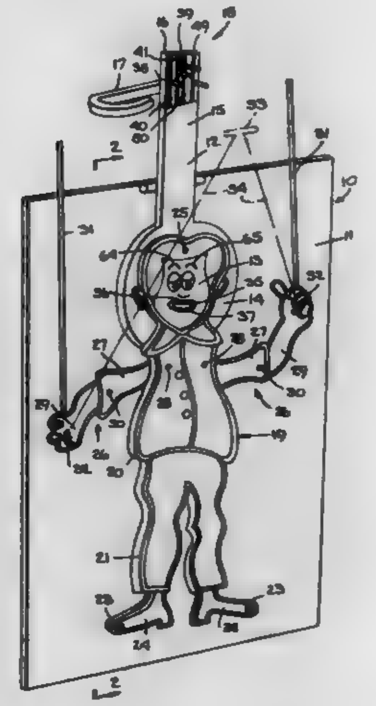


1. A fishing lure in the form of an elongate body being symmetrical about the longitudinal axis of said lure, said body comprising a substantially flat trailing end, a substantially flat leading end, and a substantially flat intermediate portion, said intermediate portion smoothly tapering in decreasing width and increasing thickness from a point closer to the trailing than to the leading end of said body to a point adjacent said leading end, said trailing end being positioned at an acute angle relative to the plane of said intermediate portion and being thin relative to the thickness of said leading end, each of said ends being adapted for attachment to a hook or fishing line.

3,981,097
ANIMATED FIGURE

Morey Bunin, 140 Riverside Drive, New York, N.Y. 10024

Filed May 30, 1975, Ser. No. 582,420
Int. Cl.² A63H *7/00*
U.S. Cl. 46—126 **7 Claims**

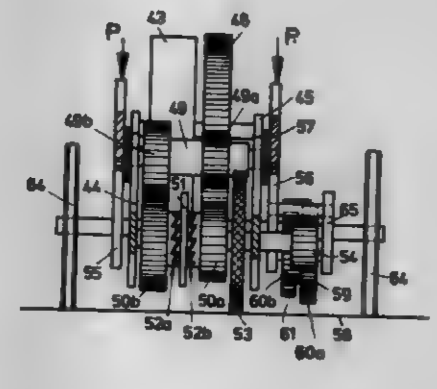


1. Animated caricature apparatus for television transmission and the like comprising a flat neutral stationary background surface member, a caricature body form mounted on said surface including an elastic body outline including arms and feet and an integrally formed elastic head outline portion, said body outline adhered only at said feet to said background surface while being otherwise movable relative thereto, a flat movable background member having a face representation thereon including eyes and slideably movable relative to said stationary member, said movable member carrying said head outline portion affixed thereto at only the upper portion thereof and being shiftable with respect to the lower portion thereof to provide facial and body distortional movement of said caricature.

3,981,098
TOY VEHICLE WITH COMPONENT FOR STORING ENERGY IN RESPONSE TO MOTION IN OPPOSITE DIRECTIONS

Helmut Darda, Im Tal, 7712 Blumberg, Germany

Division of Ser. No. 135,662, April 20, 1971, Pat. No. 3,812,933. This application Oct. 10, 1972, Ser. No. 296,165
Claims priority, application Germany, Apr. 21, 1970, 2019085; Aug. 7, 1970, 2039265; Feb. 8, 1971, 2105734
Int. Cl.² A63H *29/24*
U.S. Cl. 46—206 **48 Claims**



1. A mobile toy including a frame; a drive mounted in said frame, said drive comprising a first component rotatably mounted on said frame and rotatable in one and in an opposite direction; a second component rotatably mounted on said frame and rotatable in a predetermined direction; energy storing means on said frame and connected with said second component, said energy storing means being adapted to store energy in response to rotation of said second component in said predetermined direction; transmission means mounted on said frame in mechanical association with said components for effecting rotation of said second component in said predetermined direction in response to rotation of said first component, said transmission means comprising a first branch including first means adapted to link said components for transmission of motion from said first to said second component only in response to rotation of the former in said one direction, and a second branch including second means adapted to link said components for transmission of motion from said first to said second component only in response to rotation of the former in said opposite direction, so that, upon rotation of said first component, said second component is always rotated in said predetermined direction irrespective of the direction in which said first component is rotated; a shell configurated as a mobile conveyance mounted to said frame surrounding and accommodating said drive in its interior, said drive including means for moving said mobile conveyance over a supporting surface; and means for rotating said first component, including at least one wheel fixed to said first component and engageable with a supporting surface over which said mobile conveyance is adapted to travel.

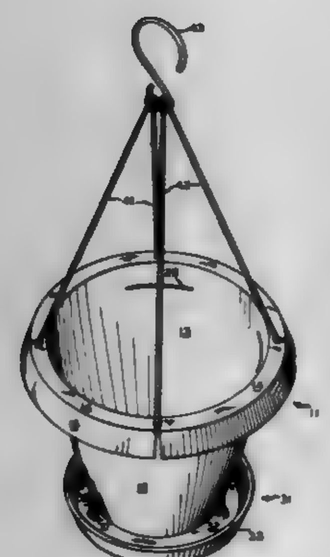
3,981,099
HANGING POT WITH DETACHABLE TRAY

Ted Dziewulski, Bartlett, Ill., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 14, 1975, Ser. No. 577,493

Int. Cl.² A01G *9/02*

U.S. Cl. 47—35 **21 Claims**



1. An article of manufacture comprising:

a pot having a bottom wall, a sidewall extending generally upwardly from the periphery of said bottom wall, and means secured to the upper portion of said sidewall for supporting said pot in a hanging position, said sidewall extending substantially continuously along the periphery of said bottom wall, said sidewall having a plurality of openings therein spaced horizontally from each other, at least a substantial portion of the bottom edge of each of said plurality of openings being defined by a respective generally horizontal shoulder spaced upwardly from said bottom wall top surface by a first distance,

a detachable tray having a generally horizontal solid base wall and a retaining wall extending generally upwardly from the periphery of said base wall throughout the extent of the periphery of said base wall to thereby form a receptacle capable of containing a liquid, the transverse dimensions of said base wall being substantially greater than the corresponding transverse dimensions of said bottom wall of said pot, a plurality of pillars extending generally upwardly from said base wall at locations spaced from the periphery of said base wall, each of said pillars having a hook member extending generally horizontally from the upper extent of the respective pillar toward the central vertical axis of said tray, each of said hook members being spaced a second distance above said base wall, said second distance being at least as great as said first distance, said pillars being spaced from each other in a pattern corresponding to the pattern of the locations of said plurality of openings in said sidewall of said pot so that upon positioning of said pot on said base wall coaxially with said tray said hook members enter said plurality of openings in said sidewall of said pot and engage said shoulders to thereby lock together said pot and said tray.

3,981,100
HIGHLY ABSORBENT STARCH-CONTAINING POLYMERIC COMPOSITIONS

Mary Ollidene Weaver, Peoria; Edward B. Bagley, Morton; George F. Fanta, Peoria, and William M. Doane, Morton, all of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 456,911, April 3, 1974, Pat. No. 3,935,099. This application Sept. 8, 1975, Ser. No. 611,458

Int. Cl.² A01C *1/06*

U.S. Cl. 47—58 **2 Claims**

1. A method of conditioning soil comprising the steps of:
   a. saponifying a gelatinized-starch-polyacrylonitrile graft polymer (GS-PAN) in an aqueous slurry with an alkali in amounts such that the molar ratio of alkali to the acrylonitrile repeating unit of said GS-PAN is from about 0.1:1 to 7:1 to form a water-soluble saponified GS-PAN (water-soluble GS-HPAN); and
   b. optionally adjusting the pH of said water-soluble GS-HPAN to about 3, followed by isolating the resulting water-insoluble acid form of GS-HPAN, and readjusting the pH of said water-insoluble acid form of GS-HPAN to reform said water-soluble GS-HPAN; and
   c. slurrying in an aqueous dispersion from 0.3 to 0.9 part by weight of said water-soluble GS-HPAN with about 100 parts by weight of soil; and
   d. drying the slurry resulting from step (c) to a moisture level of from about 1 to 15% water by weight.

2. A method of entrapping seeds in a water-absorbent composition comprising the steps of:
   a. saponifying a gelatinized-starch-polyacrylonitrile graft polymer (GS-PAN) in an aqueous slurry with an alkali in amounts such that the molar ratio of alkali to the acrylonitrile repeating unit of said GS-PAN is from about 0.1:1 to 7:1 to form a water-soluble saponified GS-PAN (water-soluble GS-HPAN); and
   b. optionally adjusting the pH of said water-soluble GS-HPAN to about 3, followed by isolating the resulting water-insoluble acid form of GS-HPAN, and readjusting the pH of said water-insoluble acid form of GS-HPAN to reform said water-soluble GS-HPAN; and
   c. slurrying in an aqueous dispersion said water-soluble GS-HPAN with the desired seeds; and
   d. drying the slurry resulting from step (c) to a moisture level of from about 1 to 15% water by weight.

3,981,101
WINDOW CONSTRUCTION

Anthony Guzzi, Finleyville, Pa., assignor to G & S Metal Products Inc., Pittsburgh, Pa.

Filed Oct. 6, 1975, Ser. No. 619,788

Int. Cl.² E05D *15/22*

U.S. Cl. 49—162 **9 Claims**

1. A window construction comprising

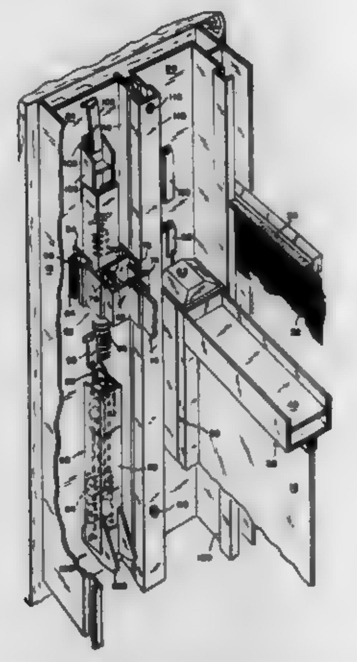
a frame with jambs and sash guides;

an upper and a lower sash received in said frame with at least said lower sash being upwardly and downwardly slidably received within said frame;

pressure urged sash balance means disposed between said sash guides and one side of the slidable sash for retaining the slidable sash within said jambs while permitting the slidable sash to be selectively moved against the pressure to a position where the slidable sash may be rotated about a vertical axis away from said frame;

a locking means removably secured within the jamb adjacent said one side of the slidable sash;

said one side of the slidable sash having pivoting means including first and second elongated members, one of said members having a vertical pivot pin element extending over a substantial position of the length thereof and the other of said members having a receptacle complementary in shape to said pin element, one of said members being received in a sash guide, said one member including a restraining element shaped to cooperate with said locking means to secure the slidable sash within said frame while said locking means is fixed to said frame.



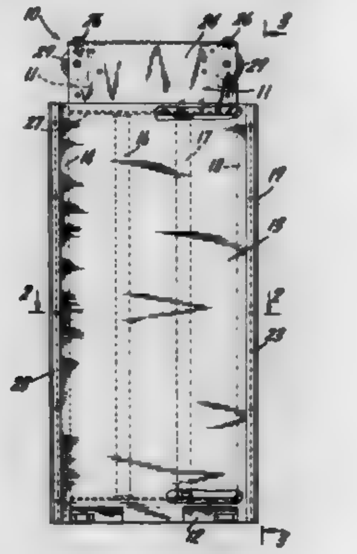
3,981,102
WARP RESISTANT FIRE DOOR

Frank Stuart Harwood, Richmond Hill, and Heinz Otto Dorst, Milton, both of Canada, assignors to Dover Corporation, New York, N.Y.

Filed July 22, 1974, Ser. No. 490,486

Int. Cl.² E06B *3/16, 5/16*

U.S. Cl. 49—501 **6 Claims**



1. A warp resistant fire door comprising a rigid frame structure defining at least one major side area and a pair of opposite minor side areas adjacent said major side area, a first outer skin portion susceptible of thermal expansion and contraction overlying the frame structure at each of the side areas and non-releasably secured to the frame structure at points other than those defining said major side area, portions of the skin between said points of securement and overlying said minor side areas being spaced apart from portions of the frame defining each of said minor side areas, and heat responsive means for attaching other portions of the skin to the frame structure to provide a rigid substantially vibration-free door panel in the presence of normal ambient temperatures, said heat responsive means releasing said other portions of the skin from the frame when the temperature of the skin reaches a predetermined level, thereby to minimize warping stresses induced on the frame by thermal expansion and contraction of the skin.

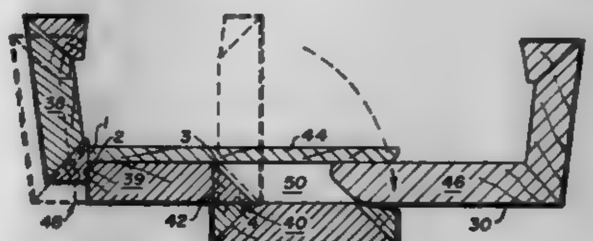
3,981,103
ADJUSTABLE SPLIT DOOR JAMB

Owen Earl McAllister, Oshkosh, Wis., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 19, 1974, Ser. No. 462,475

Int. Cl.² E06B *1/10*

U.S. Cl. 49—505 **6 Claims**



1. An adjustable split door frame female member made from a monolithic base board having four v-shaped and one plowed longitudinally extending grooves and said plowed groove being located between the middle two of said v-shaped grooves, wherein the split door frame member comprising:
   a. a first end formed by folding and securing said base board along two of said v-shaped grooves;
   b. a second end formed by folding and securing said base board along the remaining two of said v-shaped grooves;
   c. a support member attached to first and second substantially mutually perpendicular surfaces, said first surface being a surface of said first end and said second surface being a surface of said second end, said support member securing said first end to said second end after said first end has been rotated away from said second end along said plowed groove by an angle of substantially 90°;
   d. a board member fastened to said first end and substantially parallel to said second end thereby forming the slot portion of said female member; and
   e. a single piece of flexible cladding material on one side of said female member.

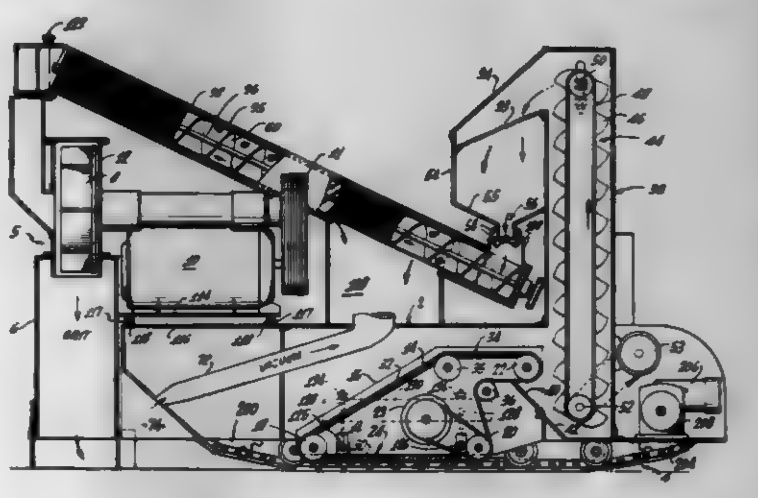
3,981,104
GRIT BLASTING MACHINE AND METHOD

Alfred J. Dreher, Pasadena, Calif., assignor to Texstar, Inc., City of Commerce, Calif.

Filed Mar. 20, 1975, Ser. No. 560,356

Int. Cl.² B24C *3/06, 9/00*

U.S. Cl. 51—9 M **36 Claims**



1. A grit blasting machine for removing scale from a surface to be cleaned utilizing particles of metal grit susceptible to magnetic attraction, the grit blasting machine comprising:

a vehicle adapted for motion along the surface in a forward direction extending longitudinally of the vehicle, said vehicle having forward and rear ends;

a housing having an opening facing the surface;

means for mounting said housing on the forward end of said vehicle with said opening positioned forwardly of said vehicle;

blasting means connected to said housing for projecting the grit through said opening against the surface to remove the scale therefrom;

at least one endless belt formed from non-magnetic, magnetically permeable material;

means connected with said vehicle for supporting said belt in an endless path and for driving said belt peripherally along said path, said path including,

a pickup region facing toward the surface in spaced adjacent relation thereto, continued motion of said vehicle moving said pickup region successively over portions of the surface travelled over by said housing,

a release region;

magnetic means connected to said vehicle for magnetically attracting grit present on the surface facing said pickup region onto said belt and for holding the grit on said belt until the grit reaches said release region, the portions of said belt passing through said release region not being subjected to sufficient magnetic force to hold the grit on said belt by magnetic attraction; and

means for causing the grit to become separated from said belt during passage through said release region.

32. A grit blasting machine for removing scale from a surface to be cleaned utilizing particles of metal grit susceptible to magnetic attraction, the grit blasting machine comprising:

a vehicle adapted for forward motion in a longitudinal direction, along the surface;

a housing having a downward opening facing the surface;

traverse means mounting said housing on the forward end of said vehicle for selectively adjustable transverse motion of said housing relative to said vehicle; and

blasting means connected to said housing for projecting the grit downwardly through said opening against the surface to remove the scale therefrom.

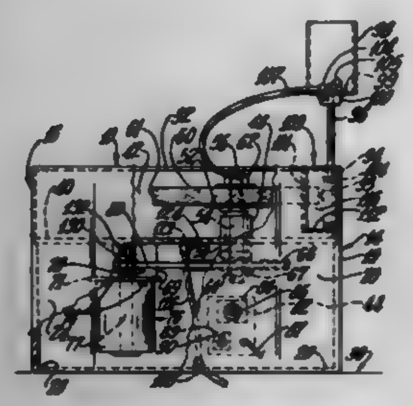
3,981,105
LAPIDARY APPARATUS

John W. Flaherty, Galesburg, Ill.; Robert C. Ingersoll, and William F. Goodrich, both of Adrian, Mich., assignors to Dick Blick Company, Galesburg, Ill.

Filed Mar. 17, 1975, Ser. No. 559,265

Int. Cl.^{2} B24B *7/08, 55/02*

U.S. Cl. 51—71 **11 Claims**



1. Apparatus for processing stones comprising, in combination, a hollow housing having connected walls, an end region of the housing providing a support surface for the housing in one position, one of said walls providing a support surface for the housing in a second position, partition means in said housing providing first and second compartments in the housing, means journally mounting a rotatable stone-processing instrumentality in said first compartment, motive means in the second compartment for rotating the stone-processing instrumentality, the housing in one position disposing the instrumentality for rotation in a substantially horizontal plane and in the second position disposing the instrumentality for rotation in a substantially vertical plane, a reservoir supported by the housing adapted to contain a liquid, tubular means connected with the reservoir for conveying liquid from the reservoir onto the stone-processing instrumentality, the end regions of the connected walls adjacent the stone-processing instrumentality having an inwardly extending flange means, said flange means and said first compartment providing a chamber for receiving liquid thrown from the instrumentality with the housing disposed in its respective positions, and a table mounted by the housing for supporting stones for processing with the instrumentality disposed in a vertical plane.

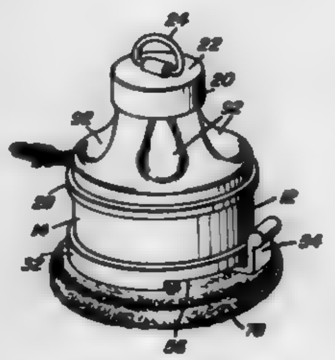
3,981,106
SCRUBBER-SANDER WITH CLEANER DISPENSING MEANS

Alfredo Gallo, 483 NE. 29th St., Miami, Fla. 33137

Filed Apr. 29, 1975, Ser. No. 572,922

Int. Cl.^{2} B24D *17/00;* **A46B** *11/04*

U.S. Cl. 51—358 **11 Claims**



1. A scrubber body comprising a hollow body closed at its lower end by means of a bottom wall, said body including an upper filler opening for introducing a selected fluent material into said body, said bottom wall having an outlet opening formed therein for gravity discharge of fluent material therethrough from within said body, said bottom wall including valve means guidingly supported therefrom operably associated with said outlet opening and shiftable relative to said bottom wall between open and closed positions, a scrubber member supported from said body beneath said bottom wall and said outlet opening penetrable by fluent material, valve means including a valve plate closely underlying said bottom wall and oscillatably supported therefrom, said valve plate including a discharge opening formed therethrough shiftable into and out of registry with said outlet opening upon oscillation of said valve plate relative to said bottom wall, said bottom wall and valve plate including corresponding central portions, said central portions including coacting mounting means rotatably supporting the central portion of said valve plate from the central portion of said bottom wall for oscillation about an upstanding axis extending generally centrally through said body.

3,981,107
ROOF-TO-SIDEWALL JOINT STRUCTURE FOR TRANSIT VEHICLE

Theodor C. Schubach, Bonita, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Apr. 28, 1975, Ser. No. 572,124

Int. Cl.^{2} B62D *31/02*

U.S. Cl. 52—11 **6 Claims**

1. In a transit vehicle having two sidewalls each having an upwardly exposed joint surface along its upper edge, and a roof structure terminating along each side thereof in a downwardly exposed marginal joint surface for seating in support relation on the upwardly exposed upper surface of its respective side wall, an externally completed joint structure connecting each side of the roof structure in supported relation to the upper joint surface of the sidewall on the same side of the vehicle, said joint structure comprising:

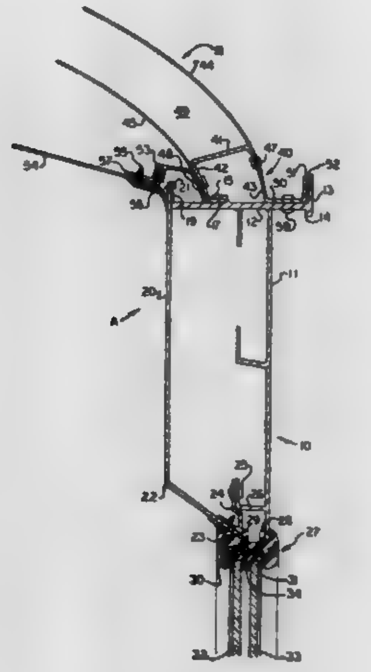
a side flange extending laterally outwardly along the outer edge of each side of the roof structure, at least a portion of the under surface of each of said roof structure side flanges comprising an extension of its respective downwardly exposed marginal roof surface,

a first locking flange extending laterally in one direction along each side of the roof structure and spaced inwardly, by a distance approximately the width of its respective side wall joint surface, toward the longitudinal center line of the vehicle from its respective outwardly extending roof structure side flange,

a side flange extending laterally outwardly from the upper portion of each of said sidewalls, a top surface of each of said latter flanges conforming to, and closely underlying, the under surface of the roof structure side flange on the same side of the vehicle,

a second locking flange on each of said sidewalls and extending laterally, in the opposite direction from, and in interlocking relation with, the said first locking flange on the corresponding side of the roof structure, and

means applied by a worker exteriorly of the vehicle securely interconnecting the superposed roof and sidewall side flanges along each side of the vehicle, thereby retaining the upper portion of each side wall against movement relative to the roof structure in a direction to withdraw each said first locking engagement with its respective said second locking flange.



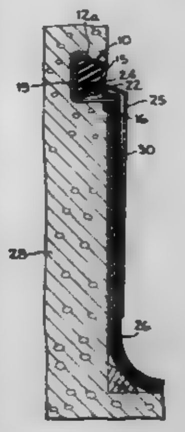
3,981,108
REGLET STRUCTURE

Edward T. Berg, 187 Fremont St., San Francisco, Calif. 94105
Continuation of Ser. No. 462,301, April 19, 1974. This application Apr. 23, 1975, Ser. No. 570,590

Int. Cl.^{2} E04D *13/14*

U.S. Cl. 52—61 **2 Claims**

1. As a new article of manufacture, a one-piece reglet formed of extruded plastic material, adapted to be embedded in a concrete structure adjacent to one surface thereof and to hold lip-equipped flashing in place against said one surface of the concrete structure, and comprising a channel consisting of spaced apart upper and lower flanges, a substantially flat connecting bight portion extending between and connected to the inner longitudinal edge portions of the flanges, and an apron extending between and connected to the outer longitudinal edge portions of said flanges and disposed originally in substantially parallel relation with the bight portion, said flanges converging substantially uniformly in the direction of the apron, said channel being adapted in connection with formation of the concrete structure to have its apron fit flatly against a form panel while wet concrete is poured around it and against said form panel in order to form said concrete structure, and being also adapted upon hardening of the concrete and removal of the form panel to have its apron exposed as well as lie in the plane of the surface which is formed on the concrete structure by way of the form panel, said apron of the channel being provided in its outer surface and adjacent and parallel to the outer longitudinal edge portion of the lower flange with a single longitudinal groove, having its outer surface smooth and uninterrupted except for said single longitudinal groove, and being adapted after removal of the form panel and longitudinal slitting of its longitudinally-grooved portion to be swung inwards and slightly upwards so that it extends inwards and downwards, provides such access to the interior of the channel as to permit entry therein of the lip of the flashing, and serves so frictionally to grip such lip as to hold the flashing in place without the use of wedges or auxiliary anchoring elements.



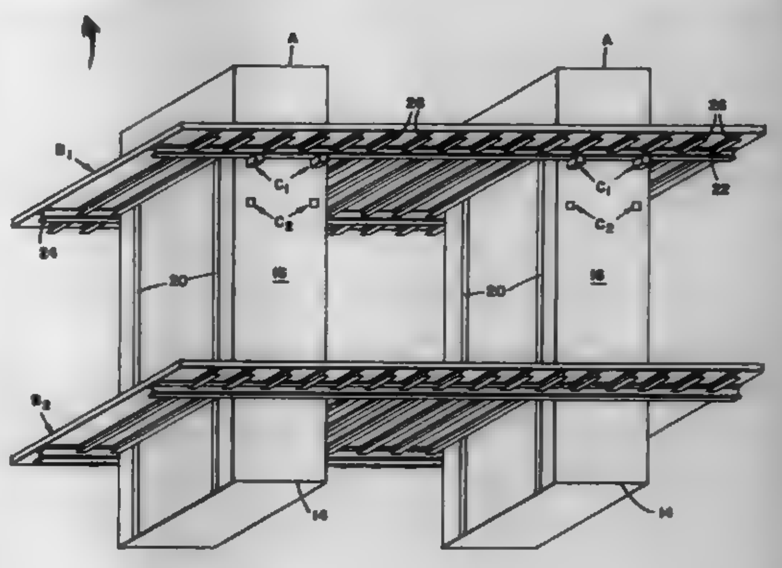
3,981,109
PROCESS AND APPARATUS FOR SUPPORTING HOISTED FLOORS PERIPHERALLY OF SUPPORTING TOWER

David E. Termohlen, Greenwich, Conn., assignor to International Environmental Dynamics, Inc., New York, N.Y.

Filed Oct. 24, 1974, Ser. No. 517,682

Int. Cl.^{2} E04B *1/00*

U.S. Cl. 52—126 **20 Claims**



1. Apparatus for the support of a floor about at least one tower to permit a floor to be raised immediately adjacent the sidewalls of said tower and above the intended elevation of said floor and thereafter lowered onto said apparatus for the support of said floor from said tower, said apparatus comprising: a plurality of substantially horizontally disposed receptacles defined within the sidewalls of said tower immediately below the elevation of said floor, said receptacles having an elongate dimension opening at one end to the exterior or the sidewalls of said tower, said receptacles having a preselected cross section across their elongated dimension to define upper and lower supporting surfaces for supporting the weight of said floor; a correspondent plurality of bars disposed within said receptacles, said bars having an elongated dimensions

from end to end to permit said bars to fit within said receptacles to define along the sidewalls of said tower an unobstructed surface permitting said floors to be raised immediately past said receptacles with said bars therewithin; means attached to said bars for permitting said bars to be withdrawn from said receptacles to protrude under said floors in supporting relation; and, upper and lower bearing surfaces on said bars corresponding in location to the upper and lower supporting surfaces in said supporting surfaces in said receptacles when said bars are partially withdrawn for load supporting contact with said receptacles to provide a cantilever support to said bars to permit support of said floor when resting thereon.

3,981,110
DWELLING HOUSE

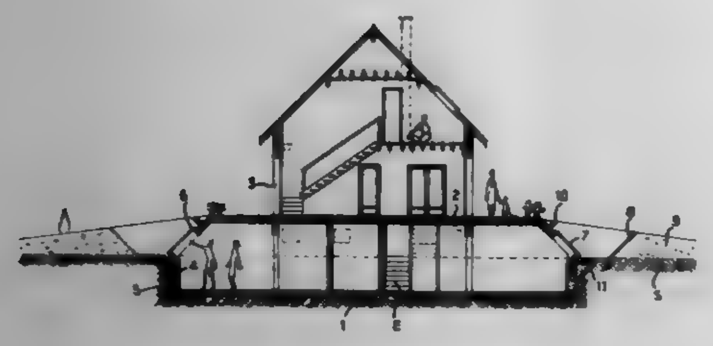
André Le Cornec, 30 rue de la Mairie, 91220 Bretigny-sur-orge, France

Filed Mar. 10, 1975, Ser. No. 557,026

Claims priority, application France, Apr. 18, 1974, 74.13520

Int. Cl.^{2} E04F *17/06;* E02D *27/00*

U.S. Cl. 52—169 R 8 Claims



1. A dwelling house, a storey of which comprises:

a horizontal floor which is below the level of the natural ground which immediately surrounds the house;

a horizontal ceiling which is above said ground level;

side faces extending from said floor to said ceiling and enclosing therewith at least one dwelling room, one of which side faces has an upper part which is above said ground level and which slopes upwards and inwards;

a window provided in said sloped upper part giving light to one said dwelling room and facing into a basin provided in the reconstituted ground above the natural ground, the bottom of the basin being approximately at the level of the natural ground.

3,981,111
INSULATING UNIT

Nils Ture Lennart Berthagen, Manadsvagen 74, S-175 42 Jarfalla, Sweden

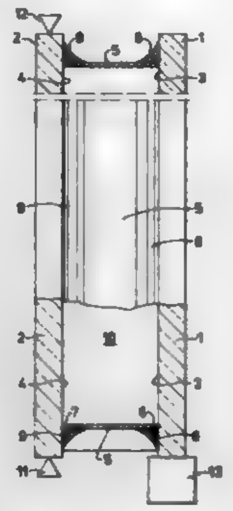
Filed Mar. 3, 1975, Ser. No. 554,833

Claims priority, application Sweden, Mar. 1, 1974, 7402787

Int. Cl.^{2} E06B *3/24, 7/12*

U.S. Cl. 52—171 8 Claims

1. In an insulating unit of the kind having at least two mutually opposing transparent plates joined together along their peripheral edge portions by means of a substantially gas-tight and liquid-light sealing means, said sealing means, together with said transparent plates, defining a closed, gas-tight and liquid-tight chamber and permitting movement between the plates, the improvement comprising means attached to at least one plate for allowing said one plate to pivot automatically with respect to said other plate around a fixed axis at its lower edge in response to changes in pressure in said closed chamber.



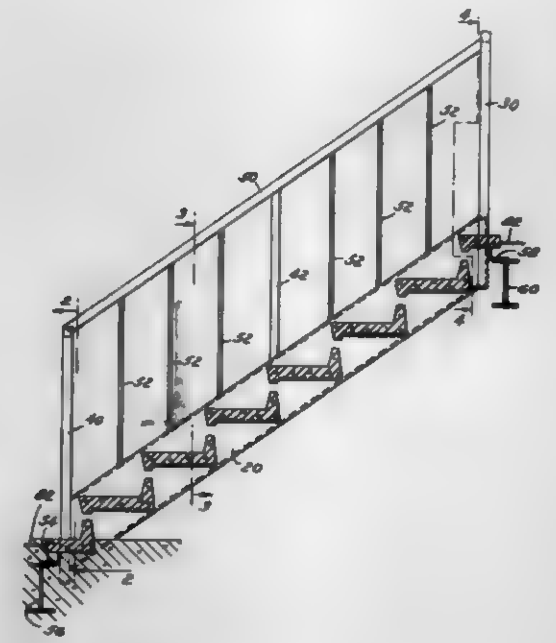
3,981,112
PREFABRICATED STAIR CONSTRUCTION

Norman W. Dake, 1756 E. Ave. NE., Cedar Rapids, Iowa 52406

Filed Dec. 6, 1974, Ser. No. 530,078

Int. Cl.^{2} E04F *11/00, 11/18*

U.S. Cl. 52—184 5 Claims



1. A prefabricated structure for a stair assembly which comprises:

a. a steel beam stringer channel disposed with the flanges of the channel extending to one side which is the outside in assembly,

b. a rail post rigidly secured at each end of the stringer channel positioned at an acute angle to the stringers wherein to be disposed in an upward vertical direction in final assembly and having a dimension transverse of the stair construction to close the flange area at the ends of the stringer channel,

c. a balustrade rail rigidly secured to the top ends of said rail posts to form a load bearing parallelogram structure with said stringers,

d. a plurality of balusters rigidly secured to a top flange of the stringer channel and to the balustrade rail to rigidify the said parallelogram structure into a structural truss, and

e. a plurality of short, tread-supporting shelves affixed in parallel spaced relation on the other side of said stringer which is the inside in assembly to support the ends of a plurality of preformed treads.

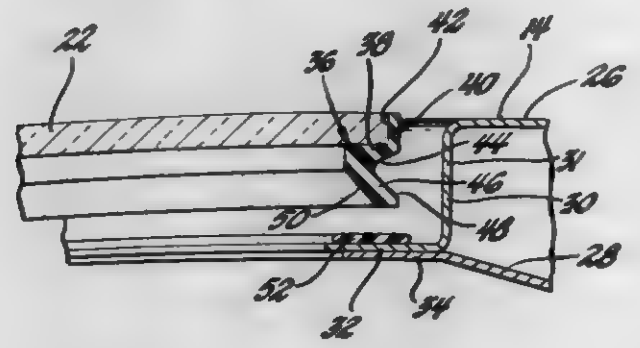
3,981,113
WINDOW GLASS BONDING STRIP

Henry W. Griffin, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 12, 1975, Ser. No. 576,806

Int. Cl.^{2} B60J *1/02;* E06B *3/62, 3/02*

U.S. Cl. 52—208 2 Claims



1. In a motor vehicle body having a window opening defined by a body panel flange and a window panel for closing the window opening when mounted therein, an extruded resilient bonding strip adhesively connecting the window panel to the body panel flange and adhesively providing the sole means mounting the window panel on the body panel flange, said bonding strip comprising: an extruded strip of resilient material having a tacky outer surface, said bonding strip having a body portion engaging and adhesively securing the bonding strip to the edge of the window panel, the body portion having a tacky underface facing toward the body panel flange and a continuous leg extruded integrally with the body portion of the bonding strip and depending therefrom at an acute angle with respect to the underface, said leg having first and second tacky faces, the leg engaging the body panel flange when the window panel is installed in the window opening so that the leg is folded back with one tacky surface engaging the tacky underface of the body portion and adhesively securing said leg to said body portion and the other face engaging and being adhesively secured to the body panel flange to adhesively mount said window panel on the body panel flange solely by the adhesion of the bonding strip.

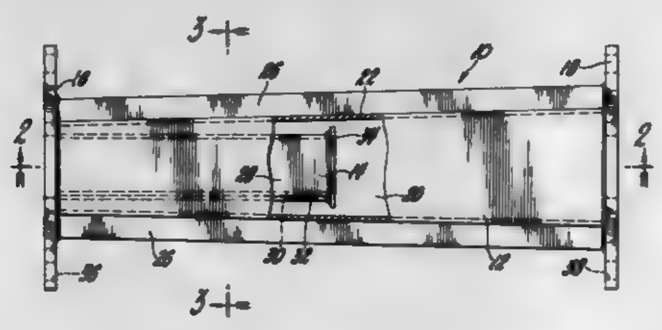
3,981,114
ENERGY ABSORBING PERMANENTLY DEFORMABLE COLLAPSIBLE COLUMN

Ronald Chupick, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 13, 1975, Ser. No. 586,613

Int. Cl.^{2} E04C *2/00, 3/32*

U.S. Cl. 52—232 4 Claims



1. An energy absorbing permanently deformable collapsible column comprising; a frusto-pyramidal shaped first hollow column; a first end cap secured to and closing one end of said first column including attaching means disposed thereon for securing the energy absorbing column in an appropriate environment, a second end cap secured to and closing the other end of said first column including attaching means disposed thereon for securing the energy absorbing column in the appropriate environment; and a second hollow column disposed within said first column having one end secured to said first end cap and having the other end freely disposed at a position substantially one-half the distance between said end caps; said first column being adapted to collapse at a predetermined rate under a predetermined amount of compressive loading, said second column preventing buckling of said first column during initial collapse of said first column and also collapsing at a predetermined rate to increase the load carrying capacity of the energy absorbing column when said first column is sufficiently compressed to permit the second column to contact said second end cap.

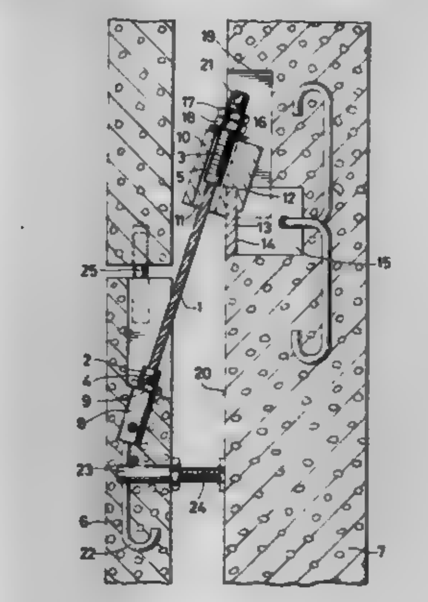
3,981,115
MOUNTING FACIA PLATES ON BUILDING STRUCTURES

Peter Hoyer, Street No. 166 a, 8941 Egg an der Gunz, Bavaria, Germany

Filed Jan. 27, 1975, Ser. No. 544,581

Int. Cl.^{2} E04B *5/57, 2/88*

U.S. Cl. 52—235 3 Claims



1. In an apparatus for the suspension of facia plates or the like from a building structure comprising a suspension member of adjustable effective length having means at its upper end for suspended engagement with the wall of a building structure and formed with means at its lower end for engagement with a facia plate, means associated with said suspension member permitting adjustment of said facia plate paralell to and normal to the surface of said wall, and an arrangement for adjusting the spacing of the facia plate from said wall surface, the improvement whereby the suspension member comprises a length of flexible wire rope with a first externally-threaded sleeve including means secured to its upper end for engagement with means in hooked engagement with a cooperating portion on the building structure and permitting adjustment of the effective length of the suspension member, and with a second externally-threaded threaded sleeve secured to the lower end of the wire cable and threadedly engaged in a cooperating sleeve anchored in the facia plate, said flexible wire rope providing a universal joint connection between the building structure and facia plate, said means in hooked engagement with the building structure comprising a suspension element including a bore which at least partially, axially accommodates the first externally-threaded sleeve and being of a size to permit free angular movement relative to the longitudinal axis of the sleeve and including a slot providing for hooked engagement with the attachment means on the building structure, said first externally-threaded sleeve carrying at least one lock nut and a washer between this nut and the upper face of the suspension element, said washer having a part-spherical formation at the face thereof, contacting the suspen-

sion element for accommodating for the relative axial angular positions of the sleeve in the bore of said suspension element.

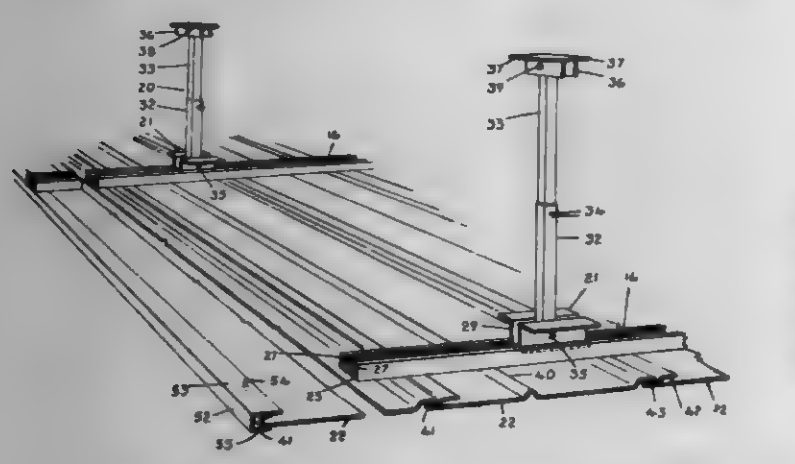
3,981,116
SHEATHING SYSTEM FOR BUILDING STRUCTURES

Charles Paul Reed, Scarborough, Canada, assignor to Alcan Aluminum Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 370,164, June 14, 1973, abandoned. This application June 17, 1974, Ser. No. 479,639

Int. Cl.^{2} E04B *5/52*

U.S. Cl. 52—484 19 Claims



1. A drop ceiling system for installation below a ceiling structure, comprising a plurality of rigid elongated stringers that are to be arranged parallel to one another in a horizontal plane, a plurality of elongated hangers for supporting the stringers from the ceiling structure, each hanger comprising a pair of rigid members that are relatively adjustable longitudinally of the hanger to vary the length of the hanger, hanger connecting and fastening means for connecting an upper end of the hanger to the ceiling structure and a lower end of the hanger to a stringer and including means slidingly engageable with a stringer to allow adjustment of the position of the hanger longitudinally of the stringer, the hanger connecting and fastening means permitting swinging of one end of the hanger relative to the other during installation to accomodate unevenness in the ceiling structure and including means for firmly fastening said rigid members together to fix the length of the hanger, the hanger connecting and fastening means when said rigid members are fastened together preventing vertical movement of the hanger longitudinally of itself relative to the ceiling structure and to the stringer whereby the hangers can rigidly space the stringers away from the ceiling structure, a plurality of moisture imprevious drop ceiling panels, means for rigidly securing the panels to the stringers to form a continuous drop ceiling and prevent relative movement between the panels and stringers, and means for sealing said drop ceiling against passage of moisture; the ceiling means, the impreviousness of the panels, the rigid securing of the panels to the stringers, and the rigid spacing of the stringers from the ceiling structure ensuring that the drop ceiling can be cleaned from below without displacement thereof and without passage of moisture therethrough.

3,981,117
LINING AND FASTENER ARRANGEMENT FOR DEVICES HAVING SURFACES SUBJECT TO WEAR

Bengt Lars Arne Dehlen, Trelleborg, Sweden, assignor to Trelleborgs Gummifabrik Aktiebolag, Trelleborg, Sweden

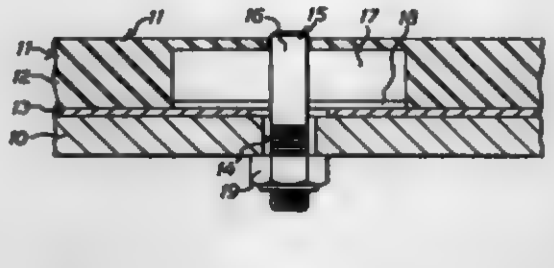
Filed May 6, 1975, Ser. No. 574,994

Claims priority, application Sweden, May 7, 1974, 7406072

Int. Cl.^{2} E04B *1/38*

U.S. Cl. 52—509 6 Claims

1. A wear surface lining and anchoring means comprising a lining element including a layer of wear resistance elastomer material having metal sheet reinforcing at least along its edge portions, said metal sheet reinforcing being spaced from one surface of said layer of elastomer material, fastening means for mounting said lining element onto a wall subject to wear with the surface of said lining element opposite said one surface adjacent said wall, said fastening means including a clamping member for engaging and clamping and lining element against said wall, means on said clamping member defining an elongated knife-edge directed toward metal reinforcing sheet and cutting through said wear resistant elastomer material from said one surface and engaging said metal reinforcing sheet, and connector means engaging said wall and retaining said clamping member in position to retain said lining element rigidly clamped on the wall by clamping action between said metal reinforcing sheet and said knife edge.



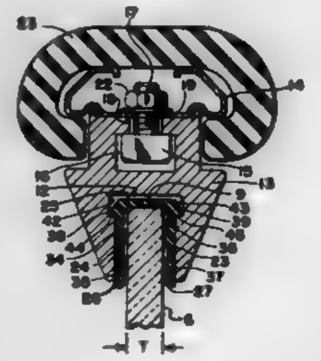
3,981,118
CLAMPING INSERT

Ernest D. Johnson, Tallmadge, and Hugh W. Wright, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 17, 1974, Ser. No. 515,515

Int. Cl.^{2} E04C *2/33;* **E04F** *19/02*

U.S. Cl. 52—716 4 Claims



1. In combination, a plate member having a supporting edge, a grooved member having a groove of greater width than the thickness of said plate member for receiving said edge and a clamping insert for gripping the sides of said plate member at said supporting edge and for insertion with said supporting edge into said groove, said insert comprising an elongated body of elastomeric material having a central portion and side portions, said side portions having locking flanges extending outwardly from the outer faces and ribs extending inwardly from the opposing inner faces for engagement with the sides of said plate member, the thickness of said side portions and said ribs being greater than the difference between the width of said groove and the thickness of said plate whereby said ribs are compressed into gripping engagement with the sides of said plate, said groove having an end and sides with slots in the sides of said groove for engaging said locking flanges of said side portions of said clamping insert in locking engagement in said slots and said elastomeric material being stretchable whereby said clamping insert may be elongated to reduce the thickness of said side portions including said ribs to compensate for dimensional variations of the plate member, grooved member and clamping insert.

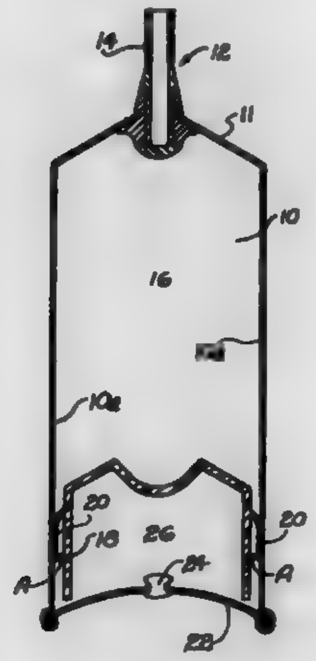
3,981,119
METHOD OF MAKING A PRESSURE OPERATED CONTAINER FOR DISPENSING VISCOUS PRODUCTS

Robert S. Schultz, 7 Heusted Drive, Old Greenwich, Conn. 06870

Continuation-in-part of Ser. No. 435,472, Jan. 22, 1974, abandoned, which is a continuation-in-part of Ser. No. 290,977, Sept. 21, 1972, Pat. No. 3,827,607, which is a continuation-in-part of Ser. No. 175,253, Aug. 26, 1971. This application Sept. 9, 1975, Ser. No. 611,814

Int. Cl.^{2} B65B *31/00*

U.S. Cl. 53—37 6 Claims



1. The method of making a pressurized container for dispensing viscous material, which comprises selecting an open-botton cylindrical container body having a dispensing valve at its closed upper end and inverting the same to upwardly face the open bottom, introducing viscous product into the open end and in intimate void-free contact with container inner-wall surfaces including that of said upper end, selecting a cupped and relatively stiffly closed cylindrical piston body of diameter substantially less than the container-bore diameter and with a flexible peripheral seal flange integrally formed with the body near the stiffly closed end, the flange having a peripherally continuous tubular container-sealing region radially offset from the piston body and of axial extent substantially less than that of the piston body, assembling the selected piston through the open bottom of the container with the closed end of the piston in contact with the viscous product and with the tubular region extending in the direction of the open bottom, imparting a relative rotary displacement of the piston and body with respect to each other after initial piston contact with the product, closing the open bottom of the container with a bottom closure, and squeezing only the tubular region of the flange into axially extending and circumferentially continuous container wall contact by introducing a superatmospheric charge of pressurized gas between the bottom closure and the piston, whereby piston-body contact with the container wall is limited to prevention of extreme angular misalignment, and whereby in use of the container (a) maximum product is squeezed ahead of the advancing piston and (b) minimum friction characterizes piston advance.

3,981,120
BOTTLE PACKAGING MACHINE

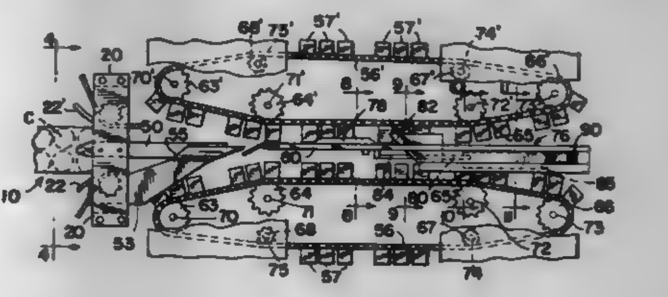
Robert H. Ganz, Saddle River, N.J., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 470,036, May 15, 1974, Pat. No. 3,940,907. This application Sept. 16, 1974, Ser. No. 506,098

Int. Cl.^{2} B65B *21/08*

U.S. Cl. 53—48 17 Claims

1. An apparatus for closing filled bottle cartons wherein the cartons comprise connected side and end wall forming panels enclosing an assembly of bottles in double row arrangement with top and bottom wall forming closure panels hingedly connected to top and bottom edges of said side wall forming panels, said top wall forming closure panels having free marginal portions which are adapted to be overlapped in the plane of the top wall and which have interengaging locking means, said apparatus comprising conveyor means for supporting the bottle assemblies with the carton top wall forming panels in upstanding open relation while advancing them along a predetermined path, endless traveling conveyor means disposed for movement in horizontal planes and having opposed runs extending in spaced relation on opposite sides of said path, which conveyor means carries top wall panel engaging means, said top wall panel engaging means extending into the path of said upstanding top wall forming closure panels and engaging said panels so as to fold said panels down into top wall forming position with free marginal portions of said panels overlapped, said top wall panel engaging means comprising a series of conveyor carried plate members having angularly related face portions positioned for engaging said top wall and said side wall panels, respectively, in areas adjacent the hinge connections between the top wall forming panels and the side wall forming panels while traveling along said opposed runs, the topmost one of said plate portions being positioned to strike the upstanding top wall closure panel above the hinged connection thereof with the associated side wall panel and the lowermost one being positioned to engage the top marginal portions of the side wall and urge the same in the direction inwardly of the carton, and holding said panels in tight relation on the bottles while the carton is advanced and plow forming devices disposed at fixed points along the top of said run which interengage said panel locking means while said top wall and side wall panels are held in tight relation on the bottles.



3,981,121
MACHINE FOR FILLING A SACK WITH PIECE GOODS AND CLOSING MOUTH OPENING OF THE SACK

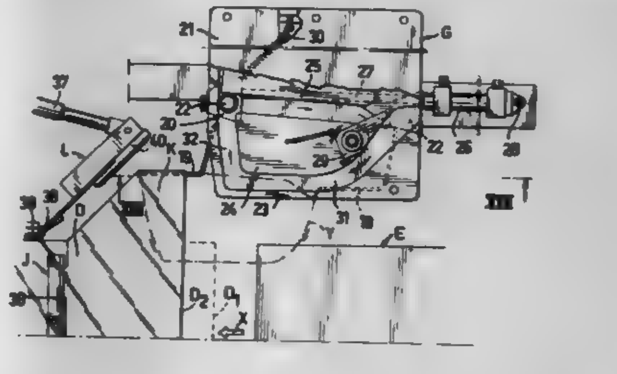
Lasse Juhani Turunen; Heikki Rimpinen; Tauno Orsma, and Aimo Peurala, all of Mantta, Finland, assignors to G. A. Serlachius Oy, Manatta, Finland

Continuation-in-part of Ser. No. 466,885, May 3, 1974, abandoned. This application July 28, 1975, Ser. No. 599,772

Claims priority, application Germany, May 7, 1973, 2322841

Int. Cl.^{2} B65B *35/50, 7/08, 51/14*

U.S. Cl. 53—159 4 Claims



1. A machine for filing a sack of flexible material such as plastics and for closing the mouth opening of the sack to form

a carrying handle comprising sorting means for stacking piecegoods into a predetermined shape; closing means for folding and seaming the mouth opening of said sack when filled, said sorting means and said closing means being arranged after each other for operating in predetermined sequence, revolving means between said sorting means and closing means and having filling racks and being displaceable in a transverse plane with respect to said line between a ready-for-operation position, in which said filing rack is positioned outside said line to receive an empty sack, and a sacking position, in which said filling rack is positioned on said line to push goods into the sack and to push the filled sack to said closing means; said closing means comprising two spreading devices positioned on different sides of the mouth opening of the sack, said devices having fingers adapted to grip the mouth opening of the sack and to stretch said mouth opening to form a narrow opening, so that the free side walls of said sack mouth opening are at least positioned substantially opposite each other to form a double edging, a supporting plate to be positioned against the mouth opening of the sack to turn said double edging to a closing plane, two swing flaps positioned close to said spreading devices to turn angle folds formed by said fingers upon said supporting plate, and welding means for welding together said folded angle folds.

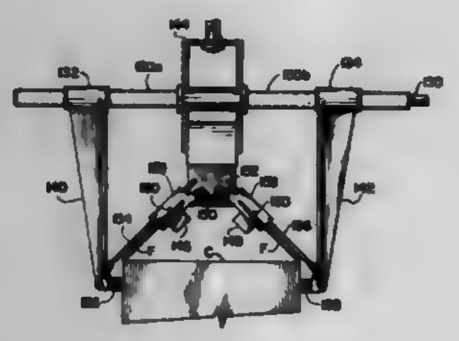
3,981,122
APPARATUS FOR APPLYING ADHESIVE TO CARTON FLAPS

Lloyd D. Johnson, Portland, Conn., assignor to Embart Industries, Inc., Hartford, Conn.

Filed Dec. 8, 1975, Ser. No. 638,770

Int. Cl.² B65B *7/20*

U.S. Cl. 53—374 **6 Claims**



1. In an apparatus for feeding erected cartons in a downstream longitudinal direction, said cartons having side panels with closure flaps pivotally connected thereto on laterally spaced longitudinally extending fold lines aligned with the downstream direction, the improvement comprising:

a. positioning means for orienting said flaps at predetermined equal but opposite angles of 90° or less measured with respect to the plane defined by the fold lines,
b. adhesive applying heads having guides for receiving and applying a band of adhesive to said flaps oriented at said predetermined angles,
c. support means for said adhesive applying heads, including a pivot block on the longitudinal center line of the apparatus for pivotally supporting said heads,
d. said support means further including at least two links each of which links has one end connected to one of said heads,
e. means for adjustably mounting the other end of both said links for movement toward and away from said block to vary the angular position of said slots in said heads to accommodate the flaps of cartons having a lateral dimension between said fold lines which can vary, the smaller size cartons having their flaps oriented at steeper angles and larger cartons at shallower angles, the adhesive applying heads being movable only angularly relative to said block,
f. side guide structure for engaging said carton side panels.
g. said means for adjustably mounting the other ends of said links including at least one laterally extending shaft having right hand and left hand threaded portions, and correspondingly threaded nuts to which said other ends of said links are pivotally connected to achieve said movement toward and away from said block, and
h. said left and right hand threaded nuts also comprising a portion of said guide structure whereby the side guides are moved toward and away from one another in the same amount as movement of said other ends of said links.

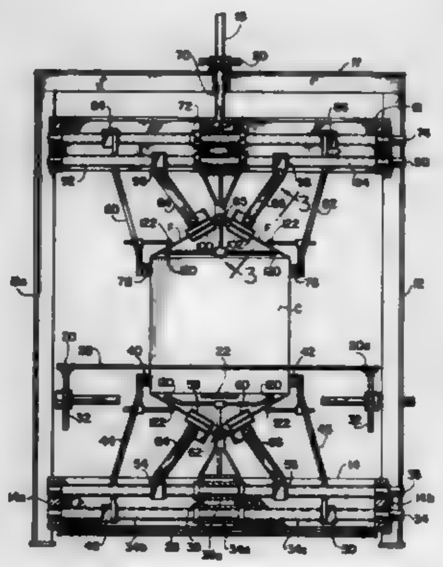
3,981,123
APPARATUS FOR APPLYING ADHESIVE TO CARTON FLAPS

Thomas L. Flanagan, Killingworth, Conn., assignor to Embart Industries, Inc., Farmington, Conn.

Filed Dec. 8, 1975, Ser. No. 638,769

Int. Cl.² B65B *7/20*

U.S. Cl. 53—374 **6 Claims**



1. In an apparatus for feeding erected cartons in a downstream longitudinal direction, said cartons having side panels with closure flaps pivotally connected thereto on laterally spaced longitudinally extending fold lines aligned with the downstream direction, the improvement comprising:

a. positioning means for orienting said flaps at predetermined equal but opposite angles of 90° or less measured with respect to the plane defined by the fold lines,
b. adhesive applying heads having guides for receiving and applying a band of adhesive to said flaps oriented at said predetermined angles,
c. support means for said adhesive applying heads, including a pivot block on the longitudinal center line of the apparatus for pivotally supporting said heads,
d. said support means further including at least two links each of which links has one end connected to one of said heads, and
e. means for adjustably mounting the other end of both said links for movement toward and away from said block to vary the angular position of said slots in said heads to accommodate the flaps of cartons having a lateral dimension between said fold lines which can vary, the smaller size cartons having their flaps oriented at steeper angles and larger cartons at shallower angles, the adhesive applying heads being movable only angularly relative to said block.

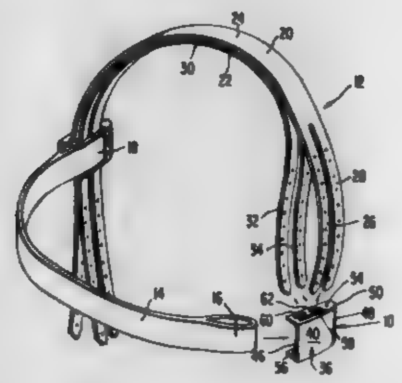
3,981,124
CONCHO

Charles E. Kibler, 8325 E. Indian Bend Road, Scottsdale, Ariz. 85253

Filed Sept. 10, 1975, Ser. No. 611,959

Int. Cl.² B68B *1/04*

U.S. Cl. 54—6 R **3 Claims**



1. The combination, with a bridle assembly which includes a brow band having loop ends, an outer overhead strap bifurcated to provide a forward bit strap and an aft throat latch strap, an inner overhead strap bifurcated to provide front and rear hanger straps, of conchos for said straps, comprising:

a concho at each end of the brow band, each concho having an outer plate with inner and outer surfaces, upper and lower edges, and forward and rear edge portions;
a rear wall extending inwardly from each of the rear edge portions, and an inside wall on each of the rear walls;
top and bottom walls extending inwardly from the upper and lower edges;
said top and bottom walls being fixedly secured to the respectively adjacent rear and inside walls;
the top and bottom walls having series of co-aligned slots formed therein;
the brow band extending into the conchos with the loop ends thereof encased in said conchos and bearing against the rear walls thereof;
the slots in the conchos being aligned with said loop ends, and the slots including enlarged outer slots, the overhead straps with said bit strap and throat latch strap entering through the loop and outer slots, and pairs of longitudinally aligned forward and rear inside slots, the front pin strap extending through the loop and forward inside slots, and the rear hanger straps extending through the loop and the rear inside slots.

3,981,125
LEVELING MECHANISM FOR HARVESTER HEADERS

Dathan R. Kerber, Bettendorf, Iowa; Thomas A. Hocking, Colona, and John L. Vande Wiele, Moline, both of Ill., assignors to International Harvester Company, Chicago, Ill.

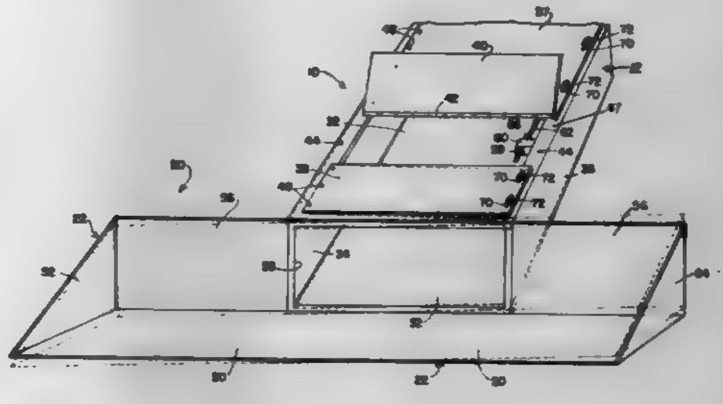
Filed Feb. 12, 1975, Ser. No. 549,244

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² A01D *41/04*

U.S. Cl. 56—14.5 **8 Claims**

1. In an agricultural implement, the combination with a feeder having a generally rectilinear tubular housing provided with a rectangular forward open rim, said housing including a transverse bottom wall, upstanding side walls, and a transverse top wall having a proximate edge fixedly secured to the upper edge of one of said side walls and a free distal edge disposed in longitudinal register with the upper edge of the other side wall, and a crop-gathering header including a bottom wall and an upstanding rear wall which extends across said open rim and is secured thereto, cooperating means on the free distal edge region of said top wall and the adjacent side wall for regulably shifting such region longitudinally along the upper edge of such side wall in either direction to thereby distort the forward rim region of the housing and effect relative vertical shifting movement of forward edge regions of the side walls and consequent rocking movement of the header casing bodily as a unit.



3,981,126
SAFETY SUPPORT FOR HARVESTER COMBINE FEEDERS

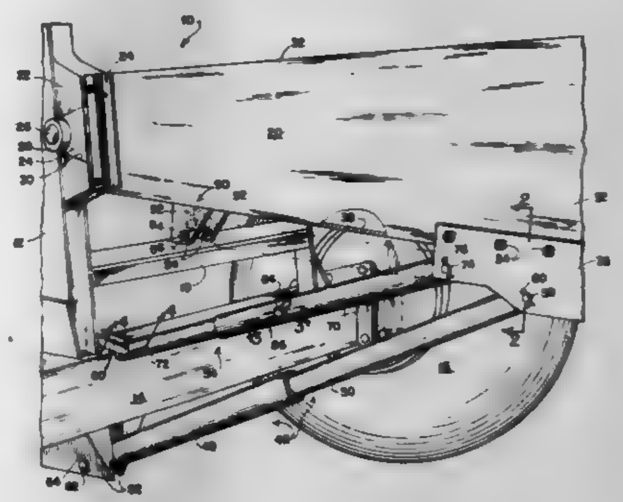
Thomas A. Hocking, Colona, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Mar. 17, 1975, Ser. No. 558,973

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 10, 1976

Int. Cl.² A01D *41/06*

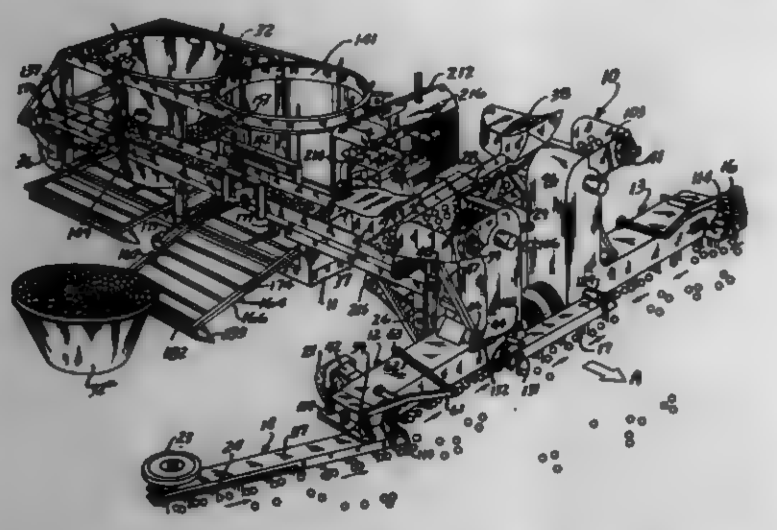
U.S. Cl. 56—15.9 **11 Claims**



1. In a harvester combine having a framework including a horizontally disposed transverse axle housing, a crop feeder pivoted at its rear end to the forward end of the combine framework for swinging movements between an operative crop infeed position and a raised inoperative position, and at least one hydraulically operable lift cylinder effective between said framework and feeder for producing such swinging movements, the improvement which compresses an extensible and contractible brace-like safety stand effective in compression between said axle housing and feeder for maintaining the latter in a predetermined elevated position, said safety stand comprising at least one extensible and contractible pair of telescopic inner and outer parts including a forward part effectively pivoted to a forward region of the feeder and a rearward part engageable with said axle housing when said stand is in its fully extended position, a removable pin projecting diametrically through said outer part and serving to maintain the stand in such fully extended position, and a parking bracket fixedly secured to said feeder rearwardly of the point of pivotal connection between said forward part and the feeder and the effective to support the rear end portion of the rear part when said pin is removed and said stand is contracted.

3,981,127
APPARATUS FOR GATHERING AND CONTAINERIZING CITRUS FRUIT AND THE LIKE

Lucius N. Smith, Montverde, Fla. 32756
Filed Sept. 3, 1974, Ser. No. 502,509
Int. Cl.^{2} A01D *51/00*
U.S. Cl. 56—328 R 17 Claims

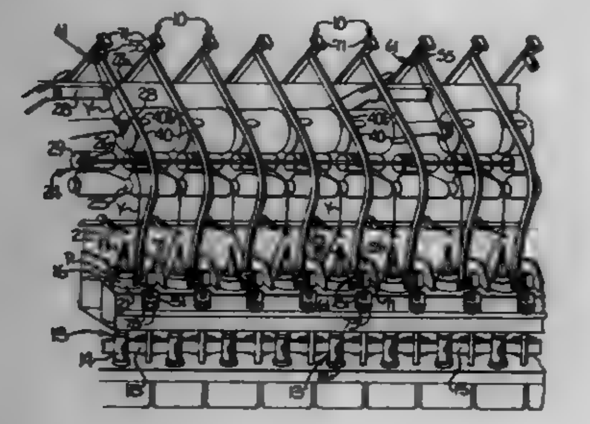


1. In apparatus for gathering fruit such as oranges and the like lying on the ground,

- a. a wheel supported frame adapted to move alongside a row of trees from which the fruit has fallen,
- b. a laterally extending conveyor and pick-up mechanism carried by the frame comprising:
  - 1. a pair of spaced generally horizontal chains and the like having upper and lower flights,
  - 2. means to rotate the chains with the lower flights moving toward the longitudinal center line of the path of movement of the apparatus,
  - 3. rake-like tines carried by the chains and disposed to engage fruit on the ground and move it inwardly of the path of movement of the apparatus
  - 4. a vertically directed housing into which the chains carrying the fruit laden tines enter, the housing being effective to hold the fruit on the vertically moving tines, and
- c. means to discharge the thus raised fruit from the tines at a point above ground level.

3,981,128
MECHANISM FOR TRANSPORTING A YARN END IN A TEXTILE MACHINE

Gert Munker, Krefeld, Germany, assignor to Palitex Project-Company G.m.b.H., Dusseldorf, Oberkassel, Germany
Filed June 26, 1975, Ser. No. 590,429
Claims priority, application Germany, July 29, 1974, [illegible]
Int. Cl.^{2} D01H *15/00, 1/10, 7/86*
U.S. Cl. 57—34 R 28 Claims

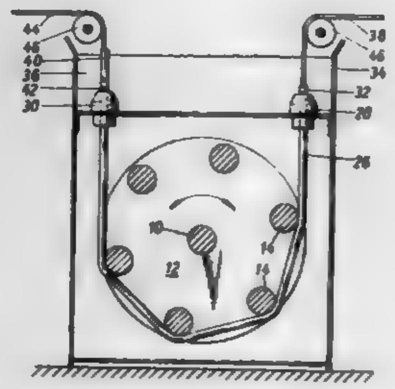


14. In a textile yarn processing machine, such as a twister, spinning frame or the like, having a plurality of side-by-side spindle assemblies for the processing of yarn and each of which includes a carrier mechanism for supporting a supply package of yarn to be withdrawn and processed and a takeup roll mechanism for the winding of the yarn after processing and being positioned above said carrier mechanism; the combination therewith of a mechanism for receiving an end of the continuous yarn being processed at the vicinity of said carrier mechanism, for transporting the yarn end along a predetermined desired path of travel and for positioning the yarn end at the vicinity of said take-up roll mechanism to facilitate yarn piecing or start-up of the yarn processing operation, said mechanism comprising

- an elongate tube carried by said yarn processing machine adjacent each of said spindle assemblies and extending along and conforming to the contour of the predetermined desired path of travel of the yarn end from said carrier mechanism to said take-up roll mechanism and defining a hollow interior therewithin,
- a freely displaceable piston positioned within said hollow interior of said tube for movement within said tube along the length thereof,
- selectively operable pneumatic means connected with said hollow interior of said tube for selectively moving said piston from one end to the other end thereof,
- a freely slideable, ring-like member positioned at least partially around the outside of said tube for movement on said tube along the length thereof,
- means magnetically coupling said piston and said ring-like member through said tube for movement of said ring-like member with said piston, and
- gripper means carried by said ring-like member for holding the yarn end during selective movement by said pneumatic means of said piston and said ring-like member along said tube transporting the yarn end along the predetermined desired path of travel.

3,981,129
METHOD AND DEVICE FOR THE FELTING OF SLIVER AND SUCHLIKE INTO FELTED YARNS

Henricus Cornelis Johannes Briaire, Nootdorp, Netherlands, assignor to IWS Nominee Company Limited, Llkley, England
Filed May 2, 1975, Ser. No. 573,826
Claims priority, application Netherlands, May 16, 1974, 7406622
Int. Cl.^{2} D04H *17/00*
U.S. Cl. 57—35 7 Claims



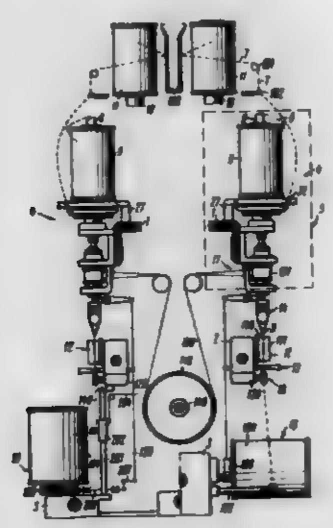
1. A method of felting wool-containing fibres consisting essentially of the steps of

- a. providing a flexible guide tube;
- b. passing wet wool-containing fibres through said guide tube; and
- c. simultaneously with step (b), flexing said guide tube.

4. A method according to claim 1, for producing a felt yarn from fibers wherein false-twist is imparted to the fibers before they are passed into the guide tube whereby to promote entanglement of the fibres.

3,981,130
SINGLE PROCESS TWISTING MACHINE FOR PRODUCING TWISTED YARN FROM TWO STRANDS

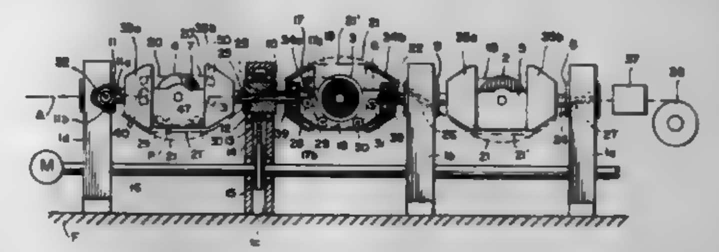
Mark Borisovich Aimbinder, ulitsa Predslavinskaya, 47, kv. 32; Mikhail Iosifovich Zhitomirsky, Vozdukhoflotsky prospekt, 103/2, kv. 26, both of, Kiev; Maria Vasilievna Denisova, 1 Krasnoarmeisky pereulok, 11, kv. 12, Mytischi Moskovskoi oblasti; Anatoly Mikhailovich Grabilin, ulitsa Entuziastov, 29, kv. 14, Kiev; Grigory Alexeevich Lapushkin, Yasny proezd, 18, kv. 72, Moscow; Moisei Zusievich Kupershmidt, ulitsa Rovenskaya, 7, kv. 55, Kiev; Jury Alexeevich Mazov, ulitsa 1 Sportivnaya, 3, kv. 7, Mytischi Moskovskoi oblasti; Viktor Petrovich Terentiev, Kolomievsky pereulok, 3/1, kv. 75, Kiev; Jury Vasilievich Sergeev, ulitsa Pervomaiskaya, 25, kv. 74, Mytischi Moskovskoi oblasti, and Vladimir Sergeevich Muzylev, stantsia Zagoryanskaya, ulitsa Kalinina, 59, Severnaya zheleznaya doroga, all of U.S.S.R.
Filed Feb. 1, 1974, Ser. No. 438,773
Int. Cl.^{2} D01H *7/86*
U.S. Cl. 57—58.3 17 Claims



1. In a single-process twisting machine for production of twisted yarn from two strands and having a plurality of work stations arranged along a longitudinal axis of the machine, each said work station comprising: a framework; a twisting spindle mounted for rotation on said framework and adapted to impart first and second twists to the strands; an arbor provided on said twisting spindle, the arbor being arranged vertically and having top and bottom ends; a radial passage provided in said arbor; a through axial passage provided in said arbor; a twisting disc associated with said spindle and having a hollow radial tube communicating through said radial passage with said axial passage of said arbor; a stationary first holder associated with said spindle adapted to support the bobbin of the supply package of the first stand, the first holder being mounted above said twisting disc on said top end of said arbor; a through passage provided in said stationary first holder coaxially with said axial passage in said arbor to offer a single through passage for the strand paid off the package of the bobbin on said stationary first holder; a first means for tensioning the strand paid off the bobbin of said stationary first holder, the first means mounted on said stationary holder and adapted for rotation under the action of the strand paid off the bobbin; a second holder for the bobbin of the supply package of the second strand, the second holder mounted on said framework outside said twisting spindle; a second means for tensioning the second strand, the second means being mounted on said second holder and adapted to maintain a permanent tension of the second strand passing through said hollow tube of said twisting disc and said axial passage on said arbor; a third means for balancing the tensioning of the two strands leaving said axial passage of said arbor prior to imparting a second twist to the strands and forming the twisted yarn, the third means being mounted on said bottom end of said arbor and actuated by the strands; a feed-in means for effecting uniform forwarding of the strands from said respective supply packages; the feed-in means being mounted downwardly of said twisting spindle and separate from the spindle under said third means for balancing the tensioning of the strands, and the feed-in means cooperating with the third means and the spindle to impart a second twist to the strands between the feed-in means and the third means of opposite direction with respect to the first twist; a take-up mechanism mounted downwardly of said twisting spindle and adapted to effect winding of the twisted yarn; a drive including a rotatable sheave and adapted to impart rotation to said twisting spindle; a first drive including a dog coupling and adapted to transmit rotation to said feed-in means to effect said uniform forwarding of the strands; a second drive including a ratchet-and-pawl mechanism adapted to supply rotation to said take-up mechanism to effect the winding of the twisted yarn; a fourth means for synchronous starting and arresting of said respective drives of said spindle, of said feed-in device, and of said take-up mechanism, the fourth means being operatively connected with said drives; a pickup responsive to the tension of the twisted yarn, associated with said synchronous starting and arresting device, and adapted to transmit an actuating signal to said last-mentioned device at slackening of the twisted yarn to simultaneously disable both of said drives, said pickup being arranged intermediate of said feed-in means and said third means for balancing the tensioning of the strands.

3,981,131
HIGH SPEED TWISTING MACHINE

Wolfgang Hartig, Remscheid; Dietrich Berges, Marienheide, and Heinz Schippers, Remscheid, all of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany
Filed Feb. 11, 1975, Ser. No. 548,982
Claims priority, application Germany, Feb. 16, 1974, 2407473
Int. Cl.^{2} D01H *1/10*
U.S. Cl. 57—58.54 9 Claims



1. In a high-speed twisting machine including (a) a plurality of individual rotors which are arranged in alignment one behind the other, which are driven at the same rotational speed and which contain guides for wires linearly intersecting the common twisting axis of the rotors, (b) a plurality of spool carriers which are rockingly mounted between two individual rotors, (c) feed spools on which wire is stored, each spool being mounted for rotation in one of the spool carriers, (d) guide means which are connected for outward extension from the individual rotors and which serve to guide the wire arriving at the rear outlet end of the machine from the front end thereof around the spool carriers and feed spools situated in the rearward direction of wire travel and (e) a winding means at the outlet end of the machine to take-up the plied and twisted wires, the improved combination in said machine for two-for-one twisting which comprises:

- rotors having hollow axial passages; and
- spool carriers having deflection means for guiding the wires which are initially forwardly drawn off through the axis of the rotors so as to pass said wires around each feed spool in the forward take-off direction, the last rotor at the front end of the machine having a guide over which the wires after being drawn off forwardly through the axis of the rotors and collected into a bundle are deflected outwardly to be returned to the rear outlet end of the ma-

chine while forming individual balloons between each two adjacent rotors.

3,981,132

DEVICE FOR SUPPORTING A SPINDLE OF AN OPEN-END SPINNING APPARATUS

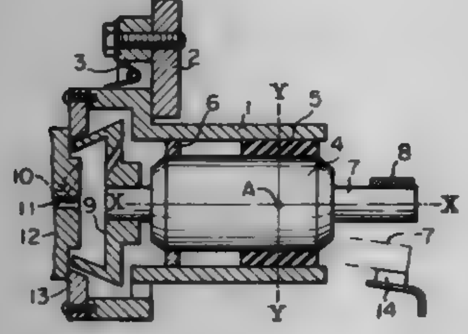
Tsutomu Miyazaki; Takashi Kato, and Noriaki Miyamoto, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho and Daiwa Boseki Kabushiki Kaisha, Osaka, both of, Japan

Continuation of Ser. No. 429,351, Dec. 28, 1973, abandoned. This application Oct. 20, 1975, Ser. No. 624,299

Claims priority, application Japan, June 29, 1973, 48-78070

Int. Cl.² D01H *1/12, 7/12*

U.S. Cl. 57—58.89 2 Claims



1. In a device for supporting a spindle of an open end spinning apparatus of the type having a spinning chamber coaxially secured to an end of said spindle, said spindle being driven by a driving belt at a free end thereof, a frame support rigidly mounted on said spinning apparatus, a cylindrical bushing member secured to said frame support, a bearing rotatably supporting said spindle, and a ring shaped resilient yieldable member rigidly inserted in a space between said cylindrical bushing member and said bearing for supporting said bearing; the improvement comprising an additional ring shaped member rigidly positioned at a location adjacent to said spinning chamber in said space and spaced from said resiliently yieldable member along the spindle axis for restricting the arc through which the spinning chamber of the spindle may move.

3,981,133

OPEN-END SPINNING UNIT

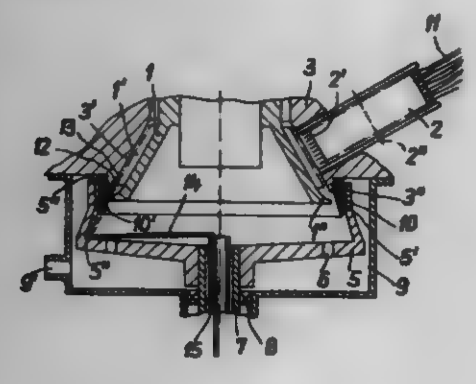
Rolf Neubert, Schwanewede; Harm Schiebenhöfer, and Rolf Wehling, both of Bremen, all of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Sept. 23, 1975, Ser. No. 616,038

Claims priority, application Germany, Oct. 4, 1974, [illegible]

Int. Cl.² D01H *1/12*

U.S. Cl. 57—58.95 19 Claims



1. In an open-end spinning unit having a spinning rotor presenting an entrance opening, a break-up roller mounted for rotation coaxially with the spinning rotor and having a frontal end section at the end thereof directed toward the spinning rotor, and a housing enclosing at least part of the break-up roller, the improvement comprising a fiber collecting ring located between, and coaxial with, said spinning rotor and said break-up roller, and supported by said housing, said fiber collecting ring protruding axially, in the direction away from said spinning rotor, beyond said frontal end section of said break-up roller and, in the direction toward said spinning rotor, beyond said entrance opening of said spinning rotor, the inner surface of said ring facing said break-up roller and serving at least partially as a fiber guiding surface.

3,981,134

YARN GUIDE EYELET AND MONITORING MECHANISM IN A TEXTILE YARN PROCESSING MACHINE

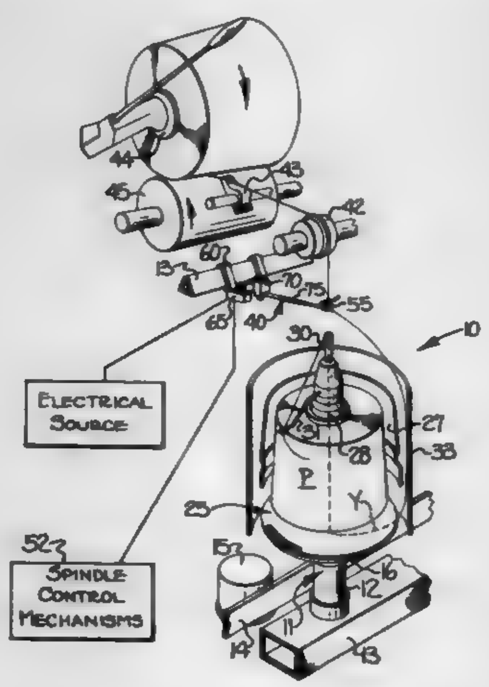
Willy Heimes, Krefeld, Germany, assignor to Palitex Project-Company G.m.b.H., Krefeld, Germany

Filed July 3, 1975, Ser. No. 592,736

Claims priority, application Germany, July 11, 1974, 2433226

Int. Cl.² D01H *13/16*

U.S. Cl. 57—81 13 Claims



1. In a textile yarn processing machine, such as a two-for-one twister and the like, having spindle assembly stations for the processing of yarn and each including means forming a rotating balloon of running yarn during such processing and spindle control mechanisms, such as start and stop devices; the combination therewith of a yarn guide eyelet and monitoring mechanism at each of said spindle assembly stations for operating said spindle control mechanisms in response to the absence and presence of yarn running through said yarn guide eyelet and monitoring mechanism, said yarn guide eyelet and monitoring mechanism comprising:

a yarn guide eyelet positioned in said spindle assembly station for limiting the upper end of the rotating balloon of yarn during passage of the running yarn therethrough which causes forces on said eyelet in the running direction of the yarn;

a generally flat, leaf spring mounted on one side to said machine and movably supporting and carrying said eyelet on the other side thereof and biasing said eyelet into a predetermined position in the absence of yarn running through said eyelet and allowing angular, non-swivelable movement of said eyelet in the running direction of the yarn out of the predetermined position by bending of said spring under the influence of the forces acting on said eyelet in the presence of yarn running through said eyelet; and

means operatively connected with said spindle control mechanisms and being responsive to the positioning of said eyelet into and out of the predetermined position thereof for operating said spindle control mechanisms.

3,981,135

SPINNING RING SUPPORTED BY A SLIDER BEARING

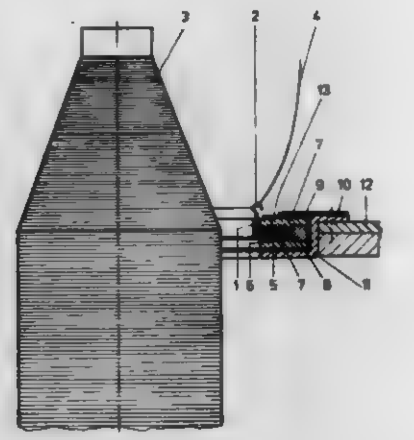
Wolfgang Huber, Schweinfurt, and Horst G. Schrecke, Dittelbrunn, both of Germany, assignors to SKF Industrial Trading and Development Company, B.V., Nieuwegein, Netherlands

Filed Dec. 23, 1974, Ser. No. 535,974

Claims priority, application Germany, Jan. 30, 1974, 2304324

Int. Cl.² D01H *7/56*

U.S. Cl. 57—124 13 Claims



1. A bearing-supported spinning ring construction including a spinning traveler or a spinning loop, and comprising a ring rail rotatably supporting said spinning ring by means of a slider bearing, said slider bearing being equipped at its bearing surfaces with a plurality of flat grooves for the exclusively automatic production of an aerodynamic or hydrodynamic pressure taking up axial and radial forces resulting from relative motion between said spinning ring and said ring rail.

3,981,136

EAR-SHAPED RING TRAVELERS FOR YARN TWISTERS

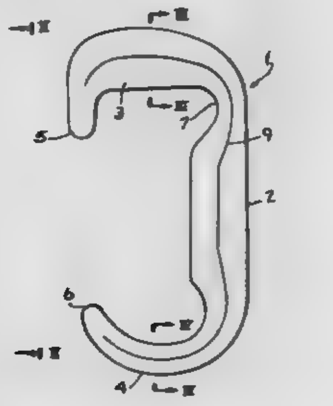
Robert L. Goerens, Esch sur Alzette, Luxemburg, Assignor to Uniroyal Luxembourg Steinfort, Luxembourg

Filed Mar. 14, 1974, Ser. No. 451,297

Claims priority, application Germany, Mar. 26, 1973, 2314891

Int. Cl.² D01H *7/60*

U.S. Cl. 57—125 9 Claims



1. An ear-shaped ring traveler designed for movement in only one given direction along a ring of a yarn twister or like machine,

a. said traveler having a main body section, first and second transverse end sections extending generally codirectionally from the opposite ends of said main body section, and first and second mutually inwardly directed hook-like ends at the extremities of said end sections, respectively,

b. of which, when the traveler is in use, said main body section extends generally vertically across and moves translationally along the inside face of the ring, said first and second end sections extend generally horizontally outwardly across and move translationally along the upper and lower edges of the ring, respectively, and said first and second hook-like ends extend downwardly and upwardly, respectively, over and more translationally along the outside face of the ring,

c. and said traveler having aerodynamically streamlined cross-sectional contours at all essential transverse planes thereof taken through said main body section and said end sections perpendicularly to the longitudinal dimensions of the respective sections for minimizing air resistance to movement of said traveler in said given direction,

d. the cross-sectional configuration of each of said sections at each of the respective essential transverse planes thereof being generally oblong in shape and having, as viewed with reference to said given direction of movement, a relatively blunt leading edge and a relatively less blunt trailing edge.

3,981,137

METHOD OF SPINNING TEXTILE FIBERS

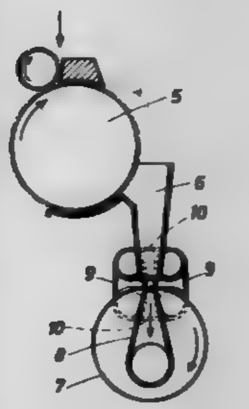
Ernst Fehrer, Auf der Gugl 28, Linz, Austria

Filed May 5, 1975, Ser. No. 574,264

Claims priority, application Austria, May 30, 1974, 4497/74

Int. Cl.² D01H *1/12*

U.S. Cl. 57—156 2 Claims



1. A method of spinning textile fibers, which comprises

1. causing a stream of a predetermined amount of air to impinge on an air-permeable collecting surface disposed in a sharply defined suction zone,
2. entraining textile fibers having a predetermined maximum length by the air stream to cause the fibers to be delivered to the collecting surface and to form a sliver thereon,
3. sucking approximately the same amount of air through the collecting surfaces as the amount of air in said stream,
4. drawing the sliver from the collecting surface in a predetermined direction,
   a. the length of the suction zone in said direction being approximately the same as the maximum length of the fibers and
   b. the width of the suction zone perpendicular to said direction being approximately the same as the diameter of the sliver,
5. twisting the sliver after it has been drawn from the collecting surface to form a thread, and
6. drawing off the thread while holding it against rotation.

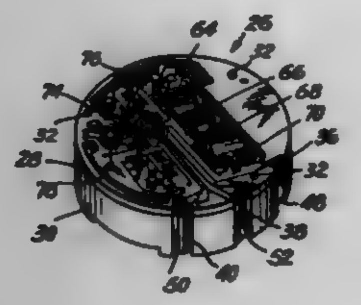
3,981,138
DIGITAL DISPLAY TIMEPIECE

Morris M. Levine, Scarsdale, and Arthur F. Cake, Smithtown, both of N.Y., assignors to Uranus Electronics, Inc., Port Chester, N.Y.

Division of Ser. No. 365,570, May 31, 1973, abandoned. This application Dec. 2, 1974, Ser. No. 528,798

Int. Cl.² G04C *3/00*

U.S. Cl. 58—23 R **6 Claims**



1. An electronic timepiece comprising:

a casing having a plurality of push buttons on the sides thereof with at least one projecting from the side of the casing laterally in the plane of the casing and another terminating in a head substantially flush with a peripheral side surface of the casing, said casing having a window closing the top thereof;

digital time display means under said window controllable by said push buttons;

electronic timing assembly means within said casing, said electronic timing assembly means including a logic means and a digit driver means affixed to a single printed circuit board means on an insulate base structure, said base structure supporting contacts along the side thereof aligned with said push buttons for completing a circuit from said logic means to said digit driver means to actuate said digital display means, said printed circuit board means having openings receiving locator pins of said insulate base structure, which locator pins extend upwardly above said printed circuit board means; and

a cover over said electronic timing assembly means under said window having an opening exposing only said digital time display means to the window of said casing, said locating pins preventing said cover from contacting said logic means.

3,981,139
SELF CONTAINED BATTERY OPERATED CLOCK FABRICATED ON A SINGLE PRINTED CIRCUIT BOARD

Reinhard Jäckle, St. Georgen, Germany, assignor to Gebruder Staiger, Fabrik fur Feinmechanik und Elektrotechnik — Kunststoffspritzerei, St. Georgen, Germany

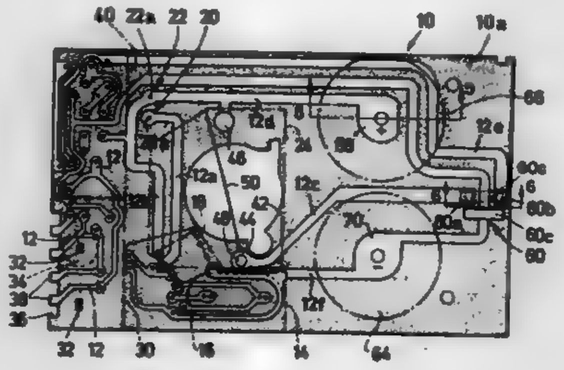
Filed Jan. 20, 1975, Ser. No. 542,240

Claims priority, application Germany, Jan. 24, 1974, [illegible]

Int. Cl.² G04C *3/00*

U.S. Cl. 58—23 R **7 Claims**

1. In an electric clock having a printed circuit board with a plurality of conductive areas plated thereon for interconnecting an electromechanical movement mounted on the printed circuit board with a group of modules and for interconnecting the modules, each module having at least one electric terminal, said group comprising a quartz controlled electric oscillator, a drive circuit controlled by the oscillator, an alarm signal source, an alarm release switch operated by the movement for closing the circuit of said alarm signal source, contacts of a manually operated alarm stop switch for breaking said circuit and a battery also having terminals, each of said modules and said battery being arranged on said printed circuit board with at least one of said terminals of each module and battery being in direct contact with selected ones of said conductive areas, with said alarm stop switch comprising a manually operated conductive member slidably contacting said printed circuit board, said conductive member being movable to a first position in direct contact with two of said conductive areas and to a second position out of contact with said areas for selectively electrically connecting and disconnecting said two conductive areas.



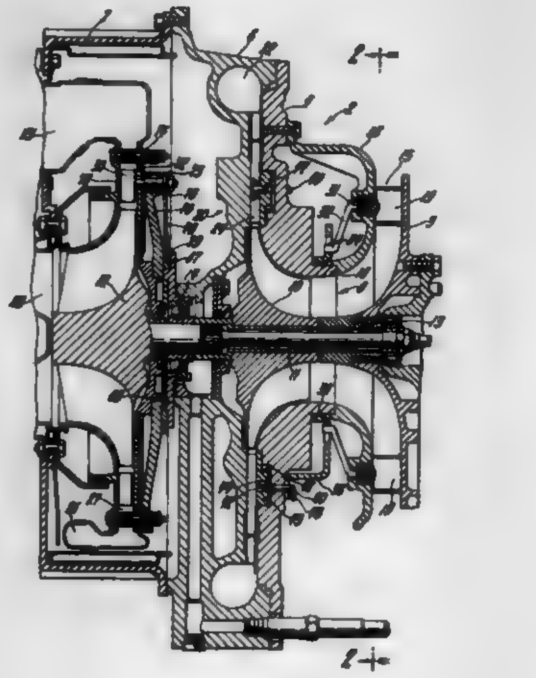
3,981,140
GAS TURBINE ENGINE GEOMETRY CONTROL

Jimmy L. Lunsford, Plainfield; Dennis E. Schroff, and David R. Steffey, both of Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed June 23, 1975, Ser. No. 589,470

Int. Cl.² F02C *9/02*

U.S. Cl. 60—39.03 **6 Claims**



1. A method of operating a gas turbine engine including a compressor, combustion apparatus, and a turbine driving the compressor, and having variable compressor and turbine geometry, the method comprising

varying concurrently the flow areas through the compressor and the turbine as a function of engine power level request in normal load-powering operation of the engine to vary the flow capacity of the engine

and closing the compressor variable geometry while opening the turbine variable geometry to spoil the power output of the engine for load-braking operation of the engine.

3,981,141
FUEL CONTROL SYSTEM FOR GAS TURBINE ENGINE

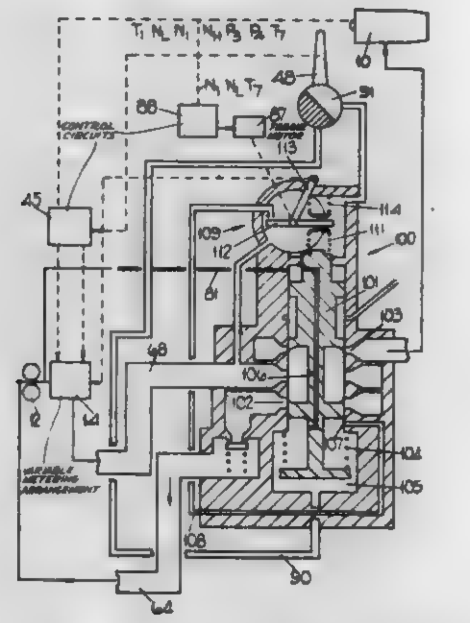
Trevor Stanley Smith, Sutton Coldfield, England, assignor to Joseph Lucas Industries, Birmingham, England

Continuation of Ser. No. 485,881, July 5, 1974. This application Jan. 12, 1976, Ser. No. 648,018

Claims priority, application United Kingdom, July 18, 1973, 34136/73; Oct. 31, 1973, 50565/73

Int. Cl.² F02C *9/08, 9/10*

U.S. Cl. 60—39.28 R **8 Claims**



1. A fuel control system for a gas turbine engine, comprising a pump, a variable metering device downstream of said pump, a control valve downstream of said variable metering device, said variable metering device including a control member movable in response to engine speed to vary fuel flow through said device, said control valve having an inlet communicating with said variable metering device and first and second outlets respectively communicating with burners of the engine and with an upstream side of said pump, said control valve having a control element movable in response to an increase in a servo pressure signal to open said first outlet and shut said second outlet, a pilot valve responsive to an increase in engine speed to reduce said servo pressure signal, and a limiting valve which is progressively shut by said control valve control element as the latter moves to shut said first outlet, said limiting valve being in series with said pilot valve whereby reduction of said servo pressure signal by said pilot valve is limited by said limiting valve.

3,981,142
CERAMIC COMBUSTION LINER

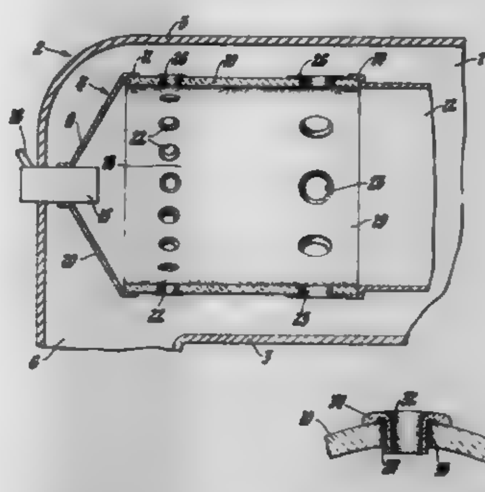
John A. Irwin, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 1, 1974, Ser. No. 456,603

Int. Cl.² F02G *3/00*; F23D *15/02*

U.S. Cl. 60—39.65 **5 Claims**

1. A combustion apparatus comprising, in combination, a housing adapted to be supplied with air, a combustion liner within the housing defining a space for combustion of fuel, the liner having a wall of ceramic material defining the exterior of the liner and defining spaced ports through the wall for admission of air into the liner from within the housing, the major part of the exterior surface of the liner being exposed to the air within the housing, the air being significantly cooler than the liner in normal operation of the combustion apparatus, and means for reducing thermal stresses in the wall due to local cooling of the wall by air streams entering through the wall by reducing transfer of heat from the wall to the streams, the said means comprising a lining for each port extending through the port, the lining isolating the wall from the air stream and having structure resisting heat transfer from the wall through the lining into the air stream, the lining being a coating on the wall of the port which is bonded to the wall and which coating is of a material sufficiently plastic at normal operating temperature to yield without breaking in accommodation to expansion and contraction of the wall.



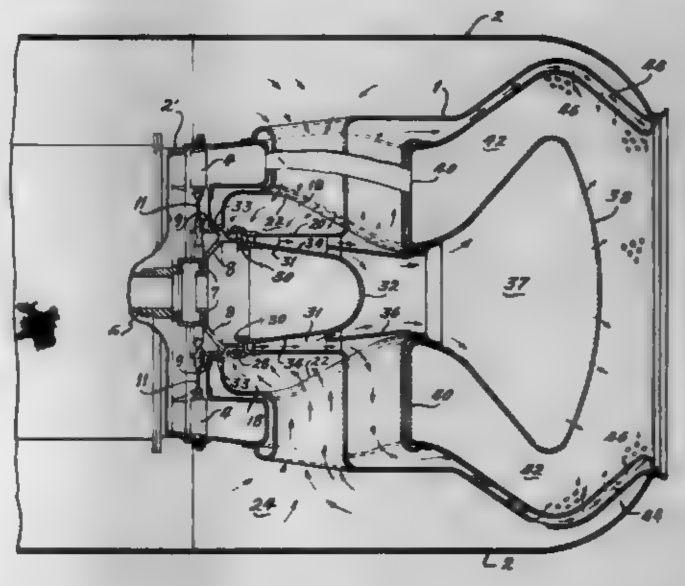
3,981,143
INFRARED SUPPRESSOR

Thomas D. Ross, West Palm Beach, and Samuel S. Owen, Jupiter, both of Fla., assignors to The United States of America as represented by the Secretary of the Army, Alexandria, Va.

Filed Aug. 15, 1974, Ser. No. 497,786

Int. Cl.² F02K *1/26*; F02C *7/18*

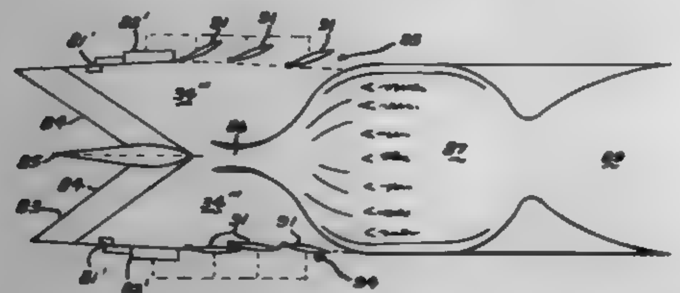
U.S. Cl. 60—264 **1 Claim**



1. In an infrared emission suppression exhaust fluid nozzle for a jet engine whose hot exhaust gases flow through turbine blades journaled to a turbine shaft, the exhaust fluid nozzle being the type including a tubular casing, an inner plug mounted coaxially within the casing, the periphery of the plug and the inner casing wall forming an engine exhaust duct of tortuous configuration such that the casing inlet and outlet are concealed from each other to block direct radiation of engine infrared radiation sources, and means for cooling portions of the exhaust duct casing and of the plug walls to reduce their infrared emissivity level, the combination of (a) a blower coaxially mounted on the turbine shaft at its aft end to be driven thereby, said blower having circumferentially disposed blades revolving annularly about the turbine axis, (b) a blower inlet plenum to reduce blower inlet air turbulence and to promote even distribution of inlet air to the blower and (c) means to supply air to said blower inlet plenum, with (d) a blower outlet duct, and a blower outlet cone coaxially disposed within the blower outlet duct to form an annular blower air outlet diffuser duct, and (e) a blower air outlet diffuser splitter ring positioned in said diffuser duct to split the blower airstream to divert one part of the blower outlet air to the plug

wall cooling means and to divert another part of the blower outlet air to the exhaust duct casing cooling means.

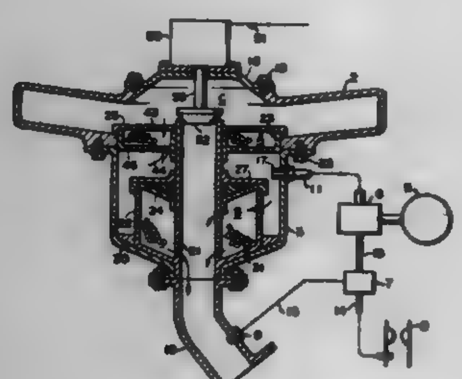
3,981,144
DUAL STAGE SUPERSONIC DIFFUSER
Robert W. Milling, and Hans J. P. Von Ohain, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Oct. 28, 1975, Ser. No. 626,147
Int. Cl.² G01M *9/00*; **F02K** *7/10*
U.S. Cl. 60—270 R **8 Claims**



1. A two stage supersonic diffuser, comprising: a gas flow passage; means for providing a supersonic gas flow through said passage; means for providing a first diffuser stage within said passage; said first diffuser stage including means for providing at least one diffuser throat inclined at a predetermined angle with respect to the direction of gas flow through the passage, to thereby form a free stream, at the output of the first diffuser stage, flowing at a predetermined angle with respect to the direction of flow upstream of the first diffuser stage; a second diffuser stage in gas receiving relation to the flow in said free stream; said second diffuser having its inlet spaced from the output of the first diffuser stage and having a diffuser throat approximately perpendicular to the diffuser throat of the first diffuser stage.

7. The device as recited in claim 1 including a ramjet combustor connected to the output of said second diffuser stage; a thrust nozzle connected to said ramjet combustor; said supersonic gas flow through said passage being supplied by ram air at the inlet to said first diffuser stage.

3,981,145
DEVICE FOR PURIFYING EXHAUST GASES BY CATALYTIC REACTION
Masaaki Noguchi; Tsuchio Bunda, and Masaharu Sumiyoshi, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Dec. 31, 1974, Ser. No. 537,778
Claims priority, application Japan, Apr. 3, 1974, 49-38185
Int. Cl.² F01N *3/15*
U.S. Cl. 60—288 **14 Claims**



1. A device for purifying exhaust gases from an internal combustion engine by reducing nitrogen oxides and oxidizing unburned gas components in the exhaust gases by means of a catalytic reaction, comprising:

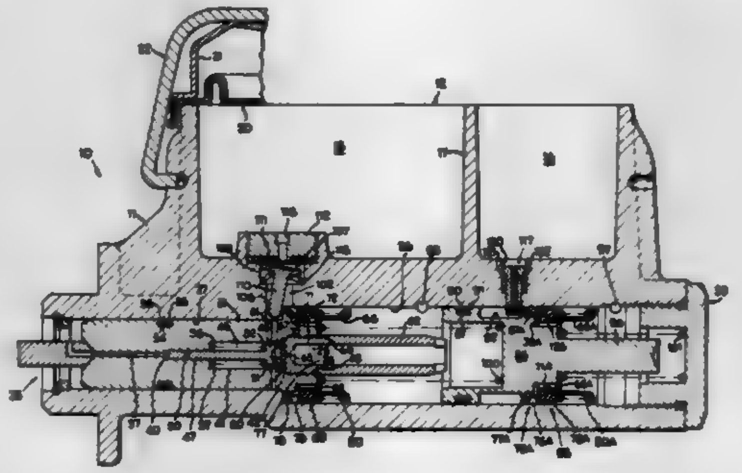
a. an exhaust manifold connected to said engine for receiving the exhaust gases therefrom;

b. a hollow cylindrical casing vertically disposed from and integrally connected to said exhaust manifold;

c. first and second cylindrical catalyst containers vertically disposed within said exhaust manifold and said hollow cylindrical casing, said first and second cylindrical catalyst containers being in series relation with respect to gas flow, said first and second cylindrical catalyst containers having first cylindrical walls and second cylindrical walls which have perforations thereon through which exhaust gases flow, whereby exhaust gas introduced in said exhaust manifold flows into said first container through said first wall perforations thereof, and out of said first container through said second wall perforations thereof, and then flows into said second container through said first wall perforations thereof and out of said second container through said second wall perforations thereof, said first container being charged with a reduction catalyst, said second container being charged with an oxidation catalyst, whereby said nitrogen oxides are reduced when passing through said reduction catalyst and said unburned gas components are oxidized when passing through said oxidation catalyst; and

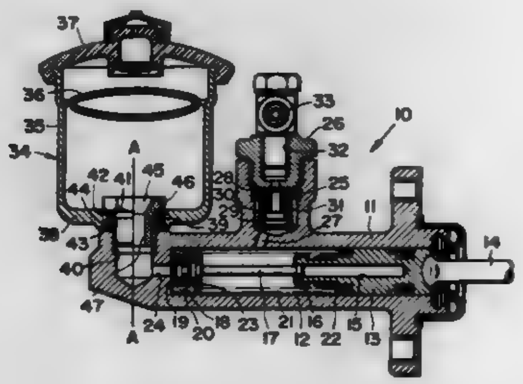
d. an exhaust pipe connected to said hollow cylindrical casing in such a manner that the inside of said second wall of said second container communicates with the inside of said exhaust pipe.

3,981,146
VARIABLE RATIO MASTER CYLINDER
Mark J. Fogelberg, Elk Grove Village, Ill., and Frank E. Hill, Warren, Mich., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Sept. 13, 1972, Ser. No. 288,817
Int. Cl.² B60T *11/12*
U.S. Cl. 60—574 **15 Claims**



1. A variable ratio master cylinder including a housing defining a fluid reservoir; a stepped bore defined by said housing including a large diameter portion and a small diameter portion, said large diameter portion having an end wall; a piston operable within said small diameter bore and said large diameter bore; a seal associated with said piston and reciprocable relative thereto and adapted in one position to divide said large diameter bore into a first chamber defined rearwardly of said seal and a second chamber defined between said seal and said end wall; a differential area metering valve carried by said piston and disposed between said first and second chambers adapted to meter fluid from said second chamber to said first chamber when a predetermined pressure differential exists between said first and second chambers, said metering valve including a head portion and a rearwardly extending valve stem terminating in an end directly exposed to atmospheric pressure, said valve head portion having a valve opening area exposed to the pressure in said second chamber, a valve closing area, smaller than said valve opening area due to the valve stem extending therefrom, exposed to the pressure in said first chamber and biasing means urging said valve to a closed position and a fluid outlet in communication with said second chamber; said metering valve opening and closing in a sequence of operations as the pressure increases in said second chamber due to movement of said piston from an initial predetermined pressure differential until a higher predetermined pressure differential is reached where upon the valve remains open throughout the remainder of the piston movement.

3,981,147
MASTER CYLINDER ASSEMBLY
Masashi Ban, Kariya; Masakazu Ishikawa, and Hiroshi Uemura, both of Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan
Filed Aug. 1, 1975, Ser. No. 600,956
Claims priority, application Japan, Sept. 25, 1974, 49-115975
Int. Cl.² F15B *7/08*
U.S. Cl. 60—585 **8 Claims**



1. A master cylinder assembly for brakes or clutch system comprising

a metallic housing provided with an opening and screw-threads on said opening,

a plastic reservoir including a bottom wall provided with an opening, said opening being located coaxially with said opening in the housing,

a metallic sleeve having a radial flange made integrally therewith, said sleeve being integrally associated with the opening in the bottom of the reservoir,

a seal rubber mounted on said bottom wall of plastic reservoir to be interposed between said bottom wall and said housing, and an axial flow passage and

a bolt having a head to engage said radial flange of sleeve and passed through said sleeve to mesh with said screw-threads on said opening of housing,

whereby rotation of said bolt causes said plastic reservoir to be secured to said metallic housing and said seal rubber to be compressed between said bottom wall of plastic reservoir and said housing.

3,981,148
COMBINED FLUID MOTOR AND PUMPING APPARATUS
Walter L. McLuckie, Coal City, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 29, 1974, Ser. No. 465,145
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976
Int. Cl.² F15B *7/10*
U.S. Cl. 60—592 **7 Claims**

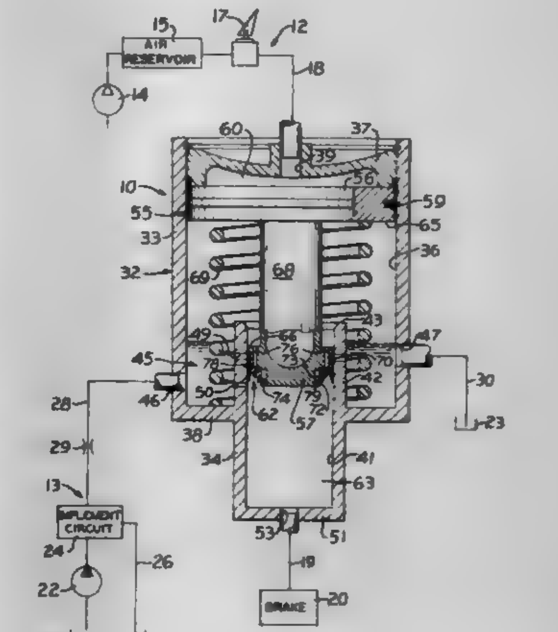
1. A combined fluid motor and pumping apparatus for pressurizing a closed hydraulic circuit work system upon selective actuation of such apparatus by a source of pressurized air, comprising;

piston means having a pair of axially spaced motor and pump piston ends;

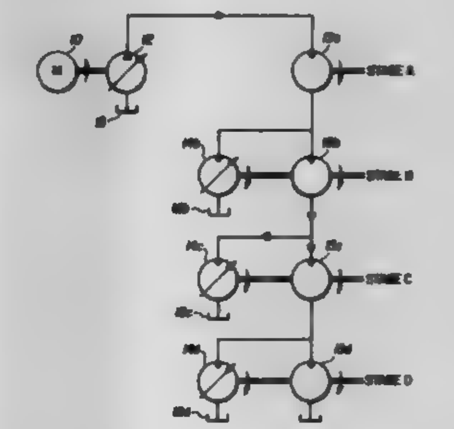
an upright housing providing a predetermined upper motor portion having said motor piston end of said piston means slidably mounted therein and a lower pumping portion having said pump piston end slidably mounted therein, said motor portion being provided with a lower end and said pumping portion being provided with a predetermined upper segment extended into said motor portion and having an open upper end disposed a predetermined distance above said lower end of the motor portion, said upper segment having a size diametrically smaller than said motor portion to define an annular chamber disposed in surrounding relation to said upper segment of the pumping portion for providing an oil makeup reservoir;

means for selectively communicating said reservoir with said pumping portion; and

means for automatically replenishing any oil consumed from said reservoir so that the reservoir is continuously maintained with a sufficient amount of oil for recharging said work system as required.



3,981,149
HYDRAULIC CASCADE DRIVE SYSTEM
Richard M. Rice, Afton, Va., assignor to Reynolds Metals Company, Richmond, Va.
Continuation of Ser. No. 433,838, Jan. 15, 1974, abandoned. This application June 6, 1975, Ser. No. 584,520
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976
Int. Cl.² F15B *11/16*
U.S. Cl. 60—424 **18 Claims**



1. A cascade fluid drive system comprising:

- a power supply having a variable displacement fluid pump and means for driving said pump;
- a plurality of fluid motors arranged in series flow circuit with each other and said fluid pump so that a change in the output of said pump tends to cause a change in the output speeds of said fluid motors; and
- variable fluid-displacement means for selectively varying the amount of fluid directed to at least one of said fluid motors to change its speed without changing the output speed ratio between said one fluid motor and an adjacent fluid motor in said series flow circuit; said variable fluid-displacement means being effective for synchronously changing the output speed of the remaining subsequent fluid motors in said series flow circuit to maintain the same speed ratio between said one fluid motor and each of said subsequent fluid motors as the speed of said one fluid motor is changed.

3,981,150
DUAL HYDRAULIC MOTOR DRIVE SYSTEM

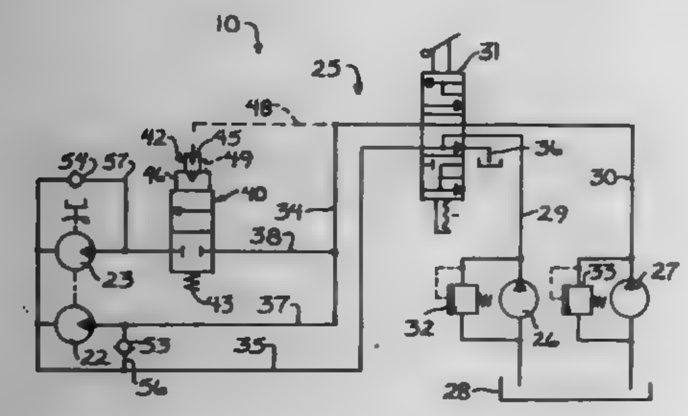
Larry G. Eftefield, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 23, 1974, Ser. No. 535,386

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² F15B *11/16*

U.S. Cl. 60—425 **7 Claims**



4. A dual hydraulic motor drive system for driving a material loading elevator for a self-loading scraper vehicle, comprising:

- a source of fluid pressure;
- first and second hydraulic motors drivingly connected to said elevator;
- a fluid circuit for selectively communicating said source of fluid pressure to said motors including a blocker valve movable between a first position for blocking fluid to one of said motors so that said elevator is operatively driven solely by the other of said motors at a high speed, low torque setting and a second position for directing fluid to both of said motors to operatively drive said motor at a low speed, high torque setting; and
- means for automatically shifting said blocker valve between its first and second positions including a pair of actuators for shifting said blocker valve towards its second position, with one of said actuators being continually responsive to loading resistance on the elevator to shift said blocker valve to its second position when the loading resistance increases to a predetermined relatively high level, and the other of said actuators being responsive to loading resistance only when said blocker valve is in its second position to assist said one actuator so that the blocker valve is held in its second position until such time that the loading resistance subsides to a level substantially lower than said high level.

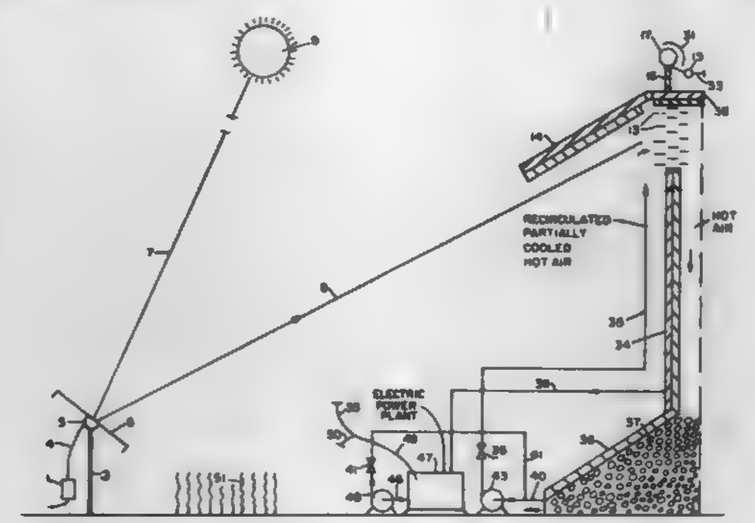
3,981,151
USE OF SOLAR ENERGY HEAT GATHERING AND STORING SYSTEMS TO INCREASE FARM CROP YIELDS

John C. St. Clair, Box 216, R.R. 5, London, Ohio 43140

Filed Jan. 20, 1975, Ser. No. 542,384

Int. Cl.² F24J *3/02*

U.S. Cl. 60—641 **4 Claims**



1. A solar heat collecting energy conversion system comprising: at least one heat reflecting mirror and means for changing position of said mirror, means for absorbing and storing heat derived from solar energy reflected by said mirror whereby the position of the mirror can be adjusted to reflect the sun's rays when the sun is in different positions in the sky, energy conversion means connected to said storage means for generating electricity, a source of artificial light and means for connecting the energy conversion means to said source of artificial light whereby the light of the sun is reflected by the mirror onto the heat absorbing means when the sun is shining and when the sun is not shining the source of artificial light is reflected by the mirror on crops growing on the ground and thus increase the growth of the crops.

3,981,152
QUICK EGRESS FROM DEEP UNDERGROUND

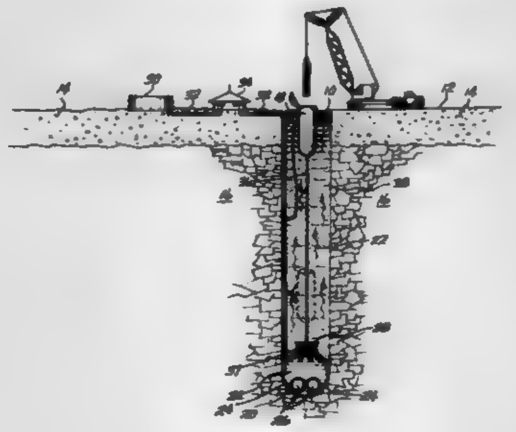
Nelson Edward Funston, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Feb. 28, 1975, Ser. No. 554,283

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² B65G *5/00, 53/00*

U.S. Cl. 61—.5 **9 Claims**



1. A method for storing and accessing a container in an environment highly resistive to damage from nuclear attack or other explosive conditions comprising the steps of:

- a. excavating a shaft into the earth, said shaft being of a diameter sufficient to allow debris descending in said shaft to bypass a container rising in said shaft and also sufficient to allow said container to negotiate any bends and discontinuities in said shaft, said shaft being of a depth sufficient to provide protection from nuclear blasts for objects buried at said depth;
- b. placing first means for the storage of water at the bottom of said shaft, saif first means for the storage of water having means for directing water into said shaft substantially at the bottom thereof;
- c. placing pressure means at the bottom of said shaft, said pressure means being in communication with said first means for the storage of water causing water contained in said first means for the storage of water to be discharged through said means for directing water into said shaft when said pressure means is activated;
- d. filling said first means for the storage of water with water;
- e. affixing a storage container to the bottom of said shaft by tether means, said tether means being able to allow said storage container to rise to the top of said shaft and further being able to draw said storage container to the bottom of said shaft, said storage container being of a density when loaded less than that of quicksand;
- f. filling said shaft with saturated sand;
- g. using said water contained in said first means for the storage of water to fluidize said saturated sand into quicksand to access said storage container by allowing said storage container to float up to the surface of said quicksand and drawing said storage container down against the buoyant force of said quicksand with said tether means; and,
- h. allowing said quicksand to de-fluidize and return to the state of being saturated, compacted sand with said storage container at the bottom of said shaft to store said storage container in a nuclear explosion proof environment.

3,981,153
BODY PLATE SERVING TO SECURE DRAIN PIPES IN EMBANKMENTS

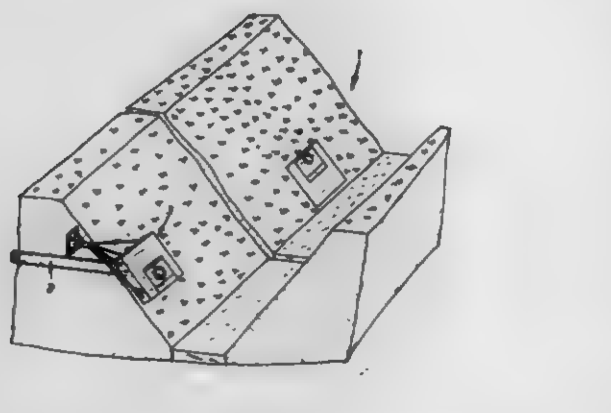
Walter Bleek, Am Juffernbach 12, 44 Munster-Handorf, Germany

Filed Jan. 17, 1975, Ser. No. 541,861

Claims priority, application Germany, Mar. 21, 1974, 2413526

Int. Cl.² F16L *9/00*

U.S. Cl. 61—16 **5 Claims**



1. Multiple component apparatus for securing drain pipes in embankments comprising a body plate member (4) having opposite end edges and opposite side edges, and having a generally rectangular cutout (5) of predetermined depth therein opening from one edge thereof, means for holding said body plate member in position on the embankment with said cutout surrounding the drain pipe, insert plate means having an opening (10) to accept the drain pipe and being insertable, in locking fashion, in said cutout of said body plate member, said cutout having lateral edges that run parallel to each other and into which is inserted said insert plate means, said insert plate means comprising a plurality of generally rectangular insert plates (9, 11, 12) one of which displays said opening (10), said insert plates being of different heights, the combined heights of which equal said predetermined depth of said cutout such that compensation for deviations in the predetermined height of the drain pipe in the embankment is permitted.

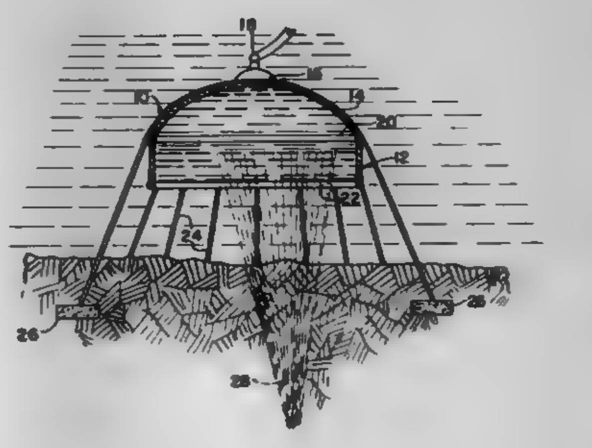
3,981,154
SYSTEM FOR RECOVERING PETROLEUM FLUIDS FROM UNDERWATER FISSURES

Charles M. Hix, Jr., Bryan, Tex., assignor to Arcadia Refining Company, Tyler, Tex.

Continuation-in-part of Ser. No. 879,653, Nov. 25, 1969, Pat. No. 3,675,427. This application Mar. 27, 1970, Ser. No. 23,343

Int. Cl.² E02B *15/04*

U.S. Cl. 61—101 **1 Claim**



1. A method for recovering fluids lighter than water escaping from an underwater fissure in the bed of a body of water, comprising the steps of completely submerging in said body of water a tank large enough to form an underwater pool capable of receiving and accumulating a large volume of said escaping fluids, said tank having an open bottom, substantially filling said tank with water, positioning said tank while substantially filled with water generally vertically above the fissure to first receive fluid escaping from said fissure after said tank is completely submerged so that said escaping fluid is recovered by rising upwardly in the said tank through the bottom thereof and displacing the water in said tank, making said tank buoyant, bouyantly suspending said tank above said fissure out of engagement with the underwater surface, accumulating said escaping fluid in said tank in a pool submerged completely underwater while said tank is buoyantly suspended submerged completely under water, and anchoring said tank from said underwater surface to maintain said tank in a substantially fixed position.

3,981,155
PLASMA DEPOSITED RIDER RINGS FOR HOT DISPLACER

Helmut L. Kroebig, Rolling Hills, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

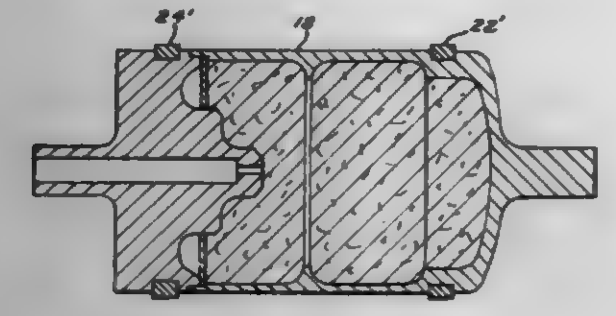
Filed Mar. 10, 1975, Ser. No. 556,988

Int. Cl.² F25B *9/00*

U.S. Cl. 62—6 **3 Claims**

1. In combination with a hot displacer, for a cryogenic refrigerator, having a first rider ring groove near the top of the displacer and a second groove near the bottom of the displacer, a plasma spray deposited rider ring in each of said grooves, of a corrosion and abrasion resistant material, which

has been machined to the desired width and diameter after deposition; said rider rings having a plurality of flat surfaces machined on the outer surface for permitting gas to pass along the hot displacer wall.



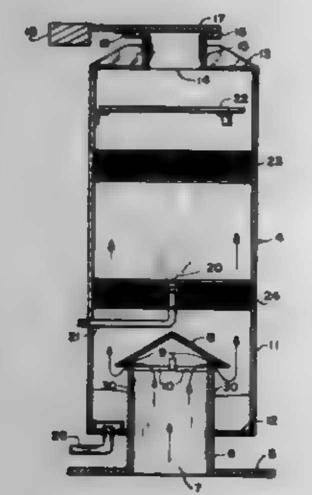
3,981,156
VAPOR RECOVERY SYSTEM AND METHOD

Jerry L. Modisette, Nassau Bay, and Otto F. Schkade, Houston, both of Tex., assignors to Ecology Control, Inc., Houston, Tex.

Filed Feb. 3, 1975, Ser. No. 546,453

Int. Cl.² F17C *7/02*

U.S. Cl. 62—54 **27 Claims**



1. A method of recovering vapors from containers of volatile substances comprising the steps of:

a. providing a scrubber connected to the vapor space of said container for receiving a flow of vapors therefrom;
b. providing absorber fluid by taking a stream of said container substances and removing the more volatile components thereof;
c. cooling said absorber fluid;
d. introducing said cooled absorber fluid into said scrubber for intimate contact with said flow of vapors; and
e. returning the vapors absorbed in said scrubber by said cooled absorber fluid to the container.

3,981,157
AUTOMOTIVE AIR CONDITIONING SYSTEM WITH VARIABLE SPEED TRACTION DRIVE TRANSMISSION

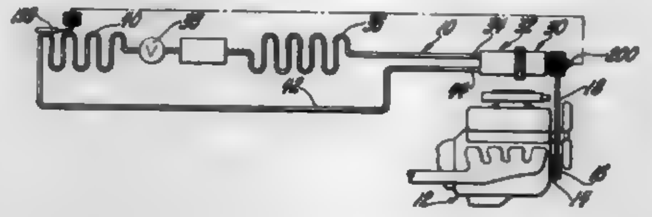
Dennis A. Black, Dayton, and Byron L. Bracken, Miamisburg, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 1, 1975, Ser. No. 573,613

Int. Cl.² B60H *3/04*

U.S. Cl. 62—243 **3 Claims**

1. An automotive air conditioning system comprising a compressor, a condenser, expansion valve means and an evaporator, means for connecting said condenser, expansion valve and evaporator in series refrigerant flow relationship, means for controlling the coolant passing through said series connected refrigerant system including a variable speed transmission including a pulley adapted to be connected to an output shaft of a vehicle engine, an input shaft connected to said pulley, a planet carrier having first and second axially spaced end plates thereon, a first plurality of friction means on one of said end plates and a second plurality of friction means on the other of said end plates, first reaction means operably associated with said first plurality of friction means, an output shaft, second reaction means on said output shaft operatively connected to said second plurality of friction means, a power transfer spool located centrally within said carriage and axially shiftable with respect to said first and second plurality of friction means for operatively varying the power transfer between said first and second plurality of friction means to control transfer of speed from said input shaft to said output shaft thereby to control the operative speed of the compressor to vary the quantity of refrigerant flow through said series connected refrigerant system.



3,981,158
DISCONNECT COUPLING FOR DRIVE SHAFTS

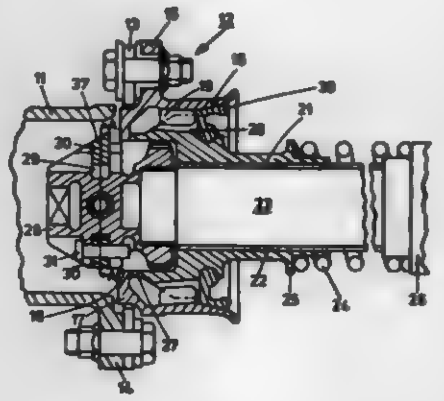
Kenneth Watson, Yeovil, England, assignor to Westland Aircraft Limited, Yeovil, England

Filed Jan. 6, 1975, Ser. No. 538,726

Claims priority, application United Kingdom, Jan. 14, 1974, 1693/74

Int. Cl.² F16D *3/00*

U.S. Cl. 64—6 **13 Claims**



1. In a helicopter having a tail rotor located adjacent the end of a rearwardly extending tail cone comprising forward and rear sections joined through a generally vertical hinge located at one side thereof, and a tail rotor drive shaft extending along the tail cone, a disconnect coupling located in the drive shaft so as to enable the rear section of the tail cone to be pivoted about the hinge, wherein the disconnect coupling comprises a flexible disc member connected through alternate bolted flange attachments to one drive shaft part and to a generally cylindrical drive member having at one end a radially inwardly extending flange with a cental aperture and internal gear teeth adjacent to its other end, said gear teeth being arranged to mesh with external gear teeth on a gear having; internal axial splines in engagement with splines on a second drive shaft part, a retaining member secured at the end of said second drive shaft part for protrusion through the central aperture in the flange of the said drive member when the coupling is engaged, the retaining member housing a plurality of flyweights arranged to be retained in a retracted position within the member when the coupling is stationary to

permit axial separation of the parts by movement of the retaining member through the said flange aperture, each flyweight being automatically extended during rotation of the coupling to a position in which such axial separation is prevented by abutment between the extended flyweights and the adjacent surface of the said flange.

3,981,159
TEXTILE-PATTERN-PEG SELECTION AND INSERTION ARRANGEMENT

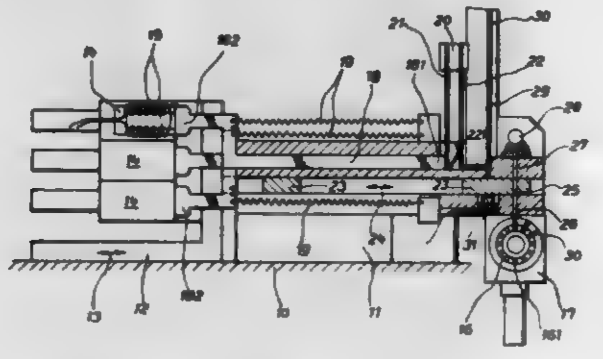
Werner Scherzinger, Bisingen, Germany, assignor to Mayer & Cie. Maschinenfabrik, Tailfingen, Germany

Filed Sept. 4, 1974, Ser. No. 503,512

Claims priority, application Germany, Sept. 5, 1973, 2344634

Int. Cl.² D04B *37/00*

U.S. Cl. 66—1 R **16 Claims**



1. In a patterning arrangement for textile machines and the like, particularly for circular knitting machines, of the type wherein pattern pegs are inserted into peg-receiving holes in a pattern peg carrier provided with spaced rows of such peg-receiving holes, in combination, holding means for holding a pattern peg carrier of the type provided with spaced rows of peg-receiving holes; a plurality of peg supply passages having respective peg discharge end sections disposed in correspondence to the disposition of peg-receiving holes in one row of the carrier; a stationary guide structure; a plurality of selector slide-bars corresponding in number to the number of peg-receiving holes in one row of the carrier, said selector slide-bars being mounted for longitudinal sliding movement on said stationary guide structure, each of said selector slide-bars being associated with a respective one of said supply passages and being operative in a first position for preventing the discharge of a peg from the respective supply passage and being operative in a second position for permitting the discharge of a peg from the respective supply passage; a carriage mounted for sliding movement relative to said stationary guide structure; a peg-transporting structure connected to said carriage and sharing the movement of said carriage, said peg-transporting structure being provided with a row of peg-receiving portions disposed in correspondence to the disposition of peg-receiving holes in one row of the pattern peg carrier, said peg-transporting structure being movable with said carriage between a first location and a second location, said second location being a peg-receiving location adjacent said peg discharge end sections for receiving pegs from selected ones of said peg supply passages in dependence upon the positions of said selector slide bars, and said first location being a peg-insertion location; peg-inserting means operative when said peg-transporting structure moves to said peg-insertion location for removing the transported pegs from said peg-receiving portions of said peg-transporting structure and furthermore operative for pushing the pegs into peg-receiving holes of the pattern peg carrier; and a plurality of magnet units mounted on said carriage for movement therewith and separately activatable for causing selected ones of said selector slide-bars to share the movement of said carriage and move to said second position when said peg-transporting structure moves to said second location.

3,981,160
NEEDLE SELECTING MEANS

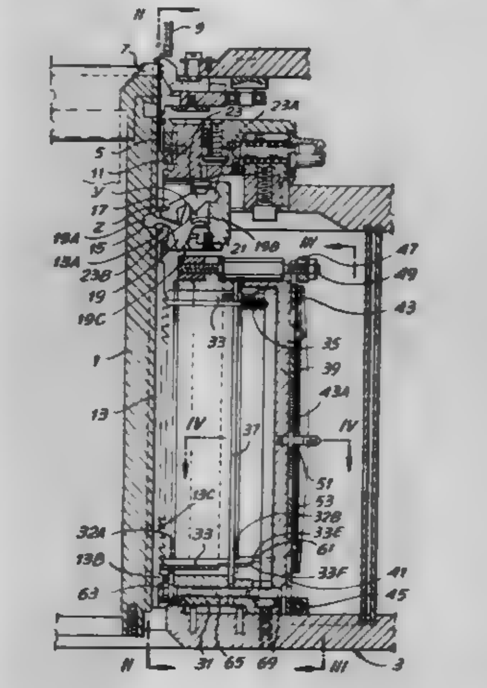
Oberdan Balzano, and Lando Dondoli, both of Florence, Italy, assignors to Billi S.p.A., Florence, Italy

Filed Apr. 29, 1974, Ser. No. 465,149

Claims priority, application Italy, Apr. 27, 1974, 9437/73

Int. Cl.² D04B *9/00*

U.S. Cl. 66—50 R **3 Claims**



1. In a multi-feed circular knitting machine having a frame and a needle cylinder provided with a plurality of vertical grooves circumferentially arranged about the needle cylinder and a vertically reciprocable knitting needle and jack mounted in each said groove, each jack having a lower butt and a plurality of pattern butts, a pattern mechanism comprising a block attached for radial adjustment to the frame and radially aligned with a feed station, a plurality of radially movable pattern blades arranged in superposed relation to each other on the block and selectively engagable with jacks at the feed station, spring means normally urging the blades away from the jacks, said pattern mechanism also including a stand removably attached to said block and said stand having two rows of vertically arranged holes on its inner surface for the selective reception of pins which are removable but stationary in use and engagable with opposed blades supported by the block to overcome said spring means and protect the blades radially inwardly to actuate the jacks according to a desired pattern, each blade including a stepped profile on one and selectively engagable with a jack and a corresponding stepped profile on the other end selectively engageable with a pin in said stand whereby each of the said two rows corresponds to one of the stepped portions on said other end of the blade.

3,981,161
PANTY HOSE WITH REINFORCED LONGITUDINAL WAIST OPENING

Paolo Conti, and Massimo Bianchi, both of Florence, Italy, assignors to Billi, S.p.A., Florence, Italy

Filed Apr. 12, 1974, Ser. No. 460,581

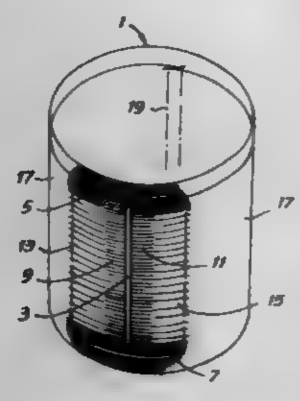
Claims priority, application Italy, Apr. 13, 1973, 9418/73

Int. Cl.² A41B *9/08*

U.S. Cl. 66—177 **1 Claim**

1. A knit construction for the waist portion of a one-piece panty hose comprising a longitudinally extending waist opening, a reinforced band of fabric surrounding said opening and comprising successive courses each of which is a partial course extending between an edge of said opening and a second position arcuately spaced around the circumference of said panty hose from said opening, said reinforced band including an auxiliary reinforcing yarn in selected courses, said

reinforced band also including an inner edge zone immediately adjacent the edges of said opening in which selected stitches of selected courses are combined with the corresponding stitches of successive courses, and wherein said



partial courses extend alternately around the circumference from said opening first in one arcuate direction and then in the opposite arcuate direction, the ends of said partial courses being overlapped at said second position.

3,981,162
CONTINUOUS TREATMENT OF TEXTILE MATERIALS

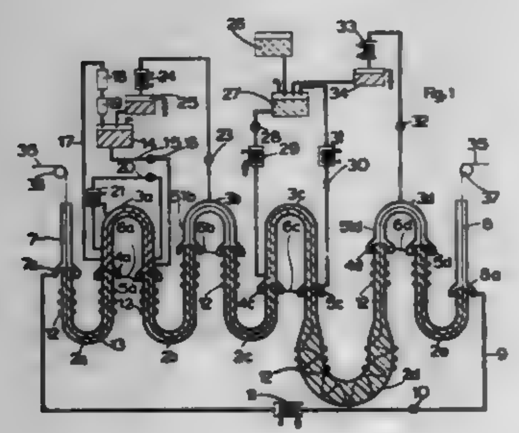
Shimon Klier, 4 Simtat Magal, Savyon, Israel

Filed Nov. 26, 1973, Ser. No. 418,870

Claims priority, application Israel, Nov. 29, 1972, 40966

Int. Cl.² D06B *3/04, 3/24, 23/18*

U.S. Cl. 68—5 E **7 Claims**



1. Apparatus for the continuous treatment of generally continuous textile material, comprising:

at least one treatment zone having defined ingress and egress;

inlet and outlet sealing zones disposed in fluid communication with the respective ingress and egress of said treatment zone, a sealing liquid flow path effecting communication betwen said sealing zones while bypassing said treatment zone, said sealing zones containing sealing liquid which is substantially inert with respect to said material and any treatment substance; and

propelling means for propelling said textile material through said at least one treatment zone and constituted by means for causing forced circulation of said sealing liquid through said sealing zones and said sealing liquid flow path in a predetermined direction thereby entraining said textile material into movement in said direction.

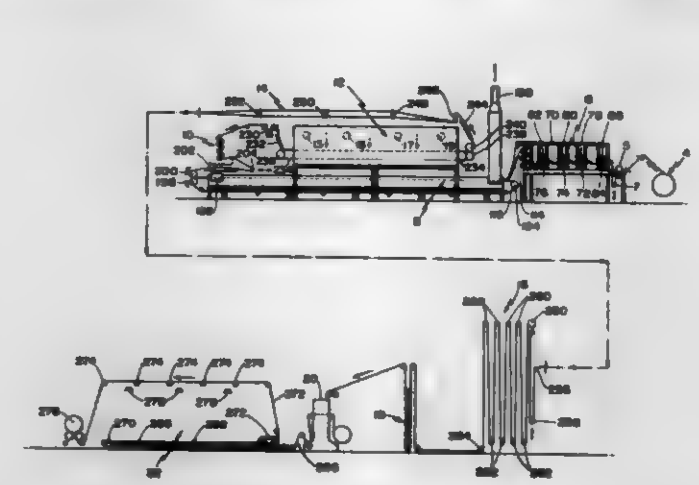
3,981,163
APPARATUS FOR TREATING YARNS

John G. Tillotson, Dalton, Ga., assignor to Tillotson Corporation, Needham, Mass.

Division of Ser. No. 432,449, Jan. 11, 1974, Pat. No. 3,898,035. This application Apr. 23, 1975, Ser. No. 570,765

Int. Cl.² D06B *1/14, 21/00, 11/00*

U.S. Cl. 68—5 D **14 Claims**



1. Apparatus for preparing yarns for use in manufacturing patterned fabrics prior to either storing the yarns or making the fabrics comprising:

printing means for printing the yarn with dye-stuff at predetermined intervals and for predetermined sectional lengths thereof;

timing means for controlling the printing means;

at least one first exit roller positioned to lead the yarn from the printing means, the timing means being energized by said exit roller, said first exit roller letting the yarn, upon exit therefrom, fall downwardly by gravitational force;

control means operatively connected between said exit roller and the timing means, said control means when in a first condition thereof permitting operation of the timing means by the first exit roller, and when in a second condition thereof disengaging the timing means from said first exit roller while simultaneously applying a brake to the timing means to hold the latter immobile during the time said control means is in its second condition;

a first restraining means positioned below the first exit roller and adapted to receive the yarn and restrain its motion as it falls downwardly;

a steam chamber for fixing the dye-stuff on the yarn and positioned below the restraining means;

a first conveyor belt having entrance and exit ends, at least the upper reach of the belt passing through the steam chamber, said entrance end being adapted to receive a yarn in plaits thereon as the yarn leaves said first restraining means;

nip rolls at the exit end of the first conveyor belt and positioned so that the plaits of yarn pass through the nip of said rolls before leaving the first belt;

washing means adjacent said nip rolls adapted to pull the yarn from said nip rolls;

a second exit roller pulling the yarn from washing means and thereafter letting the yarn fall downwardly by gravitational force;

second restraining means positioned below the second exit roller and adapted to receive the yarn and restrain its motion as it falls;

a drying chamber for drying the yarn and positioned below the second restraining means;

a second conveyor belt having entrance and exit ends, at least the upper reach of the belt passing through the drying chamber, said entrance end being adapted to receive yarn in plaits thereon as the yarn leaves said second exit roller;

nip rolls at the exit end of the second conveyor belt and being positioned so that the plaits of yarn pass through said nip rolls before leaving said second conveyor belt; and

means for removing said yarn from said second conveyor belt.

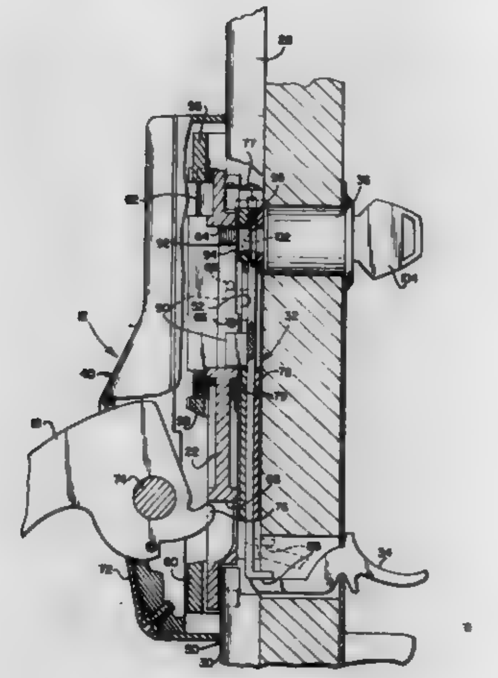
3,981,164
EXIT LOCK HAVING CASSETTE MECHANISM

Walter O. Balducci, New Britain, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

Continuation of Ser. No. 478,340, June 10, 1974, abandoned. This application Mar. 24, 1975, Ser. No. 561,669

Int. Cl.² F05B *65/10;* B60R *25/02;* F05B *39/04*

U.S. Cl. 70—92 **33 Claims**



1. In an exit lock having a case, a latch bolt actuating member, means supporting said actuating member in said case for movement between first and second positions respectively corresponding to projected and retracted positions of an associated latch bolt, and manually operable first means for moving said actuating member from said first to said second position to enable one lock operating function, the improvement comprising a cassette supported in fixed position in said case and having a housing and a connecting member supported in said housing for movement relative thereto between active and inactive positions, said connecting member having a part thereof exposed externally of said housing for engagement with said actuating member when said connecting member is in its active position, means for releasably securing said cassette in assembly with said case, another member for cooperating with said connecting member in its active position to enable another lock operating function, and manually operable second means for moving said connecting member between its active and inactive positions.

3,981,165
OUTBOARD MOTOR PROPELLER LOCK SYSTEM

Merol O. Wersinger, 600 Martin Road, Waterloo, Iowa 50701

Filed Mar. 17, 1976, Ser. No. 667,566

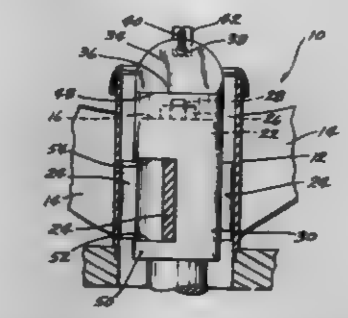
Int. Cl.² F16B *21/00*

U.S. Cl. 70—232 **6 Claims**

1. A propeller lock system to be used in combination with a boat motor which has a propeller shaft housing and a concentrically positioned spaced apart outer propeller housing with a plurality of lugs radially extending from said propeller shaft housing to said propeller housing, said lock system comprising;

an inner fin lock adapted for positioning between said propeller shaft housing and said propeller housing, having a top cover portion and a lower lug gripping edge,

an outer fin lock also adapted to position between said propeller shaft housing and said propeller housing, said outer fin lock having a top cover portion and an elongated body portion, said elongated body portion being of sufficient width to nearly completely fill the annular space between two of said lugs, and



means to lock said inner and outer fin locks together whereby free rotation of said inner fin lock to a position where it can be removed without its inner gripping edge engaging one of said lugs, is prevented.

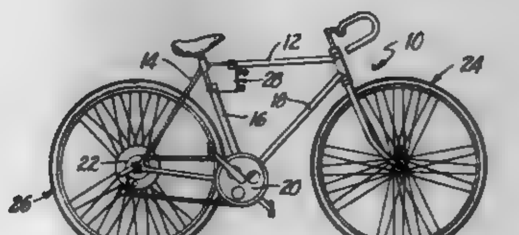
3,981,166
EASILY ATTACHED BICYCLE LOCKING APPARATUS

Nicholas W. Madonna, P.O. Box 431, Montebello, Calif. 90460

Filed June 16, 1975, Ser. No. 587,203

Int. Cl.² B62H *5/00*

U.S. Cl. 70—234 **11 Claims**



1. A bicycle locking apparatus, comprising:

a housing having top, bottom, front and rear end walls and side walls defining a housing enclosure;

said side walls having upwardly and rearwardly extending portions defining a horizontal channel and a downwardly and forwardly inclined channel respectively for reception of a horizontal bicycle frame part and a forwardly and downwardly inclined bicycle frame part respectively;

means defining a pair of opposite upwardly opening recesses for the upwardly extending portions of the housing, a pair of opposite, rearwardly opening recesses for the rearwardly extending portions of the housing;

said recesses being defined in part by respective locking strips secured to the side walls of the housing, said locking strips having outwardly extending ears with their free edges at the bottom thereof, the ears of the locking strips extending into said recesses.

3,981,167
DIRECT-DIAL COMBINATION LOCK

Peter J. Phillips, 828 Calle De Arboles, Redondo Beach, Calif. 90277

Filed Dec. 5, 1974, Ser. No. 529,699

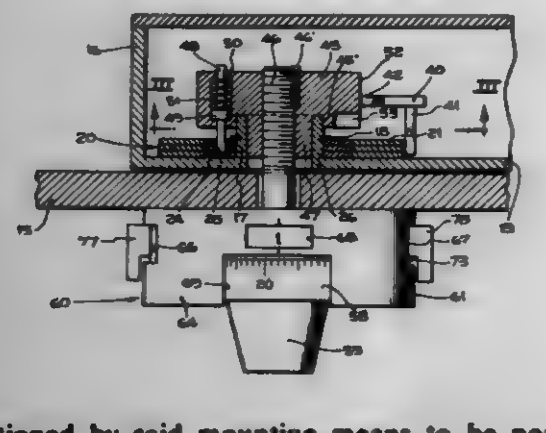
Int. Cl.² E05B *37/04*

U.S. Cl. 70—311 **8 Claims**

1. In a combination lock having a latch operating lever arm movable between latch open and latch closed positions, a plurality of tumbler means for blocking movement of said arm to latch open position until moved into predetermined positions wherein tumbler gate openings are presented toward a part of said arm and a manually operable dial means for locat-

ing said tumbler means through manipulation of a dial portion thereof and for actuating said lever arm after locating of said tumbler means, the improvement comprising the provision of:

a tumbler locator and lever arm actuator member and means for mounting said member for movement about a central axis in response to manual operation of said dial, said member having means for engaging and moving said tumbler means on operation of said dial and a portion positioned by said mounting means to be normally in relatively movable abutting contact with said lever arm to prevent contact between said arm and said tumbler means during locating of said tumbler means by said member; and



means for selectively adjusting the axial position of said member for sequentially locating and disengaging said tumbler means engaging means from each of said plurality of tumbler means.

3,981,168

PROTECTED CYLINDER LOCK

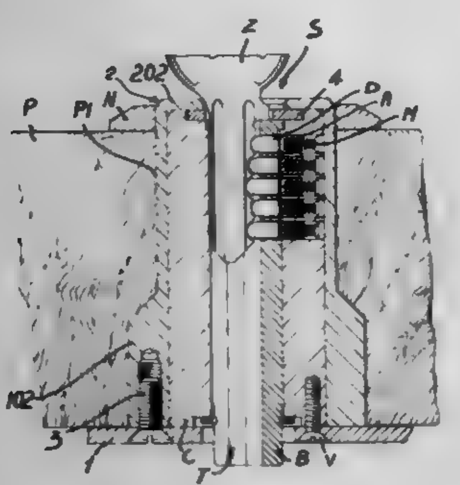
Giorgio Vanelli Coralli, and Alessandro Brunelli, both of Bologna, Italy, assignors to Viro Innocenti S.p.A., Zola Predosa, Italy

Filed Aug. 18, 1975, Ser. No. 605,681

Claims priority, application Italy, Sept. 10, 1974, 12958/74

Int. Cl.² E05B *15/16*

U.S. Cl. 70—417 9 Claims



1. A protected cylinder lock of the type to be mounted on a frame, particularly a door, by securing it to a suitable fastening plate provided at the inner side of the door, comprising:

a. a cylinder lock mechanism of conventional type comprising an outer cylinder and a rotatable plug, the outer cylinder being secured to the fastening plate by means of suitable fasteners;

b. a hard material protective casing, fitted onto and encasing the said cylinder lock mechanism, said casing being constructed as a tubular member presenting an open end in correspondence with the extremity of the cylinder lock mechanism directed towards the inside of the door, and a partially closed end in correspondence with the extremity of the cylinder lock mechanism, or external appearing at the outer or external side of the door, said casing being fastened to the said fastening plate by means of suitable fasteners, and presenting a tubular cavity having a transverse section such as to permit the rotation of the outer cylinder of the cylinder lock mechanism encased therein.

3,981,169

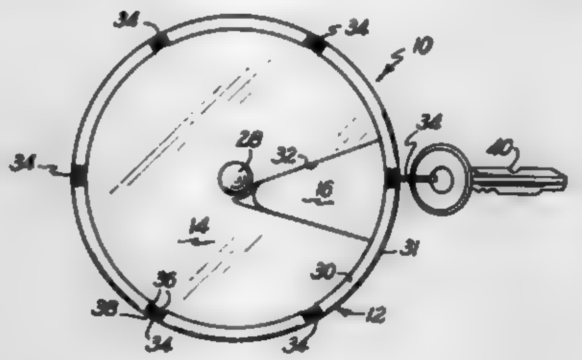
KEY HOLDING APPARATUS

James D. Youd, 35 Villa Drive, Foxboro, Mass. 02035

Filed June 6, 1975, Ser. No. 584,694

Int. Cl.² A47G *29/10*

U.S. Cl. 70—456 R 13 Claims



1. Key case apparatus comprising

a. a generally flat circular base member, a plurality of key recesses formed in the base member and lying in a plane,

b. a cover rotatably mounted on the base member, a key access slot formed in the cover adapted to provide access to a selected key receiving recess upon alignment of the slot with the selected recess, and

c. key mounting means for each key receiving recess provided on the base member, the key mounting means mounting the keys so that a selected key can be moved out of the plane of the key receiving recess when the key access slot is in alignment with the selected key receiving recess.

3,981,170

APPARATUS FOR ASSEMBLING A SCREW AND COMPRESSIBLE WASHER

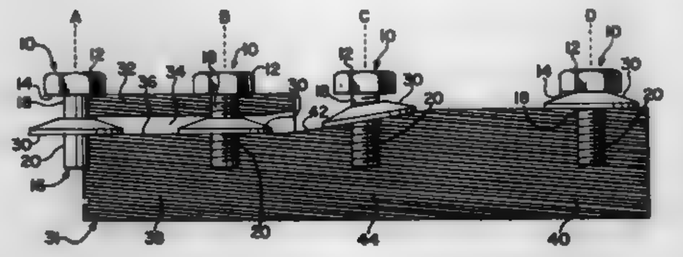
Gerald Dean Barth, Elgin, and David Prugh Wagner, Geneva, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 474,502, May 30, 1974, Pat. No. 3,906,567. This application May 8, 1975, Ser. No. 575,757

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² B21H *3/06*

U.S. Cl. 72—88 8 Claims



1. A thread rolling die assembly for fabricating a telescoping screw and compressible washer assembly "which includes an axially compressible washer positioned on a screw blank having an unthreaded shank comprising upper and lower regions and a radially enlarged head", said die assembly comprising a workpiece engageable face with a first longitudinal section having an upper portion with screw blank swaging means, slot means extending inwardly from the workpiece engageable face and located directly beneath the upper blank swaging means, the slot means including a ledge adapted to receive and support said compressible washer on the unthreaded screw shank while the upper region of the shank is swaged by the upper swaging means, ramp means adapted to move the washer upwardly on the screw shank as the screw-washer assembly moves longitudinally of the workpiece engageable face and, a second longitudinal die section having thread swaging surfaces adapted to deform the lower region of the shank into a helical thread form with a crest diameter greater than the inner diameter of the compressible washer.

3,981,171

TWIN DRIVE FOR ROLLING MILLS

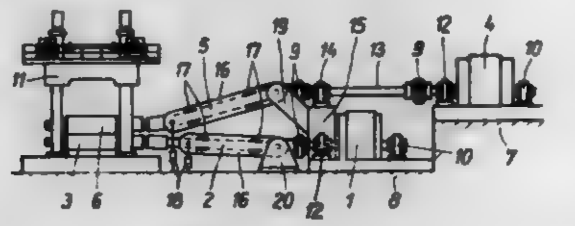
Wolfgang Kmelisch, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 7, 1975, Ser. No. 629,912

Claims priority, application Germany, Nov. 12, 1974, 2454036

Int. Cl.² F16P *7/00*

U.S. Cl. 72—249 5 Claims



1. In a twin drive rolling mill having upper and lower rollers connected with the rotor shafts of corresponding drive motors through respective transmission chains, an elevated bearing support platform over which the upper-roller transmission chain is guided, each transmission chain including: a coupling that permits longitudinal displacements, a spindle, and an axial pressure bearing for the taking up forces transmitted along the transmission chain; the upper-roller transmission chain further including: an intermediate shaft, a radial bearing mounted on the support platform for accommodating the intermediate shaft, and a support-beam structure arranged laterally of the spindle for supporting the spindle, the improvement comprising: a lever pivotally mounted on the elevated bearing support platform; connection means for connecting said support-beam structure to said lever; and, rupture means connecting said lever to the support platform for rupturing upon the application of a predetermined force between said lever and the support plaform.

3,981,172

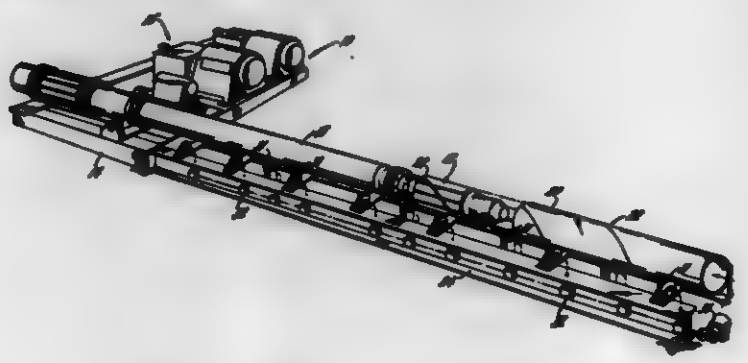
METHOD AND APPARATUS FOR EXPANDING SPIRALLY WELDED PIPE

Johann T. Hess, Deerfield, and Frederick C. Kucklick, Buffalo Grove, both of Ill., assignors to Grotnes Machine Works, Inc., Chicago, Ill.

Filed Sept. 22, 1975, Ser. No. 615,490

Int. Cl.² B21D *41/02, 31/04*

U.S. Cl. 72—370 6 Claims



1. The method of expanding pipe having a helically welded seam comprising the steps of moving the pipe over an expandable die head assembly adapted to be radially expandable within the pipe and including a helical groove on the surface of the die head, said groove arranged to conform with the helical weld seam of the pipe that is engaged by the die head assembly, expanding said die head assembly within the pipe and progressively advancing the pipe and rotating the same for subsequently incrementally expanding the pipe along its length with the helical weld seam being maintained in substantial conformity with the die head assembly groove.

3,981,173

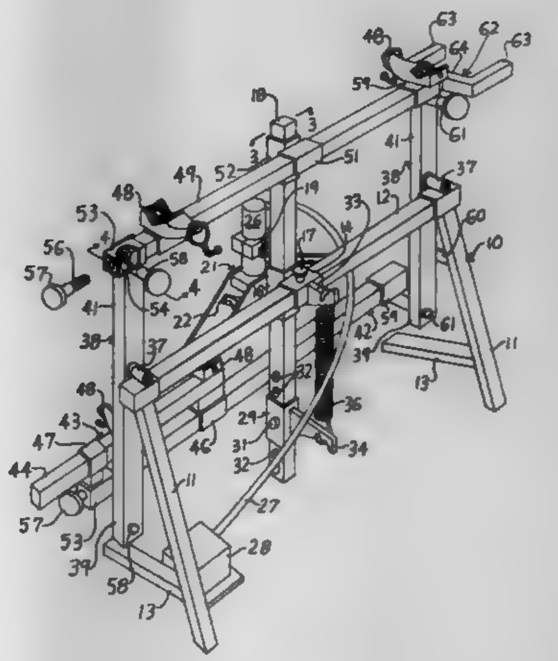
APPARATUS FOR BENDING CONDUITS

Louis C. Nobinger, 1660 Shannon Road, Bessemer, Ala. 35020

Filed Aug. 8, 1975, Ser. No. 603,171

Int. Cl.² B21D *7/06*

U.S. Cl. 72—389 14 Claims



1. In apparatus for bending conduits with a bending unit embodying a movable bending shoe spaced from conduit engaging members for receiving a conduit therebetween with means to impart relative movement between said bending shoe and said conduit engaging members whereby the conduit is bent,

a. a supporting frame having a generally horizontal guide member,

b. an upstanding member carried by said guide member intermediate the ends of said guide member and adapted for vertical and longitudinal movement relative to said guide member,

c. means pivotally connecting said bending unit to said upstanding member so that the bending unit moves with said upstanding member,

d. means retaining said upstanding member at selected elevations relative to said guide member,

e. an elongated end member mounted for pivotal movement adjacent each end of said guide member and having a depending portion adapted for angular movement to selected positions relative to said guide member, and

f. an elongated conduit supporting member extending between said end members and pivotally connected thereto so that a conduit supported thereby moves to selected elevations in response to angular movement of said end members.

3,981,174

METHOD OF AND DEVICE FOR TESTING THE SHOCK ABSORBERS OF A VEHICLE

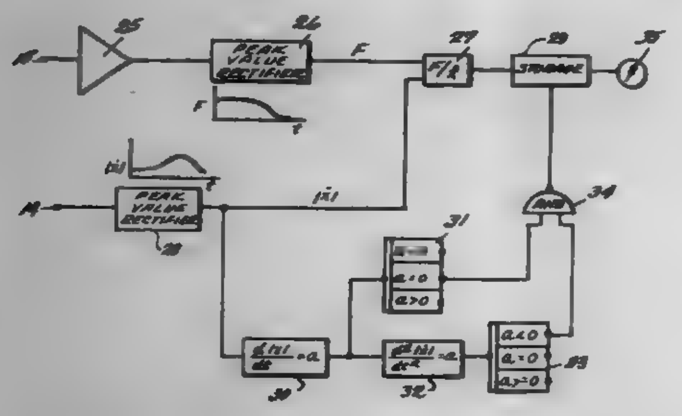
Gunther Himmler, Darmstadt, Germany, assignor to Gebr. Hofmann KG, Darmstadt, Germany

Filed Sept. 19, 1975, Ser. No. 614,957

Claims priority, application Germany, Sept. 23, 1974, 2445406

Int. Cl.² G01M *17/04*

U.S. Cl. 73—11 **6 Claims**



1. A method of testing shock absorbers installed on a vehicle comprising the steps of:

oscillating one vehicle wheel of said vehicle supported on a wheel supporting plate of a test stand,

producing a first signal which varies as a function of wheel footprint dynamic pressure,

producing a second signal which varies as a function of the oscillation velocity of said wheel supporting plate,

detecting when resonance is occurring and producing a resonance signal,

dividing said first and second signals to produce a tire quality signal, and

producing a tire quality indication from said tire quality signal only when said resonance signal is produced.

3,981,175

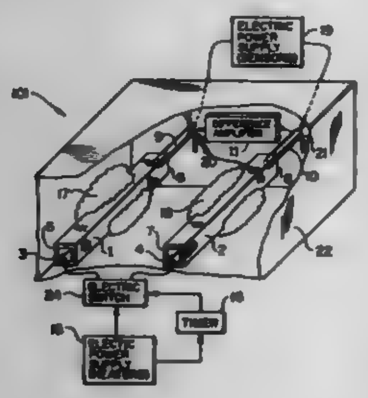
METHOD OF AND APPARATUS FOR NONDESTRUCTIVELY DETERMINING THE COMPOSITION OF AN UNKNOWN MATERIAL SAMPLE

Ogden H. Hammond, III, and Francis I. Baratta, both of Arlington, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 19, 1975, Ser. No. 578,446

Int. Cl.² G01N *25/00*

U.S. Cl. 73—15 R **43 Claims**



1. Apparatus for determining nondestructively the composition of an unknown sample that comprises, in combination: means for applying heat at a rate q_{sa} at one end of an elongate sample of weight W_{sa}; means for simultaneously applying heat at a rate q_{st} at one end of a standard of weight W_{st} and having the same length as the length of the sample such that $q_{sa}/W_{sa} = q_{st}/W_{st}$; first transducer means positioned to sense the temperature at the other end of the sample and to provide a first electric signal; second transducer means positioned to sense the temperature at the other end of the standard and to provide a second electric signal; and means connected to receive and analyze the first electric signal and the second electric signal over time to determine the relative magnitudes, either qualitatively or quantitatively, of the temperatures at the ends of the sample and of the standard.

3,981,176

DUAL FREQUENCY ACOUSTIC GAS COMPOSITION ANALYZER

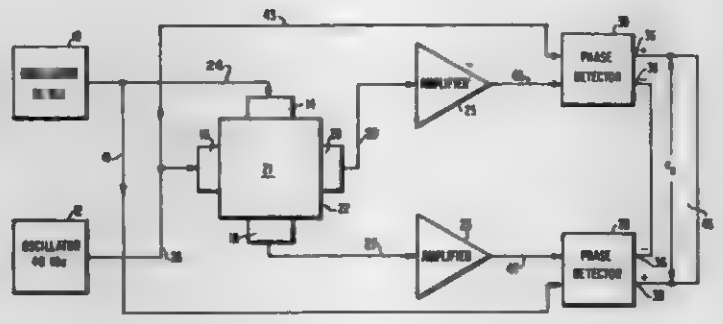
John E. Jacobs, Evanston, Ill., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed Sept. 16, 1974, Ser. No. 506,744

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² G01N *29/02*

U.S. Cl. 73—24 **4 Claims**



1. An apparatus for measuring the composition of a gas comprising:

a fixed length acoustical column containing the gas to be tested;

first and second variable frequency oscillator means for simultaneously generating respectively first and second different oscillating signals;

first and second transmitting transducer means, disposed on said column, for converting said first and second oscillating signals into mechanical energy;

first and second receiving transducer means disposed on said column for converting the mechanical energy produced by said transmitting transducer means into first and second electrical energy output signals, wherein said first transmitting transducer means is disposed on said acoustical column opposite said first receiving means, and said second transmitting transducer means is disposed on said acoustical column opposite said second receiving transducer means, and wherein said first and second transmitting means and said first and second receiving transducer means are disposed on said acoustical column in order to pass both acoustic beams across the same gap;

first phase detector means, connected to said first transmitting transducer and said first receiving transducer means, for measuring the phase shift in said first oscillating signal and generating a first phase shift output signal;

second phase detector means, connected to said second transmitting transducer and said second receiving transducer, for measuring the phase shift in said second oscillating signal and generating a second phase shift output signal; and

output means, connected to said first and second phase detector means, for summing said first and second phase shifts output signals.

3,981,177

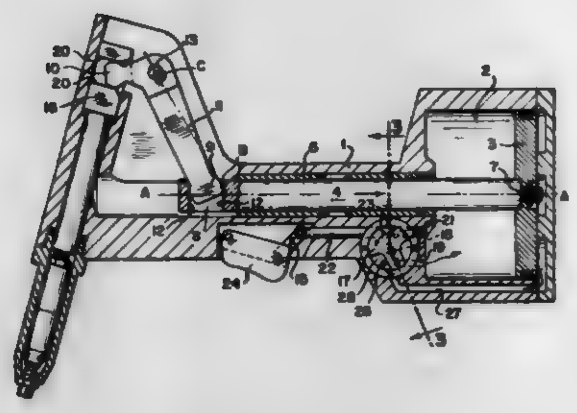
COMPRESSED AIR RIVET SETTING TOOL

Anthony E. Di Maio, and Willem Swier, both of Georgetown, Mass., assignors to Marson Fastener Corporation, Chelsea, Mass.

Filed Feb. 21, 1975, Ser. No. 551,592

Int. Cl.² B21J *15/34*

U.S. Cl. 72—391 **1 Claim**



1. A compressed air-powered blind rivet setting tool comprising

a. a housing with a recess;

b. a piston within the housing for movement by compressed air;

c. a piston rod connected to the piston and supported for reciprocating movement along a straight line within the housing;

d. rivet pulling means reciprocally mounted in said housing and spaced from the piston rod;

e. a pivotable lever member pivoted about a pivot axle on the housing, said lever member having a first cam surface at one end portion which surface is slidable engageable on the pulling means and having a second cam surface at the other end portion slidably engageable with the piston rod so that as the piston rod is moved a distance by the compressed air the rivet pulling means is moved a fraction of that distance, said lever member cam surfaces being shaped so that as the member pivots about the axle the distances between the axle and the lines of contact between the cam surfaces on the one hand and the pulling means and piston rod on the other hand remain constant;

f. compressed air control means including valve means which direct compressed air to cause movement of the piston in one direction for pulling and setting the rivet and cause movement of the piston in the other direction to return the piston; and

g. said control means includes a rotary valve member positioned in said recess for rotation, closing means connected to said housing having an aperture communicating with the atmosphere and closing said recess except for the aperture which communicates said recess to the atmosphere, chamber means being defined by a single passageway in the valve member communicating with the air source and selectively with first and second sides of the piston as the rotary valve member is rotated in said recess, whereby the piston is caused to move in a reciprocating manner, said valve member communicating with the one side of the piston for providing communication with the air source while permitting the alternate side of the piston to exhaust to atmosphere through said aperture, and for communicating the air source to the alternate side and permitting the one side to exhaust to atmosphere through said aperture.

3,981,178

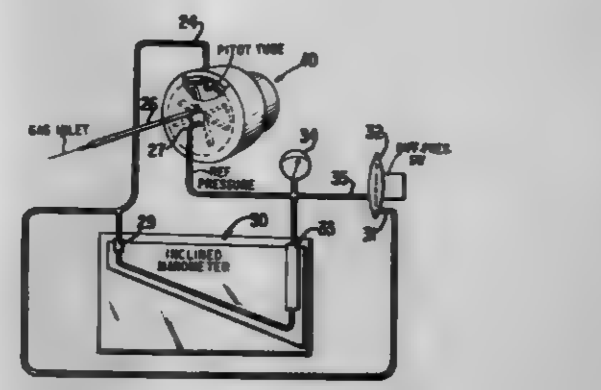
GAS DENSITY DETECTING APPARATUS

Lloyd R. Jones, Fairfield, Conn., and Frederick W. Roberts, deceased, late of Southport, Conn., by Dorothy A. Roberts, executrix, assignors to Rolock Incorporated, Fairfield, Conn.

Continuation of Ser. No. 298,510, Oct. 18, 1972, abandoned. This application Apr. 11, 1974, Ser. No. 460,045

Int. Cl.² G01N *9/30*

U.S. Cl. 73—30 **3 Claims**



1. In a gas density detecting apparatus for measuring the density of a gas flowing through a conduit, the combination of a single casing, a rotatable centrifuging wheel located within said casing, said wheel being a hollow disc with a back face and a peripheral wall extending therefrom, said back face having a plurality of radially extending vanes thereon, said vanes terminating before said peripheral wall so as to provide a circumferential space therebetween, means for rotating said wheel, a front face on said hollow disc having central aperture means, inlet means for introducing the gas to be measured adjacent the rotary axis of said wheel, said gas being centrifuged outwardly in said hollow disc toward said peripheral wall and moving with said disc, means adjacent the rotary axis of said wheel for establishing a reference pressure within said casing, means for sensing the relative pressure of the centrifuged gas as compared with said reference pressure, said sensing means including a Pitot tube having its entrance orifice tangentially located adjacent the peripheral wall of said wheel and the ends of said vanes, so that the centrifuged gas provides ram and velocity effect in said Pitot tube, and outlet means thereby providing a gas flow path through said apparatus.

3,981,179

FLUID DETECTING SYSTEM

Lewis B. Roof, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

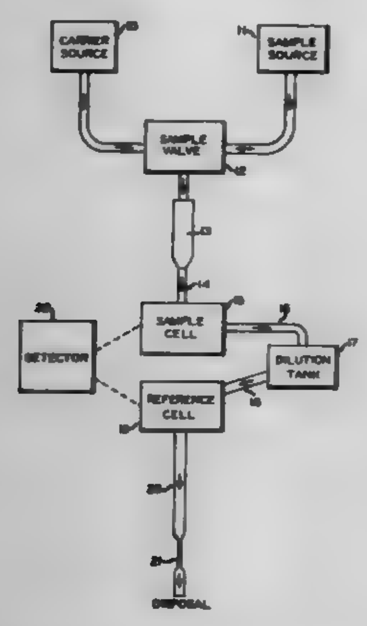
Filed Oct. 15, 1975, Ser. No. 622,589

Int. Cl.² G01N *31/08*

U.S. Cl. 73—61.1 C **13 Claims**

9. A process for the analysis of a fluid stream which is predominately a carrier fluid containing at least one other fluid component in amounts that can be detected by the detector employed in the analysis comprising filling a first detection zone and a second detection zone with said aforementioned carrier fluid containing no amounts of other substances which can be detected by the detector being employed, then passing the fluid to be analyzed through said first detection zone, passing the fluid from said first detection zone to a dilution zone, passing the thus diluted fluid from the dilution zone through said second detection zone, the fluid being diluted with said carrier fluid in said dilution zone until only said

carrier fluid is detectable in said second detector zone by the detector being employed, and comparing at least one characteristic of the fluids in the two detection zones as the fluid to be analyzed is passed through said first detection zone.



3,981,180

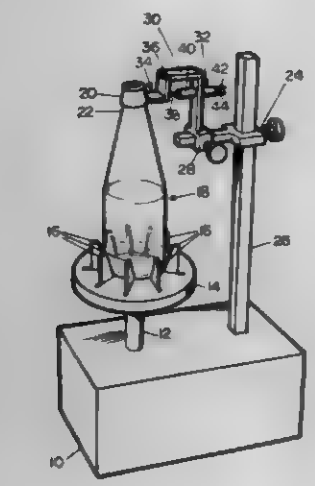
APPARATUS AND METHOD FOR MEASURING CONTAINER LEAN

Sam Lovalenti, Toledo, Ohio, and Darius O. Riggs, Ottawa Lake, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed May 1, 1975, Ser. No. 573,481

Int. Cl.² G01B *13/04*

U.S. Cl. 73—37.6 **9 Claims**



1. Apparatus for measuring the deviation of the top portion of a glass container from the vertical center line of said glass container which comprises, in combination:

a rotatable turntable;

means for chucking a lower base portion of said glass container on said turntable;

a pivotally mounted follower positioned in contact with the top portion of said glass container;

means for sensing the movement of said follower to maintain contact with said glass container as said glass container is rotated and for generating a displacement signal as a function of said movement, said means for sensing the movement of said follower and for generating a displacement signal as a function thereof including;

a fluidic position transmitter, positioned to impinge a jet of air on the back surface of said follower, said position transmitter generating a back pressure signal as a function of the movement of said follower;

a source of air under pressure connected to said fluidic position transmitter; and

a pressure transducer, responsive to said back pressure signal, for generating an electrical displacement signal proportional to said back pressure signal;

a fluidic toggle switch connected in series between said fluidic position transmitter and said source of air for selectively disconnecting said source of air from said fluidic position transmitter; and

signal processing means, connected to receive said generated displacement signal, for generating an electrical output signal representative of the deviation of the top of said glass container from the vertical center line thereof, said signal processing means including;

a pressure switch, connected to receive air when said toggle switch is positioned to allow air to flow to said fluidic position transmitter and generate an electrical signal whenever air is furnished thereto; and

a timing circuit, connected to the electrical signal output of said pressure switch, for generating a first electrical signal at the beginning of a first preselected time period to clear said signal processing means of any previous values of said displacement signal and to allow said fluidic position transmitter to reach a stable position and for generating a second electrical signal at the end of said first preselected time period to allow said signal processing means to accept new values of said displacement signal only during a second preselected time period.

3,981,181

METHOD FOR DETECTING LIQUID LEAK AND A CABLE THEREFOR

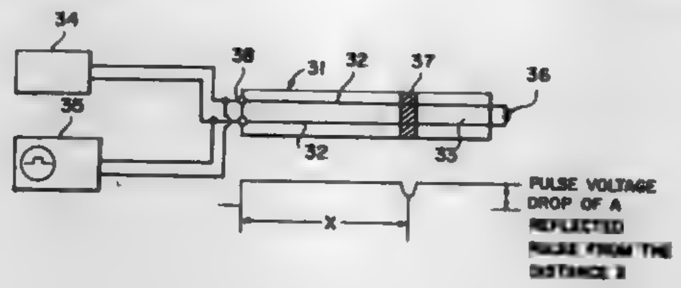
Sadamasa Ochiai, 1089-8 Shimofujisawa, Iruma, Saitama, Japan

Filed July 10, 1975, Ser. No. 594,615

Claims priority, application Japan, July 13, 1974, 49-79736

Int. Cl.² G01M *3/16*

U.S. Cl. 73—40.5 R **7 Claims**



1. A method for detecting liquid leaks from holding means for said liquid, which method comprises,

a. laying a cable adjacent said holding means, which cable comprises two electrical conductors held in substantially parallel relationship and insulated from each other by a porous insulating material having continuous pores;

b. sending an electrical pulse wave into one end of said cable, and

c. sensing the pulse shape reflected in said cable, said pulse shape being distorted by liquid leaks in said holding means which leaks alter the characteristic impedance of said cable, thereby enabling the detection and location of said leaks.

3,981,182

FLOW-THROUGH CAPILLARY VISCOMETER

Ivo Kössler, Hradesinska 59, Prague, Czechoslovakia (101 00), and Karel Habr, v Houstce 5/1032, Brandys n.L., Czechoslovakia

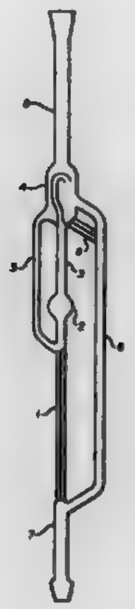
Filed July 11, 1975, Ser. No. 596,024

Claims priority, application Czechoslovakia, July 16, 1974, 5072-74

Int. Cl.² G01N *11/06*

U.S. Cl. 73—55 **7 Claims**

1. In a flow-through capillary viscometer comprising an inlet filling tube, an inlet filling bulb, a measuring capillary tube, and a measuring bulb positioned above said measuring capillary tube; the improvement which comprises providing a filling tube joining the lower part of said inlet filling bulb with the lower part of said measuring bulb, and wherein said measuring bulb is connected by an air-outlet tube to said inlet filling bulb or an overflow tube.



3,981,183

METHOD AND APPARATUS FOR MEASURING A PHYSICAL PROPERTY OF A FLUID MATERIAL THAT VARIES NONLINEARLY RELATIVE TO THE DENSITY OF THE FLUID

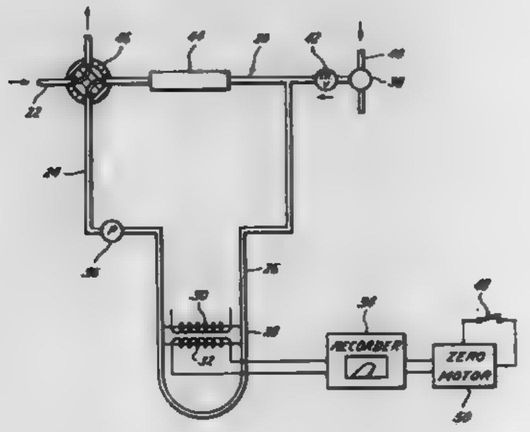
William B. Banks, Chappell Hill, Tex., assignor to Automation Products, Inc., Houston, Tex.

Filed Oct. 3, 1974, Ser. No. 511,909

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.² G01N 9/36

U.S. Cl. 73—61.1 R **13 Claims**



1. The method of measuring a physical property of a fluid material that varies nonlinearly relative to the density of the fluid comprising,

measuring the density of the fluid,

injecting a predetermined amount of a second miscible fluid having a density different from the density of the first fluid into a predetermined amount of the first fluid, and

measuring the density of the combined fluids whereby the differences in the two measurements is an indication of the physical property of the first fluid.

3,981,184

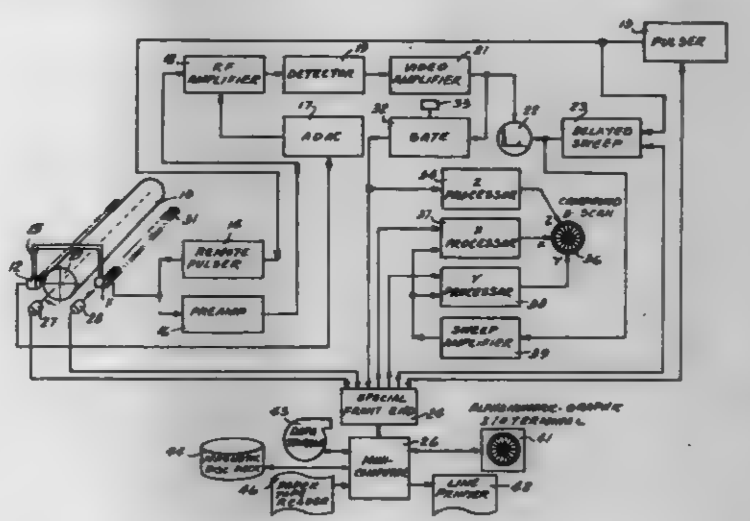
ULTRASONIC DIAGNOSTIC INSPECTION SYSTEMS

Istvan M. Matay, North Royalton, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed May 7, 1975, Ser. No. 575,572

Int. Cl.² G01N *29/04*

U.S. Cl. 73—67.8 S **8 Claims**



1. An ultrasonic inspection system for a test specimen comprising,

a pulser,

a transducer connected to said pulser for transmitting and receiving ultrasonic energy into and from said specimen,

a receiver connected to said transducer,

angular indexing means producing an output indicative of the angular position of said transducer relative to said specimen,

longitudinal indexing means producing an output indicative of the longitudinal position of said transducer, and

a computing and presentation means receiving the outputs of said receiver,

said angular indexing means and said longitudinal indexing means and producing an output indicative of the internal structure of said test specimen,

wherein said computing and presentation means include a timing means which supplies an input to said pulser, means for changing the angular relationship between said transducer and said test specimen, means for changing the longitudinal relationship between said transducer and said test specimen, an adjustable level gate receiving the output of said receiver and passing echoes above a preset level to said computing and presenting means, and a second transducer mounted adjacent said test specimen on the side opposite said transducer, and an automatic distance amplitude controller receiving the output of said second transducer and supplying an output to said receiver to vary its gain.

3,981,185

POSTEMULSIFIABLE DYE PENETRANT SYSTEM AND METHOD FOR USING SAME

Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 444,432, Feb. 21, 1974, Pat. No. 3,915,885, and a continuation-in-part of Ser. No. 444,433, Feb. 21, 1974, Pat. No. 3,915,886. This application Dec. 23, 1974, Ser. No. 535,262

Int. Cl.² G01N *21/16, 19/08;* C09K *11/06*

U.S. Cl. 73—104 **19 Claims**

1. A postemulsifieable dye penetrant inspection method for detecting cracks and flaws in the surface of an object, which comprises applying to said surface a biodegradable liquid dye penetrant composition which consists essentially of (1) a first biodegradable nonionic surfactant consisting essentially of an oxyalkylated alcohol, or a mixture thereof, and (2) a small amount of a dye soluble in said first surfactant, said first surfactant having limited water solubility and rendering the dye penetrant difficult to wash away with water, contacting the

dye penetrant covered surface of said object with an emulsifier containing as essential component a second biodegradable nonionic surfactant consisting of an oxyalkylated alcohol, or a mixture thereof, said second surfactant being essentially water soluble, and rendering the emulsified penetrant water washable, said first and second biodegradable nonionic surfactants being of the group consisting of (a) straight chain, primary, aliphatic oxyalkylated alcohols, wherein said alcohols can contain from 8 to 20 carbon atoms and the oxyalkyl groups are a mixture of ethylene oxide and propylene oxide groups, and (b) ethoxylates of linear secondary aliphatic alcohols, with the hydroxyl groups randomly distributed, the linear aliphatic portion of said alcohols being a mixture of alkyl chains containing in the range from 10 to 17 carbon atoms, and containing an average of from 3 to 12 moles of ethylene oxide, said second surfactant in the emulsifier having a higher number of oxyalkyl groups in the hydrophilic portion than said first surfactant, contacting the emulsified penetrant on the surface of said object with water and removing said dye penetrant from said surface without removing said dye penetrant composition from said cracks and flaws in said surface, and viewing the surface of said object under lighting conditions to obtain colored traces from the dye in said cracks and flaws.

3,981,186

DEVICE FOR BLOCKING AT A GIVEN TORQUE A ROTATING MACHINE DRIVEN BY A HYDRAULIC TURBINE

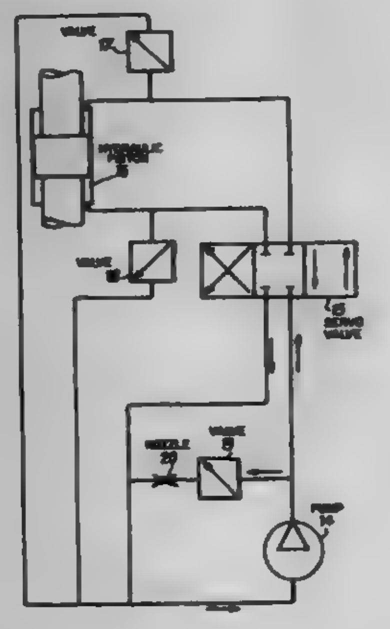
Philippe Rauch, Bordarres, and Jacques Tinchon, Lescar, both of France, assignors to Teleco Inc., Middletown, Conn.

Filed July 14, 1975, Ser. No. 595,509

Claims priority, application France, July 24, 1974, 74.25611

Int. Cl.² E21B *47/00*

U.S. Cl. 73—151 5 Claims



1. A device to block at a predetermined torque value the driven shaft of a rotating machine connected to a driving shaft, including:

a driving shaft;

a driven shaft;

first plate means on said driving shaft having at least three cavities therein equidistantly spaced about said first plate means and penetrating into said first plate means in a first direction;

second plate means on said drive shaft having at least three cavities therein equidistantly spaced about said second plate means and penetrating into said second plate means in a second direction opposed to said first direction of penetration in said first plate means;

at least three rolling bodies between said first and second plate means, each rolling body being located in a homologous manner in a cavity in each of said first and second plate means;

said cavities being grooves that would be made by penetration of one of said rolling bodies into each of said plate means while moving parallel to the axis of the plate means and at a uniform velocity and with each plate means rotating at a uniform velocity and in a direction opposite to the other;

spring means for biasing said second plate means toward said first plate means, said spring means being rotatable with said driven shaft, said second plate means moving away from said first plate means at a predetermined torque load where the axial load on said driven shaft overcomes the biasing load of said spring means; and

brake means for braking said driven shaft at a predetermined torque load, said brake means including at least one disc mounted on said driven shaft for rotation with said driven shaft, and at least one fixed disc facing said mounted disc for frictional engagement with said mounted disc upon movement of said second plate means away from said first plate means, the opposing surfaces of said fixed and mounted discs being of material to retain a substantially uniform friction coefficient regardless of wear.

3,981,187

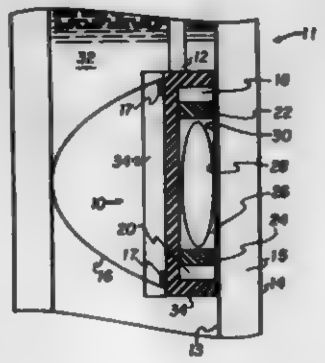
METHOD FOR MEASURING THE THERMAL CONDUCTIVITY OF WELL CASING AND THE LIKE

Eddie P. Howell, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 454,754, March 25, 1974, abandoned. This application July 7, 1975, Ser. No. 593,282

Int. Cl.² E21B *47/06*; G01V *9/00*

U.S. Cl. 73—154 2 Claims



1. The method of measuring the earth heat flux at a selected depth adjacent an uncased borehole comprising the steps of:

a. measuring the temperature of the well bore at said depth,

b. thereafter applying a known constant heat flux to the well bore at said depth for at least a predetermined time interval sufficient to establish a linear relation between the corresponding temperature rise and the earth thermal conductivity at said depth,

c. measuring the correponding rise in temperature of the well bore at said depth,

d. measuring the temperature gradient in the unheated well bore between two positions separated therein by a predetermined vertical distance at approximately said depth, and

e. calculating a value for the earth heat flux in the vicinity of said depth as a function of the earth thermal conductivity at said depth and of said temperature gradient, wherein the steps are performed in part by moving past said depths at a constant logging speed a well logging probe carrying a pair of vertically spaced apart temperature sensors responsive to the temperature of said bore hole at their respective levels, means for electrically heating a portion of the probe intermediate said sensors, and means for decentralizing the probe so that it is urged into thermal conductive contact with said bore hole, the value of said logging speed being equal to or less than the quotient formed by dividing the length of effective heated interface between said heating means and the bore hole by said predetermined time.

3,981,188

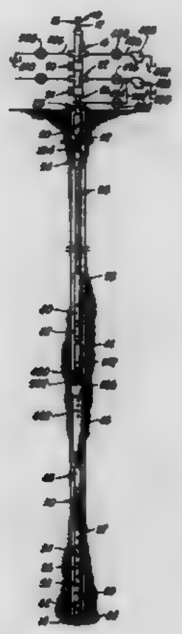
METHOD AND APPARATUS FOR TESTING WELLS

Burchus Q. Barrington; David L. Farley, and O. L. Morrisett, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 24, 1974, Ser. No. 517,488

Int. Cl.² E21B *49/00*

U.S. Cl. 73—155 21 Claims



21. An apparatus, for sampling high pressure fluid containing underground formations penetrated by a well bore, comprising:

a. conduit means positionable in the well bore for conveying fluids therethrough within the well bore;

b. sampler chamber means, carried by said conduit means, for isolating a sample of the fluids conveyed through said conduit means, and for continuously maintaining said sample in isolation during removal of said extended sampler chamber from said well bore;

c. sampler chamber extension means, operably associated with said sampler chamber means, for extending and increasing the volume of said sampler chamber means after the fluid sample is isolated and contained therein in response to upward movement of said conduit means; and

d. motivator means, associated with said conduit means, for causing the fluids from the underground formation to flow into said sampler chamber means.

3,981,189

METHODS AND STEAM SAMPLERS WITH INERTIAL LATCH

Curtis E. Howard, Humble, and Douglas G. Calvin, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 528,073, Nov. 29, 1974, Pat. No. 3,934,469. This application Apr. 14, 1975, Ser. No. 567,787

Int. Cl.² E21B *47/00*

U.S. Cl. 73—155 10 Claims

1. A method for collecting a sample of steam at any desired location down in a well having free passage for a cylindrical collecting vessel suspended on a wire line therein comprising the steps of,

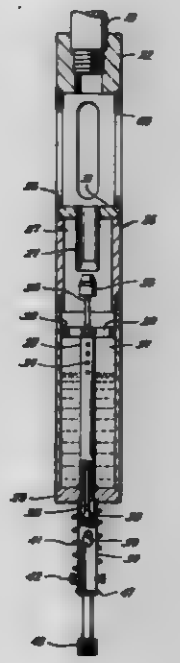
a. passing the steam that has arrived at the desired location through a tube means internally of the cylindrical collecting vessel,

b. passing a portion of the steam vapor phase and liquid phase from the tube means through an upper opening in the tube means out into an annulus formed between the tube means, and the cylindrical collecting vessel,

c. collecting the steam liquid phase and vapor phase in the annulus,

d. passing the steam vapor phase back into the tube means through side openings therein and out an opening in the lower end of the tube means,

e. inserting a solid massive mandrel up into the lower end of the tube means with the lower end of the solid mandrel protruding below the cylindrical vessel,



f. latching the solid massive mandrel to the wire line supported vessel in a lowered and liquid unsealing position with an inertial operated spring latch,

g. lowering the cable and vessel rapidly for a predetermined distance,

h. unlatching the solid massive mandrel from the vessel by sudden deceleration of the wire line and vessel,

i. raising the solid mandrel relative to the tube means to latch the solid massive mandrel in raised liquid sealed position wherein the openings are sealed closed by inertial forces and spring action of the latch to accordingly seal any steam liquid phase in the annulus,

j. raising the cylindrical vessel to the surface, and

k. cooling the cylindrical vessel for removal of the steam liquid phase.

3,981,190

ELECTROMAGNETIC FLOWMETER HAVING INTERNAL FIELD COILS

Eugene Vidmantas, Greece, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed May 23, 1975, Ser. No. 580,281

Int. Cl.² G01F *1/58*

U.S. Cl. 73—194 EM 10 Claims

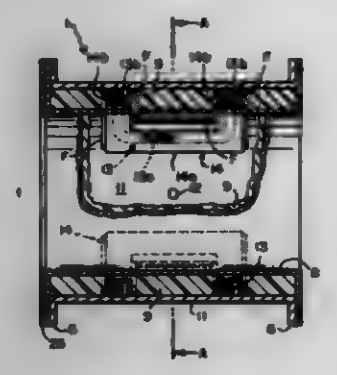
6. A flowmeter having, in combination:

a. a flow tube having a bore providing for flow of a conductive fluid through said flowmeter;

b. field coil means in said bore for producing a magnetic field therein transverse to the flow of said fluid;

c. measuring means for sensing and conditioning voltages induced in said fluid by its said flow through said flow tube;

d. said flow tube having a magnetic pipe section, non-magnetic box means projecting inwardly into said bore, said box means defining spaces having substantially the shape and proportions of said field coil means, said spaces being located below the exterior surface of said tube but being hermetically separated from the bore of said flow tube by said box means, and said field coil means being fixedly secured in said spaces defined by said box means.



3,981,191
METHOD AND APPARATUS FOR THE ULTRASONIC MEASUREMENT OF THE FLOW VELOCITY OF FLUENT MEDIA

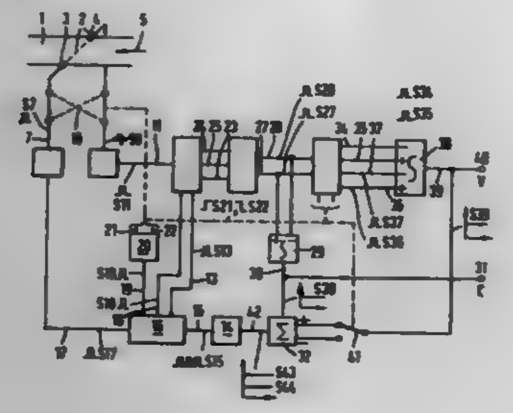
Alvin E. Brown, Claremont, Calif., and Niels Thun, Sonderborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Aug. 11, 1975, Ser. No. 603,294

Claims priority, application Germany, July 5, 1975, 2530202

Int. Cl.² G01F *1/66*

U.S. Cl. 73—194 A 20 Claims



1. In apparatus for the measurement of fluid flow rate using ultrasonic signals, said apparatus having first and second transducers positioned in relative upstream and downstream locations in communication with the fluid to be measured for alternately transmitting said ultrasonic signals in opposite senses therebetween, the combination comprising:
- a timing generator for controlling the transmission times of said ultrasonic signals and generating a reference signal delayed with respect to each said transmission time,
- comparator means for generating early and late signals according to whether the received ultrasonic signals are early or late relative to each said reference signal,
- a first signal level generator responsive to at least some of said early and late signals for generating a first signal level related to sound speed in said fluid,
- logic means responsive to said comparator means and to the sense of transmission of said ultrasonic signals for generating early and late signals correlated with transmission direction upstream and downstream,
- a second signal level generator responsive to at least two of said early and late signals correlated with transmission direction for generating a second signal level different than said first level related to said fluid flow rate, and
- adder means responsive to said first and second signal levels for generating control signals related respectively to the upstream and downstream speeds of sound for controlling the timing of said timing generator.

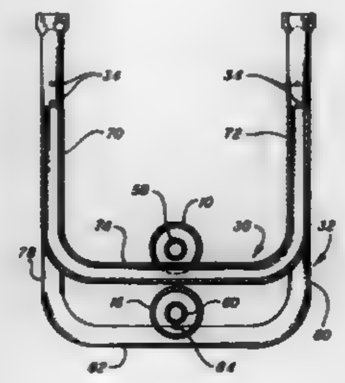
3,981,192
FLUID PRESSURE SENSING APPARATUS

Carl J. Bauder, Syracuse, N.Y., assignor to Cambridge Filter Corporation, Syracuse, N.Y.

Filed May 23, 1975, Ser. No. 580,152

Int. Cl.² G01F *1/46*

U.S. Cl. 73—212 9 Claims



1. Means for communicating the pressure of a field within an enclosed space to a measuring instrument, said means comprising, in combination:
- a. a hollow, U-shaped sensing probe having first openings in both legs through which the interior of the enclosed space communicates with the interior of each leg of said probe;
- b. a hollow manifold tube of substantially larger internal cross section than said probe and having a second opening through a wall thereof;
- c. means fixedly connecting and effecting an air-tight seal between said probe, substantially at the mid-point between the legs thereof, and said manifold tube about the periphery of said second opening;
- d. said probe having a third opening through which the interior of each of said legs communicates with the interior of said manifold tube;
- e. a pressure measuring device; and
- f. means communicating the pressure within said manifold tube to said device.

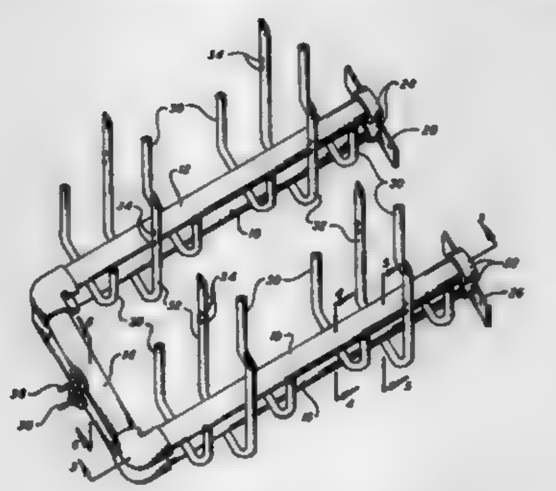
3,981,193
FLUID PRESSURE SENSING APPARATUS

Roger T. Goulet, 7952 Orion Path, Liverpool, N.Y. 13088

Filed May 23, 1975, Ser. No. 580,153

Int. Cl.² G01F *1/46*

U.S. Cl. 73—212 7 Claims



1. Apparatus for measuring the pressure within an enclosed duct having fluid flowing in a first direction therethrough, said apparatus comprising, in combination:
- a. at least one hollow manifold tube extending laterally across the duct and having an effective internal cross sectional area, constant along its entire length, of a first predetermined value, and a length of a second predetermined value;
- b. a plurality of hollow, U-shaped sensing tubes arranged at spaced intervals along the length of said manifold tube, each of said sensing tubes having open ends directed oppositely to the direction of fluid flow;
- c. each of said sensing tubes having an opening located substantially at the mid-point between said open ends and having an area of a third predetermined value;
- d. means fixedly connecting and effecting an air-tight seal between each of said sensing tubes, substantially at the mid-points thereof, and said manifold tube for communication of the interiors thereof through said sensing tube openings;
- e. the ratio of said first and second values being sufficiently large with respect to said third value, to reduce the velocity of air flow within said manifold to an extent eliminating any appreciable pressure drop along the length of said manifold tube; and
- f. means for communicating the pressure within said manifold tube to a point outside the duct.

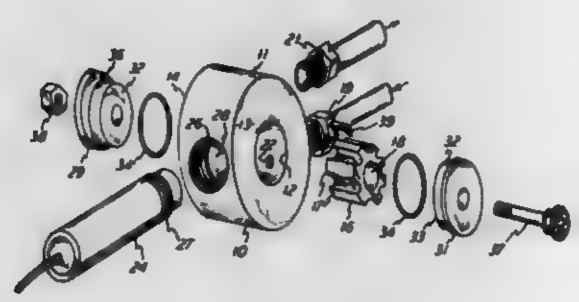
3,981,194
FLOW METER SYSTEM

Bernard G. Blise, and Norman H. Jessen, both of Kenosha, Wis., assignors to William O. Lehman, Kenosha, Wis., a part interest

Filed Aug. 21, 1975, Ser. No. 606,463

Int. Cl.² G01F *1/075*

U.S. Cl. 73—229 5 Claims



1. A flow meter system comprising a housing having a fluid inlet and a fluid outlet and a circular chamber in flow communication with said inlet and said outlet, a cylindrically-shaped rotor rotatably disposed in said chamber and being capable of rotation in response to the flow of fluid through said housing and with said rotor having a plurality of openings spaced around the circumference thereof and having vanes projecting radially between said openings and having an axial opening extending therethrough, said housing and said rotor being non-metalic, end covers on said housing, and a bolt of a diameter having clearance with said rotor axial opening and extending into said housing and loosely through said rotor axial opening for securing said end covers fluid-tightly to said housing, a metalic piece attached to one of said vanes of said rotor and being disposed at the periphery thereof, a radio frequency sensor mounted on said housing and extending to a location adjacent said chamber for sensing the passing of said metalic piece during rotation of said rotor in the disturbance of the radio wave emitted by said sensor, and a counter connected with said sensor for recording the wave disturbances and thus the revolutions of said rotor to thereby determine the flow of fluid through said housing.

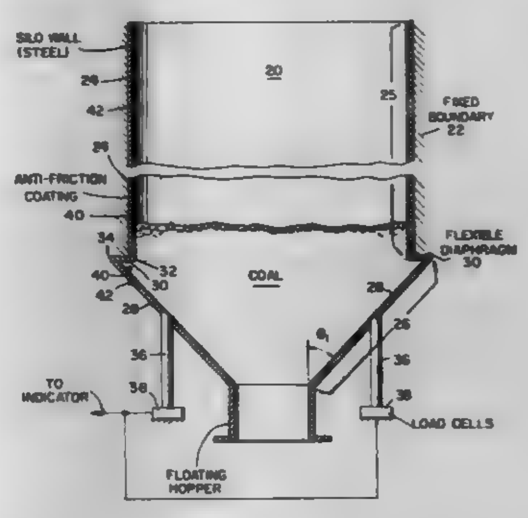
3,981,195
SILO LEVEL MEASURING SYSTEM

Ross H. Forney, Renner, and Candelario Paredes, Dallas, both of Tex., assignors to Forney Engineering Company, Carrollton, Tex.

Filed July 21, 1975, Ser. No. 597,936

Int. Cl.² G01F *23/20*

U.S. Cl. 73—296 19 Claims



1. A system for measuring levels of bulk material in a silo comprising: an upper storage compartment, means for supporting said upper storage compartment, a lower hopper discharge compartment connected to said upper storage compartment, said upper storage compartment and said hopper discharge compartment selectively formed with marginal edges which are spaced apart and operatively engage each other, such that said hopper discharge compartment supports the load of said bulk material without being effected by the weight of said upper storage compartment, and means responsively coupled to said hopper discharge compartment for measuring the load thereof.

3,981,196
APPARATUS FOR TEMPERATURE MEASUREMENT

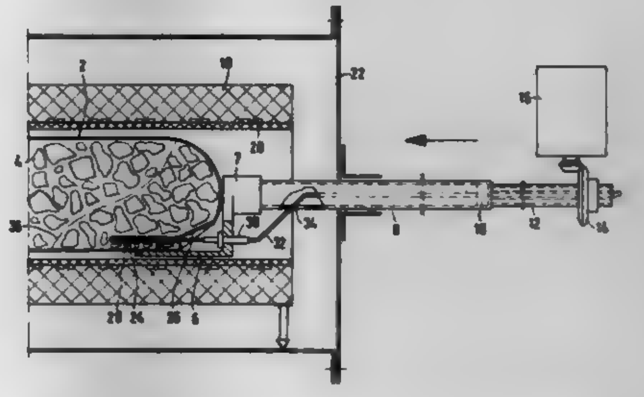
Klaus Zeuch, Eckental, and Josef Stadter, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 24, 1975, Ser. No. 561,342

Claims priority, application Germany, Mar. 27, 1974, 2414888

Int. Cl.² F27D *21/00;* G01K *1/14*

U.S. Cl. 73—343 B 5 Claims



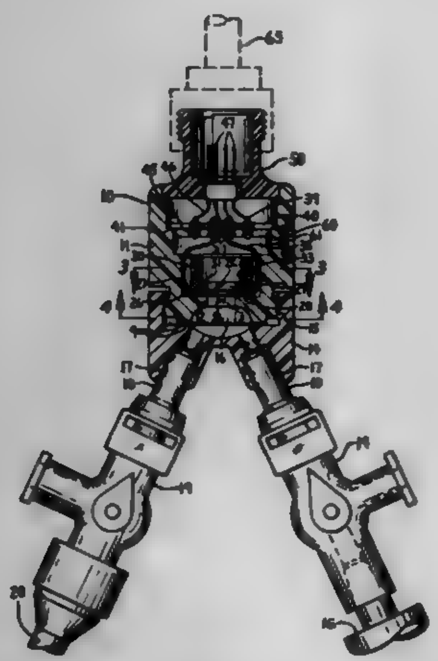
1. Apparatus for the temperature measurement of a granular semiconductor material which is evaporated in an ampoule supported along an axis of symmetry having two closed end walls arranged in an autoclave with the counter pressure of the autoclave controlled as a function of the vapor pressure of the semiconductor material, in particular in such apparatus for the production of a semiconductor compound, one component of which possesses a significantly higher vapor pressure

than the other or others, comprising: a measuring tube with a diameter much smaller than that of the ampoule inserted through and sealed into one of said end walls of the ampoule eccentric to said axis of the ampoule near its bottom so that its closed end is located in and surrounded by the granular semiconductor material being evaporated therein and with its open end at the outside surface of the wall of said ampoule so as to permit insertion of a temperature sensor therein; and a temperature sensor having leads inserted into the closed end of said measuring tube with said leads extending from the open end thereof.

3,981,197
EXTERNAL BLOOD PRESSURE TRANSDUCER

Clement Eugene Lieber, Yorba Linda, and Lawrence Webster Blake, Costa Mesa, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed June 23, 1975, Ser. No. 589,714
Int. Cl.² G01L *9/06*
U.S. Cl. 73—398 AR 11 Claims



1. In a fluid pressure transducer, a flexible diaphragm of elastomeric material, a strain gage beam element encapsulated in said elastomeric material, and electrical connections for said beam element encapsulated in said elastomeric material, said diaphragm comprising a pair of discs of said elastomeric material bonded together with said beam element disposed between said discs, at least one of said discs being transparent to provide inspection of the position of said beam element in the diaphragm.

3,981,198
TRANSDUCING METHODS AND TRANSDUCERS

Winfield Sample, Sierra Madre, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed July 7, 1975, Ser. No. 593,395
Int. Cl.² G01L *7/08, 9/04*
U.S. Cl. 73—407 R 30 Claims

1. A method of providing a signal in response to a force producing physical condition with the aid of a signal transducing device comprising in combination the steps of:

providing a laterally flexible tubular enclosure having two opposite ends;

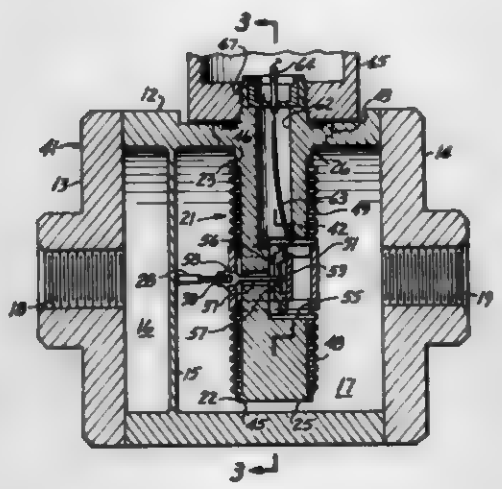
locating said signal transducing device inside said tubular enclosure;

maintaining both of said ends relatively stationary;

picking up said force outside said tubular enclosure;

applying said picked-up force to said tubular enclosure between said relatively stationary ends and laterally flexing said tubular enclosure with said applied force between said relatively stationary ends;

maintaining said signal transducing device stationary relative to said flexing tubular enclosure; and

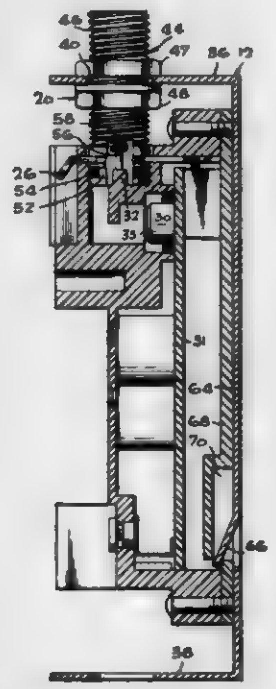


transmitting said applied force to said relatively stationary signal transducing device to generate said signal inside and during the flexing of said tubular enclosure.

3,981,199
PRESSURE TRANSDUCER

Leonard W. Moore; Ronald L. Bodie, both of Northridge, and Conrad Fiederer, Agoura, all of Calif., assignors to Moore Industries, Sepulvada, Calif.

Filed Aug. 29, 1975, Ser. No. 608,889
Int. Cl.² G01L *7/00*
U.S. Cl. 73—420 36 Claims



5. A quick connect-disconnect connector for a pressure transducer comprising a tubular coupling adapted to be connected to a pressurized line, a pressure transducer housing, said pressure transducer housing having a tubular coupling receiving bore formed therein and sized to receive said tubular coupling, said pressure transducer housing having a chamber formed therein communicating with said tubular coupling receiving bore, a pressure transducer mounted in said chamber so it is responsive to the pressure in said chamber, means for releasably connecting the chamber in the pressure transducer housing to the tubular coupling, and valve means in the tubular coupling to automatically close said tubular coupling when the pressure transducer housing is separated from the tubular coupling and to automatically open the tubular coupling when the pressure transducer housing is connected to it so pressure can enter into said bore to cause the pressure transducer to provide a signal functionally related to said pressure.

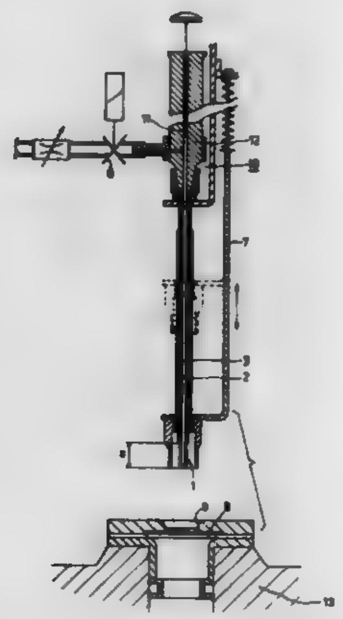
3,981,200
METHOD OF AUTOMATICALLY TRANSFERRING AND INJECTING A LIQUID SAMPLE

Richard Alexander George, and Adriaan Herman Hubert van Abel, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 29, 1975, Ser. No. 609,012

Claims priority, application Netherlands, Sept. 2, 1974, 7411605

Int. Cl.² G01N *1/10*
U.S. Cl. 73—422 GC 4 Claims



1. A method for transferring and injecting a liquid sample into a receiver with the aid of an injection syringe having a plunger and a needle, comprising the sequential steps of drawing a liquid sample into the syringe by withdrawing the plunger, moving the syringe relative to the receiver so that the needle is disposed in the receiver, injecting the liquid sample by depressing the plunger, and passing an inert gas through the needle.

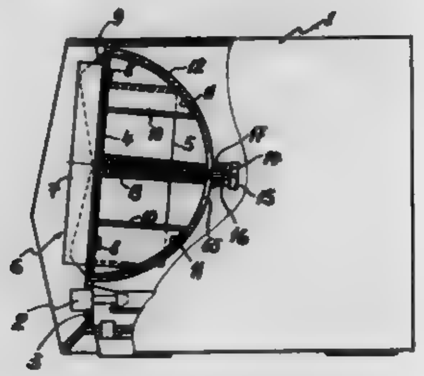
3,981,201
ADJUSTABLE METER

Jean-Pierre Jeannet, Lausanne, and Jean-Pierre Leuba, Renens, both of Switzerland, assignors to Tesa S.A., Renens, Switzerland

Filed Jan. 10, 1975, Ser. No. 540,134

Claims priority, application Switzerland, Feb. 15, 1974, 2130/74

Int. Cl.² G01D *11/24*
U.S. Cl. 73—431 5 Claims



1. An adjustable meter comprising:

a. a casing formed to be part of a stack of apparatus, said casing having a front wall with a cut-out portion formed in the surface thereof;

b. at least one shell disposed within said casing, said shell extending from the inner face of the front wall of said casing;

c. a panel located in said cut-out portion of said front wall, said panel having an opening formed therein and a plurality of projections fixed on its rear face, the ends of said projections shaped to form rounded guides bearing and sliding against said shell to allow swinging movement of said panel about a horizontal and/or vertical direction within said cut-out portion of said front wall;

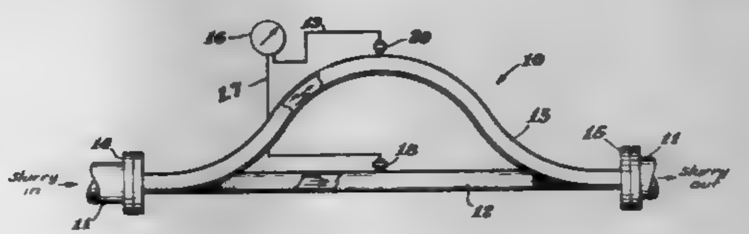
d. means cooperating with the shell and the panel for maintaining said rounded guides against said shell to maintain said panel in a selected position; and

e. a reading unit connected to said panel within the opening thereof, said reading unit having a dial applied against the front face of said panel and a body passing through said opening in said panel to extend from the rear face thereof and project into the casing, whereby swinging of said panel permits orientation of the reading unit in the horizontal and/or vertical direction.

3,981,202
APPARATUS FOR MEASURING THE DENSITY OF A CEMENT SLURRY

Lloyd B. Spangle, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 2, 1975, Ser. No. 537,872
Int. Cl.² G01N *9/26*
U.S. Cl. 73—438 1 Claim



1. Apparatus for measuring the density of a cement slurry stream, which includes the combination of:

a delivery conduit which is adapted for carrying the cement slurry stream under a positive pressure from a holding point to a use point, the delivery conduit being connected at one end to the holding point and at the other end to the use point;

a first conduit section which communicates with the delivery conduit, which has a curved shape, which is in a horizontal position, and which is adapted to carry in a horizontal curved path a part of the cement slurry stream which is enroute to the use point;

a second conduit section which communicates with the delivery conduit, which has a curved shape, which is in a vertical position located at 90° from the horizontal position of the first conduit section, and which is adapted to carry in a vertical curved path a part of the cement slurry stream which is enroute to the use point;

the combined cross-sectional area of the first conduit section and the second conduit section being an area not greater than the cross-sectional area of the delivery conduit;

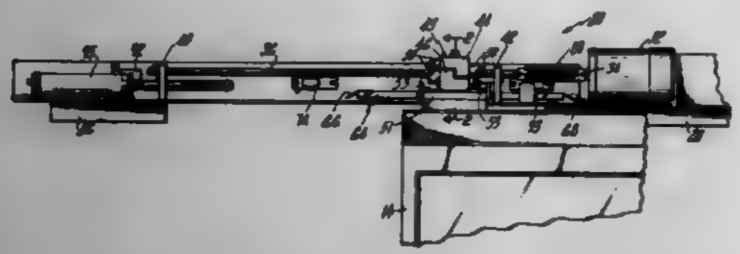
a differential pressure indicator having a high pressure area which communicates with the first conduit section, a low pressure area which communicates with the second conduit section, and a scale which reads in units of density, wherein

the said pressure indicator will sense a pressure difference between the part of the slurry stream flowing through the first conduit section and the part of the slurry stream flowing through the second conduit section, and will read the said pressure difference on the indicator scale as units of density.

3,981,203
DOOR OPERATOR

Gardner R. Williams, Kensington, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Oct. 24, 1974, Ser. No. 517,734
Int. Cl.² F16H *21/50*
U.S. Cl. 74—25 **3 Claims**

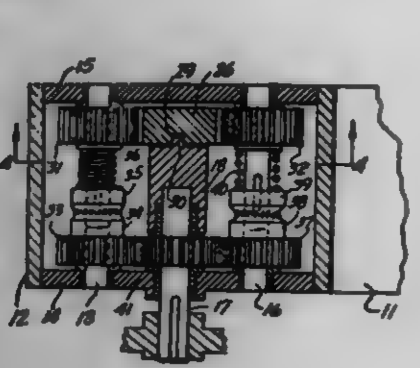


1. A door operator suited for powering a traffic responsive sliding door suspended by a trolley which rides on a track mounted by a header above the doorway comprising a threadless drive shaft, journal means mounting said shaft for rotation and limited reciprocation in parallel relationship to the track, a reversible drive motor having a shaft coaxially aligned with the drive shaft, a reciprocable carriage mounting rollers engaging the drive shaft, said rollers being skewed relative to the axis of the drive shaft to move the carriage along the shaft as the shaft is rotated, and a coupling having a midsection comprising a plurality of closely spaced helical convolutions with the end portions thereof respectively secured to said motor shaft and said drive shaft, and means for decreasing the shear stresses per unit area imposed on the end portions of said convolutions during the transmission of torque between the motor and the drive shaft.

3,981,204
SHOCK ABSORBER DRIVE UNIT

Raymond E. Starbard, 929 Drever St., West Sacramento, Calif. 95691

Filed Jan. 6, 1975, Ser. No. 539,028
Int. Cl.² F16H *21/52*
U.S. Cl. 74—34 **1 Claim**

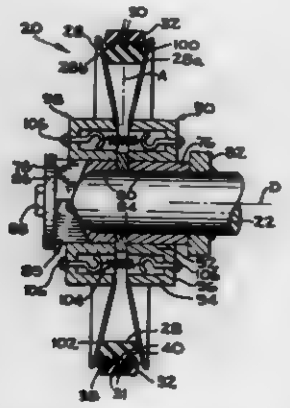


1. A shock absorber power system for motor vehicles of the type supported on four wheels and including a frame comprising a plurality of units secured to the frame adjacent each wheel of the motor vehicle with each of said units including a housing, a rack bar mounted for vertical sliding movement vertically through said housing, said rack bar having rack teeth formed on diametrically opposed sides thereof, means in said housing guiding said rack bar in its vertical reciprocation, a pair of parallel shafts journalled in said housing on opposite sides of said rack bar, a gear secured to each of said shafts and meshing with the rack teeth on opposite sides of said rack bar, a one-way clutch mounted on each of said shafts, a spur gear mounted for rotation on each of said shafts rotatably driven by one of said one-way clutches, a third shaft journalled in said housing and extending outwardly therefrom, a spur gear secured to said third shaft and meshing with the gears on said parallel shafts, a base supporting said housing, a gear train mounted on said last named shaft and said base, a pair of electric alternators secured to said base, and means extending from said gear train for rotating said alternators to produce electricity.

3,981,205
DUAL RANGE INFINITELY VARIABLE SPEED DRIVE

Stellios A. Avramidis, Greenfield, and William T. Partridge, Indianapolis, both of Ind., assignors to FMC Corporation, San Jose, Calif.

Filed July 5, 1974, Ser. No. 486,261
Int. Cl.² F16H *55/56, 9/00, 9/16*
U.S. Cl. 74—230.17 A **8 Claims**

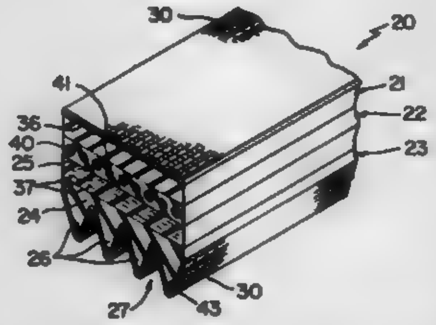


1. In a mechanical power transmission system, the combination comprising a pair of variable diameter pulleys including a drive pulley and a first driven pulley, a first endless belt trained over said pulleys to transmit rotation from the drive pulley to the driven pulley, a first accessory driven by said first driven pulley, means to increase the effective diameter of one of said pulleys and simultaneously decrease the effective diameter of the other of said pulleys in response to the speed of at least one of said pulleys, a second endless belt received on top of said first endless belt in at least one of said pulleys, a second driven pulley to receive said second belt, and a second accessory driven by said second driven pulley.

3,981,206
ENDLESS POWER TRANSMISSION BELT

Joseph P. Miranti, Jr., Nixa, and Carl R. Woodland, Springfield, both of Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Aug. 20, 1975, Ser. No. 606,153
Int. Cl.² F16G *5/16, 1/22*
U.S. Cl. 74—233 **19 Claims**

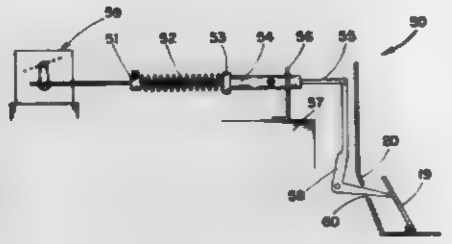


1. An endless power transmission belt made primarily of an elastomeric material and comprising, a load-carrying section, a ribbed section adjacent said load-carrying section defined by a plurality of ribs, said ribs being defined by a plurality of alternating projections and recesses, and a knit cover fabric bonded against said ribs and defining the inside surface of said belt, said knit fabric being made of a yarn comprised of at least a pair of synthetic plastic materials which are bonded together on an interface having exposed edges, said knit fabric affording extensibility in a plurality of directions to assure said belt is particularly adapted to be operated in associated sheaves with minimum stresses being imposed thereon due to said cover fabric.

3,981,207
MOTOR VEHICLE THROTTLE CONTROL

Ivan H. Stant, 2103 Indiana Ave., and Arville E. Bertsch, R.R. No. 1, both of Connersville, Ind. 47331

Continuation-in-part of Ser. No. 469,964, May 13, 1974, abandoned. This application June 20, 1975, Ser. No. 588,774
Int. Cl.² G05G *1/14*
U.S. Cl. 74—513 **5 Claims**

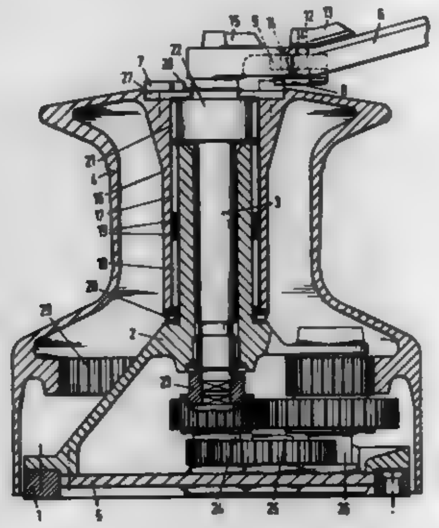


1. In a motor vehicle having an accelerator pedal coupled through a linkage to a throttle control, the improvement which comprises spring means for yieldably opposing movement of the linkage after a predetermined amount of movement of the linkage, the yieldable opposition of the spring means being applied between the motor vehicle and the linkage, the spring means comprising a spring, coupled at a first end to the linkage and at a second end to a first stop member, and a second stop member attached to the motor vehicle and positioned to engage the first stop member afer said predetermined movement of the linkage.

3,981,208
SHEET WINCH

Andrianus Moses, Voorschoten, Netherlands, assignor to Enkes N.V., Voorburg, Netherlands

Filed Oct. 15, 1974, Ser. No. 514,507
Claims priority, application Netherlands, May 29, 1974, 7407198
Int. Cl.² F16H *5/52*
U.S. Cl. 74—812 **7 Claims**

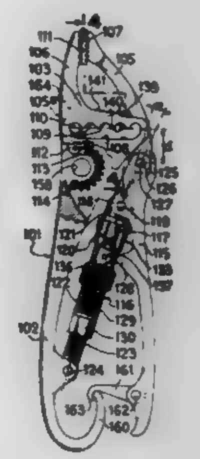


6. A sheet winch as defined in claim 1 further comprising:
said base member including an upwardly extending column having an upper end located below the upper end of the winch;
the drive shaft extending downwardly through said column, said drive shaft having an enlarged collar formed at its upper end above the upper end of the column;
the winch drum having a downwardly extending sleeve which circumscribes the column and the enlarged collar of the shaft; and
bearing means interposed between the drum sleeve and each of the column and collar.

3,981,209
GRIPPING PINCERS

Yves Robert Caroff, Saint-Mande, France, assignor to Facom, Morganis, France

Filed July 10, 1974, Ser. No. 487,044
Claims priority, application France, July 20, 1973, 73.26805
Int. Cl.² B25B *7/12*
U.S. Cl. 81—367 **4 Claims**



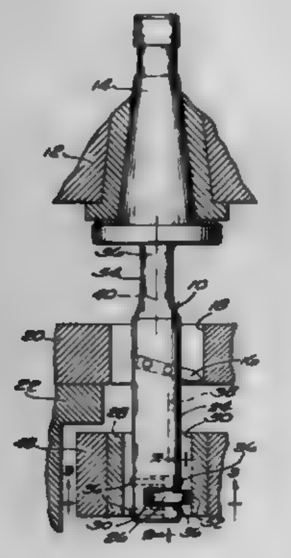
1. A gripping pincers of the vice-pincers type, the pincers comprising:
- a main lever of forged steel having a milled fork, the milled fork including an elongated opening on both sides thereof having a plurality of arcuate notches therealong,
- a first fixed jaw integral with said main lever,
- a first chop integral with said first fixed jaw and formed at one end thereof.
- a second jaw of forged steel having a T shape and mounted on a first part of said main lever for pivotal motion thereon,
- a journal mounted on the base portion of the T shaped second jaw, wherein said journal is capable of engaging a selected one of said arcuate notches for pivotal motion thereon and whereby the transverse distance between the first and second jaw may be adjusted,
- a second chop mounted on a first cross arm bar of said T shaped second jaw,
- a toggle device connecting said pivotable jaw to another part of said main lever, the toggle device comprising an auxiliary lever of forged steel pivoted to the second cross arm bar of said T shaped second jaw wherein the journal of said second jaw and the elongated opening of the fork is between the second chop and the pivot of said second cross arm in all relative positions of said first and second jaws, the toggle device performing the function of a lever for locking the pincers,
- an adjustable lever of changeable length having one end pivoted to a forked lug integral with said auxiliary lever and another end pivoted to a forked lug integral with said main lever, said adjustable lever comprising an elongated tubular element having at either end a set of internal threads, the threads of one set being pitched oppositely to the threads of the other, a first threaded rod attached at one end thereof by a pivot to the forked lug of said main lever and engaging at the other end thereof by means of threads one set of the internal threads of said tubular element, and a second threaded rod attached at one end thereof by a pivot to the forked lug of said auxiliary lever and engaging at the other end thereof by means of threads the other set of internal threads of said tubular element, whereby rotation of the tubular element relative to the first and second threaded rods causes a change of length of the adjustable lever,
- a fixed abutment integrally formed on said auxiliary lever, said abutment contacting the tubular portion of the adjustable lever whereby the approach of the auxiliary lever toward the main lever is limited.

a stressed spring, a projection integral with said second jaw adjacent to said journal, and a pin mounted on said main lever between said elongated opening and the forked lug of said main lever, wherein said stressed spring is attached to said projection and said pin and whereby said spring urges said journal into engagement with a selected one of said notches and biases said two jaws into an opened position, and

a transverse aperture located in said main lever and adapted to receive a lever perpendicular to said main lever for applying a driving torque to the pincers.

3,981,210
GUIDE MEANS FOR BORING BARS

Kasimir Janiszewski, 11908 W. Loomis Road, Franklin, Wis. 53132
Filed Sept. 12, 1974, Ser. No. 505,393
The portion of the term of this patent subsequent to Mar. 5, 1991, has been disclaimed.
Int. Cl.² B23B *41/06*
U.S. Cl. 82—1.4 6 Claims



1. In apparatus for boring holes including a rotatable and longitudinally movable boring bar having a radially projecting tool for engaging and removing material from a bore in a workpiece and having a free end that extends beyond said tool and having guide means to guide said tool, the improvement wherein said guide means comprises a guide bushing separate from the workpiece and having an axis supported in generally coaxial alignment with said boring bar around the free end thereof, and a guide roller rotatably attached adjacent the free end of said boring bar for rotation about an axis parallel to and eccentric with respect to the axis of rotation of said bar and for longitudinal movement with said boring bar and within said guide bushing and rollably engaged with the interior surface of said guide bushing at a point located generally in the same axial plane and the same radial direction as said projecting tool with said contact point shifting longitudinally along said interior surface of said guide bushing as said boring bar moves through the workpiece to form a surface in the workpiece complementary in shape to the surface of the guide bushing.

3,981,211
SELF-CENTERING TOOL HOLDING APPARATUS

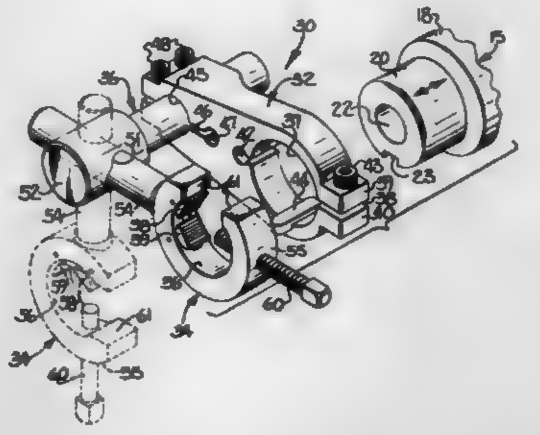
Clarence A. Turner, 2028 Floral Ave., Charlotte, N.C. 28203
Filed June 13, 1975, Ser. No. 586,554
Int. Cl.² B23B *29/04*
U.S. Cl. 82—36 R 9 Claims

1. An apparatus for releasably holding a tool within the socket in a tailstock spindle of a lathe or the like to thereby prevent relative rotation between the tool and spindle, and characterized by the ability to be automatically centered about the axis of the tool so that no lateral stresses are applied to the tool by the apparatus, said apparatus comprising

a supporting arm having a transverse opening defining a first axis and which is adapted to coaxially receive the tailstock spindle of a lathe or the like therethrough, and means for releasably securing said supporting arm to such spindle with the spindle extending coaxially through said opening,

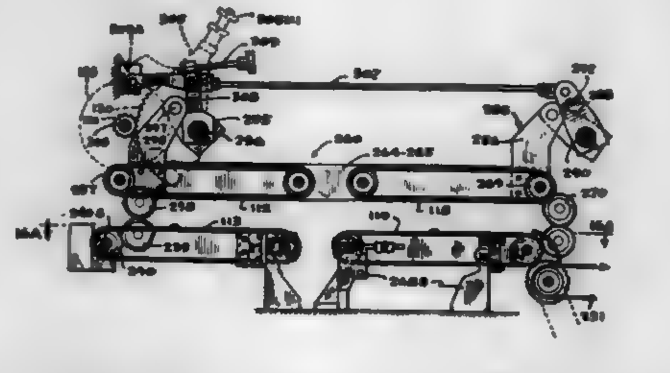
a mounting arm having a transverse opening defining a second axis and which is adapted to coaxially receive a tool or the like therethrough, and means for releasably securing said mounting arm to such tool with the tool extending coaxially through said mounting arm opening, and

means for interconnecting said supporting arm and mounting arm such that said arms may be freely moved relative to each other in parallel planes with said first and second axes extending parallel to each other to thereby permit the axes to move into coaxial alignment, while precluding relative rotation of said arms about said first and second axes, said interconnecting means comprising a cylindrical rod defining a rod axis, means for mounting said rod to one of said supporting arm and mounting arm such that the rod extends parallel to the associated opening axis and while permitting relative linear movement along a direction perpendicular to said rod axis, and means for mounting said rod to the other of said supporting arm and mounting arm such that the rod extends parallel to the associated opening axis and while permitting relative rotation about said rod axis.



3,981,212
SHEET TRIMMING MACHINE

William B. McCain, Hinsdale; James F. Cosgrove, Western Springs, and Elmer D. Beweradorf, Downers Grove, all of Ill. Assignor to McCain Manufacturing Corporation, Chicago, Ill.
Division of Ser. No. 115,174, Feb. 6, 1971, Pat. No. 3,732,766. This application Jan. 29, 1973, Ser. No. 327,488
Int. Cl. B26d *7/06, 7/16*
U.S. Cl. 83—155 5 Claims

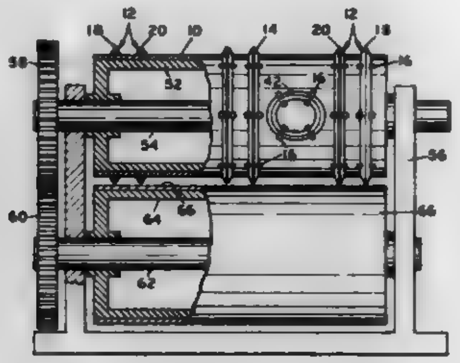


1. In a machine for trimming stacked sheets such as signatures or the like fed through the machine in sets of stacks one after another to be trimmed first at one knife station and then at a second knife station, and in which the dimensions of the stacks including height may vary from one machine run to the next: feed means including a set of opposed, vertically spaced

feed bands for advancing a stack of trimmed sheets from the first knife station toward the second knife station, other feed means including a set of opposed vertically spaced feed bands for clearing a stack of trimmed sheets from the second knife station, individual supports for the upper feed bands in the two sets of feed bands, each of said individual supports having a rotary shaft rotation of which is accompanied by raising or lowering of the related support, means joining the shafts so that an increment of rotation in one shaft is accompanied by a substantially equal increment of rotation in the other shaft whereby the two supports may be adjusted simultaneously by an equal amount, and manually operable gear means for imparting an increment of rotation to one of the shafts.

3,981,213
ROTARY SHEET MATERIAL CUTTER AND CREASER

Albert Lopman, 123 Dayton Road, Lake Worth, Fla. 33463
Filed Oct. 25, 1974, Ser. No. 518,078
Int. Cl.² B23D *25/12;* B26D *1/56*
U.S. Cl. 83—346 11 Claims



1. A rotary cutting and creasing apparatus for the continuous cutting and creasing of forms (34) from rolls (70) of sheet material (68) of paper, cardboard, corrugated paper or like rolls comprising a die sleeve (10), a die sleeve supporting base cylinder (52), an anvil sleeve (66), an anvil sleeve supporting base cylinder (64), each base cylinder (52, 64) having a bearing shaft (54, 62) extending axially therethrough and through a bearing framework (56), means (58, 60) gearing said shafts (54, 62) together for simultaneous rotation, said anvil sleeve (66) being of ductile material, said die sleeve (10) being of comparatively harder material, said die sleeve (10) having cutting and creasing rule means (12) delineated thereon in desired patterns, said rule means (12) being substantially triangular in cross-section, and spaced opposed fingers (16) struck up from said die sleeve embracing opposite lateral sides (14) of said rule means (12) securing said rule means (12) to said die sleeve (10).

3,981,214
CODE KEY CUTTER HAVING INTERCHANGEABLE ATTACHMENTS

Horst W. Wich, 816 Brent St., South Pasadena, Calif. 91030
Filed Nov. 13, 1975, Ser. No. 631,502
Int. Cl.² B26F *1/12*
U.S. Cl. 83—414 12 Claims

1. A key cutting machine comprising:

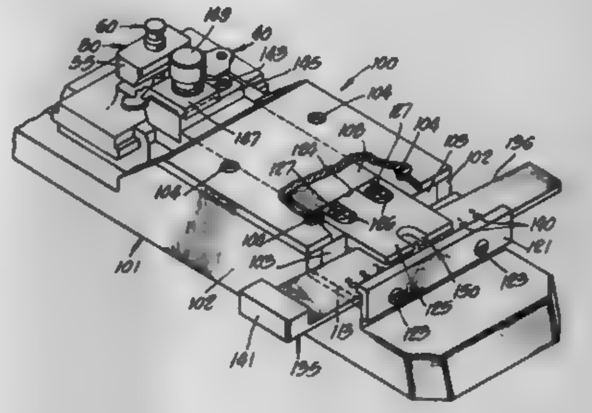
a key carriage adapted to support a key blank thereon with the operative edge of the key blank projecting beyond the carriage;

a die carriage having a die and a punch supported thereon, said punch being reciprocable within said die;

means supporting said key carriage juxtaposition to said die carriage so that the operative edge of the key blank may be interposed between said punch and said die;

means for adjusting the position of said die carriage relative to said key carriage in a direction longitudinally of the key blank, so as to select a longitudinal position on the key blank at which end a notch is to be cut;

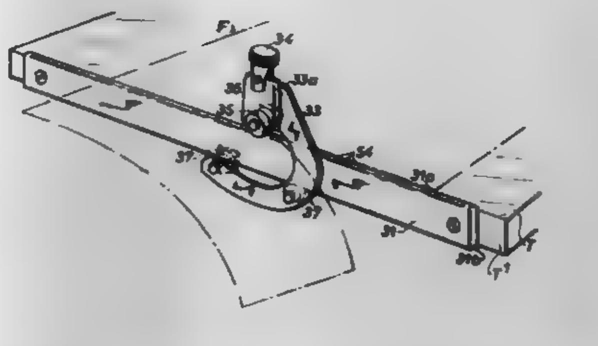
means for adjusting the position of said key carriage relative to said die carriage in a direction perpendicular to the operative edge of the key blank in order to set the depth of the notch that is to be cut, said key carriage adjusting means including a cam which is coupled to said key carriage and extends generally parallel to the longitudinal axis of the key blank but at an acute angle relative thereto, and drive means cooperable with said cam for driving said key carriage either towards or away from said key carriage; and



means manually operable after both of said carriages have been positioned for driving said punch into said die to cut the notch.

3,981,215
APPARATUS FOR CUTTING SHEET MATERIAL

Maurice Granger, 28 rue Charles de Gaulle, 42000 Saint-Etienne, Loire; Andre Lerond, 174 rue Leon Blum, 69100 Villeurbanne, Rhone, and Olivier Failliot, Rochefort en Yvelines, Yvelines, all of France
Filed Oct. 9, 1974, Ser. No. 513,495
Claims priority, application France, Oct. 12, 1973, 73.37147; Feb. 12, 1974, 74.05637
Int. Cl.² B26D *1/20*
U.S. Cl. 83—455 15 Claims



1. Apparatus for cutting band materials comprising means for supporting, in free rotation, a length of said material, fixed cutting means, movable cutting means slidably guided with respect to the fixed cutting means, support means for said fixed and movable cutting means, said fixed cutting means being constituted by a longitudinal profiled member fixed to said support means and having a rounded convex section for contact with the movable cutting means, said movable cutting means being constituted by at least one roller element having a sharp edge engaging the fixed cutting means to cut the band material placed between the fixed and movable cutting means.

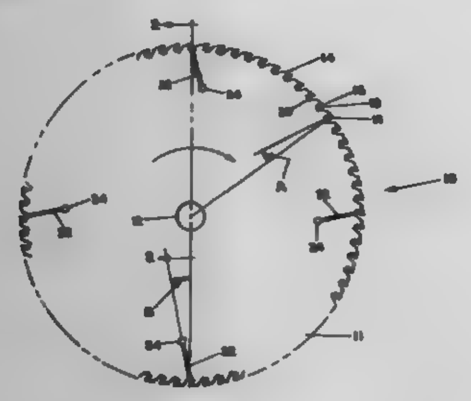
3,981,216
LOW NOISE, HIGH SPEED SAW BLADE

Kenneth R. Lemmon, Grand Rapids, Mich., assignor to Lemmon & Snoop Co., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 367,432, June 6, 1973, abandoned. This application Apr. 9, 1975, Ser. No. 566,263

Int. Cl.² B27B *5/38*

U.S. Cl. 83—848 **19 Claims**



1. In a high speed circular saw blade comprising a plurality of teeth spaced about the outer periphery of the blade, an improvement comprising a plurality of expansion slots formed in the outer edge of the blade at a negative angle of about 5°–15° with respect to lines extending radially from the center of the blade to the outer ends of the expansion slots, said expansion slots being greater than 0 inches and up to about three-thirty seconds (3/32) inches wide.

3,981,217
KEY ASSIGNER

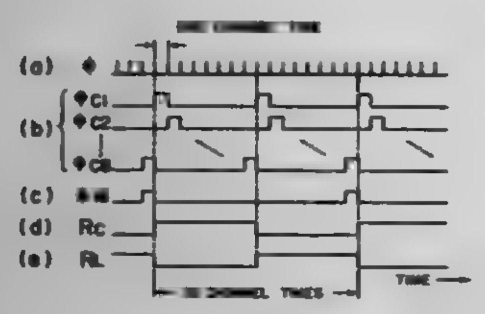
Akiyoshi Oya, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Sept. 2, 1975, Ser. No. 609,846

Claims priority, application Japan, Sept. 5, 1974, 49-102365; Sept. 6, 1974, 49-102640

Int. Cl.² G10F *1/00*

U.S. Cl. 84—1.03 **5 Claims**



1. A key assigner comprising:

key state memory means for storing signals representing previous states of depression and release of respective keys by each key;

a keyboard circuit for simultaneously and parallelly delivering signals corresponding to the ON-OFF states of key switches interlocked with the respective keys;

change detection means comprising a logical circuit for comparing by each key the signals provided from said key state memory means with the signals provided from said keyboard circuit and detecting change from the previous state of the key switches to the present state thereof at a predetermined time interval;

a priority circuit for selectively delivering out a single signal from among change detection signals supplied from said change detection means in accordance with a predetermined priority order at said predetermined time interval;

a key code generator for generating key codes corresponding to the change detection signals provided from said priority circuit;

a key code memory having channels equal in number to a maximum number of tones to be reproduced simultaneously and being capable of storing the key codes in the respective channels;

key state detection means for detecting whether the key code supplied from said key code generator corresponds to a newly depressed key or a released key;

key code loading means for loading the key code from said key code generator in a corresponding channel of said keycode memory if the key code corresponds to a newly depressed key;

a decoder for decoding the key codes provided from said key code memory; and

control means for causing said key state memory means to store signals representing states of depression and release of the respective keys in accordance with the decoded signals provided from said decoder;

tone generation control signals being produced on output lines of said decoder corresponding to the respective keys.

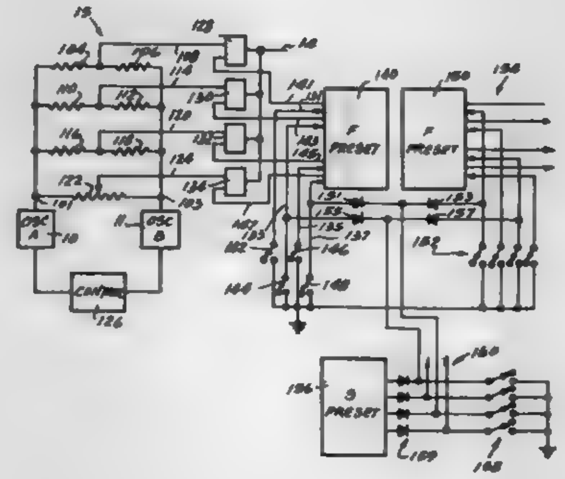
3,981,218
PRESET SYSTEM FOR ELECTRONIC MUSICAL INSTRUMENT

David A. Luce, Clarence Center, N.Y., assignor to Norlin Music, Inc., Lincolnwood, Ill.

Filed June 14, 1974, Ser. No. 479,443

Int. Cl.² G10H *1/02*

U.S. Cl. 84—1.24 **11 Claims**



1. In an electronic musical instrument having a signal source, an output system for producing sound waves corresponding to a signal derived from said source, and a plurality of modifying means interposed between said signal source and said output system, the combination comprising a plurality of independently settable function preset units, one for each of said modifying means, each for controlling an operating parameter of said modifying means, a supervisory preset unit having a plurality of noncontinuous discrete operating modes, and connecting means connecting said supervisory preset unit with a plurality of said function preset units for causing said function preset units, irrespective of their prior condition, to control said operating parameters in different predetermined configurations for each operating mode of said supervisory preset unit, one or more of said operating parameters being changed in each configuration.

3,981,219
PRACTICE VIOLIN AND BOW

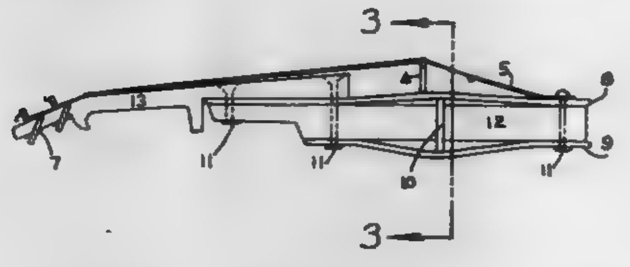
Robert H. Johns, 3379 Paper Mill Road, Huntingdon Valley, Pa. 19006

Filed Sept. 9, 1974, Ser. No. 504,169

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² G10D *1/02*

U.S. Cl. 84—275 **7 Claims**



1. For introductory or practice purposes, a body for a violin-type stringed instrument having a neck and a tailpiece, comprising a pair of arched panels spaced approximately parallel to one another to form the top and bottom surfaces of the body, a longitudinal rib separating the body panels, a pair of clamping means for securing at spaced localized areas said neck and said rib in longitudinal alignment, said top panel being fastened at one end by said pair of clamping means between said neck and said rib, said bottom panel being fastened at one end to said rib by at least one of said pair of clamping means, a third clamping means fastening said tailpiece and the other ends of said top panel, said rib, and said bottom panel, respectively, at a third localized area, said panels being otherwise unsupported and free at their peripheries, and a sound post positioned between the panels, the length of said post being sufficient to arch and separate the central portions of the panels from said rib.

4. A bow for a violin-type stringed instrument comprising a shaft having string retaining guide means at its extremities, bow strings wound around the shaft through the string retaining guide means in loops extending lengthwise of the shaft, and a spacer or frog slidably positioned between the shaft and the playing strings on one side of the shaft.

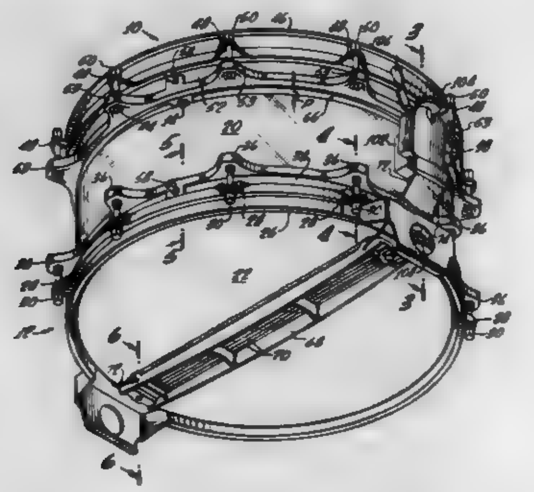
3,981,220
SNARE DRUM WITH TONE RING

Forrest W. Clark, Fountain Valley, Calif., assignor to CBS Inc., New York, N.Y.

Filed Oct. 6, 1975, Ser. No. 619,779

Int. Cl.² G10D *13/02*

U.S. Cl. 84—415 **15 Claims**



1. A snare drum comprising mutually spaced and interconnected batter and snare head assemblies, a tone ring fixed to said snare head assemby and extending toward said batter head assembly, said tone ring defining a resonating chamber contiguous with said snare head assembly, said chamber having a port extending circumferentially about said drum in relatively close adjacency to said batter assembly and relatively remote from said snare head assembly.

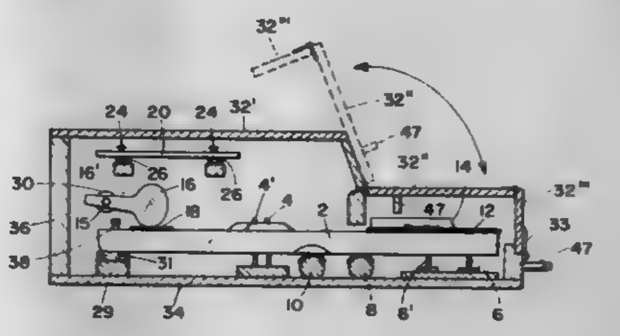
3,981,221
PORTABLE KEYBOARD

Luther A. Wittel, 512 Harwood Ave., Baltimore, Md. 21212

Filed Sept. 2, 1975, Ser. No. 609,534

Int. Cl.² G10C *3/12*

U.S. Cl. 84—423 **5 Claims**



1. A piano type musical instrument comprising a frame, a plurality of individual operatable key bars mounted on said frame in a side-by-side relationship having one end of each of the said key bars extending over an open keyboard area, the portion of the key bars extending over the key board area having means on the upper surface of each key bar for presenting one of two separate colors, the key bars presenting one color extending further over the key board than the other side key bars presenting another color said key bars presenting the second color being selectively spaced in between the key bars presenting the first mentioned color, a single pivot mounted laterally of the frame about which one set of colored bars is pivoted and a second single pivot extending laterally of the frame and in substantially the same horizontal plane with the first mentioned pivot, about which the second set of color key bars is pivoted, the opposite ends of all the key bars being positioned in a single vertical plane, a single selected sound producing element positioned above the opposite end of each of the key bars, a pivoted hammer positioned below each sound producing element and in a horizontal plane extending between the sound producing element and the outer end of the key bars, means on the opposite end of the key bars adjacent the hammer for moving the said hammer in a vertical plane in contact with the same sound producing element, a stop for receiving the opposite end of the key bar members when the said bars are at rest and means for retaining the key bars substantially perpendicular with the horizontal plane of the key board.

3,981,222
TIME DELAY FUSE

Donald E. Bowman, Baltimore, Md., assignor to Catalyst Research Corporation, Baltimore, Md.

Division of Ser. No. 149,483, Oct. 30, 1961, Pat. No. 3,897,731. This application Mar. 31, 1964, Ser. No. 356,187

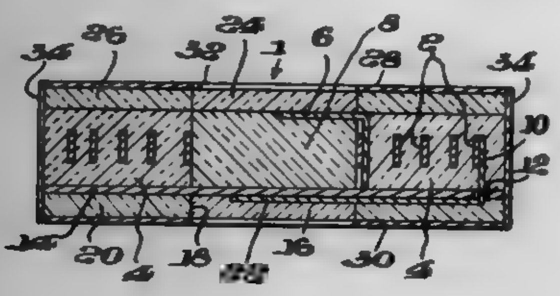
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 20, 1976

Int. Cl.² F42B *3/10*

U.S. Cl. 86—1 R **3 Claims**

1. A method of making a time delay fuse comprising the steps of overlaying a fuse strip consisting essentially of a paper formed of non-combustible insulating fibers filled with a combustible composition which evolves substantially no gas on burning with a backing strip wider than said fuse strip consisting essentially of a paper formed from noncombustible insulating fibers, both ends of said fuse strip extending beyond and normal to said backing strip, winding said overlaid fuse strip in a flat spiral around the circumference of a cylindrical core formed from non-combustible insulating fibers to form a cylin-

drical body having said both fuse strip ends exposed on the surface of said core while maintaining a high water content in said fuse strip, backing strip and core, axially compressing said body to form a compact, and drying said compact.



3,981,223
BRAIDING MACHINE

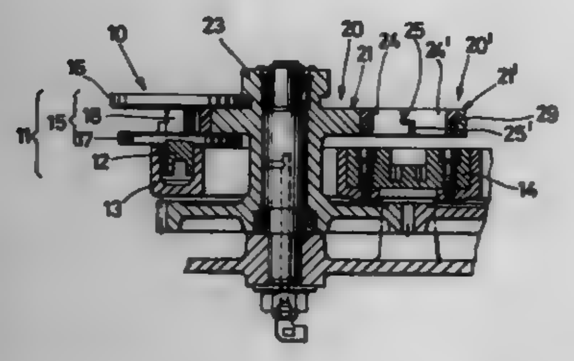
Max Ostermann, Wuppertal, Germany, assignor to W. & M. Ostermann, Wuppertal, Germany

Filed Feb. 25, 1975, Ser. No. 552,786

Claims priority, application Germany, Feb. 27, 1974, 2409341

Int. Cl.² D04C *3/06*

U.S. Cl. 87—50 **13 Claims**



1. In a braiding machine, a combination comprising guide means defining an endless track; a plurality of bobbin supports movable along said track and each having a guide portion engaging said track, and a motion-transmitting portion; means for advancing said bobbin supports along said track, including a plurality of rotary drivers arranged along said track and each having an angularly movable circular plate provided in a circumferential margin thereof with angularly spaced recesses each located in a sector of said plate, the margins of adjacent ones of said plates overlapping one another and said motion-transmitting portions being engageable in said recesses so as to share part of the angular movement of the respective plate prior to engaging the margin of the adjacent plate and entering into a recess of the latter; and sound-damping means provided at said margins at least in the region of initial contact between the respective sector and motion-transmitting portion, such region being located forwardly of the respective recess with reference to said angular movement, so as to reduce the noise resulting from engagement between said margins and said bobbin supports.

3,981,224
MISSILE TRANS PORTER-LAUNCHER

Chester W. Byars, Stow; Edgar L. Van Cott, Weston, and Clifton F. Orchard, Marblehead, all of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 11, 1975, Ser. No. 595,190

Int. Cl.² F41F *3/04*

U.S. Cl. 89—1.815 **5 Claims**

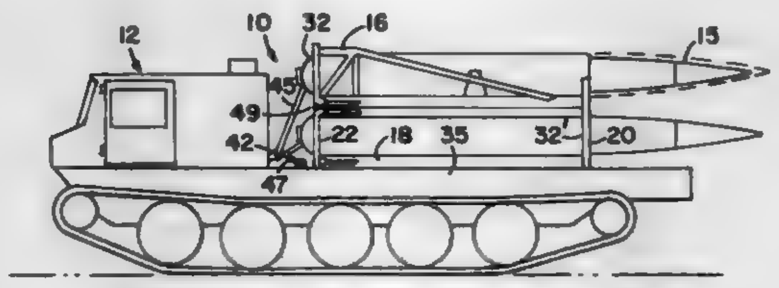
1. A missile transporter-launcher for ejection launching of missiles therefrom comprising:

a. a mobile vehicle having a platform thereon;

b. carriage means carried by said platform and having forward and aft ends, said carriage means including a pair of carriages the first of said pair of carriages mounted above the second of said pair of carriages;

c. power erection means carried by said vehicle and operatively connected with said carriage means and the crankshaft of said vehicle for raising and lowering said forward end of said carriage means between a first horizontal position for transporting said missiles and a second inclined position for launch of said missiles; said power erection means including screw activator means secured to said platform, a member slidably carried by said screw activator means and pivotally secured to said second carriage, a linkage secured to the aft end of each said carriage and said vehicle, a carriage support and slide means secured to said platform for support of said carriage means, whereby movement of said screw activator means moves said carriage means toward the rear of said vehicle on said support and slide means, and said linkage is extended for coaction with said screw activator means for raising said carriage means; and,

d. a low pressure hot gas ejection system carried by said carriage means for ejection launching of said missiles.



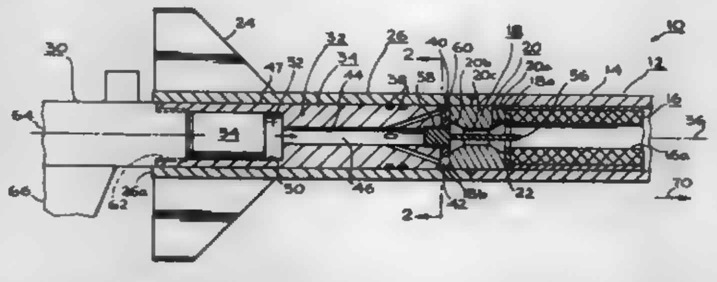
3,981,225
LAUNCHER ARRANGEMENT FOR ROCKET POWERED ROUND

Matthew S. Smith, 4400 Sarah, Apt. 29, Burbank, Calif. 91505, and Ernest A. Filippi, 5859 E. Ida Place, Greenwood Village, Englewood, Colo. 80110

Continuation-in-part of Ser. No. 364,658, May 29, 1973, Pat. No. 3,886,841. This application Mar. 24, 1975, Ser. No. 561,474

Int. Cl.² F41F *3/04*

U.S. Cl. 89—1.818 **15 Claims**



1. In a launching arrangement having a launcher for launching a rocket powered round by the hot pressurized launch gases generated by an ignited launch cartridge charge means, said rocket powered round of the type having a launch phase and a powered phase of flight, and said rocket powered round having a rocket motor comprising a rocket propellent grain, a rocket nozzle block, said rocket nozzle block having a forward end and an aft end and a nozzle passage way between said forward end and said aft end communicating with said rocket propellent grain, and said nozzle passage way having walls defining a convergent section, a divergent section and a throat section and said throat section having a predetermined throat area, and said rocket propellant round having a tubular tailpipe extending from the rocket nozzle block, the improvement to said launch arrangement comprising, in combination:

a launch cartridge means coupled to said launcher and said launch cartridge means comprising a body means slidably insertable a first predetermined axial distance into said tubular tailpipe of said rocket powered round, and said body means having a forward end adjacent said aft end of said nozzle block of said rocket powered round, and an aft end spaced therefrom;

first walls in said body means defining a launch gas transfer passage way extending between said forward end and said aft end and said gas transfer passage way having a predetermined volume and comprising at least a first portion of an initial launch volume;

second walls in said body adjacent said aft end thereof and defining a launch cartridge charge means cavity for receiving said launch cartridge charge means, and said launch cartridge charge cavity communicating with said gas transfer passage way;

probe means coupled to said forward end of said body means and coaxially aligned with and extending into said throat of said rocket nozzle passageway, and said probe means having a predetermined axial length and a preselected cross sectional area, said preselected cross sectional area of said probe means less than said throat area of said nozzle passage way, to reduce the gas passage area therethrough for the condition of said rocket powered round mounted on said launcher;

whereby the ignition of said launch cartridge charge means generates said hot pressurized launch gases into said gas transfer passage way of said initial launch volume for exerting a launch force on said aft end of said nozzle block to launch said rocket powered round from the launcher and initiate the ignition of said rocket propellant grain.

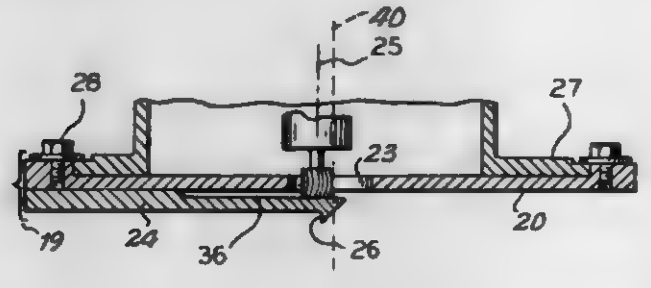
3,981,226
ROTATABLE BASE UNIT FOR A ROUTER FOR TRIMMING LAMINATE PLASTICS

Kenneth N. White, 12650 90th Ave., Palos Park, Ill. 60464

Filed Sept. 27, 1974, Ser. No. 510,116

Int. Cl.² B23C *1/20*

U.S. Cl. 90—12 D **3 Claims**



1. A router for trimming plastic laminate material comprising:

a housing having a base;

a power unit within said housing for rotatably driving a cutting blade about a first axis perpendicular to said base;

said cutting blade extending beyond said base;

means for adjusting the amount of said cutting blade extending beyond said base;

a template follower attached to said base;

said template follower having a guide means for following the contour of a surface of a template material;

said guide means including a template abutment engaging a perpendicular surface of said template material;

said template abutment disposed in a vertical plane;

means for adjusting in a substantially horizontal direction said template follower and for aligning said blade comprising said base rotatably attached to said housing about a second axis perpendicular to said base;

rotation of said housing adjusting the position of said blade relative to said guide means; and

a clearance space between said base and said template follower for insertion of a material to be trimmed by said blade.

3,981,227
POWER PISTON OF BOOSTER

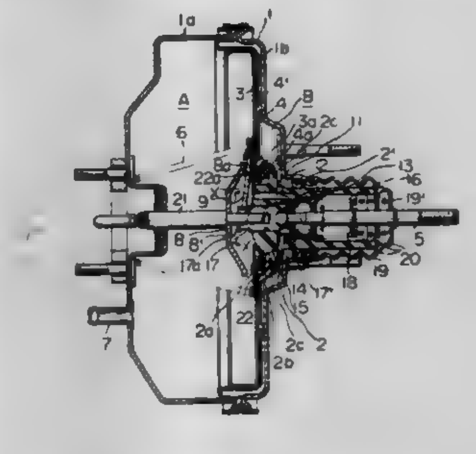
Tomizo Azuma, Yamato, Japan, assignor to Tokico Ltd., Japan

Filed Dec. 18, 1974, Ser. No. 533,754

Claims priority, application Japan, Dec. 29, 1973, 49-363

Int. Cl.² F15B *9/10;* **F01B** *19/00;* **F16J** *3/02*

U.S. Cl. 91—376 R **3 Claims**



1. A power piston assembly for use in a booster, said assembly comprising:

resilient diaphragm means within said booster for dividing the interior of said booster into two chambers, said diaphragm means having a first opening therethrough;

rotatable piston plate means adjacent said diaphragm means for receiving the differential pressure caused by the pressure difference between said two chambers, said piston plate means having a second opening therethrough of non-circular configuration coaxially aligned with said first opening; and

valve means adjacent the side of said diaphragm means opposite the side adjacent said piston plate means, extending through said first and second openings, and fitted against the side of said piston plate means opposite the side thereof and adjacent said diaphragm means for controlling communication between said two chambers and for resiliently holding said diaphragm means against said piston plate means, said valve means having:

a main body portion adjacent said diaphragm means,

a neck portion projecting axially from one end of said main body portion and extending through said first and second openings, and

a head portion of non-circular configuration attached to the free end of said neck portion extending through said first and second openings, said head portion slidable through said first and second holes, and in contact with said rotatable piston plate means when said piston plate means is rotated relative to the position of said head portion.

3,981,228
HYDRAULIC CONTROL SYSTEM

Edmund Maucher, Stuttgart, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Oct. 24, 1974, Ser. No. 517,810

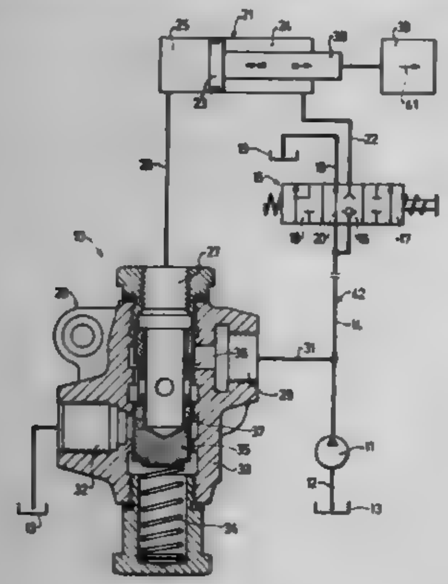
Claims priority, application Germany, Nov. 13, 1973, 2356667

Int. Cl.² F15B *11/08, 13/042*

U.S. Cl. 91—415 **9 Claims**

1. A hydraulic control system, comprising a double-acting user having a first and an oppositely acting second pressure-fluid compartment and a pressure responsive element therebetween and being arranged to move in a first direction counter to the urging of a load at one speed which is substantially uniform over the entire stroke length, and in a second direction with or without the urging of a load; a fluid reservoir; a source of pressure fluid communicating with said fluid reservoir; first conduit means having one section communicating with said first compartment, and another section communicating with said source; second conduit means communicating with said reservoir; and means for effecting movement of said

element in said second direction without the urging of a load at another speed which is also substantially uniform over the entire stroke length, comprising control valve means interposed in said first conduit means and movable between a first position in which it connects said sections with one another, and a second position in which it connects said second conduit means with both of said sections, and pressure-reducing and pressure-limiting actuating valve means, including a first port communicating with said second compartment, a second port communicating with said reservoir, a third port communicating with said other section of said first conduit means, and pressure-limiting means operative for limiting the fluid pressure in said second compartment, said pressure limiting means comprises a valve member having a pressure responsive face directly and continuously open to said second compartment, said valve member being movable between one position in which it normally connects said third port with said first port, another position in which it connects said first port with said second port, and a further position in which it disconnects all of said ports from one another; and biasing means normally biasing said valve member to said one position.



3,981,229
GAS POWERED MOTOR

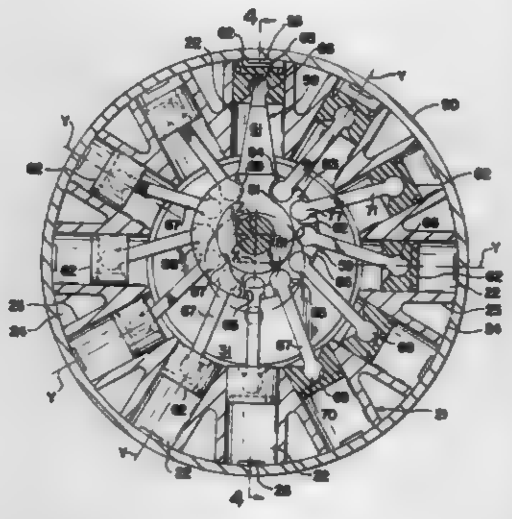
John H. Breisch, Lakewood, Ohio, and William L. Brown, 4th, Pine Grove Mills, Pa., assignors to Midland-Ross Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 378,334, July 11, 1973, abandoned, which is a division of Ser. No. 173,832, Aug. 23, 1971, abandoned. This application June 27, 1974, Ser. No. 483,575

Int. Cl.^{2} F01B *1/00*; F02N *7/02*

U.S. Cl. 92—72 **10 Claims**

1. A motor adapted to be powered by pressurized gas and suitable for use as a starter motor for small internal combustion engines comprising housing means having an axis and a plurality of cylinders disposed generally radially around said axis; crank means having a shaft portion supported from said housing means for rotation about said axis, and having a crank pin portion offset from said axis of said housing means; pistons mounted in said cylinders, said pistons being formed of stiff resilient material, each of said pistons having a socket opening therein; connecting rod mounting means rotatably mounted on said crank pin portion, said connecting rod mounting means having a plurality of openings therein corresponding to a plurality of said cylinders; a plurality of identical connecting rods, each of said connecting rods being symmetrical about an axis extending perpendicular to the longitudinal axis thereof and each having a first enlarged end portion that is held in a socket of one of said pistons, said first enlarged end portion and the piston socket in which it is held being shaped so that due to the resilience of said material of which said piston is formed said first enlarged end portion of said connecting rod may be snapped into said socket and thereafter pivotally but firmly held in said socket in such manner that no substantial movement of the connecting rod with respect to the piston in directions parallel to the axis of the piston can take place during operation of the engine, said connecting rod having at its other end a second enlarged portion identical to said first enlarged end portion pivotally but firmly connected to said connecting rod mounting means solely by the shape of said second enlarged portion and of the shape of the opening in said connecting rod mounting means in which it is disposed without use of a pivot pin or the like.



3,981,230
APPARATUS FOR THERMALLY MACHINING THERMOPLASTICS SHEET

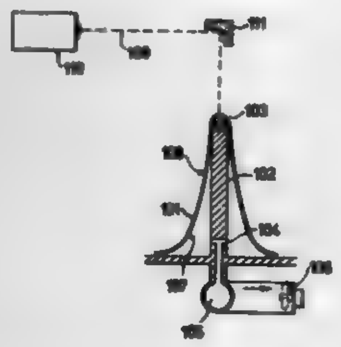
Michael John Lee, Didcot, England, assignor to A. J. Bingley Limited, Bristol, England

Filed Sept. 29, 1975, Ser. No. 617,656

Claims priority, application United Kingdom, Oct. 3, 1974, 43027/74

Int. Cl.^{2} B31B *1/16*, *1/64*

U.S. Cl. 93—33 H **8 Claims**



1. Apparatus for thermally machining thermoplastics sheet with a laser, comprising at least one backing member of a material having a high coefficient of absorption of radiant energy at the wavelength emitted by the laser, a low thermal diffusivity and good resistance to thermal shock, means for tensioning the thermoplastics sheet over the backing member so that it is maintained in intimate thermal contact with the backing member where it is deflected thereby, means for focussing radiation from the laser on to the sheet where it lies over the backing member and means for scanning the focussed laser radiation over the sheet.

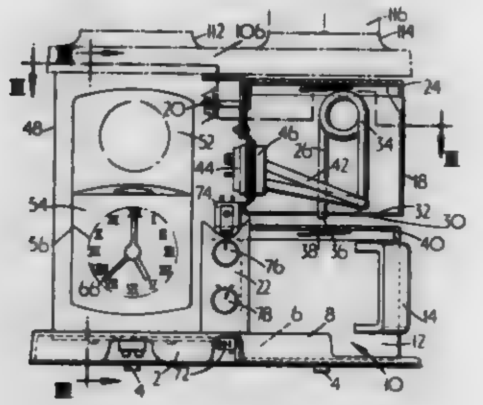
3,981,231
BEVERAGE-MAKING APPARATUS

Frederick Simm Grundy, Leigh, and John Byron King, Mossley, both of England, assignors to Pifco Limited, Manchester, England

Filed Oct. 3, 1975, Ser. No. 619,162

Int. Cl.^{2} A47J *31/047*

U.S. Cl. 99—280 **5 Claims**



1. A beverage-making apparatus comprising a water-heating kettle with removable lid means which when fitted on said kettle results in the interior of the kettle being in substantial fluid-tight isolation from the surrounding atmosphere, said kettle being provided with an electrically powered heating element connected to a control circuit for connection to a supply of electrical current, a syphon tube provided inside the kettle and having an open end disposed adjacent to the base of said kettle, said tube having a first tube portion extending upwardly from said end to a second tube portion comprising more than one coil of tube to prevent or impede pre-syphoning, and a third tube portion extending downwardly from the second tube portion to an open second end of the tube disposed below the base of the kettle for introducing hot water into a tea-pot or other infusion vessel, disposed below the kettle, and a thermally operated device responsive to the temperature of the water in the kettle to interrupt a conductive path supplying electrical energy to said heating element, when the temperature rises above a predetermined value.

3,981,232
FREE STANDING FRYER

Donald Farrington Williamson, 16 Shasta Drive, Thornhill, Ontario, Canada

Filed June 20, 1975, Ser. No. 588,864

Int. Cl.^{2} A47J *37/12*

U.S. Cl. 99—337 **9 Claims**

1. A free standing fryer unit adapted for use in an enclosed space without connection to a ventilation system, said unit comprising:

a cabinet adapted to be supported at a suitable working height and having a floor, a roof and sides, at least one of said sides being open for access to the interior;

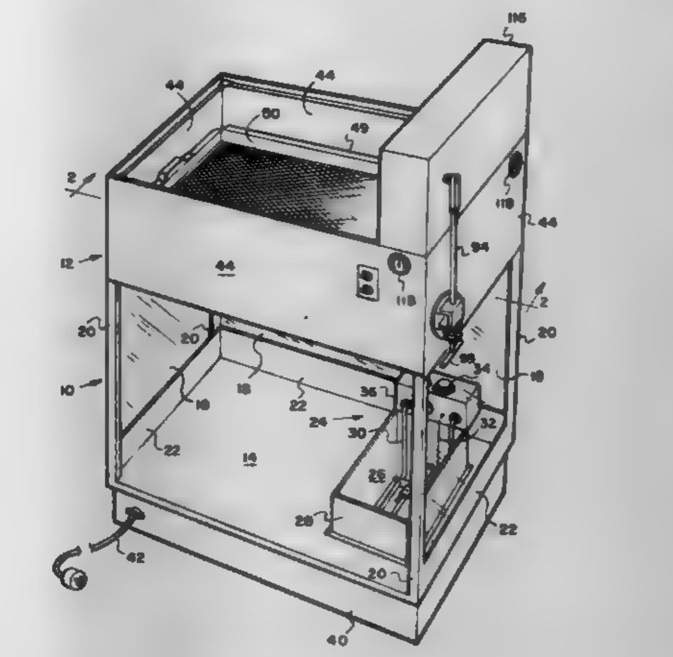
a cooking receptacle located in said cabinet in a predetermined location and adapted to be connected to a source of heating power;

outlet means located in said roof above said receptacle for passage of fumes from said cabinet and incorporating exhaust fan means;

wall means defining a chamber having an open side, located above said roof;

opening means in said wall means for passage of fumes from said exhaust fan means into said chamber; and,

filter means removably positionable in said open side of said chamber whereby said fumes may pass therethrough, said filter means being absorptive of the odour of said fumes and in a sufficient quantity to effectively deodorise the same for a reasonable working period.



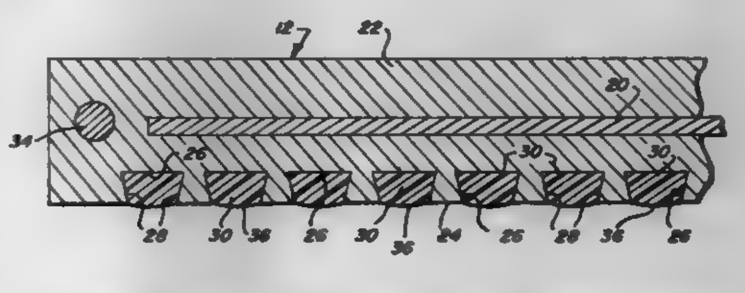
3,981,233
ANTI-STICK GRILL

Anthony R. Nugarus, Chicago, Ill., assignor to Restaurant Technology, Inc., Oak Brook, Ill.

Filed Oct. 3, 1975, Ser. No. 619,297

Int. Cl.^{2} A47J *37/06*

U.S. Cl. 99—422 **15 Claims**



1. A grill, comprising a platen having a grilling surface, a heating means for heating said platen and said grilling surface, a plurality of spaced recesses in said grilling surface and extending inwardly toward said heating means and into the main body of said platen, each said recess having associated retention means, a discrete polytetrafluoroethylene body in each said spaced recess and held in its recess by said retention means and having a surface portion disposed at said grilling surface for contact with an object to be disposed against said grilling surface for grilling.

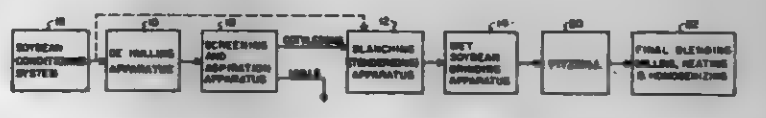
3,981,234
APPARATUS FOR THE PREPARATION OF A SOYBEAN BEVERAGE BASE

Alvin I. Nelson, Champaign, Ill.; B. P. N. Singh, and Surjan Singh, both of Uttar Pradesh, India, assignors to University of Illinois Foundation, Urbana, Ill.

Filed May 9, 1974, Ser. No. 468,269

Int. Cl.^{2} A23C *3/02*, *9/02*, *13/04*, *15/04*

U.S. Cl. 99—483 **10 Claims**


SOYBEAN CONDITIONING SYSTEM
DE HULLING APPARATUS
SCREENING AND ASPIRATION APPARATUS
HULLS
BLANCHING TENDERIZING APPARATUS
WET SOYBEAN GRINDING APPARATUS
FINAL BLENDING FILLING, HEATING & HOMOGENIZING

6. An apparatus for blanching food products, comprising a blanching chamber positioned so that the axis thereof extends generally vertically, said chamber having an opening in the bottom end thereof, valve means for closing said opening so

that water may be retained in said chamber, means for introducing steam into said chamber so that products contained therein may be agitated during boiling thereof whereby excessive foam in said chamber is prevented, a drain member adapted to fit into said opening thereby to prevent products from entering said opening during draining of water through said opening, said drain member being movable out of said opening after the product has been blanched, thereby to permit the blanched product to be discharged through said opening when said valve means is opened.

3,981,235
AUTOMATIC PRINT GAP ADJUSTMENT ARRANGEMENT

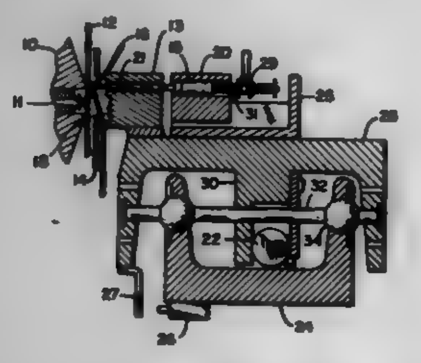
Roy D. Thomas, Wenonah, N.J., and Ross W. Johnston, Norristown, Pa., assignors to Sperry Rand Corporation, New York, N.Y.

Division of Ser. No. 401,524, Sept. 27, 1973, abandoned. This application June 21, 1974, Ser. No. 481,600

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.^{2} B41J *1/20*

U.S. Cl. 101—93.14 **7 Claims**



1. A printer device of the type wherein a print hammer is separated from a print band and the print hammer is directed toward the print band comprising,

- a. a print head means including the print hammer;
- b. a print form wherein both the print head means and form are located on a fixed carriage, said print form having a variable thickness depending upon whether it is a single or multi-part form;
- c. a movable print type band;
- d. a ribbon wherein both said band and ribbon are located on a movable carriage, said ribbon having a thickness which is variable upon replacement;
- e. means located in proximity to said movable carriage for simulating the print hammer striking said ribbon and form;
- f. means responsive to said simulation of the print hammer for positioning said print band the required distance from said print hammer.

3,981,236
PRINTHEAD FOR IMPACT PRINTER

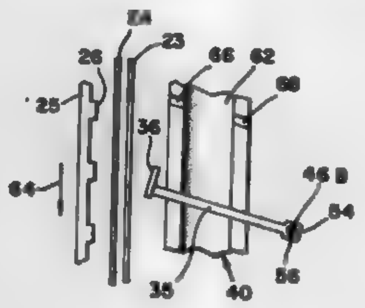
Ross W. Johnston, Norristown, and Barrie W. Witty, Glenside, both of Pa., assignors to Sperry Rand Corporation, New York, N.Y.

Continuation of Ser. No. 449,865, March 11, 1974, abandoned. This application Nov. 3, 1975, Ser. No. 628,341

Int. Cl.^{2} B41J *1/20*

U.S. Cl. 101—93.14 **1 Claim**

1. An impact printer arrangement to operate in conjunction with a rotating type band and an inked ribbon to print characters on a record medium which is moved upwardly in a vertical plane in close proximity to said ribbon and to said type band, said type band formed and disposed to define a rotating path which lies perpendicular to said vertical plane, comprising: a hammer guide assembly formed and disposed to lie perpendicular to said vertical plane and to have a first side lying substantially parallel to said rotating path and in close proximity to said record medium, to said inked ribbon, and to said type band; said hammer guide assembly formed to have grooves therein, which grooves lie in a horizontal plane and which grooves are formed to lie at an angle less than 90° from said vertical plane with said angle opening toward the direction toward which said rotating type band is moving; a plurality of impact printer hammers each having a stricker face member formed integral with a hammer arm, each of said impact printer hammers disposed to have its hammer arm mounted in a different one of said grooves and further disposed in its associated one of said grooves so that its striker face member lies opposite said rotating path of said type band and so that when it is moved toward said type band it will strike said type thereon and which striker face member lies at a small angle from said vertical plane and which angle opens toward the direction from which said rotating type band is moving during its rotation; and means to drive each of said impact printer hammers toward said record medium, toward said inked ribbon, sand toward said type band whereby said striker face members will force said record medium against said ribbon and said type bands to effect printing of characters thereon with a minimum of smearing.



3,981,237
PLASTIC ROTARY PRINTING SCREENS CONSTRUCTION METHOD THEREFOR

John M. Rhodes, Box 343, Summit, N.J. 07901

Continuation-in-part of Ser. No. 334,267, Feb. 21, 1973, abandoned. This application Nov. 4, 1974, Ser. No. 520,736

Int. Cl.^{2} B41C *1/14;* **B41N** *1/24*

U.S. Cl. 101—128.2 **9 Claims**

1. In the manufacture of a rotary printing screen having perforations through which printing emulsions and pastes are forced for rotary screen printing of textiles while mounted on a rotary printing machine without internal support, an improved method for precision fabrication from plastic film of a plastic rotary printing screen having the thinness, extremely high bending modulus, resistance to denting, and precise construction of a metal screen, the chemical inertness of a silk screen, non-hygroscopicity, a scratch-resistant hard surface, and a maximum circumferential variation of ± 0.1%, comprising the following steps, in combination:

- A. manufacturing a plastic blank according to the following steps:
  - 1. providing a sheet of film of a high-melting, difficulty soluble, linear, highly polymerized ester of a bi-functional dicarboxylic acid and a glycol of the series $HO(CH_2)_nOH$, wherein n is an integer within the range of 2 to 10, said sheet having a thickness of 0.002 to 0.012 inch, a length greater than the length of said plastic blank, opposite edges in parallel with the machine direction thereof, a width between said opposite edges that is less than the circumference of said plastic blank, a modulus of elasticity of at least 5×10^5 psi, and a capability of exceeding 100,000 folding cycles as measured by ASTM test D2176-69;
  - 2. bevelling said opposite edges at a bevel angle of about 10°–60° to form bevelled edges;
  - 3. wrapping said sheet of film around a mandrel, having an axis and a diameter tolerance of about 0.002 inch, with said machine direction generally corresponding to said axis and with said bevelled edges opposed and skewed by up to 60° from a line on the surface of said mandrel that is disposed in parallel with said axis, so that said bevelled edges abut each other to form a skewed seam and said wrapped sheet of film precisely conforms to the circumferential dimensions of said mandrel; and
  - 4. conjoining said bevelled edges, so that said skewed seam is not detectable, and trimming said length to form said plastic blank; and
- B. perforating said plastic blank with a plurality of minute holes to form said plastic rotary printing screen for said rotary screen printing of said textiles.

3,981,238
METHOD AND APPARATUS FOR DETERMINING DOCTOR BLADE POSITION IN A ROTOGRAVURE PROCESS

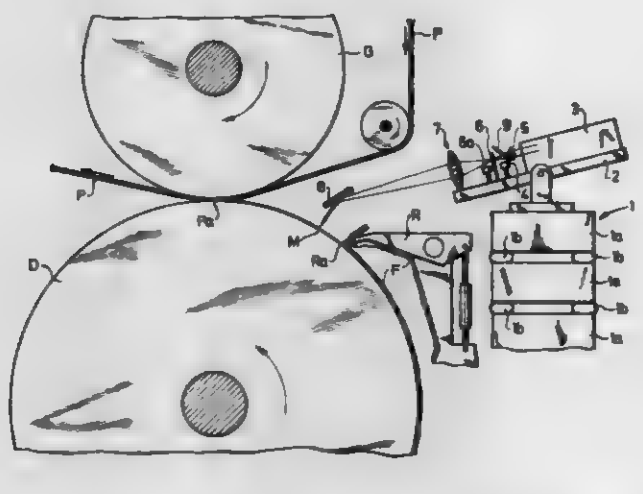
Mamiliano Dini, Elba, Italy, assignor to European Rotogravure Association, Munich, Germany

Continuation of Ser. No. 400,196, Sept. 24, 1973, abandoned. This application June 6, 1975, Ser. No. 584,534

Claims priority, application Germany, Sept. 27, 1972, 2247351

Int. Cl.^{2} B41F *9/10*

U.S. Cl. 101—154 **25 Claims**



1. A method for determining and automatically adjusting the relative position between a doctor blade and printing cylinder in a doctor blade rotogravure printing process using only a light beam in direct contact with the printing cylinder said method comprising:

- transferring ink onto a rotogravure printing cylinder in surplus amounts;
- stripping off all but a residual ink film portion of the surplus ink by the doctor blade leaving engraved cells in said printing cylinder substantially loaded with ink and also leaving said residual ink film on the non-engraved portions of said cylinder;
- determining the thickness of the layer of residual ink film which passes by the doctor blade by directing an incident light beam through said residual ink film, reflecting the incident light beam from said predetermined non-engraved portions of said rotogravure printing cylinder back through said residual ink film a second time and sensing the resulting attenuated intensity of the reflected light beam which has thus been attenuated by two passages through said residual ink film to a degree representative of the thickness of said ink film; and
- utilizing the sensed thickness as a control parameter in adjusting the relative position of the doctor blade in response thereto.

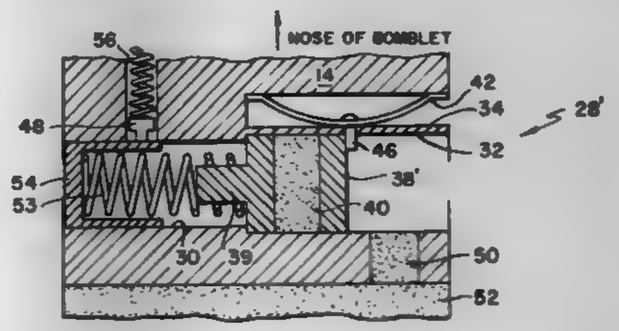
3,981,239
FLUIDIC LINK MASTER/SLAVE FUZE SYSTEM

Norman Czajkowski, Chevy Chase, and John H. S. McMann, Highland, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 4, 1975, Ser. No. 610,468

Int. Cl.^{2} F42B *25/16;* **F42C** *15/32*

U.S. Cl. 102—7.2 **15 Claims**



9. A fuzing system for cluster munitions having a dispenser and a plurality of bomblets in the dispenser, each bomblet having a fuze comprising:

- a dispenser fuze to control the opening of the dispenser and the arming of the bomblets;
- a signal generator controlled by said dispenser fuze to produce a fluidic signal to control bomblet fuze arming; and
- a signal receiver in the fuze of each of the plurality of bomblets, said receiver placing the bomblet fuze in the enabled condition upon receipt of the signal from said signal generator and arming the bomblet fuze upon dispenser opening and pressure release.

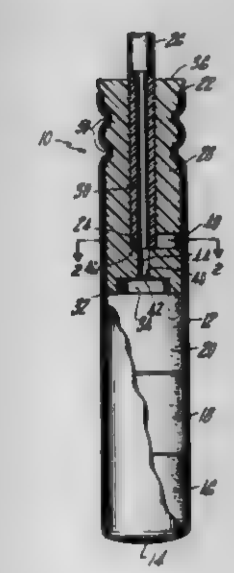
3,981,240
DETONATING CAP ASSEMBLY AND CONNECTING BUSHING

Ernest Laird Gladden, Granby, Conn., assignor to The Ensign-Bickford Company, Simsbury, Conn.

Filed July 30, 1975, Ser. No. 600,221

Int. Cl.^{2} F42B *3/10*

U.S. Cl. 102—29 **14 Claims**



1. A detonating cap assembly adapted for use with a fuse having a propensity for accumulating a static charge comprising an elongated shell open at one end for receiving said fuse, a charge positioned in said shell and spaced from said one end,

and a fuse retaining bushing positioned in said shell at said open end for interconnecting said fuse to said shell, said bushing being an elongated member slidably received within said shell and having a confined end adjacent said charge and an exposed end remote from said charge, a longitudinal bore in said bushing for receiving said fuse, said bore extending from said exposed end to adjacent said confined end, said bushing having a rupturable membrane at said confined end terminating said bore, said bushing including a low resistance shunt path positioned adjacent said membrane and intermediate said membrane and the exposed end of said bushing, said shunt path extending laterally outwardly from said bore toward said shell for diverting static charge from said fuse toward said shell.

3,981,241
SELF-LEVITATING SIGNAL CARTRIDGE

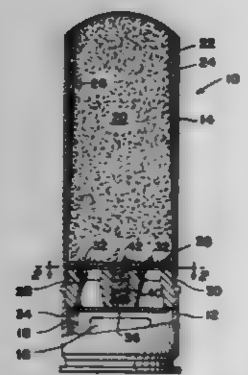
Leonard R. Ambrosini, Churchville, Md., and Raymond S. Isenson, Vandenberg AFB, Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 11, 1973, Ser. No. 405,726

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² F42B *4/06, 4/26*

U.S. Cl. 102—32 **2 Claims**



1. In a pyrotechnic signal cartridge comprising:
a. a cartridge case,
b. a projectile case detachably secured to said cartridge case,
c. a projectile initial propulsion charge in said cartridge case for launching said projectile case,
d. a rocket motor means, including a plurality of rocket nozzle ports, closure means for said ports positioned within said projectile case, a solid pyrotechnic signal composition, and a solid rocket motor propellant composition,
e. ignition means including an ignition composition and a delay column for said solid pyrotechnic signal composition and said solid rocket motor propellant composition, wherein the improvement comprises, said solid rocket motor propellant composition and said solid pyrotechnic signal composition present in admixture in said projectile case and wherein said compositions present in admixture have a conical configuration with diameter gradually decreasing with distance from said rocket nozzle parts such that burning of said compositions in admixture after launching of said projectile case balances the thrust of the rocket motor means against the mass of the cartridge providing a thrust-to-weight ratio of approximately unity which effect causes a self levitating display.

3,981,242
INFRASTAR CANNISTER CARTRIDGE

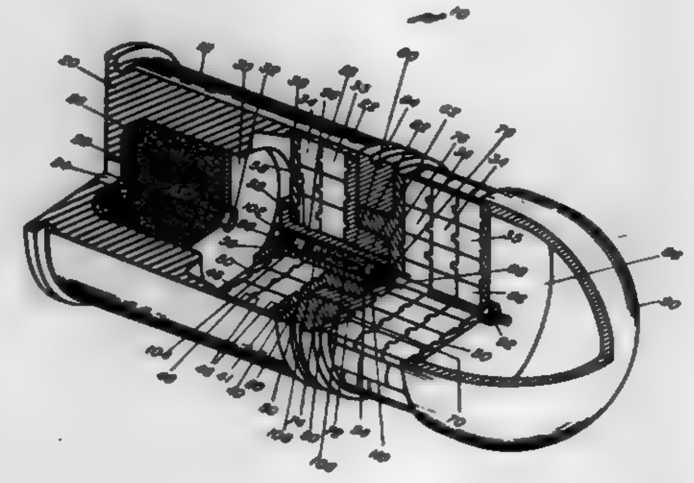
Edgar M. Shurtleff, Downey, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 15, 1974, Ser. No. 443,163

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976

Int. Cl.² F42B *7/04, 13/18, 13/48*

U.S. Cl. 102—42 R **3 Claims**



1. An internally fragmenting stage released cartridge which comprises:
a cup shaped cartridge case having a partialy closed end and an open end;
a primer fixedly axially positioned in said closed end;
propellant means operatively positioned within said cartridge case adjacent said primer for generating gas pressure within said cartridge case upon initiation by said primer;
first fragment means operatively disposed in the open end of said cartridge case and means for holding said first fragment means together during a first interval of time and for releasing said first fragment means after said first interval of time which includes;
a disc shaped first retainer plate member having a plurality of operatively disposed protrusion line-up bores and an axial clearance hole therein;
a plurality of interlocking cylindrically shaped fragments operatively arranged in a two-tier annular fragment assembly, said two-tier assembly having protrusions on a first end which slidably engage said line-up bores in said first retainer plate member; and
a disc shaped second retainer plate member having a plurality of operatively disposed protrusion line-up bores therein, and a central threaded hole therein, said annular fragments assembly also having protrusions on its second end which slidably engage said line-up bores in said second retainer plate member;
second fragment means attached to said first fragment means and means for holding said second fragment means together during said first interval of time and for releasing said second fragment means after a second interval of time; and
means for releasing said first fragment means comprising delay means axially positioned within said first fragment means operatively disposed adjacent said means for releasing said second fragment means for sequentially initiating the release of said first and second fragment means so that a double cone pattern of shot is generated by firing of said cartridge;
wherein said delay means passes through said axial clearance hole and said fragment assembly to threadedly engage the central threaded hole of said second retainer plate member.

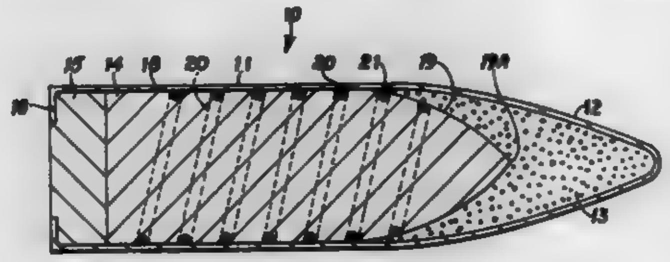
3,981,243
PROJECTILE

Thomas A. Doris, Jr., Palmyra, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 10, 1975, Ser. No. 585,648

Int. Cl.² F42B *13/02*

U.S. Cl. 102—52 **2 Claims**



1. An incendiary projectile comprising,
a projectile main body having a forward nose portion and a rearward annular flange, said nose portion containing an incendiary mix,
a base plug secured in said main body against said annular flange,
a penetrator positioned within said main body forwardly adjacent said base plug,
said penetrator having a spiral groove in its peripheral surface, and
a lead sheathed incendiary mix in said groove and in contact with said nose portion incendiary mix.

3,981,244
PYRAMID PROJECTILE PAYLOAD EJECTION DEVICE

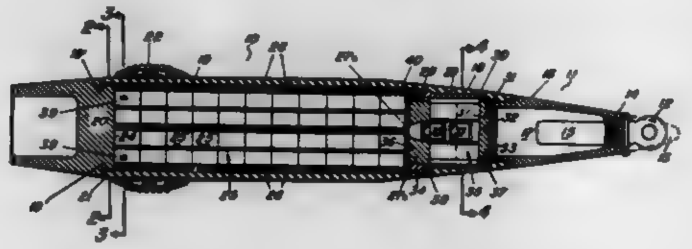
Louis J. Adimari, Lake Hiawatha, and George D. Dusoe, Oak Ridge, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 229,847, Feb. 28, 1972, abandoned. This application Nov. 2, 1973, Ser. No. 412,068

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² F42B *13/50*

U.S. Cl. 102—69 **9 Claims**



1. A projectile for dispensing a payload at a selected point along its trajectory, comprising:
a housing including a forward ogive portion, a rear separatable base plug portion, and an intermediate hollow cylindrical portion filled with a first payload,
an elongated hollow cylindrical pusher assembly means adjacent to said first payload and slidingly disposed substantially entirely within said ogive portion for movement rearwardly in said housing, with at least an annular portion of its peripheral wall in bearing contact with the inner wall of said housing, said pusher assembly means being open at its rear end and closed at the other end and filled with an additional payload,
an expulsion charge means disposed within said ogive portion forward of said pusher assembly means for explosively generating an expanding gas, and
fuze means for selectively activating said charge means;
whereby, upon activation of said charge means, said gas and said pusher assembly means will eject both of said payloads rearwardly from said housing.

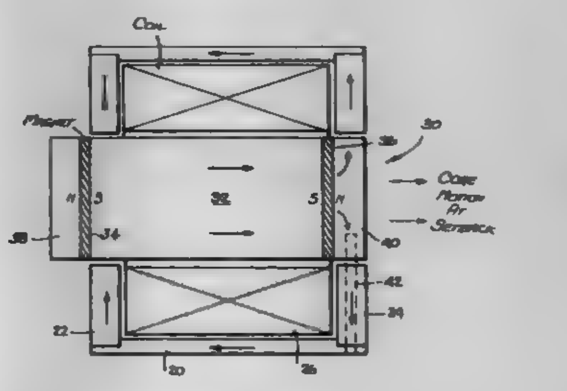
3,981,245
ELECTRICAL SETBACK GENERATOR

Colby E. Buzzell, Wilmington, Mass., and Richard T. Ziemba, Burlington, Vt., assignors to General Electric Company, Burlington, Vt.

Filed Dec. 17, 1974, Ser. No. 533,682

Int. Cl.² F42C *11/04*

U.S. Cl. 102—70.2 GA **26 Claims**



1. A setback generator comprising:
a first incomplete magnetically permeable circuit;
an electrical conductor magnetically coupled to said circuit;
a second incomplete magnetically permeable circuit including two sources of magnetic flux of opposing polarity spaced apart by magnetically permeable means of such length that only one of said sources can be coupled to said first circuit at any time;
said first and second circuits being mutually interjournalled to permit relative translation therebetween, whereby first one of said sources and then the other of said sources can be coupled to said first circuit to provide a complete reversal of magnetic flux through said first circuit and a corresponding energy in said electrical conductor.

3,981,246
FIN-STABILIZED SUBCALIBER PROJECTILE

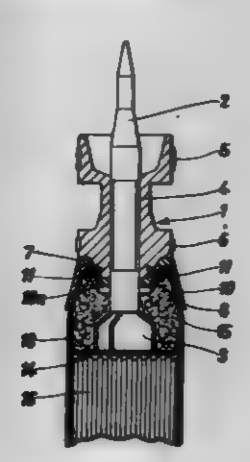
Hans Werner Luther, Holzbuttgen, and Peter Bender, Dusseldorf, both of Germany, assignors to Rheinmetall G.m.b.H., Dusseldorf, Germany

Filed May 2, 1974, Ser. No. 466,224

Claims priority, application Germany, May 9, 1973, 2323244

Int. Cl.² F42B *13/16*

U.S. Cl. 102—93 **3 Claims**



1. A fin-stabilized subcaliber projectile having a drive cage comprising
a plurality of segments surrounding the body of said projectile in a central region thereof,

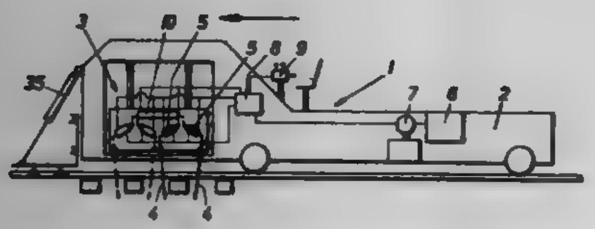
a tail disc fastened to said cage and jointly covering said segments, said disc having joints and tearing in the region
of the joints upon the release of said cage,
a plurality of reinforcing segments corresponding to said drive-cage segments and defining said joints between them,
a burnable cartridge case, and
at least one connecting piece connecting said burnable
cartridge case, said reinforcing segments and said disk to the tail of
said drive cage after the other and by means of non-burnable fastening means.

3,981,247

TRACK WORKING MACHINE WITH VIBRATORY AND RECIPROCABLE TRACK WORKING TOOLS

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industrie-gesellschaft m.b.H., Vienna, Austria

Filed Mar. 24, 1975, Ser. No. 561,115
Claims priority, application Austria, May 9, 1974, 3855/74
Int. Cl.² E01B *27/16*
U.S. Cl. 104—12 10 Claims



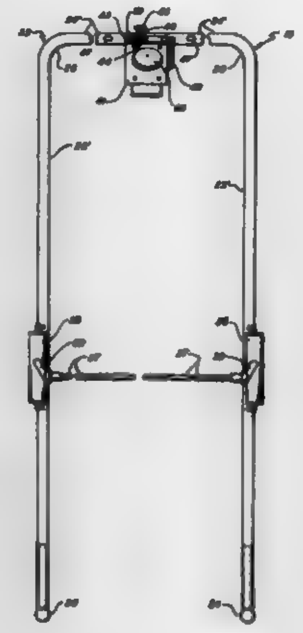
1. A track working machine comprising a frame mounted for mobility on the track, reciprocable and vibratory tools mounted on the frame for working the track, hydraulic motor means for reciprocating and vibrating the tools, the hydraulic motor means including a hydraulic motor associated with each tool for reciprocating the same and a further hydraulic motor, a hydraulic circuit including a hydraulic fluid sump, a pump for delivering hydrualic fluid from the sump to the hydraulic motor means and return conduit means for returning hydraulic fluid to the sump, and a control in the hydraulic circuit for generating a pulsating stream of the hydraulic fluid and delivering the pulsating stream to the hydraulic motor, means whereby the tools are vibrated, the control including an impulse generator for imparting impulses to the hydraulic fluid and thereby generating the pulsating hydraulic fluid stream, and a valve assembly including a plurality of check valves and having inlet means and an outlet means, control conduit means for delivering the pulsating hydraulic fluid stream to the inlet means of the valve assembly, further conduit means for delivering the pulsating hydraulic fluid stream from the outlet means of the valve assembly to respective chambers defined by the hydraulic motor means, the further conduit means being connected to the chambers of the further hydraulic motor and the hydraulic motor associated with each tool being connected to the further hydraulic motor for vibration of the hydraulic motor and the tool associated therewith by the further hydraulic motor, and the hydraulic motor reciproacting the tool, and respective ones of the valves alternately blocking and permitting passage of the pulsating hydraulic fluid stream from the inlet to the outlet means of the valve assembly.

3,981,248

TIMING GATE FOR SKI-LIFTS

Phillip D. Savage, Owls Head, N.Y., assignor to Hall Ski-Lift Company, Inc., Watertown, N.Y.

Filed Feb. 28, 1975, Ser. No. 554,200
Int. Cl.² B61B *12/00*
U.S. Cl. 104—173 ST 1 Claim



1. A gateway for admitting a predetermined number of passengers abreast to a ski-lift loading area, comprising: an inverted U-shaped frame having two vertical legs and a cross arm and adapted to be supported erect on the ground, at least one two-way pneumatic cylinder secured at substantially waist-high level to a frame leg and having a piston with spaced seals adjacent either end, the cylinder having a helically-disposed quarter-turn slot in its wall, the piston in the cylinder having an elongated rod-like gate member secured thereto between the seals and projecting radially therefrom through the cylinder slot for guiding the gate member as the piston moves up and down, the gate member having a closed position transverse the gateway when at one end of the slot and an open position swung 90° from the closed position when at the other end of the slot, a source of compressed air under pressure, an electrically operated reversing valve, tube means for connecting the upper end of the cylinder through the valve to the source when the valve is in one position at the start of each cycle, tube means for connecting the lower end of the cylinder through the valve to the source when the valve is in its other position in its intermediate position in the cycle, a chair-sensing feeler switch operable by each passing chair, and electrically operated switch means connected in a circuit with the feeler switch for operating the reversing valve after a timed delay when the feeler switch is operated by a passing chair for initiating each succeeding cycle, the piston and gate member being adapted to fall by gravity to the gate closed position upon any failure of the source of compressed air.

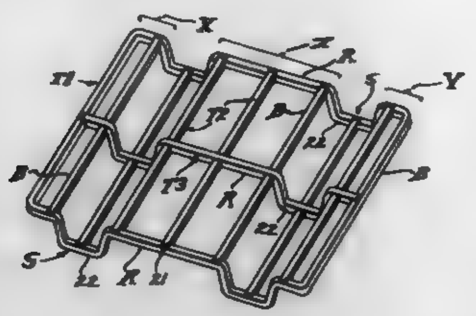
3,981,249

LOAD BEARING PALLET

John R. Herrmann, Tustin, and Robert L. Alexander, Newport Beach, both of Calif., assignors to G. S. Beckwith Gilbert, Greenwich, Conn.

Filed Oct. 17, 1974, Ser. No. 515,498
Int. Cl.² B65D *19/30*
U.S. Cl. 108—52.1 4 Claims

1. A load bearing pallet fabricated of elongated formable members of tubular cross section for torsional stability, there being a frame work comprised of a plurality of spaced and parallel transversely disposed and rigid load bearing members in a common plane with and extending between and intersecting spaced and parallel longitudinally disposed rigid rail members, said transversely and longitudinally disposed tubular members being joined at notched interconnections thereof wherein each tubular member is notched with a seat bottom disposed normal to said tubular cross section and formed by piercing the same at spaced parallel lines with one side thereof depressed to the mid plane of the tube, the seat bottom of the notch in one member bearing against the seat bottom of the notch in the complementary intersecting member.

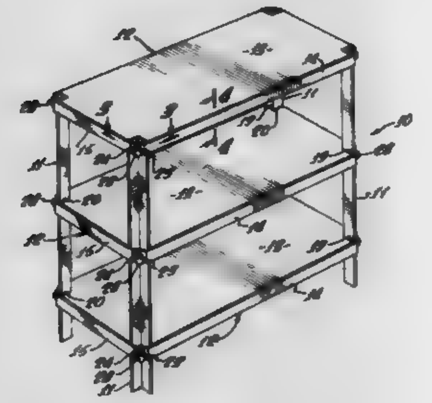


3,981,250

ADJUSTABLE SHELVING

Russell E. Anthony, 1575 Chanticleer, Anaheim, Calif. 92802

Filed Aug. 18, 1975, Ser. No. 605,749
Int. Cl.² A47B *9/00*
U.S. Cl. 108—106 15 Claims



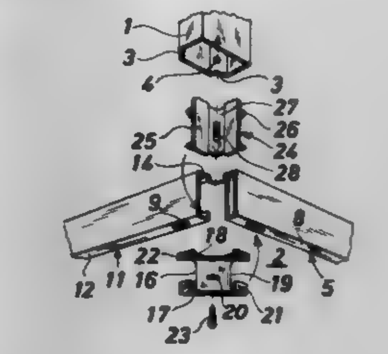
1. An adjustable shelf device comprising
at least one member defining a support surface,
  said member having a plurality of corners,
    each of said corners including first and second edges extending from outer ends thereof at the periphery of said support surface to intersecting inner ends thereof so as to define a notch,
an element extending across said notch of each of said corners between said outer ends of said edges so as to cooperate with said edges in defining an opening,
a post means received in each of said openings, said post means comprising a structural angle having an L-shaped cross section having outer surfaces on one side in juxtaposition with said edges, and
friction means between said element and the inner surface of said structural angle for releasably holding said member in a fixed relationship with said post means.

3,981,251

ARRANGEMENT AT CORNER JOINTS IN A KNOCK-DOWN SHELVING UNIT

Ejvind Damberg, Nykobing Falster, Denmark, assignor to A/S Ranco Storage Systems, Denmark

Filed Mar. 21, 1975, Ser. No. 560,570
Claims priority, application Denmark, Oct. 11, 1974, 5343/74
Int. Cl.² A47B *3/06*
U.S. Cl. 108—154 2 Claims



1. In a shelving structure in which at least one shelf has a corner portion connected to a post by a screw received in a hole of the post, said shelf being generally horizontal and having vertical flanges with horizontal flanges adjoining said corner portion, said vertical and horizontal flanges having end edges at said corner portion, and there being a mounting brace means extending obliquely between said vertical flanges, said brace means having lugs received by slots in said horizontal flanges, and a hole for the extension therethrough of said screw, the improvement which comprises a protective bridge means having a pair of protective plates connected together by a flexible central portion, said plates having lugs disposed for resilient engagement with corresponding flanges of the shelf to retain the bridge means at the corner portion of the shelf with said protective plates against said end edges and covering same to protect the post against abrasion thereby, said protective plates having respective surfaces each disposed for contact with the post and accommodating movement of the shelf with said surfaces in sliding contact with the post without abrasion of the post; and means defining a hole in said bridge means aligned with the hole in said brace means and disposed to engage the threads of said screw and to align said screw with the hole in the post.

3,981,252

NON-POLLUTING DISPOSAL OF ANTIFOULING PAINT RESIDUES ENCOUNTERED IN SHIPYARD ABRASIVE BLASTING OPERATIONS

Arthur Ticker, 12117 Maddox Lane, Bowie, Md. 20715

Filed Dec. 3, 1975, Ser. No. 637,421
Int. Cl.² F23G *7/00*
U.S. Cl. 110—18 R 7 Claims

1. A safe, non-polluting method of handling and neutralizing the toxic nature of organo-metallic antifouling paint residue removed from ships comprising the steps of:
removing the organo-metallic antifouling paint from a ship's hull as by abrasive blasting or other mechanical means;
collecting the residue of said organo-metallic antifouling paint and spent abrasive blasting material;
placing said residue of organo-metallic paint and abrasive material in a vapor-tight muffle furnace;
heating said residue in said furnace in the presence of air for a period of time above its ignition temperature and the ignition temperature of its vapors;
whereby said organo-metallic material is destroyed to yield carbon dioxide, water vapor and a non-toxic, non-organic metal oxide; and
unloading the detoxified material for recycling or safe disposal.

3,981,253
DEVICE FOR MAKING TUFT FABRIC

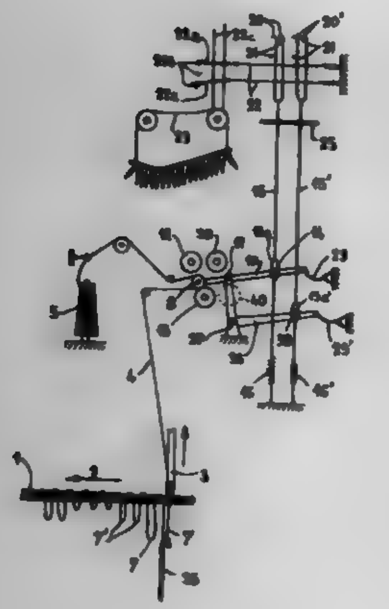
Rene Neyraud, Rhone, France, assignor to Verdol S.A., Caluire et Cuire, France

Filed Feb. 5, 1975, Ser. No. 547,151

Claims priority, application France, Feb. 14, 1974, 74.05651

Int. Cl.² D05C *15/18*

U.S. Cl. 112—79 A **6 Claims**



1. A device for feeding a thread at more than two different linear speeds in a tuft making machine, said device comprising:

- a friction roller to frictionally advance said thread;
- a first cylinder rotating at a first peripheral speed about its axis to frictionally drive said friction roller at a first angular speed so as to advance said thread at a first linear speed;
- a second cylinder rotating at a second peripheral speed about its axis to frictionally drive said friction roller at a second angular speed so as to advance said thread at a second linear speed, the axis of said second cylinder being parallel to the axis of said first cylinder to define a plane therewith;
- a first movable supporting member to rotatably support said friction roller;
- a second movable supporting member to support said first supporting member;
- first means to displace said first supporting member on said second supporting member in such a direction that for a first position of said second supporting member said friction roller may engage selectively said first and second cylinders to be driven by same at two different linear speeds;
- second means to displace said second movable member between said first position and a second position more remote from said plane and for which said first means can no more bring said friction roller into engagement with said first and second cylinder;
- and at least a third cylinder rotating at a third peripheral speed, the axis of said third cylinder being parallel to the axes of said first and second cylinder, and being so disposed laterally of said plane that for said second position of said second supporting member, said first means may bring said friction roller into engagement with said third cylinder to cause said roller to be driven at a third angular speed so as to advance said thread at a third linear speed.

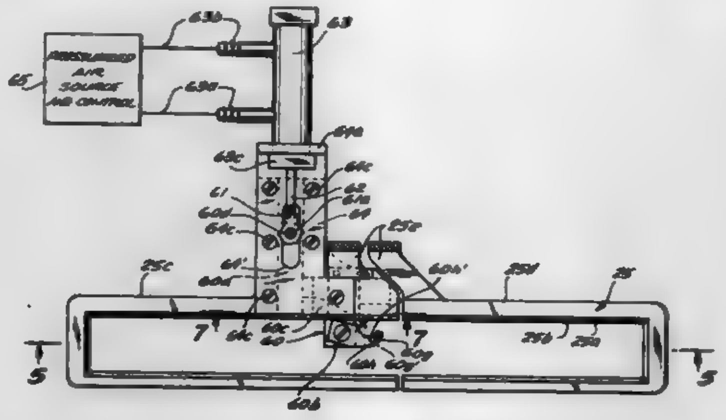
3,981,254
AUTOMATIC NECKTIE NECKBAND TACKER

Stanley Franklin, Northridge, Calif., and Herbert Jaffe, New York, N.Y., assignors to Stanley Franklin, Los Angeles, Calif.; Herbert Jaffe, New York, N.Y. and Harold Athey, Los Angeles, Calif., part interest to each

Filed Dec. 29, 1975, Ser. No. 645,197

Int. Cl.² D05B *3/12*

U.S. Cl. 112—104 **7 Claims**



1. In a tacking machine, an automatic necktie neckband tacker, comprising

- a gauge including inner peripheral edge means defining an opening substantially equal to the size of a neckband for securing a neckband therein adjacent an upper portion thereof,
- an upper clamp defining a clamp opening therein substantially equal to said opening of said gauge and aligned therewith, means movably disposing said upper clamp above said gauge and said upper clamp constituting a clamping means with said gauge for clamping therebetween a tie at a neck area thereof adjacent the neckband,
- a clamp and cutting blade carrier means for clamping and cutting, respectively, an upper needle thread,
- said upper clamp including guide means for guideably mounting said clamp and cutting blade carrier means for movement of the latter upon actuation thereof into a withdrawn position under said upper clamp, as well as into an operative position projecting into said clamp opening,
- pneumatic actuating means constituting a pneumatic cylinder operatively mounted on said upper clamp moveably jointly therewith, and for actuating said clamp and cutting blade carrier means.

3,981,255
CURTAIN HEMMING DEVICE

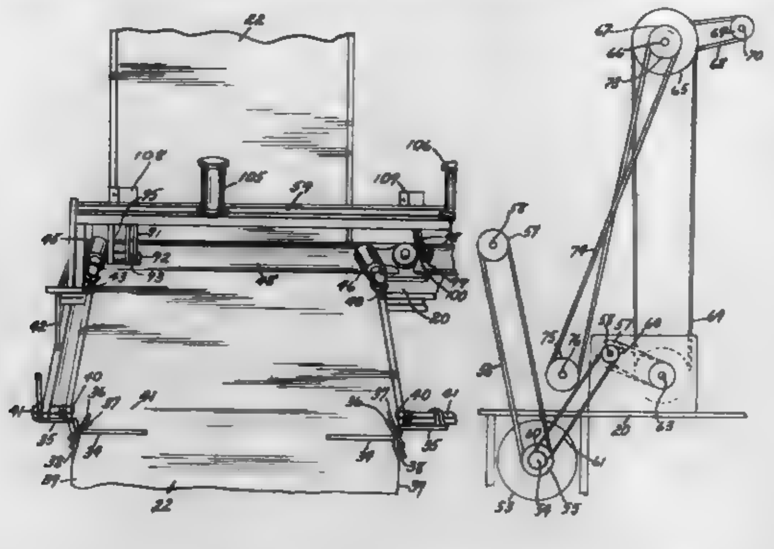
Hervey Taylor, Candor, N.C., assignor to Home Curtain Corporation, Far Rockaway, N.Y.

Filed May 27, 1975, Ser. No. 580,763

Int. Cl.² D05B *25/00*

U.S. Cl. 112—155 **3 Claims**

1. In a device for forming a hemmed edge on each side of a continuous web of material, said device including a main frame element having a principal longitudinal axis and a transversely extending supporting member, and first and second sewing machines positioned in the area of each hemmed edge, means for driving said first and second sewing machines in synchronism, and means for advancing said web in synchronism with said machines, the improvement comprising: one of said sewing machines being in fixed location relative to said frame element, the other of said sewing machines being selectively positionable at a plurality of locations along a transverse axis relative to said frame element; prime mover means mounted upon said frame element, a transversely extending shaft mounted for rotation upon said frame element and driven by said prime mover means; said one of said sewing machines being supported from said transversely extending supporting member, and having belt means driven from said transversely extending shaft to oscillate stitch forming means thereon; said frame element including a second transversely extending support means, said means carrying fabric elevating means cooperating with said stitch forming means, and forming an interstice therebetween through which a web of fabric may pass; said transversely extending shaft projecting outwardly of said frame element and mounting a driven pulley, said second transversely extending support means carrying a pulley driving said fabric elevating means, there being belt means interconnecting said last two mentioned pulleys.



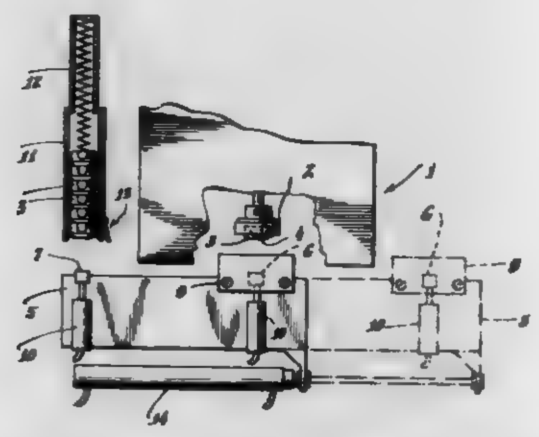
3,981,256
MAGNETIC AUTOMATIC BOBBIN CHANGER FOR SEWING MACHINES

William B. Sexton, Moore, S.C., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

Filed May 9, 1975, Ser. No. 575,867

Int. Cl.² D05B *57/26*

U.S. Cl. 112—180 **7 Claims**



1. In a lock stitch sewing machine and automatic bobbin changer, the sewing machine being provided with a conventional bobbin holder adapted to hold a bobbin and case, the case having a latch and means for holding the bobbin and case and strong detent means for holding the bobbin and case, said detent means cooperating with the latch, a sensor on the sewing machine for sensing when a bobbin is almost exhausted, said sensing means providing a signal when the approaching exhaustion of the bobbin actuates the sensor, the improvement, comprising, in combination,

a. a magazine positioned adjacent to the sewing machine adapted to hold a plurality of bobbins and cases and quick detent means,

b. a cross slide provided with a first magnet and a second magnet and actuating means for moving the magnets toward and away from the sewing machine and magazine and also actuating means for moving the slide from a first position in which the first magnet is opposite the sewing machine bobbin holder and the second magnet is opposite the magazine,

c. initiating means for the magnet and slide actuating means, said initiating means being actuated by the signal from the almost-empty bobbin holder sensor, the initiating means causing the magnet actuating means to move the first magnet toward the bobbin holder and the second magnet toward the magazine, the movement being sufficient to contact the magnets with an almost empty bobbin and case on the sewing machine and with a full bobbin and case in the magazine,

d. means for actuating the magnet moving means through a cycle after the magnets are moved toward the sewing machine and magazine by the initiating signal means, said cycle first withdrawing the magnets, the first magnet being sufficiently strong to move the latch to an unlatched position whereby the unlatched empty bobbin and case is removed from the sewing machine bobbin and case holder and the full bobbin and case is removed from the magazine, the second step in the cycle actuating the means for moving the slide to a position in which the magnet and full bobbin case are aligned with the sewing machine bobbin and case holder, the second step of the cycle moving the second magnet forward a sufficient distance to lock the full bobbin and case in the bobbin holder by means of the latch and the detent mechanism, the third step in the cycle retracting the second magnet, said magnet being insufficiently strong to unlatch the full bobbin and case, the fourth step in the cycle actuating the slide to move to the position where the first magnet is aligned with the sewing machine bobbin holder and the second magnet with the magazine.

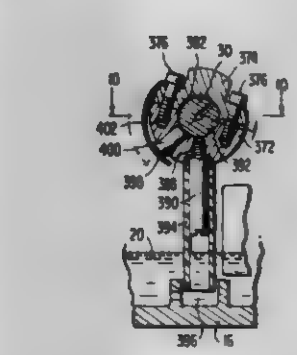
3,981,257
SEWING MACHINE LUBRICATION SYSTEM AND PUMP THEREFOR

Edward A. Kelly, 126 Meadowgate, Wethersfield, Conn. 06109

Division of Ser. No. 354,714, April 26, 1973. This application Dec. 30, 1974, Ser. No. 537,626

Int. Cl.² D05B *71/00*

U.S. Cl. 112—256 **6 Claims**



1. A pump comprising a housing having a cylindrical bore extending therethrough, an elongated shaft extending through said cylindrical bore and supporting said housing for free rotation thereon, frame means independent of said housing journalling said shaft for rotation about its longitudinal axis, first and second radial bores formed in said housing in spaced circumferential relation to one another, a plunger slidably mounted in said first radial bore, said plunger having a flat inner end surface extending in tangential contacting relation with said shaft, spring means carried by said housing and resiliently urging said plunger radially inward into said contacting relation with said shaft, a substantially arcuate circumferentially extending depressed eccentric groove formed in said shaft in the portion thereof within said cylindrical bore, said groove having an axial dimension adapted to receive the inner end of said plunger during relative rotation between said shaft and said housing, said second radial bore defining a pump inlet for supplying fluid to said cylindrical bore, means defining an outlet to permit fluid to be discharged from said pump, first restraining means normally restraining said hous-

ing against rotation about the axis of said shaft, and means for rotating said shaft about its longitudinal axis in a direction to move said groove progressively past said first and said second radial bores in succession.

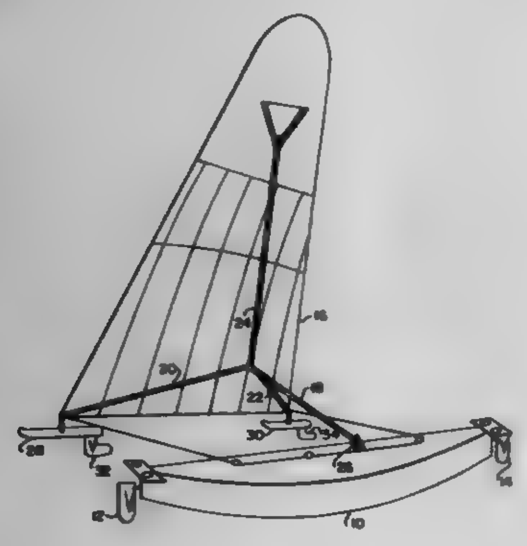
3,981,258
WATERSKI SAILBOAT

Bernard Smith, King George, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 15, 1975, Ser. No. 596,118

Int. Cl.² B63B *39/00*

U.S. Cl. 114—39 **11 Claims**



1. A hydrofoil sailboat comprising:
- a slender hull one side of which is flat and the other side convexly curved to provide a hydrofoil shape to raise the sailboat at high speeds thereby reducing immersion and resistance;
- at least one rudder on one end of said hull and means to control the angular movement of said rudder, said rudder being shaped with one flat side and one convexly curved side;
- a sail, having the characteristics of an airfoil, spaced laterally from the flat side of said hull whereby said hull will resist side forces generated by said sail;
- means for movably attaching said sail to said hull at an angle from the vertical so that the sail tilts toward the hull, the tilt of the sail being variable and the sail being movable in azimuth at least on one side of the hull; and
- waterski means attached at the bottom of the sail and supporting the sail.

3,981,259
CATAMARAN WITH EXTENSIBLE HULLS

William H. Harper, Jr., 5125 Lake Wheeler Road, Raleigh, N.C. 27603

Filed July 7, 1975, Ser. No. 593,480

Int. Cl.² B63B *1/00*

U.S. Cl. 114—61 **12 Claims**

1. A boat structure comprising:

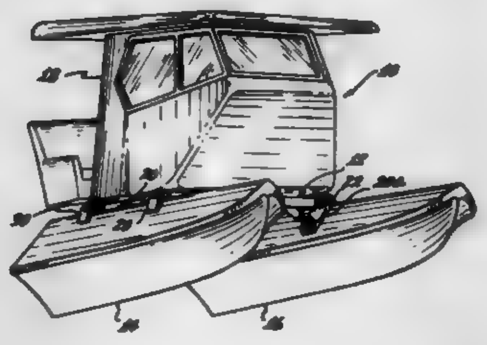
a. a frame having a spaced pair of shafts interconnected by at least a pair of transverse beams;

b. a superstructure mounted atop said frame;

c. a pair of hulls each pivotably connected to a different one of the shafts of said frame for rotation about the longitudinal axes thereof, said hulls laterally pivotable in opposite directions from a retracted position to a midposition to a fully extended position; and

d. actuatable hull pivoting means on said frame and connected to said pair of hulls for movement of said pair of hulls from the retracted to the midposition thereof and from the midposition to the fully extended position, said actuatable hull pivoting means comprising,

first selectively actuatable means on said frame and connected to said pair of hulls for movement thereof through approximately 45° of rotation about their respective ones of the shafts of said frame to move said pair of hulls from the retracted position to the midposition thereof, and



second selectively actuatable means on said frame and connected to said pair of hulls for movement thereof through approximately 45° degrees of rotation about their respective ones of the shafts of said frame to move said pair of hulls from the midposition to the fully extended position thereof.

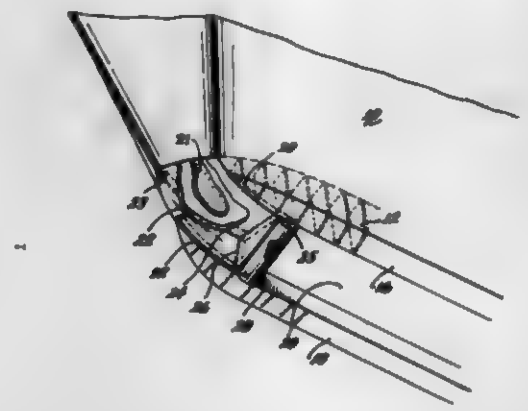
3,981,260
ROLLER LIP SEAL FOR SURFACE EFFECT SHIPS

Jack H. Hilbig, Chula Vista, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Continuation of Ser. No. 534,717, Dec. 20, 1974, abandoned. This application Aug. 21, 1975, Ser. No. 606,683

Int. Cl.² B63B *1/36*

U.S. Cl. 114—67 R **7 Claims**



1. In a surface effect ship of a type which comprises vertically depending sidewalls defining a cavity to receive sea wave shocks, a compound keel means which comprises keel skeletal structure means pivotally mounted to the bow of the ship, a resilient shock modulating skin having a sealed attachment to said bow on a portion of said vertically depending sidewalls and connected to and enclosing said skeletal structure, a trailing means connected to the trailing edge of said skin for free movement between said vertically depending sidewalls, said trailing means adapted to smooth out the waves and reduce the drag on the keel and an air bag confined by said cavity and said keel means for biasing said keel toward the sea waves.

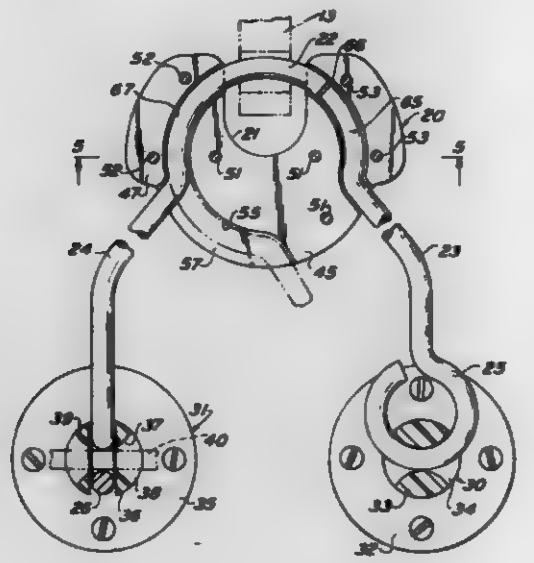
3,981,261
BOAT DOCKING DEVICE

Andrew G. Kauffman, 212 Heather Road, Upper Darby, Pa. 19082, and James D. Michelson, 17 Scarlet Ave., Greenridge, Pa. 19014

Filed Aug. 18, 1975, Ser. No. 605,590

Int. Cl.² B63B *21/00*

U.S. Cl. 114—230 **9 Claims**



1. A boat docking device comprising a hub having a cut-out for receiving a boat fitting, a fixed arm having one end fixedly connected to said hub and having its other end extending outwardly therefrom, a shiftable arm having one end shiftably connected to said hub and having its other end extending outwardly therefrom and movable toward and away from said fixed arm, a bolt connected to said shiftable arm for extensile and retractile movement therewith into and out of said cut-out upon respective movement of said shiftable arm away from and toward said fixed arm for extension through and withdrawal from the boat fitting, a pair of eye members adapted for spaced affixation to a dock and each having an aperture fixed in substantially horizontal axial alignment with each other, a first loop on the other end of one of said arms extending swingably through one of said eye member apertures, and a second loop on the other end of the other of said arms for movement therewith into and out of alignment with the other of said eye member apertures when said arms are in respective positions away from and toward each other, whereby a shackle is removably engageable through said aligned second loop and other eye member to removably mount said arms and hub for swinging movement about the axis of said eye member apertures.

3,981,262
WATER JET PROPULSION APPARATUS

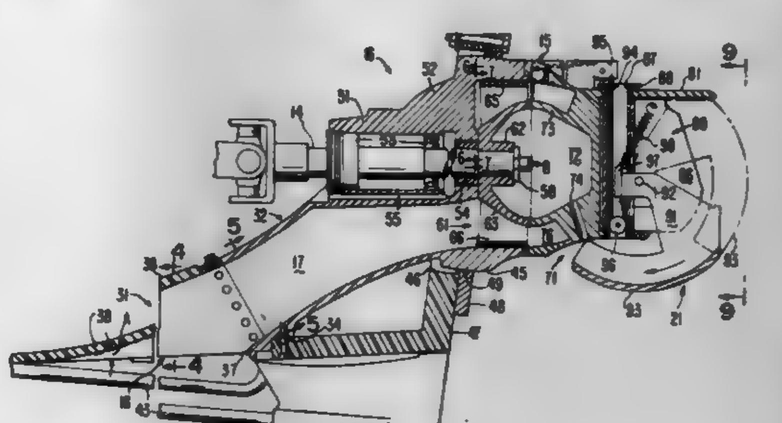
Robert DeVault, Malibu, and Ralph Maloof, Woodland Hills, both of Calif., assignors to Sidewinder Marine, Inc., Redding, Calif.

Filed Jan. 22, 1971, Ser. No. 108,946

Int. Cl.² B63H *11/10*

U.S. Cl. 115—12 R **5 Claims**

1. A water jet propulsion apparatus for water craft comprising:
- a water-conveying conduit having an inlet opening substantially flush with the bottom of the craft and an outlet opening at the aft end of the craft and a pump within said conduit for discharging water as a propulsion jet through said outlet opening,
- said inlet opening substantially in the shape of an isosceles triangle with the base of the triangle substantially straight and transverse of the length of the craft and with the apex of the triangle aligned toward the fore end of the craft, said conduit including a ramp wall extending upwardly aft from the apex of said inlet opening at an angle of less that 20°.



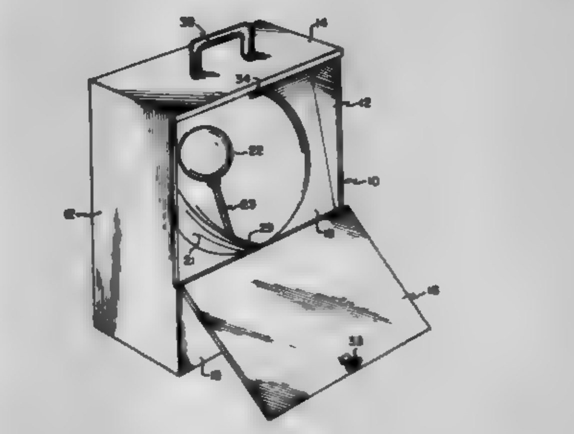
3,981,263
BLINKING REFLECTOR SIGNAL DEVICE

Eugene G. Capucio, P.O. Box 1087, Caracas, Venezuela

Filed Apr. 8, 1974, Ser. No. 458,503

Int. Cl.² E01F *9/10*

U.S. Cl. 116—63 P **15 Claims**



1. A blinking light reflector comprising:

a. a housing;

b. a directional light reflector surface within said housing;

c. a luminescent member;

d. oscillating means for periodically moving said luminescent member at regular intervals toward and away from said reflector surface;

e. opening means in said housing for exposing said surface and said luminescent member to an external light source; and

f. said reflector surface being a highly polished concave surface and shaped for magnifying the luminescent member at each movement of said member toward the reflector surface such that an intermittent flashing is produced by a change in magnification as said luminescent member is moved toward and away from said reflector surface.

3,981,264
DROPLET IMPACT RECORDER

Charles A. Smith, Fountain Valley, and Arthur D. Warren, Los Angeles, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

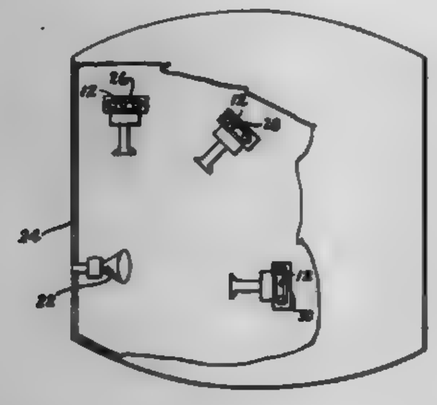
Filed Jan. 16, 1975, Ser. No. 541,483

Int. Cl.² G01N *33/22;* **G03C** *1/74*

U.S. Cl. 116—114 AM **2 Claims**

1. A method for recording the droplet fallout distribution pattern of an unreacted monomethyl hydrazine fuel component emanating from the exhaust source of a rocket propulsion motor in a closed testing environment which comprises the steps of:

a. providing a photographic film base in the testing environment having a silver alloy particle containing gelatin coating on at least one surface thereof, said particles having a predetermined sensitivity toward monomethyl hydrazine;



b. exposing at least a portion of said one surface of said coated photographic film base to the impact of said droplet fallout for a period of time sufficient to record and retain an exact droplet pattern of the said unreacted monomethyl hydrazine fuel component.

3,981,265
COMBINED DIAL SCALE AND STATION INDICATOR

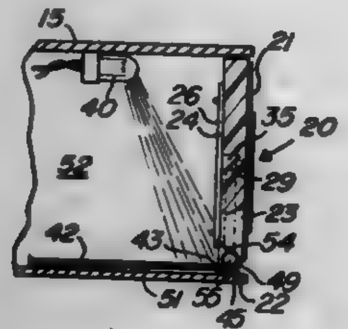
Paul B. Gilbert, Chicago, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 6, 1974, Ser. No. 467,412

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² G11B *31/00*; H03J *01/04*

U.S. Cl. 116—124.4 **14 Claims**



1. In a radio receiver and magnetic tape player combination having a radio tuning control mechanism for controlling the frequency to which the radio receiver is tuned, and a housing provided with an opening to receive a magnetic tape cartridge, the combination including:

a door having indicia thereon to indicate the frequency to which the radio receiver is tuned, said door being mounted in the housing and movable between a first position wherein the opening is closed and a second position clear of the opening to prevent entry of a cartridge;

a pointer movably mounted in the housing and operatively connected to the radio control mechanism, said pointer having a reflecting surface thereon;

reflection means including an angled reflecting surface provided in said door in position adjacent said indicia on said door for cooperating with the reflecting surface on said pointer; and

illumination means mounted in the housing for illuminating the reflecting surface on said pointer such that the reflection therefrom impinges upon said reflection means to illuminate said indicia on said door when said door is in the first position to indicate the frequency to which the radio receiver is tuned.

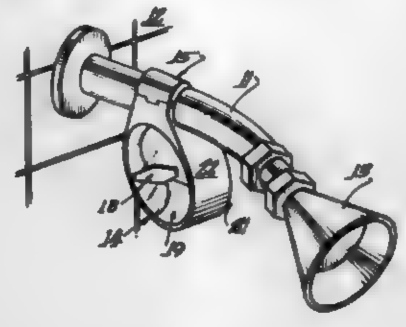
3,981,266
HIGH VISIBILITY DIAL INDICATOR

Russell C. Persson, 661 San Felipe St., Salinas, Calif. 93901

Division of Ser. No. 483,217, June 26, 1974, Pat. No. 3,924,468. This application Sept. 29, 1975, Ser. No. 617,484

Int. Cl.² G01D *13/04*

U.S. Cl. 116—129 F **2 Claims**



1. An easily readable dial indicator comprising a housing defining a transparent opening that is generally circular with respect to a central axis, a pointer and means for supporting said pointer for rotation on said axis in proportion to a varying quantity, and indicating means underlying said pointer and visible through said opening for indicating the position of said pointer, said indicating means including at least first and second planar dial segments disposed in partially overlying relation and having contrasting colors, said first dial segment having a diametrically extending slot therein to form a first portion on one side of the slot and a second portion on the other side of the slot, said second segment having a sector shaped excision bounded by a generally radially extending edge, said second segment being disposed in said slot so that a portion of said second segment underlies said first portion and is obscured by said first portion of said first segment and another portion of said second segment overlies said second portion and is visible through said opening so that said edge defines a boundary between said segments, said pointer being opaque and having a circumferential extent of at least about 18° at the widest portion to afford visibility thereof under impaired visual conditions, said edge being of sinusoidal shape having a peak and a valley that are circumferentially spaced from one another by an amount exceeding the circumferential extent of said pointer so as to afford a continuous indication of the position of said pointer relative said segments, at least said second segment being moveable in said housing to permit selective position of said edge.

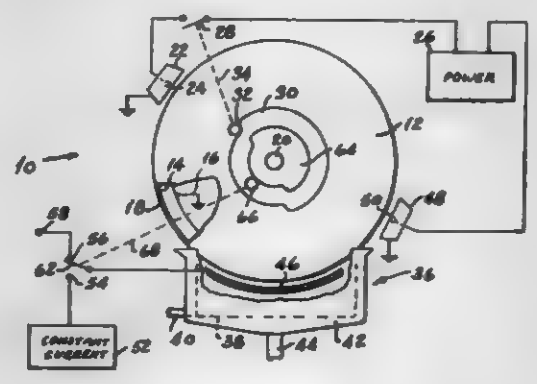
3,981,267
ELECTROPHOTOGRAPHIC LIQUID DEVELOPING SYSTEM

Kenneth W. Gardiner, Menlo Park, and Louis F. Schaefer, Palo Alto, both of Calif., assignors to Savin Business Machines Corporation, Valhalla, N.Y.

Filed May 20, 1975, Ser. No. 579,330

Int. Cl.² G03G *15/10*

U.S. Cl. 118—7 **23 Claims**



1. Apparatus for developing a latent electrostatic image carried by the surface of a photoconductor having a residual potential in background areas of said image including in combination, means for applying developer to said surface at a developing station, a development electrode at said station, a constant current source, and means for connecting said constant current source to said electrode to overcome the effect of said residual potential.

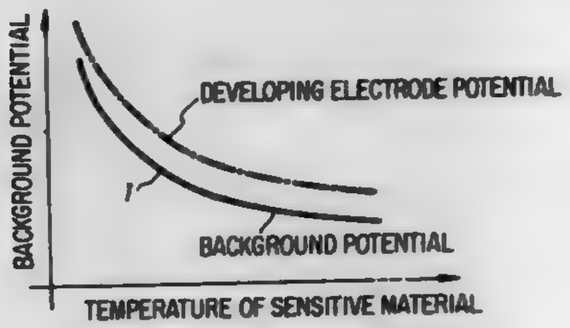
3,981,268
DEVICE FOR CONTROLLING ELECTRIC POTENTIAL APPLIED TO DEVELOPING ELECTRODE IN AN ELECTROPHOTOGRAPHIC DUPLICATOR

Takuzo Tsukamoto; Mitsuharu Nakaguchi; Hidetoshi Kito; Toshio Nagashima; Akihiko Shirata, and Shinichi Tsuda, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed June 11, 1975, Ser. No. 585,780

Int. Cl.² G03G *15/08*

U.S. Cl. 118—8 **4 Claims**



1. A device for use in an electrophotographic duplicator employing a sensitive member comprising a temperature-dependent sensitive material whose static charge characteristic varies with the surface temperature thereof, said sensitive member bearing an electrostatic latent image having an image region and a background region, said device comprising

a developing electrode disposed at the periphery of said sensitive member for effecting uniform development of said image region;

temperature sensitive means disposed in the vicinity of said sensitive member responsive to said surface temperature of the sensitive member for generating a bias potential for said developing electrode, said developing electrode being so controlled by said bias potential that said bias potential is always maintained at a value greater than the value of the potential of said background region even when the temperature at the surface of said sensitive material decreases substantially thereby necessitating a substantial increase in the bias potential

whereby little, if any, toner is deposited on said background region to thereby lessen fogging thereof.

3,981,269
FIXING DEVICE FOR ELECTROPHOTOGRAPHIC DUPLICATING MACHINES

Kenichi Watahiki, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 3, 1975, Ser. No. 546,762

Claims priority, application Japan, Mar. 20, 1974, 49-31159[U]

Int. Cl.² G03G *15/20*

U.S. Cl. 118—60 **4 Claims**

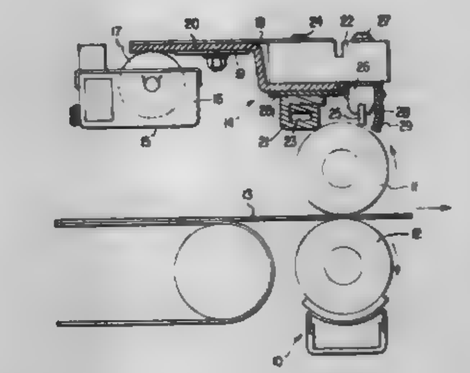
1. A fixing device for use in electrophotographic copying machine, said fixing device comprising

rollers through which is fed a copy medium supporting a toner image, one of said rollers being an image-side heat roller for fixing said toner image to support medium, said one roller having a substantially vertical imaginary plane extending through the axis thereof;

means for rotating said one roller in a predetermined direction;

feed means for applying an offset preventing solution to at least the surface of the image-side heat roller, said feed means being disposed on one side of said plane;

a blade disposed in front of said feed means in the direction of rotation of said one roller and on the side of said plane opposite said one side, said blade wiping viscous material deposited on the surface of said image-side heat roller to



thereby prevent said viscous material from reaching said feed means;

moisture absorbent means disposed in front of said blade in the direction of rotation of said one roller, said moisture absorbent means preventing flow around said image-side roller of viscous material wiped by said blade and being disposed adjacent to and slightly spaced from said image-side roller and having a portion in contact with said feed means.

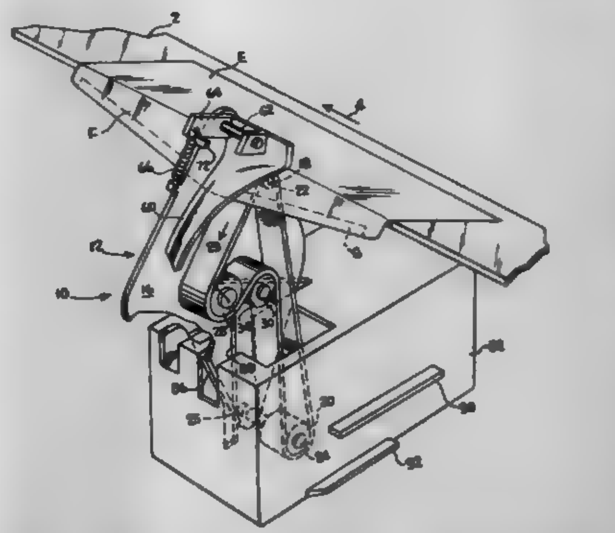
3,981,270
ENDLESS BELT ENVELOPE FLAP MOISTENING SYSTEM

John J. Bogdanski, Stamford, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Mar. 10, 1975, Ser. No. 556,680

Int. Cl.² B05C *1/14*

U.S. Cl. 118—257 **9 Claims**



1. A moistening system for moistening the gummed flaps of envelopes processed in an envelope handling machine such as a postage meter mailing machine comprising:

a liquid reservoir means for containing a supply of liquid;

an endless belt means capable of transferring moisture extending outward from the reservoir means;

a support means for operatively movingly carrying the endless belt means, and

a contoured finger means operatively associated with the support means positioned adjacent to the endless belt means;

the contoured finger means and the endless belt means defining between them, upon insertion of an envelope flap therebetween, an area for receiving the gummed flap of an envelope;

the contoured finger means being so shaped and positioned relative to the endless belt means as to apply pressure against at least a portion of a flap inserted therebetween in such a manner that the gummed edge portion of the envelope flap contacts the endless belt means to receive moisture therefrom.

3,981,271
MAGNETIC BRUSH TYPE DEVELOPER FOR USE IN AN ELECTROPHOTOGRAPHIC MACHINE

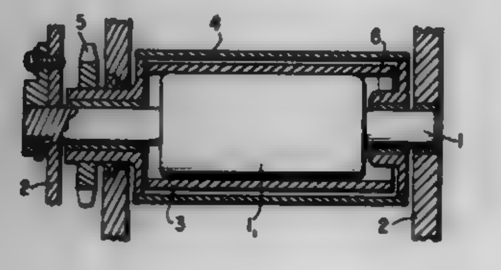
Ryuzo Okada; Toshio Nagashima; Hidetoshi Kito; Takuzo Tsukamoto; Michiharu Nakaguchi, and Kenichi Handa, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 18, 1975, Ser. No. 550,562

Claims priority, application Japan, Feb. 20, 1974, 49-19615[U]

Int. Cl.² G03G *15/09*

U.S. Cl. 118—637 3 Claims



1. A magnetic brush developer for use in electrophotographic copiers or the like, said developer comprising

a magnet support shaft fixedly mounted with respect to said copier;

a hollow, cylindrical magnet fixedly mounted on said support shaft;

a hollow cylinder rotatably, concentrically mounted about said cylindrical magnet, said cylinder having at least one side, said one side including an annular support member for said cylinder where said support member is rotatably mounted on said magnet support shaft and projects inside of said cylindrical magnet to thereby provide a compact arrangement for said developer.

3,981,272
MAG BRUSH HOUSING WITH DETACHABLE SUMP SECTION

Richard E. Smith, Webster, and Augustus W. Griswold, Rush, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 20, 1974, Ser. No. 525,528

Int. Cl.² G03G *13/09*

U.S. Cl. 118—637 12 Claims

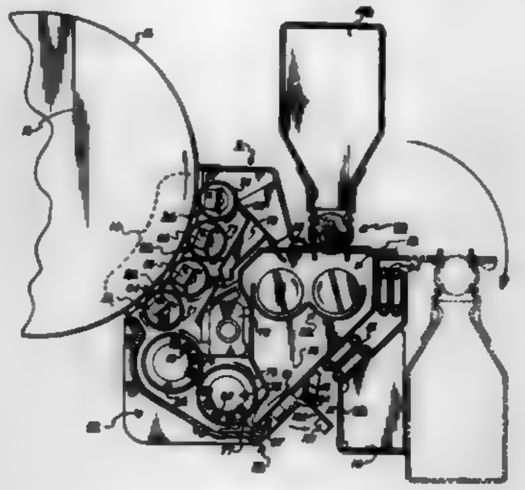
1. A magnetic brush development system for developing latent electrostatic images carried by a substrate; said system having a split housing comprising

a stationary section positioned adjacent said substrate and including at least one development roll spaced a predetermined distance from said substrate for brushing said substrate with developer;

a movable section located outboard of said stationary section, said movable section being mounted for movement relative to said stationary section and including a sump for storing a supply of developer, said sump having a discharge orifice

means for moving said developer along a flow path from said sump, through said orifice to said roll and back to said sump;

a latching mechanism operative in a first position to secure said movable section to said stationary section and operative in a second position to release said movable section from said stationary section; and



a flow gate coupled to said latching mechanism and movable in response to the movement of said mechanism for interrupting the flow of developer from said sump whenever said latching mechanism is in said second position and for permitting said flow when said mechanism is in said first position.

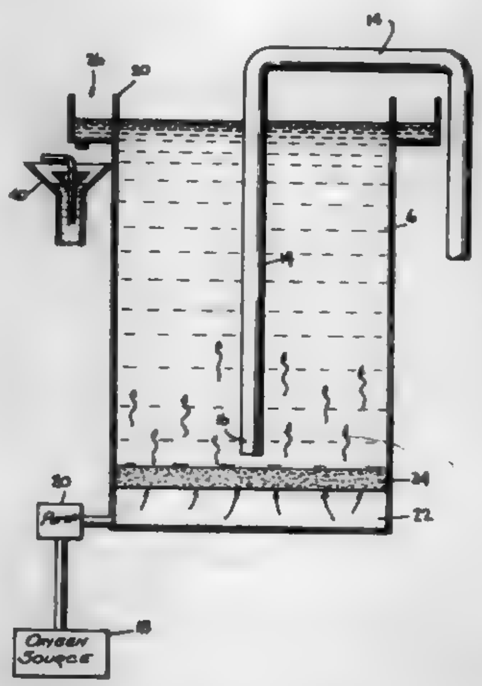
3,981,273
FISH HUSBANDRY SYSTEM

Keen W. Buss, 967 Wall Station, Boalsburg, Pa. 10005

Division of Ser. No. 405,633, Oct. 11, 1973, abandoned, which is a division of Ser. No. 162,910, July 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 16,830, March 5, 1970, abandoned. This application Dec. 20, 1974, Ser. No. 534,923

Int. Cl.² A01K *63/00*

U.S. Cl. 119—3 2 Claims



1. Apparatus for the intensive raising of fish for human consumption in a controlled environment comprising a tank adapted to contain water for the raising of said fish, water supply means for delivering water into said tank adjacent a porous plate positioned above a bottom thereof for distributing incoming water over the same and for conducting water through said tank from bottom to top in a substantially uniform upward direction across the width of said tank at a velocity of at least one foot per minute sufficient to move substantially all solid waste matter in an upward direction to the upper region of said tank, an external peripheral trough adjacent the upper edge of said tank for receiving and discharging the overlow from said tank including said solid waste matter and an aeration means connected with the tank below the porous plate for introducing oxygen into the water being supplied to said tank to maintain the oxygen level in said water at about the saturation level and aid in the upward flow and removal of waste.

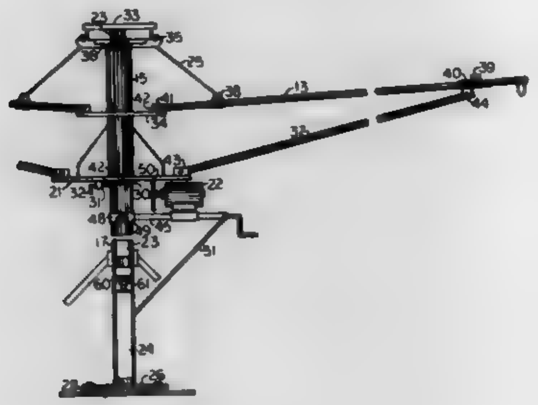
3,981,274
HORSE WALKER HAVING A CONTINUOUSLY VARIABLE TRANSMISSION AND FOLDING BOOMS

Terry W. Curtis, R.R. No. 1, Box 45, Albany, Ill. 61230

Filed July 31, 1975, Ser. No. 600,261

Int. Cl.² A01K *15/00*

U.S. Cl. 119—29 7 Claims



1. A horse walker comprising:

an upright standard,

a driven wheel having a hub rotatively mounted on said standard for rotation of said driven wheel in a horizontal plane, said driven wheel having a horizontal annular surface about said standard, said annular surface having substantial radial width,

a boom,

means for fastening one end of said boom to said hub, said boom extending radially from said hub for rotation therewith,

a motor having a drive wheel with a driving circumferential surface,

means for mounting said motor to position said driving circumferential surface in firm contact with said horizontal annular surface, the direction of the axis of said drive wheel being radial with respect to the hub of said driven wheel,

means for moving at will said motor radially with respect to said hub to move said drive wheel inwardly and outwardly across said horizontal annular surface such that said drive wheel and said driven wheel cooperate to function as a continuously variable transmission between said motor and said boom.

3,981,275
DOG GROOMING TOOL

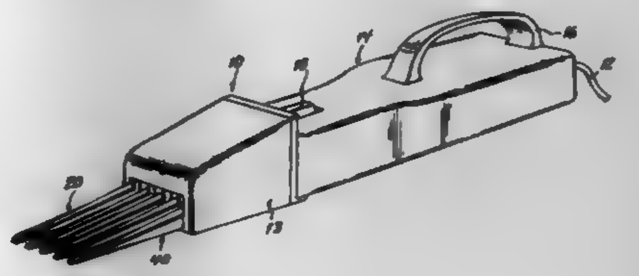
Louis C. Schimoler, 1639 Cedar Swamp Road, Brookville, Glen Head PO, N.Y. 11545

Filed June 20, 1975, Ser. No. 588,622

Int. Cl.² A01K *13/00*

U.S. Cl. 119—83 5 Claims

1. A power operated grooming tool for splitting matted hair in aimals while minimizing the cutting of said hair comprising an elongated housing having a longitudinal axis, a forward portion and a rearward portion; means defining an opening in the forward portion of said housing; an electric motor in said rearward portion connected to a source of power; a reciprocating drive mechanism in said forward portion of said housing connected to said motor; an elongated comb member extending from the forward portion of said housing having a plurality of grooved teeth members, said grooved teeth being adapted to partially enclose and guide a series of reciprocating blades, said blades having cutting edges exposed above the



grooved teeth members, the blades being operatively connected to the drive mechanism in a counter-reciprocating relationship along a common axis in cooperation with the teeth members of the comb.

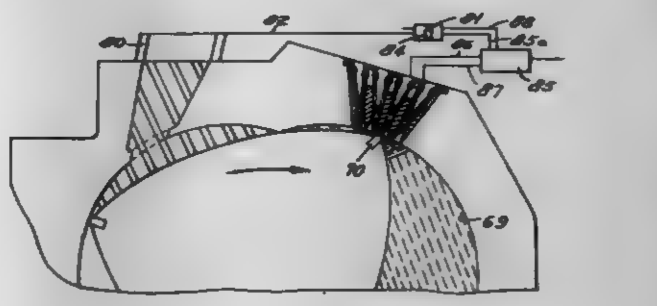
3,981,276
INDUCTION-EXHAUST SYSTEM FOR A ROTARY ENGINE

Robert P. Ernest, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 6, 1974, Ser. No. 476,833

Int. Cl.² F02B *53/00*

U.S. Cl. 123—8.45 14 Claims



1. In a rotary internal combustion engine having variable volume combustion chambers defined by a rotary piston dynamically sealed against a surrounding housing at spaced locations of the rotor, said engine having means for igniting a combustible mixture introduced at one location to each of said chambers and for peripherally exhausting the combustion gas from said chambers, an induction system for said engine, comprising:

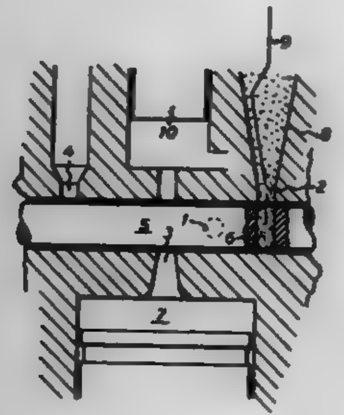
a. a housing having a trochoidally shaped wall with an inlet port in said wall at said one location for admitting a combustible mixture into said chambers, said port having a centerline located at a station of said wall wherein the differential pressure between adjacent chambers will be consistently at about 0, said port having a throat area equal to or less than 1.0 square inch for each 42 cubic inches of engine displacement whereby induction flow velocity is induced at a high level, and

b. means effective to permit flow of said combustible mixture through said port while limiting dilution backflow to less than 2 cubic inches per cycle of said engine, said means being actuated to open or close by a change in direction of greatest fluid pressure forces in said inlet port, said means having a frequency response of at least 120 cycles/second.

3,981,277
SOLID FUEL INJECTION APPARATUSES

Jan Viktor Åbom, Poppelgatan 12, 421 74 Vastra Frolunda, Sweden

Filed Feb. 18, 1975, Ser. No. 550,640
Claims priority, application Sweden, Mar. 4, 1974, 7402810
Int. Cl.² F02B *45/02*
U.S. Cl. 123—23 10 Claims



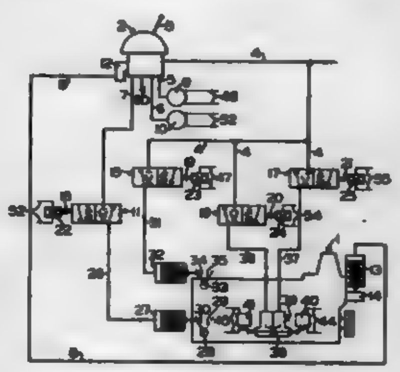
1. An apparatus for injecting pulverulent fuel into the combustion chamber of an internal combustion engine comprising
a fixed connection to the combustion chamber;
a vacuum source having a fixed connection attached thereto;
a fuel supply of fuel powder having a fixed connection attached thereto;
means to apply pressure to said fuel supply having a fixed connection attached thereto;
a fixed connection to ambient air;
sealing means having means to apply said sealing means under pressure;
and movable means cooperating with said sealing means and having a pre-chamber for fuel powder, to connect said pre-chamber during a cycle of the internal combustion engine successively to:
  said fixed connection to said vacuum source,
  said fixed connection to said fuel supply of fuel powder,
  said fixed connection to the combustion chamber and simultaneously with said means to apply pressure to said fuel supply,
  and said fixed connection to ambient air,
while said means to apply said sealing means under pressure applies said sealing means sealingly against said movable means to seal said pre-chamber attachment with each of said fixed connections,
whereby said pre-chamber successively has a vacuum therein from its said connection to said vacuum source, has fuel powder fed therein by the action of the vacuum prevailing therein, has fuel powder injected into said connection to the combustion chamber by the action of pressure placed on the fuel from said connection from said means to apply pressure to said fuel supply, and has lowered pressure by said connection to ambient air.

3,981,278
PROTECTION APPARATUS FOR REMOTELY CONTROLLED SELF-REVERSING MARINE ENGINES

Noboru Harada, Mihara, Japan, assignor to Mitsubishi Heavy Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 399,559, Sept. 21, 1973, abandoned. This application Feb. 6, 1975, Ser. No. 547,452
Int. Cl.² F01L *13/02*
U.S. Cl. 123—41 R 8 Claims

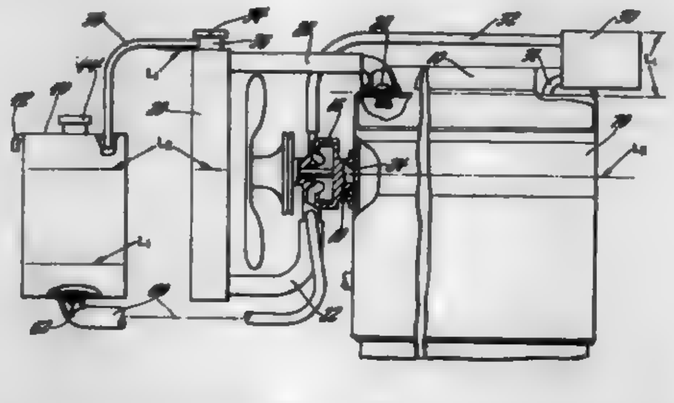
1. Protection apparatus for remotely controlled reversible marine engines for marine vessels including drive means therefor, engine starting means, speed control means, an operator's controller selectively operable to a plurality of forward or reverse positions for effecting forward or reverse travel, engine starting and speed of the vessel according to the controller position selected, and control means operable responsively to operation of said operator's controller to a selected position, said control means including:
  a. first means actuable responsively to operation of said operator's controller from any one of said plurality of forward or reverse positions to a selected opposite position for reversing engine rotation by sequentially shutting down the engine, reducing the rotational speed thereof, and setting the engine for forward or reverse rotation according to the position selected;
  b. second means actuable responsively to actuation of said first means, with said operator's controller remaining in said opposite position, for effecting engine restarting subsequently to reduction of engine speed to less than a certain low rate and setting thereof for the selected direction of rotation;
  c. third means actuable responsively to actuation of said first and second means for effecting engine speed according to the selected opposite position of the operator's controller subsequently to said engine restarting,
and wherein the improvement comprises:
  d. fourth means for delaying said engine restarting and consequent reversal of direction of travel of the vessel until engine speed has reduced to said certain low rate, notwithstanding operation of said operator's controller from one of said forward or reverse positions directly to said opposite position without delay.



3,981,279
INTERNAL COMBUSTION ENGINE SYSTEM

William C. Bubniak, Troy; Edward D. Klomp, Mount Clemens; William R. Matthes, Troy, and Neil A. Schilke, Rochester, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 26, 1975, Ser. No. 608,013
Int. Cl.² F01P *3/20*
U.S. Cl. 123—41.14 2 Claims



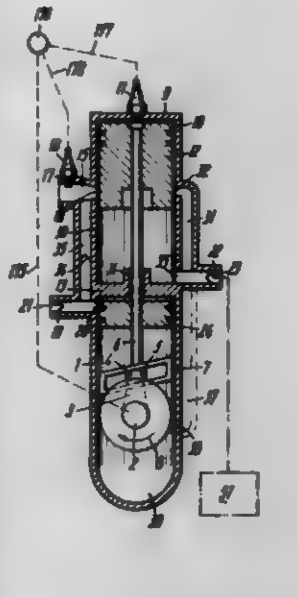
1. An internal combustion engine system characterized by rapid combustion chamber surface temperature increase on cold start comprising in combination:
an internal combustion engine having at least one combustion chamber and liquid coolant passages about said chamber to cool same during normal engine operation;
a heat exchanger connected to receive liquid coolant from and after cooling return the liquid coolant to said liquid coolant passages;
a pump means driven by said engine for circulating liquid coolant through said liquid coolant passages and heat exchanger;
a thermostat control valve means for controlling liquid coolant flow from said liquid coolant passages to said heat exchanger wherein flow is blocked when the engine is cold and flow is permitted at an increasing rate with increasing liquid coolant temperature as engine temperature increases;
a reservoir means having an atmospheric vent;
a pressure regulator means for regulating the pressure of the circulating liquid coolant and delivering the overflow to said reservoir;
a vent valve means for venting said heat exchanger and liquid coolant passages to said reservoir;
said reservoir means also connected to said pump and of size and elevation relative to said heat exchanger and said liquid coolant passages so that liquid coolant can drain thereto to substantially lower the liquid coolant level about said combustion chamber below a normal level;
pressure responsive flow control valve means in the connection between said reservoir and the inlet of said pump operable to open in response to the liquid coolant pressure in said heat exchanger and coolant passages falling below a predetermined value as the result of liquid coolant temperature decrease on engine shut-off and operable to close in response to the liquid coolant pressure rising above said predetermined value because of temperature increase after cold engine start providing means whereby liquid coolant drains to said reservoir to establish a below-normal liquid coolant level about said combustion chamber when the engine is cold and is pumped back into said heat exchanger and liquid coolant passages on cold start to establish the normal liquid coolant level which is thereafter maintained for normal engine cooling;
and orifice means of predetermined size in bypass relationship wth said thermostat control valve for operating when the thermostat control valve is closed on cold engine start to vent said liquid coolant passages at a limited rate to prolong the change from the below-normal to normal liquid coolant level for a predetermined substantial time period during cold start operation providing means whereby normally liquid cooled portions of said combustion chamber are not cooled until a substantial time period after cold start.

3,981,280
TWO-STROKE COMBUSTION ENGINES

Walter Franke, Hittfelder Kirchweg 22, 2105 Seevetal 3, Germany

Filed Feb. 19, 1974, Ser. No. 443,922
Claims priority, application Germany, Feb. 19, 1973, 2308127
Int. Cl.² F02B *1/08*
U.S. Cl. 123—69 R 7 Claims

1. A two-cycle internal combustion engine comprising a working cylinder, a working piston operating within said working cylinder, a combustion chamber defined within said working cylinder on one side of said working piston, a partition wall forming a side of said working cylinder, a first compression chamber defined between the opposite side of said working piston and one side of said partition wall, a piston rod connected with said working piston and extending through said partition wall, a compression piston connected with said piston rod on the side of said partition wall opposite said first compression chamber, a second compression chamber defined between one side of said compression piston and said opposite side of said partition wall, exhaust gas outlet means for exhausting gas from said combustion chamber, first inlet means communicating through a first inlet port with said second compression chamber for supplying air thereto, first valve means between said first inlet means and said first port for enabling air flow toward said second compression chamber but blocking flow in a reverse direction, first conduit means extending in flow communication from a point between said first valve means and said first port to said exhaust gas outlet means for supplying air from within said second compression chamber to said exhaust gas outlet means, second valve means enabling air flow in said first conduit means toward said exhaust gas outlet means, but preventing flow in the reverse direction, second inlet means communicating through a second port with said first compression chamber, third valve means between said second port and said second inlet means for enabling flow toward said first compression chamber but preventing flow in a reverse direction, second conduit means extending in flow communication from a point between said second port and said third valve means to said combustion chamber and air-fuel mixture supply means for supplying a combustible mixture to said second inlet means, with compressed combustible mixture being supplied through operation of said working piston from said first compression chamber to said combustion chamber, and with compressed air being supplied by operation of said compression piston from said second compression chamber to said exhaust gas outlet means.



3,981,281
CAM FOR CONTROLLING VALVES OF AN INTERNAL COMBUSTION ENGINE

Gerhard Deschler; Dieter Wittmann, and Reinhold Trier, all of Nurnberg, Germany, assignors to Maschinenfabrik Augsburg-Nurnberg AG, Nurnberg, Germany

Filed June 20, 1975, Ser. No. 588,968
Claims priority, application Germany, June 20, 1974, 2429708
Int. Cl.² F16H *53/00*
U.S. Cl. 123—90.6 1 Claim

1. For use in connection with a valve, with spring means continuously urging said valve into its closing position, and with a tappet having a flat bottom for opening said valve against the thrust of said spring means, a rotatable cam operable to be accelerated and decelerated, in which the acceleration and deceleration phases are divided into a total of five phase I to V, and in which the acceleration phases I and V of the opening and closing flank are determined by a Fourier series of third order by the following equation:

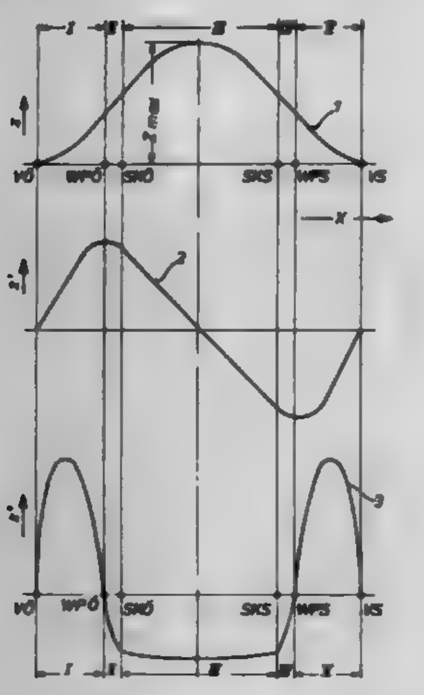
$$z_j\alpha = a_j\,.\sin\alpha + a_j\,.\sin 2\alpha + a_{j3}.\sin 3\alpha$$

where j indicates the relevant phase I or V, the values a_j to a_j are selected according to the specified conditions, and α represents a function of the cam angle x, and in which phase II following the opening flank is characterized by the equation:

$$z_{II} = a_4.\sin[\sqrt{0.5}(x-WP\ddot{O})]-SK(x-WP\ddot{O})+z_{A\ II}$$

and together with the phase IV of the deceleration phase before the closing flank bring about an axially constant increase in the lubrication number curve, said phase IV being characterized by the equation:

$$z_{IV} = a_7 .\sin[\sqrt{0.5}(x-SKS)]+a_8.\cos[\sqrt{0.5}(x-SKS)]+SK(x-SKS)+z_{A\ IV}$$



The values a and z_A resulting from the continuity of the lift curve z and the first and second derivation z', z'' with respect to the cam angle x, WPO being the reversal point at the cam lift on the opening side, SK representing the ascent value and SKS the start of the constant drop in the lubrication number at the closing side, and in which in phase III in the range of highest deceleration a constant lubrication number is attained which is determined by the correlation to the cam lift

$$z_{III}=a_5.\sin[\quad 0.5(x-SKO)]+a_6.\cos[\quad 0.5(x-SKO)]+Smax+RG,$$

SKO being the end of the constant cam rise, $Smax$ representing the maximum lubrication number value, and RG representing the cam base circle radius.

3,981,282
IGNITION SYSTEMS AND FUEL INJECTION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

Eric Harold Ford, London, England, assignor to Lumenition Limited, England

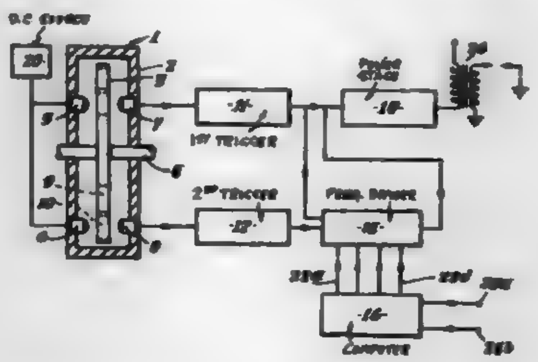
Filed Jan. 8, 1973, Ser. No. 321,660

Claims priority, application United Kingdom, Jan. 18, 1972, 2311/72

Int. Cl. F02p *5/04, 1/00*

U.S. Cl. 123—117 R **10 Claims**

1. An electronic device for controlling the advance and retard of the ignition timing of an internal combustion engine in accordance with engine requirements, including means for generating a first series of square-wave voltage pulses in synchronism with the engine revolutions to provide a series of alternate first and second voltage levels; means for generating a second series of square-wave voltage pulses also in synchronism with the engine revolutions and at a fixed multiple of the first series of square-wave voltage pulses, so that the frequency of the second series of voltage pulses is greatly in excess of the frequency of the first series of voltage pulses; means for counting a number of the second series of voltage pulses from a predetermined point in relation to the first series of voltage pulses, the number of said pulses counted depending on the engine requirements; means for producing an output at the first voltage level from said counting means after said count has been completed; means for detecting the presence of both an output at the first voltage level from the first pulse generating means, and an output at the first level from the counting means in order to initiate the production of a spark for the combustion of the fuel; and means for continuously varying the count of the counting means, so as to advance and retard the ignition timing in accordance with the requirements of the engine.



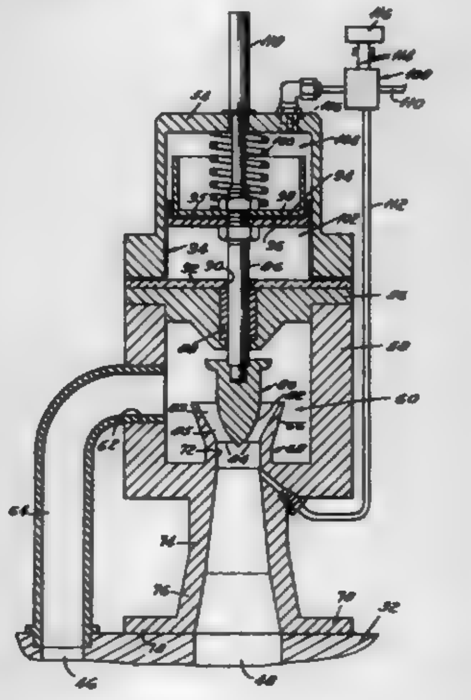
3,981,283
ENGINE EXHAUST GAS RECIRCULATING CONTROL

Warren F. Kaufman, Santa Ana, Calif., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sept. 3, 1974, Ser. No. 502,523

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **7 Claims**



1. An exhaust gas recirculating flow metering control for an internal combustion engine having a duct connecting engine exhaust gases to the engine intake manifold, the control including a movable valve means associated with the duct and postioned to normally close the duct to prevent recirculation of the exhaust gases and movable to open positions to permit variable recirculation of the gases, and spring means biasing the valve means towards a duct closing position, the valve means including sonic flow metering means which in each open position of the valve means maintains flow past the valve means at a constant rate independent of the pressure variation in the duct downstream of the valve means, and actuator means connected to the valve means and movable in response to predetermined conditions of operation of the engine to move the valve means to a different open piston to change the rate of flow of exhaust gases into the intake manifold, the valve means including a sonic flow nozzle having a contoured pintle mounted therein, means mounting the nozzle and pintle for a relative axial movement therebetween the closed and open pistons of the valve means, the nozzle and pintle being so constructed and arranged as to define in the open positions of the valve means first a converging flow area between the nozzle and pintle followed by a gradually diverging flow area between the nozzle and pintle progressively expanding the flow gradually into the duct downstream of the nozzle and pintle to minimize flow losses and maintain sonic flow in the nozzle, the relative movement between the nozzle and pintle providing varying converging-diverging annular flow areas between the nozzle and pintle, the nozzle and pintle being so contoured and proportioned as to impart sonic velocity to the flow through the nozzle over essentially the entire operating range of the engine manifold vacuum.

3,981,284
CARBURETOR

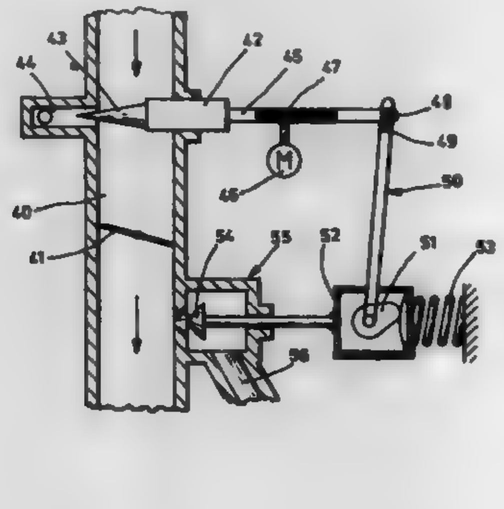
Reinhard Gospodar, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

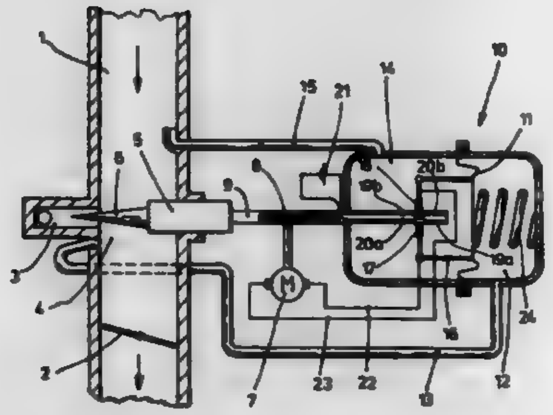
Filed Nov. 15, 1974, Ser. No. 524,256

Claims priority, application Germany, Nov. 17, 1973, 2357465

Int. Cl.² F02M *9/06*

U.S. Cl. 123—119 A **10 Claims**





1. In a carburetor for an internal combustion engine comprising an intake channel for the passage of air, a throttle valve arranged in said intake channel, nozzle means having an exit aperture into said intake channel for discharging fuel into said intake channel upstream of said throttle valve, and a piston valve arranged to move linearly across said intake channel, upstream of said throttle valve, and in a direction substantially transverse to the longitudinal axis of said intake channel thereby to vary the cross-sectional area of said intake channel at the region of air-fuel mixture, said piston valve having a tapered nozzle needle projecting into said exit aperture of said fuel nozzle means; the improvement comprising servo motor drive means for positioning said piston valve in said intake channel, and means for controlling said drive means in dependence upon the difference between the total pressure in said intake channel and the static pressure in said mixture region of said intake channel.

3,981,285
FUEL CONTROL SYSTEM FOR SUPERCHARGED, FUEL INJECTED INTERNAL COMBUSTION ENGINES

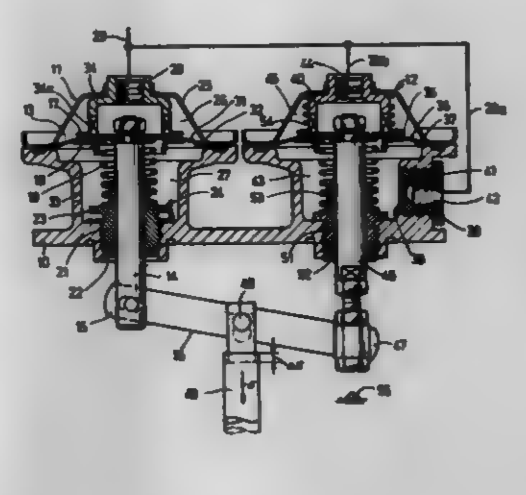
Peter Schueler, Asperg; Detlev Runge, and Heinz Kuschmierz, both of Gerlingen, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Continuation of Ser. No. 388,935, Aug. 16, 1973, abandoned. This application June 19, 1975, Ser. No. 588,132

Claims priority, application Germany, Aug. 19, 1972, 2240947

Int. Cl.² F02B *33/00*

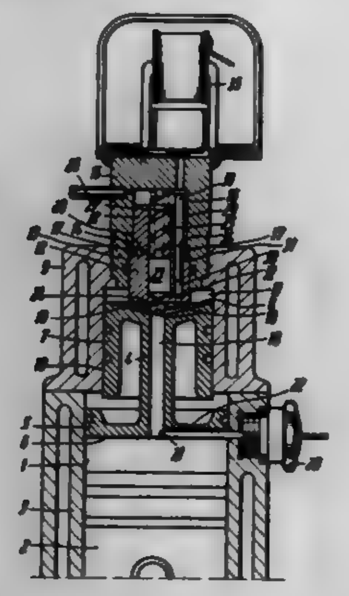
U.S. Cl. 123—119 C **16 Claims**



1. In a fuel control system for supercharged, fuel injected internal combustion engines employing exhaust gas turbochargers, comprising: a turbo-charged intake manifold pressure actuated first movable partition means; a setting member; and means connecting the setting member to said first partition means, said setting member being actuated by the motion of said first movable partition means and said means connecting the setting member to said first partition means for displacing said setting member in the direction of an increasing fuel supply quantity during a period of increasing turbo-charged intake manifold pressure, the improvement comprising: a supplementary pneumatic control unit having delayed feedback characteristics and including a second movable partition means, air line means positioned between the intake manifold and one side of said first movable partition means and further line means connected to one side of said second movable partition means for supplying a pneumatic control medium thereto, means for connecting said second partition means to said setting member, and both the one side of the first and the one side of the second partition means are pressure actuated by the fuel intake manifold pressure, i.e., the pneumatic control medium pressure, in the same working direction when viewing the movement of the setting member, a delay member connected to said control unit through which said control medium is supplied to the other side of said second movable partition means, by means of said control unit the position of said setting member is made to be additionally changeable, said second movable partition means being acted on by a differential pressure of the pneumatic control medium delivered through said connecting line means to the one side of said second movable partition means and through said delay member to the other side of said second movable partition means, where said pressure is a measure of the engine acceleration, whereby during periods of increasing pressure of the control medium, said second partition means and said means for connecting said second partition means to said setting member supplementarily displaces said setting member beyond the position set by said first movable partition means and in the direction of an increasing fuel supply quantity, and counter pressure means comprising said delay member for producing, during constant speed operation, a reversal of the supplementary displacement of said setting member to a zero value by the effect of an increasing counter pressure exerted by the control medium.

3,981,286
METHOD AND APPARATUS FOR FORMING AND BURNING A FUEL-AIR-MIXTURE IN AN AIR-COMPRESSING PISTON INTERNAL COMBUSTION ENGINE

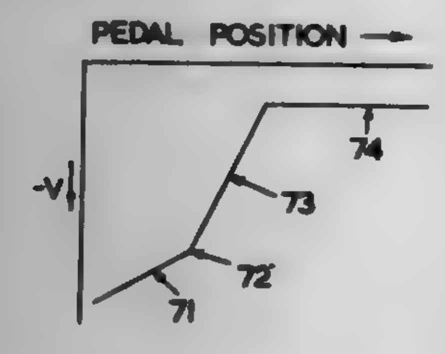
Werner Erik Siemens, Parkallee, 28 Bremen 1, Germany
Filed Feb. 3, 1975, Ser. No. 546,789
Claims priority, application Germany, Feb. 1, 1974, 2404491
Int. Cl.² F02M *49/02*
U.S. Cl. 123—139 AJ **11 Claims**



1. A method for forming and burning a fuel-air-mixture in an air compressing piston internal combustion engine comprising the steps of tapping off at least a portion of the air compressed in the combustion space of the working cylinder, passing the tapped off portion of air into a chamber which is in communication with the combustion space, injecting a measured amount of fuel through an injection nozzle into a fraction of said portion of air during its recirculation into the combustion space, accelerating said fraction of air and the injected quantity of fuel together towards the combustion space, conveying the thus formed mixture into the air present in the combustion space during combustion, adjusting the quantity of fuel injected, and adjusting the amount of said air fraction proportional to said quantity of injected fuel.

3,981,287
FUEL SYSTEMS FOR ENGINES

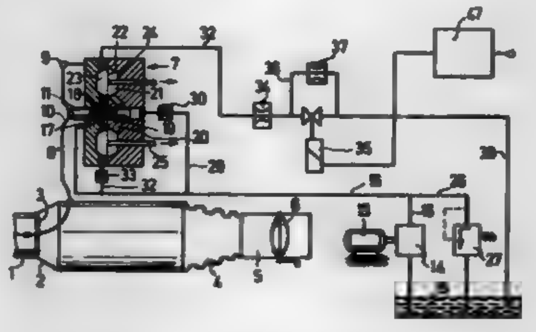
Malcolm Williams, Solihull; Richard William Crookes, Shirley, and Christopher Robin Jones, Alcester, all of England, assignors to C.A.V. Limited, Birmingham, England
Continuation of Ser. No. 446,540, Feb. 27, 1974, abandoned. This application Mar. 13, 1975, Ser. No. 558,060
Claims priority, application United Kingdom, Mar. 2, 1973, 10343/73
Int. Cl.² F02B *3/00;* **F02M** *39/00*
U.S. Cl. 123—139 E **6 Claims**



1. A fuel system for an engine, comprising in combination a pump supplying fuel to the engine, pump control means including a pedal for determining the output of the pump, a first summing amplifier to which are fed signals representing the demanded and actual values of pump output, said demanded value signal being proportional to the position of said pedal, together with a signal representing engine speed, the first summing amplifier comparing the signals it receives and producing an output controlling the pump control means, a second summing amplifier to which are fed electrical signals representing engine speed and a reference, and a discriminator coupling the first and second summing amplifiers to the pump control means, the output from the discriminator at any instant being the output from the summing amplifier demanding the least fuel, so that the second summing amplifier limits the engine speed, and in which the first summing amplifier limits the pump output, and in which the speed signal is fed to the first amplifier indirectly by modifying the output of a transducer measuring demanded pump output, and in which the transducer measuring demanded pump output includes an operator controlled member and associated circuit means for producing a d.c. voltage, and further including a first transistor for receiving said d.c. voltage so that the first transistor conducts increasingly with increasing demand, the first transistor being coupled to a second transistor the conduction of which decreases with increasing demand so as to provide an input to the first summing amplifier, the conduction of the second transistor being modified by said electrical signal representing engine speed.

3,981,288
APPARATUS FOR REDUCING THE TOXIC COMPONENTS IN THE EXHAUST GAS OF INTERNAL COMBUSTION ENGINES

Wolf Wessel, Schwieberdingen, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed Apr. 28, 1975, Ser. No. 572,286
Claims priority, application Germany, May 13, 1974, 2423111
Int. Cl.² F02M *1/04;* **F01N** *3/00*
U.S. Cl. 123—139 AW **7 Claims**



1. In an apparatus for reducing the concentration of toxic components in the exhaust has of an internal combustion engine, which engine includes a fuel supply system, a fuel metering system and a control pressure circuit for controlling said fuel metering system, said control pressure circuit including an electromagnetic valve which controls a fuel bypass, said apparatus further including a regulating device which accepts control information signals from sensors monitoring the value of engine parameters and which cyclically actuates and controls said electromagnetic valve to intermittently actuate the fluid bypass, the improvement comprising the regulating device for controlling the electromagnetic valve including:

an electric signal generator, having an output connection and generating sawtooth signals of constant frequency and amplitude;

summing amplifier means, having an inverting and a non-inverting input connection and an output connection;

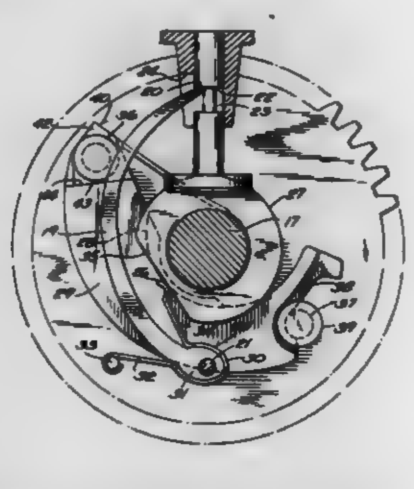
first resistive means, connected to the output of said electric signal generator and connected to receive said control information signals from said sensors, and to effect electrical superposition of said sawtooth signals and said control information signals and further connected to said inverting input of said summing amplifier;

second resistive means, including too resistors connected as a voltage divider circuit and providing a predetermined voltage to said non-inverting input of said summing amplifier;

whereby signals appearing at said output of said summing amplifier mediately affect the energization timing of said electromagnetic valve, thereby changing the mass ratio of the fuel-air mixture supplied to said internal combustion engine.

3,981,289
AUTOMATIC COMPRESSION RELIEF MECHANISM FOR INTERNAL COMBUSTION ENGINES

Joseph R. Harkness, Germantown, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.
Filed Mar. 14, 1975, Ser. No. 558,251
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976
Int. Cl.² F01L *13/08*
U.S. Cl. 123—182 **9 Claims**



1. In an internal combustion engine having a valve which controls flow of gas through a port communicable with the engine combustion chamber, and valve actuating means by which the valve is moved axially between its seat and an open position, and wherein said valve actuating means comprises a valve spring biasing the valve for closing motion towards its seat, a camshaft rotatable in timed relation to the engine cycle, and means comprising an axially movable part connected with the valve and a cam constrained to rotate with the camshaft for cyclically moving the valve in the opening direction, automatic compression relief mechanism whereby the valve is prevented from getting nearer to its seat than a predetermined small distance therefrom at engine cranking speeds but is permitted to engage its seat normally at engine running speeds, said mechanism comprising:

A. a latch member;

B. mounting means confining the latch member to motion substantially transverse to the direction of movement of said part, between defined latching and inoperative positions;

C. cooperating abutment means on the latch member and on said part, engageable when the latch member is in its latching position to restrain the valve against movement through said distance to its seat, said abutment means cooperating with the valve spring and the mounting means to confine the latch member against movement out of its latching position whenever the valve actuating means tends to dispose the valve at less than said distance from its seat;

D. a cam follower movable between defined latch enabling and latch disabling positions;

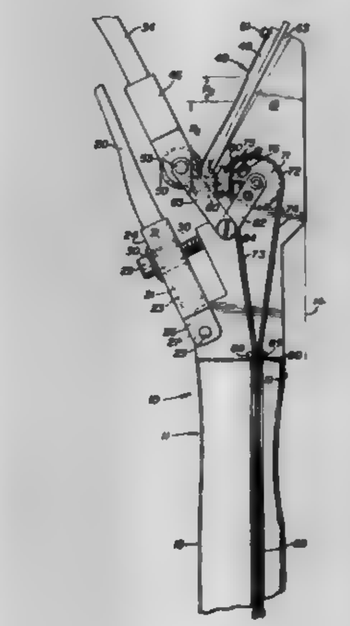
E. means providing a resilient lost motion connection between the cam follower and the latch member whereby movement of the cam follower from its latch enabling position to its latch disabling position biases the latch member away from its latching position and motion of the cam follower from its latch disabling position to its latch enabling position biases the latch member away from its inoperative position; and

F. cam means cooperable with the cam follower to dispose the same in its latch enabling position only when the engine is at cranking speeds, and then only during a minor portion of the engine cycle that begins during closing motion of the valve and at a time when the valve is more than said distance from its seat, and to dispose the cam follower in its latch disabling position at all other times, said cam means comprising

   1. a first cam element constrained to rotate with the camshaft and which is arranged to engage the cam follower through all but said minor portion of every engine cycle, and
   2. a centrifugally responsive second cam element which is complementary to the first cam element and which is carried by the camshaft for rotation therewith and for motion relative thereto between a pair of defined positions, towards one of which it is biased and towards the other of which it is centrifugally propelled, said second cam element being arranged to engage the cam follower during said minor portion of the engine cycle, but only when said second cam element is in one of its said positions.

3,981,290
COMPOUND BOW

John J. Islas, Canastota, N.Y., assignor to Victor Comptometer Corporation, Chicago, Ill.
Filed Mar. 21, 1975, Ser. No. 560,581
Int. Cl.² F41B *5/00*
U.S. Cl. 124—24 R **14 Claims**

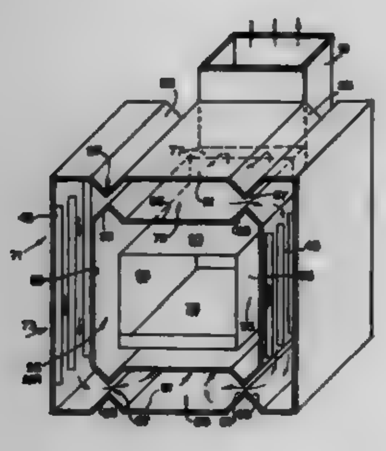


10. An archery bow comprising: a riser adapted to be grasped by an archer and having opposite, upper and lower portions; fulcrum means secured to said upper and lower portions of said riser; an elongate spring member mounted in cantilevered fashion from each said opposite portion of said riser; an upper and a lower limb element, each having an inboard end portion, a medial portion and an outboard end portion; a bow string extending between the outboard end portions of said limb elements; follower means presented from the inboard end portions of said upper and lower limb elements having a translational engagement with the fulcrum means presented from the corresponding upper and lower portions of said riser for supporting each limb element when pivoted during a cocking action; the medial portion of each said upper and lower limb elements engaging corresponding elongate spring members to cock the latter in response to the application of the drawing force to said bow string whereby

the inboard end portion, the medial portion and the outboard end portion of said limb elements are interconnected with the remainder of said bow such that the limb elements each function as a second degree lever arm.

3,981,291
HEAT TRANSFER AND CONDITIONING UNIT

Robert J. Smith, 4511 E. Snover, Silverwood, Mich. 48780
Filed May 27, 1975, Ser. No. 581,201
Int. Cl.^{2} F24H *3/10*
U.S. Cl. 126—110 R **3 Claims**



1. A heat transfer and conditioning unit comprising a hollow casing having inner and outer walls defining exhaust passages for the conduction of products of combustion, and including at the top thereof, an exhaust inlet chamber;

and at the bottom thereof, an exhaust outlet chamber adapted for connection to a flue to atmosphere;

a hollow fire chamber spaced concentrically within said casing, and having an exhaust outlet at the top thereof communicating with said exhaust inlet; whereby, the products of combustion due to natural or other draft, pass laterally outward from said exhaust inlet chamber into said casing and along the opposite sides thereof for inward direction to said exhaust chamber;

the wall of said fire chamber as spaced from the inner wall of said casing defining a transverse fresh or ambient air passage through said casing for the transfer of heat from said walls to the air passing therethrough;

the top and bottom walls of said casing being defined by parallel spaced laterally elongated plates;

opposed inwardly directed V-formed plates at the ends of said parallel plates and connected thereto, to define in said exhaust conduits along the length thereof a series of longitudinally spaced laterally elongated venturi passages, said venturi passages effectively slowing down movement of the products of combustion through said exhaust conduits to said flue, so that increased quantities of heat are transferred to the walls thereof.

3,981,292
HEATER

Wilbur E. Lilly, and David A. Rogers, both of Mount Gilead, Ohio, assignors to Lilly Industries, Inc., Mount Gilead, Ohio
Filed July 24, 1975, Ser. No. 598,720
Int. Cl.^{2} F24B *1/26*
U.S. Cl. 126—121 **10 Claims**

1. A heater including a front, two side walls and a rear wall joined together to form a fire box,

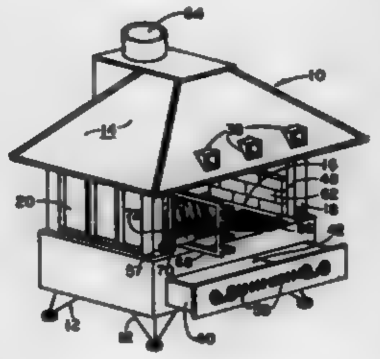
the front including a first opening for allowing the deposition of combustible material on a grate, said grate comprising a plurality of U-shaped metallic bars aligned parallel to each other and joined at their ends to straight bars extending perpendicular to said U-shaped bars, said U-shaped bars having been deformed downwardly between said straight bars to thereby define a generally wide U-shape,

means forming a rectangular horizontal opening within said fire box below the first opening in the front, the grate being supported in said opening by said straight bars resting on the means forming the rectangular horizontal opening,

a second opening in the front below the first opening, an ash pan extending through the second opening below the grate to catch falling ashes,

damper means for admitting air below the grate,

the rear wall including a vertically extending exterior panel spaced from an interior surface, said interior surface comprising three planer panels, the upper and lower of the three panels extending parallel with said exterior panel, the middle panel extending forwardly and upwardly to fill the space between the upper and lower panels,



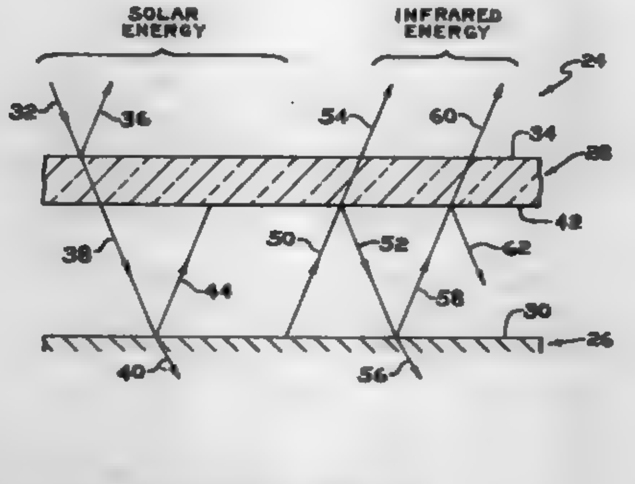
a top attached to the top surfaces of the front, the side walls, and the exterior panel, said top extending outward and below said top surfaces, and a flue opening through the top wherein a plane including said exterior panel passes through said flue opening,

a plurality of hot air ducts extending in fluid communication through both the front and said portion of said top outward of said front from the space between the interior surface and the exterior panel of the rear wall to provide freer flow of hot air to the area to be heated and

air blower means mounted on said exterior panel for moving air from outside the fire box through an aperture in the exterior panel into the space between the interior surface and the exterior panel where it may be heated and conducted through the ducts to heat the area forward of the front.

3,981,293
SOLAR HEAT COLLECTOR

Frank Howard Gillery, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Mar. 13, 1974, Ser. No. 450,702
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—271 **11 Claims**



1. A solar heat collector, comprising:

a solar and infrared energy absorber;

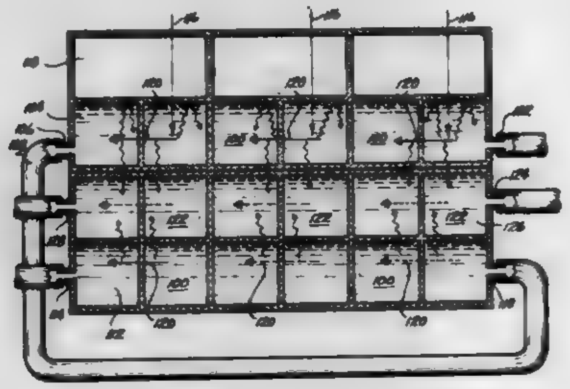
a cover plate capable of passing solar energy;

a coating on said cover plate to provide said cover plate with a transmittance coefficient (*t*) for solar radiation and a reflectance coefficient (*r*) for infrared energy in a wavelength range of about 2 to 15 microns wherein the product of (*r*) and (*t*) is greater than about 0.45 and wherein said coating is indium oxide, tin oxide or a mixture of tin oxide and indium oxide; and

means for mounting said cover plate in spaced relation to said absorber.

3,981,294
ALL GLASS COMPOSITE BUILDING PANELS

Czeslaw Deminet, Kent, and Roger B. Gillette, Auburn, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Continuation-in-part of Ser. No. 416,539, Nov. 16, 1973, abandoned. This application Oct. 7, 1974, Ser. No. 512,745
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—271 **2 Claims**



1. An all glass building panel having a first enclosed space layer and a second enclosed space layer wherein:

a. the portion of said all glass building panel containing said first enclosed space layer comprises contiguous evacuated cells being comprised of;

a first outer glass plate,

first external glass walls fused to said first outer glass plate, one edge of said first external glass walls being fused to the circumferal edge of said first outer glass plate, said first external glass walls forming the closed external boundaries of said first enclosed space layer,

first internal glass walls fused to said first outer glass plate, one edge of said first internal glass walls being fused to said first outer glass plate within the boundaries of said first external glass walls to define the internal structure of said first enclosed space layer, and

a middle glass plate fused along its circumferal edge to the edge of said first external glass walls opposite the edge of said first external glass walls fused to said first outer glass plate and fused to the edge of said first internal glass walls opposite the edge of said first internal glass walls fused to said first outer glass plate; and,

b. the portion of said all glass building panel containing said second enclosed space layer comprises a serpentine path for liquid flow therethrough, said serpentine path having integral means for ingress and egress of liquid thereto and therefrom, said serpentine path having a membrane disposed therein for absorbing solar energy and transmitting said absorbed solar energy to the liquid disposed therein, said second enclosed space layer being comprised of;

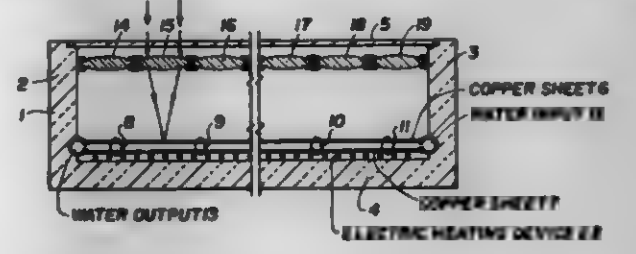
second external glass walls fused to said middle glass plate, one edge of said second external glass walls being fused to the circumferal edge of said middle glass plate, said second external glass walls forming the closed external boundaries of said second enclosed space layer,

second internal glass walls fused to said middle glass plate, one edge of said second internal glass walls being fused to said middle glass plate within the boundaries of said second internal glass walls to define the internal structure of said second enclosed space layer, and

a second outer glass plate fused along its circumferal edge to the edge of said second external glass walls opposite the edge of said second external glass walls fused to said middle glass plate and fused to the edge of said second internal glass walls opposite the edge of said second internal glass walls fused to said middle glass plate.

3,981,295
SOLAR HEATING SYSTEM

Jim N. Minnick, Kamiah, Idaho, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed July 15, 1975, Ser. No. 596,301
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—271 **3 Claims**



1. A solar heating system, comprising

at least one heating unit comprising an insulated housing having a plurality of sides, a bottom and a transparent top, a pair of copper sheets at the bottom of the housing, a plurality of spacers between the copper sheets maintaining said sheets in spaced substantially parallel relation less than half an inch from each other, water input means for supplying cold water to the space between the copper sheets, water output means for withdrawing heated water from the space between the copper sheets, and lens means in the housing at the top thereof for magnifying and concentrating the rays of the sun on the copper sheets to heat the water between said sheets;

electric heating means directly beneath the copper sheets in the housing for heating the water between the copper sheets;

a source of electrical energy;

photosensitive switch means; and

circuit means electrically connecting the heating means, the source of electrical energy and the switch means in circuit in a manner whereby the water is heated by the heating means under the control of the switch means when the sunlight is beneath a predetermined brightness level.

3,981,296
SNOW LIQUIFYING APPARATUS

Palemon T. Medina, 5420 Lindberg St., Saginaw, Mich. 48603
Filed Sept. 27, 1973, Ser. No. 401,354
Int. Cl.^{2} F24H *1/00*
U.S. Cl. 126—343.5 R **1 Claim**

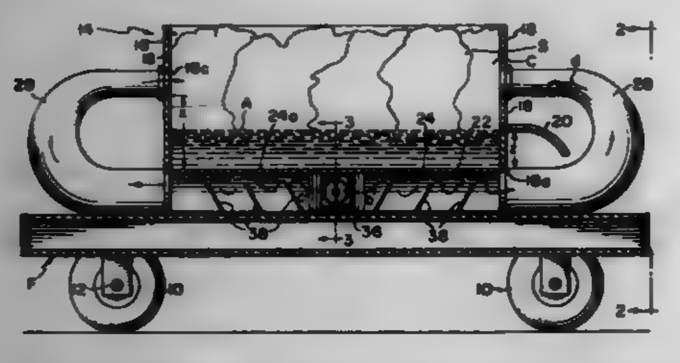
1. Apparatus for liquifying snow comprising:

a snow receiving hopper having opposed, downwardly converging sidewalls and opposed end walls spanning said side walls, said side walls and end walls defining a snow receiving chamber for receiving snow to be liquified, said chamber having an open bottom, said end walls each having an opening therethrough;

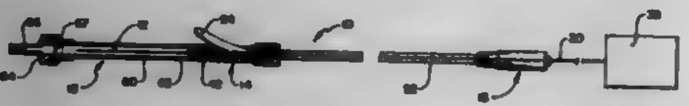
a heat transfer manifold for introducing snow liquifying, heated fluid into the chamber to liquify snow in the chamber;

said manifold comprising an annular hollow duct having a duct portion underlying said hopper and closing said bottom, said duct also having a pair of 180° loop sections

provided with terminal ends communicating with said openings in said end walls to communicate heated fluid to said chamber;
said duct portion underlying said hopper includes upper and lower walls, said upper walls closing said open bottom, and a plurality of vertically inclined baffles mounted on said lower wall terminating a predetermined distance from said upper wall for deflecting said heated medium toward said upper wall to heat and melt snow within said chamber; and
liquid outlet means in one of said end walls a predetermined distance above said duct portion for permitting the escape of the liquified snow after a predetermined amount of liquified snow is permitted to collect on said duct portion, said terminal ends extending through said end walls at a level above said liquid outlet means.



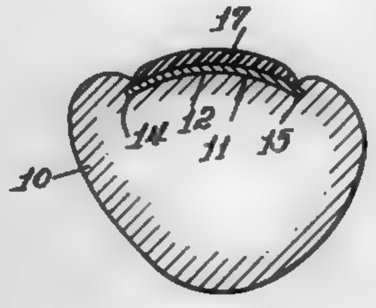
3,981,297
GAS SAMPLING CATHETER ASSEMBLY AND METHOD
Karl L. Dunn, Salt Lake City, and Gordon S. Reynolds, Bountiful, both of Utah, assignors to Sorenson Research Co., Inc., Salt Lake City, Utah
Filed Mar. 3, 1975, Ser. No. 555,007
Int. Cl.^{2} A61B *5/00*
U.S. Cl. 128—2 G 12 Claims



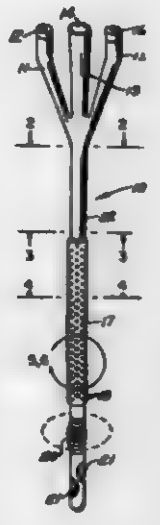
1. A catheter for sampling gases in vivo comprising:
a hollow generally flexible gas-impermeable tube having a leading end at least a portion of which is adapted to be inserted into the body of a patient;
a gas-permeable membrane traversing the entire length of the insertable portion of the tube;
means at the leading end of the tube for communicating the hollow of the tube and the inside of the gas-permeable membrane; and
a gas-impervious barrier means circumscribing the tube between the tube and membrane behind the communicating means to prevent gas transfer to the leading end from membrane behind the barrier.

3,981,298
METHOD OF TREATING INGROWN NAIL
Philip G. Viranda, 71 S. LaVista Blvd., Battle Creek, Mich. 49017
Filed July 23, 1973, Ser. No. 381,603
Int. Cl.^{2} A61F *5/00*
U.S. Cl. 128—81 R 10 Claims

1. A method for treating an ingrown nail condition which comprises applying a coating consisting essentially of a hardenable substantially liquid material having adhesive properties with respect to the surface of the nail over a rearwardly disposed limited area substantially across the entire width of the nail and at an area having a substantially normal radius of curvature, permitting said material to harden and to become affixed to the surface of the nail to form a support, and permitting the hardened material to remain on said nail until it has progressed forwardly to a position at the forward end of said nail and has substantially increased the radius of curvature at the forward end of the nail, and removing said hardened material, the thickness of said coating being sufficient to retain substantially the curvature of the coated portion of said nail as it grows to the end of the toe and is eventually removed.

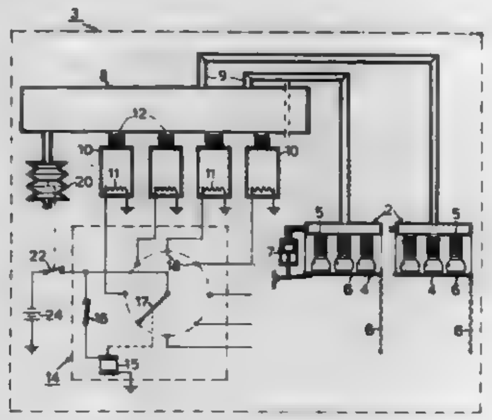


3,981,299
URETHRAL CATHETER
Harry Elmer Murray, 412 E. Pierce, Kirksville, Mo. 63501
Filed Mar. 15, 1971, Ser. No. 603,371
Int. Cl.^{2} A61M *25/00*
U.S. Cl. 128—349 B 2 Claims



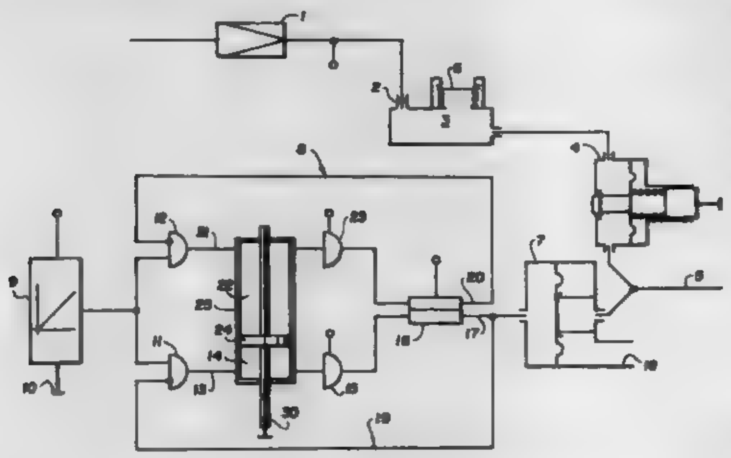
1. A urethral catheter comprising an elongated body portion having drainage openings near one end thereof and a drainage tube extension at its opposite end, an inflatable element on said body portion in spaced relation to said drainage openings, a coacting inflation means for said inflatable element on the body portion near said opposite end, a porous thin flexible outer membrane sleeve on and surrounding the body portion over a substantial portion of its length and spaced from said inflatable element and having opposite end portions joined to said body portion, said thin membrane sleeve tending to collapse against the exterior of the body portion due to confining pressure when the catheter is inserted into a body cavity, a multiplicity of spaced relatively small uniform height and substantially equally sized fixed projections on the exterior of the body portion and lying beneath the membrane sleeve and serving to maintain the latter spaced from the exterior of the body portion over substantially the full area of the sleeve and preventing collapse of the membrane sleeve inwardly against the body portion, and fluid conduit means on the body portion near said opposite end and communicating with the interior of the membrane sleeve, whereby fluids may be introduced into the membrane sleeve for treatment of the urethral canal while the catheter is implanted therein.

3,981,300
OXYGEN SUPPLY SYSTEMS FOR AIRCRAFT
Irving Williams, 4 Harav Uziel St., Tel Aviv, Israel
Filed Jan. 22, 1975, Ser. No. 543,072
Int. Cl.^{2} A62B *7/08*
U.S. Cl. 128—142 R 5 Claims



1. A system for supplying oxygen to oxygen masks in an aircraft cabin, comprising: a plurality of chemical oxygen generators each of the type actuated by an igniter and each including igniter means which, when energized, causes its chemical oxygen generator to generate oxygen; sequencer means connected to said igniter means for energizing same in sequence; a plurality of oxygen masks within said aircraft cabin; an oxygen distribution system distributing the oxygen from said chemical oxygen generators to said oxygen masks in the aircraft cabin; said distribution system including a common chamber, a conduit from each of said chemical oxygen generators to said common chamber, and a conduit from each oxygen mask to said common chamber; and pressure sensing means disposed to sense the pressure in a predetermined part of said oxygen distribution system and controlling said sequencer means to energize said igniter means of said chemical oxygen generators in sequence in response to the pressure sensed in said part of the distribution system.

3,981,301
PNEUMATICALLY CONTROLLED RESPIRATION DEVICE
Detlef Warnow, and Hans-Jörg Ziebrecht, both of Lubeck, Germany, assignors to Dragerwerk Aktiengesellschaft, Germany
Filed June 26, 1975, Ser. No. 590,490
Claims priority, application Germany, June 27, 1974, 2430839
Int. Cl.^{2} A61M *16/00*
U.S. Cl. 128—145.8 10 Claims

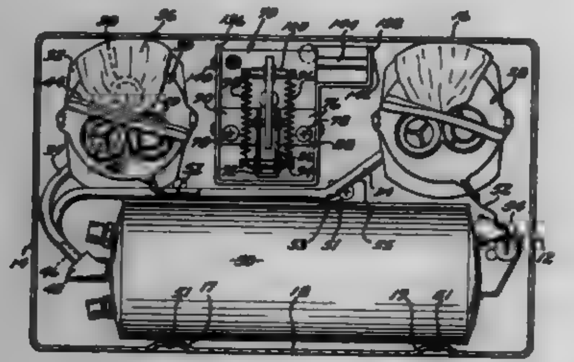


1. In a pneumatically controlled respiration device in which breathing gas, taken from a pressure-gas supply source through an injector and volumetrically metered in a pressure regulating valve, is supplied, in the inspiration phase, to the user and discharged, in the expiration phase, through an exhaling valve, the improvement comprising, in combination, a source of respiration gas; a respiration gas enclosure element; an injector connected between said source and said enclosure element for delivering respiration gas thereto; a pressure regulating valve connected to said enclosure element; an exhaling valve means having an opening to atmosphere; a user line connected to said pressure regulating valve and to said opening of said exhaling valve means; said pressure regulating valve including means for volumetrically metering the respiration gas delivered to said user line; said exhaling valve means normally establishing communication between said user line and said opening for the expiration phase and, responsive to application of a control pressure thereto, blocking communication between said user line and said opening to initiate the inspiration phase; means forming a fixed volume control space divided into an inspiration chamber and an expiration chamber; means operable to adjust the ratio of the volumes of said chambers; a source of control gas under pressure; a frequency valve connected to said source of control gas, first and second pneumatic control elements; said first and second elements directly connecting said inspiration and expiration chambers, respectively, on the upstream sides, to said frequency valve and each including means operable, only when enabled, to supply control gas to the associated chamber from said frequency valve for filling of the associated chamber with control gas; said first and second pneumatic control element includes means for enabling the same only when control gas is supplied thereto solely from said frequency valve; third and fourth pneumatic elements each having inputs connected, respectively, to said source of control gas and directly to the downstream sides of said inspiration and expiration chambers, respectively, and each having an output; each of said third and fourth pneumatic elements including means responsive to filling of the associated chamber with control gas for connecting the source of control gas to its output; the output of each second pneumatic element being without pressure until the associated chamber has been filled with control gas; means connecting the output of each third and fourth pneumatic elements to each of said first and second pneumatic control elements, respectively, whereby said first and second pneumatic control elements are responsive to filling of the associated chamber with control gas and thereby, the output of said third and fourth pneumatic elements such that each first and second pneumatic control element is no longer enabled and blocks flow of control gas from said frequency valve to each associated chamber so that the control gas in the associated chamber is discharged through the associated third and fourth pneumatic element; and means connecting the output of the respective fourth pneumatic element connected to said expiration chamber to said exhaling valve means for applying control pressure to said exhaling valve means for closing said opening to atmosphere to initiate the inspiration phase; the respective first pneumatic control element connected to said inspiration chamber being enabled, due to the lack of pressure at the output of the respective third pneumatic element connected to said inspiration chamber, to initiate filling of said inspiration chamber with control gas from said frequency valve; whereby the lengths of the respective phases of the respiration cycle are determined solely by the filling times, and thus the volumes, of the respective chambers.

3,981,302
EMERGENCY BREATHING MEANS
Herbert F. Veit, Fullerton, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Feb. 26, 1975, Ser. No. 553,282
Int. Cl.^{2} A62B *7/14*
U.S. Cl. 128—203 10 Claims

1. A unitized emergency breathing supply system comprising:
a container;

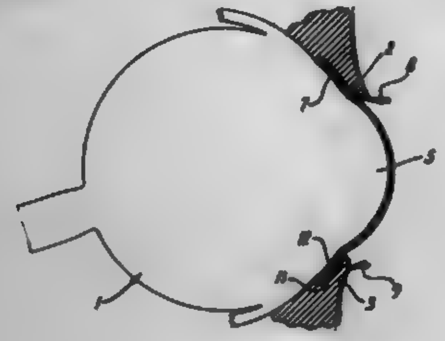
emergency breathing means stored in said container for retrieval therefrom;
lid means attached thereto;
latch means consisting of means entirely within said container locking said lid means in closure of said container;
latch triggering means within said container responsive to a preselected value of ambient pressure to operate said latch means and release said lid including ambient pressure-sensitive means in an enclosed housing having a single vent port; and



test probe attachment means on the exterior of said container, conduit means communicating said test probe attachment means to said vent port for the sealed application of a source of controlled fluid pressure to said housing to permit testing of the preselected value of pressure of said latch triggering means.

3,981,303
BIOERODIBLE OCULAR DEVICE

Takeru Higuchi; Anwar A. Hussain, Lawrence, Kans., and John W. Shell, Los Altos, Calif., assignors to Alza Corporation, Palo Alto, Calif.
Division of Ser. No. 179,129, Sept. 9, 1971, abandoned. This application July 31, 1975, Ser. No. 600,793
Int. Cl.² A61M *31/00*
U.S. Cl. 128—260 22 Claims

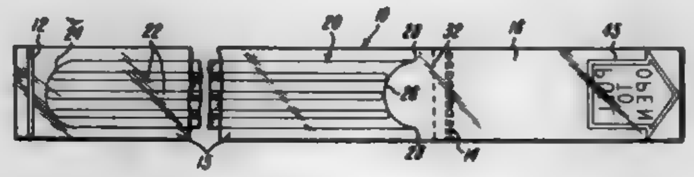


1. A bioerodible ocular device for the controlled continuous administration of a predetermined dosage of drug to the eye over a prolonged time period, the device
  a. being of an initial shape and size that it is adapted for insertion and retention in the sac of the eye; and
  b. comprising:
    i. a plurality of microcapsule reservoirs each of which is comprised of a drug formulation confined within a drug release rate controlling material and each of which includes means inherent in its structure by which it is adapted to be eliminated automatically from the ocular cavity during or after the prolonged time period, the reservoirs being distributed throughout
    ii. a bioerodible matrix that is permeable to the passage of drug at a higher rate than the rate of drug passage through the drug release rate controlling material,

whereby the drug is released from the reservoirs to the eye at a therapeutically effective, controlled rate and as the bioerodible matrix erodes in the eye the reservoirs are freed therefrom so that they may be eliminated from the eye per said means.

3,981,304
DISPENSING AND APPLICATING DEVICE AND PRODUCTION OF SAME

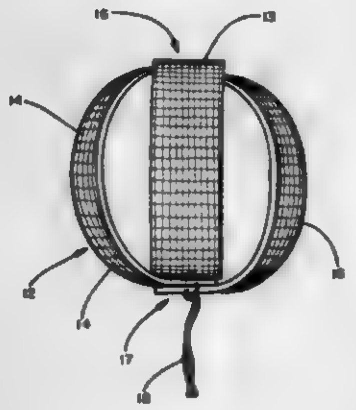
Roman Szpur, 2685 Culver Ave., Kettering, Ohio 45429
Continuation-in-part of Ser. No. 486,463, July 8, 1974, Pat. No. 3,896,808. This application June 11, 1975, Ser. No. 585,876
The portion of the term of this patent subsequent to July 29, 1992, has been disclaimed.
Int. Cl.² A61M *35/00*
U.S. Cl. 128—269 21 Claims



1. A device for dispensing a fluid, comprising a flexible container including a container portion defining a chamber adapted to receive the fluid, a piercing member extending within said chamber and providing said container portion with increased rigidity, means for sealing said container portion to confine the fluid and said piercing member within said chamber, said piercing member including means for piercing at least one hole in said container portion in response to relative movement between said container and said piercing member to provide for dispensing the fluid from said container portion, and said container includes a tab portion projecting from said container portion and adapted to be folded adjacent said piercing means and pulled to effect piercing of said hole by said piercing member.

3,981,305
LOW DENSITY TAMPON OF INTERMESHED DEFORMABLE STRIP MATERIAL AND INSERTER THEREFOR

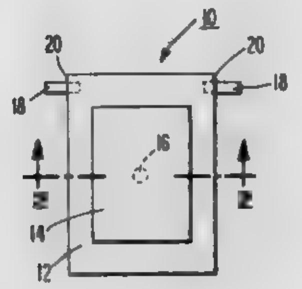
David F. Ring, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Sept. 11, 1975, Ser. No. 612,488
Int. Cl.² A61F *13/20*
U.S. Cl. 128—285 20 Claims



1. A resiliently deformable catamenial tampon comprising a multiplicity of intermeshed loops of thin flat strips of low density absorbent material which is resiliently deformable in dry or wet condition, said intermeshed loops being disposed to form an openwork spheroid in which said loops cross over each other at the top and bottom of the vertical axis of said spheroid and have a withdrawal string attached at the loop crossover areas to secure together the loop areas at the bottom of said axis.

3,981,306
MULTILAYER ONE-PIECE DISPOSABLE DIAPERS

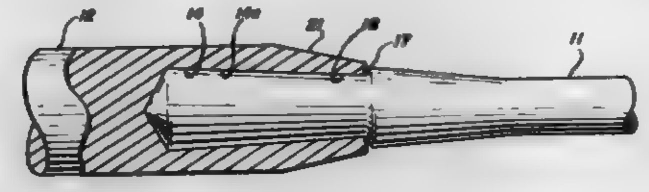
Evelyn H. Krusko, Newtown Square, Pa., assignor to Scott Paper Company, Philadelphia, Pa.
Filed Aug. 11, 1975, Ser. No. 603,298
Int. Cl.² A16F *13/16*; A41B *13/02*
U.S. Cl. 128—287 21 Claims



1. A multilayer, one-piece, disposable diaper comprising a liquid-impervious backing layer having sufficient longitudinal and transverse dimensions for encircling the thigh and waist regions of a wearer, a fluid-absorbent pad adapted to be disposed in the perineal region of the wearer for receiving and retaining body fluids, said pad constituting the primary absorbent component, by weight, of the diaper and being superposed on said backing layer and means for providing adjustable movement between said backing layer and said pad comprising bonding means securing the fluid-absorbent pad to the backing layer over only a limited region disposed inwardly of at least two corners of said pad for permitting marginal sections of the pad which constitute at least 50% of the total pad area to move independently of the backing layer.

3,981,307
THERMAL ATTACHMENT OF SURGICAL SUTURES TO NEEDLES

Emil Borysko, Somerville, N.J., assignor to Ethicon, Inc., Somerville, N.J.
Continuation-in-part of Ser. No. 484,471, July 1, 1974, abandoned. This application June 12, 1975, Ser. No. 586,312
Int. Cl.² A61B *17/06*
U.S. Cl. 128—339 7 Claims

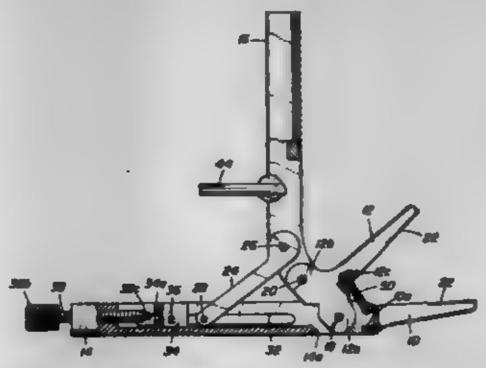


1. A controlled release needle-suture combination comprising a needle having a sharp end and a blunt end with an elongated recess in said blunt end, and a suture of size 4/0 or larger comprising a normally crystalline, oriented synthetic polymer which becomes substantially disoriented and amorphous and is laterally swellable upon heating to a temperature below the melting point of said polymer, one end of said suture being located within said recess and being swelled therein so that the outer surfaces of said suture end engage the inner surface of said recess to the extent that said suture is removable from said recess by application of a straight pulling force of from about 3 to 30 ounces.

3,981,308
POSITIVE-LOCKING SURGICAL CLAMP

Allen P. Schlein, 111 Marconi Ave., Bridgeport, Conn. 06610
Filed Mar. 3, 1975, Ser. No. 554,719
Int. Cl.² A61B *17/00*; B25B *7/12*
U.S. Cl. 128—346 2 Claims

1. A surgical clamp comprising, in combination:
a first substantially straight channel-shaped handle of U-shape cross-section having an open side and forward and rearward ends and having an integral elongated stationary jaw extending substantially co-linearly from the forward end thereof,
a second channel-shaped handle of U-shape cross-section having an open side and forward and rearward ends disposed with its open side in confronting relationship with the open side of said first handle, said second handle being substantially straight throughout a major portion of its length and having its forward end curved away from the first handle,
a movable elongated jaw disposed between and transversely pivoted to the channel walls at the forward end of said first handle rearwardly of said stationary jaw and disposed within and transversely pivoted to the channel walls of the second handle near the extremity of its curved forward end and arranged to cooperate with the stationary jaw to grip an article,
an overcenter locking element comprising a lever having a forward end transversely pivoted to and between the channel walls of the second handle at a point rearwardly of the pivotal connection thereof with the movable jaw and inclined rearwardly with its other end engaging a block member slidably supported within the channel of the first handle, said block member having pins extending transversely therefrom and engaging longitudinal slots formed in the channel walls and being longitudinally adjustable by an adjusting screw threaded into the rearward end of the first handle, said locking element being arranged to lock the clamp when the handles are squeezed by hand into contact with each other, and



means for releasing the clamp comprising a disk eccentrically pivoted to and between the channel walls of said second handle by a transverse pivot pin, said disk being secured to said transverse pivot pin, and a release lever secured to said transverse pivot pin and disposed closely parallel along and outside one of the channel walls of the second channel, said disk being engageable with the surface of the locking element lever that confronts the second handle and operative upon rotation of said release lever and said transverse pivot pin to impart a releasing movement to said locking element.

3,981,309
PATIENT STIMULATING PACER ELECTRODE

Robert Lee Cannon, Waltham, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Dec. 23, 1974, Ser. No. 535,466
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976
Int. Cl.² A61N *1/04*
U.S. Cl. 128—419 P 2 Claims

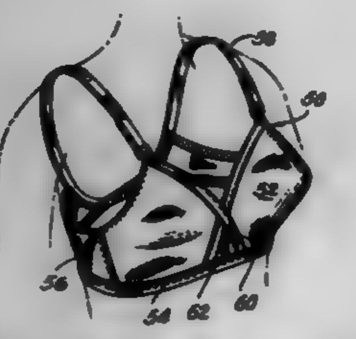
2. An electrode system capable of use with an electronic heart pacer, said system comprising at least one insulated electrical conductor whose distal ends are electrically connected between electrical output of said pacer and tissue of said heart, said tissue-connected distal end comprising electrically conductive porous means having point contact-welded

metallic dust particles for conducting current from said pacer into said tissue in a manner to simultaneously decrease polarization losses and increase current density at the interface of said tissue and said conducting means.

3,981,310
MOLDED BRASSIERE CUPS

James G. Donaghy, Flanders, N.J., assignor to International Playtex, Inc., New York, N.Y.

Filed Jan. 22, 1975, Ser. No. 542,995
Int. Cl.² A41C *3/00*
U.S. Cl. 128—464 **7 Claims**



1. A molded three-dimensional breast cup for a brassiere comprising a warp knit fabric of thermoplastic yarns throughout, said fabric being at least a three guide bar fabric, including top, middle and bottom guide bar yarns having a denier per filament of at least 10, said bottom and middle guide bar yarns being in opposition to each other and each having underlap lengths which extend at least two wales, but not more than three wales, said fabric having a degree of stretch sufficient to enable said fabric to distend during molding from an initially planar condition to a three-dimensional configuration, and in which said warp knit fabric yarns form stitches with overlaps and underlaps that are substantially dimensionally stabilized, said fabric top bar yarns appearing on both surfaces of the molded breast cup for soft molded fabric surfaces.

3,981,311
AROMATIC COMPOSITIONS

Edouard P. Demole, Geneva, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

Division of Ser. No. 482,776, June 24, 1974. This application June 12, 1975, Ser. No. 586,387

Claims priority, application Switzerland, Jan. 19, 1971, 773/71; June 23, 1971, 9156/71; Jan. 11, 1972, 380/72

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976

Int. Cl.² A24B *3/14, 13/00, 15/08*
U.S. Cl. 131—144 **6 Claims**

1. A process for improving, enhancing or modifying the organoleptic properties of a tobacco product, which comprises adding thereto about 1 to about 1000 parts per million based on the weight of tobacco of at least one compound selected from the group consisting essentially of:

a. 2-hydroxy-5-methyl-acetophenone
b. 2-methyl-5-isopropenyl-anisole.

3,981,312
HAIR WAVING METHOD WITH A PREBONDER

Kanu I. Patel, Chatsworth, Calif., assignor to Redken Laboratories, Inc., Van Nuys, Calif.

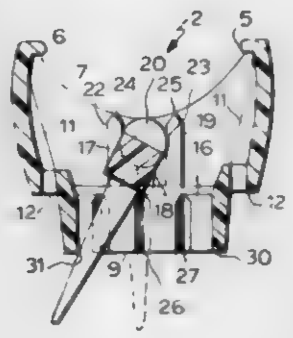
Filed July 3, 1975, Ser. No. 592,806
Int. Cl.² A45D *8/00*
U.S. Cl. 132—7 **24 Claims**

1. In a process for waving hair which includes the steps of contacting the hair with a reducing agent to reduce the hair followed by contacting the hair with an oxidizing agent to reconstitute the hair, the improvement comprising the step of prebonding the hair prior to contact with the oxidizing agent by contact with at least one polyvalent metal salt in an aqueous solution and at least one water soluble reactive polyamide-epichlorohydrin resin in an aqueous solution.

3,981,313
HAIR DRYER CONCENTRATOR

Frederick A. Burke, Riverside, and Douglas A. Long, Wilton, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

Filed Apr. 28, 1975, Ser. No. 572,081
Int. Cl.² A45D *1/00*
U.S. Cl. 132—9 **10 Claims**

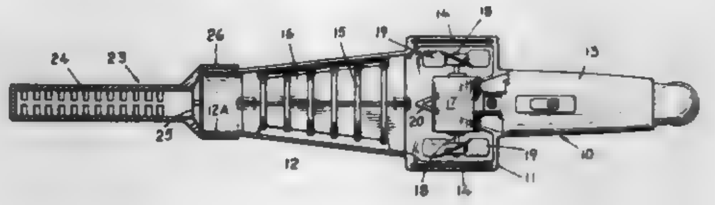


1. A concentrator for airflow hair dryers comprising
a housing having
an inlet and
a terminal outlet for a flow of air therethrough, said terminal outlet being of a size less than said inlet,
a hair-engaging member,
means for mounting said hair-engaging member adjacent said terminal outlet, and
positioning means for selectively positioning said hair engaging member in plural hair-engaging positions in relation to said terminal outlet.

3,981,314
HAIR DRYER

George Barradas, Glenville, Conn., assignor to Venus Electric Limited, Scarborough, Canada

Filed Sept. 25, 1975, Ser. No. 616,550
Int. Cl.² A45D *20/00*
U.S. Cl. 132—9 **11 Claims**

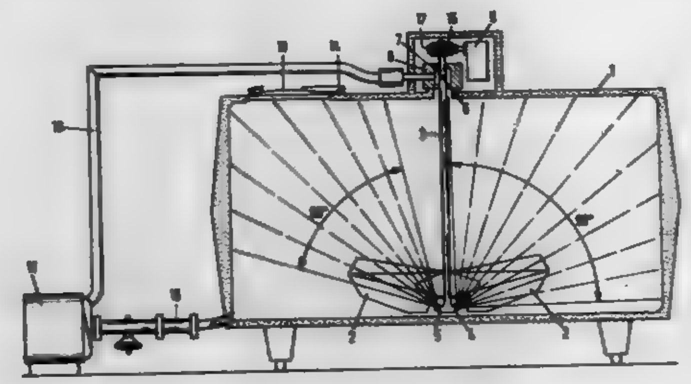


1. A hair dryer comprises an elongated casing, said casing providing a fan housing and a heater housing extending longitudinally therefrom, the fan housing providing a pair of laterally spaced air inlets and the heater housing providing an air outlet, electric heating means mounted in said heater housing, an electric motor mounted in said fan housing, a pair of fans located in the fan housing and coupled to the motor to be driven thereby, each fan cooperating with a respective one of said air inlets, deflector means located in the fan housing and positioned to deflect incoming air from each of said inlets into said heater housing, and means for supplying electric current to said electric heating means and said motor.

3,981,315
STIRRING APPARATUS FOR A LIQUID TANK

Klaas Olthoff, Leek, Netherlands, assignor to Alfa-Laval N.V., Groningen, Netherlands

Filed Sept. 30, 1974, Ser. No. 510,789
Int. Cl.² B08B *3/00, 9/00*
U.S. Cl. 134—167 R **3 Claims**



1. A stirring apparatus for a liquid tank comprising
a rotatingly driven hollow shaft extending downward in the tank,
stirring paddles mounted on said shaft and extending radially from the shaft,
means for applying a pressurized cleaning fluid into the upper end of the hollow shaft,
said hollow shaft extending to adjacent the bottom of the tank,
said paddles extending downward to at least the bottom of the shaft,
said paddles having cutouts adjacent the bottom of the shaft,
spray nozzles disposed on the bottom of the hollow shaft in said cutouts and aligned with said paddles, and
said spray nozzles being directed radially outward and upward over the front and back sides of each of the stirring paddles such that the front and back sides of the paddles and the inside of the tank are cleaned by the cleaning liquid as the shaft is rotated.

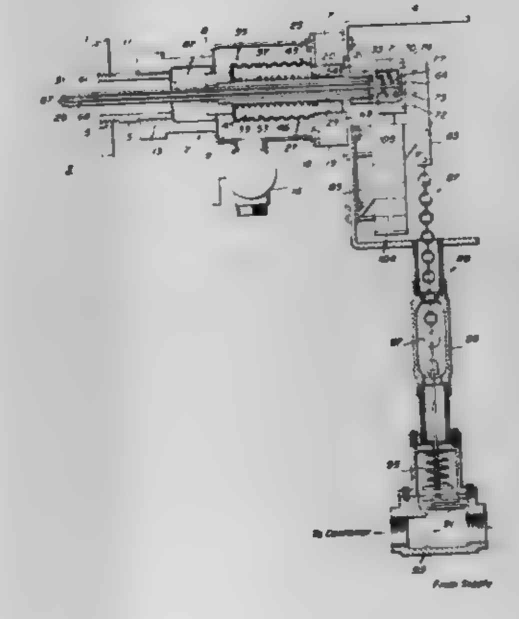
3,981,316
PRESSURE AND TEMPERATURE-RESPONSIVE CONTROL MEANS

Timothy J. Sullivan, Butte, Mont., assignor to Sullivan Valve & Engineering Company, Butte, Mont.

Filed Nov. 13, 1975, Ser. No. 631,701
Int. Cl.² F16K *17/38*
U.S. Cl. 137—73 **13 Claims**

1. Pressure- and temperature-responsive actuator means for operating a load device (83) in response to the pressure and temperature conditions within the chamber of a vessel (1), and to the temperature conditions external of the vessel, said vessel containing a wall opening (5), comprising

a. a hollow support member (7) containing a first chamber (9), said support member being adapted for connection at one end with said vessel wall opening, said support member having a first opening at said one end affording communication between the vessel chamber and said first chamber, said support member having at its other end a second opening (23), the load device being spaced from said second opening externally of said support member; and
b. a pressure- and temperature-responsive assembly mounted for longitudinal displacement in said second opening to operate said load device, said assembly including
   1. a tubular member (29) one end of which is closed to define a probe adapted to extend into the vessel chamber via said first support opening and the vessel wall opening, the other end of said tubular member being open and extending through said support member second opening;
   2. expansible pressure-responsive means (35) disposed in said first pressure chamber and defining therein a second pressure chamber (37) which is in communication, via said second wall opening, with the adjacent region external of said support member;
   3. first spring means (53) biasing said tubular member axially away from the load device, said expansible pressure-responsive means being connected between said hollow support member and said tubular member to produce axial displacement of said tubular member toward said load device when the pressure in said first chamber exceeds that of said second chamber by a predetermined amount;



   4. a rod (61) arranged longitudinally within said tubular member, one end of said rod terminating adjacent the closed probe end of said tubular member and the other end of said rod extending beyond the open end of said tubular member;
   5. first temperature-responsive fusible means (67) adjacent the closed end of said tubular member normally connecting said one end of said rod with said tubular member;
   6. a load operating member (70) adjacent said other end of said rod;
   7. second temperature-responsive fusible means (74) normally connecting said load operating member with said other end of said rod; and
   8. second spring means (77) arranged between said load operating member and said other end of said tubular member for biasing said rod longitudinally away from said closed end of said tubular member, whereby, when the fluid pressure of the first chamber exceeds that of said second chamber by a predetermined amount, said pressure and temperature assembly is displaced longitudinally toward the load device against the biasing force of said first spring means, whereby when the temperature sensed by the probe exceeds the melting temperature of said first fusible connecting means, said rod is released and is longitudinally displaced toward the load device by said second spring means, and whereby when the melting temperature of said second fusible means is exceeded, said operating member is released and is displaced toward the load device by said second spring means.

3,981,317
FLAME-ARRESTING OR SMOKE-CLEARING VALVE DEVICE OPERATING BY CLOSURE AND OPENING RESPECTIVELY

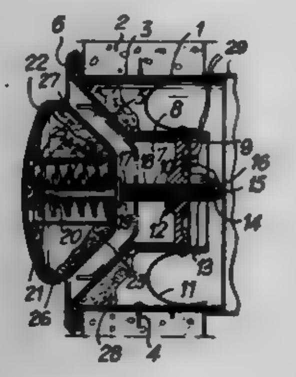
Wilhelm Paul Strulik, 2, rue d'Heurtebise, Roussemeau-Villeneuve-sur-Yonne, (Yonne), and Claude Mealares, 40, rue Jean Baffier, Saint-Florent-sur-Cher, (Cher), both of France

Filed Feb. 3, 1975, Ser. No. 546,829

Claims priority, application France, Feb. 12, 1974, 74.04687

Int. Cl.² F16K *17/38*

U.S. Cl. 137—75 **7 Claims**



1. A valve device for adjustably controlling air flow through a mechanical ventilation duct, blocking propagation of flames through the duct, and selectively exhausting smoke through the duct, said valve device comprising, in combination, an air extraction terminal sleeve communicable with the ventilation duct and provided with an outwardly facing valve seat; a support mounted in said sleeve inwardly of said valve seat; an elongated guide extending through said support and having an inner end and an outer end, said guide being adjustable longitudinally relative to said support; means maintaining said guide in a longitudinally adjusted position relative to said support; an obturator mounted on said guide outwardly of said support for adjustably controlling the flow area into said terminal sleeve, said obturator including an outwardly convex dome member fixedly secured to the outer end of said guide and an inwardly convex valve member having conforming seating engagement with said dome member and arranged to conformingly engage said valve seat to block flow into said terminal sleeve; said valve member being slidable on said guide; spring means surrounding said guide within said obturator and biasing said valve member to separate from said dome member to engage said valve seat; and a pin engaged with said guide and restraining separation of said dome and valve members, said pin releasing such restraint responsive to detection of a fire whereby said valve member is disengaged from said dome member to engage said valve seat to block said terminal sleeve.

3,981,318
PNEUMATIC OUTPUT SIGNAL LIMITING DEVICE

Robert C. Prescott, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

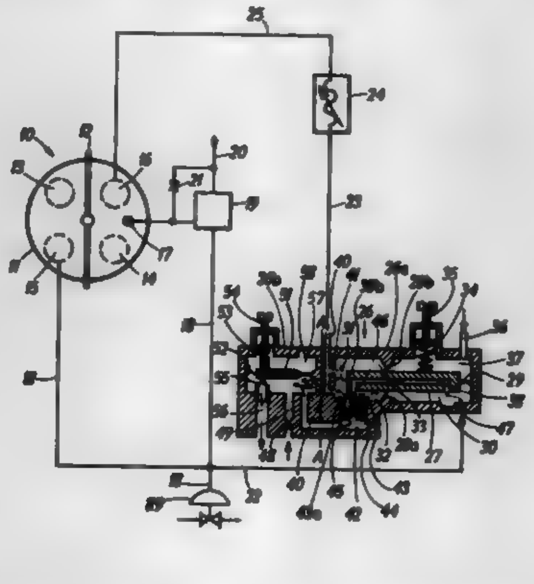
Filed Feb. 3, 1975, Ser. No. 546,573

Int. Cl.² G05D *16/00*

U.S. Cl. 137—86 **8 Claims**

1. A pneumatic output signal limiting device having a planartype laminated sandwich construction, comprising, in combination:

a multi-layer laminated assembly having
a resilient diaphragm layer and
at least one relatively stiff spring layer
said at least one relatively stiff springy layer having a stationary portion and a balance beam portion joined at a point between the ends thereof to said stationary portion by flexure axis portions for pivotal movement of said balance beam portion about the axis of said flexure portions.
a passage extending through said balance beam portion having a first opening and a second opening on opposite sides of said axis;
an input signal chamber having as one wall thereof that portion of said multi-layer laminated assembly which includes that end of said balance beam portion having said first opening and provided with sufficient space for movement of said balance beam portion;
a passage into said input signal chamber adapted to receive an input signal;
a means for applying a biasing force against said balance beam portion in opposition to the forces exerted against said wall portion of said multi-layer laminated assembly by the input signal in said input signal chamber;
a first output signal chamber having as one wall thereof that portion of said multi-layer laminated assembly which includes that end of said balance beam portion having said second opening and provided with sufficient space for movement of said balance beam portion;



a vent passage in said first output signal chamber for venting said first output signal chamber;
a valve in said vent passage spring biased to a closed position and having an outwardly extending plug portion arranged to close said second opening of said passage extending through said balance beam portion upon movement of said balance beam portion in one direction and upon further movement in the same direction to open said valve;
a fulcrum support means adapted to support said flexure portions;
a second output signal chamber on the other side of said multi-layer laminated assembly from said first output chamber with sufficient space for movement of said balance beam portion;
a passage providing communication between said first and second output signal chambers;
an output signal passage out of said first output signal chamber for transmitting the output signal from said first output signal chamber.

3,981,319
CYCLING AIR VOLUME CONTROL

Corbly LeRoy Holt, Clearwater, Fla., assignor to Brady Air Controls, Inc., Muncie, Ind.

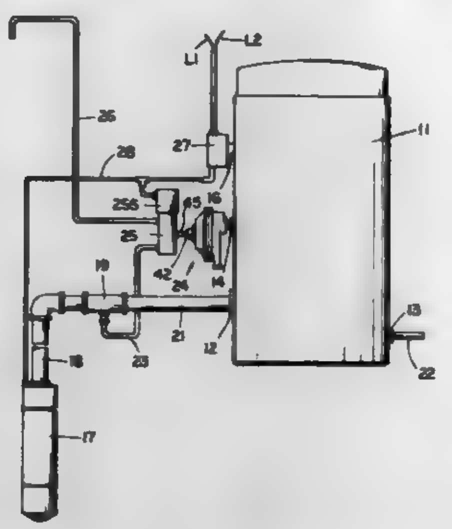
Filed May 5, 1975, Ser. No. 574,580

Int. Cl.² F04D *1/00*

U.S. Cl. 137—211 **19 Claims**

1. A cycling air volume control for an air-pressurized hydraulic system comprising:

an air storage chamber assembly including a housing having a cavity therein for a control fluid therein and air therein, the respective volume of fluid and air therein being variable, first aperture means in said housing to permit entrance of air to said cavity from atmosphere, second aperture means in said housing to permit entrance and departure of said control fluid, and third aperture means in said housing to permit discharge of air therefrom to a liquid storage vessel;
and switchable valve means having an operating energy source independent of energy stored in the liquid storage vessel, said switchable valve means being coupled to said second aperture of said storage chamber assembly and operable to periodically change fluid passages and communicating with said second aperture to enable periodically changing a pressure difference between said second and third aperture means to thereby periodically vary the respective volumes of fluid and air in said air storage chamber assembly.



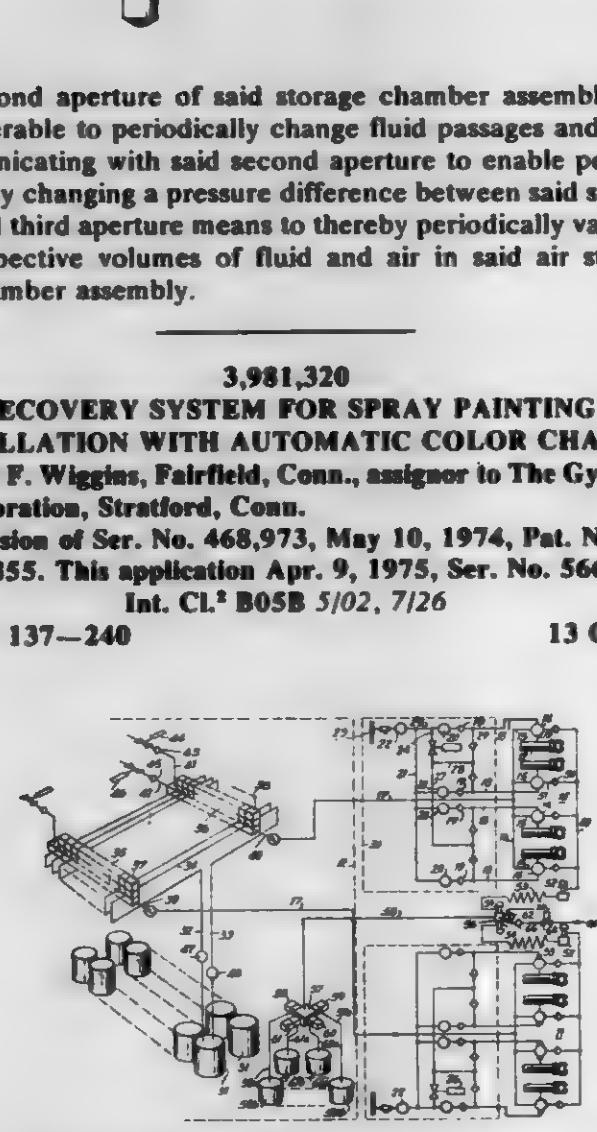
3,981,320
RECOVERY SYSTEM FOR SPRAY PAINTING INSTALLATION WITH AUTOMATIC COLOR CHANGE

Richard F. Wiggins, Fairfield, Conn., assignor to The Gyromat Corporation, Stratford, Conn.

Division of Ser. No. 468,973, May 10, 1974, Pat. No. 3,939,855. This application Apr. 9, 1975, Ser. No. 566,290

Int. Cl.² B05B *5/02, 7/26*

U.S. Cl. 137—240 **13 Claims**



1. A color change system for a paint spray installation, which comprises

a. a paint spray station,
b. a paint supply area located remote from said spray station and including first supply means for supplying paints and cleaning materials for the spray station,
c. supply conduit means for delivering said paints and cleaning materials to said spray station,
d. purge discharge conduit means communicating with said spray station for conveying paints and cleaning materials away from said spray station, and
e. second supply means connected to said purge discharge conduit for introducing cleaning materials into said purge discharge conduit immediately adjacent said spray station.

3,981,321
VEHICLE FUEL SYSTEM

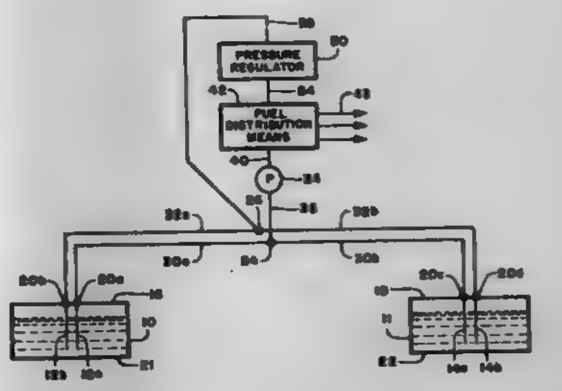
John T. Risse, and James C. Taggart, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Sept. 24, 1974, Ser. No. 508,940

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.² F02M *37/00*

U.S. Cl. 137—255 **4 Claims**



1. A self-regulating fuel level equalizing system for internal combustion engines of vehicles comprising a plurality of spaced apart fuel tanks, feed conduits having about equal length, about equal inner diameter, and about equal fuel flow restriction and having lower portions with open ends each disposed at about the same level for automatic preferential fuel withdrawal from the fuller of said tanks, housed within and extending from lower portions of each of said tanks through an upper portion of each of said tanks and devoid of external bottom connections with said tanks and each coupled to a fuel pump, a fuel pump for preferentially withdrawing fuel from the fuller of said tanks through said feed conduits and supplying at least a portion of said fuel to a said engine, distribution means for feeding said fuel from said fuel pump to said engine, return conduits separate from said feed conduits having about equal length, about equal inner diameter, and about equal fuel flow restriction, and having lower portions with open ends each disposed at about the same level in said tanks for automatic preferential fuel return to the less full of said tanks, housed within and extending from lower portions of each of said tanks through and upper portion of each of said tanks and coupled to said fuel pump for preferentially returning any unused portion of said withdrawn fuel to the less full of said tanks, said preferential fuel withdrawing and returning automatically coacting to maintain an about equal fuel level in said fuel tanks.

3,981,322
PIPE CONNECTING DEVICE

Sven Runo Vilhelm Gebelius, Fridhemsgatan 27, Stockholm, Sweden (S-11240)

Continuation of Ser. No. 481,471, June 20, 1974, abandoned. This application Sept. 8, 1975, Ser. No. 611,320

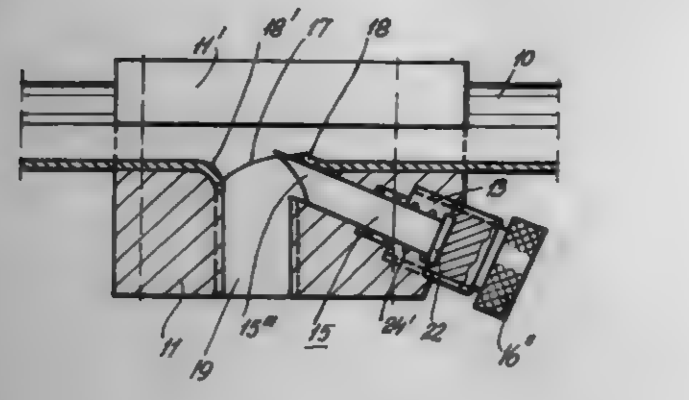
Claims priority, application Sweden, June 25, 1973, 7308865

Int. Cl.² F16K *51/00*

U.S. Cl. 137—318 **1 Claim**

1. A pipe connection means for crosswise-extending pipe connections to transport pipes for fluid, gas or similar media, said pipe connection means including at least one flow channel intersecting the transport pipe and directed towards a connection pipe, and a guiding channel directed towards the transport pipe, said guiding channel including a hole-cutting, piercing member movable in said guiding channel to pierce the transport pipe adjacent the intersection of said flow channel with said transport pipe and create a hole through said transport pipe, said piercing member being connected to a maneuverable adjusting member arranged to move the hole

piercing member in the guiding channel in directions to and from the transport pipe, edge portions of the hole forming a valve seat, the hole piercing member having an end portion functioning as a valve element and acting against said valve seat, the guiding channel being arranged at an acute angle in relation to the longitudinal axis of the transport pipe, the end portion of the hole piercing member functioning as a cutting member and being arranged to cut out and form an inwardly directed guiding member and an outwardly directed guiding member when moved in a direction towards the transport pipe and therethrough, said guiding members, in connection with the edge portions of the hole, forming said valve seat and the cutting part of the piercing member forming the valve element.



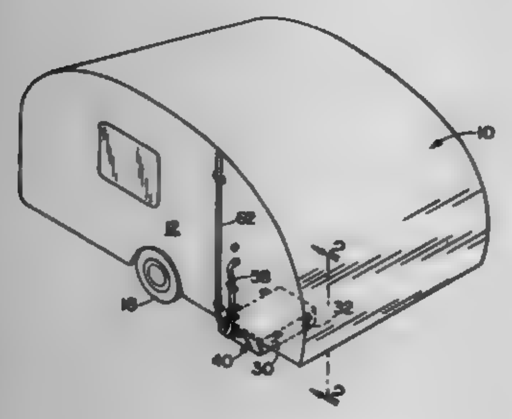
3,981,323
REMOVABLE FLUID HOLDING TANK FOR VEHICLE

Clarence V. Watson, 4715 Rivercrest Drive North, Salem, Oreg. 97303

Filed Jan. 13, 1975, Ser. No. 540,421

Int. Cl.² B60P *1/00*

U.S. Cl. 137—344 4 Claims



1. In combination with a vehicle having a body with plumbing therein,

a liquid holding tank below said plumbing,

conduit means extending from said plumbing to the tank, said conduit means connecting with the top of the tank and extending into the tank to a region adjacent the base of the tank and at said region communicating with the interior of the tank, said conduit means further including an expanse outside said tank at an elevation below the base of the tank, and

means detachably connecting said conduit means to said plumbing, said conduit means on disconnection from said plumbing being adjustable to provide for the draining of fluid under gravity from said tank.

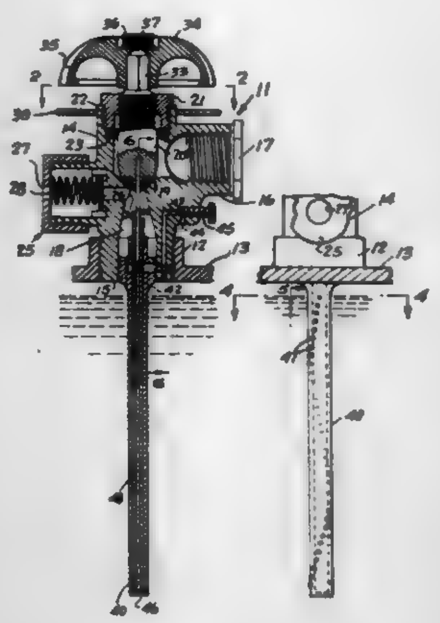
3,981,324
COMBINED VALVE AND OUTAGE GAUGE

Doyle Waring, Rte. 2, Box 262-B, Heber Springs, Ark. 72543

Filed Aug. 29, 1975, Ser. No. 609,007

Int. Cl.² F16K *37/00*

U.S. Cl. 137—556.6 16 Claims



1. A combined service valve and outage indicator for a liquified gas container comprising a valve body provided with means sealingly engagable with the outlet conduit of a gas container and having a gas transmission passage including a valve seat, a main valve element threadedly engaged in the valve body and being engagable with said valve seat, operating knob means connected to said valve element, means on the valve body adjacent said knob means for indicating the degree of rotation of said knob means, a depending tubular chamber secured to the inlet end of said gas transmission passage, said chamber being formed with spirally arranged inlet passage means, a tubular sleeve element rotatably mounted in said chamber, means axially connecting said sleeve element to the valve element, said sleeve element being formed with linear passage means registrable with said spirally arranged inlet passage means at points in accordance with the degree of rotation of said sleeve element, said valve body being formed with a vent port, the top end of said tubular chamber having a receiving space communicating with the top end of said sleeve element, the valve body having a passage communicatively connecting said receiving space to said vent port, and manually operated control valve means in said last-named passage for at times opening said vent port to allow liquified gas from the associated gas container to discharge through the vent port.

3,981,325
TANK TRUCK VENT SYSTEM

Bernie E. Robinson, and Daniel T. Robinson, both of Milwaukee, Wis., assignors to Milwaukee Valve Company, Inc., Milwaukee, Wis.

Filed Oct. 20, 1975, Ser. No. 623,747

Int. Cl.² F16K *45/02*

U.S. Cl. 137—587 7 Claims

1. A combination vent and safety valve system for a tank truck or the like comprising

a vent valve including

a body having a mounting flange permitting said vent valve to be mounted on an upper portion of the tank and an opening adapted to communicate with the inside of the tank,

a valve seat in said vent valve body,

a valve member mounted for movement relative to said vent valve seat between an open position to permit vapors to vent from the tank through said opening and a closed position in sealing engagement with said vent valve seat, and

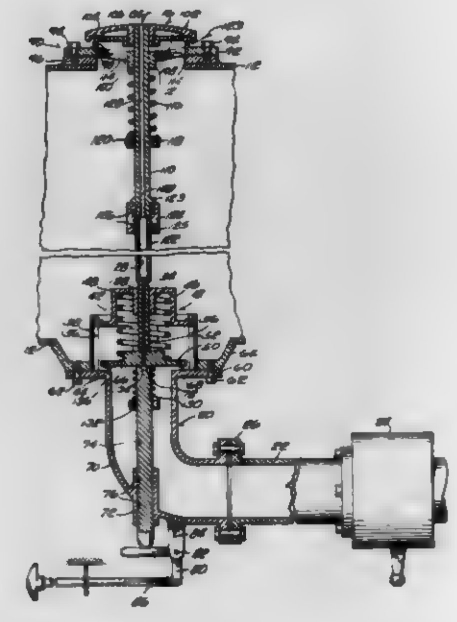
means for urging said vent valve member towards the closed position;

a safety valve including

a valve body having a mounting flange permitting said safety valve to be mounted on a lower portion of the tank, an inner portion to be located inside the tank, a discharge portion, and a flow passage adapted for communicating between the tank and said discharge portion,

a valve seat,

a valve member mounted for movement relative to said safety valve seat between an open position to permit fluid flow through said flow passage and a closed position in sealing engagement with said safety valve seat to prevent fluid flow through said flow passage,



means for urging said safety valve member towards the closed position, and

movable actuator pin means having one end located inside said safety valve discharge portion and disengagably connected to said safety valve member for selectively moving said safety valve member away from said safety valve seat to the open position;

actuating rod means operatively connecting said vent valve member with said safety valve member such that, when said safety valve member is moved to the open position by movement of said safety valve actuator pin means, said vent valve member is also moved to the open position and, when said safety valve is moved to the closed position, said vent valve member is also moved to the closed position;

a vent passage extending from an inlet in said safety valve member, through said actuating rod means and through said vent valve member for venting said safety valve discharge portion when both said vent valve and said safety valve are closed, said inner end of said actuator pin means being operable to close said vent passage inlet when said actuator pin is moved to a position to open said safety valve member; and

means operatively and disengagably connecting said inner end of said safety valve actuator pin means with said safety valve member for urging said inner end of said safety valve actuator pin means away from said safety valve member to thereby open said vent passage inlet and permit said safety valve discharge portion to be vented through said vent passage when said safety valve actuator pin means is moved to a position for closing said safety valve member.

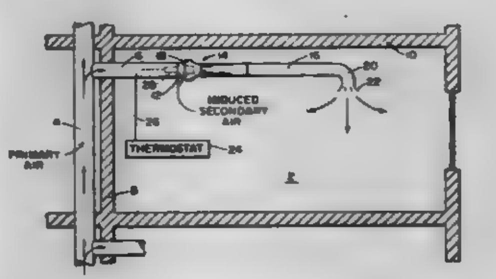
3,981,326
INDUCTION MIXING NOZZLE

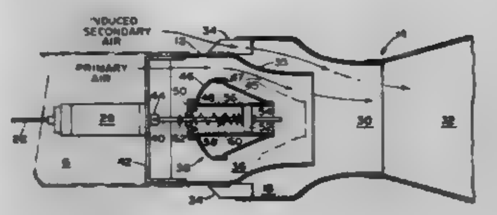
Dimiter Gorchev, Washington, D.C., assignor to Mitco Corporation, Somerville, Mass.

Continuation-in-part of Ser. No. 446,606, Feb. 28, 1974, abandoned. This application Apr. 11, 1975, Ser. No. 567,383

Int. Cl.² F16K *19/00*

U.S. Cl. 137—604 7 Claims





1. An apparatus for mixing two gas phase fluids in an air circulation system comprising:

A. a mixing nozzle;

B. adjustable flow rate injection means for introducing an annular flow of primary fluid into said mixing nozzle at a selected primary fluid flow rate; and

C. a port in said mixing nozzle adjacent to said injection means for introducing an induced annular secondary flow of fluid into said mixing nozzle,

wherein said injection means comprises:

i. a conduit having a tapered nozzle at one end thereof;

ii. a plunger coaxially mounted within said conduit to define an annular passage within said tapered nozzle, said plunger having a tapered portion wherein the lesser diamter end of said tapered portion is adjacent to the tapered end of said tapered nozzle, and wherein further the lesser diameter end of said tapered portion is blunt so that the annular primary fluid flow past said plunger has a relatively high velocity at the edge of said tapered nozzle near said induction port, and a relatively low velocity otherwise; and

iii. means for adjusting the position of said plunger along the axis of said conduit, and

further comprising a primary fluid velocity responsive means supporting said plunger within said conduit to maintain a constant primary fluid flow rate therethrough, said primary fluid flow rate being relatively independent of primary fluid input pressure variations.

3,981,327
PRESSURE REGULATION VALVE DEVICE

Kichiro Sato, c/o Mitsubata No. 19-9,1-chome, Shin, Setagaya, Tokyo, Japan

Filed July 9, 1975, Ser. No. 594,465

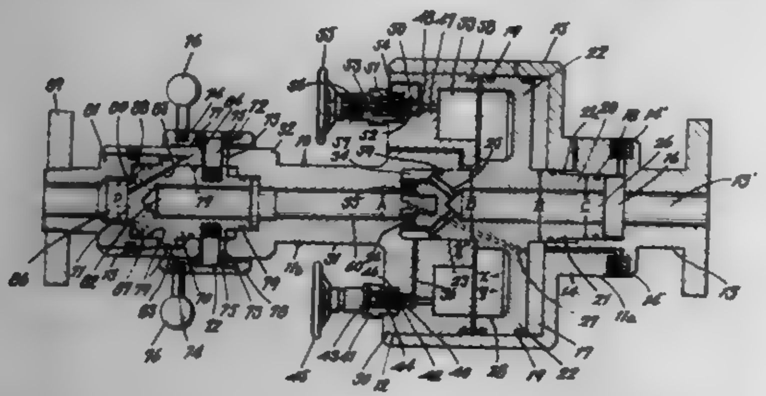
Claims priority, application Japan, July 11, 1974, 49-79415; Oct. 28, 1974, 49-124053

Int. Cl.² G05D *16/10*

U.S. Cl. 137—613 4 Claims

1. A pressure regulation valve device comprising a main body having a linear axial fluid passage, a valve seat and a pressure regulation chamber, a pressure regulation valve body for seating against and unseating from said valve seat and normally maintained under balanced condition by counterbalancing primary pressure acting on the valve body, said valve body having an intermediately positioned largest diameter

pressure receiving portion slidably received within said pressure regulation chamber to define a secondary pressure chamber on one side of the valve body and a reference pressure chamber on the other side of the valve body within the pressure regulation chamber, a primary pressure communication passage provided in said main body adjacent to said valve seat in communication with said reference pressure chamber, a reference pressure setting valve provided in said primary pressure communication passage, and a communication passage leading from a position adjacent to said valve body through said valve body to said secondary pressure chamber in the pressure regulation chamber.



3,981,328

HAND-OPERABLE TAKEOUT VALVE FOR A FLUID PRESSURIZED CONTAINER

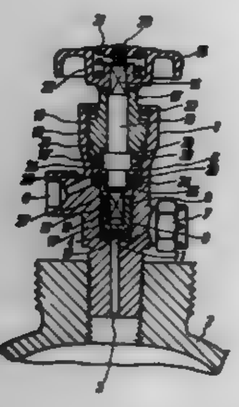
Keitaro Yonezawa, Kobe, Japan, assignor to Kabushiki Kaisha Neriki, Japan

Filed July 24, 1975, Ser. No. 598,733

Claims priority, application Japan, Aug. 9, 1974, 49-91851

Int. Cl.² F16K *11/18*

U.S. Cl. 137—614.2 28 Claims



1. A hand-operable takeout valve for temporary attachement to a fluid pressurized container, comprising an outer body attachable to said container, said outer body including a fluid passage communicating with a takeout port via two adjacent chambers, said first chamber including a main valve closable of said fluid passage and said second chamber including a check valve closable of said takeout port, a stem supporting said main valve for rotational displacement, said stem passing through said check valve and being provided with a means for urging said check valve upwardly, a sleeve mounted in said outer body for rotational displacement, a spring means interposed between said sleeve and said check valve so as to maintain said check valve at a location in which to close said takeout port, and a rotating means of said stem for effecting the rotational displacement of said main valve with respect to said fluid passage.

6. A takeout valve for attachment to a fluid pressurized container, said valve comprising:

an outer body attachable to said container, said outer body including: a fluid passage, a first chamber, a second chamber, and a takeout port; said fluid passage communicating with said first chamber, said first chamber communicating with said second chamber, said second chamber communicating with said takeout port;

A main valve located in said first chamber;

a check valve and valve seat located in said second chamber;

a sleeve rotatably mounted in said outer body for axial displacement with respect to said outer body;

a stem, rotatably mounted in said sleeve, passing through said check valve and engaging said main valve, to rotate and displace said main valve with respect to said outer body to control the passage of fluid between said fluid passage and said first chamber;

a biasing means urging said check valve against said valve seat for preventing the passage of fluid between said second chamber and said takeout port;

a holding means urging said check valve away from said valve seat when said sleeve is axially displaced for allowing the passage of fluid between said second chamber and said takeout port.

3,981,329

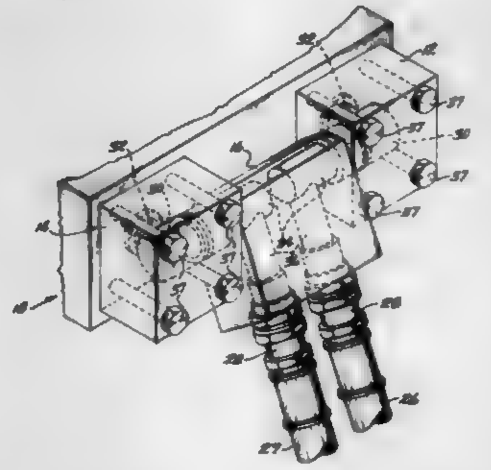
SWIVEL TYPE FLUID COUPLING

Maurice Wohlwend, 5001 S. 112th St., Seattle, Wash. 98176

Filed Oct. 20, 1975, Ser. No. 624,006

Int. Cl.² F16L *39/00*

U.S. Cl. 137—615 9 Claims



1. A swivel coupling for use between hanging hydraulic fluid supply and return hoses and a hydraulic tool which is pivotally mounted onto the outer end of a boom which is itself pivotally mounted at its inner end onto a construction machine, said coupling comprising:

a pair of spaced apart bearing blocks, each of which is formed to include a blind socket opening towards the space between said bearing blocks, said sockets being of cylindrical shape and being formed about a common axis which is parallel to the axis about which the hydraulic tool pivots relative to the boom, said bearing blocks having corresponding mounting sides, said bearing blocks also including internal passageways communicating with said blind sockets and extending perpendicularly of said blind sockets from adjacent the closed ends of the blind sockets to ports on the mounting sides of the bearing blocks, and

a journal block located between said bearing blocks and including a pair of coaxial, oppositely extending, open ended tubular journals which are snuggly received within said blind sockets, to mount said journal block for pivotal movement relative to said bearing blocks, said journal block being formed to include an inflow passageway for hydraulic fluid which communicates with the interior of one of said tubular journals, and an outflow passageway for hydraulic fluid which communicates with the interior of the other tubular journal, with portions of said inflow and outflow passageways extending radially outwardly of the pivotal axis of the journals to ports which are located side-by-side on an end of the journal block, said ports including connection means for coupling them to the hydraulic supply and return hoses.

3,981,330

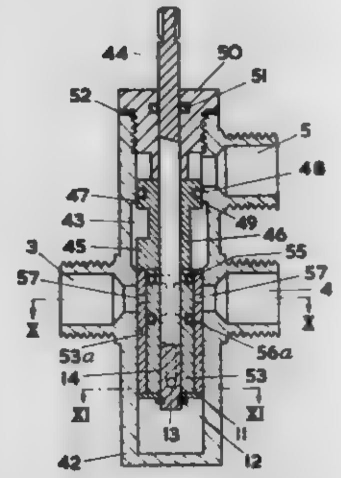
WATER MIXING TAP

Horace Watts, Pinner, England, assignor to H. & D. E. Watts Limited, Middlesex, England

Filed Aug. 5, 1974, Ser. No. 495,039

Int. Cl.² F16K *11/00*

U.S. Cl. 137—636.4 16 Claims



1. A fluid mixing valve comprising a body defining a chamber having a surface of which at least a portion is cylindrical, said cylindrical surface having a first fluid inlet therein and a second fluid inlet therein at a position spaced from said first fluid inlet, a fluid outlet leading from said chamber, valve means positioned operatively within said chamber and comprising a valve closure element and a mixture control element, a valve actuator operatively connected to said elements, said elements being supported for joint axial movement in said chamber under the control of the valve actuator, the mixture control element being supported for rotational movement relative to both the chamber and the valve closure element under the control of the valve actuator, obturating means carried by the valve closure element and engaging the cylindrical surface, said valve means being operable by the valve actuator between a closed positon in which the first and second inlets are both closed by the obturating means and an open position in which the relative degree of opening of the first and second inlets are controlled by the rotative position of the mixture control element.

3,981,331

CROSSING WARP MECHANISM

Anselmo Bolea Camprubi, Barcelona, Spain, assignor to Incotex, S.A., Sabadell (Barcelona), Spain

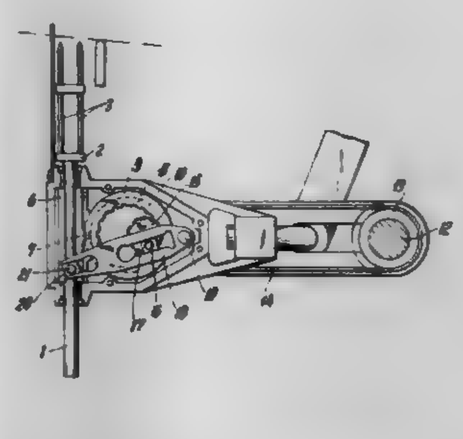
Filed July 23, 1975, Ser. No. 598,352

Claims priority, application Spain, July 31, 1974, 205051

Int. Cl.² D03D *47/40*

U.S. Cl. 139—54 6 Claims

1. A crossing warp mechanism comprising an axially extending rod, a holder plate attached to one end of said rod, a plurality of needles secured to and extending outwardly from said holder plate, a sleeve laterally enclosing an axially extending portion of said rod, said rod being connected to said sleeve so that said rod is axially slidable relative to said sleeve, first means contacting said sleeve for oscillating said sleeve about the axis of said rod, second means contacting said rod for reciprocating said rod in its axial direction, said second means being engaged between said rod and said sleeve to cause said rod to rotate together with said sleeve about its own axis when said sleeve is oscillated by said first means, and means for actuating said first and second means whereby the rod and needles carried by said rod are oscillated and reciprocated simultaneously.



3,981,332

DEVICE FOR DRIVING A CARRIER FOR A FILLING-THREAD GRIPPER HEAD ON A LOOM

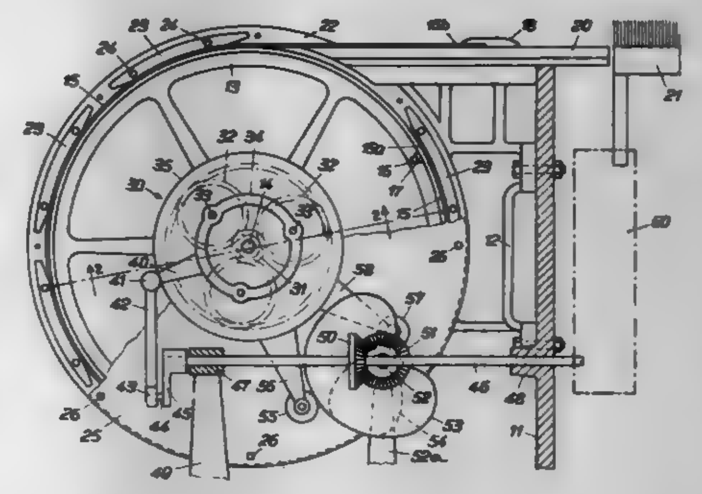
Erwin Schwarz, Ruti, Switzerland, assignor to Ruti Machinery Works Ltd., Ruti, Switzerland

Filed Mar. 10, 1975, Ser. No. 557,086

Claims priority, application Switzerland, Mar. 11, 1974, 3339/74

Int. Cl.² D03D *47/00*

U.S. Cl. 139—449 5 Claims



1. Drive device for a carrier of a filling-thread gripper head on a loom in which the carrier can be moved back and forth by a drive wheel which is turnable alternatively in opposite directions, with a planetary gearing arrangement comprising a sun wheel rigidly connected with the drive wheel, at least one planet wheel in engagement with the sun wheel, an outer wheel having an inner toothing which is arranged coaxial to the sun wheel and which is also in engagement with said planet wheel, a planet wheel strap which rotatably supports the said planet wheel, a drive shaft which drives the planet wheel strap by a first mechanism and the outer wheel by a second mechanism synchronously with a batten and harness drive of the loom in order to convert the movement of rotation of said drive shaft into a back and forth turning movement of said planet wheel strap and of said outer wheel around the axis of said sun wheel.

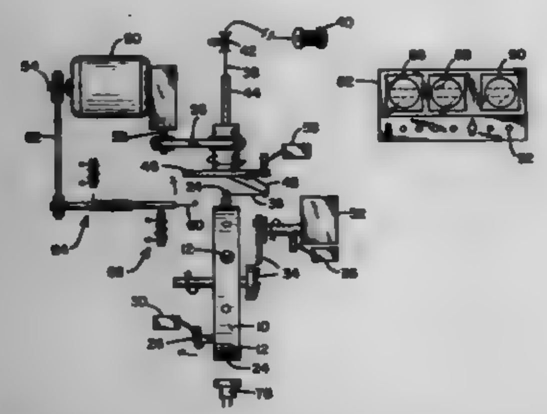
3,981,333
VARIABLE TURN COIL WINDER

Dennis Ludwig Breu, Stillwater, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 24, 1975, Ser. No. 634,397

Int. Cl.² B21F *3/04*

U.S. Cl. 140—1 **7 Claims**



1. Apparatus for facilitating the winding of intermediately tapped electrical transformers utilizing open ferromagnetic bobbin-type cores comprising:

a. means for securing a plurality of bobbins and advancing said bobbins individually to a plurality of work stations;

b. winding means located at one of said plurality of work stations for winding each stationary bobbin core individually, with first and second groups of turns of wire, and

c. means for creating at least one intermediate tap between said first and second groups of turns by pulling the wire being wound on the bobbin core a predetermined distance away from the bobbin core upon the completion of the winding of said first group of turns and twisting the wire so withdrawn while said means for winding is applying said second group of turns to said bobbin core, the arrangement being such that the twisting ultimately exceeds the elastic limit of said wire.

3,981,334
LIQUID DISPENSING AND VAPOR RECOVERY SYSTEM UTILIZING AN INJECTOR AND AN IMPROVED VAPOR FLOW CONTROL UNIT

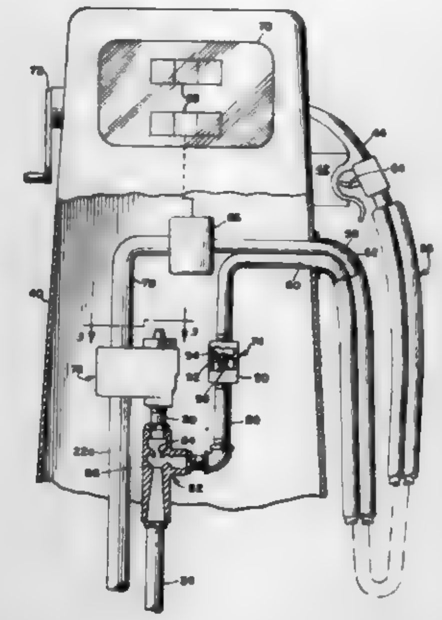
Elmer M. Deters, Muscatine, Iowa, assignor to Weil-McLain Co., Inc., Dallas, Tex.

Filed Apr. 4, 1975, Ser. No. 565,123

Int. Cl.² B67D *5/04*

U.S. Cl. 141—46 **7 Claims**

1. A liquid dispensing and vapor recovery system comprising storage means for said liquid, dispensing means for dispensing said liquid to a receptacle, first conduit means adapted to connect said storage means to said dispensing means, pump means for pumping said liquid from said storage means through said first conduit means and to said dispensing means, second conduit means connected to said first means and to said storage means for diverting a portion of said liquid in said first conduit means back to said storage means, a housing defining a first passage forming a portion of said first conduit means and a second passage communicating with said first passage and forming a portion of said second conduit means, first valve means disposed in said first passage and movable in response to changes in the flow rate of said liquid through said first conduit means, means responsive to the absence of a predetermined liquid flow rate in said first conduit means for urging said first valve means to a position in said first passage in which the flow of liquid through said first conduit means is reduced, second valve means disposed in said second passage and movable in response to said movement of said first valve means for continuously changing the flow rate of liquid through said second passage means, said second valve means preventing the flow of liquid through said second passage upon said first valve member moving to said position, means for forming a reduced pressure zone in said second conduit means in response to liquid flow through said second conduit means, and third conduit means connected to said reduced pressure zone and to said receptacle for permitting the vapors to pass from said receptacle into said second conduit means for passage into said storage means.



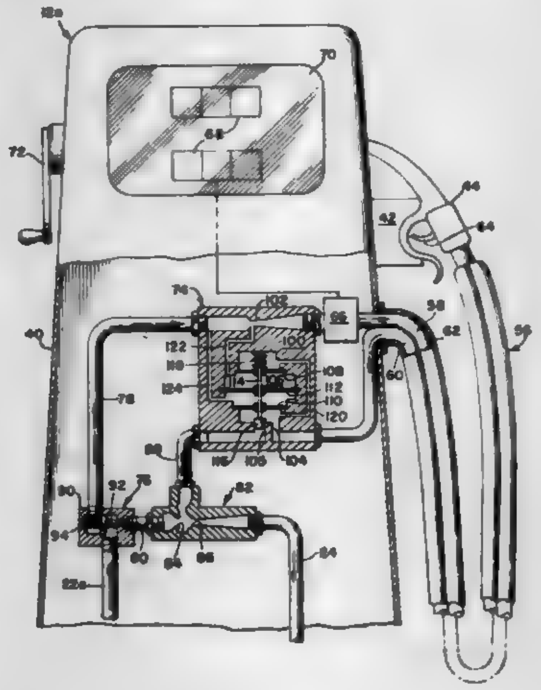
3,981,335
LIQUID DISPENSING AND VAPOR RECOVERY SYSTEM UTILIZING AN INJECTOR AND A VALVE FOR PERMITTING OPERATION OF LEAK DETECTING APPARATUS

Elmer M. Deters, Muscatine, Iowa, assignor to Weil-McLain Co., Inc., Dallas, Tex.

Filed Mar. 31, 1975, Ser. No. 565,728

Int. Cl.² B67D *5/04*

U.S. Cl. 141—46 **7 Claims**



1. A liquid dispensing and vapor recovery system comprising storage means for said liquid, dispensing means for dispensing said liquid to a receptacle, first conduit means adapted to connect said storage means to said dispensing means, pump means for pumping said liquid from said storage means through said first conduit means and to said dispensing means, second conduit means connected to said first conduit means and to said storage means for diverting a portion of said liquid in said first conduit means back to said storage means, a housing defining a first passage forming a portion of said first conduit means and a second passage communicating with said first passage and forming a portion of said second conduit means, first valve means disposed in said first passage and movable in response to changes in the flow rate of said liquid through said first conduit means, means responsive to the absence of a predetermined liquid flow rate in said first conduit means for urging said first valve means to a position in said first passage in which the flow of liquid through said first conduit means is reduced, second valve means disposed in said second passage and movable in response to said movement of said first valve means for preventing the flow of liquid through said second passage upon said first valve means moving to said position, means for forming a reduced pressure zone in said second conduit means in response to liquid flow through said second conduit means, third conduit means connected to said reduced pressure zone and to said receptacle for permitting the vapors in said receptacle to pass from said receptacle into said second conduit means for passage into said storage means, and means operatively associated with said third conduit means for continuously changing the flow rate of the vapors in said third conduit means in response to changes in the flow rate of liquid through said first conduit means.

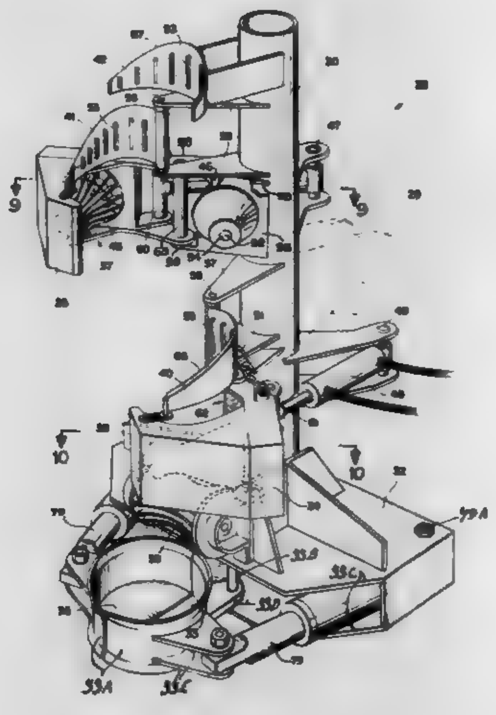
3,981,336
TREE HARVESTER

Joseph Lucien Levesque, Cochram, Canada, assignor to L & L Logging Research Limited, Timmins, Canada

Continuation-in-part of Ser. No. 260,278, June 6, 1972, abandoned. This application May 28, 1974, Ser. No. 474,053

Int. Cl.² A01G *23/08*

U.S. Cl. 144—3 D **4 Claims**



1. In a tree harvester of the class comprising a tree cutting and delimbing unit which first severs a tree trunk after effecting a gripping embrace of the tree and then draws the trunk through the unit to effect delimbing, a plurality of trunk gripping pulling-rollers effecting said draw, characterised in that said rollers have gripping surfaces which are longitudinally and circumferentially concave relative to their rotary axes, said delimbing unit including at least two trunk-holding arms at least partially embracing said trunk, and a delimbing knife attached to at least one of said arms for movement therewith, said delimbing knife having a concave inner surface, said rollers being so journalled between the ends of said arms as to span the same.

3,981,337
KNIFE ASSEMBLY

Erik Wilhelm Sundström, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

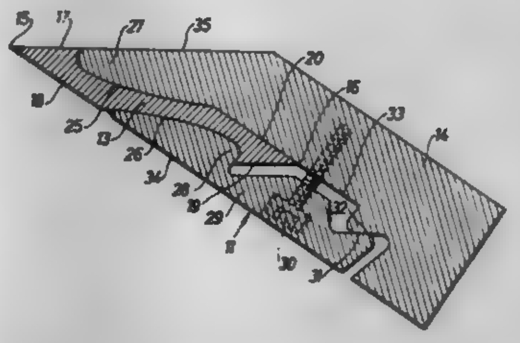
Filed Jan. 30, 1975, Ser. No. 545,630

Claims priority, application Sweden, Feb. 2, 1974, 7401608

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² B27G *13/00*

U.S. Cl. 144—241 **6 Claims**



1. Cutting insert for knife assembly, said insert having two longitudinal cutting edges (15, 16), the insert being symmetrical after turning on a longitudinal axis (40) for fastening in a holder (14, 29) and exposing one cutting edge at a time for cutting purposes, the cutting edges forming in cross section the acute corners of a parallellogram, the insert also having two longitudinal grooves (27, 28) occupying each of the two obtuse corners of said cross section each of said grooves having a hooked cross section in order to establish a hooked engagement between the cutting insert and the holder.

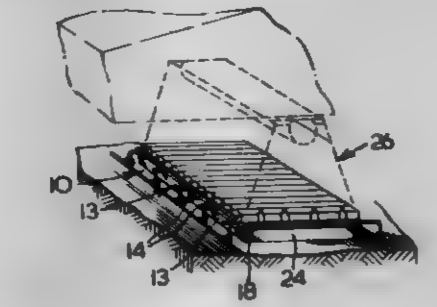
3,981,338
METHOD OF MAKING A COMPRESSED WOOD PANEL FROM PEELED LOGS

Charles A. Jones, 26 Gladstone Ave., Oshawa, Ontario, Canada

Continuation-in-part of Ser. No. 529,868, Dec. 4, 1974, abandoned, which is a continuation of Ser. No. 351,908, Aug. 17, 1973, abandoned. This application Aug. 4, 1975, Ser. No. 601,868

Int. Cl.² B27K *3/15;* **B27L** *1/00;* **B29D** *3/00;* **B29G** *1/00*

U.S. Cl. 144—309 D **10 Claims**



1. The process for producing building panels, comprising the steps of:

arranging in a mold a plurality of debarked dried logs, said mold having side walls to retain liquid, adding a suitable liquid adhesive to said mold to substantially fill spaces between the logs, moving said mold under a pressure applying means and subjecting said logs to mechanical pressure applied uniformly over said logs in a first pressing stage to reduce the overall thickness of said logs in the mold to less than the thickness required for the chosen panel releasing said pressure to allow the logs to expand while substantially immersed in adhesive so that their overall thickness becomes greater than the chosen final panel thickness while said adhesive is sucked into the logs,

subjecting said logs to mechanical pressure applied uniformly over said logs in a second pressing stage, to remove excess adhesive from said logs, the pressure applied in said second stage being less than said first stage,

draining excess liquid adhesive from said mold, moving said logs to an oven therein subjecting the logs and adhesive to elevated temperatures in a mold, to form a panel.

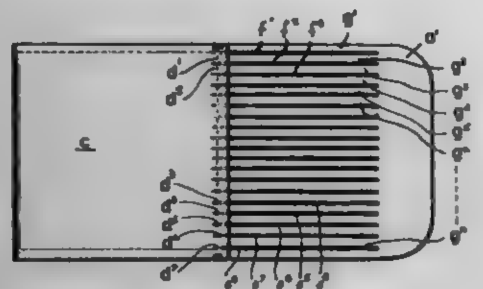
3,981,339
SECRET COMPARTMENT ARTICLE

Marcel M. Arnould, 17 E. Midland Ave., Kearny, N.J. 07032

Filed May 29, 1975, Ser. No. 581,828

Int. Cl.² A45C *1/00*

U.S. Cl. 150—36 **1 Claim**



1. A secret compartment device comprising in combination: at least three strip materials including a first upper material and a second intermediate material at least in part located below the first upper material in a stacked relationship, and a third lower material at least in part located below the second intermediate material in a stacked relationship, said second intermediate material having a plurality of slits extending in substantially parallel relationship to one-another from substantially a central point between opposite ends of an elongated axis of the second intermediate material, each of the three strip materials having a substantially common width with one-another, one portion of the first material being stitched to one portion of the material of the second intermediate material located between said slits, and to and through material of the third lower material for a first predetermined portion of said common width comprising a major proportion of said width, a second portion of the first upper material adjacent said one portion and comprising the remainder of said common width having second stitches stitched through said slits with the second stitches being stitched to a remaining second predetermined portion of the third lower material adjacent said one portion of said lower material, and there being an end portion located and spaced a predetermined distance from said stitches secondly stitched, the end portion including at least one of said first upper material and said third lower material being unified with said second intermediate material along edges thereof extending to and from said stitches such that an enclosure space is defined and such that for said remainder of the common width at said second predetermined portion said second stitches are slidable between the slits whereby said second intermediate material is slidable in a direction toward the enclosure space whereby articles may be inserted through slits of material pulled sufficiently in said direction, into the enclosure space and thereafter may be similarly removed therefrom.

3,981,340
COVER

Richard W. Anderson, Reading, and James L. Pettee, Winchester, both of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Nov. 28, 1975, Ser. No. 636,153

Int. Cl.² B65D *65/08*

U.S. Cl. 150—52 R **11 Claims**

1. A cover comprising:

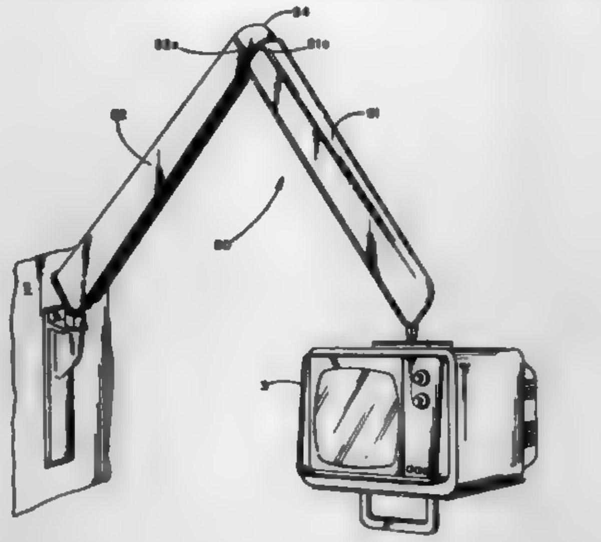
a first, generally-rectangular, generally-flat, flexigle, elongated cover section of material having a first end portion and a second, opposed end portion, said second end portion having a cup-like configuration;

a second, generally-rectangular, generally-flat, flexible, elongated cover section of material having a first end portion and a second, opposed end portion, said second end portion having a cup-like configuration;

a connecting sheet interconnecting the first end portions of the first and second cover sections and including a generally-flat, flexible, non-stretchable central section of material and first and second end sections of stretchable material connected to the central section and to the first end portions of the first and second cover sections, respectively;

first means disposed at the edges of the first cover section generally parallel to the length of the first cover section for joining the edges of the first cover section together; and

second means disposed at the edges of the second cover section generally parallel to the length of the second cover section for joining the edges of the second cover section together.



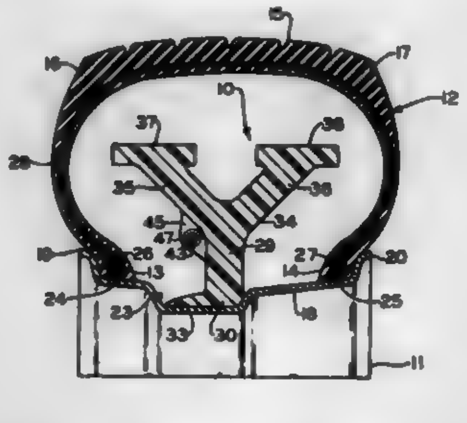
3,981,341
SAFETY SUPPORT FOR PNEUMATIC TIRES

John R. Bauer, North Canton, and Joseph M. Forney, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 19, 1975, Ser. No. 578,525

Int. Cl.² B60C *17/04*

U.S. Cl. 152—158 **4 Claims**



1. A safety support for use on a wheel rim for a pneumatic tire of the type having a tread portion, shoulder portions at the edges of said tread portion and bead portions for mounting the tire on said rim, said wheel rim having an annular well for positioning of said bead portions during mounting of said tire on said rim, comprising an annular central disc-like supporting member having a radially inner edge for mounting said support in said well, said inner edge having a relatively thin axially extending flange at one side of said supporting member with a width substantially equal to the width of said well less the width of said supporting member and not less than the width of one of said bead portions providing space at one side of said well for receiving one of said bead portions of the tire during mounting of the tire on said rim, a pair of supporting rings positioned at spaced-apart positions radially outward of said central supporting member and a pair of supporting arm members connecting said central supporting member and said rings, said rings having a diameter less than the diameter of said tread portion of the tire in the inflated condition and greater than the diameter of said bead portions for supporting engagement of said rings with said tire in the area of said shoulder portions in the deflated condition of said tire.

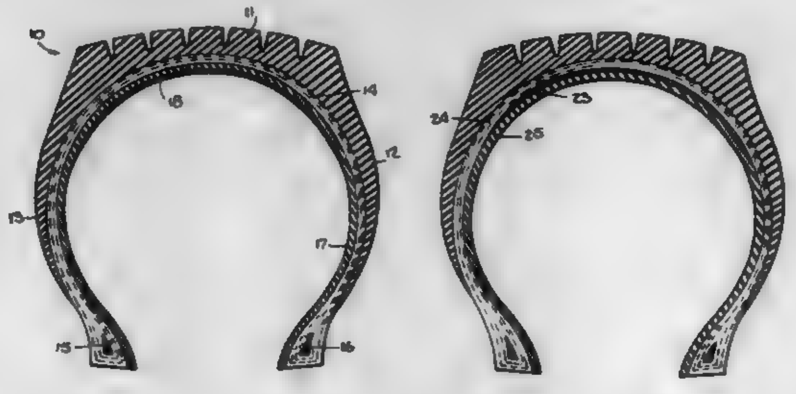
3,981,342
PUNCTURE SEALING COMPOSITION AND TIRE

Milton Farber, Bethany; Frederick C. Loveless, Cheshire, and Robert F. Peterson, Jr., Woodbury, all of Conn., assignors to Uniroyal Inc., New York, N.Y.

Filed Mar. 12, 1975, Ser. No. 557,713

Int. Cl.² B60C *21/08*

U.S. Cl. 152—347 **28 Claims**



6. A puncture sealing composition for a tubeless pneumatic tire comprising a blend of from more than 50 to 90% by weight of a low molecular weight liquid elastomer which is liquid heat depolymerized natural rubber having a Brookfield viscosity at 150° F of from 20,000 to 200,000 cps with correspondingly from less than 50 to 10% by weight of a high molecular solid elastomer having a Mooney viscosity of from 20 to 160 ML-4 at 212° F., said blend being partially corsslinked to an extent sufficient to provide in the blend a gel content of from 15 to 60% by weight of the blend as measured in toluene at room temperature and an initial Mooney viscosity of from 30 to 70 ML at room temperature, whereby the blend is prevented from flowing at elevated temperatures and centrifugal forces encountered in the tire in use and the blend has sufficient adhesion and conformability to function as a sealant in the tire.

3,981,343
COUNTERBALANCING MECHANISM FOR ROLLING DOORS

George DeVito, Chicago, Ill., assignor to Arthur M. Brady, Chicago, Ill.

Filed Sept. 23, 1974, Ser. No. 508,404

Int. Cl.² E05F *15/20*

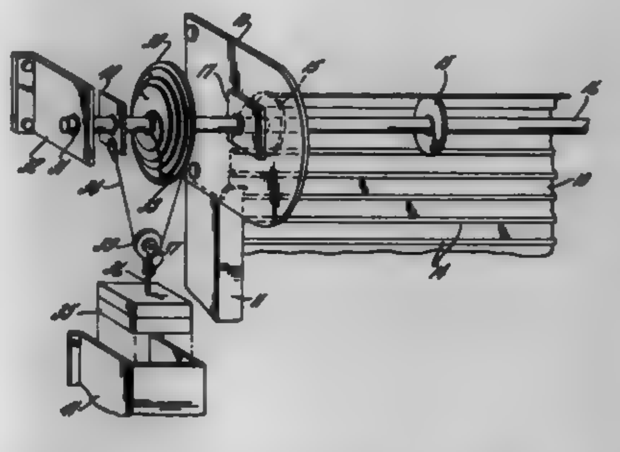
U.S. Cl. 160—9 **7 Claims**

1. A door assembly comprising a standard rolling door comprising a multiplicity of articulated sections mounted for movement vertically along the plane of the doorway and into a stored overhead position above the top of the doorway when the door is opened, the weight of the vertical portion of the door producing variable forces urging the door toward its closed position as the door is moved between its open and closed positions, and a counterbalancing mechanism comprising the combination of:

a. a horizontal shaft rotatably mounted above the doorway and operably connected to said door, and a drum fixed to said shaft for rotation therewith in response to movement of the door between its open and closed positions, said drum having a spiral groove formed in the outer surface thereof for guiding a cable along the drum when the drum is rotated,

b. a cable connected to said drum and wrapped around said drum in said spiral groove in response to rotation of the drum in one direction and unwrapped from the drum in response to rotation in the opposite direction, the lengths of said cable and said spiral groove being such that the cable is completely unwrapped from the spiral groove when the door is in the open position,

c. and a constant counterbalance weight suspended from said cable directly adjacent the doorway for applying a torque to said drum, and thus applying a force to said door, urging the door toward its open position, the radius of curvature of said spiral groove about the axis of said drum gradually decreasing along the length of the drum so that the torque arm between the axis of the drum and said cable gradually decreases as the door moves from its closed position to its open position for counterbalancing the variable forces urging the door toward its closed position, said radius of curvature decreasing at an increasing rate at the smaller end of the spiral drum so that the force applied to the door diminishes at an increasing rate as the door approaches the fully open position, said spiral groove terminating at about the outside diameter of the shaft in a radius of curvature that produces substantially zero torque on the drum, and thus the door, when the door is in its open position so that the door smoothly decelerates as it approaches said open position and is readily withdrawn from said open position for movement toward said closed position, said drum and weight providing the sole counterbalance for said door.



3,981,344
INVESTMENT CASTING MOLD AND PROCESS

Douglas R. Hayes, Vernon, Conn., and Charles M. Phipps, Ridgewood, N.J., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 21, 1974, Ser. No. 499,227

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

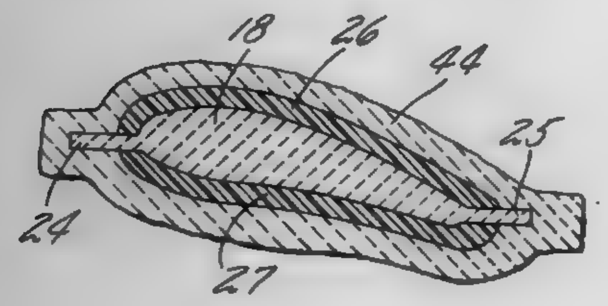
Int. Cl.² B22C *7/02, 9/22*

U.S. Cl. 164—26 **15 Claims**

1. In the manufacture of a mold for use in precision casting of mating thin walled parts from high temperature alloys, the steps of

providing a precast, high strength central mold element of adequate strength to avoid deformation during heating and casting of the said mold element having article forming surfaces on opposite surfaces thereof and edge flanges extending beyond the article forming surfaces and the wax patterns,

positioning individual wax patterns on opposite sides of the element, one on each article forming surface of the element, forming a shell mold around the assembled mold element including the edge flanges and the patterns on the element by successively dipping the element with the patterns thereon in a ceramic slurry, stuccoing with refractory particles to form a coating and drying the coating to form the desired shell thickness, and



heating the shell mold to harden it and to melt out the wax patterns in readiness for making a casting therein, the central mold element retaining its shape and dimension during such heating.

3,981,345
METHOD TO IMPROVE THE STRUCTURE OF CAST METAL DURING CONTINUOUS CASTING THEREOF

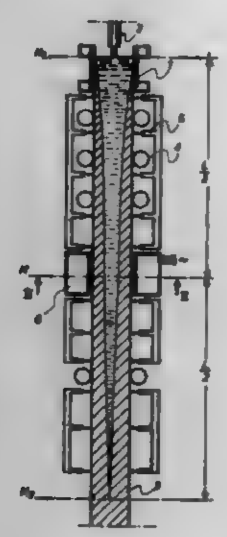
Robert Alberny, Metz; Alain Leclercq, Alpa Porcheville, and Jean-Pierre Birat, Metz, all of France, assignors to Institut de Recherces de la Siderurgie Francaise (IRSID), Saint-Germain-en-Laye, France

Filed May 21, 1974, Ser. No. 471,972

Claims priority, application France, May 21, 1973, 73.18329

Int. Cl.² B22D *27/02, 11/10*

U.S. Cl. 164—49 **4 Claims**



1. A method to control the structure of solidification of a continuously cast metal product in which the product is subjected during its solidification to the action of a rotating magnetic field produced by a bipolar inductor to provoke in a central still liquid portion of the product and at least in a zone bordering the inner surface of the already solidified outer skin a rotary movement of the liquid metal, said method comprising the steps of continuously discharging a stream of molten metal in downward direction; cooling the stream of molten metal to gradually solidify the same; continuously withdrawing the thus solidified metal; continuously measuring the speed at which the product is withdrawn; and regulating the intensity of the magnetic field as a function of variations of the withdrawal speeds so as to maintain constant a value *a* defined by the equation:

$$a = B_e \cdot e(V) \cdot \sqrt{\frac{f}{\rho}} \; ,$$

in which B_e is the effective value in Tesla of the induction in air in the region at the border of the solidified and liquid metal; f is the frequency in Hertz of the current supplied to the bipolar inductor producing the rotating magnetic field, the magnetic field produced corresponding to a magnetic field applied to a reference product of circular cross section of a diameter equal to the minimum width of the product cast and following the same law of solidification as the cast product; ρ is the resistivity of the liquid metal cast in Ωm; and $e(V)$ is the medium distance between two opposite points at the border between the still liquid and the already solidified metal in the zone of action of the magnetic field and measured in the direction normal to the outer surface of the cast product, said distance being defined by the equation:

$$e(V) = E - 2k \sqrt{\frac{H}{V}} \; ,$$

in which E is the distance in meters between two opposite points of the outer surface of the product in the zone of action of the magnetic field and measured in the direction normal to said surface, k is a coefficient of solidification specific to the metal cast, V is the instantaneous withdrawal speed of the product expressed in meters per minute, and H is the metallurgical distance in meters between the median level of action of the magnetic field and the level at which the whole cross section of the cast metal is in the liquid state.

3,981,346
METHOD AND APPARATUS FOR DIRECTIONAL SOLIDIFICATION

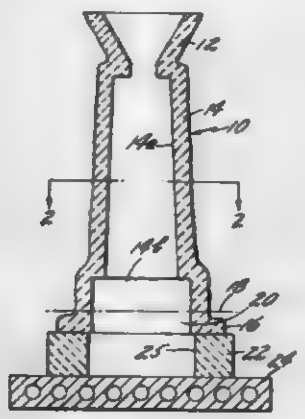
Douglas R. Hayes, Vernon, and James S. Perron, Chester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 3, 1974, Ser. No. 511,885

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² B22D *25/06*

U.S. Cl. 164—60 **10 Claims**



1. Apparatus for making columnar grained articles including,

a chill plate for controlling the cooling of the mold and alloy therein,

a ceramic mold including an article portion having a cavity and a base portion having a cavity communicating with the cavity in the article portion,

a spacer ring of preformed ceramic material separate from the mold and positioned on said chill plate and on which the mold is positioned with the base portion resting on the spacer,

said spacer ring and mold providing a continuous cavity from the chill plate through the spacer and into and including the article portion cavity,

means surrounding the mold for heating the mold to a temperature substantially as high as the melting point of the alloy to be cast, and

the material and thickness of said spacer ring such that said ring is particularly resistant to damage by the steep thermal gradients developed during heating of the mold resting on the ring and simultaneous chilling of the ring by the chill plate, and said spacer ring serving to space the mold from the chill plate to reduce the thermal gradients therein.

3,981,347
METHOD AND APPARATUS FOR STRAND COOLING WITH A FLAT SPRAY PATTERN

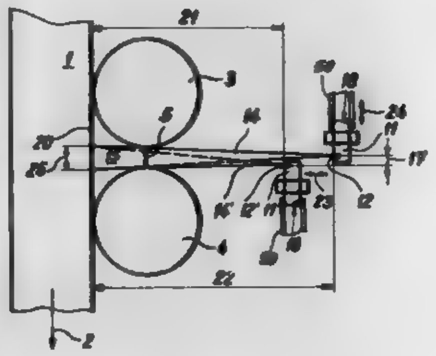
Fritz Willim, Birmensdorf, Switzerland, assignor to Concast AG, Zurich, Switzerland

Filed Apr. 21, 1975, Ser. No. 570,220

Claims priority, application Switzerland, Apr. 26, 1974, 5748/74

Int. Cl.² B22D *11/124*

U.S. Cl. 164—89 **12 Claims**



1. A method of cooling a strand during the continuous casting of metals, especially steel, comprising the steps of guiding the cast strand between neighboring spaced strand guide elements extending in the direction of travel of the strand, selectively spraying cooling fluid between two neighboring strand guide elements from two spray patterns which are essentially unidirectional onto the surface of the strand, said two spray patterns initially extending behind one another in the direction of travel of the strand and thereafter being united into a flat spray pattern, the thickness and direction of which approximately corresponds to that of one of the adjacently situated spray patterns.

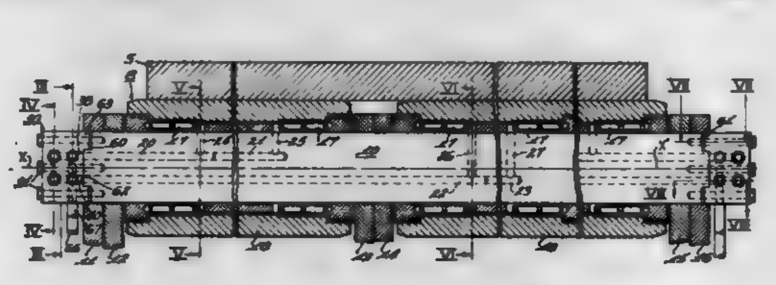
3,981,348
SUPPORT AND LUBRICATION SYSTEM FOR CONTINUOUS CASTING MACHINE ROLLERS

William A. Schmucker, Cedarburg, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 20, 1975, Ser. No. 623,599

Int. Cl.² B22D *11/14;* **F01M** *1/06;* **F16N** *25/02*

U.S. Cl. 164—149 **5 Claims**



1. A roller assembly for such as supporting a strand of metal cast in a continuous casting machine, with the roller assembly having a shaft adapted to be journaled in supporting arms at axially spaced locations along the shaft, a plurality of axially spaced bearings mounted on the outer periphery of the shaft, a plurality of axially spaced cylindrical roller shells mounted on the outer periphery of the bearings, at least one axial end of the shaft bored to define at least three axially inwardly projecting lubricating passages each in fluid communication with at least one radially extending lubrication passage located to deliver lubricant to one of the bearings, and including an improvement comprising a lubricant measuring and distributing valve assembly mounted on the end of the shaft so bored, with the valve assembly comprising:

a. a body defining a pair of lubricant inlet passages for alternately receiving a pressurized lubricant according to a predetermined time sequence, and at least three outlets for discharging lubricant from the valve body in the shaft passages;

b. means provided within the body and connected to each of the inlet passages for regulating the admission of lubricant;

c. means provided within the body and connected to the regulating means for measuring four predetermined volumes of admitted lubricant; and

d. operating means within the lubricant volume measuring means, responsive to a flow of pressurized lubricant from one of the inlet passages through the regulating means to operate the measuring means to receive a first pair of predetermined volumes of lubricant from the regulating means, after which the operating means operates in response to the alternating of pressure from the pair of inlet passages to operate the measuring means to receive a second pair of such volumes of lubricant which then actuate the operating means to expel the first pair of volumes of lubricant from the measuring means through first and second of the outlets respectively which are connected with a first and second of the shaft passages, and the operating means thereafter receives lubricant from the regulating means to replace the expelled first pair of volumes and such admission of lubricant actuates the operating means to expel the second pair of volumes of lubricant through at least a third outlet which is connected with a third shaft passage.

3,981,349
ELECTROSLAG REMELTING PLANT

Boris Izrailevich Medovar, ulitsa A.Barbjusa, 22/26, kv. 109, Kiev; Vladimir Yakovlevich Saenko, Kharkovskoe shosse, 18, kv. 71, Kiev; Grigory Bentsionovich Schupak, ulitsa Chudnovskogo, 7, kv. 61, Kiev; Jury Fedorovich Alferov, bulvar Lepse, 29, kv. 64, Kiev; Vladimir Fedorovich Karpov, prospekt Metallurgov, 213/3 kv. 18, Zhdanov Donetskoi oblasti; Kirill Adolfovich Berman, ulitsa Pirogova, 67, kv. 68, Zhdanov Donetskoi oblasti; Vitaly Vasilievich Pogoretsky, ulitsa Pushkina, 66, Zhdanov Donetskoi oblasti; Vitaly Alexandrovich Ovseichuk, pereulok Vesely, 5a, kv. 18, Korsakov Sakhalinskoi oblasti; Petr Stepanovich Zabolotsky, bulvar Shevchenko, 248, kv. 124, Zhdanov Donetskoi oblasti; Georgy Alexandrovich Boiko, ulitsa Vladimiro-Lybedskaya, 16, kv. 106, Kiev; Vladimir Ivanovich Oleinik, ulitsa Entuziastov, 29/1, kv. 38, Kiev; Stanislav Vitalievich Grodzitsky, ulitsa Matejuka, 5, kv. 190, Kiev; Viktor Andreevich Popov, ulitsa Andreevskaya 11, kv. 2, Kiev, and Anatoly Ivanovich Chvertko, bulvar Lesi Ukrainki, 2, kv. 10, Kiev, all of U.S.S.R.

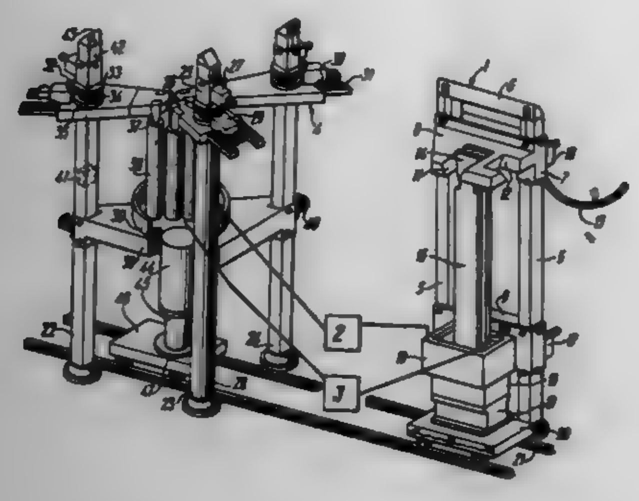
Filed Sept. 19, 1975, Ser. No. 615,076

Int. Cl.² B22D *27/02*

U.S. Cl. 164—252 **2 Claims**

1. An electroslag remelting plant, comprising molds with a base plate; a double-mast single-phase furnace with a water-cooling and a gas suction system; electrode holders arranged on each of said masts; a three-mast three-phase electroslag remelting furnace connected directly to said water-cooling and gas suction systems of the double-mast single-phase fur-

nace; at least one of the masts of said three-mast three-phase furnace on which the electrode holder is fixed is arranged at such a distance from the double-mast single-phase furnace which ensures the melting of an ingot into a common mold.



3,981,350
APPARATUS FOR SUPPORTING AND COOLING A CONTINUOUSLY CAST PRODUCT

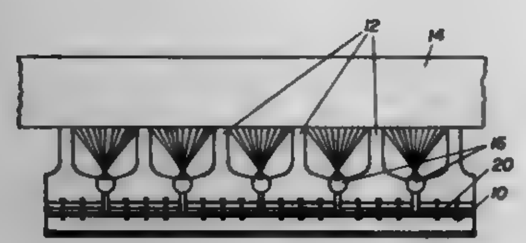
Alain Chielens, Marcq en Baroeul, and Jean Pierre Henin, Lille, both of France, assignors to Fives-Cail Babcock, Paris, France

Filed Mar. 10, 1975, Ser. No. 556,878

Claims priority, application France, Mar. 8, 1974, 74.07923

Int. Cl.² B22D *11/14*; **B65G** *11/18*; **F27B** *3/12*

U.S. Cl. 164—283 R **24 Claims**



1. An apparatus for supporting and cooling a continuously cast product having a surface while the product is displaced along a path, comprising

1. a series of substantially identical support bars extending substantially parallel to each other in a direction transverse to the path of displacement,
   a. the support bars being dismountably assembled to form a panel, and
   b. each bar including a portion of rectangular cross section having a large face and a small face, the large face extending perpendicularly to the surface of the cast product and the small face being arranged in contact with the surface of the cast product to support the product, the width of the small faces of the bar portions being substantially less than the spacing therebetween; and
2. elongated means for spraying a cooling fluid disposed substantially parallel to each other on the panel and between the support bars, the elongated spraying means being supported by the panel.

3,981,351
MOLD FOR THE CONTINUOUS VERTICAL CASTING OF BILLETS

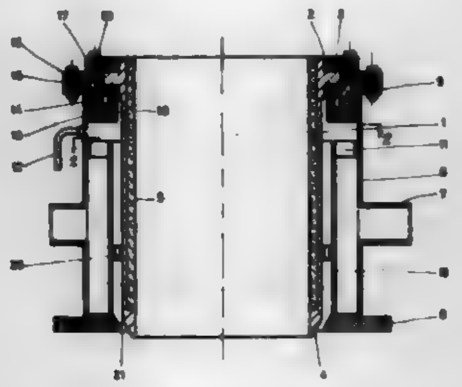
John Dompas, Olen, Belgium, assignor to Metallurgie Hoboken-Overpelt, Brussels, Belgium

Filed Nov. 13, 1974, Ser. No. 523,405

Claims priority, application Luxemburg, Nov. 26, 1973, 68861

Int. Cl.² B22D *11/124*

U.S. Cl. 164—283 R **13 Claims**



1. A device for the continuous vertical casting of metal billets which includes

a. a tubular mold having an upstream end and a downstream end,
b. a cooling jacket disposed annularly with respect to said tubular mold,
c. fluid inlet means for introducing a cooling fluid into the space between said tubular mold and said cooling jacket,
d. an annular fluid discharge slot located adjacent the downstream ends of said tubular mold and said cooling jacket,
e. a tubular member disposed between the exterior of said tubular mold and the interior of said cooling jacket and extending upwardly an axial distance less than said mold and said cooling jacket,
f. a plurality of rib members extending outwardly from the upper part of said tubular member toward the inner wall of said cooling jacket so as to thereby form a plurality of flow channels, and
g. a passageway extending from said fluid inlet means, past said rib members, around the end of said tubular member and then to said annular fluid discharge slot, whereby when fluid is introduced into said fluid inlet means it will flow in the space between the inner wall of said cooling jacket and the outer wall of said tubular member toward the upstream end of said tubular mold, be divided into a plurality of flow streams by said rib members, and then flow in a laminar streams between the inner wall of said tubular member and the outer wall of said tubular mold toward said annular fluid discharge slot.

3,981,352
METAL CASTING MOLD WITH BONDED PARTICLE FILTER

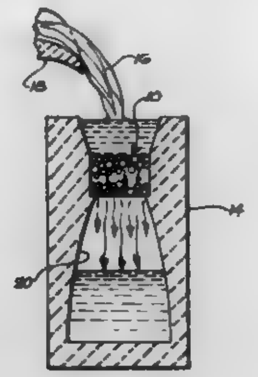
John I. Nurminen, North Muskegon, Mich., and David H. Sturgis, Gladstone, Oreg., assignors to Howmet Corporation, Greenwich, Conn.

Filed Nov. 21, 1975, Ser. No. 634,045

Int. Cl.² B22C *9/08*

U.S. Cl. 164—358 **5 Claims**

1. The combination of a mold for casting metal and a filter construction associated therewith, said mold including a passage for the introduction of molten metal into a mold cavity, said filter being located in said passage whereby the molten metal passes through the filter during filling of the mold, the improvement wherein said filter comprises a multiplicity of substantially spherical, refractory particles, and a ceramic binder securing said particles in bonded assembly, said binder substantially completely coating the particles, openings defined between the coated particles to permit the flow of molten metal through the filter, said binder having an affinity for inclusions in the molten metal including dross and slag constituents whereby such inclusions are removed during passage of metal through the filter.



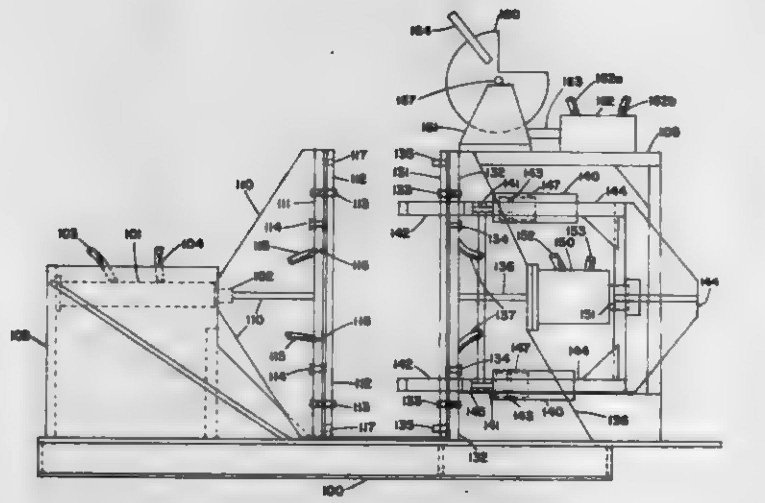
3,981,353
ANODE CASTING MACHINE

Bill J. Knight, 7315 S. Settler Ave., Tucson, Ariz. 85706

Filed Jan. 16, 1975, Ser. No. 532,491

Int. Cl.² B22D *19/00, 41/04, 17/26*

U.S. Cl. 164—332 **31 Claims**



1. An anode casting machine for casting metal anodes comprising a base means, a first open faced mold plate, a first backing plate operably connected to said first open faced mold plate, a second open faced mold plate, a second backing plate operably connected to said second open faced mold plate, means attached to said base means to unite and secure said first and second open faced mold plates into a mold configuration, ladle means for introducing molten metal into said mold formed by said first and second mold plates, means to stabilize temperature of said first and second mold plates, means for separating said first and second mold plates and means for transferring molten metal from an associated melting pot to said ladle means, said ladle means for introducing molten metal into said mold configuration comprising rotatable cylinder means having axle means at each end, said axle means operably connected to support means connected to said base means, said cylinder having openings along the circumference and parallel with the longitudinal axis cylinder, whereby said cylinder when filled with molten metal may be rotated until said molten metal pours from said openings.

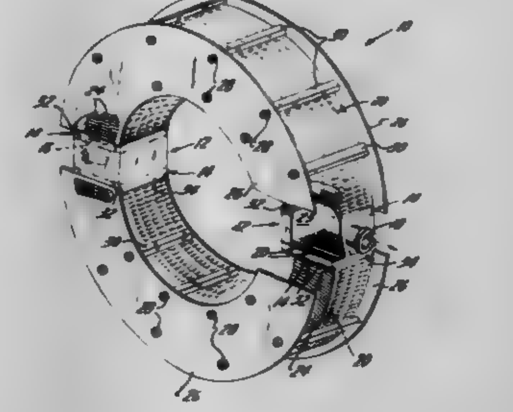
3,981,354
BUILT-UP TUBE AND TUBESHEET ASSEMBLY FOR MULTI-CONDUIT HEAT EXCHANGERS

Richard J. Haberski, Emerson, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Mar. 28, 1975, Ser. No. 563,089

Int. Cl.² F28F *7/00*

U.S. Cl. 165—79 **11 Claims**



1. A tube and tubesheet assembly for a heat exchanger having a plurality of tube elements of non-circular cross-section comprising:

a. plurality of peripheral wall elements secured together to form an enclosure;
b. at least one partition wall element disposed in said enclosure and secured at opposite ends to said peripheral walls to divide said enclosure into tube element receiving openings;
c. said tube elements having end portions disposed in said openings;
d. spacer means coacting with said tube elements and said peripheral and partition walls adjacent thereto to position said tube elements in a predetermined close spaced relationship with said adjacent peripheral and partition walls; and
e. securing means for connecting said tube elements and said peripheral and partition wall elements together and for sealing the interstices between the end portions of the tube elements and the adjacent peripheral and partition wall elements.

3,981,355
SOLID-GAS HEAT EXCHANGE METHOD IN COUNTERCURRENT CONTACTING OF GAS AND GRANULAR MATERIAL IN PANEL BED

Arthur M. Squires, 245 W. 104 St., New York, N.Y. 10025

Filed Sept. 19, 1974, Ser. No. 507,398

Int. Cl.² F25B *13/00*

U.S. Cl. 165—2 **15 Claims**

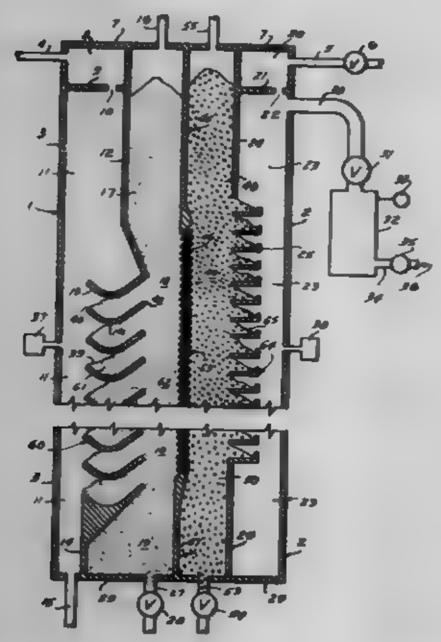
1. A method for solid-gas heat exchange in countercurrent contacting of gas and granular material in a panel bed comprising:

a. arranging granular material at a given temperature in a bed having a plurality of transversely disposed upwardly spaced gas entry portions separated by interposed supporting members having outer and inner edges with respect to the bed wherein said gas entry portions have gas entry faces with outer edges substantially contiguous with said outer edges of said supporting members and wherein a supporting member is gently curved and inclines downwardly and inwardly from its outer edge and then upwardly and inwardly toward its inner edge and wherein the inner edge of a typical supporting member is above the inner edge of the gas entry face supported by the member, and wherein said bed has gas exit portions spaced from said inner edges of said supporting members;
b. forwardly flowing gas at a different temperature in a substantially continuing flow during said heat exchange

through the gas entry portions of the granular material bed and outwardly from the gas exit portions to exchange heat between said gas and said granular material; and

c. thereafter causing a transient flow of an auxiliary gas to move in the direction in reverse to the flow of said gas in (b);

d. said transient reverse flow producing first a rise at a given rate of rise and subsequently a fall in the pressure difference between said gas exit portions and said gas entry portions, said difference produced by said transient reverse flow remaining greater than a first critical minimum difference for a time interval less than about 150 milliseconds, said first critical difference being that difference at which a steady flow of gas in said reverse direction just produces a localized spill of granular material from said gas entry faces, and said difference produced by said transient reverse flow peaking to a top value beyond a second critical minimum difference, which is the pressure difference at which a transient flow of gas in said reverse direction producing said pressure difference at said rate of rise just initiates a body movement of the granular material toward said gas entry faces to spill a portion of the granular material from the bed.



3,981,356

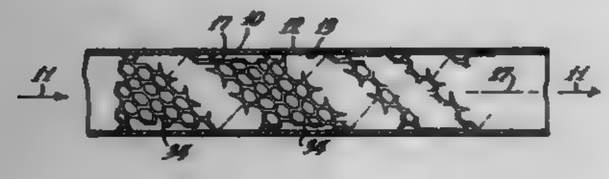
HEAT EXCHANGER

Dennis C. Granetzke, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis.

Filed June 6, 1975, Ser. No. 584,632

Int. Cl.^{2} F28F *1/42*

U.S. Cl. 165—179 7 Claims



1. A heat exchanger, comprising: a heat exchange tube for flow of a heat exchange liquid therethrough; and a turbulator on the interior of said tube and in contact with the inner surface of the tube wall, said turbulator comprising an expanded metal member arranged in a flat helix comprising coils located adjacent and substantially parallel to said wall surface, and having side edges with spacing projections integral with the expanded metal, said projections extending outwardly of said helix coils and in contact with the inner surface of the tube for spacing the expanded metal helix turbulator from the tube inner surface, said expanded metal comprising separated strands defining openings through the metal and connecting bridges for said strands with the strands and bridges having side surface means at an angle to said helix and thus to said wall surface for directing a preselected portion of the liquid in the tube toward the inner wall surface and the remainder toward the main liquid stream on the interior of the tube, thereby achieving improved heat transfer through said tube wall with minor pressure drop of said liquid flow through the tube.

3,981,357

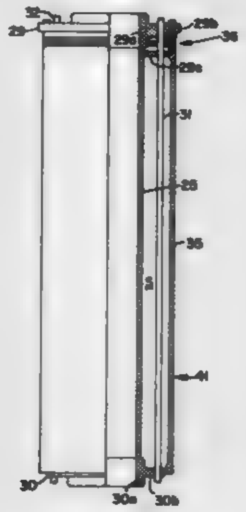
MARINE RISER

James M. Walker; William T. Ilfrey, and Philippe H. Schaeffer, all of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Feb. 3, 1975, Ser. No. 546,490

Int. Cl.^{2} E21B *7/12*

U.S. Cl. 166—*.5* 3 Claims



3. Apparatus for buoyantly supporting a section of conduit comprising:

a. a buoyancy can mounted concentrically about said conduit and being sized to form an annular space therebetween; and

b. a laminated gasket having alternate layers of a metal and a resilient material, said gasket connecting said can to said conduit, said gasket being operative to permit free movement of the non-attached lower end of said can with respect to said conduit to substantially eliminate the transfer of bending moments between said can and said conduit upon bending movement of said conduit.

3,981,358

WELL SAFETY VALVE

Fred E. Watkins, Houston, Tex., and James R. Reaux, New Orleans, La., assignors to Camco, Incorporated, Houston, Tex.

Filed Nov. 14, 1975, Ser. No. 632,032

Int. Cl.^{2} E21B *43/12*

U.S. Cl. 166—224 A 7 Claims

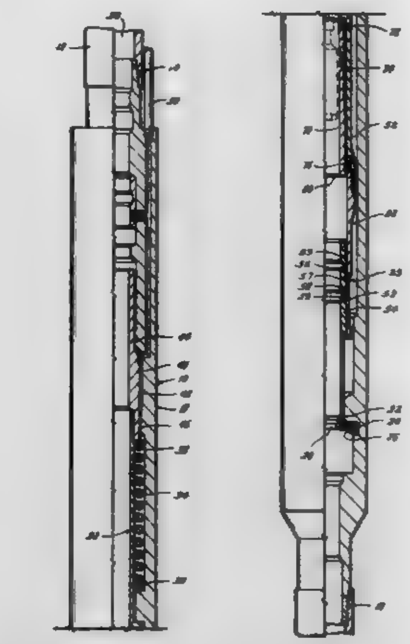
1. In a well safety valve for controlling the fluid flow through a well tubing, the valve adapted to be positioned in the well tubing and having a valve closure member moving between open and closed positions, a longitudinally movable tubular member for controlling the movement of the valve closure member, first means for moving the tubular member in a first direction, second means for moving the tubular member in a second direction, the improvement comprising,

said tubular member including a first upper and a second lower telescoping section,

releasable locking means normally securing the telescoping sections together, and releasable means constructed to release upon the application of a predetermined force less than a force sufficient to cause damage to the valve,

said releasable locking means normally securing the telescoping sections in an intermediate extended position whereby upon the application of said predetermined force, said sections will telescope towards each other preventing damage to said valve, and

tool engaging means on the second telescoping section for extending said section downwardly for opening the valve closure member.



3,981,359

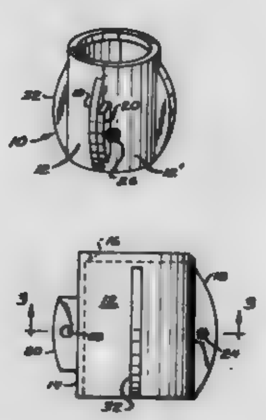
CENTRALIZER ELEMENT FOR WELL SCREEN

Dewitt L. Fortenberry, Lafayette, La., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 21, 1975, Ser. No. 624,511

Int. Cl.^{2} E21B *17/10, 43/10*

U.S. Cl. 166—241 2 Claims



1. A centralizer for axially centering a well screen within a tubular well casing, said centralizer comprising a pair of identical housing portions having a generally semi-cylindrical, annular wall cross-section along substantially the entire axial length thereof, one end of said wall having an integral, inwardly extending lip portion formed thereon, a pair of integral, outwardly extending flange portions formed in a common plane and extending from each side edge of said housing portions, each one of said pair of flange portions having an aperture therein so that when a pair of housing portions are positioned opposite each other and in surrounding relation to a well screen, fastener members can pass through said apertures to clamp said housing portions together, and an outwardly extending flange portion on each housing portion arranged between said pair of flange portions, each of said flange portions extending about the same distance from the inner wall of said housing portions so as to center a well screen to which said housing portions are adapted to be clamped within a well casing which is just slightly larger in internal diameter than the distance between the tips of any pair of flange portions lying in a common plane, said lip portions being adapted to fit into a recessed area of limited axial extent adjacent the end of a well screen to prevent axial shifting of said centralizer relative to a well screen to which it is clamped.

3,981,360

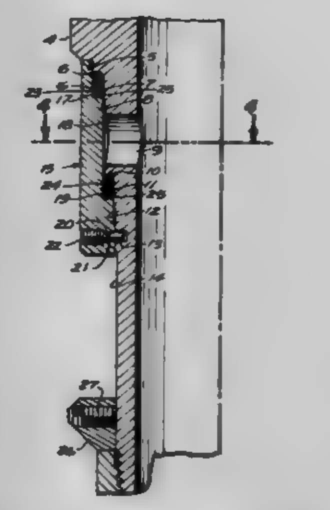
WELL TUBING DRAIN

Anil Marathe, Long Beach, Calif., assignor to Cook Testing Co., Long Beach, Calif.

Filed July 30, 1975, Ser. No. 600,213

Int. Cl.^{2} E21B *33/16, 33/134*

U.S. Cl. 166—224 R 8 Claims



1. A drain for a well tubing string, comprising:

a. a tubular mandrel member having at least one lateral port and adapted to be interposed between sections of a tubing string;

b. an axially movable annular sleeve member surrounding the mandrel member;

c. at least one shear pin connecting the sleeve and mandrel to restrain the sleeve against axial displacement;

d. a pair of axially spaced annular seal means disposed between the sleeve member and mandrel member isolating and sealing the port each of the seal means presenting a pressure responsive area, and one being of larger diameter than the other whereby both pressure areas are operable to apply a shearing load in the same direction on the shear pin;

e. and at least one of the seal means presenting an axially directed annular pressure responsive area, exposed to the interior of the mandrel member through the port and responsive to a predetermined fluid pressure in the mandrel member to exert a shearing load on the shear pin permitting downward axial displacement of the sleeve member to expose the port.

3,981,361

OIL RECOVERY METHOD USING MICROEMULSIONS

Robert N. Healy, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed July 31, 1975, Ser. No. 601,126

Int. Cl.^{2} E21B *43/22*

U.S. Cl. 166—252 19 Claims

1. A method of recovering oil from a subterranean formation containing formation oil and formation water which comprises:

a. combining an oil having physical and chemical characteristics approximately the same as the formation oil, an aqueous medium having physical and chemical character-

istics approximately the same as the formation water, and a surfactant to form a microemulsion and at least one liquid phase which is immiscible with said microemulsion;
b. determining the ratio of the volume of said immiscible liquid phase in said microemulsion to the volume of the surfactant in said microemulsion;
c. selecting a microemulsion having a volumetric ratio greater than 0.5; and
d. injecting a microemulsion containing an oil, an aqueous medium and a surfactant each having physical and chemical characteristics substantially the same as the oil, aqueous medium, and surfactant contained in said selected microemulsion into said formation to recover oil.

3,981,362
IN-SITU COMBUSTION METHOD FOR THE RECOVERY OF HYDROCARBONS

Joseph C. Allen, Bellaire, and Fuad T. Saadeh, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 17, 1975, Ser. No. 558,869

Int. Cl.² E21B *43/24*

U.S. Cl. 166—260 **7 Claims**

1. A method of recovering hydrocarbons from a subterranean hydrocarbon-bearing reservoir penetrated by at least one injection well and one production well, utilizing a hot inert gas drive, said reservoir having undergone hydraulic fracturing employing a combustible hydraulic fracturing mixture to create fractures therein, comprising the steps of:
a. injecting via said injection well an oxygen-containing gas into said created fractures in said reservoir containing said hydraulic fracturing mixture,
b. initiating an in-situ combustion of said hydraulic fracturing mixture within said fractures of said reservoir,
c. continuing injection of said oxygen-containing gas to combust said fracturing mixture to attain a temperature in said fractures in the range of at least 650° to 750°F,
d. injecting via said injection well a stream of fluidized carbon in an inert gas carrier and simultaneously continuing injection of said oxygen-containing gas thereby causing combustion of said fluidized carbon in said fractures whereby minimum formation of water of combustion is achieved,
e. terminating injection of said stream of fluidized carbon in an inert gas carrier and said oxygen-containing gas after a sufficient amount of heat has been generated by said combustion such that said reservoir hydrocarbons have been rendered mobile,
f. injecting via said injection well an inert gas to provide a hot inert gas drive in said reservoir,
g. producing said reservoir hydrocarbons via said production well.

3,981,363
PARTIALLY CROSSLINKED POLYMER USED IN CORRECTING SUBTERRANEAN FORMATION PERMEABILITY

James W. Gall, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 6, 1975, Ser. No. 629,357

Int. Cl.² E21B *43/22, 33/138*

U.S. Cl. 166—270 **9 Claims**

1. A method for treating a subterranean formation which is penetrated by at least one well bore, comprising:
a. injecting into the formation through a well bore a first aqueous solution of partially crosslinked polymer;
b. thereafter injecting a complexing ionic solution of multivalent cations and retarding ion; and
c. thereafter injecting into the formation through the well bore a second aqueous solution of partially crosslinked polymer.

3,981,364
WELL TUBING PARAFFIN CUTTING APPARATUS AND METHOD OF OPERATION

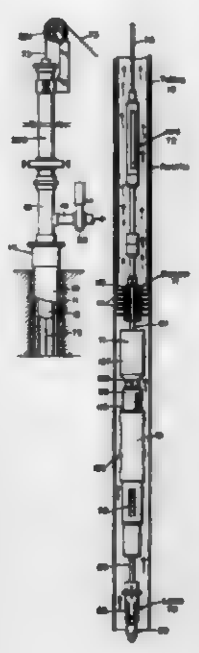
Darrell G. Warner, New Orleans, and William D. Loth, Covington, both of La., assignors to Exxon Production Research Company, Houston, Tex.

Filed Oct. 2, 1974, Ser. No. 511,156

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² E21B *21/00, 37/02*

U.S. Cl. 166—311 **16 Claims**



1. A paraffin cutter for use in removing paraffin from a well tubing comprising a stationary wireline operated subsurface safety valve;
means for releasably connecting said paraffin cutter to said subsurface safety valve and
for permitting sufficient tension to be applied to said subsurface safety valve to maintain said subsurface safety valve open while said paraffin cutter and said subsurface safety valve remain connected together.

11. A method for cutting paraffin from a tubing containing a wireline operated subsurface safety valve comprising the steps of:
lowering paraffin cutting apparatus containing cutting elements engageable with the wall of said tubing through said tubing on a wireline;
connecting said paraffin cutting apparatus to said safety valve;
applying sufficient tension to said wireline to open said safety valve and maintain said safety valve open;
manipulating said wireline to disconnect said paraffin cutting apparatus from said safety valve and to expose cutting elements on said paraffin cutting apparatus for engagement with the wall of said tubing; and
pulling said paraffin cutting apparatus upwardly through said tubing by said wireline with said cutting elements in engagement with the wall of said tubing.

3,981,365
ROCK GATHERING MACHINE

Carl R. Arnold, and Charles D. Arnold, both of Marion, Iowa, assignors to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

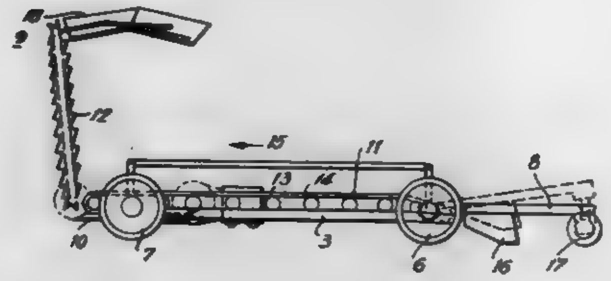
Filed Mar. 10, 1975, Ser. No. 556,689

Int. Cl.² A01B *43/00*

U.S. Cl. 171—63 **2 Claims**

1. A rock gathering machine for picking rocks up off the ground, said rock gathering machine comprising

a vehicle movable over land;
conveyor means mounted on the vehicle for transporting rocks from the front of the vehicle to an elevated point at the rear of the vehicle, said conveyor means comprising endless belt means having a plurality of spaced rod-like members transverse to the direction of movement of the belt means whereby small stones and dirt fall onto the land under the vehicle, a substantially horizontal section of the conveyor, and a substantially vertical section of the conveyor;



rock catching means mounted at the front of the vehicle for picking up rocks lying in the path of the vehicle and depositing them on the conveyor means; and
removing means mounted at the rear of the vehicle for removing rocks from the conveyor means and depositing them in a desired area relative to the vehicle, said removing means comprising sleeve means directing rocks from the vertical section to an area alongside the vehicle.

3,981,366
SOIL CULTIVATOR

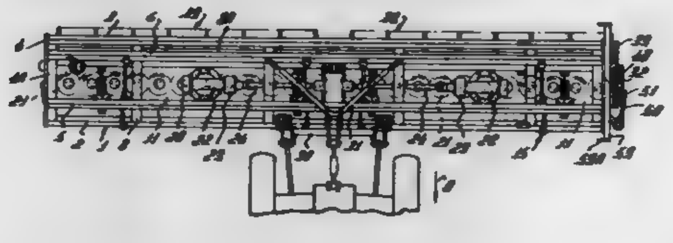
Cornelis van der Lely, 7 Bruschenrain, Zug, Switzerland; Ary van der Lely, 10, Weverskade, Maasland, and Cornelis Johannes Gerardus Bom, 36, Esdoornlaan, Rozenburg, both of Netherlands

Division of Ser. No. 369,907, June 14, 1973, Pat. No. 3,885,633. This application Mar. 24, 1975, Ser. No. 561,228

Claims priority, application Netherlands, Apr. 18, 1973, 7305416

Int. Cl.² A01B *33/06, 23/04*

U.S. Cl. 172—59 **7 Claims**



1. A cultivator or harrow implement comprising frame means and a plurality of soil-working members rotatably mounted on upwardly extending axes with driving means connected to said members to rotate same, said frame means including a supporting frame that supports said soil-working members and driving means, said supporting frame comprising four beams and said beams extending generally parallel to one another, transverse to the normal direction of operative travel of said implement, said beams being arranged in pairs at different levels above the ground and means interconnecting said beams with one another, a leading beam of the lowermost pair being located at a lower level than a rearward beam of that pair, a foremost beam of the uppermost pair being located at a higher level than a rearmost beam of the uppermost pair, the distance between the beams of said lowermost pair being greater than the distance between the beams of said uppermost pair.

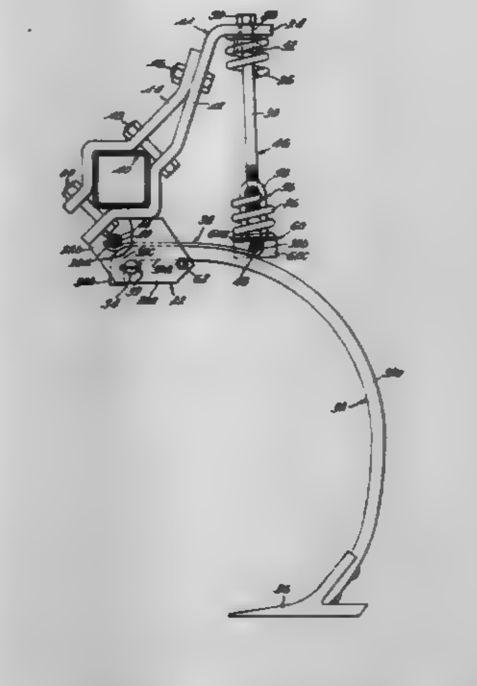
3,981,367
SPRING TRIP CULTIVATOR SHANK ASSEMBLY

John W. Mydels, La Porte, Ind., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sept. 29, 1975, Ser. No. 617,935

Int. Cl.² A01B *61/04*

U.S. Cl. 172—265 **12 Claims**



1. A spring trip cultivator shank assembly adapted to be supported from a bracket structure carried by the transverse tool bar of a cultivator apparatus, comprising a pair of downwardly extending side plates positioned contiguous the forward end of said assembly, said side plates being spaced laterally from each other but longitudinally of said tool bar, a cultivator shank adapted to support a cultivator tool contiguous the lower end thereof, the upper forward end of said cultivator shank extending between said side plates and including a pivot part, horizontally extending pivot means carried by said side plates engaging said pivot part to accomodate pivotal movement of said cultivator shank in a vertical plane, an abutment member received between said side plates and bearing against said cultivator shank to hold said cultivator shank against said pivot means, said abutment member extending beyond and rearwardly of said side plates in overlying abutting relation to the upper surface of said cultivator shank, a loading spring subassembly supported from a rearwardly extending portion of said bracket structure, the lower end of said loading spring subassembly bearing against a rearward portion of said abutment member whereby to transmit through said abutment member a downward loading force to said cultivator shank, said loading spring subassembly including a compression spring which is compressible to permit upward pivotal movement of said cultivator shank when said cultivator tool carried by said shank encounters an obstacle such as a rock.

3,981,368
COUPLING MEANS IN A DRILLING MACHINE

Hans Per Olof Lundstrom, and Ernst Lennart Johansson, both of Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Dec. 31, 1974, Ser. No. 537,709

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² B25D *9/00*

U.S. Cl. 173—104 **5 Claims**

1. A rock drilling equipment of the character having an impact and rotary force-transmitting device for use with a percussive type drill motor having a reciprocal piston delivering percussive force, said equipment comprising:

a rotatable tube (11), said tube being composed of a plurality of sections connected in end to end relation, one end section of which is connected to said drill motor and the other end section being connected to a drill bit;

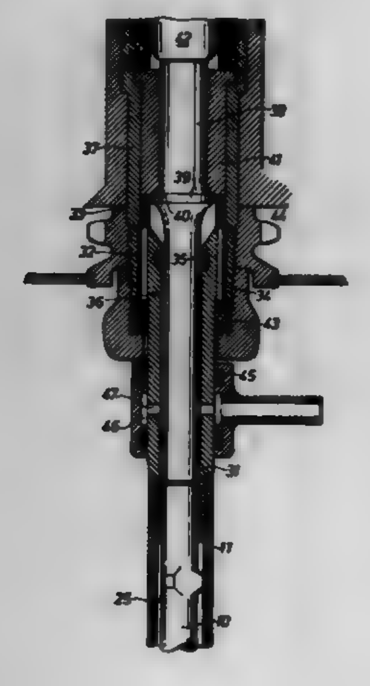
a rod (10) being in sections connected in end to end relation, said rod being slidable within said tube, one end of said rod having a force-receiving surface and the other end having a force-transmitting surface to transmit only longitudinal forces to said bit;

a tubular adapter (31) in interlocking connection with said tube, the uppermost part of said adapter being received in a tubular casing and enclosing an uppermost rod section (36), the latter being adapted to transmit percussion force from said reciprocal piston (42) to said drill bit,

said adapter being provided with longitudinally extending connection means (32) around its circumference; and

a coupling member (33), rotatable by said drill motor, said coupling member being provided with corresponding connection means to mate circumferentially with said adapter within said casing for transmitting only rotary motion to said tube and said bit,

said mating being effected with clearance such that said tube is able to take angular positions relative to said casing.



3,981,369
RISER PIPE STACKING SYSTEM

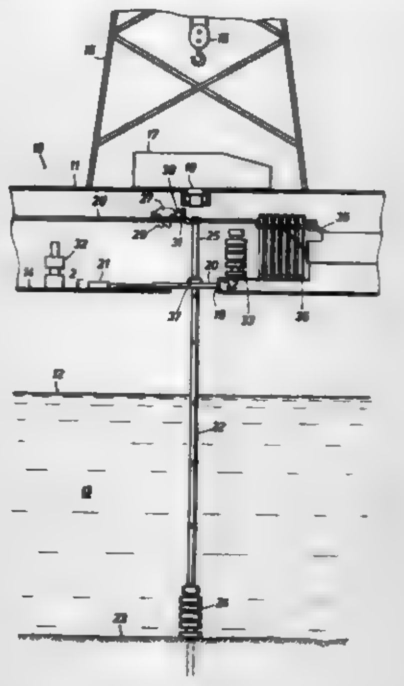
Donald G. Bokenkamp, Houston, Tex., assignor to Dolphin International, Inc., Houston, Tex.

Division of Ser. No. 434,651, Jan. 18, 1974, Pat. No. 3,895,677. This application Mar. 31, 1975, Ser. No. 563,736

Int. Cl.^{2} E21B *19/00*

U.S. Cl. 175—5 **10 Claims**

1. In an offshore drilling rig, a supporting mechanism for selectively supporting well tool elements of differing cross-sections where each such element has means for providing a downwardly facing abutment surface, said supporting mechanism being attached to a horizontal floor having an opening therein, means for moving said supporting mechanism horizontally relative to said floor between a retracted position leaving the opening unobstructed and an extended position over said opening, said supporting mechanism including superimposed supporting devices having upwardly facing abutment surfaces for respectively engaging downwardly facing abutment surfaces for a large cross-section well tool element and for a smaller cross-section well tool element, said supporting device for a large cross-section well tool being movable independently of said other supporting device, and means for releasably coupling said supporting devices to one another for conjoint movement whereby a smaller cross-section well tool can be supported in said opening.



3,981,370
DISC CUTTING UNIT FOR USE ON ROCK BORING MACHINES

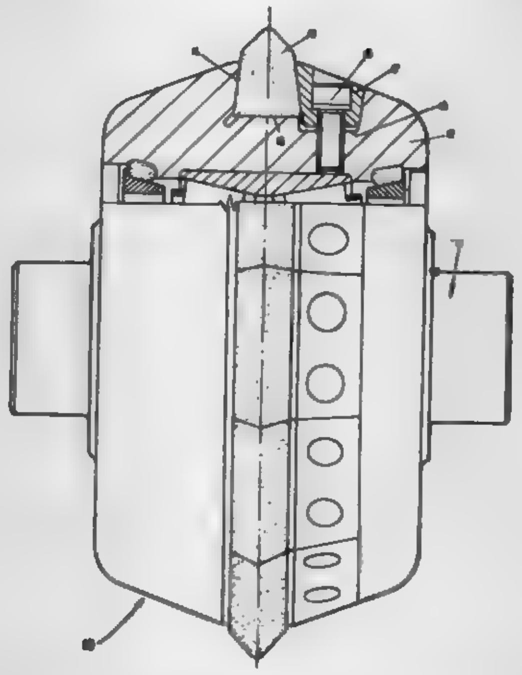
Henry Bingham; John Gilmour Glassford, both of Springs, Transvaal, and Noel Cuthbert Pope, Johannesburg, Transvaal, all of South Africa, assignors to Hard Metals Limited, Johannesburg, South Africa

Filed May 31, 1973, Ser. No. 365,682

Claims priority, application South Africa, June 2, 1972, 72/3776

Int. Cl.^{2} E21B *9/14*, *9/36*

U.S. Cl. 175—373 **6 Claims**



1. A rock-boring machine of the type comprising a rotatable headplate having a plurality of disc cutting units mounted on the front face of the headplate; each disc cutting unit comprising a base adapted to be secured to the front face of the headplate, a bearing shaft mounted on the base, an annular body journalled for rotation on the bearing shaft and having a continuous recess extending around its periphery, a plurality of cutting segments located in the recess to extend around the periphery of the body, and removable clamping means adapted to secure the cutting segments in the recess.

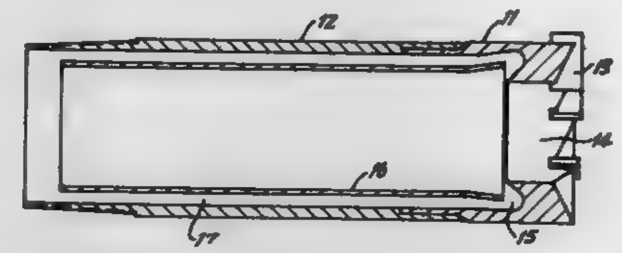
3,981,371
CORE SAMPLING DRILL

Jamie Malcolm Wallis, Morrison Road, Midvale, Western Australia, Australia

Filed June 6, 1975, Ser. No. 584,491

Int. Cl.^{2} E21B *49/00*

U.S. Cl. 175—403 **1 Claim**



1. A core sampling drill comprising a drill bit having a lower end with a series of cutting surfaces arranged around a central core hole, the upper end of the drill bit being threaded so that it can be fitted to the lower end of a tubular drill stem, a core tube positioned within the lower end of the drill substantially concentric therewith and spaced apart therefrom to provide an outer annular air passage, the inner portion of the outer wall of the drill bit being provided with an annular recess which is arcuate in cross-section so that air flowing downwardly through the outer annular passage is turned through approximately 180° and directed upwardly into the core tube so that the material cut by the drill bit is entrained therein and carried into the core tube, said core tube being substantially cylindrical over its entire length and including a lower end portion which is conically flared and has an end extremity immediately proximate said annular recess and facing radially thereto.

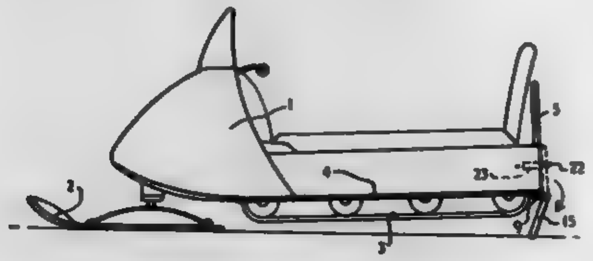
3,981,372
MOTORIZED SNOW VEHICLE STAND

Lorenzo Moreau, 2275 Highway 69N, Box 331, Site 10, RR 2, Val Caron, Ontario, Canada

Filed Mar. 31, 1975, Ser. No. 563,674

Int. Cl.^{2} B62D *55/08*

U.S. Cl. 180—5 R **3 Claims**



1. For a motorized snow vehicle, a stand comprising a pivot bar attachable in transverse horizontal position across the rear of a motorized snow vehicle; means securing said bar in nonrotatable relation; a U-shaped bail having a spaced pair of parallel arms with a sleeve on the free end of each arm of said bail rotatably mounted on said bar; means normally holding said bail in raised inoperative position against the rear of the vehicle; and a spring biased between said nonrotatable bar and said bail acting to swing said bail downwardly into operative ground-engaging position beneath the vehicle, said bar having a threaded bore in each end, a bolt threaded in each said bore with a vehicle mounting bracket secured on the outer end of each said bolt, whereby the spread of the brackets is adjustable to the width of the vehicle frame and wherein each said bolt loosely carries a washer engageable with the near end of said bar and a jamb nut threaded on said bolt between said washer and said mounting bracket for tightening said washer against the end of the bar thereby capturing the bail arm sleeves on the bar and securing the bar against turning relative to said mounting brackets.

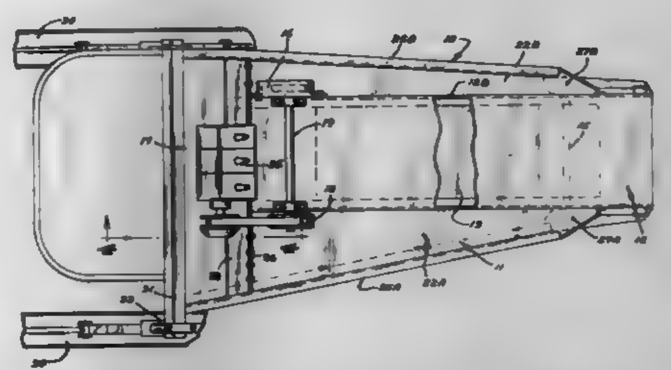
3,981,373
UNITARY FRAME AND ENGINE SUPPORT FOR SNOWMOBILE

Gerald O. Irvine, Crosby, Minn., assignor to Scorpion, Inc., Crosby, Minn.

Filed May 23, 1975, Ser. No. 580,299

Int. Cl.^{2} B62M *27/00*; B62D *27/02*

U.S. Cl. 180—5 R **9 Claims**



1. A snowmobile frame construction comprising a main housing including a tunnel portion adapted to house and mount a snowmobile drive track including a forward frame comprising a pair of vertical flange means, one on each side of the tunnel portion extending at least partially coextensively with and also forwardly of said tunnel portion and being spaced laterally outwardly from said tunnel portion a sufficient distance to permit an engine and torque converter assembly of the snowmobile to be positioned between said vertical flange means and forwardly of said tunnel portion, a front axle assembly structurally attached to the forward ends of both of said vertical flange means and ahead of a substantial portion of the engine of the snowmobile, and structural reinforcing means between both of said vertical flange means and the forward end of said tunnel portion, said structural reinforcing means including a panel member of substantial vertical depth structurally connected to said vertical flange means to transmit loads from said vertical flange means to said tunnel portion, and means to structurally connect the rearward portions of said vertical flange means to the tunnel portion.

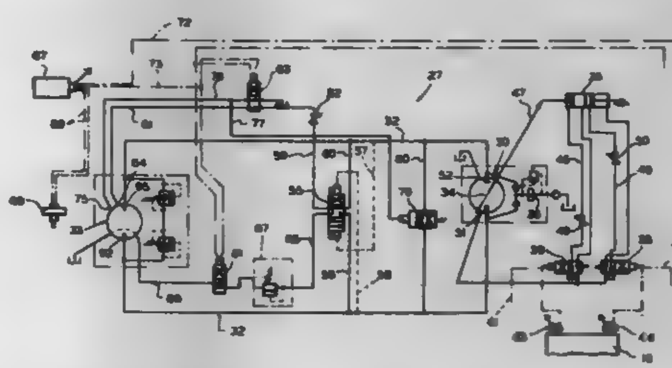
3,981,374
HYDRAULIC DRIVE ASSIST FOR SCRAPERS

Robert C. Johns, Jr., Lubbock, Tex., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Nov. 13, 1974, Ser. No. 523,308

Int. Cl.^{2} B62D *59/04*

U.S. Cl. 180—14 A **2 Claims**



1. A hydraulic drive for a ground vehicle having wheels propelled by an engine and other wheels driven by the hydraulic drive during predetermined conditions for assisting the engine propelled wheels, comprising a variable displacement pump driven by the engine, a hydraulic motor connected to

said pump in a closed loop hydraulic circuit, said pump having means displaceable in either direction from a neutral position for pressurizing the pump and driving said motor selectively in either forward or reverse drive mode, a normally closed pilot operated by-pass valve connected between the sides of said closed loop circuit to form a short loop circuit by-passing the motor when said by-pass valve is open, a second pilot operated valve actuated by the operating pressure in said closed loop hydraulic circuit downstream from said short loop circuit, said second pilot operated valve connected for operation by a pressure differential between the opposite sides of said closed loop circuit for putting the motor in the drive mode for either forward or reverse operation, a speed sensor driven at a speed proportional to the ground speed of the hydraulically driven wheels, means responsive to the indication of a predetermined speed by said speed sensor for operating said normally closed by-pass valve to open it, and a charging pump connected to said closed loop circuit for providing fluid for lubrication and cooling of the motor and for operation of said second pilot operated valve when said variable displacement pump is in said neutral position.

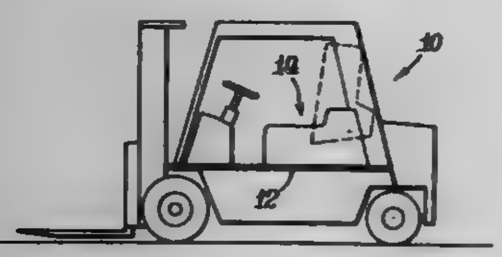
3,981,375
VEHICLE HOOD ASSEMBLY

John T. Crawford, Lyndhurst, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Nov. 3, 1975, Ser. No. 628,683

Int. Cl.² B62D *25/10*

U.S. Cl. 180—69 C **1 Claim**



1. A hood assembly of a vehicle having a frame, comprising:

a hood body having first and second end portions and being of a construction sufficient for covering a preselected portion of the vehicle;

means adjacent the second end portion for pivoting the hood body between a first position overlying the preselected portion of the vehicle and a second position at which portions of the hood body are positioned laterally from said preselected vehicle portion and the hood extends generally vertically from the vehicle, said pivot means being of a construction for pivoting the hood at about a single median location of the height of the hood body;

a plate connected to the second portion of the hood body adjacent the pivot means and extending toward the first end portion of the hood;

a gas spring having one end connected to the vehicle frame and the other end connected to the plate at a location spaced from the pivot means a preselected direction toward the first end portion of the hood;

an elongated stop element controllably, movably connected at opposite ends to the frame at a location adjacent and extending across at least a portion of the first end portion of the hood body in the first position of said hood body, said stop element having at least portions covered with a pliable material;

a centering element connected to the stop element and extending substantially vertically upwardly therefrom;

a supporting bracket connected to the first end portion of the hood and extending from said hood first end portion toward the second end portion of the hood; and

an elongated aligning element having a generally inverted "V" cross-sectional configuration and a tapered opening extending therethrough and being controllably, movably connected to the supporting bracket for receiving the centering element and contacting the stop element at the first position of the hood, said elongated aligning element being controllably positionable on the supporting bracket and said stop element being controllably positionable on the frame and said stop and aligning elements being of a construction sufficient for urging the hood toward a preselected position in response to passing the centering element into the opening and contacting the stop element with the aligning element during movement of the hood from the first to the second position.

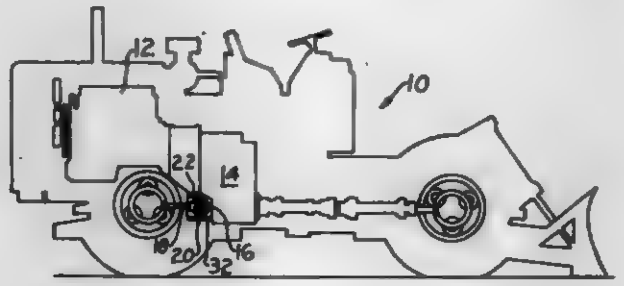
3,981,376
VEHICLE PROTECTION MEANS

Albert E. Kluge, Jr., Bloomingdale, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 22, 1975, Ser. No. 615;261

Int. Cl.² B60K *17/22*

U.S. Cl. 180—70 P **6 Claims**



1. A vehicle, comprising:

a power means;

a transmission housing;

a power train positioned in the housing;

a drive shaft connected to the power train, said drive shaft having a "U" joint positioned adjacent and beneath a portion of the transmission housing; and

an impact barrier element positioned between the "U" joint and the overlaying transmission housing, said element having first and second flanges connected to the transmission housing and a middle portion connecting said flanges and being spaced a preselected distance from the transmission housing.

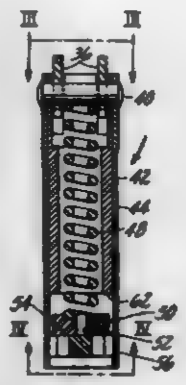
3,981,377
EXHAUST MUFFLER FOR PNEUMATIC TOOL OR MACHINE

Paul Gilberto, Milford, Conn., assignor to USM Corporation, Boston, Mass.

Filed Sept. 23, 1975, Ser. No. 615,907

Int. Cl.² F01N *1/20*

U.S. Cl. 181—36 A **5 Claims**



1. An exhaust muffler for a pneumatically actuated device having a pressure chamber and an exhaust passageway for relieving gas pressure in said chamber, the muffler comprising:

an exhaust conduit communicating with said passageway for exhausting said gas pressure from said chamber therethrough;

valve means interposed between said passageway and said conduit having a first state permitting relatively free flow of gas pressure through said conduit and a second state permitting relatively restricted flow of gas pressure through said conduit; and

means biasing said valve means for maintaining said valve means in said first state when a relatively low gas pressure is present in said chamber, said biasing means yielding to relatively high gas pressure in said chamber for permitting said valve means to assume said second state.

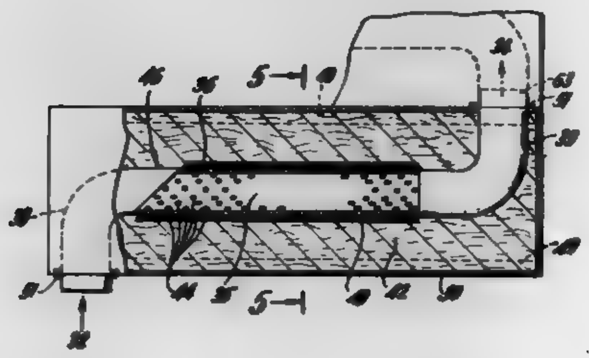
3,981,378
MUFFLER FOR PILE DRIVING APPARATUS

Stannard M. Potter, Glastonbury, Conn., assignor to Horn Construction Co., Inc., Merrick, N.Y.

Filed Oct. 16, 1974, Ser. No. 515,226

Int. Cl.² F01N *1/10, 1/24*

U.S. Cl. 181—50 **20 Claims**



1. A muffler for attenuating exhaust noise from a pile driving apparatus, which comprises a first muffler section comprising:

a housing having two ends;

a first inlet port formed in a side of said housing substantially near a first end thereof;

a first outlet port formed in a side of said housing substantially near a second end thereof;

an elongated muffler passage in said housing, having a perforated substantially straight portion, said straight section extending substantially from said first end of said housing to said second end of said housing;

an unperforated inlet end piece adapted to connect a first end of said straight section to said first inlet and an unperforated outlet end piece adapted to connect a second end of said straight section to the first outlet, said first and second end pieces being elbow pipe joints;

acoustical absorbing material in said housing surrounding said perforated straight section and filling said housing; and

screen means between said perforated straight section and said acoustical absorbing material, surrounding and in contact with said perforated straight section, said screen means being proportioned to permit access of acoustical waves from said exhaust gas noise to said acoustical absorbing material and to substantially prevent access of the exhaust gas and its contaminants to said acoustical absorbing material;

said first inlet port being adapted for connection to a source of exhaust gas such that said exhaust gas travels through said muffler passage wherein noise associated with said exhaust gas is substantially attenuated.

3,981,379
DEVICE FOR EMITTING MECHANICAL WAVES

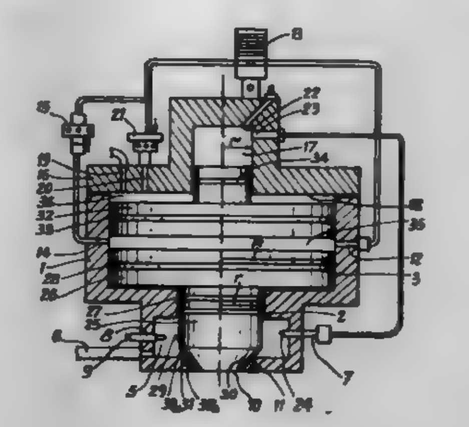
Léon Sayous, Pau, France, assignor to Societe Nationale des Petroles d'Aquitaine, Courbevoie, France

Filed May 30, 1975, Ser. No. 582,241

Claims priority, application France, May 31, 1974, 74.18911

Int. Cl.² G01V *1/06, 1/14*

U.S. Cl. 181—118 **10 Claims**



1. In a device for emitting mechanical waves comprising a pneumatic chamber for holding a high-pressure fluid, a valve member, and an element having a seat cooperating with said valve member, said element and valve member being coaxial and defining a combustion chamber adjacent said pneumatic chamber and adapted to be opened and closed by axial movement of said valve member, said combustion chamber being equipped with means for admitting fuel and oxidant and with ignition means, the improvement according to which said valve member is a differential piston having a first side which defines a mobile wall of the pneumatic chamber and an opposite side which defines a mobile wall of said combustion chamber.

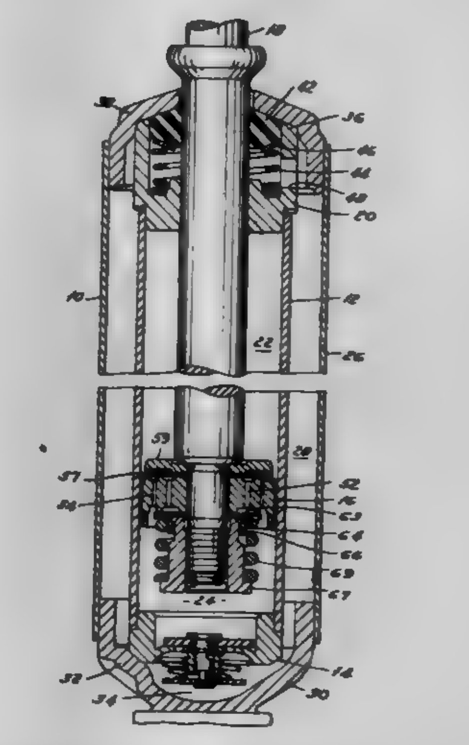
3,981,380
SHOCK ABSORBER FOR MOTOR VEHICLE

Lee R. Andre, Tecumseh, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 12, 1975, Ser. No. 631,251

Int. Cl.² F16F 9/48

U.S. Cl. 188—282 **6 Claims**



1. A hydraulic shock absorber constructed to become stiffer during usage having first and second fluid chambers and flow control means constructed to provide a restricted fluid pas-

sage for the controlled flow of hydraulic fluid from said first chamber to said second chamber;
- said flow control means including a fluid passage, a valve seat positioned about one end of said passage and a valve element;
- said valve element having a metallic backing portion and an organic facing;
- spring means exerting a spring force urging said organic facing into engagement with said valve seat;
- said valve element being displaceable in response to fluid pressure between an open position wherein said organic facing is spaced apart from said valve seat and a closed position wherein said organic facing engages said valve seat;
- orifice means defining a restrictive orifice between said valve seat and said valve element when said organic facing is in engagement with said valve seat;
- said organic facings being progressively plastically deformable in response to repeated displacement of said valve element from said open position to said closed position and constructed to progressively close said restrictive orifice whereby the flow control means becomes more restrictive during the service life of said shock absorber.

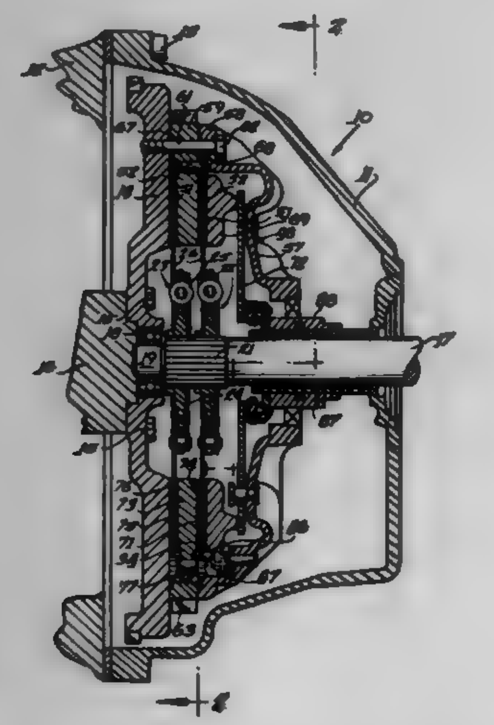
3,981,381
SELF-CONTAINED MULTIPLATE WET CLUTCH

Thaddeus W. Nesck, Roseville, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 10, 1975, Ser. No. 557,144

Int. Cl.² F16D *13/56, 13/74*

U.S. Cl. 192—70.18 **18 Claims**



1. A clutch assembly comprising driving and driven members rotatable about a common axis, said members having relative rotation when said clutch assembly is disengaged or when said clutch is not fully engaged, one of said members including two or more plates, each plate having friction clutching surface means thereon, and the other of said members including a flywheel, a clutch cover, and a unitary spacer ring interposed between and sealingly engaging the flywheel and cover, a pressure plate on the opposite side of the plates from said flywheel, at least one intermediate pressure plate between said plates, means connecting said spacer ring with said intermediate plate to cause the intermediate plate to rotate with the flywheel, spacer ring and clutch cover, and piloting means to accurately align the spacer ring and the clutch cover with the flywheel, comprising a circular pilot on one side of the spacer ring and a recess on the opposite side thereof, said flywheel having a recess in its interior face conformably receiving said spacer ring pilot, and said clutch cover having a flange facing the spacer ring with a pilot formed thereon conformably received in said spacer ring recess.

3,981,382
SAFETY CLUTCH DEVICE

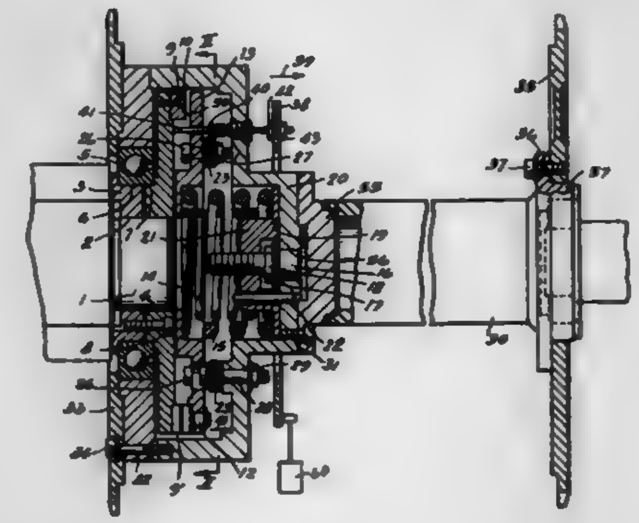
Edwin Bolliger, Morges, Switzerland, assignor to J. Bobst & Fils S.A., Switzerland

Filed May 21, 1975, Ser. No. 579,610

Claims priority, application Switzerland, May 28, 1974, 7299/74

Int. Cl.² F16D *7/04, 43/20*

U.S. Cl. 192—150 **10 Claims**



1. A safety coupling for transmitting torque between a pair of axially aligned shafts such as from a drive shaft to a driven shaft of a press, comprising a disk member having at least one slanting plane surface; a flange member having a slanting plane surface for each of the slanting plane surfaces of the disk member and extending substantially parallel thereto; first means for connecting the disk member for rotation with one of said pair of shafts; and second means for connecting the flange member for rotation with the other of said pair of shafts and in axial alignment with the disk member; said second means including means for enabling axial movement of the flange member from a first position with the slanting surfaces in torque transmitting engagement to a second position with the slanting surfaces withdrawn from engagement and biasing means for applying a force to urge the flange member to the first position, said means for enabling axial movement including a plurality of flexible link elements, said biasing means being adjustable to vary the force applied to the flange member so that the engaged slanting plane surfaces transfer torque between the pair of shafts until the amount of torque overcomes the force applied by the biasing means.

3,981,383
RIGHT HAND MARGIN CONTROL SYSTEM

John R. Bittner, Waynesboro, and Ronald D. Wesner, Crozet, both of Va., assignors to General Electric Company, Waynesboro, Va.

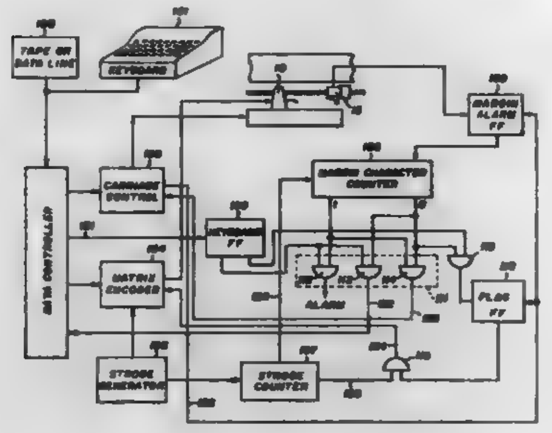
Filed Aug. 1, 1974, Ser. No. 493,973

Int. Cl.² B41J *21/02*

U.S. Cl. 197—63 **9 Claims**

1. A margin control system in combination will a recorder having a recording assembly that moves across a record medium and records characters in respective column positions in response to discrete character signals available from a source, comprising: switch means settable for actuation by said recording assembly at any selected column position thereof; and

indicator means operative in response to said recording assembly transversing a predetermined number of said column positions following actuation of said switch means to control recording of a special symbol in a succeeding column position.



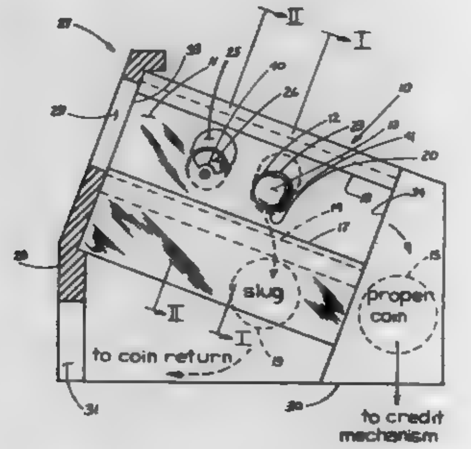
3,981,384
COIN SIZE TESTER

Henry Charles Kovar, Anoka, Minn., assignor to The Cornelius Company, St. Louis Park, Minn.

Filed Dec. 5, 1975, Ser. No. 638,026

Int. Cl.² G07F *3/02*

U.S. Cl. 194—102 **49 Claims**



1. A coin size tester comprising:
- a. an elongate coin trackway defined by and having
  - 1. a bottom surface upon which a coin may roll;
  - 2. a guide extending upward of a first side of the bottom surface for maintaining a coin upright on edge upon the bottom surface;
  - 3. a retainer edge spaced upward from and positioned parallel to a second side of the bottom surface; and
  - 4. a sizing edge positioned parallel to and spaced upward a predetermined distance from the bottom surface for maintaining only a coin of at least a predetermined diameter upright on edge upon the bottom surface;
- b. a journal for containing a ball and having
  - 1. a support at one end for positioning of a ball partially within the trackway;
  - 2. an elongate ramp extending laterally from the trackway and upward from the support to the outside of the trackway on the guide side; and
  - 3. a keeper at the upper end of the ramp for containing of a ball within the journal; and
- c. a ball contained within the journal and having
  - 1. a normal position resting against the support and projecting at least partially into the trackway from the guide side for biasing a coin against the retainer and sizer edges and obstructing free passage of a coin through the trackway;
  - 2. an alternate position retracted into the journal for opening the trackway for passage of a coin; and
  - 3. free movement upon the ramp between the normal and alternate positions, the ball being movable to the alternate position by a coin of at least the predetermined diameter passing through the trackway and returnalbe to the normal position after passage of such coin.

3,981,385
TYPING MACHINE KEY ACTION

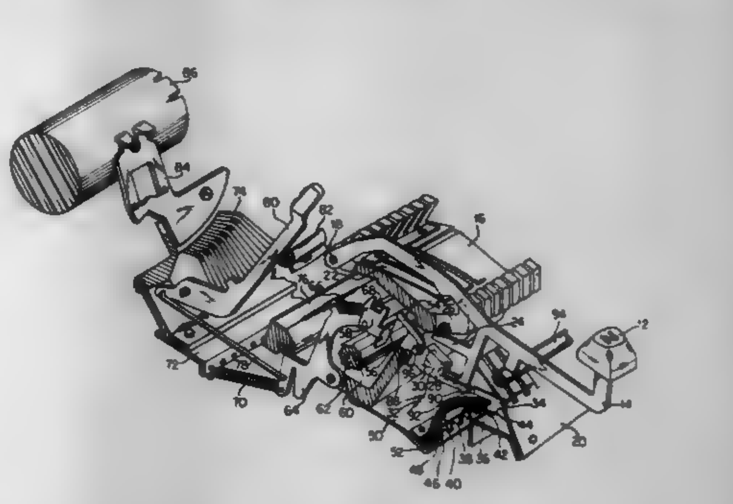
Hans W. Mueller, and Richard E. Shattuck, both of Cortland, N.Y., assignors to SCM Corporation, New York, N.Y.

Filed Aug. 28, 1974, Ser. No. 501,122

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.² B41J *23/06*

U.S. Cl. 197—17 **12 Claims**



1. In a typing machine of the kind having means for actuating a typing machine operation, a power roll rotatably mounted in the typing machine for engagement by the actuating means to actuate the typing machine operation, a key lever movably mounted in the typing machine, an interposer, means for supporting the interposer, means for releasing the interposer relative to the supporting means upon depression of the key lever, and means for restoring the key lever to a rest position, in combination, the improvement comprising:
- a. means, connected between the interposer and a stationary portion of the typing machine, for biasing the interposer against the supporting means and after activation of the releasing means, against the actuating means to cause the actuating means to engage the power roll to actuate the typing machine operation; and
- b. means for restoring potential energy in the biasing means during return of the key lever to the rest position by the restoring means.

3,981,386
NON RETURN TO HOME RACK SHIFT SELECTION MECHANISM FOR A SINGLE ELEMENT PRINTER

William A. Abell, Jr.; Thomas R. Field; Ralph A. Haus, and Iraj D. Shakib, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,391

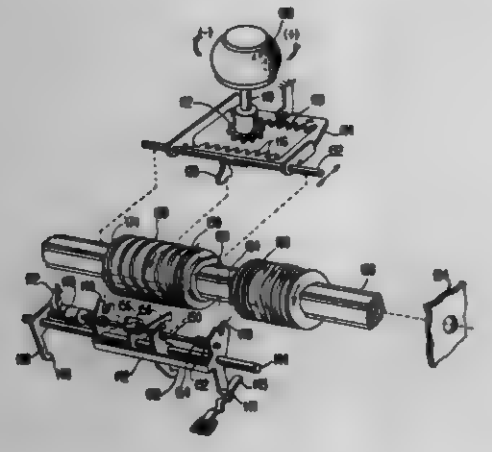
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² B41J *23/04*

U.S. Cl. 197—18 **1 Claim**

1. A printer having a type element mounted for rotation to present different characters to a print position, a pinion connected to said type element for rotation therewith, a drive device comprising a pair of rack members alternately positionable to engage diametrically opposite portions of said pinion, and means for driving an engaged rack member a measured distance wherein the improvement comprises:
- a rack selection mechanism for shifting said rack members into and out of engagement, said rack selection mecha-

nism comprising a pivot member spacially fixed with respect to said printhead;
a first cam follower means pivotally mounted on said pivot member;
a second cam follower pivotally supported on said pivot member;
a third cam follower pivotally supported on said pivot member;
said first cam follower means supporting for monoaxial displacement relative thereto, a selectably displaceable member for coupling said first cam follower means alternatively with said second and said third cam followers;



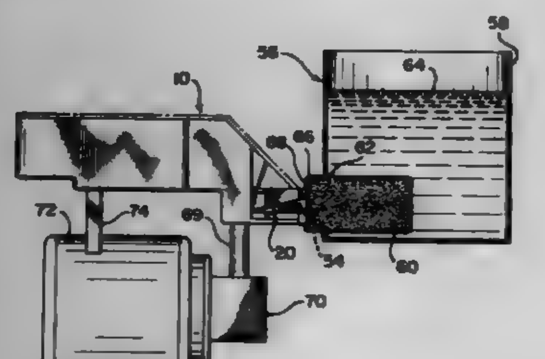
said first cam follower means positively engaging said drive device to impart bidirectional movement to said drive device;
a first cam, rotationally engageable with said first cam follower;
second cam rotationally engageable with said second cam follower, said first and second cam followers spacially displaced such that said first and second followers can not be simultaneously engaged by the respective first and second cams;
third cam engageable with said third cam follower to shift said first cam follower about said pivot member when said displaceable member is engaged with said third follower, said cams being axially movable into and out of engagement with said respective followers.

3,981,387

METHOD FOR INKING PREASSEMBLED RIBBON CARTRIDGES

James A. Gottschlich, Bellbrook, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 24, 1974, Ser. No. 536,133
Int. Cl.² B41J *33/10*
U.S. Cl. 197—168 **14 Claims**



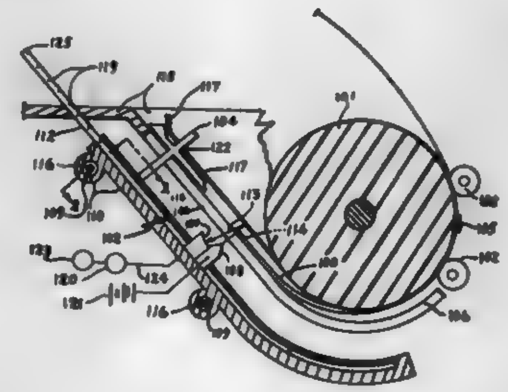
1. A method of producing an inked ribbon cartridge comprising the steps of:
a. loading a length of uninked ribbon into a ribbon cartridge having a support area where a portion of the ribbon is supported and exposed;
b. positioning an inking means and the portion of the ribbon exposed at said support area is operative proximity with each other; and
c. driving said ribbon while in operative proximity with said inking means so as to transfer ink from said inking means to said length of ribbon;
said loading step (a) comprising the steps of:
d. winding said length of said ribbon on a single reel; and
e. joining the ends of said length of ribbon to form an endless loop to produce a cartridge of the type which employs a single reel from which the ribbon is unwound by withdrawing the innermost turn of the ribbon on the reel.

3,981,388

AUTOMATIC BOTTOM MARGIN SIGNAL SYSTEM FOR TYPEWRITERS

Robert L. Gulliani, 45310 Akimala Place, Kaneohe, Hawaii 96744

Filed Nov. 20, 1974, Ser. No. 525,593
Int. Cl.² B41J *29/44*
U.S. Cl. 197—189 **3 Claims**



1. Automatic bottom margin signal system for typewriters comprising: a typewriting means; transparent means located on the typewriting means for receiving material in sheets adopted to be used in said typewriting means; a light reflective plate means positioned in a parallel plane on one side of and spaced from the transparent means with the sheet material receivable therebetween; a slightly flexible rod means adjustably mounted on the typewriting means on the otherside of said transparent means in a plane parallel thereto and spaced therefrom; a light source mounted on the rod means; a light responsive means mounted on the rod means in juxtaposition with the light source, whereby light from the source will shine through the transparent means to the reflective plate means and reflect back to the light responsive means; alarm means, and electrical circuit means connected between the light responsive means and alarm means whereby light from the light source being unobstructed by the sheet material and reflected from the reflective plate reaching the light responsive means will cause the alarm to be activated.

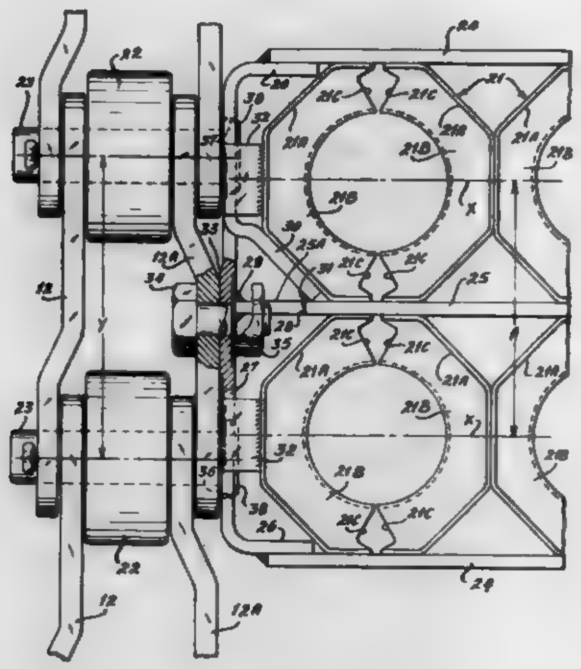
3,981,389

TANDEM BOTTLE CARRIER ASSEMBLY

Momir Babunovic, Des Peres, and John C. Kay, Spanish Lake, both of Mo., assignors to Barry-Wehmiller Company, St. Louis, Mo.

Filed Dec. 20, 1974, Ser. No. 534,759
Int. Cl.² B65G *17/00*
U.S. Cl. 198—655 **3 Claims**

1. In a tandem bottle carrier assembly for bottle washers the improvement which comprises a pair of roller chains in spaced parallel relation, said chains including a series of rollers, a series of links interconnecting said rollers at least on one side of the rollers, said links having overlapped ends; pin means extending through each of said rollers and engaged in said overlapped ends of adjacent ones of said links, said pins having heads thereon in opposed facing relation between said pair of chains; elongated carrier means extending between said pair of roller chains, each of said carrier means including two series of bottle receiving pockets spaced widthwise of said carrier means in tandem formation, and an end member on the opposite ends of the said carrier, said end members being formed with recesses spaced widthwise of said carrier means in the direction of chain travel with the trailing recess being elongated generally in the direction of travel to accommodate chain stretch; means securing each end member to the adjacent roller chain at an adjacent one of the links between a pair of adjacent overlapped ends of said links and with said pin heads disposed within said recesses of each end member; and the leading recesses of said end members and one of said pin heads being engaged in driving relation, said pins and end member recesses being spaced apart a distance less than the width of said carrier means.

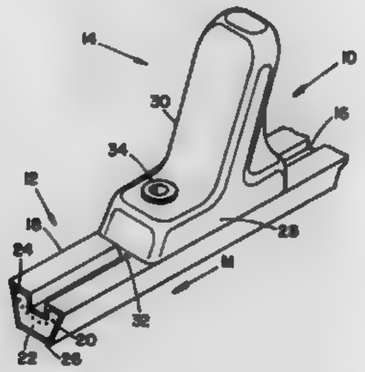


3,981,390

CONVEYING BELT

Byron G. Richard, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Sept. 25, 1975, Ser. No. 616,740
Int. Cl.² B65G *15/42*
U.S. Cl. 198—844 **7 Claims**



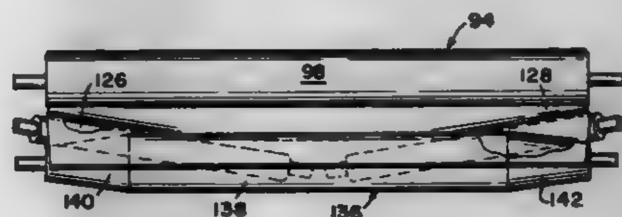
1. Conveying apparatus comprising:
a belt having a substantially flat top surface with at least one groove therein oriented longitudinally of the belt and generally perpendicular to a transverse horizontal axis of the belt; and extending from said substantially flat top surface to a position below said substantially flat top surface.
at least one working element with a foot portion with at least one rib and a leading portion, the foot portion disposed against the top of the belt with the rib disposed in the groove;
a fastener extending through a portion of the belt and only the leading portion of the foot portion in a direction generally normal to the groove;
whereby the fastener, rib, and groove in the belt substantially (1) preclude the foot portion from pivoting at the top surface of the belt; and (2) do not inhibit belt bending.

3,981,391

BELT TRACKING SYSTEM FOR A BALER

Carmen S. Phillips, and Charles D. Mecklin, both of Memphis, Tenn., assignors to International Harvester Company, Chicago, Ill.

Filed Aug. 21, 1974, Ser. No. 499,352
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976
Int. Cl.² B65G *15/62*
U.S. Cl. 198—308 **9 Claims**



1. In a baler having an endless drivable belt upon which an incoming stream of hay is adapted to be rolled into a cylindrical bale, a support and tracking system for the belt comprising:
a generally horizontal frame extending fore-and-aft of the baler;
a power-drivable roller journaled on a forward portion of said frame;
a tightener roller journaled on a rearward portion of said frame, said belt being trained about said rollers so as to be disposed therebetween in upper and lower runs, said drivable roller being adapted to move said lower run in a forward direction;
a pair of guiding rollers journaled on said frame in a V-configuration relative to each other as viewed in transverse vertical section and in horizontal plan to engage and support said lower run in a transverse trough-like configuration, thereby maintaining said belt in centered relation on said driving and tightening rollers;
a compensating roller journaled on said frame in engagement with said lower run between said guiding rollers and said drivable roller, said compensating roller having a cylindrical central portion and outwardly tapered end portions for engaging the troughed lower run as received from said guiding rollers to dispose the lower run uniformly into contact with said drivable roller.

3,981,392

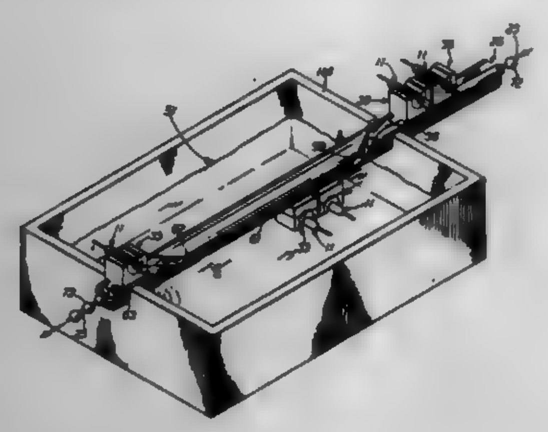
APPARATUS FOR CONVEYING ARTICLES TO FORM LAYERS OF FUSIBLE METAL THEREON

David L. Booz, Allentown; Ford J. Brown, Kutztown, and Richard J. Merwarth, Easton, all of Pa., assignors to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 291,482, Sept. 22, 1972, Pat. No. 3,882,816. This application Mar. 21, 1975, Ser. No. 560,450
Int. Cl.² B65G *47/24*
U.S. Cl. 198—377 **7 Claims**

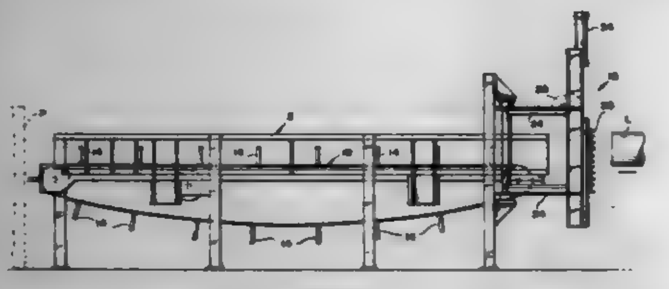
1. An apparatus for conveying articles, which comprises:
an elongated member having a surface and a slot formed in the surface and curving helically about the axis of the elongated member;
a strand-like member extending along the elongated member;

means for holding the articles;
means passing through the slot, including grooved portions supported by and slidably engaging the edges of such slot, for movably mounting the article holding means to the strand-like member to enable said article holding means to move rotatably about said strand-like member; and



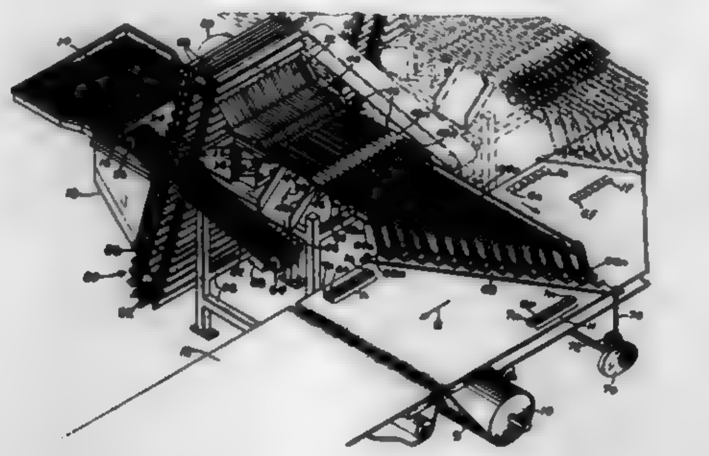
means for advancing the strand-like member longitudinally along the elongated member to simultaneously move the article holding means longitudinally along the slot of the elongated member and to move the article holding means rotatably about the strand-like member, thereby conveying the article longitudinally along the elongated member and simultaneously moving them rotatably about the strand-like member.

3,981,393
LOG TURNING APPARATUS
Adrian L. Landers, Emmett, Idaho, assignor to Adco-West Machinery Manufacturing Company, Emmett, Idaho
Filed Oct. 8, 1974, Ser. No. 513,053
Int. Cl.^{2} B65G *47/24*
U.S. Cl. 198—379 **5 Claims**



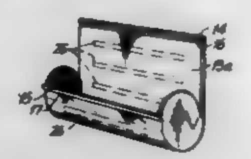
1. Apparatus for rotating an axially traveling horizontal log about its longitudinal axis, comprising
- a. frame means for supporting the log for axial travel along a given path, said frame means including conveyor means (10) for axially conveying the log along said path;
- b. a pair of support arms (22, 24; 122, 124) pivotally connected with said frame means on opposite sides of the vertical plane containing the path of axial travel of the log;
- c. a pair of cylindrical rollers (18, 20; 118, 120) freely rotatably connected in parallel relation with said support arms, respectively, on opposite sides of the path of travel of the log, each of said rollers also being connected for axial vertical displacement relative to its associated support arm;
- d. first motor means (28, 128) connected at each end between said support arms for pivoting said support arms toward and away from operating positions in which the rollers are vertical, parallel and in frictional engagement with diametrically opposed portions of the log; and
- e. second motor means (32, 34; 132, 134) for axially displacing said rollers in opposite directions relative to their respective support arms when said rollers are in frictional engagement with the log, thereby to rotate the log about its longitudinal axis relative to said frame means.

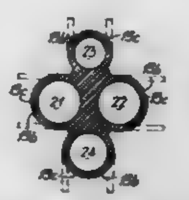
3,981,394
FEEDING AND ASSEMBLY APPARATUS
Donald A. Slathar, Chanhassen, and Christiaan H. Neutkens, Cottage Grove, both of Minn., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed June 3, 1975, Ser. No. 583,390
Int. Cl.^{2} B65G *47/14*
U.S. Cl. 198—391 **7 Claims**



1. In feeding and assembly apparatus, a machine comprising:
means for feeding a plurality of individual items from a supply;
vibrating means for receiving said fed items and moving them along their major axis, said vibrating means includes a row of vibrating members, each of said members are V-grooved and have a narrow middle section for providing a space between adjacent members, whereby all items which are unaligned lengthwise along the V-groove drop through the spaces provided between adjacent members;
means coupled to said vibrating means for engaging said items and depositing them in a row across a conveying means moving transversely to said vibrating means, said means for engaging and depositing include a row of wheels terminating said vibrating means for engaging said items, a chain lug bed for receiving said items from said wheels and depositing them onto a slide chute, and a reciprocating means for positioning the items from the slide chute in said row across the conveying means; and
means for returning the dropped items to said supply.

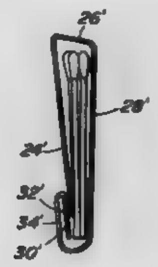
3,981,395
CONTAINER FOR COINS AND SIMILAR DISC SHAPED MEMBERS
Jack Frank Dalgleish, 1401 Prince of Wales Drive, Apt. 1505, Ottawa, Ontario, Canada (K2C 3J8)
Filed May 7, 1975, Ser. No. 575,164
Int. Cl.^{2} A45C *11/00;* **B65D** *85/58*
U.S. Cl. 206—.82 **4 Claims**





1. A container for coins, comprising an integral single piece molded structure having two circular spaced apart end members and a wall joining said end members, said wall extending peripherally for the entire periphery of said end members and integral with said end members for a maximum of half of the periphery of said end members to form a fixed portion integral with said end members and a flexible flap portion, said wall in a closed condition of the container having opposed laterally extending edges, a first integrally molded formation extending along one of said edges and a second integrally molded formation extending along the other of said edges, said first formation including a re-entrant portion extending laterally for the length of said one edge on an outer surface of said wall, said second formation including a projection extending inwardly from said other edge for the length of the wall, said other edge on said flap, said projection adapted to enter into said re-entrant portion with said formations in overlapping relationship, whereby when the container is closed and said formations are interengaged, flexing and stressing of said container urges said formations into continued engagement.

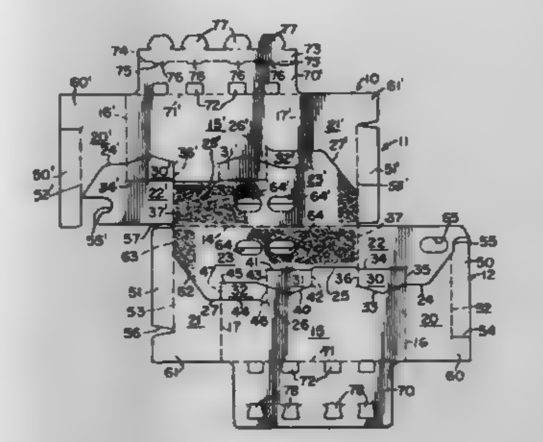
3,981,396
SAFETY MATCHBOOK
Peter W. Frangos, 39 Salem Ave., Cranston, R.I. 02920
Filed May 8, 1975, Ser. No. 575,494
Int. Cl.^{2} A24F *27/12, 27/00*
U.S. Cl. 206—109 **1 Claim**



1. A safety matchbook, comprising
- a. a plurality of matches connected to one another along a common base,
- b. a cover attached to said matches to form a book,
- c. said cover including a front flap, a back wall integral with said flap and attached to said base to form a book,
- d. a lip connected to said back wall and to said base,
- e. a wall forming a substantially flat tube open from end-to-end connected to one side of said cover at the base thereof, said tube being integral with said cover and extending transversely thereof for the full width thereof, and,
- f. a stratum of abrasive material disposed in a continuous strip along the inner face of said tube for the full length thereof, and a stratum of aluminum foil disposed in a continuous strip along the inner face of said tube opposite to and coextensive with said abrasive stratum.

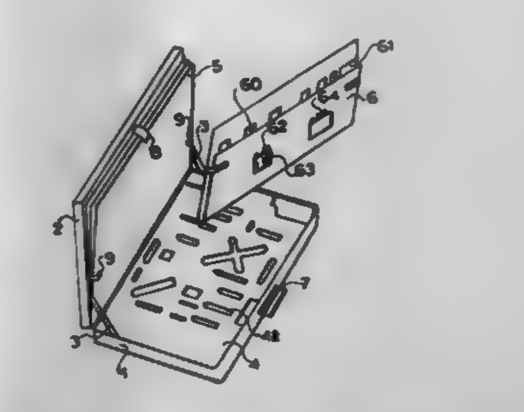
3,981,397
ARTICLE CARRIER
Edwin L. Arneson, Hillsdale, N.J., assignor to Federal Paper Board Company, Inc., Montvale, N.J.
Filed Aug. 18, 1972, Ser. No. 281,999
Int. Cl.^{2} B65D *75/00*
U.S. Cl. 206—178 **5 Claims**

1. A blank for fabricating a collapsible cellular bottle carrier which is formed from a generally rectangular sheet of paperboard or like material wherein the blank is divided by a longitudinal center fold forming crease line into two generally rectangular sections which sections are offset relative to each other in the longitudinal direction of the blank and wherein each of said blank sections is divided by cut and crease lines extending transversely relative to said center crease line into a side wall forming panel, end wall forming panels at the opposite ends of said side wall forming panel and a combination handle and partition forming panel extending along said center fold forming crease line, each of said end wall forming panels having a free marginal portion extending transversely relative to said center crease line, a relatively narrow riser panel cut in each said free transverse marginal portion which is separated therefrom by a hinge forming crease line extending transversely of said center crease line, each riser panel terminating short of the outer longitudinal side edge of the blank section so as to leave an integral portion of the associated end wall forming panel extending in the plane thereof and longitudinally beyond the crease line separating the riser panel therefrom, each said handle and partition forming panel being separated from the associated side and end wall forming panels by transversely spaced, longitudinally extending cutting lines, and transverse hinge forming longitudinally spaced



crease lines extending between said cutting lines and cooperating therewith to define cross partition straps, and a hinge forming transverse crease line dividing each said handle and partition forming panel into a handle panel portion and a handle reinforcing panel portion with the handle reinforcing panel portions being taken from material at opposite ends in the longitudinal direction of said handle portions and from longitudinally opposite ends of said blank.

3,981,398
AID IN THE MANAGEMENT OF CLINICAL EMERGENCIES IN MEDICAL AND DENTAL PRACTICES AND OTHER CIRCUMSTANCES
Pieter Nico Sinclair Boshoff, Pretoria, South Africa, assignor to Hendrik Lukas Pienaar, Verwoerdburg, South Africa
Filed Jan. 29, 1975, Ser. No. 545,190
Claims priority, application South Africa, Sept. 13, 1974, 74/5849
Int. Cl.^{2} B65D *69/60;* **G09B** *23/28*
U.S. Cl. 206—223 **9 Claims**



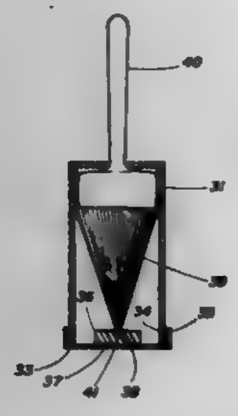
1. An emergency kit comprising means for administering emergency clinical treatment to animals or persons, said means comprising a plurality of articles, said articles comprising drugs and medical instruments, a holder for said articles, a plurality of masks, said holder being adapted to hold each particular article in one particular position in combination with said plurality of different masks, the masks being located in said kit in a manner adapted to permit selection of any one mask from the plurality of masks, the masks being adapted for any such selected mask to be placed one only at a time in one particular masking position to mask some but not all articles in the holder, each mask having openings which are adapted to expose some other articles in the holder, the exposed articles being clinically appropriate to one particular mode of

clinical treatment of animals or persons, each mask being identifiable by suitable markings as being appropriate to the particular mode of clinical treatment for which the articles which that mask is adapted to expose in the masking position are appropriate, each particular mode of clinical treatment associated with each mask being appropriate to a definable clinical condition.

3,981,399
APPARATUS FOR HOLDING A PAINT BRUSH

William R. Crouch, R.R. 13, Box 468, Bloomington, Ind. 47401

Filed Sept. 22, 1975, Ser. No. 615,384
Int. Cl.² B65D *51/26*
U.S. Cl. 206—15.2 1 Claim



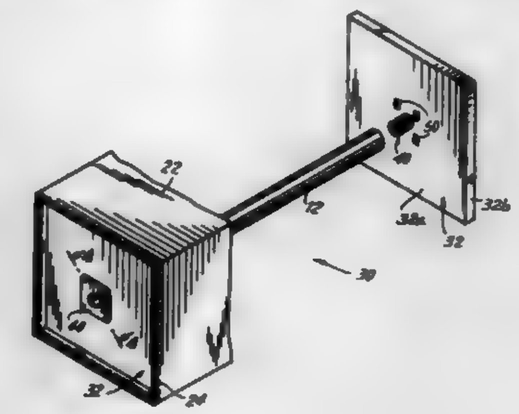
1. A paint brush keeper comprising:
a box assembly with a movable wall to allow insertion of a paint brush into the box assembly, said box assembly including a bottom and a top wall, said top wall having a hole through which the handle of the paint brush projects;
said box assembly including a pair of diverging walls extending from said bottom to said top wall, said walls sized to receive and form the bristled end of a paint brush into a tapered configuration; and wherein:
said pair of walls form an insert mounted within said box assembly;
said box assembly includes a box with an open bottom and box configured cap fittable on said open bottom closing said box assembly;
said cap includes an interior block with a V-shaped groove fittingly receiving and locating said insert.

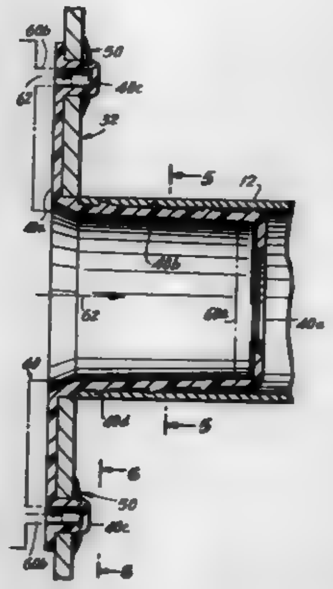
3,981,400
TEXTILE PACKAGE

Michael A. Quintana, Methuen, Mass., assignor to Malden Mills, Inc., Lawrence, Mass.

Filed Sept. 30, 1975, Ser. No. 617,995
Int. Cl.² B65D *85/67*
U.S. Cl. 206—407 4 Claims

1. A textile package comprising a pair of end panels having edges; each of said end panels having a central hole therein and at least one additional hole positioned between said central hole and an edge thereof; a pair of connector elements each including a flat flange, a central sleeve projecting from the inner face of said flange and at least one lug projecting from said inner face in the direction of said sleeve, each said sleeve being inserted in the central hole of an end panel with said at least one lug passing through said at least one additional hole in each end panel; at least one locking means on said at least one lug on each connector element securing the connector element to each end panel; a hollow connecting tube positioned between said connector elements with the sleeves being received in the hollow ends thereof; the sleeve on each connector element being tapered with the diameter of its end furthest away from the flange being smaller than the inner diameter of said tube and having a plurality of sharp-cornered circumferential ridges, the outer diameter of at least one circumferential ridge near the flange being larger than the inner diameter of said tube so that a force-fit is achieved by said at least one circumferential ridge deforming the tube slightly and opposing the withdrawal of the sleeve from the tube; and a wrapper extending from one end panel to the other and being secured to the edges of both end panels.

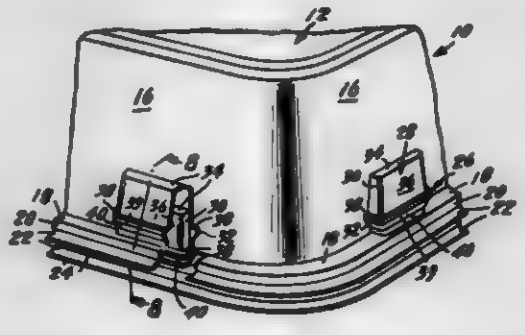




3,981,401
COVER FOR PLATES AND STACKING DEVICES THEREFOR

Richard Lewis Blanchard, St. Charles, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Mar. 14, 1975, Ser. No. 558,460
Int. Cl.² B65D *21/02*
U.S. Cl. 206—508 6 Claims



1. An integrally formed, nestably stackable thin-walled flexible cover having a topwall, a side wall extending downwardly therefrom and a peripherally continuous flange member extending outwardly to an open end, said sidewall being formed with a plurality of outwardly deformed stacking devices disposed in selected circumferential spaced relation to provide predetermined axial spacing and positive alignment of a plurality of said covers when stacked, each of said stacking devices comprising:

1. a stack stabilizer having a top portion horizontally disposed and extending outwardly from the sidewall, a face portion vertically depending from the top portion and,

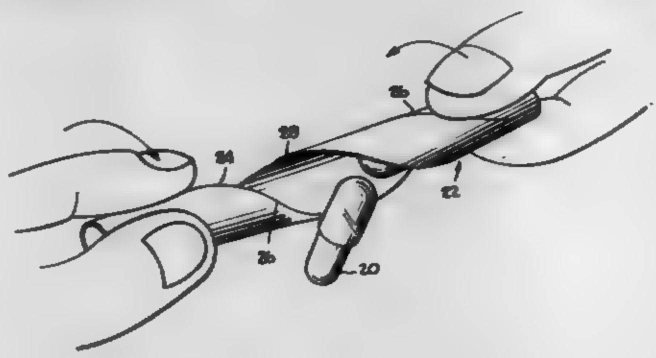
2. a stack shoulder having a first horizontally disposed portion depending from the face portion of said stabilizer and extending outwardly from the sidewall to define a stacking ledge, and a reverse tapered member, depending from said stacking ledge and extending inwardly and downwardly to merge with the flange member at the open end of the cover;

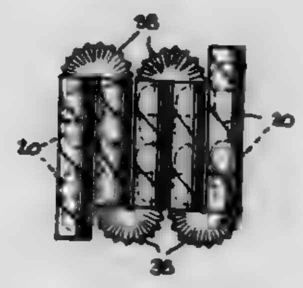
the top and face portions of the stack stabilizer, the stacking ledge and the reverse tapered member of the stack shoulder each having returned sides which extend inwardly to merge with the sidewall of the cover;
said stacking devices providing minimal clearance between sidewalls of nested covers at sections of controlled overlap and maintaining contact therebetween during horizontal shift.

3,981,402
PELLET DISPENSER

Neil W. Miller, New Britain, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 26, 1974, Ser. No. 446,065
Int. Cl.² B65D *3/04*; A47F *11/16*
U.S. Cl. 206—534.2 7 Claims





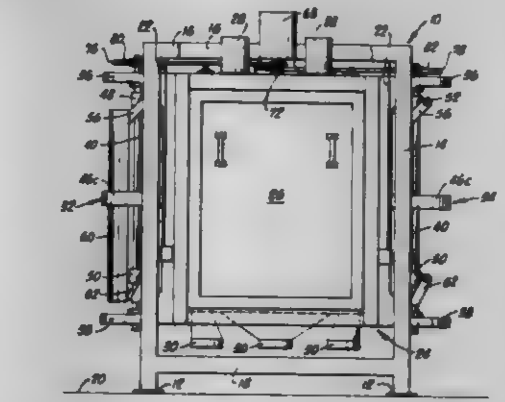
1. A pellet containet comprising an elongated tubular element having a helical slit extending nearly to each end of the tubular element, the tubular element formed of a strip of stiff but resilient plastic material, containing a plurality of pellet-like elements in aligned array with the inner surface of the container frictionally gripping the elements, the resiliency of the material being sufficient normally to maintain the strip in its closed tubular configuration wherein and adjacent edges of the helical slit are in contact, and to yield to manual twisting forces applied thereto for opening the strip in selected locations for dispensing at least one of its pellet-like elements.

3,981,403
OSCILLATING FREE SWINGING SIFTER APPARATUS

Otto J. Zimmerman, Oklahoma City, and Walton L. Mock, Bethany, both of Okla., assignors to Smico Corporation, Oklahoma City, Okla.

Filed Oct. 2, 1974, Ser. No. 511,387
Int. Cl.² B07B *1/44*
U.S. Cl. 209—366.5 22 Claims

1. A free swinging sifter apparatus comprising:
sieve means for classifying materials passed through the sieve means during movement thereof;
elongated flexible suspension means connected to said sieve means for vertically suspending the sieve means for free-swinging movement;
an upright suspension framework supporting said flexible suspension means and spaced from said sieve means to avoid contact by said sieve means with said suspension framework during free swinging movement of said sieve means;
first weight means disposed alongside the sieve means in horizontally spaced relation thereto and mechanically connected to the sieve means;
means pivotally supporting said first weight means from a side of said sieve means and affording mechanical connection between said first weight means and said sieve means, said pivotally supporting means being responsive to centrifugal force acting on said first weight means to undergo pivotation along with said weight means and allow said weight means to move further away from said sieve means;



second weight means spaced from the first weight means and spaced horizontally from said seive means alongside said sieve means and mechanically connected to the sieve means, said second weight means being disposed on the opposite side of said sieve means from said first weight means;
means pivotally supporting said second weight means from a side of said sieve means and affording mechanical connection between said second weight means and said sieve means, said means pivotally supporting said second weight means being responsive to centrifugal force acting on said second weight means during swinging movement of said sieve means to pivot outwardly with said second weight means as said second weight means is displaced further from said sieve means;
a prime mover mounted directly on said sieve means at a location between, and spaced from, said first and second weight means; and
flexible drive means connected between the prime mover and each of said first and second weight means to drive each of said first and second weight means in rotation.

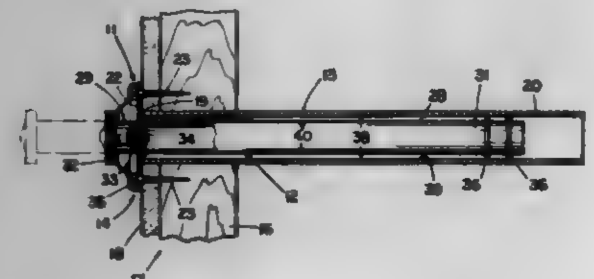
3,981,404
TELESCOPING GARMENT HANGER

John C. Goeke, 161 SW. 18th St., Richmond, Ind. 47374

Filed Jan. 20, 1975, Ser. No. 542,234
Int. Cl.² A47H *1/08*
U.S. Cl. 211—1.3 1 Claim

1. A telescoping garment hanger comprising:
a. a first tubular member having an exterior end and an interior end;
b. a second member having an exterior end and an interior end, said second member being telescopically received by said first tubular member;
c. mounting means near the exterior end of said first tubular member for mounting said first tubular member in a structure;

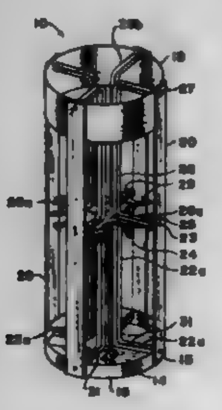
d. alignment means on said second member near the interior end of said second member for preventing said second member from disengaging from said first tubular member and for preventing angular displacement of the axis of said second member relative to the axis of said first tubular member when said second member has been extended from said first tubular member;
e. stop means near the exterior end of said second member for preventing objects hanging on said second member from sliding off said second member when it has been extended from within said first tubular member; and
f. attachment means for removably attaching the stop means to the second member, the perimeter of the cross section of the second member being essentially uniform from the location of the alignment means to the exterior end of the second member and the first tubular member having an inner wall whose cross section is essentially uniform from an area near the mounting means to the interior end of said first tubular member, said attachment means including an expansion member mounted within said second member and a screw whose threaded portion extends through the expansion member and is threadedly received within the stop means, increasing the engagement of the screw within the stop means expanding the diameter of the expansion member thereby retaining the stop means near the exterior end of the second member, whereby adjustment of the overall length of the telescoping garment hanger may be made prior to installation by removing a portion of the interior end of the first tubular member and by removing a portion of the exterior end of the second member before attachment of the stop means to the second member.



3,981,405
ROTATABLE DISPLAY AND STORAGE STAND FOR FLOOR COVERINGS

John A. Slack, Dalton, Ga., assignor to World Carpets, Dalton, Ga.

Filed June 16, 1975, Ser. No. 586,856
Int. Cl.^{2} A47F *7/18*
U.S. Cl. 211—70 5 Claims

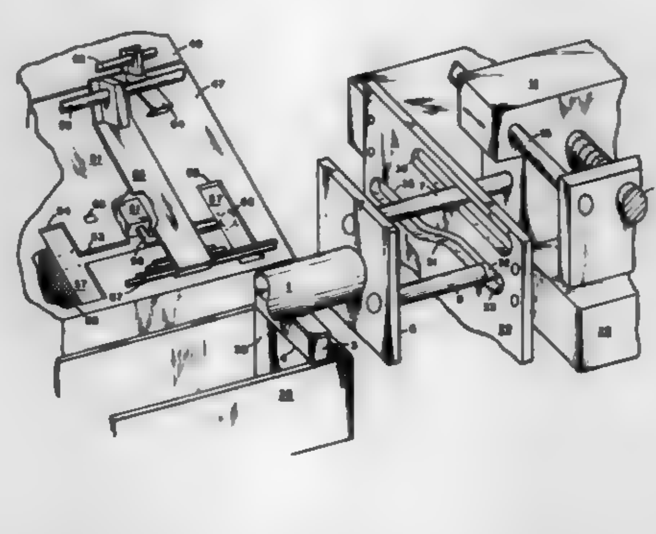


1. A display and storage rack for rolled samples of floor covering materials and the like, comprising:
a. a standard having foot portions for supporting a generally upright, vertical portion therefrom;
b. a rotative assembly comprising a first disc for supporting an end of each of the rolled sample to be displayed and a second disc spaced therefrom and having sets of recesses therein disposed about the periphery of said second disc, each said recess being of a configuration and size for receiving at least a single roll of the floor covering, and first plurality of bracket members for supporting said first and second disc in a spaced relationship, said first disc having an opening therethrough for receiving said standard, whereby said assembly is rotatively supported about said upright, vertical portion;
c. a second plurality of bracket members, each having a first leg portion fastened by fastening means to an upper surface of said second disc, a second leg portion and a connecting bite portion; and
d. a lower cylindrical member and an upper cylindrical member respectively connected to said first leg portions of said first mentioned plurality of brackets and to said upper leg portion of said second plurality of brackets.

3,981,406
AUTOMATIC BOX LOADER

Harry H. Eldridge, Monterey; Robert A. Jones, Oak Ridge; Gordon M. Lindner, Norris, and Paul H. Hight, Lebanon, all of Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Oct. 31, 1975, Ser. No. 627,624
Int. Cl.^{2} B65G *57/04*
U.S. Cl. 214—6 FS 10 Claims

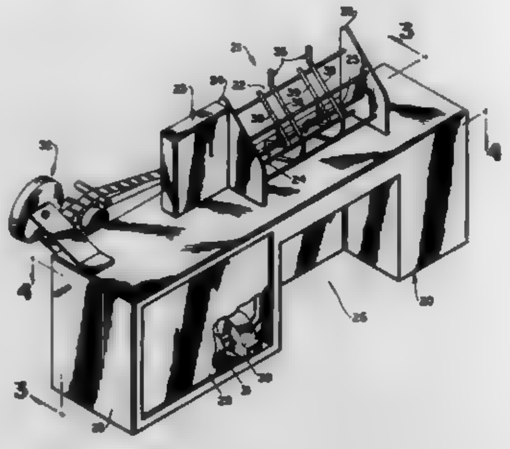


1. A tube-handling system comprising:
a tube-retainer having an inclined face for retention of a layer of tubes;
means for depositing on said face a plurality of ferromagnetic armatures;
means for loading said retainer with a layer of said tubes bridging said armatures, thus providing an assembly comprising a tube layer and armatures underlying the same;
transport means for said assembly, said means including an elongated member carrying a row of electromagnets; and
drive means for alternately effecting (a) advance of said member toward said retainer to first station where said electromagnets are contiguous with said assembly and respectively in magnetic-coupling relation with the armatures thereof and (b) retraction of said member from said first station to a second station more remote from said retainer, said drive means including magnet-positioning means for angularly displacing said electromagnets toward said retainer in the course of said advance and away from said retainer in the course of said retraction.

3,981,407
CONE LABELING, SEPARATING AND RESTACKING APPARATUS AND METHOD

Robert G. Potts, 3007 Dodson Ave., Chattanooga, Tenn. 37406

Filed Aug. 15, 1974, Ser. No. 497,554
Int. Cl.^{2} B65G *59/00*; B65H *3/08*
U.S. Cl. 214—8.5 E 3 Claims



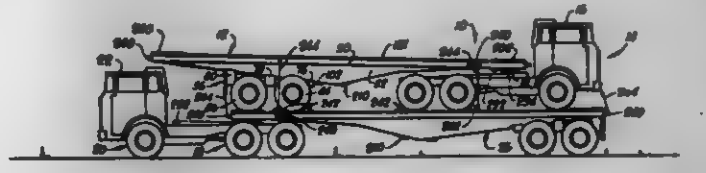
1. Cone separating apparatus for cones comprising a frustum of a cone and having a conical opening therethrough, each cone defining a nose at the smaller end of said cone and having a small hole therethrough, each cone defining a base at the larger end of said cone and having a large hole therethrough, said small hole and said large hole constituting opposite ends of said conical opening, a plurality of said cones being stacked together into a stalk of cones, said cone separating apparatus including cone base receiving means axially aligned with said stalk of cones to receive said base of a cone after said cone is separated from said stalk of cones, a cone nose receiver aligned with said stalk of cones to receive said nose of a cone at the end of said stalk of cones, means for compressing said stalk of cones including means for moving said cone base receiving means towards said cone nose receiver for causing said stalk of cones to be nested tightly together, means for closing said small hole in two contiguous cones to define an annular space, said means for closing said small hole in two contiguous cones comprising a nozzle having a uniform outside diameter substantially equal to the diameter of said small hole and a length greater than the distance between said small hole in any two contiguous cones, a supply pipe, said nozzle defining an axial passageway therein, said axial passageway being in communication with said supply pipe, said nozzle defining a transverse passageway in communication with said axial passageway and positionable in said annular space for placing said annular space in communication with said supply pipe, a source of fluid under pressure for supplying fluid through said supply pipe to said passageways and for placing fluid under pressure within said annular space sufficient to cause the endmost cone of said stalk of cones to move towards said cone base receiving means, said cone base receiving means receiving the base of said endmost cone.

3,981,408
APPARATUS FOR TRANSPORTING ONE VEHICLE BY ANOTHER

Finis Lavell Chisum, Rte. 5, Woodcrest Heights, Claremore, Okla. 74017

Continuation-in-part of Ser. No. 336,869, Feb. 28, 1973. This application Sept. 3, 1974, Ser. No. 502,610
The portion of the term of this patent subsequent to Oct. 15, 1991, has been disclaimed.
Int. Cl.^{2} B60P *1/28*
U.S. Cl. 214—506 11 Claims

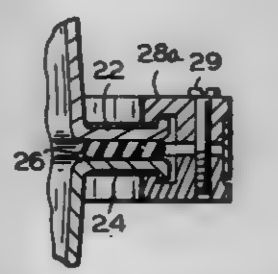
1. In combination:
first and second semitrailers and tractors, each of the semitrailers including an elongated load bed having support wheels adjacent the rear end thereof, each tractor having an operator's cab and a fifth wheel for connection to the front end of the respective semitrailer, and each semitrailer and tractor having a wheel base defined by the distance between the forward and rear wheels;
lift means adjacent the forward end of said second semitrailer for lowering the forward end of the load bed of the second semitrailer substantially to the ground and for raising the load bed from said lowered position to a position sufficiently high to be coupled to the fifth wheel of the second tractor whereby the forward end of the second semitrailer can be lowered to form a ramp, and the first semitrailer and tractor may be driven onto the load bed of the second semitrailer;
means for reducing the wheel base of the first semitrailer and tractor to a length no greater than the length of the load bed of the second vehicle; and
means on one of the semitrailers for raising the rear end of the load bed of the first semitrailer when the first semitrailer is positioned on the load bed of the second semitrailer sufficiently high to clear the cab of the second tractor whereby the first semitrailer and tractor can be transported on the second semitrailer and tractor.



3,981,409
COLLAPSIBLE REUSABLE BARREL FOR FLUIDS

Robert D. Flanders, Rte. 2, Box 666, No. 42, Wilsonville, Oreg. 97070

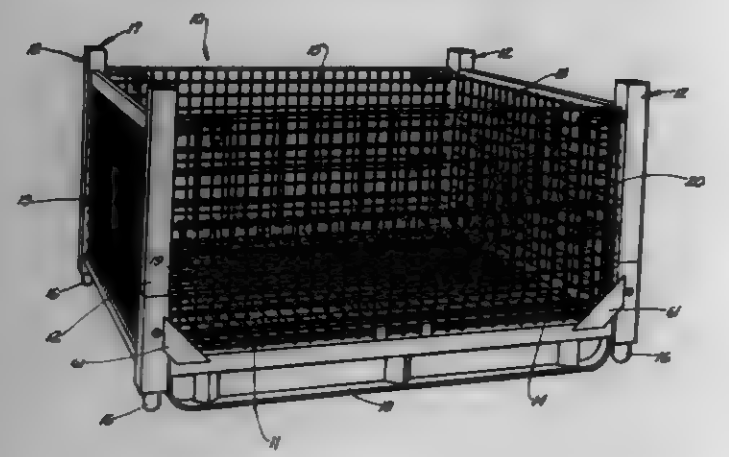
Continuation of Ser. No. 255,597, May 22, 1972, Pat. No. 3,940,008. This application Sept. 19, 1975, Ser. No. 614,863
Int. Cl.^{2} B65D *7/02*, *45/16*; F16L *23/00*
U.S. Cl. 220—5 R 1 Claim



1. In a barrel for storing and shipping fluids and other materials comprised of a pair of frustrum-shaped shell-like barrel sections, each having a closed end and an open end larger than said closed end and being interchangeably nestable one within the other when disassembled, said barrel sections each having mating means for sealingly and detachably joining said open ends together with the respective interiors of said two barrel sections facing one another, the improvement wherein said mating means comprises: a pair of projecting flanges each extending peripherally around the respective open ends of said barrel sections, a resilient gasket for inserting between said flange pair, a plurality of unitary C-shaped clamp members spaced at arbitrary locations along the periphery of said flange pair for holding said flange pair in non-contacting close proximity with said gasket compressed therebetween, and means associated with said flange pair and said clamp members for interlockingly engaging said flange pair and clamp members at said arbitrary locations along the periphery of said flange pair while permitting said clamp members to be detached from said flange pair at said arbitrary peripheral locations by the pressing of said barrel sections together momentarily to increase the compression of said resilient gasket, thereby freeing said flange pair from engagement with said clamp members.

3,981,410
RIGID, COLLAPSIBLE AND NESTABLE CONTAINER

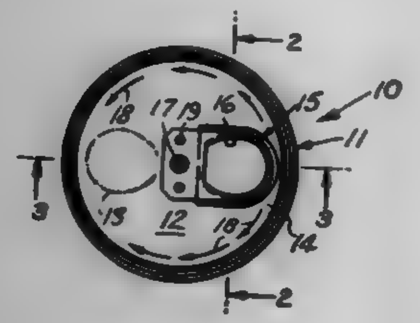
Richard Charles Schurch, Livonia, Mich., assignor to Armco Steel Corporation, Middletown, Ohio
Filed Dec. 19, 1975, Ser. No. 642,310
Int. Cl.² B65D *7/24*; B65J *1/02*
U.S. Cl. 220—6 **10 Claims**



1. A rigid collapsible container comprising:
a. a rectangularly shaped base member having upstanding corner posts at each of the corners thereof, said corner posts being pivotal about a point near said base member from a vertical position to a position overlying said base member and including male nesting means extending below said base member and female nesting means for mating with said male nesting means when said corner posts are in said vertical position and in said position overlying said base member;
b. a pair of side panels each extending between and pivotally associated with a pair of said corner posts; and
c. front and rear panels extending between said side panels and hingedly secured to said base member, said front and rear panels being swingable between a vertical position and a position overlying said base member.

3,981,411
SAFETY CAN OPENER

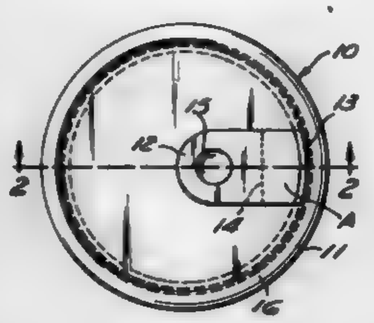
Robert A. Hofstetter, 1715 Rada Road, Hacienda Heights, Calif. 91745
Filed Jan. 26, 1976, Ser. No. 652,160
Int. Cl.² B65D *41/32*
U.S. Cl. 220—267 **5 Claims**



1. A safety can opener, comprising a liquid containing can, a pivotable tab secured to the top of said can in recessed means of the top, shearing edge means on said tab for shearing an opening in the top of said can, indentation and nipple means on said can, providing stop means for the alignment of said tab with a scored line, and means for retaining said tab within the opening that is defined by said scored lines.

3,981,412
CONTAINER CLOSURE

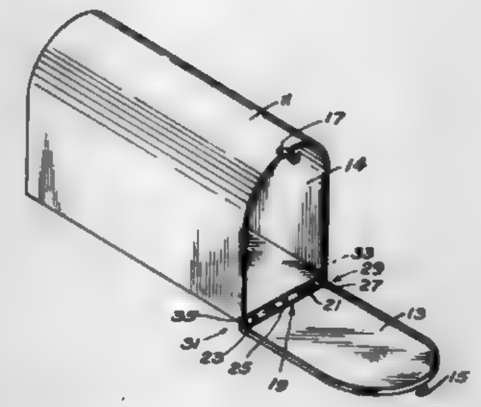
Richard W. Asmus, 3628 W. 48th St., Cleveland, Ohio 44102
Filed Mar. 29, 1971, Ser. No. 128,804
Int. Cl.² B65D *17/20*
U.S. Cl. 220—270 **9 Claims**



1. A container comprised of a closure of cleanly combustible, high impact-resistant thermoplastic having low gas and vapor permeability and lower tear-resistance after rupture, said closure being united to the rim of the mouth of a container body, an opening tab having a free portion and a portion fused to said closure, said closure having a rupture line of lesser section defining the periphery of an opening therein, and said tab being positioned with respect to said line whereby the forces of a pull on the free portion of said tab concentrate at a rupturable portion of said rupture line and the continuation of a pull sufficient to effect initial rupture will continue to tear said closure along said line and allow said container to be opened.

3,981,413
MAILBOX DOOR MOUNTING ARRANGEMENT

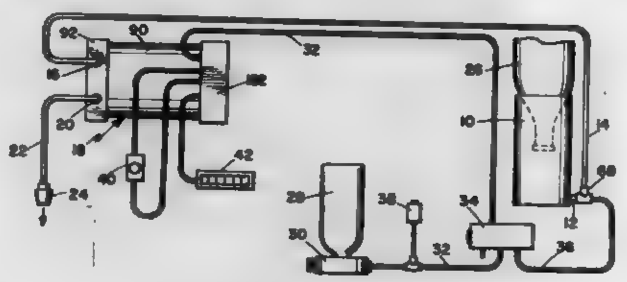
Alexander M. Cornwell, Jr., St. Louis, Mo., assignor to Jackes-Evans Manufacturing Company, St. Louis, Mo.
Filed Apr. 28, 1975, Ser. No. 568,482
Int. Cl.² B65D *43/14*, *51/04*
U.S. Cl. 220—334 **10 Claims**



1. A mounting arrangement for a mailbox door, the mailbox having an open end to be selectively closed by a door, comprising:
a rigid flat bar extending across the door adjacent the bottom thereof;
fastening means for securing said flat bar to the door to strengthen the door against distortion, said fastening means precluding relative movement between said flat bar and the door;
supporting members rigidly connected to said flat bar and extending generally transversely thereto at each end thereof; and
mounting means for pivotally connecting said supporting members to either side of the mailbox, the connection of said supporting members to the side of the mailbox and the use of said rigid flat bar strengthening the mailbox as well as the door against distortion.

3,981,414
BEVERAGE DISPENSING SYSTEM

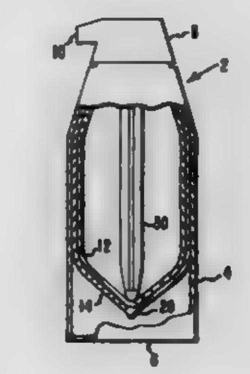
Raymond Edward Gust, 10327 Strawberry Lane, Spring Valley, Calif. 92077, and Patrick Henry Murphy, 1464 Bridge Street, Clarkson, Wash. 99403
Filed Apr. 7, 1975, Ser. No. 565,435
Int. Cl.² B67D *5/22*; G01F *11/06*
U.S. Cl. 222—38 **9 Claims**



1. A beverage dispensing system, comprising:
a pump unit having a pair of end blocks with a cylinder secured therebetween;
a piston slidable in said cylinder between a retracted position and an extended position;
the first of said end blocks having a liquid inlet and liquid outlet therein, communicating with the interior of the cylinder;
the second of said end blocks having a barrel extending axially into said cylinder;
said piston being hollow with a closed end and an open end and being telescopically slidable over said barrel;
said piston being circumferentially spaced from said barrel and slidably sealed thereto at axially spaced positions, defining a cushion chamber between the piston and barrel;
a source of liquid beverage connected to said liquid inlet;
a source of pressurized gas connected to said pump unit;
valve means in said pump unit for controlling the flow of pressurized gas to drive said piston to the extended position, and for conducting gas into said cushion chamber to return the piston to the retracted position in a continuous cycle;
and actuating means coupled to said source of pressurized gas for initiating the cycle of piston motion.

3,981,415
DISPENSER WITH EXPANSIBLE MEMBER AND CONTRACTING FABRIC

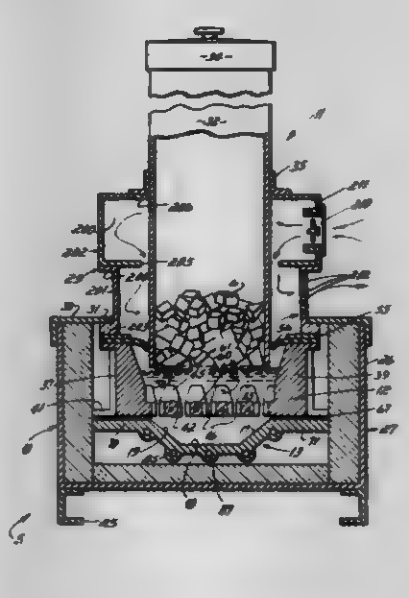
John Rayford Fowler, Wilmington, Del., and Edward Merrick Hogan, Landenberg, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 29, 1975, Ser. No. 626,964
Int. Cl.² B65D *35/28*, *35/56*
U.S. Cl. 222—95 **10 Claims**



1. In a fluid dispensing container comprising a volume-expansible member for receiving and holding said fluid and means for forcing said volume-expansible member to contract in volume so as to dispense said fluid therefrom, the improvement comprising an expansible fabric disposed about said volume-expansible member and having a uni-directional recovery force to contract said volume-expansible member sufficiently to substantially empty it of said fluid, thereby serving as said forcing means, said fabric comprising elastomer yarn supplying said recovery force to said fabric and yarn in engagement with said elastomer yarn to maintain the position of said elastomer yarn in the fabric during expansion and contraction of said fabric so as to prevent blow-out of said volume-expansible member.

3,981,416
APPARATUS FOR MELTING AND DISPENSING THERMOPLASTIC MATERIAL

Charles H. Scholl, Vermilion, Ohio, assignor to Nordson Corporation, Amherst, Ohio
Continuation-in-part of Ser. No. 549,189, Feb. 12, 1975. This application June 4, 1975, Ser. No. 583,586
Int. Cl.² B67D *5/62*
U.S. Cl. 222—146 R **7 Claims**



1. An apparatus for converting solid thermoplastic material to molten thermoplastic material and for dispensing the molten thermoplastic material, comprising
a housing including a hopper having side walls for receiving solid thermoplastic material,
a flow through grid melter having a continuous side wall, a bottom wall, and a open top for receiving said solid thermoplastic material from said hopper, said bottom wall comprising a plurality of spaced heating sections,
a plurality of discharge openings in said bottom wall of said grid melter between said spaced heating sections,
a reservoir mounted beneath said grid melter and adapted to receive molten material from said discharge openings of said grid melter,
means for heating said bottom wall of said grid melter,
a dispenser operable to dispense said molten thermoplastic material,
a pump for supplying said molten thermoplastic material from said reservoir to said dispenser, and
cooling means for maintaining said hopper side walls below the solidification temperature of said molten material so as to prevent the melt back of molten material from said grid melter into said hopper, said cooling means comprising
a shroud surrounding at least the lower portion of said hopper, said shroud defining an air chamber between the inner walls of said shroud and the outer walls of said hopper, and air flow means for supplying a flow of forced air through said air chamber so as to cool the lower portion of said hopper.

3,981,417

SYSTEM FOR AERATING AND FLUIDIZING PARTICULATE MATERIAL

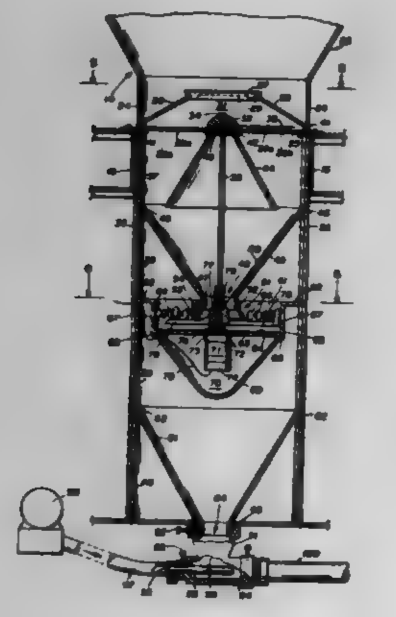
Arthur L. Fassauer, Canyon, Tex., assignor to Fassauer Industries, Inc., Canyon, Tex.

Continuation of Ser. No. 290,648, Sept. 20, 1972, Pat. No. 3,804,303, which is a continuation-in-part of Ser. No. 121,254, March 5, 1971. This application Feb. 11, 1974, Ser. No. 441,427

The portion of the term of this patent subsequent to Apr. 16, 1990, has been disclaimed.

Int. Cl.² B67D *5/54*

U.S. Cl. 222—193 **4 Claims**



1. A particulate material aeration and fluidization system comprising:

- an upper aeration and fluidization chamber including a substantially horizontally disposed circular plate having inner and outer concentric circular regions with a plurality of apertures formed through the plates in the outer region;
- a first thin, elongate agitation member mounted for rotation around a path extending substantially across the outer region of apertures and some predetermined distance above the plate of the first aeration and fluidization chamber to aerate and agitate particulate material in the chamber and to cause particulate material to flow from the chamber through the apertures in the plate;
- a stationary upper conical member tapering downwardly and outwardly under a number of the apertures in the outer region whereby particulate material flowing through the apertures of said plate is diverted by said outer conical member;
- a lower aeration and fluidization chamber including a lower conical member surrounding the outer region of apertures formed through said plate with its upper end adjacent the lower end of the upper conical member to define an annular passageway therebetween and tapering downwardly and inwardly to a particulate material outlet, whereby the volume of particulate material flowing through the apertures of said plate is directed downwardly and inwardly to said outlet; and
- a second thin, elongate agitation member supported for rotation around a path extending adjacent to and spaced from said lower conical member of said lower aeration and fluidization chamber to aerate and agitate particulate material by loosening said material adjacent to the inner wall of the second chamber and to feed particulate material through the outlet.

3,981,418

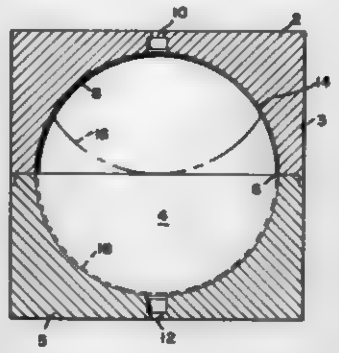
EXPULSION DEVICE

Clyde E. Williamson, Los Angeles, and Louis A. Rosales, Manhattan Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 18, 1966, Ser. No. 596,052

Int. Cl.² F23K *5/00*

U.S. Cl. 222—386.5 **3 Claims**



1. A fluid expulsion device comprising:

- a container;
- inlet means for introduction of a first fluid into said container;
- an outlet for expulsion of a second fluid from said container; and
- a diaphragm within and electrodeposited on the interior wall of said container for separating said first and second fluids, said diaphragm being bonded over substantially its entire surface to the interior wall of said container, whereby said diaphragm will peel smoothly from said container when said second fluid is expelled through said outlet in response to said first fluid being introduced into said container.

3,981,419

SELF-CLOSING CLOSURES

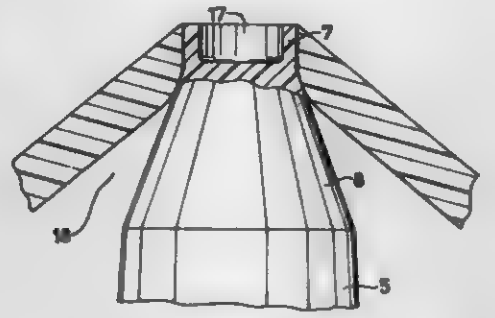
Billy N. Nilson, Mjolby, Sweden, assignor to KeNova AB, Malmo, Sweden

Filed Apr. 1, 1975, Ser. No. 564,079

Claims priority, application Sweden, Apr. 8, 1974, 7404749

Int. Cl.² B65D *35/50*

U.S. Cl. 222—494 **8 Claims**



1. A closure for use with a container, the closure opening in response to pressure upon the contents of the container, and being self-closing upon the release of pressure, said closure comprising a first part having a discharge opening, and a second part having a projection extending toward said opening in said first part and closing said opening when said closure is in the closed position, said discharge opening having a substantially cylindrical shape and changing at the interior of the opening to an annular, curved convex surface, said projection having a substantially cylindrical tip sized to be sealingly received in the cylindrically shaped discharge opening in the closed position of said closure and a conical portion diverging outwardly from said cylindrical tip for establishing linear sealing contact with the annular convex surface of said discharge opening in the closed position of said closure, whereby sealing engagement between the projection and the discharge opening is attained at two places.

3,981,420

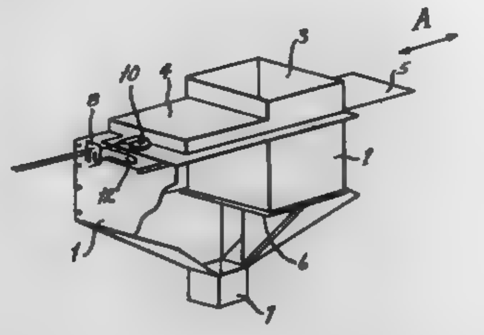
PULL MEANS FOR SLIDABLE MEMBER FOR DOSING DEVICE

Louisa Josephina Smits-Geurts, Dorpstraat 48, Borkel en Schaft, Netherlands

Filed Jan. 20, 1975, Ser. No. 542,368

Int. Cl.² B67D *3/00*

U.S. Cl. 222—505 **6 Claims**



1. A slidable member for use in conjunction with the supporting frame of a dosing device for dispensing a select quantity of granular material, said slidable member being adapted for reciprocal movement in opposing directions with respect to the supporting frame of the dosing device, the improvement which comprises a rope means, pulley means connecting with said supporting frame and having a rope means arranged thereon, said rope means as arranged upon the pulley means forming a pair of rope sections that extend substantially parallel to each other and away from the supporting frame, a plate means secured to the said slidable member, there being a pair of holes provided in said plate means, one of said rope sections being arranged through said pair of holes to adjustably secure the rope means thereto, whereby upon a pull of one of the rope sections the said plate means and slidable member will be displaced in one of the opposing directions.

3,981,421

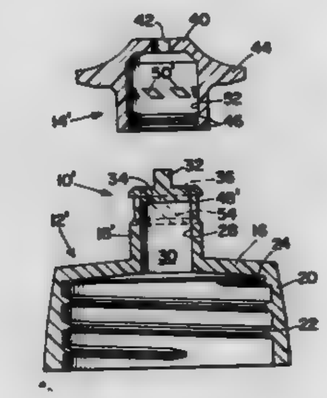
NONSPURTING DISPENSING CLOSURE

John David McDowell, Jr., Cincinnati, and Paul John Nutley, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 30, 1975, Ser. No. 592,007

Int. Cl.² B65D *47/26*

U.S. Cl. 222—521 **10 Claims**



1. In a dispensing closure having a generally cylindrical chimney portion projection from a shell member and a tip member with a generally cylindrical bore slidably disposed thereon having a generally central dispensing opening and movable between an extended open position and a telescoped closed position and wherein there is provided an undercut generally annular groove extending generally peripherally around the shell member chimney portion and means carried by the tip member within said bore thereof for engagement within said groove to limit movement of said tip member relative said shell member to movement between the open and closed positions thereof, the improvement comprising means for restricting the movement of the tip member relative the shell member chimney portion to a low angle slight twisting motion during push-pull movement to thereby reduce spurting of product during opening movement thereof; said movement restricting means comprising at least one high slope angulated rib extending across and only partially around said shell member chimney portion undercut groove and a pair of circumferentially spaced apart lugs carried by said tip member extending into said bore thereof for engaging said at least one rib on opposite sides thereof to impart said slight twisting motion to said tip member during movement thereof between said open and said closed positions.

3,981,422

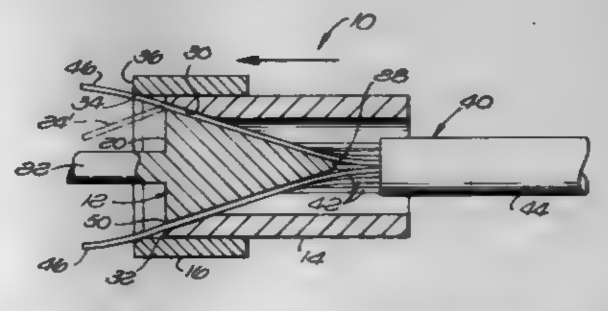
METHOD OF BREAKING GLASS FIBERS AND TOOL THEREFOR

John R. Moore, Santa Ana, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 18, 1975, Ser. No. 597,096

Int. Cl.² C03B *33/02*; B26F *3/00*

U.S. Cl. 225—2 **14 Claims**



1. A method of uniformly breaking glass fibers in a bundle of fibers comprising the steps of:

- inserting the apex of a cone into the end of a bundle of fibers to position the fibers in a single layer about the surface of the cone with the free ends of the fibers extending beyond the base of the cone;
- shifting a sleeve surrounding said bundle forwardly toward said base to firmly grip the fibers between the end of the sleeve and said cone; and
- severing the ends of the fibers extending beyond said base.

3,981,423

TWO SPEED PLANETARY GEAR TRAIN

Henry Jacob Koeber, Deerfield, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Apr. 17, 1975, Ser. No. 568,879

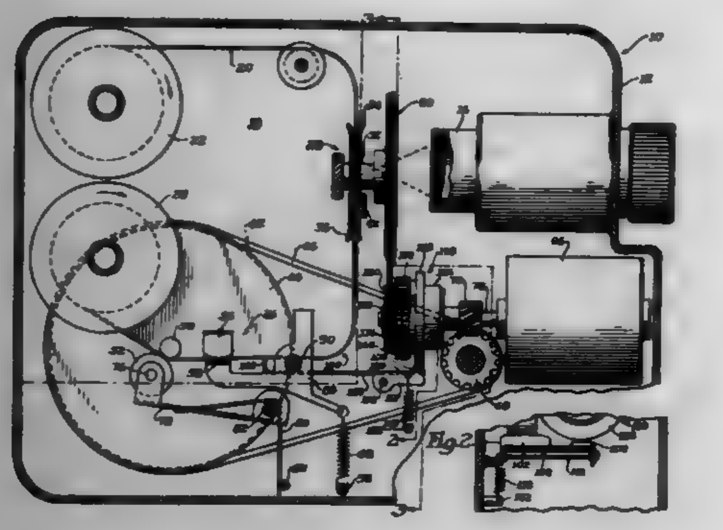
Int. Cl.² B65H *23/22*

U.S. Cl. 226—42 **8 Claims**

1. An improvement in a motion picture camera having an image recording station past which film is moved intermittently and spaced therefrom, a sound recording station past which the film is moved constantly, the film path between the stations including a film loop, the improvement comprising:

- a single motor for driving the film through both said stations;
- a film moving mechanism at said sound recording station;
- a constant speed transmission coupling said motor to said film moving mechanism at said sound recording station;
- a speed change assembly coupling said motor to said film moving mechanism at said image recording station;
- said speed change assembly including a braking disc having fixed thereto at least a pair of stud shafts about each of which an idler gear is rotatable, said idler gears being nonrotatably revolved on said braking disc when said braking disc is unrestrained, and being non-revolvably rotated when said braking disc is restrained; and
- film loop sensor means for selectively engaging said braking disc of said speed change assembly to affect the rate of

operation of said film moving mechanism at said image recording station, whereby said film moving mechanism is operated at a first rate when said braking disc is unrestrained and at a reduced rate when said braking disc is restrained.



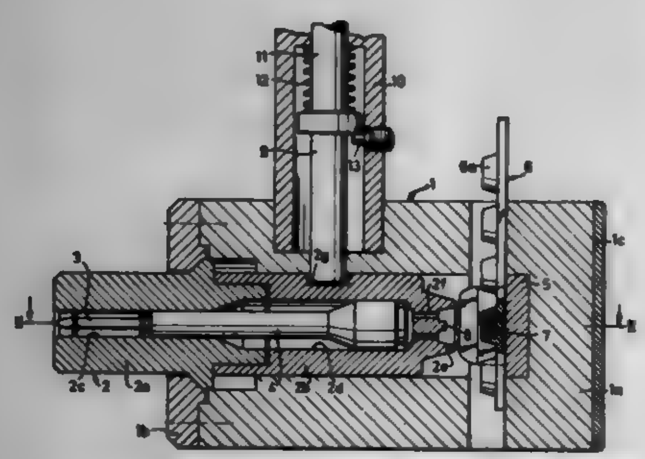
3,981,424
EXPLOSIVE CHARGE DRIVEN SETTING GUN
Elmar Maier, Feldkirch-Tisis, Austria, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed July 25, 1975, Ser. No. 599,066

Claims priority, application Germany, July 29, 1974, 2436446

Int. Cl.² B25C ***1/14***

U.S. Cl. 227—10 24 Claims



1. An explosive charge driven setting gun for firing an explosive charge and using force generated by the explosive charge for driving fastening elements and the like into a receiving material, comprising a housing having a bore extending in the firing direction of the gun, said bore having a rear end and a front end spaced in the firing direction from said rear end, a barrel axially displaceably mounted within the bore in said housing, said barrel having a forward end facing in the firing direction and a rearward end facing in the opposite direction, a breech block positioned in said housing at the rear end of said bore and in alignment with said barrel, said breech block arranged to support a propellent charge, wherein the improvement comprises means formed on the rearward end of said barrel for firing the propellent charge supported on said breech block when said barrel is displaced rearwardly against said breech block.

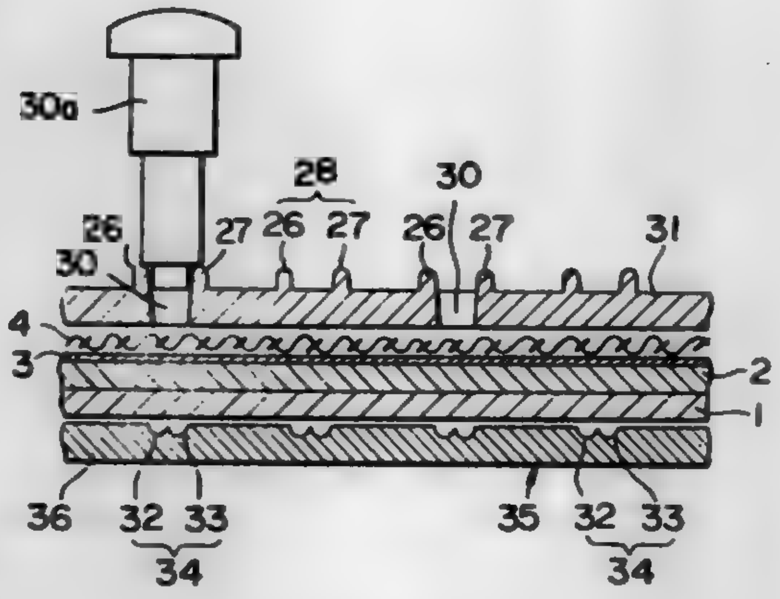
3,981,425
DEVICE FOR ASSEMBLING STRUCTURAL MEMBER
Naomitsu Megumi, Funabashi, Japan, assignor to Tokyo Plywood Kabushiki Kaishi, Tokyo and Naomitsu Megumi, Funabashi, both of, Japan

Division of Ser. No. 404,163, Oct. 9, 1973. This application Apr. 24, 1975, Ser. No. 571,119

Claims priority, application Japan, Oct. 25, 1972, 47-106851; Oct. 25, 1972, 47-106852

Int. Cl.² B25C ***7/00***

U.S. Cl. 227—155 4 Claims



1. A device for manufacturing a composite structural member of the type made up of a plurality of superimposed structural elements secured together by staples comprising a guide block having an upper surface, a plurality of individual rails projecting from said upper surface, said rails being arranged in pairs with the two individual rails constituting a pair being separated from one another by a first elongated space, said first elongated space and the pair of rails defining said first elongated space forming an elongated groove on said top surface of said guide block, said pairs of rails being separated from each other by a second elongated space parallel to said first elongated space, means disposed along the bottom of said elongated groove defining a plurality of spaced openings passing completely through said guide block, said guide block being adapted to be disposed over said plurality of superimposed structural elements, a receiving block adapted to be disposed beneath said plurality of superimposed structural elements, said receiving block having a plurality of grooves formed therein, said grooves being arranged in pairs with the two individual grooves constituting a pair having a combined width substantially corresponding to the width of said openings in said guide block, said pairs of grooves being separated from one another a distance substantially corresponding to the distance between said elongated grooves on said guide block, said receiving block being disposed relative to said guide block such that said elongated grooves on said guide block generally overlie said pairs of grooves on said receiving block, whereby staples are adapted to be passed through said spaced openings in said elongated grooves in said guide block, pass through said superimposed structural elements, and engage said grooves in said receiving block such that upon engaging said grooves, the staples are turned laterally to thereby close the staple and secure together said plurality of superimposed structural elements.

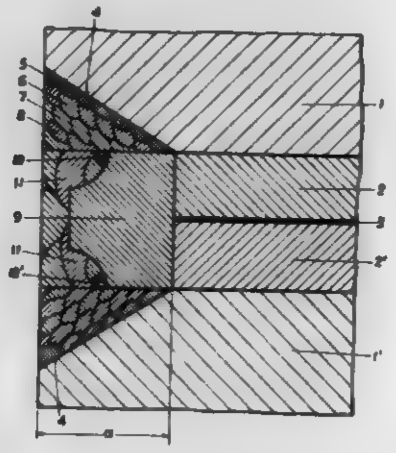
3,981,426
CORROSION-RESISTANT STRUCTURAL SHAPE CLAD BY ROLLING AND WELDING AND COMPRISING A BASE MATERIAL AND A CLADDING MATERIAL AND METHOD OF PRODUCING SUCH A STRUCTURAL SHAPE
Giswalt Veitl, Linz, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Dec. 4, 1974, Ser. No. 529,296

Claims priority, application Austria, Dec. 17, 1973, 10532/73

Int. Cl.² B23K ***1/20***

U.S. Cl. 228—118 . 5 Claims



1. In a method of producing a corrosion-resistant structural shape that is clad by rolling and welding, and which comprises a base material of austenitic manganese steel and a cladding material containing alloy elements tending to phase precipitations, said structural shape being formed from a cladding pile of a certain circumference with a sandwich-like construction composed of two outer base material plates and two inner cladding sheet bars having smaller dimensions than the base material plates so that the base material plates overhang the cladding sheet bars, a separating layer being inserted between the cladding sheet bars for preventing said cladding sheet bars from being welded together, a gap formed by the overhang of the base material plates surrounding the cladding sheet bars and being closed all around by weld strips welded together with the base material plates, the improvement comprising:

grinding a bevel into the base material plates at their edges, said bevel extending over substantially all of the overhang of the base material plates,

replacing ground-off material by building-up a plurality of welding layers of carbon steel,

composing the pile and inserting the weld strips,

connecting the weld strips, by means of root seams along the circumference of the pile, with the built-up welding layers, and

tightly closing the gap by applying further welding layers between the built-up welding layers and the weld strips, whereby the pile is completed.

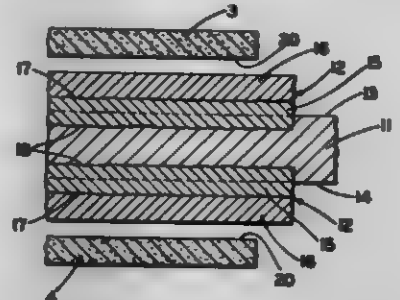
3,981,427
METHOD OF LAMINATING GRAPHITE SHEETS TO A METAL SUBSTRATE
Ronald R. Brookes, 303 Cordelia Ave. SW., North Canton, Ohio 44720

Filed Apr. 28, 1975, Ser. No. 572,319

Int. Cl.² B23K ***31/02, 19/00, 35/22***

U.S. Cl. 228—122 11 Claims

1. The method of coating sheet steel base material with graphite, which includes the steps of providing a steel sheet having an intermetallic phase bonded tin coating on at least one side of the steel base; placing a graphite sheet on the tin coated side of the steel base sheet to form a sandwich pack; pressing the tin coated and graphite sheets of the pack together while conductively heating the pack to a temperature slightly higher than the melting point of tin penetrating the graphite sheet with liquidus tin resulting from the heating, while maintaining the heated pack under pressure; and then cooling the sandwich pack under pressure to solidify the liquidus tin to form a bond between the graphite sheet and the tin coating on the steel base material.



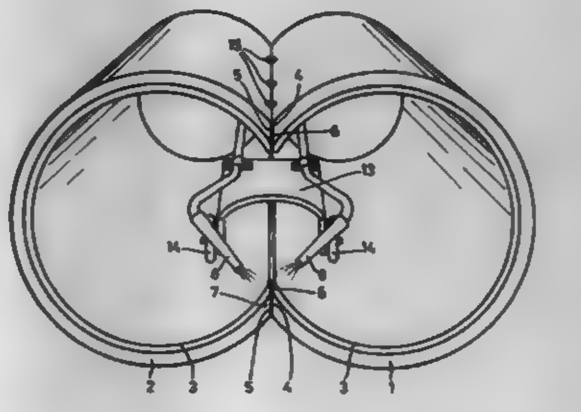
3,981,428
METHOD FOR CRACK-FREE JOINING OF TUBES FOR A WEARING INSERT FOR SCREW CONVEYORS
Fritz Przybylla, Heilbronn, Germany, assignor to Werner & Pfleiderer, Stuttgart, Germany

Filed Dec. 15, 1975, Ser. No. 640,853

Claims priority, application Germany, Dec. 20, 1974, 2460316

Int. Cl.² B23K ***1/14***

U.S. Cl. 228—175 8 Claims



1. A method for crack-free joining of tubes cut along secants and pressed together along the secant surfaces to form relatively pointed saddles with application of heat and additional products, said tubes being provided on the inside with a wearing coating, said tubes serving as a wearing insert for housing of plural-screw screw conveyors, the method comprising:

joining the tubes lengthwise with solder being used as the additional product and by the heat being provided in the area of a saddle from the inside of the tubes and symmetrically with respect to the saddle.

3,981,429
METHOD FOR PLATED FOIL LIQUID INTERFACE DIFFUSION BONDING OF TITANIUM
Elmo G. Parker, La Mesa, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Continuation of Ser. No. 81,262, Oct. 16, 1970, abandoned. This application Jan. 29, 1973, Ser. No. 327,341

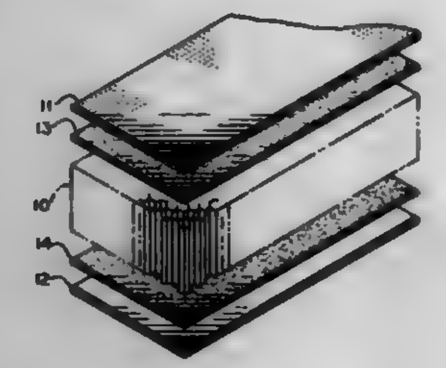
Int. Cl.² B23K ***31/02***

U.S. Cl. 228—194 12 Claims

1. The method of plated foil liquid interface diffusion bonding of two titanium base members which comprises:

a. providing a thin plated titanium base foil having a thickness of the order of less than 0.001 inch,

b. placing on at least one side of said foil laminar diffusion bridge materials consisting of successive plating layers of Cu-Ag-Ni plated thereon in the order named,
c. interposing said plated foil between the faying surface of said base members,
d. subjecting the members to compressive force urging the same into contact with the interposed foil at their respective foil interfaces,



e. heating the members and foil in a protective atmosphere to a temperature of the order of 1450°F. to 1800°F. which is sufficient to form a liquid interface diffusion bridge at each said interface of the members and foil, and
f. continuing and holding said heating at a temperature level and for a period of time sufficient to cause atomic transport of the titanium of the foil and members across said interfaces therebetween to form a bonding zone at each interface in which the titanium of the foil and member is diffused and in which the diffusion bridge materials are diffused and diluted throughout the zone.

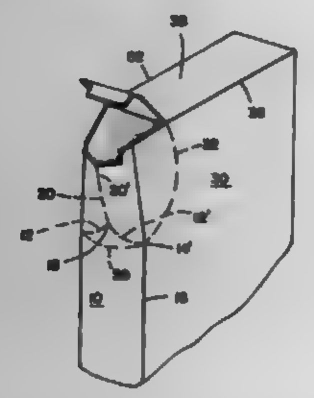
3,981,430
CONTAINER WITH IMPROVED POUR SPOUT

Cameron D. Keim, Fremont, Mich., assignor to Gerber Products Company, Fremont, Mich.

Filed July 9, 1975, Ser. No. 594,467

Int. Cl.² B65D *5/72, 83/00*

U.S. Cl. 229—17 R **9 Claims**



1. A container for holding a mass of a flowable material comprising back and front walls, at least one end wall and top end flaps hingedly attached at one end of said walls, each said back and front wall being contiguous with said end wall through respective of generally upright side margins, a break-away tab formed in part by a tear line in said end wall, said tab further being formed by the hinged attachment of said end wall to a first top end flap; a pair of top end flaps hingedly attached to said back and front walls, and overlapping said first top end flap, each of said pair of top end flaps being joined to respective of said back and front walls in part by a tear hinge extending therebetween for a distance corresponding to the depth of the said first top end flap, said back and front wall top end flaps being further provided with a fold line transverse to said tear hinge; a first pair of arcuate fold lines provided in respective of said back and front walls, each of said pair of arcuate fold lines having one end thereof intersecting with the upright side margin between said end wall and respective of said back and front walls, and the other end thereof intersecting the transverse fold line at the respective top end flap, said end wall having a second pair of fold lines extending upwardly from respective side margins and being convergent relative to each other intermediate said side margins at a location near said break-away tab, each said back, front and end wall being formed of a material having sufficient flexibility to permit the back and front walls to be moved toward each other while simultaneously allowing the end wall to flex outwardly along said fold lines, whereby when said carton is filled with flowable materials, the particles can be dispensed from said carton by first separating said tab along the tear line in said end wall and said tear hinges in said pair of top end flaps, then by bending said tab upwardly about said transverse fold line, and thereafter depressing the portions of said back and front walls defined by said pair of arcuate fold lines and said end wall, so as to temporarily lock into a pour spout configuration to control the pouring of said flowable material from said container.

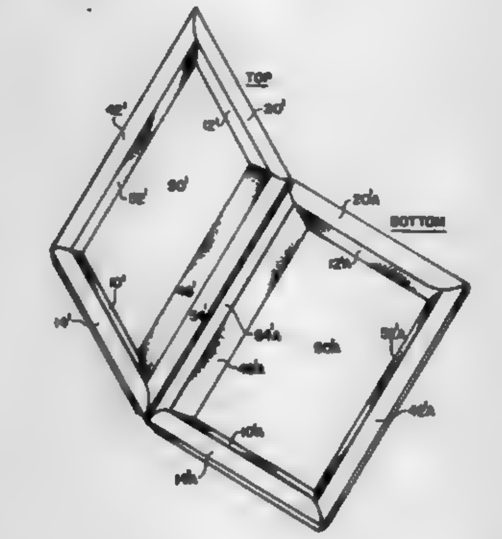
3,981,431
BLANK FOR A SIMULATED JEWEL BOX

Glen Matsuyama, Los Angeles, Calif., assignor to Graphic Arts Packaging Corporation, Gardena, Calif.

Filed May 22, 1975, Ser. No. 579,787

Int. Cl.² B65D *5/22*

U.S. Cl. 229—34 HW **1 Claim**



1. A one-piece blank for forming a generally rectangular box having identical top and bottom sections hinged to one another along a common edge, the blank including: a first rectangular panel and a second rectangular panel; a first pair of end flaps integral with the first panel and separated therefrom and from one another by respective scorelines; a second pair of end flaps integral with the second panel and separated therefrom and from one another by respective scorelines; a third pair of intermediate flaps integral with the first and second panels and separated therefrom and from one another by respective scorelines to permit the first panel to be folded over the second panel; a pair of further panels formed at each end of the first panel respectively adjacent to one of the flaps of the first pair and one of the flaps of the third pair and separated from the first panel by respective scorelines to permit the first panel to be moved into a shallow rectangular well against the second panel with the last-named flaps of the first and third pairs forming end rims for the well and with the further panels forming end walls for the well; first and second pluralities of side flaps formed integral with the respective sides of the second panel and separated therefrom by respective scorelines to permit the side flaps of the first and second pluralities to be folded over one another to form side rims and side walls for the well; said one of the end flaps of said first pair and said one of the end flaps of said second pair having side sections extending along the respective sides of the first panel and separated therefrom by respective slits, each of said side sections having an integral flap separated therefrom by a scoreline to be folded under the side flaps of the first and second pluralities to constitute reinforcement for the side rims and side walls of the well; and an identical one-piece blank having first and second panels of rectangular shape, and a second pair of end flaps integral with the second panel thereof and separated therefrom and from one another by respective scorelines, and in which the other one of said last-named flaps is integral with the end flaps of the second panel of the first-named blank and separated therefrom by a scoreline, the first-named blank forming a top for the box and the second-named blank forming a bottom for the box, and said last-named scoreline forming a hinge for the top and bottom.

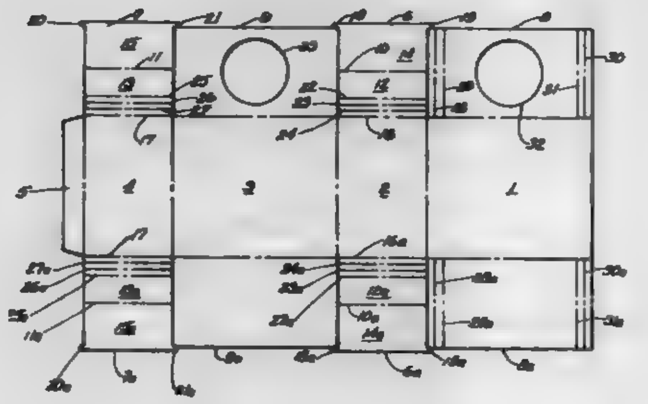
3,981,432
CARTON WITH TIGHTLY SEALED END CLOSURES

Frank D. Bergstein, Cincinnati, and Robert W. Nerenberg, Middletown, both of Ohio, assignors to Bergstein Packaging Trust, Middletown, Ohio

Filed May 8, 1975, Ser. No. 575,518

Int. Cl.² B65D *5/02, 5/64, 43/00*

U.S. Cl. 229—37 R **12 Claims**



1. In a seal-end paperboard carton having enclosing body wall panels defining the carton body and end closure flaps hingedly connected to the end edges of the body wall panels, an improved sift-proof end closure construction comprising an opposing pair of innermost closure flaps and an opposing pair of outermost closure flaps, said pairs of closure flaps being hingedly connected to the carton body wall panels along scored lines of articulation defining inwardly projecting ridges, said innermost closure flaps being divided by scored lines of articulation into first and second parts, with the second parts slightly wider than the first parts so that when the second parts are infolded relative to the first parts the free side edges of the second parts will overlie the ridges defined by the lines of articulation between the first parts and the body wall panels to which they are connected, said second parts being infolded and adhesively secured to the first parts to form double thickness innermost flaps, whereby when said double thickness innermost closure flaps are infolded to overlie the open end of the body, the free side edges of the second flap parts will enter into wedging engagement with said ridge-defining lines of articulation, such wedging engagement acting to urge the said innermost flaps upwardly to provide pressure resistive planar supports over which the outermost flaps may be folded and the flaps tightly secured together throughout their contacting areas.

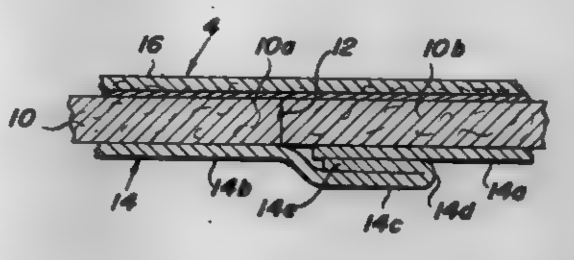
3,981,433
ONE-STEP EASY-OPEN CONTAINER FOR REFRIGERATED DOUGH PRODUCTS AND THE LIKE

Dewey B. Thornhill, St. Louis, Mo., and Ralph E. Frank, Jr., New Albany, Ind., assignors to Boise Cascade Corporation, Boise, Idaho

Filed Sept. 15, 1975, Ser. No. 613,201

Int. Cl.² B65D *3/26, 85/36*

U.S. Cl. 229—51 BP **9 Claims**



1. A cylindrical easy-open container consisting solely of:
a. a helically-wound cylindrical body wall layer (10) formed of fibrous material having a helical butt joint extending continuously the length thereof, the adjacent edge portions (10*a*, 10*b*) of said body wall layer defining said butt joint being contiguous and unbonded;
b. a correspondingly helically-wound impervious liner layer (14) secured to and coextensive with the inner surface of said cylindrical body wall layer to bridge the butt joint, one edge portion (14*a*) of said liner layer terminating adjacent and short of a first side of said butt joint, the other edge portion (14*b*) of said liner having a first portion (14*c*) which extends from the other side of said butt joint across and beyond said butt joint, and a reversely folded second portion (14*e*) which extends between said one edge portion (14*a*) and said first portion (14*c*) back toward, and terminates short of, said butt joint, the length of said second portion (14*e*) extending substantially the length of said first portion (14*c*) and terminating adjacent the edge of said one edge portion (14*a*), the fold line (14*d*) between said first and second portions extending helically the length of the container, the outer surface of said reversely folded second liner portion being secured, at least adjacent the free edge extremity thereof, to the inner surface of said liner layer one edge portion to permit relative expansion of said first and second liner portions;
c. a removable outer layer (16) extending across the outer surface of said butt joint and secured to the outer surfaces of the abutting edge portions of said body wall layer substantially throughout the length of said butt joint, thereby to maintain together the body wall edge portions defining said unbonded butt joint; and
d. end closure means (6, 8) for closing the ends of said body wall layer, said outer layer being removable from said body wall layer to permit opening of the butt joint and expansion of the liner layer to cause separation of the first and second portions thereof, thereby to automatically open said liner layer along a helical path.

3,981,434
EASY OPENING CARTON FOR FROZEN COMESTIBLE

Gary Allen Ramich, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

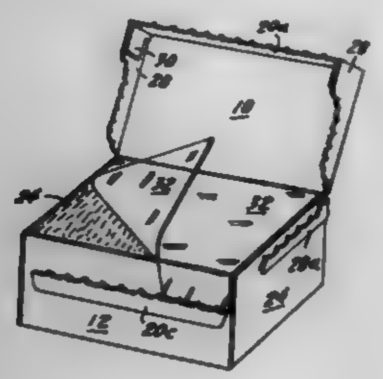
Filed Apr. 10, 1975, Ser. No. 566,835

Int. Cl.² B65D *5/02, 17/12*

U.S. Cl. 229—51 TS **5 Claims**

1. A paperboard carton for ice cream comprising a front wall, a bottom wall, a rear wall, opposed end walls and a top cover panel hingedly attached along one edge to the upper edge of the back wall and having a front cover panel hingedly attached to the opposite edge of said top cover panel and overlapping the upper portion of the front wall when the

carton is erected, said front cover panel being separated by a pair of spaced upper and lower weakness lines substantially parallel to the hinge line between said top cover panel and said front cover panel into an upper cover front skirt portion, an intermediate detachable portion and a lower bonding portion adhesively bonded to said front wall,

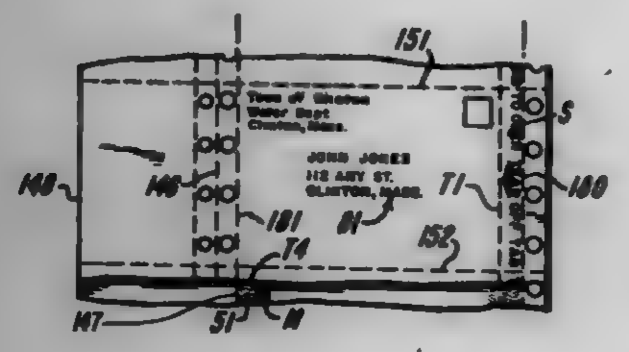


and a flexible, water-resistant liner sheet adhered along one edge thereof to the interior surface of said back wall, said sheet extending to substantially completely cover the interior surface of said top cover panel and being adhered along the opposite edge thereof to the inner surface of said front cover panel in an area below said upper weakness line.

3,981,435
CONTINUOUS BUSINESS FORM OR THE LIKE ADAPTED FOR SUBSEQUENT PROCESSING INTO COMBINATION MAILING ENVELOPES AND RETURN ENVELOPES HAVING A COMMON BACK PLY PANEL

Edward L. Johnson, 12 Fox Meadow Lane, Wayland, Mass. 01778

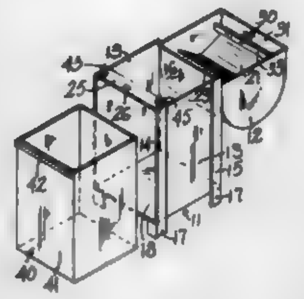
Continuation of Ser. No. 433,462, Jan. 15, 1974, abandoned.
This application Nov. 19, 1975, Ser. No. 633,490
Int. Cl.² B65D *27/06, 27/10, 27/34*
U.S. Cl. 229—69 15 Claims



1. As a new article of manufacture a continuous series of blanks each suited for subsequent processing into a combination mailing envelope and return envelope having a common back ply panel, said article comprising a series of transversely spaced interconnected blanks each having a back ply panel common to both the mailing envelope and the return envelope, a front ply panel of the mailing envelope integral with said back ply panel; an intermediate, discardible panel integral with and disposed between the front end back ply panels, said intermediate panel separating said front and back ply panels from one another; a front ply panel of the return envelope disposed in registered overlying relationship with three edges of said back ply and having one marginal edge spaced inward from the adjacent marginal edge of said back panel; and adhesive means interposed between and bonding the registered marginal edges of said front ply panel of the return envelope and said back ply panel to one another defining a return envelope pocket open along said one marginal edge.

3,981,436
MAIL BOX

Louis A. Neal, 57 Hopson Ave., Branford, Conn. 06405
Filed June 26, 1975, Ser. No. 590,519
Int. Cl.² B65D *91/00*
U.S. Cl. 232—17 4 Claims

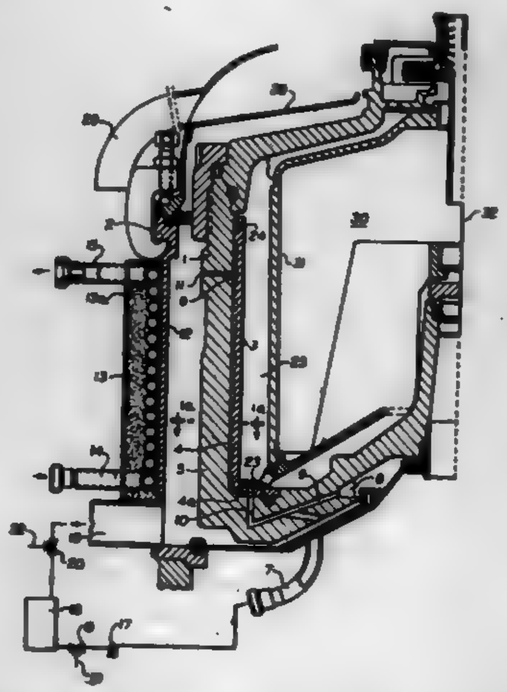


1. A mail box comprising a base, a hood and a removable receptacle, the base being generally rectangular and having an open front, the receptacle being adapted to fit within the base and having a front wall adapted to close the open front of the base, and the hood being hinged to the base for movement between open and closed positions, one lower edge of the hood being adapted to engage the front wall of the receptacle when the hood is closed, and the hood being provided with locking means for securing the hood in closed position, the base including a locking bar defining the top of the open front, and the locking means including a hook adapted to engage said bar in locking position and a cam adapted to lift the hood to free the front wall of the receptacle when the locking means is actuated to unlocking position.

3,981,437
CENTRIFUGE HAVING A SYSTEM FOR CONTROLLING THE TEMPERATURE OF THE LIQUID TO BE CENTRIFUGED OR OF ONE OF THE COMPONENTS THEREOF

Heinrich Hemfort; Gunthard Pautsch, and Werner Kohlstette, all of Oelde, Germany, assignors to Westfalia Separator AG, Oelde, Germany

Filed Apr. 28, 1975, Ser. No. 572,688
Claims priority, application Germany, May 14, 1974, 2423319
Int. Cl.² B04B *15/02*
U.S. Cl. 233—11 6 Claims



1. A centrifuge for separating a specifically heavier material from a specifically lighter liquid phase with means for controlling the temperature of material centrifuged comprising a drum for the centrifuging which is rotatably mounted, a sta-

tionary frame jacket surrounding the drum and spaced therefrom, an inlet to the drum for introduction of material to be centrifuged, and an outlet for the liquid phase from which the specifically heavier material has been separated by centrifuging, said temperature control means comprising:

a. an insert disposed within and about the drum adjacent the drum periphery and supported on the drum walls at a plurality of circumferentially spaced locations and spaced therefrom providing passages for a heat exchange medium between the drum wall and the insert for controlling the temperature of material being centrifuged, and means sealing said passage from the drum interior,

b. inlet means and outlet means communicating with said passage for flow of heat exchange medium through the passage,

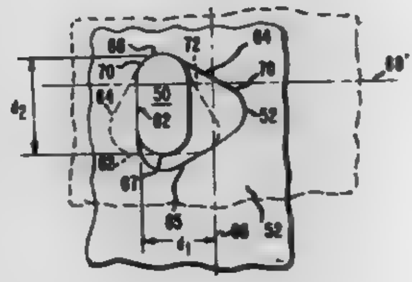
c. heat transfer means mounted on the stationary frame for controlling the temperature in the space between the drum and frame,

d. said outlet means from the insert communicating the passage between the drum and insert with the space between the drum and frame for flow of the heat exchange medium through said space for temperature control thereof, and

e. means for circulating said heat exchange medium which has passed through said space from said space to the inlet of said passage between the drum and insert.

3,981,438
CENTRIFUGE ROTOR HAVING SWINGING MEMBERS WITH VARIABLE PIVOT POINTS

Oakley Louis Weyant, Sandy Hook, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed June 19, 1975, Ser. No. 588,646
Int. Cl.² B04B *5/00*
U.S. Cl. 233—26 7 Claims



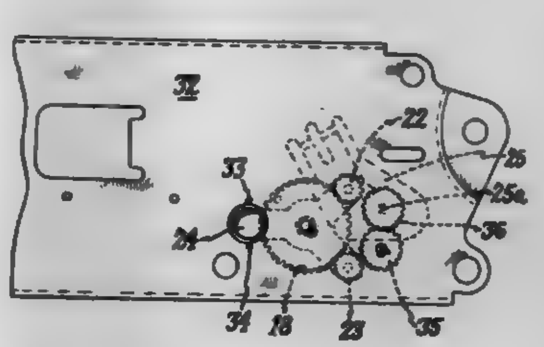
1. In a swinging bucket type rotor adapted to spin about a vertical axis with buckets disposed peripherally and pivotally about said rotor and adapted in use to pivot outwardly and upwardly, each said bucket having a longitudinal axis through its center of mass which axis is generally vertically oriented when said rotor is at rest, the combination comprising:

pivot means peripherally disposed on said rotor, each having a vertically elongated cross-section, for pivotally supporting each said bucket,

a tab on each said bucket, said tab defining a pair of intersecting, downwardly opening, cam edges contacting said pivot means, the intersection of said cam edges lying on one side of said longitudinal axis, one of said cam edges extending to the other side of said longitudinal axis, such that the effective pivot point of said bucket shifts relative to said longitudinal axis as said bucket swings outwardly.

3,981,439
UNIDIRECTIONAL DRIVE ASSEMBLY FOR A GEAR DRIVEN METER REGISTER

Donald M. Ham, Rochester, N.H., assignor to General Electric Company, Schenectady, N.Y.
Filed Sept. 4, 1975, Ser. No. 610,486
Int. Cl.² G06M *1/00*
U.S. Cl. 235—91 R 14 Claims



1. A unidirectional drive assembly for a gear driven meter register that is adapted for use with a meter having a register drive gear comprising:

an idler gear shift assembly coaxially mounted in nesting relationship with a ratio gear assembly between supporting members of a frame assembly on which said gear assemblies are rotatably mounted,

in combination with a register indicator gear assembly for rotating an indicator, and a third idler gear rotatably mounted in continuous meshing engagement with a gear in said register indicator gear assembly,

said idler assembly having first and second idler gears rotatably mounted in selectively interruptible engagement, respectively, with said gear on said register indicator gear assembly and with said third idler gear,

said idler gear shift assembly being operable to move said first idler gear into meshing engagement with said gear on the register indicator gear assembly responsive to rotation of said ratio gear assembly in a forward direction, and being further operable to move said second idler gear into meshing engagement with said third idler gear responsive to rotation of said ratio gear assembly in a reverse direction,

whereby said indicator register gear is driven in an up-scale direction by said idler gear assembly responsive to rotation of said ratio gear in either direction.

3,981,440
DIGITAL SIGNAL DETECTOR

Alexander Laidlaw Richardson, Livingston, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Sept. 25, 1974, Ser. No. 508,926
Int. Cl.² H03K *5/20*
U.S. Cl. 235—92 FQ 6 Claims

1. An apparatus for recognizing a plurality of digital signals having different pulse widths or pulse repetition intervals comprising:

a presettable digital counter;

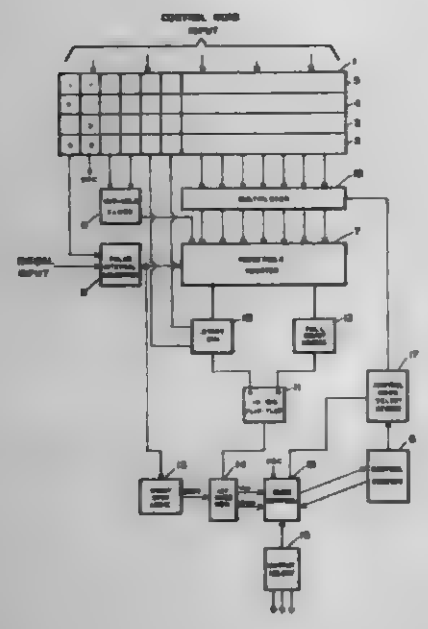
a memory containing a plurality of binary code words, which code words contain the binary complement of the interval to be measured, said memory coupled to said presettable counter for loading said complement into said presettable counter;

means for receiving digital input signals to be measured, said digital signals including pulses and intervals between pulses;

pulse interval converter means coupled to said receiving means, said memory, and said presettable counter for inverting said digital input signal when a current code word indicates that an interval between pulses is to be measured;

logic means coupled to said presettable counter for generating a signal corresponding to an acceptable time interval within which a desired input interval must end;

means coupled to means for receiving for indicating when an input interval has terminated;



means for generating an ouput when said indication occurs during said acceptable time interval; and

means for varying said acceptable time interval.

3,981,441
COUNTERS

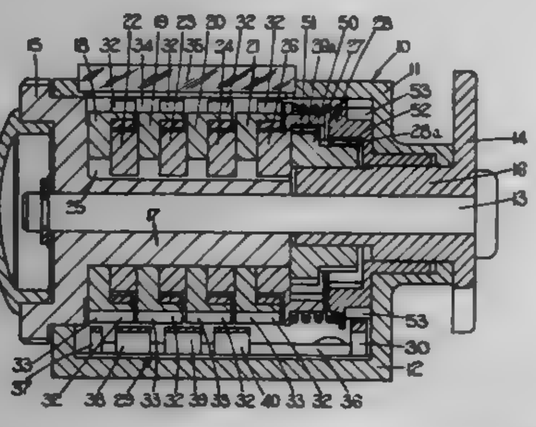
John Benjamin Leslie Walters, Walsall, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed May 27, 1975, Ser. No. 580,721

Claims priority, application United Kingdom, June 14, 1974, 26435/74

Int. Cl.² G01C *22/00*; **G06C** *15/42*

U.S. Cl. 235—103 **13 Claims**



1. A counter comprising a body, a set of co-axially disposed discs, a plurality of numerals around a periphery of each said disc, a window in said body for displaying a numeral on each disc, friction drive means for frictionally rotating said discs, a rotary counting member for operating said friction drive means in a counting direction, a reset member for operating said friction drive means in a reset direction, a plurality of first abutment means on each said disc of said set except for one of said discs at one end of said set, said first abutment means being disposed between adjacent numerals on each said disc, a plurality of resilient stop means each adapted to engage first abutment means on a respective one of said discs, except for said one of said discs at one end of said set, to prevent rotation of said respective one of said discs in the counting direction but to allow rotation of said discs in the opposite or reset direction, a second abutment means on each said disc of said set, and a plurality of resilient detent means respectively adapted to engage said second abutment means on each of said discs so as to allow rotation of said discs in the counting direction but to stop said discs at a predetermined point of their rotation in said opposite reset direction, and a spring blade serving to attach each said stop means to said body, wherein the improvement comprises each said resilient detent means is mounted on the spring blade on which is mounted said stop means of an adjacent disc, the arrangement being such that riding movement of each said detent means over its respective second abutment means causes it to move the respective stop means out of engagement with one of said first abutment means on said adjacent disc.

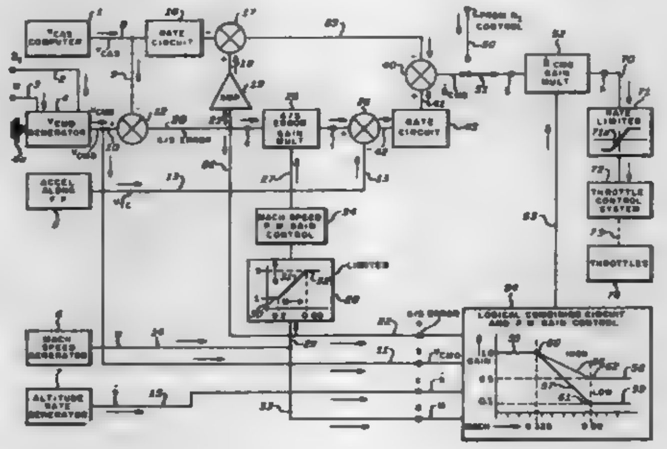
3,981,442
AIRCRAFT ENGINE AUTOMATIC THROTTLE CONTROL WITH AUTOMATIC GAIN PROGRAMMING SYSTEM

Harry D. Smith, Scottsdale, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 15, 1975, Ser. No. 605,082

Int. Cl.² B64C *13/18*

U.S. Cl. 235—150.2 **11 Claims**



1. In a variable gain engine throttle control system for an aircraft:

computer means for generating a signal representative of craft air speed error,

first gain control signal generator means responsive to craft air speed for generating a signal representative of craft air speed,

first gain multiplier means in series relation with said computer means output and responsive to said first gain control signal generator means signal,

second gain control signal generator means responsive to said computer means output, to a signal representative of commanded craft air speed, to a signal representative of craft altitude rate, and to a signal representative of craft air speed for generating a composite control signal,

second gain multiplier means in series relation with said first gain multiplier means and responsive to said composite control signal, and

engine throttle control means responsive to said second gain multiplier means.

3,981,443
CLASS OF TRANSFORM DIGITAL PROCESSORS FOR COMPRESSION OF MULTIDIMENSIONAL DATA

Robert T. Lynch, and James J. Reis, both of Torrance, Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Sept. 10, 1975, Ser. No. 612,090

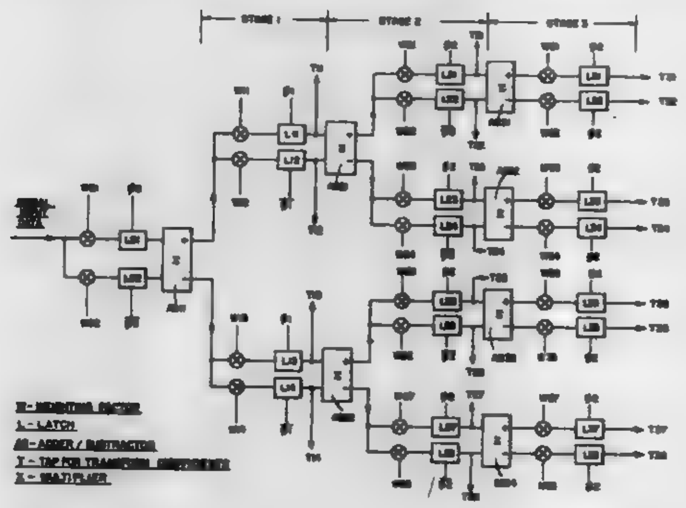
Int. Cl.² G06F *15/34*

U.S. Cl. 235—156 **24 Claims**

1. A system for digitally implementing a class of transforms to process data in real time comprising.

a plurality of modules cascaded in stages with each stage having twice the number of modules as the preceding stage, each of said modules including a pair of latches for receiving and temporarily storing data from the preceding module, and an adder/subtractor unit having two units with each input coupled to the output of one of the associated pair of data latches, said adder/subtractor unit having a pair of outputs for providing a first output signal corresponding to the sum of the contents of the pair of associated data latches and a second output signal corresponding to the difference of the contents of the associated pair of data latches, and

means for coupling said first and second output signals of each adder/subtractor unit to one of the two associated modules of the next succeeding stage to thereby implement the class of transformers in real time.



3,981,444
METHOD FOR STARTING A STEAM-HEATED HEAT EXCHANGER BY REGULATING THE PRESSURE OF THE HEATING-STEAM

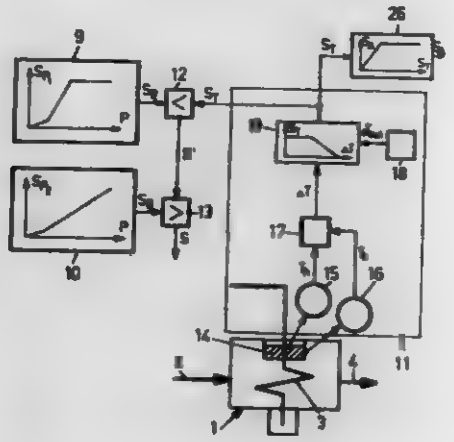
Gerhard Weiss, Oberrohrdorf, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed May 29, 1975, Ser. No. 581,794

Claims priority, application Switzerland, Dec. 12, 1974, 16518/74

Int. Cl.² F24H *9/20*

U.S. Cl. 236—1 R **17 Claims**



1. Closed loop control method for starting a steam-heated heat exchanger by controlling the heating-steam pressure, where a correcting variable is established by a controller from an actual pressure value, measured by an actual pressure transmitter, and from a reference value generated by a reference value generating device and where the heating-steam pressure is modified by at least one control valve on the basis of said correcting variable, the characteristics being that the pressure reference value S is selected from three pressure set values S_T,S_{P1} and S_{P2}, that the lesser value of S_T and S_{P1} is established as an intermediate pressure set value S′, that is $S' = \mathrm{Min}\,(S_T, S_{P1})$, and the pressure reference value S is selected as being the greater value of S′ and S_{P2}, that is $S = \mathrm{Max}\,(S', S_{P2})$, where S_T represents that permissible maximum pressure set value which is a function of the momentary metal temperature T_a of the endangered component (14) where S_{P1} represents that permissible maximum pressure set value which is a function of the momentary existing quantity of working medium and thus of the momentary existing power, and where S_{P2} represents the permissible minimum pressure set value as a function of the same momentary factor.

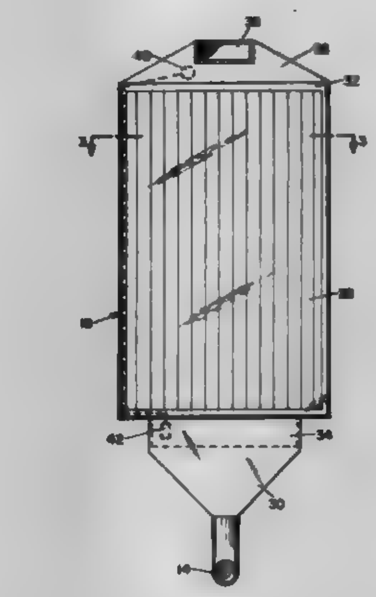
3,981,445
VARIABLE VOLUME AIR WALL

Warren L. Custer, R.D. No. 3, Box 205D, Ligonier, Pa. 15658

Filed May 23, 1975, Ser. No. 580,247

Int. Cl.² F24J *3/02*

U.S. Cl. 237—1 A **7 Claims**



1. A temperature modifying system primarily for the periphery of a building including the combination of a heat exchange unit, ducting means, at least two windows and means for forcing air through the unit, ducting means and windows,

the ducting means being for sequentially conducting air to the heat exchange unit, the air forcing means and the windows, said ducting means being connected to each of said windows such that air from said heat exchange unit passes through only one window prior to its return to the heat exchange unit,

the windows being located in window openings in the building, at least one window being exposed to direct radiant heat from the sun and at least one other being shaded from the sun,

each window including parallel transparent panels spaced apart by means forming a substantially fluid tight enclosure with said panels, said enclosure means including aperture means at its bottom and top for ingress and egress of air from the ducting means,

one said panel being exposed to air outside the building and the other said panel being exposed to air inside the building,

aligned slat means mounted between said parallel panels for absorbing and reflecting radiant heat,

separate volume control means for the shaded window and exposed window for regulating the volume of air passing into the enclosures such that the exit temperatures of the air from the enclosures are substantially equal,

a temperature sensing device near the point of egress of the air of each said windows, said temperature sensing device being operatively connected to means for modifying the size of the ingress aperture, said modifying means increasing the size of the ingress aperture when the temperature sensing device senses an increase in temperature of the air exiting the enclosure.

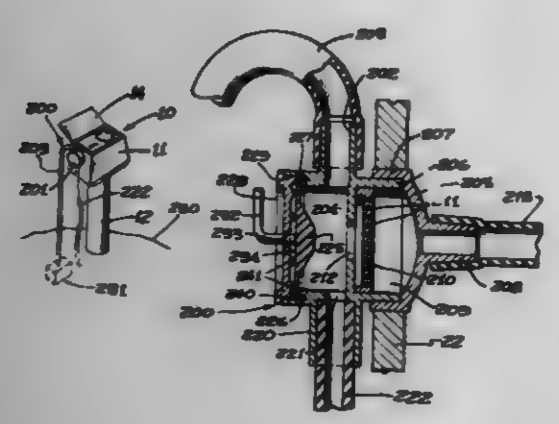
3,981,446
WATER OPERATED CONTROL APPARATUS AND METHOD

Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, San Marcus, Calif.

Filed Aug. 22, 1974, Ser. No. 499,485

Int. Cl.² A01G *25/00*

U.S. Cl. 239—1 17 Claims



1. A method of operating an air pressure actuated device in response to variations in the amount of air passed through an air valve whose ability to pass air therethrough varies dependent upon the level of moisture available in its environment comprising the steps of:

- connecting said air valve in air flow communication with a chamber;
- establishing a vertical column of water in a conduit in fluid flow communication with said chamber whereby the weight of said column of water has an effect on the air pressure in said chamber;
- placing said chamber in air pressure sensing relation with one side of a diaphragm member of said air actuated device; and
- operating said device in response to variations in the resultant air pressure in said chamber caused by the combined affect thereof of said air valve and column of water.

3,981,447
RECIRCULATORY APPARATUS FOR SPRAYING MOULD PARTING AGENTS AND OTHER SUBSTANCES

Bruno Bachofen, Wettswil, and Karl Riedl, Arni-Islisberg, both of Switzerland, assignors to Siemens-Albis Aktiengesellschaft, Zurich, Switzerland

Filed Feb. 10, 1975, Ser. No. 548,465

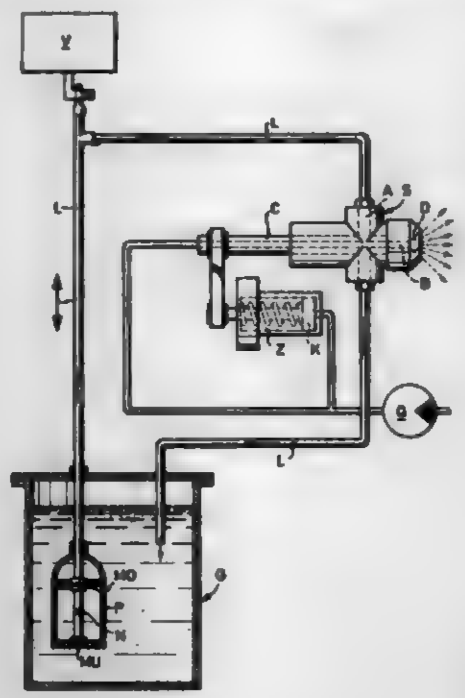
Claims priority, application Switzerland, Feb. 15, 1974, 2091/74

Int. Cl.² B05B *9/00, 7/12;* F04B *49/00*

U.S. Cl. 239—124 12 Claims

1. Apparatus for spraying a sprayable substance, comprising in combination:

- means including a conduit for circulating said substance; and
- means including a first bore connected in said conduit for a circulation of said substance through said bore, a spraying device, a second bore intersecting said first bore at an angle and extending to said spraying device, and means for supplying a pressurized medium to said spraying device, including a nozzle pin extending in said second bore and having a third bore for supplying said pressurized medium to said nozzle device, and means for regulating the supply of said circulated substance from said first bore to said spraying device, including means connected to said nozzle pin for varying the position of said nozzle pin in said second bore.



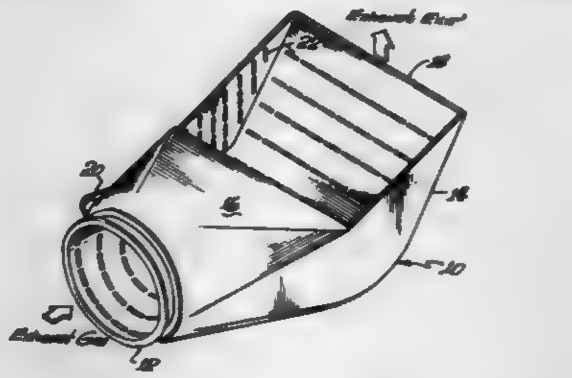
3,981,448
COOLED INFRARED SUPPRESSOR

Christos Demogenes, Pacific Palisades, Calif., and Robert A. Stone, Arlington, Va., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 23, 1970, Ser. No. 31,108

Int. Cl.² B64D *33/04*

U.S. Cl. 239—127.3 27 Claims



1. An infrared suppressor for the exhaust of an infrared radiation source comprising a generally scoop-shaped duct having an annular inlet to receive the exhaust from the infrared radiation source and a generally flattened outlet to discharge the infrared suppressed exhaust from said duct, said outlet directed off to one side from said inlet to prevent the direct viewing of the radiation source from said outlet, said duct including means to cool the exhaust between said inlet and said outlet comprising a heat transfer matrix including a pair of spaced plates separated by a plurality of transverse spacer elements to form a plurality of separate transversely extending compartments, the surface of one of said pair of heat transfer matrix plates exposed to the exhaust and having a plurality of openings therein with each separate compartment having at least one opening to discharge coolant therefrom into the exhaust and an outer shroud plate disposed around and spaced apart from the other of said pair of spaced heat transfer matrix plates form a coolant header around said heat transfer matrix to receive and distribute a coolant to the separate compartments of said heat transfer matrix, the other of said heat transfer matrix plates having a plurality of openings therein with each separate compartment having at least one opening to receive coolant from said coolant header.

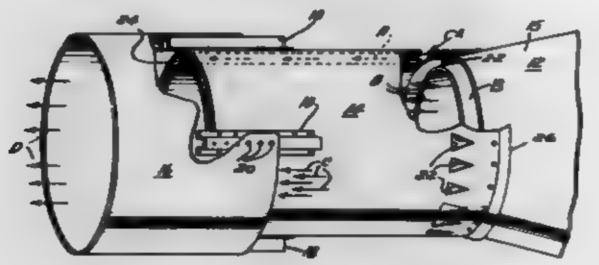
3,981,449
EXHAUST COOLING SYSTEM

John F. Krey, North Hollywood; Ephraim Regelson, China Lake, and John D. Crecelius, Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 29, 1968, Ser. No. 703,230

Int. Cl.² B64D *33/04*

U.S. Cl. 239—127.3 1 Claim



1. An exhaust cooling system attachment for combustion engines having an exhaust tail pipe and a shroud surrounding said pipe; said attachment comprising:

- inner and outer cylindrical wall members forming a dual walled conduit having a longitudinal dimension and a radial dimension;
- a cylindrical shield having a diametral dimension larger than the diametral dimension of the outer wall member of said dual walled conduit and fastened to said outer member in overlapping spaced relationship;
- said walls of said dual walled conduit forming an inner and an outer passageway;
- said dual walled conduit having a plurality of openings in the outer wall thereof to admit cooling air to the forward end of said outer passageway;
- said outer wall attached to said shroud of said engine exhaust system and said inner wall attached to said outer wall near said pipe, whereby exhaust gases flow through the inner passageway;
- said radial dimension of said inner member being substantially constant and commensurate with the terminus of said tail pipe;
- the radial dimension of said outer member being substantially commensurate with the terminus of said shroud; and
- said shield overlapping said conduit from a point rearward of the mean of said longitudinal dimension and extending beyond the terminus of said conduit a distance approximately equal to the overlapping portion so that cooling air will flow between said shield and said tube to provide further cooling of said exhaust gases.

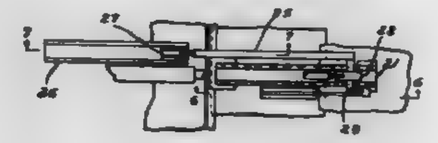
3,981,450
IN-FLIGHT MODULATING THRUST REVERSER

Arthur McCardle, Jr., Greenhills; George H. Israel, Jr., Cincinnati; Frank J. Trombetta, West Chester, and David F. Howard, Madeira, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sept. 22, 1975, Ser. No. 615,757

Int. Cl.² B64C *15/06*

U.S. Cl. 239—265.31 10 Claims



1. In a combined translating flap convergent/divergent variable area-aircraft engine-exhaust nozzle and integrated thrust reverser mechanism; an exhaust duct having an outer, stationary shroud portion; a thrust reverser-set of cascades mounted to said shroud portion; a first, inner, exhaust duct-stationary segment; a second, inner, exhaust duct-translating segment disposed in a normally closed relation to said first, exhaust duct-stationary segment when the engine exhaust is being ejected in an aft direction during the forward thrust regimen to thereby close off the reverse thrust-exhaust flow path through said cascades; a variable throat area-exhaust nozzle receiving and discharging the engine exhaust being ejected in the said aft direction; an outer cowl member normally covering said cascades during the forward thrust regimen; first, exhaust nozzle-hydraulic actuator means operative to generally open and close the exhaust nozzle to thereby vary its throat area during different forward thrust-flight regimes; first, thrust reverser-actuating means interconnected with and operable to simultaneously adjust both of the said second, exhaust duct-translating segment and said outer cowl member to their open positions to thereby open the reverse thrust-exhaust flow path through said cascades; separate, exhaust flow-controlling means positioned at the aft end of said exhaust nozzle and selectively operable to open and close the forward thrust-exhaust flow path through said exhaust nozzle; second, thrust reverser-actuating means interconnected between said first, thrust reverser-actuating means and said separate, exhaust flow-controlling means and automatically effective by the operation of said first-named, actuating means to actuate said separate, exhaust flow-controlling means to its closed position to thereby shut off the engine exhaust flow in an aft direction through said exhaust nozzle when the reverse thrust regime is in operation; and second, thrust reverser-hydraulic actuator means interconnected with and operable to adjust said first, thrust reverser-actuating means to the thrust reverser regime and thereby move both of the said second, exhaust duct-translating segment and said outer cowl member to their opened positions to thus open the reverse thrust-exhaust flow path through said cascades.

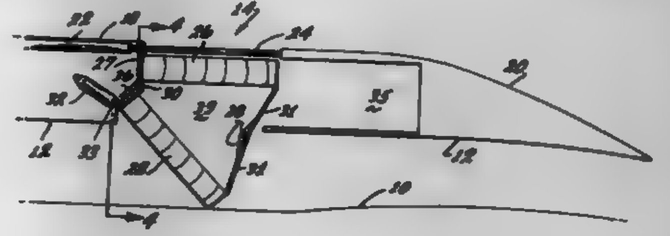
3,981,451
FAN CASCADE THRUST REVERSER

Barry W. Prior, San Diego, and John T. Halkola, La Jolla, both of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed Nov. 17, 1975, Ser. No. 632,182

Int. Cl.² F02K *3/06;* B64C *15/04*

U.S. Cl. 239—265.31 5 Claims



1. A thrust reverser for a turbo-fan engine comprising:

- a split shroud having two longitudinal sections surrounding said engine and forming a duct therebetween, the forward section of said shroud being fixedly positioned and the rear section of said shroud being translatable, said rear section forms a continuation of the aerodynamic contour of said forward section when stowed and provides an opening between said sections when deployed rearward, said duct communicates exterior of said shroud through said opening;
- a plurality of first and second cascade baskets, said first cascade baskets fixedly attached to said forward section and each of said second cascades pivotally attached to said forward section at one of its ends and at its other end is attached through a hinge member to one of said first cascade baskets, one of each of said first and second cascades have a juxtaposed relationship when said second cascades are in a stowed position and nest within a cavity

formed in the forward portion of said rear section and said second cascades pivot downward toward said duct in their deployed position for directing the fan gases through said first cascades external of said shroud in a direction substantially reverse to the normal rearward flow through said duct, said hinge means blocks the rearward flow path of said fan gases when said second cascades are deployed; and

a plurality of linear actuator members for translating said rear section and rotating said second cascade baskets.

3,981,452

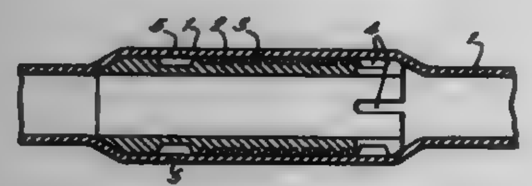
IRRIGATION PIPES WITH DRIPPER UNITS AND METHOD OF ITS MANUFACTURE

Gershon Eckstein, 9 Naomi St., Har Hacarmel, Haifa, Israel

Filed Feb. 10, 1975, Ser. No. 548,736

Int. Cl.² B05B *15/00*

U.S. Cl. 239—542 **7 Claims**



1. A continuous irrigation pipe with integrally built-in dripper units spaced at predetermined intervals having an aperture in alignment with each of said units, said dripper units having an inlet and an outlet, the inlet being in communication with the interior of the pipe and the outlet being in communication with the aperture and the exterior of the pipe.

3,981,453

METHOD FOR SEGREGATING BARK AND FOLIAGE FROM WOOD CHIPS AND TWIGS

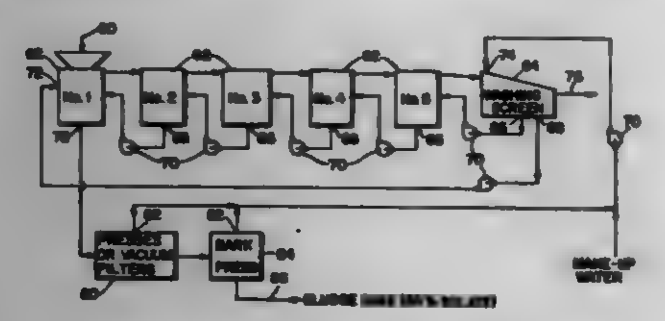
Robin Wilfrid Berlyn, Montreal, and James David Hutchinson, Dorval, both of Canada, assignors to Pulp and Paper Research Institute of Canada, Canada

Filed Nov. 29, 1974, Ser. No. 528,479

Claims priority, application Canada, Nov. 29, 1973, 186975

Int. Cl.² B02C *23/38*

U.S. Cl. 241—21 **17 Claims**



1. A method for detaching bonded bark, and foliage, if present, from wood chips and twigs in a mixture of such components and selectively comminuting and segregating the bark and foliage from said mixture, comprising:

a. storing said mixture in a pile for a sufficient time to effect partial decomposition of the bark and foliage of the mixture to the extent of weakening the bond between the bark and the wood, and the structure within the bark itself,

b. subjecting resultant partially decomposed mixture to vigorous agitation in admixture with sufficient quantity of added water to form a slurry and to allow the mixture to circulate, said vigorous agitation being for a sufficient time to break the bark from the wood chips and twigs and to comminute the bark and foliage to a lower particle size than the wood chips; and

c. wet screening the comminuted bark, foliage, and effluent water from the wood chips and twigs of the agitated mixture.

3,981,454

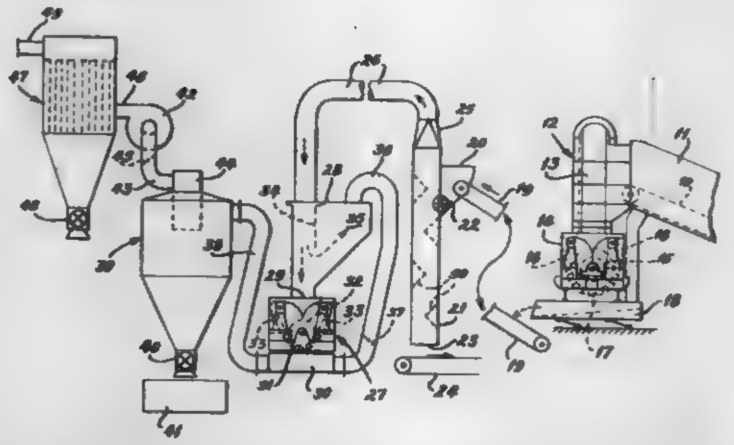
WASTE MATERIAL PROCESSING APPARATUS

Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher and Pulverizer Company, St. Louis, Mo.

Filed July 7, 1975, Ser. No. 593,625

Int. Cl.² B02C *23/10*

U.S. Cl. 241—24 **8 Claims**



7. In waste material processing the method which comprises the steps of shredding the waste material in a first stage mill, subjecting the output from the first stage mill to an air separation step in which light weight air borne fractions are separated from heavier weight fractions, processing the air borne fractions in a second stage mill, maintaining the second stage mill under a negative pressure, maintaining air flow from the air separation step through the second stage mill, and extracting the light weight fractions from the air flow beyond the second stage mill.

3,981,455

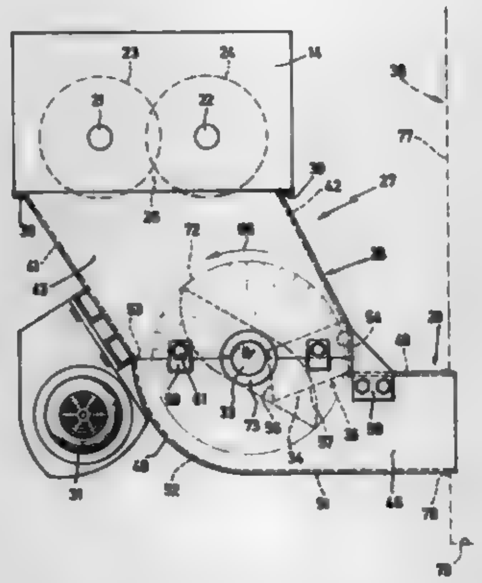
DEVICE FOR PROCESSING REFUSE

Al Kaczmarek, 2010 Warrenville Road, Lisle, Ill. 60532

Filed Nov. 29, 1974, Ser. No. 527,942

Int. Cl.² B02C *13/09*

U.S. Cl. 241—32 **19 Claims**



1. A device for processing refuse of varied composition comprising,

inlet means,

rotatable shaft means spaced from said inlet means,

means for driving said shaft means with high moment and at low speed,

a plurality of elongated, bend-resistant plate means rigidly secured to and extending from said shaft means,

said plate means being slightly shorter than the depth of said inlet means at the level of said shaft means and being spaced a short distance from one another,

means for reversing the rotation of said shaft means in response to overload,

outlet means having a bottom at a level below said shaft means and adapted to be connected to back pressure means,

a plurality of fixed stripper finger means protruding towards said shaft means and extending, between said plate means from the rear area of said outlet means,

wall means of a circular arc in cross section, having a smooth inner surface portion emanating from the rear of said inlet means and transitioning tangentially into the bottom of said outlet means, and

means for reversing said shaft means together with reversal of a reversible crushing device.

3,981,456

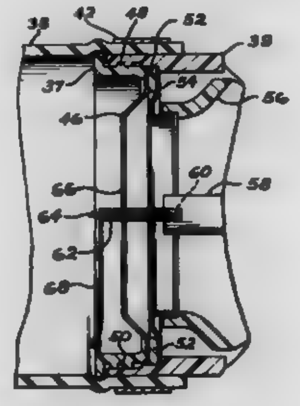
FOOD PARTICLE MACERATING MEANS

Thomas M. Hahn, Louisville, and George T. Sholtes, Fern Creek, both of Ky., assignors to General Electric Company, Louisville, Ky.

Filed Oct. 31, 1975, Ser. No. 627,603

Int. Cl.² B02C *13/10;* **F04D** *29/70*

U.S. Cl. 241—46 R **3 Claims**



1. A pump and motor assembly for use with a dishwasher comprising a pump housing having an inlet and an outlet, a rotatable shaft having an impeller for rotation within said housing at a preselected location to provide for pumping of fluid from said inlet toward said outlet;

a grid-like food particle grading element disposed across said inlet and having a plurality of openings through which fluid entering said inlet must pass to reach said impeller;

a food particle cutter attached to said shaft and including a cutting arm mounted on a flexible, helically-wound column, said arm being rotatable about said axis and said column being flexibly expandable to provide for said arm to pass over an unmacerable food particle lodged in one of said openings of said grading element.

3,981,457

PLASTIC COMMINUTING METHOD AND APPARATUS

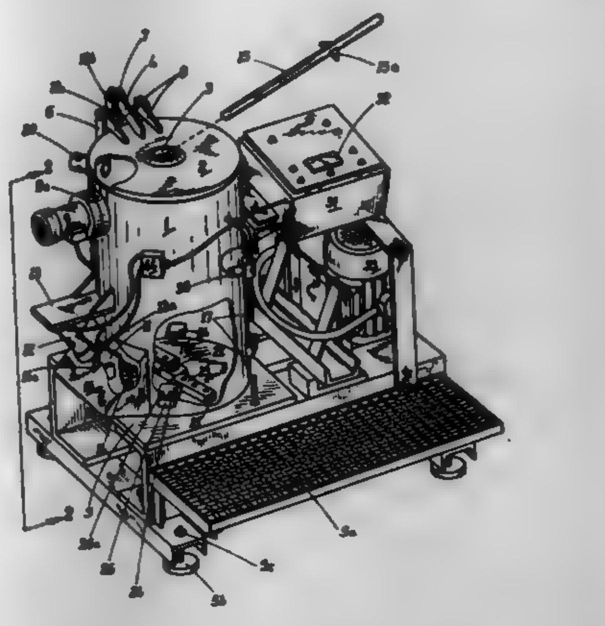
Herman C. Weist, Louisville, Ky., assignor to Weist Industries, Inc., Louisville, Ky.

Filed Dec. 24, 1974, Ser. No. 536,154

Int. Cl.² B02C *23/36*

U.S. Cl. 241—46.17 **1 Claim**

1. An apparatus for communiting a plastic material including: generally cylindrical receptacle means having a vertical axis, a generally horizontal bottom, an inlet opening to receive selected plastic, and outlet opening means located in the bottom portion of said receptacle for emission of comminuted plastic material; lid means to selectively close said inlet; outlet cover means to selectively cover said outlet means; rotatable cutter blade means adapted for rotation about an axis generally parallel to said vertical axis and in a generally horizontal plane within said receptacle and in spaced relation from said receptacle bottom; fixed cutter blade means carried on the periphery of said receptacle means in spaced relation from said rotating cutter blade means; fluid supply means selectively inject a selected fluid into said receptacle means; a generally vertical rotatable shaft means carrying said rotatable cutter blade means; bearing means located beneath and adjacent said receptable bottom to receive said shaft means for rotation therein, and bearing cooling means to receive heat from said bearing means, where said bearing cooling means includes means to receive said fluid to be admitted to said receptacle in heat transfer relation prior to supplying said fluid to said receptacle means.



3,981,458

SINGLE PIN GUIDE TRAVERSE

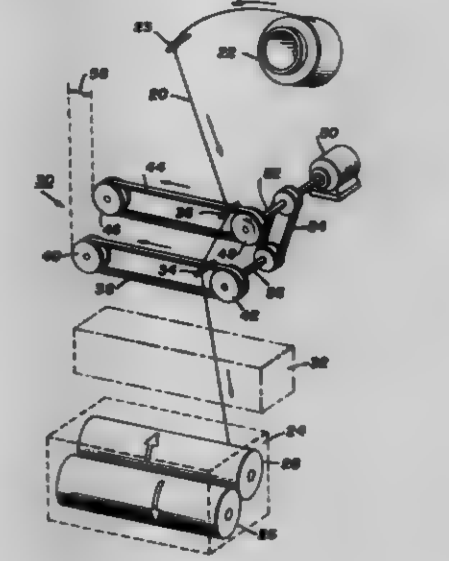
Lawrence W. Rogers, Brewton, Ala., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 236,535, March 8, 1972, abandoned. This application Nov. 7, 1974, Ser. No. 521,600

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² B65H *54/30*

U.S. Cl. 242—43 R **6 Claims**



1. In apparatus wherein yarn is fed from a yarn source to a yarn winding means rotating about an axis, yarn traversing means for traversing said yarn in a plane generally parallel to said axis, said traversing means comprising:

a. a yarn-engaging finger extending through said plane;

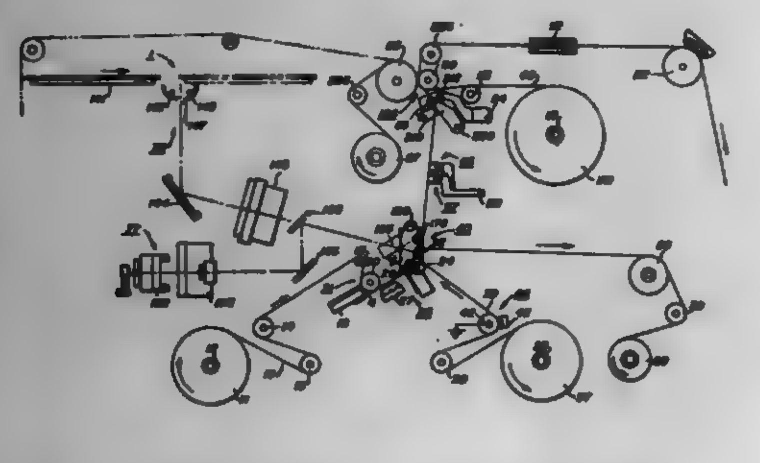
b. support means supporting said finger for movement in a closed path in said plane and between said yarn source and said yarn winding means, said path including first and second generally parallel straight segments connected by first and second arcuate end segments, said first and said second segments being generally parallel to said axis, the only contact between said yarn and an element supported by said support means being contact between said yarn and said finger;

c. and guide means for maintaining said yarn in continuous contact with the external surface of said at one side of a plane coinciding with the axis of said finger.

3,981,459
PHOTOELECTROPHORETIC ELECTROSTATIC TACKING CAPSTAN WEB TENSION SYSTEM

Edwin A. Urbanek, Penfield, and Roger G. Teumer, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 24, 1975, Ser. No. 571,327
Int. Cl.² B65H *59/00*
U.S. Cl. 242—75.44 4 Claims



1. A web tension system comprising in combination:

a. a web supply roll mounted to support a conductive web for travel, said web supply roll provided with tension means for controlling web tension of a supported conductive web unwinding from said web supply roll;

b. a web drive capstan roller for driving a supported conductive web through friction contact therewith at constant velocity;

c. a web friction capstan roller mounted in the direction of web travel after said web supply roll, said web friction capstan roller provided with tension means for controlling tension of a supported conductive web unwinding from said web supply roll in cooperation with said web supply roll tension means in (a) above;

d. main drive means for driving said web drive capstan roller at the desired speed;

e. an electrostatic capstan roller mounted to transport a supported conductive web unwinding from said web supply said electrostatic capstan roller provided with electrostatic roll, electrostatic tacking means for providing an electrostatic tacking force between a supported conductive web and said electrostatic capstan roller and thereby controlling tension of a supported conductive web transported from said web supply roll; and

f. electrostatic drive means for driving said electrostatic capstan roller at the desired speed.

3,981,460
STAGGERED CHANNEL WING-TYPE AIRCRAFT

Alexander Ratony, Simi Valley, Calif., assignor to Robert N. Starr, North Hollywood, Calif.

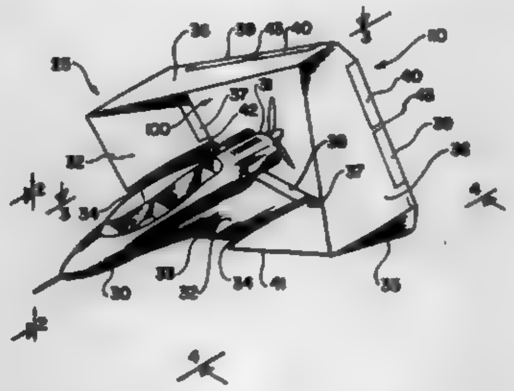
Filed Aug. 30, 1973, Ser. No. 393,220
Int. Cl.² B64C *3/06*
U.S. Cl. 244—13 3 Claims

1. A staggered channel wing type aircraft comprising:

a fuselage with a nose and a passenger section;

a pusher type propulsion means mounted behind said passenger section, said fuselage being free of any tail structure;

a lower pair of wings swept rearward from said fuselage;

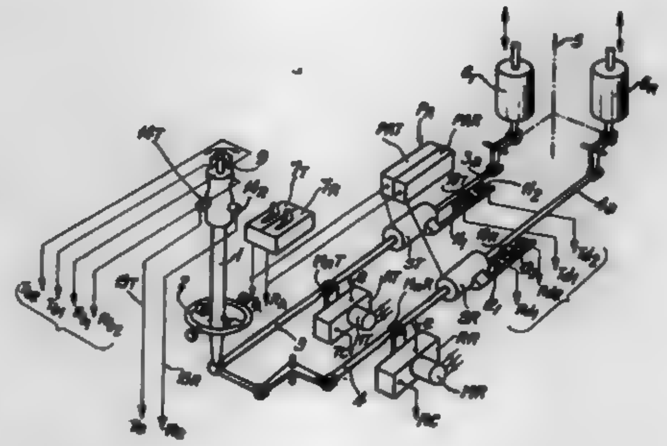


an upper pair of wings rigidly attached at the wing tips of said lower pair and swept back, inward and upward from said tips and secured together to form a triangular pyramid-like configuration with the upper wings being free from the fuselage and from vertical fins and both upper and lower wings having control surfaces thereon for controlling the aircraft about the roll, pitch and yaw axes.

3,981,461
SYSTEM FOR CONTROLLING THE POSITION OF THE ANCHORAGE POINT OF THE PILOTING CHANNEL OF AN AIRCRAFT

Gérard Fleury, Marseille, and Marc Camille Alexandre Fourcade, St-Victoret, both of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed June 2, 1975, Ser. No. 582,674
Claims priority, application France, June 6, 1974, 74.19532
Int. Cl.² B64C *27/70*
U.S. Cl. 244—17.13 4 Claims

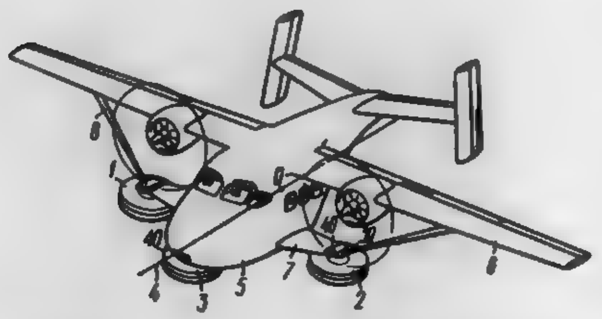


1. A System for controlling the position of at least one anchorage point of an aircraft piloting channel, with a manual control, a servo control, a moving element inserted as an anchorage point between said manual control and said servo control, and a trim motor for positionally controlling said moving element, said position controlling system comprising an electronic switch having main electrodes inserted in the supply circuit of said trim motor and a control electrode, and a first and a second logic arrangement connected for processing the manual and automatic data coming from the piloting channel, said first logic arrangement being operative to energise the main electrodes of the said switch for having said trim motor running in a particular direction, and said second logic arrangement being operative to energise the control electrode of the said switch.

3,981,462
AIR-CUSHION LANDING GEAR FOR AIRCRAFT

Igor Alexandrovich Berezhnoi, ulitsa Tukhachevskogo, 253, kv. 18; Albert Ivanovich Elatontsev, ulitsa Sovetskoi Armii, 163, kv. 61; Vladimir Vasilievich Ignatiev, prospekt Kirova, 293, kv. 40, all of Kuibyshev; Djuis Danilovich Ivlev, prospekt Mira, 184, kv. 2, Moscow; Boris Veniaminovich Mayanov, ulitsa Gagarina, 27, kv. 2, Kuibyshev; Vasily Andriyanovich Svinukhov, ulitsa Fizkulturnaya, 98a kv. 2, Kuibyshev; Vladimir Petrovich Kuzmin, ulitsa Sovetskoi Armii, 200, kv. 16, Kuibyshev; Igor Alexandrovich Evdokimov, prospekt Kirova, 212, kv. 39, Kuibyshev, all of U.S.S.R., and Boris Alexeevich Zhidkov, deceased, late of Kostromskoi Pereulok, 8, kv. 26, Kuibyshev, U.S.S.R. (by Ljudmila Vasilievna Zhidkova, administratrix)

Continuation of Ser. No. 493,732, July 31, 1974, abandoned. This application May 15, 1975, Ser. No. 577,781
Int. Cl.² B64C *25/54*
U.S. Cl. 244—100 A 13 Claims

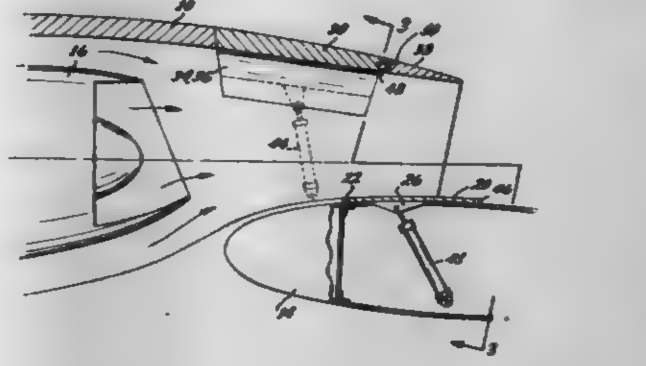


1. An aircraft air-cushion landing gear comprising: landing gear units suspended from said aircraft; at least two of said landing gear units being spaced transversely with respect to the longitudinal axis of said aircraft; at least one of said landing gear units being arranged on the longitudinal axis of said aircraft ahead of its center of gravity; each of said landing gear units being suspended from said aircraft by a separate platform; each of said landing gear units having at least one inflatable cell secured to the underside of said platform; each of said inflatable cells of said landing gear units being of a generally annular configuration in plan and, when inflated, circumscribing an air-cushion space under said platform; injecting devices built in the platforms of said landing gear units; each of said injecting devices supplying compressed air to the inner cavity of one of said inflatable cells for inflating it and to said air-cushion space circumscribed thereby for providing a lift force which sustains the aircraft in close proximity to the runway surface during take-off, landing and taxiing; means for decelerating and controlling the aircraft's movement, provided in at least two of said spaced-apart landing gear units, the platform of each said landing gear unit and the inflatable cell secured thereto being of a generally annular configuration in plan and arranged coaxially, and the injecting device comprises a centrifugal fan whose impeller is disposed under the platform in the upper portion of the air-cushion space circumscribed by the inflatable cell, on its axis, and, to supply compressed air to said impeller, the platform has a through channel, while, for inflating the cell, its inner cavity is coupled to branch pipes whose intake ends are arranged in the direction of the air flow repulsed by the impeller of the fan, the inflatable cell being confined, when inflated, by a cylindrical wall from the outside, whose diameter is equal to that of the platform, and by a truncated conical wall with a larger lower base from the inside, on the side of the air-cushion space, flexible annular membranes being provided inside the inflatable cell, stiffening its side wall and having openings for the passage of air, flexible and stiffening elements being attached to the inner and outer walls of the inflatable cell to facilitate the folding of the cell after it has been deflated to be retracted and pressed against the platform, and elastic cords comprising the flexible elements attached to the walls of the cell in a prestretched condition.

3,981,463
OVERWING THRUST REVERSER

Ladislao Pazmany, San Diego, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Continuation of Ser. No. 453,377, March 21, 1974, abandoned. This application Mar. 27, 1975, Ser. No. 562,532
Int. Cl.² B64D *33/04*; F02K *1/12*
U.S. Cl. 244—110 B 4 Claims

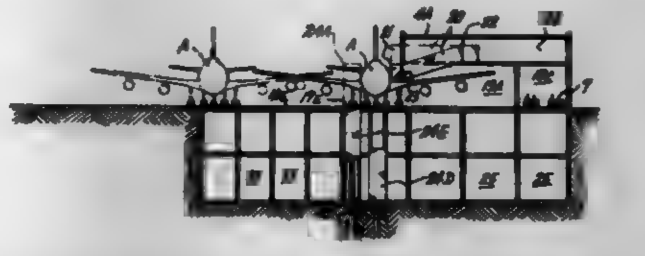


1. In a trust reverser utilized on wing mounted jet engine powered aircraft discharging exhaust gases over the wings thereof, said jet engine housed in a nacelle being affixed to the leading edge of the wing of the aircraft, the lower portion of the nacelle being appropriately contoured for connection to said wing such that the outer skin on said lower portion forms a continuous aerodynamic profile with said wing, said reverser comprising a blocker door which in stowed position overlies the upper surface of said wing and is similarly profiled, said blocker door being pivotable counterclockwise from a fixed pivot point at its leading edge to its deployed condition wherein it intercepts the exhaust gases prior to said gases being discharged through the nozzle of said nacelle, a deflector door having a fixed pivot point at its trailing edge is formed in the nacelle between the aft portion of said engine and the nozzle of said nacelle in the vicinity of the trailing edge of said nacelle, and which in stowed position forms part of the interior and exterior contour of said nacelle, said deflector door being pivotable clockwise to a deployed position in which it intercepts the exhaust gases delivered thereto by said blocker door and diverts them forwardly, a first actuator means positioned within walls of said nacelle pivotally connected between said nacelle and active on said deflector door to deploy and stow said defector door, and second actuator means positioned within said wing structure and pivotally connected and active on said blocker door at its other end to deploy and stow said blocker door.

3,981,464
AIRPORT TERMINAL

Robert E. Dudley, Bellevue, Wash., assignor to Richard M. Tracey and Gerald R. Brunstrom, both of Seattle, Wash., part interest to each

Division of Ser. No. 852,969, Aug. 18, 1969, Pat. No. 3,554,470, which is a continuation of Ser. No. 645,213, June 12, 1967, abandoned. This application Aug. 6, 1970, Ser. No. 61,675
Int. Cl.² B64F *1/36*
U.S. Cl. 244—114 R 8 Claims



4. A passenger embarking and debarking facility for aircraft having wing-tips of a predetermined height and a fuselage of

a predetermined length from the front of the aircraft to a point adjacent to the stabilizer of the aircraft, comprising:

a building having a passenger floor disposed at an elevation which is above said predetermined height, said building being open along at least a portion of one side so as to expose an edge of said passenger floor and so that one wing of the aircraft may be received within the building below said passenger floor thereby permitting the aircraft to be parked alongside the building and parallel to the side thereof;

a horizontal elongated passenger boarding gallery disposed parallel to said passenger floor between the exposed edge of the latter and the aircraft, said gallery having a length about equal to said predetermined length of the aircraft forward of the aircraft stabilizer;

means for supporting said gallery from above to facilitate servicing of the aircraft from that portion of the edge below the level of said passenger floor and for raising and lowering said gallery in a continually horizontal position between an elevation above said predetermined height and an elevation below said predetermined height whereby said gallery may be raised to permit entry of one wing of the aircraft into the building and subsequently lowered to a position opposite one side of the aircraft fuselage for permitting movement of passengers between said gallery and the aircraft; and

an adjustable passenger access ramp extending between said passenger floor of the building and said gallery.

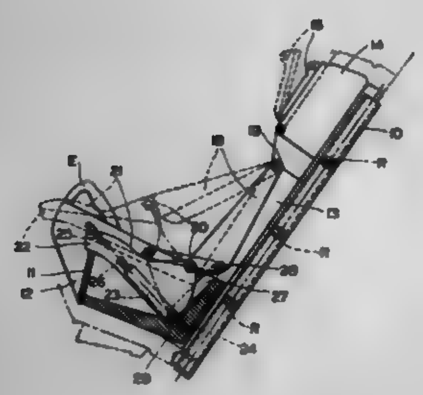
3,981,465
SUPINATING SEAT AND CONTROL DISPLAY FOR AIRCRAFT COCKPITS

James M. Stinnett, St. Louis; Leslie N. Edgington, Florissant, and Carl F. Asiala, Hazelwood, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed May 5, 1975, Ser. No. 575,047

Int. Cl.^{2} B64D *11/06*

U.S. Cl. 244—122 A 14 Claims



13. In an aircraft: a cockpit; and pilot accommodations in said cockpit which comprise, an ejection rail and rail support in said cockpit, a seat assembly carried by said ejection rail and having a seat back and a seat bottom pivotally interconnected, said seat back being pivotally connected to said ejection rail, means connected between said ejection rail and said seat bottom and operable to move said seat bottom away from said ejection rail and simultaneously move said seat back about its pivotal connection; and flight instrumentation panel means in said cockpit presented to the pilot in spaced relation from said seat assembly, said seat bottom movement away from said ejection rail supinating the pilot relative to said flight instrumentation panel means.

3,981,466
INTEGRATED THERMAL ANTI-ICING AND ENVIRONMENTAL CONTROL SYSTEM

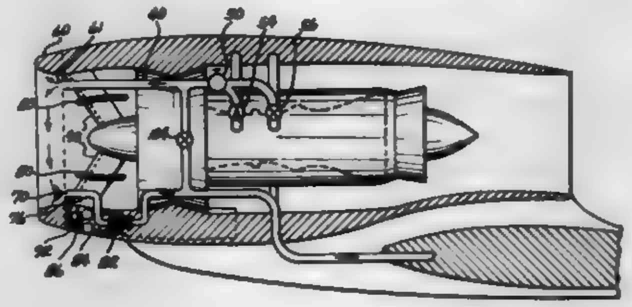
Anil D. Shah, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 23, 1974, Ser. No. 535,928

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.^{2} B64D *15/02, 13/08*

U.S. Cl. 244—134 R 3 Claims



1. An integrated thermal anti-icing and environmental control system for use on aircraft having a wing, a passenger cabin, a gas turbine powerplant, an inlet supplying air to the powerplant and an acoustic ring mounted with said inlet comprising:

a source of hot, compressed air;

first means connected to the source for distributing a portion of the air within the wing for anti-icing purposes;

second means connected to said source for distributing a second portion of the air within the inlet for anti-icing purposes and for cooling that portion of the air to a predetermined maximum temperature;

a heat exchanger connected to the second means;

a liquid;

closed-loop means for circulating the liquid through the heat exchanger and the acoustic ring;

environmental control means connected to said heat exchanger for conditioning and pressurizing air for the passenger cabin.

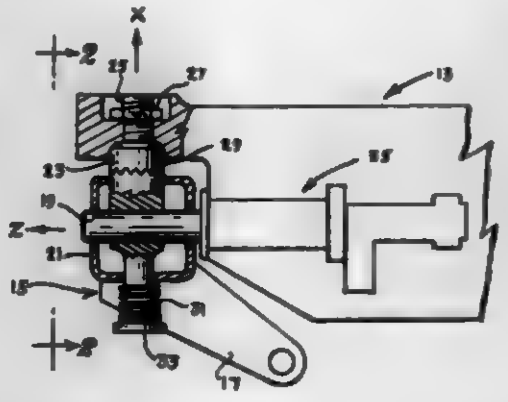
3,981,467
LAUNCH LOCK DEVICE

Kenneth G. Ludlow, Manhattan Beach, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 17, 1975, Ser. No. 623,530

Int. Cl.^{2} B64G *1/00*

U.S. Cl. 244—158 3 Claims



1. A launch lock device for locking the rotatable structure and the despun structural platform of a dual spin spacecraft in each of three axes during the launch phase, said device comprising a slidable pin disposed for lateral movement into and out of said despun structural platform, a tubular channel element having aligned openings in the sidewall thereof attached to said rotatable structure, said pin being positioned to pass through the aligned openings in said channel element, a two-piece upright member positioned within said channel element and passing through the upper and lower walls thereof, said upright member having an opening therethrough in alignment with the openings in the sidewall of said channel element, said pin passing through the opening in said upright member, means for preventing lateral movement of said rotatable structure relative to said despun structural platform during the launch phase of said spacecraft, and means for releasing said rotatable structure from said despun platform after a predetermined flight distance prior to orbit of said spacecraft thereby allowing free rotation of said rotatable structure.

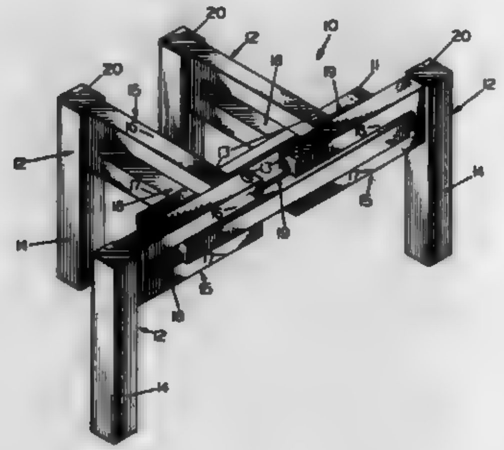
3,981,468
STAND

Leif A. Holan, Chimney Rock, Winona, Minn. 55987

Filed May 12, 1975, Ser. No. 576,353

Int. Cl.^{2} F16M *11/38*

U.S. Cl. 248—167 3 Claims



1. A stand comprising,

a centrally disposed body member,

a plurality of leg members, at least one of said leg members having an upright portion one end of which is adapted to engage a base surface and having spaced apart fingers extending at substantially right angles to the upright portion, said spaced apart fingers defining an unobstructed opening therebetween and straddling said body member with a finger on opposed sides of said body member,

means connecting a leg member having the spaced apart fingers to said body member, said means allowing said leg member to be adjusted pivotally about an axis and also allowing said axis to be moved to different positions with respect to said body member while retaining the upright portion of said leg member in an upright position, said axis being parallel to said upright portion of said leg and

means for locking said axis and its associated leg at various positions relative to the body member.

3,981,469
HANGER FOR SUSPENDED CONCRETE FORMS

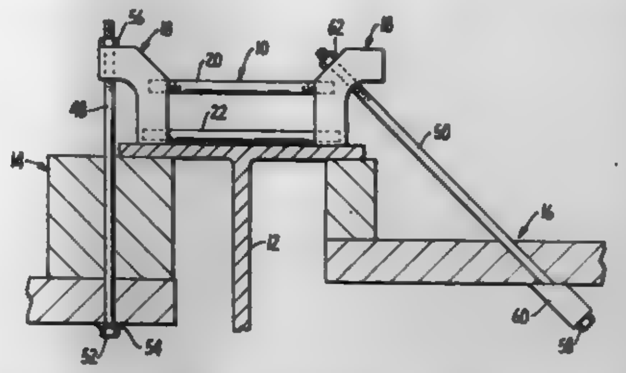
Philip A. Torbet, San Mateo, and Cyril Thomas Eager, San Francisco, both of Calif., assignors to The Burke Company, San Mateo, Calif.

Filed Nov. 6, 1975, Ser. No. 629,121

Int. Cl.^{2} E04B *1/00*; E04G *17/16*

U.S. Cl. 248—235 6 Claims

1. A hanger for suspending concrete forms, said hanger comprising: a pair of ends disposed in spaced relationship to one another, said respective ends having opposed screw threaded openings in the upper portions thereof and opposed non-threaded sockets in the lower portions thereof, and each said end also having a suspension rod opening for the receipt and support of a suspension rod and an undersurface adapted to rest upon a member upon which the hanger is supported; a tension rod extending between said ends, said rod having screw threaded portions threadably engaged with the opposed threaded openings in said ends; and, a compression strut extending between said ends beneath said tension rod, said strut having ends received within said non-threaded sockets in abutting compression imparting relationship to the ends.



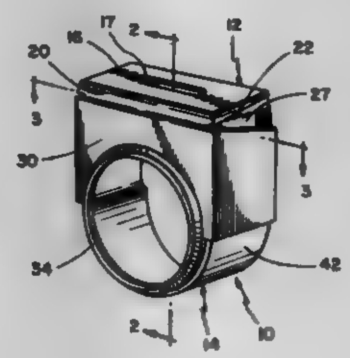
3,981,470
MOLDED PLASTIC ADJUSTABLE INSTRUMENT PANEL

Renzo N. Rutili, 1515 Madison St., Evanston, Ill. 60202, and Howard J. Rasmussen, 1634 Meade Ave., Chicago, Ill. 60639

Filed Mar. 13, 1975, Ser. No. 557,939

Int. Cl.^{2} A47H *1/10*; A47F *5/00*

U.S. Cl. 248—291 4 Claims



1. An instrument panel, comprising; a mounting bracket adapted to be fixed to a surface of random orientation, a mounting panel pivotally connected to said mounting bracket, said mounting panel having an opening therethrough for receiving an instrument, integral hinge means interconnecting said mounting bracket and said mounting panel, means for locking said mounting panel at a predetermined angular orientation with respect to said mounting bracket including means on said mounting panel having at least one tooth integrally molded therewith, a projection integrally molded with said mounting bracket and having a plurality of serrations thereon, said projection including at least one post having said serrations thereon, and said mounting panel having a circular aperture thereon defining said one tooth and receiving said post.

3,981,471
HANGER DEVICE

Robert F. Currier, 4129 Horton Road, Jackson, Mich. 49201

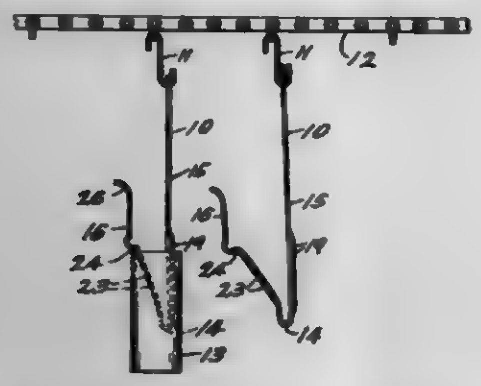
Filed Aug. 20, 1975, Ser. No. 606,307

Int. Cl.^{2} A47J *51/142*; A47F *5/00*; A47J *5/00*

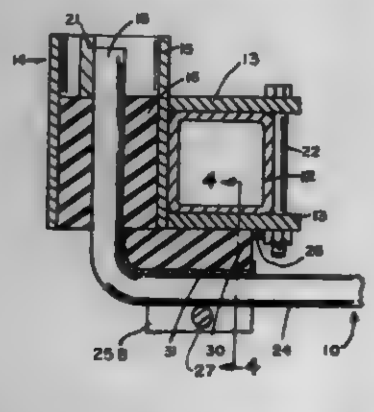
U.S. Cl. 248—317 5 Claims

1. A hanger for engaging and supporting tubular objects comprising a resilient, single piece member defining a U-shaped closed end and opposing arms extending from said closed end, a retaining portion on each of said arms adjacent said closed end, retaining teeth defined along each of said retaining portions, a handle portion on each of said arms extending away from said retaining portions, said retaining portions extending from said closed end in a diverging, non-parallel relationship, whereby said closed end is placed within

the tubular object by gripping said handle portions and compressing said arms and whereby both handle portions remain exterior of the tubular object upon release of said handle portions.



3,981,472
CUSHION CLAMP FOR SPRING SHANKS OF EARTH WORKING TOOLS
Robert D. Anderson, Murdock, Minn., assigner to TCI, Inc., Benson, Minn.
Filed Jan. 24, 1975, Ser. No. 543,816
Int. Cl.^{2} F16F *15/04*
U.S. Cl. 248—358 R **8 Claims**



1. A clamp assembly for mounting a spring shank onto a support frame member, including a main support means, means to fix the main support means to a support frame member, a spring shank having an attachment portion comprising a first finger bent integral with said shank and at substantially right angles to an adjacent portion of the shank, said adjacent portion being positioned generally horizontal during use, and means connected between said first finger and said main support means comprising a resilient elastomeric sleeve and a housing holding said sleeve, and a separate elastomeric block mounted on said main support means and positioned between said main support means and the adjacent generally horizontal portion of said shank, said finger being mounted in said sleeve and transferring loads on said spring shank to said elastomeric sleeve, and through said housing to said main support means and said adjacent generally horizontal portion bearing against said elastomeric block during use of said spring shank to transfer loads from the horizontal portion of the spring shank to the main support means.

3,981,473
LOCKING DEVICE FOR ADJUSTABLE SEAT TRACK STRUCTURE
Tsuyoshi Nagai, Toyota, Japan, assignor to Arakawashatai Kogyo Kabushiki Kaisha, Toyota, Japan
Filed May 9, 1975, Ser. No. 575,990
Claims priority, application Japan, Jan. 28, 1975, 50-11553
Int. Cl.^{2} F16M *13/00*
U.S. Cl. 248—430 **5 Claims**

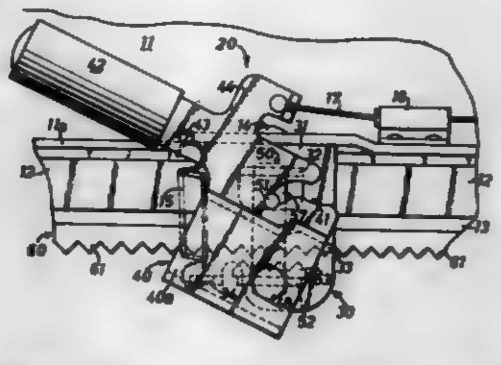
1. A locking device, for an adjustable seat track structure: comprising an elongated stationary track for securement on the floor of a vehicle compartment, a movable track slidably mounted on the stationary track along the longitudinal direction thereof to be locked in a selected position;

an elongated, continuously toothed, lock plate secured to and under said stationary track;

a support member secured on said movable track and including a pair of legs straddling both sides of said stationary track;

a latch member of U-shaped cross-section having its web under said stationary track and its upwardly directed arms slidably guided by said support member for up and down movements toward and away from said lock plate, said latch member being provided with a latch element located under said lock plate to be engaged with a selected portion of the continuous teeth on the lock plate;

an outwardly directed pin secured to each arm of said latch member;

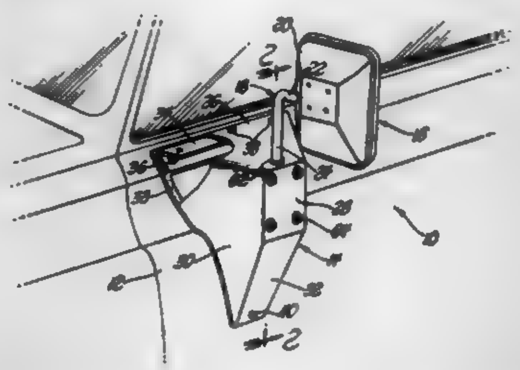


a rotary member having a U-shaped cross-section with upwardly disposed arms, each arm being pivoted to a leg of said support member, the web of said rotary member being located under the latch element of said latch member and each arm of said rotary member being provided with a cam slot engaged with one of said pins of said latch member, said cam slots each including a supporting cam face to support one of said pins thereon and an arcuate cam face to permit upward and downward movement of said pin upon rotary movement of said rotary member;

an operation handle on said rotary member for manual actuation to rotate the rotary member; and

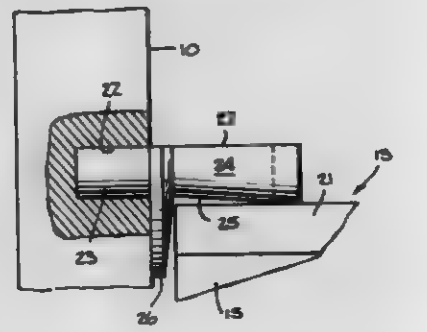
resilient means for biasing said rotary member to maintain the engagement of said latch element with said continuous teeth on the lock plate.

3,981,474
MIRROR BRACKET ASSEMBLY
Jane M. Szilagyi, Center Valley, Pa., assignor to Delbar Products, Inc., Perkasie, Pa.
Filed June 12, 1975, Ser. No. 586,335
Int. Cl.^{2} A47G *1/24*
U.S. Cl. 248—487 **6 Claims**



1. An outside rear view mirror assembly adapted to be mounted to a body portion of a vehicle, said assembly comprising a mirror head, a support arm including first and second leg portions, and means for adjustably mounting the mirror head upon said first leg portion, a monolithic housing structure integrally associated with said vehicle body portion and projecting exteriorly therefrom, said housing structure including a laterally projecting wall portion and a vertically extending wall portion depending therefrom, first and second coacting journal bearing members mounted on said vertical wall portion internally of the housing structure, an opening in said laterally projecting wall portion and axially aligned with said journal bearing members, the second leg portion of said support arm projecting through said wall opening and clampingly supported between said journal members, and means for adjusting the clamping pressure between said journal members and said second leg portion.

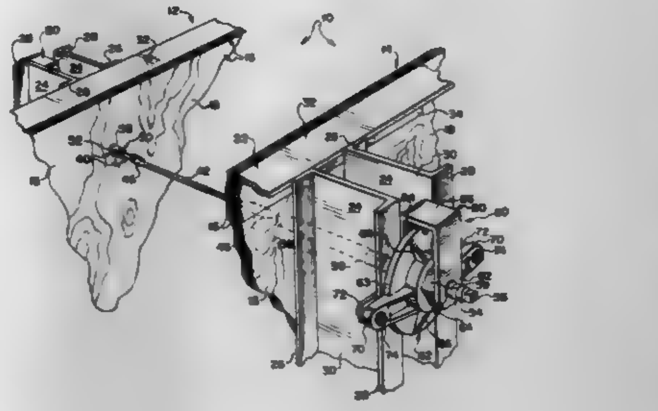
3,981,475
SHELF ANCHORING CLIP
Kenneth D. Weeks, Valdese, and Ronald W. Scoggin, Morganton, both of N.C., assignors to Champion International Corporation, Stamford, Conn.
Filed Feb. 21, 1975, Ser. No. 551,661
Int. Cl.^{2} F16M *1/00*
U.S. Cl. 248—500 **4 Claims**



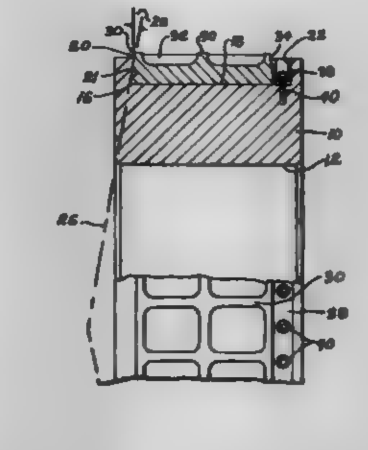
1. A clip for anchoring loose shelvs within a cabinet during shipping comprising an elongated body having at one end a cylindrical portion for insertion in a bore in a side panel of the cabinet, at the other end a camming portion with a surface on its side for exerting pressure against the adjacent surface of a stacked assembly of said shelves, and a segment of an annular flange disposed intermediate said ends of said body in a plane substantially normal to the longitudinal axis of said body for disposition between said side panel and an end of at least one shelf, said camming portion and said flange having a common substantially flat side substantially co-planar with an element of said cylindrical portion, said side surface of said camming portion being flattened and disposed opposite said flat side but, at least at its extremity, radially more distant from the central axis of said cylindrical portion than said flat side, and wherein said camming portion has rounded surface portions between said flat side and said flattened surface.

3,981,476
SPREADER CLIP ASSEMBLY FOR A CONCRETE WALL FORM
Kenneth B. Alexander, and Robert J. Flathau, both of Elgin, Ill., assignors to Symons Corporation, Des Plaines, Ill.
Filed Feb. 6, 1975, Ser. No. 547,759
Int. Cl.^{2} E04G *17/08*
U.S. Cl. 249—42 **7 Claims**

1. In a concrete wall form of the type wherein opposed form sides, each consisting of panel units disposed in edge-to-edge relationship, are reinforced by outside, spaced apart, vertical strongbacks, wherein adjacent strongbacks on each form side are bridged and connected by reaction washers through which tie rod-connected she-bolts having externally threaded outer end regions loosely project, wherein fastening nuts are threadedly received on the outer threaded ends of the she-bolts so as to resist the outward spreading action of the washers incident to the outward thrust of wet concrete which is poured between the form sides, and wherein means are provided on said washers for releasably clamping said washers to their respective pairs of strongbacks, the improvement which comprises: a clip member of inverted J-shape configuration having a relatively short inner leg and a relatively long outer leg connected together at their upper ends by a bight portion associated with each she-bolt, and means captively and pivotally connecting said clip member at the inner leg thereof to the associated reaction washer for swinging movement of the clip member between a lowered vertical locking position wherein said legs straddle the adjacent nut and washer with the outer leg opposing the outer face of the nut, captively locating said nut between said washer and the inner face of the outer leg, and an out-of-the-way raised upwardly inclined position wherein a major portion of the clip member is disposed between and straddled by the adjacent strongbacks and the outer leg is withdrawn from the nut in order to render the latter accessible for wrench-receiving purposes.



3,981,477
DIE SEGMENT FOR BRIQUETTING ROLL
William D. Armbrust, Greensburg; Dennis J. Shallenberger, Latrobe, and Charles E. Hill, Whitney, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.
Division of Ser. No. 455,518, March 28, 1974, Pat. No. 3,883,282. This application Feb. 7, 1975, Ser. No. 548,155
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976
Int. Cl.^{2} B29C *3/02*
U.S. Cl. 249—135 **9 Claims**



1. A die segment for a briquetting roll comprising; a body of hard wear resistant material having end edges and side edges and oppositely facing first and second major surfaces, one major surface having pocket means formed therein, the other major surface being disposed in a first flat plane, one side edge being disposed in a second flat plane at an angle to said first plane, and the other said side edge being in the form of an angular segment of an annular section of a cone.

3,981,478
FLUID FLOW CONTROL VALVE

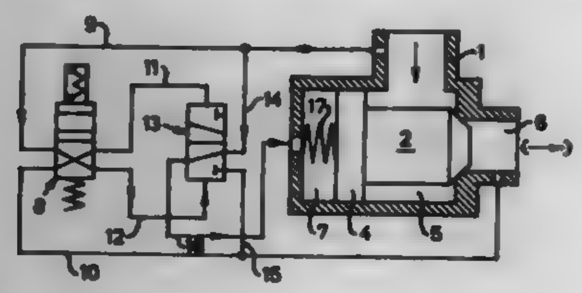
Henning Börge Ländsgart, Karlslunde, Denmark, assignor to Dansk Industri Syndikat A/S, Herlev, Denmark

Filed Sept. 30, 1975, Ser. No. 618,016

Claims priority, application Denmark, Oct. 11, 1974, 5358/74

Int. Cl.² F16K *31/122*

U.S. Cl. 251—29 **4 Claims**



1. A fluid flow control valve, comprising in combination:
a valve housing having a first and a second chamber,
a valve seat in said housing between said first and second chambers,
a valve member linearly displaceable in said housing for cooperating with said valve seat,
a stepped piston rigidly connected to said valve member and having a first active surface subjected to the fluid pressure in said first chamber and an opposed second active surface of larger area, which second piston surface together with said housing defines a third chamber,
a four-way two-position switch valve having a first inlet port connected to said first chamber, a second inlet port connected to said second chamber, a first outlet port and a second outlet port, and signal receiving means for switching the valve to selectively connect each inlet port with one or the other outlet port,
a three-way two-position auxiliary valve having first, second and third ports connected to said first, second and third chamber, respectively, and fluid actuated means for selectively switching said auxiliary valve between a first position in which its said first and third ports are connected, and a second position in which its said second and third ports are connected,
and duct means connecting said fluid actuated means to the first and second outlet ports, respectively, of said switch valve.

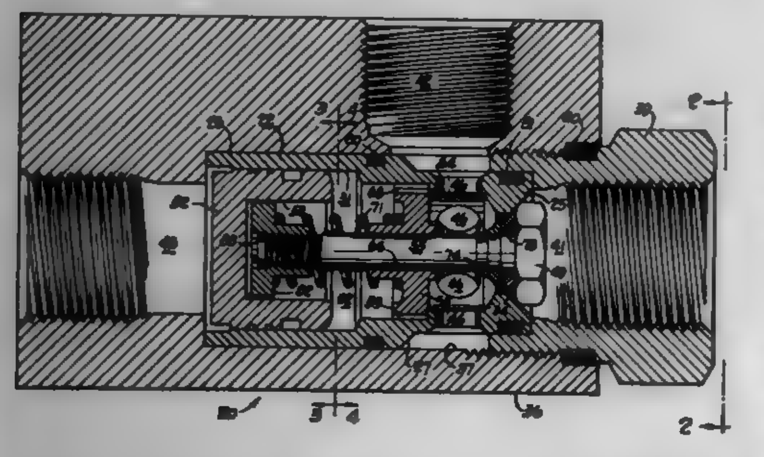
3,981,479
CHECK VALVE

Frank L. Foster, Corry, and Wayne E. Wilcox, Union City, both of Pa., assignors to Snap-Tite, Inc., Union City, Pa.

Filed June 14, 1974, Ser. No. 479,194

Int. Cl.² F16K *31/163*

U.S. Cl. 251—63.6 **12 Claims**



1. A pilot operated cartridge check valve including in combination a housing having first and second end portions and having internal wall means defining an opening, a valve seat formed on said internal wall means, a fluid port in said first end portion of said housing providing for the entrance of fluid to said opening, a valve member movable into and out of engagement with said valve seat to selectively prohibit and permit fluid flow through said opening at said valve seat, a control piston positioned in said second end portion of said housing, and movable between first and second positions, a valve stem connected to said valve member and extending axially to a position adjacent said control piston, a valve guide positioned in an intermediate portion of said housing and having a periphery located adjacent said internal wall means of said housing, said valve guide and said control piston defining a fluid chamber therebetween, a stop shoulder on said internal wall means, said valve guide engageable with said stop shoulder in a first position to limit movement of said valve guide in the direction of said valve seat and said valve guide movable away from said stop shoulder to a second position toward said control piston, a central opening in said valve guide, said valve stem slidably extending through said central opening, a fluid opening in said valve guide providing for fluid communication between said fluid chamber and said axial opening at said first end portion of said housing, said valve guide in said first position permitting flow from said fluid chamber only through said fluid opening and in said second position permitting free flow around said valve guide to said fluid chamber, and a spring member acting on said valve member and said valve guide tending to move said valve member into engagement with said valve seat and said valve guide into engagement with said stop shoulder.

3,981,480
VARIABLE GAS LEAK RATE VALVE

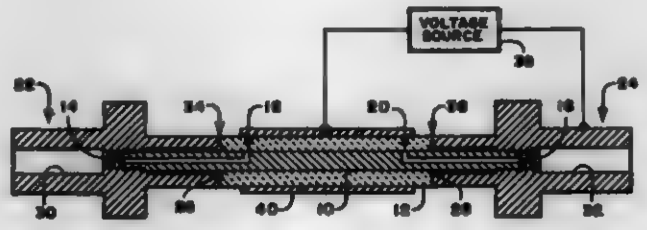
Errol P. Eernisse, and Gary D. Peterson, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Dec. 19, 1974, Ser. No. 534,333

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.² F16K *31/02*

U.S. Cl. 251—129 **4 Claims**



1. A variable gas leak rate valve comprising an elongated metallic rod having first passageway extending from one end of said rod to an opening in its outer surface intermediate the rod ends and a second passageway extending from the other end of said rod to an opening in its outer surface spaced from said first passageway opening; a piezoelectric sleeve fitted in gas tight relationship around a portion of said rod intermediate said passageway openings, said sleeve being poled in the radial direction and normally blocking gas flow between said openings; an electrode disposed on the outer surface of said sleeve coextensive with said gas tight portion; means for sealing the ends of said sleeve to end portions of said rod; and means for coupling voltage bias between said rod and said electrode to effect communication between said passageways through the interface between said rod and said sleeve.

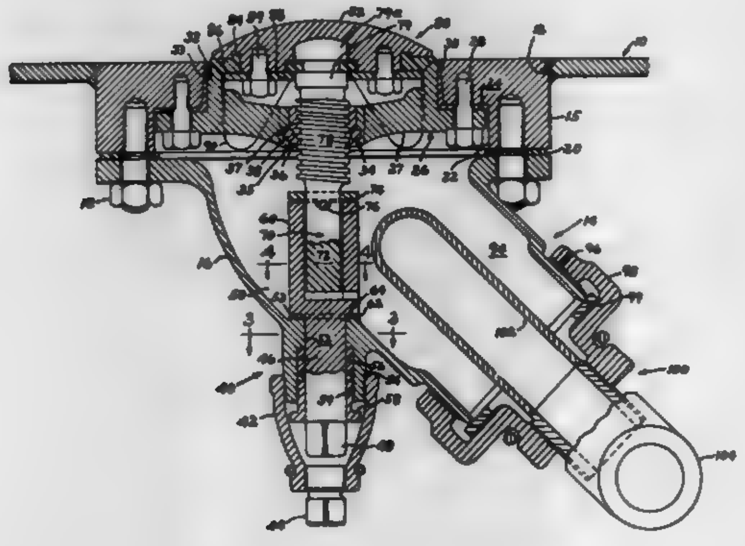
3,981,481
BOTTOM OPERABLE TANK CAR VALVE

Charles E. Reedy, Bridgeton, and Edwin S. Carlson, St. Charles, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 8, 1974, Ser. No. 513,082

Int. Cl.² F16K *1/48*

U.S. Cl. 251—144 **13 Claims**



1. A bottom outlet comprising:
a valve body adapted to be integrally affixed to an opening in the bottom of a tank;
said valve body having a valve body opening defining a shoulder; a retainer assembly fitting within said valve body opening and urging a seal into engagement with at least a portion of said shoulder;
said retainer assembly having a threaded center portion and a vertical extension having a retainer opening therein; a seal and a housing affixed to said valve body with mechanical fasteners comprising a shear plane;
said housing having a housing opening therein; a valve operator assembly mounted within said housing opening comprising a first valve operator having a lower tool connection
and a first operator extension;
said first operator extension having a first valve operator opening therein in which a second valve operator is drivably engaged;
said second valve operator having threaded means comprising a second shear plane and adapted to engage said threaded center portion;
said second valve operator further having means for engaging a valve plug adapted to close said retainer opening;
a seal member removably affixed to said valve plug whereby rotation of said first valve operator causes rotation of said second valve operator and vertical movement thereof, and whereby rotation and vertical movement of said second valve operator results in vertical movement of said valve plug from the closed to an open position, and whereby said valve operator assembly can be completely disassembled from the bottom; and whereby said first and second shear planes insure that upon severe impacts to said outlet, said housing and said valve operator assembly will shear off below said valve plug, thereby tending to maintain said valve plug in the closed position and maintain any lading within the tank during and after such impact.

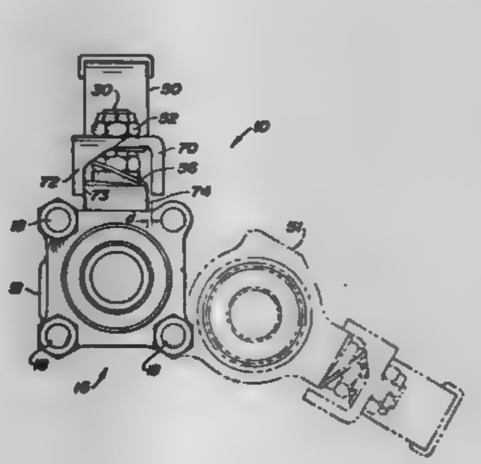
3,981,482
FLUID SYSTEM DEVICE

Francis J. Callahan, Jr., Chagrin Falls; Bernard J. Gallagher, South Euclid, both of Ohio; Stephen Matousek, and Ulrich H. Koch, both of Moraga, Calif., assignors to Whitey Research Tool Co., Emeryville, Calif.

Division of Ser. No. 406,272, Oct. 15, 1973. This application Dec. 20, 1974, Ser. No. 534,607

Int. Cl.² F16K *51/00*

U.S. Cl. 251—152 **19 Claims**



19. A flow system device comprising:
a body section having a longitudinal through-flow passage which extends between a pair of generally parallel end faces, said body section having seal ring assemblies positioned about each end of said through-flow passage and which seal ring assemblies are axially removable from said body section, said body section further having a protrusion extending outwardly thereof substantially longitudinally therealong;
a pair of end fitting members each having a through opening, said end members being positioned on opposed ends of said body section in engagement with the end faces thereof with said through openings aligned with said through-flow passage;
at least three tie bolts extending between said end fittings for interconnecting said body section and end fittings with said tie bolts being spaced apart from each other around said end fittings, one of said tie bolts extending through said body section with the remaining tie bolts located radially outward of the body and said protrusion engaging another of said tie bolts, said at least three tie bolts being spaced apart in said end fittings such that removal of a single tie bolt other than said one and said another tie bolts and loosening of the remainder of said at least three tie bolts permits arcuate movement of said body section about said one tie bolt for gaining access to the through-flow passage of said body section.

3,981,483
CABLE HAULING DEVICE

Johannes Augustus Rinie, 5 Promenade Venezia, Grand Siecle, 7800 Versailles, France

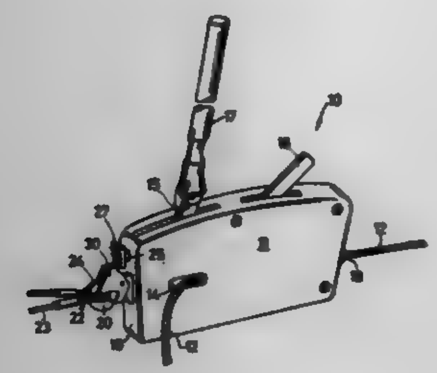
Continuation-in-part of Ser. No. 416,169, Nov. 15, 1973, abandoned. This application June 23, 1975, Ser. No. 589,524

Int. Cl.² B66F *3/00*

U.S. Cl. 254—76 **16 Claims**

1. A cable hauling device having an attachment hook fixed on a housing and clamp jaws mounted in two blocks, the clamp jaws being movable in opposite directions by two oscillatable rocking arms and which alternately clamp on a cable pulled through the device to take along this cable, a lever mechanism for releasing said clamp jaws from their clamping position, said lever mechanism comprising a control rod extending through the housing, wherein the control rod (25) is locked against release by a lock pawl (30) external of the

housing, said lock pawl being maintained in locked position by a suspension device, said suspension device including a suspension element (22, 23) inserted into the attachment hook (20).



3,981,484
LIFTING APPARATUS

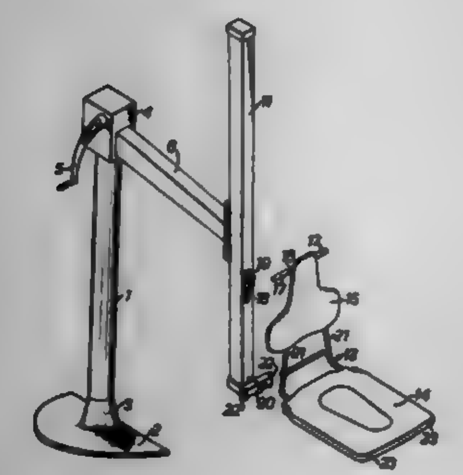
David Richard James, Hasfield, England

Filed June 21, 1974, Ser. No. 481,866

Claims priority, application United Kingdom, June 21, 1973, 29475/73

Int. Cl.² B66D *1/00*

U.S. Cl. 254—148 **12 Claims**



1. An invalid hoist comprising an upstanding column, a load support structure projecting from the column and an elevating mechanism whereby a load supported at the end of the support structure remote from the column can be raised and lowered in a vertical plane, wherein the support structure comprises an arm projecting from the column at an angle inclined to the horizontal, which arm or a portion thereof is invertible to provide two alternative adjusted positions in which the arm is respectively inclined below and above the horizontal, and a load attachment member adjacent a lower end of which the load is rigidly attachable and which is slidable so as to be capable of rectilinear load-lifting movement in said vertical plane relative to the arm with the latter remaining at a constant height during raising and lowering of the load, with the attachment member capable of arcuate movement in a horizontal plane about a pivot axis offset from that member.

3,981,485
HELICOPTER TRANSPORTABLE DRILLING RIG

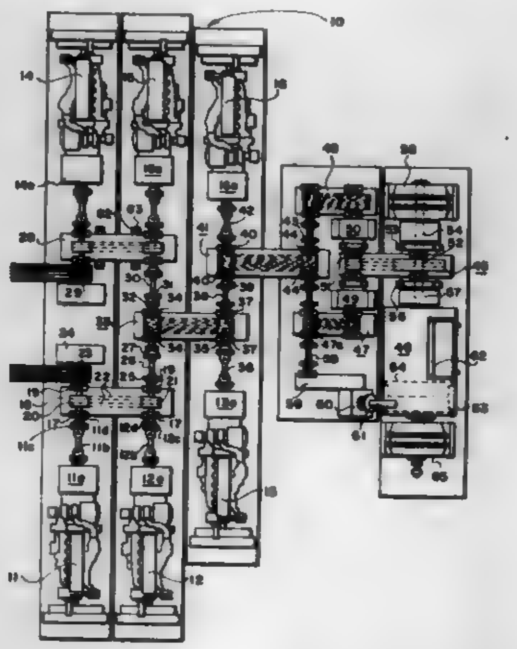
Kenneth Harmon Eddy, and Kenneth Harmon McGill, both of Beaumont, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 2, 1974, Ser. No. 511,407

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 10, 1976

Int. Cl.² B66D *1/14*

U.S. Cl. 254—186 R **15 Claims**



1. A power system for an oil well drilling rig, said system being constructed of integral componets each being portable and having a weight of less than about 4000 pounds, said system comprising:

a plurality of prime movers arranged in close proximity to each other;

means for receiving and mounting each of said prime movers and for transmitting power from said prime movers; said means comprising an integral, portable unit for each said prime mover;

power transfer means interconnectable with said transmitting means and adapted to receive power from at least two of said prime movers via said transmitting means and to transfer said power to an output shaft, said power transfer means comprising a plurality of integral power transfer systems, each system being an integral unit fully transportable without disassembly thereof, and each said system having easily disconnected and reconnected power input and output means;

power accumulator means for receiving the power from all of said prime movers and having alternately selective dual power outputs;

transmission means connected to said accumulator means and having a high speed transmission connected to one of said accumulator means power outputs, and a low speed transmission connected to the other of said accumulator means power outputs;

main drum drive means releasably connected to both of said transmissions and arranged to selectively receive power from either of said transmissions and transmist power to two output shafts; said main drum drive means being an integral, fully portable unit in itself;

a main drawworks drum connected to one of said output shafts of said main drum drive means in driven relationship therewith; and,

main drum brake means connected to said main drum and arranged to apply braking forces thereto, said brake means comprising an integral brake system disconnectable from said main drum brake means without disassembly of said integral brake system.

3,981,486
SHOCK ABSORBER AND GUIDE RAIL ASSEMBLY INCLUDING THE SAME

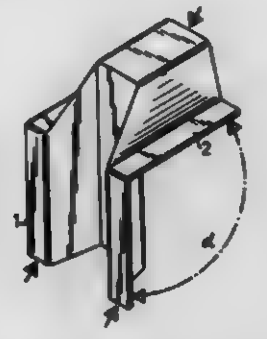
Ernst Baumann, Schonlaterngasse 11, Vienna I, Austria

Filed Jan. 29, 1973, Ser. No. 327,866

Claims priority, application Austria, Jan. 31, 1972, 715/72; Mar. 21, 1972, 2395/72; Aug. 9, 1972, 6899/72; Aug. 21, 1972, 7187/72

Int. Cl.² E01F *15/00*

U.S. Cl. 256—13.1 **20 Claims**



1. A guide rail assembly having at least one guide rail and stationary support means being connected to the guide rail via shock absorber means, said shock absorber means comprising a metal strip having at least one bend, the two legs of the shock absorber means extending from said bend including an angle and being profiled in cross section opposite to each other near said bend and transverse to the direction of extension of said legs from said bend, said strip being formed with folds at said bend, at least a part of at least one of said folds being dislocated upon moving the two legs toward each other, so as to reduce said angle, one leg of the shock absorber means being connected to the stationary support means and another leg being connected to the guide rail.

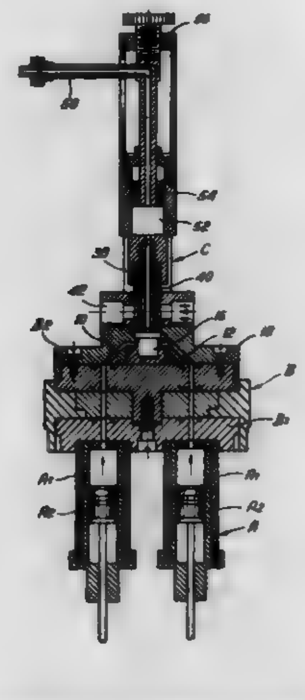
3,981,487
DEVICE FOR MIXING LIQUIDS IN KINETIC REACTIONS OBSERVED BY THE METHOD KNOWN AS STOPPED FLOW

Paolo Papoff, and Basilio Morelli, both of Bari, Italy, assignors to Consiglio Nazionale delle Richerche, Rome, Italy

Filed Jan. 16, 1975, Ser. No. 541,410

Int. Cl.² B01F *15/00, 15/02*

U.S. Cl. 259—4 R **6 Claims**



1. Mixing device for liquids employing the stopped flow method comprising injecting liquids through a mixing chamber then into an observation cell or chamber, comprising an annular chamber connected with at least two diametrically opposite supply or feed conduits for the liquids to be mixed with at least two diametrically opposite radial ducts of gradually decreasing cross-section in direction of flow and conveniently offset with respect to said supply or feed conduits so as to invert liquid flow direction by 90° and leading into the bottom wall of a central chamber which is co-axial with said annular chamber extending axially beyond the latter and communicating by asymetrical conduits with an observation cell whereby the liquids to be mixed will at first flow through curved paths in opposite directions then meet and flow centripetally through the radial conduits, to be deviated axially into a central chamber and then flow axially into said observation cell.

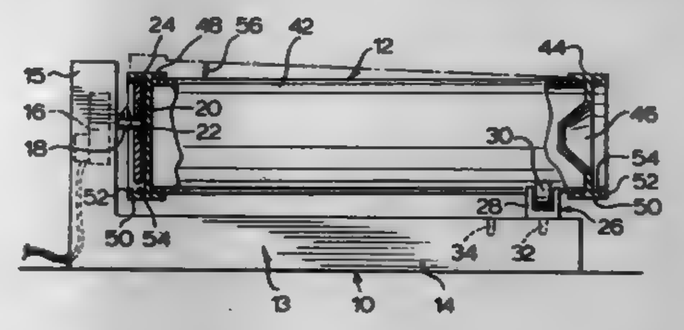
3,981,488
CARRIER FOR PROCESSING PHOTOGRAPHIC MATERIAL AND APPARATUS FOR ROTATING THE CARRIER

Simon Ratowsky, Downsview, Canada, assignor to Monrick Holdings Limited, Downsview, Canada

Filed Jan. 2, 1975, Ser. No. 538,004

Int. Cl.² B01F *9/00;* **G03D** *3/04*

U.S. Cl. 259—72 **8 Claims**



1. Apparatus for axially rotating and vertically oscillating a horizontally disposed cylindrical carrier for processing photographic material, the carrier having a ring projecting longitudinally from at least one end thereof, to form an internal trackway, comprising:

a frame;

vertically oriented eccentric means rotatably mounted on the frame and engagable with the ring of the carrier along the trackway thereof;

support means mounted on the frame and spaced from the eccentric means, the support means carrying rotatable means for cradling the carrier remote from the ring thereof; and

drive means to rotate the eccetric means.

3,981,489
AUTOMATIC HEAT TREATING SYSTEM

Hobart L. Wentworth, Barrington, Ill., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.

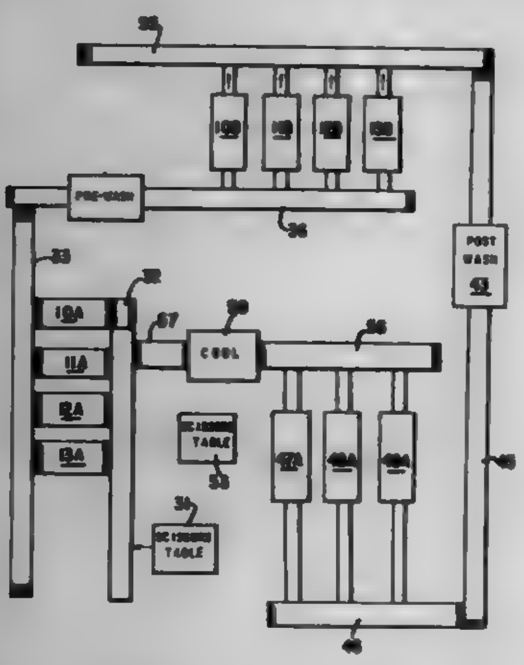
Continuation of Ser. No. 322,716, Jan. 11, 1973, abandoned. This application Sept. 19, 1974, Ser. No. 507,445

Int. Cl.² C21D *1/66*

U.S. Cl. 266—80 **3 Claims**

1. In a material heat and treating furnace system, the combination including a plurality of material heating and quenching furnaces, first conveyor means for receiving material to be treated, second conveyor means located transversely along and adjacent said heating and quenching furnaces so that material to be treated in a selected furnace can be selectively received thereby, means for selectively moving material to be treated from said first conveyor means to said second conveyor means, an automatic temperature sensing, atmosphere sensing and operation control means for each of said furnaces, loading and unloading means for selectively transferring material to and from said second conveyor means to a selected one of said heating and quenching furnaces, an automatic computer control means for each furnace and connected to its automatic temperature atmosphere and control means, said

computer control means being arranged to receive a selected pattern of treatment information for controlling signals therefrom and which in response to said signals will control said automtic temperature atmosphere and operation control means and will provide activating signals to the conveyor means to selectively move material in the selected pattern onto and from said first conveyor means to said second conveyor means and to a selected one of said heating and quenching furnaces, and which will activate the selected furnace for the preselected pattern of treatment in accordance with the treatment information to said computer control means when the material is moved into the selected furnace, the control means being activated for a selected furnace to transfer material thereto a predetermined time before the selected furnace is in readiness to receive the material, the material being first moved from the first conveyor means to a pre-wash and drying means and held there until the selected furnace is ready to receive the same, there being draw oven means, post wash means and cooling means to which the material is selectively moved by the automatic control means to which the material is selectively moved by the automatic control means after being treated in one of said furnace means, and a plurality of draw oven means and cooling means located along a third unload conveyor with a post wash means between said second conveyor and third conveyor and a by-pass conveyor between said second and third conveyors across which material can be selectively passed to by-pass said post wash and draw oven means.



3,981,490
APPARATUS FOR DECOMPOSING ALKALI METAL AMALGAMS

Ivo Rousar; Vaclav Cezner, both of Prague; Milan Franz, Usti nad Labem, and Miroslav Matusek, Pardubice, all of Czechoslovakia, assignors to Vyzkumny Ustav Anorganicke Chemie, Usti nad Labem, Czechoslovakia

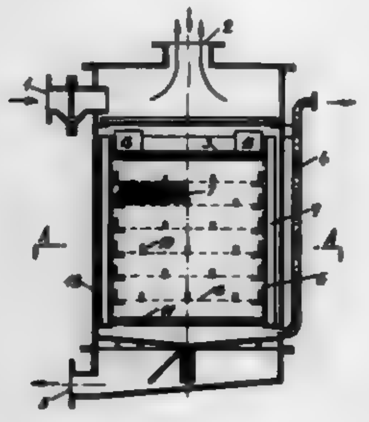
Continuation-in-part of Ser. No. 468,542, May 9, 1974, abandoned. This application May 5, 1975, Ser. No. 574,341

Claims priority, application Czechoslovakia, May 11, 1973, 3375-73

Int. Cl.² C25C *1/04*

U.S. Cl. 266—169 **2 Claims**

1. In an apparatus for decomposing amalgams of alkali metals, said apparatus having a tower with vertical wall means and a reaction body with perforated vertical means, and means for passing the amalgam and water through the tower and in contact with the reaction body therein, the improvement which comprises means providing an interstice for escape of hydrogen gas between the perforated vertical wall means of the reaction body and vertical wall means of the tower, and wherein the reaction body is of substantially uniform horizontal cross-section, said perforated vertical wall means are made of a metal chosen from the group consisting of steel, nickel and an iron-nickel alloy, and horizontally spaced perforated sheets in excess of two made of a metal chosen from the group consisting of steel, nickel and an iron-nickel alloy, said horizontal sheets being supported by said perforated vertical wall means and packings of particulate bodies between these perforated sheets, said particulate bodies being made of material chosen from the group consisting of graphite and titanium carbide and having the form of pellets, balls, chips and the like, whose diameter is 3–20 mm.



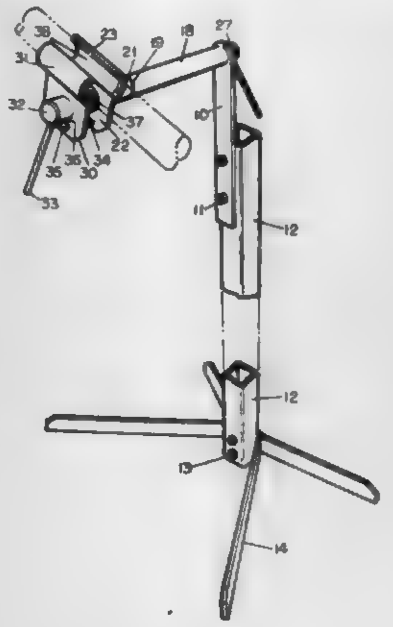
3,981,491
WORK STAND FOR BICYCLES

Donald H. Snyder, 128 S. Monroe St., Blissfield, Mich. 49228

Filed Nov. 28, 1975, Ser. No. 636,230

Int. Cl.² B25B *1/14*; B23Q *3/18*

U.S. Cl. 269—64 **1 Claim**



1. A bicycle work stand comprising
- a. a support bar,
- b. means for holding said support bar in an upright position,
- c. a horizontal sleeve fixed at its outer end to said support bar,
- d. a circular row of teeth on the inner end of said sleeve,
- e. a relatively short tube at the inner end of said horizontal sleeve and axially aligned therewith,
- f. a circular row of teeth on an end of said short tube to mesh in locking engagement with said first circular row of teeth,
- g. a clamping plate fixed on the other end of said short tube and generally parallel to said support bar,
- h. a clamping jaw on the upper end of said clamping plate,
- i. a bushing rigid with said short tube and projecting within said horizontal sleeve in bearing relation,
- j. a shaft fixed to said bushing and extending freely through said horizontal sleeve,

- k. a screw threaded end portion on said shaft extending freely through said support bar to the outer side thereof,
- l. a nut on said screw threaded portion adapted when tightened to bear against said support bar to cause said rows of teeth to lockingly engage, or when loosened to free said rows of teeth so that the clamping jaw can be revolved to a selected position,
- m. a second screw threaded shaft rigid with said bushing and extending in a direction opposite to said first shaft,
- n. a movable jaw plate similar to and at one side of said first jaw plate and through which said second screw shaft extends,
- o. a clamping jaw on the upper end of said movable jaw plate to cooperate with said first clamping jaw,
- p. a nut on said second screw shaft adapted to bear against the outer face of said movable jaw plate for forcing said movable jaw plate toward and in clamping relation to said first jaw plate,
- q. a coil spring on said second screw shaft disposed between, and tending to urge said clamping plates apart, and
- r. a jaw support plate on the lower end of one jaw plate having a hook-like projection to engage in an aperture in the other jaw plate to cause rocking of the plates for effecting clamping operation.

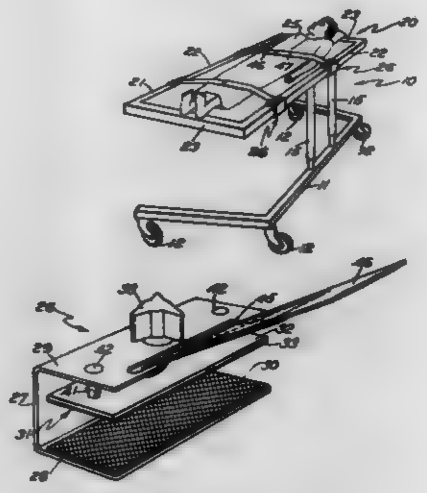
3,981,492
X-RAY TABLE PATIENT TRANSFER DEVICE OR THE LIKE WITH BODY HOLDING DEVICE

David R. Hallmann, 288 Nayatt Road, Barrington, R.I. 02806

Filed Aug. 4, 1975, Ser. No. 601,545

Int. Cl.² A61G *13/00*

U.S. Cl. 269—328 **2 Claims**



1. In an X-ray table or the like, the combination of a relatively flat horizontal body support means having rigid opposite side rails, clamps on said opposite rails, flexible straps secured to each clamp and extending from one side rail toward the other side rail, said straps being of a length to be in overlapping relation, means on said overlapping straps to secure them together in overlapping relation, said clamps comprising a pair of jaws, means to move said jaws toward each other to grip a side rail in a desired location along the side rail and releasable for adjustment along the side rail and re-gripping the rail, each of said clamps comprising a back to be disposed generally vertically when engaging said rail, a lower arm and an upper arm extending at generally right angles to the back, one of said arms serving as a gripping jaw and a second jaw movably mounted on the inner side of the other arm and means to move the second jaw toward and from the first said jaw, the last said means comprising a threaded collar on the said other arm and a threaded member extending through said collar and swivelly attached to said second jaw, each of said upper arms having a slot to receive said strap.

3,981,493
APPARATUS FOR SEPARATING A LETTER STACK

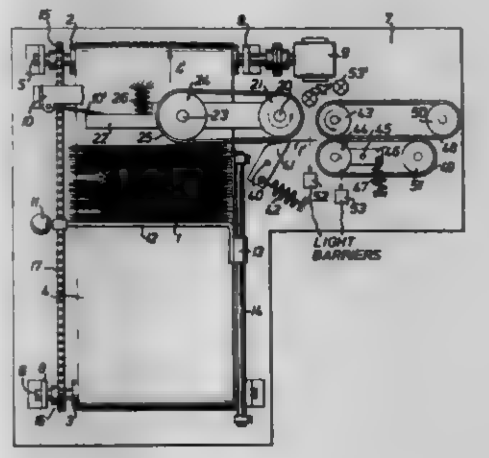
Karl Klappenecker, Constance; Gisbert Burkhardt, Insel Reichenau, and Hans Rapparlie, Constance, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Feb. 27, 1974, Ser. No. 446,203

Claims priority, application Germany, Feb. 27, 1973, 2309765

Int. Cl.² B65H *3/04*, *5/02*

U.S. Cl. 271—10 **11 Claims**



1. An apparatus for forwarding flat items individually from a stack, including means for supporting the stack; a withdrawing means having a principal gripping zone and being in frictional contact with the foremost item in the stack for forwarding the item to a standby position; a retaining mechanism being urged into contact with the withdrawing means; feed means disposed downstream of the standby position and having an item gripping zone; means generating a call signal; and advancing means for forwarding, upon receipt of the call signal, the item from its standby position into the gripping zone of the feed means; the improvement comprising in combination:
- a. an item-moving mechanism being in continuous frictional contact with the foremost item in the stack and constituting, in a single structure, both said withdrawing mechanism and said advancing means; said item-moving mechanism including means for advancing the item in a direction parallel to its own plane;
- b. drive means coupled to said item-moving mechanism for operating the same; said drive means having an energized state in which said item-moving mechanism is in an operating phase and a de-energized state in which said item-moving mechanism is in a non-operating phase;
- c. a sole sensor positioned between the gripping zone of the feed means and the retaining mechanism for sensing the item as the latter arrives into the standby position; the distance between said principal gripping zone and said sole sensor being smaller than the shortest possible length of an item;
- d. a control circuit connected to said sensor and said drive means, said control circuit including
  1. input means for receiving the call signal;
  2. means for energizing said driving means only when said sensor senses no item present;
  3. means for energizing said drive means only when said sensor senses the presence of an item and the call signal is applied to said input means; and
  4. means for de-energizing said drive means upon sensing the presence of an item by said sensor; and
- e. means for stopping and restarting the motion of said item-moving mechanism for arresting the item in its own plane in said standby position upstream of said gripping zone of said feed means when said sensor senses the presence of the item and for subsequently advancing the item as a whole into the gripping zone of the feed means when said call signal is received by said input means.

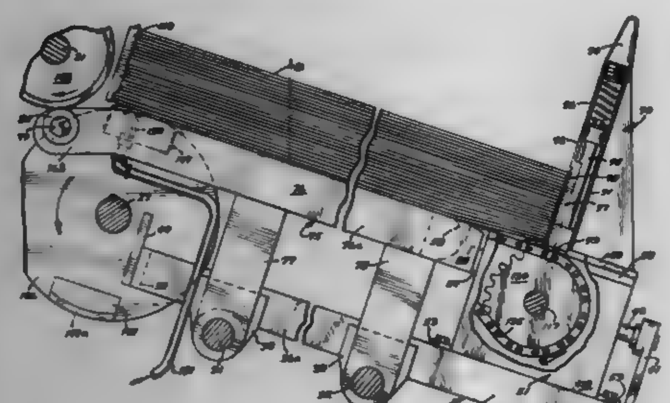
3,981,494
BLANK FEEDER APPARATUS

Paul G. Prestegaard, 201 Westwood Drive, Minneapolis, Minn. 55416

Filed May 8, 1975, Ser. No. 575,713

Int. Cl.² B65H *3/04, 3/06, 1/06*

U.S. Cl. 271—10 **39 Claims**



9. For successively feeding the lowermost blank from a generally vertical stack of blanks, one after another, in a longitudinally forward direction into a processing machine such as a carton folding machine, blank feeder apparatus comprising a frame, longitudinally extending slide means on the frame for supporting the stack of blanks, means on the frame for feeding the lowermost blank in the stack forwardly along the slide means into the processing machine, means on the frame and adjacent the front of the stack of blanks for blocking the movement of the stack of blanks other than the lowermost blank to said machine, and hold down means on the frame for constantly resiliently urging rear end portions of at least the lowermost part of the stack downwardly toward the slide means, said hold down means comprising a hold down member having forwardly facing serrations for engaging the stack rear edge portion, and means mounting the hold down member for limited generally vertical movement and constantly resiliently urging the hold down member downwardly.

3,981,495
PROCESS AND APPARATUS FOR SEPARATING SUPPLE SHEETS FROM A STACK

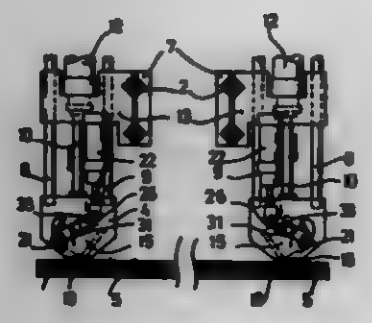
Gasper A. H. Bijttebier, Grote Heerweg 64, B -8749 Beveren (Leie), Belgium

Filed Oct. 24, 1974, Ser. No. 517,626

Claims priority, application Belgium, Oct. 26, 1973, 806540; Oct. 26, 1973, 806541; June 27, 1974, 816940

Int. Cl.² B65H *3/22*

U.S. Cl. 271—18.3 **9 Claims**



1. A process for separating one or more supple sheets from a stack comprising:

compacting the stack at least in the vicinity of its opposite lateral upper edges,

providing at least one sharp projection at each of said opposite lateral upper edges, the projections at one of said edges being opposite the projections at the other of said edges,

subsequently to the step of compacting the stack, introducing sharp projections obliquely in the sheet or sheets near said edges in order to engage the sheet or sheets to be removed, said projections being pointed outwardly toward their respective said edges,

slightly releasing the pressure on the stack,

moving said opposite projections apart in opposite directions in order to tighten the sheet or sheets to be removed, and

finally lifting from the stack the thus engaged and tightened sheet or sheets.

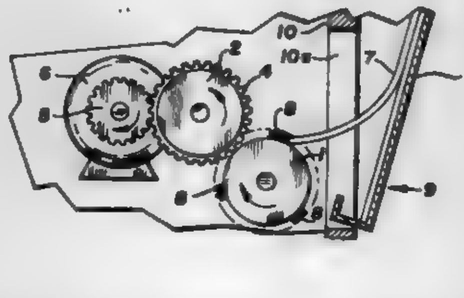
3,981,496
STRIPPING AND TRANSFER ROLLER ASSEMBLY FOR SHEET FILM PROCESSORS

Gerald A. Jensen, Wayzata, and Conrad E. Lee, Mound, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Oct. 14, 1975, Ser. No. 622,093

Int. Cl.² B65H *29/22*

U.S. Cl. 271—80 **2 Claims**



1. A stripping and transfer roller assembly for discharging individual sheets of film from a processing machine and comprising,

a first roller forming a stripping and transfer roller,

a plurality of soft compressible stripping and transfer elements mounted on said roller in circumferentially spaced relation therearound,

a second roller positioned in close parallel relation to said first roller compressing said elements when a sheet of film is being driven between said rollers to provide positive frictional driving contact between said sheet and said rollers,

a film receiving bin in close side by side relation to the stripping and transfer roller,

said rollers driving said sheet into said bin to maintain said sheet into a substantially upright position,

said elements expanding beyond the periphery of said first roller as they are rotated out of contact with said second roller to strip said sheet from said first roller, and

said expanded elements then being rotated into engagement with the trailing edge of said stripped sheet to transfer said trailing edge laterally towards said bin and depositing said sheet in upstanding position into said bin.

3,981,497
AUTOMATIC DOCUMENT ALIGNMENT METHOD AND APPARATUS FOR DOCUMENT FEED EQUIPMENT

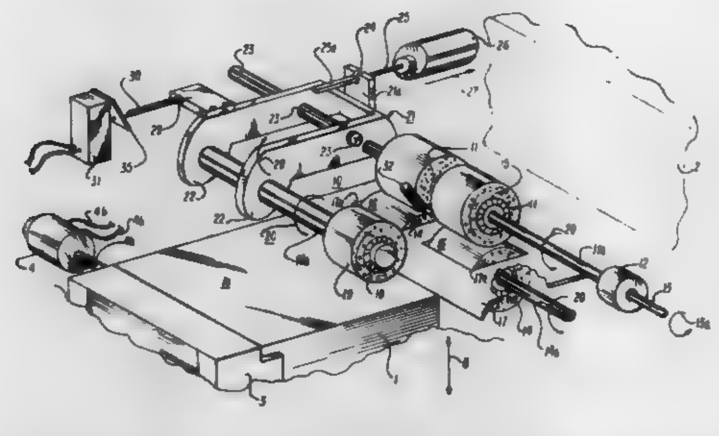
Paul Feinstein, Jr., and Gary Leo Sokol, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 23, 1975, Ser. No. 589,301

Int. Cl.² B65H *3/06, 5/06, 7/14*

U.S. Cl. 271—126 **3 Claims**

1. In apparatus for feeding documents from a stack and being of the type including a vertically movable platform for supporting said stack of documents, means for elevating said platform, a document feed assembly comprising a set of rotatably powered cooperating rollers and rotatably powered picker roller means pivotally mounted for respective disengagement from and engagement with said stack for advancing a document from said stack to the nip point of said cooperating rollers; the improvement wherein said apparatus further comprises a sensor assembly responsive to the leading edge of each document passing through said nip point for initially causing pivoting of said picker roller means out of engagement with said stack and further responsive to the trailing edge of each document to both interrupt the rotation of said cooperating rollers and allow said picker roller means to drop back into engagement with said stack and second means responsive to the momentum of said dropping picker roller means for incrementally elevating said document stack.



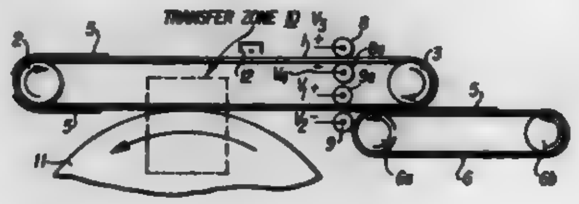
3,981,498
NON-UNIFORM CHARGING OF SHEET MATERIAL

Gerald M. Fletcher, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 24, 1975, Ser. No. 561,459

Int. Cl.² B65H *29/16*

U.S. Cl. 271—193 **11 Claims**



1. In a sheet material conveying apparatus having a conveying surface for conveying sheet material, the improvement comprising:

means for applying a non-uniform charge pattern over said conveying surface, and

means for applying a non-uniform charge pattern of opposite polarity over a surface of the sheet material being conveyed whereby an electrostatic tacking force holds the sheet material on the conveying surface, wherein both of said means comprises a roller having an outer cylindrical surface which is textured substantially throughout.

3,981,499
DEMAND LABEL TRANSFER WHEEL

Donald W. Watson, Arlington Heights, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 15, 1974, Ser. No. 524,092

Int. Cl.² B65C *9/08;* **B65H** *29/32*

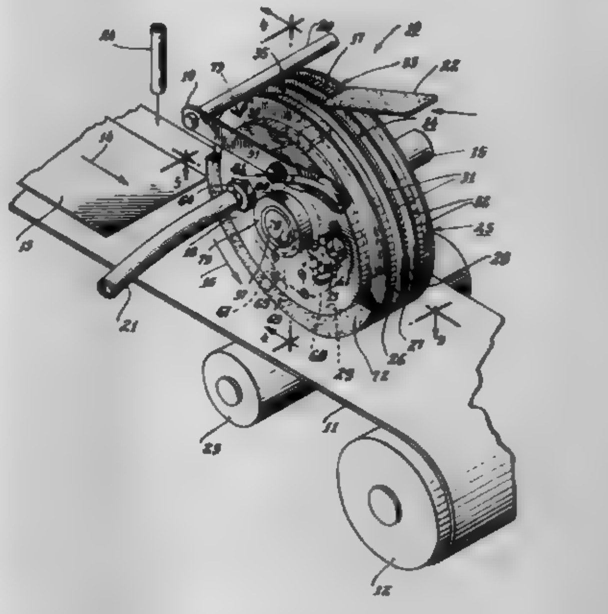
U.S. Cl. 271—276 **8 Claims**

1. A transfer wheel of the type responsive to a vacuum source for transferring a label from a first station to a second station, comprising:

a cylindrical structure having a circular cavity axially extending into a side thereof and a plurality of holes disposed about the cylindrical surface of the structure, said holes communicating with the cavity;

means, rotatably coupled to the structure, for providing from the cavity a chamber with a port, at least one of the holes communicating with the chamber;

said means including a plate rotatably coupled to the structure; an annular seal for providing a fluid tight seal between the plate and the structure; a first device, coupled to the plate, for providing a fluid tight radial wall in the cavity; and a second device, coupled to the plate, for providing another fluid tight radial wall in the cavity, said port being located in the plate, one of the devices being securely fastened to the plate and the other of the devices being rotatably coupled to the plate, whereby the angular distance between the walls may be varied, and whereby if the vacuum source is connected to the port and the cylindrical structure is rotated with respect to the means providing the chamber vacuum pressure is periodically applied to the holes.



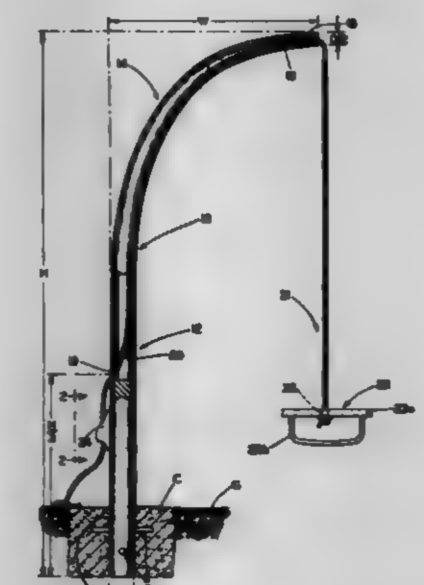
3,981,500
ADJUSTABLE SUPPORT APPARATUS

Vernon L. Ryan, 6802 Millikin Ave., Austin, Tex. 78723

Filed Oct. 17, 1974, Ser. No. 515,618

Int. Cl.² A63G *9/00*

U.S. Cl. 272—85 **15 Claims**



1. In combination:

an arcuate, flexible support rod, a channel being formed along the longitudinal axis of an upper portion of said rod;

a rope slidingly mounted in said channel, one end of said rope extending from an upper end of said rod, the upper end being substantially horizontal;

an opening in the upper portion of said rod adjacent a lower portion of said rod to allow the other end of said rope to extend from said rod;

a seat means connected to said one end of said rope; and

a quick-release locking means connected to said support rod for releasably securing said other end of said rope, the length of said rope extending from the upper end of said rod depending on the portion of said other end of said rope secured to said locking means.

3,981,501

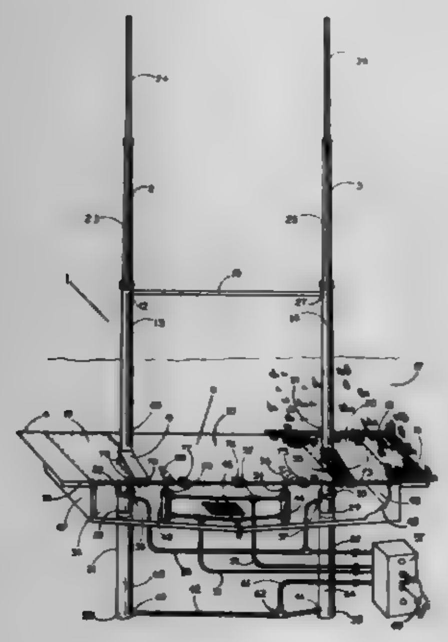
RETRACTIBLE GOAL POST

Ray Gonzalez; Roy Gonzalez, and Octavio Raymundo Gonzalez, all of 3427 Savannah Ave., El Paso, Tex. 79930

Filed Dec. 11, 1974, Ser. No. 531,699

Int. Cl.² A63B *67/00*

U.S. Cl. 273—55 R **5 Claims**



1. An extendible and retractable goal post device comprising two parallel and spaced apart vertically disposed goal posts connected by a horizontal member, each vertical post comprising an elongated bottom member and at least two coaxially telescoping tubes telescoping within said bottom member, each vertical post being extendible to vertically adjust said horizontal member to regulation goal post cross member height; the bottom end of each bottom member being mounted below ground level in a first hydraulic means, said hydraulic means cooperating to raise said post vertically to a fully extended position above ground level and to withdraw said post to a retracted position completely below ground level; said horizontal member extending between the upper end of each bottom member and being connected thereto; said device further comprising a subterranean casing means for housing said goal posts and said horizontal member in their retracted position, said casing means being provided with hydraulically activatible hinged lid means at ground level, said lid means being adapted to be raised to a substantially vertical position by a second hydraulic lifting means to permiit entry and exit of said goal posts and horizontal member into and from said casing and further being adapted to be lowered to a position flush with the ground; said lid means providing a covering for said casing when said goal posts and horizontal member are retracted or extended.

3,981,502

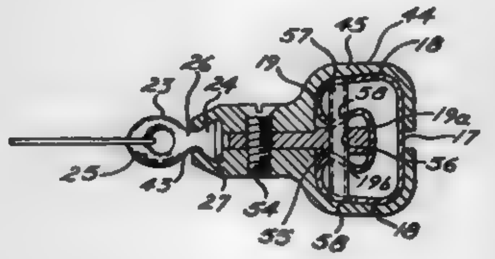
YOKE FOR GAME RACKET

William E. Portz, North Madison, Ohio, assignor to True Temper Corporation, Cleveland, Ohio

Division of Ser. No. 264,820, June 21, 1972, Pat. No. 3,908,995. This application Aug. 21, 1975, Ser. No. 606,541

Int. Cl.² A63B *49/02*

U.S. Cl. 273—73 G **11 Claims**



1. A game racket comprising an elongated frame member formed into a loop, converging portions forming a throat, and handle portions extending beyond said throat, said racket having a longitudinal axis; said loop having means for mounting strings thereto; a yoke connecting said converging portions across said throat; said yoke comprising a pair of complementary plate members having body portions disposed parallel with the plane of said loop; grip portions disposed at the ends of said body portions affording converging channels opening toward each other and nested over said converging portions; said body portions having edge portions closing said loop extending between said grip portions; a flat spacer of substantially the same shape as said body portions disposed between said body portions; said edge portions of said body portion having means for mounting strings thereto; and means securing said body portions and spacer together whereby said grip portions firmly engage said converging portions.

3,981,503

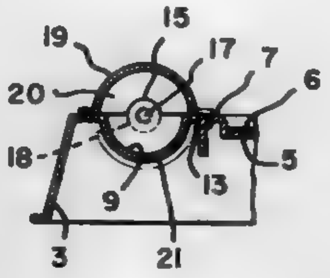
GAME BOARD WITH GAME PIECE STORAGE AREA

Mitsuo Tsukuda, 3-1-3 Moto-Askusa, Taito, Tokyo, Japan

Continuation of Ser. No. 481,204, June 20, 1974, abandoned. This application Nov. 14, 1975, Ser. No. 632,114

Int. Cl.² A63F *3/00*

U.S. Cl. 273—136 K **2 Claims**



1. A rectangular game board provided with an integrally formed raised support at its edges,

said game board having a rectangular upper playing surface upon which flat circular play pieces are deployed, a raised bead portion surrounding said playing surface and being an integral part of said game board and a marginal extension outwardly from a pair of opposite sides of the bead portion,

said game board having a depressed portion in at least one of said marginal extensions below and adjacent said surface forming a groove which is semicircular in cross-section and having end walls,

said groove forming a storage area for the play pieces,

a cover for the storage area comprising a semicircular cylindrical member having end walls and of slightly larger diameter than said groove,

cooperating means on the end walls of the groove and cover substantially along their axes for mounting the cover for rotary movements about said axes,

said game board having a slit therethrough along a side and a portion of the ends of the groove from said side to said cooperating means for receiving the cover and its end walls when moved to open about its rotary axis the portion of said slit along said side of said groove being coextensive with and in the path of rotation of said cover.

3,981,504

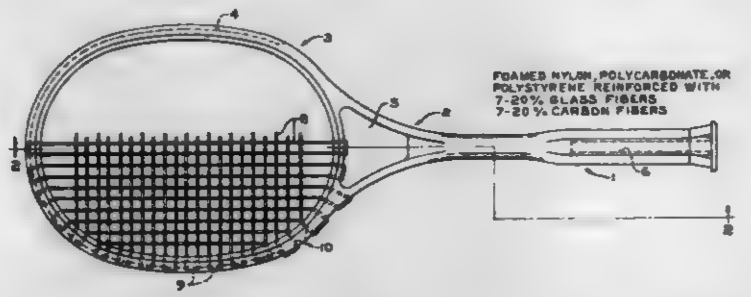
GLASS-CARBON REINFORCED FOAMED RESIN TENNIS RACKET FRAME

John D. Gugel, Columbus, Ind., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 452,302, March 18, 1974, abandoned. This application Nov. 25, 1974, Ser. No. 526,648

Int. Cl.² A63B *49/10*

U.S. Cl. 273—73 F **6 Claims**


FOAMED NYLON, POLYCARBONATE, OR POLYSTYRENE REINFORCED WITH 7-20% GLASS FIBERS 7-20% CARBON FIBERS
4
3
5
2
10
9
2

1. A tennis racket frame comprising a unitary, injection molded tennis racket frame constructed of a fiber glass - carbon reinforced foamed resin having a specific gravity of less than 1, said resin frame having a head member, a handle section and an intermediate throat portion, a cellular core and a noncellular dense outer shell and containing at least 7 percent by weight glass fibers and at least 7 percent by weight carbon fibers, said fibers being oriented in a longitudinal plane in a random pattern relative to each other and following the contour of said frame with their long axes paralleling the longitudinal axis of said frame and wherein said fibers have an L/D ratio of at least 125 for the glass fibers and at least 225 for the carbon fibers

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3,981,505

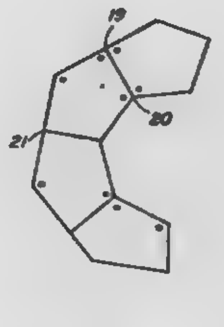
PUZZLE WITH IRREGULAR PENTAGONAL PIECES

Marc G. Odier, 85 Blvd. Exelmans, Paris 16, France

Filed Mar. 1, 1973, Ser. No. 337,117

Int. Cl.² A63F *9/10, 9/20*

U.S. Cl. 273—157 R **2 Claims**



1. A puzzle comprising:

a plurality of substantially identically shaped planar puzzle pieces, each being in the form of an irregular pentagon having sides of substantially equal length and having apices defining consecutive angles of approximately 131°, 90°, 114°, 114° and 90°;

means forming indicia of value at each apex of at least one side of each puzzle piece, said indicia of value being selected from M possible values and where M is at least equal to two;

said indicia being formed on each side of each of said puzzle pieces with each side of each apex having identical indicia whereby turning over of each piece presents a mirror image of the configuration of indicia presented by that piece before turning over, said puzzle including twenty puzzle pieces, the total number of indicia configurations being thirty-two.

3,981,506

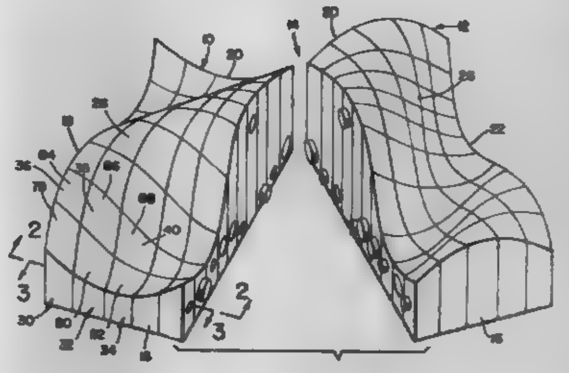
THREE DIMENSIONAL RELIEF PUZZLE

Wayne A. Daniel, and Bryan D. Daniel, both of Sterling Heights, Mich., assignors to Vesta, Sterling Heights, Mich.

Filed June 23, 1975, Ser. No. 589,468

Int. Cl.² A63F *9/12*

U.S. Cl. 273—157 R **3 Claims**



1. A three-dimensional relief puzzle comprising a plurality of puzzle pieces which are required to be initially assembled and fastened into a plurality of rows and subsequently assembled and fastened by rows into a composite having a rectilinear periphery, said puzzle pieces having substantially identical cross sectional areas and having varying heights substantially greater than the widths thereof, said puzzle pieces having planar side faces which are adapted to mate with each other in a predetermined manner to collectively form said composite, interlock means of varying sizes randomly disposed at predetermined varying heights in said side faces of said pieces except said faces which form peripheral surfaces of said composite, for securing said puzzle pieces to each other in said predetermined manner, said interlock means comprising projection means of varying size extending from the side faces of predetermined pieces of said puzzle and corresponding openings for close mating engagement with said projection means when said pieces are assembled into said rows and subsequently into said composite, said interlock means being thus disposed at a plurality of different heights throughout said composite, said puzzle pieces when assembled into said composite forming a planar lower surface and a curved upper surface describing a physical embodiment of a regular three-dimensional mathematical function.

3,981,507

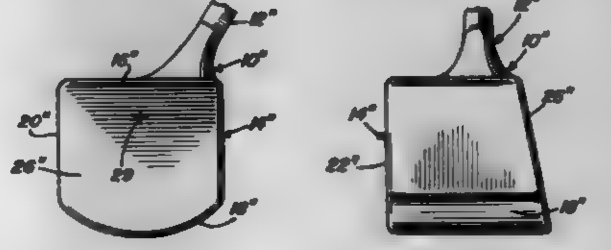
GOLF CLUB HEAD CONSTRUCTION

Charles Nunziato, Rte. No. 1, Westville, Fla. 32464

Filed July 22, 1974, Ser. No. 490,869

Int. Cl.² A63B *53/04*

U.S. Cl. 273—164 **1 Claim**



1. A golf club including an upstanding shaft portion having an enlarged head supported from its lower end, said head

including top and bottom sides, generally parallel opposite inner and outer sides and front and rear sides, said shaft portion being slightly upwardly and outwardly inclined from the inner side of said head and being joined to the top side of said head adjacent said front side and said inner side thereof, said outer, rear and top sides being substantially mutually right angularly disposed, said front side being at least slightly rearwardly and upwardly inclined relative to said rear side, said bottom side being cylindrically convex about a front-to-rear extending axis, the radius of curvature of said convex bottom side being less than the maximum spacing between said top and bottom sides and the spacing between said inner and outer sides, said front side being inclined more than ten degrees relative to a vertical plane containing said shaft portion.

3,981,508

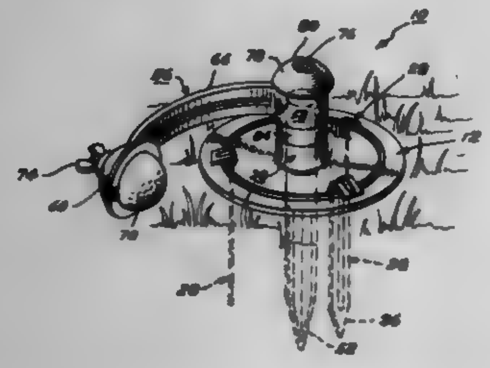
GOLF PRACTICE DEVICE

Jeffrey M. Koblick, Hopkins, Minn., assignor to K-tel International, Inc., Minnetonka, Minn.

Filed Nov. 28, 1975, Ser. No. 635,805

Int. Cl.² A63B *69/36*

U.S. Cl. 273—200 B **5 Claims**



1. An improved device for permitting right handed and left handed golfers to practice their golf swings in a relatively restricted or confined area, comprising:

a molded plastic body including a flat, generally circular base which has an upper surface and a lower surface that is adapted to be in contact with the ground or the like; the body also including a center post which projects upwardly from the upper surface of the base and which is disposed so that its central longitudinal axis is substantially coaxial with the center of the base and is substantially perpendicular to the plane of the lower surface of the base; the base having a plurality of evenly spaced apertures disposed about its periphery, each of these apertures being adapted to receive a peg which is to be driven into the ground or the like and which is utilized to secure the body to the ground or the like; the center post comprising a first cylindrical portion and a second smaller diameter, cylindrical portion, with the first cylindrical portion being adjacent to the upper surface of the base, with a shoulder being formed at the juncture of the first and second cylindrical portions; and with the upper end of the second cylindrical portion terminating at an upper closed end; the center post also having an internal recess formed therein which extends from the lower surface of the base upwardly into the center post and which is open, adjacent to the lower surface of the base so as to permit access to the recess from without the body and so as to receive the upper end of a center pin which is to be driven into the ground or the like and which is utilized to restrain the body from movement with respect to the ground; a bolt having a threaded shank and being pressed into the upper, closed end of the second cylindrical portion of the center post so that the longitudinal axis of the threaded shank of the bolt is substantially coaxial with the central longitudinal axis of the center post and so that the threaded shank of the bolt projects upwardly beyond the upper closed end of the second cylindrical portion of the center post; an elongated, curved, molded plastic arm having a cylindrical, vertically disposed collar formed at one end thereof and having a horizontally facing cup formed at its other end, the collar being disposed about the second portion of the center post so that the central longitudinal axis of the collar is coaxial with the central longitudinal axis of the center post and so that the arm may be rotated in a horizontal plane about the central longitudinal axis of the center post and spaced a preselected distance above the upper surface of the base, the cup having a substantially hemispherical shaped, inner concave surface and having a centrally disposed aperture formed therethrough, the length of the arm, from the collar to the cup, being greater than the radius of the base so that the cup is positioned beyond the periphery of the base; a ball-like member having the appearance of a golf ball and being disposed in the cup so that at least a portion of the ball-like member is positioned without the cup and is visible to the golfer using the practice device; a double threaded ended stud, one end of which is screwed into the ball-like member and the other end projecting through the aperture in the cup; wing nut means for engaging the other threaded end of the stud for preventing the removal of the ball-like member from the cup; spacer ring means, mounted on the second cylindrical portion of the center post, for adjusting the height of the arm above the upper surface of the base between a first lower position and a second upper position; and a molded plastic cap, including a lower surface and having a horizontally disposed nut enclosed therein, the nut being threadedly engageable with the threaded bolt mounted in the upper end of the second portion of the center post, and the cap, when the nut threadedly engaged the threaded bolt, preventing the collar and spacer ring means from being removed from the center post.

3,981,509

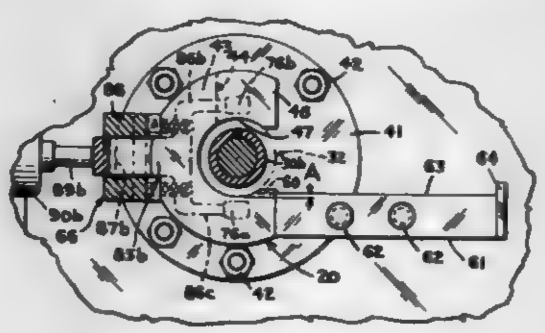
LATCHING MEANS FOR RELEASABLY SUPPORTING A DRIVEN ROTATABLE MEMBER

William R. Myer, Frenchtown, N.J., assignor to Geometric Machine and Design Corporation, Woodbridge, N.J.

Filed Oct. 31, 1974, Ser. No. 519,548

Int. Cl.² B23B *33/00*; B23Q *1/08*

U.S. Cl. 279—1 R **15 Claims**



1. A support and latching means for a rotatable member comprising:

a. a base for connecting the support and latching means adjacent to the end of the rotatable member to be supported,
b. means forming a bearing in the axial line of the rotatable member,
c. means forming an arcuate wall shaped to define a transfer cavity in the axial line of the rotatable member and concentric with the bearing,
d. said arcuate wall means having a first portion thereon forming the lower support section of the transfer cavity and a second portion thereon continuous with the first portion forming an upper side section of the transfer cavity,

e. the upper side section of the arcuate wall means disposed on one side of a plane intersecting the vertical axis through the center of the transfer cavity and extending from the lower support section to a point short of said plane of intersection with the vertical axis so as to define a transport opening for movement of the rotatable member to be supported into and out of the transfer cavity,
f. means so connected adjacent the lower support section and on the side thereof opposite from the upper side section as to provide a supporting surface slightly higher than and parallel to a plane tangent to the lowermost portion of the transfer cavity formed by the lower support section of the arcuate wall means.

3,981,510

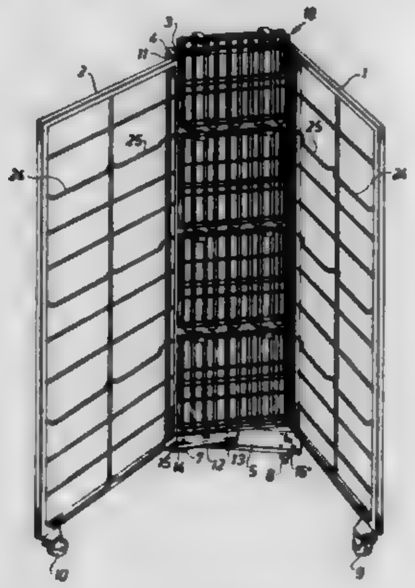
TRANSPORT CARRIAGE

Nils Henry Gustafsson, Alvsjo, Sweden, assignor to Swepall AB, Stockholm, Sweden

Filed June 3, 1975, Ser. No. 583,411

Int. Cl.² B62B *3/02, 11/00*

U.S. Cl. 280—33.99 H **14 Claims**



1. Transport carriage comprising a horizontally extending supporting means having at least one running wheel, and a vertically extending frame, said frame comprising a rigid rear wall and a pair of rigid side walls, at least one side wall being pivotally connected to said rear wall, a bearing pin interconnecting said supporting means and the rear wall of said frame to permit said frame to pivot about a vertical axis with respect to said supporting means, and at least one running wheel provided at the forward portion of each of said side walls, said frame being pivotal about said bearing pin, and said pivotal side wall being movable with respect to said rear wall between a first position wherein said side walls are parallel to each other for transport condition and a second position wherein said side walls diverge outwardly into nesting condition with another similarly constituted transport carriage.

3,981,511

DISPENSING CART

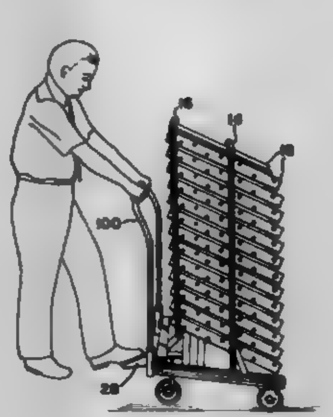
Lawrence Foster, 11 Ogden Road, Scarsdale, N.Y. 10583

Filed Feb. 12, 1975, Ser. No. 549,288

Int. Cl.² B62B *5/00*

U.S. Cl. 280—79.3 **14 Claims**

1. A dispensing cart comprising a main frame including a base, a first rigid frame member extending vertically from said base and a second frame member extending parallel to said first frame member and mounted for relative vertical movement with respect thereto; a plurality of shelves pivotally connected, in superimposed relation, to both of said frame members for movement between a first horizontal position and an inclined position tilted towards one side of the main frame, and means for raising and lowering said second frame member relative to said first frame member to move said shelves between said two positions, including a lever pivotally mounted on said base, a link pivotally connected at opposite ends to said second frame member and to said lever to raise and lower the second frame member upon pivotal movement of the lever in opposite directions, and a support arm rigidly secured to the lever and having a free end adapted to engage



the support surface on which the cart is placed when the lever is moved to the position in which said second frame member is raised; said arm being dimensioned to support said base adjacent the lever in a raised position, whereby articles on said shelves will move on the shelves towards said one side of the main frame when said shelves are tilted.

3,981,512

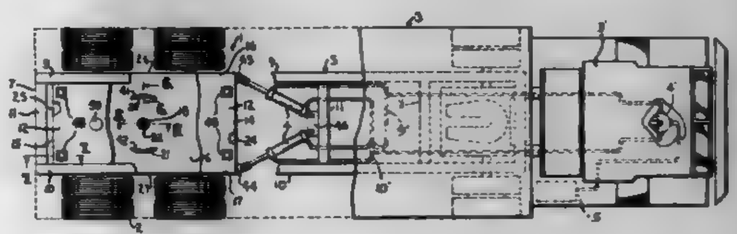
REAR WHEEL STEERING SYSTEM

Marvin D. Westover, Rte. No. 1, Amoret, Mo. 64722

Filed Mar. 24, 1975, Ser. No. 561,157

Int. Cl.² B62D *53/00*

U.S. Cl. 280—81.5 **4 Claims**



1. In a tractor-trailer combination:

a. a towing vehicle;
b. a trailer having a forward end adapted to be pivotally connected to said towing vehicle, said trailer having an elongated frame with a pair of spaced longitudinally extending side members connected by a plurality of longitudinally spaced transverse cross members;
c. a frame member fixed on the trailer frame adjacent a rear end thereof and extending under each of the trailer frame side members, said frame member having a downwardly facing bearing surface;
d. a rear wheel assembly having a mounting member with load carrying axles having rotatable ground engaging wheels, said mounting member being resiliently supported by said axles, said mounting member being under said frame member and having an upwardly facing bearing surface engaging the downwardly facing bearing surface of said frame member;
e. means on said frame member and mounting member pivotally connecting same together for rotative movement of said mounting member on a vertical axis centrally of the rear wheel assembly and on a longitudinal center of the trailer frame;
f. laterally spaced fluid actuated extensible members each having one end pivotally connected to a leading portion of the mounting member and the other end pivotally connected to the frame of the trailer forwardly of said mounting member and extension of one and contraction

of the other extensible members operates to rotate the rear wheel assembly about said vertical axis;

g. said mounting member having lock recesses each substantially spaced outwardly from said vertical axis;

h. lock structures on the frame member and an end having a lock tongue registering with a respective lock recess when the rear wheel assembly is in position for movement of the trailer in a straight longitudinal line and normally engaged in said lock recesses to retain the rear wheel assembly in said position;

i. means controlled from within the towing vehicle and operative to simultaneously release the lock tongues from the lock recesses to permit turning of the rear wheel assembly about said vertical axis; and

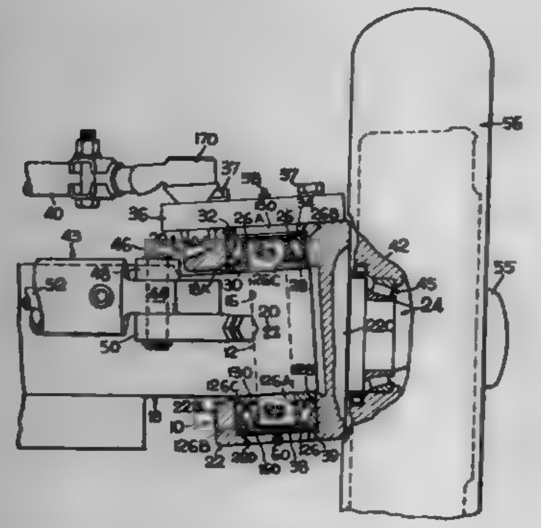
j. means controlled from within the towing vehicle and operative to selectively apply fluid pressure to said pair of extensible members to turn the rear wheel assembly about said vertical axis for steering the rear end of the trailer.

3,981,513
STEERING AXLE ASSEMBLY
Douglas W. Erskine, Homewood, Ill., assignor to Allis-Chalmers, Rumely, Ltd., Guelph, Canada

Filed May 27, 1975, Ser. No. 581,123

Int. Cl.² B62D *7/06*

U.S. Cl. 280—95 R **5 Claims**



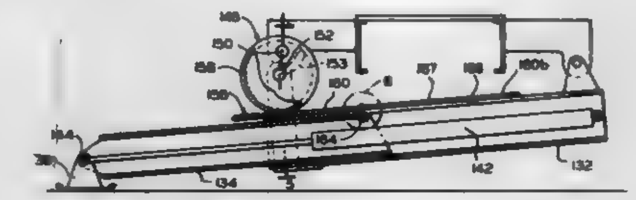
1. A steering axle assembly for use on a vehicle, comprising a king pin extending through and secured to a transverse axle of the vehicle contiguous an end of the transverse axle, said king pin including opposite end portions thereof respectively extending above and below said transverse axle, a steering spindle comprising upper and lower flange members connected by a main body portion, said upper and lower flange members being respectively journalled for angular steering rotation about said end portions of said king pin which respectively extend above and below said transverse axle, a separate tapered roller bearing assembly interposed between each respective end portion of said king pin and the corresponding steering spindle flange, a stub axle carried by said main body portion of said steering spindle, said stub axle being adapted to support a wheel for rotation thereon, a steering arm having a portion thereof overlying and rigidly secured by threaded fastening means to the normally upper end of said steering spindle in covering relation to the normally upper end of said king pin and in covering relation to at least a portion of the normally upper end of said steering spindle, said steering arm being additionally in overlying covering relation to said tapered roller bearing assembly which is interposed between said upper flange member and the corresponding end portion of said king pin, and means interposed between the under surface of said steering arm and the upper surface of said last-mentioned tapered roller bearing assembly and acting in combination with the overlying connection of said steering arm to the upper end of said steering spindle whereby to simultaneously adjust the respective tapered roller bearing assembly which lies between each respective end portion of said king pin and the corresponding flange member of said steering spindle, said steering arm including a lever portion extending beyond said steering spindle to define a lever by means of which a steering torque is communicated to said steering spindle, said lever portion of said steering arm being adapted to be connected to link means for imparting a steering torque to said steering arm.

3,981,514
OUTRIGGER
Peter J. Visser, Niles, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Continuation-in-part of Ser. No. 406,749, Oct. 15, 1973, Pat. No. 3,909,040. This application Feb. 18, 1975, Ser. No. 550,403

Int. Cl.² B60S *9/02*

U.S. Cl. 280—765 **4 Claims**



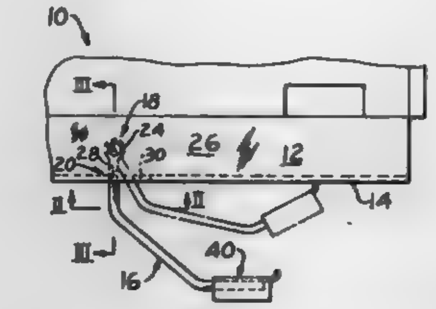
1. An outrigger for a machine having a frame, the outrigger comprising an outer elongated member, a connection adjacent one end of the said outer member pivotally connecting the outer member to the frame, an inner member within the said outer member and movable outwardly and inwardly of the said outer member, power means for selectively moving the said inner member, and movable guide and support means interconnected between the said outer member and frame and responsive to movement of the inner member for causing the outrigger to pivot away from the frame during outward movement of the said inner member, the said movable guide and support means including a support member pivotally supported on the frame and a depending support structure extending beneath the said outer member and pivotally connected on a different axis to the said pivotal support member.

3,981,515
MOVABLE STEP OF A VEHICLE
Dean E. Rosborough, Blue Mound, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 22, 1975, Ser. No. 615,260

Int. Cl.² B60R *3/02*

U.S. Cl. 280—166 **4 Claims**



1. In a vehicle having a frame portion having a lower edge surface and a step member pivotally connected to the frame portion for generally upward and downward movement of the step member relative to the frame portion, the improvement comprising:

means pivotally connecting the step member to the frame at a location adjacent and spaced upwardly from the lower edge surface of said frame portion; and

a stop positioned at about the lower edge portion of the frame at an elevation greater than the lower edge surface of said frame portion and at a preselected location relative to the pivotally connecting means for restraining the step member against pivotal movement below a preselected elevation, said stop being an edge portion of a frame opening extending through the frame with the step member extending through said opening, said opening extending from a first end immediately adjacent the step along the frame to a second end of the opening with said second opening end being greater than said first opening end as measured transverse the frame.

3,981,516
BICYCLE AND TRICYCLE OF LOW WIND RESISTANCE AND OF LOW CENTER OF GRAVITY
Björn Häggkvist, Garvar Lundins Grand 7, Stockholm, Sweden

Filed Mar. 21, 1975, Ser. No. 560,953

Claims priority, application Sweden, Mar, 29, 1974, 7404244

Int. Cl.² B62K *5/06*

U.S. Cl. 280—263 **5 Claims**

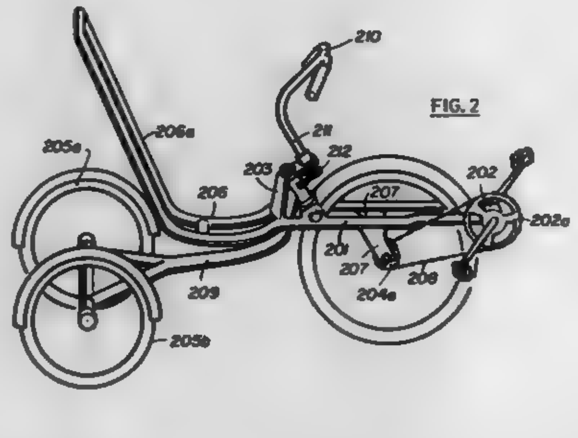


FIG. 2

1. A vehicle comprising in combination a forward frame having a front wheel rotably mounted at a forward point thereof, a depressed middle seat part, and an upwardly inclined rear back rest part; a rear frame positioned in tandem below and partly behind said first frame, the forward part of said rear frame being upwardly inclined, the front of said rear frame being pivotally joined to said forward frame at a place in said forward frame which is between the forward part of the seat part of said frame and the rear part of the front wheel of said vehicle, said pivot being inclined at such angle that the axis thereof, extended downwardly, substantially intersects the point of said forward wheel which normally is in contact with the ground, at least one of said frames being longer than half the wheelbase of said vehicle; at least one rear wheel being rotably mounted at a rear portion of said rear frame; means to pivot said frames relative to each other and thereby steer said vehicle; and drive means for said vehicle.

3,981,517
COUPLING MECHANISM ADAPTED TO LATCH OBJECT TO OBJECT SUBSTANTIALLY COTERMINOUSLY WITH UNCOVERING UNIVERSAL MOVEMENT MEANS BETWEEN OBJECTS
Gerald J. Crochet, Sr., 508 Beverly Drive, Lafayette, La. 70501

Continuation-in-part of Ser. No. 302,862, Nov. 1, 1972, Pat. No. 3,866,948. This application Feb. 18, 1975, Ser. No. 550,854

Int. Cl.² B62D *53/00*

U.S. Cl. 280—478 R **21 Claims**

1. Coupling apparatus for coupling first and second objects together for travel in tandem and including first coupling means carried by said first object and second coupling means carried by said second object:

said second coupling means comprising second latch means;

said first coupling means comprising:

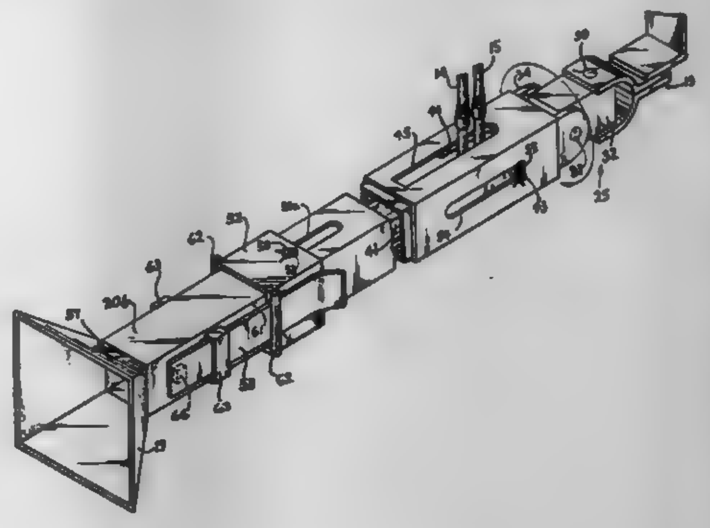
a universal joint assembly including an end component distal said first object and operative to permit pivotal movement of said end component with respect to said first object about three generally mutually perpendicular axes;

a universal joint control assembly;

one of said assemblies being connected to said first object; and

an extendable mechanism longitudinally extendable from said first object and retractable toward said first object, said extendable mechanism including first latch means linked to said end component of said universal joint assembly and operative upon extension of at least a portion of said extendable mechanism to automatically engage said second latch means and thereby effect coupling of said first and second objects, said extendable mechanism further including the other of said assemblies, said other assembly having a first position with respect to said one assembly in which said universal joint assembly is locked against said pivotal movement and a second position with respect to said one assembly in which said universal joint assembly is freed for said pivotal movement, said other assembly being movable from said first position to said second position upon extension of said extendable mechanism; and

drive means connected to said extendable mechanism for extending and retracting said extendable mechanism.

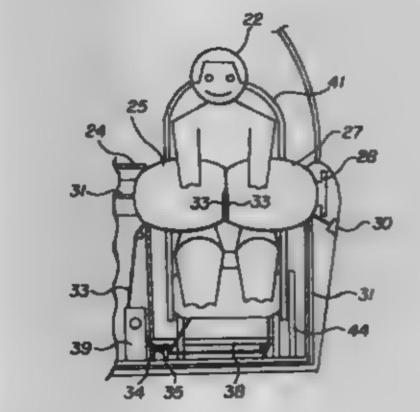


3,981,518
VEHICLE RESTRAINT SYSTEM
Nathaniel H. Pulling, East Orleans, Mass., assignor to Liberty Mutual Insurance Company, Boston, Mass.

Filed May 5, 1975, Ser. No. 574,285

Int. Cl.² B60R *21/08*

U.S. Cl. 280—730 **6 Claims**



1. A safety system comprising:

a vehicle for providing human transportation, said vehicle comprising a front end that leads said vehicle during normal movement thereof;
seating means including a seat for accommodating a passenger of said vehicle, said seat comprising a substantially horizontal base portion for supporting the buttocks of the passenger and a substantially vertical back rest portion for supporting the back thereof;
inflatable air cushion means comprising a pair of independently inflatable bags one disposed on each side of said seat so as to be forced upon inflation into mutually engaging positions adjacent the abdomen of the passenger;
collision responsive detector means for simultaneously inflating said bags in response to detection of a collision or impending collision of said vehicle;
lateral support means for restraining the self-induced lateral thrust produced by engagement of said inflated bags, said support means comprising a support member on each side of said seat; and
a flexible, non-elastic restraint means secured to each of said bags so as to restrain upward movement thereof, one of said restraint means having one end secured to the mutually engaged surface of one of said bags and the other said restraint means having one end secured to the mutually engaged surface of the other bag, the opposite ends of said restraint means being secured to said vehicle.

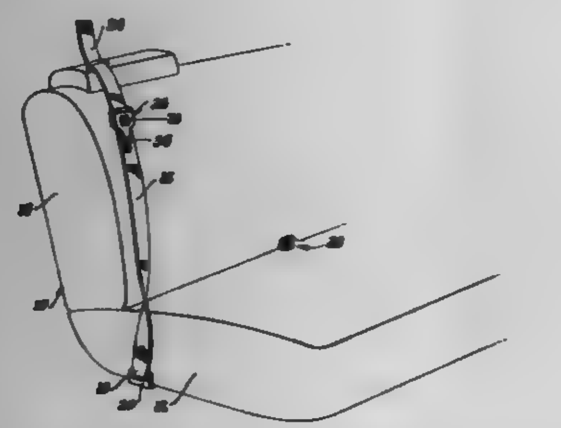
3,981,519
RESTRAINT BELT BUCKLE ASSEMBLY

Roy S. Cataldo, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 28, 1975, Ser. No. 599,855

Int. Cl.² B62B *35/00*

U.S. Cl. 280—744 **3 Claims**



1. In a seat belt assembly having a buckle member attached to a length of seat belt for movement with the belt between restraining and stored positions and a latch member mounted on a member of the vehicle body, the combination comprising: the buckle member having a buckle member housing, a round cylindrical pintle attached to the buckle member housing and having an end projecting therefrom, a plunger telescopically mounted inside the pintle and having a normal retracted position inside the end of the pintle, occupant actuatable means on the buckle member housing for selectively moving the plunger from the normal retracted position to an extended position, the latch member having a latch member housing with a round cylindrical opening for receiving the pintle of the buckle member at any degree of orientation of the pintle about its axis, latch means carried by the latch member housing and lockingly engageable with the pintle to retain the pintle in the latch member, and release means in the latch member being actuated upon movement of the plunger to the extended position by the occupant actuatable means to disengage the latch means from locking engagement of the pintle.

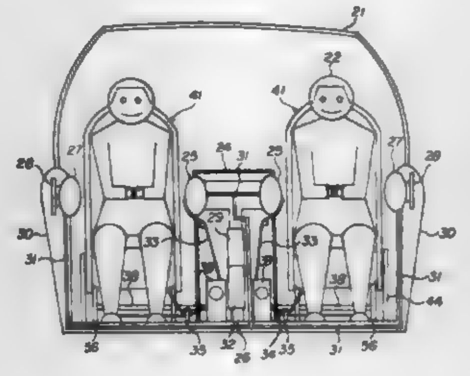
3,981,520
PROTECTIVE ENCLOSURE FOR PASSENGERS OF TRANSPORT DEVICES

Nathaniel H. Pulling, Framingham, Mass., assignor to Liberty Mutual Insurance Company, Boston, Mass.

Filed May 5, 1975, Ser. No. 574,286

Int. Cl.² B60R *21/10*

U.S. Cl. 280—748 **9 Claims**



1. A vehicle safety system comprising:
an occupant seat means;
detector means activated in response to a collision condition of said vehicle;
occupant restraint means movable into an occupant restraining position in response to activation of said detector means; and
mover means for moving said seat into and occupant protecting position, activated by said restraint means moving into said restraining position.

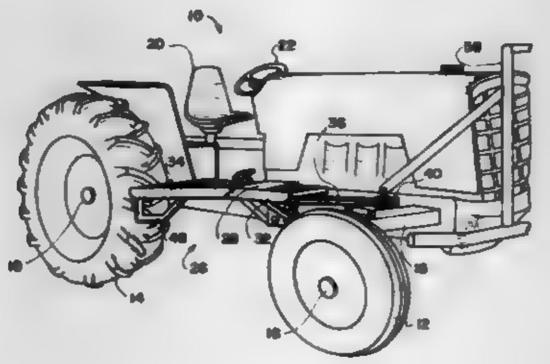
3,981,521
BRUSH GUARD FOR TRACTOR

Roy H. See, Rte. 1, Bidwell, Ohio 45614

Filed June 5, 1975, Ser. No. 584,112

Int. Cl.² B60R *19/00*

U.S. Cl. 280—760 **10 Claims**



1. Apparatus for mounting on a tractor having both a front and a rear axle with wheels on each end of each axle, said apparatus serving to (1) protect the driver from branches whipping upward after they are passed over by the front axle and (2) prevent obstructions which project upward above the level of either axle from immobilizing the tractor by passing into the zone defined by the two axles and two imaginary lines extending longitudinally from each end of the front axle to the end of the rear axle, on the same side of the tractor, the ends of the two lines being about at the center of rotation of each wheel, the apparatus comprising two guards, one for each side of the tractor,
each guard including a first bar attached to the tractor body at a spot above the level of the front axle, each said bar extending outward and backward from said tractor body generally toward the outside peripherial edge of the adjacent rear wheel,
each said bar being attached to a separate cross-piece, each cross-piece being attached to one side of the tractor body about equidistant between the front and rear axles, each cross-piece extending outwardly from the tractor body a distance about equal to the distance of the adjacent front wheel from the tractor body,
a front deflector bar being attached to and extending from each cross-piece toward the center of rotation of the adjacent front wheel, each deflector bar terminating just short of the rearmost extension of the adjacent wheel,
a rear deflector bar on each side of the tractor being attached to and extending from the adjacent cross-piece toward the outermost periphery of the adjacent rear wheel, each rear deflector bar terminating just short of the forwardmost extension of the adjacent wheel,
all parts of said guard being disposed at a level at least as high as the lowermost portion of either axle.

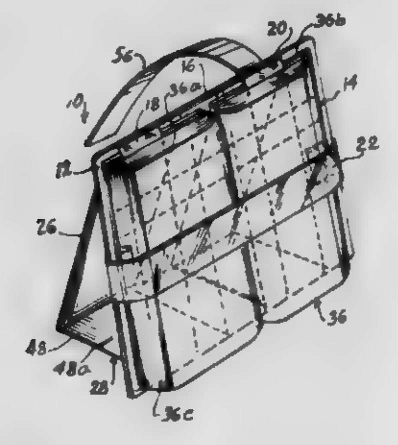
3,981,522
BOOK HOLDER

William Bloom, North Bergen, N.J., assignor to Emjay Industries, Inc., Hoboken, N.J.

Filed May 28, 1975, Ser. No. 581,471

Int. Cl.² B42D *3/04*

U.S. Cl. 281—34 **3 Claims**



1. A bookholder, comprising:
a. a pair of cover panels,
b. a back panel hingedly connected between said cover panels,
c. book-holding means on said cover panels, and
d. a spring element extending transversely of and mounted in said cover and back panels,
e. said spring element being secured to said cover and back panels and normally extended in a generally common plane to support the book holder in a substantially flat, open position,
f. said spring element being bendable transversely of its length when the book holder is closed,
g. said spring element comprising a resilient strip formed with a transverse curve along its length to provide it with structural stiffness and to keep it in extended position,
h. whereby the book holder is held in open position,
i. said resilient strip being transversely bendable to flatten its transverse curve when the book holder is closed,
j. the book-holding means comprising a pair of book-holding bands which are secured at their upper ends to the upper ends of the cover panels and which are secured at their lower ends to the lower ends of the cover panels,
k. said book-holding bands and said cover panels forming pockets between them which are adapted to receive and hold the covers of a book, whereby the book is held in place on said book holder,
l. a strut provided on the back of the cover and back panels to support them in easel fashion,
m. said strut being hingedly connected at its upper end to the upper ends of said cover and back panels,
n. restraining means interconnecting the lower end of said strut with the lower ends of said cover panels,
o. said restraining means being foldable to enable the strut to swing to a position substantially flat against the cover and back panels,
p. said strut being formed of a pair of superposed flexible plastic sheets which are joined along their respective edges and are provided with a pair of spaced stiffener boards between them,
q. whereby the strut is structurally capable of supporting the book holder and a book held thereon, in easel fashion,
r. said strut being foldable in the space between its stiffener boards to coincide with the hinging action between the back and cover panels,
s. a book-holding strap transversely disposed across the book holder,
t. means securing one end of said book-holding strap to one cover panel adjacent its outer side edge, and
u. means securing the opposite end of said book-holding strap to the other cover panel adjacent its outer side edge,
v. said book-holding strap being adapted to hold a book on the book holder.

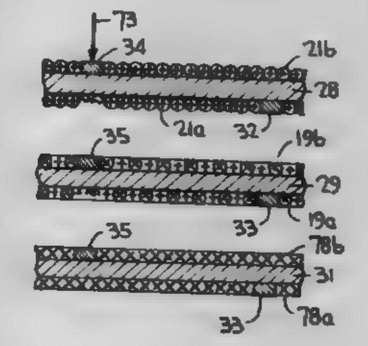
3,981,523
CARBONLESS MANIFOLD BUSINESS FORMS

George E. Maalouf, Niagara Falls, N.Y., assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.

Filed Mar. 24, 1975, Ser. No. 561,623

Int. Cl.² B41L *1/16*

U.S. Cl. 282—27.5 **8 Claims**



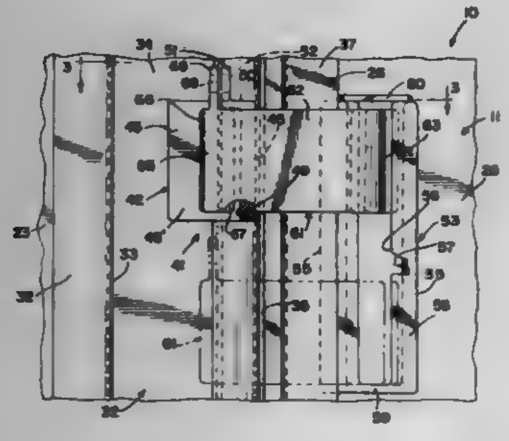
1. A manifold set of carbonless recording sheets comprising:
a stack including at least three superimposed sheets;
the initially uppermost and the middle sheets each having a coating on their respective back surfaces and the initially lowermost sheet having a coating on its front surface;
the back coating of the middle sheet comprising, as a reactive component thereof, a first reactive component of a first initially colorless color forming reaction system, and the front coating of the initially lowermost sheet comprising, as a reactive component thereof, a second reactive component of said first reaction system;
the front coating of the initially lowermost sheet also comprising, as a reactive component thereof, a first reactive component of a second initially colorless color forming reaction system and the back coating of the initially uppermost sheet comprising, as a reactive component thereof, a second reactive component of said second reaction system,
said first and second components of the first reaction system being capable of interreacting to produce a colored mark upon coming into reactive contact,
said first and second components of the second reaction system likewise being capable of interreacting to produce a colored mark upon coming into reactive contact,
said first component of the first system and said second component of the system being incapable of interreacting to produce a colored mark,
said first component of the second system and said second component of the first system being incapable of interreacting to produce a colored mark,
said middle sheet being initially disposed in overlying relationship to said lowermost sheet such that its back coating

is disposed against said front coating of the lowermost sheet, whereby upon application of pressure to the stack, said back coating of the middle sheet and the front coating of the initially lowermost sheet are forced together to bring the first and second components of the first reaction system into said reactive contact to thereby produce a colored mark,

said sheets being capable of rearrangement such that said initially lowermost sheet overlies said initially uppermost sheet with the front coating of the initially lowermost sheet disposed against the back coating of the initially uppermost sheet, whereby upon application of pressure to the stack, said front coating of the initially lowermost sheet and the back coating of the initially uppermost sheet are forced together to bring the first and second components of the second reaction system into said reactive contact to thereby produce another colored mark.

3,981,524
ANTI-PILFERAGE LOCK FOR BOX CAR DOORS

Jack E. Gutridge, Dyer, Ind., and James J. Schuller, Crete, Ill., assignors to Pullman Incorporated, Chicago, Ill.
Filed May 27, 1975, Ser. No. 581,193
Int. Cl.^{2} E05C *1/04*
U.S. Cl. 292—31 7 Claims



1. In a railway car adapted for rolling on a railway track, said car having a body including a side wall provided with a door opening, and

door means movable between open and closed positions. relative to said door opening, the improvement comprising;

a door lock mechanism mounted on said body at a vertical distance from said railway track substantially greater than the height of a person standing at track level beside said car to make the door lock mechanism substantially inaccessible to the person,

said door lock mechanism connected to the door means for releasably holding the door means in a closed position and including a keeper having a base member supported on said body and projecting outwardly relative thereto,

said base member including a vertically extending keeper recess open at its lower end,

a latch support rigidly connected to said door means,

said latch support being positioned at substantially the same height as said keeper,

guide means on said latch support,

a latching element having an arm extending horizontally from said latch support to said keeper,

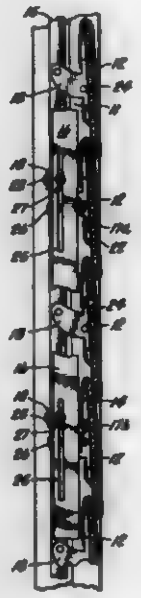
said latching element including a tongue portion in a lock position retained within said keeper recess to lock said door in a closed position,

means connecting said latching element to said guide means to provide for guided vertical movement of said latching element relative to said keeper,

and means on said latch support for supporting said latching element below said keeper whereby said latching element may be moved vertically between lock and unlock position relative to said keeper.

3,981,525
SECURITY APPARATUS FOR LOUVER WINDOWS AND DOORS

George C. Mayes, 1512 Ellsmere Ave., Los Angeles, Calif. 90019
Filed Apr. 28, 1975, Ser. No. 572,011
Int. Cl.^{2} E05C *19/18*
U.S. Cl. 292—259 R 8 Claims

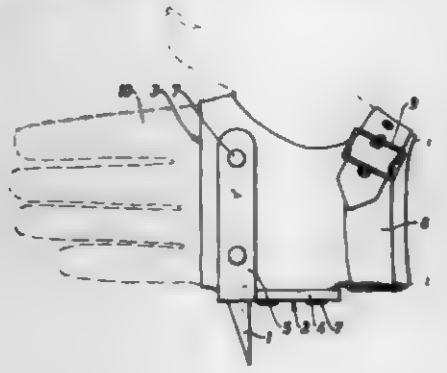


1. A security device for louver windows or doors having two lateral members and a multiplicity of louver lite brackets containing glass slats which open and close by rotating about attachment points on said members, wherein said security device is comprised of:

an elongated rectangular shaped vertical blocking member that is attachable to either of or both of said lateral members which prevents said brackets from rotating about said attachment point, lateral fastening means affixed to each end of said vertical blocking member for attaching said vertical blocking member to said lateral members and frontal fastening means affixed to said vertical blocking member whereby said vertical blocking member maybe clipped to said louver lite brackets.

3,981,526
SPIKE TOOL

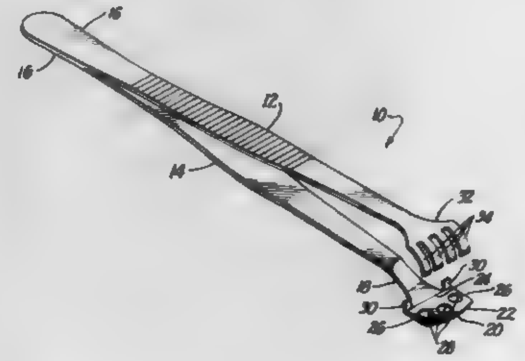
Karl Gustav Emanuel Lundqvist, Molinsgatan 4, S-411 33 Goteborg, Sweden
Filed Dec. 24, 1974, Ser. No. 536,096
Claims priority, application Sweden, Dec. 28, 1973, 7317511; Oct. 30, 1974, 7413643
Int. Cl.^{2} B26B *27/00*; B65G *7/12*
U.S. Cl. 294—25 3 Claims



3. An improved spike tool, particularly intended to dig into slippery surfaces, such as ice and the like, comprising a spike holder means, a substantially straight spike mounted on said spike holder means, and means attaching said spike tool to a hand, said spike holder means comprising a spike handle adapted to rest in the palm of the hand for gripping engagement with said hand, and a support rail extending essentially at right angles from said spike handle along the side of the hand opposite the thumb in a direction towards the wrist, the spike proper rigidly secured to said spike holder so as to extend in the plane of the hand transversely from said support rail, two straps operatively connected with said support rail, the first one of said straps arranged to be tightened around said hand and the second one of said straps arranged to be tightened about the wrist of said hand to attach said spike tool to said hand, a first set of apertures formed in said support rail, and a second set of apertures formed in said spike handle at the end thereof opposite said support rail, the first one of said straps passing through said first and said second sets of apertures.

3,981,527
TWEEZERS FOR USE WITH SEMI-CONDUCTOR WAFERS

John A. Ciano, Menlo Park, Calif., assignor to Interconsal Associates, Inc., Palo Alto, Calif.
Filed Apr. 7, 1975, Ser. No. 565,616
Int. Cl.^{2} B25B *9/02*
U.S. Cl. 294—99 R 2 Claims



1. A tweezers having upper and lower elongated arms, each of said arms having a mounting end and a holding end, said mounting ends of said arms being located adjacent to one another and being secured to one another in such a manner as to permit said holding ends to be brought toward one another in which the improvement comprises:

said holding end of said lower arm includes a flat plate having a front edge, a back edge and side edges connecting said front and back edges and also includes a shoulder connecting said back edge with the remainder of said lower arm, said plate being positioned beneath said lower arm on the side thereof remote from said upper arm by said shoulder,

said holding end of said lower arm also including stop means for limiting the extent to which said plate can be inserted under an object, said stop means being located generally along said back edge of said plate and extending from said back edge generally toward said holding end of said upper arm,

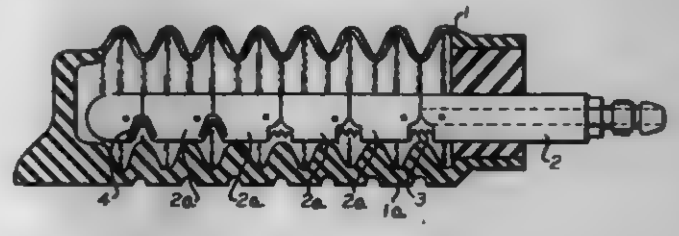
said stop means comprising two tabs extending from said back edge of said plate, said plate being provided with a plurality of perforations extending through said plate, said perforations allowing liquid to drain through said plate,

said holding end of said upper arm includes a plurality of separate, resilient fingers spaced from one another and a support holding said fingers and connecting said fingers to the remainder of said upper arm, said fingers curving outwardly and downwardly from said support generally toward said plate,

said arms being capable of being moved toward one another so that said fingers are capable of independently and resiliently engaging an object on said plate generally between said front and rear edges of said plate so as to hold said object on said plate.

3,981,528
ROBOT FINGER

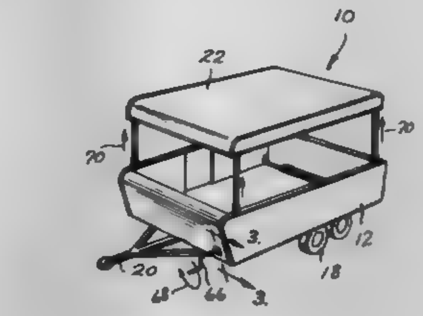
Paul Andorf, Wettstetten; Dietmar Franz, Lampertheim; Alfred Lieb, Dossenheim; Gerd Upper, Gorsheimertal, all of Germany, and Walter Guttropf, Winisch, Switzerland, assignors to Firma Carl Freudenberg, Weinheim, Germany
Filed May 19, 1975, Ser. No. 579,113
Claims priority, application Germany, May 30, 1974, 2426096
Int. Cl.^{2} B25J *15/00*; B66C *1/46*
U.S. Cl. 294—99 R 13 Claims



1. A robot finger comprising a substantially enclosed hollow elongated body, which body has integral therewith and running lengthwise thereof a gripping pad, said gripping pad bearing on an exterior wall of said body, said body being deformable by fluid pressure in the direction of said gripping pad, said griping pad being non-deformable in the direction of said body by said fluid pressure, said elongated body having a fluid injection inlet in a wall thereof, said hollow body having a longitudinally running supporting member yieldable only in the direction toward said gripping pad, said supporting member being in facing relationship with a portion of the walls of said hollow body the exterior of which carries said gripping pad, said supporting member having a circular cross section, said hollow body having therewith a bellows-like construction where the walls thereof which bear the gripping pad are corrugated, the depths of the folds of the bellows being substantially equal to the depth of the corrugations.

3,981,529
LIFT MECHANISM FOR A CAMPER TOP

Lloyd J. Bontrager, 60311 County Road 35, Middlebury, Ind. 46540
Filed Sept. 22, 1975, Ser. No. 615,776
Int. Cl.^{2} B60P *3/32*
U.S. Cl. 296—23 C 7 Claims



1. In a camper having a wheeled body which includes side and end walls and a top shiftable between a collapsed position over said body and an elevated position spaced above said body, telescopic post means adjacent each corner of said body extending between the body and said top, guided elongated substantially incompressible flexible means associated with each telescopic post means for shifting said top between its collapsed and elevated positions upon endwise movement, power transmitting means, said power transmitting means

including a shaft journaled in said body and an engagement member secured to said shaft for rotation with the shaft, flexible drive member means passing around said engagement member and being associated with said flexible means for imparting said endwise movement to the flexible means upon rotation of said shaft, the improvement wherein one end portion of said shaft projects into an opening in one of said body side and end walls, bearing means journaling said shaft end portion for rotation and for axial movement relative to said one body wall, said bearing means including an abutment part, a ratchet wheel journaled upon said shaft and located between said engagement member and bearing means abutment part, a pawl carried by said body and engageable with said ratchet wheel to interlock with the wheel when said shaft attempts to turn in one direction, said shaft end portion terminating in an end and having a threaded part located between said end and bearing means abutment part, nut means carried by said shaft end portion and turned upon said shaft threaded part, said nut means having a first operative position spaced from said bearing means when turned in said one shaft rotative direction, said nut means having a second operative position abutting said bearing means when turned in the opposite direction to cause said shaft to be shifted axially compressing said ratchet wheel between said engagement member and bearing means abutment part for rotation with the shaft, said pawl engaging said ratchet wheel to prevent rotation of said shaft in said one shaft rotative direction when said nut means is in its second operative position, and crank means for engaging said nut means to turn said nut means between its first and second operative positions.

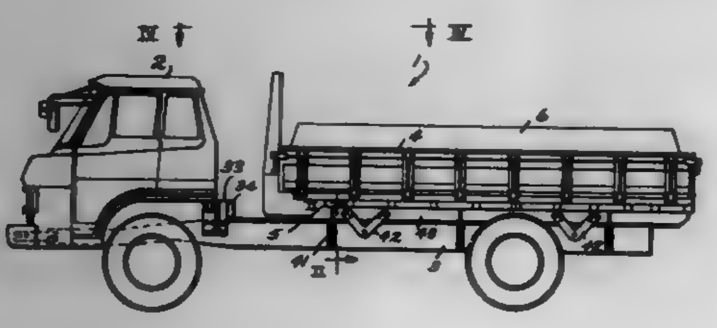
3,981,530
ENERGY ABSORBING LOADING TABLE MOUNT

Akira Yamanaka, Yokohama; Katsumi Terakado, Yamato, and Naofumi Nagaike, Yokohama, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 19, 1974, Ser. No. 498,854

Int. Cl.² B62D *27/06, 33/02*

U.S. Cl. 296—35 R **3 Claims**



1. A truck comprising:
a body frame;
a loading table positioned on said frame;
energy absorber means operatively related to said frame and the table, said energy absorber means including friction plates interposed between said body frame and said loading table and means for joining said table to the frame, said joining means comprising metallic plates each having a lower portion secured to said body frame and an upper portion drilled with at least one bolt hole adapted to receive a bolt to secure the plate to said loading table, each plate being formed with a slot extending from one of said bolt holes in the forward direction and having a width smaller than a diameter of said bolt hole, said joining means being responsive to a force on said table in excess of a predetermined value for permitting movement of the table with respect to the frame whereby kinetic energy of said moving table is absorbed by said energy absorber means.

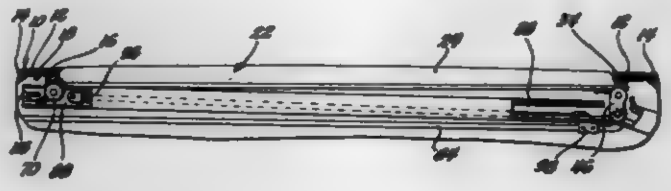
3,981,531
VEHICLE BODY SUNROOF

Joseph F. Koral, Sterling Heights, and Daniel L. Beaufait, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 15, 1975, Ser. No. 613,533

Int. Cl.² B60J *7/10*

U.S. Cl. 296—137 G **3 Claims**



1. In a vehicle body having a roof panel with an opening defined by a downwardly facing flange and a closure panel having a peripheral flange for sealing engagement with the downwardly facing flange of the roof panel to close the opening, a closure panel operating mechanism for moving the closure panel between open and closed positions and comprising: a track extending longitudinally of the vehicle, mounting means at one end of the closure panel and captured for fore and aft movement within the track, stop means for limiting forward movement of the closure panel, a lifter link having a leading end and a trailing end with the leading end being pivotally connected to the other end of the closure panel, means pivotally mounting the trailing end of the lifter link on the track for fore and aft movement, drive means connected to the trailing end of the lifter link for moving the lifter link fore and aft in the track, a ramp member slidably engaged in the track rearwardly of the mounting means and captured for fore and aft movement in the track, the ramp member having an inclined surface engageable with the mounting means to lift the mounting means and the one end of the closure panel vertically when the ramp member is driven beneath the mounting means, and a connecting rod attached to the ramp member and providing a fixed length between the ramp member and the trailing end of the lifter link whereby upon forward movement of the trailing end of the lifter link subsequent to the closure panel being stopped from further forward movement by the stop means, the leading end of the lifter link moves vertically to lift the other end of the closure panel vertically into sealing engagement of the flange while the connecting rod drives the ramp member beneath the mounting means causing the inclined surface to lift the mounting means and one end of the closure panel vertically, thereby lifting the closure panel vertically to carry the peripheral flange of the closure panel into sealing engagement with the downwardly facing flange of the roof panel.

3,981,532
FOLDABLE FURNITURE

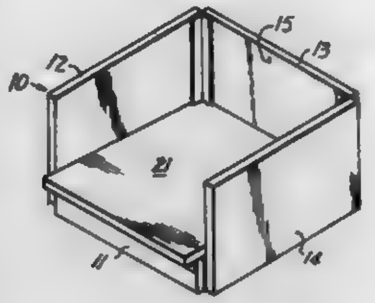
John W. Caldwell, 1829 Warwick Road, San Marino, Calif. 91001

Filed July 7, 1975, Ser. No. 593,366

Int. Cl.² A47C *4/00*

U.S. Cl. 297—42 **17 Claims**

1. A foldable article of furniture comprising: four elongated side members, each having a pair of ends and a dimension of height, one of said side members having a lesser dimension of height than the other side members, whereby to form a sill; hinge means attached to each of said ends whereby hingedly to connect adjacent ones of said side members in a quadrilateral array, opposite side members being substantially equal in length so that said array viewed in plan is rectangular, and the array can be folded through a parallelogram configuration at least to approach a flattened configuration; a transverse member hingedly attached to the sill adjacent to the outside edge thereof, whereby the transverse member can be hingedly moved to enter the inside of the array when rectangular and be moved to a position outside of it on the opposite side of the sill from the interior of the array when flattened; and stop means on one of said side members so disposed, proportioned and arranged as to support the transverse member from below at some position of the transverse member when hingedly moved to the inside of the array when rectangular.



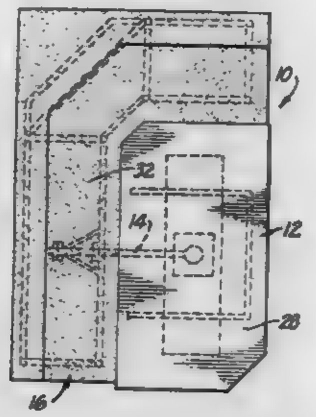
3,981,533
FURNITURE COMBINATION

Ferris E. Jones, 943 Millbury Ave., LaPuente, Calif. 91746

Continuation-in-part of Ser. No. 488,909, July 16, 1974, which is a continuation of Ser. No. 281,322, Aug. 17, 1972, which is a continuation-in-part of Ser. No. 81,241, Oct. 16, 1970, abandoned. This application Feb. 3, 1975, Ser. No. 546,204

Int. Cl.² A47B *39/00*

U.S. Cl. 297—173 **15 Claims**



1. A furniture combination comprising:
a seat including a generally horizontal seat portion and an upright back rest portion,
a table positioned in front of said seat having a supporting base including a pedestal and arm means rigidly attached at one end to the lower end of said pedestal and extending rearwardly toward the end of said seat, and a table top secured to the upper end of said pedestal above the level of said seat portion, and
pivot means adjacent the other end of said arm means located below said seat portion but a substantial distance above floor level pivotally mounting said arm on said seat for vertical swinging movement of said table about a pivot axis located above floor level between a lower portion of use wherein said table base rests on the floor and an elevated cleaning position wherein said table base is raised above the floor and said table top is located in an inclined position over said seat portion forwardly of said backrest portion to permit cleaning below the table.

3,981,534
SEAT COVER FASTENING SYSTEM

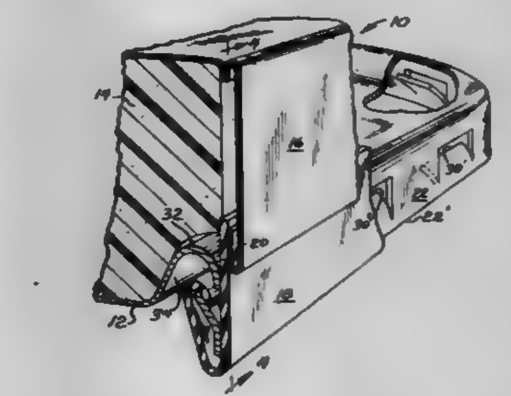
William L. Wilton, Waukesha, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 27, 1975, Ser. No. 591,205

Int. Cl.² A47C *27/00*

U.S. Cl. 297—219 **6 Claims**

1. A seat cover fastening system comprising:
a formed seat pan having an inverted U-shaped peripheral edge portion, the outer vertical leg of said edge portion having a plurality of inwardly and upwardly directed tabs struck out of its surface at spaced locations around said edge portion which are located above the bottom of said vertical leg; seat cover material attached at its edges to a resilient trim strip having a generally J-shaped configuration and including an outer leg which is long and an inner leg which is short, the inner leg having a lip portion formed at its upper end which extends downwardly and outwardly toward said outer leg, said seat cover material being attached to said outer leg and extending upwardly therefrom, and said resilient trim strip covering the lower portion of said outer vertical leg so that its inner leg extends above said tabs and said lip portion extends downwardly toward the space between said tabs and said outer vertical leg so as to be interlocked therewith.



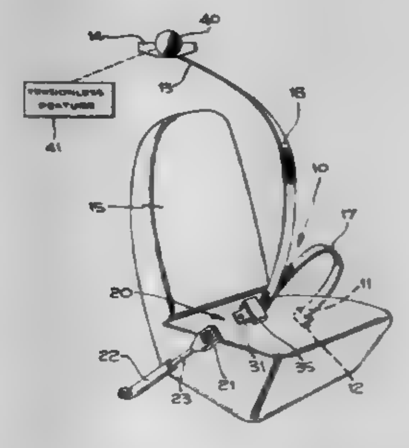
3,981,535
SINGLE RETRACTOR CONTINUOUS LOOP RESTRAINT SYSTEM

Cyril Henderson, Woodland Hills, and Albert R. Close, Sylmar, both of Calif., assignors to American Safety Equipment Corporation, Encino, Calif.

Filed May 27, 1975, Ser. No. 580,766

Int. Cl.² A47B *35/00*

U.S. Cl. 297—389 **12 Claims**

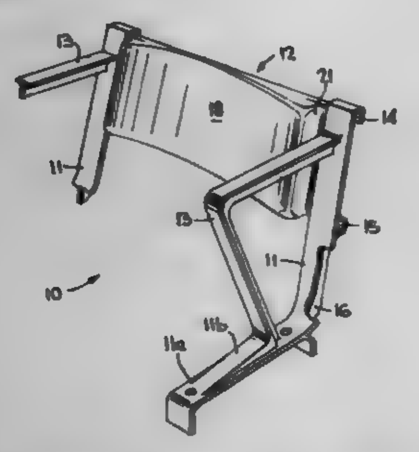


1. In a continuous loop restraint system for vehicles comprising a continuous loop of webbing anchored at a first end to the lower part of the vehicle and at its second end to the upper part of the vehicle and releasable anchor means releasably connecting the central portion of the webbing to the lower part of the vehicle on the other side of the user than the first mentioned anchor such that the portion of the webbing between the anchors at the lower part of the vehicle passes over the user's lower torso and the portion between the upper anchor and the releasable anchor passes over the user's upper torso, a retractor attached to the second end of the webbing to store excess webbing thereon, the improvement comprising the provision of:

said releasable connector including limiting means for allowing the webbing to pass therethrough only in a direction to shorten the webbing portion over the lower torso and lengthen the portion of the webbing over the upper torso.

3,981,536
BACK SYSTEM FOR MODULAR SEATING

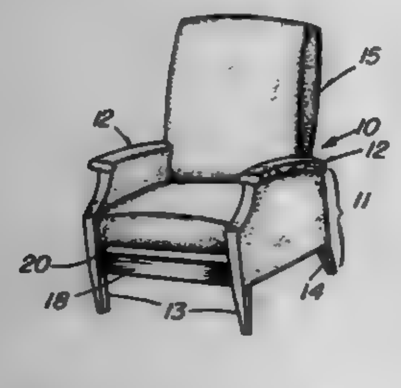
Wilmer R. Schultz, 1540 Chestnut St., Emmaus, Pa. 18049
Filed Dec. 30, 1974, Ser. No. 537,440
Int. Cl.² A47C *7/00*
U.S. Cl. 297—444 **7 Claims**



1. A backrest assembly for modular stadium seating or the like comprising:
  upright support means attached to said seating;
  a backrest module carried by said support means above said seating in position to engage and rest the back of the user;
  said module having a lateral flange formed by a first portion extending substantially parallel to said module and a second portion turned at substantially a right angle to said module extending substantially parallel and in juxtaposition to said upright support;
  clip means for gripping the lateral edge of said backrest means;
  said clip means including a body, holding means on said body engaging said flange in opposed relationship to said upright support means and causing both said portions of said flange to engage snugly in substantially full face-to-face contact against said upright support; and
  fastener means for attaching said clip to said support means for holding said backrest means in position.

3,981,537
PERSON'S BODY WEIGHT SUPPORT IN FURNITURE ASSEMBLY

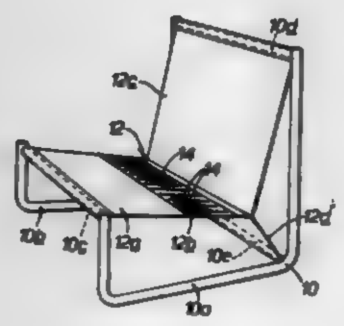
John T. Wright, Cattaraugus, N.Y., assignor to Champion International Corporation, Stamford, Conn.
Filed May 21, 1975, Ser. No. 579,447
Int. Cl.² A47C *7/02*
U.S. Cl. 297—452 **4 Claims**



1. A seat support assembly in a piece of furniture for bearing some weight of a person's body comprising:
  1. a relatively rigid peripheral frame having at least a pair of laterally-spaced panel supports;
  2. a weight-bearing panel having laterally-spaced, anchoring edge zones with said panel including an upper layer against which body weight is to be applied and comprising cellulosic fibers, a lower tensile layer of metallic material having a moderately high modulus of tension, and a layer of set glue intervening said layers and fastening the latter together; and
  3. anchoring support means fastening said panel edge zones to said pair of laterally-spaced frame supports in a manner whereby said weight-bearing panel is convexed upwardly above the median plane extending between said panel supports when no body load is applied to the panel, whereas under an applied body load, said panel is deflected reversibly to a concave contour for sling support of the body load.

3,981,538
RESILIENT PLATFORMS FOR SEATING

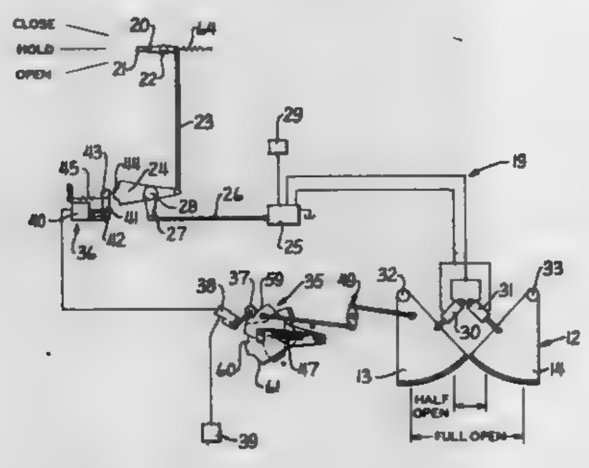
Anthony Guy Chubb, Naphill, England, assignor to Pirelli Limited, London, England
Filed July 31, 1975, Ser. No. 600,868
Int. Cl.² A47C *7/02*
U.S. Cl. 297—454 **5 Claims**



1. A seat frame comprising:
a. a first horizontal frame member at the front of the frame and at seat level;
b. a second horizontal frame member at the back of the frame and above seat level;
c. a third horizontal frame member at the back of the frame and below seat level;
d. two spaced rigid side-frame structures between which said horizontal frame members extend; and
e. a resilient seating platform attached to said horizontal frame members and comprising:
i. first sheet means having first and second opposite edges, said first sheet means being secured along its said first edge to said first frame member, said first sheet means extending generally horizontally towards the back of the frame and including an elastic portion extending across the full width of said first sheet means; and
ii. second sheet means comprising a first portion having first and second opposite edges and a second portion having first and second opposite edges, said first portion being secured along its said first edge to said second frame member and along its second edge to said second edge of said first sheet means and said second portion being secured along its said first edge to said third frame member and along its said second edge to said second edge of said first sheet means.

3,981,539
WAGON DOOR CONTROL SYSTEM AND DUAL CAM THEREFOR

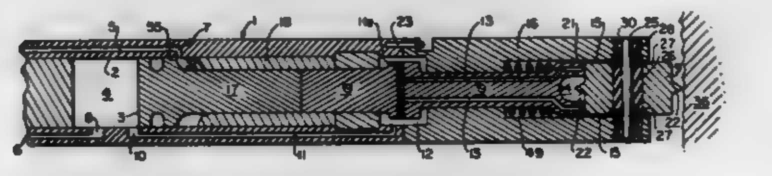
Bernard E. Proeschl; Ralph C. Schell, both of Decatur, and James M. Stanley, Oreana, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 30, 1974, Ser. No. 510,588
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976
Int. Cl.² B60P *1/56*
U.S. Cl. 298—35 M **12 Claims**



1. In a wagon having a movable dump door means, the improvement comprising: control means selectively manually positionable in an Open position and a Close position; power means responsive to the positioning of the control means in the Open position to move the door means to an open position and to the positioning of the control means in the Close position to move the door means to a closed position; powered means for throwing the control means to a Hold position from either of said Open and Close positions; and cam means responsive to the movement of the door means by said power means to either of said open and closed positions to operate said powered means to throw said control means to said Hold position thereby stopping further movement of the door means in the selected door position, said cam means including means for selectively arranging a camming portion thereof to operate said powered means to throw said control means to said Hold position selectively when said door reaches a preselected partially open position intermediate said closed and open positions.

3,981,540
ROCK BREAKING APPARATUS

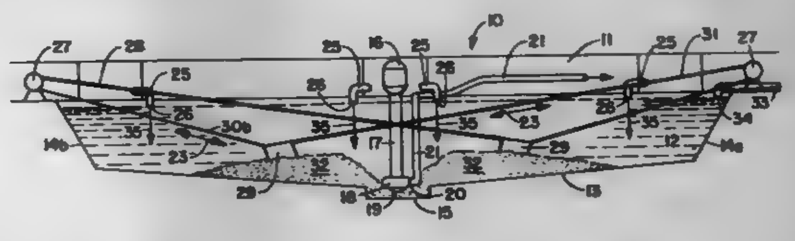
Ivor Hawkes, Lyme, N.H., assignor to Creare, Incorporated, Hanover, N.H.
Continuation of Ser. No. 408,724, Oct. 23, 1973, which is a continuation-in-part of Ser. No. 372,982, June 25, 1973, abandoned. This application July 18, 1975, Ser. No. 597,250
Int. Cl.² E21C *1/00*
U.S. Cl. 299—62 **16 Claims**



1. An impact roller cutter assembly comprising: a unitary, rigid annular metal cutter having an axis of rotation and including a radially outwardly extending peripheral cutting portion, said cutter having a separate outer peripheral impact receiving portion spaced radially inwardly of said cutting portion and being the only portion of said cutter adapted to have controlled actuating impact blows delivered thereto; an elongated shaft extending substantially coaxially with said axis and supporting said cutter and adapted to be supported by a housing; elastomeric bushing means having the outer periphery thereof in engagement with at least an inner peripheral portion of said cutter and extending radially inwardly therefrom; and said bushing means being of a stiffness to deform in response to individual impact blows of such impact blows providing limited transverse movement of said cutter with respect to the longitudinal axis of said shaft.

3,981,541
SHALLOW UNDERGROUND COAL SLURRY CONCENTRATION SUMP

Richard E. Doerr; David L. McCain, and Hilbert D. Dahl, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
Filed Apr. 15, 1974, Ser. No. 461,034
Int. Cl.² B65G *53/30;* E21C *47/00*
U.S. Cl. 302—11 **11 Claims**



1. In an underground mine slurry system including a sump for a plurality of slurry lines inside said mine wherein said mine has at least a tunnel, said sump comprising:
  a sump means formed in the floor of said tunnel, said sump means having a bottom, side walls and ends, the length of said sump means equal to or greater than four times the depth of said sump means and said sump means adapted to be filled with water or slurry;
  a depression;
  pump means having an inlet and an outlet, said inlet communicating with said depression;
  slurry removal means communicating with said outlet; a plurality of slurry outlet means spaced along said sump means and communicating with a plurality of respective mine faces whereby product deposited from said slurry outlet means will fall to the bottom of said sump means; and
  mechanical conveying means for moving said product toward and into said depression.

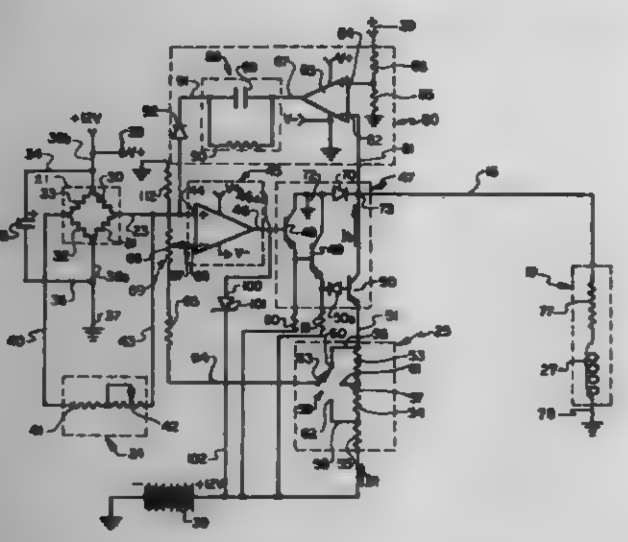
3,981,542
ELECTRICAL BRAKE CONTROL SYSTEM

Max E. Abrams, and Jess E. Wahlenmaier, both of Arkansas City, Kans., assignors to Spring Machine, Inc., Arkansas City, Kans.
Filed Nov. 15, 1974, Ser. No. 524,056
Int. Cl.² B60T *13/74*
U.S. Cl. 303—20 **7 Claims**

1. In a braking system having a fluid circuit and an electrically operated braking system having one or more braking units, an electrical control circuit comprising:
  a. a fluid pressure transducer means having a fluid input connected to said fluid circuit means, and producing an electrical output signal proportional to the fluid pressure of said fluid circuit;
  b. comparator circuit means having 1st and 2nd inputs and an output;
  c. circuit means for connecting said 1st input to said electrical signal output of said fluid pressure transducer means;
  d. circuit means connecting said output from said comparator circuit means to said electrically operated brake;
  e. feedback means connecting said electrically operated brake to said 2nd input; whereby said comparator circuit means maintains the feedback voltage to said 2nd input substantially identical with the voltage at said 1st input by

controlling the magnitude of its output to said electrically operated brake; and

f. an impulse generating circuit means having its input connected to the input of said electrically operated brake and



its output connected to said 1st input, whereby an impulse will be generated upon initial operation of the brakes forcing the brake magnets against the brake drums.

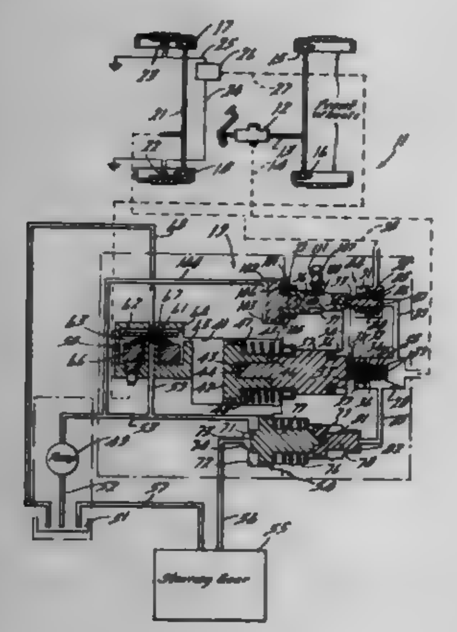
3,981,543
SKID CONTROL SYSTEM EMBODYING FAIL SAFE BYPASS

Thomas M. Atkins, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Division of Ser. No. 391,463, Aug. 24, 1973. This application Apr. 7, 1975, Ser. No. 565,556

Int. Cl.² B60T *8/02*

U.S. Cl. 303—21 AF **5 Claims**



1. A skid control system for a vehicle comprising a master cylinder for providing a source of actuating fluid pressure, a wheel cylinder for operating one wheel brake of the vehicle, a brake actuating circuit interconnecting said master cylinder and said one wheel cylinder, modulator means in said brake actuating circuit between said master cylinder and said wheel cylinder for reducing the pressure transmitted from said master cylinder to said wheel cylinder in response to a predetermined signal for preventing a skid condition, a bypass circuit interconnecting said master cylinder and said one wheel cylinder, a first valve element for controlling the flow of fluid from said modulator to said wheel cylinder, a second valve element for controlling the flow through said bypass circuit from said master cylinder to said one wheel cylinder, each of said valve elements being movable between an opened position and a closed position, and a common actuating means directly affixed to each of said valve elements for moving said first valve element from its opened position to its closed position simultaneously with movement of said second valve element from its closed position toward its open position.

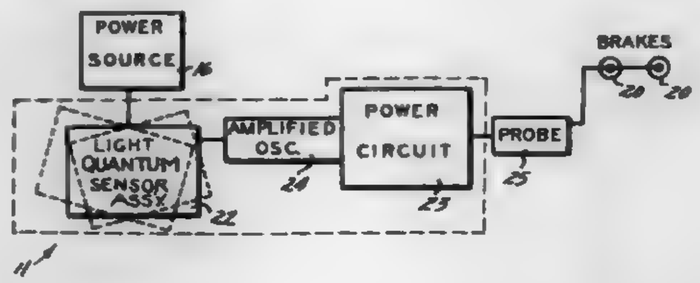
3,981,544
BRAKE CONTROLLER AND SHORT CIRCUIT PROBE DISCONNECT

Jerry J. Tomecek, Milford, and Philip J. Hagerty, Marshall, both of Mich., assignors to Tekonsha Engineering Company, Tekonsha, Mich.

Division of Ser. No. 531,171, Dec. 9, 1974. This application Feb. 2, 1976, Ser. No. 654,466

Int. Cl.² B60T *17/22;* **B60Q** *11/00*

U.S. Cl. 303—21 AF **7 Claims**



1. A brake control for brakes in towed vehicles and connected to a source of electrical energy comprising:
a light sensitive monitor;
inertially operated means attenuating light to said monitor;
a power circuit activated by said light monitor transmitting a pulse at a frequency proportional to the light as determined by said inertially operated means and connected to a source of energy and delivering said thus pulsed energy to brakes in a towed vehicle; and
a short circuit probe including an electromagnetic reed switch and capacitance timer connected to the power line through said power circuit and sensing amperage surges to provide intermittent disabling of power until said amperage surge is eliminated and in protection of said brake control.

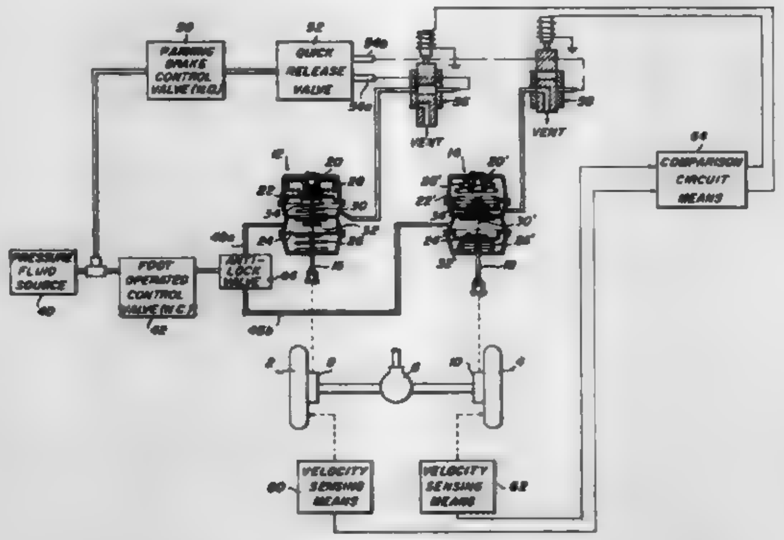
3,981,545
TRACTION CONTROL APPARATUS

William C. Eddy, Birmingham, Mich., assignor to Aspro, Incorporated, Westport, Conn.

Filed July 30, 1975, Ser. No. 600,505

Int. Cl.² B60T *8/08*

U.S. Cl. 303—21 EB **13 Claims**



1. A traction control system for a vehicle including at least one pair of driven wheels arranged on opposite sides of the vehicle and connected by a differential mechanism, a plurality of wheel brake means associated with said driven wheels, respectively, and a plurality of brake-operating means for operating said wheel brake means, respectively, each of said brake operating means including a brake-operating member (24, 24′) operable between brake-engaged and brake-released positions;
said traction control system comprising
a. a plurality of spring brake-locking means associated with each of said brake-operating members; respectively, each of said spring brake-locking means including
1. spring means (28, 28′) normally placing the brake-operating member in its brake-engaged position; and
2. disabling means (22, 22′) operable between enabling and disabling conditions for activating and de-activating said spring means relative to said brake operating member, respectively;
b. a plurality of velocity sensing means (60, 62) for generating signal voltages which are a function of the rotational velocities of said driven wheels, respectively;
c. voltage comparison circuit means for comparing said signal voltages of said driven wheels, respectively, and for producing a control signal when the rotational velocity of one driven wheel exceeds that of the other driven wheel by a predetermined value; and
d. means (56, 58) responsive to said control signal for operating to its enabled condition the disabling means associated with the driven wheel having the faster rotational velocity, thereby to effect braking of the faster driven wheel, whereby driving torque is transferred through said differential means to the driven wheel having the lower rotational velocity.

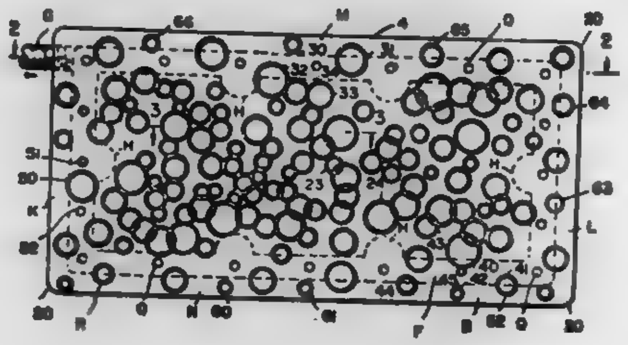
3,981,546
AIR BEARING CONSTRUCTION

Jacob H. Sperman, 2199 E. 21st St., Brooklyn, N.Y. 11229

Filed Sept. 29, 1969, Ser. No. 861,815

Int. Cl.² F16C *17/00*

U.S. Cl. 308—5 R **6 Claims**



1. A fluid bearing for supporting a load for movement in a plane substantially parallel to the plate comprising a rigid load supporting plate having substantially parallel upper and lower faces, one of said faces forming a surface for a load to be supported and the other of said faces forming a bearing surface, an internal fluid conduit system intermediate said upper and lower faces, a plurality of spaced outlet orifices extending vertically transversely through the plate between the internal conduit system and the bearing face and a plurality of fluid retaining grooves on said bearing face forming closed ended fluid paths in said bearing surface for receiving a portion of the fluid discharged from said orifices and for restraining the flow of such discharged fluid along said bearing surface. The fluid to be Air or Gas continuously supplied under pressure thru an inlet.

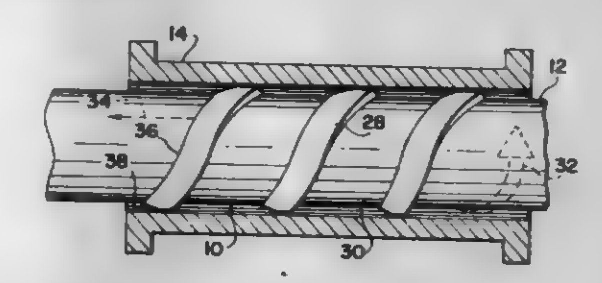
3,981,547
SPIRAL, TAPERED-LAND, JOURNAL BEARING

John E. Perruzzi, 7333 New Hampshire Ave. No. 114, Hyattsville, Md. 20783

Filed July 15, 1975, Ser. No. 596,119

Int. Cl.² F16C *29/00*

U.S. Cl. 308—98 **6 Claims**



1. A journal bearing comprising:
a bearing; and
a journal within said bearing,
said journal being formed with a circumferential, spiral land having an indented leading section to form an oil wedge to support said journal within said bearing.

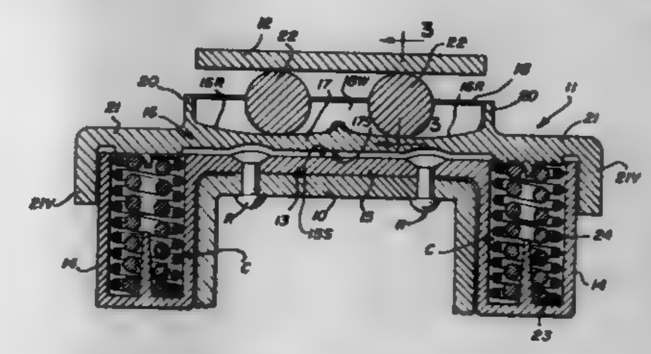
3,981,548
CONSTANT CONTACT SIDE BEARING

Robert W. MacDonnell, Crete, and Otto A. Shander, Chicago Heights, both of Ill., assignors to R. W. Mac Company, Crete, Ill.

Filed May 27, 1975, Ser. No. 580,667

Int. Cl.² B61F *17/00;* **F16C** *1/24, 13/02*

U.S. Cl. 308—226 **10 Claims**



1. A side bearing for providing constant contact between a truck bolster and a railway car body and comprising base means rigid with the bolster, and providing cushion supports flanking the bolster cushioning means carried by said supports, top follower means bridging said bolster and supported on said cushioning means to undergo cushioned vertical travel above and below a pre-load position, said top follower means having an upwardly facing pocket overlying the bolster and defining an elongated raceway extending intermediate said cushioning means, and roller means disposed in said pocket in constant contact rolling engagement between the raceway and the car body.

3,981,549
THRUST BEARING WITH FORMED THRUST WASHER

Paul A. Carullo, Torrington, Conn., assignor to The Torrington Company, Torrington, Conn.

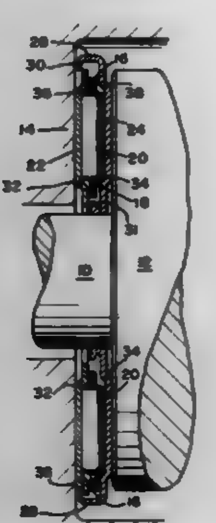
Filed Sept. 16, 1974, Ser. No. 506,277

Int. Cl.² F16C *33/38*

U.S. Cl. 308—235 **7 Claims**

1. A thrust bearing comprising: a thrust roller and cage assembly; and a formed sheet metal thrust race contacted by the round surface of the rollers in the thrust roller and cage assembly and having at least one annular shoulder; the dimensions of the formed sheet metal thrust race, and the dimensions of the thrust roller and cage assembly being such that the thrust roller and cage assembly may move radially with respect to the thrust race; and when the thrust roller and cage

assembly is coaxial with the thrust race, a radial space exists between said annular shoulder and the nearer radial ends of the rollers, the nearer radial ends of some of the rollers coming into contact with said annular shoulder if the cage and roller assembly moves radially to thereby limit the radial movement of the thrust roller and cage assembly.



3,981,550

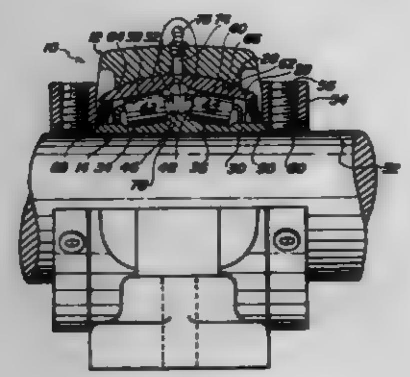
BEARING IMPROVEMENT

George A. Zimmer, and Hilarius S. Struttmann, both of Ithaca, N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 20, 1975, Ser. No. 542,482

Int. Cl.² F16C *23/00*

U.S. Cl. 308—194 10 Claims



1. In a bearing assembly of a housing having a central opening and a bearing cartridge in said opening, said cartridge including inner and outer races and antifriction rolling elements in rolling engagement with said races, said housing having a lubricant fitting and passageway therethrough to said cartridge and said cartridge having an opening substantially opposite to said passageway for the passage of lubricant from said fitting into said cartridge, the improvement which comprises:

resilient means having an opening therethrough for the passage of lubricant located in said passageway adjacent to said cartridge, said resilient means being in rubbing contact with said cartridge, said resilient means defining the path of lubricant introduced at said fitting substantially to said cartridge opening and, restricting the flow of lubricant along the interface between the cartridge and the central opening of housing.

3,981,551

MEANS FOR TRANSPORTING YARN PACKAGES PRODUCED BY SPINNING MACHINERY

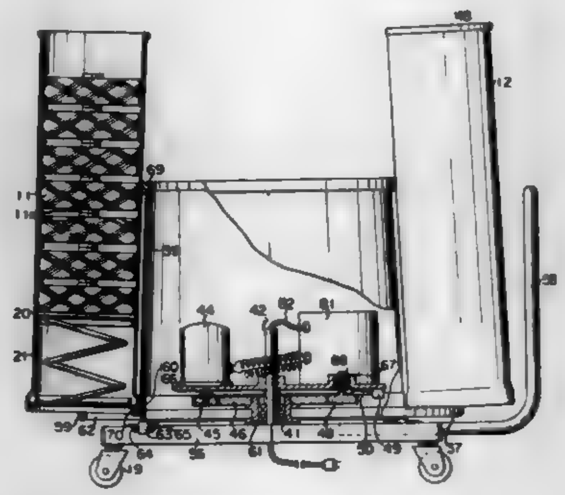
Tsutomu Miyazaki, Kariya; Takashi Kato, Toyota; Shozo Ueda, Kariya, and Toshio Yoshizawa, Chiryu, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Feb. 4, 1975, Ser. No. 547,092

Claims priority, application Japan, Feb. 8, 1974, 49-16629; Feb. 8, 1974, 49-16630; Feb. 14, 1974, 49-17933[U]; Feb. 18, 1974, 49-19398[U]; Feb. 20, 1974, 49-20911[U]

Int. Cl.² A47F *1/00*; B65G *1/00*; A47B *49/00*

U.S. Cl. 312—250 10 Claims



1. A device for receiving and transporting a plurality of yarn packages produced by a spinning machine in the form of relatively large diameter cylinders with center bobbins, said device comprising:

a base;

canister means for containing said yarn packages therein with said center bobbins contacting each other, said canister means comprised of:

a plurality of individual cylindrical containers positioned in a circular arrangement about a central axis, said containers having unobstructed open tops for receiving said yarn packages therethrough and closed bottoms,

movable plate means fitted within each container for supporting said yarn packages thereon, and

resilient member means in each container between said movable plate and the bottom of said container for biasing and moving said movable plate upward in said container the length of one bobbin each time a yarn package is removed therefrom;

turntable means mounted on top of said base with said canister means removably positioned thereon for supporting and rotating said canister means;

a plurality of wheels mounted beneath said base, whereby movement of said base, said turntable means, and said canister means is facilitated; and

an upright cylindrical casing fitted over said turntable means on said base within the circular arrangement of said cylindrical containers.

3,981,552

SHOWCASE

Masashi Karashima, 40-7, Sangenjaya 2-chome, Setagaya, Tokyo, Japan

Filed May 20, 1975, Ser. No. 579,324

Claims priority, application Japan, Oct. 30, 1974, 49-124310

Int. Cl.² A47B *77/10*; A47F *5/00*

U.S. Cl. 312—250 3 Claims

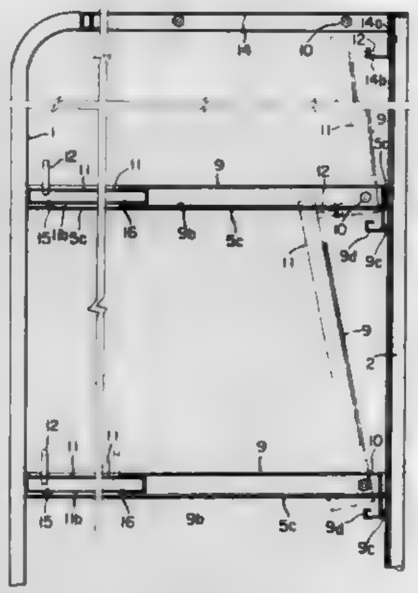
1. A multi-shelf showcase for displaying items, said showcase comprising:

an outside framework having front and back parallel vertical frame members;

a plurality of parallel, horizontal, vertically spaced shelf supports attached betwen said front and back frame members;

a plurality of shelving means pivotally attached between and resting upon each pair of parallel horizontal shelf supports within said framework for holding said items thereon, said shelving means being extensible, horizontally along said shelf supports and pivotable vertically upward;

latch means at the forward end of said shelving means for latching said pivotable shelving means in an upwardly vertical position;



first latch receiving means at the top inside rear portion of said framework for receiving and engaging said latch means of the uppermost shelving means when said uppermost shelving means is pivoted upward against said first latch means; and

second latch receiving means integrally formed at the rearward end of each shelving means for receiving and engaging the latch means of the shelving means immediately therebelow when the uppermost of two vertically adjacent shelving means is pivoted upward and the lowermost shelving means of the two vertically adjacent shelving means is pivoted upward against said second latch receiving means formed at the rearward end of said uppermost shelving means.

3,981,553

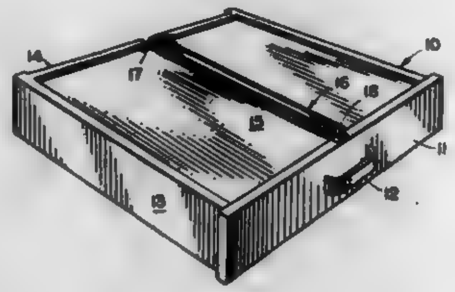
DRAWER SLIDE

Kenneth H. Gutner, 3285 Dato, Highland Park, Ill. 60035

Filed Dec. 5, 1975, Ser. No. 638,067

Int. Cl.² A47B *88/00*; A47F *5/08*

U.S. Cl. 312—347 2 Claims



1. A slidable drawer structure comprising a frame such as a dresser or the like having a generally rectangular drawer-receiving front opening, a drawer slidably received in said opening, said frame being equipped with an elongated side-sloted center guide for the underside of said drawer with said guide extending generally perpendicular to said opening, an elongated slide fixed to the underside of said drawer and slidably engaging said guide, said slide being generally C-shaped in transverse section to engage said guide slots, said C-shaped defining a horizontal top wall integrated with vertical side walls and inwardly extending flanges integrated with said side walls below said top walls, said slide adjacent the inserted end of said drawer being equipped with transversely extending rib means, a longitudinal rib in each vertical side wall extending from said rib means to the other end of said slide, said longitudinal ribs projecting inwardly of said C-shape and adapted to bear against said guide.

3,981,554

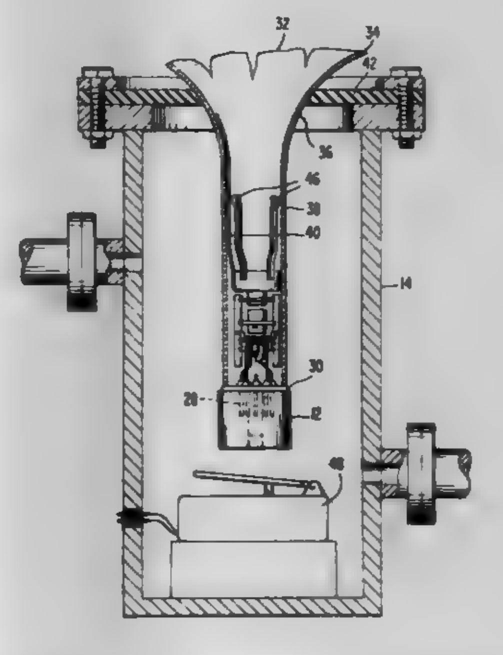
METHOD OF AIR LETTING AN EVACUATED CATHODE RAY TUBE

Clinton Harvey Todd, Waubaushene, Canada, assignor to RCA Corporation, New York, N.Y.

Filed June 4, 1975, Ser. No. 583,605

Int. Cl.² H01J *9/50*

U.S. Cl. 316—2 7 Claims



7. In a method for repairing an evacuated cathode ray tube having a glass envelope with a funnel portion and a neck portion and having a stem with electrical connection pins extending therefrom attached to said neck portion wherein the evacuated tube is initially opened, a defective component replaced by one of the desired quality and the tube is re-evacuated and sealed, an improvement in the method of initially opening the evacuated tube comprising the steps of:

a. inserting said electrical connection pins into a mating receptacle in a weight;

b. rotating the tube and applying a flame to the neck portion of said glass envelope causing localized heating around a circumference of said neck portion;

c. applying a mechanical shock to the heated circumference and reapplying said flame to the neck portion until said neck portion is cracked completely through around the circumference thereof;

d. then positioning said tube in support means in a substantially vertical orientation with said stem being in a downward position, and said stem and said cracked neck portion being oriented within a hermetic chamber;

e. evacuating said chamber of environmental atmosphere therein until the gravitational force exerted on said weight attached to said stem overcomes the forces on the stem due to friction and the pressure differential between the inside and outside of said envelope causing said stem to separate from said funnel portion at the circumferential crack in said neck portion and using said separated stem with the weight attached thereto to effect the cessation of further chamber evacuation and the start of admission of a non-contaminating gaseous atmosphere into said chamber;

f. admitting said gaseous atmosphere into said chamber in a gradual manner to prevent the conveyance of contaminated particles into said open tube until said gaseous atmosphere attains a pressure substantially equal to that of said environmental atmosphere; and

g. removing said tube from the support means and the hermetic chamber.

3,981,555
CONNECTOR PLUG WITH PERMANENTLY CONNECTED CABLE

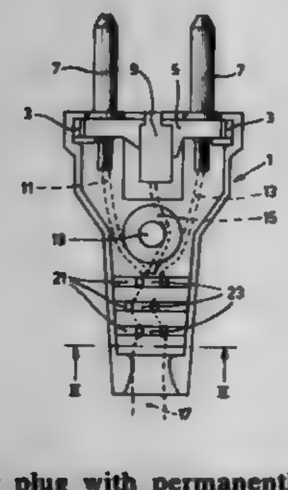
Johannis Martinis Deurloo, Emmen, Netherlands, assignor to Draka Kabel B.V., Hamerstraat, Netherlands

Filed June 24, 1975, Ser. No. 589,762

Claims priority, application Netherlands, July 4, 1974, [illegible]

Int. Cl.² H01R *13/58*

U.S. Cl. 339—105 3 Claims



1. A connector plug with permanently connected cable, comprising an elongate housing which has an opening on one end for the passage of the cable and at least two openings on the opposite end wherethrough contact pins project or wherethrough contact sockets are accessible, the said housing consisting of two shells which are arranged one on the other by way of their edges, characterized in that for the strain relief of the cable (17) at least three transverse partitions (21) are provided in one of the shells (1), each partition comprising a cut-out (23) which opens into its free side and which includes a lower portion (25) having parallel sides near its closed end, the depth thereof being larger than and the width thereof being smaller than the largest and the smallest, respectively, transverse dimension of the cable (17), the said cut-outs (23) being positioned such that cut-outs (23) which are situated directly one behind the other are staggered in the transverse direction with respect to each other.

3,981,556
ELECTRIC CONNECTIONS OF WINDOW DEFOGGING DEVICES

Silvino Sabatelli, and Ivano Buoncristiani, both of Vasto (Chieti), Italy, assignors to Societa Italiana Vetro Siv S.p.A., Vasto (Chieti), Italy

Filed Feb. 6, 1975, Ser. No. 547,727

Claims priority, application Italy, Feb. 11, 1974, 48247/74

Int. Cl.² H01R *11/06*

U.S. Cl. 339—275 T 8 Claims

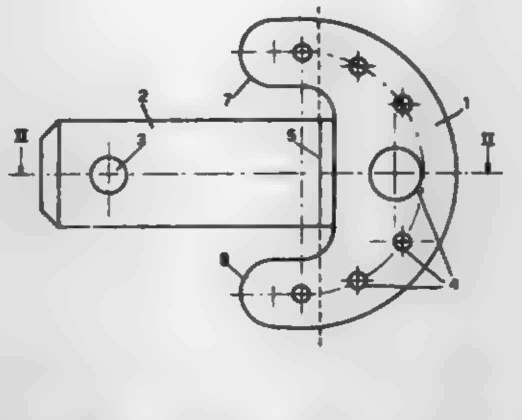
1. A method of connecting an electrical connector to a bus conductor connected to a system of spaced-apart wires for electrically heating a window pane comprising, in combination:

providing a platelet having a tongue integral therewith and connectable to a power supply,

bending said tongue to offset it from the remainder of said platelet,

making a plurality of holes in said platelet to allow venting of gases which form between said platelet and said bus conductor during soldering,

bringing one face of said platelet and solder into contact with said bus conductor and heating same to solder said platelet to said bus conductor while allowing gases to escape via said holes in said platelet, and



subsequently pouring additional solder into said holes in said platelet, which additional solder fuses with solder beneath said platelet to anchor said platelet more firmly to said bus conductor.

3,981,557
LIGHT RETROREFLECTIVE SYSTEM FOR SIGN SURFACES

Ludwig Eigenmann, Vacallo, Ticino, Switzerland

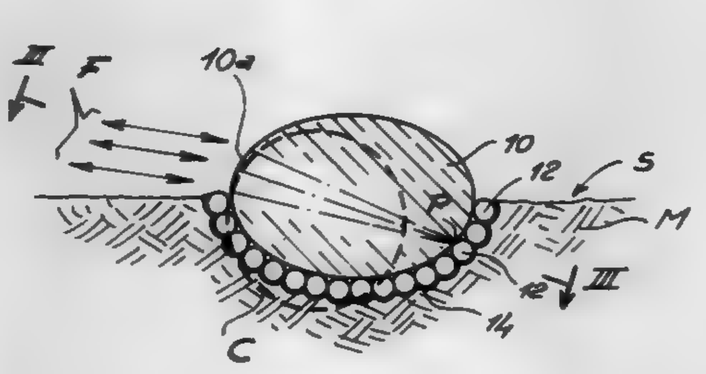
Filed Aug. 26, 1974, Ser. No. 500,663

Claims priority, application Italy, Aug. 29, 1973, 28320/73

The portion of the term of this patent subsequent to Dec. 25, 1990, has been disclaimed.

Int. Cl.² G02B *5/126, 5/128*

U.S. Cl. 350—104 7 Claims



1. A light retroflective arrangement for use in a sign having an exposed surface, comprising a body of transparent material having an index of refraction less than 1.9, said body having an outer surface of a configuration corresponding to that obtained by rotating an ellipse about its minor axis equiplanar with the exposed surface of the sign and normal to the major axis thereof, the major axis of the ellipse being positioned substantially coplanarly with the surface of the sign and a central plane normal to said major axis and subdividing the entire surface of said body into two surface portions which have smallest radii of curvature in regions adjacent said central plane, said body being embedded in said sign at said exposed surface so that one of said surface portions is exposed and is located externally of said sign and the other surface portion is concealed and is accommodated within said sign, said body being elliptical in all its sections taken in planes perpendicular to said sign surface light rays impinging on said region of said exposed surface portion at a small angle to said central plane being focussed at said concealed surface portion; and reflective means adjacent said concealed surface portion and operative for reflecting said light beams focused at said exposed surface portion.

3,981,558
LIQUID CRYSTAL ELECTRO-OPTICAL DISPLAY

Chan Soo Oh, Diamond Bar, and Paul Y. Hsieh, Irvine, both of Calif., assignors to Timex Corporation, Waterbury, Conn.

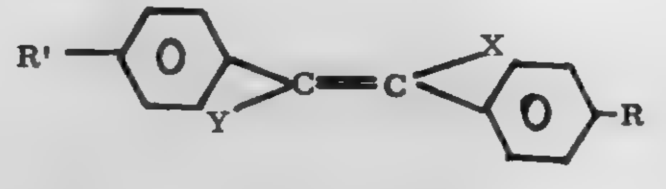
Filed Nov. 12, 1973, Ser. No. 415,200

Int. Cl.² C09K *3/34*; G02F *1/13*

U.S. Cl. 350—160 LC 5 Claims

1. A liquid crystal material of positive dielectric anisotrophy comprising a mixture of:

A. from 50 to 95% by weight of at least one compound of the formula



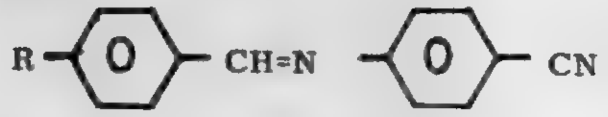
wherein

R is n-butyl, n-hexyl, n-heptyl or n-octyl;

R' is ethoxy, butyloxy, or hexyloxy;

X and Y are hydrogen or chlorine; and when X is hydrogen, Y is chlorine, and when Y is hydrogen, X is chlorine; and

B. from 5 to 50% by weight of at least one compound of the formula



wherein

R is $CH_3-(CH_2)_n-O-$ or $CH_3-CH_2)_n$ $-COO-$ wherein *n* is an integer.

3,981,559
LIQUID CRYSTAL DISPLAY

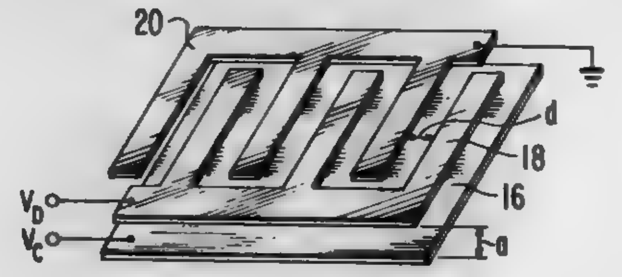
Donald Jones Channin, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 25, 1974, Ser. No. 527,054

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.² G02F *1/13*

U.S. Cl. 350—160 LC 17 Claims



1. A method of operating a dielectrically anisotropic liquid crystal comprising the steps of:

applying to the liquid crystal a non-zero electric field Ey having its major component in a given direction;

concurrently applying to the liquid crystal a non-zero electric field Ex having its major component in a direction orthogonal to said given direction; and

independently controlling the amplitudes of the Ex and Ey fields.

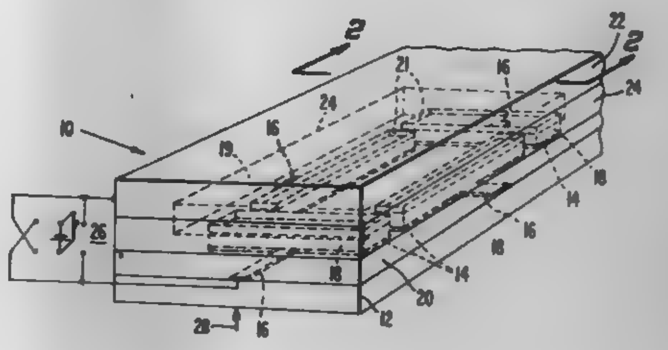
3,981,560
ELECTROCHROMIC DISPLAY DEVICE

Philip Michael Heyman; Robert Leon Quinn, both of Trenton, and Istvan Gorog, Princeton, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed June 16, 1975, Ser. No. 587,428

Int. Cl.² G02F *1/36*

U.S. Cl. 350—160 R 11 Claims



1. An electrochromic display device comprising:

a substantially transparent substrate,

at least one substantially transparent electrically conductive electrode on said substrate,

a layer of electrochromic material partially covering said electrode,

an organic insulating layer substantially covering the uncovered portion of said transparent electrode, and

an electrolyte on said layer of electrochromic material with said insulating layer substantially preventing said electrolyte from contacting said transparent electrode, and

a counter electrode spaced from said transparent electrode, said counter electrode being in contact with said electrolyte.

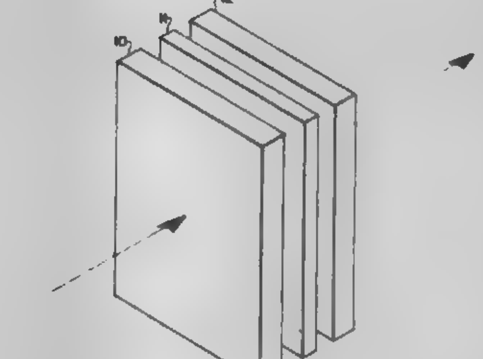
3,981,561
OPTICALLY ACTIVATED EXCIPLEX SHUTTER/ATTENUATOR

Joel A. Weiss, Fairfax, and James P. Sheridan, Burke, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 16, 1975, Ser. No. 623,144

Int. Cl.² G02F *1/36*

U.S. Cl. 350—160 P 6 Claims



1. An optically activated system for attenuation of incident optical radiation which comprises:

an optical radiation transparent housing;

an exciplex solution within said housing;

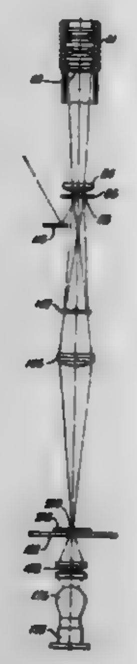
a first optical radiation filter for absorbing a desired short wavelength range while passing radiation of longer wavelengths;

a second optical radiation filter for absorbing optical radiation having wavelength greater than a desired wavelength while passing radiation of a desired wavelength range;

said housing including said exciplex solution positioned to receive all wavelengths of incident radiation with each of said first and second optical radiation filters positioned to receive radiation passing through said exciplex solution.

3,981,562
SPATIAL FILTERING FOR ERROR DETECTION

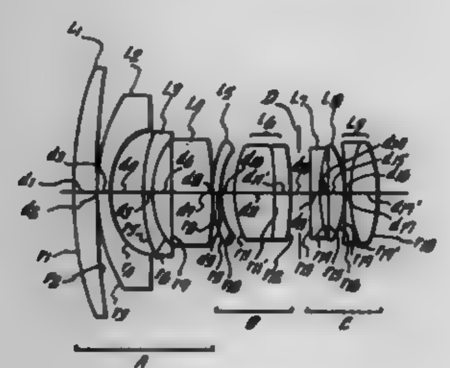
Erik W. Anthon, Santa Rosa, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.
Filed Sept. 9, 1974, Ser. No. 504,498
Int. Cl.² G02B *27/38*
U.S. Cl. 350—162 SF **29 Claims**



1. In a Fourier transform imaging microscope for examining parts carrying a repetitive stripe pattern, a source of light, means forming a slit through which said light passes, means including said part carrying the repetitive pattern for forming a Fourier transform image of the slit after the light beam passes through the part, means for suppressing the image of the stripe pattern of the part and for enhancing the defects in the stripe pattern including at least one slit having an orientation parallel to the first named slit, and means for positioning the slit in the Fourier transform image.

3,981,563
RETROFOCUS WIDE ANGLE LENS SYSTEM

Akiyoshi Nakamura, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed May 8, 1975, Ser. No. 575,493
Claims priority, application Japan, May 11, 1974, 49-52563
Int. Cl.² G01B *9/64*
U.S. Cl. 350—214 **19 Claims**



1. A retrofocus wide angle lens system comprising from the object to image side of the total lens system:

a first lens group consisting consecutively from the object side to the image side of a first positive meniscus lens having its convex surface on the object side, a first negative meniscus lens having its convex surface on the object side, a second negative meniscus lens having its convex surface on the object side and a second positive lens whose radius of curvature on the object side surface has a greater absolute value than its radius of curvature on the image side surface;

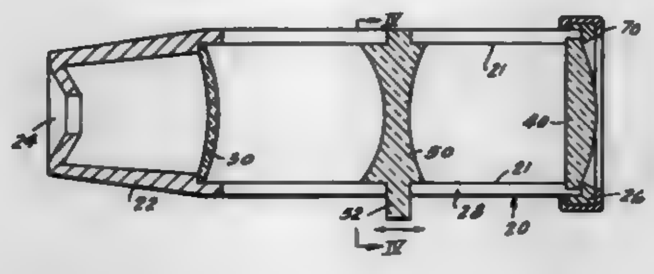
a second lens group positioned after the first lens group including a negative meniscus lens having its convex surface on the object side and at least one biconvex lens on the image side of the negative meniscus lens;

a diaphragm positioned rearward of the second lens group; and

a third lens group positioned after the diaphragm and consisting consecutively from the object side to the image side of a negative lens whose radius of curvature on the object side surface has a greater absolute value than its radius of curvature on the image side surface, a first positive lens and a second positive lens, at least one of the three lenses of the third lens group being a cemented doublet.

3,981,564
LENS SELECTOR

Gerald Hoos, 1035 Wesley Ave., Evanston, Ill. 60202
Continuation-in-part of Ser. No. 224,642, Feb. 8, 1972, abandoned. This application Oct. 3, 1975, Ser. No. 619,195
Int. Cl.² G02B *7/02*
U.S. Cl. 350—255 **11 Claims**



1. A lens selector comprising

A. an elongated opaque housing having
   1. an axis,
   2. a generally cross-sectionally rectangular configuration,

B. a converging meniscus lens means fixed coaxially in said housing in spaced relationship to one end thereof, including mounting means therefor,

C. a plano-convex lens means fixed coaxially in said housing adjacent the opposite end thereof, including mounting means therefor, said plano convex lens means generally conforming in its perimeter contour approximately with the interior cross section of said housing and also approaching said interior cross section in its length and width dimensions,

D. said housing further having
   1. a generally constant interior cross section between said converging meniscus lens means and said plano convex lens means, and
   2. a longitudinally extending slot defined therein between said converging meniscus lens means and said plano convex lens means,

E. a biconcave lens means comprised of a clear plastic and coaxially located in said housing between said converging meniscus lens means and said plano convex lens means said biconcave lens means generally conforming in its perimeter contour approximately with said constant interior cross section and also approaching said constant interior cross section in its length and width dimensions, said biconcave lens means being adapted for longitudinal sliding movements coaxially in said housing,

F. handle means located adjacent said slot and accessable exteriorly relative to said housing for so slidably moving said biconcave lens means,

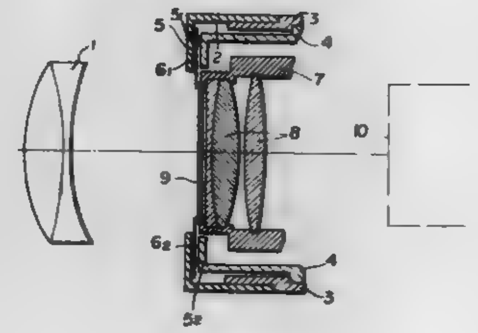
G. first rail means fixed to a first perimeter portion of said biconcave lens means and also fixed to said handle means extending transversely through said slot and being slidably engagable with longitudinal edge portions of said slot for guidance of said biconcave lens means during said longitudinal sliding movements thereof,

H. second rail associated with at least a second perimeter portion of said biconcave lens means and slidably engagable with portions of said housing, said second rail means cooperating with said first rail means to stabilize said biconcave lens means during said longitudinal sliding movements thereof,

I. said converging meniscus lens means said plano convex lens means and said biconcave lens means coacting together so that, as said biconcave lens means is so slidably moved, a focused image is substantially continuously visible adjacent said one end over a range of focal lengths extending at least about 10:1 focal length from wide angle to telephoto positions.

3,981,565
LIGHT-MODULATING DEVICE

Tamotsu Karasawa, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 23, 1973, Ser. No. 408,266
Claims priority, application Japan, Oct. 28, 1972, 47-123933[U]
Int. Cl.² G05D *25/00*
U.S. Cl. 350—266 **4 Claims**



1. A light-modulating device comprising:

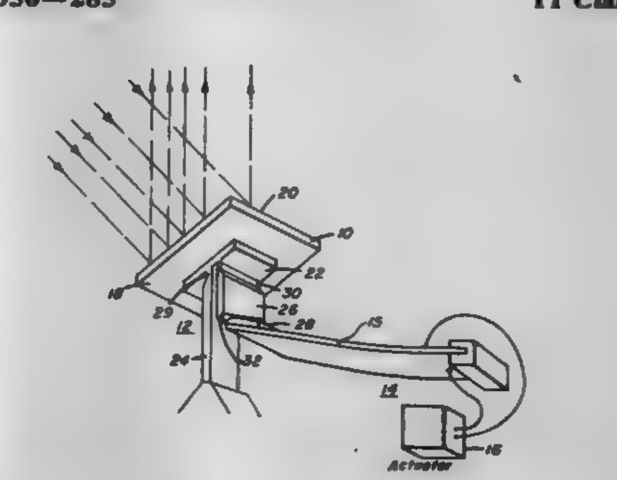
a mechanical diaphragm for the modulation of light, said modulation being a function of the adjustment of the aperture opening of said diaphragm, said diaphragm having relatively lower aperture accuracy for small aperture openings and relatively higher aperture accuracy for large aperture openings;

drive means for adjusting the aperture opening of the diaphragm; and

a neutral density filter element arranged to optically cover the aperture opening of said diaphragm means, said filter element having at least two regions of different density, one of said regions being a central first region which is centered at the optical axis and in which the density is constant with the radial distance from the optical axis, said first region for cooperation with said mechanical diaphragm for relatively lower aperture accuracy conditions, the other second region being contiguous with said first region, and havings its density vary linearly with the radial distance from the optical axis, said second region for cooperation with said mechanical diaphragm for relatively higher aperture accuracy conditions, whereby light modulation over a wide range is provided which varies as the product of the area of the diaphragm aperture opening and the transmittance of the effective portion of the filter element.

3,981,566
LEVER-ACTION MOUNTINGS FOR BEAM STEERER MIRRORS

Lee F. Frank, and James K. Lee, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 23, 1974, Ser. No. 508,775
Int. Cl.² G02F *1/29*
U.S. Cl. 350—285 **11 Claims**



2. A light beam steering apparatus for use in optical tracking and scanning systems to redirect light beams over a predetermined angular range, said steering apparatus comprising:

a. a mirror for redirecting light beams incident thereto;

b. a bender-type driver for producing a motion signal in accordance with an actuating signal, said driver being fixed at one end and free to move at the other;

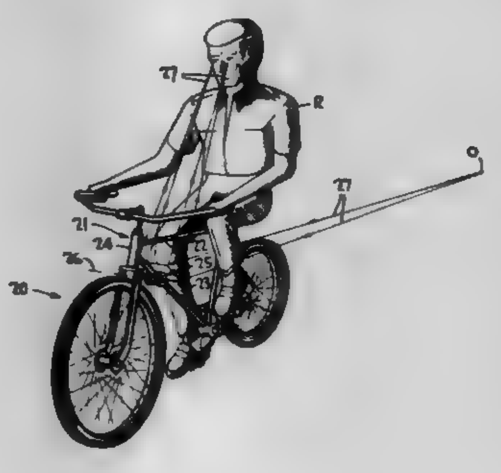
c. a controllable actuator means for supplying an actuating signal to said driver;

d. at least one support including a hinge coupled to said mirror for establishing a fulcrum axis for said mirror; and

e. means for coupling said driver to position said mirror, said means including a drive link coupled at one end to said mirror by means of a hinge and coupled at the other end to the free end of said driver, the spacing of said hinges, being preselected to transform said driver motion signal into a mirror rotation corresponding to the predetermined angular range.

3,981,567
BICYCLE FRAME MOUNTED REAR VIEW MIRROR

John J. Cululi, 2315 Kemmerer St., Bethlehem, Pa. 18017, and Glenn R. Ash, 173 Ridge St., Emmaus, Pa. 18049
Filed Feb. 19, 1975, Ser. No. 551,048
Int. Cl.² G02B *5/08;* A47G *1/24*
U.S. Cl. 350—307 **11 Claims**



1. A frame mounted rear view mirror for a bicycle having a frame, wheels rotatably mounted on said frame, and handle bars disposed above said frame, said frame having at least one longitudinal bar member and at least one diagonal bar member, a head bar member being disposed above the forward one of said wheels and being connected to the forward ends of said longitudinal and diagonal bar members, the improvement

comprising a mirror assembly including mirror mounting means connected to one of said longitudinal, said diagonal and said head members for pivotal movement about an axis transverse to said longitudinal member, said mounting means including a mirror support element defining a mirror support surface lying at an angle facing upwardly and rearwardly and being disposed wholly below said handle bars, said mirror assembly further including a flat plane mirror mounted on said support element against said mirror support surface, whereby said mirror assembly avoids any interference with a bicycle operator and establishes a line of sight to the operator's rear while avoiding potential safety hazards by being mounted below said handle bars and out of the immediate vicinity thereof.

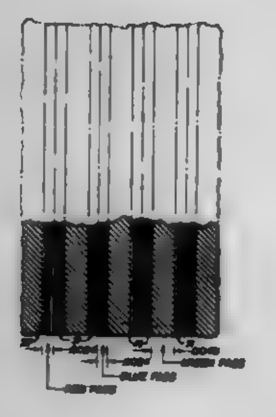
3,981,568
STRIPED DICHROIC FILTER WITH BUTTED STRIPES AND DUAL LIFT-OFF METHOD FOR MAKING THE SAME

Leroy A. Bartolomei, Santa Rosa, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Division of Ser. No. 305,692, Nov. 13, 1972, abandoned. This application July 1, 1974, Ser. No. 484,401

Int. Cl.^{2} B05D *5/06;* **G02B** *5/28, 5/22*

U.S. Cl. 350—317 **8 Claims**



1. A method for forming supplementary pattern in a spatial relationship of first and second coatings on a substrate having a surface comprising, forming a first layer having a pattern of a first plurality of spaced parallel stripes of a first material on said surface of said substrate which is complementary to that required for the first coating, applying a first coating to the surface and overlying the pattern on the first material, forming a first layer of a second material on said first coating, removing the first layer of first material by etching so that there remains on the surface the first coating with an overcoat of the second material, forming a second layer having a pattern of second plurality of spaced parallel stripes of the first material complementary to that required for the second coating, said pattern of the second layer of the first material serving as a bias mask and being biased so that there will be an overlap of the first and second coatings, applying the second coating, applying a second layer of the second material on the second coating, removing the second layer of the first material by etching and removing all of the layers of the second material by etching so that there remains the first and second coatings in patterns in which the edges of the first and second pluralities of stripes of the patterns abut each other with no overlap.

3,981,569
EYEGLASS STRUCTURE

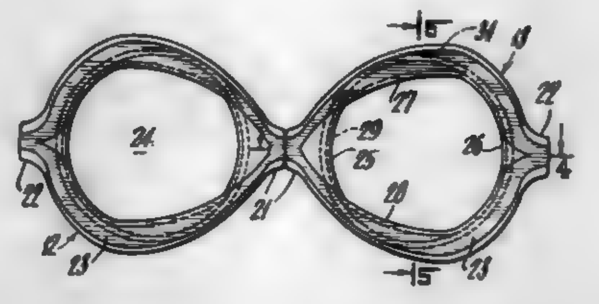
J. Robert Morgan, Palmer's Hill Road, Old Greenwich, Conn. 06830

Filed Dec. 16, 1974, Ser. No. 533,126

Int. Cl.^{2} G02C *9/04*

U.S. Cl. 351—47 **5 Claims**

1. An eyeglass structure comprising a rear frame structure including a pair of circular portions connected by a nose bridge and a pair of temple supports and means for attaching them to the outer edges of said circular portions, each circular portion having an annular outwardly extending peripheral ridge adjoining the front edge thereof, a pair of substantively identical front portions each having an opening therein coordinated with the opening in one of said circular frame portions, at least the rear portion of the opening in each front portion being circular and having an annular recess in the wall thereof for removably receiving one of said annular ridges to rotatably secure the front portion to said frame, each of said front portions having similar outwardly extending elements on opposite sides thereof to overlie a portion of the nose bridge and temple attaching means, the configuration of said front portions and outwardly extending elements being coordinated with the configuration of said rear frame structure and completely overlying and covering said rear frame structure and said nose bridge and temple supports to produce the effect of a unitary structure when said front portions are in selected adjusted positions relative to said rear frame structure with said elements overlying said nose bridge and temple supports and light modifying lenses carried by at least one pair of said portions whereby said elements when in said selected positions, position said light modifying lenses in the desired relationship for cooperation with the eyes.



3,981,570
MOTION PICTURE PROJECTOR DEVICE AS AUDIO-VISUAL AID AND AUDIO-VISUAL SYSTEM USING THE SAME

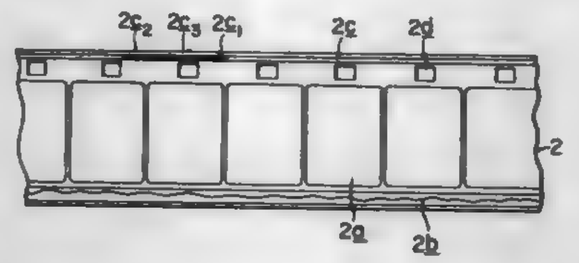
Akira Ashida, Tokyo, and Kiyoshi Takahashi, Kunitachi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 3, 1974, Ser. No. 476,107

Claims priority, application Japan, June 8, 1973, 48-64478; June 8, 1973, 48-64481; June 8, 1973, 48-64479

Int. Cl.^{2} G03B *31/00*

U.S. Cl. 352—12 **7 Claims**



1. An audio-visual system for reproducing a strip of cinematographic film provided with an image information zone, along which a first image information, for motion projection, and a second image information, for still projection, are recorded in succession, and along which there are provided a first sound signal zone corresponding to said first image information, a second sound signal zone corresponding to said second image information, a transfer instruction signal zone, and a mode change-over signal zone, said system comprising in combination:

a. signal recording means having;
   1. a sound signal recording medium and means for moving said recording medium continuously at a substantially constant speed; and

   2. first transducing head means arranged to record a sound signal onto said sound signal recording medium, and of converting the thus recorded sound signal into an electrical signal;

b. film feeding means capable of feeding said film in a motion projection mode, and of temporarily stopping the film feeding for a still projection mode;

c. sound signal information reproducing means; and

d. a control device having;
   1. second transducing head means for detecting a first sound signal along said first sound signal zone of said film and for directing the thus detected sound signal into said sound signal information reproducing means;
   2. third transducing head means for detecting in sequence during movement of said film, a transfer instruction signal in said transfer instruction signal zone, a second sound signal in said second sound signal zone, and a mode change-over signal in said mode change-over signal zone; and
   3. control means electrically connected to said first and third transducing head means, and said film feeding means to control the operations of said transducing head means and said film feeding means,

said control means being operative in response to said transfer instruction signal from said third transducing head means to cause the second sound signal and said mode changeover signal detected by said third transducing head means to be recorded onto said recording medium via said first transducing head means,

said control means also being operative in response to the detection of said mode change-over signal by said third transducing head means to control said film feeding means to stop the film feeding for said still projection mode and for simultaneously causing the signal recorded on said recording medium to be detected by said first transducing head means and for the thus detected signal to be directed through said sound signal reproducing means, and

said control means further being operative in response to the detection, by said first transducing head means, of said mode change-over signal recorded on said recording medium to return said film feeding means to its motion projection mode.

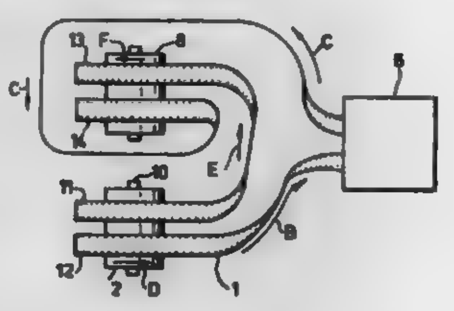
3,981,571
SPOOLING ARRANGEMENTS FOR ENDLESS BAND MATERIAL

Penrose David Robertson, London, England, assignor to Westrex Limited, London, England

Filed Apr. 4, 1975, Ser. No. 565,170

Int. Cl.^{2} G03B *23/00*

U.S. Cl. 352—125 **9 Claims**



1. An arrangement for spooling endless band materials, and for controlling the said band material during a transport operation by which the entire length of the said band material is transported past a fixed station, comprising a first double spool adapted to receive and hold a loop of the band material and to carry substantially the whole length thereof in two spirals of the band material laterally spaced-apart, a second double spool adapted to receive and hold a loop of the band material and to receive and carry the band material from the first double spool in two spirals of the band material laterally spaced-apart, motor means for controlling the first double spool for rotation in the pay-off sense of the band material wound thereupon during a first half of the said transport operation, and in the take-up sense during the second half of the transport operation, motor means for controlling the second double spool for rotation in the take-up sense for the band material during the first half of the said transport operation, and in the pay-off sense during the second half of the transport operation, a first system of band-supporting guide members fixed in position relatively to the first and second double spools, a second system of band-supporting guide members co-operating with said first system of guide members and movable with respect thereto from first positions during the first half of the said transport operation, to second positions during the second half of the transport operation, the said band-supporting guide members being positioned, in the first said positions of the movable guide system, for guiding said band material from a first said spiral on the first double spool to the said fixed station and from the fixed station onto a first spiral on the second double-spool and also for guiding said band material from the second spiral on the first double-spool onto a second spiral on the second double-spool, the said band-supporting guide members being re-positioned, in the second said positions of the movable guide system, for guiding said band material from the said second spiral on the second double-spool to the said fixed station and from the fixed station onto a second spiral on the first spool and also for guiding said band material from the first spiral on the second double-spool to a first spiral on the first double-spool.

3,981,572
MIRROR FOLLOW-UP DEVICE FOR A FILM PROJECTOR

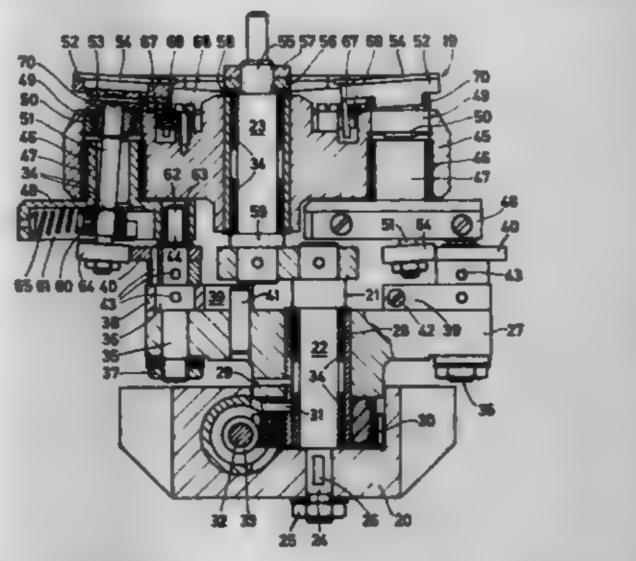
Jean-Jacques Bessire, and Francis Loardon, both of Bern, Switzerland, assignors to Eresa S.A., Bern, Switzerland

Filed Sept. 23, 1974, Ser. No. 508,616

Claims priority, application Germany, Sept. 24, 1973, 2347931

Int. Cl.^{2} G03B *41/10*

U.S. Cl. 352—112 **7 Claims**



1. A mirror follow-up device for a projector intended to project a path of light rays of a continuously movable film upon an image plane, comprising:

a plurality of mirrors and a like number of mirror supports;
a plurality of ball and socket joints about each of which one of said mirrors is pivotable on one of said mirror supports;
a supporting base;
a bearing axle connected to said supporting base and having two parallel and staggered shaft portions;
a plate rotatingly mounted on one of said shaft portions;
a mirror wheel rotatingly mounted on the other of said shaft portions, said mirrors being attached to said mirror wheel through said mirror supports and said ball and socket joints;

a plurality of coupling means corresponding to the number of said mirrors and being connected between said plate and said mirror wheel for transmitting the rotating motion of said plate to said mirror wheel; and

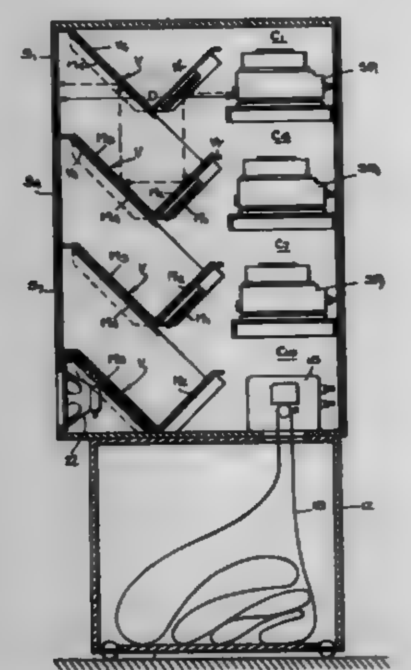
a plurality of extended guide shafts, each of said guide shafts being connected adjacent one end thereof with a respective one of said ball and socket joints; and wherein

each of said coupling means comprises a sliding block disposed perpendicular to said bearing axle and having an elongated recess therein, a slide displaceable within said recess for supporting a respective one of said guide shafts, an eccentric disc rigidly connected to said plate, a roller rotatingly mounted at the free end of said respective one of said guide shafts and cooperating with said eccentric disc, and a spring for pressing said roller against said eccentric disc, whereby said respective one of said guide shafts is pivoted about an axis which is substantially perpendicular to a plane defined by the path of rays emanating from said projector.

3,981,573
AUDIO-VISUAL SLIDE PROJECTION SYSTEM

Robert C. Schwartz, Woodmere, N.Y., assignor to Motiva, Ltd., New York, N.Y.

Filed July 29, 1975, Ser. No. 600,000
Int. Cl.² G03B *21/22, 21/00*
U.S. Cl. 353—15 9 Claims



1. A multiple slide projection system comprising:

A. a vertical array of individual slide projectors, each including a projection lens having a horizontal optical axis, a supply of slides and an indexing mechanism to transfer slides successively from the supply to an optical path leading to the projection lens for projection of slide images along said axis;

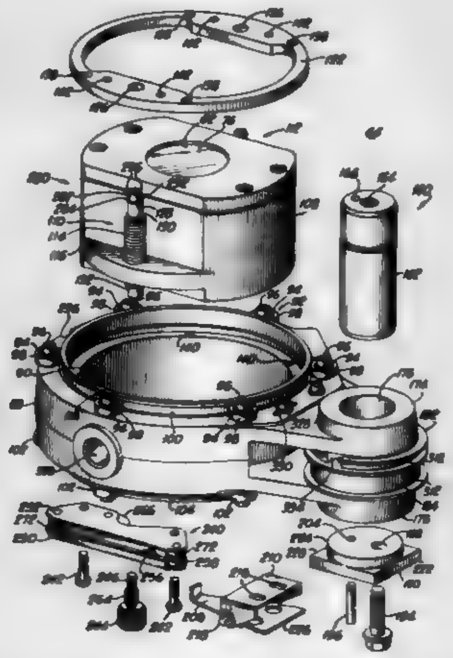
B. a vertical array of co-planar rear view screen sections to form a mosaic screen matrix adjacent the array of projectors, each section of the matrix lying in the vertical plane and being associated with a corresponding projector on the same level to present the slide image projected by said corresponding projector;

C. an upright V-shaped reflector assembly interposed between each screen section and its corresponding projector on the same array level, said each same-level assembly having an inclined front leg which faces the screen section and a reversely-inclined rear leg which faces the projection lens of the corresponding projector, each said front and rear leg of each assembly having mirrors on the upperside and the underside thereof, each said assembly being positioned in the optical axis of each projector and screen section so that the underside mirror on the rear leg receives an image from the lens and directs it downwardly onto the upperside mirror on the rear leg of the V-shaped reflector assembly on the level below, which mirror directs the image forwardly toward the upperside mirror on the front leg of the level-below assembly, which mirror directs the image upwardly onto the underside mirror on the front leg of the same-level assembly, which mirror in turn projects the image onto the assoicated screen section, whereby the opitical path between each lens and each screen section is substantially longer than the straight line distance therebetween.

3,981,574
OPTICAL DEVICE

Alexander Jesensky, Barrington; Frederick D. Meller, Lombard; Robert C. Patzke, Prospect Heights, and Gilbert W. Willey, Barrington, all of Ill., assignors to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Dec. 17, 1973, Ser. No. 425,511
Int. Cl.² G03B *3/00*
U.S. Cl. 353—101 16 Claims



1. A device for providing a projected image of a micro-image comprising

an elongated illumination path,

means for positioning said micro-image in said illumination path,

means for illuminating said micro-image to form said projected image of said micro-image having a first spatial disposition or image position in an image plane,

optical means for receiving said projected image and for variably optically altering the spatial disposition or image position of said projected image in said image plane from said first spatial disposition or image position to a second, distinct, spatial disposition or image position in said image plane, said optical means including an axis of rotation,

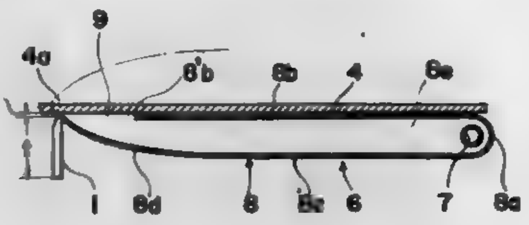
a projection lens assembly disposed between said illuminating means and said optical means, and

means for mounting said optical means along said illumination path in a position to receive said projected image from said projection lens assembly, said mounting means including means for variably adjusting the longitudinal position of said optical means along a portion of said elongated illumination path and means for enabling the movement of said optical means into and out of said illumination path, said enabling means including a stationary member providing a fulcrum or pivot point about which the optical means is pivotably movable into and out of the illumination path and said mounting means including means for impeding the pivotal movement of said optical means when said axis of rotation is substantially coincident with the longitudinal axis of said illumination path.

3,981,575
PHOTOCOPIER ILLUMINATION DEVICE

Susumu Tanaka, Sakai; Yuji Enoguchi, Osaka; Masaya Ogawa, Sakai; Hidetoshi Kawabata, Tondabayashi; Takaji Kurita, Kawachinagano; Takao Fujiwara, Sakai; Hiroshi Murasaki, Sakai, and Kenichi Wada, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed June 3, 1975, Ser. No. 583,391
Claims priority, application Japan, June 22, 1974, 49-71518
Int. Cl.² G03B *27/00, 15/28, 15/32*
U.S. Cl. 355—1 25 Claims



1. An optical illumination device for use in a copying apparatus of the type wherein an object is to be illuminated and an image thereof is to be projected through a particular image transmitter formed of a plurality of optical fibers of graded refractive index in bundled configuration to a light sensitive surface, said device comprising: an illumination light means; and

a light guide duct having the shape of a substantially flattened cubic body supported within the machine housing below a transparent support structure for the support of the object thereon, said light guide duct comprising top and bottom reflective surfaces in spaced relation to each other, a pair of opposed side reflective surfaces extending between said top and bottom reflective surfaces in spaced relation to each other, and an end reflective surface at one end of said light guide duct closing the end thereof, said bottom reflective surface being greater in length than said top reflective surface and having a portion thereof adjacent the other end of said light guide duct upwardly curved, said upwardly curved portion of said bottom reflective surface terminating adjacent the light receiving area of the image transmitter and providing a light exit in cooperation with the free end of said top reflective surface,

said light means being accommodated within said light guide duct and held in position adjacent said end reflective surface, rays of light from said light means to travel towards said curved portion of said bottom reflective surface and, after having been reflected by said curved portion of said bottom reflective surface, further travel towards the object through said light exit.

3,981,576
MULTICOLOR ELECTROPHOTOGRAPHIC COPIER WITH LIQUID DEVELOPING

Shozo Inoue, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1974, Ser. No. 463,161
Claims priority, application Japan, Apr. 24, 1973, 48-46484
Int. Cl.² G03G *15/01*
U.S. Cl. 355—4 9 Claims

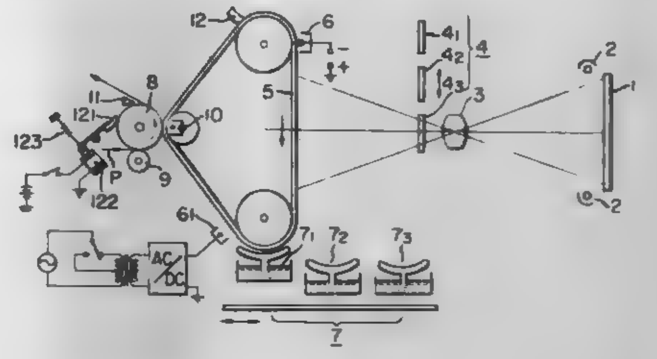
1. An electrophotographic copying apparatus comprising:

a rotatable image bearing member;

means for successively forming on said image bearing member electrostatic latent images of respective color components of an original in a predetermined spaced-apart relationship, thereby defining non-image bearing portions on said image bearing member between said successive images;

means for maintaining said non-image bearing portions of said image bearing member at a potential of a predetermined polarity;

developing means for applying different color charged developers to said image bearing member, said charged developers having a polarity opposite to said predetermined polarity, and each said developer comprising toner particles suspended in developing liquid, said developer means including a plurality of developing units, one for each said different color developer, disposed below said image bearing member for applying the developers individually to the respective latent images, wherein excess toner particles are attracted to said non-image bearing portions thereby avoiding mixing of the developers;



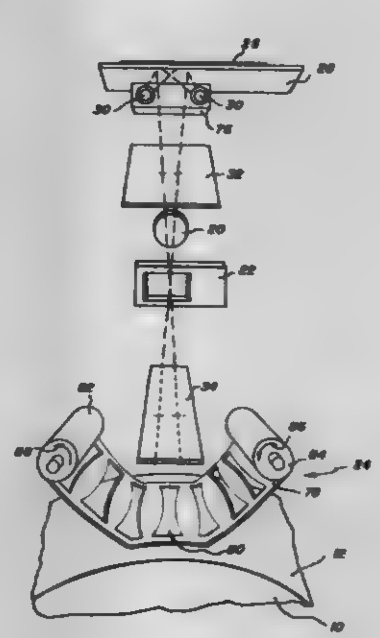
means for transferring the images thus developed onto a transfer material in a superimposed relationship; and

means for cleaning said image bearing member after transfer of the images.

3,981,577
OPTICAL SYSTEM FOR AN ELECTROPHOTOGRAPHIC PRINTING MACHINE

George N. Tsilibes, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 18, 1974, Ser. No. 507,169
Int. Cl.² G03G *15/30*
U.S. Cl. 355—4 5 Claims



1. An optical system for forming a substantially uniform intensity light image of an original document, including:

a light source for illuminating the original document with light rays;

lens means in a light receiving relationship with the light rays transmitted from the original document to form a light image thereof;

an opaque belt member having a plurality of spaced slits therein, each of the slits in said belt member being of

different areas and having the widths thereof increasing in a lengthwise direction from a central region to the marginal regions thereof;
means for movably supporting said belt member; and
means for moving said belt member so as to position one of the slits in the optical path of the light image to correct the non-linearities of the light image transmitted thereto so as to transmit therefrom a light image having substantially uniform intensity.

3,981,578
ELECTROPHOTOGRAPHIC COPYING MACHINE WITH SEAMLESS IMAGE FORMING AND TRANSFER BAND

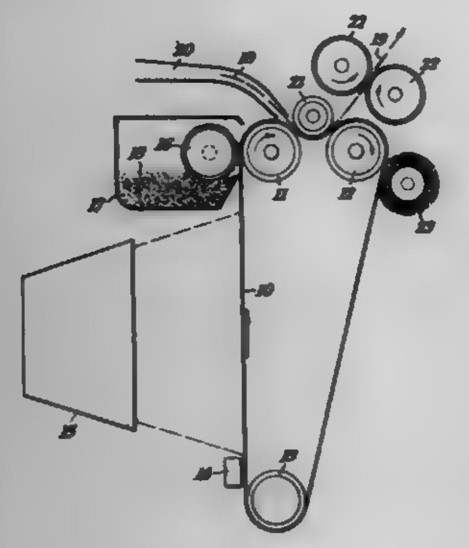
Paul Heinzer, Zurich, Switzerland, assignor to Wifo Wissenschaftliches Forschungs-Institut A.G., Zurich, Switzerland

Filed Feb. 11, 1975, Ser. No. 549,048

Claims priority, application Switzerland, Feb. 11, 1974, 1838/74

Int. Cl.² G03G *15/00*

U.S. Cl. 355—16 **6 Claims**



1. In an electrophotographic copying machine including a charging station, an exposure station, a dusting station, and a transfer station, wherein an endless, image-forming and transfer band made of an electrically conducting material having a photoconductive coating moves continuously and in succession past said stations, said charging station imparting an electrostatic charge to said band, said exposure station projecting an image of an original onto said band, said dusting station applying toner powder to electrostatic images formed on said band at the exposure station, and said transfer station transferring toner powder images from said band to a copy sheet, the improvement which comprises providing said endless band in a form which is seamless.

3,981,579
APPARATUS FOR SELECTING ORIGINALS FOR COPYING ON THE BASIS OF IMAGE SHARPNESS

Volker Weinert, Munich; Friedrich Hujer, Grunwald, and Walter Knapp, Munich, all of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

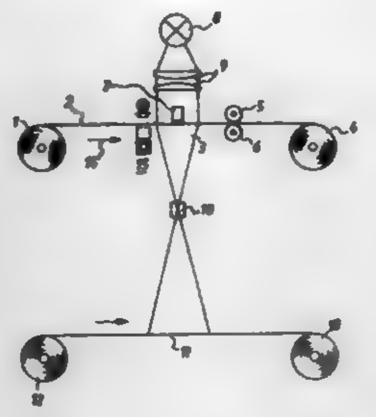
Filed Sept. 7, 1973, Ser. No. 395,366

Claims priority, application Germany, Sept. 9, 1972, 2244340

Int. Cl.² G03B *27/00*

U.S. Cl. 355—18 **17 Claims**

1. In an arrangement for copying originals, an arrangement for selecting originals to be copied on the basis of the sufficiency of the image sharpness of such originals, comprising, in combination, a copying station having means for copying an original; means for monitoring the rate of change of density across each original; and means for automatically preventing copying of an original unless the monitored rate of change of density of such original at least once exceeds a predetermined reference value.



3,981,580
METHOD AND A SYSTEM FOR CONCURRENTLY COPYING BOTH SIDES OF AN ORIGINAL

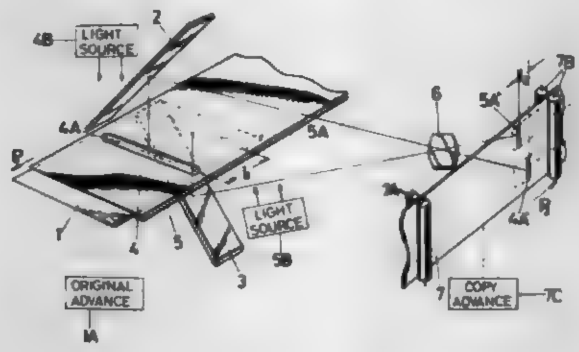
Hajime Yamashita, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1974, Ser. No. 521,146

Claims priority, application Japan, Nov. 12, 1973, 48-126218

Int. Cl.² G03B *27/32, 27/52*

U.S. Cl. 355—24 **15 Claims**



1. A system for concurrently copying both sides of an original having a selected length and a selected width onto the same side of a copy having a selected length and a selected width comprising:
a first and a second opaque plate overlapping each other and spaced dfrom each other by a small distance to allow the original to pass therebetween in an original scanning direction which is parallel to the length of the original, each plate having an elongated transparent window transverse to the original scanning direction and the windows being spaced from each other along the original scanning direction by a distance which is less than the length of the original;
means defining a passageway through which the copy moves in a copy scanning direction which is parallel to the length of the copy;
means for forming a reflected light image of the portions of the original scanned by said windows as the original moves in said original scanning direction; and
means for scanning adjacent areas of the same side of the copy with said reflected light image as the copy moves along said copy scanning direction, said adjacent areas being side-by-side across the width of the copy and being coextensive along the length of the copy.

11. A method of concurrently copying both sides of an original onto the same side of a copy comprising the steps of:
scanning a first side of the original with a first incident beam and a second side of the original with a second incident beam to thereby provide a first and a second reflected beam, each of said incident beams being elongated in a direction transverse to the original scanning direction and the locations on the original where said incident beams impinge being spaced from each other along the scanning directions by a distance which is less than the size of the original in the scanning direction; and
scanning, in a copy scanning direction, a first and a second area of the copy, which are on the same side of the copy and are spaced from each other along a direction transverse to the copy scanning direction, with said first and second reflected beam respectively to thereby form thereon a first and a second copy image of the portions of the original scanned by said first and second incident beam respectively.

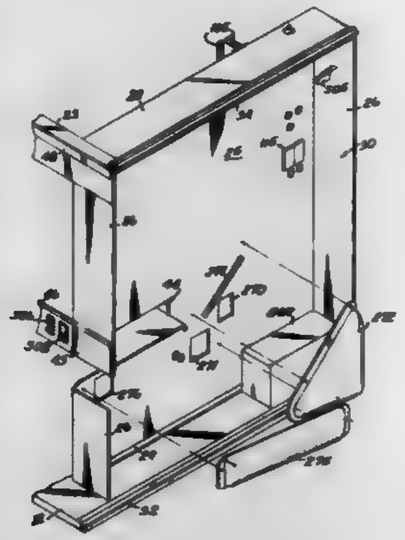
3,981,581
DRIVE SYSTEM FOR SHIFTING A MIRROR ASSEMBLY

Lawrence M. Freeman, 599 Ansley Court, NE., Atlanta, Ga. 30324, and Francis T. Arnold, 2379 Tristan Circle, NE., Atlanta, Ga. 30345

Division of Ser. No. 304,519, Nov. 7, 1972, which is a continuation-in-part of Ser. No. 146,114, May 24, 1971, Pat. No. 3,730,622. This application June 17, 1974, Ser. No. 479,879

Int. Cl.² G03B *13/24*

U.S. Cl. 355—44 **4 Claims**



1. In a microfilm reader-printer apparatus for copying images from microfilm onto copy paper including image forming means for reproducing the image of the microfilm on the copy paper and a viewing sceen, the improvement comprising:
image projection means for projecting the image from the microfilm into said image forming means to cause the image to be reproduced on said copy paper;
projection transfer means for selectively transferring the projected image from said image projection means onto said viewing screen while preventing said projected image from reaching said image forming means when said projection transfer means is in a first position and for allowing said projected image to reach said image forming means when said projection transfer means is in a second position, said projection transfer means constructed and arranged to be constantly urged toward said first position;
a drive motor having a rotary output shaft;
a driving member carried by and rotatable with said output shaft;
a flexible endless transfer member connected to and moved by said driving member along a prescribed path in a first direction;
a driving element mounted on and movable with transfer member along said prescribed path;
a first driven element operatively connected to said projection transfer means; said first driven element constructed and arranged to be engaged by and moved with said driving element at the speed of movement of said driven element to move said projection transfer means from said first position to said second position as said driving element is moved along a first predetermined portion of said prescribed path in said first direction by said transfer member and for releasing said first driving element when said projection transfer means reaches said second position;
a second driven element operatively connected to said projection transfer means; said second driven element constructed and arranged to be engaged by and moved with said driving element at the speed of movement of said driven element to move said projection transfer means from said second position to said first position as said driving element is moved along a second predetermined portion of said prescribed path in said first direction by said transfer member and for releasing said second driving element when said projection transfer means reaches said first position; and,
holding means for resiliently and releasably maintaining said projection transfer means in said second position when said projection transfer means is moved to said second position.

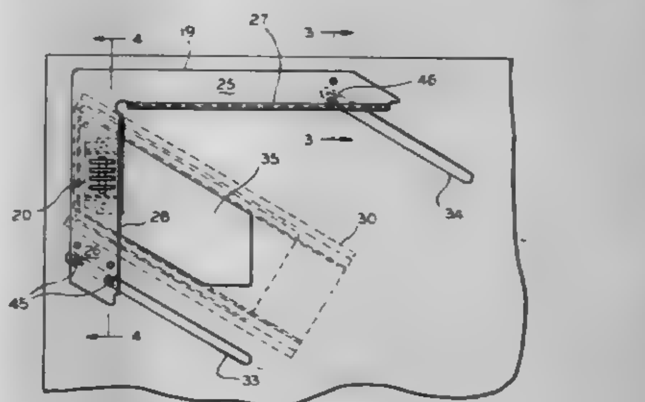
3,981,582
MICROFILM COPYBOARD WITH DOCUMENT INDEX

George William Bookless, Franklin Park, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Sept. 30, 1975, Ser. No. 617,471

Int. Cl.² G03B *27/62*

U.S. Cl. 355—75 **10 Claims**



1. A copyboard especially suited for use in a microfilm system, said copyboard comprising a guide member having a digital display means integrally mounted thereon, and guide member mounting means for enabling movement of said guide member and said display means across said copyboard, said guide member mounting means commprising a main guideway and spaced parallel outrigger guideways disposed on opposite sides of said main guideway.

3,981,583
APPARATUS FOR AUTOMATICALLY PROCESSING PHOTOPOLYMER PLATES

Shozo Tsuchida, Kawashishi, and Sakuo Okai, Joyoshi, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

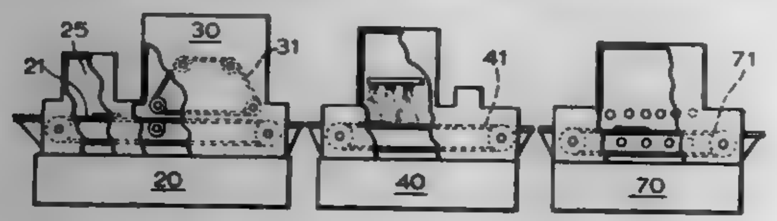
Filed Aug. 23, 1973, Ser. No. 390,874

Int. Cl.² G03B *27/30*

U.S. Cl. 355—100 **7 Claims**

1. An apparatus for processing plates having a photopolymer surface comprising: an exposure unit having a first conveyer for carrying said plates, a transparent photographic image conveyer alignable with said first conveyer and movable in the same direction as said first conveyer, and a light source adapted to pass light through said transparent photographic image conveyer for exposing portions of said photopolymer surface; a washing unit having a net conveyer adapted to continuously receive said plates from said first conveyer, and

nozzle means directed at said net conveyer, for spraying wash-out liquid on said plates to wash away the unexposed portions of said photopolymer surface, said nozzle means disposed above and at right angles to the plane of said net conveyer and operable in reciprocating motion perpendicular to the direction of movement of said plates; and a drying unit having a second conveyer adapted to continuously receive said plates from said net conveyer, and means for drying said plates carried by said second conveyer, said drying means including hot air blowers, infrared heating tubes and mercury lamps directed at said plates whereby plates are continuously processed for letter-press printing.



3,981,584
PREDICTION OF ENGINE FAILURE BY EXAMINATION OF PARTICLE SIZE DISTRIBUTION OF METAL PARTICLES IN LUBRICANT

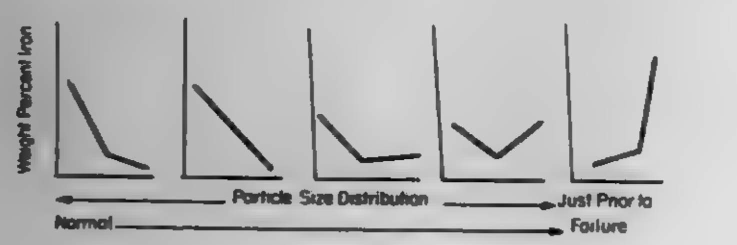
Jon Anthony Guymer, Beaumaris, Australia, assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,762

Claims priority, application Australia, June 13, 1974, 7674/74

Int. Cl.² G01N *33/28, 15/02*

U.S. Cl. 356—70 **6 Claims**



1. A method for predicting incipient failure of an apparatus having moving metal surfaces, which surfaces are wetted with a liquid lubricant which comprises separating the metal wear particles contained in a sample of said lubricant into at least three predetermined size ranges by passage through membranes having pore openings corresponding in size to said predetermined size, analyzing each of the fractions so separated for a selected metal contaminant, plotting the content of said metal contaminant for each of said fractions against the particle size thereof and determining the likelihood of mechanical failure in said apparatus from the shape of the resulting graph.

3,981,585
MOLECULAR CAVITY ANALYSIS-FILTER CAVITY

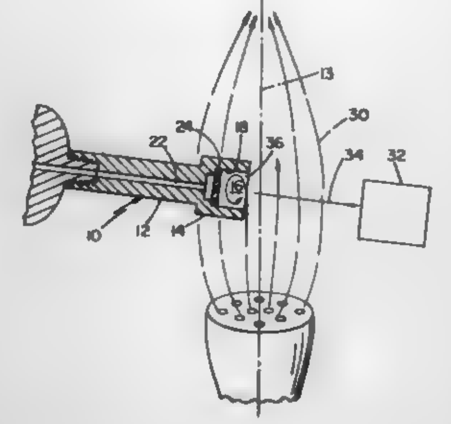
Ronald Belcher; Alan Townshend, and Stanley L. Bogdanski, all of Birmingham, England, assignors to Anacon, Inc., Ashland, Mass.

Continuation-in-part of Ser. No. 389,587, Aug. 20, 1973, Pat. No. 3,871,768. This application Feb. 3, 1975, Ser. No. 546,197

Int. Cl.² G01J *3/30*

U.S. Cl. 356—87 **4 Claims**

1. In an emission promoting structure for use in an analyzer in conjunction with a flame and an optical emission analysis device, said structure defining a sheltered region for containing reactant, an exposure path for flame gas to interact with the reactant in the sheltered region and an optical path projecting out of said sheltered region whereby, under conditions influenced by said structure, reactant vapor in said sheltered region and flame gas can mix, interact and emit along said optical path to said analysis device radiation characteristic of said interaction, the improvement wherein said emission promoting structure is defined by a filter and sheltering wall means extending from said filter to an opening, said wall means sheltering said filter from said flame, and said opening and wall means defining said exposure path for gas from the flame to interact with reactant provided on said filter.



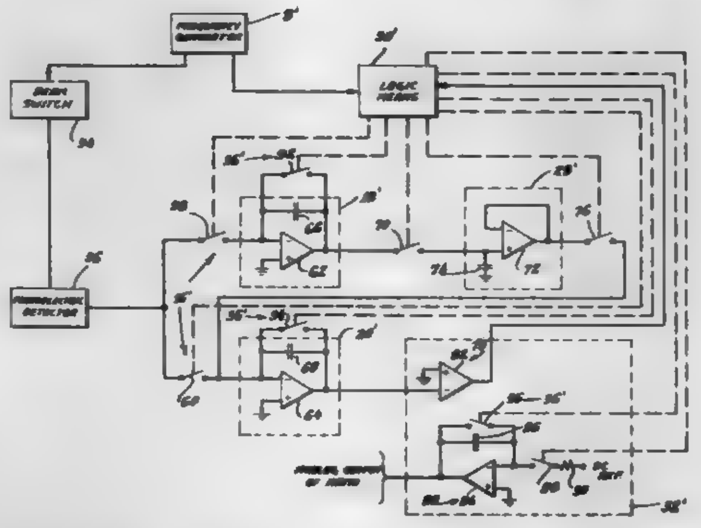
3,981,586
CONTINUOUSLY MONITORING RATIOMETER

Larkin B. Scott, Forth Worth, Tex., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 19, 1975, Ser. No. 578,500

Int. Cl.² G01J *3/42*

U.S. Cl. 356—97 **10 Claims**



1. Apparatus for continuously monitoring a ratio between two time-varying signals, comprising:
- a first integrator for the signal relating to the denominator of the ratio;
- a second integrator for the signal relating to the numerator of the ratio;
- chopper means for applying each of the signals to said corresponding integrator;
- sample and hold means for storing the output of said first integrator; said sample and hold means having the output thereof connected to the input of said second integrator;
- timer means for measuring the elapsed interval between when output from said sample and hold means is applied to said second integrator and when output from said second integrator transgresses through a reference level;
- reset means for returning said timer means and each said integrator to reference levels;
- a frequency generator; and
- logic means for controlling said chopper means, the output from said sample and hold means, and said reset means in synchronized intervals with the cycles of said frequency generator, said chopper means being controlled to apply the signals to said integrators for at least one frequency cycle, the output from said sample and hold means being controlled for connecting to said second integrator only after integration of the numerator signal has been completed thereby, and said reset means being controlled to establish the reference levels only after the elapsed interval in proportion to the ratio of the signals has been measured by said timer means.

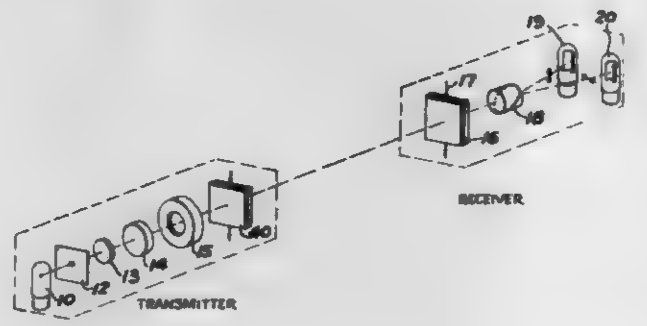
3,981,587
MONITORING RELATIVE DISPLACEMENT BETWEEN TWO DEVICES

John G. Gievers, Rochester, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 17, 1962, Ser. No. 245,320

Int. Cl. G01b *11/26*

U.S. Cl. 356—152 **36 Claims**



32. An apparatus for monitoring the relative position between two points at one of which a light source is positioned, said apparatus comprising
- means for polarizing and modulating the light from said light source into a polarized and modulated beam,
- a transducer which has a sensitive axis about which it may be rotated to change the birefringent action thereof from an initial birefringent position,
- said transducer being substantially insensitive to rotations about any other coplanar axis,
- means for positioning said transducer at said second point in the path of said light beam for rotation about its sensitive axis and with its sensitive axis parallel to the axis about which relative movement is to be monitored,
- means for analyzing said light beam after passage through said transducer for changes in polarity thereof due to rotation of the transducer about its sensitive axis relative to the beam,
- a second transducer positioned in the path of the light beam with its sensitive axis at an angle to the sensitive axis of the first transducer,
- and second analyzer means for analyzing the change in polarity of said light beam due to the rotation of said second transducer.

3,981,588
MEANS AND METHOD FOR DETERMINING MERIDIAN LOCATION AND AZIMUTH

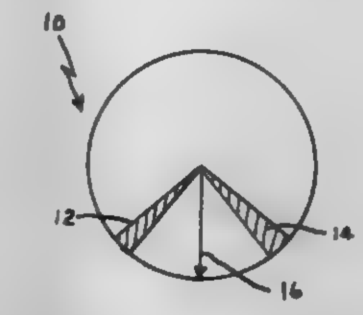
Theodore E. Wirtanen, Chelmsford, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 5, 1974, Ser. No. 494,936

Int. Cl.² G01B *11/26;* G01C *17/34*

U.S. Cl. 356—152 **4 Claims**

1. A system for determining meridian location comprising: a means for observing stellar events; a rotatable support means adopted to receive the stellar event observing means; means for selectively rotating said support means in a level plane; means connected to the observing means for timing, and recording sequential intervals of the passage of a stellar object relative to at least two fixed apertures in said observing means; means for determining a ratio between timed sequential intervals; means for converting the ratio into an electrical signal; and means connected to the support rotating means for rotating said support until determined ratios for subsequent sequential stellar events reach a minimum.



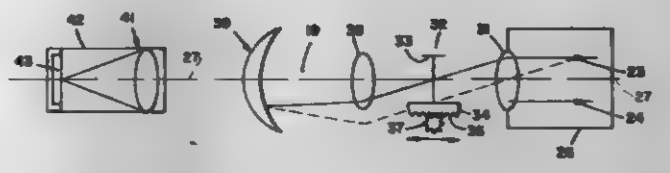
3,981,589
AUTOMATIC OBJECTIVE LENSOMETER

Larry Spitzberg, San Rafael, Calif., assignor to Optical Sciences Group, San Rafael, Calif.

Filed Oct. 30, 1974, Ser. No. 519,092

Int. Cl.² G01B *9/00*

U.S. Cl. 356—127 **11 Claims**



1. A device for analyzing the optical properties of a lens, comprising a plurality of Scheiner point light sources with electrically controlled light intensity, actuated periodically and out of phase each with the other, said point light sources arrayed about an optical axis and directed therealong; first rotating means supporting said point light sources and selectively rotatable about said optical axis; said Scheiner point light sources being stationary with respect to said first rotating means; means for retaining the lens under analysis in the path of the rays from said point light sources; target aperture means disposed between said point light sources and said retaining means and translatable along said optical axis; telescope means for focusing said rays passing through the lens; light transducer means disposed at the focal plane of said telescope means for generating an electrical signal in proportion to the illumination from the target images from said point light sources falling thereon; electrical circuit means for processing said electrical signal and determining the relative alignment and convergence of said images; second rotating means for supporting said light transducer means and rotating same about said optical axis in concert with said first rotating means.

3,981,590
OPTICAL SYSTEM TO OPTIMIZE FIELD OF VIEW UNIFORMITY IN A MULTI-COLOR PRODUCE SORTER

Joseph R. Perkins, Burke, Va., assignor to AMF Incorporated, White Plains, N.Y.

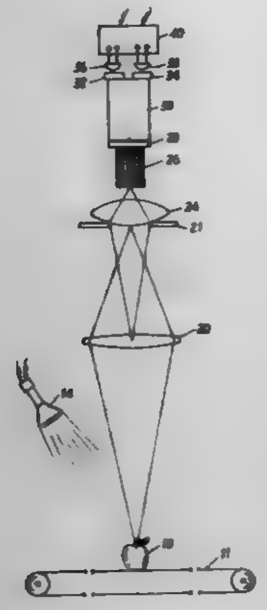
Filed Aug. 28, 1975, Ser. No. 608,497

Int. Cl.² G01J *3/50*

U.S. Cl. 356—178 **9 Claims**

1. In apparatus for grading articles of agricultural produce according to frequency components of radiant energy received therefrom, the combination comprising
- objective lens means for focusing at an image plane radiant energy received from an object to be graded,
- a field stop at or near said image plane for defining a field of view that includes an article to be graded,

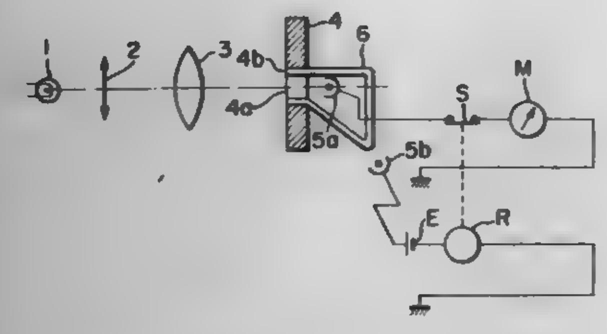
a fiber optic bundle having first and second ends,
field lens means adjacent said stop for forming an image onto one end of said fiber optic bundle,
diffusing means at the second end of said bundle for diffusing radiant energy emerging from the other end of said fiber optic bundle,



a plurality of photodetector means positioned to receive radiant energy emerging from said diffusing means, and
a plurality of color filter means disposed in front of said photodetector means for passing to each of said photodector means a respective frequency component of said radiant energy.

3,981,591
AUTOMATIC PHOTOMETER

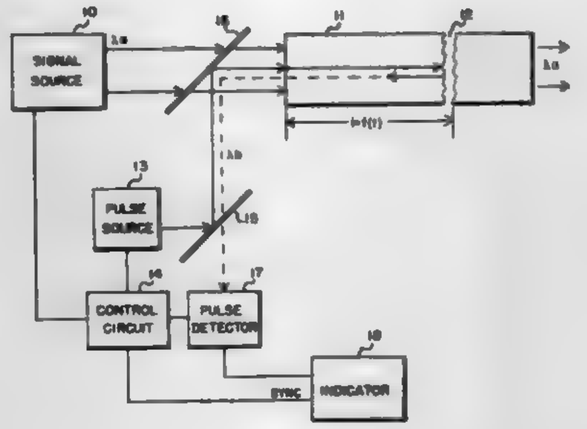
Kazuo Mimura, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Continuation-in-part of Ser. No. 392,862, Aug. 30, 1973, abandoned. This application Feb. 27, 1975, Ser. No. 553,808
Claims priority, application Japan, Sept. 4, 1972, 47-87929
Int. Cl.² G01N *21/22*
U.S. Cl. 356—201 **11 Claims**



1. An automatic photometer for metering intensity of light from a portion of a sample to be measured, said photometer comprising a light source for illuminating the sample,
an objective for forming the image of the sample illuminated by the light source,
a stop plate formed with an aperture at the focusing plane of the objective for passing light therethrough,
a first photo-electric conversion means for receiving the light passed through the aperture of said stop means,
means for indicating an output signal from said first photoelectric conversion means, and
control means for allowing the indicating of said indicating means, only when the image of said portion of the sample to be measured is completely within said aperture,
whereby said indicating means indicates only the output signal from said first photo-electric conversion means when the image of said portion to be measured is completely within said aperture.

3,981,592
SYSTEM FOR LOCATING BREAKS IN FIBER OPTIC FILAMENTS

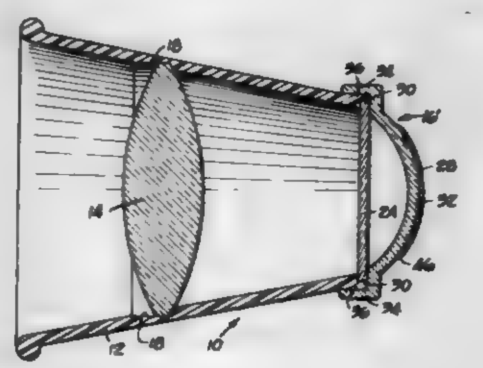
Donald N. Williams, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 31, 1975, Ser. No. 563,751
Int. Cl.² G01N *21/16*; G01C *3/08*
U.S. Cl. 356—237 **6 Claims**



1. A system for locating breaks in fiber optic filaments transmitting light energy signal information from a first source comprising:
a second source of light energy pulses having a frequency distinguishably different from said light energy signal information;
means for directing said pulses along the light paths defined by the disposition of said fiber optic filaments;
a control circuit for controlling the emission of said pulses from said second source at a determinable time;
a pulse detector positioned to receive reflected pulse light energy from said fiber optic filaments; and
an indicator responsive to said control circuit and said pulse detector for indicating the elapsed time between the emission of said pulses and the reception of said reflected pulse light energy, whereby to establish the total distance along said light path to the location of breaks in said fiber optic filaments including curvilinear distances due to said disposition of said fiber optic filaments.

3,981,593
SOFT CONTACT LENS INSPECTION DEVICE

Robert M. Boyle, 2655 Tokola St., Concord, Calif. 94518
Filed Feb. 27, 1975, Ser. No. 553,476
Int. Cl.² G01N *21/04*
U.S. Cl. 356—239 **12 Claims**

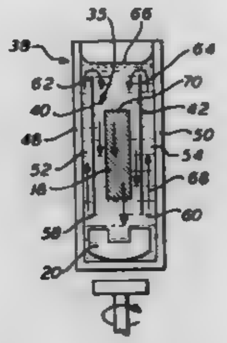


1. A soft contact lens inspection device, comprising:
a housing;

a magnifying lens mounted within said housing;
a transparent concave-convex contact lens supporting member at the top of said housing; said supporting member having the concave surface thereof facing said magnifying lens; and
a soft contact lens on the convex surface of said supporting member for inspection thereof.

3,981,594
OPTICAL ABSORPTION CELL WITH MAGNETIC STIRRING

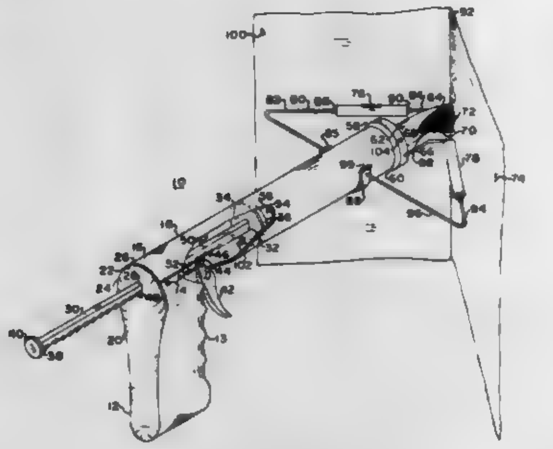
Kenyon Palmer George, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 1, 1975, Ser. No. 618,410
Int. Cl.² G01N *1/00*
U.S. Cl. 356—246 **6 Claims**



1. An optical absorption cell for use in optical absorption spectroscopy, comprising:
a container for fluidic samples to be subjected to optical absorption;
a magnetic stirrer body at the bottom of said container, said body being rotatable in response to an externally applied rotating magnetic field, for effecting agitation of said sample; and
partitioning means mounted in said container in non-interfering relationship to the anticipated light projection path through said container; said partitioning means defining in cooperation with the rotation of said stirrer body an upward flow space adjacent the walls of said container, and a downward flow space toward the interior of said container; said partitioning means extending at least to a level in said sample above the said light projection, whereby relatively complete agitation of said fluidic sample is effected at least in the portions of said sample residing within said light projection path.

3,981,595
DISPENSING PAINT TRIMMER

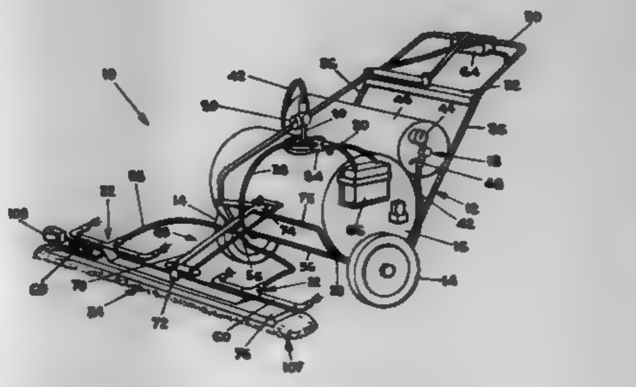
Theodore M. Blake, 801 Farley Drive, Huntsville, Ala. 35802
Filed May 27, 1975, Ser. No. 580,550
Int. Cl.² A46B *11/00*
U.S. Cl. 401—48 **2 Claims**



1. A dispensing paint trimmer for painting one of two walls meeting along a line at a right angle comprising:
a right angle frame, and first and second spaced guide members comprising first and second rollers supported on said frame on perpendicular axes, and each roller having a linear outer wall engaging surface lying along a line 90° apart from the same outer surface of the other roller and thereby adapted to guidably engage surfaces of such walls, said frame including an open region between said second roller and right angle at and corresponding to the intersection of the extension of lines along said surface of said rollers;
a paint dispenser connected to said frame, and having an outlet and paint feed control means for supplying a selected quantity of paint through said outlet; and
paint distribution means comprising a plurality of bristles extending from said outlet of said paint dispenser, the ends of said bristles comprising a paint application area extending from said right angle for a selected distance in said open region and along a line which, when extended, engages said outer surface of said second roller.

3,981,596
FLOOR FINISH APPLICATOR

Joseph E. Melton, Grand Rapids, Mich., assignor to Melton Systems, Inc., Grand Rapids, Mich.
Continuation-in-part of Ser. No. 432,098, Jan. 9, 1974, abandoned. This application June 30, 1975, Ser. No. 591,850
Int. Cl.² A46B *11/02*
U.S. Cl. 401—48 **25 Claims**



1. A floor finish applicator comprising:
frame means adapted for movement along a floor in any selected direction;
liquid finish storage tank means mounted on the frame means, said storage tank means having an inlet and an outlet and being adapted to hold liquid finish therein;
finish spreading means adapted to spread the finish out into a smooth, even finish after it has been applied to the floor, said finish spreading means being mounted in the applicator for transverse movement with respect to the frame as the frame moves in its selected direction in applying finish to the floor, said transverse movement being sufficient to permit the finish spreading means to follow a path along the floor that deviates from the path followed by the frame so as to permit the application of finish around obstacles and corners in a room as the frame is moved past such obstacles and corners; and
finish applying means for receiving liquid finish from the outlet of the storage tank and applying liquid finish to the floor in the path of the finish spreading means as the applicator is moved along the floor.

3,981,597
SHAVING CREAM DISPENSER

Bernard Cohn, 100 Princeton Ave., Bridgeton, N.J. 08302
Filed May 28, 1975, Ser. No. 581,643
Int. Cl.² A46B *11/02*
U.S. Cl. 401—190 **6 Claims**

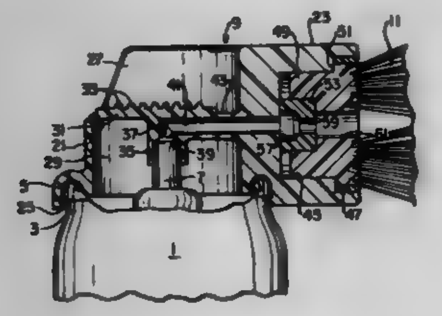
1. A lather dispensing shaving brush for attachment to a cylindrical aerosol can having an outwardly extending flange

surrounding its top surface and an axially movable cylindrical valve on its top surface, the depression of which dispenses shaving cream through the valve comprising:

a housing;

an inwardly extending lip on said housing of smaller diameter than said flange for removably engaging said flange;

a base having outer and inner surfaces, said outer surface having bristles embedded therein and said inner surface having a cavity formed therein for receiving a nozzle member, said base being removably mounted in said housing;



a duct formed in said base having one end opening into said outer surface and its other end opening into said cavity;

a foam producing nozzle member disposed in said base cavity having an orifice concentric and communicating with said other end of said duct;

an enlarged bore connected to said orifice for slipping over the valve;

a seat terminating said enlarged bore for engaging the top surface of the valve; and

means for selectively moving said seat to depress the valve, whereby the shaving cream is dispensed from the can, through the valve, and into said bristles.

3,981,598

FUSE AND APPLICATION OF SAID FUSE TO THE CONSTRUCTION OF AN EMERGENCY SHUTDOWN SYSTEM FOR A NUCLEAR REACTOR

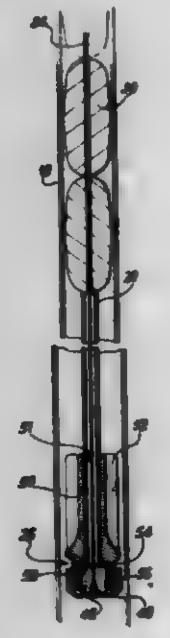
Hubert Henri Leon Taulier, Maisons Laffitte, and Gerard Brugeilles, Chatou, both of France, assignors to Electricite de France (Service National), Paris, France

Filed May 14, 1974, Ser. No. 469,907

Claims priority, application France, May 22, 1973, 73.18496

Int. Cl.² F16D *9/00*

U.S. Cl. 403—28 **7 Claims**



1. A coupling device or fuse between two components of elongated shape, said coupling being capable of breaking if a given physical characteristic of the space in which said device is located exceeds a predetermined threshold value, wherein said device comprises a first element for providing a mechanical connection between the two components, said element being formed of material which retains its mechanical properties when said physical characteristic is below the threshold value, and a second element formed of material which melts when said characteristic attains said threshold value and causing when in contact with the material of the first element an exothermic reaction with said material producing a temperature which is higher than the melting point of the material of the first element and also the formation of any alloy would be such as to have a melting point below said threshold value, means included in said coupling for separating the first element from the second element when said characteristic is below said threshold value and allowing engagement of said materials with each other after melting of the material constituting the second element.

3,981,599

PUSH-PULL-LOCK DEVICE FOR SLIDE SHAFT

Toshiharu Koen, Yokohama, Japan, assignor to Victor Company of Japan, Limited and Nifco Inc., both of Tokyo, Japan

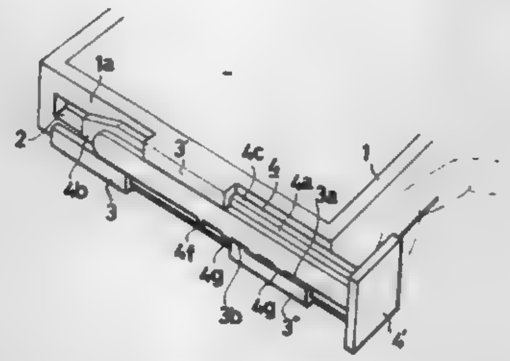
Filed Oct. 10, 1974, Ser. No. 513,789

Claims priority, application Japan, Oct. 11, 1973, 48-117446

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976

Int. Cl.² F16B *7/10;* **F16D** *1/12*

U.S. Cl. 403—107 **3 Claims**



1. A plastic device having locking means thereon to control the sliding of a plate-shaped shaft element relative to a body on which it is mounted comprising a plate-shaped shaft member, a second body member having a plurality of hook-shaped shaft guide pieces mounted along a surface on which said plate-shaped shaft member is mounted, said body member being made of an appropriate resilient plastic material, said shaft guide pieces being disposed alternately along the margins of said body member in confronting but staggered positions, said hook-shaped shaft guide pieces including upright elements and at their terminal ends in spaced relation to said body member having lips also in confronting position and extending towards each other to form a channel, said plate-shaped shaft element having an entering end and a catch surface on its opposite end, said plate-shaped shaft element adapted to be inserted in and sealed along the surfaces formed by said body member and said hook-shaped elements mounted thereon which form the channel, said plate-shaped shaft element being provided along at least one of its margins with a sawtooth projection so positioned and shaped as to permit the shaft to be slidingly inserted between said shaft guide pieces and said body member with said tooth being temporarily distorted as it passes at least one of said guide shaft pieces and thereafter returning to its normal position to provide a lock to prevent inadvertent removal, and a second set of projections on the margin of said plate-shaped shaft member consisting of a plurality of trapezoidal projections for frictional interference with the hook-shaped guide piece elements to permit positionment of said plate-shaped shaft element in any desired predetermined position.

3,981,600

KEY RETAINING DEVICE

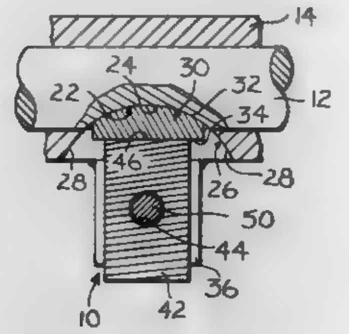
Charles F. A. Laitner, Jr., Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 13, 1975, Ser. No. 540,632

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² F16B *3/00*

U.S. Cl. 403—318 **3 Claims**



1. A key retaining device comprising,

an elongated shaft with a notch formed therein,

a tubular member fully encirclingly journalled on said shaft and having a radial slot extending through the outer periphery thereof with closing end walls formed therethrough alignable with said notch,

a pair of ears secured to the outer periphery of said tubular member in radially outwardly extending relation on opposite sides of said slot,

a key insertable in said notch and in said slot to lock said shaft and said tubular member together,

a key retaining plate radially inwardly disposable against said key, and

fastener means operatively associated with said ears to deflectably bias them together for clamping the key retaining plate therebetween, maintaining said key in its locked condition and for transferring force across said slot in said tubular member.

3,981,601

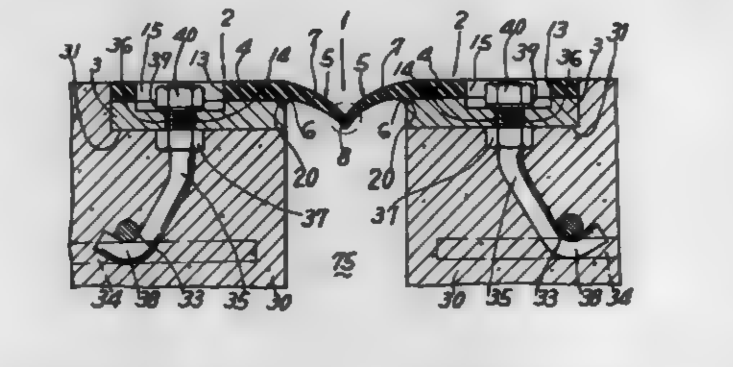
EXPANSION JOINT AND METHOD OF INSTALLING THE SAME

Mctonosuke Arai, 4-12, Iwazono-cho, Ashiya, Hyogo, Japan

Continuation of Ser. No. 361,024, May 17, 1973, abandoned. This application Mar. 20, 1975, Ser. No. 560,481

Int. Cl.² E01C *11/02*

U.S. Cl. 404—68 **5 Claims**



1. A concrete roadway expansion joint for spaced apart roadway portions said roadway portions each including means to anchor a roadway expansion joint to said roadway, said roadway expansion joint comprising opposing horizontal fixing bodies for said spaced apart roadway portions; said fixing bodies including a substantially flat elastic horizontal course; a hard flat metal base course; said horizontal course and said base course fused to each other, both said horizontal course and said base course each approximately the same width over said roadway portions, an elastic expansion plate, said metal base course including a fillet and said elastic horizontal course including a rib over said fillet adjacent said expansion plate being integral with said horizontal fixing bodies for said spaced apart roadway portions; said expansion plate extending below and away from the upper plane of said spaced apart fixing bodies between said apart roadway portions when on said spaced apart roadway portions; said expansion plate including a longitudinal groove along its upper surface, a thick apex corresponding to said longitudinal groove; said apex being opposite said longitudinal groove along said expansion plate between said spaced apart roadway portions; said expansion plate tapering thinner toward said apex, and said fixing bodies including longitudinal stepped openings, each said stepped opening extending at least to said hard metal base course, said roadway's means to anchor a roadway expansion joint interactable to anchor said horizontal fixing body at said stepped openings below the plane of the top of said fixing body and said spaced apart roadway portions.

3,981,602

VEHICLE RETARDATION

Dennis H. Ogden, Wolverhampton, England, assignor to British Industrial Plastics Limited, England

Filed Mar. 19, 1974, Ser. No. 452,672

Claims priority, application United Kingdom, Mar. 23, 1973, 14107/73

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² E01C *7/00;* **C08J** *9/00*

U.S. Cl. 404—71 **9 Claims**

1. A vehicle deceleration bed comprising at least two layers of a non-resilient cured foam of an aminoplast resin material laid on a vehicle trackway, the layers being coextensive and in superposed relation to one another, the density and compressive strength properties of the foam in each layer being sensibly constant throughout said layer, but different from the density and compressive strength properties of any other layer.

3,981,603

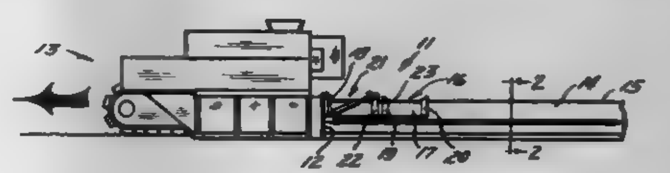
BARRIER LEVELLING ATTACHMENT

James Sprunger, 324 Railroad, Rives Junction, Mich. 49277

Filed Apr. 17, 1975, Ser. No. 569,077

Int. Cl.² E01C *19/52*

U.S. Cl. 404—98 **6 Claims**



4. A barrier levelling attachment connected to a continuous barrier casting machine comprising:

an elongate smooth sided chute having an open top and bottom supported by said barrier casting machine and extending therefrom in continuing confinement of a barrier formed by said machine:

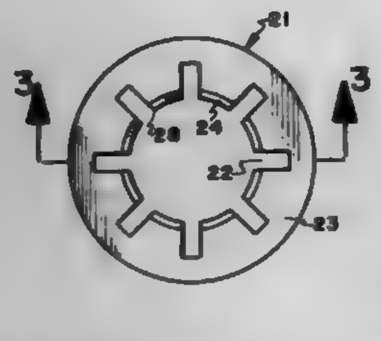
a frame supporting said chute and having plural spanning elements at spaced intervals along the length of said chute and confining the sides of said chute; and

a pair of extendable adjustment struts, one on each side of said chutes and rigidly attached to said casting machine and extending therefrom and including a threaded extension member extending axially from said strut and threadably engaged therewith and attached by threaded means to said chute whereby said chute is adjustable as to elevation of one or both sides and lockable at said elevation.

3,981,604

LINER BUSHING

Thomas N. Cenis, Westfield, Mass., assignor to Joseph J. Mele, Huntington, N.Y.
Continuation of Ser. No. 499,452, Aug. 22, 1974, abandoned. This application Dec. 10, 1975, Ser. No. 639,248
Int. Cl.² B23B *49/02*
U.S. Cl. 408—72 B **9 Claims**

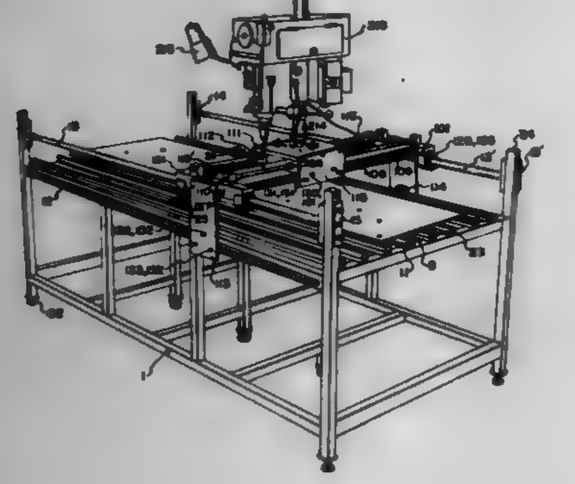


1. A liner bushing for holding a first member in alignment with respect to a second member to which said liner bushing is secured, said liner bushing being generally cylindrical and having an axial opening therethrough mating with said first member, a plurality of radially inwardly extending splines separated by a plurality of grooves in the peripheral surface of said opening, the inner extremities of said splines defining an alignment surface for said first member, the inner corners of said splines forming scraping edges whereby contamination on said first member is removed by twisting said first member in said bushing.

3,981,605

X-Y TABLE FOR MACHINING

Donald Edward Wirsing, Schaumburg, Ill., assignor to Frank Tessitore, Glenview, Ill.
Filed Nov. 3, 1975, Ser. No. 628,549
Int. Cl.² B23B *39/00*
U.S. Cl. 408—88 **28 Claims**



1. Apparatus for coordinate positioning of a machining unit, wherein said apparatus comprises a frame assembly, a carriage unit, and a cross slide unit carrying said machining unit;

said frame assembly comprises a support structure with a work bed for receiving work pices for machining, two main shafts extending in a first direction, each main shaft having its two ends attached to said support structure, two first guide means parallel to said main shafts and mounted on and supported by said support structure;

said carriage unit comprises two end members, and two cross shafts extending in a second direction, each cross shaft having its two ends attached respectively to said two end members, each end member having main-shaft bearing means running on one of said main shafts and first moving support means running on one of said first guide means with a rigid structure between said main-shaft bearing means and said first moving support means;

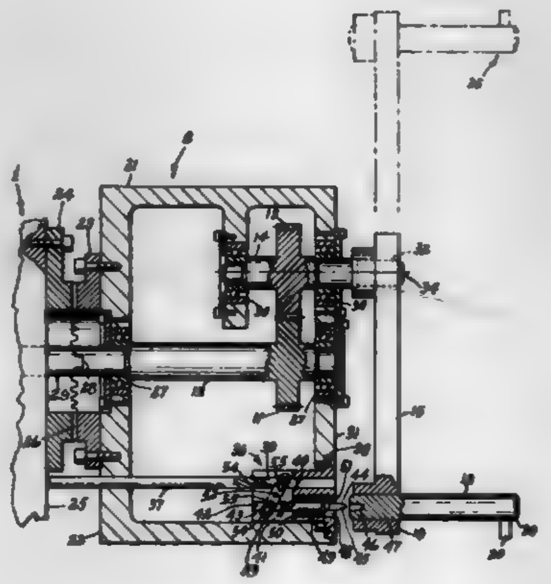
said cross slide unit having two cross-shaft bearing means running respectively on said two cross shafts, and a bridge mounted between said cross-shaft bearing means to carry said machining unit;

whereby the carriage unit may be accurately positioned along the main shafts, and the cross slide unit may be accurately positioned along the cross shafts, to locate the machining unit for a machining operation on the work piece.

3,981,606

MACHINE BORING TOOL

Robert Wilfred Nashold, New Richmond, Ohio, assignor to Cincinnati Milacron, Inc., Cincinnati, Ohio
Filed Aug. 30, 1974, Ser. No. 501,993
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976
Int. Cl.² B23B *43/00*
U.S. Cl. 408—124 **5 Claims**



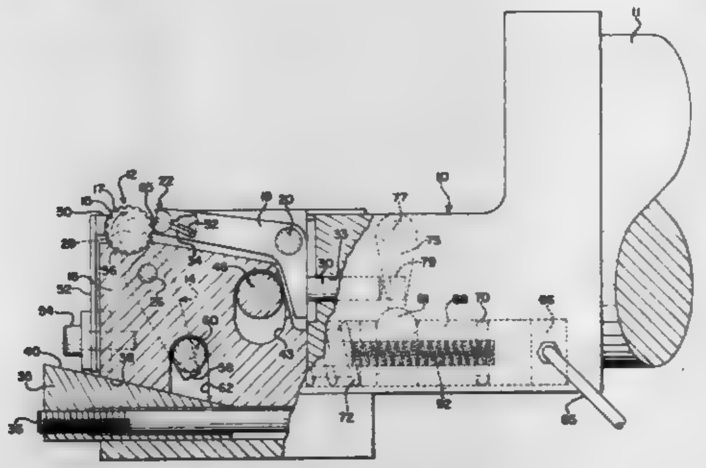
1. In a machine tool utilizing interchangeable tool heads, the boring tool head comprising:

a. a housing, having an input face adapted to be received on a machine tool, and further having an output face disposed away from said input face on said housing;
b. an input shaft passing through said input face, rotatably mounted and centrally located within said housing;
c. an output shaft, passing through said output face, rotatably carried in said housing and displaced from said output shaft and drivingly connected thereto;
d. a boring arm, having one end connected to said output shaft and having the other end supporting a boring tool such that rotation of said output shaft causes said boring tool to swing in an arcuate path, wherein said arcuate path extends beyond the perimeter of said housing when viewed along the axis of said arcuate path; and
e. a latching mechanism affixed to said housing and operable to maintain said boring arm in a predetermined angular position while transporting said tool head to and from a tool head storage matrix, and further operable to automatically release said boring arm for free rotation when said tool head is employed for use at a machining site.

3,981,607

BORING BAR WITH REMOVABLE AND INDEXABLE CUTTING INSERT

Arne R. Jorgensen, Lombard, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Nov. 7, 1974, Ser. No. 521,986
Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976
Int. Cl.² B23B *29/04*
U.S. Cl. 408—146 **4 Claims**

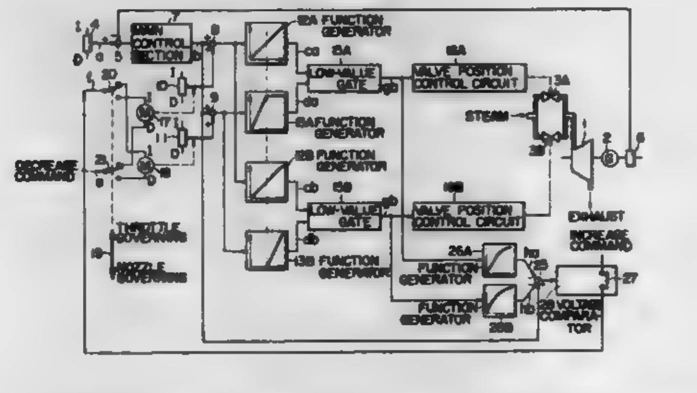


1. A device for holding and automatically indexing a removable cutting insert comprising a plurality of cutting sections which are selectively indexable so as to successively contact the surface of a work piece being machined comprising a tool block for receiving said insert, clamp means for exerting holding pressure on said insert to hold said insert in place in said block, force means for selectively applying and removing force on said clamp means, indexing means for indexing said cutting insert comprising engagement means for engaging said cutting insert in order to rotate said cutting insert through a predetermined angle, operating means for selectively operating said force means in order to apply or release said force on said clamp means and control means coupled to said operating means and to said indexing means and synchronized with said operating means which operates said indexing means so that said indexing means automatically acts to rotate said cutting insert only subsequent to the release of said force on said clamp means by said force means.

3,981,608

TURBINE CONTROL SYSTEM

Seiko Sato, Tokyo; Yutaka Hiyama, Higashiyamato, and Mitsuhisa Yokota, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Sept. 4, 1975, Ser. No. 610,238
Int. Cl.² F01B *25/04*
U.S. Cl. 415—15 **6 Claims**



1. A turbine control system for changing two speed governing operations of a steam turbine from a throttle governing operation to a nozzle governing operation and vice versa by controlling a plurality of steam control valves on the basis of a main control flow-rate request signal, which system comprises:

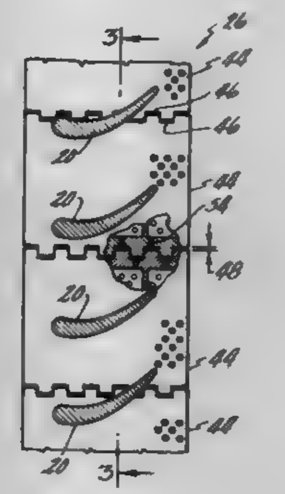
a. a first group of function generators for said throttle governing operation provided respectively for said steam control valves and a second group of function generators for said nozzle governing operation provided respectively for said steam control valves, each function generator producing a function output signal in response to a main control flow-rate request signal applied thereto,
b. a low-value preference circuit provided for each steam control valve for selectively passing the lower of the function output signals applied thereto, said lower function output signal thus passed being utilized to control an opening degree of said steam control valve,
c. first means for obtaining a difference signal between said main control flow-rate request signal and the sum of said function output signals thus passed, and
d. second means for increasing, according to said difference signal, a bias applied to one of said two groups of function generators which operates for one of said two governing operations which is not a speed governing operation intended to effect, and for decreasing a bias applied to the other group of function generators which operates for said speed governing operation intended to effect,

whereby during the speed governing operation changing period of said turbine, the output of said turbine is kept unchanged and no thermal shock is caused to said turbine.

3,981,609

COOLABLE BLADE TIP SHROUD

Robert John Koenig, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed June 2, 1975, Ser. No. 583,143
Int. Cl.² F01D *11/08, 11/10*
U.S. Cl. 415—117 **4 Claims**



1. In a gas turbine engine, a coolable shroud comprising a plurality of arcuate segments disposed in end to end relationship to surround the tips of the rotor blades of the engine wherein each segment has a sealing surface which opposes the tips of the blades and a chamber which extends circumferentially beneath the sealing surface, wherein the improvement comprises:

one or more passages extending from the chamber to the region between adjacent segments to cool the region and to aerodynamically provide continuity between the sealing surfaces of the adjacent segments.

3,981,610
WATER PUMP

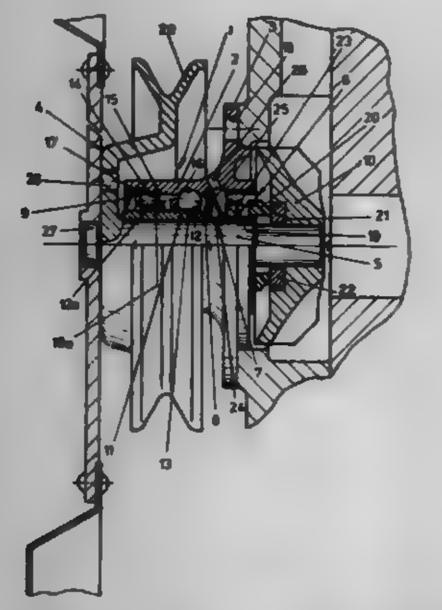
Horst M. Ernst, Eltingshausen; Manfred Brandenstein, Aschfeld, and Armin Olschewski, Schweinfurt, all of Germany, assignors to SKF Industrial Trading and Development Company, B.V., Amsterdam, Netherlands

Filed Oct. 17, 1974, Ser. No. 515,651

Claims priority, application Germany, Nov. 2, 1973, 7339167

Int. Cl.² F04D *29/44, 7/02*

U.S. Cl. 415—291 C **9 Claims**



1. A water pump for motor vehicles comprising a pump housing, a pump wheel located within said housing and arranged at the end of a shaft, a belt driven pulley for rotating said shaft and a bearing independent of said pump for journalling said shaft, said bearing comprising a fixed race ring having a radially extending flange integrally formed therewith for attachment to the motor of said vehicle, a rotatable race ring and a pair of parallel rows of roll bodies located therebetween, said pulley and said shaft being integrally connected to said rotatable race ring for conjoint rotation therewith, said pulley having a rim for receiving a drive belt extending about said bearing, said rim being arranged so that the line of force applied thereto by the belt lies in a plane extending between the two rows of roll bodies.

3,981,611
ELECTRICAL INTERCONNECTION CIRCUITRY FROM A ROTATING BODY TO A RELATIVELY STATIONARY BODY

Harry Thomas Jensen, Milford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 12, 1975, Ser. No. 549,394

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² B64C *27/32*

U.S. Cl. 416—61 **4 Claims**

1. An electric system including relatively rotating parts with apparatus providing a highly reliable interconnection therebetween, comprising:

first and second bodies each having electrical ground;

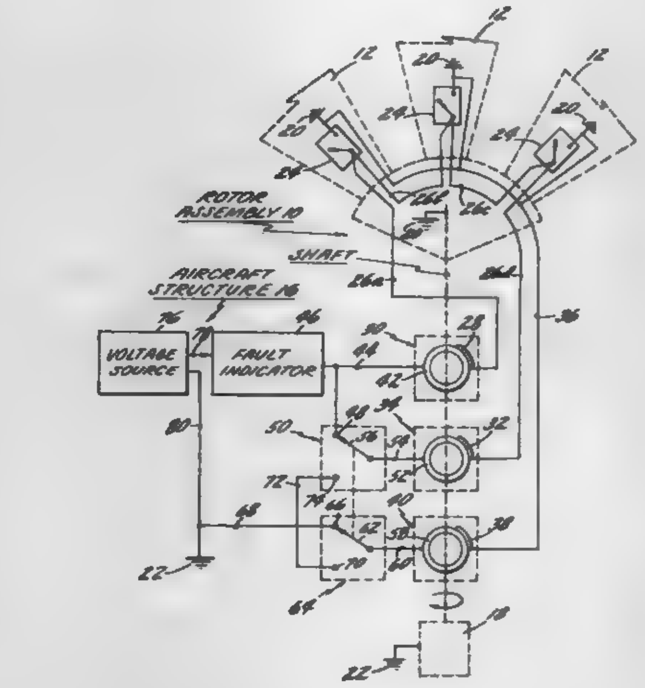
means including a plurality of rotary electrical connection means for disposing one of said bodies for rotation on the other of said bodies with electrical contact therebetween;

a power source having first and second outputs and disposed on a first one of said bodies, said first output connected to ground of said first body;

electric utilization means disposed on said first body having a first terminal connected to said second output, and having a second terminal;

electrical sensing means disposed on the second one of said bodies for sensing a condition on said second body and interconnected from ground on said second body to a group of said plurality of rotary electrical connection means; and

circuitry connected to said second terminal of said utilization means, including switch means having an operating position and a test position and being settable to either of said positions alternatively, said circuitry connecting said utilization means to said sensing means through all of said rotary electrical connection means in said group in parallel when said switch means is in said operating position and connecting said utilization means to said sensing means through one of said rotary electrical connection means in said group and connecting said sensing means through at least another one of said rotary electrical connection means in said group to ground of said first body when said switch means is in said test position.



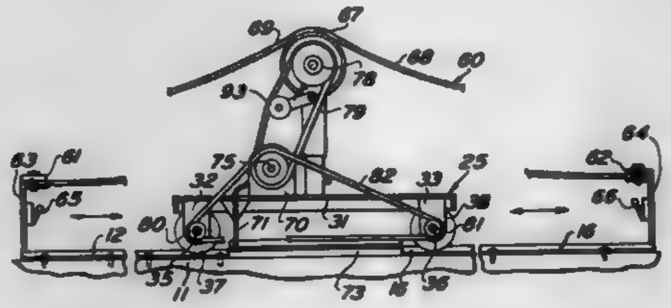
3,981,612
WAVE PRODUCING APPARATUS

Charles Bunger, and Edward R. Fawess, both of 430 Rutgers Road, North Babylon, N.Y. 11704

Filed June 27, 1975, Ser. No. 591,131

Int. Cl.² A47K *3/10*

U.S. Cl. 416—66 **7 Claims**



1. Apparatus for producing wave movement, said apparatus comprising: track means extending generally along a path of wave travel, a flexible web extending longitudinally of said track means, carriage means movable along said track means and engaging an under portion of said web to upwardly flex the engaged web portion, and propulsion for effecting carriage movement along said track means relative to and in upward flexing engagement with said web, whereby said engaged web portion is caused to move and produce a traveling wave.

3,981,613
FOLDABLE PROPELLERS

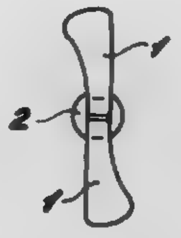
Nils Oluf Ehrenskjold, Kolding, and Torben Munk, Virum, both of Denmark, assignors to Gori-Vaerk A/S, Kolding, Denmark

Filed July 10, 1974, Ser. No. 487,220

Claims priority, application United Kingdom, July 11, 1973, 33044/73; Oct. 23, 1973, 49219/73

Int. Cl.² B63H *1/24*

U.S. Cl. 416—142 **6 Claims**



1. A propeller adapted to be fully submerged in water for a vehicle such as a boat or the like which is mounted on the aft end of the vehicle drive shaft comprising, in combination, a pair of propeller blades adapted to assume a folded position extending rearwardly of the drive shaft, means for mounting said blades at their inner ends on said shaft for freely pivotal movement into an equilibrium angular position during the forward or rearward powered movement of the vehicle throughout an angular range extending in both directions from a 90° position and in an axial plane with respect to the axis of said shaft whereby when propeller blades are designed for maximum efficiency when the blades are swung for instance 110°–130° away from the folded position for forward motion, the propeller will be approximately equally effective in a position 50°–70° away from the folded position during rearward motion, the shape of the blades being properly adapted to such function.

3,981,614
PUMP WHEEL FOR A HYDRODYNAMIC UNIT

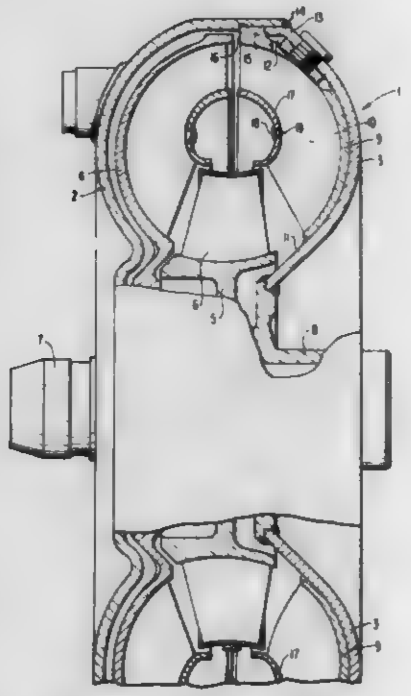
Josef Helmer, Aich, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Sept. 11, 1974, Ser. No. 505,010

Claims priority, application Germany, Sept. 14, 1973, 2346356

Int. Cl.² F01D *5/04*

U.S. Cl. 416—180 **6 Claims**



1. A pump wheel for a hydrodynamic unit with a hub member, a pump wheel outer shell means welded to said hub member, said pump wheel outer shell means essentially consist of cold-deformed sheet metal material, the pump wheel comprising:

a shell member having an outer surface substantially matched to an inner surface of the pump wheel outer shell means,

pump wheel blade means having a variable cross-sectional profile integrally cast with said shell member,

a plurality of torque entrainment means for entraining said shell member and said pump wheel outer shell means, said entrainment means being cast integrally with said shell member and being spaced from each other along the outer circumference of said shell member,

a plurality of spaced apertures provided in the inner surface of the pump wheel outer shell means along the outer circumference thereof for engaging respective ones of said plurality of torque entrainment means,

pins cast integrally at the inner circumference of the pump blade means,

a cast inner ring means having a shell shape substantially similar to the shape of the shell member, and

aperture means provided in said cast inner ring means for receiving said pins, said inner ring means is placed over the pump blade means from the inside thereof, said pins are fused rivet-shaped for the retention of the inner ring means, said pump wheel outer shell means is provided at the output side of the hydrodynamic unit, a second pump wheel outer shell means is provided at the input side of the hydrodynamic unit, a welding seam along the outer circumference of the pump wheel for connecting said pump wheel outer shell means disposed on the output side with said second pump wheel outer shell means disposed at the input side, said pump wheel outer shell means arranged at the output side being provided with a bent portion at the outer circumference thereof within the area of the welding seam, said bent portion producing within the area of the welding seam an air space between the inner surface of the pump wheel outer shell means arranged on the output side and the outer surface of said shell member,

said shell member terminates in an inner edge portion at the outer circumference thereof, said second pump wheel outer shell means including a stepped portion engaging said inner edge portion of said shell member and a further portion extending from said stepped portion, said further portion including an inner surface engaging the outer surface of at least a portion of said bent portion, said further portion of said second pump wheel outer shell means terminating in an outer edge portion, said welding seam being provided at said outer edge portion.

3,981,615
CONTINUOUS CONNECTION DEVICE FOR THE MOBILE BLADES OF A TURBO-MACHINE

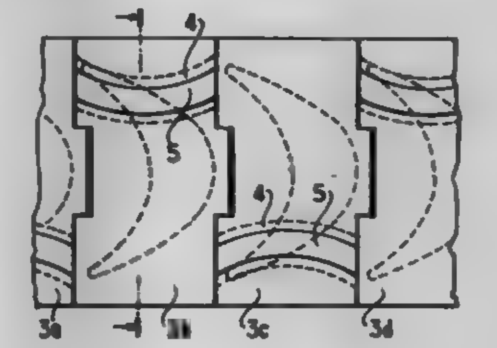
Salomon Krol, Belfort, France, assignor to Groupe Europeen pour la Technique des Turbines a Vapeur G.E.T.T., Paris, France

Filed Nov. 3, 1975, Ser. No. 628,696

Claims priority, application France, Nov. 14, 1974, 74.37586

Int. Cl.² F01D *5/22*

U.S. Cl. 416—190 **4 Claims**



1. In a continuous connection arrangement for the mobile turbine blades of the wheel of a turbo-machine in which each turbine blade is provided with a cap which is integral with it and the turbine blades are installed on the wheel with the caps

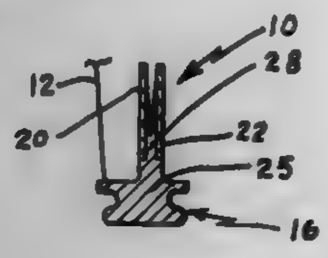
clamped against each other, the improvement wherein at least one turbine blade cap in two comprises at least one recess in which is inserted a flexible clamping blade which may be elastically deformed therein, said clamping blade having at least one free end which overlaps from the blade cap in a tangential direction and presses against the cap of a neighboring turbine blade, causing an elastic deformation of said clamping blade.

3,981,616

HOLLOW COMPOSITE COMPRESSOR BLADE

Hans Stargardter, Bloomfield, and Walter Pilpel, West Hartford, both of Conn., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 22, 1974, Ser. No. 516,931
Int. Cl.² F01D *5/14*
U.S. Cl. 416—233 2 Claims



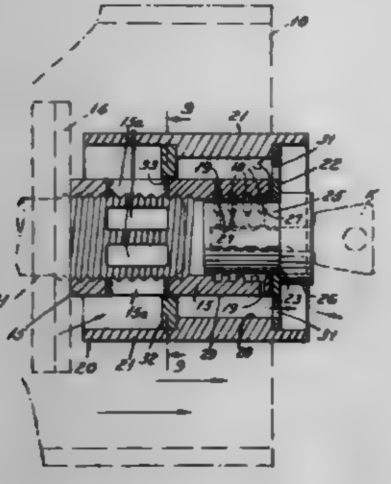
1. A hollow composite compressor blade having an airfoil planform comprising a root section, a pair of upstanding panels made of composite material extending from said root section, said panels forming a cavity therebetween, said panels having an insert located between adjacent panels at the leading edge of said blade and an insert located between adjacent panels at the trailing edge of said blade for securely joining said panels together, a central spar made of composite material and being of unitary construction with and extending in the longitudinal direction from said root section intermediate said panels, said spar terminating in a V-shaped configuration in said longitudinal direction, said V-shaped configuration having a pair of sides and a base, the sides of said V-shaped configuration being in direct contact with said pair of upstanding panels and the base of said V-shaped configuration being located substantially midway between said pair of panels in the transverse direction thereby providing a lightweight, extremely strong blade structure.

3,981,617

MARINE PROPELLER LOCK

Norbert W. Milewicz, 1194 Rolling Hills, Bloomfield Hills, Mich. 48013

Filed Aug. 1, 1974, Ser. No. 493,529
Int. Cl.² B63H *1/20*
U.S. Cl. 416—244 B 8 Claims



1. For use with a marine propeller which is mounted on an output shaft of a power source and which has generally axial openings therein for the passage of engine exhaust gases and engine cooling exhaust waters under high pressure through the propeller hub, the combination comprising

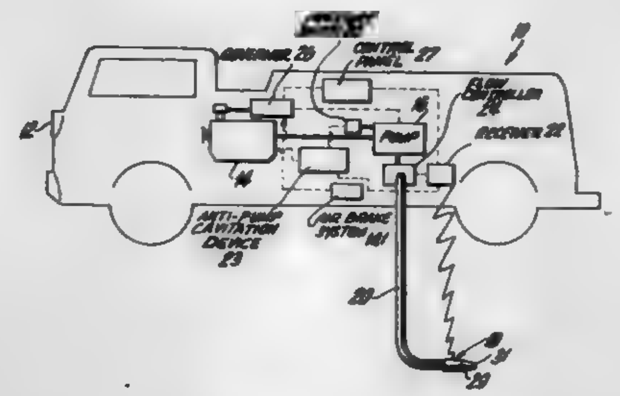
- removable fastener means on said shaft for limiting axial movement of the propeller on said shaft,
- a cover member having a first end portion thereof adjacent the outer end of the fastener means and a second portion thereof surrounding said fastener means on said output shaft,
- a lock insertable through said cover member into said fastener means and having interengaging means thereon engaging said fastener means to hold said cover in position on said shaft and thereby prevent access to said fastener means,
- said fastener means, said cover member and said lock being such that, upon rotation, no adverse unbalance is produced,
- said second portion of said cover having a free end spaced from the inner end of said fastener means to provide a space through which engine cooling exhaust water and engine gases may flow,
- said second portion of said cover being spaced from said fastener means to permit flow of water and exhaust gases substantially axially therethrough,
- said first end portion of said cover having openings therein permitting the flow of water and exhaust gases therethrough,
- said lock having an axial opening and a radial opening therein extending to said interengaging means whereby water can flow into said lock through said axial opening and out of said lock through said radial opening past said interengaging means,
- first passage means from said space between said cover and said fastener means to the interior of said fastener means,
- second passage means from the interior of said fastener means to the space between said cover and said fastener means,
- such that exhaust water and exhaust gases flow through said openings in said end portion of said cover to produce a pressure drop to cause flow radially inwardly through said first passage means and induce a flow out of said lock through said second passage means so that exhaust gases entrapped with said water tend to deposit a lubricating film on the interengaging means of said lock and the water removes contaminants and foreign particles from said lock.

3,981,618

METHOD AND APPARATUS FOR PREVENTING PUMP CAVITATION

George R. Nelson, Jr., New York, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Feb. 14, 1975, Ser. No. 550,042
Int. Cl.² F04B *49/08*
U.S. Cl. 417—12 10 Claims



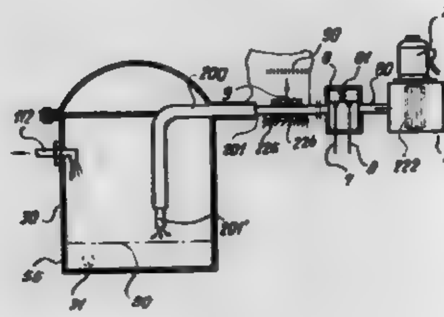
1. A method of controlling a system having a pump driven by an engine, said pump having a discharge conduit with a variable flow rate controller to prevent cavitation due to engine overspeed comprising the steps of: continuously sensing the speed of said engine and comparing the speed to a preselected set point speed; generating a command signal when said sensed speed exceeds said set point speed; actuating said flow controller with said command signal to change the flow rate of said discharge conduit by a predetermined decrement; subsequently blocking said command signal from activating said flow controller for a selected time interval to permit the flow rate to reach steady state, while reducing energy input to the engine to cause said engine speed to drop below said set point speed, whereby said engine speed is maintained substantially at said set point speed to prevent cavitation in the pump.

3,981,619

CONTROL DEVICE FOR CONTROLLING THE LEVEL OF A LIQUID IN A CONTAINER

Mathias Mitter, Senne, Germany, assignor to Mitter & Co., Schloss Holte, Germany

Filed Nov. 8, 1973, Ser. No. 413,992
Claims priority, application Germany, Nov. 9, 1972, 410550[U]
Int. Cl.² F04B *49/00*
U.S. Cl. 417—38 6 Claims



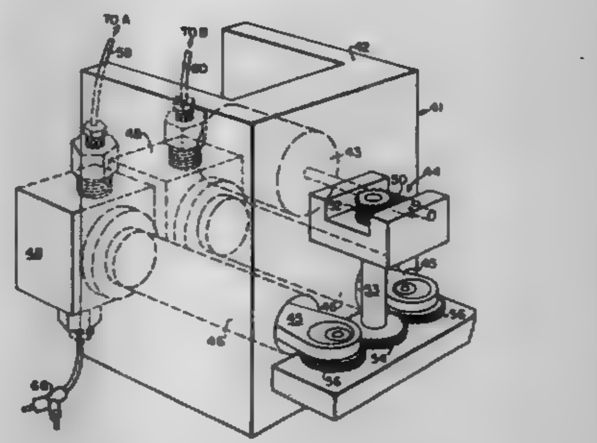
1. Control device for controlling the level of liquid in a container and the like, comprising a container adapted to be filled with liquid up to a predetermined level; elongated flexible tubular means for transmitting a gas therethrough, said elongated flexible tubular means being movable relative to said container and having a free end in the container upwardly adjacent the level of liquid therein; means mounting said elongated flexible tubular means for movement in a path having a horizontal and a vertical component to thereby steplessly adjust the position of the free end in vertical direction relative to said container in accordance with the desired level of liquid therein, said mounting means including rigid stationary guide means having a substantially horizontal portion and a substantially vertical portion for guiding said elongated flexible means along said path; a pump for feeding liquid into said container; and a switch actuated by said gas passing through said elongated flexible tubular means, said switch comprising a membrane, spring means engaging said membrane and tending to flex the latter in one direction, control circuit means for said pump having contact means cooperating with said membrane for normally closing said contact means to thereby operate said pump, means for passing said gas at a predetermined pressure through said flexible elongated tubular means so that said predetermined pressure changes when the liquid in said container reaches said free end of said flexible tubular means, said gas cooperating with said membrane to flex the latter, upon change of said predetermined pressure, in a direction opposite to the one direction to thereby open said contact means and stop operation of said pump.

3,981,620

PUMPING APPARATUS

Louis Abrahams, Worcester; Burleigh M. Hutchins, Jr., and James L. Waters, both of Framingham, all of Mass., assignors to Waters Associates, Inc., Framingham, Mass.

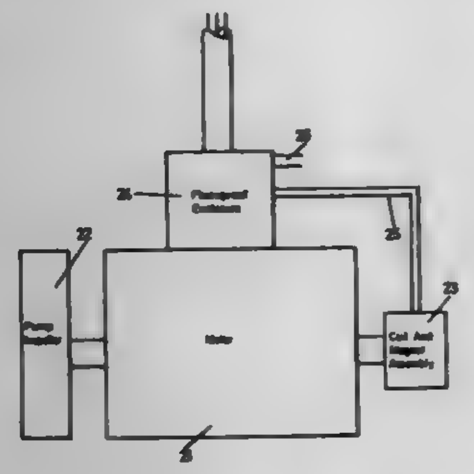
Division of Ser. No. 232,128, March 6, 1972, Pat. No. 3,855,129. This application Nov. 19, 1973, Ser. No. 417,146
Int. Cl.² F04B *49/00*
U.S. Cl. 417—42 15 Claims



1. A positive-displacement pump comprising a plurality of pump chambers,

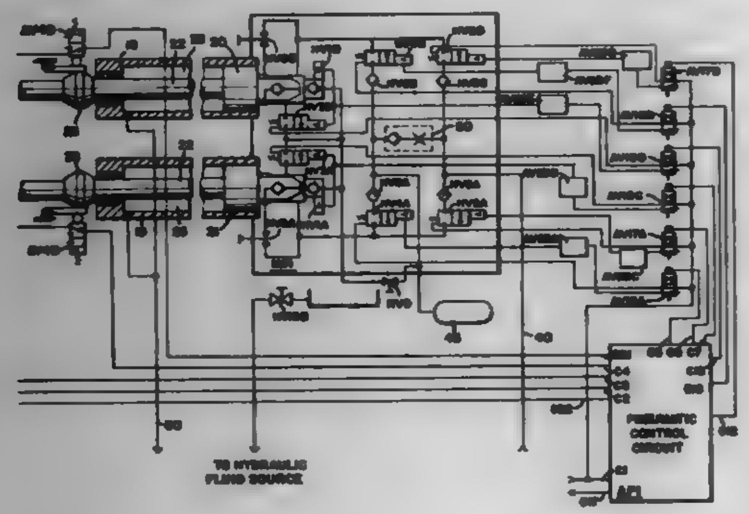
- plungers positioned for reciprocal motion in each said chamber, and operating means for moving said plungers independently from one another;
- said operating means including means to synchronize the movement of plungers in said chambers to maintain the sum of fluid flowing from all said chambers at a substantially constant displacement rate,
- said pump adapted to hold less than about 3 milliliters liquid volume,
- means for pushing each said plunger assembly foward to an extended position within its chamber wherein it largely fills said chamber,
- means for pulling each said plunger backwards to a retracted position wherein it is largely removed from its chamber,
- seal means between each said chamber and said push and pull means; and wherein
- a fluid inlet is positioned at an inlet end of each said chamber,
- a fluid outlet is positioned at an outlet end of each said chamber,
- wherein each said plunger, in extended position, forms a thin annular conduit with the chamber wall, said conduit forming means for fluid first entering said chamber at one said port during said plunger's movement from the extended position to the retracted position, to be also the fluid first discharged from said chamber at the second said port as the plunger returns to its extended position;
- wherein said pump is free of additional structure between said fluid inlet and said fluid outlet;
- and wherein said system comprises a flow path comprising said outlet from said system for supplying a liquid under pressure, and interposed between said pump and said system outlet, a liquid-pressure sensing means and, operably communicating between said pressure-sensing means and a motor drive means for said pump, a motor control means operably interacting with said motor drive means to continuously control the flow-output of said pump by continuously controlling the speed of said motor in response to said pressure.

3,981,621
BEARING WEAR DETECTION DEVICES
William Howard Considine, Storrington, England, assignor to The A.P.V. Company Limited, Crawley, England
Filed Mar. 27, 1975, Ser. No. 562,868
Int. Cl.^{2} F04B *49/06*
U.S. Cl. 417—44 **14 Claims**



1. In a glandless sealed rotor pump of the type having a static housing, bearings in said housing, and a rotor mounted in said bearings and wholly contained within said housing: the improvement comprising an electromagnetic bearing wear detection system including magnet means mounted on said rotor and a coil mounted coaxially on said rotor outside said housing immediately adjacent the path of said magnet means as said rotor rotates, said magnet means being mounted eccentrically of said rotor so as to follow a circular path at a constant distance from said coil as said rotor rotates truly in said bearings whereby the flux threading said coil remains constant, but to follow a circular path varying in distance from said coil if said rotor rotates eccentrically whereby the flux threading said coil varies and induces an alternating e.m.f. in said coil, the amplitude of the e.m.f. varying with the eccentricity of said rotor and the frequency of the e.m.f. varying with the speed of rotation of said rotor.

3,981,622
HYDRAULIC INTENSIFIER CONTROL SYSTEM
Richard W. Hall, and Sven Sonnenberg, both of Springfield, Ohio, assignors to Kelsey-Hayes Company, Springfield, Ohio
Filed Nov. 20, 1974, Ser. No. 525,567
Int. Cl.^{2} F04B *49/00, 17/00, 35/00*
U.S. Cl. 417—46 **7 Claims**



1. In a hydraulic intensifier for oil well fracturing, erosion drilling or the like, in which a pair of working rams are sequentially operated by a corresponding pair of hydraulic cylinder motors from a source of hydraulic fluid under high pressure and in which said motors move between retracted and extended positions, the improvement comprising:

first valve means for applying hydraulic fluid from said source selectively to said cylinder motors for causing extending movement thereof and a corresponding working stroke of the ram associated therewith,

accumulator means connected to said source through means defining a restricted orifice to bleed off a portion of the output of said source,

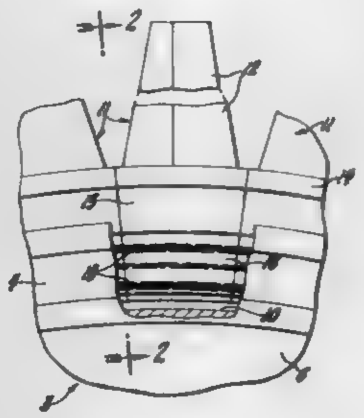
second valve means responsive to the return of each of said cylinder motors to their corresponding retracted positions for connecting said motors to said accumulator means for precompressing said motors prior to the initiation of the direct application of hydraulic fluid from said source,

means responsive to the arrival of each of said cylinder motors toward their respective extended positions for applying hydraulic fluid from said source to the other motor which has been precompressed in its retracted position, so that the output pressure of the intensifier remains essentially uninterrupted,

means for depressurizing each said cylinder motor at its extended position upon the direct application of said source to the other motor, and

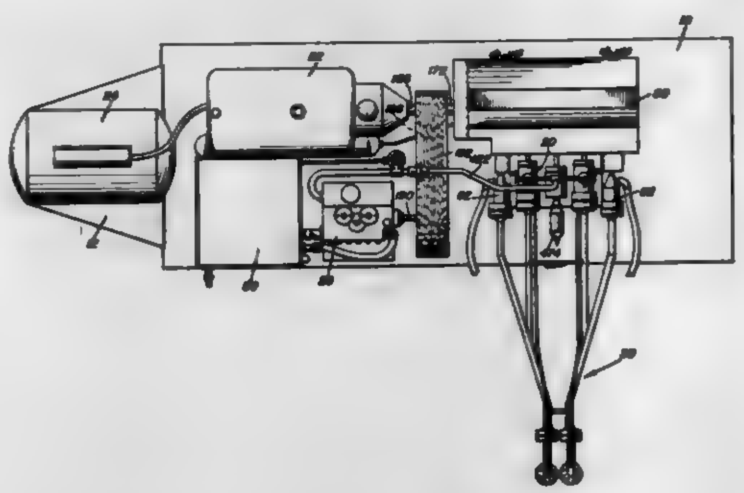
means for returning each said depressurized cylinder motor from its extended position to its retracted position at a rate which exceeds the rate at which said motors move from their respective retracted positions to their extended positions.

3,981,623
TURBOMACHINE ROTOR STAGE
Robert H. Aspinwall, Zionsville, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed May 2, 1975, Ser. No. 573,966
Int. Cl.^{2} F01D *5/30*
U.S. Cl. 416—215 **2 Claims**



1. A turbomachine rotor stage comprising a wheel including a disk and a rim at the periphery of the disk, the rim being substantially bilaterally symmetrical with respect to the central plane of the disk and having an axially central undercut circumferential slot for retention of blade roots; and an annular row of blade elements having roots mounted in the said slot; wherein the improvement comprises a rim the cross-section of which at each side of the said slot in any plane containing the axis of rotation of the wheel is substantially symmetrical about a line through the centroid of the section and parallel to the said axis of rotation and is asymmetrical about a line through the centroid of the section and normal to the said axis of rotation, and is of such a cross-section that the flexural center of each side of the rim is axially inboard of the radial plane of action of centrifugal forces exerted by the blade roots on the said side due to rotation of the rotor stage about the said axis.

3,981,624
SONIC OR ENERGY WAVE GENERATOR AND MODULATOR
Clarence W. Brandon, Nashville, Tenn., assignor to Orpha B. Brandon, Nashville, Tenn., a part interest
Continuation-in-part of Ser. No. 611,082, Jan. 23, 1967, Pat. No. 3,765,804, which is a continuation-in-part of Ser. No. 665,995, June 17, 1957, Pat. No. 3,302,720, which is a continuation-in-part of Ser. Nos. 296,038, June 27, 1952, Pat. No. 2,866,509, and Ser. No. 241,647, Aug. 13, 1951, Pat. No. 2,796,109. This application Oct. 12, 1973, Ser. No. 406,045
Int. Cl.^{2} F04B *49/00, 47/00*
U.S. Cl. 417—53 **41 Claims**



1. That method of maintaining a predetermined pressure upon a fluid medium and thereby transmitting a sonic wave between a sonic wave generator and a means of reception comprising

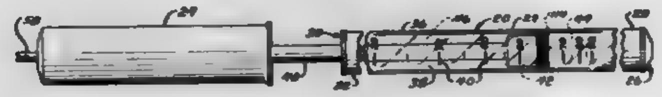
oscillating a valve in head piston between a compressible energy storage means and a column of pressured fluid contacting said means of sonic wave reception,

making up losses in the predetermined pressure of said fluid medium by admittance of additional fluid through said piston valve from a source of pressured fluid during accelerated rarefaction oscillations of said piston against said compressible energy storage means,

adding said additional fluid into said fluid medium during compressional oscillations of said piston,

including increasing the pressure being maintained on said fluid medium column by increasing the accelerations imposed on said rarefaction oscillations.

3,981,625
PUMP WITH GAUGE MEANS
Chester H. Wickenberg, Elgin, Ill., assignor to Dahltron Corporation, Lombard, Ill.
Continuation of Ser. No. 444,873, Feb. 22, 1974, abandoned. This application Apr. 24, 1975, Ser. No. 571,316
Int. Cl.^{2} F04B *21/00, 21/04;* **B60C** *23/02*
U.S. Cl. 417—63 **20 Claims**



1. A pump for inflating an inflatable member, comprising:

an elongated hollow cylinder having a first closure adjacent one end of the cylinder and a second closure adjacent the other end of the cylinder, said second closure having a bore extending therethrough;

a piston slidably received for reciprocation in said cylinder, said piston separating the inside of the cylinder into a first chamber intermediate the piston and the first closure and a second chamber intermediate the piston and the second closure;

a hollow piston rod having one end connected to the piston and the other end extending out of the cylinder, said rod being slidably received in the bore of the second closure;

means for connecting the other end of the rod to the inflatable member;

first one-way valve means adjacent the first closure for permitting passage of air from outside the cylinder into the first chamber and preventing passage of air out of the first chamber;

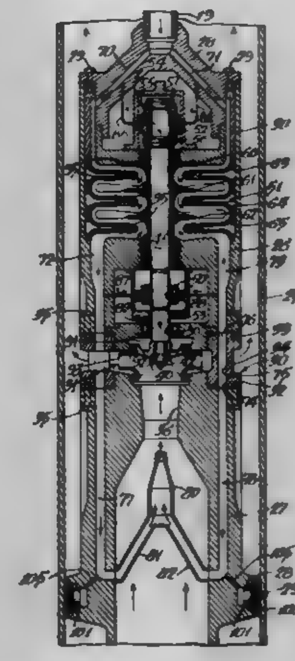
second one-way valve means adjacent the second closure for permitting passage of air from outside the cylinder into the second chamber and preventing passage of air out of the second chamber;

valve means carried by the piston for establishing communication between either of said chambers and the piston rod when the pressure in either of said chambers exceeds the pressure in the inflatable member, whereby air is pumped into the inflatable member when the piston is reciprocated in the cylinder;

opening means communicating between one of said chambers and the piston rod adjacent its one end for permitting relatively slow passage of air between the rod and one chamber; and

means operatively coupled to the piston and the cylinder to indicate the location assumed by the cylinder relative the piston after movement of the piston toward the end of said one chamber and after release of the cylinder measuring the amount of pressure in the inflatable member.

3,981,626
DOWN HOLE PUMP AND METHOD OF DEEP WELL PUMPING
Hasan F. Onal, Denver, Colo., assignor to Sundstrand Corporation, Rockford, Ill.
Filed Feb. 6, 1975, Ser. No. 547,392
Int. Cl.^{2} F04D *13/04, 13/12*
U.S. Cl. 417—89 **3 Claims**



1. A method of deep well pumping of liquid comprising, placing a turbine driven pump at the desired depth in a well casing and sealing the pump to the well casing in a seal area with a pump inlet communicating with the liquid in the well and a pump outlet communicating with the well casing above the seal area for delivery of pumped liquid to the surface using the well casing as a conduit, returning a predetermined proportion of the pumped liquid from the surface under pressure to provide power liquid for driving said turbine, filtering of said predetermined proportion of pumped liquid prior to return thereof, directing some of said returned filtered liquid in advance of said turbine to bearings for the turbine driven pump to provide lubrication thereof, and delivering said power liquid exhausted from the turbine to the pump inlet

area in a manner to provide a net positive suction head and prevent cavitation.

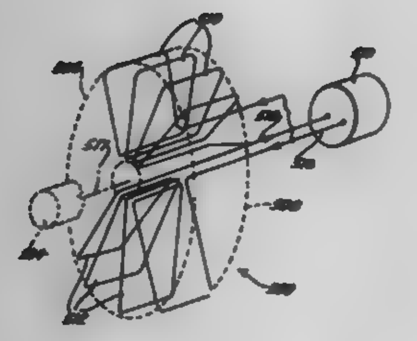
3,981,627
ROTARY THERMODYNAMIC COMPRESSOR

Frederick W. Kantor, 523 W. 112th St., New York, N.Y. 10025

Division of Ser. No. 864,112, Oct. 6, 1969, Pat. No. 3,808,828, which is a continuation-in-part of Ser. No. 608,323, Jan. 10, 1967, Pat. No. 3,470,704. This application Apr. 16, 1974, Ser. No. 461,452

Int. Cl.² F04B *39/00*

U.S. Cl. 417—207 **3 Claims**



1. A rotary thermodynamic compressor comprising, in combination, a rotary drive shaft, a pair of conduits, each conduit forming a group of loops each of which is transverse to the rotational axis of said shaft, each of said loops having first and second sections extending outwardly from said axis at locations spaced from one another along said axis, said groups of loops being arranged about said rotational axis in opposed pairs with corresponding loops directly opposite one another, each of said groups extending around said rotational axis to tend to form a toroid whose axis extends in the same direction as said rotational axis, means for delivering a compressible fluid to each of said conduits so that said corresponding loops have the same amount of fluid in them to rotationally balance said compressor, and heat transfer means for conducting heat out of each of said first sections and into each of said second sections.

3,981,628
PUMP

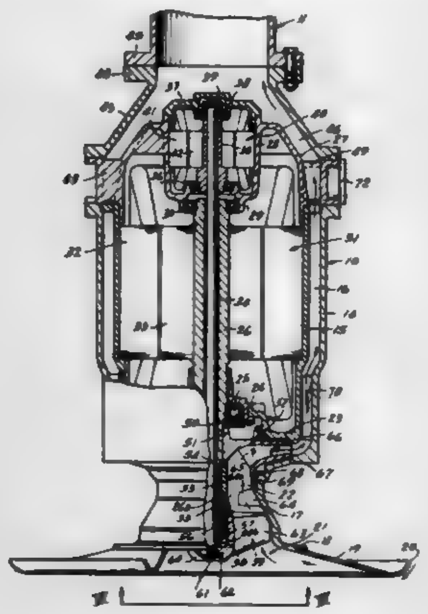
James C. Carter, 1735 San Pasqual St., Pasadena, Calif. 91106

Filed Apr. 8, 1974, Ser. No. 459,022

Int. Cl.² F04D *13/12*

U.S. Cl. 417—247 **9 Claims**

1. In a submersible electric motor driven centrifugal pump unit with an inducer in the pump inlet ahead of the pump impeller supported on a hollow motor driven impeller shaft, the improvements of a second shaft extending through said hollow shaft coupled to said inducer, a turbine in the top end of said unit driven by pumpage from the impeller and driving said second shaft at a lower speed than said hollow shaft, and a coupling driving the inducer from the hollow shaft during start-ups of the unit.



3,981,629
SWASH-PLATE TYPE COMPRESSOR FOR AIR CONDITIONING OF VEHICLES

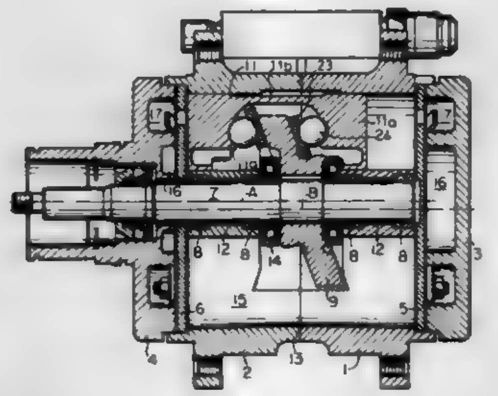
Shozo Nakayama; Takeshi Toriyama, both of Kariya, and Takeshi Higuchi, Ohbu, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Japan

Filed Sept. 15, 1972, Ser. No. 289,727

Claims priority, application Japan, Sept. 21, 1971, 46-86057[U]

Int. Cl.² F04B *1/12*

U.S. Cl. 417—269 **3 Claims**



1. In a shell elimination type swash plate compressor for air conditioning vehicles, of the type having a pair of cylindrical cylinder blocks combined with each other in axial alignment and forming the outer surface of the compressor body, a pair of cylinder heads coaxially connected to the outer ends of said combined cylindrical cylinder blocks by way of valve plates, each cylinder head having a suction chamber and a discharge chamber, said combined cylindrical cylinder blocks having three axially aligned bores extending therein, a piston slidably held in each bore, a drive shaft connected to a driving source, and a swash plate mechanism for moving said pistons and rigidly mounted on said drive shaft; the improvement wherein said drive shaft is mounted with its center line axially extending and located radially spaced from the geometrical longitudinal center line of said combined cylindrical cylinder blocks, and said three bores are disposed with equiangular spacing on a circle about said center line of said drive shaft whereby one of the three sector spaces defined by adjacent pairs of said three bores and an inside wall of said cylindrical cylinder blocks has a volume larger than those of the remaining two sector spaces, said larger volume sector space having a lubrication reservoir formed therein, said swash plate mechanism extending into said reservoir, whereby the periphery of said swash plate mechanism is farther from the outer wall of said cylinder blocks in the region of said reservoir than in a region of the cylinder blocks diametrically opposite said reservoir.

3,981,630
HYDRAULIC SWASH PLATE PUMPS

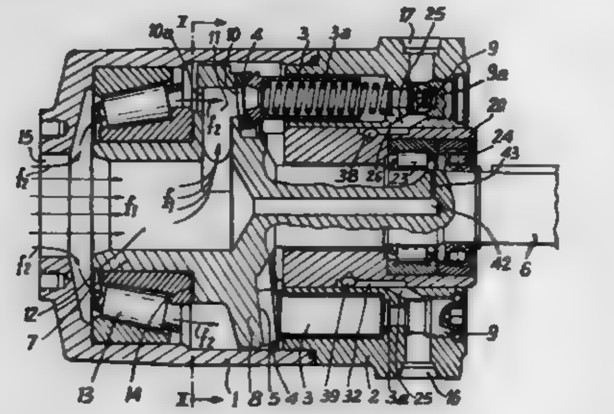
Gérard Leduc, 88, rue d'Alsace, 88 Saint-Die, and Michel Leduc, 54 Azerailles, both of France

Filed May 27, 1975, Ser. No. 580,973

Claims priority, application France, June 19, 1974, 74.21247; Feb. 28, 1975, 75.06331

Int. Cl.² F04B *1/12*

U.S. Cl. 417—269 **12 Claims**



1. A swash plate pump of the type comprising a plurality of pistons bearing against a plate driven by a driving shaft, said plate being inclined relatively to said driving shaft in such a manner that the pistons are given a reciprocating movement when said plate is driven by said shaft, in which the drive shaft has a first portion and a hollow portion, which hollow portion forms an axial conduit for admission of a hydraulic liquid; said plate being mounted on said shaft at the junction between said first portion and said hollow portion, said plate having a recess communicating with said axial liquid supply duct and a port for distribution of the liquid to said pistons, said port being formed on the rear face of said plate, said plurality of pistons being arranged in a circle concentrically with said first portion of said shaft and bearing against said rear face of said plate, and a taper roller bearing mounted on said hollow portion of said shaft and against which the front face of said plate bears.

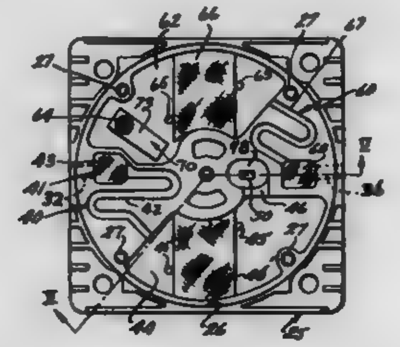
3,981,631
COMPRESSOR HEAD CONSTRUCTION

Donald P. Kemp, Stevensville, Mich., assignor to Gast Manufacturing Corporation, Benton Harbor, Mich.

Filed Jan. 16, 1974, Ser. No. 433,820

Int. Cl.² F04B *21/00, 39/00*

U.S. Cl. 417—312 **3 Claims**



1. A compressor head construction comprising:

a head adapted to be attached to a compressor cylinder and including a surface defining a wall of the compression chamber of said cylinder;

inlet and outlet ports formed in said head;

first channel means formed in said head on a side opposite said surface defining a wall of the compression chamber and first aperture means extending through said head for coupling said inlet port to said compression chamber adjacent an opposite side of said casting, said first channel means including an elongated, generally S-shaped portion coupled at one end to said inlet port, an enlarged filter receiving portion having a depth greater than said elongated portion and coupled at one end for said elongated portion and further including filter means disposed in said enlarged portion for filtering air entering said compression chamber;

second channel means formed in said head on a side opposite said surface defining a wall of the compression chamber and second aperture means extending through said head for coupling said compression chamber to said outlet port;

cover means removably secured only to said head to permit access to said filter means and for sealably covering said first and second channel means; and

valve means coupled to said head to permit air to be compressed to enter said compressor only through said inlet port and exit said compressor only through said outlet port.

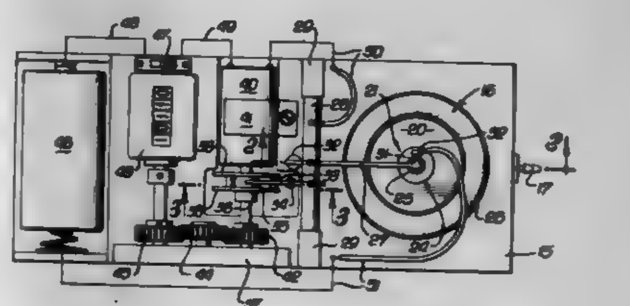
3,981,632
METERING PUMP

Halbert Allen LeFebre, 66 Monte Veda, P. O. Box 314, Orinda, Calif. 94563

Filed Apr. 24, 1975, Ser. No. 571,317

Int. Cl.² F04B *19/00*

U.S. Cl. 417—413 **13 Claims**



1. In a metering pump for measuring the flow of a fluid, the combination of a variable-volume chamber which expands and contracts as fluid admitted thereto and withdrawn therefrom, respectively, means for reciprocatively altering the volume of the chamber including resilient means urging the chamber toward one direction of volume alteration at a rate determined by the externally-determined rate of the fluid flow and mechanical means for positively altering the chamber volume in the other direction, the mechanical means being ineffective to control the chamber volume during at least a part of the volume alteration in the said one direction, valve means for the chamber arranged to cause fluid flow therethrough upon reciprocative alteration of the chamber volume, and means for counting the alterations of the chamber volume, said counting means being effective only during alteration of the chamber volume in one of said directions.

3,981,633
PUMP

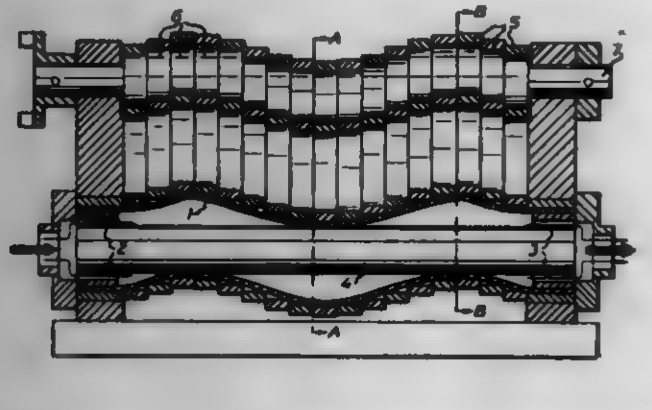
Karl Bertil Wall, Malmo, Sweden, assignor to AB Ljungmans Verkstader, Malmo, Sweden

Filed June 17, 1975, Ser. No. 587,788

Claims priority, application Sweden, June 25, 1974, 7408327

Int. Cl.² F04B *43/08, 43/12, 45/06*

U.S. Cl. 417—474 **10 Claims**



1. A pump comprising, an elastic hose having open inlet and outlet ends, an elongated bar member mounted within said hose and extending substantially the full length thereof, hose actuator means operable to impart to the portion of said hose between said ends a progressive transverse undulating movement about said bar, said actuator means including movable means engaging and deflecting said hose for providing at all times a movable seal between said hose and said bar on opposite sides with said hose maintaining a substantially uniform cross section along its length during said movement, said hose cooperating with said bar to at least substantially seal from one another the spaces within said hose on said opposite sides of said bar.

3,981,634
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

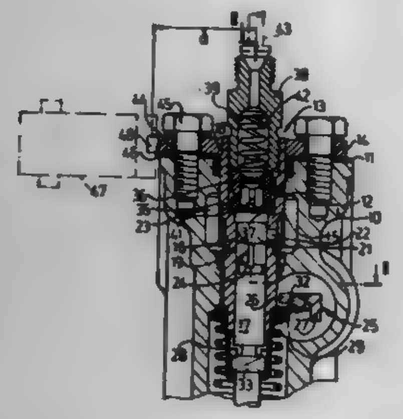
Heinrich Staudt, Markgroningen-Talhausen, and Eberhard Hofmann, Kirchbert, M., both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Mar. 27, 1975, Ser. No. 562,858

Claims priority, application Germany, Apr. 1, 1974, 2415719

Int. Cl.² F04B *39/10, 7/04*

U.S. Cl. 417—499 **4 Claims**



1. In combination, a fuel injection pump for use in internal combustion engines, and an adjustment tool for adjusting the basic fuel quantity setting for the pump, the pump including:

a. a housing within which there is formed at least one bore for receiving a piston and an associated guiding structure, and an associated pair of bolt receiving bores, with all the bores extending into the body of the housing from an upper end face thereof;

b. a cylinder bushing mounted within the receiving bore of the housing and forming the guiding structure for the piston, the cylinder bushing forming an axial bore into which the piston extends and within which the piston is displaced, and at least one control bore in the side wall thereof; said cylinder bushing being received within the receiving bore of the housing so that it can be rotated within a limited angular region for effecting a basic setting of fuel quantity supplied by the pump;

c. a pair of bolts;

d. a mounting flange fastened to the cylinder housing and extending transversely outwardly therefrom, said mounting flange including a pair of bores which align with the bolt receiving bores when the mounting flange is mounted to the upper end face of the housing by the pair of bolts, said mounting flange including an adjustment tool engaging portion at the outer circumference thereof, said engaging portion being formed as a slot within the mounting flange located at a greater transverse distance from the longitudinal axis of the cylinder bushing than the maximum transverse distance of the bolts from said longitudinal axis, said slot having side walls and a base which are parallel to the longitudinal axis of the cylinder bushing, the adjustment tool being adapted to engage the engaging portion to effect the rotation of the cylinder bushing within the limited angular region;

e. a piston mounted within the axial bore of said cylinder bushing, said piston having an oblique control edge formed on its outer surface, said control edge cooperating with the at least one control bore for controlling the quantity of fuel delivered by the pump; and

f. a pressure valve mounted within said axial bore, said pressure valve serving to control the outflow of fuel from the pump under the injection pressure.

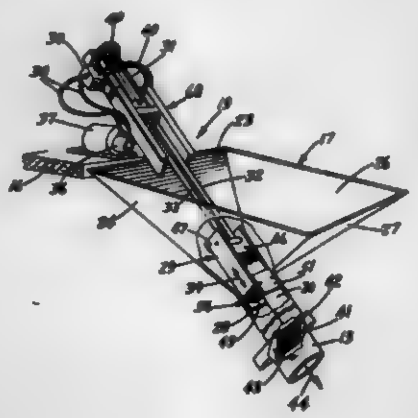
3,981,635
MATERIAL HANDLING SYSTEM

Junior M. Hedlund, Boyceville, Wis., assignor to Hedlund Manufacturing Co., Inc., Boyceville, Wis.

Division of Ser. No. 397,380, Sept. 14, 1973, Pat. No. 3,872,981. This application Feb. 28, 1975, Ser. No. 553,913

Int. Cl.² F04B *21/04*

U.S. Cl. 417—551 **26 Claims**



1. A pumping apparatus for moving material to a selected location comprising: means having a chamber for receiving material and an outlet for carrying material away from the chamber, a pumping piston located in said chamber for moving material into the outlet, said pumping piston having walls forming a passage allowing material to move through the piston, said piston having an open top allowing material to move into the passage, means connected to the pumping piston to reciprocate the piston in a forward direction and a reverse direction, first and second door means movable to closed positions to block the flow of material through the passage on forward movement of the piston and movable to open positions to permit the flow of material through the passage on reverse movement of the piston, separate pivot means pivotally mounting said first and second door means on said piston for movement about separate axes providing for movement of the door means between the closed positions and open positions thereof, and means having stop means secured to the piston engageable with at least one of the door means when the door means are in the closed positions to prevent movement of the door means in a reverse direction beyond the closed positions thereof whereby the door means remain in the closed positions on forward movement of the piston so that the door means moves material in front of the door means through the outlet on movement of the piston in the forward direction and said door means move away from the stop means to open positions on movement of the piston in the reverse direction whereby material can move through the passage of the piston to the outlet.

3,981,636
DIAPHRAGM VACUUM PUMP

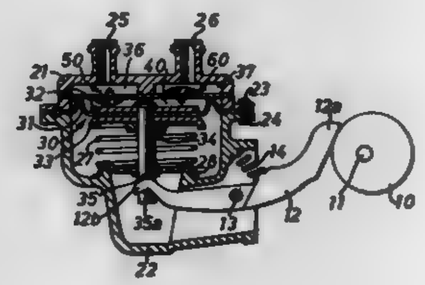
Shigeru Aoki, Toyota; Katuya Suzuki, Seto, and Tosimitu Sakai, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 489,362, July 17, 1974, abandoned. This application Nov. 3, 1975, Ser. No. 628,403

Claims priority, application Japan, July 20, 1973, 48-81619

Int. Cl.² F04B *21/02;* **F16K** *15/14*

U.S. Cl. 417—566 **8 Claims**



1. A diaphragm vacuum pump having a plurality of check valves for allowing flow into and out from a suction chamber having a diaphragm-piston assembly for creating suction therein wherein each check valve comprises:

a valve body made of plastic material in a mushroom configuration having a circular cap and a neck portion including an annular groove,

a plate member including a flat valve seat surface to be engaged with the annular rim of the cap portion of said valve body,

a circular assembling hole to be coupled with the neck portion of said valve body, and

a plurality of circular openings disposed symmetrically on a circular path concentric with said assembling hole so as to be normally closed by the annular rim of the cap portion of said valve body, the neck portion of said valve body being assembled within said assembling hole so that said groove is registered with said assembling hole through said plate, said neck portion being under an axially and radially compressed condition to air-tightly engage the annular rim of the cap portion of said valve body against said valve seat surface of said plate member, the ratio of the radius of said circular path to the radius of the cap portion of the valve body being in the range from about 0.5 to about 0.65, the ratio of the width of said plate to the width of said annular groove being in the range from about 1.2 to about 1.4, and the ratio of the diameter of the assembling hole to the normal diameter of the neck portion of the valve body being about equal to or less than 1.1.

3,981,637
VARIABLE DISPLACEMENT ROTARY MACHINE WITH OSCILLATING PISTON SLIDES

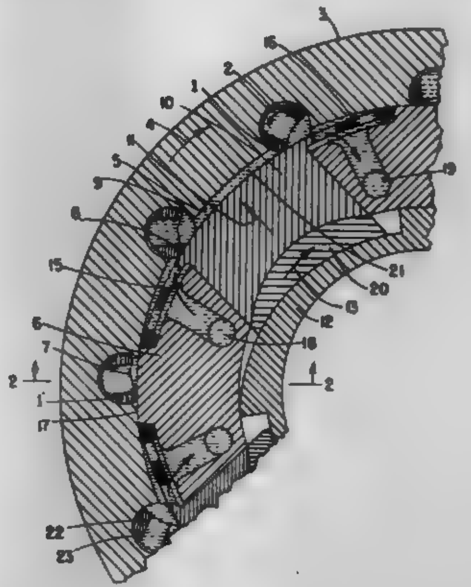
Arno Fischer, Pfistermuhle, 8121 Rottenbuch, Upper Bavaria, Germany

Continuation-in-part of Ser. No. 315,337, Dec. 15, 1972, abandoned. This application Nov. 11, 1974, Ser. No. 522,447

Claims priority, application Germany, Dec. 21, 1971, 2163423

Int. Cl.² F01C *1/00, 21/16;* **F03C** *3/00;* **F04C** *1/00*

U.S. Cl. 418—22 **18 Claims**



1. A rotary piston engine comprising:

A. a symmetrical rotor including bearing means;

B. a plurality of oscillating piston slides supported in said bearing means, each of said slides having a semilunar cross section and comprising a notch including a working surface on one side thereof and a rearward recess in communication with said working surface via a duct;

C. a symmetrical stator, arranged concentrically with said rotor, having inner, outer and lateral surfaces, including,
  a. successive separating parts spaced around said stator and cooperating with said rotor and said slides, a portion of each separating part abutting said rotor,
  b. feed ports and discharge ports between each of said portions communicating with a conveying medium,
  c. a working chamber defined between each of said portions and said rotor, and
  d. perforated coverings over said feed and discharge ports between said ports and said rotor, connecting said feed and discharge ports to said working chambers and said piston slide ducts.

3,981,638
ROTARY PISTON MACHINE

Johann Hutterer, Vienna, Austria, assignor to David Godfrey Williams, Merseyside, England, a part interest

Filed Mar. 24, 1975, Ser. No. 561,217

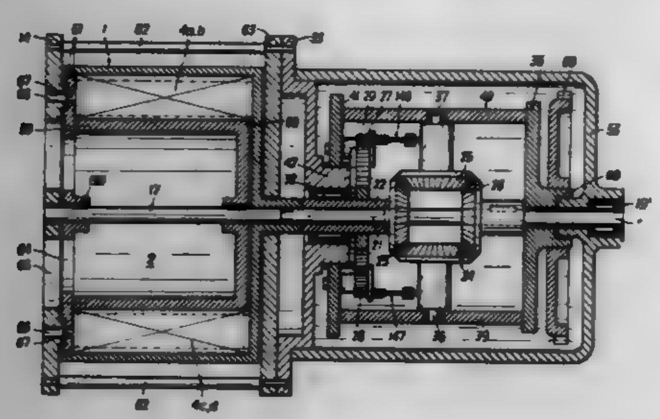
Claims priority, application Austria, Mar. 25, 1974, 2439/74

Int. Cl.² F01C *1/42;* **F02B** *55/14*

U.S. Cl. 418—34 **8 Claims**

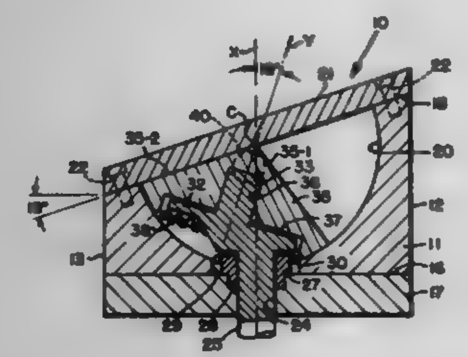
1. A rotary piston machine comprising an outer rotary piston and an inner rotary piston which define between them an annular working space, which is divided into a plurality of sealed chambers by bars, which extent in alternation from said outer and inner rotary pistons, and a differential gear assembly which operatively connects said outer and inner rotary pistons, which perform a differential rotational movement whereby the volumes of said sealed chambers are periodically changed, said differential gear assembly comprising a bevel gear assembly and an epicyclic gear assembly, said bevel gear assembly having two mutually confronting, coaxial bevel wheels which are coaxial with said annular working space, and

two intervening additional bevel wheels, which are in mesh with the two first-mentioned bevel wheels and rotatable on an axis that is at right angles to the axis of rotation of said coaxial bevel wheels, one of said two coaxial bevel wheels being operatively connected to said outer rotary piston, the other of said two coaxial bevel wheels being operatively connected to said inner rotary piston, said epicyclic gear assembly having a sun wheel and two planet wheels in mesh with said sun wheel, said differential gear assembly also comprising connecting means, which connect said planet wheels to respective ones of said additional bevel wheels, said connecting means and planet wheels being operable to impart a rotational movement to said two additional bevel wheels in alternating senses of rotation to produce the differential rotational movement of said rotary pistons, said rotary pistons being pot-shaped and nested one within the other, the shells of said pots defining between them said working space, and the bars which divide said working space being fixed in alternation to the shell of one and the other of said pots.



3,981,639
NUTATING ENGINE

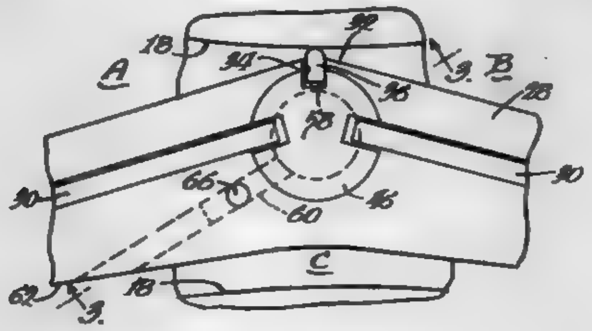
Robert H. Wahl, 1747 Creek Road, Rochester, N.Y. 14625
Filed Sept. 24, 1974, Ser. No. 508,744
The portion of the term of this patent subsequent to July 29, 1992, has been disclaimed.
Int. Cl.² F04C *1/00*
U.S. Cl. 418—49 **7 Claims**



1. An engine, comprising
a housing having therein a hemispherical chamber bound in part by a first, plane surface disposed diametrally of the sphere of which said chamber is a segment,
a rotor in said chamber having the configuration of a spherical wedge, and having a pair of intersecting, surfaces forming an apex extending diametrally across said chamber and in sliding engagement with said first surface,
a shaft projecting at one end part way into said chamber and rotatable about a first axis inclined to said first surface and extending through a point common to the centers of said first surface and said sphere, and
means mounting said rotor on said one end of said shaft for rotation relative thereto about a second axis inclined to said first axis and extending through said point coaxially of said rotor,
said mounting means including phasing means for effecting one half revolution of said rotor about said point for each revolution of said shaft, thereby to pivot said rotor in opposite directions about its apex during each revolution of said rotor, whereby said intersecting surfaces on said rotor are alternately swung toward and away from said first surface to effect compression and expansion, respectively, of the corresponding portions of said chamber.

3,981,640
SLANT AXIS ROTARY MECHANISM

Alexander Goloff, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 8, 1975, Ser. No. 611,033
Int. Cl.² F04C *27/00;* **F01C** *19/10*
U.S. Cl. 418—51 **7 Claims**



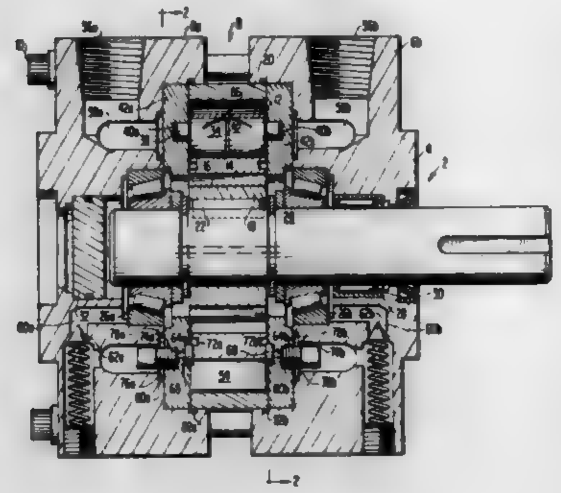
1. In a slant axis rotary mechanism, the combination comprising
a. a housing defining an operating chamber,
b. a shaft journalled in said housing having an angularly offset portion within said chamber,
c. a rotor within said chamber and journalled on said angularly offset portion, said rotor having an annular flange provided with plural apices on each side thereof,
d. peripheral seal means about the periphery of said flange sealingly engaging said housing,
e. a generally radially extending groove at each apex,
f. an apex seal loosely carried in each groove and sealingly engaging said housing, and
g. a bolt seal at each apex on the periphery of said flange and sealingly engaging said housing, each said bolt seal having a first pressure-responsive surface in fluid communication with the corresponding groove and a second pressure-responsive surface in fluid communication with the side of the flange opposite the corresponding apex.

3,981,641
HYDRAULIC MOTOR WITH ORBITING DRIVE MEMBER

Michael A. D'Amato, 1200 E. Main St., Waukesha, Wis. 53186
Filed Oct. 8, 1975, Ser. No. 620,697
Int. Cl.² F01C *1/02, 21/00, 19/08, 21/04*
U.S. Cl. 418—61 R **7 Claims**

1. An orbital drive fluid motor comprising
a casing defining a cavity bonded by an inwardly facing annular surface,
a rotatable drive shaft extending through said cavity and having a pinion thereon,
an annular drive member having
  an inner periphery larger than and surrounding said pinion with teeth thereon which are more in number than the teeth on said pinion,
  an outer periphery surrounded by and smaller in diameter than the annular surface bonding said chamber, and
  opposite end surfaces,
a pair of port plates having inner surfaces respectively disposed against the end surfaces of said drive member and having limited freedom of movement towards and away from the same,

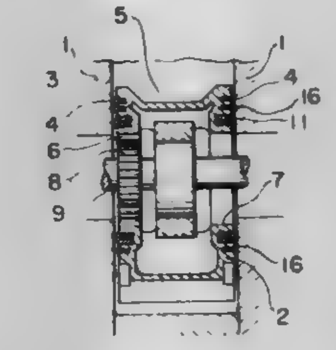
a plurality of divider means extending between the outer periphery of the drive member and the surrounding annular surface and providing therebetween a plurality of fluid coupling chambers,
a plurality of eccentric bearing members extending through bores through said drive member from end-to-end thereof and having opposite ends thereof supported in said port plates,
  said bearing members restraining said drive members against other than orbital movement wherein the teeth on the inner periphery thereof engage the teeth a few at a time of the pinion and wherein fluid coupling chambers on one side of the drive member undergo expansive phases while those on the opposite side undergo contractile phrases, said drive member having on opposite ends thereof slots which terminate at said fluid coupling chambers,
  said casing having trepan chambers on each outer side of said port plates, one of which is for connection with a high pressure fluid supply line while the other is for connection with a low pressure fluid return line, said port plates having therethrough ports, those on one of which plates register with slots terminating in fluid coupling chambers on one end of said drive members and connect the same with one of said trepan chambers while those on the other plate connect said fluid coupling chambers on the other side of said drive member with the other trepan chamber,
means for hydraulically balancing the opposite sides of said port plates, and means for charging the bearing bores with fluid from said fluid coupling chambers.



3,981,642
PROTECTIVE DEVICE FOR ROTARY ENGINE OIL SEAL

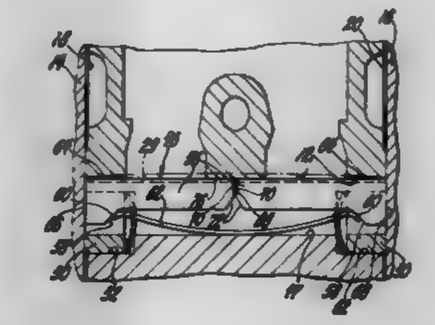
Kazuhiro Kawamura, and Kunihiko Mizutani, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan
Filed June 10, 1974, Ser. No. 478,091
Claims priority, application Japan, July 9, 1973, 48-80535[U]
Int. Cl.² F01C *19/08, 21/04*
U.S. Cl. 418—91 **1 Claim**

1. A rotary engine comprising, in combination: an eccentrically rotatable rotor; a rotor housing including housing sides located on both sides of said rotor closely adjacent thereto; a lubricating section located generally centrally of said rotor and adapted to have lubricating oil contained therein; a combustion chamber defined within said housing radially outwardly of said lubricating section peripherally of said rotor; annular oil seals each including an O-ring provided on both sides of said rotor between said rotor and said housing sides to prevent lubricating oil in said lubricating section from escaping radially outwardly of said rotor into said combustion section; and a protective device for said oil seals located radially outwardly of said oil seals and extending completely thereabout on both sides of said rotor, said protective device comprising: annular grooves defined in said rotor on both sides thereof; said grooves being located radially outwardly of each of said oil seals and extending completely thereabout concentrically with said oil seals in close proximity thereto; sealing rings extending continuously within said grooves; spring means fitted respectively within each of said grooves urging said sealing rings against said housing sides in sliding engagement therewith to prevent exposure of said oil seals to combustion gases escaping from said combustion chamber, said oil seals including an oil sealing ring extending continuously within oil seal grooves provided on both sides of said rotor, said oil sealing rings each defining a circumferentially extending U-shaped cavity therein opening radially inwardly of said rotor and facing away from said annular grooves of said protective device, said cavity having O-rings located therein; and gas sealing means provided on both sides of said rotor between said rotor and said housing sides to prevent combustion gases from said combustion chamber from escaping radially inwardly of said rotor and from coming into contact with said annular oil means, said gas sealing means being located radially outwardly of said protective device and extending to surround said protective device and said annular oil seals in an arrangement having said protective device radially juxtaposed between said gas sealing means and said annular oil seals; said housing sides comprising a generally flat planar configuration with each of said sealing rings of said protective device comprising a flat planar abutment face extending generally parallel to said housing sides and urged by said spring means into abutting relationship therewith across substantially the entire area of said face of said sealing rings.



3,981,643
ROTARY COMBUSTION ENGINE TWO-PIECE APEX SEAL ARRANGEMENT

Raymond P. Canale, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 29, 1974, Ser. No. 528,433
Int. Cl.² F01C *19/04, 19/08;* **F04C** *27/00*
U.S. Cl. 418—119 **1 Claim**



1. An apex sal arrangement for a rotary combustion engine having an inner peripheral wall and oppositely facing side walls and a rotor between the side walls with apexes that remain adjacent the peripheral wall as the rotor rotates and a peripheral port in the peripheral wall with a bridge across the center, said apex seal arrangement comprising a pair of apex seal segments arranged in a slot in each rotor apex with oppo-

sitely facing inner ends and outer ends that face the respective side walls, said segments having a peripheral sealing surface on an outer side and an end sealing surface on their outer end and a ramp on an underneath side inclined relative to the peripheral wall and the adjacent side wall, and a spring arrangeable in the slot having a center portion seating on the bottom of the slot and end portions engaging only said ramps so as to urge said pair of apex seal segments in directions bringing said peripheral sealing surfaces against the peripheral wall and also said end sealing surfaces against the respective side walls whereby a leakage gap is left only between the oppositely facing inner ends of said apex seal segments radially outward of the slot and the inner ends are supported by the bridge as they pass over the peripheral port.

3,981,644

SEALING STRIP PARTICULARLY FOR ROTARY ENGINES

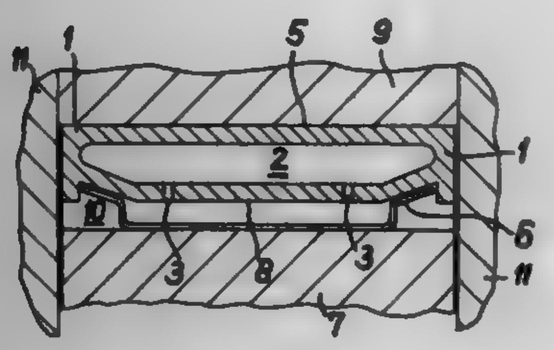
Josef Blum, Mulheim (Ruhr); Heinz Lamm, Esslingen-St. Bernhardt, and Alfred Sprang, Essen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany and Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, both of, Germany

Filed Jan. 29, 1975, Ser. No. 545,293

Claims priority, application Germany, Feb. 1, 1974, 2404770

Int. Cl.² F01C *19/02*

U.S. Cl. 418—122 **3 Claims**



1. A sintered hard metal sealing strip particularly for constituting a radial seal in a rotary internal combustion engine, the sealing strip including a body having a cavity extending longitudinally within the body and two longitudinal ends, the improvement comprising sintered hard metal end faces forming part of said body and closing off said cavity; both said ends being connected with the respective end face fixedly without transition.

3,981,645

DISPLACED PISTON MACHINE

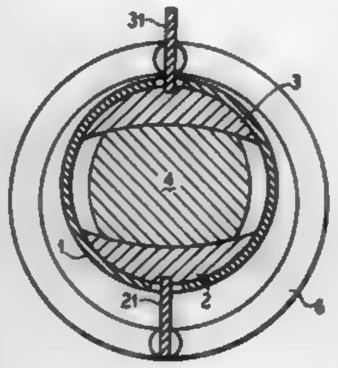
Hans Herzner, 3579 Schrecksbach/Holzburg, Eichmuhle, Germany

Filed Aug. 1, 1974, Ser. No. 493,929

Int. Cl.² F04C *17/18*

U.S. Cl. 418—161 **11 Claims**

1. A moving piston machine comprising: at least one piston received in a housing, at least one working chamber in said housing defined in part by a wall of the housing, an end face of the piston and opposed walls of a pair of guide members per piston, the guide members received in said housing, at least one of the guide members free to oscillate in the housing, the opposed walls of the guide members contacting opposite side walls of the piston, each of the opposed walls of the guide members and its contacted wall of the piston being coaxially arcuately curved, movement of the piston varying the size of the working chamber and moving at least one contacted guide member within the housing, and a guide member of each pair being firmly connected to a rotatable shaft means in a nonrelatively rotatable manner, the piston moving at a right angle to the rotation of the shaft means.



3,981,646

GEAR PUMPS AND MOTORS

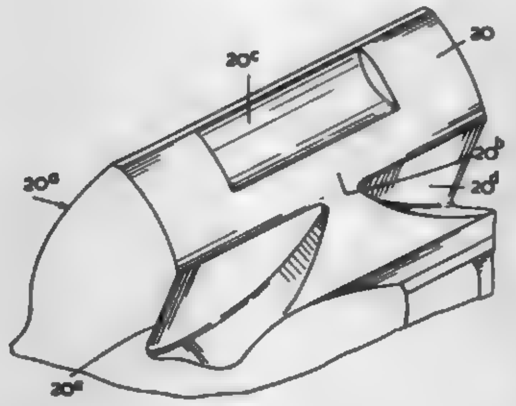
Harry Simister Bottoms, Solihull, England, assignor to Lucas Aerospace Limited, Birmingham, England

Division of Ser. No. 450,483, March 12, 1974, Pat. No. 3,953,160. This application Nov. 19, 1975, Ser. No. 633,562

Claims priority, application United Kingdom, Mar. 15, 1973, 12545/73

Int. Cl.² F04C *1/04, 15/00*

U.S. Cl. 418—190 **1 Claim**



1. A gear pump or motor comprising a housing having therein an 8-shaped chamber with ports communicating with the chamber on opposite sides thereof, a pair of meshed pinion elements running in said 8-shaped chamber, and a shaft connected to one of the said pinion elements and projecting from the housing, each pinion element being supported in bearing blocks with non-planar surfaces forming relieved zones, each pinion element having a plurality of teeth each of which has a working flank, which engages the working flanks of teeth on the other pinion, and a non-working flank, each axial end portion of the non-working flank of each tooth of each pinion having a respective relieved portion adjacent its root, which relieved portion extends to the respective axial end of the non-working flank, and a further relieved portion adjacent its tip intermediate the axial ends of the non-working flank, each non-working flank having an unrelieved land extending across the entire width of the non-working flank from the root to the tip, said unrelieved land also including a longitudinal strip extending from one axial end of the non-working flank to the other at a position intermediate the root and the tip, and wherein the ports in the housing communicate with the inter-tooth spaces via the relieved zones in the bearing blocks and the relieved portions of the non-working flanks of the teeth at axial ends thereof.

3,981,647

PNEUMATIC VANE MOTOR

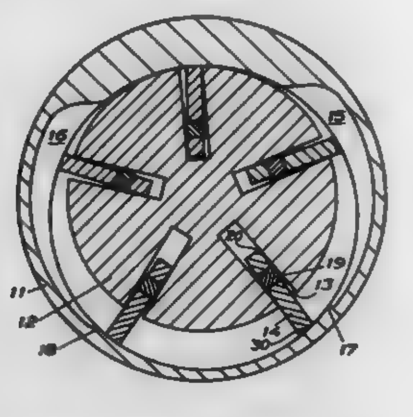
Knut Christian Schoeps, Tyreso, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Feb. 24, 1975, Ser. No. 552,331

Claims priority, application Sweden, Mar. 8, 1974, 7403166

Int. Cl.² F01C *21/00*

U.S. Cl. 418—259 **10 Claims**



1. In a pneumatic vane motor comprising:

a cylinder provided with inlet and outlet openings for motive pressure air; a rotor eccentrically located within and rotatably journalled relative to said housing, said rotor comprising radial slots therein extending throughout the length thereof; and a plurality of vanes, each vane having an outer edge adapted to contact a wall of the cylinder, an inner edge adapted to be within a slot of said rotor and opposite faces defined between said outer and inner edges, respective vanes being disposed within said slots and arranged to be urged outwardly to urge their outer edges into contact with the cylinder wall, each of said vanes having a thickness defined between said opposite faces which is less than the width of the slot within which it is disposed;

the improvement wherein each vane is provided with projections protruding from both of its opposite sides and spaced a substantial distance from its inner edge for preventing the vane from seating flatly on the slot walls and for substantially preventing the projections from being exposed to contact pressure between the vanes and the slot walls.

3,981,648

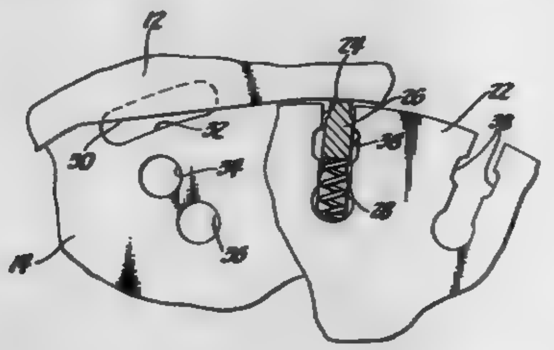
POWER TRANSMISSION

Kenneth T. Jordan, Madison Heights, and Norman A. Sowers, Lincoln Park, both of Mich., assignors to Sperry Rand Corporation, Troy, Mich.

Filed Oct. 23, 1974, Ser. No. 517,333

Int. Cl.² F01C *19/02*

U.S. Cl. 418—267 **1 Claim**



1. A hydraulic pump or motor unit of the rotary sliding vane type comprising a body formed by a non-circular cam ring and opposed end members having flat interior faces, inlet and outlet ports in the body, and further comprising a rotor having sliding engagement with the faces of the end members and being provided with generally radial slots and with vanes significantly narrower than the slots and radially reciprocable in the slots to contact the cam ring along its interior circumference, the unit having the improvement which comprises a hydraulic vane projection system utilizing in addition to the known fluid flow path between the sides of the slots and the sides of the significantly narrower vane and the known pressure feed holes in the end member faces communicating with the bottom of the slots, a widened portion in each slot intermediate its ends and a second set of pressure feed holes communicating with the widened portions of the slots.

3,981,649

APPARATUS FOR PRODUCING A FOAMED THERMOPLASTIC RESIN ARTICLE

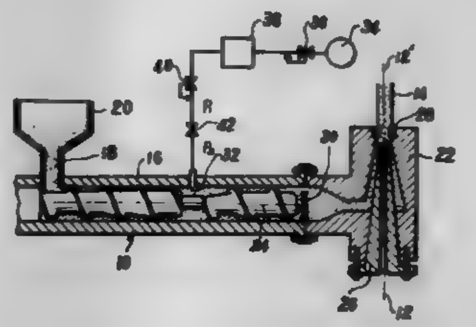
Takashi Shimano; Katsumi Orimo; Shoji Yamamoto, all of Ichihara, and Masao Azuma, Chiba, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo

Filed Jan. 20, 1975, Ser. No. 542,396

Claims priority, application Japan, Jan. 22, 1974, 49-8985; Oct. 8, 1974, 49-115763

Int. Cl.² B29D *27/00*

U.S. Cl. 425—4 C **6 Claims**



1. An apparatus for producing a foamed thermoplastic resin article comprising an extruder including a barrel through which a thermoplastic resin is fed while being melted and a head to extrude said molten resin from said barrel to a lower pressure area, and gas injector means to inject a gas into said molten resin in said barrel through a gas injecting port in said barrel whereby said thermoplastic resin article is formed by extruding said gas containing molten resin, said injector means characterized by comprising gas flow rate setting means disposed adjacent and connected to said injecting port to conduct said gas therethrough while a constant gas flow rate is maintained irrespective of variation in the downstream pressure, and the volume of a gas passage from said gas flow rate setting means to said gas injecting port in said barrel being set sufficiently small for the gas pressure in said gas passage to respond to variation in the pressure of said molten resin in said barrel, said volume of said gas passage being less than 8 percent of the volume (at normal state) of said gas flowing through said gas flow rate setting means per minute.

3,981,650

MELT BLOWING INTERMIXED FILAMENTS OF TWO DIFFERENT POLYMERS

Robert E. Page, Davis, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Jan. 16, 1975, Ser. No. 541,504

Int. Cl.² B29F *3/04*

U.S. Cl. 425—72 S **12 Claims**

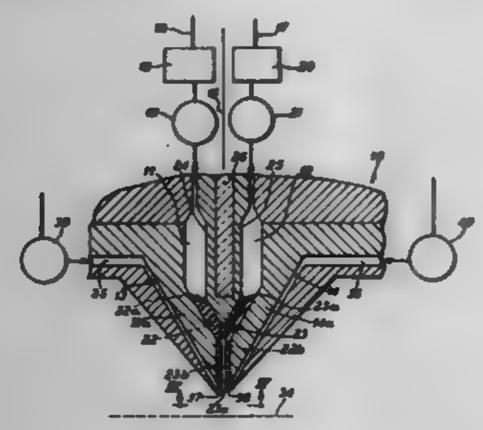
1. A plastic extrusion mechanism comprising in combination:

a die head having a first chamber for a first plastic and a second chamber for a second plastic;

a plurality of first small extrusion passages leading from the first chamber to first openings arranged in a row;

a plurality of second small extrusion passages leading from the second chamber to second openings in said row interspersed between said first openings;

first plastic delivery means connected to said first chamber for delivery of a first plastic thereto;
second plastic delivery means connected to said second chamber for delivery of a second plastic thereto said second plastic having different physical characteristics than said first plastic, and



first and second high velocity gas delivery means each one being on a different side of said row for directing a flow of air towards filaments emitted from respective ones of said first and said second openings at an angle between 0° and 90° relative to the axes of said filaments.

3,981,651
DEVICE FOR PRODUCING PLATE-SHAPED WORKPIECES

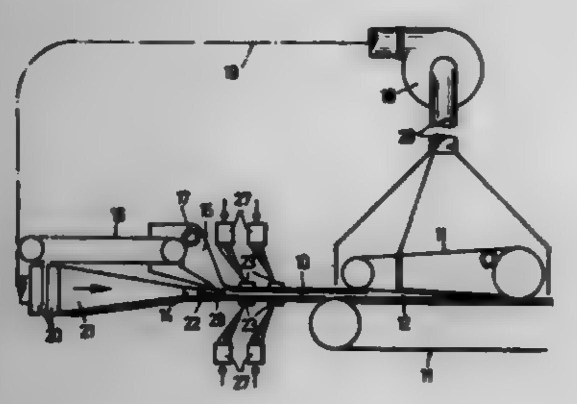
Adolf Buddenberg; Bruno Hengst, both of Bad Driburg, and Josef Weskamp, Bad Driburg-Alhausen, all of Germany, assignors to Adolf Buddenberg GmbH, Bad Driburg, Germany

Filed May 20, 1974, Ser. No. 471,690

Claims priority, application Germany, May 19, 1973, 2325508

Int. Cl.^{2} B29C *13/00*; D01G *25/00*

U.S. Cl. 425—83 15 Claims



1. In a device for producing plate-shaped workpieces from comminuted material introduced by an air current into a forming chamber located downstream of a material supply channel, in supply direction of the material, the forming chamber being defined at upper and lower sides thereof by a pair of endless revolving conveyor and compression belts spaced from and located above one another, one of the belts being formed with air passage openings therein, the improvement therein comprising a separate material supply channel and air blow channel which come together with an adjustable air flow regulator, in the air blow channel, which terminates at the juncture of the air blow channel and the material supply channel, a fleece-forming and supply channel connected to and forming an extension of said air flow channel, and a plurality of injector nozzle means spaced from and located downstream of said air flow regulator for moving the fleece through the fleece-forming and supply channel to the forming chamber and for orienting the comminuted material.

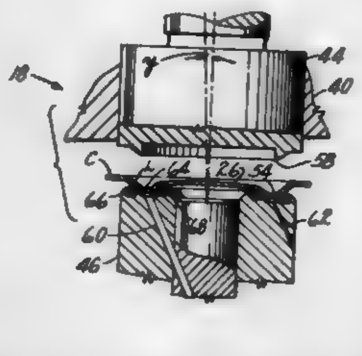
3,981,652
MACHINE FOR PARTLY COATING ARTICLES

Walter C. Lovell, Wilbraham, and Frederick G. J. Grise, Magnolia, both of Mass., assignors to USM Corporation, Boston, Mass.

Filed Aug. 5, 1974, Ser. No. 494,985

Int. Cl.^{2} A23G *1/20*

U.S. Cl. 425—111 15 Claims



2. A coating device for treating portions of generally planar sheet metal lids having a disruptable closure defining ridge on one side of the respective lids and a complemental groove formed respectively on the opposite side of the lids between the walls of said ridge, said device comprising a movable back-up die having axially protruding work engaging surfaces respectively shaped to nest in said complemental groove of the closure and bear on the periphery of the lids, and an applicator registerable and cooperative with the die and having laterally spaced masking edges arranged, respectively, to nip and mask the walls of the closure ridge when the die and applicator are relatively moved together, said applicator having an open cavity bounded by the masking edges for receiving pressure fluid sealant when the closure ridge is thus nipped by the masking edges.

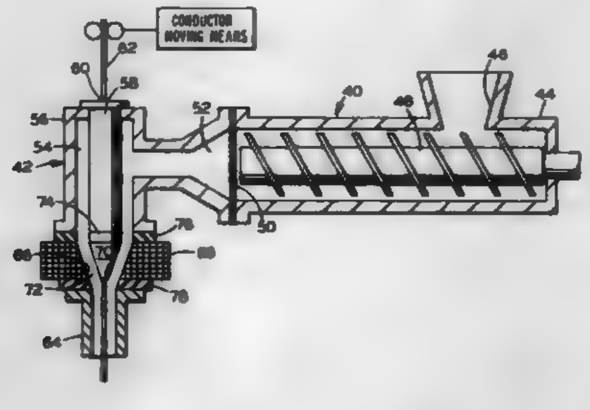
3,981,653
APPARATUS FOR THE MANUFACTURE OF AN ELECTRICAL CONDUCTOR COVERED WITH A CROSSLINK CURED POLYMERIC INSULATION

Milton Sharples Greenhalgh, and Ray Clarence Lever, both of Fairfield, Conn., assignors to General Electric Company, New York, N.Y.

Filed Jan. 3, 1975, Ser. No. 538,353

Int. Cl.^{2} B29F *3/08*

U.S. Cl. 425—113 7 Claims



1. An apparatus for the continuous plasticating and heating of a heat activatable, crosslink curable polymeric compound and forming therefrom a crosslink cured polymeric insulating covering about a moving elongated electrical conductor, comprising:

a. plastic forming means comprising an extruder barrel having an outlet passage at one end leading to a channel die having a converging entry thereto for the continuous molding of plastic polymeric material progressively moving therethrough;

b. means located upstream of said die for continuously moving an elongated electrical conductor through the channel die;

c. means comprising a rotatable extruder screw within the extruder barrel for plasticizing and continuously progressively moving a heat activatable, crosslink curable polymer compound into and through the converging entry and channel die and thereby continuously molding said curable polymer compound about the elongated conductor moving through the die;

d. electrical induction heating means comprising a combination of an electrical induction coil positioned surrounding the area of the converging entry to the channel die and a cooperating heat generating metal induction core member positioned substantially concentrically encircled within and spaced apart from the converging entry to the channel die whereby a heat activated, crosslink curable polymer compound continuously progressively moving into and through the die passes over the heat generating metal induction core and the temperature thereof is abruptly increased; and

e. thermal insulating means isolating the heat generating metal induction core from other components of the apparatus to thereby confine the heating of the continuously progressively moving heat activated, crosslink curable polymer compound to the portion thereof entering into the channel die.

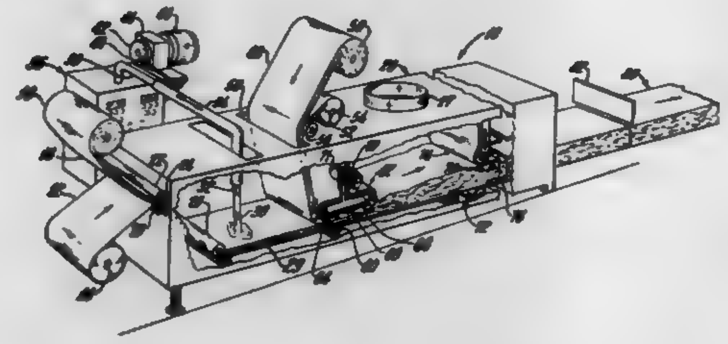
3,981,654
APPARATUS FOR PRODUCING FIBER REINFORCED ORGANIC FOAM

Leonard D. Rood, Columbus, and Ronald E. Kissell, Alexandria, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 338,486, March 6, 1973, Pat. No. 3,867,494. This application Nov. 13, 1974, Ser. No. 523,383

Int. Cl.^{2} B29D *27/04*

U.S. Cl. 425—115 5 Claims



1. Apparatus for producing a body of fiber-reinforced foam, said apparatus comprising means for supplying a layer of fibers along a horizontal path, means downstream of said fibers supplying means for supplying a foamable material substantially uniformly on the upper surface of said layer, means downstream of said foamable material supplying means for supplying a flexible sheet above said layer of fibers and said foamable material, means extending substantially across the width of said layer for compressing the layer through said flexible sheet to aid in penetration of the foamable material, and means downstream of said compressing means to subsequently restrict the extent of the rise of the foamable material during foaming, said compressing means comprising a plurality of rolls, means connected to said rolls for supporting said rolls transversely to the path of said layer with their axes parallel, and means connected to said rolls for rotating said rolls in a circular path with the rolls closest to said layer moving in the same direction as said layer.

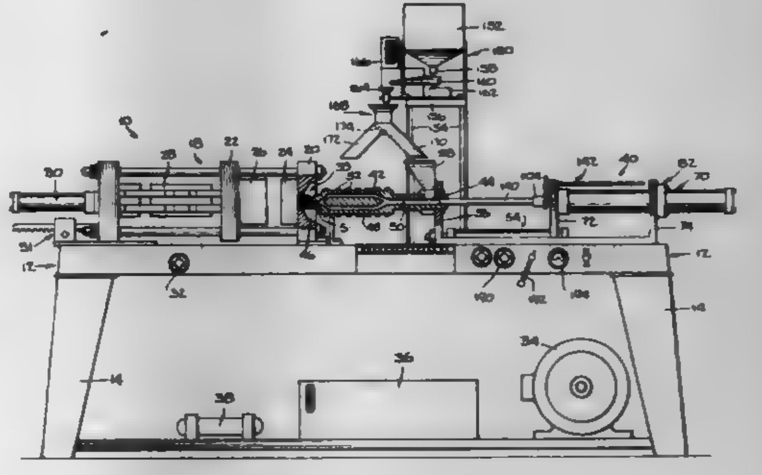
3,981,655
MOLDING APPARATUS SELECTIVELY OPERABLE FOR EITHER INJECTION OR TRANSFER MOLDING

Stephen Horbach, 40 Glen Road, Mountain Lakes, N.J. 07046

Filed Jan. 15, 1975, Ser. No. 541,213

Int. Cl.^{2} B29F *1/00*; B29G *3/00*

U.S. Cl. 425—181 4 Claims



1. A dual mode molding apparatus comprising:
a frame,
first and second laterally spaced platens mounted on said frame, at least one of said platens being movable relative to said frame, said platens being reciprocally movable relative to one another,
cavity mold pieces mounted on said platens and disposed to form a closed mold upon relative movement of said platens toward each other and to open the mold upon relative movement of said platens away from each other,
said first platen including a first through opening in communication with the mold cavity defined by said mold when in said closed state,
a removable first mode feed cylinder having a second through opening, said first mode feed cylinder adapted to be mounted adjacent said first platen and, when so mounted, said second through opening being in communication with said first through opening,
a removable second mode feed cylinder having heating means and an outlet nozzle, said second mode feed cylinder adapted to be mounted adjacent said first platen,
a removable sprue adapted to be inserted in said first through opening,
said sprue mating with said nozzle when said sprue is so inserted and when said second mode feed cylinder is so mounted,
a plunger mounted on said frame for reciprocal lateral movement, and
means operatively connected to said plunger for adjusting the stroke of said plunger to provide first and second stroke modes for said plunger,
when said first mode feed cylinder is so mounted and said plunger is in said first stroke mode, said plunger having a stroke that extends through said second through opening and through said first through opening into said mold,
when said second mode feed cylinder is so mounted and said plunger is in said second stroke mode, said plunger having a stroke that extends partially into said second mode feed cylinder,
the stroke of said plunger in said second mode being substantially less than the stroke of said plunger in said first mode.

3,981,656

MOULDING OF HIGH BOILED SUGAR AND LIKE CONFECTIONS

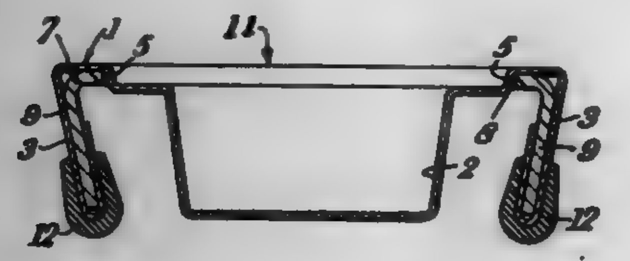
Gordon Steels, Peterborough, and Terence John Blore, Deeping St. James, near Peterborough, both of England, assignors to Baker Perkins Holdings Limited, Great Britain

Filed Apr. 18, 1975, Ser. No. 569,392

Claims priority, application United Kingdom, Apr. 22, 1974, 17523/74

Int. Cl.² A23G *3/12*

U.S. Cl. 425—182 **5 Claims**



1. A mould assembly for use in a confectionery moulding plant, said assembly comprising

- a rigid, generally rectangular carrier frame having an upper portion formed with a central rectangular aperture therethrough and opposed depending side flanges extending downwardly with respect to said upper portion, said carrier frame also having end portions thereon adapted so as to enable attachment of said mould assembly to spaced driving chains in said moulding plant,
- a mould constituted of a generally rectangular sheet of thin, flexible plastic material, said sheet having a central rectangular, recessed portion which is located within said aperture in said carrier frame, being formed with at least one moulding cavity extending downwardly through said aperture, and also having opposed depending side flanges which extend alongside outer surfaces of said side flanges on the carrier frame, said mold flanges having lower portions which are bent upwardly to extend alongside inner surfaces of the side flanges of the carrier frame, and
- clips of U-shaped cross-section which are fitted over said side flanges on the mould to thereby removably attach them to the side flanges on the carrier frame.

3,981,657

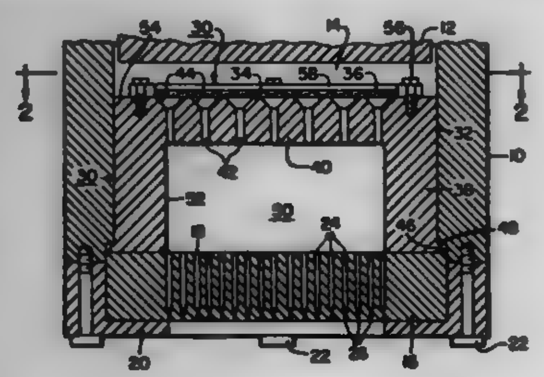
IN-LINE HOMOGENIZING OF EXTRUDABLE CERAMIC BATCH MATERIALS

Francis L. Orso, and Giacomo J. Piazza, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 398,379, Sept. 18, 1973, Pat. No. 3,888,963. This application Feb. 19, 1975, Ser. No. 551,135

Int. Cl.² B28B *3/24*

U.S. Cl. 425—198 **2 Claims**



1. In extrusion apparatus including an extrusion cylinder, an extrusion die on the outlet end of said extrusion cylinder, and a reciprocal plunger within said cylinder for extruding successive charges of ceramic batch material through said extrusion die into ceramic articles, the improvement comprising means positioned within said extrusion cylinder upstream of said extrusion die for initially breaking up and dissipating interfacial discontinuities in said batch material and then for compacting such material into a continuous homogeneous slug of batch material prior to being extruded through said extrusion die, said means including a flow homogenizer positioned within said extrusion cylinder, said flow homogenizer having substantially cylindrical outer sidewall portions conforming to inner wall portions of said extrusion cylinder and an upper wall portion extending across said sidewall portions forming a compaction chamber within said flow homogenizer between said sidewall and upper wall portions, a plurality of passages extending through said upper wall portion communicating between the interior of said extrusion cylinder and said compaction chamber, said passages extending diagonally through said upper wall portion and forming mixing means for laterally transposing batch material fed therethrough to an offset position within said compaction chamber relative to its initial orientation in said extrusion chamber.

3,981,658

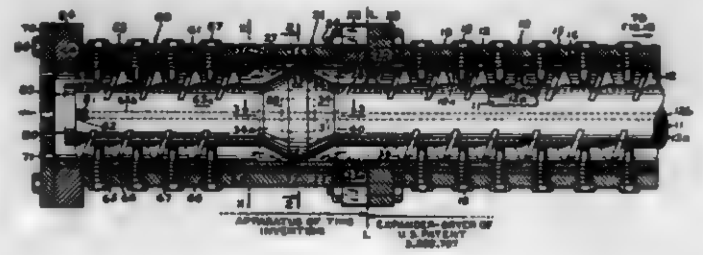
SCREW TYPE APPARATUS FOR DRYING MOIST POLYMERIC MATERIALS

George Oliver Briggs, West Lake, Ohio, assignor to International Basic Economy Corporation, New York, N.Y.

Division of Ser. No. 217,744, Jan. 14, 1972, abandoned. This application Jan. 23, 1975, Ser. No. 543,492

Int. Cl.² B29F *3/06*

U.S. Cl. 425—205 **4 Claims**



1. In an apparatus for drying moist polymeric material including (a) a processing chamber having an inlet port and an exit port, (b) a compaction worm mounted on a first rotatable shaft disposed within said processing chamber for advancing material to be dried from the inlet port to the exit port while progressively compacting and thereby increasing the pressure of the material as it advances, (c) means for gradually increasing the temperature of the material as it advances through said chamber, the pressure developed due to compaction of the material being sufficient to substantially prevent vaporization of the moisture associated with the material in said processing chamber, and (d) discharge means associated with the exit port for maintaining a suitable back-pressure in said processing chamber and for releasing the material to a relatively low pressure environment as compared to the pressure developed in said processing chamber, the improvement in said discharge means comprising:

1. a cylindrical conduit having an inlet port and an exit port, the inlet port of said conduit communicating with the exit port of said processing chamber;
2. a second rotatable cylindrical shaft mounted concentrically in said conduit and connected to said first shaft for rotation in unison therewith, said second shaft having diameter substantially less than the inside diameter of said conduit;
3. valve means associated with an intermediate portion of said conduit for providing a passageway of controllable cross-sectional area from the portion of said conduit upstream of said valve means to the portion of said conduit downstream of said valve means including:
   - 3a. an obstruction mounted on said second shaft, said obstruction having a smooth cylindrical outer surface concentric with said second shaft, the diameter of said obstruction being substantially greater than the diameter of said second shaft but less than the inside diameter of said conduit;
   - 3b. at least one valve housing mounted externally of said conduit and containing a valve chamber continuously communicating with the interior of said conduit from a region upstream of said obstruction to a region downstream of said obstruction;
   - 3c. a valve member slidably disposed in said valve chamber for radial motion with respect to said conduit for controlling the volume of said valve chamber communicating with said conduit to control the cross-sectional area of said passageway; and
   - 3d. means associated with said valve member for controlling the position of said valve member in said valve chamber; and
4. means associated with the portion of said conduit downstream of said valve means for releasing the material exiting from said passageway to said relatively low pressure environment within said downstream portion of said conduit to permit substantially all of the moisture associated with the material exiting from the passageway to immediately vaporize and immediately expand the material to the full extent required for said vaporization, thereby drying the material, and for compacting and advancing the dried material to the exit port of said conduit under pressures sufficiently low to prevent substantial recondensation of the vapor on the dried material including:
   - 4a. a plurality of worms spaced longitudinally on said second shaft downstream of said obstruction to form an interrupted compaction worm flight for advancing the dried material to the exit port of said conduit and progressively compacting the dried material as it advances without creating a substantial pressure difference between the exit port of said conduit and the downstream end of said passageway during compaction and advance of the material; and
   - 4b. a plurality of breakers mounted on said conduit and projecting into the interior of said conduit intermediate at least some of said worms to prevent the dried material from rotating with the worms.

3,981,659

APPARATUS FOR DRYING CARBON BLACK PELLETS

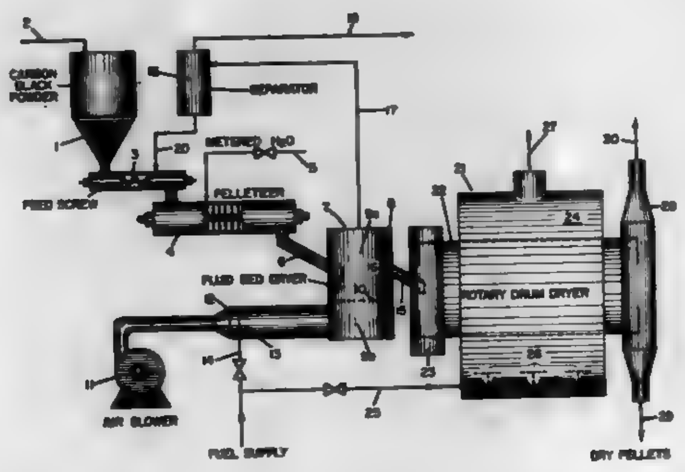
Claude V. Myers, El Dorado, Ark., assignor to Cities Service Company, Tulsa, Okla.

Division of Ser. No. 47,085, June 17, 1970, Pat. No. 3,740,861. This application July 16, 1971, Ser. No. 163,463

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² C09C *1/58*

U.S. Cl. 425—222 **5 Claims**



1. Apparatus for producing dry pellets of carbon black comprising:

- a. carbon black wet pelletizer,
- b. a fluid bed dryer adapted to receive pellets which are discharged from said pelletizer, a conduit connecting said pelletizer and said dryer for directing said pellets from the pelletizer to the fluid bed dryer
- c. a rotary drum dryer adapted to receive pellets which are discharged from said pelletizer and a conduit connecting said fluid bed dryer and said rotary drum dryer for directing said pellets from the fluid bed dryer to the rotary drum dryer.

3,981,660

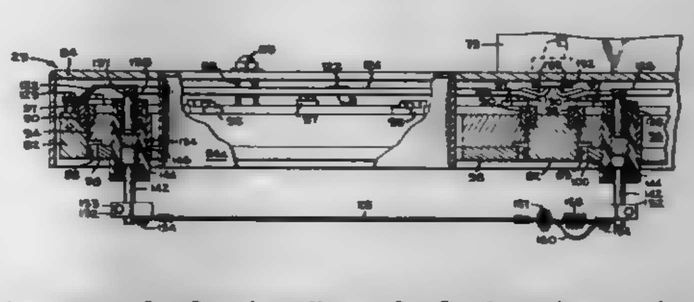
APPARATUS FOR CUTTING SLICES OF SEMI-FROZEN FOOD PRODUCTS

Peter W. Forcella, Los Gatos, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 12, 1975, Ser. No. 549,264

Int. Cl.² A23G *9/28, 9/14*

U.S. Cl. 425—232 **12 Claims**



1. Apparatus for forming slices of a food product such as semi-frozen ice cream or the like, comprising:

- a. a vertical axis extrusion nozzle for extruding a substantially vertical column of the product;
- b. a first rotatable member comprising an annulus that surrounds the lower end of said nozzle;
- c. a second rotatable member laterally adjacent said first member;
- d. means operatively associated with said rotatable members for driving both members in a common direction and at the same angular velocity;
- e. means for rotatably mounting a wire clamp on each member, the two clamps being equally spaced from the axes of their respective members and being positioned so that the distance between the clamps remains constant during rotation of said members;
- f. a heated cutoff wire anchored to said wire clamps to cut the unsupported extruded product column and sever an individual slice, and
- g. a conveyor movable beneath said nozzle for receiving product slices.

3,981,661

INJECTION CYLINDER UNIT, MOLD AND MOLD HANDLING APPARATUS

Don Allen Taylor, Box 4, 216 Mills St., Wadsworth, Ohio 44281

Continuation of Ser. No. 411,793, Nov. 1, 1973, abandoned. This application May 27, 1975, Ser. No. 580,909

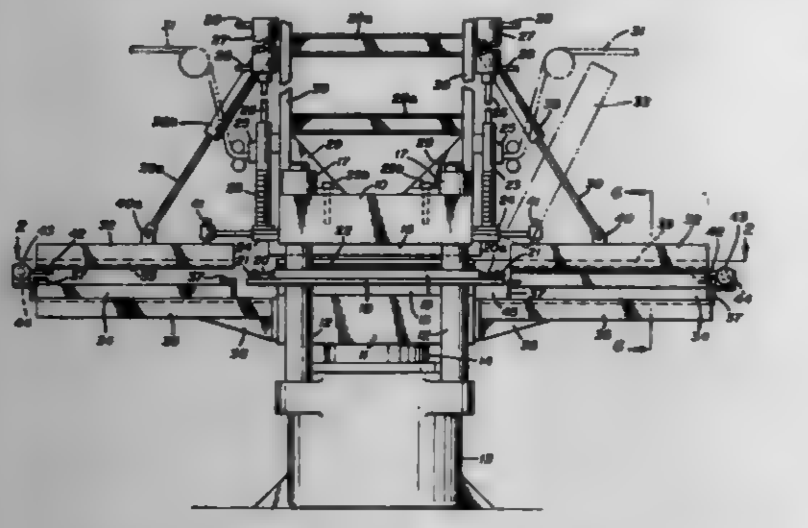
Int. Cl.² B29C *3/02*

U.S. Cl. 425—247 **19 Claims**

1. An injection cylinder unit, mold, and mold-handling apparatus in combination with a compression press having a frame and relatively movable upper head and bottom bolster with upper and lower platens attached thereto, comprising:

- A. at least one vertically disposed material heating, plasticizing and injection cylinder assembly disposed adjacent to the frame of the compression press exteriorly thereof;
- B. a material distributing and storing manifold communicating with said injection cylinder;
- C. said manifold having at least one material outlet sprue;
- D. at least one multi-cavity mold having a plurality of sprue openings therein for communication with said material outlet sprue of said manifold; and

E. means connected to said mold for incrementally indexing said mold from a position between the upper and lower platens of said press to a position exteriorly thereof whereby said sprue openings of said mold can be selectively moved into communication with said material outlet sprue of said manifold.



3,981,662
INJECTION-MOLDING MACHINE, ESPECIALLY FOR THERMOSETTING OR THERMALLY CROSS LINKABLE SYNTHETIC RESINS

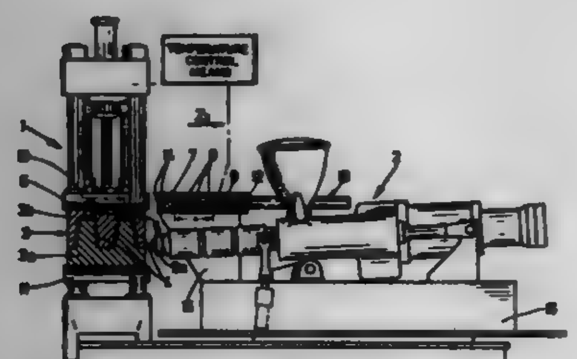
Friedrich Bernd Bielfeldt, Aidenried, and Klaus Händler, Puchheim-Bhf, both of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed Dec. 27, 1971, Ser. No. 212,186

Claims priority, application Germany, Dec. 31, 1970, 2064670

Int. Cl.² B29F ***1/022***

U.S. Cl. 425—247 10 Claims



1. An injection-molding system for a thermally sensitive moldable material, comprising a separable mold having at least two mold members defining at least one mold cavity and formed with at least one channel communicating with said cavity and opening at a surface of the mold perpendicular to a mold-opening and mold-closing direction; mold-closing means for retaining said mold members under pressure in said direction; a material-distribution plate separate from said mold members and alignable with said surface, displaceable transversely to said direction and provided with at least one throughgoing distribution passage communicating with said channel in an inserted position of said plate; means for selectively inserting said plate into the effective path of said mold-closing means and fully withdrawing said plate from alignment with said surface and out of the effective path of said mold-closing means and fully out of heat communication with said mold; and injection means for injecting said material into said passage of said plate at least in said inserted position thereof.

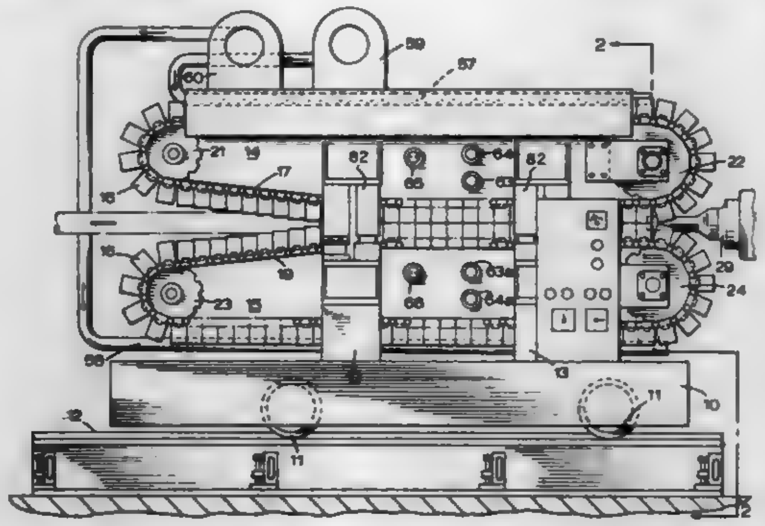
3,981,663
APPARATUS FOR MAKING HIGH SPEED CORRUGATED PLASTIC TUBING

Gerd P.H. Lupke, 46 Stornoway Crescent, Thornhill, Ontario, Canada (L3T 3X7)

Continuation-in-part of Ser. No. 396,100, Sept. 10, 1973, abandoned. This application Oct. 7, 1974, Ser. No. 512,231

Int. Cl.² B29F ***3/08***

U.S. Cl. 425—326 B 14 Claims



1. A high speed corrugator for producing corrugated thermoplastic tubing, comprising:
- a pair of complementary mold assemblies each comprising an endless chain of articulately interconnected mold blocks and means for guiding the mold blocks along an endless track having a forward run and a return run,
- each mold block being complementary to a respective mold block of the other assembly, said mold blocks cooperating in pairs along said forward run to form an axially extending tunnel defining a tubular mold having a corrugated wall,
- means associated with said assemblies for driving said endless chains in synchronism for progressively moving the mold blocks along said endless tracks,
- an extrusion head adapted to be fitted to the nozzle of an extrusion machine for forming a tube of thermoplastic material therefrom,
- means positioning the mold assemblies so as to locate the extrusion head at the entrance to said tunnel coaxially therewith,
- said extrusion head including first duct means for introducing pressurized air to the interior of the extruded tube for expanding the tube to conform to the wall of the tubular mold, and second duct means separate of said first duct means for the passage of cooling air,
- baffle means spaced axially from the extrusion head for maintaining a pressurized air space between said baffle means and the extrusion head, and
- an air distributing duct communicating with said second duct means, the air distributing duct extending axially along said tunnel beyond said baffle means for distributing cooling air to the interior of the molded thermoplastic material within said tubular mold.

3,981,664
MAIN SHAFT SUPPORT FOR PELLET MILLS

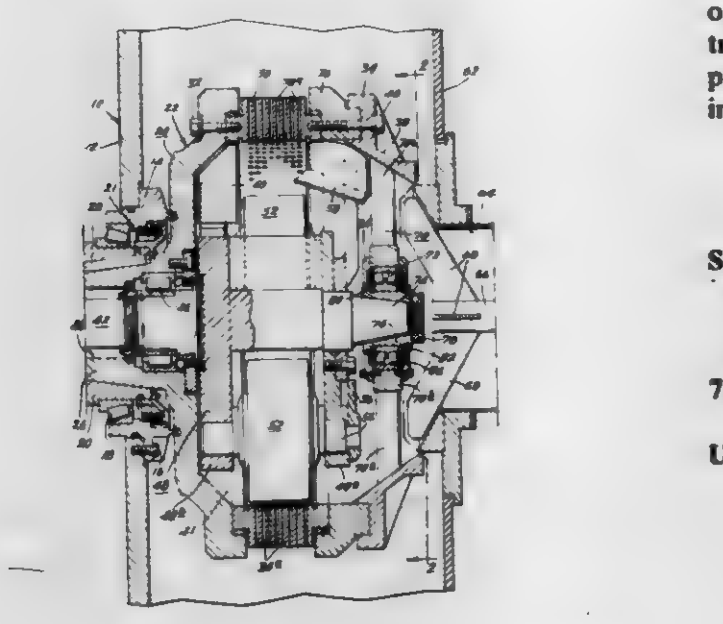
Oszkar Bittner, South Williamsport, and Chester Donald Fisher, Muncy, both of Pa., assignors to Sprout, Waldron & Company, Inc., Muncy, Pa.

Continuation of Ser. No. 517,910, Oct. 25, 1974, abandoned. This application Aug. 7, 1975, Ser. No. 602,808

Int. Cl.² B29C ***17/14***

U.S. Cl. 425—331 8 Claims

1. In a pellet mill comprising a base, a die housing mounted on said base, an annular die and die cover secured to said die housing, said die housing, die and die cover defining a pelleting chamber therewithin, a main shaft supported concentrically within said die housing and extending into said pelleting chamber, a roller support frame extending from said main shaft, a plurality of rollers rotatably supported on said roller support frame in contiguous cooperative relation with said die, means on said die housing and main shaft providing relative rotation of said die housing, die and die cover with respect to said main shaft, roller support frame and rollers, means adjacent said die cover for conveying material to be pelleted into said pelleting chamber, and means on said roller support frame for directing material to be pelleted into the nips of said rollers, the improvement comprising means for resolving the radial forces developed between said rollers and said die during pelleting operations, said latter means comprising an extension of said main shaft beyond said roller support frame, support means extending between said die cover and said main shaft extension and including bearing means permitting relative rotation of said die cover and said main shaft extension, said support means being apertured to permit the passage of material to be pelletized therethrough.



3,981,665
PRESS HAVING TORQUE RESPONSIVE DRIVE COUPLING

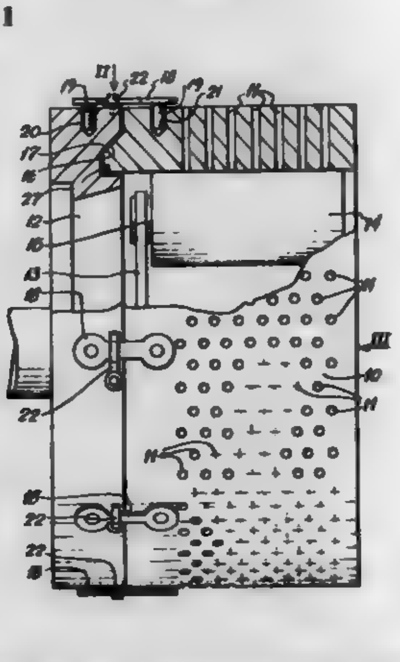
Robert Spencer, Stroud, England, assignor to Simon-Barron Limited, Gloucester, England

Filed Oct. 2, 1975, Ser. No. 619,009

Claims priority, application United Kingdom, Nov. 9, 1974, 48588/74

Int. Cl.² B28B ***3/12***

U.S. Cl. 425—331 14 Claims



1. A press of the kind for the preparation of pellets of cattle feed or other pelletisable material and comprising an annular die having a plurality of radial bores therein, which is mounted on a driving rim for rotation around a stationary support fitted with a number of pressure rollers, each freely rotatable on a stationary shaft and in closely spaced relationship with the interior surface of the die, the arrangement being such that material fed into the interior of the die is forced through the bores therein by the action of said pressure rollers, characterised in that the die and driving rim therefor are provided with complementary circumferential mating male and female surfaces, there being a plurality of circumferentially spaced links each of which is arranged to be pivotally connected at its opposed ends to the driving rim and die respectively such that transmission of torque from the driving rim to the die causes pivoting movement of said links to bring said mating surfaces into pressurised engagement.

3,981,666
COMPRESSION DEVICE

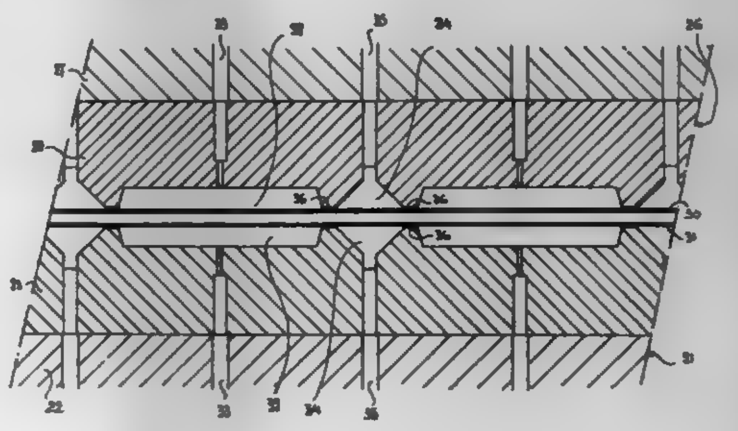
Sipke Sikke Wadman, Burg. Bartelstraat 6, Hoogezand, Netherlands

Filed Oct. 17, 1974, Ser. No. 515,553

Claims priority, application Netherlands, Oct. 30, 1973, 7314849

Int. Cl.² B29C ***15/00***

U.S. Cl. 425—371 6 Claims



1. In a compression device comprising two continuously circulating belts between which a layer of material is to be conditioned under pressure, the improvement comprising:
- a pair of supporting bodies mounted on said device, between which both said belts pass in spaced-apart relationship, thereby defining a space for conditioning said material between said belts;
- each of said supporting bodies having
  - a plurality of first recesses facing a respective belt and defining pressurized fluid sources,
  - a plurality of second recesses facing a respective belt and defining fluid discharge means, and
  - unobstructed gaps between the respective belts and the portions of said supporting bodies between recesses;
- whereby fluid can flow out of said fluid sources, through said gaps, and into said discharge means, in order to maintain a fluid film between said moving belts and said portions of said supporting bodies between recesses.

3,981,667
TAKEOUT APPARATUS FOR A BLOW MOLDING MACHINE

Richard D. Bilodeau, North Stonington, Conn., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 492,001, July 26, 1974. This application Jan. 31, 1975, Ser. No. 545,927

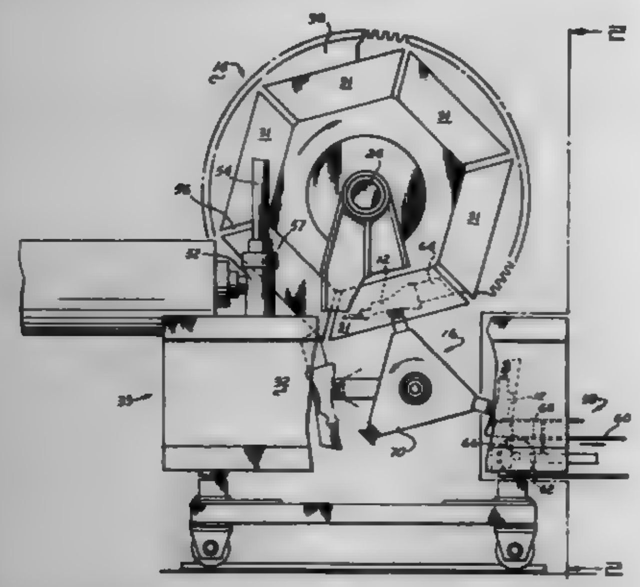
Int. Cl.² B29D ***23/03***

U.S. Cl. 425—387 B 8 Claims

1. Takeout and transfer apparatus in combination with a blow molding machine which is vertically disposed on framework and includes a plurality of molds circularly arranged about a horizontal axis, each mold comprising partible sec-

tions openable and closeable parallel to said axis, said apparatus comprising:

a. a vertically oriented turret assembly located within said framework generally adjacent a five o'clock position with respect to the circular arrangement of the molds when viewing the machine from the front side, said assembly including a plurality of article pickup devices each of which includes a telescopically mounted pickup head for receiving articles from the molds;



b. drive means operatively connected to said turret assembly for continuously rotating the turret assembly in synchronism with the blow molding machine;

c. conveyor means adjacent the turret assembly for receiving and transferring articles from the pickup heads;

d. positioning means connected to said pickup devices for sequentially retracting each pickup head inwardly toward the turret assembly as it traverses a generally circular path toward the conveyor means after receiving an article from a mold to allow each head and engaged article to move through such path in an unobstructed manner.

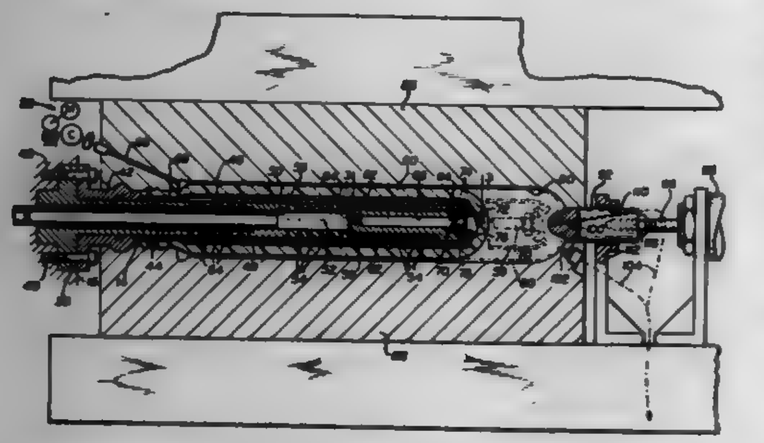
3,981,668
APPARATUS AND METHOD FOR LONGITUDINAL STRETCH FOR BLOW MOLDING

John J. Farrell, Green Brook, N.J., assignor to Farrell Patent Company, Greenbrook, N.J.

Division of Ser. No. 441,811, Feb. 12, 1974, Pat. No. 3,905,738. This application Jan. 31, 1975, Ser. No. 545,933

Int. Cl.^{2} B29D *23/03*

U.S. Cl. 425—387 B 4 Claims



1. Blow molding apparatus including in combination a core rod, an elastic balloon attached to the core rod at the neck end thereof, the balloon hugging the core rod when the balloon is in a deflated condition preparatory to having a parison applied over the outside surface of the balloon, and an end portion of the core rod remote from the neck end of the rod and that moves axially to extend the length of the core rod so that the balloon and the parison thereon are stretched lengthwise, characterized by the core rod being carried by one face of an indexing head that has a plurality of other faces that carry similar core rods and that move each rod successively to an injection station, characterized by the apparatus including two conditioning stations, means at the first conditioning station for partially blowing the balloons and parisons of successive core rods to move each balloon out of contact with its core rod, and means at the second conditioning station for actuating the movable portion of the core rods, characterized by temperature control means at the conditioning stations for maintaining the temperature of the parison within the orientation range.

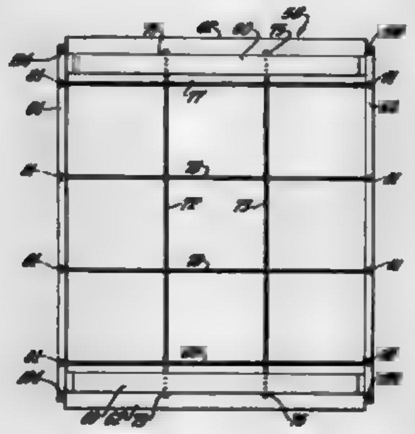
3,981,669
MOLDING APPARATUS WITH SUPPORTING FRAME FOR PREFORM STOCK MATERIAL

Ulysses T. Gambill, and Gregory C. Brock, Jr., both of Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 383,854, July 30, 1973, which is a division of Ser. No. 54,541, July 13, 1970, Pat. No. 3,764,243. This application Jan. 10, 1975, Ser. No. 540,041

Int. Cl.^{2} B29C *1/00*

U.S. Cl. 425—397 4 Claims



1. In a molding apparatus, means for supporting a quantity of moldable fibrous material during a molding operation comprising a rectangular metal frame having tubular end frame members and side rails, each of said end frame members having an outwardly-projecting strip integrally joined therewith providing an end rail, a plurality of spaced linear elements connected with the end frame members, a plurality of spaced linear elements connected with the side rails, said linear elements connected with the end frame members being in crossing relation with the linear elements connected with the side rails, said linear elements providing support means for the fibrous material during a molding operation in which the fibrous material is molded into bodies substantially defined by the areas bounded by the linear elements.

3,981,670
APPARATUS FOR SHAPING A BRASSIERE

Jean Michel Bloch Levy, Barcelona, Spain, assignor to Central Corsetera S.A., Barcelona, Spain

Filed Sept. 6, 1974, Ser. No. 503,667

Claims priority, application Spain, Sept. 10, 1973, 418621

Int. Cl.^{2} B29C *3/00*

U.S. Cl. 425—398 10 Claims

1. In an apparatus for at least partially forming a brassiere, comprising:

a frame;

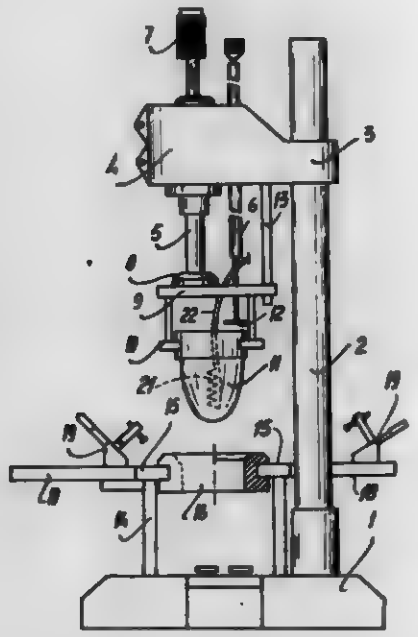
first and second support means mounted on said frame and disposed in spaced but opposed relationship to one another;

shaping means for simultaneously shaping the cups of a brassiere from a sheet of flexible material;

said shaping means including a pair of identical cup-shaped male molds disposed adjacent one another, each said mold having a substantially conical outer surface adapted to engage and deform the material therearound so that the molds form a pair of cups in said material, said molds being movably supported on said first support means for permitting the spacing between said molds to be selectively varied;

said shaping means further including die means defining therein a pair of adjacent circular openings which extend through said die means and are disposed in substantial alignment with said molds, said die means being removably mounted on said second support means;

clamping means for releasably holding a sheet of flexible material between said molds and said die means with said sheet being disposed directly adjacent said die means and extending across the openings thereof;



said shaping means also including heating means associated therewith for heating said flexible material as deformed by said molds; and

drive means drivingly connected to one of said support means for causing reciprocating movement thereof between two end positions in a direction toward and away from the other of said support means, said one support means when in one of said end positions resulting in said molds being completely withdrawn from said openings and spaced from said die means, and said one support means when in the other of said end positions resulting in said molds projecting through said openings so as to deform the flexible material extending thereacross.

3,981,671
LIQUID REACTION MOLDING PRESS

Bobbie Lee Edwards, Cincinnati, Ohio, assignor to Cincinnati Milacron, Inc., Cincinnati, Ohio

Filed Sept. 22, 1975, Ser. No. 615,351

Int. Cl.^{2} B29C *5/00*; B29D *27/04*

U.S. Cl. 425—453 15 Claims

1. A clamp for mounting mating parts of a mold in the mold cavity of which may be reacted an organic liquid molding to form a solid molded object comprising:

a C-shaped frame assembly having a lower jaw connected by a column to an upper jaw;

a mold support (crown) pivotally mounted on the upper jaw of said frame assembly;

a pedestal and floor plate assembly;

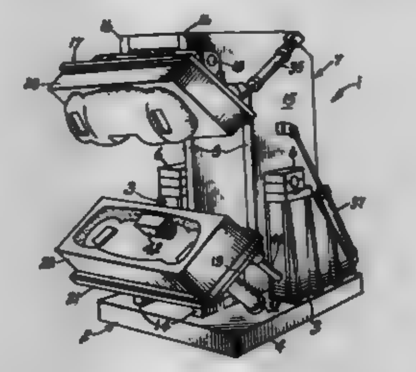
means revolvably supporting said C-shaped frame assembly from said pedestal and floor plate assembly;

a mold bed support (bed) pivotally mounted on the lower jaw of said frame assembly;

pivotal mounting means for said crown and bed located on substantially parallel axes; and

a movable platen reciprocably mounted on one of said bed and said crown;

said crown and said movable platen being adapted to support thereon respective parts of said mold and positionable so that the mold is closed when the crown and bed are substantially parallel and said platen has been advanced to where the mold parts are engaged and said mold is opened by retracting said platen and pivotally swinging both said bed and crown away from the column portion of said frame assembly.



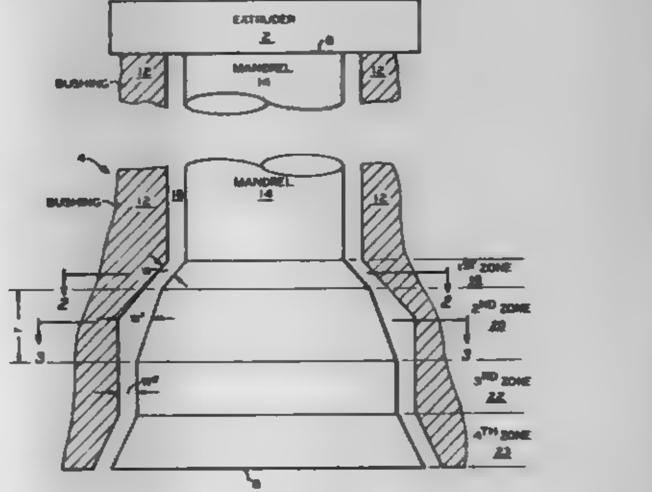
3,981,672
APPARATUS FOR FORMING A PARISON

Newton R. Wilson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 338,250, March 5, 1973, Pat. No. 3,914,366. This application Dec. 10, 1974, Ser. No. 531,448

Int. Cl.^{2} B29D *23/04*

U.S. Cl. 425—467 6 Claims



1. A die for forming a parison of blow-moldable material, said die having first and second open ends, a bushing and a mandrel positioned within the bushing, said mandrel and bushing each being of dimensions forming an annulus therebetween, said annulus having first, second, and third annular zones along its axis from the entrance end toward the exit end of the die, the first annular zone being of a generally uniform first width and of a generally circular cross-section, the second annular zone having first and second diametrically opposed portions each being of a greater second width than said first width, the second width of each first and second portion progressively decreasing in a clockwise and a counterclockwise direction from a median locus of said first and second portions, the directions being taken at right angle to the axis of the mandrel, the second width of each of said first and second portions along the length of said second annular zone progressively increasing in an upper portion of said second annular zone and then decreasing in a lower portion of said second annular zone in a direction from the entrance end

toward the exit end of the die, and said third annular zone being of a generally uniform third width, said third width being less than the second width taken along the length of said second annular zone.

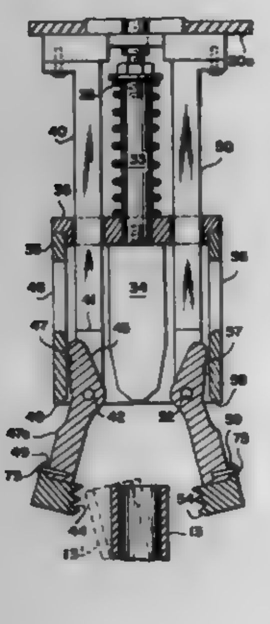
3,981,673
PARISON TRANSFER MEANS

Nicholas N. Sokolow, Cheshire, Mass., assignor to Beloit Corporation, Beloit, Wis.

Filed Sept. 25, 1974, Ser. No. 509,150

Int. Cl.² B29D *23/03*

U.S. Cl. 425—455 R 4 Claims



1. A transfer apparatus for transferring an open ended tubular parison from an oven to a blow mold comprising:

- **a gripper means for gripping the upper edge of a tubular parison, said gripper means including**
  - **at least three jaws which, in the closed position, form essentially a circle closely surrounding the parison, said jaws being movable essentially horizontally and radially outwardly from the closed position a distance sufficient to receive between them the upper end of a tilted parison and for closing onto said tilted parison to center it to a proper upright position as the jaws move to the closed position; said jaws being mounted for pivotal movement about a horizontal axis located thereabove;**
- **a vertically movable ring member having operative surfaces positioned to engage the jaws upon vertical movement relative to the jaws to open and close the jaws;**
- **a push piece having a tapered lower end; means for positioning the push piece for vertical movement into the opened upper end of the centered parison to firmly secure the parison between the jaws and the push piece including a vertical rod, said push piece forming the lower end of said rod and said ring member being cylindrical and having an upper support surface and surrounding the rod and being movable vertically relative to the rod;**
- **means associated with said ring member limiting both the downward and the upward movement of the ring member relative to the push piece;**
- **resilient means acting between the rod on the push piece and the ring support surface urging the ring to its lowermost position relative to the push piece at which lowermost position the jaws are opened, and from which position upward movement of the ring relative to the push piece opposes the resilient means and causes the jaws to close.**

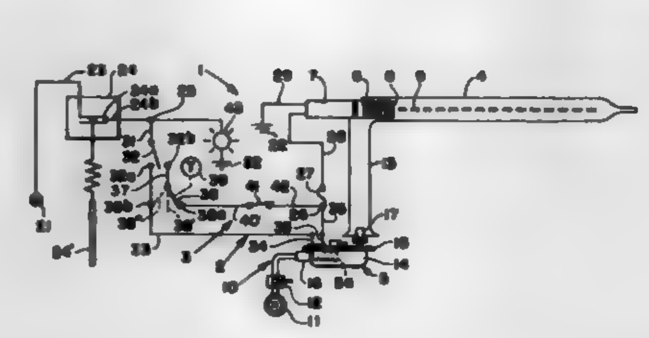
3,981,674
CONTROL CIRCUIT AND ADJUSTABLE VALVE FOR A GAS APPLIANCE

Richard L. Perl, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Filed June 5, 1975, Ser. No. 583,985

Int. Cl.² F23H *5/24*

U.S. Cl. 431—67 15 Claims



1. A control circuit for a gas burner appliance having an electric igniter adapted for positioning proximate the burner port area and a fuel valve in the gaseous fuel line to the burner and including electrically operable means for opening the fuel valve, comprising: ignition circuit means for energization of said electric igniter and said electrically operable means to effect heating of said electric igniter and opening of said fuel valve, said energized electric igniter being capable of effecting ignition of fuel at the burner, hold circuit means for energization of the electric igniter independently of the fuel valve to maintain a source of heat in the appliance without fuel combustion, and control means for selective independent operation of said ignition circuit means and said hold circuit means.

3,981,675
CERAMIC BURNER CONSTRUCTION

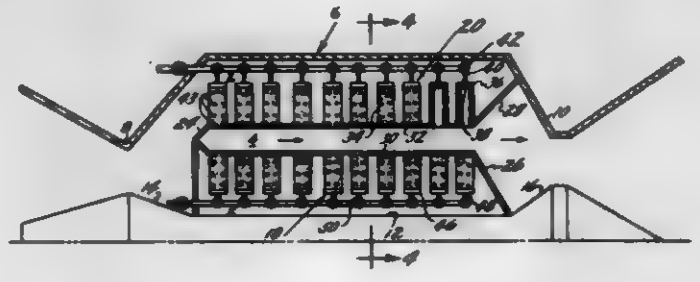
Eugene J. Szetela, South Windsor, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 19, 1974, Ser. No. 534,313

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² F23C *5/28*

U.S. Cl. 431—175 12 Claims



1. A burner construction including:

- **a substantially cylindrical surrounding outer wall;**
- **an inner wall spaced from and enclosed by said outer wall, said inner wall having a plurality of holes therein; and**
- **a plurality of individual burner cans mounted on said inner wall, each burner can having a perforate sidewall and having a fuel nozzle opening at one end, and having the other end attached to one of the openings in the inner wall with the axis of each individual burner extending substantially at right angles to the inner wall, said burners being totally within the cylindrical outer wall.**

3,981,676
LYOPHILIZED DYES AND THE USE THEREOF TO COLOR KERATINIC FIBERS

Giuliana Ghilardi, Paris; Pierre Bore, Montfermeil, and Jean-Francois Grollier, Paris, all of France, assignors to L'Oreal, Paris, France

Continuation-in-part of Ser. No. 120,353, March 2, 1971, abandoned. This application June 25, 1973, Ser. No. 372,933

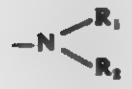
Claims priority, application Luxemburg, Mar. 3, 1970, 60449; Oct. 19, 1970, 61890; Feb. 15, 1971, 62596; June 26, 1972, 65589

Int. Cl.² A61K *7/12*

U.S. Cl. 8—10 9 Claims

1. A process for preparing a lyophilized dye composition for coloring hair comprising freezing at a temperature of about −200° to −60°C a solution consisting essentially of, in an organic solvent or an aqueous solution of said organic solvent wherein said organic solvent is selected from the group consisting of dioxane, dimethyl sulfoxide, tert-butyl alcohol and a mixture thereof, a dye selected from the group consisting of

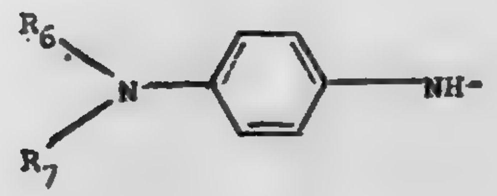
- **a. a dye having the formula $Y - Ar_1 - N = Ar_2 = X$ or a corresponding tautomeric form thereon, wherein**
  - **Ar_1 and Ar_2 each independently represents a member selected from the group consisting of phenyl, pyridyl and phenomorpholine, each optionally substituted by an electron donor group selected from the group consisting of amino, hydroxy, alkoxy having 1–4 carbon atoms, alkyl having 1–4 carbon atoms, acetylamino and halogen,**
  - **Y is selected from the group consisting of hydroxy and**

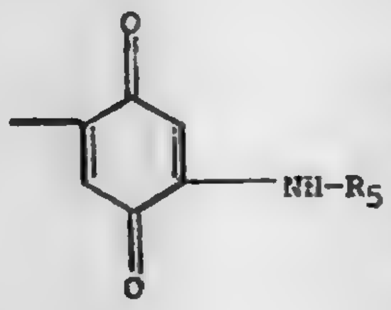


$$-N\begin{matrix}R_1\\R_2\end{matrix}$$

wherein R_1 and R_2 each independently represents a member selected from the group consisting of hydrogen, alkyl having 1–4 carbon atoms and acetylaminoalkyl wherein the alkyl moiety has 1–4 carbon atoms, and

- **X represents a member selected from the group consisting of oxygen, imine and iminium;**
- **b. a salt of (a) above; and**
- **c. 2,5-diamino-1,4-benzoquinone of the formula:**

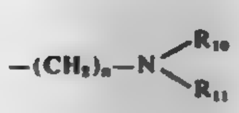




wherein

R_5 represents a member selected from the group consisting of hydrogen and hydroxyalkyl having 1–4 carbon atoms, and

R_6 and R_7 each independently represents a member selected from the group consisting of alkyl having 1–4 carbon atoms, hydroxyalkyl having 1–4 carbon atoms and aminoalkyl of the formula



$$-(CH_2)_n-N\begin{matrix}R_{10}\\R_{11}\end{matrix}$$

wherein *n* is 2–6 and R_{10} and R_{11} together with the nitrogen atom to which they are attached from a piperidinyl group and subliming said frozen solution by heating the same under a vacuum to a temperature lower than the melting point of said frozen solution.

3,981,677
OXIDATIVE HAIR DYE COMPOSITIONS CONTAINING N-SUBSTITUTED o-PHENYLENEDIAMINES AND METHOD FOR THEIR USE

Alexander Halasz, Norwalk, Conn.; Frederick Brody, deceased, late of Greenwich, Conn., by Richard Newman, executor, New York, N.Y., assignors to Clairol Incorporated, New York, N.Y.

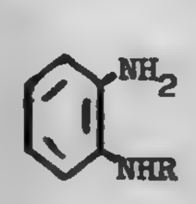
Filed Jan. 2, 1974, Ser. No. 430,334

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² A61K *7/13*

U.S. Cl. 8—10.2 26 Claims

1. An oxidation hair dyeing composition comprising a water containing hair dye carrier and a tinctorially effective amount of an o-phenylenediamine of the formula:



wherein R is alkyl having 1 to 4 carbon atoms.

3,981,678
LYOPHILIZED DYES AND THE USE THEREOF TO COLOR KERATINIC FIBERS

Giuliana Ghilardi, Paris; Pierre Boré, Montfermeil, and Jean-Francois Grollier, Paris, all of France, assignors to L'Oreal, Paris, France

Continuation-in-part of Ser. No. 120,353, March 2, 1971, abandoned. This application June 25, 1973, Ser. No. 372,934

Claims priority, application Luxemburg, Mar. 3, 1970, 60449; Oct. 19, 1970, 61890; Feb. 15, 1971, 62596; June 26, 1972, 65590

Int. Cl.² A61K *7/12*

U.S. Cl. 8—11 9 Claims

1. A process for producing a lyophilized dyestuff for coloring keratinic fibers consisting essentially of reacting hydrogen peroxide with an oxidation base in an aqueous alkaline solution open to ambient atmosphere in the presence of an organic solvent for the resulting dyestuff, said organic solvent being selected from the group consisting of tert-butyl alcohol, dimethylsulfoxide, dioxane and benzyl alcohol and having a pH ranging from 8 to 13 at a temperature between about 15°–30°C for a period of about 5 minutes to 30 hours and lyophilizing said reaction mixture, the molar raito of said hydrogen peroxide to said oxidation base being between about 0.1:1 to 20:1, said oxidation base being selected from the group consisting of paratoluylene diamine, paraphenylene diamine, N,N-dimethylparaphenylene diamine, methyl paraphenylene diamine, chloroparaphenylene diamine, 2-methoxy-5-methyl paraphenylene diamine, 2,6-dimethyl-3-methoxy paraphenylene diamine, tetramethyl paraphenylene

diamine, 2-methoxy paraphenylene diamine, para aminophenol, 2,6-dimethyl para aminophenol, 2,4-diamino anisole, 2-methyl para aminophenol, 1-methoxy-2,5-dimethyl paraphenylene diamine, and the hydrochlorides thereof, wherein lyophilizing said reaction mixture comprises freezing said reaction mixture at a temperature of about −200° to −60°C and subliming said frozen mixture at a temperature of about −50°C to −30°C at a pressure of about 0.01 mm Hg to 0.1 mm Hg.

8. A process for producing a lyophilized dyestuff for coloring keratinic fibers consisting essentially of reacting hydrogen peroxide with an oxidation base in an aqueous alkaline solution open to ambient atmosphere in the presence of a coupler selected from the group consisting of metaphenylene diamine, 2,4-diamino anisole, 2,4-diamino toluene, metaaminophenol, 6-methyl-3-aminophenol, N-methyl metaaminophenol, 4-methoxy-3-aminophenol, resorcin, 2,6-xylenol, α-naphthol, 3-methoxy-4-aminophenol and the sulfate, hydrochloride and hydrobromide thereof, the molar ratio of said coupling agent to said oxidation base before oxidation being between 0:1 and 10:1 and in the presence of an organic solvent for the resulting dyestuff, said organic solvent being selected from the group consisting of tert-butyl alcohol, dimethyl sulfoxide, dioxane and benzyl alcohol and having a pH ranging from 8 to 13 at a temperature between about 15°–30°C for a period of about 5 minutes to 30 hours and lyophilizing said reaction mixture, the molar ratio of said hydrogen peroxide to said oxidation base being between about 0.1:1 to 20:1, said oxidation base being selected from the group consisting of paratoluylene diamine, paraphenylene diamine, N,N-dimethyl paraphenylene diamine, methyl paraphenylene diamine, chloroparaphenylene diamine, 2-methoxy-5-methyl paraphenylene diamine, 2,6-dimethyl-3-methoxy paraphenylene diamine, tetramethyl paraphenylene diamine, 2-methoxy paraphenylene diamine, para aminophenol, 2,6-dimethyl para aminophenol, 2,4-diamino anisole, 2-methyl para aminophenol, 1-methoxy-2,5-dimethyl paraphenylene diamine and the hydrochlorides thereof, wherein lyophilizing said reaction mixture comprises freezing said reaction mixture at a temperature of about −200° to −60°C and subliming said frozen mixture at a temperature of about −50° to −30°C at a pressure of about 0.01 to 0.1 mm Hg.

3,981,679

METHOD FOR DYEING THE JUTE BACKING OF MULTILEVEL NYLON CARPET WITHOUT STAINING THE NYLON FACE FIBERS

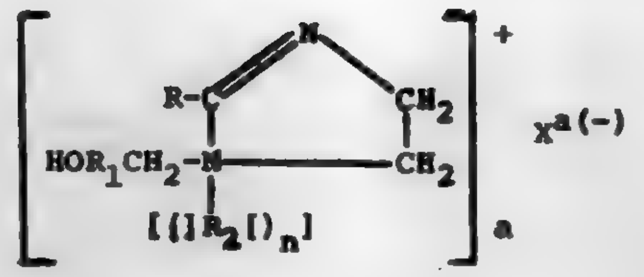
Nick J. Christie, Mendham, and John Karnilaw, Parsippany, both of N.J., assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed May 21, 1975, Ser. No. 579,462

Int. Cl.² D06P *3/874*

U.S. Cl. 8—21 B **11 Claims**

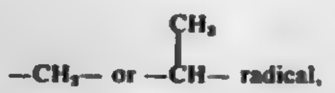
1. In a process of dyeing with a cationic dye the backing of a jute-backed carpeting having multilevel nylon face fibers, the improvement which comprises; dyeing the jute backing in the presence of a quantity of an imidazoline compound preventing discernible staining of the face fibers, said compound having the general formula:



wherein:

R is a hydrocarbon radical having 15 to 17 carbon atoms,

R_1 is a



$-CH_2-$ or $-\overset{CH_3}{\overset{|}{C}}H-$ radical,

R_2 is hydrogen, an unsubstituted or hydroxy-substituted aliphatic hydrocarbon radical having 1 to 6 carbon atoms or a benzyl radical,

X equals a water-soluble anion, and

a is a number equal to the ionic valence of the anion, X.

3,981,680

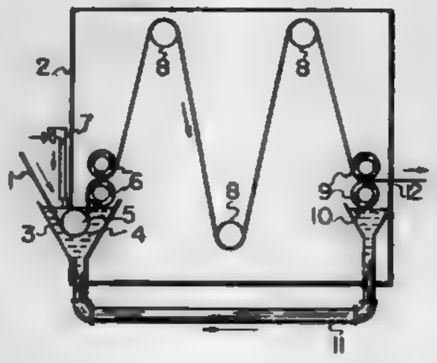
PROCESS FOR CONTINUOUSLY FIXING VAT DYES ON A TEXTILE WEB

John Milford Fletcher, R.F.D. No. 3, Box 376, Opelika, Ala. 36801

Filed Jan. 17, 1975, Ser. No. 541,737

Int. Cl.² D06P *1/22*

U.S. Cl. 8—34 **3 Claims**



1. In the process of continuous vat dyeing of a textile web comprising passing said web through an essentially anaerobic steamer having a web entrance and a web exit and at or near said entrance, applying to said web, by means situate at or near said entrance, a vat dye and reductant liquor obtained either by applying to the web a preformed aqueous liquor comprising a vat dye and a reductant or by applying a reductant liquor to a web carrying vat dye in the oxidized form, and vat dye being reduced by said reductant liquor and fixed to the web during passage through the steamer, the improvement consisting in:

A. applying, by means situate at or near said web entrance a vat dye and reductant liquor or a reductant liquor in excess of that expressable by squeeze rolls;

B. expressing liquor from said web by means of squeeze rolls situate at or near said web exit;

C. collecting and applying expressed liquor to said web together with vat dye and reductant liquor or reductant liquor by said means situate at or near said web entrance.

3,981,681

DEPILATORY FORMULATION

Mario de la Guardia, Savannah, Ga., assignor to Carson Products Company, Savannah, Ga.

Filed Apr. 16, 1974, Ser. No. 461,352

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² A61K *7/155*

U.S. Cl. 8—161 **13 Claims**

1. A stable aqueous depilatory composition having a pH of about 11.5 to about 12.7 comprising, as the essential active ingredients,

a. one part of at least one alkali metal silicate, wherein the amount of said alkali metal silicate is about 0.1 to 1.0 weight percent, based on the total weight of said composition,

b. 5 to 200 parts of at least one alkaline earth metal acid salt, wherein the acid is selected from the group consisting of thioglycolic acid and thiolactic acid, and

c. 1 to 50 parts of thiourea, wherein the composition has a shelf stability under ambient conditions of at least three months.

3,981,682

CORROSION INHIBITING COMPOSITIONS AND PROCESS FOR INHIBITING CORROSION OF METALS

Benjamin F. Ward, and William G. Vardell, both of Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.

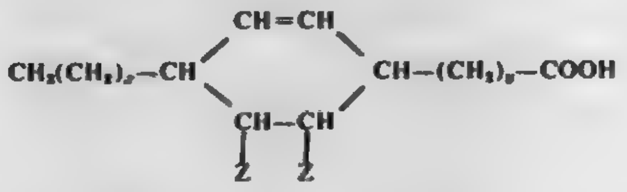
Division of Ser. No. 341,588, March 15, 1973, abandoned. This application Nov. 29, 1974, Ser. No. 527,999

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976

Int. Cl.² C23F *9/02, 11/00, 11/10*

U.S. Cl. 21—2.7 R **2 Claims**

1. A process for rust inhibition of metallic surfaces contacted by petroleum hydrocarbons and aqueous media which comprises, contacting said metallic substances with from 1 to 200 parts per million of an additive of the group consisting of a dicarboxylic acid having the following structure:



wherein *x* and *y* are integers from 3 to 9, *x* and *y* together equal 12, and Z is a member of the group consisting of hydrogen and COOH with one Z of each moiety, the hydrogenated dicarboxylic acid of said structure, the bisalkanolamide derivatives of said dicarboxylic acid, the mono-alkanolamide derivatives of said dicarboxylic acid, and the mono-alkanolamide derivatives of a soap of said dicarboxylic acid.

3,981,683

TEMPERATURE RESPONSIVE STERILITY INDICATOR

Raymond P. Larsson, Denville, and Robert J. Witonsky, Princeton, both of N.J., assignors to Bio-Medical Sciences, Inc., Fairfield, N.J.

Filed Apr. 14, 1975, Ser. No. 568,149

Int. Cl.² G01N *31/22;* **G01K** *11/06, 11/12*

U.S. Cl. 23—253 TP **17 Claims**

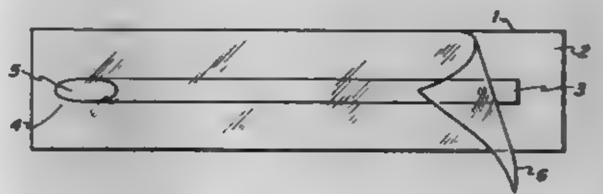
1. A sterility indicator device for use in a steam autoclave comprising:

a. a backing strip

b. an organic compound having a normal melting point which is greater than a predetermined control temperature said melting point being depressed below said control temperature by the absorption of water into the organic compound when said organic-compound is exposed to saturated water vapor at the control temperature, said control temperature being below the normal melting point of the organic compound, said compound being mounted on said backing strip.

c. a wicking means having one end of said wicking means in intimate contact with said compound, said wicking means extending away from said compound and being mounted on said backing strip; and

d. a water vapor transmission rate controlling cover strip overlayer covering said compound and wicking means



said cover strip being bonded to said backing strip and being permeable to water vapor and having a water permeability coefficient at the control temperature such that sufficient water vapor will permeate the cover strip to reduce the melting point of the organic compound from its normal melting point to the control temperature; said device being inoperative at the predetermined control temperature in the absence of saturated steam and displaying a visual response of the integrated time/temperature exposure of a system to moist heat.

3,981,684

APPARATUS FOR CONTROLLING UREA SYSTEM

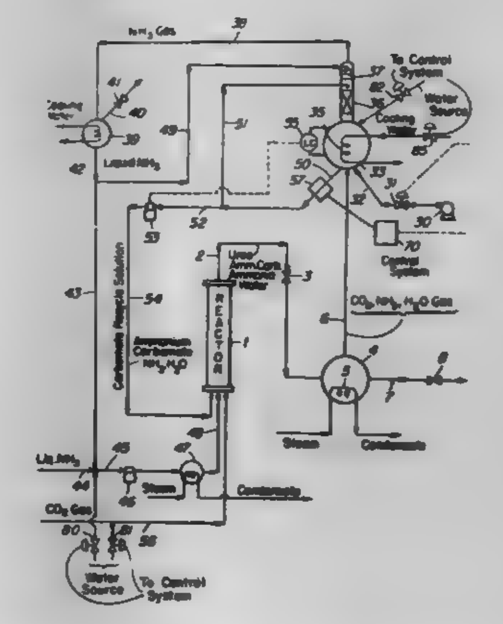
Ivo Mavrovic, 530 E. 72nd St., New York, N.Y. 10021

Division of Ser. No. 468,255, May 9, 1974, Pat. No. 3,940,440, which is a continuation of Ser. No. 88,272, Nov. 10, 1970, abandoned. This application Oct. 15, 1975, Ser. No. 622,531

The portion of the term of this patent subsequent to Feb. 24, 1993, has been disclaimed.

Int. Cl.² B01J *1/00;* **G05D** *11/00*

U.S. Cl. 23—260 **20 Claims**



1. A system for the synthesis of urea with ammonium carbamate solution recycle, wherein fluid ammonia, fluid carbon dioxide and a solution comprising ammonium carbamate are reacted at elevated pressure and temperature to synthesize urea in a urea reactor, and wherein water balance is maintained in the system, comprising:

sources of fluid ammonia and fluid carbon dioxide;

a source of water:

a urea synthesis reactor having first inlet means coupled to said sources and second inlet means receiving said solution comprising ammonium carbamate, said reactor for reacting said fluid ammonia, fluid carbon dioxide and said solution comprising ammonium carbamate at elevated pressure and temperature therein to produce a urea product stream containing urea, water, unconverted ammonium carbamate and ammonia, said reactor further including outlet means for discharging said urea product stream therefrom;

valve means coupled with said reactor outlet means to reduce the pressure of said urea product stream;

a decomposer equipped with inlet means coupled to the discharge side of said valve means, and including means for removing gases therefrom and means for removing liquid product therefrom, said decomposer including means for heating said product stream at a reduced pressure relative to the pressure in the reactor to decompose unconverted ammonium carbamate to gaseous ammonia and carbon dioxide and to vaporize said ammonia and expel the total mixture of gaseous ammonia and carbon dioxide together with some water vapor from the aqueous urea solution through said gas removing means;

a condenser having at least one inlet means and outlet means, the at least one condenser inlet means being coupled to said gas removing means of the decomposer, said condenser condensing gaseous ammonia and carbon dioxide and water vapor to a liquid phase containing ammonium carbamate, ammonia and water, the liquid phase being fed to the condenser outlet means;

conduit means coupling said outlet means of said condenser to said second inlet means of said reactor for charging recycled ammonium carbamate solution to said reactor;

a refractometer coupled between said condenser outlet means and said second inlet means of said reactor for sensing a refractive index value of said liquid phase recycled to said second inlet of said reactor, said refactive index value being a function of the weight ratio of carbon dioxide as carbamate to water in said liquid phase; and

regulating means including at least one valve means coupled to said water source and controlled by said refractometer for regulating the weight ratio of carbon dioxide to water in said liquid phase in said condenser by varying the flow rate of water to said condenser as a function of deviations of said sensed refractive index value from a reference value which corresponds to a reference weight ratio of carbon dioxide as carbamate to water in said liquid phase to substantially reduce said deviations and maintain said weight ratio substantially at said reference weight ratio.

3,981,685

MONOLITHIC CATALYTIC CONVERTER HAVING FLUIDIZED ABRASIVE PARTICLES BED FOR MAINTAINING CATALYST ACTIVITY

Francis J. Fennessy, East Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 427,872, Dec. 26, 1973, abandoned. This application Apr. 4, 1975, Ser. No. 565,180

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² B01J *8/18, 8/24;* **F01N** *3/15, 5/04*

U.S. Cl. 23—288 F **4 Claims**

1. A catalytic reactor for purifying exhaust gases including:

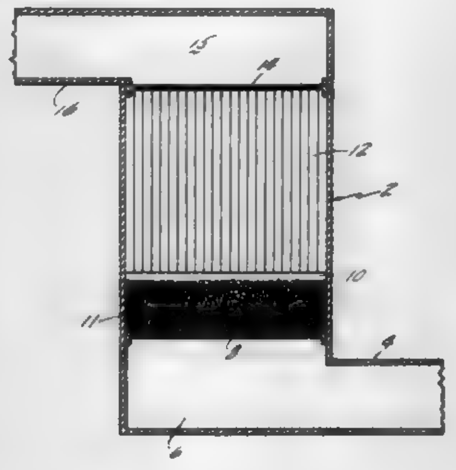
a vertically disposed chamber having a bed of abrasive particles in the bottom thereof;

a first porous screen for supporting the particles;

a catalytic structure above the particles and mounted in the chamber, said structure having vertical passages defining substantially vertical catalytic surfaces, each of said vertical passages extending from the bottom of said structure to the top thereof and providing for the unimpeded flow of gases therethrough, the abrasive particles being substantially smaller than the passages for movement of the particles vertically in both directions in the passages;

a second porous screen at the top of said catalytic structure for preventing loss of said particles from said reactor;

the bottom end of the catalytic structure being spaced above the top surface of the bed of particles to leave a clearance space therebetween; and



said reactor having an inlet located below said first porous screen and an outlet at the top of the reactor above the top of said second porous screen for passing exhaust gases upwardly through the bed and through the catalytic structure for purifying said exhaust gas and fluidizing said bed such that the particles abrade the catalytic surfaces.

3,981,686

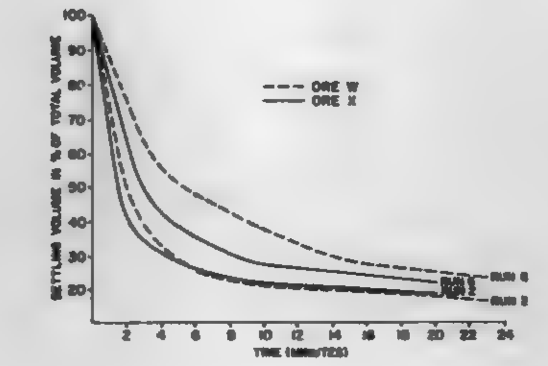
CLARIFIER PROCESS FOR PRODUCING SODIUM CARBONATE

Walter Lobunez, Princeton, N.J.; Nam Kyun Kim, Green River, Wyo., and Eric Rau, Trenton, N.J., assignors to Intermountain Research and Development Corporation, Green River, Wyo.

Filed Oct. 24, 1974, Ser. No. 517,472

Int. Cl.² C01B *7/00, 7/14;* **B01D** *9/02;* **C01B** *7/24*

U.S. Cl. 23—302 T **7 Claims**



1. A method for clarifying a carbonate process solution used in the preparation of crystals selected from the group consisting of sodium bicarbonate, sodium sesquicarbonate, anhydrous sodium carbonate and sodium carbonate monohydrate, which comprises:

forming a carbonate process solution containing suspended insolubles and a material selected from the group consisting of sodium carbonate and sodium bicarbonate;

dispersing in the carbonate process solution about 1 to about 20 ppm of a cationic flocculating agent comprising a substituted guar gum containing one quaternary ammonium group per 2 to 12 monosaccharide units;

agglomerating the suspended insolubles by forming agglomerated particles of increased size and density;

settling and removing the agglomerated particles from the carbonate process solution; and

crystallizing the clarified carbonate process solution to produce crystals selected from the group consisting of sodium bicarbonate, sodium sesquicarbonate, anhydrous sodium carbonate and sodium carbonate monohydrate.

3,981,687

METHOD OF TREATING QUARTZ CRYSTAL RESONATORS

John R. Vig, Colts Neck, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 8, 1975, Ser. No. 575,854

Int. Cl.² H01L *41/22*

U.S. Cl. 29—25.35 **14 Claims**

1. A method of reducing the aging and thermal hysteresis of quartz crystal resonators, said method including the steps of:

a. hermetically sealing the quartz crystal resonator in a housing including a material transparent to ultraviolet radiation capable of polymerizing contaminants, and

b. irradiating the contaminants within said resonator housing with ultraviolet radiation to polymerize said contaminants.

3,981,688

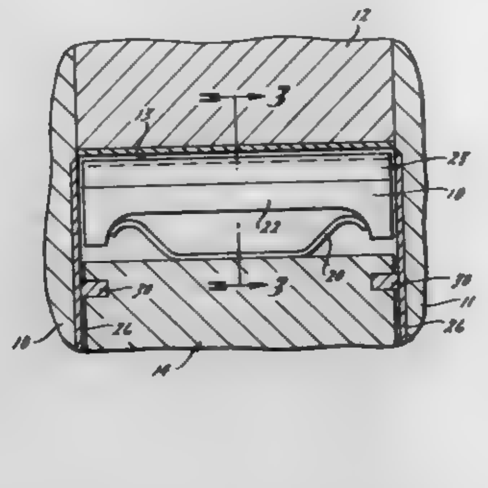
COATING FOR ROTARY ENGINE ROTOR HOUSINGS AND METHOD OF MAKING

Yeshwant P. Telang, Grosse Ile, and James C. Uy, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 376,862, July 5, 1973, Pat. No. 3,890,069. This application June 7, 1974, Ser. No. 477,230

Int. Cl.² F01C *21/00;* **F04C** *15/00*

U.S. Cl. 29—156.4 WL **6 Claims**



1. A method of producing a wear-resistant rotor housing for a rotary internal combustion engine, the rotor housing comprising part of the means defining a combustion chamber arranged for a planetary movement of a rotor therein, the method comprising:

a. preparing a cast rotor housing for defining a supporting epitrochoid shaped end wall, said casting being milled to define a reference and being prepared from an aluminum alloy composition comprising silicon 16–18%, iron 0.5 maximum, magnesium 0.45–0.65, titanium 0.25 maximum and the remainder aluminum,

b. removing a uniform layer of said casting along said end wall to a depth of 0.125 inch,

c. thermally spraying a mixture of martensitic stainless steel powder and a nickel-based alloy powder uniformly across said supporting end wall within the thickness range of 0.015–.030 inches,

d. immersing said coated casting in a medium of oil,

e. removing the outer surface of said coating to a depth commensurate with said reference.

3,981,689

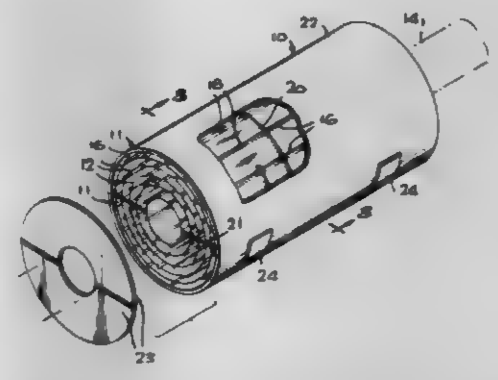
INSULATOR

Robert B. Trelease, Torrance, Calif., assignor to Hitco, Irvine, Calif.

Filed Oct. 15, 1974, Ser. No. 514,386

Int. Cl.² B32B *3/00;* **F16L** *59/14;* **F28F** *13/00*

U.S. Cl. 29—183 **21 Claims**



1. An insulator comprising a plurality of generally planar, sheet-like elements disposed in nominally parallel relationship with each other so as to define intersheet gaps between adjacent pairs of the sheet-like elements, each of the sheet-like elements having a plurality of corrugations therein which extend outwardly from the plane of the sheet-like element in at least one direction and through part but not all of the intersheet gap formed by the sheet-like element and an ajacent sheet-like element, the intersheet gaps having a nominal size between the adjacent sheet-like elements of substantially less than one-half inch, each of the corrugations being separated from adjacent corrugations by relatively flat areas of the sheet-like elements substantially larger in area than the area of the corrugations, and means for holding the sheet-like elements apart from one another to maintain the intersheet gaps and to prevent contact between adjacent ones of the sheet-like elements.

3,981,690

AGGLOMERATING COMBUSTOR-GASIFIER METHOD AND APPARATUS FOR COAL GASIFICATION

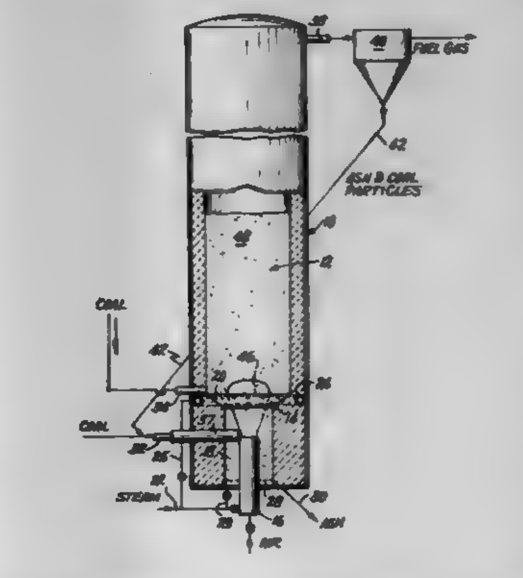
Joseph L. P. Chen, Murrysville, and David H. Archer, Pittsburgh, both of Pa., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 15, 1975, Ser. No. 541,376

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.² C10J *3/20*

U.S. Cl. 48—73 **11 Claims**



1. Apparatus for gasification of coal particles comprising a vertically disposed refractory lined, pressure vessel, outlet means in the upper portion thereof for removing gases, an

upper section of said vessel defining a gasification chamber and a lower section of said vessel being of reduced diameter and forming a combustion chamber, a central tube for introduction of air extending into said pressure vessel through the bottom thereof and having an open upper end terminating at said combustion chamber, said tube and the lower portion of the inner refractory wall of said vessel forming an annulus, a perforated distributor plate extending across said annulus, means for introducing coal particles into the lower part of said gasification chamber, means for introducing coal particles into said combustion chamber at the open upper end of said central tube, means for introducing stripping steam below said perforated distributor plate, and means for removal of ash from the annulus above said perforated distributor plate.

3,981,691
METAL-CLAD DIELECTRIC SHEETING HAVING AN IMPROVED BOND BETWEEN THE METAL AND DIELECTRIC LAYERS

Edward A. Cuneo, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed July 1, 1974, Ser. No. 484,952
Int. Cl.² B32B *15/08, 15/20;* **C23F** *1/02;* **H05K** *1/00*
U.S. Cl. 29—195 **13 Claims**

1. Multilayered sheeting useful as a component of flexible electric circuitry, comprising a layer of electrically conductive metal, a thin black-chromium layer on at least one side of the layer of conductive metal, and a layer of electrically insulating polymeric material bonded to said black-chromium layer, whereby after etching of the layer conductive metal to provide narrow-width conductors, the conductors will not be delaminated from the layer of electrically insulating polymeric material by exposure of the sheeting for 5 minutes in a 10-normal hydrochloric acid bath at 25°C.

8. Multilayered sheeting useful as a component of electric circuitry comprising a layer of copper-based electrically conductive metal, a thin black-chromium layer on at least one side of the layer of conductive metal, and a layer of polyimide electrically insulating polymeric material bonded to said black-chromium layer, whereby after etching of the layer of conductive metal to provide narrow-width conductors, the conductors will not be delaminated from the polyimide layer by exposure for 5 minutes in a 10-normal hydrochloric acid bath at 25°C.

9. Multilayered sheeting of claim 8 in which the layer of conductive metal is configured as an electrical circuit.

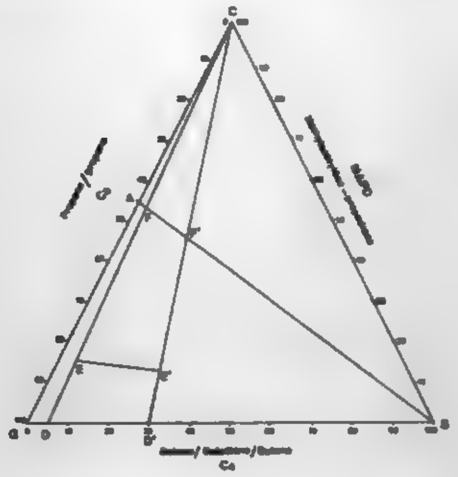
3,981,692
COMBUSTIBLE MIXTURE FOR TORCHES AND BURNERS

Georges Seris, Antony, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France
Continuation-in-part of Ser. No. 94,207, Nov. 20, 1970, abandoned. This application Feb. 27, 1974, Ser. No. 446,326
Claims priority, application France, Nov. 29, 1969, 69.40730
Int. Cl.² B23K *7/00;* **C10L** *3/00*
U.S. Cl. 48—197 FM **12 Claims**

1. A stable combustible mixture for torches and burners consisting essentially of

1. 40–45% by volume based on the total combustible mixture consisting of methylacetylene, propadiene or a mixture thereof,
2. a C_3 hydrocarbon diluent consisting of propane, propylene or a mixture thereof; and
3. a C_4 hydrocarbon diluent consisting of a C_4 paraffinic hydrocarbon, a C_4 olefinic hydrocarbon or a mixture thereof;

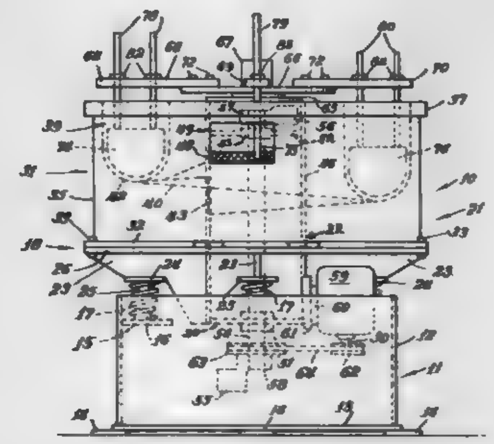
the volume ratio of said methylacetylene, propadiene or mixture thereof to said C_3 hydrocarbon diluent being no greater than 55:45, and the volume ratio of said C_3 hydrocarbon diluent to said C_4 hydrocarbon diluent being from 70:30 to 95:5;



the endothermic heat of formation of said combustible mixture being at least 10KCal per molar volume.

3,981,693
FINISHING APPARATUS

Gunther W. Balz, Kalamazoo, Mich., assignor to Roto-Finish Company, Kalamazoo, Mich.
Filed Nov. 12, 1973, Ser. No. 414,656
Int. Cl.² B24B *31/06*
U.S. Cl. 51—163.2 **30 Claims**

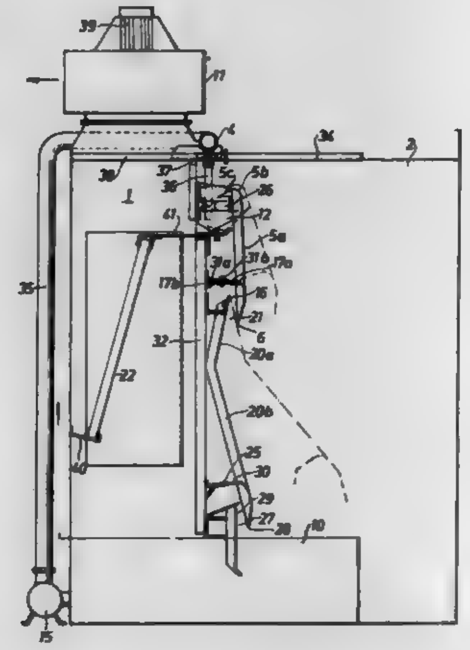


1. A finishing machine suitable for finishing the surfaces of parts with loose finishing material while maintaining a part or parts isolated from other parts and to prevent damage to parts as a result of collision therebetween, said finishing machine comprising:

a. a resiliently supported finishing chamber,
2. means for imparting vibratory movement to said finishing chamber to cause the parts contained therein to be finished by interaction with said finishing material and to move along said chamber,
3. part-isolating means defining at least two compartments in said finishing chamber arranged to contain a part or parts therein and to maintain said part or parts isolated from other parts in said finishing chamber,
4. wherein said part-isolating means comprises partitions arranged for movement along said finishing chamber and adapted to be carried along by the contents of the finishing chamber,
5. wherein said part-isolating means also comprises support means mounted for movement with respect to said finishing chamber, said partitions being supported by said support means, said support means being arranged to guide said partitions along said finishing chamber with said contents of the finishing chamber,
6. wherein said finishing chamber is annular, and
7. wherein said support means comprises a turntable.

3,981,694
METHOD AND MEANS FOR AIR PURIFICATION DURING SPRAY-PAINTING

Lars Evert Hultgren, Huddinge, and Olof Engwall, Lidingo, both of Sweden, assignors to Thermospray AG, Zug, Switzerland
Filed Sept. 4, 1974, Ser. No. 503,076
Claims priority, application Sweden, Sept. 10, 1973, 7312306
Int. Cl.² B01D *47/00*
U.S. Cl. 55—90 **10 Claims**



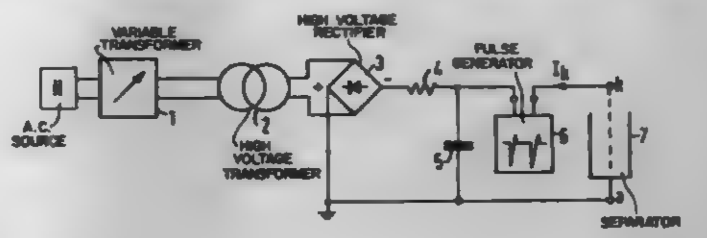
1. A method of cleaning air from a spraying-painting chamber having a plurality of walls spaced apart to define therebetween at least one upper opening and one lower opening, through which air is drawn from the spray-painting chamber, the method comprising the steps of:

a. providing a film of water to flow along said walls inside said spray-painting chamber from the top thereof;
b. drawing air through said openings such that water is drawn therewith;
c. for each opening causing the air-water mixture which is passed therethrough to make a first sharp alteration in direction upwards in order to effect thorough mixing and atomization, such that the water will take up paint particles from the air;
d. for each opening causing the air-water mixture which is passed therethrough to make a second alteration in direction downwardly and into a cleaning chamber such that the speed of the air-water mixture is reduced and the water drawn in through the openings together with paint particles taken up are separated and deposited; and
e. supplying water in a sufficient amount so as to provide said film such that at least at said upper opening only a portion of the water flowing down across the opening is drawn in therethrough, while the rest of the water flowing down across the opening continues to flow down along a wall of said plurality of walls below said upper opening.

3,981,695
ELECTRONIC DUST SEPARATOR SYSTEM

Heinrich Fuchs, Haus 88, 8601 Steinfeld, Germany
Filed Nov. 2, 1973, Ser. No. 412,185
Claims priority, application Germany, Nov. 2, 1972, 2253601; Aug. 11, 1973, 2340716
Int. Cl.² B03C *3/00*
U.S. Cl. 55—138 **26 Claims**

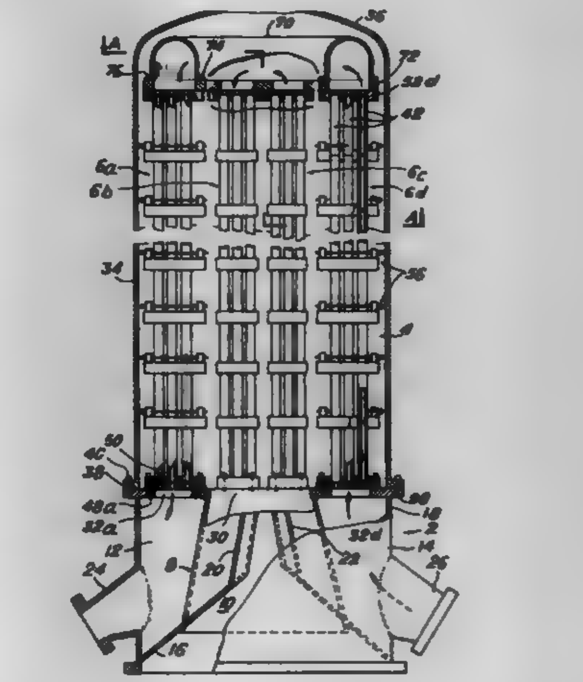
1. A device for the electronic collection of dust comprising:
an electrostatic separator including an anode and a cathode,
a high voltage transformer including a primary winding and a secondary winding,
means for supplying an input voltage to said primary winding,
a pulse generator connected in circuit with said transformer for supplying a pulse to said electrostatic separator,
the output voltage of said transformer being close to and below the spark over limit of said electrostatic separator, said pulse generator voltage being superimposed on the



output of said transformer to cause the voltage to exceed the spark over limit within one of the half cycles of each cycle of said transformer output voltage, and
a serial electrical path including a capacitor and a diode connected across said secondary winding of said transformer and connected to and supplying voltage across said electrostatic separator anode and cathode.

3,981,696
MULTIPASSAGE DIFFUSER

André Lalis, Le Plessis Robinson; René Rouviere, Orange, and Gilbert Simon, Sevres, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France
Filed May 7, 1974, Ser. No. 467,743
Claims priority, application France, May 18, 1973, 73.18166
Int. Cl.² B01D *53/22*
U.S. Cl. 55—158 **7 Claims**



1. A multi-passage diffuser for isotopic separation of air isotopic mixture comprising a leak-tight cylindrical enclosure cover closing the top of said enclosure, an end-wall closing the bottom of said enclosure, a plurality of parallel rectilinear tubes in said enclosure of porous material through which the isotopic mixture is circulated, parallel to an axis of said enclosure, means for grouping said tubes together in sectors each sector having a plurality of tubes, top and bottom perforated tube plates for each sector receiving the ends of the tubes of the sector, clamping members uniformly spaced along the tubes of each sector rigidly coupling the tubes of each sector, said sectors being disposed at uniform intervals around the interior periphery of said enclosure, a floating annular header in said enclosure, said top perforated tube plates being rigidly fixed to said annular header, said header being a half-torus, an

orifice in said header opposite each of said top tube plates establishing communication between said header and said tubes of the corresponding one of said sectors, said bottom tube plates being rigidly fixed to said end-wall of said enclosure, orifices in said end-wall opposite each of said bottom tube plates, passages constituted by a plurality of juxtaposed sectors in which the mixture circulates in the same direction, radial portions in said header dividing said header into portions, each of said portions containing said orifices corresponding to said sectors constituting two adjacent passages, leak-tight chambers beneath said end-wall, top walls for said chamber constituted by said end-wall, orifices for each of said chambers corresponding to said sectors of two adjacent ones of said passages opening into two different portions of said header, two of said chambers being collector-chambers, each of said collector-chambers communicating with said sectors of one of the two remaining passages, a nozzle for each of said collector-chambers for introducing the isotopic mixture and for discharging the fraction of the undiffused mixture, a central orifice for said end-wall opening into the interior of said enclosure and a shaft connected to said central orifice for discharging the diffused fraction of the isotopic mixture.

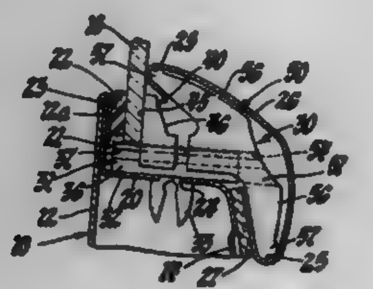
3,981,697
CARRIER AND CLAMP ASSEMBLY FOR A VEHICLE WINDOW

George E. Buckthorpe, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 22, 1975, Ser. No. 615,764

Int. Cl.² E04B *1/62*; E04F *15/14*

U.S. Cl. 52—400 **5 Claims**



1. A carrier and clamp assembly for use in a vehicle body having a support structure providing a first wall portion defining a receiving opening and a second wall portion at right angle to the first wall portion defining a window opening, the first wall portion having at least one aperture therethrough and a glass panel positioned within the receiving opening in abutment against the second wall portion with a seal sandwiched therebetween, said carrier and clamp assembly including a carrier of rectangular configuration and having a top surface with parallel, laterally extending, inclined serrations thereon, a base with a retainer stud extending therefrom for insertion into the aperture in the first wall portion whereby said carrier is secured to said first wall portion at right angle to the second wall portion in position to support an edge of the glass panel on the top surface of said carrier, said carrier further having longitudinal sides, each said side having a groove therein extending the length of said side and, a clamp slidably positioned on said carrier, said clamp including a body portion having a longitudinal channel therethrough and extending from one surface thereof whereby said clamp is slidably received on said carrier, said channel defining spaced apart side walls with inwardly extending flanges of a configuration complementary to said grooves to slidably interlock therewith, said side walls being interconnected by a wall having parallel laterally extending serrations thereon to interlock with said serrations on said carrier whereby said clamp is movable in only one direction relative to said carrier and is locked to said carrier by said serrations against movement in the opposite direction.

3,981,698
PROCESS FOR THE REMOVAL OF CARBON DIOXIDE FROM GASES

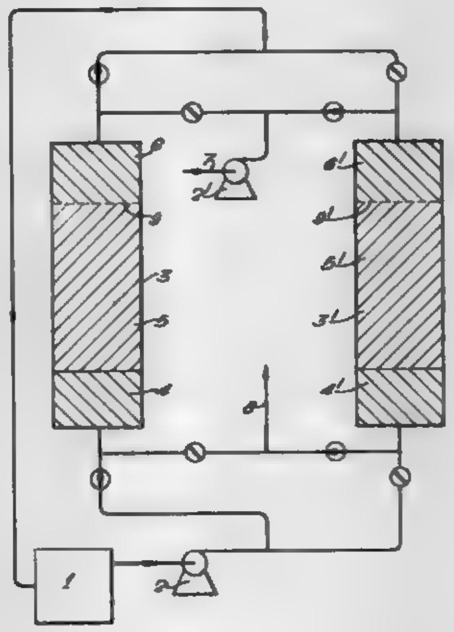
Colin James Leppard, Emsworth, England, assignor to CJB Development Limited, London, England

Continuation-in-part of Ser. No. 388,352, Aug. 15, 1973, Pat. No. 3,893,827. This application Feb. 18, 1975, Ser. No. 550,777

Claims priority, application United Kingdom, Feb. 22, 1974, 8192/74

Int. Cl.² B01D *53/04*

U.S. Cl. 55—31 **9 Claims**



1. A process for the removal of carbon dioxide from a wet stream which process comprises passing the gas stream through an integrated absorption bed which comprises a first portion which is an absorbent for water whereby water is removed from the gas stream, a second portion which is an absorbent for carbon dioxide whereby carbon dioxide is removed from the gas stream and a third portion which is an absorbent for water which is saturated with water whereby water is reintroduced into the gas stream, the first portion of the integrated absorption bed being maintained at a higher pressure than that of the desorbing third portion of the bed by incorporating a pressure plate between the second portion and third portion of the integrated absorption bed.

3,981,699
PURIFIER

Victor D. Molitor, 90 Corona St., Denver, Colo. 80218

Filed Oct. 25, 1974, Ser. No. 517,851

Int. Cl.² B01D *53/04*

U.S. Cl. 55—208 **7 Claims**

1. A purifier comprising:

a first series of generally concentric spiral passages interspaced and in heat exchange relationship with a second series of generally concentric spiral passages;

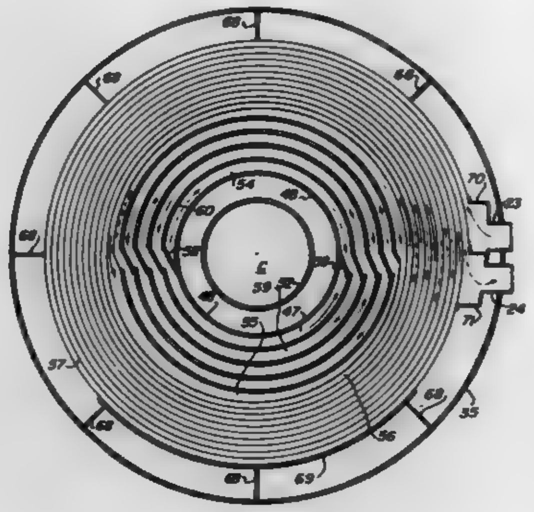
a container for gettering material disposed centrally of said first and second series of passages;

each said series of spiral passages including spiral plates and end walls between said plates forming the opposite ends of the respective passages;

a heater for heating said gettering material to a predetermined temperature and for heating the gases passing through said container;

means for conducting untreated gases to the outer of said first series of passages; and

means for conducting the outgoing heated gases from said container to the inner of said second series of passages.



3,981,700
VENT STRUCTURE

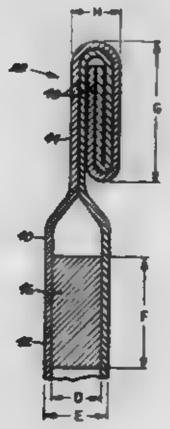
Joseph C. McGuire, Kennewick, Wash., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Division of Ser. No. 296,680, Oct. 11, 1972, Pat. No. 3,876,403. This application May 3, 1974, Ser. No. 466,522

The portion of the term of this patent subsequent to Apr. 8, 1992, has been disclaimed.

Int. Cl.² B01D *19/00*

U.S. Cl. 55—385 C **6 Claims**



1. A vent structure comprising:

a tubing of predetermined length and size, said tubing including an undeformed normally lower portion and a formed normally upper portion, and said upper tubing portion being flattened and folded against itself;

means provided in said upper tubing portion for separating its opposing proximate faces to prevent sintering and similar closures thereof; and

a particulate filter installed in said lower tubing portion for filtering out particulate matter while allowing free passage of gas therethrough whereby proper venting of gas can be maintained through said vent structure to produce a reliable, particulate filtered, long term operation vent structure.

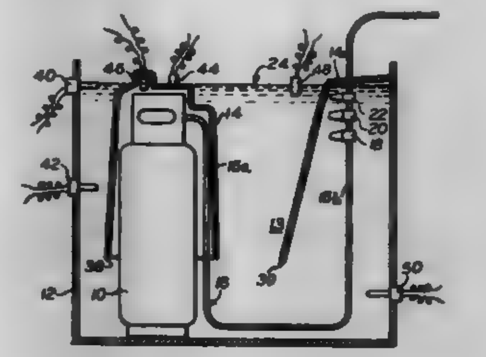
3,981,701
METHOD AND APPARATUS FOR CONTROLLING A VOLATILE SUBSTANCE

Harold Willids Andersen, and Charles H. Harrison, both of Oyster Bay, N.Y., assignors to H.W. Andersen Products Inc., Oyster Bay, N.Y.

Filed Aug. 10, 1973, Ser. No. 387,461

Int. Cl.² F17C *13/02*

U.S. Cl. 62—49 **11 Claims**



1. The method of determining impairment of the containment and isolation integrity of a volatile substance contained and isolated under pressure within a closed storage tank comprising the steps of containing and isolating said volatile substance under pressure within a closed impervious storage tank, providing a man-made manufactured vessel, maintaining an immersion fluid within said vessel at a pressure lower than the pressure of the volatile substance in said closed storage tank, said immersion fluid being capable of absorbing said volatile substance, immersing said storage tank within said immersion fluid while maintaining the containment and isolation integrity between the volatile substance in said storage tank and the immersion fluid in said vessel, and sensing changes in said immersion fluid caused by absorption of said volatile substance by said immersion fluid upon accidental or other unintentional failure of containment and isolation integrity between said volatile substance in said storage tank and the immersion fluid in said vessel, and utilizing said sensed changes to determine impairment of the containment and isolation integrity of said volatile substance in said storage vessel.

3,981,702
HEAT EXCHANGER

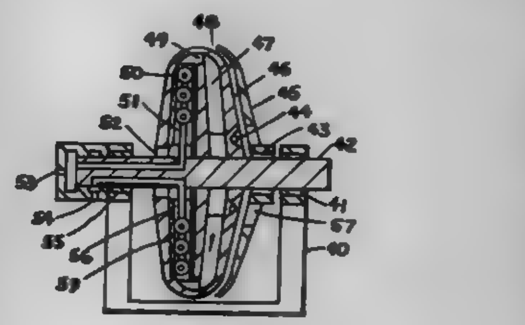
Michael Eskeli, 7994-41 Locke Lee, Houston, Tex. 77042

Division of Ser. No. 423,560, Dec. 10, 1973, abandoned, which is a division of Ser. No. 357,588, May 7, 1973, abandoned.

This application Dec. 2, 1974, Ser. No. 528,878

Int. Cl.² F25B *3/00*

U.S. Cl. 62—87 **1 Claim**



1. A method of transferring heat from a lower temperature to a higher temperature comprising compressing a first fluid by a centrifugal force within an outwardly extending first passage of a rotating rotor with accompanying temperature increase; expanding said compressible first fluid inwardly in a second passage that is connected at its outward end with said outwardly extending passage outer end by a first passage

means, connecting said second passage inward end with a discharge means a second radial distance away from the center of rotation of said rotor, connecting said first passage inward end with an entry means with said entry means furthest radial distance from the center of rotation of said rotor being less than said second radial distance to provide a pressure differential for said first fluid within said rotor, said discharge means being a set of nozzles adapted of passing said first fluid and being oriented to discharge said first fluid away from the direction of rotation to generate torque on said rotor to assist in the rotation of said rotor, removing heat from said first fluid during and after compression within said rotor in a heat exchanger carried by said rotor.

3,981,703

MULTISTAGE VANE TYPE ROTARY COMPRESSOR

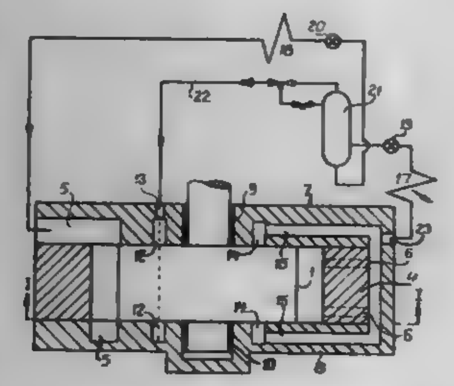
Rune Valdemar Glanvall, and Anders Lundberg, both of Norrkoping, Sweden, assignors to Stal-Refrigeration AB, Norrkoping, Sweden

Filed Apr. 15, 1975, Ser. No. 568,209

Claims priority, application Sweden, Apr. 23, 1974, 7405408

Int. Cl.² F25B *1/10;* **F04B** *23/10*

U.S. Cl. 62—509 **1 Claim**



1. A refrigeration circuit comprising a condensor having an inlet for compressed gas and an outlet, an intermediate pressure receptacle having an inlet and also having a gas outlet and a liquid outlet, a first expansion valve through which said condensor outlet is connected to said receptacle inlet, a second expansion valve connected to said liquid outlet of the receptacle, a low pressure duct leading from said second valve, an intermediate pressure duct leading from said gas outlet of the receptacle, and a compressor of the rotary vane type including a stator having a chamber of curved non-circular cross-section, defined by an inner surface and end plates, a rotor having a circular cross-section rotatably mounted within said chamber, the outer surface of said rotor, said end plates, and said inner surface defining a gas space, there being at least one inlet passage communicating with said gas space and to which said low pressure duct leads, there also being at least one outlet passage communicating with said gas space and connected to said condensor inlet, a plurality of vane slots in said rotor, a vane having inner and outer ends in each of said vane slots, said vanes being slidable inwardly and outwardly in said slots upon rotation of said rotor to permit the outer ends of said vanes to bear against the inner surface of said stator, successive vanes forming first working chambers of a first compression unit in said gas space and the outward movement of said vanes forming second working chambers in said slots, there being a plurality of grooves in at least one of said end plates, a first one of said grooves connecting with the second working chambers during at least one part of the outward movement of said vanes, and a second one of said grooves connecting with the second working chambers during at least one part of the inward movement of said vanes, gas inlet means connecting said intermediate pressure duct to said first groove, and gas outlet means connecting said second groove to said outlet passage from the gas space, whereby said second working chambers provide a secondary compression unit for compressing intermediate pressure gas from said receptacle.

3,981,704

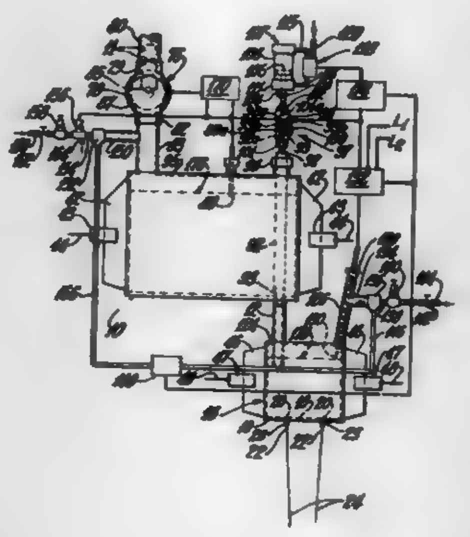
METHOD AND APPARATUS FOR PROCESSING GLASS

Wilfred A. Fournier, Heath, and Elmer P. Rieser, Pickerington, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 20, 1974, Ser. No. 534,616

Int. Cl.² C03B *37/02*

U.S. Cl. 65—2 **25 Claims**



1. The method of processing glass comprising establishing a supply of molten glass in a chamber, transferring molten glass from the supply into a stream feeder, establishing gas pressure on the molten glass in the stream feeder, flowing streams of glass from the feeder under the influence of the pressure on the molten glass in the feeder, attenuating the streams of glass to fibers, and establishing gas pressure on the molten glass in the chamber to effect transfer of molten glass from the chamber into the stream feeder.

3,981,705

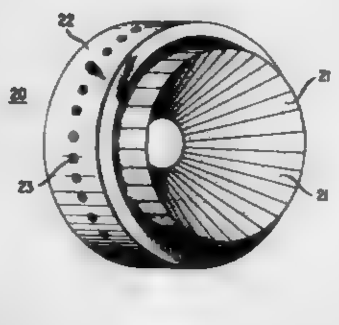
METHOD OF MAKING OPTICAL WAVEGUIDES FROM GLASS FIBERS

Raymond Edward Jaeger, Basking Ridge, and Thomas John Miller, Green Brook, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 5, 1975, Ser. No. 574,437

Int. Cl.² C03B *37/02*

U.S. Cl. 65—2 **11 Claims**



1. A process for fabricating glass fiber in which the glass fiber is drawn from a glass preform which has been softened by heating with laser radiation in the frequency range where the glass is absorbent, comprising the steps of

A. directing the laser radiation onto a conical reflector with a hole in the center so as to reflect the laser radiation toward the glass preform, said conical reflector having at least 3 facets the number of facets and radii of curvature of the facets on the reflector being arranged to effect a uniform temperature distribution in the zone where the glass is being necked down such that the focus of the laser beam does not concentrate at the center of the preform;

B. feeding the glass preform through the hole in the center of the conical reflector; and

C. pulling the glass fiber from the softened glass preform approximately along the axis of the glass preform.

3,981,706

METHOD FOR MAKING FLEXIBLE COLORED FIBER OPTIC DEVICE

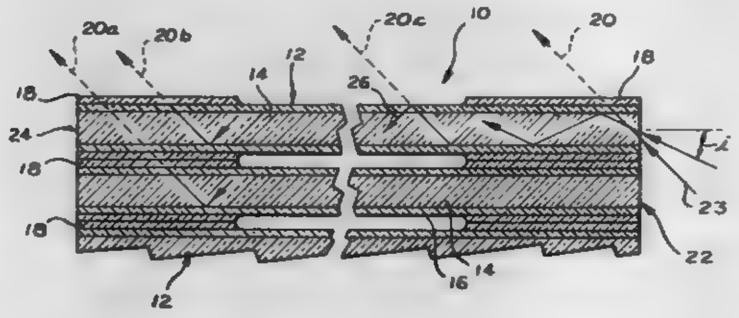
Richard R. Strack, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 354,600, April 26, 1973, abandoned. This application Dec. 16, 1974, Ser. No. 532,969

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² C03C *25/02, 23/20, 15/00*

U.S. Cl. 65—3 A **5 Claims**



1. The method of forming a flexible fiber optic image-transmitting conduit comprising the steps of:

preparing a composition of leachable glass containing a light-absorbing colorant;

overcladding each of a multiplicity of long and thin glass clad glass optical fibers with said colored leachable glass, said overcladding in each case of each fiber comprising a second fiber cladding;

arranging said overclad optical fibers in intimately juxtaposed relationships with each other;

heating and fusing said overcladdings together as a matrix between said optical fibers;

leaching said matrix away from said optical fibers throughout a substantial portion of their lengths intermediately of corresponding opposite ends thereof while leaving an appreciable amount of said matrix adjacent each of said opposite ends of said fibers as fiber interconnecting and stray light-absorbing means.

3,981,707

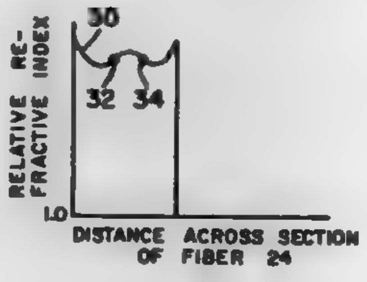
METHOD OF MAKING FLUORINE OUT-DIFFUSED OPTICAL DEVICE

Roger J. Araujo, Corning; Nicholas F. Borrelli, Elmira; John D. Crow, Mohegan Lake, and Thomas P. Seward, III, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 23, 1975, Ser. No. 570,713

Int. Cl.² C03C *25/02, 15/00;* **G02B** *21/34, 5/14*

U.S. Cl. 65—3 A **6 Claims**



1. A method of forming a planar optical waveguide comprising the steps of

providing a flat substrate of transparent silicate glass containing an amount of fluorine effective to decrease the refractive index thereof to a value below that of the silicate glass alone,

polishing a surface of said substrate to form an optical quality surface, and

heating said substrate to a temperature below the softening point temperature but greater than the annealing point temperature of said silicate glass, said temperature being sufficiently high to effect an out-diffusion of fluorine from said surface to form at said surface a layer of reduced fluorine content, the concentration of fluorine in said layer gradually increasing from a minimum value at said surface to a maximum value within said substrate so that the refractive index of said layer decreases from a maximum value at said surface to a minimum value within said substrate.

4. A method of forming a glass optical waveguide fiber having a refractive index distribution throughout its length such that in a plane perpendicular to the fiber optical axis the refractive index progressively decreases from a higher value at the optical axis of the fiber to a lower value at some finite fiber radius, said method comprising

providing a hollow tube of transparent silicate glass containing an amount of fluorine effective to decrease the refractive index thereof to a value below that of the silicate glass alone,

heating said tube to a temperature below the softening point temperature but greater than the annealing point temperature of said silicate glass, said temperature being sufficiently high to effect an out-diffusion of fluorine from at least the inner surface thereof to create at said inner surface a layer of reduced fluorine content, the concentration of fluorine in said layer gradually increasing from a minimum value at said inner surface to a maximum value within said tube, said fluorine out-diffusion process causing the refractive index of said tube to gradually decrease from a high value at the inner surface of said tube to a lower value within said tube,

subjecting said tube to a temperature sufficiently high to permit said tube to be drawn into a fiber, and

drawing said tube to collapse the hole in the center thereof and to reduce the cross-sectional area thereof and thereby form a glass optical fiber having a refractive index distribution throughout its length which progressively decreases from a high value at the optical axis of said fiber to a minimum value at some radius within said fiber.

3,981,708

SYSTEM FOR PRODUCING BLANKETS AND WEBS OF MINERAL FIBERS

Romain Eugene Loeffler, Littleton, and Forrest Theodore Rollins, Englewood, both of Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Filed Jan. 15, 1975, Ser. No. 541,358

Int. Cl.² C03B *37/00*

U.S. Cl. 65—4 R **20 Claims**

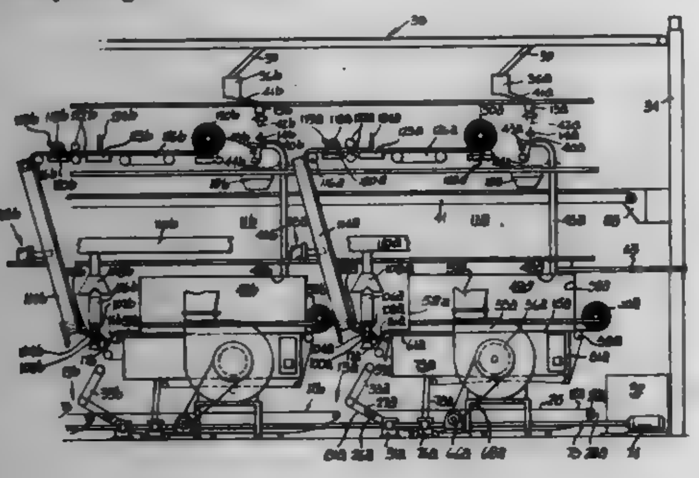
1. In a production line for the production of a thick mineral blanket comprised of a plurality of superposed mineral fiber mats comprising:

a. a plurality of mat forming modules arranged in an in-line orientation, along the production line each of said modules comprising:

  i. a level having fiberizing means thereon,
  ii. a mat forming chamber,
  iii. a mat delivery station,
  iv. a foraminous fiber collecting conveyor located in said forming chamber to collect fiber in mat form and to convey said mat from said forming chamber to said mat delivery station,

v. a section box in communication with said forming chamber through said fiber collecting conveyor,

b. a transfer conveyor means located below said fiberizing level and arranged to travel adjacent to the plurality of said mat delivery stations spaced along said in-line orientation for receiving mats sequentially from the individual delivery station spaced along said transfer conveyor means to form a thick blanket of superposed mats, the improvement comprising: at least one of said modules comprising,



c. means located adjacent the downstream end of said collecting conveyor for removing said mat from said collecting conveyor,

d. means for elevating said mat to the vicinity of the fiberizing level,

e. means for cutting said mat into desired lengths, and

f. means for accumulating said cut lengths, whereby a mat from at least one module is individually elevated to the vicinity of the fiberizing level and accumulated while the mats from the remaining modules are directed onto said transfer conveyor means to form a different product.

3,981,709
EDGE PROCESSING OF CHEMICALLY TOUGHENED LENSES

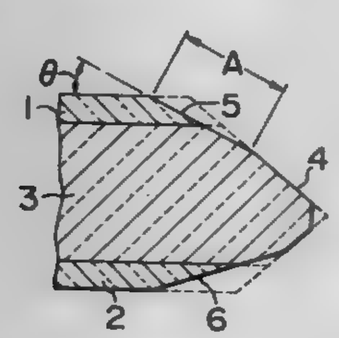
Fumio Kondo, Zushi; Masayuki Kondo, Tokyo; Tsuneyoshi Itoh, Tokyo, and Koji Sato, Tokyo, all of Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 7, 1975, Ser. No. 565,457

Claims priority, application Japan, Apr. 10, 1974, 49-41233

Int. Cl.² C03C *15/00, 19/00;* **B24B** *7/00, 1/00*

U.S. Cl. 65—30 E **5 Claims**



1. A process for the production of toughened lenses, comprising the steps of chamfering peripheral portion of a lens which has been subjected to chemical tempering treatment, and edge grinding thereafter with the angle of chamfering to the tangential line on the optical surface of the lens at the edge thereof being less than 45°; said chemical tempering treatment imparting toughness properties to said lens, said toughness properties remaining substantially after said edge grinding, said chamfering removing distortions appearing at the lens periphery when carrying out said edge grinding.

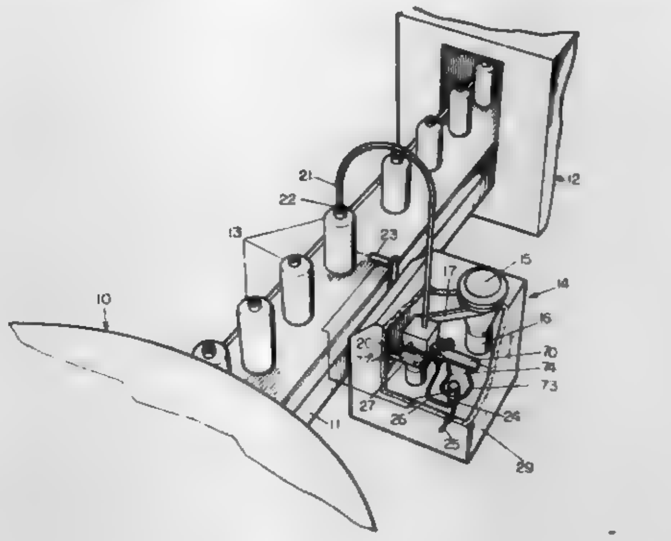
3,981,710
APPARATUS FOR SURFACE TREATING GLASS CONTAINERS

John R. Johnson, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 24, 1975, Ser. No. 571,149

Int. Cl.² C03B *25/04*

U.S. Cl. 65—158 **7 Claims**



1. Apparatus for delivering sulfur pills to the interior of glass containers moving on a conveyor, comprising in combination:

a pill feeder mounted alongside said conveyor;

a magazine extending downwardly from said pill feeder for receiving and storing pills from said feeder;

a pair of pocketed wheels mounted for rotation in opposite directions with the peripheral areas thereof in overlapping relationship with a pocket in each wheel in vertical alignment at the area of overlap, said pair of pocketed wheels forming a gating device positioned below said magazine;

means connecting said magazine to said gating device to supply pills to said pockets in said wheels;

a dispensing tube connected to said gating device and extending from said gating device to a position overlying said conveyor;

means connected to said gating device for operating said gating device to bring a predetermined number of pills into registry with the inlet of said dispensing tube; and

a source of fluid under pressure connected to said gating means at the inlet to said tube for propelling pills through said tube.

3,981,711
LUBRICATING SWABBING MEANS FOR GLASS CONTAINER MACHINE

Gösta Björkström, Limmared, Sweden, assignor to Aktiebolaget Platmanufaktur, Malmo, Sweden

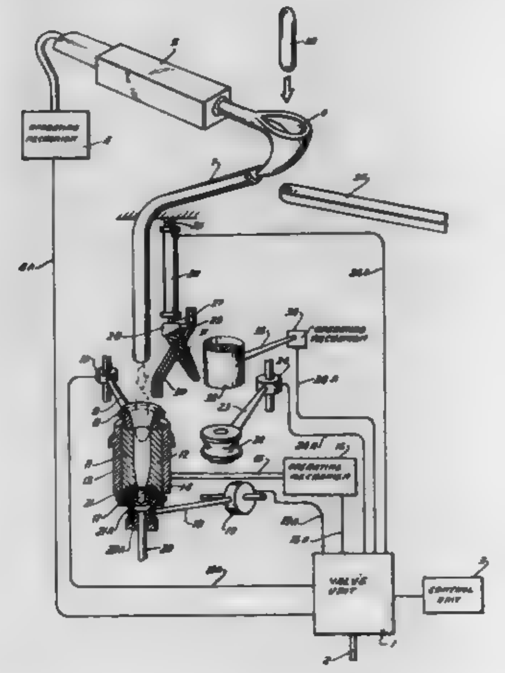
Continuation-in-part of Ser. No. 487,315, July 10, 1974, abandoned, which is a continuation of Ser. No. 299,359, Oct. 20, 1972, abandoned. This application Feb. 18, 1975, Ser. No. 550,294

Claims priority, application Sweden, Feb. 8, 1972, 1504/72

Int. Cl.² C03B *39/00*

U.S. Cl. 65—165 **5 Claims**

1. In a glass container making machine having a source of glass parisons, a pair of mold sections which are controllably opened and closed to form a split faced mold, a feeding guide positioned above said split faced mold having a first end through which the glass parisons enter and a second end by which the glass parisons exit to descend upon the mouth of the split faced mold, means for moving said feeding guide between a first position above and laterally removed from said split faced mold with said second end spaced therefrom and a second position with said second end in close proximity to said mouth of said split faced mold, said first position defining the position of said feeding guide after the glass parisons have been fed to said mouth and said second position defining the position of said feeding guide when feeding the glass parison to said mouth, a conveying device fixedly mounted above said mouth of said split faced mold having a first end for receiving the glass parisons and a second end spaced downwardly from said first end and communicating with said first end of said feeding guide to direct the glass parisons thereto, catcher means mounted for reciprocable movement above said first end of said conveying device, said catching means having a first enlarged end for receiving therein the supply of glass parisons and a second end spaced below said first end for the exit of the glass parisons therefrom, means for reciprocating said catcher means between a first position with said second end of said catcher means directly above said first end of said conveying device and a second position with said second end spaced laterally from said first end of said conveying device so that the glass parisons being fed will be diverted from said conveying device, a neck mold mounted for reciprocating movement below said split faced mold, means for reciprocating said neck mold between a first position at the bottom of said split faced and a second position remote from said first position for subsequent treatment of the formed glass parisons, a nozzle for the spraying of compressed air, means for reciprocating said nozzle between a first position within said neck mold when said neck mold is in its first position and a second position removed from said neck mold to allow for the removal of the neck mold and the thus formed glass parisons, and a bottom presser for pressing the top of the glass parisons in the split faced mold when said neck mold and said nozzle are in their first positions, means for reciprocating said bottom presser between a first position in said mount of said split faced mold and a second position spaced from said first position, the improvement comprising a waste glass mounted below said second end of said catcher means for receiving the glass parisons when said catcher means is in its second position, a swabbing means for swabbing said split faced mold after the forming of an article, means for reciprocating said swabbing means between a first position above said mouth of said split faced mold and a second position within said mouth of said split faced mold, a vessel of lubricating material positioned above said mouth and movable between a first position directly beneath said swabbing means when said swabbing means is in its first position and in said vessel of lubricating material, and a second position spaced from said first position with said swabbing means spaced from said vessel of lubricating material, and means for reciprocating said vessel of lubricating material between said first position and said second position.



3,981,712
TREATMENT OF IRON DEFICIENCIES IN PLANTS WITH IRON COMPLEXES OF ETHYLENE-BIS-(α-IMINO-2-HYDROXYARYL ACETIC ACIDS)

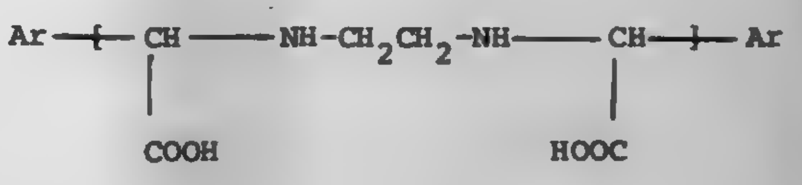
Harris E. Petree, Spanish Fort, and Joseph W. Stutts, Jackson, both of Ala., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 391,401, Aug. 24, 1973, Pat. No. 3,903,119. This application July 3, 1975, Ser. No. 593,099

Int. Cl.² C07F *15/02*

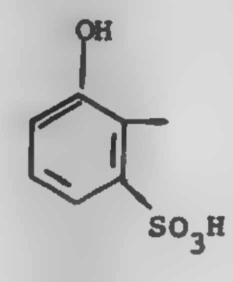
U.S. Cl. 71—1 **4 Claims**

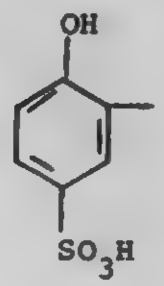
1. A composition of matter for the treatment of iron deficiencies in plants which comprises from about one-hundredth to about 50 percent by weight of at least one iron complex of ethylene-bis-(α-imino-2-hydroxyaryl acetic acid) as active ingredient of the formula

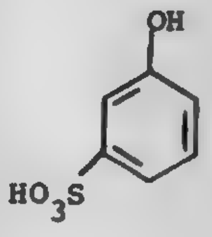


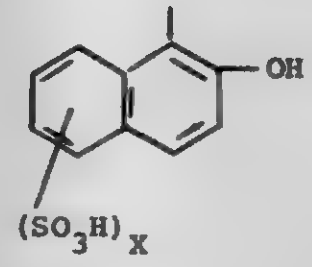
$$\mathrm{Ar}-\Big[-\underset{\displaystyle \mathrm{COOH}}{\underset{|}{\mathrm{CH}}}-\mathrm{NH}-\mathrm{CH_2CH_2}-\mathrm{NH}-\underset{\displaystyle \mathrm{HOOC}}{\underset{|}{\mathrm{CH}}}-\Big]-\mathrm{Ar}$$

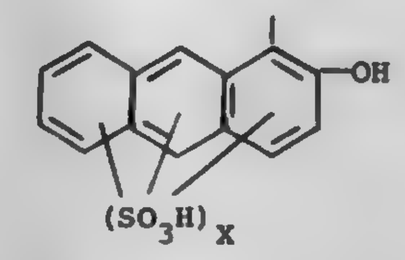
wherein Ar is selected from the group consisting of

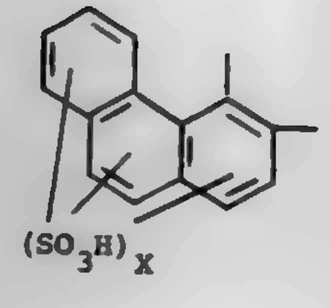


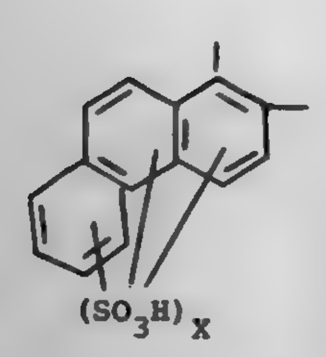












wherein X is 1 to 3
the molar ratio of ligand to iron being from about 1:1.1 to 1:3.0.

3,981,713

UREA-ZINC OXIDE COMPOSITION AND PROCESS

Gerald L. Tucker, and Elmer Ladelle Blanton, both of Yazoo City, Miss., assignors to Mississippi Chemical Corporation, Yazoo City, Miss.

Filed July 23, 1971, Ser. No. 165,698

Int. Cl.² C05C *9/00*; **C07C** *126/00*

U.S. Cl. 71—28 **10 Claims**

1. A particulate fertilizer which comprises a solidified solution of urea particles having a water content of less than 12% and having a fertilizing quantity in an amount of less than 27.5% of ZnO homogeneously dispersed throughout said urea.

3,981,714

CYCLIC N-THIADIAZOLYL-(2)-CARBOXYLIC ACID COMPOUNDS AND HERBICIDAL COMPOSITIONS

Carl Metzger, Dormagen; Ludwig Eue, and Robert Rudolf Schmidt, both of Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

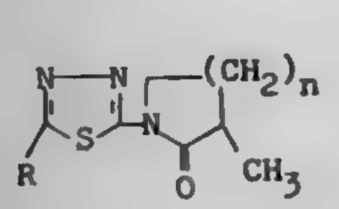
Filed Feb. 24, 1975, Ser. No. 552,506

Claims priority, application Germany, Mar. 9, 1974, 2411288; Mar. 28, 1974, 2415056

Int. Cl.² C07D *417/04*

U.S. Cl. 71—90 **14 Claims**

1. Cyclic N-thiadiazolyl-(2)-carboxylic acid amide compounds of the formula:



(I)

wherein

R is alkyl, haloalkyl, alkylthio, alkylsulfonyl or alkoxy, and contains not more than 5 carbon atoms and

n is 1 or 2.

11. Herbicidal composition comprising an agriculturally acceptable carrier and, in effective amounts, a cyclic N-thiadiazolyl-(2)-carboxylic acid amide compound as claimed in claim 1.

3,981,715

2,3,5-SUBSTITUTED-6-TRIFLUOROMETHYL-1,3-DIAZIN-4-ONES HERBICIDES

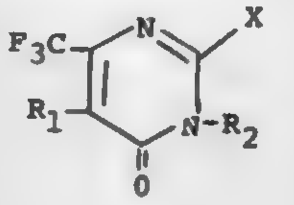
Albert William Lutz, Princeton, and Bryant Leonidas Walworth, Pennington, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 237,936, March 24, 1972, Pat. No. 3,869,457, which is a continuation-in-part of Ser. No. 737,308, June 17, 1968, abandoned. This application Sept. 9, 1974, Ser. No. 504,230

Int. Cl.² A01N *9/22*

U.S. Cl. 71—92 **8 Claims**

1. A method for controlling undesirable plant species which comprises applying to soil containing the undesirable plant species a herbicidally effective amount of a compound of the formula:



wherein

R_1 is hydrogen or halo,

R_2 is alkyl of 1 to 12 carbon atoms, cyclohexyl, phenyl, allyl, hydrogen or mono or dihalo substituted alkyl of 1 to 12 carbon atoms, monocarb (loweralkoxy) substituted alkyl of 1 to 12 carbon atoms, mono or dihalo substituted phenyl, or mono or di CF_3 substituted phenyl, and X is hydrogen or hydroxy and where X is hydroxy, the tautomers and water soluble sodium, potassium, ammonium and tri(C_1–C_4 alkyl) ammonium salts.

3,981,716

GEM-BIS AMIDE HERBICIDE ANTIDOTE COMPOSITIONS AND METHODS OF USE

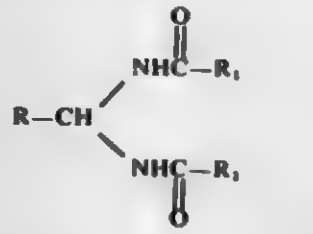
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 363,464, May 24, 1973, Pat. No. 3,923,494. This application May 22, 1975, Ser. No. 580,125

Int. Cl.² A01N *9/12*

U.S. Cl. 71—100 **28 Claims**

1. An herbicide composition comprising a mixture of a herbicidally effective amount of a thiocarbamate herbicide and an antidote compound corresponding to the formula



in which R is selected from the group phenyl, naphthyl and substituted phenyl wherein said substituents are selected from the group methoxy, nitro, chloro, bromo, mono- and di-substituted lower alkyl having from 1 to 4 carbon atoms, inclusive; and R_1 is lower chloroalkyl containing from 1 to 4 carbon atoms, inclusive; from about 0.01 to about 15 parts by weight of antidote compound for each part by weight of the thiocarbamate herbicide.

3,981,717

HERBICIDAL METHODS

Bryant Leonidas Walworth, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sept. 24, 1969, Ser. No. 860,796

Int. Cl.² A01N *9/20*

U.S. Cl. 71—105 **9 Claims**

1. A method for the control of undesirable plant species comprising contacting said plant species with a herbicidally effective amount of a compound methyl 2-cyano-3-(N-methylanilino) acrylate, n-octyl 2-cyano-3-(N-methylanilino) acrylate, ethyl 2-cyano-3-(N-methyl-3-chloroanilino)acrylate, ethyl 2-cyano-3-(N-methyl-3-methylanilino)acrylate, ethyl 2-cyano-3-(N-methyl-2-methylanilino) acrylate or ethyl 3-(N-phenyl-N-methyl)-amino-2-cyano acrylate.

3,981,718

METHOD FOR INCREASING THE SUCROSE CONTENT OF GROWING PLANTS

Ernest G. Jaworski, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

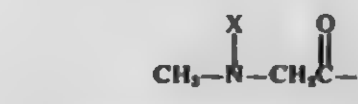
Filed Dec. 20, 1974, Ser. No. 535,076

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 20, 1976

Int. Cl.² A01N *9/24*

U.S. Cl. 71—113 **7 Claims**

1. A method for increasing the sucrose content of sugar cane plants which comprises applying to said plants, from about 2 to 8 weeks prior to harvest, an effective amount of a compound of the formula



$$CH_3{-}\overset{\overset{X}{|}}{N}{-}CH_2\overset{\overset{O}{\|}}{C}{-}OH$$

wherein X represents hydrogen or methyl, and the non-phytotoxic, agriculturally acceptable salts thereof.

3,981,719

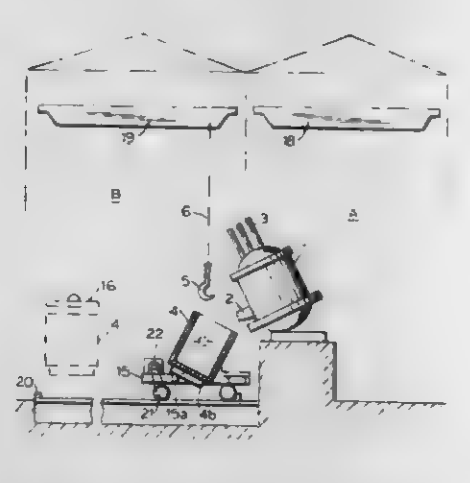
METHOD FOR RECEIVING MOLTEN STEEL FROM AN ELECTRIC FURNACE

Shoji Nakamura, Osaka, Japan, assignor to Kyoei Steel Works, Ltd., Osaka, Japan

Filed July 8, 1975, Ser. No. 594,072

Int. Cl.² C21C *5/52*

U.S. Cl. 75—13 **1 Claim**



1. A method for transferring molten metal from an electric furnace comprising the steps of:

positioning a ladle bogie along rails leading to said furnace, said rails being parallel to an extension of a line connecting the furnace center and a tapping trough of said furnace;

controlling the location of said ladle bogie along said rails by remote control;

mounting a ladle having trunnion shafts on two opposite sides thereof onto said ladle bogie, said ladle being tiltable about said trunnion shafts and being lined with fireproof material;

advancing said ladle bogie with said ladle thereon to a preheater positioned above and along said rails near said electric furnace;

preheating said ladle on said ladle bogie with said preheater;

advancing said preheated ladle on said ladle bogie on said rails to said electric furnace;

tilting said ladle about said trunnion shaft by lifting the bottom edge thereof opposite said furnace; and

pouring the molten metal in said furnace through said tapping trough into said preheated, tilted ladle, said tapping trough being short enough to prevent substantial heat loss from the molten metal passing therethrough.

3,981,720

FOAMING OF METAL BY THE CATALYZED AND CONTROLLED DECOMPOSITION OF ZIRCONIUM HYDRIDE AND TITANIUM HYDRIDE

Sidney E. Speed, Stonington, Conn., assignor to Swiss Aluminum Limited, Chippis, Switzerland

Continuation-in-part of Ser. No. 30,886, April 22, 1970, Pat. No. 3,676,071, which is a continuation-in-part of Ser. No. 866,776, Oct. 15, 1969, abandoned, which is a continuation of Ser. No. 593,969, Nov. 14, 1966, abandoned. This application Feb. 7, 1972, Ser. No. 224,104

Int. Cl.² C22B *5/02*

U.S. Cl. 75—20 F **8 Claims**

1. A process for producing foamed metal by catalyzing and controlling the solid state decomposition of a material which releases a substantial amount of gas in molten metal which comprises:

A. intimately admixing a discrete particulate material which decomposes at elevated temperatures to release a substantial amount of gas selected from the group consisting of zirconium hydride and titanium hydride and a discrete particulate material containing a major proportion of aluminum in an amount of at least 0.8 part by weight based on the amount of aluminum per part of decomposable material;

B. heating said admixture at a temperature range of 850° to 900°F for at least 5 minutes to form a surface oxide layer upon said hydride; and

C. adding said admixture to a melt of molten metal to foam said metal.

3,981,721

METHOD FOR DESULFURIZING MOLTEN IRON

Masaru Takashima, Komae, Japan, assignor to Aikoh Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1975, Ser. No. 553,709

Claims priority, application Japan, Feb. 27, 1974, 49-22341; Apr. 9, 1974, 49-39499

Int. Cl.² C21C *7/02*

U.S. Cl. 75—58 **10 Claims**

1. In a method for desulfurizing molten iron, which comprises adding a desulfurizing agent to the molten iron, the improvement which comprises said desulfurizing agent being at least one of:

a. a dust collected from the smelting step of manganese which comprises by weight, about 2 to 20% of Na_2O, about 5 to 50 % of K_2O, about 20 to 40 % of MnO, about 5 to 30% of CaO, about 3 to 20 % of SiO_2 about 3 to 10 % of C, and not more than about 5 % of each of Al_2O_3 Fe_2O_3, and CaF_2; and

b. a dust collected from the smelting step of chromium which comprises, by weight, about 3 to 25 % of Na_2O, about 4 to 40% of K_2O, about 4 to 15% of CaO, about 5 to 30 % of SiO_2, not more than about 5% of Cr_2O_3 and not more than about 5% of each of C, Al_2O_3, Fe_2O_3, and CaF_2.

3,981,722

AMORPHOUS ALLOYS IN THE U-CR-V SYSTEM

Ranjan Ray, and Elisabeth Musso, both of Morristown, N.J., assignors to Allied Chemical Corporation, Morris Township, N.J.

Filed Oct. 31, 1974, Ser. No. 519,887
Int. Cl.² C22C *43/00*

U.S. Cl. 75—122.7 **4 Claims**

1. A uranium base metal alloy which is at least 50 percent amorphous comprising about 60 to 80 atom percent of uranium and about 20 to 40 atom percent of chromium and/or vanadium, and a maximum of about 10 atom percent of other alloying elements replacing chromium and/or vanadium.

3,981,723

WHITE GOLD ALLOY

Joseph J. Tuccillo, Norwalk, Conn., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation of Ser. No. 370,496, June 15, 1973, abandoned, which is a continuation-in-part of Ser. No. 190,686, Oct. 19, 1971, abandoned. This application June 26, 1974, Ser. No. 483,256

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 10, 1976

Int. Cl.² C22C *5/02*

U.S. Cl. 75—165 **9 Claims**

1. A white gold alloy for dental castings which is characterized by having, after heat treatment by heating to 1900°F. at a rate of 75° to 100°F. per minute and maintaining at 1900°F. for about 10 minutes and cooling, an ultimate tensile strength of at least about 90,000 psi., a yield strength of at least about 70,000 psi., and a Brinell hardness number of at least about 170, consisting essentially, in percent by weight, of 50 to 54% gold; 27 to 31% palladium; 11 to 16% silver; about 0.05 to about 0.25% of iridium or ruthenium, and a total of 4.5 to 8% of indium and tin, provided there is at least 2% indium and no more than 4.5% tin, and further provided that if there is less than about 6% indium, there must be at least 0.25% tin.

3,981,724

ELECTRICALLY CONDUCTIVE ALLOY

Janaiah S. Prasad, Norwalk, Conn., assignor to Consolidated Refining Company, Inc., Mamaroneck, N.Y.

Filed Nov. 6, 1974, Ser. No. 521,393
Int. Cl.² C22C *5/06*

U.S. Cl. 75—173 R **1 Claim**

1. An alloy consisting essentially of silver, gold and platinum, there being from 0.1 to 0.5% by weight based on said alloy of each of said gold and said platinum.

3,981,725

PROCESS AND SYSTEM FOR FORMING FINISHED PARTS FROM POWDER METAL

William F. Dixon, Rochester, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Mar. 6, 1974, Ser. No. 448,783
Int. Cl.² B22F *1/00, 3/24, 3/00*

U.S. Cl. 75—200 **9 Claims**

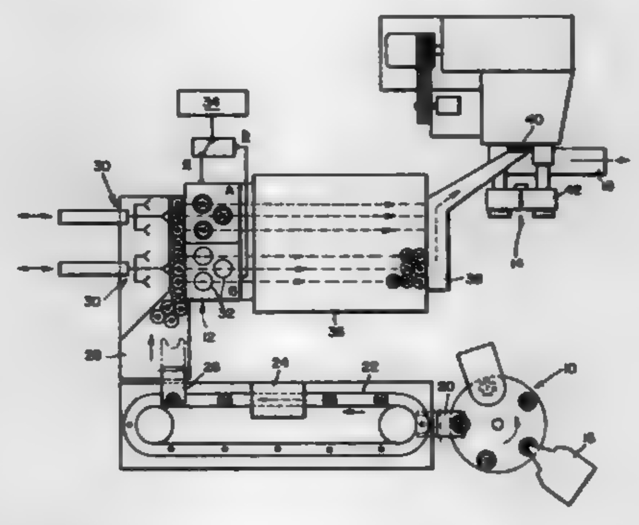
1. In an industrial process for forming finished parts from metal powder by initially compacting a measured quantity of metal powder into a coherent preliminary part having an intermediate shape, followed by steps of heating and forming the preliminary part into a finished part having a final shape and density, the improvement of integrating the steps of such a process into a single automated system, comprising

compacting loose powder metal with a process which produces a continuous flow of preliminary parts,

conveying and transferring said preliminary parts to an induction sintering station,

rearranging the continuous flow of preliminary parts into separate batches in the induction sintering station so that separate batches of the preliminary parts can be uniformly heated to a selected sintering temperature level in alternating time sequence,

removing the batches of preliminary parts from the induction sintering station after sintering is completed, and rearranging the batches of preliminary parts back into a flow of parts which can be conveyed to a final forming station, and



transferring parts from said flow of parts to a forming station where said preliminary parts are formed into finished parts having a final shape and density.

3,981,726

ELECTRICAL CONTACT MATERIALS

Peter Douglas; David John Pedder; Peter John Swallow, and Terrence Ardern Davies, all of Northampton, England, assignors to Square D Company, Park Ridge, Ill.

Division of Ser. No. 384,161, July 30, 1973, Pat. No. 3,922,236. This application June 13, 1975, Ser. No. 586,763

Claims priority, application United Kingdom, Aug. 1, 1972, 35826/72

Int. Cl.² B22F *1/00, 3/00*

U.S. Cl. 75—206 **11 Claims**

1. A method of producing an electrical contact material including the steps of providing irregular silver powder having a powder particle size of not greater than approximately 350 mesh; providing irregular copper powder having a powder particle size of not greater than approximately 350 mesh; providing lanthanum strontium chromite powder of formula $La_{1-x}Sr_xCrO_3$, where the values lie between 0 and 1.0, and having a powder particle size of not greater than approximately 10 microns; mixing the powders together to provide a fine, evenly dispersed mixture containing 5 to 50 weight per cent of copper, 2 to 20 weight per cent of $La_{1-x}Sr_xCrO_3$ and the remainder silver; compacting the powder mixture into a desired shape; and sintering the compacted shape.

3,981,727

SIGNAL AMPLIFICATION BY CHARGING AND ILLUMINATING A PARTIALLY DEVELOPED LATENT ELECTROSTATIC IMAGE

Alan C. Nelson, Los Angeles, and Lothar S. Jeromin, Sierra Madre, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed June 5, 1974, Ser. No. 476,348
Int. Cl.² G03G *13/24*

U.S. Cl. 96—1.3 **5 Claims**

1. A method of increasing the potential difference between two adjacent charge patterns of differing charge density formed on a photoconductive surface comprising the steps of:

a. providing a photoconductive surface having at least two adjacent charge patterns of differing charge density thereon, said charge patterns being of a first polarity,

b. depositing a developer powder which is charged to said first polarity on said photoconductive surface whereby said developer powder is deposited denser in the areas of lower surface charge density, than in the areas of higher surface charge density, thereby providing a developed charge pattern,

c. uniformly applying charge of said first polarity to said developed charge pattern,

d. exposing the charged developed charge pattern to light, and

e. thereafter applying additional developer powder charged to a second polarity to said developed charge pattern whereby the potential difference between adjacent charge patterns of differing density is at least equal to the initial potential difference therebetween.

3,981,728

XEROGRAPHIC IMAGING MEMBER HAVING HEXAGONAL SELENIUM IN INTER-LOCKING CONTINUOUS PATHS

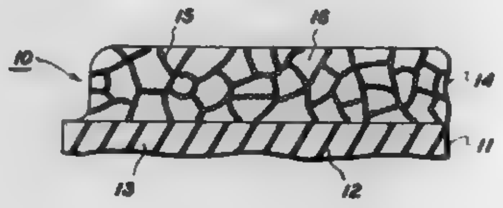
Robert N. Jones, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 518,554, Oct. 29, 1974, Pat. No. 3,928,036. This application July 24, 1975, Ser. No. 598,613

The portion of the term of this patent subsequent to Jan. 22, 1991, has been disclaimed.

Int. Cl.² G03G *5/087*

U.S. Cl. 96—1.5 **20 Claims**



1. A xerographic imaging member which includes a photoconductive insulating layer, said layer comprising an insulating organic matrix and hexagonal selenium, with substantially all of the hexagonal selenium in said member in a multiplicity of interlocking hexagonal selenium continuous paths through the thickness of said layer, said hexagonal selenium paths being present in a volume concentration, based on the volume of said layer, of from about 1 to 25 percent, with the outer surface of said layer comprising organic resin material.

3,981,729

PHOTOGRAPHIC METHOD EMPLOYING ORGANIC LIGHT-SCATTERING PARTICLES FOR PRODUCING A VIEWING-SCREEN STRUCTURE

Theodore Alexander Saulnier, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 14, 1973, Ser. No. 359,901

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² G03C *5/00*

U.S. Cl. 96—36.1 **3 Claims**

1. A method for producing a luminescent screen structure including the steps of

a. coating a supporting surface with a film consisting essentially of (i) organic polymeric binder material whose solubility in a given solvent is altered when it is exposed to radiant energy, said binder material being volatilized when heated in air below about 500°C and (ii) about 10 to 80 weight percent with respect to the weight of said binder material of particles of an organic material that is insoluble in said binder material and selected from the group consisting of acrylic and polystyrene polymers, said particles being volatilized when heated in air at temperatures below about 500°C and being about 0.3 to 1.0 micron median size, said organic particles being adapted to scatter said radiant energy in said film,

b. exposing said film to an image in the form of said radiant energy until the solubility of the irradiated portions thereof is selectively altered, thereby producing in said film regions of greater solubility and regions of lesser solubility,

c. removing those regions of said film with greater solubility with a liquid solvent therefor while retaining said regions with lesser solubility, thereby baring the areas of said supporting surface underlying said regions of greater solubility, while retaining those regions of said film of lesser solubility,

d. then, while said retained film regions are wet with said solvent, adhering dry particles of screen-structure material to said film regions of lesser solubility,

e. and then baking said retained film regions with said adhered particles thereon in air at temperatures below about 500°C until said binder material and said organic particles are substantially entirely volatilized.

3,981,730

DIAZO-TYPE MULTICOLOR REPRODUCTION PROCESS

Kenzi Takahashi; Toshihiro Kouchi, both of Hirakata; Yasutoki Kamezawa, Tsuzuki, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan

Filed Apr. 16, 1974, Ser. No. 461,444

Claims priority, application Japan, Apr. 18, 1973, 48-43050; Apr. 18, 1973, 48-43051

Int. Cl.² G03C *5/34*

U.S. Cl. 96—49 **17 Claims**

1. In a process for multi-color reproduction, which comprises:

A. exposing image-wise a diazo-type photosensitive material to actinic light by exposing through an original sheet of an assembly, said assembly consisting of (i) an original sheet having opaque image areas and transparent or semi-transparent non-image areas on one surface and a color-forming layer containing at least one thermovolatile or sublimable azo coupler (a), said layer being located in only preselected areas which are contiguous with opaque image areas of said original sheet, said preselected areas being present in only a portion of the areas contiguous with said opaque image areas of said original sheet, and (ii) a diazo-type photosensitive material having a photosensitive layer containing at least one photosensitive diazonium salt (c), an acidic stabilizer and an azo coupler (b) having a substantially lower rate of coupling with the diazonium salt (c) under the developing conditions than that of the azo coupler (a) said original sheet (i) being superimposed on said diazo-type photosensitive material (ii) so that the color-forming layer comes into face-to-face contact with the photosensitive layer;

B. heating said assembly to thereby heat-transfer said layer of the coupler (a) to the corresponding position on the surface of said photosensitive layer, said steps (A) and (B) being performed simultaneously or in the time sequence of (A) to (B) or (B) to (A); and

C. contacting the exposed photosensitive material with a mixture of ammonia and steam or an alkali-containing aqueous liquid developer to thereby develop said photosensitive material, whereby in the unexposed latent image area of the portion to which the coupler (a) has been heat-transferred, a dye (c)–(a) having a certain hue or color is formed by the selective reaction of the heat-transferred coupler (a) with the diazonium salt (c) and at the same time, in the unexposed latent image areas to which the coupler (a) has not been heat-transferred, a dye (c)–(b) having a different hue or color from said dye (c)–(a) is formed by the reaction of the coupler (b) with the diazonium salt (c), thus producing a multi-colored copied image, the improvement wherein in addition to the thermo-volatile or sublimable coupler (a), the color-forming layer contains a hue separation-improving agent selected from the group consisting of

a. polyalkylene oxides having recurring units represented by the following formula

$\left(RO \right)_n$

wherein R is an alkylene group having 2 to 4 carbon atoms, and n is a number so selected that the polymer is solid under conditions of 20°C and one atmosphere pressure,

b. carboxylic acid esters and ethers of polyalkylene oxide as described above,

c. adducts between ethylene oxide or propylene oxide and stearic acid amide, lauric acid amide or oleic acid amide, and

d. fatty acid amides other than said adducts, fatty acid imides, fatty acid aminoalkyl esters, fatty acid salts and condensates of fatty acid amide with formaldehyde, the melting point of which is 100°C or higher.

2. A process for multi-color reproduction, which comprises:

A. exposing image-wise a diazo-type photosensitive material to actinic light by exposing through an original sheet of an assembly, said assembly consisting of (i) an original sheet having opaque image areas and transparent or semi-transparent non-image areas on one surface and a color-forming layer containing at least one thermovolatile or sublimable azo coupler (a), said layer being located in only preselected areas which are contiguous with opaque image areas of said original sheet, said preselected areas being present in only a portion of the areas contiguous with said opaque image areas of said original sheet, and (ii) a diazo-type photosensitive material having a photosensitive layer containing at least one photosensitive diazonium salt (c), said original sheet (i) being superposed on said diazo-type photosensitive material (ii) so that the color-forming layer comes into face-to-face contact with the photosensitive layer;

B. heating said assembly to thereby heat-transfer said layer of the coupler (a) to the corresponding position on the surface of said photosensitive layer, said steps (A) and (B) being performed simultaneously or in the time sequence of (A) to (B) or (B) to (A); and

C. thereafter developing the exposed photosensitive layer with an alkaline aqueous liquid developer containing a coupler (b), wherein said coupler (a) has a higher coupling rate under developing conditions than said coupler (b), whereby in the unexposed latent image area of the portion to which the coupler (a) has been heat-transferred, a dye (c)-(a) having a certain hue or color is formed by the selective reaction of the heat-transferred coupler (a) with the diazonium salt (c) and at the same time, in the unexposed latent image areas to which the coupler (a) has not been heat-transferred, a dye (c)–(b) having a different hue or color from said dye (c)–(a) is formed by the reaction of the coupler (b) with the diazonium salt (c), thus producing a multi-colored copied image, the improvement wherein in addition to the thermo-volatile or sublimable coupler (a), the color-forming layer contains a hue separation-improving agent selected from the group consisting of

a. polyalkylene oxides having recurring units represented by the following formula

$\left(RO \right)_n$

wherein R is an alkylene group having 2 to 4 carbon atoms, and n is a number so selected that the polymer is solid under conditions of 20°C. and one atmosphere pressure,

b. carboxylic acid esters and ethers of polyalkylene oxide as described above,

c. adducts between ethylene oxide or propylene oxide and stearic acid amide, lauric acid amide or oleic acid amide, and

d. fatty acid amides other than said adducts, fatty acid imides, fatty acid aminoalkyl esters, fatty acid salts and condensates of fatty acid amide with formaldehyde condensates, the melting point of which is 100°C or higher.

3,981,731
STABILIZATION OF DEVELOPED PHOTOGRAPHIC IMAGES

Werner Berthold; Anita von König, both of Leverkusen, and Helmut Timmler, Wuppertal, all of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

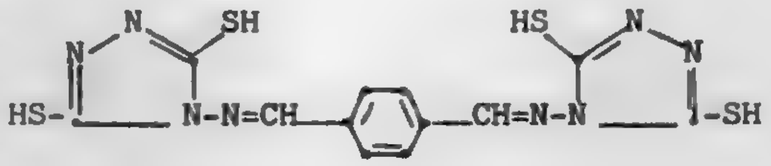
Filed Nov. 4, 1975, Ser. No. 628,660

Claims priority, application Germany, Nov. 9, 1974, 2453218

Int. Cl.² G03C *5/26, 5/38, 1/06*

U.S. Cl. 96—50 R **6 Claims**

1. In a process for the production of photographic images by exposure of a photographic material which contains at least one silver halide emulsion layer, development and stabilization of the unexposed and undeveloped silver halide, the improvement according to which development is carried out with a bath containing a compound of the following formula or salts thereof



3,981,732
GRANULAR p-PHENYLENEDIAMINE COLOR DEVELOPING AGENT

Takeo Emoto, Fujisawa, and Satoshi Kurihara, Hiratsuka, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Division of Ser. No. 281,672, Aug. 18, 1972, Pat. No. 3,833,377. This application Apr. 9, 1974, Ser. No. 459,446

Claims priority, application Japan, Aug. 19, 1971, 46-63231

Int. Cl.² G03C *5/30, 7/00*

U.S. Cl. 96—66.2 **5 Claims**

1. A granular color developing composition consisting essentially of granules which comprise p-phenylenediamine color developing agent, wherein said granules will not pass through a 250μ sieve and are dust-free and free-flowing, wherein said granular color developing composition is formed by a process which comprises:

a. mixing and kneading at least one excipient selected from the group consisting of water and lower alcohols and a p-phenylenediamine color developing agent;

b. extruding the resulting mixture to mold said mixture into a rod; and

c. drying the resulting extrudate to remove the excipient.

3,981,733
SILVER HALIDE PHOTOGRAPHIC MATERIALS CONTAINING THE ADDITION PRODUCTS OF LOWER ALKYLENE OXIDES AND ORGANIC POLYAMINES AS ANTI-FOG COMPOUNDS

Max Van Dam, Oradell, N.J., and Stephen Robert Gallo, Yonkers, N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

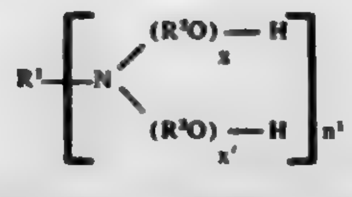
Filed July 31, 1974, Ser. No. 493,281

Int. Cl.² G03C *1/34*

U.S. Cl. 96—67 **13 Claims**

1. A photosensitive a silver halide photographic emulsion containing a water soluble anti-fog compound of the following

formula:



where R¹ is a lower alkylene radical having up to 6 carbon atoms,

—R²O— and —R³O— are the same or different lower oxyalkylene radicals,

the sum of *x* and *x'* such that said compound has greater than about 33 to about 500 —R²O— radicals and —R³O— radicals,

*n*¹ is a value greater than 1 and up to 2,

said compound being present in said emulsion in an amount sufficient to reduce the fog of said emulsion.

3,981,734
STABLE PIGMENT COMPOSITIONS

Louis Antoine Cabut, Nogent sur Oise, and Michel Ernest Antoine Huille, Creil, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed July 15, 1975, Ser. No. 596,132

Claims priority, application France, July 19, 1974, 74.25131

Int. Cl.² C09D *11/00*

U.S. Cl. 106—20 **7 Claims**

1. A process for stabilizing copper phthalocyanine pigments which comprises admixing a copper phthalocyanine pigment with 1 to 20% of a compound of the formula:

$$Pc — (X - A)_n$$

wherein Pc represents the unmetallized or metallized phthalocyanine moiety, X represents oxygen, sulfur or —NH—,

A represents straight or branched chain alkyl having 4 to 20 carbons, unsubstituted aryl or aryl substituted by halogen, trifluoromethyl, alkyl or alkoxy,

and *n* is a number from 1 to 8.

2. A pigment composition consisting of an admixture of a copper phthalocyanine pigment with 1 to 20% of a stabilizing compound of the formula:

$$Pc — (X - A)_n$$

wherein Pc represents the unmetallized or metallized phthalocyanine radical,

X represents oxygen, sulfur or —NH—,

A represents straight or branched chain alkyl having 4 to 20 carbon atoms, unsubstituted aryl or aryl substituted by halogen, trifluoromethyl, alkyl or alkoxy,

and *n* is a number from 1 to 8.

7. In a printing ink, the improvement which comprises having present therein the pigment composition as defined in claim 2.

3,981,735
PROCESS FOR MAKING A STABLE, RELATIVELY HIGH CONCENTRATION, SOLUTION OF AN ORGANIC COLOR-REACTIVE COLORLESS DYE IN OIL

Minoru Murata; Koichi Sugiyama, both of Hiratsuka, and Hisao Ikeda, Fujisawa, all of Japan, assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 20, 1974, Ser. No. 452,883

Claims priority, application Japan, Apr. 16, 1973, 48-43005

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² C09D *11/06*

U.S. Cl. 106—27 **11 Claims**

1. A stable, colorless, liquid ink composition comprising an organic peroxide compound dissolved in substantially water insoluble organic oil and complexed with a color reactive dye material.

3,981,736
BIOCOMPATIBLE GLASS CERAMIC MATERIAL

Heinz Broemer, Hermannstein; Hans-Herbert Kaes, Wetzlar-Dorlar, and Emanuel Pfeil, Marburg, all of Germany, assignors to Ernst Leitz G.m.b.H., Wetzlar, Germany

Division of Ser. No. 471,891, May 21, 1974, Pat. No. 3,922,155. This application May 12, 1975, Ser. No. 576,797

Claims priority, application Germany, May 23, 1973, 2326100

Int. Cl.² A61F *1/00;* **C03C** *3/22*

U.S. Cl. 106—39.6 **4 Claims**

1. An apatite-containing glass ceramic material of satisfactory biocompatibility, said material being formed by thermal crystallization of a glass consisting essentially, in weight percent, of

Between about 20 and about 60 percent of silicon dioxide SiO_2,

between about 5 and about 40 percent of phosphorus pentoxide P_2O_5,

between about 2.7 and about 20 percent of sodium oxide Na_2O,

between about 0.4 and about 20 percent of potassium oxide K_2O,

between about 2.9 and about 30 percent of magnesium oxide MgO, and

between about 5 and about 40 percent of calcium oxide CaO.

3,981,737
PROCESS FOR PRODUCING LIGHTPROOF TITANIUM DIOXIDE PIGMENT

Toivo Evilampi, and Virpi Laamanen, both of Pori, Finland, assignors to Kemira Oy, Finland

Filed Feb. 14, 1974, Ser. No. 442,409

Claims priority, application Finland, Feb. 20, 1973, 493/73

Int. Cl.² G04B *31/02*

U.S. Cl. 106—300 **10 Claims**

1. In a process for producing a substantially lightproof titanium dioxide pigment suitable for matting artificial fibers, in which a water soluble vanadium compound which is a vanadate or vanadyl salt is added to an aqueous suspension of the titanium dioxide pigment to form a precipitate of a vanadium hydroxide in the amount of 0.01–0.5 percent of the weight of the pigment calculated as V_2O_5 on the surface of the titanium dioxide particles, whereafter the suspension is filtered, washed, and the washed precipitate is thermally dried, and ground, the improvement comprising adding to said aqueous suspension an aluminum compound, which is an aluminate or aluminum salt so as to cause a precipitate of a vanadium hydroxide and an aluminum hydroxide on said titanium dioxide particles, the amount of said aluminum hydroxide being 0.5–5 percent of the weight of the pigment calculated as Al_2O_3 and effecting the thermal drying and the grinding at such a low temperature that the pigment temperature is between 105°C and 300°C and for such a short period that the vanadium hydroxide remains on the surface of the titanium dioxide pigment particles without being calcinated into the particles.

3,981,738

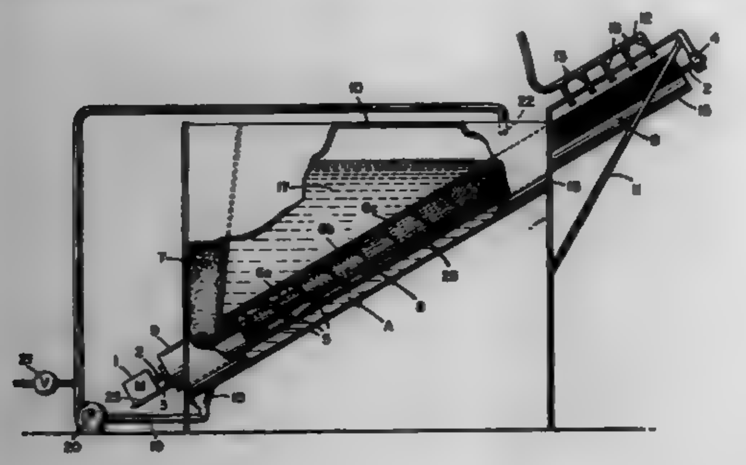
GLUTEN WASHING AND DEWATERING DEVICE

Ganta Venkateswara Rao, Hutchinson; Dale Albert Garinger, Buhler, and Floyd Kent Shoup, Hutchinson, all of Kans., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 18, 1976, Ser. No. 659,160

Int. Cl.^{2} C13L *1/00*

U.S. Cl. 127—25 **22 Claims**



1. A device for separating wheat gluten from wheat starch, bran, and germ, said device comprising:

a. an armature fixed at a angle greater than horizontal, said armature thus having a lower and upper end, including
   i. a cylinder having a smaller diameter at the lower end of said armature and a larger diameter at the upper end of said armature, said cylinder including a plurality of peaked, elbow-shaped ridges on its exterior surface;
   ii. helical flights set in a spiral around and protruding outwardly from said cylinder, said flights having substantially the same diameter throughout the entire length of said cylinder;

b. means for spraying liquid onto the upper end of said armature;

c. a stator substantially enveloping the length and circumference of said armature and spaced at a substantially constant distance from said helical flights, said stator being foraminous over a major portion thereof;

d. tank means for retaining liquid around and within at least a portion of said stator and for collecting liquid introduced by said spraying means, said tank means having a lower and upper end; and

e. feed means communicating with the interior of said stator at the lower end of both said stator and said armature for introducing a gluten-containing wheat product.

3,981,739

CONTINUOUS CRYSTALLIZATION

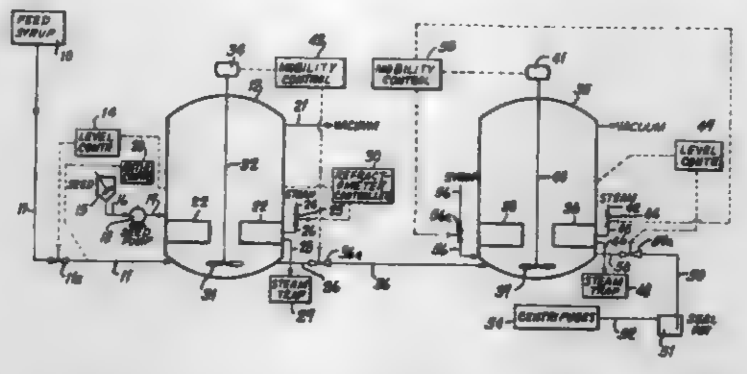
Morris Dmitrovsky, Roslyn Heights, N.Y., and Antoine H. Kokke, Rosemont, Pa., assignors to Amstar Corporation, New York, N.Y.

Filed Aug. 30, 1974, Ser. No. 501,862

Int. Cl.^{2} C13F *1/02;* **C13K** *1/10, 5/00, 11/00*

U.S. Cl. 127—60 **44 Claims**

36. A method of continuously crystallizing crystallizable solute from a solution containing said solute which comprises substantially continuously introducing said solution into a first stage evaporative-crystallization zone, substantially continuously introducing into said first stage evaporative-crystallization zone seed crystals of said solute, concentrating the solution thus-introduced into said first stage evaporative-crystallization zone to produce therein a first stage solution having said solute dissolved therein at a concentration greater than the concentration of said solute in said solution with concomitant growth and production of crystals of said solute in said first stage solution, said solute crystals in said first stage solution having an average crystal size substantially greater than the average crystal size of said solute seed crystals, substantially continuously withdrawing a stream of said first stage solution from said first stage evaporative-crystallization zone and substantially continuously introducing said first stage solution into a second stage evaporative-crystallization zone for evaporative crystallization therein to produce a second stage solution having a total solute content greater than that of said first stage solution and containing solute crystals having an average crystal size substantially greater than the average crystal size of the crystals of said solute in said first stage solution and substantially continuously withdrawing said second stage solution from said second stage evaporative-crystallization zone.



3,981,740

METHOD FOR THE REMOVAL AND INHIBITION OF METAL SCALE FORMATION IN A HYDROCARBON PROCESSING UNIT

George J. Czajkowski, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 19, 1974, Ser. No. 462,479

Int. Cl.^{2} C23F *9/02, 11/16, 14/02*

U.S. Cl. 134—2 **2 Claims**

1. A method of removing metal oxide and mill scale and inhibiting further metal scale formation in a catalytic hydrocarbon conversion processing unit having internal steel surfaces, which comprises simultaneously circulating through said unit, prior to the first cycle catalytic conversion therein, a normally liquid hydrocarbon selected from the group consisting of gas oil, kerosene, straight-run naphtha, and black oils, a gas containing primarily hydrogen, and a sulphur compound selected from the group consisting of hydrogen sulfide, alkyl mercaptans and alkyl sulfides while heating said unit to a temperature of from about 400°F. to about 1200°F., thereby separating loosely bound metal scale from the internal surfaces of the processing unit, and removing thus separated metal scale from the processing unit prior to the catalytic conversion therein.

3,981,741

FIBROUS CLEANING MATERIALS IMPREGNATED WITH A LATEX-MIXTURE

Hirokazu Iino, 4/40, Kasumi-cho, Nishinomiya, Hyogo, Japan

Division of Ser. No. 416,510, Nov. 16, 1973, abandoned. This application Mar. 3, 1975, Ser. No. 555,046

Claims priority, application Japan, Nov. 16, 1972, 47-115082

Int. Cl.^{2} B08B *7/00;* **A47L** *1/08, 13/16*

U.S. Cl. 134—6 **8 Claims**

1. A method of cleaning a soiled surface comprising rubbing in the presence of water the surface to be cleaned with a fibrous cleaning material consisting essentially of a fibrous carrier which is impregnated with a mixture of (1) a latex of at least one rubber selected from the group consisting of natural rubber, butadiene rubber and styrene-butadiene rubber and (2) a polar high molecular weight substance selected from the group consisting of polyvinyl acetate, vinyl acetate-ethylene copolymer, acrylonitrile-butadiene copolymer, polychloroprene and acrylic resin and thereafter drying.

3,981,742

HIGH POWER LEAD ACID BATTERY

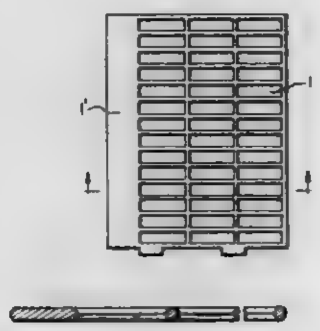
Kunio Yonezu; Masaharu Tsubota, and Kenji Asai, all of Kyoto, Japan, assignors to Japan Storage Battery Co., Ltd., Kyoto, Japan

Filed Feb. 10, 1975, Ser. No. 548,842

Claims priority, application Japan, Feb. 9, 1974, 49-16730; Mar. 18, 1974, 49-31482; June 8, 1974, 49-66711; June 8, 1974, 49-65387

Int. Cl.^{2} H01M *4/36*

U.S. Cl. 429—123 **10 Claims**



1. A lead acid battery including a container enclosing assembled elements each of which comprises a plurality of positive and negative plates each of which is composed of a grid filled with active material and formed with an integral band-shaped portion along the length of only one end thereof facing a side wall of the container, said plates being layered one upon another with separators therebetween in such a way that the respective band-shaped portions for the positive plates and negative plates respectively face opposite side walls of the container, a positive strap connected to said positive plates along at least a part of the length of the band-shaped portions thereof, and a negative strap connected to said negative plates along at least a part of the length of the band-shaped portions thereof.

3,981,743

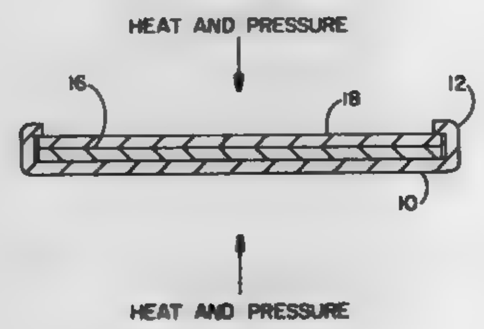
METHOD OF PREPARING A LITHIUM-ALUMINUM ELECTRODE

James Clement Schaefer, N. Royalton Cuyahoga, Ohio, assignor to ESB Incorporated, Philadelphia, Pa.

Filed June 6, 1975, Ser. No. 584,629

Int. Cl.^{2} H01M *35/18, 4/26*

U.S. Cl. 429—218 **6 Claims**



1. The method for preparing a negative lithium-aluminum electrode comprising the steps of:

a. forming a sandwich comprised of sheets of lithium and aluminum such that lithium is disposed between the aluminum layers of the sandwich; and

b. heat soaking the sandwich of step (a) at a temperature below the melting point of lithium while simultaneously applying pressure to the sandwich to assure contact between the abuting surfaces of lithium and aluminum sheets making up the sandwich of step (a) thereby causing the lithium and aluminum to chemically react to form an lithium-aluminum alloy.

3,981,744

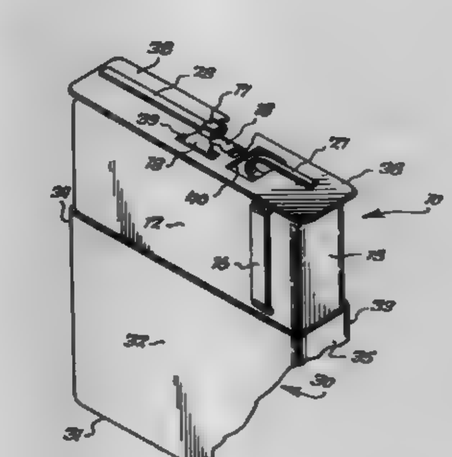
ENCLOSURE FOR LITHIUM-IODINE CELL AND METHOD OF MAKING THE SAME

Wilson Greatbatch, Clarence, and Ralph T. Mead, Kenmore, both of N.Y., assignors to Wilson Greatbatch, Ltd., Clarence, N.Y.

Continuation of Ser. No. 328,312, Jan. 31, 1973, abandoned. This application Oct. 8, 1974, Ser. No. 513,127

Int. Cl.^{2} H01M *4/36*

U.S. Cl. 429—178 **15 Claims**



1. A lithium-iodine cell enclosure comprising:

a. a first hollow casing of a material which is non-reactive with iodine and having an opening at one end, said casing containing a lithium-iodine cell comprising a lithium anode, iodine-containing cathode material and a lithium iodide electrolyte;

b. closure means of a material which is non-reactive with iodine for sealing the opening in said first casing;

c. a second hollow casing enclosing said first casing, said second casing having an opening at one end which is closed by a closure means sealed thereto, said second casing being inverted relative to said first casing whereby said closure means of said first casing is adjacent an end of said second casing opposite said closure means of said second casing so that any iodine-containing material which may happen to leak past said closure means of said first casing must flow along the entire dimension of said first casing before reaching said closure means of said second casing thereby minimizing the probability of any damaging effects from such leakage;

d. said first and second casings being generally of the same shape and in relatively close-fitting relation;

e. a third hollow casing enclosing said first and second casings, said third casing having an opening at one end and which is closed by a lid member hermetically sealed to said third casing; and

f. spacing means between said second casing and said lid member of said third casing for providing a space to receive any substances released from said first or second casings.

12. A method of enclosing a lithium-iodine cell comprising the steps of:

a. providing a first hollow casing of a material which is non-reactive with iodine and having an opening at one end;

b. placing a lithium anode and a cathode current collector in said first casing in spaced relation to each other;

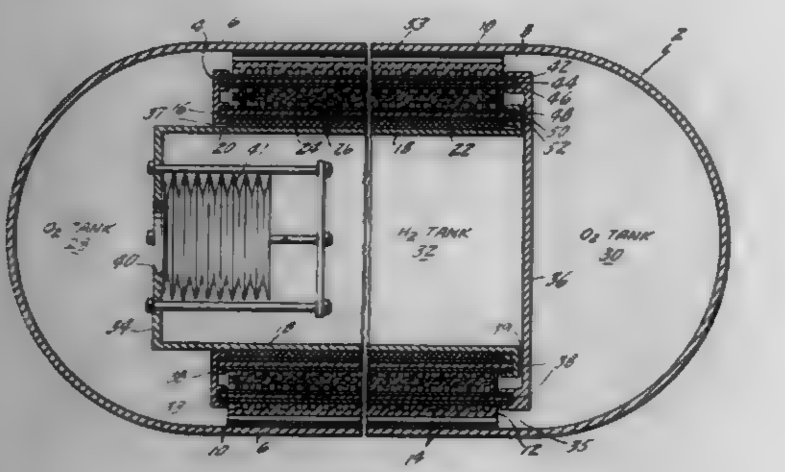
c. introducing iodine-containing material into said first casing and in operative contact with said lithium anode and said cathode current collector;

d. sealing the opening in said first casing;

e. placing said first casing in a second hollow casing having an opening at one end in a manner such that said second casing is inverted relative to said first casing with the sealed end of said first casing adjacent an end of said second casing opposite the opening in said second casing;

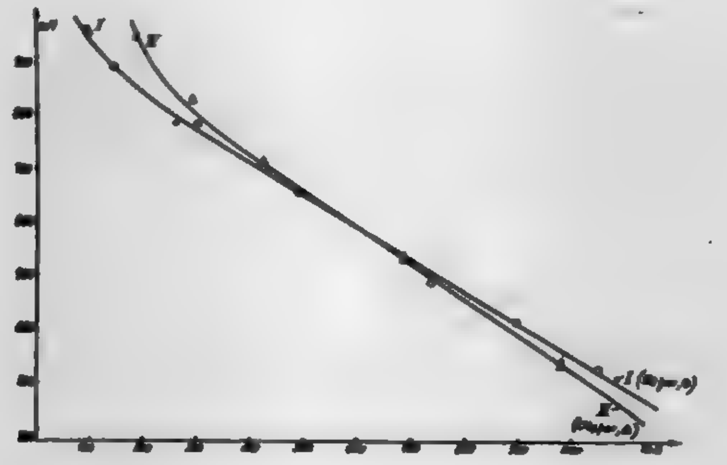
f. introducing potting material into said second casing in a manner encapsulating said first casing, said potting material being non-reactive with iodine;
g. sealing the opening in said second casing;
g. whereby any iodine-containing material which may happen to leak through the sealed end of said first casing must flow along the entire dimension of said first casing before reaching the sealed end of said second casing thereby minimizing the probability of any damaging effects from such leakage;
i. placing said first and second casings in a third hollow casing having an opening at one end; and
j. hermetically sealing a lid member to the opening in said third casing.

3,981,745
REGENERATIVE FUEL CELL
James K. Stedman, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Sept. 11, 1974, Ser. No. 505,126
Disclosure was also published under second Trial Voluntary Protest Program on Feb. 10, 1976
Int. Cl.² H01M *33/00*
U.S. Cl. 204—266 1 Claim



1. A regenerative fuel cell system which operates on hydrogen and oxygen, comprising:
a housing:
a first assembly disposed in said housing including a fuel cell having a hydrogen electrode, a first oxygen electrode and an electrolyte matrix disposed therebetween, and including a first oxygen passage in fluid communication with said first oxygen electrode, said first oxygen electrode being composed of a first material;
a second assembly disposed in said housing including an electrolysis cell having a hydrogen electrode, a second oxygen electrode and an electrolyte matrix disposed therebetween, and including a second oxygen passage in fluid communication with said second oxygen electrode, said second oxygen electrode being composed of a second material different from said first material, said fuel cell hydrogen electrode and said electrolysis cell hydrogen electrode being spaced apart and in facing relationship;
a water matrix disposed in the space between and in contact with said fuel cell hydrogen electrode and said electrolysis cell hydrogen electrode and including portions bridging said hydrogen electrodes for transporting water produced by said fuel cell during fuel cell operation to said electrolysis cell for use during electrolysis cell operation, said water matrix shaped to define hydrogen passages in communication with said fuel cell hydrogen electrode and said electrolysis cell hydrogen electrode, said first assembly having a water storage matrix associated with one of said fuel cell electrodes for storing water produced by said fuel cell during fuel cell operation, said water storage matrix being adjacent said first oxygen electrode of said fuel cell and in fluid communication with said water matrix;
fluid connecting means in communication with said hydrogen passages and said oxygen passages for providing hydrogen to said hydrogen passages and oxygen to said oxygen passages, and including seal means preventing said hydrogen passages from communicating with said oxygen passages; and
means for operating said first assembly always as a fuel cell and said second assembly always as an electrolysis cell, said means being in electrical communication with said assemblies.

3,981,746
ELECTRODE FOR FUEL CELL
Jean Bezaudun, Ris-Orangis, and Joseph Edouard Weisang, Le Havre, both of France, assignors to Compagnie Francaise de Raffinage, Paris Cedex, France
Continuation of Ser. No. 776,841, Sept. 9, 1968, abandoned. This application June 7, 1971, Ser. No. 150,827
Claims priority, application France, Sept. 7, 1967, 67.120332
Int. Cl.² H01M *4/00, 8/00*
U.S. Cl. 429—13 7 Claims

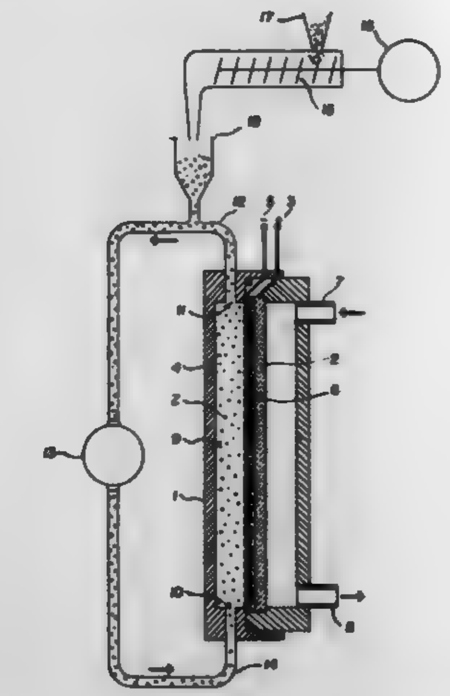


1. A fuel cell having an electrolyte of solid, fritted ceramic, suitable for operation at high temperatures and for operation on a hydrocarbon or hydrogen as a fuel and oxygen or oxygen containing gas as a comburant, consisting essentially of an electrolyte of a cubic-phase stabilized zirconia, a cathode, and an anode therefor, said anode being porous and consisting essentially of an electron collector wherein said collector is selected from the group consisting of cubic-phase stabilized zirconia modified with a uranium oxide, silver and copper and an oxidation catalyst wherein said catalyst is selected from the group consisting of silver and oxides of chromium, and vanadium.

3,981,747
PROCESS FOR PRODUCING ELECTRIC CURRENT BY THE ELECTROCHEMICAL OXIDATION OF AN ACTIVE ANODIC METAL, ESPECIALLY ZINC
Denis Doniat, Mollesulaz; Augusto Porta, and Bernard Bugnet, both of Geneva, all of Switzerland, assignors to Societe Anonyme Automobiles Citroen, France
Continuation of Ser. No. 275,182, July 26, 1972, abandoned. This application Sept. 5, 1974, Ser. No. 503,283
Claims priority, application Switzerland, Aug., 1971, 11361/71
Int. Cl.² H01M *8/06*
U.S. Cl. 429—15 8 Claims

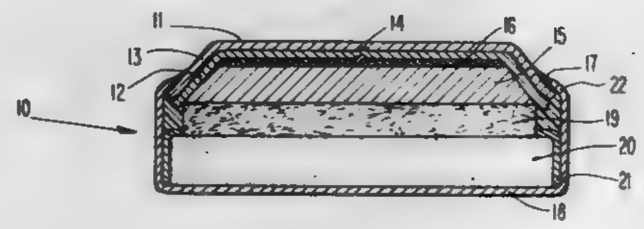
1. In an energy conversion process providing electrical discharge by electrochemical oxidation of a particulate anode-active metal in at least one electrochemical cell containing an electrolyte solution capable of dissolving the products of said oxidation, the improvements consisting of:

a. removing from said cell electrolyte solution containing dissolved products of said oxidation resulting from discharge and adding to said solution a high mass-capacity metal which is dissolved therein so as to thereby chemically displace and precipitate said anode-active metal by reducing the said electrochemical oxidation products dissolved in the electrolye solution, so as to thereby recover said anode-active metal in the form of particles in suspension in the electrolyte solution;



b. recycling the recovered anode-active metal particles in suspension in said electrolyte solution whereby to provide discharge with renewed oxidation of said recovered metal in said cell: and
c. repeating said steps (a) and (b) so as to provide electrical discharge in said cell due to repeated recovery and renewed oxidation of said anode-active metal, with consumption of said high mass-capacity metal which is added to the electrolyte solution and dissolved therein outside said cell.

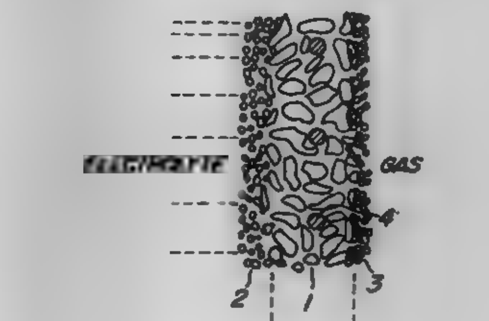
3,981,748
NON-AQUEOUS, PRIMARY BATTERY HAVING A BLENDED CATHODE ACTIVE MATERIAL
Nehemiah Margalit, Levittown, Pa., assignor to ESB Incorporated, Philadelphia, Pa.
Filed Aug. 14, 1975, Ser. No. 604,888
Int. Cl.² H01M *6/00*
U.S. Cl. 429—164 16 Claims



1. A non-aqueous, primary battery having a light metal anode selected from the group consisting of lithium, magnesium, aluminum, beryllium, calcium, sodium, and potassium, an electrolytic solution consisting essentially of an organic solvent containing a light metal inorganic salt dissolved therein, a separator, and a blended cathode mix comprising a blend of silver chromate and a metallic phosphate having a discharge potential in the electroytic solution higher than silver chromate and capable or reacting with silver ions present in the cathode mix to form silver phosphate, and said battery being characterized by having a single silver voltage plateau throughout discharge.

9. A non-aqueous, primary battery of a button cell construction having a light metal anode selected from the group consisting of lithium, magnesium, aluminum, beryllium, calcium, sodium, and potassium, an electrolytic solution consisting essentially of an organic solvent containing a light metal inorganic salt dissolved therein, a separator, and a blended cathode mix comprising a blend of silver chromate and a metallic phosphate having a discharge potential in the electrolytic solution higher than silver chromate and capable of reacting with silver ions present in the cathode mix to form silver phosphate, said cathode mix containing at least about 50% by weight of silver chromate, and said battery being characterized by having a single silver voltage plateau throughout discharge.

3,981,749
GAS DIFFUSION ELECTRODE FOR A BATTERY
Masataro Fukuda, Takatsuki; Tsutomu Iwaki, Kyoto, and Hiroshi Kawano, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 174,137, Aug. 23, 1971, abandoned, which is a continuation of Ser. No. 686,043, Nov. 28, 1967, abandoned. This application Sept. 12, 1973, Ser. No. 396,558
Claims priority, application Japan, Nov. 30, 1966, 41-79022
Int. Cl. H01m *13/00*
U.S. Cl. 429—41 6 Claims

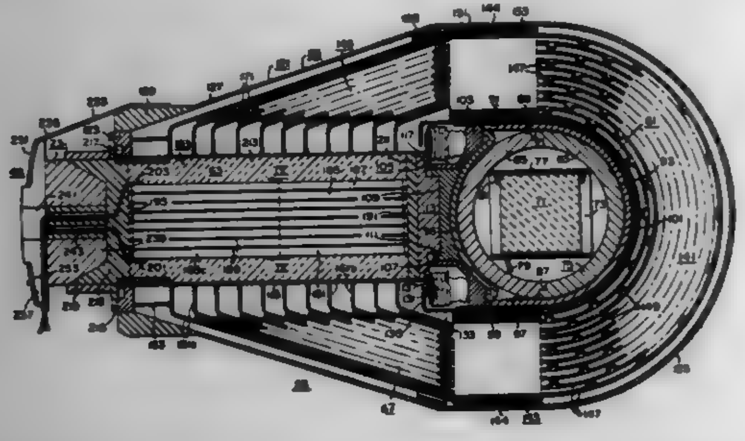


1. A battery comprising:
a gas diffusion electrode, said electrode comprising:
a high porosity sintered metallic body, said body having nickel as its main constituent,
a first layer affixed to one side of said sintered body, said first layer consisting essentially of: a powder-like, alkali-resistive material which is catalytically inert with respect to fuel, and a synthetic resin binder agent;
an electrolyte in contact with said first layer of said gas diffusion electrode; and
means for supplying a gas on the other side of the sintered body of said gas diffusion electrode.

3,981,750
ELECTRICAL GENERATOR
David L. Purdy, Indiana, Pa., assignor to Coratomic Inc., Indiana, Pa.
Filed July 12, 1973, Ser. No. 378,513
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976
Int. Cl.² G21H *1/10*
U.S. Cl. 136—202 22 Claims

1. An electrical generator including a container, a heat source and a thermoelectric unit of the solid-state type having a hot-junction and a cold-junction within said container,

means within said container, contacting substantially the whole outer surface of said unit, for applying stress of the



hydrostatic type to said unit, and means connecting said hot-junction in heat-deriving relationship with said source.

3,981,751
THERMOELEMENT AND THERMOPILE BASED THEREON

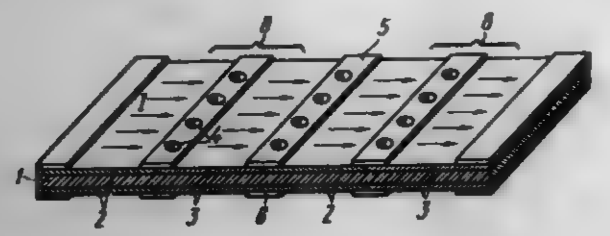
Zinovy Moiseevich Dashevsky, ulitsa Marxa-Engelsa, 15, kv. 52; Yakov Alexandrovich Kaller, ulitsa Kominterna, 11/7, kv. 20; Nikolai Vasilievich Kolomoets, ulitsa Kastanaevskaya, 61, kv. 22, and Igor Vladimirovich Sgibnev, Frunzensky val, 38, kv. 6, all of Moscow, U.S.S.R.

Filed Dec. 3, 1974, Ser. No. 529,234

Claims priority, application U.S.S.R., Dec. 6, 1973, 1975107

Int. Cl.^{2} H01V *1/02*, *1/04*

U.S. Cl. 136—225 2 Claims



1. A thermoelement comprising: a substrate; an n-type branch formed by two semiconductor n-type films applied one opposite the other onto the opposite side of one portion of said substrate; a p-type branch formed by two semiconductor p-type films applied one opposite the other onto the opposite sides of another portion of said substrate; a row of through holes provided in said substrate between said n- and p-type branches; commutation buses for interconnecting said branches, there being one bus on both sides of said row of holes, said buses being electrically interconnected through said holes.

3,981,752
METHOD FOR CONTROLLING THE TEMPERATURE OF STEEL DURING HOT-ROLLING ON A CONTINUOUS HOT-ROLLING MILL

Helmut Kranenberg, Orchard Park, N.Y., and Richard S. Hostetter, Jr., Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation of Ser. No. 416,309, Nov. 15, 1973, abandoned. This application Dec. 10, 1974, Ser. No. 531,272

Int. Cl.^{2} C21D *7/14*

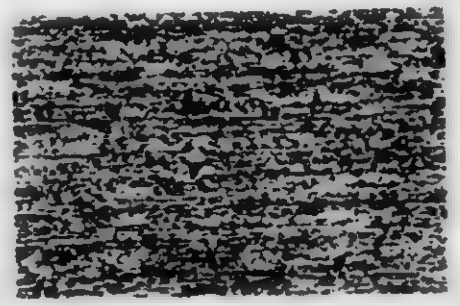
U.S. Cl. 148—12 B 11 Claims

1. A method for producing an as-rolled steel product taken from the group consisting of a bar and rod from a steel billet in a continuous hot rolling mill having a plurality of roll stands in a roughing train, an intermediate train and a finishing train wherein said steel billet is progressively reduced in cross-sectional area, comprising:

a. heating said steel billet to a temperature of about 1950° F. to about 2100° F.,

b. passing said heated steel billet through said roughing train to effect a first reduction in cross-sectional area,

c. passing said heated steel billet through said intermediate train,



d. controlling the temperature of said heated steel billet in step (c) by spraying said steel billet with a liquid coolant in at least one spray cooling unit between selected roll stands of said intermediate train, and

e. passing said steel billet through said finishing train to produce an as-rolled steel product having an integrated mean temperature of not more than about 1750° F.

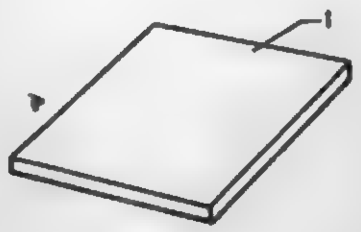
3,981,753
STOP-WELD COMPOSITION AND THE METHOD OF USING IT

William H. L. Hopper, Carlisle, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Division of Ser. No. 725,480, April 30, 1968, abandoned. This application June 26, 1970, Ser. No. 59,859

Int. Cl.^{2} B23K *35/34*

U.S. Cl. 148—23 1 Claim



1. A stop-weld composition for pressure inflating internal cavities in sheet metal at elevated temperatures containing from about 1 to 50% by weight of a metal hydride selected from aluminum hydrides, sodium hydrides, potassium hydrides, calcium hydrides, strontium hydrides, barium hydrides, yttrium hydrides, titanium hydrides, zirconium hydrides, hafnium hyrides, rare earth hydrides, actinide hydrides, zirconium-nickel hydrides, zirconium-hafnium hydrides, zirconium-titanium hydrides and mixtures thereof and the balance of the composition a stop-weld material selected from graphite and a graphite-alumina mixture.

3,981,754
METHOD FOR HEATING SHEET METAL

John Erixson, Vasteras, Sweden, assignor to Granges Engineering AB, Vasteras, Sweden

Continuation-in-part of Ser. No. 309,594, Nov. 24, 1972, abandoned. This application July 3, 1975, Ser. No. 593,161

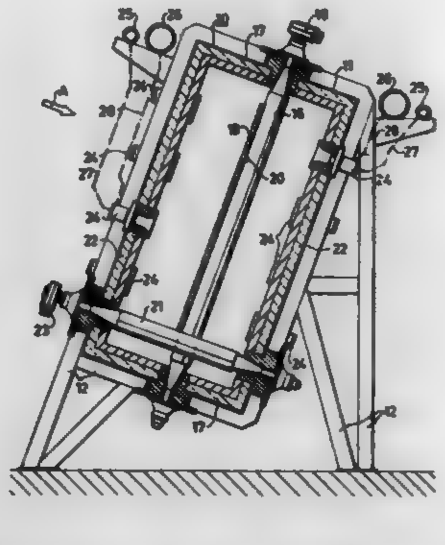
Claims priority, application Sweden, Nov. 30, 1971, 15294/71

Int. Cl.^{2} C21D *9/46*

U.S. Cl. 148—155 4 Claims

1. A method of counteracting or preventing formation and agglomeration of scale and other foreign material on the roller surfaces of a roller path for supporting one flat side of a heavy

steel sheet during heat treatment of said sheet in a furnace, comprising the steps of: transporting the steel sheet endwise in a substantially horizontal direction in said furnace; disposing and supporting said one flat side of the sheet by said roller path in a plane inclined with respect to the vertical and transverse to the furnace, during the entire heat treatment, to sustain only part of the weight of the inclined sheet; supporting the inclined sheet along the lower edge thereof by further sheet-supporting means, substantially at right angles to the roller path, during the entire heat treatment, to sustain the rest of the weight of the inclined sheet; selecting the angle of inclination of the sheet to the vertical so that the actual steel sheet thickness, expressed in millimeters, multiplied by the sine value of said angle of inclination is at most 12 to 15 millimeters to thereby restrict the pressure exerted by the inclined sheet perpendicularly against the rollers of the roller path to a value insufficient to cause the agglomeration of scale on said one flat side of the sheet and said rollers; and applying simultaneously with the described steps a heat treatment to the inclined steel sheet by exposing both said one flat side and the opposite flat side of the sheet between the rollers of the roller path to heat, to shorten the stay time of the sheet in the furnace.



3,981,755
PHOTOCATHODE MANUFACTURE

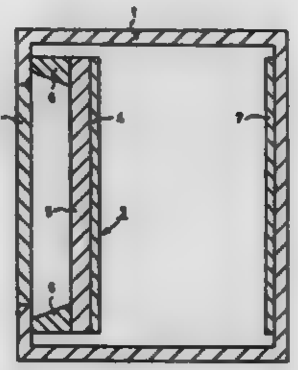
Jonathan Paul Gowers, Salfords near Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 418,295, Nov. 23, 1973, Pat. No. 3,889,143. This application Dec. 19, 1974, Ser. No. 534,205

Claims priority, application United Kingdom, Aug. 21, 1973, 54387/73

Int. Cl.^{2} H01L *7/36*, *7/38*

U.S. Cl. 148—171 5 Claims



1. A method of manufacturing a photocathode which includes a single-crystal layer of photocathode material the thickness of which is of the order of the diffusion length of electrons therein, said method comprising the steps of:

a. growing a single crystal layer of gallium indium phosphide by an epitaxial technique on a single crystal substrate of gallium arsenide, said crystal layer having relative proportions of gallium and indium such that the lattice parameter thereof is substantially the same as that of said substrate,

b. subsequently growing said layer of photocathode material of doped gallium arsenide by an epitaxial technique on the free surface of the gallium indium phosphide layer so that said photocathode material layer has a lattice parameter substantially the same as said single-crystal layer, and

c. subsequently removing at least part of said substrate to expose the gallium indium phosphide.

3,981,756
PROCESS FOR PREPARING HIGH DENSITY SOLID PROPELLANTS

Carl Gotzmer, Jr., La Plata, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 9, 1975, Ser. No. 611,772

Int. Cl.^{2} C06B *45/10*, *21/00*

U.S. Cl. 149—19.3 12 Claims

1. A process for preparing a high density solid propellant which comprises mixing the solid propellant components which comprise a high molecular weight perfluorinated polymer binder and an inorganic oxidizer salt with a dispersion comprising a dissolved low molecular weight perfluorinated polymer, a suspended low molecular weight perfluorinated polymer and a suitable solvent; removing the solvent; and drying the resulting solids.

12. A high density solid propellant consisting essentially of 25 to 70% of NF_4BF_4, 5 to 50% of a polytetrafluoroethylene having an average molecular weight of about 3 million and 10 to 25 percent of a polytetrafluoroethylene having an average molecular weight of about 3700.

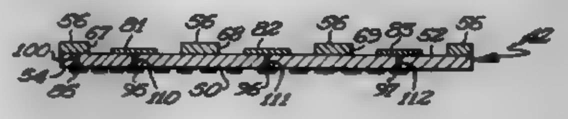
3,981,757
METHOD OF FABRICATING KEYBOARD APPARATUS

Willis August Larson, Mequon, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Apr. 14, 1975, Ser. No. 567,874

Int. Cl.^{2} C23F *1/02*

U.S. Cl. 156—8 23 Claims



1. Method of forming electrode means having a height differential on an insulator to form a touch sensitive electronic switch including: an insulator having a first face; a plurality of first electrode means supported on the first face of the insulator and having a top surface; a plurality of second electrode means supported on the first face of the insulator and having a top surface, with the height of the top surface of the plurality of first electrode means being vertically spaced from the height of the top surface of the plurality of second electrode means, with the plurality of first electrode means being electrically insulated from the plurality of second electrode means, and with plurality of first electrode means and the plurality of second electrode means forming an array of individual switching units for use in a touch sensitive electronic keyboard switch, said method comprising:

a. obtaining an insulator having a first face with at least the first face supporting a conductive layer;

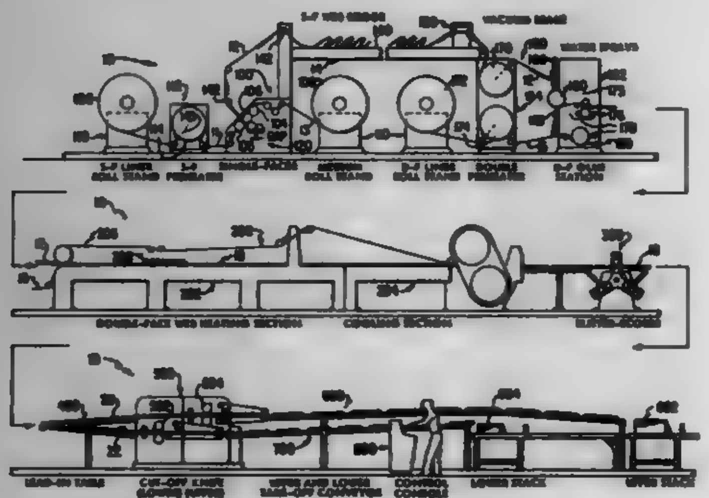
b. forming a pattern of first electrode means in the entire thickness of the conductive layer including apertures therethrough which expose the first face of the insulator; and

c. forming a pattern of second electrode means of a thickness unequal to the thickness of the conductive layer on the first face of the insulator within and spaced from at least one of the apertures exposing the first face of the insulator.

3,981,758
PROCESS CONTROL SYSTEM FOR CORRUGATORS

William Stansbury Thayer, Lutherville, and Charles Edward Thomas, Reisterstown, both of Md., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Nov. 4, 1974, Ser. No. 520,687
Int. Cl.² B32B *31/00*
U.S. Cl. 156—64 54 Claims



1. A method of improving the quality of blanks being made from a double-face corrugated paperboard web issuing from a corrugator machine comprising the steps of:

automatically maintaining substantially constant the heating time of succeeding portions of said double-face web advancing through said corrugator machine to apply a substantially constant amount of heat to said succeeding portions of said double-face web;

automatically maintaining substantially constant the amount of heat applied to succeeding portions of a single-face web forming a first lamina of said double-face web;

automatically maintaining substantially constant the amount of heat applied to succeeding portions of a double-face liner forming a second lamina of said double-face web;

automatically maintaining substantially constant the amount of moisture applied to succeeding portions of said single-face web; and

automatically maintaining substantially constant the amount of moisture applied to succeeding portions of said double-face liner

throughout the range of operating speeds of said corrugator machine.

36. Apparatus for improving the quality of blanks made from a double-face corrugated paperboard web issuing from a corrugator machine, said machine including in combination:

first heating means for heating said double-face web for a substantially constant time;

second heating means for applying a substantially constant amount of heat to a single-face web and to a double-face liner forming said double-face web;

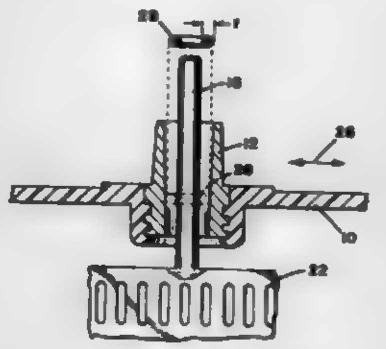
moisture means for applying a substantially constant amount of moisture to said single-face web and said double-face liner; and

control means responsive to the speed of said corrugator machine for controlling said first heating means, said second heating means, and said moisture means to automatically maintain said heating time; said amount of heat, and said amount of moisture substantially constant throughout the range of operating speeds of said corrugator machine.

3,981,759
METHOD OF ASSEMBLING A STORAGE BATTERY USING VIBRATORY ENERGY

Arthur M. Summo, Danbury, Conn., assignor to Branson Ultrasonics Corporation, New Canaan, Conn.

Filed Nov. 17, 1975, Ser. No. 632,240
Int. Cl.² B29C *27/08*
U.S. Cl. 156—73.5 6 Claims



1. A method of assembling a storage battery by frictional energy comprising the steps of:

disposing a thermoplastic cover of the battery having a hollow metallic terminal therein upon mating surfaces of a thermoplastic case having an associated upstanding metallic core member passing through said terminal, the clearance between said terminal and said upstanding core member in the direction of motional displacement being at least equal to the motional displacement between said cover and said case when frictional energy is applied;

applying a static force between said cover and said case in a direction substantially perpendicular to the plane of the mating surfaces between said cover and said case while causing said cover and said case to undergo relative reciprocating translating motion in a direction substantially parallel to the plane of the mating surfaces for causing softened thermoplastic material at the mating surfaces;

stopping the translating motion while maintaining said static force for causing the softened material to rigidify whereby to provide a fused joint between said cover and said case, and

sealing the gap between said terminal and said core.

3,981,760
ADHESION OF GLASS FIBERS TO RUBBER WITH ADHESIVE LAYER COMPRISING A CRESOL-FORMALDEHYDE-RESORCINOL RESIN

Otto C. Elmer, Akron, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

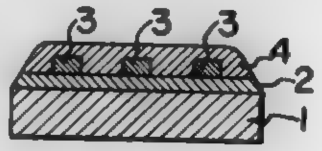
Division of Ser. No. 523,645, Nov. 13, 1974, Pat. No. 3,955,033. This application Jan. 12, 1976, Ser. No. 648,440
Int. Cl.² B29H *5/02, 9/02, 9/04;* C03C *25/02*
U.S. Cl. 156—110 A 6 Claims

1. A method for adhering a glass fiber reinforcing element to a rubber compound which comprised treating said element with a composition consisting essentially of an aqueous alkaline dispersion of 100 parts by weight of a rubbery vinyl pyridine copolymer, from about 8 to 75 parts by weight of a water soluble, heat reactable o-cresol-formaldehyderesorcinol resin, and from about 250 to 1100 parts by weight of water, heating said treated element at a temperature and for a time sufficient to remove essentially all of the water from said composition and to provide said element with a heat cured adhesive in an amount of from about 10 to 40% by weight (dry) based on the weight of said reinforcing element, combining said dried and heat cured adhesive containing reinforcing element with an unvulcanized vulcanizable rubber compound, and vulcanizing the same, the mol ratio of the o-cresol to the resorcinol being from about 1:1 to 1:5 and the mols of formaldehyde being in excess of the total mols of the o-cresol and resorcinol in the resin, and said composition coating and at least substantially totally impregnating said element.

3,981,761
PROCESS FOR MANUFACTURING PRINTED SUBSTRATES AND DECALCOMANIA COMPOSITIONS USED THEREFOR

Yasuhiro Kojima, Inazawa; Niiti Matunaga, Yokkaichi, and Motoki Nawa, Toyoake, all of Japan, assignors to Nippon Toki Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 27, 1973, Ser. No. 392,001
Claims priority, application Japan, Sept. 11, 1972, 47-91119
Int. Cl.² B32B *7/04*
U.S. Cl. 156—235 8 Claims



1. A process for manufacturing a printed substrate comprising the steps of:

providing a decalcomania composition consisting of a permeable backing paper, a water-soluble binder coated thereon, a printed electric circuit pattern made of a conductor material or resistor material formed on the binder, and a removable cover coat formed on the printed pattern,

the removable cover coat consisting essentially of a member selected from the group of (1) silicone rubber, (2) a plastic film containing silicon rubber and (3) a film-forming coating material containing silicon rubber,

immersing said decalcomania composition in water to separate the paper from said printed conductor or resistor material-made pattern attached to the cover coat,

applying said printed pattern which is attached to the cover coat directly onto a flat or non-flat substrate substantially without any material between said printed pattern and said substrate, said substrate being of low porosity selected from the group consisting of alumina or fosterite,

peeling said cover coat off said printed pattern applied to the substrate, and

baking the printed pattern-applied substrate to obtain a conductor or resistor material pattern printed substrate, whereby the conductor or resistor pattern is baked substantially free of any material thereon which would have a deleterious effect on the performance of the resulting printed electric circuit.

5. A process for manufacturing an electric circuit printed substrate comprising the steps of:

providing a decalcomania composition consisting of a permeable backing paper, a water-soluble binder coated thereon, a removable cover coat formed on the water-soluble binder and a printed electric circuit pattern made of a conductor material or a resistor material and formed on the removable cover coat,

the removable cover coat consisting essentially of a member selected from the group of (1) silicone rubber, (2) a plastic film containing silicone rubber and (3) a film-forming coating material containing silicone rubber,

immersing said decalcomania composition in water to separate the paper from said cover coat to which said printed, conductor or resistor material-made pattern is attached,

applying said printed pattern which is attached to said cover coat directly onto a flat or non-flat substrate substantially without any material between said printed pattern and said substrate, said substrate being of low porosity selected from the group consisting of alumina or fosterite,

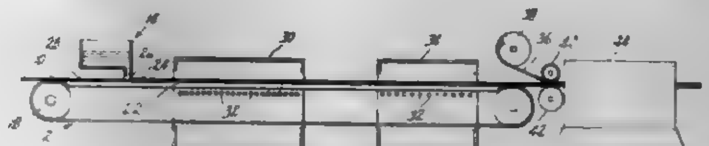
peeling said cover coat off said printed pattern applied to the substrate, and

baking the printed pattern-applied substrate to obtain a conductor or resistor material pattern printed substrate, whereby the conductor or resistor pattern is baked substantially free of any material thereon which would have a deleterious effect on the performance of the resulting printed electric circuit.

3,981,762
METHOD FOR BONDING RESIN FILM TO METAL

Howard G. Davis, Wellesley; Emerson B. Hovey, Wayland, and Edwin E. Sylvester, Danvers, all of Mass., assignors to USM Corporation, Boston, Mass.

Filed Aug. 3, 1972, Ser. No. 278,173
Int. Cl.² B65C *9/25;* C09J *3/14*
U.S. Cl. 156—322 8 Claims



1. The method of bonding a resin film having a thickness of less than 10 mils and having one surface formed with a three-dimensional pattern to a surface of a metal workpiece comprising the steps of coating a surface of the metal workpiece with a heat-curing adhesive solution in a volatile organic solvent of from about 35 to 55 parts by weight of an —NCO terminated prepolymer from reaction of an excess of a polyfunctional isocyanate with at least one —OH terminated polyester or copolyester, from about 5 to about 15 parts by weight of a terpolymer of vinyl chloride, vinyl acetate and maleic anhydride, up to about 10 parts by weight of chlorinated rubber and from about 10 to about 25 parts by weight of a mineral filler, heating said workpiece to a temperature of at least about 400°F. in a period of about 50 seconds and for a time to drive off said solvent and bring said adhesive to an intermediate state of cure having increased firmness but in which it retains thermoplasticity needed to give tackiness and ability to enter into wetting adhesive engagement with said resin film at the temperature of assembly with said resin film, reducing the temperature of said workpiece to a temperature in the range of from about 290°F. to about 325°F. which is below that which will rapidly soften and distort resin film but which will keep said coating tacky for wetting adhesive engagement with said resin film, laying down said resin film on the tacky adhesive coating, passing said assembly between the nip of rolls to apply momentary pressure to join said resin film to said metal workpiece and directly quenching the assembly of metal workpiece and resin film to below the distortion point of said resin film.

3,981,763
APPARATUS FOR THE MANUFACTURE OF DISPOSABLE DIAPERS OR OTHER ARTICLES HAVING STOP MOTION DEVICES THEREIN

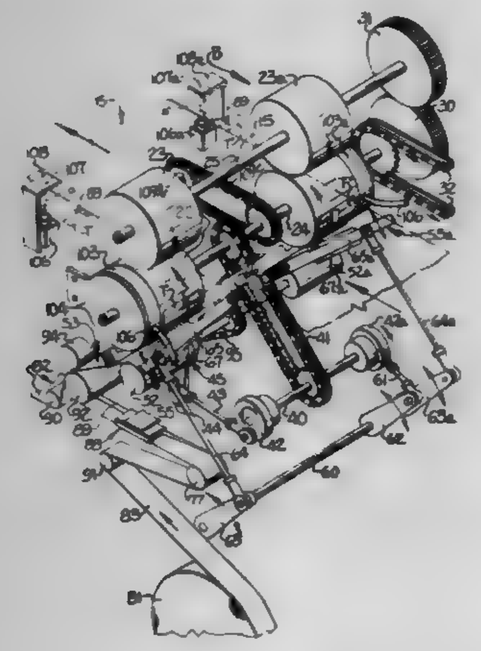
Charles E. Brocklehurst, Honea Path, S.C., assignor to Riegel Textile Corporation, New York, N.Y.

Division of Ser. No. 385,832, Aug. 6, 1973, abandoned. This application Feb. 11, 1975, Ser. No. 549,049
Int. Cl.² B65C *9/40*
U.S. Cl. 156—352 7 Claims

1. In an apparatus for the manufacture of disposable diapers or other articles having spaced apart fastener tabs, labels or strips at predetermined locations thereon and including means for continuously moving material being manufactured into such articles through said apparatus, and means for applying such fastener tabs, labels or strips at the predetermined locations to the moving material; the combination therewith of:

electrically operated drive means operatively connected with said material moving means and said tab, label or strip applying means for driving both of said means;

sensing means positioned adjacent said tab, label or strip applying means and downstream of the path of travel of the material therefrom for sensing the passage of the tabs, labels or strips applied on the moving material; and electric circuit means connected with said sensing means and with said drive means for normally operating said drive means and being responsive to said sensing means for stopping operation of said drive means when said sensing means fails to sense the passage of a tab, label or strip at a predetermined location on the moving material as it passes said sensing means,



whereby operation of said material moving means and said tab, label or strip applying means is stopped in the event of the failure of a tab, label or strip having been applied to the moving material at a predetermined location for repair of said apparatus.

3,981,764
III-V COMPOUND SEMI-CONDUCTOR CRYSTAL GROWTH FROM A LIQUID PHASE ON A SUBSTRACT INCLUDING FILTERING LIQUID PHASE

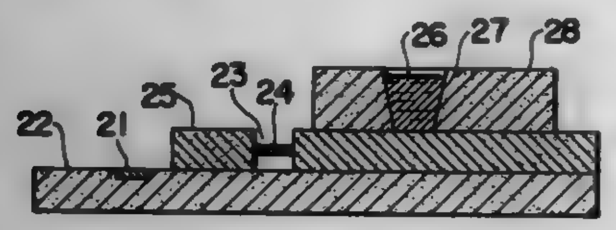
Kazuhiro Ito, Tokyo; Masao Kawamura, Fuchu; Yuichi Ono, and Makoto Morioka, both of Tokyo, all of Japan, assignors to Hitachi, Ltd., Japan

Filed June 25, 1975, Ser. No. 590,336

Claims priority, application Japan, Aug. 12, 1974, 49-91553

Int. Cl.² B01J *17/20;* **C01B** *19/00, 27/00;* **C01F** *7/00*

U.S. Cl. 156—622 **6 Claims**



1. A method for crystal growth, in which a semiconductor crystal is grown in a liquid phase on a substrate crystal, which comprises:

1. preparing a solution for crystal growth comprising a III–V compound semiconductor material containing a predetermined amount of solute which is to be grown,
2. heating said solution to a temperature which is higher than the temperature of crystal growth,
3. cooling said solution to said temperature of crystal growth, whereby a part of said solute crystallizes out as small crystals,
4. separating said solution for crystal growth into two parts, one of which contains said crystals and the other of which does not by initially placing said solution in a first well, by positioning said first well over a second well having filter means through which only liquid can pass adjacent to its upper portion and by allowing said crystals to form in the solution while it is contained in said first well and thereafter allowing liquid in the solution to pass through said filter means into the second well,
5. bringing said substrate crystal into contact with the part of said solution for crystal growth containing no crystals in said second well and
6. forming a temperature gradient, at the latest before said step of bringing said substrate crystal into contact with the part of said solution for crystal growth containing no crystals, whereby the temperature increases in an upward direction from the substrate crystal to the upper surface of the solution for crystal growth.

3,981,765
TREATMENT OF WOOD CHIPS WITH AN ALKALI METAL BOROHYDRIDE SOLUTION FOLLOWED BY MECHANICAL DEFIBRATION

Emilio Kruger, Milan; Guglielmo Ruffini, Lovere (Bergamo); Giovanni Gandini, and Franco Ghislandi, both of Milan, all of Italy, assignors to Vita Mayer & C., Milan, Italy

Continuation-in-part of Ser. No. 518,816, Oct. 29, 1974, abandoned, which is a continuation of Ser. No. 403,421, Oct. 4, 1973, abandoned, which is a continuation of Ser. No. 279,318, Aug. 10, 1972, abandoned, which is a continuation of Ser. No. 872,749, Oct. 30, 1969, abandoned. This application Dec. 17, 1974, Ser. No. 533,638

Claims priority, application Italy, July 30, 1969, 20285/69; Sept. 26, 1969, 22550/69

Int. Cl.² D21C *3/02, 3/12*

U.S. Cl. 162—80 **5 Claims**

1. A chemi-mechanical process for making an unbleached pulp with yield of at least 85% and brightness in excess of 60 G.E. with good color stability and high strength characteristics for papermaking purposes, the steps comprising in sequence:

a. providing a lignocellulosic material in the form of wood chips having a thickness in the range between 1/16 and ⅛ inch, and a dryness between 50 to 90%,
b. impregnating the chips at a temperature from room temperature to 50°C with an alkaline solution comprised of an aqueous solution of sodium hydroxide and an alkali metal borohydride in an amount from 0.1 to 2.0% by weight of the chips and with a ratio of solution to chips of 2:1 to 20:1, said alkaline solution having an alkalinity, based on the Na_2O content of the alkaline material, from 3.5% to not in excess of 16%, by weight, and having a pH in excess of 13,
c. heating the alkaline borohydride-impregenated chips at a temperature not greater than 150°C for at time between 15 minutes to 30 minutes to provide semi-cooked chips,
d. separating said semi-cooked chips from the solution, and
e. defiberizing the separated semi-cooked chips to mechanically separate the fibers of the chips into an unbleached pulp having said brightness, yield, and strength characteristics.

3,981,766
METHOD OF CONTROLLING FUNGI AND BACTERIA IN PAPER PRODUCTS

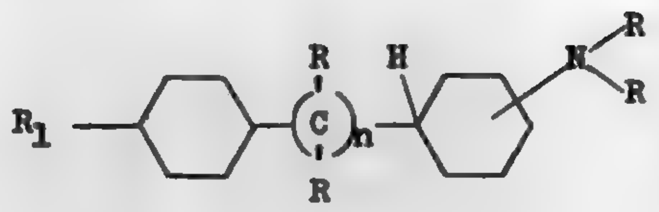
Engelbert Pechhold, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 21, 1975, Ser. No. 551,961

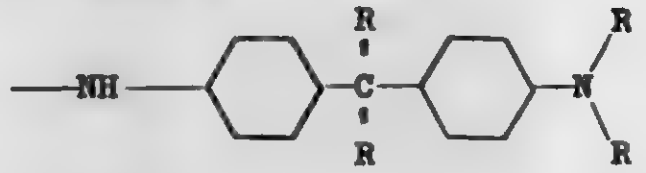
Int. Cl.² D21D *3/00;* **D21H** *5/22*

U.S. Cl. 162—161 **9 Claims**

1. A method of controlling bacteria or fungi comprising applying to the locus to be protected a biocidally effective amount of a substituted cyclohexylamine of the formula:



where R is hydrogen or methyl,
R_1 is hydrogen or



n is 0 or 1 and the halogen, sulfate, nitrate or acetate salt thereof.

3,981,767
APPARATUS AND METHOD FOR CONTROLLING THE STOCK FLOW TO A PAPER MACHINE HEADBOX

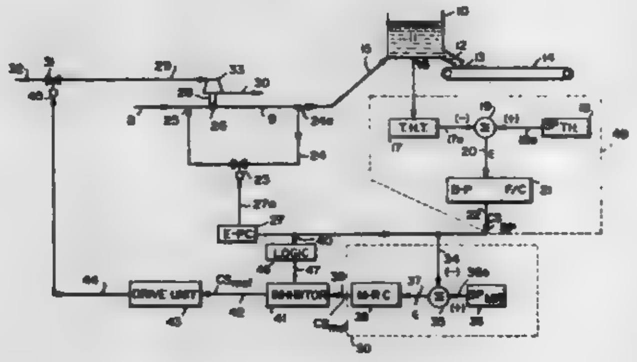
Abdul-Rahman A. Al-Shaikh, Mount Kisco, N.Y., assignor to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 888,431, Dec. 29, 1969, abandoned. This application June 4, 1971, Ser. No. 150,142

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² D21F *1/06, 1/08*

U.S. Cl. 162—198 **34 Claims**



1. In a paper machine headbox system including a headbox, a stock pump, a main stock line from said stock pump which branches into a by-pass line which shunts said main stock line and a headbox stock flow line through which stock may flow from said main stock line to said headbox, an apparatus for controlling the stock flow rate in said headbox stock flow line which comprises:

a. first means for providing by-pass flow control signals related to a desired headbox stock flow rate;
b. a by-pass flow control valve in said by-pass line and responsive to said by-pass flow control signals;
c. second means for providing main stock flow control signals;
d. third means, responsive to said main stock flow control signals, for controlling the stock flow rate in said main stock flow line; and
e. logic-inhibit means, logically responsive to said by-pass flow control signals, for inhibiting said third means response to said main stock flow control signals until said by-pass flow control valve exceeds predetermined limits.

3,981,768
WEB-FORMING METHOD AND APPARATUS FOR PAPER-MANUFACTURING MACHINES

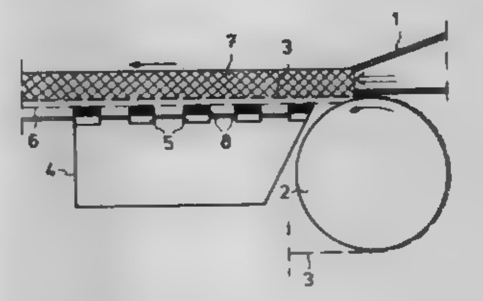
Antti Lehtinen, Jyvaskyla, Finland, assignor to Valmet Oy, Finland

Filed Dec. 3, 1974, Ser. No. 529,112

Claims priority, application Finland, Dec. 5, 1973, 3751/73

Int. Cl.² D21F *1/32*

U.S. Cl. 162—199 **8 Claims**



1. In a paper manufacturing method, the steps of situating stock which issues from a headbox against one side of a travelling wire to form a web at said one side of said wire and a film of liquid at said wire, and simultaneously directing a plurality of small jets of steam toward the opposite side of the wire, which is opposed to said one side thereof, from a location which is in close proximity to said opposite side of said wire, in a manner creating in said film small steam bubbles which implode to provide an implosion action at said opposite side of the wire, in the wire, and in the web which forms at said one side of the wire.

4. In a paper manufacturing machine, travelling wire means for forming on one side of said wire means from stock delivered from a headbox to said one side of said wire means, a web and a film of liquid situated at said wire means, and means at the opposite side of said wire means, in close proximity thereto, for directing jets of steam toward said opposite side of said wire means in a manner creating in said film of liquid small steam bubbles which due to the lesser temperature of the film of liquid, as compared with the temperature of the steam bubbles, implode to subject the web and wire means to implosion action.

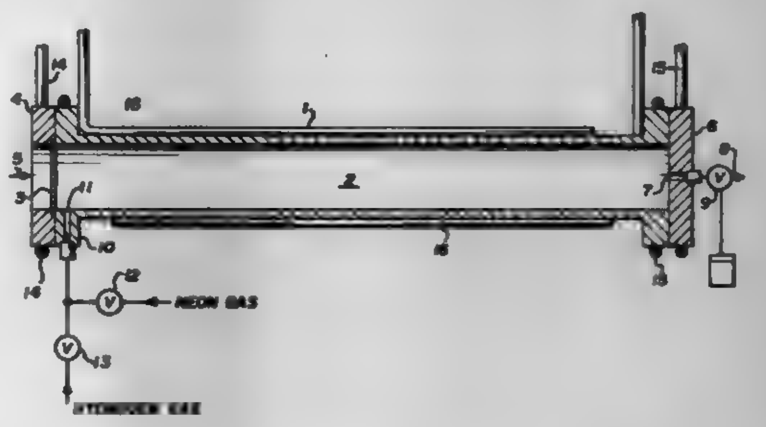
3,981,769
PROCESS FOR PREPARING FLUORINE-18

Harry S. Winchell, Lafayette; Dale K. Wells, Martinez; James F. Lamb, Albany, and Samuel B. Beaudry, Walnut Creek, all of Calif., assignors to Medi-Physics, Inc., Emeryville, Calif.

Continuation-in-part of Ser. No. 247,588, April 26, 1972, abandoned. This application Aug. 29, 1974, Ser. No. 501,557

Int. Cl.² G21G *1/00*

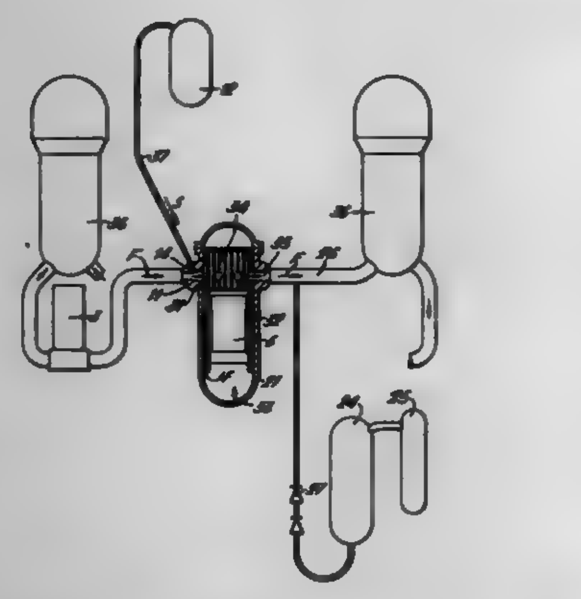
U.S. Cl. 176—11 **7 Claims**



1. A process for making fluorine-18 comprising: irradiating neon-20 gas molecules in an enclosed reaction zone with energetic deuteron particles to form fluorine-18; heating said reaction zone to a temperature in excess of 500°C.; and flushing the heated fluorine-18 from said reaction zone with an inert gas.

3,981,770
PROTECTIVE ARRANGEMENTS FOR COOLING SYSTEMS

John Ernest Middleton, Great Glen, England, assignor to Nuclear Power Company (Whetstone) Limited, England
Filed Apr. 24, 1974, Ser. No. 463,778
Claims priority, application United Kingdom, Apr. 25, 1973, 19899/73
Int. Cl.^{2} G21C *19/40*
U.S. Cl. 176—37 **19 Claims**



1. An emergency protective arrangement for a cooling system of a kind in which a fluid coolant consisting of a liquid, a gas, a vapor or a two-phase fluid is circulated around the system under pressure through a coolant path including a region to be protected against overheating, the protective arrangement comprising:

a. means sensing a condition of the coolant feeding said region,
b. means controlled by said sensing means to inject into the system an auxiliary fluid coolant under pressure following a reduction in the normally circulating coolant feeding said region, which may be due, for example, to a breach in a part of the system upstream from said region, and
c. nozzle means through which the auxiliary fluid is injected into said coolant path,
d. said nozzle means being arranged to maintain a flow of coolant in a normal direction through said region and to prevent cessation or reversal of flow through said region for a period of time following said reduction to permit other protective arrangements to become effective.

3,981,771
MAREK'S DISEASE VACCINE

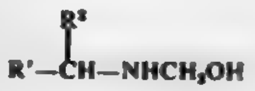
Martin Sevoian, 167 Montague Road, North Amherst, Mass. 01059
Continuation-in-part of Ser. No. 380,615, July 19, 1973, abandoned. This application May 29, 1975, Ser. No. 581,967
Int. Cl.^{2} A61K *39/32*
U.S. Cl. 195—1.3 **5 Claims**

1. Process for preparing vaccine for immunizing poultry against JM and serologically like strains of Marek's disease comprising the steps of producing a virulent strain of modified Marek's disease virus (JM-V) by the multiple serial passage of JM strain of field Marek's disease virus through humoral antibody producing tissue of live young chicks, continuing said serial passage until said virus becomes highly immunogenic and pathogenic as evidenced by lymphoblastic leukemia and mortality of birds within ten days postinoculation, the immunogenicity of said modified virus (JM-V) being evidenced by development in chickens inoculated with the modified virus of antibody levels in the range of 10–350 serum neutralization titers per milliliter, and thereafter attenuating the pathogenicity of said modified virus by serially passing the same through yolk sacs of avian embryos until a vaccine is obtained which is non-contagious, aviremic and non-pathogenic or substantially so but remains highly immunigenic to Marek's disease virus, whereby poultry inoculated with said vaccine is able to withstand infectous challenge of said JM-V and JM strain of Marek's disease virus.

3,981,772
METHOD OF ATTENUATING VIRUSES WITH SIMULTANEOUS STABILIZATION OF THEIR ANTIGENS USING SELECTED AMINOMETHYLOL COMPOUNDS

Alexandr Mikhailovich Poverenny, ulitsa Kurchatova, 22-a, kv. 52; Jury Alexeevich Semin, Ulitsa Zholio-Kjuri, 60, Kv. 41, both of Obninsk Kaluzhskoi oblasti; Mikhail Petrovich Chumakov, Leninsky prospekt, 68/10, kv. 354, Moskow; Antonina Vasilievna Gagarina, poselok Instituta poliomielita, 3, kv. 30; Maria Kronidovna Khanina, poselok Instituta poliomielita, 3, kv. 16, both of Moskovskaya oblast; Evgeny Alexandrovich Tkachenko, ulitsa Yablochkova, 23, kv. 216, and Vyacheslav Nikolaevich Bashkirtsev, ulitsa arkhitektora Vlasova, 33, korpus 1, kv. 23, both of Moscow, all of U.S.S.R.
Filed July 17, 1975, Ser. No. 596,909
Claims priority, application U.S.S.R., Aug. 27, 1974, 2055851
Int. Cl.^{2} C12K *7/00*
U.S. Cl. 195—1.4 **2 Claims**

1. A method of attenuating the infectiousness of viruses with a simultaneous stabilization of their antigens which consists of attenuating a liquid virus-containing material with an aminomethylol derivative having the formula:



$$R'-\overset{R^2}{\overset{|}{C}}H-NHCH_2OH$$

where:
R′ is H, CH_2OH or COOH;
R² is H, $(CH_2)_3CH_3$, $(CH_2)_nNH_2$, $(CH_2)_nCOOH$ or $(CH_2)_nOH$; and
N is an integer of 1 – 4

said compound being in a concentration of from 6.6×10^{-2} to 1.6×10^{-3}M at a temperature from 4° to 32°C, the selection of the temperature depending on the nature of the virus, and the exposure being sufficient for a complete attenuation of viral infectiousness.

3,981,773
PROCESS FOR THE PREPARATION OF GALACTOSE AND BEVERAGES BASED ON GALACTOSE FROM SOLUTIONS CONTAINING LACTOSE

Pierre Galzy, and Guy Jean Moulin, both of Montpellier, France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France
Filed July 18, 1974, Ser. No. 489,736
Claims priority, application France, July 20, 1973, 73.26663; Aug. 3, 1973, 73.28537
Int. Cl.^{2} C12D *13/02;* **C12K** *1/02*
U.S. Cl. 195—31 R **14 Claims**

1. A process for the preparation of a solution containing galactose from a solution containing lactose comprising:

a. inoculating said solution containing lactose with a culture of a living mutant, non-pathogenic, prototrophic yeast having β-galactosidase and gal^- character selected from the group consisting of ascomycetes and basidiomycetes;
b. fermenting said solution to produce a galactose containing solution; and
c. recovering said galactose containing solution.

3,981,774
FERMENTATION OF OXYGENATED HYDROCARBON COMPOUNDS WITH THERMOPHILIC MICROORGANISMS

Donald O. Hitzman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Sept. 30, 1975, Ser. No. 618,191
Int. Cl.^{2} C12B *1/00;* **C12D** *13/06*
U.S. Cl. 195—49 **24 Claims**

1. A method of producing a single cell protein material which comprises culturing a *Bacillus* microorganism species NRRL B-8066 or NRRL B-8065 in an aqueous medium employing an oxygenated hydrocarbon as carbon and energy source under aerobic fermentation conditions and recovering the resulting microorganisms as a single cell protein material.

3,981,775
ENZYME INSOLUBILIZATION

Robert Sydney Kenyon, 29 Glen St., Eastwood, New South Wales, Australia 2122; John Lyndon Garnett, 29 Arabella St., Longueville, New South Wales, Australia 2066, and Michael James Liddy, 20 Carinyan Crescent, Castle Hill, New South Wales, Australia 2154
Filed Jan. 10, 1975, Ser. No. 540,087
Claims priority, application Australia, Jan. 18, 1974, 6298/74
Int. Cl.^{2} C07G *7/02*
U.S. Cl. 195—68 **11 Claims**

1. A process for insolubilizing an enzyme comprising the steps of:

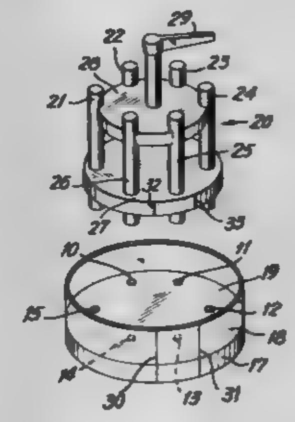
1. grafting a monomer selected from the group consisting of p-nitrostyrene and p-nitrophenylacrylate onto an inert polymeric carrier using an ionizing radiation at a dose of from 1 to 10 megarads under conditions conducive to surface grafting;
2. converting the nitro-group of the grafted polymeric carrier to an amino, diazo or isothiocyanato group; and
3. covalently attaching the enzyme to the amino, diazo or isothiocyanato group to produce an enzymically active conjugate.

3,981,776
MAGNETICALLY RESPONSIVE, BIOLOGICALLY ACTIVE SUBSTANCE AND ASSOCIATED METHODS AND APPARATUS

Rolf Saxholm, Box 3, 1362 Billingstad, Norway
Continuation-in-part of Ser. No. 156,738, June 25, 1971, Pat. No. 3,843,450, which is a continuation-in-part of Ser. No. 705,539, Feb. 14, 1968, abandoned. This application Aug. 30, 1974, Ser. No. 502,107
Claims priority, application Norway, Feb. 16, 1967, 166874/67
The portion of the term of this patent subsequent to Oct. 22, 1991, has been disclaimed.
Int. Cl.^{2} C12K *1/04, 1/10*
U.S. Cl. 195—103.5 R **37 Claims**

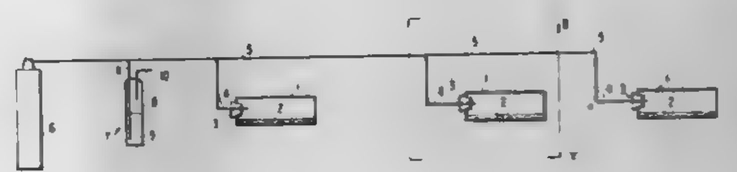
1. An article for carrying out microbiological and similar biochemical examinations, said article comprising a test dose of an antibiotic substance whose reactivity with microorganism of a medium in which the test dose is brought into contact is the subject of investigation, a dry and porous carrier which is free of said test dose and to which said test dose can be added, said carrier being inert to said antibiotic substance, and metallic magnetically responsive means disposed on and supported by said carrier and intact with the carrier as a unitary body for pressing the carrier into substantially uniform contact with the medium under the action of an external magnetic field so that the test dose is brought into contact with said medium, said magnetically responsive means being dimensioned and proportioned relative to said carrier to provide a pre-determined operative contact pressure between the carrier and the medium under the influence of the external magnetic field, the amount of magnetically responsive means being only a very small fraction of that required to achieve the same said contact pressure by its added weight.

17. A method of measuring the relative sensitivity of a microorganism and a biologically active substance, which comprises forming a substrate containing the microorganism; forming an article constituted as a unitary body having incorporated therewith metallic magnetically responsive material; applying a magnetic force to said article in a direction substantially perpendicular to the surface of said substrate to urge the article against the substrate and form good contact therewith, said article being initially porous and dry and free of a biologically active substance, adding said biologically active substance to said article; allowing sufficient time for the biologically active substance to act on the microorganism; and thereafter measuring a sensitivity region surrounding the article.



3,981,777
METHOD AND APPARATUS FOR TESTING MATERIALS FOR LEVELS OF AGENTS INHIBITORY OR TOXIC TO MICROORGANISMS

George Michael Alsop, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
Filed Jan. 19, 1976, Ser. No. 650,356
Int. Cl.^{2} C12K *1/00*
U.S. Cl. 195—103.5 R **11 Claims**



1. Method of testing a material to be subjected to microorganisms to detect the presence or absence of inhibitory or toxic agents capable of inhibiting or preventing growth of said microorganisms comprising mixing a sample of said material with a liquid medium containing microorganisms, said medium being capable of supporting growth of said microorganisms; impregnating the resulting liquid mixture into a porous inert support mass capable of permitting oxygen transfer from ambient gas enveloping said mass to said mixture impregnated into it; incubating said mixture impregnated into said mass for a period of time and under conditions sufficient to promote bacterial growth therein in the absence of inhibitory or toxic agents; removing the incubated mixture from said inert support mass and filtering same through an open-pore filter; and observing the degree of turbidity, or lack of it, in the resulting filtrate.

3,981,778

COKE OVEN HOOD APPARATUS

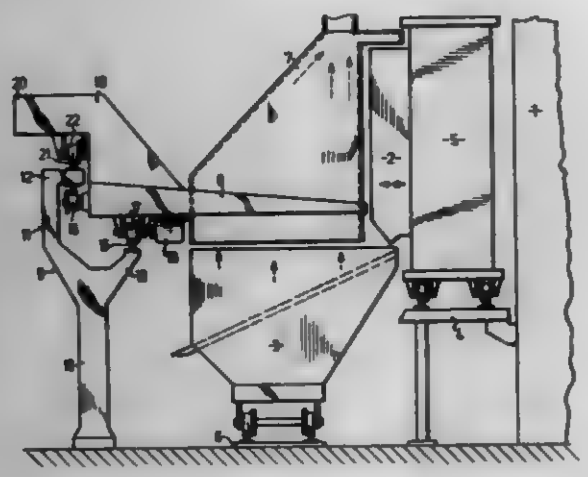
Fritz Schulte, Meerbusch-Buderich; Johann G. Riecker, Ratingen, and Martin Bender, Dusseldorf-Eller, all of Germany, assignors to Hartung, Kuhn & Co. Maschinenfabrik GmbH, Dusseldorf, Germany

Filed Apr. 8, 1975, Ser. No. 566,428

Claims priority, application Germany, Apr. 16, 1974, 2418323

Int. Cl.² C10B *27/00*

U.S. Cl. 202—263 9 Claims



1. In association with a coke oven having a carriageway along one side thereof and a quenching car movable along said carriageway, a combination comprising an elongated support structure extending along that side of said carriageway which is remote from the coke oven; a hood for covering the quenching car; and support frame means movable along said support structure and supporting said hood solely on said support structure.

3,981,779

INHIBITION OF SCALE ON SALINE WATER HEAT EXCHANGE SURFACES WITH IMINODIACETIC ACID COMPOUNDS

Jacob Block, Rockville, and Nelson Samuel Marans, Silver Spring, both of Md., assignors to W. R. Grace & Co., Cambridge, Mass.

Division of Ser. No. 312,343, Dec. 5, 1972, abandoned. This application Aug. 1, 1974, Ser. No. 493,959

Int. Cl.² B01D *3/34;* **C23F** *11/00, 14/00*

U.S. Cl. 203—7 2 Claims

1. A method for inhibiting the deposition of scale on heat exchange surfaces of saline water distillation plants which comprises adding 1 to 25 parts per million of a chelant surfactant selected from the group consisting of salts, N-oleyiminodiacetic acid, its alkali metal and ammonium salts, N-oleoyliminodiacetic acid and its alkali metal and ammonium salts.

3,981,780

COMPOSITIONS FOR INHIBITING THE CORROSION OF METALS

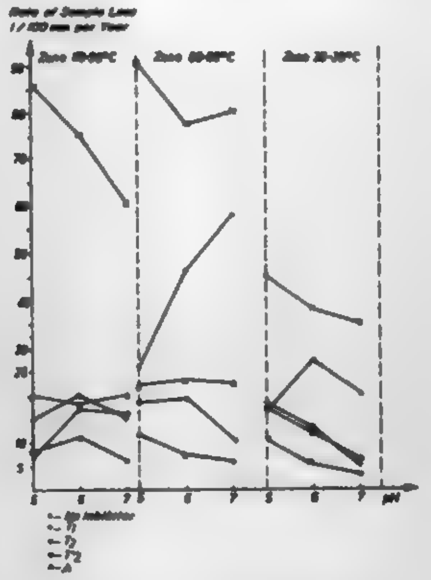
Claude-Jacques Scherrer, Le Havre; Jean-Louis Mauleon, Sainte Adresse, and Jean-Daniel Gmerek, Bleriot Place, all of France, assignors to Compagnie Francaise de Raffinage, Paris, France and Universal Oil Products Company, Des Plaines, Ill., part interest to each

Division of Ser. No. 353,048, April 20, 1973, Pat. No. 3,907,578. This application Mar. 7, 1975, Ser. No. 556,372

Int. Cl.² C23F *11/12, 11/14*

U.S. Cl. 203—7 8 Claims

1. A process for the inhibition of corrosion of metal in a distillation column containing an upper part, an injection port in said upper part, a lower part downstream of said upper part, an injection port in said lower part and a flow of water from said upper part to said lower part, said corrosion due to the contact of said metal with said water containing a chloride ion contaminant which comprises injecting a neutralizing agent through said injection port in said upper part and thereafter injecting an inhibitor composition in said downstream port, said inhibitor composition comprising a mixture of (a) a salt of a dicarboxylic acid containing from about 10 to about 50 carbon atoms and an aliphatic amine containing from 10 to about 30 carbon atoms, said salt containing an acid to amine ratio of about 1:1 to about 3:1 equivalents of acid per equivalent of amine, and (b) cyclic amine or a mixture of cyclic amines containing 10 or less carbon atoms.



3,981,781

ELECTROLYTICALLY FORMED COMPOSITE COATINGS

Yasunobu Mori, Shizuoka, and Shinjiro Otsuka, Hamamatsu, both of Japan, assignors to Suzuki Motor Company Limited, Japan

Filed Aug. 9, 1974, Ser. No. 496,002

Claims priority, application Japan, Aug. 14, 1973, 48-91069

Int. Cl.² C25D *15/00, 3/12*

U.S. Cl. 204—16 19 Claims

1. A method for improving the properties of an electrolytically plated composite layer containing nickel and minute particles codeposited on a substrate comprising the steps of providing a nickel plating electrolyte having a pH of between about 3.5 to 6.0 and containing minute particles, adding to said nickel plating electrolyte a compound containing phosphorous in an amount of between about 0.1 and 4.2 grams per liter, and electrolytically depositing nickel and phosphorous along with said minute particles to produce a composite coating.

3,981,782

ELECTROPLATING OF GOLD AND GOLD COMPOUNDS THEREFOR

Christopher William Bradford, and Harry Middleton, both of London, England, assignors to Johnson Matthey & Co., Limited, London, England

Continuation-in-part of Ser. No. 382,111, July 24, 1973, abandoned. This application Apr. 17, 1975, Ser. No. 568,838

Int. Cl.² C25D *3/48;* **C01G** *7/00*

U.S. Cl. 204—46 G 14 Claims

1. A gold compound obtained by reacting an alkali metal gold sulphite with an alkali metal nitrite, said compound having the empirical formula:

$M_4AuNO_8S_2$ where M is an alkali metal.

12. A gold electroplating bath which comprises an aqueous solution of a gold compound according to claim 1 together with an alkali metal nitrite.

14. A gold compound which has an empirical formula corresponding to $Na_4Au(SO_3)_2(NO_2)$. $NaNO_2$. H_2O.

3,981,783

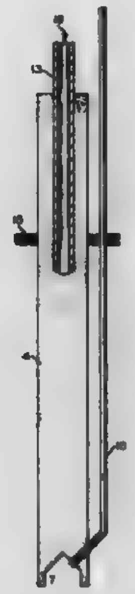
ELECTROCHEMICAL FLUORINATION PROCESS UTILIZING EXCESS CURRENT AND HYDROGEN ADDITION

William V. Childs, and Harold C. Walters, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 23, 1975, Ser. No. 589,738

Int. Cl.² C25B *3/08*

U.S. Cl. 204—59 F 8 Claims



1. A process for the electrochemical fluorination of a fluorinatable feedstock comprising:

passing an electric current through a current-conducting essentially anhydrous liquid, hydrogen fluoride electrolyte contained in an electrolysis cell containing a cathode and a porous carbon anode;

introducing said feedstock into said anode at a point near a bottom thereof and contacting said feedstock with said electrolyte within pores of said anode to thus at least partially fluorinate at least a portion of said feedstock, said current being passed in an amount sufficient to generate an excess of free fluorine;

introducing hydrogen into said anode at a point near an upper end thereof but below a level of said electrolyte and thus into contact with said free fluorine; and

recovering fluorinated product, unreacted feedstock, and HF.

3,981,784

ELECTROLYSIS PROCESS AND APPARATUS

Gerald F. Pace, Casa Grande, Ariz.; John C. Stauter, Arlington Heights, Ill.; Calvin N. Armstrong, and Gary R. Harris, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 29, 1974, Ser. No. 518,841

Int. Cl.² C25C *1/12, 7/00*

U.S. Cl. 204—105 R 9 Claims

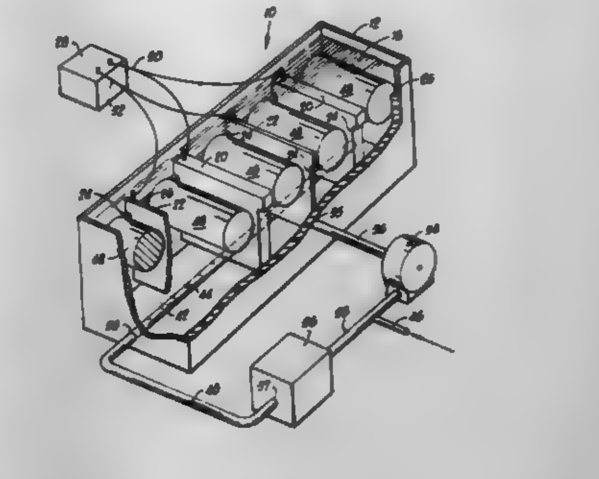
6. A process for electrowinning ions from a liquid electrolyte comprising the steps of:

impressing an electrical potential through said electrolyte by way of electrodes immersed therein;

agitating said electrolyte;

continuously covering said electrolyte with a layer of low conductivity liquid which is immiscible with said electrolyte; and

reducing the area of the interface between said immiscible liquid and said electrolyte to a relatively small area by floating at said interface at least one body member having a density such that said body member floats at the interface between said immiscible liquid and said electrolyte so that agitation of said interface and entrainment of said immiscible liquid in said electrolyte is substantially prevented.



3,981,785

ELECTROCHEMICAL SENSOR FOR REACTIVE GAS MIXTURES

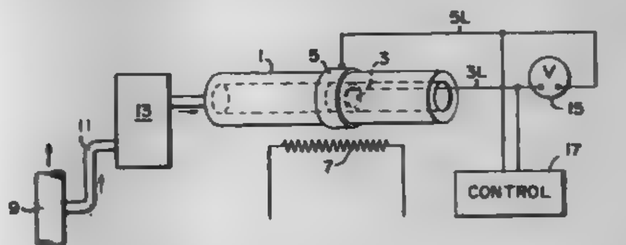
Yehuda L. Sandler, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 18, 1969, Ser. No. 843,038

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 S 8 Claims



1. An electrochemical device for monitoring constituents of an oxygen-fuel mixture comprising, a solid electrolyte electrochemical cell having a first and second electrode disposed on opposite surfaces thereof, said first electrode has a composition exhibiting negligible catalytic action on said mixture, means for supplying a first portion of said mixture to said first electrode and a second portion of said mixture to said second electrode, said first portion of said mixture forming an oxygen reference media and said first electrode serving as an oxygen reference electrode, and catalytic means for equilibrating said second portion of said mixture, said electrochemical device generating an EMF indicative of the difference between the oxygen content of said first portion of said mixture and the equilibrated second portion of said mixture.

3,981,786

ECM AND EDM TOOLING FOR PRODUCING HOLES IN AIRFOIL TRAILING EDGES

Laurance R. Andrews, Agawam, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 19, 1974, Ser. No. 534,314

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 10, 1976

Int. Cl.² C25F *7/00;* **B23K** *9/24*

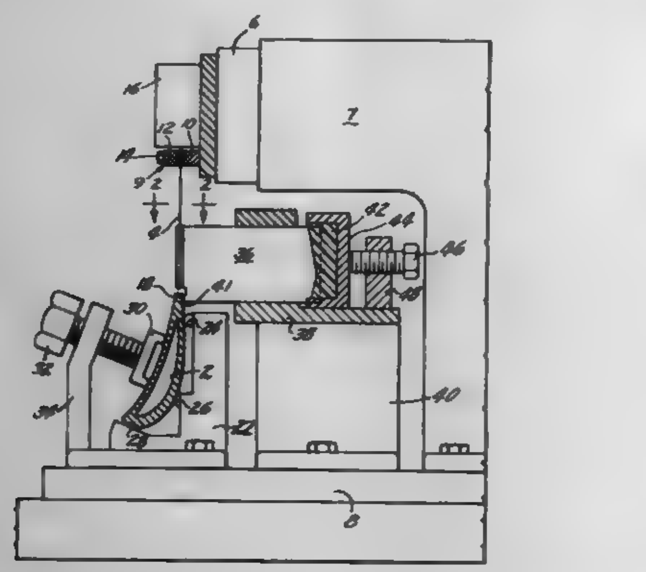
U.S. Cl. 204—224 M 10 Claims

1. A device for supporting a plurality of electrode tubes for drilling a row of holes in a workpiece, said device including:

a base,

a locating fixture for a workpiece,

a plurality of electrodes,
a support for the electrodes movable toward and away from the fixture,
a plurality of guides for the electrodes adjacent to the fixture,
a plurality of movable slides in parallel arrangement, one for each guide and on which the respective guides are mounted,



locating means on each slide having a surface engageable with a portion of the workpiece adjacent to the desired location of the hole therein, and
resilient means acting on each slide in a direction substantially at right angles to the movement of the support for holding it against the workpiece with the electrode properly located relative to the workpiece.

3,981,787
ELECTROCHEMICAL CIRCULATING BED CELL

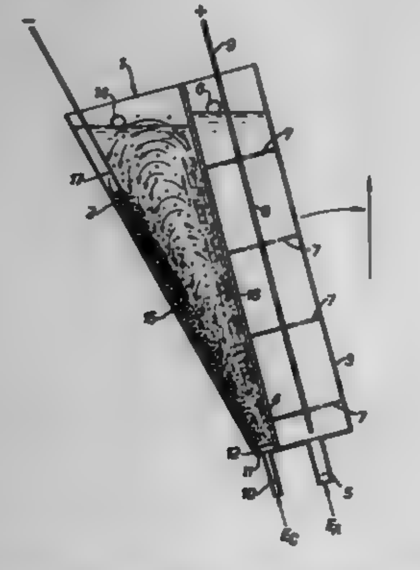
George Stephen James, Johannesburg; Bruce Ian Dewar, Randburg, and Walter Rudolf Moergeli, Roodepoort, all of South Africa, assignors to Parel Societe Anonyme, Luxembourg, Luxembourg

Division of Ser. No. 493,645, July 30, 1974. This application June 27, 1975, Ser. No. 590,862

Claims priority, application South Africa, Aug. 3, 1973, 73/5310; Aug. 3, 1973, 73/5311; Dec. 14, 1973, 73/9490; Dec. 14, 1973, 73/9491; Dec. 14, 1973, 73/9494; May 24, 1974, 74/3330

Int. Cl.² C25B *11/02, 13/02*

U.S. Cl. 204—252 **14 Claims**



1. An electrode system, suitable for use with a counter electrode to perform an electrochemical process in accordance with the invention, which electrode system comprises a particulate electrode, a current conductor, a vessel containing said particulate electrode and current conductor and having an ion-permeable wall at least a part of which is inclined towards the particulate electrode, and means for flowing a fluid medium through said vessel in contact with said particulate electrode.

3,981,788
CAUSTIC ALKALI PRODUCING MULTIPLE VERTICAL DIAPHRAGM TYPE ELECTROLYTIC CELL ADMITTING OF EASY ASSEMBLY

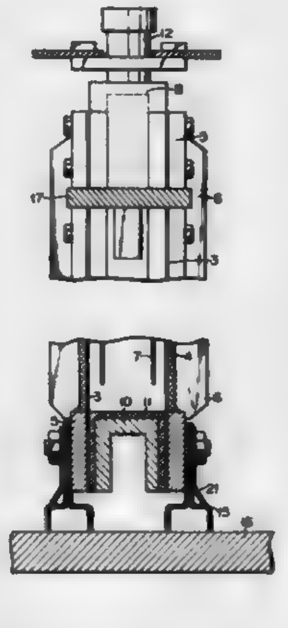
Yoshikazu Kokubu; Isao Okazaki, and Haruo Shikano, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1975, Ser. No. 605,381

Claims priority, application Japan, Aug. 23, 1974, 49-96833

Int. Cl.² C25B *9/02, 1/26*

U.S. Cl. 204—266 **3 Claims**



1. In a caustic alkali-producing multiple vertical diaphragm type electrolytic cell, wherein a plurality of vertical flat box-shaped unit anode chamber sets are assembled in parallel in a cathodic cell case, each said unit anode chamber set comprises main walls formed of a pair of diaphragms and a pair of cathode wire nets stretched on the outside of said diaphragms, and a pair of anode plates received in said anode chamber so as to face said diaphragms, an improvement characterized in that a plurality of conductor metal parts are spatially fitted to the frame of cathode wire nets of each unit anode chamber set at the lower end portion thereof; the outsides of both narrow crosswise walls of each unit anode chamber set are fitted respectively with a ribbed plate; the inner walls of the cell case are fitted with counterpart ribbed plates; and said both ribbed plates are connected with a tightening metal part, to press the unit anode chamber sets against the bottom plate of the cathodic cell case for electrical connection.

3,981,789
APPARATUS FOR OIL DEWAXING

Charles W. Harrison; Herbert J. Pitman, both of Nederland, and Glenn A. Senters, Beaumont, all of Tex., assignors to Texaco Inc., New York, N.Y.

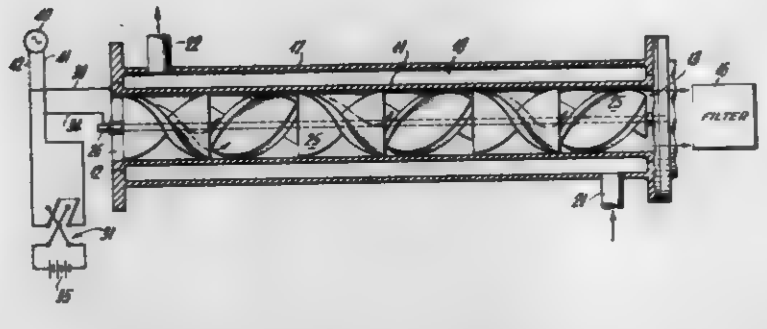
Filed Dec. 16, 1974, Ser. No. 532,961

Int. Cl.² C25F *7/02, 7/00*

U.S. Cl. 204—272 **1 Claim**

1. Apparatus for dewaxing oil containing some waxy constituents, comprising in combination,
an elongated cylindrical container for said oil having an inlet and an outlet for permitting said oil to flow therethrough,
said container being constructed of electrically conductive material and forming an electrode for applying an electromotive force to said oil flowing therein,
another electrode being formed by an axially located electrically conductive shaft extending uninterruptedly through said container,

a plurality of thin helical surfaces alternately twisted in opposite rotations and filling said container from said inlet to said outlet for mixing said oil as it flows through,
said helical surfaces being constructed of electrically insulating material and covering said conductive shaft,



circuit means for connecting said electromotive force to said two electrodes including switch means for periodically reversing the polarity thereof,
a jacket surrounding said container for circulating a coolant therein, and
filter means for separating said waxy constituents following crystallization thereof.

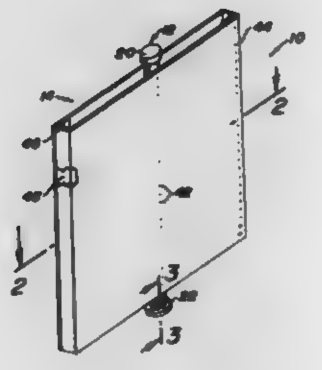
3,981,790
DIMENSIONALLY STABLE ANODE AND METHOD AND APPARATUS FOR FORMING THE SAME

Richard O. Olson, Parma, and Gerald R. Pohto, Mentor, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Division of Ser. No. 368,843, June 11, 1973, Pat. No. 3,895,210. This application Oct. 11, 1974, Ser. No. 514,143

Int. Cl.² C25B *9/00, 11/02, 11/10*

U.S. Cl. 204—286 **7 Claims**



1. A dimensionally stable anode for use in an electrolytic cell comprising:
at least one generally cylindrical anode riser member;
a pair of metal sheets joined to generally diametrically opposite sides of said riser, each sheet having a major, generally planar, extent with first and second spaced edge portions, each said sheet being joined to said riser member such that their respective planar extents are parallel and the first edge portion of each is generally parallel to and aligned with the second edge portion of the other said sheet, the second edge portion of each sheet being bent to have an integral leg portion extending generally toward the first edge portion of the other sheet a distance substantially equal to the outside diameter of said riser member with each leg portion terminating in a tab portion extending parallel to the first edge portion of the other sheet and joined thereto; and,
an electrically conductive surface covering each said sheet.

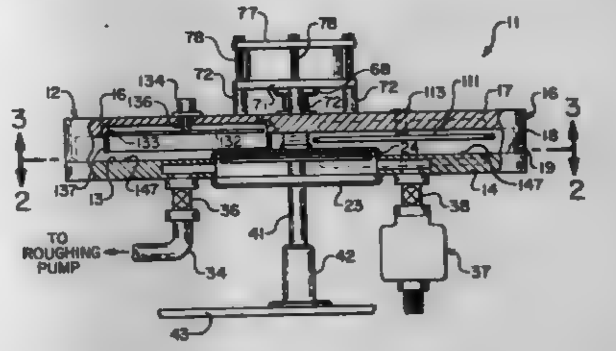
3,981,791
VACUUM SPUTTERING APPARATUS

Warren C. Rosvold, Sunnyvale, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Mar. 10, 1975, Ser. No. 556,584

Int. Cl.² C23C *15/00, 13/08*

U.S. Cl. 204—298 **8 Claims**



1. In a vacuum sputtering apparatus for treating articles, a housing forming a main vacuum chamber having a plurality of work stations therein, at least one sputtering apparatus mounted in at least one of the work stations, means connected to the vacuum chamber for forming a vacuum in the vacuum chamber, said housing having a wall with an opening formed therein through which the articles can be inserted and removed from the main vacuum chamber, first and second sealing members for forming sealing engagement with opposite sides of the wall and forming in combination with the wall a lock chamber, means connected into the lock chamber to create a vacuum in the lock chamber, means for moving the first sealing member into and out of engagement with said wall whereby articles may be inserted into and removed from said chamber, means for moving said second sealing member into and out of engagement with said wall whereby when said sealing member is out of engagement with said wall, articles which have been inserted into the lock chamber can be removed, and means in the main chamber for intermittently advancing articles from the lock chamber and moving the same progressively through the work stations in the main vacuum chamber and thence back into the lock chamber whereby articles can be inserted into the lock chamber, removed therefrom and advanced progressively through the work stations and thereafter inserted in the lock chamber for removal therefrom.

3,981,792
HEAT EXCHANGE METHOD FOR SERIES FLOW REACTORS

Norman H. Scott, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 527,007, Nov. 25, 1974. This application Nov. 6, 1975, Ser. No. 629,726

Int. Cl.² C10G *39/00*

U.S. Cl. 208—49 **15 Claims**

1. A method of heat exchanging a feed stream to a hydrocarbon conversion process which comprises the steps of:
a. passing said feed stream into said process at a measured rate of flow;
b. dividing said feed stream into a first fluid stream having a first rate of flow which is controlled in response to a first temperature and a second fluid stream having a second rate of flow;
c. dividing said second fluid stream into a third fluid stream having a third measured rate of flow which is controlled in response to a second temperature and a fourth fluid stream having a fourth measured rate of flow which is controlled in response to said measured rate of flow of said feed stream;
d. dividing a hydrogen-rich vapor stream into a first portion proportional in quantity to said third measured rate of

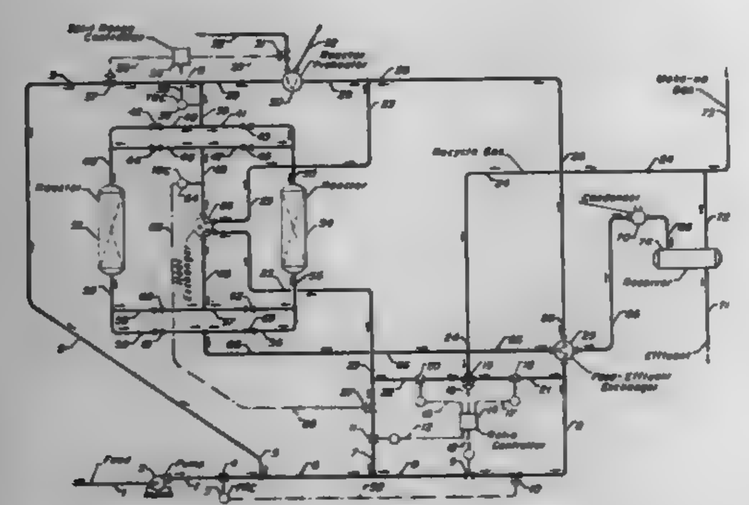
flow and a second portion proportional in quantity to said fourth measured rate of flow, combining said first portion with said third fluid stream to effect the formation of a first reactant stream, and combining said second portion with said fourth fluid stream to effect the formation of a second reactant stream;

e. passing said first reactant stream through a first heat exchange means and effecting a heating of said first reactant stream, and passing said second reactant stream through a second heat exchange means and effecting a heating of said second reactant stream;

f. combining said first reactant stream and said second reactant stream and effecting the formation of a third reactant stream;

g. passing said third reactant stream through a feed preheater means to which there is charged a heating medium having a rate flow controlled in response to said first fluid temperature;

h. combining said third reactant stream with said first fluid stream to effect the formation of a combined reactant stream;



i. passing said combined reactant stream into a first reaction system comprising a first reaction zone to effect the production of a first reaction system effluent stream;

j. measuring a temperature within said first reaction system to determine said first temperature;

k. passing said first reaction system effluent stream into said first heat exchange means to effect the heat exchanging of said first reaction system effluent stream with said first reactant steam;

l. passing said first reaction system effluent stream into a second reaction system comprising a second reaction zone to effect the production of a second reaction system effluent stream;

m. measuring a temperature within said second reaction system to determine said second temperature; and,

n. passing said second reaction system effluent stream into said second heat exchange means to effect the heat exchanging of said second reaction system effluent stream with said second reactant stream.

3,981,793

AUTOMATIC CONTROL OF A HYDROCRACKER

David A. Christie, and James W. Hobbs, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 30, 1975, Ser. No. 591,920

Int. Cl.^{2} C10G *13/00*

U.S. Cl. 208—108 **11 Claims**

1. A method for controlling the conversion of a hydrocracker comprising

a. passing a stream of fresh oil feed into the feed inlet portion of said hydrocracker as part of the charge thereto,

b. passing at least one hydrogen stream into the feed inlet portion of said hydrocracker as part of the charge thereto,

c. withdrawing reactor effluent from said hydrocracker,

d. separating from said reactor effluent a recycle oil stream,

e. passing said recycle oil stream into the feed inlet portion of said hydrocracker as part of the charge thereto,

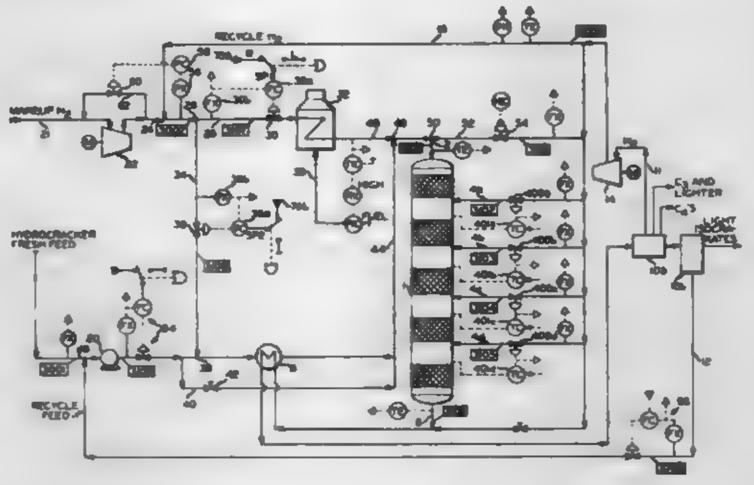
f. determining the rate of total oil flow into the hydrocracker and generating a total oil flow rate signal responsive thereto,

g. generating hydrogen mass flow rate signals for each hydrogen stream introduced into the reactor,

h. determining the inlet temperature of the charge to the hydrocracker at the feed inlet portion thereof and generating an inlet temperature signal responsive thereto,

i. determining the temperature of the effluent withdrawn from the hydrocracker proximate to the outlet portion thereof and generating an outlet temperature signal responsive thereto,

j. automatically computing from the signals generated in step (f) through (i) an enthalpy balance conversion and generating an enthalpy balance conversion signal responsive thereto,



k. determining the flow rate of said recycle oil stream and generating a recycle oil flow rate signal,

l. automatically computing from said total oil flow rate signal and from said recycle oil flow rate signal a material balance conversion and generating a material balance conversion signal responsive thereto,

m. generating an inlet temperature control signal responsive to both the material balance conversion signal and the enthalpy balance conversion signal, with the further provision that the material balance conversion is calculated for a first set of parameters and the enthalpy balance conversion is calculated for a second set of parameters determined at a time subsequent to the determination of the first set of parameters,

n. generating a control signal responsive to the inlet temperature control signal and the inlet temperature signal.

o. regulating the temperature of the charge to the hydrocracker at the feed inlet port thereof responsive to said control signal such as to control the actual conversion rate of the hydrocracker to keep it at a desired value.

3,981,794

AROMATIZATION PROCESS AND CATALYSTS

Paul E. Eberly, Baton Rouge, La., assignor to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 395,935, Sept. 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 183,382, Sept. 24, 1971, abandoned. This application Dec. 9, 1974, Ser. No. 531,061

Int. Cl.^{2} C10G *35/08;* C07C *5/30;* B01J *23/16*

U.S. Cl. 208—138 **24 Claims**

1. Process for the preparation of aromatic hydrocarbons from a feedstream containing n-C_6^+ hydrocarbons selected from the group consisting of paraffins, olefins and mixtures thereof comprising contacting said feedstream in a reaction zone maintained at temperatures ranging from about 600° to about 1200°F. and at pressures ranging from about 0 to about 300 psig with a catalyst consisting essentially of from about 0.05 to about 5% of palladium metal, from about 0.1 to less than 2% chromium oxides, and from about 0.01 to about 4.5% by weight of an alkali metal oxide promoter, on a high surface area support.

3,981,795

HYDROCARBON CONVERSION WITH AN ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 8, 1975, Ser. No. 602,935

Int. Cl.^{2} C10G *35/08;* C07C *3/28, 5/32;* B01J *23/62*

U.S. Cl. 208—139 **23 Claims**

1. A process for converting a hydrocarbon which comprises contacting the hydrocarbon at hydrocarbon conversion conditions with an acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % cobalt, about 0.01 to about 5 wt. % bismuth, and about 0.1 to about 3.5 wt. % halogen, wherein the platinum group metal, catalytically available cobalt, and bismuth are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum group metal is present in the elemental metallic state, and wherein substantially all of the catalytically available cobalt is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under hydrocarbon conversion conditions or in a mixture of these states.

3,981,796

DESULFURIZATION OF BLACK OIL UTILIZING A PRETREATED COBALT-MOLYBDENUM CATALYST

Lee Hilfman, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 418,700, Nov. 23, 1973, Pat. No. 3,933,683. This application July 21, 1975, Ser. No. 597,627

Int. Cl.^{2} C10G *23/02;* C07C *5/10;* B01J *27/04*

U.S. Cl. 208—215 **2 Claims**

1. A black oil desulfurization process utilizing a hydrogenation catalyst containing cobalt and molybdenum components present in oxide form which catalyst is activated according to a method which comprises the steps of:

a. intimately contacting said hydrogenation catalyst with gaseous hydrogen, containing a sulfur compound, at a temperature within the range of from about 550°F. to about 800°F. for a sufficient time to effect the reduction and sulfiding of a major proportion of said components; and,

b. stripping the resulting reduced and sulfided catalyst with substantially pure hydrogen at a temperature within the range of from about 750°F to about 900°F.

3,981,797

CONTROL OF HYDROCARBON DEASPHALTING PROCESS

James S. Kellar, Des Plaines; Don B. Carson, Mount Prospect, and David M. Boyd, Claredon Hills, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed July 21, 1975, Ser. No. 597,625

Int. Cl.^{2} C10G *21/00*

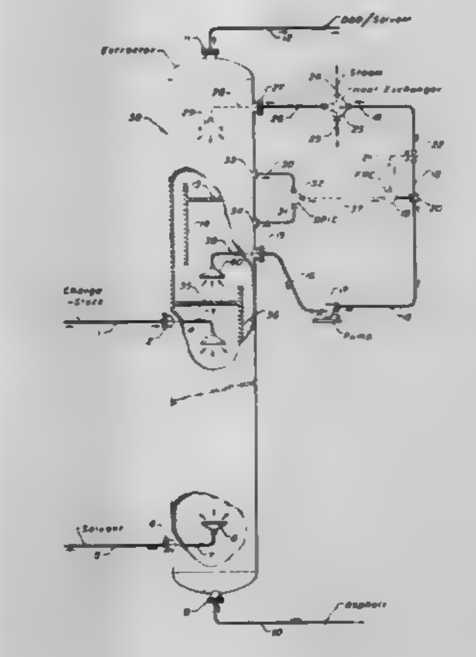
U.S. Cl. 208—309 **13 Claims**

1. A process for deasphalting an asphalt-containing hydrocarbonaceous charge stock, in a solvent extraction zone, which comprises the steps of:

a. countercurrently contacting said charge stock, introduced into said extraction zone through a first locus thereof, with a hydrocarbon-selective solvent, introduced into said zone through a lower second locus thereof, at extraction conditions selected to produce a solvent-lean asphaltic stream and a solvent-rich hydrocarbon stream;

b. withdrawing said asphaltic stream from said extraction zone through a third locus thereof, said third locus being below said second locus, and a solvent-rich deasphalted oil stream from an upper fourth locus thereof;

c. withdrawing at least a portion of said solvent-rich hydrocarbon stream through a fifth locus intermediate said first and fourth loci, sid fifth locus being in open communication with a lower liquid-collecting zone within a divided top-heating section of said extraction zone;



d. increasing the temperature of said portion of the solvent-rich hydrocarbon stream and introducing the heated portion into said extraction zone through a sixth locus intermediate said fourth and fifth loci, said sixth locus being in open communication with an upper liquid-collecting zone within said divided top-heating section;

e. determining the pressure differential between said lower and upper liquid-collecting zones; and,

f. adjusting the rate at which said solvent-rich hydrocarbon stream is withdrawn through said fifth locus in response to said differential pressure.

3,981,798

LIQUID/LIQUID EXTRACTION USING CERTAIN ETHERS AND ESTERS

Donald G. Ries, and David G. Braithwaite, both of Brookhaven, Miss., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 501,519, Aug. 29, 1974, abandoned. This application May 5, 1975, Ser. No. 574,209

Int. Cl.^{2} C10G *21/16*

U.S. Cl. 208—323 **3 Claims**

1. A process for the liquid/liquid extraction of aromatic hydrocarbons from organic solvent mixtures which comprises the steps of:

A. contacting the organic solvent mixture with an extractant selected from the group consisting of mono-methylether of glycerine, monoethylether of glycerine and a mixture of glycerine monoacetate and glycerine diacetate in a volume ratio to the solvent mixture of from 1:10 to 10:1;

B. mixing the extractant with the organic solvent mixture for a period of time necessary to extract substantially all of the aromatic hydrocarbons into the extractant;

C. separating the extractant containing aromatic hydrocarbons from the organic solvent mixture;

D. recovering the aromatic hydrocarbons from the extractant.

3,981,799
BAUM JIG

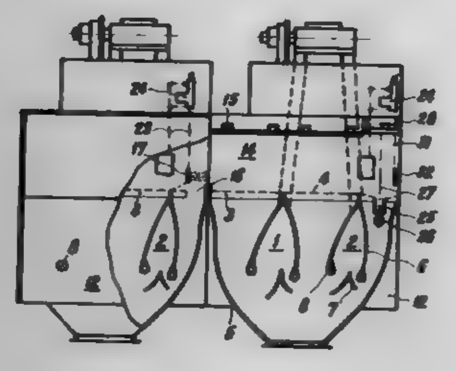
Antoni Jedo, Gliwice, Poland, assignor to Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych "Komag", Gliwice, Poland

Filed May 29, 1975, Ser. No. 581,921

Claims priority, application Poland, May 30, 1974, 171533

Int. Cl.² B03B *5/20*

U.S. Cl. 209—457 **12 Claims**



1. A baum jig with a screen deck comprising, in combination, a number of water cisterns each having a feed end and a discharge end and arranged in a series-paralleled system with symmetrical air chambers opened at the bottom and located beneath the screen deck transversely to the axis of the jig, said symmetrical air chambers comprising plates as sections of a cylindrical surface, the symmetry axes of said air chambers being deflected from the perpendicular by an angle of 5° to 15° toward said feed end, said chambers having asymmetric guide vanes displaceable in a horizontal direction.

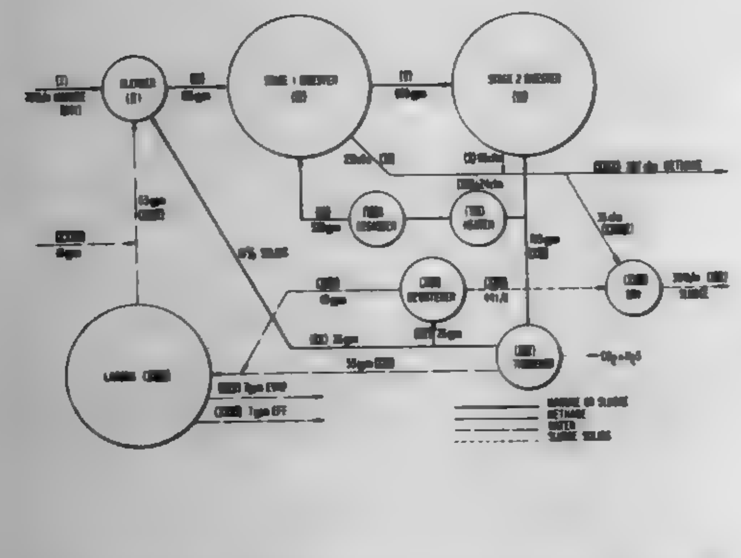
3,981,800
HIGH QUALITY METHANE GAS THROUGH MODIFIED ANAEROBIC DIGESTION

Jay E. Ort, Lewistown, Pa., assignor to ERA, Incorporated, Clovis, N. Mex.

Filed Nov. 22, 1974, Ser. No. 526,176

Int. Cl.² C02C *1/14*

U.S. Cl. 210—6 **17 Claims**



1. In anaerobic digestion of organic solid waste to produce methane gas in a digester, the improvement wherein the digestion is effected, so that gas in the digester is under a pressure of at least one atmosphere in excess of atmospheric pressure so that digesting organic solid waste preferentially absorbs carbon dioxide.

3,981,801
GRADIENT STORAGE METHOD FOR LIQUID CHROMATOGRAPHY

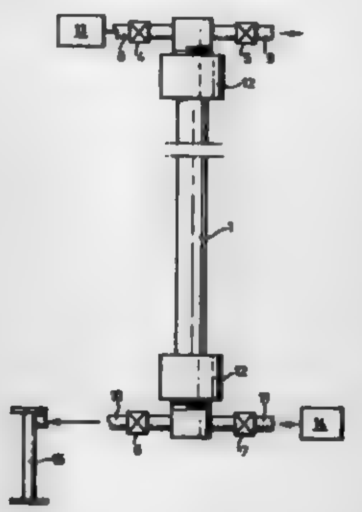
John Henderson Knox, Edinburgh, Scotland, assignor to University of Edinburgh, Edinburgh, Scotland

Filed Feb. 14, 1974, Ser. No. 442,583

Claims priority, application United Kingdom, Feb. 14, 1973, 7142/73

Int. Cl.² B01C *15/08*

U.S. Cl. 210—31 C **9 Claims**



1. A process for the preparation, storage and subsequent pressurized delivery of a sample liquid whose composition varies in a reproducible and controllable way from one region of its volume to another, comprising filling an elongate tube with a first liquid, the geometrical dimensions of said tube being chosen so that a sharply defined band of one liquid whose composition differs from that of a surrounding liquid is dispersed in a reproducible way when said band is passed at a specified rate through said tube, subsequently introducing into said tube a second liquid miscible with said first liquid so as to displace at least part of said first liquid, the composition of the second liquid being controlled during the introduction procedure according to a prearranged programme to effect a predetermined dispersion of said second liquid which forms a precursor sample, closing at least one end of said tube to hold and store said precursor sample within said tube, and subsequently expelling said precursor sample at the outlet of said tube into pressurized equipment to form the sample liquid whose composition varies in a reproducible and controlled manner from one region of its volume to another.

3,981,802
PLATE TYPE PRESS FILTER

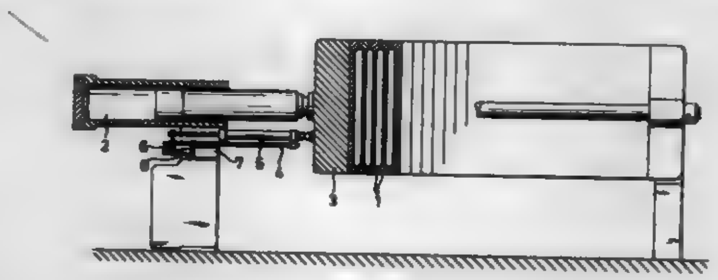
Alfons Schotten, Duren; Hermann Josef Spolgen, D'horn, and Ulrich Rilling, Stolberg, all of Germany, assignors to Eberhard Hoesch & Sohne, Duren, Germany

Filed Mar. 26, 1975, Ser. No. 562,161

Claims priority, application Germany, Mar. 30, 1974, 2415598

Int. Cl.² B01D *25/12*

U.S. Cl. 210—91 **13 Claims**



1. In a filter press having a support frame; a plurality of face-to-face oriented filter plates forming a filter plate stack; means for movably supporting the filter plates with respect to one another; a closing device connected to the filter plates for exerting thereon a pressure with which the filter plates are urged to one another; and a closing pressure regulator coupled to the closing device; the improvement comprising:

a. a stationarily supported path-sensing signal transmitter means operatively connected to said closing pressure regulator; and

b. a sensor arm attached at least indirectly to one of said filter plates for displacing said sensor arm by, and as a function of the motion of, said one filter plate; said sensor arm being operatively coupled to said path-sensing signal transmitter means for controlling the closing pressure of said closing device by said signal transmitter means as a function of the position of said sensor arm.

3,981,803
METHOD AND APPARATUS FOR ANAEROBIC FERMENTATION

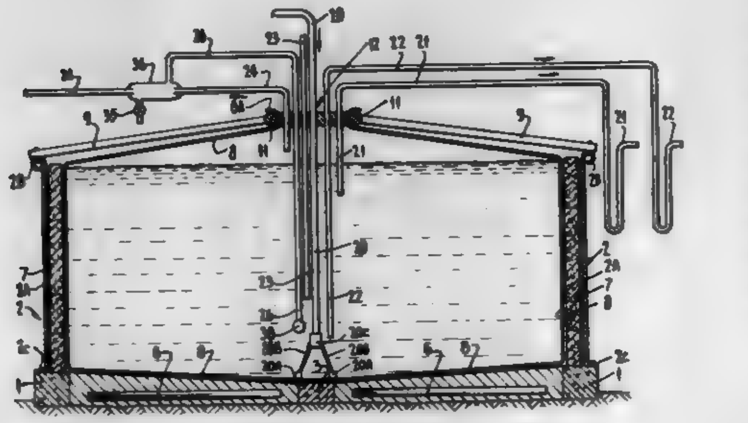
John Louis Coulthard, Lot 9, Frankston Rd., Cranbourne South, 3977, Victoria, Australia

Division of Ser. No. 304,785, Nov. 8, 1972, abandoned. This application Oct. 29, 1974, Ser. No. 518,899

Claims priority, application Australia, Nov. 11, 1971, 7000/71

Int. Cl.² C02C *1/14*

U.S. Cl. 210—178 **11 Claims**



1. Apparatus for use in the anaerobic fermentation of organic waste material in a digestion zone comprising:

a. a bag-like container made of flexible material for digesting organic waste materials, said container having an opening, a closure member for sealing said opening;

b. inlet and outlet means extending through said closure member into said bag-like container for the introduction of said waste materials and the simultaneous removal of liquid and gaseous products, respectively;

c. a wall disposed about said container for supporting said container, said wall comprising a series of interconnected panels extending in substantially vertical planes to form a self-supporting structure;

d. at least one layer of insulating material disposed between said bag-like container and said wall;

e. a support member having one end supported on said wall, said support member extending over said bag-like container;

f. said bag-like container having an upper surface adjacent said support member, and means for securing said upper surface to said support member;

g. a mixing tank including mixing means for mixing waste materials in said mixing tank, said mixing tank being in communication with said inlet means for passing said waste materials from said mixing tank through said inlet means into said bag-like container;

h. gas storage means connected to said outlet means for said gaseous products, for storing said gaseous products.

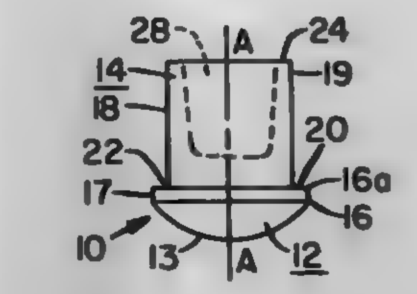
3,981,804
APPARATUS FOR SEPARATING MULTIPHASE FLUIDS

Joseph F. Gigliello, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed June 25, 1975, Ser. No. 590,127

Int. Cl.² B01D *21/26*

U.S. Cl. 210—516 **6 Claims**



1. An improved apparatus for separating and partitioning different density phases of a multiphase fluid such as blood comprising, a tubular container having a closed end, inert thixotropic gel-like means having a density intermediate the density of said fluid phases initially positioned adjacent said closed end for separating said phases upon centrifugation, said gel-like means including a mixture of an oil and a filler and flow control means having a density greater than the density of said gel-like means initially partially submerged within a surface portion of said gel-like means for directing the flow thereof during centrifugation along wall portions of said container, wherein the improvement comprises: said flow control means including a bottom portion and a top portion extending upwardly from said bottom portion, and said top portion having an annular recessed region formed therein such that said recessed region provides an annular space between wall portions of said top portion and said container adjacent the surface of said gel-like means.

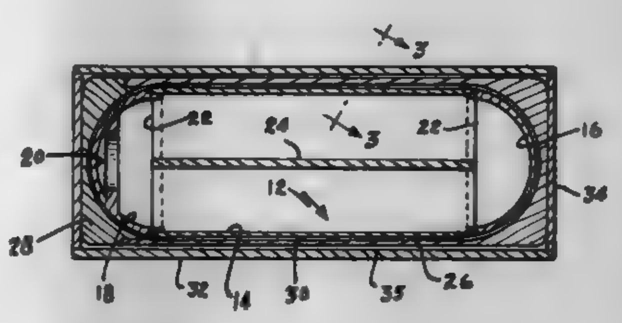
3,981,805
HIGH TEMPERATURE RADIOISOTOPE CAPSULE

George B. Bradshaw, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 846,996, July 28, 1969. This application Sept. 13, 1972, Ser. No. 287,160

Int. Cl.² G21G *4/00*

U.S. Cl. 250—493 **6 Claims**



1. A high temperature radioisotope capsule comprising a first innermost cylinder, said cylinder having at least one radial heat conduction fin mounted therein, a second cylinder surrounding said first cylinder, a first space separating said first cylinder from said second cylinder, a gas located in said space, an outer structure encasing said second cylinder, a second space separating said second cylinder from said outer structure and a gas located in said second space.

3,981,806
FLAME-RETARDANT EMULSION CONTAINING 1,1,2,3,4,4-HEXABROMOBUTENE-2

Eugene P. Di Bella, Piscataway, N.J.; Donald A. Keyworth, Houston, Tex., and Marvin Rosen, Warren, N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Division of Ser. No. 423,564, Dec. 10, 1973. This application Sept. 15, 1975, Ser. No. 613,771

Int. Cl.² C09K *3/28*

U.S. Cl. 252—8.1 **12 Claims**

1. An emulsion suitable for use as a flame-retardant for textile materials whose discontinuous phase is a solution containing about 5% to 25% by weight of 1,1,2,3,4,4-hexabromobutene-2 in a solvent mixture that contains 1 part to 5 parts by weight of an aromatic hydrocarbon per part by weight of an N-alkylpyrrolidinone whose alkyl group has 1 to 5 carbon atoms and whose continuous phase is water.

3,981,807
DURABLE TEXTILE TREATING ADDUCTS

Stuart Raynolds, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 27, 1973, Ser. No. 401,128

Int. Cl.² D06M *13/20;* **D01M** *13/34*

U.S. Cl. 252—8.8 **10 Claims**

1. In an adduct for application to a textile article for the purpose of improving the functional performance of the article, the improvement consisting essentially of including in the adduct and chemically bonding therein about from 5 to 50 weight percent of a durabilizing organic moiety having a melting point between about 100° and about 300°C. and a Solubility Parameter differing by at least one unit from the Solubility Parameter of the functional component of the adduct.

3,981,808
SOLUBLE OIL CONCENTRATE

Gifford G. McClaflin, and Albert M. Durr, Jr., both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 15, 1975, Ser. No. 622,598

Int. Cl.² C10M *1/40, 3/34, 5/22;* **B21B** *45/02*

U.S. Cl. 252—33.3 **4 Claims**

1. A soluble oil concentrate composition comprising:
a. a major amount of paraffinic base oil;
b. a major amount of naphthenic base oil;
c. an emulsion stabilizing amount of a mahogany sulfonate;
d. an emulsion stabilizing amount of fatty/rosin acid; and
e. a minor amount of each of a naphthenic acid, an alkylol amine, an alkylene glycol and an alkali metal hydroxide.

3,981,809
BIS-ANILINE DISULFIDE REACTION PRODUCTS AS MULTIFUNCTIONAL LUBRICATING OIL ADDITIVES

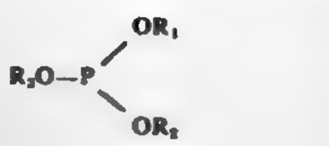
Gunter Caspari, Wheaton, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Dec. 10, 1975, Ser. No. 639,330

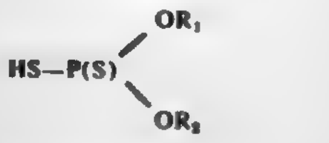
Int. Cl.² C10M *1/48, 3/42, 5/24, 7/46*

U.S. Cl. 252—32.7 E **20 Claims**

1. A lubricating oil composition containing from about 0.01 weight percent to about 5 weight percent of an oil-soluble multifunctional additive comprising the reaction product of bis-aniline disulfide with

a)  ; or

$R_3O-P(OR_1)(OR_2)$

b)  ; or

$HS-P(S)(OR_1)(OR_2)$

c. phosphosulfurized olefin;
where R_1, R_2 and R_3 are hydrocarbyl or chloro, bromo or hydroxy substituted hydrocarbyl.

16. A lubricating oil composition containing from about 0.01 weight percent to about 5 weight percent of an oil-soluble multifunctional additive comprising
a. aniline disulfide dihydrocarbyl phosphoramide; or
b. aniline disulfide dihydrocarbyl dithiophosphate; or
c. aniline disulfide-phospho-sulfurized olefin;
where the hydrocarbyl groups are entirely hydrocarbon, or chloro, bromo or hydroxy substituted hydrocarbon.

3,981,810
GREASE COMPOSITION

Robert N. Bolster, Fairfax County, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 11, 1975, Ser. No. 630,826

Int. Cl.² C10M *1/48, 3/42, 5/24, 7/46*

U.S. Cl. 252—32.7 E **5 Claims**

1. A grease composition which comprises:
from 82 to 89 weight percent of an ester-silicone oil base selected from the group consisting of a blend of isodecyl pelargonate, hexadecyl isostearate, and methyl-phenyl silicone, a blend of isodecyl pelargonate, tridecyl azelate, and methylphenyl silicone, and a blend of ethylhexyl adipate and methylphenyl silicone;
from 4.9 to 7.5 weight percent of lithium stearate;
from 1.7 to 3 weight percent of a rust inhibitor selected from the class consisting of barium and lead dinonylnaphthalene sulfonate;
from 1.5 to 5 weight percent of antimony dialkylphosphorodithioate;
from 0.25 to 0.6 weight percent of a copper-silver corrosion inhibitor selected from the class consisting of tolyltriazol, disalicylal-propylene-diamine, and 2-mercaptobenzothiazole; and
from 0.2 to 0.6 weight percent of 2,6-di-tert-butyl-4-methylphenol.

3,981,811
SILICONE FLUIDS AS A CORROSION INHIBITOR FOR PERFLUORINATED POLYETHER FLUIDS

Alex Zletz, Naperville, Ill., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 14, 1976, Ser. No. 649,105

Int. Cl.² C10M *1/10, 1/50, 7/02, 7/48*

U.S. Cl. 252—49.6 **4 Claims**

1. A lubricating composition comprising (1) a major amount of a perfluorocarbon polyether fluid and (2) a minor corrosion inhibiting amount of a silicone fluid selected from the group consisting of methylphenyl silicone, chlorophenylmethyl silicone, and methyltrifluoropropyl silicone.

2. The lubricating composition of claim 1 wherein the polyether fluid is thickened to a grease consistency with at least one thickening agent selected from the group consisting of p-oxybenzoyl polymer and 2,4-diamino-6-hydroxy-1,3,5-triazine.

3,981,812
HIGH TEMPERATURE THERMALLY STABLE GREASES

Alex Zletz, Naperville, Ill., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 14, 1976, Ser. No. 649,104

Int. Cl.² C10M *1/10, 1/50, 7/02, 7/48*

U.S. Cl. 252—49.6 **1 Claim**

[1. A lubricating grease composition composed of a mixture of from about 4 to about 13 percent by weight of a substituted polyphenylene thickening agent selected from the group consisting of nitropolyphenylene and aminopolyphenylene; from about 0.75 to about 10 percent by weight of a silicone co-thickening agent selected from the group consisting of dimethyl silicone and phenylmethyl silicone; and the balance substantially all a perfluoropolyether lubricating vehicle.

3,981,813
HYDRAULIC FLUID

Marvin J. Den Herder, Olympia Fields, and Thomas Martin Warne, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 12, 1975, Ser. No. 576,362

Int. Cl.² C10M *1/40*

U.S. Cl. 252—75 **18 Claims**

1. A hydraulic fluid composition comprising:
a. a major proportion of a hydrocarbon oil having a viscosity of from about 10 to about 200 centistokes at 100°F., and
b. a minor proportion comprising:
  1. from about 0.3 to about 3.0 weight percent in said hydrocarbon oil of a metal sulfonate having a total base number of from about 5 to about 80 and a molecular weight of from about 400 to about 1,500, wherein the metal in said metal sulfonate is selected from the group consisting of barium, calcium, magnesium, sodium, potassium, and lithium;
  2. from about 0.05 to about 0.60 volume percent in said hydrocarbon oil of a higher molecular weight alkyl- or alkenyl-substituted succinic acid or anhydride containing from about 50 to about 90 carbon atoms;
  3. from about 0.01 to about 0.50 volume percent in said hydrocarbon oil of a lower molecular weight alkyl- or alkenyl-substituted succinic acid or anhydride containing a total of from about 12 to about 34 carbon atoms; and
  4. from about 0.02 to about 0.60 volume percent in said hydrocarbon oil of an ethoxylated fatty alcohol or alkylphenol, having an HLB of from about 7 to about 15 and having the formula

$R-(OCH_2CH_2)_n-OH$

wherein R is an oil-soluble group selected from the class consisting of a first alkyl group having from about 8 to about 30 carbon atoms and an alkaryl group having a total of up to 36 carbon atoms and having only one aromatic ring and from 1 to 3 second alkyl groups wherein at least one of said second alkyl groups contains from about 8 to about 30 carbon atoms, and n is about 4 to about 70.

3,981,814
BACTERIOSTATIC SUBSTITUTED BENZANILIDE COMPOSITIONS AND METHODS FOR THEIR USE

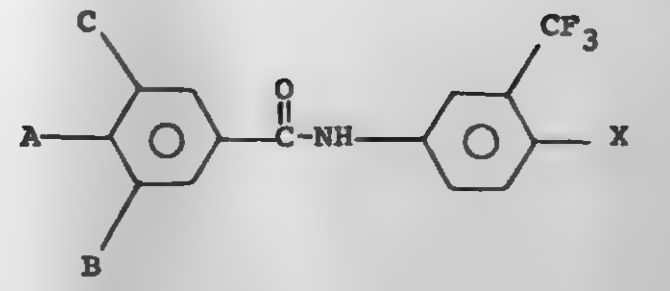
Edward J. Nikawitz, Glen Rock, N.J., assignor to Givaudan Corporation, Clifton, N.J.

Continuation of Ser. No. 398,522, Sept. 18, 1973, abandoned. This application Apr. 21, 1975, Ser. No. 570,140

Int. Cl.² C11D *3/48, 9/50*

U.S. Cl. 252—107 **41 Claims**

1. A bacteriostatic detergent composition comprising a soap or detergent of the anionic, cationic, nonionic or amphoteric type and a bacteriostatically effective amount of a benzanilide having the formula:



wherein:
A is selected from the group of H, Cl, Br, CF_3 and $C(CH_3)_2$;
B is selected from the group of H, Cl and Br;
C is selected from the group of H and Cl; and
X is selected from the group of H, Cl, Br and F;
except:
when X is Cl, C must be H; and
wherein:
at least one of the groups A, B, C or X must be Cl or Br and the positions in the phenyl moieties ortho to the —CO— and —NH— are free of substituents.

3,981,815
PROCESS FOR UTILIZING COLLECTED MATERIAL REMOVED FROM EFFLUENT GAS

Masao Taniguchi, Tokyo; Sueo Machi, Takasaki; Waichiro Kawakami, Takasaki; Shoji Hashimoto, Takasaki; Keita Kawamura, Yokohama, and Shingi Aoki, Fujisawa, all of Japan, assignors to Ebara Manufacturing Co., Ltd., Tokyo, Japan

Filed Sept. 16, 1974, Ser. No. 506,571

Claims priority, application Japan, Sept. 21, 1973, 48-106697; Sept. 21, 1973, 48-106698; Sept. 21, 1973, 48-106700; Sept. 21, 1973, 48-106702; Sept. 21, 1973, 48-106703

Int. Cl.² B01D *53/34;* **B01J** *1/10*

U.S. Cl. 252—182 **3 Claims**

1. A process for recovering effective components from effluent gas containing sulfur dioxide and nitrogen oxides, which comprises irradiating the effluent gas with an ionizing radiation to form an aerosol, and then collecting the aerosol by a collecting means, and decomposing the resulting collected material, characterized by forming paste of the collected material, and subjecting the paste to steam-roasting to form a vapor of a mixed acid of sulfuric acid and nitric acid, and condensing the vapor by water to form a liquid of the mixed acid.

3,981,816
LIQUID CRYSTAL DISPLAY DEVICE

Akio Moriyama, Katano; Masakazu Fukai, Nishinomiya; Komei Asai, Hirakata, and Koshiro Mori, Nara, all of Japan, assignors to Matsushita Electric IndustrialCo., Ltd., Osaka, Japan

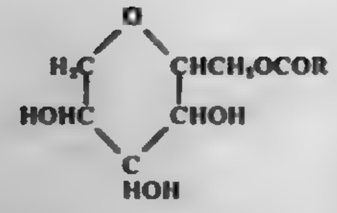
Continuation-in-part of Ser. No. 415,361, Nov. 13, 1973, abandoned. This application Sept. 15, 1975, Ser. No. 613,425

Claims priority, application Japan, Nov. 15, 1972, 47-114965; Nov. 16, 1972, 47-115374; Nov. 17, 1972, 47-115793; Nov. 17, 1972, 47-115794; Nov. 17, 1972, 47-115795; Nov. 17, 1972, 47-115829; Nov. 20, 1972, 47-116919; Nov. 20, 1972, 47-116981; Nov. 20, 1972, 47-116982; Nov. 20, 1972, 47-116983; Nov. 20, 1972, 47-116984; Nov. 20, 1972, 47-116986; Nov. 20, 1972, 47-116987; Nov. 20, 1972, 47-116992; Nov. 20, 1972, 47-116993; Nov. 20, 1972, 47-116994; Nov. 20, 1972, 47-116995; Nov. 20, 1972, 47-116996

Int. Cl.² G02F *1/13;* **C09K** *3/34*

U.S. Cl. 252—299 **4 Claims**

1. A liquid crystal display device employing a nematic liquid crystal composition containing at least one homeotropic aligning additive having the following general formula:



wherein R is an alkyl group having 10 – 24 carbon atoms.

3,981,817
MIXTURES OF LIQUID CRYSTALS

Arthur Boller, Binningen, and Hanspeter Scherrer, Therwil, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 27, 1974, Ser. No. 455,083

Claims priority, application Switzerland, Apr. 4, 1973, 4799/73

Int. Cl.² G02F *1/16*

U.S. Cl. 252—299 **11 Claims**

1. A mixture which contains p-n-octylbenzoic acid p′-cyanophenyl ester, p-n-hexylbenzoic acid p′-cyanophenyl ester and p-n-butylbenzoic acid p′-cyanophenyl ester in a molar ratio of 1:1:1.

3,981,818
CRYSTALLINE MATERIALS

Carl F. Swinehart, University Heights, and Marko Sfiligoj, South Euclid, both of Ohio, assignors to The Harshaw Chemical Company, Cleveland, Ohio

Division of Ser. No. 193,206, Oct. 26, 1971, Pat. No. 3,766,080, and a continuation-in-part of Ser. No. 314,952, Oct. 9, 1963, abandoned, said Ser. No. 193,206 is also a continuation-in-part of said Ser. No. 314,952. This application Oct. 15, 1973, Ser. No. 406,585

Int. Cl.² G02B *5/20*

U.S. Cl. 252—300 **2 Claims**

1. A process for making an infrared transmitting non-cleaving, cooled and solidified melt comprising the steps of mixing two infrared-transparent solid components capable of forming a eutectic in proportions to yield approximately the eutectic mixture, heating the mixture to form a melt of the two solid phases, solidifying the melt in a controlled manner by adding heat to the melt and removing same from the solids during said solidification step, the amount of heat being added to the melt and conducted through the solidifying melt is 10^3 to 10^5 times the latent heat of fusion of said eutectic mixture, and cooling the solid mixture.

3,981,819
LUMINESCENT SULFIDES OF MONOVALENT AND TRIVALENT CATIONS

Perry Niel Yocom, Princeton, and John Pickett Dismukes, South Branch, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,813

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² C09K *11/08*

U.S. Cl. 252—301.4 S **7 Claims**

1. A luminescent material, having a crystal structure similar to that of alpha sodium ferric oxide and the empirical formula

$$(\alpha\ Ma\ \gamma\ Mc\ \delta/2\ Md)\ (\beta\ Mb\ \delta/2\ Md\ \epsilon\ Me)\ S_2$$

wherein:

- Ma is at least one monovalent cation selected from the group consisting of Na, K, Rb and Cs,
- Mb is at least one trivalent cation selected from the group consisting of Gd, La, Lu, Sc and Y,
- Mc is at least one monovalent cation selected from the group consisting of silver, copper and thallium,
- Md is at least one divalent cation selected from the group consisting of europium, manganese, lead and tin,
- Me is at least one trivalent cation selected from the group consisting of arsenic, bismuth, cerium, dysprosium, erbium, praseodymium, antimony, samarium, terbium and thulium,
- S is sulfur,
- α is 1.00 minus γ minus $\delta/2$,
- β is 1.00 minus ϵ minus $\delta/2$,
- γ, δ and ϵ are each in the range of 0.00 to 0.05 mol, and
- γ plus δ plus ϵ is in the range of 0.00005 to 0.05 mol.

3,981,820
ANTISKID COATING

Richard C. Miller, and Charles C. Payne, both of Chicago, Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Division of Ser. No. 390,897, Aug. 23, 1973, Pat. No. 3,930,063. This application June 16, 1975, Ser. No. 587,320

Int. Cl.² C09K *11/00, 3/14*

U.S. Cl. 252—301.16 **4 Claims**

1. A liquid coating composition for application to substrates to impart antiskid properties thereto, comprising: an aqueous silica sol containing a fluorescent dye.

3,981,821
PROCESS FOR PREPARING MICROCAPSULES

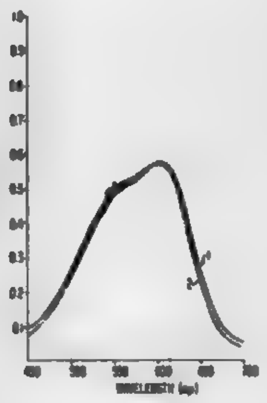
Masataka Kiritani, and Yasuhiro Ogata, both of Fujimiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed July 17, 1974, Ser. No. 489,283

Claims priority, application Japan, July 17, 1973, 48-81624

Int. Cl.² B01J *13/02*

U.S. Cl. 252—316 **4 Claims**



1. A process for preparing microcapsules which comprises emulsifying a hydrophobic liquid as droplets thereof in a hydrophilic liquid immiscible therewith as a continuous phase, polymerizing at least one capsule wall-forming substance present in the continuous phase and selected from the group consisting of a combination of an amino containing compound and an epoxy compound; a combination of an amino compound and an aldehyde compound; a combination of a urea resin and an aldehyde compound; a combination of a urea resin and an amino compound; a combination of a melamine resin and an amino compound; a combination of a melamine compound and an aldehyde compound; a self-polymerizable urea resin; and a self-polymerizable melamine resin, and depositing the resulting polymer around the droplets of the hydrophobic liquid thereby to envelop the hydrophobic liquid droplets from outside; wherein the hydrophobic liquid prior to emulsification contains a deposition promoting agent which is reactive with said at least one wall-forming substance in the continuous phase and consequently promotes the deposition of the polymer resulting in the continuous phase, said agent being used in an amount sufficient to promote said deposition, said agent being selected from the group consisting of a hydrophobic liquid soluble isocyanate compound, a hydrophobic liquid soluble amino compound, a hydrophobic liquid soluble acid chloride, a hydrophobic liquid soluble epoxy compound, a hydrophobic liquid soluble compound containing chloroformate groups, and a hydrophobic liquid soluble aldehyde compound, the weight ratio between the amount of the deposition promoting agent and the amount of the capsule wall-forming substance is 0.16 to 0.4.

3,981,822
NOVEL COMBINATIONS OF ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS

James C. Ownby, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 19, 1975, Ser. No. 615,032

Int. Cl.² C09K *15/30, 15/28, 15/16*

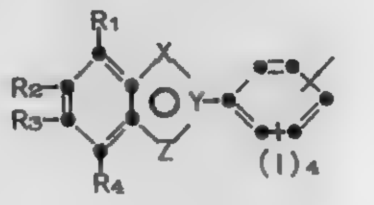
U.S. Cl. 252—403 **14 Claims**

1. An organic composition susceptible to ultraviolet light degradation stabilized against such degradation with a stabilizing amount of a mixture of:

1. at least one heterocyclic compound having the formula:

A-I or A-B-C

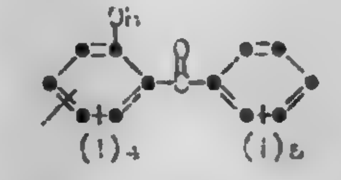
wherein A is a group having the structure



wherein

- X and Y are a carbon atom, a carbon atom containing an R group or a nitrogen atom;
- Z is an oxygen atom, a sulfur atom, a nitrogen atom, or a nitrogen atom containing a hydrogen atom or an alkyl group having 1 to 12 carbon atoms or an aryl or substituted aryl group having 6 to 18 carbon atoms;
- R, R_1, R_2, R_3 and R_4 are hydrogen, chloro, bromo, lower alkyl, substituted lower alkyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, lower alkylaryl, aryl-substituted-aryl, alkoxy, substituted amino, cyano, carboalkoxy and the substituents R_1 and R_2, R_2 and R_3, and R_3 and R_4, combined with the carbon atoms to which they are attached, are joined alkylene groups completing a carbocyclic ring, which ring can also be substituted with one or more of the substituents listed above for R_1, R_2, R_3 and R_4;
- I is the same as R_1, R_2, R_3 and R_4 and is present on all positions of the benzenoid ring, except the carbon atom attached to the Y substituent and the carbon atom attached to the B group connecting the heterocyclic aromatic A group with the aromatic C group, said B connecting group is attached to the benzenoid ring in the ortho, meta or para positions from the carbon atom connected to the Y substituent, said I substituents can all be the same substituent listed above or different listed substituents;
- B is a linking group connecting A and C and can be alkylene, arylene, carbonyl, carbonyloxy, oxycarbonylalkyleneoxy, oxycarbonyl, alkyleneoxycarbonyloxy, oxyalkylenecarbonyl, oxycarbonyloxy, alkyleneoxy, oxyalkylene, alkyleneoxyalkyleneoxy, thio, thioalkyleneoxy, sulfinyldioxy, oxy(alkoxy)phosphinooxy, alkyloxyphosphinylidene, aryloxyphosphinylidene, oxy(alkyl)phosphinyloxy, aminocarbonyl, N-alkylaminocarbonyl, N-arylaminocarbonyl, aminocarbonylalkyleneoxy, N-alkylaminocarbonylalkyleneoxy, N-arylaminocarbonylalkyleneoxy, aminocarbonylamino, N-alkylaminocarbonylamino, N,N-dialkylaminocarbonyl, N-arylaminocarbonyl, N-alkylaminocarbonyl, N,N-diarylaminocarbonyl, amino, N-alkylamino, N-arylamino, N-alkylaminoalkyleneoxy, N-arylaminoalkyleneoxy, oxyalkyleneoxy, oxyaryleneoxy, alkyleneaminoalkylene, aryleneaminoarylene, aryleneaminoalkylene and alkyleneaminoarylene; and

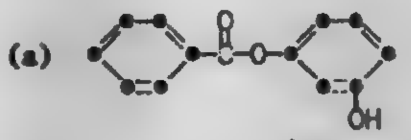
wherein C is a hydroxybenzophenone group having the formula



where I is the same substituent as listed above and is present in all positions of the benzenoid rings except the carbon atom attached to the B group connecting the A and C moieties, said B connecting group is attached to the benzenoid ring in the ortho, meta or para position from the keto group of the benzophenone, and said I substituents can all be one of the substituents listed above or different listed substituents, and

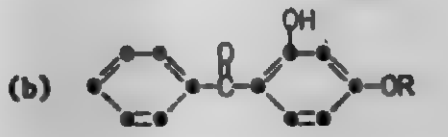
2. at least one compound selected from the group consisting of:

(a)



or

(b)



wherein R is hydrogen or an alkyl group of 1 to 20 carbon atoms.

3,981,823
REGENERATION OF IRIDIUM-CONTAINING CATALYSTS

David J. C. Yates, Westfield, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 343,304, March 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 248,683, April 28, 1972, abandoned. This application Sept. 23, 1974, Ser. No. 508,104

Int. Cl.² B01J *23/96;* **C10G** *35/08*

U.S. Cl. 252—415 **16 Claims**

1. A process for regenerating a supported hydrocarbon reforming catalyst containing at least about 0.1 wt. % iridium in the metallic form, wherein the support is a refractory inorganic oxide, the catalyst being at least partially deactivated by the presence of carbonaceous deposits thereon which comprises the steps of (1) contacting said catalyst with an oxygen-containing gas at a temperature of at least 300°C. for a time sufficient to burn at least a substantial portion of said carbonaceous deposits from said catalyst; (2) contacting catalyst treated in step (1) with a reducing gas selected from the group consisting of hydrogen, carbon monoxide, nitric oxide, and mixtures thereof at an elevated temperature for a time sufficient to convert at least a portion of said iridium to its metallic form; and (3) contacting the catalyst containing iridium at least a portion of which has been reduced to the metallic form with a gas containing a halogen and oxygen at a temperature of at least 300°C., the oxygen being present in an amount sufficient to enhance the dispersion of the iridium on the catalyst but less than 5% by volume, at an oxygen partial pressure not exceeding about 0.1 atmosphere.

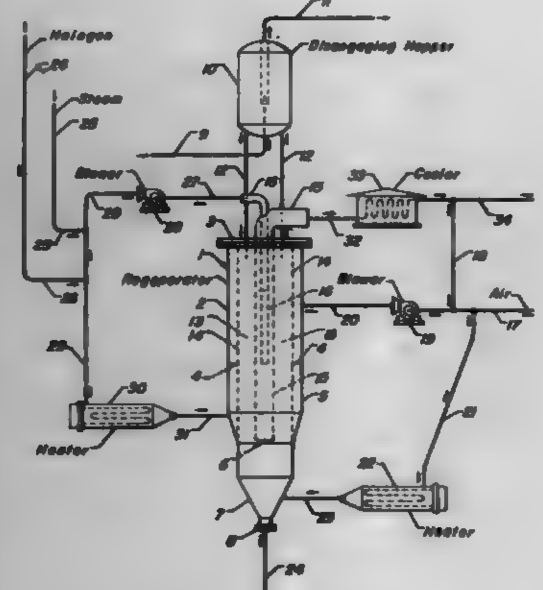
3,981,824
REGENERATION METHOD FOR GRAVITY-FLOWING CATALYST PARTICLES

Arthur R. Greenwood, Niles, and Earl S. Lemberger, Buffalo Grove, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 13, 1974, Ser. No. 523,288

Int. Cl.² B01J *23/96;* **C10G** *35/08*

U.S. Cl. 252—415 **5 Claims**



1. A method for continuously regenerating deactivated hydrocarbon conversion catalyst particles comprising a Group VIII noble metal component and a halogen component in combination with a refractory inorganic oxide, and which particles have been deactivated by deposition of carbonaceous matter thereon and loss of halogen therefrom, said method comprising the steps of:

a. passing said catalyst particles downwardly by gravity flow through a vertically positioned confined regeneration zone maintained at a temperature of from about 750°F. to about 1050°F. and having an interconnecting upper carbon-burning section, with an intermediate halogenation section in interconnection with a lower drying section in descending sectional order;

b. introducing said deactivated hydrogen conversion catalyst particles to said carbon-burning section and a first air stream from an external source through a carbon-burning inlet port to said carbon-burning section;

c. burning substantially all of the carbonaceous matter from the catalyst particles in said carbon-burning section;

d. withdrawing the excess air and combustion products from said carbon-burning section through a carbon-burning withdrawal port and cooling at least a portion thereof;

e. recycling at least a portion of said cooled excess air and combustion products to said carbon-burning section through said carbon-burning inlet port;

f. introducing the catalyst particles in the carbon-burning section to said interconnecting intermediate halogenation section;

g. introducing steam and halogen or a halogen-containing compound to said intermediate halogenation section through a halogen-steam inlet port and therein increasing the halogen content of the catalyst particles;

h. introducing the catalyst particles of increased halogen content to said interconnecting lower drying section;

i. introducing a second air steam from an external source to said lower drying section through a lower drying section inlet port, wherein substantially all the water from said catalyst particles of increased halogen content in said lower drying section is removed, and wherein the mole ratio of air in said first air stream of (b) and said second air stream is at least 1.0:1.0;

j. withdrawing the substantially water-free regenerated catalyst particles from the lower end of the regeneration zone through a catalyst particle withdrawal conduit; and,

k. wherein in said method of regenerating said first air stream, second air stream and steam and halogen or halogen-containing compound are introduced transversely and flow countercurrently to said gravitational flow of said catalyst particles, and wherein air from the lower drying section passes upwardly therefrom into the halogenation section and therethrough into the carbon burning section.

3,981,825
HYDROCARBON CONVERSION CATALYST

William J. Reagan, Yardley, Pa., and Nai Y. Chen, Titusville, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed June 7, 1974, Ser. No. 477,240

Int. Cl.² B01J *21/04, 21/12, 23/42, 23/52*

U.S. Cl. 252—455 R **8 Claims**

1. A reforming catalyst comprising a solid porous support containing platinum, iridium and gold, said catalyst being prepared by the process of applying to the said support a dimethylsulfoxide solution containing soluble compounds of the metals, selected from the group consisting of metal salt, metal acid, metal ammine and metal ammine halide, drying the resulting solids and calcining.

3,981,826
HARD SURFACE CLEANING COMPOSITION

Hamish David Munro, St. Albans, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 304,868, Nov. 8, 1972, abandoned. This application Nov. 25, 1974, Ser. No. 526,647

Claims priority, application United Kingdom, Nov. 15, 1971, 52874/71

Int. Cl.² C11D *1/12, 3/04, 3/12*

U.S. Cl. 252—526 **16 Claims**

1. A substantially non-aqueous liquid, pasty or gelatinous detergent composition having scouring properties comprising a dispersion of from about 19% to 79% of a water-miscible liquid medium selected from the group consisting of

a. a liquid polyhydric alcohol and

b. a mixture of a liquid polyhydric alcohol and a lower monohydric alcohol,

wherein the amount of free water is not more than about 5% by weight and;

a. from about 15 to 74% of a normally solid watersoluble anionic surface-active agent selected from the group consisting of alkali metal, ammonium, and amine salts of organic sulfates and sulfonates;

b. from about 5 to 60% of a solid particulate watersoluble abrasive inorganic salt selected from the group consisting of chlorides, sesquicarbonates, sulfates, phosphates, carbonates, and borates, said inorganic salt having a particle size such that at least 90% by weight passes an 8 mesh Standard Test Sieve and is retained by a 100 mesh BS Standard Test Sieve, and

c. from about 1 to about 5% by weight of a highly voluminous oxide suspending agent selected from the group consisting of silicas, magnesias, aluminas, clays and mixtures thereof effective to suspend said water-soluble inorganic salt throughout said composition.

3,981,827
POLYURETHANES CONTAINING BROMINATED CYCLOALIPHATIC ESTER POLYOLS

Anthony Joseph Papa, St. Albans, W. Va., and William Robert Proops, Wilmington, Del., assignors to Union Carbide Corporation, New York, N.Y.

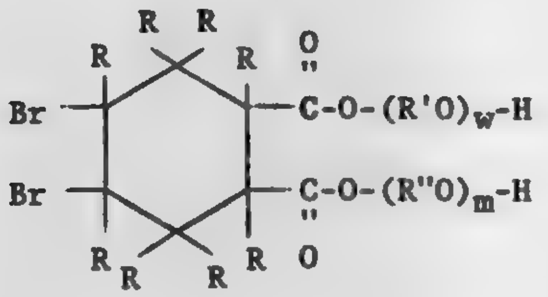
Division of Ser. No. 231,751, March 3, 1972, Pat. No. 3,869,502. This application Nov. 26, 1974, Ser. No. 527,431

Int. Cl.² C08G *18/14, 18/42*

U.S. Cl. 260—2.5 AN **16 Claims**

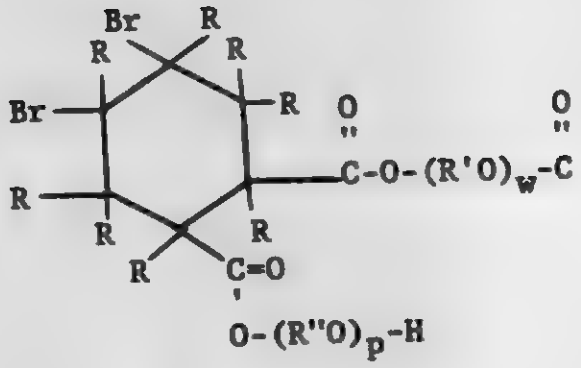
1. A method for producing flame-retarded cellular polyurethanes which comprises reacting and foaming a reaction mixture containing: (a) an organic polyisocyanate, (b) a mixture of bromine-substituted cycloaliphatic ester polyols, (c) a polyol different from said mixture of bromine-substituted cycloaliphatic ester polyols (b), and (d) a blowing agent, wherein the bromine-substituted cycloaliphatic ester polyols contained in said mixture thereof have the formulas,

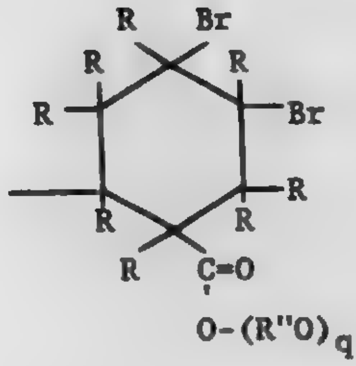
(1)



and

(2)





wherein R is hydrogen or an alkyl radical having from 1 to 6 carbon atoms; each of R′ and R″ is a bivalent alkylene group having from 2 to 10 carbon atoms; *w* is a number having an average value of from about one to about 15; and *m*, *p* and *q* are positive numbers provided the average value of the sum *m+p+q* is between about one and about 10.

3,981,828
FLEXIBLE CELLULAR POLYURETHANE FOAM COMPOSITIONS HAVING INCREASED FLAME RETARDANCE

John G. Demou, Lincoln Park; Louis C. Pizzini, Trenton, and John T. Patton, Jr., Wyandotte, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 264,157, June 19, 1972, Pat. No. 3,804,782. This application Apr. 12, 1974, Ser. No. 460,441

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² C08G *18/14, 18/18, 18/20*

U.S. Cl. 260—2.5 AC **8 Claims**

1. A flexible polyurethane foam prepared in the presence of water by the reaction of:

a. a polyalkylene polyether polyol having an average equivalent weight of from 200 to 2500 with

b. an organic polyisocyanate employing an isocyanate index of from 130 to 225 in the presence of from 0.05 part to 10 parts by weight per 100 parts by weight of said polyalkylene polyether polyol of an isocyanate trimerization catalyst selected from the group consisting of triethylene diamine, alkylene oxide-water adducts of triethylene diamine, triethylene diamine diformate, and N-benzyltrialkyl ammonium alkoxides and hydroxides.

3,981,829
PROCESS FOR THE PREPARATION OF CARBODIIMIDE-ISOCYANURATE FOAMS

Moses Cenker, Trenton; Thirumurti L. Narayan, Riverview, and Peter T. Kan, Plymouth, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 30, 1974, Ser. No. 537,102

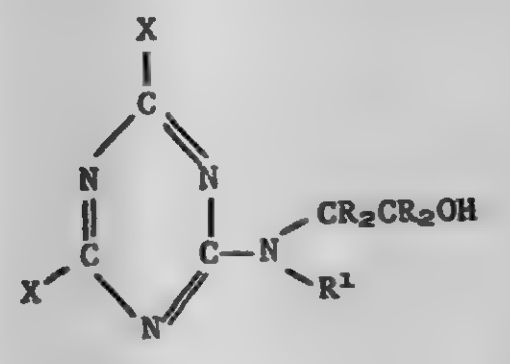
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² C08G *18/14, 18/20*

U.S. Cl. 260—2.5 AC **9 Claims**

1. A process for the preparation of a foam characterized by carbodiimide and isocyanurate linkages which comprises condensing an organic polyisocyanate in the presence of a catalyst system comprising based on 100 parts by weight of organic polyisocyanate

a. from 0.1 part to 10 parts by weight of an s-triazine compound selected from the group consisting of 2,4,6-tris(-diethanolamino)-s-triazine, 2,4,6-tris(diisopropanolamino)-s-triazine, 2,4,6-tris(dibutanolamino)-s-triazine, 2,4,6-tris(N-methylethanolamino)-s-triazine, and unsymmetrically substituted triazines of the formula:



wherein R is hydrogen or lower alkyl of from 1 to 10 carbon atoms, R^1 is CR_2CR_2OH or lower alkyl of from 1 to 12 carbon atoms, X is NR_2, alkoxy of from 1 to 12 carbon atoms, phenoxy, alkyl of from 1 to 12 carbon atoms, phenyl, hydroxyl, halogen, aziridyl, pyrrolidyl, piperidyl, or N-alkylpiperazyl,

b. from 1 part to 6 parts by weight of a 1,3,5-tris(N,N-dialkylaminoalkyl)-s-hexahydrotriazine or the alkylene oxide and water adducts thereof, and

c. from 0.01 part to 5 parts by weight of a phenolic compound selected from the group consisting of phenol, methylphenols and halophenols.

3,981,830
PROCESS FOR PRODUCING CHEMICALLY CROSSLINKED POLYETHYLENE-POLYBUTADIENE

Yasumasa Takeuchi; Takehiko Ikeda, both of Yokohama; Akira Sekimoto, Kamakura; Takashi Hayashi, Gifu; Toshimi Sasaki, and Sabulo Atsumi, both of Anjo, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd. and MTP Kasei Co., Ltd., both of, Japan

Continuation of Ser. No. 428,637, Dec. 26, 1973, abandoned. This application June 27, 1975, Ser. No. 590,910

Claims priority, application Japan, Dec. 30, 1972, 48-3203

Int. Cl.² C08J *9/00*

U.S. Cl. 260—2.5 HA **14 Claims**

1. A process for producing a chemically cross-linked polyethylene foam comprising heating a composition consisting essentally of at least one polyethylene, at least one blowing agent, and at least one crosslinking agent to simultaneously foam and cross-linked said composition, wherein said composition further contains 1,2-polybutadiene having a 1,2-addition unit content of at least 70%, a crystallinity of 10 to 30% and an intrinsic viscosity of at least 0.7 dl/g as measured in toluene at 30°C and the ratio of said, 1,2-polybutadiene to the polyethylene is 3 to 50% by weight of the former to 97 to 50% by weight of the latter.

3,981,831
INORGANIC-ORGANIC PLASTIC

Peter Markusch, Cologne; Dieter Dieterich, Leverkusen, both of Germany, and Helmut Reiff, New Martinsville, W. Va., assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 26, 1974, Ser. No. 527,474

Claims priority, application Germany, Nov. 30, 1973, 2359612

Int. Cl.² C08G *18/14, 18/30, 3/34*

U.S. Cl. 260—2.5 AM **17 Claims**

1. A process for producing an inorganic-organic plastic of high strength, elasticity, dimensional stability to heat, and flame resistance, comprising a polyureapolysilicic acid composite material in the form of a solid/solid xerosol, which process comprises mixing:

A. an organic polyisocyanate or polyisothiocyanate;

B. an aqueous alkali metal silicate solution containing 20–70% by weight of said alkali metal silicate, or an aqueous silica sol, and

C. an organic additive, and

allowing the resultant mixture to react, wherein said organic additive contains from 1 to 9 carbon atoms has a molecular weight of from 32 to 400 and is selected from the group consisting of monoalcohols, monothioalcohols, monophenols, monothiophenols, halomethyl group containing compounds, nitriles, esters, ethers, thioethers, ketones, nitro-group containing compounds, monocarboxylic acid chlorides, monocarboxylic acid bromides, monosulphonic acid chlorides, monocarboxylic acids or salts thereof, monosulphonic acids or salts thereof, and aldehydes, with the proviso that when said organic additive is a monoalcohol, monothioalcohol, monophenol, monothiophenol or monocarboxylic acid, said mixing of (A), (B) and (C) takes place substantially simultaneously.

3,981,832
FIRE-PROTECTING EPOXY RESINS

Leo M. Godfried, Badhoevedorp, Netherlands, assignor to Fokker-V.F.W. B.V., Schiphol-Oost, Netherlands

Division of Ser. No. 220,431, Jan. 24, 1972, Pat. No. 3,839,239. This application July 12, 1974, Ser. No. 488,007

Claims priority, application Netherlands, Feb. 11, 1971, 7101606

Int. Cl.² C08J *9/02;* **C08G** *53/08*

U.S. Cl. 260—2.5 EP **3 Claims**

1. A fire-protecting epoxy resin, essentially comprising a cured product of an epoxy resin made from a polyfunctional halohydrin and a polyhydric phenol and cured with a curing agent selected from the group consisting of polyamines and carboxylic anhydrides, said cured epoxy resin having a source of carbon, a source of phosphoric acid and a source of non-inflammable gases incorporated therein throughout its mass,

said source of carbon having a high temperature of decomposition and containing many radicals capable of entering into an esterifying reaction with phosphoric acid, said carbon source being polyvalent alcohol,

said source of phosphoric acid being a phosphate compound having a selected decomposition temperature lower than that of said source of carbon to generate phosphoric acid whereby said esterifying reaction may take place at said selected temperature and being selected from the group consisting of ammonium orthophosphate, melamine phosphate, polyphosphoryl phosphate, and water-insoluble ammonium polyphosphate with a phosphate content of about 90%, and

said source of non-inflammable gases being a compound which does not take part in the curing of the epoxy resin but remains in free state therein and provides non-inflammable gases at temperatures above said selected temperature and said source of non-inflammable gases being selected from the group consisting of dicyanodiamide, urea, melamine, guanidine and a combination thereof with chlorinated paraffin,

and said fire-protecting epoxy resin further comprising a glass fiber reinforcement.

3,981,833
STARCH/POLYESTER RESIN COMPOSITION

John C. Lark, St. Charles, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 1, 1975, Ser. No. 564,025

Int. Cl.² C08L *3/00*

U.S. Cl. 260—9 **5 Claims**

1. A composition comprising pasted starch and water soluble polyester resin having an acid number of at least 35 comprising (1) a backbone portion having an acid number of from 0–25 comprising the reaction product of polyhydroxy compound and dicarboxylic acid compound having a hydroxyl:-carboxyl ratio of more than one wherein from 20 to 75 equivalent percent of the hydroxy groups are provided by a polyoxyethylene glycol having at least 3 oxyethylene units and at least 50 equivalent percent of the dicarboxylic acid compound is provided by an aromatic dicarboxylic acid compound and (2) pendant carboxylic acid moieties comprising a polycarboxylic acid compound having at least 3 acyl moieties which provides from 5 to 30 equivalent percent of the acyl moieties in the polyester, wherein said polyester resin comprises from 0.1–100 parts by weight per each 100 parts by weight starch.

3,981,834
CONCRETE TREATING COMPOSITION

Larry J. Kern, 1848 S. Stuart, Denver, Colo. 80219, and John D. Webb, 2972 S. Vrain, Denver, Colo. 80236

Filed Dec. 30, 1974, Ser. No. 537,335

Int. Cl.² C08L *1/26*

U.S. Cl. 260—17 R **14 Claims**

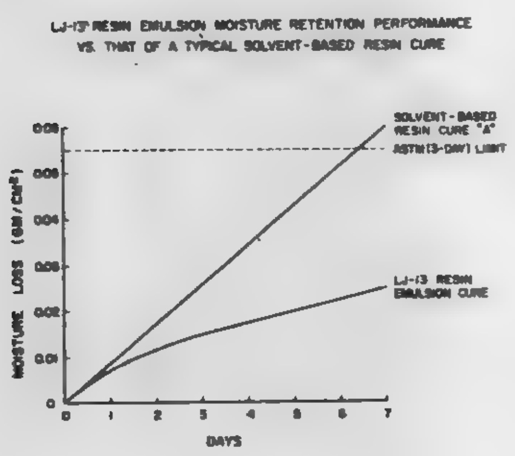
1. A water base emulsion for use as a film-forming agent for

treating concrete before it has set comprising the following ingredients with amounts given in weight percents:

about 50–60 percent water,

about 15–35 percent of a polydicyclopentadiene having a molecular weight range of about 650–950,

about 0.5–2.5 percent of a higher fatty acid, having about 10 to 20 carbon atoms in the alkyl chain



about 10–15 percent of an organic solvent for the higher fatty acid,

about 0.1–1 percent of an alkaline hydroxide selected from the group consisting of ammonium hydroxide and alkali metal hydroxides,

about 0.5–2.5 percent of a nonionic surfactant, and

about 0.1–1 percent of a thixotropic agent.

3,981,835
METHOD OF MAKING A SET WATER-IN-OIL EMULSION INCLUDING A CONTINUOUS RESIN PHASE

John C. van Dyke, Oklahoma City, Okla., assignor to Woods Research and Development Corporation, Oklahoma City, Okla.

Division of Ser. No. 850,629, Aug. 15, 1969, Pat. No. 3,635,289. This application July 1, 1971, Ser. No. 159,002

Int. Cl.² C08L *51/08*

U.S. Cl. 260—29.6 NR **9 Claims**

1. A method of making a set water-in-oil emulsion including a continuous resin phase which comprises from about 40 to about 20 weight percent thereof and a discontinuous water phase which comprises from about 60 to about 80 weight percent thereof from first and second fluids comprising:

a. forming said first fluid which forms said continuous resin phase, said first fluid consisting essentially of an unsaturated polyester resin of an ethylenically unsaturated aliphatic dicarboxylic acid and a saturated aliphatic glycol, an ethylenically unsaturated monomer selected from the group consisting of acrylonitrile, styrene, and methyl methacrylate, and having an effective amount of a catalyst promoter therefor mixed thoroughly therewith;

b. forming said second fluid consisting essentially of water with from about 0.5 to about 5 weight percent based on the total weight of said first and second fluids of a nonionic colloidal suspension agent thoroughly admixed therein, and an effective amount of a catalyst for said polymerizable component, thoroughly admixed therein; and

c. thoroughly admixing said first and second fluids to form an emulsion and allowing said emulsion to set to form said set water-in-oil emulsion.

3,981,836
YARN SIZES, SIZING TREATMENTS AND RESULTING SIZED YARNS

James C. Pangle, Jr., Danville, Va., and Alton D. Hicks, Mauldin, S.C., assignors to Dan River Inc., Danville, Va.

Division of Ser. No. 744,292, July 12, 1968, Pat. No. 3,630,983, which is a continuation-in-part of Ser. Nos. 407,551, Oct. 29, 1964, abandoned, and Ser. No. 491,399, Sept. 29, 1965, and Ser. No. 670,787, Sept. 26, 1967. This application Sept. 3, 1971, Ser. No. 177,827

Int. Cl.² D06M *15/14*

U.S. Cl. 260—29.6 H **8 Claims**

1. A textile size composition dispersible in water comprising a mixed salt of a styrene-maleic anhydride copolymer, 20 to 80 weight percent of the cations of said salt being ammonium cations and 20 to 80 weight percent of said cations being alkali metal cations.

3,981,837
LARGE PARTICLE SIZE SYNTHETIC LATEX EMULSIFIERS

John G. Papalos, Kearny, and James S. Lee, Long Valley, both of N.J., assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation of Ser. No. 334,849, Feb. 22, 1973, abandoned. This application Mar. 22, 1974, Ser. No. 453,924

Int. Cl.² C08F *2/26;* **C08L** *9/04, 9/08, 27/06*

U.S. Cl. 260—29.7 SQ **16 Claims**

1. In the process of manufacturing synthetic latexes, using a recipe containing a diluent, an emulsifier, an initiator, and at least one relatively water insoluble latex monomer, with optionally, a chelating agent, an electrolyte, a chain transfer agent, and a secondary emulsifier, the improvement comprising forming large particle size latexes by using in the recipe from about 0.5 to 4.0 parts by weight, based on 100 parts by weight of latex monomers, of a primary emulsifier system comprising

a. from about 35 to about 87% by weight of a salt of a mono-alkyl benzene mono-sulfonate, and

b. the balance being mono-alkyl benzene wherein the alkyl moiety is linear, saturated or unsaturated and has from about 6 to about 20 carbon atoms.

3,981,838
LUBRICANT FOR POLYVINYL CHLORIDE

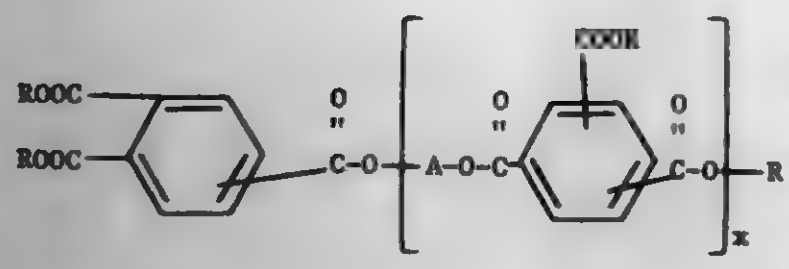
Alfred P. Wilson, St. Charles, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 515,437, Oct. 16, 1974, abandoned, which is a continuation-in-part of Ser. No. 373,482, June 25, 1973, abandoned, which is a continuation-in-part of Ser. No. 373,481, June 25, 1973, abandoned. This application Nov. 28, 1975, Ser. No. 635,851

Int. Cl.² C08K *5/12*

U.S. Cl. 260—31.6 **7 Claims**

1. In extrusion of a rigid polymer selected from the group consisting of vinyl chloride polymer, vinyl chloride-vinyl acetate copolymer, acrylonitrile-butadiene-styrene terpolymer and methylmethacrylate-butadiene-styrene terpolymer, whereby the polymer is forced through an orifice to produce a continuously formed profile, the improvement comprising adding to the polymer before extrusion an effective internal and external lubricating amount of up to 4 phr of a reaction product of (a) trimellitic acid, trimellitic anhydride or a mixture thereof and (b) a dihydric alcohol, in a molar ratio between 1.6 to 1 and 4.0 to 1, and (c) one or more aliphatic mono alcohols, such product having the formulae:



wherein such product comprises a mixture of a plurality of species with $x = 0, 1, 2, 3$ or 4 and where A is an aliphatic diradical containing 2 to 10 carbon atoms, R is individually selected from the group consisting of alkyl radicals containing 16 to 35 carbon atoms and hydrogen.

3,981,839

PROCESS FOR THE PREPARATION OF POLYMER DISPERSIONS

Brian Roy Asher, Egham, and Morice William Thompson, Maidenhead, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 12, 1974, Ser. No. 478,831

Claims priority, application United Kingdom, June 18, 1973, 28837/73

Int. Cl.^{2} C08J *3/02;* **C08K** *5/01, 5/02, 5/05*

U.S. Cl. 260—33.6 R **10 Claims**

1. A process for the preparation of a dispersion of a condensation polymer, in which the links between the reactants forming the polymer chain involve atoms other than carbon and in the formation of which a low molecular weight by-product is eliminated, in a first liquid medium selected from the group consisting of hydrocarbons and chlorinated hydrocarbons in which the polymer is insoluble, the process comprising heating in the said first liquid medium, at a temperature of at least 150°C, an appropriate polymer-forming reactant or reactants, said first liquid having a boiling point not lower than the temperature at which the polymer is formed and the reactant or at least one of the reactants being insoluble therein, each said insoluble reactant being dissolved at a concentration of from 10% to 90% by weight in a second liquid which is inert towards the polymer-forming reaction, is substantially immiscible with the first liquid at the temperature of the said reaction and is capable of being separated from the first liquid by distillation, and the solution of the reactant in the second liquid being present as the liquid disperse phase of an emulsion of which the continuous phase is the first liquid, the polymerization taking place in the disperse phase which constitutes from 10% to 75% by volume of the total emulsion, and wherein there is present, in an amount of from 1% to 10% by weight of the said disperse phase, an emulsifying agent which has at least one polymeric component soluble in the said continuous phase and at least one other polymeric component soluble in the said disperse phase, one of the polymeric components of the emulsifying agent which is soluble in the said disperse phase being also capable of sufficient association with the polymer produced for the preparation of a stable, finely divided polymer dispersion.

3,981,840

METHOD FOR MOLDING THERMOPLASTIC RESIN COMPOSITIONS

Sadanori Yamamoto, and Isao Osada, both of Hirakata, Japan, assignors to Joto Chemical Company Limited, Japan

Continuation-in-part of Ser. No. 257,720, May 30, 1972, abandoned. This application Mar. 13, 1974, Ser. No. 450,797

Claims priority, application Japan, June 3, 1971, 46-38230

Int. Cl.^{2} C08K *9/00*

U.S. Cl. 260—42 **7 Claims**

1. Process for manufacture of shaped articles by molding a thermoplastic resin composition and a filler which comprises (1) preheating the filler to a preheating temperature at which the filler has an amount of heat sufficient for heating the resin to its melting point and which is about 50° to about 200°C higher than the melting point of the thermoplastic resin, (2) mixing and heating thermoplastic resin with the filler in a true volume ratio of resin to filler between about 1 to 0.5 and about 1 to 1.5, controlling said preheating temperature of the filler being limited to a temperature T_2 which is defined by the relation $W_1C_1\,(T_M-T_1)=W_2C_2\,(T_2-T_M)$ wherein W_1 and W_2 are the respective weights of resin and filler in one mixture, C_1 and C_2 are the respective specific heats of the resin and filler, T_1 is the temperature of the resin, and T_M is the melting point of the resin, and (3) subsequently kneading the resultant mixture of resin and filler under pressure, and then molding the resultant mixture to form the desired shaped article.

3,981,841

BLENDS OF A POLYPHENYLENE ETHER RESIN, ALKENYL AROMATIC RESINS MODIFIED WITH EPDM RUBBER AND GRAFT POLYMERIZED HIGH RUBBER CONTENT POLYMERS

Visvaldis Abolins; Glenn D. Cooper, both of Delmar, and Gim F. Lee, Jr., Albany, all of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Feb. 15, 1974, Ser. No. 443,150

Int. Cl.^{2} C08K *7/14;* **C08L** *51/04*

U.S. Cl. 260—42.18 **11 Claims**

1. A thermoplastic molding composition which comprises:
a. from 20–65% by weight of a polyphenylene ether resin;
b. from 25–70% by weight of an alkenyl aromatic resin that is modified with from 5 to 20% by weight of a rubbery interpolymer which comprises 10–90 mole percent of ethylene, 10–90 mole percent of an alpha olefin having from 3–10 carbon atoms and from 0.1–10 mole percent of a polyene that is a non-conjugated cyclic or open-chain diene that has from 5–10 carbon atoms; and
c. from 5–20% by weight of an emulsion graft copolymer of from 40–70 parts by weight of an alkenyl aromatic resin and from 30 to 60 parts by weight of a rubbery interpolymer which comprises 10–90 mole percent of ethylene, 10–90 mole percent of an alpha olefin having from 3–10 carbon atoms and from 0.1–10 mole percent of a polyene that is a non-conjugated cyclic or open-chain diene that has from 5–10 carbon atoms.

3,981,842

SUBSTANTIALLY NON-INFLAMMABLE ACRYLONITRILE POLYMERS CONTAINING ANTIMONY SALTS

Eduard Radlmann, Dormagen-Hackenbroich; Heinz Schaffner, Dormagen; Günter Lorenz, Dormagen, and Günther Nischk, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 8, 1975, Ser. No. 575,591

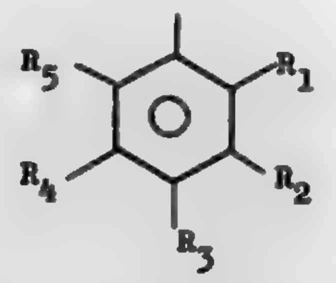
Claims priority, application Germany, May 8, 1974, 2422171

Int. Cl.^{2} C08J *3/20*

U.S. Cl. 260—45.75 B **5 Claims**

1. A composition of matter which comprises a copolymer of acrylonitrile and a member selected from the group consisting of vinyl halide, vinylidene halide and a mixture thereof and from 0.1 to 5% by weight based on the total mixture of antimony in the form of a water-insoluble complex antimony compound containing at least one amide group which compound is formed by reacting an antimony oxide of Sb to acid in a molar ratio of 1:2 to 1:4 with an α-hydroxy carboxylic acid selected from the group consisting of tartaric acid, malic acid, lactic acid, glycolic acid, citric acid, mucic acid and glyceric acid in a polar organic solvent at a temperature in the range of from 100 to 200°C, and reacting the resulting reaction product with the stoichiometric quantity of a monoisocyanate at a temperature below 100°C, said monoisocyanate corresponding to the general formula R—N═C═O, wherein R is a

linear or branched alkyl radical with from 1 to 20 carbon atoms, or represents the radical:



in which R_1, R_2, R_3, R_4 and R_5 which may be identical or different, represent a member selected from the group consisting of hydrogen, an alkyl radical with from 1 to 5 carbon atoms, fluorine, chlorine and bromine.

3,981,843

IMPACT-RESISTANT, FLAME-RETARDANT RESIN COMPOSITION

Hiroyuki Yoshizaki, Toyonaka; Hiromitsu Takanohashi, Takarazuka; Yoshitaka Masuda, Toyonaka; Yukio Hozumi, Sakai; Akira Ohi, Sakai, and Yuzo Sonoyama, Sakai, all of Japan, assignors to Daicel, Ltd., Osaka and Mitsubishi Gas Chemical Company, Inc., Tokyo, both of, Japan

Filed Sept. 27, 1974, Ser. No. 510,047

Claims priority, application Japan, Sept. 28, 1973, 48-109575

Int. Cl.^{2} C08K *5/59;* **C08L** *67/06*

U.S. Cl. 260—45.75 B **8 Claims**

1. An impact-resistant, flame retardant, blended resin composition in which the resin components of said composition consist essentially of a mixture of
A. from 15 to 85 weight percent of ABS resin,
B. from 15 to 85 percent by weight of a high molecular weight aromatic polycarbonate copolymer prepared from a mixture of bisphenols consisting essentially of from 5 to 50 weight percent of nuclear-halogen-substituted bisphenol and the balance is an unsubstituted bisphenol,

and an inorganic or organic antimony flame-retardant compound in an amount of from 0.3 to 5 parts by weight per 100 parts by weight of the resin mixture.

3,981,844

STABLE EMULSION AND METHOD FOR PREPARATION THEREOF

Lubomyr T. Romankiw, Briarcliff Manor, N.Y., assignor to IBM, Armonk, N.Y.

Filed June 30, 1975, Ser. No. 591,981

Int. Cl.^{2} H01F *1/00*

U.S. Cl. 252—62.52 **18 Claims**

1. An emulsion having a continuous and discontinuous phase comprising:
A. water;
B. a water-immiscible organic liquid phase comprising a solution of:
  1. a liquid nonpolar hydrocarbon selected from the group consisting of aliphatic hydrocarbons, aromatic hydrocarbons, and mixtures thereof; and
  2. a liquid halogenated aliphatic hydrocarbon;
C. a colloidal suspension in the discontinuous or continuous phase of the emulsion of ferromagnetic particles and a surface-active agent in an amount at least sufficient to stabilize the ferromagnetic particles in the desired discontinuous or continuous phase of the emulsion;
D. the relative proportions of said nonpolar hydrocarbon and said halogenated aliphatic hydrocarbon being such that the density of the water phase and the density of the water-immiscible liquid phase are substantially equal to each other; and
E. said nonpolar hydrocarbon and said halogenated aliphatic hydrocarbon being mutually soluble in each other and being compatible with said surface-active agent.

3,981,845

HIGH SURFACE AREA POLYCONDENSATION POLYMER PARTICULATES BASED ON UREA AND FORMALDEHYDE

Alfred Renner, Muenchenstein, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 442,901, Feb. 15, 1974, abandoned, which is a continuation-in-part of Ser. No. 380,127, July 17, 1973, abandoned, which is a continuation of Ser. No. 275,658, July 27, 1972, abandoned, which is a continuation-in-part of Ser. Nos. 102,170, Dec. 28, 1970, abandoned, and Ser. No. 83,624, Oct. 23, 1970, abandoned, said Ser. No. 102,170, is a division of Ser. No. 389,197, Aug. 12, 1964, abandoned, and Ser. No. 775,964, Nov. 14, 1968, Pat. No. 3,553,115, which is a continuation-in-part of Ser. No. 807,926, March 17, 1969, abandoned. This application May 27, 1975, Ser. No. 580,792

Claims priority, application Switzerland, Aug. 23, 1963, 10437/63; Mar. 21, 1968, 04169/68

Int. Cl.^{2} C08G *12/12*

U.S. Cl. 260—69 R **5 Claims**

1. An insoluble, infusible, finely dispersed, non-porous urea-formaldehyde condensation product in particulate form having a specific surface area of more than 10 m^2/g and an average particle size smaller than 5 microns.

3,981,846

WORKABLE AND THERMAL STABLE INTERPOLYMERS OF DICARBOXYLIC ACID ESTERS AND VINYL CHLORIDE

Johannes Freytag, Troisdorf-Siegler, and Hans-Ewald Konermann, Troisdorf-Oberlar, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Continuation of Ser. No. 139,140, April 30, 1971, abandoned. This application June 29, 1973, Ser. No. 375,210

Claims priority, application Germany, May 5, 1970, 2021938; June 2, 1970, 2026821

Int. Cl.^{2} C08F *15/32, 45/58*

U.S. Cl. 526—227 **4 Claims**

1. Vinyl chloride resin having good workability and formable into articles having high thermal stability which comprises:
a. vinyl chloride polymer which is a copolymer of vinyl chloride and cetyl alcohol diester of at least one of fumaric acid and maleic,
b. additives including
  1. a plasticizer, and
  2. an organic peroxide cross-linking agent having a starting temperature above 150°C.

3,981,847

PROCESS FOR THE PRODUCTION OF POLYAMIDOCARBOXYLIC ACIDS

Gerhard Meyer; Anton Toth, both of Obernburg, and Dieter Laudien, Wuppertal, all of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Nov. 7, 1974, Ser. No. 521,848

Claims priority, application Germany, Nov. 16, 1973, 2357297

Int. Cl.^{2} C08G *73/10*

U.S. Cl. 260—78 TF **9 Claims**

1. In a process for the production of a polyamic acid as the prepolymer in the formation of a polyimide by the reaction of approximately equimolar amounts of a tetracarboxylic acid dianhydride with a diprimary diamine at a temperature below about 50°C. and under substantially water-free conditions in an anhydrous, polar, aprotic organic solvent, the improvement which comprises:

first treating the dianhydride reactant in the form of solid fine particles by adding thereto a limited amount of a solvent, using (a) an inert organic solvent in an amount sufficient only to wet said dianhydride or (b) a polar, aprotic organic solvent in an amount at least sufficient to wet said dianhydride up to an amount which forms the dianhydride into a paste or suspension; and

then adding a solution of said diamine in the polar, aprotic organic solvent continuously or in portions to the thus treated dianhydride under thorough mixing.

3,981,848

PHOTOCONDUCTIVE COMPOSITIONS AND IMAGING MEMBERS AND METHODS EMPLOYING SAME

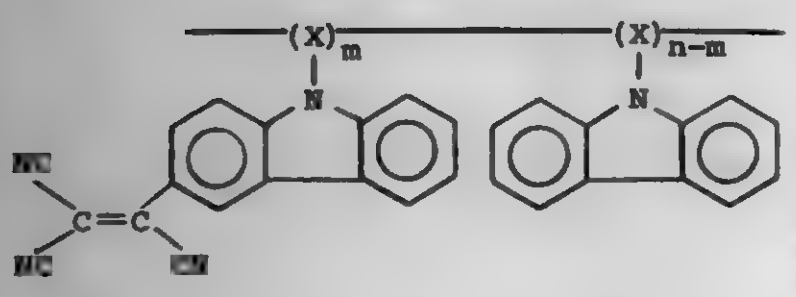
William W. Limburg, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 374,187, June 27, 1973, abandoned. This application Feb. 20, 1974, Ser. No. 444,215

Int. Cl.^{2} C08F *22/30, 26/12*

U.S. Cl. 526—263 **5 Claims**

1. A photoconductive polymer of the formula



wherein

X is a structural unit of the backbone of the photoconductive polymer;

n is the total number of N-carbazyl groups pendant from the backbone of the photoconductive polymer; and

m is at least 0.1 percent of the number of N-carbazyl functional groups pendant from the backbone of the photoconductive polymer.

3,981,849

LOW PRESSURE PROCESS FOR THE PRODUCTION OF LOW DENSITY CO- AND TERPOLYMERS OF ETHYLENE

Albert Frese; Fritz Baxmann, and Walter Dittmann, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Oct. 2, 1974, Ser. No. 511,130

Claims priority, application Germany, Oct. 5, 1973, 2350065

Int. Cl.^{2} C08F *10/02, 10/06, 10/08*

U.S. Cl. 526—82 **12 Claims**

1. In a process for the production of low density thermoplastic ethylene copolymers by low pressure copolymerization of ethylene with 0.1 to 20 molar percent of an α-olefin comonomer selected from the group consisting of propylene, butene-1 and mixtures thereof with a particulate mixed polymerization catalyst consisting essentially of (a) titanium trichloride and (b) a trialkylaluminum or a dialkylaluminum hydride in a molar ratio Al:Ti of 0.5 – 4.0, the improvement which comprises conducting the polymerization as a liquid phase solution polymerization employing a polymerization solvent consisting essentially of C_4 or a mixture of C_3 and C_4 hydrocarbons containing 0.1–20 molar percent of said α-olefin, 1–60 molar percent of butane, propane or mixtures thereof and 20–98.0 molar percent of butene-2 to form said copolymer product substantially free of homopolymers, provided that the maximum amount of butene-1 present in the solvent mixture is not greater than 5 molar percent and the maximum amount of propylene is not greater than 3 molar percent at a polymerization temperature of 70 to 100°C.; the maximum amount of butene-1 present in the solvent mixture is not greater than 10 molar percent and the maximum amount of propylene is not greater than 5 molar percent at a polymerization temperature of 50 to 70°C.; and the maximum amount of butene-1 present in the solvent mixture is not greater than 20 molar percent and the maximum amount of propylene is not greater than 15 molar percent at a polymerization temperature of 20°to 50°C.

3,981,850

PROCESS FOR PREPARING COPOLYMERS OF ETHYLENE AND VINYL ESTERS OR MIXTURES WITH OTHER ETHYLENICALLY UNSATURATED MONOMERS

Max J. Wisotsky, Highland Park, and Norman Tunkel, Perth Amboy, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 158,615, June 30, 1971, abandoned, which is a continuation of Ser. No. 808,040, March 12, 1969, abandoned, which is a continuation-in-part of Ser. No. 717,902, April 1, 1968, abandoned. This application Aug. 19, 1975, Ser. No. 605,901

Int. Cl.^{2} C08F *210/02*

U.S. Cl. 526—227 **3 Claims**

1. A method of copolymerizing about 3 to 20 molar proportions of ethylene per molar proportion of vinyl acetate to form a pour depressant copolymer having less than 6 methyl terminating side branches per 100 methylene groups and having a molecular weight of about 1,000 to 2,900, which comprises copolymerizing said ethylene and vinyl acetate in cyclohexane as solvent at a temperature of about 70° to 130°C. using dilauroyl peroxide catalyst and under pressure of 500 to 3,000 psi.

3,981,851

PRIMER COMPOSITIONS

Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 216,769, Jan. 10, 1972, Pat. No. 3,808,018. This application Nov. 19, 1973, Ser. No. 417,014

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

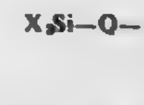
Int. Cl.^{2} C08F *212/08*

U.S. Cl. 526—267 **8 Claims**

1. A composition consisting essentially of

a. 80 to 99.99 weight percent of a tackifier component consisting essentially of a resin having a molecular weight of no more than 12,000, said resin being selected from the group consisting of polyterpenes, coumarone-indene resins and modified coumarone-indene resins, polycyclopentadiene, aliphatic hydrocarbon resins and chlorinated aliphatic hydrocarbon resins having a ring and ball softening temperature of from 50° to 120°C., said aliphatic resins being derived from olefinic monomers having 3 to 5 inclusive carbon atoms; polystyrene and copolymers of styrene with at least one ethylenically unsaturated aromatic monomer, phenolic and modified phenolic resins and chlorinated terphenyl or diphenyl resins having a chlorine content of about 42 to 65 weight percent; and

b. 0.01 to 20 weight percent of an organosilicon compound of the general formula



$$X_3Si—Q—\underset{\displaystyle R'}{\underset{|}{NH}}$$

water-soluble partial condensates thereof and hydrochloride salts thereof in which

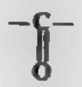
X is the hydroxyl group or a hydrolyzable radical;

Q is a divalent hydrocarbon radical or a substituted divalent hydrocarbon radical containing nitrogen in the form of

$$—NR$$

groups wherein R is a hydrogen atom, a lower alkyl group containing from 1 to 6 inclusive carbon atoms or a phenyl radical; and

R′ is selected from the group consisting of the hydrogen atom, monovalent hydrocarbon radicals containing from 1 to 18 inclusive carbon atoms and substituted monovalent hydrocarbon radicals containing oxygen in the form of —COC or



$$—\underset{\displaystyle O}{\underset{\|}{C}}—$$

and having from 1 to 18 inclusive carbon atoms.

3,981,852

POLYTETRAFLUOROETHYLENE MOLDING POWDER

Carl Harding Manwiller, Wilmington, Del., and Carleton Angelo Sperati, Parkersburg, W. Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed June 17, 1974, Ser. No. 480,142

Int. Cl.^{2} C08F *114/26, 214/26*

U.S. Cl. 526—250 **13 Claims**

1. Polytetrafluoroethylene molding powder having

a. a specific surface area of at least 1.5 m^2/g,

b. an average particle diameter of less than 100 microns;

c. an apparent density of at least 500 g/l, with the proviso that the apparent density is at least as great as the value calculated from the equation

$$\text{apparent density} = 500\ g/l + 3.00\ (\Delta SG_{5-1})$$

wherein ΔSG_{5-1} is 1000 times the difference in specific gravities of sintered moldings made at preform pressures of 1000 psi and 5000 psi wherein said ΔSG_{5-1} is no greater than 75,

d. a tensile strength of at least 245 kg/cm^2 at 70 kg/cm^2 preform pressure,

e. a porosity of less than 0.20, and

f. a ΔSG_{5-1} no greater than 75.

3,981,853

POLYTETRAFLUOROETHYLENE MOLDING POWDER FROM POLYTETRAFLUOROETHYLENE FINE POWDER

Carl Harding Manwiller, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Comany, Wilmington, Del.

Filed June 17, 1974, Ser. No. 480,143

Int. Cl.^{2} C08F *114/26, 214/26*

U.S. Cl. 526—255 **6 Claims**

1. A process for making polytetrafluoroethylene molding powder from polytetrafluoroethylene fine powder obtained from aqueous dispersion polymerization comprising compacting said fine powder at a temperature of about 20° to 30°C. at a pressure of 8000 psi to 50,000 psi and partially decompacting the resultant compact to said molding powder having an average diameter of less than 100 microns.

3,981,854

CHLOROPRENE POLYMER ISOLATION

Thomas James Kelly, Metairie, La., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed June 2, 1975, Ser. No. 582,811

Int. Cl.^{2} C08F *6/22*

U.S. Cl. 528—481 **10 Claims**

1. In the process of acidifying an alkaline latex of a chloroprene polymer to a pH of about 5.0–6.5 prior to the isolation of said polymer by coagulation on a freeze drum, the improvement of adding to said latex a combination of a strong acid and a weak acid, wherein

the strong acid is selected from the group consisting of oxalic acid and sulfonic acids represented by the formula RSO_3H, where R is (a) a C_4–C_{11} alkyl, or (b) an aryl, alkaryl, or aralkyl group in which the sum of the number of any alkyl carbons plus one-half the number of aryl carbons totals 3–11;

the weak acid is a C_1–C_6 carboxylic acid having a first ionization constant whose negative logarithm, pKa, at 25°C., is about 3.5–5.0; and

the proportion of the strong acid in the combination is about 10–80 mole percent.

3,981,855

REACTOR PROCESS CONDITIONS CONTROL

Max Klein, New Shrewsbury, N.J., assignor to Normac, Inc., Tinton Falls, N.J.

Continuation-in-part of Ser. No. 814,879, March 19, 1969, abandoned, which is a continuation-in-part of Ser. No. 601,148, Dec. 12, 1966, abandoned, which is a continuation-in-part of Ser. No. 460,187, June 1, 1965, abandoned, and a continuation-in-part of Ser. No. 218,596, Jan. 17, 1972, Pat. No. 3,880,771, which is a continuation-in-part of Ser. No. 700,704, Jan. 26, 1968, abandoned, and a continuation-in-part of Ser. No. 106,915, Jan. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 889,332, Dec. 31, 1969, abandoned, which is a continuation-in-part of Ser. No. 515,445, Dec. 21, 1965, abandoned, and a continuation-in-part of Ser. No. 15,935, March 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 488,756, Sept. 20, 1965, abandoned. This application June 26, 1972, Ser. No. 266,469

Int. Cl.^{2} B01J *1/00;* **B08B** *13/00;* **C08F** *2/00*

U.S. Cl. 526—63 **8 Claims**

1. The method of conducting under selected temperature conditions and with agitation a chemical operation which includes agitating a liquid phase under selected temperature conditions, which method comprises enclosing whatever starting materials are involved in the selected operation, which includes agitating a liquid phase under selected temperature conditions, in a liquid-tightly enclosed cylindrical operating zone by a liquid-tightly closeable zone-enclosure which enclosure is a heat conductor and has a greater axial length than diameter and is substantially completely enveloped by a temperature-control fluid-confining zone divided into a plurality of substantially equal control-fluid zonal parts; and agitating said operating zone contents by rotating said enclosed operating zone jointly with said fluid-confining zone end over end about an axis substantially perpendicular to and intersecting its longitudinal axis generally about midway between its ends, while running temperature-control fluid separately through each of said zonal parts under substantially identical flow pattern to provide substantially uniform overall indirect heat transfer between the temperature-control fluid and said operating zone contents.

2. The method as claimed in claim 1, wherein the starting materials involved in it comprise polyvinyl chloride insulation covered copper wire and an organic solvent for said insulation in an amount sufficient to dissolve said insulation, and the operating zone is rotated end over end for a time sufficient to dissolve the insulation from said wire at a temperature below that at which the polyvinyl chloride is degraded.

3. The method of conducting a polymerization under selected temperature conditions and with agitation, which method comprises enclosing the polymerization starting materials including at least one fluid polymerizable monomer and a polymerization catalytically effective amount of a compatible catalyst effective for the polymerization of the monomer, in a liquid tightly-enclosed cylindrical operating zone by a liquid-tightly closeable zone-enclosure which enclosure is a heat conductor and has a greater axial length than diameter and is substantially completely enveloped by a temperature-control fluid-confining zone divided into a plurality of substantially equal control-fluid zonal parts; and agitating said operating zone contents by rotating said enclosed operating zone jointly with said fluid-confining zone end over end about an axis substantially perpendicular to and intersecting its longitudinal axis generally about midway between its ends, while running temperature-control fluid separately through each of said zonal parts under substantially identical flow pattern to provide substantially uniform overall indirect heat transfer between the temperature-control fluid and said operating zone contents.

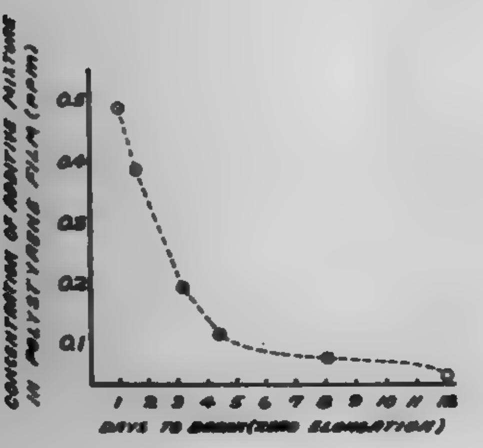
3,981,856
DEGRADABLE HYDROCARBON POLYMERS CONTAINING A METAL COMPOUND AND A BENZOTRIAZOLE

Donald E. Hudgin, Princeton Junction, and Thomas Zawadzki, Princeton, both of N.J., assignors to Princeton Polymer Laboratories, Incorporated, Princeton, N.J.

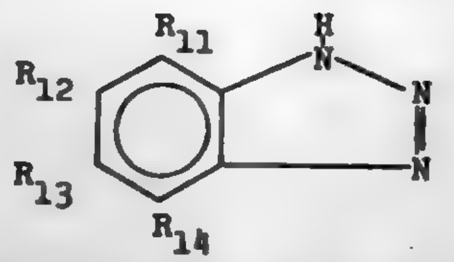
Division of Ser. No. 455,334, March 7, 1974, which is a division of Ser. No. 269,291, July 6, 1972, Pat. No. 3,830,764. This application Jan. 20, 1975, Ser. No. 542,299

Int. Cl.² C08J *3/20*

U.S. Cl. 526—4 25 Claims



1. A polymeric composition having a controllable degradation rate in sunlight and air comprising (1) a polymer which is a member selected from the group consisting of polymer of an olefin having 2 to 3 carbon atoms and styrene polymers and (2) a two component additive system, the first component of said additive being selected from the group consisting of (a) salts of an organic carboxylic acid with a metal capable of existing in at least two valence states and (b) chelates of a metal capable of existing in at least two valence states with a beta diketone, and the second component of the additive being a benzotriazole of the formula:



wherein R_{11}, R_{12}, R_{13} and R_{14} are selected from the group consisting of hydrogen, halogen alkyl, aryl, alkoxy, aralkyl, aroyl and aryloxy groups, said additive system being present in an amount effective to decrease the time of degradation of the polymer under the influence of ultraviolet light, each of said components of the additive system being present in an amount sufficient that the mixture thereof is more effective to decrease the time of degradation of the polymer than a corresponding amount of either member of the two component additive system by itself.

3,981,857
GELATIN HARDENING PROCESS

Teiji Habu; Hisashi Yamaguchi; Tsuneo Wada; Takashi Sasaki; Hiroki Ishii; Takayoshi Omurà, and Hiroyuki Inokuma, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

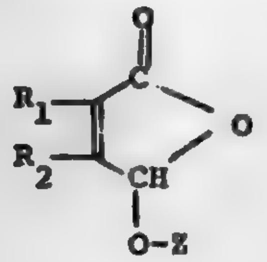
Filed Mar. 18, 1974, Ser. No. 452,374

Claims priority, application Japan, Mar. 19, 1973, 48-30948; Mar. 19, 1973, 48-30949

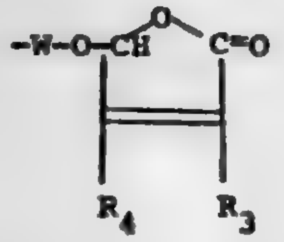
Int. Cl.² C09H *7/00*

U.S. Cl. 260—117 3 Claims

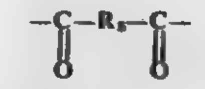
1. A process for hardening photographic gelatin which comprises reacting photographic gelatin with a compound of the general formula



wherein R_1 is selected from the group consisting of halogen, substituted- and unsubstituted- aryloxy and -arylthio, R_2 is halogen, Z is selected from the group consisting of —X—Y and



wherein X is $(C{=}0)_m$, wherein *m* is 0 or 1, Y is selected from the group consisting of substituted- and unsubstituted- alkyl, -alkenyl and -aryl, W is selected from the group consisting of alkylene,



$$-\underset{\substack{\|\\ O}}{C}-R_5-\underset{\substack{\|\\ O}}{C}-$$

and $—R_6—(—0_6)_n—)$
wherein
R_5 is selected frm the group consisting of substituted- and unsubstituted- alkylene and -arylene, R_6 is selected from the group consisting of substituted and unsubstituted alkylene, *n* is a positive integer, R_3 is selected from the group consisting of halogen, substituted- and unsubstituted- aryloxy and -arylthio, and R_4 is halogen, provided that when Z is —X—Y, R_1 is selected from the group consisting of aryloxy and arylthio.

3,981,858
ALKOXY- AND CYCLOHEXYLOXYCARBONYLAMINOPHENYL-AZO-HYDROXYNAPHTHALENES CONTAINING AT LEAST ONE SULFO GROUP

Roland Mislin, Saint-Louis, France, and Hanspeter Uehlinger, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

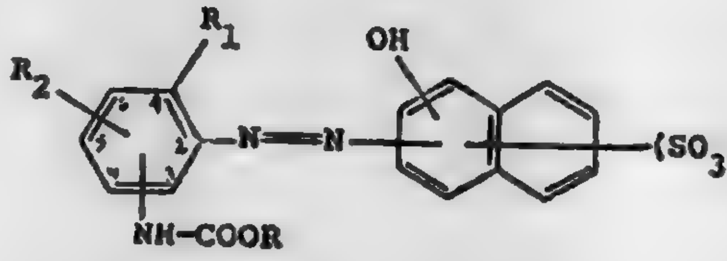
Filed Jan. 15, 1973, Ser. No. 323,621

Claims priority, application Switzerland, Jan. 20, 1972, 823/72

Int. Cl.² C07C *107/04*

U.S. Cl. 260—201 38 Claims

1. A compound of the formula



or a salt thereof, wherein
- R is alkyl of 6 to 18 carbon atoms, substituted alkyl of 6 to 18 carbon atoms, cyclohexyl or substituted cyclohexyl,
- R_1 is hydrogen, halo, alkyl of 1 to 18 carbon atoms, substituted alkyl of 1 to 18 carbon atoms or sulfo,
- R_2 is hydrogen, halo, alkyl of 1 to 18 carbon atoms or substituted alkyl of 1 to 18 carbon atoms, and
- *n* is 0, 1 or 2, with the proviso that the compound contains at least one sulfo group,

wherein
- each substituent of each substituted alkyl is independently halo, hydroxy, cyano, alkoxy of 1 to 6 carbon atoms, phenyl, substituted phenyl, naphthyl or substituted naphthyl, wherein each substituted phenyl and substituted naphthyl independently has 1 to 2 substituents and each substituent is independently halo, cyano, nitro, hydroxy, trifluoroalkyl of 1 to 6 carbon atoms, trichloroalkyl of 1 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms, cycloalkyl of 5 to 7 carbon atoms, phenyl, naphthyl, alkoxy of 1 to 6 carbon atoms, phenoxy, naphthyloxy, alkoxycarbonyl of 2 to 7 carbon atoms, sulfamoyl, alkylsulfonyl of 1 to 6 carbon atoms, phenylsulfonyl, naphthylsulfonyl, carbamoyl or sulfo,
- each substituent of each substituted cyclohexyl is independently alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms or halo, and

each halo is independently fluoro, chloro, bromo or iodo.

3,981,859
SILICONE-COMPATIBLE AZO DYESTUFFS

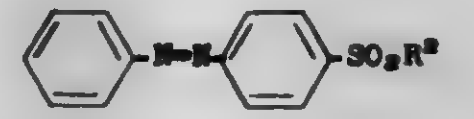
Carl Mayn Smith, White Bear Lake, and George Van Dyke Tiers, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 275,190, July 26, 1972, Pat. No. 3,888,891. This application Aug. 28, 1974, Ser. No. 501,211

Int. Cl.² C09B *43/00*

U.S. Cl. 260—205 1 Claim

1. An azo dyestuff of the formula:



wherein R^2 is tris(trimethylsilyloxy)silylalkylamino

$R'—N—R—Si[OSi(CH_3)_3]_3$

in which R is straight or branched chain unsubstituted alkylene of 1–6 carbon atoms and R' is hydrogen or unsubstituted lower alkyl of 1 to 6 carbon atoms.

3,981,860
2,3:4,5-DI-O-SUBSTITUTED GLUCONATES

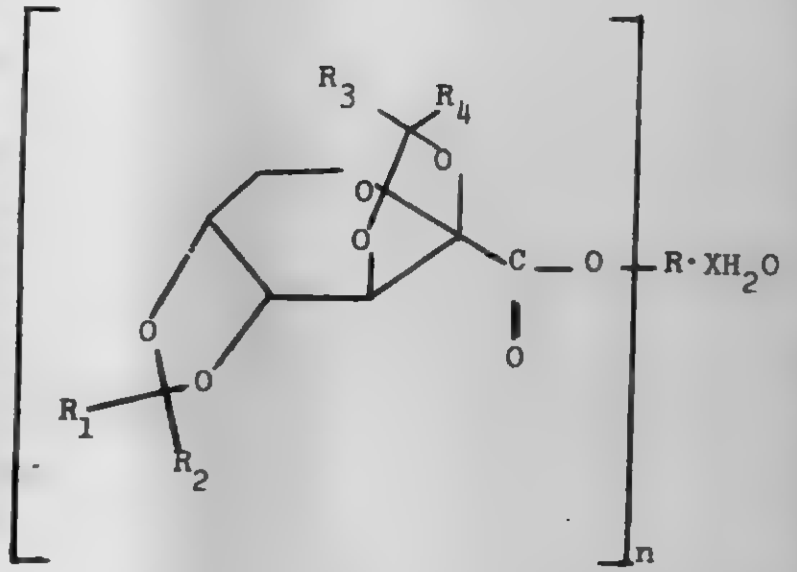
William Szkrybalo, Verona, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 344,657, March 26, 1973, abandoned. This application June 20, 1974, Ser. No. 481,265

Int. Cl.² C07H *9/04*

U.S. Cl. 536—4 45 Claims

1. A compound represented by the formula



wherein, when *n* is 1, R is straight or branched chain alkyl of from 1 to 12 carbon atoms, straight or branched chain lower alkenyl, straight or branched chain lower alkynyl, or halo-lower alkyl and, when *n* is 2, R is lower alkylene; R_1, R_2, R_3 and R_4 are hydrogen, straight or branched chain lower alkyl, straight or branched chain lower alkenyl, straight or branched chain lower alkynyl, halo-lower alkyl, phenyl, mono-(lower alkoxy) phenyl or R_1 and R_2 together and R_3 and R_4 together are each a saturated ring containing from 3 to 8 carbon atoms and wherein the combination of the substituents of R_1 and R_2 is the same as the combination of the substituents of R_3 and R_4; *n* is an integer from 1 to 2 and X is a number from 0 to 1.

3,981,861
ANTIBIOTIC AMINOGLYCOSIDES, PROCESSES OF PREPARATION AND PHARMACEUTICAL COMPOSITIONS

Jean Bernard Chazan, Paris; Daniel Coussediere, Villejuif, and Jean-Claude Gasc, Bondy, all of France, assignors to Roussel-UCLAF, Paris, France

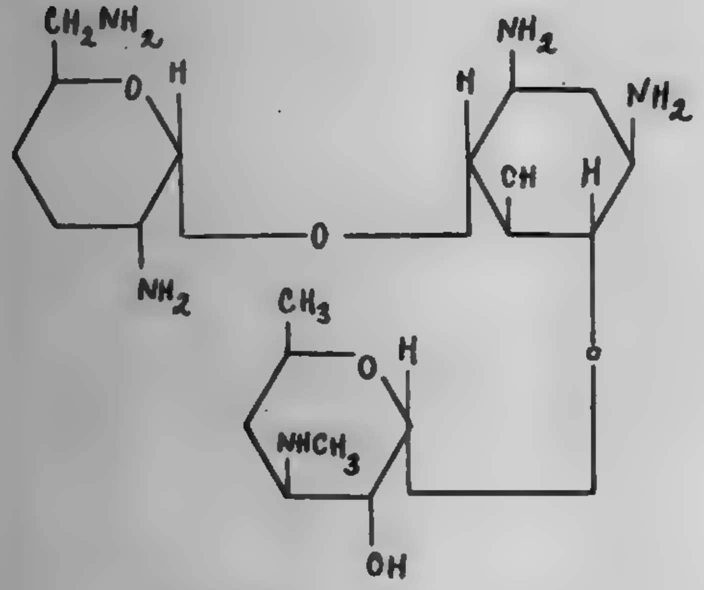
Filed Mar. 7, 1975, Ser. No. 556,405

Claims priority, application France, Mar. 12, 1975, 75.08314

Int. Cl.² C07H *15/22*

U.S. Cl. 536—17 5 Claims

1. The 4-0-(2',6'-diamino 2',3',4',6'-tetradesoxy α,D-erythrohexopyrannosyl) 6-0-(3''-methylamino 3'',4'',6''-tridesoxy α,D-xylohexopyrannosyl) 2-desoxystreptamine of the formula:



and its pharmaceutically acceptable salts.

3,981,862
PREPARATION OF C22-ALKYL DERIVATIVE OF DIGOXIN

Wolfgang Voigtlander, Viernheim; Fritz Kaiser, Lampertheim; Wolfgang Schaumann, Heidelberg, and Kurt Stach, Mannheim-Waldhof, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim, Germany

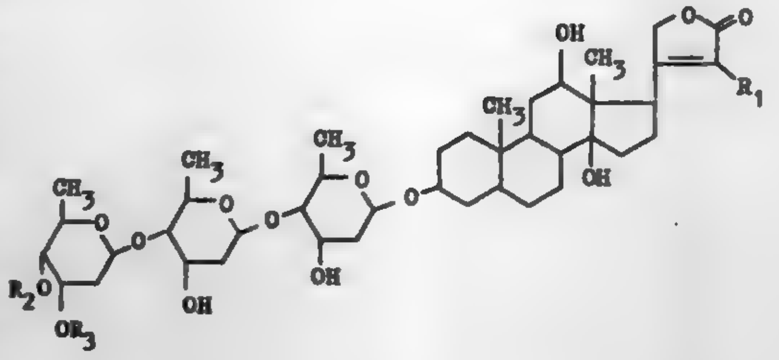
Filed Mar. 14, 1975, Ser. No. 558,381

Claims priority, application Germany, Apr. 13, 1974, 2418127; July 12, 1974, 2433563; Dec. 4, 1974, 2457219

Int. Cl.² C07J *19/00*

U.S. Cl. 536—7 11 Claims

1. A process for the preparation of a C22-alkyl-derivative of digoxin of the formula

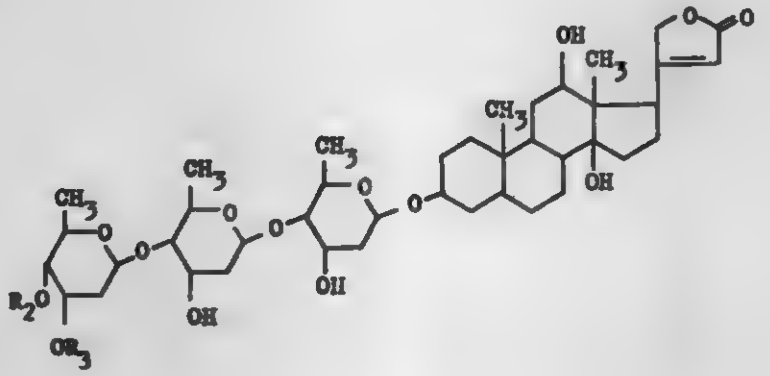


in which

R_1 is alkyl containing up to 4 carbon atoms,

R_2 and R_3 are selected from the group consisting of hydrogen, lower alkanoyl, benzyl, carbobenzoxy, trimethylsilyl, tetrahydropyranyl and phosphonic acid or together are alkylidene,

comprising reacting a compound of the formula



I

with an alkyl iodide of the formula R_1I in the presence of a strongly polar aprotic solvent and an alkali metal hydride.

3,981,863
CYANOCOBALAMIN DERIVATIVES

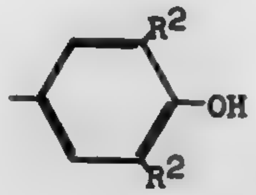
Gordon Dean Niswender, and James M. Hudson, both of Fort Collins, Colo., assignors to Micromedic Diagonistics, Inc., Horsham, Pa.

Filed Feb. 25, 1975, Ser. No. 552,919

Int. Cl.² C07H *23/00*

U.S. Cl. 536—25 7 Claims

1. A vitamin B_{12} derivative in which a hydroxyphenyl group is covalently bonded through one of the $—CH_2CH_2CONH_2$ or $—CH_2CONH_2$ groups initially present in one of the pyrrole nuclei of the vitamin B_{12} molecule, the hydroxyphenyl group being of the formula



wherein R^2 is H or iodine, at least one of R^2 being ^{125}I or ^{131}I.

3,981,864
1,3-BENZODIOXOL DERIVATIVES

Satoru Tanaka, Higashikurume, and Hideaki Watanabe, Ushiku, both of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

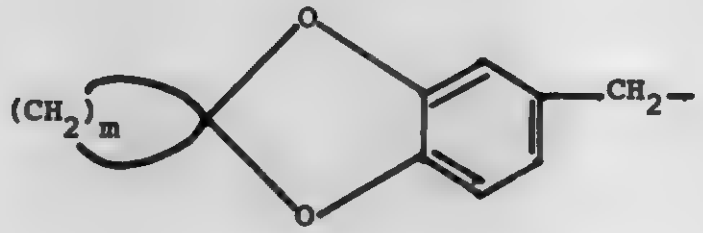
Filed Sept. 5, 1974, Ser. No. 503,515

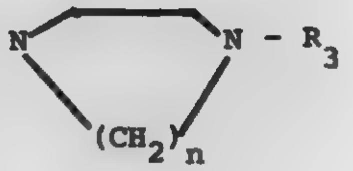
Claims priority, application Japan, Sept. 8, 1973, 48-100761; Sept. 8, 1973, 48-100762

Int. Cl.² C07D *405/02, 267/08*

U.S. Cl. 260—239 BC 2 Claims

1. A member of the group consisting of a compound of the formula





wherein *m* is an integer of 4 or 5, R_3 is methyl, phenyl, halogen substituted phenyl or benzhydryl, and *n* is an integer of 2 or 3 and a pharmalogically acceptable salt thereof.

3,981,865
BIS-TYPE PENICILLINS AND PROCESS FOR PRODUCING THE SAME

Isamu Saikawa; Shuntaro Takano; Okuta Takashima, all of Toyama; Kaishu Momonoi, Shinminato; Seietsu Kuroda, Toyama; Miwako Komatsu, Fuchu; Takashi Yasuda, Kosugi; Kyoko Kasuya, Takaoka, and Yutaka Kodama, Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

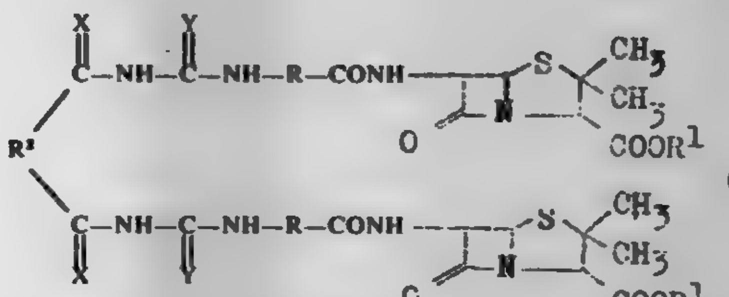
Filed June 11, 1975, Ser. No. 586,015

Claims priority, application Japan, June 27, 1974, 49-72798; Aug. 15, 1974, 49-92755; Sept. 3, 1974, 49-100565; May 26, 1975, 50-62761

Int. Cl.² C07D *499/66, 499/68, 499/70*

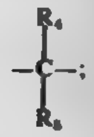
U.S. Cl. 260—239.1 14 Claims

1. A compound represented by the general formula (I),



(I)

wherein R is the radical derived from a conventional penicillin acylamido group represented by the formula



$$-\overset{R_4}{\underset{R_5}{C}}-;$$

in which R^4 represents a substituted or unsubstituted alkyl, cycloalkyl, cycloalkenyl, cycloalkadienyl, aryl, aralkyl, aryloxy, alkylthioalkyl, or a heterocyclic group; and R^5 represents a hydrogen atom; R^4 and R^5 together with the common carbon atom may form a cycloalkyl, cycloalkenyl or cycloalkadienyl ring; R^1 represents a hydrogen atom, a conventional penicillin blocking group or a conventional penicillin saltforming cation R^2 represents a substituted or unsubstituted alkylene, alkenylene, cycloalkylene, arylene, alkylenediaryl group; X and Y are individually an oxygen atom or a sulfur atom.

3,981,866
PENICILLIN MONOESTERS, THEIR PRODUCTION AND INTERMEDIATES THEREOF

John Peter Clayton, and Harry Ferres, both of Horsham, England, assignors to Beecham Group Limited, Great Britain

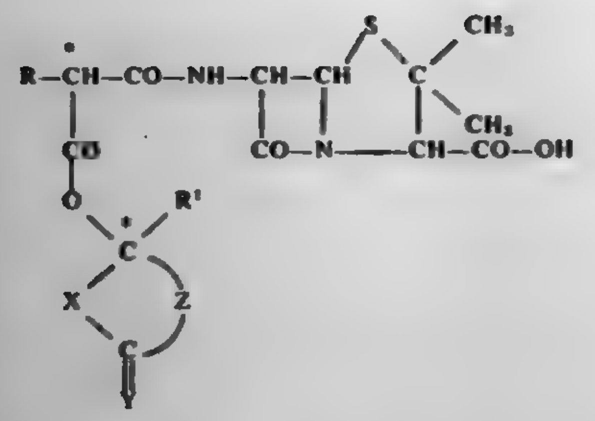
Filed Sept. 21, 1973, Ser. No. 399,326

Claims priority, application United Kingdom, Sept. 8, 1972, 41756/72

Int. Cl.² C07D *499/12, 499/72*

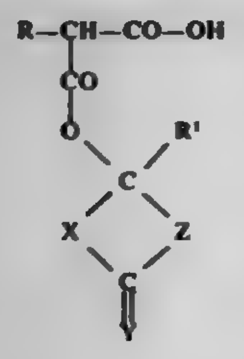
U.S. Cl. 260—239.1 11 Claims

1. A process for the preparation of a compound of formula (I) or a pharmaceutically acceptable salt thereof:



(I)

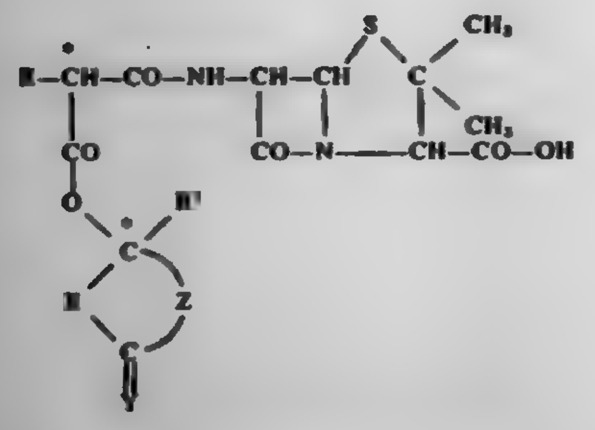
wherein R is lower alkyl, cycloalkyl of 3–6 carbon atoms, phenyl or 2- or 3-thienyl, tetrahydropyranyl or thiacyclohexanyl; X and Y are the same or different and each represents oxygen or sulphur; Z is 1,2-phenylene unsubstituted or substituted by one or more of alkoxy, nitro and halogen; R¹ represents hydrogen, lower alkyl, lower alkenyl, lower alkynyl, phenyl, benzyl, hydroxy, alkoxy, halogen, amino or carboxyl, by reacting 6-aminopenicillanic acid or a pharmaceutically acceptable salt thereof or a silylated 6-aminopenicillanic acid with a reactive N-acylating derivative of a compound of formula (III):



(III)

wherein R, R¹, X, Y and Z have the same meaning as in formula (I), and when a silylated 6-aminopenicillanic acid is employed, thereafter removing the silyl groups from the resultant compound by hydrolysis or alcoholysis.

4. A compound of formula (I) or a pharmaceutically acceptable salt thereof:



(I)

wherein R is lower alkyl, cycloalkyl of 3–6 carbon atoms, phenyl, or 2- or 3-thienyl, tetrahydropyranyl or thiacyclohexanyl; X and Y are the same or different and each represents oxygen or sulphur; Z is 1,2-phenylene unsubstituted or substituted by one or more of alkoxy, nitro and halogen; R¹ represents hydrogen, lower alkyl, lower alkenyl, lower alkynyl, phenyl, benzyl, hydroxy, alkoxy, halogen, amino or carboxyl.

3,981,867

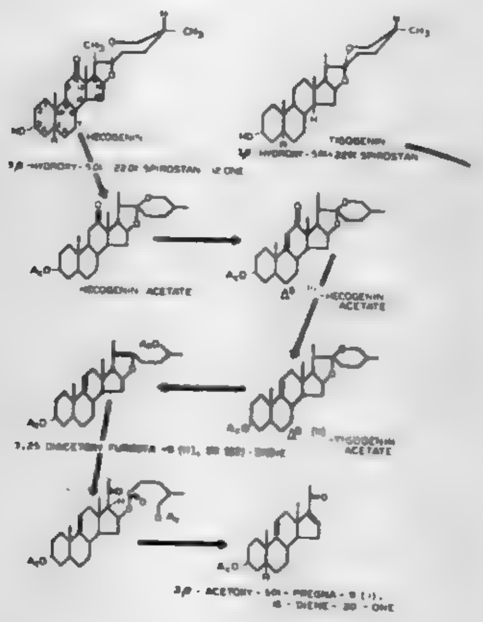
PROCESS FOR OBTAINING SAPOGENIN PARTICULARLY HECOGENIN FROM PLANT MATERIAL SUCH AS AGAVE SISALANA LEAVES

Max G. Beauvoir, P.O. Box 2187, Port-au-Prince, Haiti

Filed Mar. 17, 1975, Ser. No. 559,012

Int. Cl.² C07J *17/00*

U.S. Cl. 260—239.55 A 14 Claims



1. A process for obtaining steroid content from saponin-containing juices of certain plant material, which process comprises:

acidifying said juices to a pH of from 0.4 to 1.5 with an acid selected from the group consisting of sulfuric, hydrochloric and phosphoric acids;

subjecting said acidified juices to acid hydrolysis by heating them to a predetermined temperature under a pressure of from 40 to 125 p.s.i.g. for a fixed period of time to produce a hydrolyzate containing crude hecogenin; and

separating said crude hecogenin from said hydrolyzate.

3,981,868

DERIVATIVES OF 9-OXO-13-TRANS-PROSTENOIC ACID AMIDES

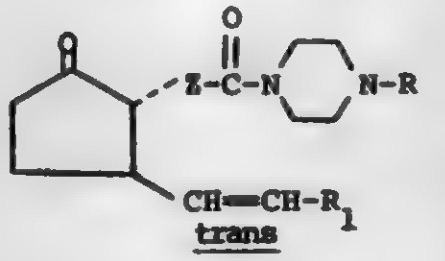
Karel Francis Bernady; Middleton Brawner Floyd, Jr., both of Suffern; John Frank Poletto, Nanuet, all of N.Y.; Robert Eugene Schaub, Upper Saddle River, and Martin Joseph Weiss, Oradell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 365,806, May 31, 1973, abandoned, which is a continuation of Ser. No. 162,712, July 14, 1971, abandoned. This application Jan. 10, 1974, Ser. No. 432,264

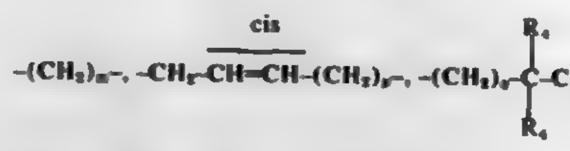
Int. Cl.² C07D *103/737*

U.S. Cl. 260—240 J 29 Claims

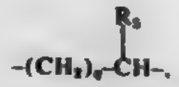
1. A compound selected from the group consisting of an optically active compound of the formula:



and a racemic mixture of that formula and the mirror image thereof wherein R is selected from the group consisting of methyl and phenyl; Z is a divalent radical selected from the group consisting of those of the formulae:



$$-(CH_2)_m-,\ -CH_2-\overset{cis}{\overline{CH=CH}}-(CH_2)_p-,\ -(CH_2)_q-\underset{R_4}{\overset{R_4}{C}}-CH_2-,$$



$$-(CH_2)_q-\overset{R_5}{CH}-,$$

$-(CH_2)_q-O-CH_2-$ and $-(CH_2)_q-S-CH_2-$

wherein *m* is an integer from 1 to 8, inclusive, *p* is an integer from 2 to 4, inclusive, *q* is an integer from 3 to 6, inclusive, R_4 is an alkyl group having up to 3 carbon atoms, and R_5 is an alkyl group having up to 4 carbon atoms, phenyl or fluoro; R_1 is selected from the group consisting of a straight chain alkyl group having from 3 to 10 carbon atoms, a straight chain alkyl group having from 3 to 6 carbon atoms and having one branched alkyl group having up to 4 carbon atoms, a straight chain alkenyl group having from 3 to 6 carbon atoms, a straight chain ω-haloalkyl group having from 3 to 6 carbon atoms, a straight chain ω-phenylalkyl group having from 1 to 4 carbon atoms in the chain, a straight chain ω-(cycloalkyl)alkyl group having from 1 to 4 carbon atoms in the chain and from 5 to 7 carbon atoms in cycloalkyl, and moieties of the formulae:

$$-(CH_2)_p-S-R_4 \text{ and } -(CH_2)_p-O-R_4$$

wherein *p* and R_4 are as hereinabove defined; and the pharmaceutically acceptable anionic salts thereof.

3,981,869

PROCESS FOR THE PREPARATION OF HETEROCYCLIC COMPOUNDS

Peter Ziemek, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

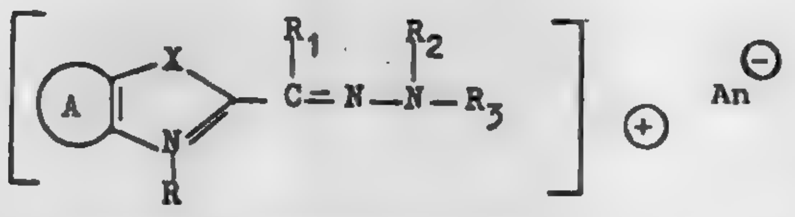
Filed Aug. 5, 1974, Ser. No. 494,911

Claims priority, application Germany, Aug. 10, 1973, 2340571

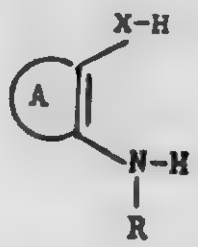
Int. Cl.² C09B *23/04*

U.S. Cl. 260—240 G 6 Claims

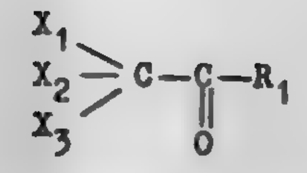
1. Process for preparing compounds of the formula



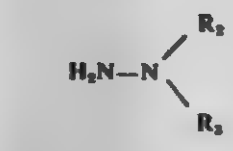
by condensing an amine of the formula



with a carbonyl compound of the formula



in the presence of a hydrazine of the formula



$$H_2N-N\begin{matrix}R_2\\R_3\end{matrix}$$

wherein

A is a benzene; naphthalene; pyridine; pyrimidine; or a pyrazine ring; or a benzene or naphthalene ring which is substituted with halogen, C_1-C_4-alkyl, cyclohexyl, phenyl, C_1-C_4-alkoxy, nitro, cyano, amino, C_1-C_4-alkyl-carbonylamino, C_1-C_4-alkyl-sulphonylamino, C_1-C_4-alkylsulphonyl, phenylsulphonyl, tolyl-sulphonyl, benzylsulphonyl, hydroxyl, carboxyl, carboalkoxy with 1 to 4 C atoms in the alkoxy group, carbonamide or sulphonamide;

X is O, S or N-R_4;

R_4 is hydrogen, C_1-C_4-alkyl; cyclohexyl; benzyl; phenethyl; phenyl or naphthyl;

R_1 is hydrogen or C_1-C_4-alkyl;

R_2 is hydrogen, C_1-C_4-alkyl; cyclohexyl; benzyl; phenethyl; phenyl; naphthyl; or pheyl substituted by C_1-C_4-alkyl, C_1-C_4-alkoxy, nitro, halogen, C_1-C_4-dialkylamino, or benzyl;

R_3 is hydrogen, C_1-C_4-alkyl; cyclohexyl; benzyl; phenethyl; phenyl; naphthyl; phenyl substituted by C_1-C_4-alkyl, C_1-C_4-alkoxy, nitro, halogen, C_1-C_4-dialkylamino, or benzyl; benzthiazolyl-2; benzoxazolyl-2; benzimidazolyl-2; oxazolyl-2; triazolyl-2; thiazolyl-2; thiophenyl-2; purine-2; pyridine-2; pyrimidine-2; cinnolinyl-3; quinoxazinyl-2; or quinazolinyl-2; or

R_2 and R_3 conjointly with the N atom form an indoline; carbazole or tetrahydroquinoline radical or one of the foregoing radicals substituted by C_1-C_4-alkyl, C_1-C_4-alkoxy or halogen;

R is hydrogen, C_1-C_4-alkyl; allyl; cyclohexyl; benzyl; phenethyl; phenyl or naphthyl;

An^- is an anion;

X_1 is hydroxyl, methoxy, ethoxy or halogen; and

X_2 and X_3 are halogen or conjointly are oxygen.

3,981,870

PLANT GROWTH REGULANT CARBAMOYLPHOSPHONATES

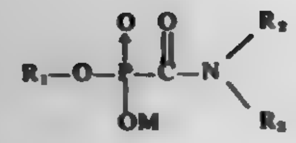
William P. Langsdorf, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 478,968, June 13, 1974, which is a division of Ser. No. 283,769, Aug. 25, 1972, Pat. No. 3,846,512, which is a continuation-in-part of Ser. No. 85,221, Oct. 29, 1970, Pat. No. 3,819,353, which is a continuation-in-part of Ser. No. 803,962, March 3, 1969, abandoned, which is a continuation-in-part of Ser. No. 731,732, May 24, 1968, Pat. No. 3,627,507. This application Feb. 28, 1975, Ser. No. 554,227

Int. Cl.² C07F *9/65*

U.S. Cl. 260—242 4 Claims

1. A compound of the formula:

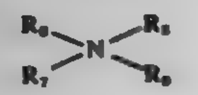


wherein:

R_1 is alkyl of one through six carbon atoms, chloroalkyl of one through six carbon atoms containing up to three chlorine atoms, bromoalkyl of one through six carbon atoms containing up to three bromine atoms, alkoxy alkyl of three through seven carbon atoms, alkenyl of two through six carbon atoms, alkynyl of three through four carbon atoms, phenyl or benzyl;

R_2 and R_3 are taken together to form a ring of the configuration $-(CH_2)_2-O-(CH_2)_2-$;

M is selected from the group consisting of ammonium, hydrogen, sodium, lithium, potassium, calcium, magnesium, zinc, manganese barium or



where R_6, R_7 and R_8 can be the same or different and each can be hydrogen, alkyl of one through four carbon atoms, or hydroxy alkyl of two through four carbon atoms; and R_9 is hydrogen, alkyl of one through twelve carbon atoms, allyl, benzyl, amino, methylamino, or dimethylamino; R_6 and R_7 can be taken together to form a ring that is $-(CH_2)_2-O-(CH_2)_2-$ or $-(CH_2)_n-$ where n is 2–6 and R_8 and R_9 are H.

3,981,871
2-(5,6-DIHYDRO-4H-1,3-THIAZIN-2-YL)-2-NITROETHENAMINE INSECT CONTROL AGENTS

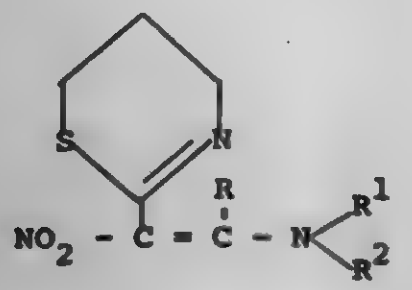
James E. Powell, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed June 27, 1975, Ser. No. 590,990

Int. Cl.^{2} C07D *279/06*

U.S. Cl. 260—243 R **2 Claims**

1. A compound of the formula:



wherein R is hydrogen, straight-chain or branched-chain alkyl of from one to six carbon atoms, phenyl or phenyl substituted by one or more of halogen, nitro, cyano, straight-chain or branched chain alkyl or alkoxy of from one to four carbon atoms, or phenoxy, and R^1 and R^2 each is straight-chain or branched-chain alkyl of from one to ten carbon atoms, or phenyl, optionally substituted as described for R, above.

3,981,872
DERIVATIVES OF 2-AMINO-(1,2,3,4-TETRAHYDRONAPHTHALENE)

Pierre M. Vanhoof, and Pierre M. Clarebout, both of Brussels, Belgium, assignors to A. Christiaens Societe Anonyme, Brussels, Belgium

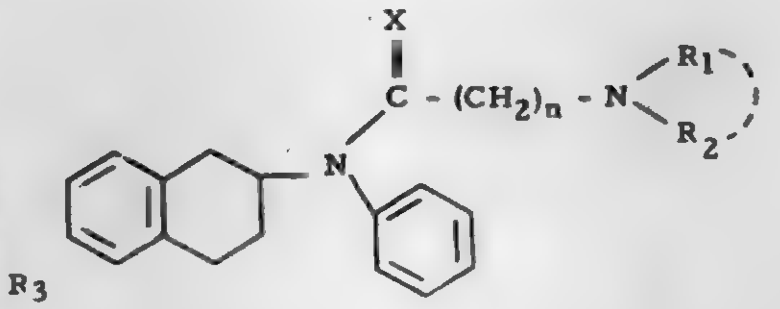
Division of Ser. No. 404,048, Oct. 5, 1973, Pat. No. 3,943,172. This application Dec. 6, 1974, Ser. No. 530,095

Claims priority, application United Kingdom, Oct. 6, 1972, 46268/72

Int. Cl.^{2} C07D *295/14*

U.S. Cl. 260—247.2 A **1 Claim**

1. A derivative of 2-amino(1,2,3,4-tetrahydronaphthalene) of the formula:



(I)

in which $n = 1$ or 2, X represents two hydrogen atoms or one oxygen atom, R_1 and R_2 form together with the attached nitrogen atom a morpholino, piperidino, pyrrolidino or piperazino ring, with the proviso that R_1 may also represent hydrogen, and R_3 represents hydrogen or a lower alkoxy group, as well as the pharmaceutically acceptable acid addition salts of said compounds of formula (I).

3,981,873
SULFUR CONTAINING DYES OF THE QUINONAPHTHALONE SERIES

Johannes Dehnert, Ludwigshafen, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Rhine, Germany

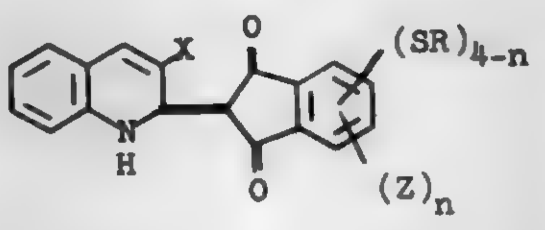
Filed Nov. 7, 1973, Ser. No. 413,663

Claims priority, application Germany, Nov. 9, 1972, 2254757

Int. Cl.^{2} C09B *25/00*

U.S. Cl. 260—289 H **6 Claims**

1. A dye having the formula:



in which

X is hydrogen or hydroxy

Z is chlorine or bromine and

n is zero, 1, 2 or 3 and

$(SR)_{4-n}$ represents $4-n$ groups which may be separate (R denoting hydrogen, alkyl of one to 12 carbon atoms, hydroxyalkyl of two or three carbon atoms, alkoxycarbonyl-methyl or alkoxycarbonylethyl where the alkoxy has one to four carbon atoms, cyclohexyl, benzyl, phenyl, phenyl bearing chloro, methyl, tert-butyl or methoxy as substituents or naphthyl) or any adjacent pair of which may be combined into a group —S—R′—S— where R′ represents a 3,4-toluylene- or a dimethylene (whereby one or two six-membered rings each containing 2 sulphur atoms is formed).

3,981,874
N-[(METHOXYMETHYL-FURYL)-METHYL]-MORPHINANS OR -6,7-BENZOMORPHANS AND SALTS THEREOF

Herbert Merz; Adolf Langbein, both of Ingelheim am Rhein; Gerhard Walther, and Klaus Stockhaus, both of Bingen (Rhine), all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

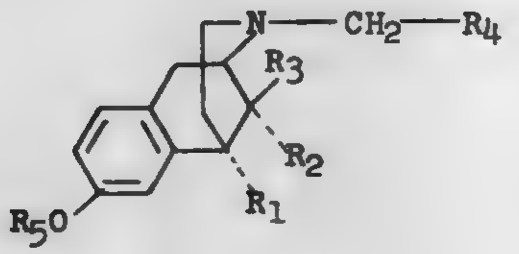
Filed Oct. 15, 1974, Ser. No. 514,474

Claims priority, application Germany, Oct. 27, 1973, 2354061

Int. Cl.^{2} C07D *221/26*

U.S. Cl. 260—293.54 **6 Claims**

1. A compound of the formula



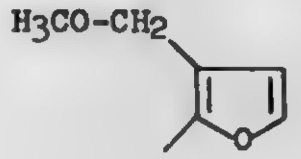
wherein

R_1 is methyl, ethyl or propyl,

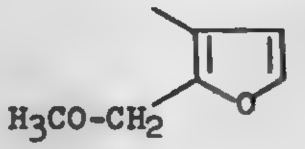
R_2 is hydrogen, methyl or ethyl,

R_3 is hydrogen or methyl,

R_4 is



or



and

R_5 is hydrogen, methyl or acetyl, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,981,875
2-SUBSTITUTED-9-PHENYL-2,3,4,4A,9,9A-HEXAHYDRO-1H-INDENO[2,1-C]PYRIDINES AND RELATED COMPOUNDS

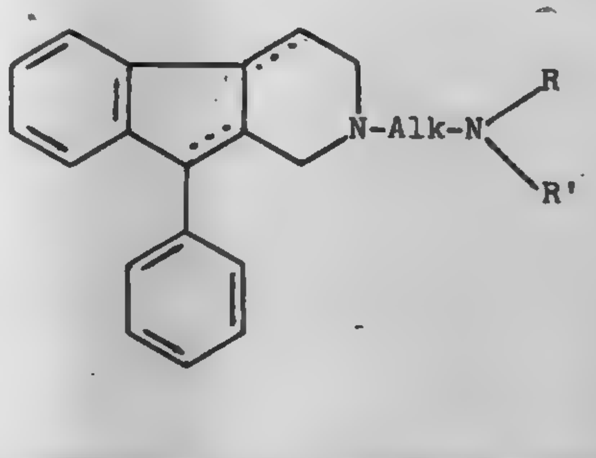
John W. Cusic, Skokie; Charles R. Ellefson, Chicago, and Chi Min Woo, Skokie, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed June 16, 1975, Ser. No. 587,405

Int. Cl.^{2} C07D *401/06, 221/16*

U.S. Cl. 260—293.54 **15 Claims**

1. A compound of the formula



(I)

wherein Alk is alkylene of 2 to 6 carbon atoms separating the nitrogen atoms attached thereto by at least 2 carbon atoms; NRR′ is selected from the group consisting of di(lower alkyl-)amino, pyrrolidino, piperidino, and hexamethyleneimino; and the dotted lines indicate the optional presence of a set of double bonds.

3,981,876
1-ALKYL-4-(10[1-PIPERIDYL]-5H-DIBENZO-[A,D]CYCLOHEPTEN-5-YLIDENE)PIPERIDINE COMPOUNDS

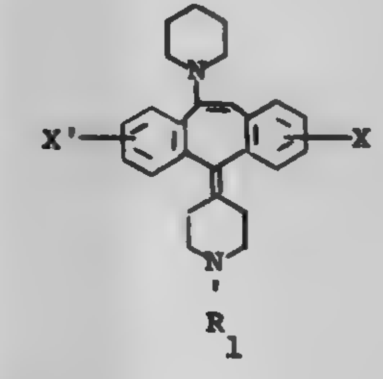
John D. Prugh, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 9,049, Feb. 5, 1970, abandoned. This application Aug. 14, 1972, Ser. No. 280,697

Int. Cl.^{2} C07D *211/28*

U.S. Cl. 260—293.62 **2 Claims**

1. A compound of the formula



wherein

R_1 is lower alkyl;

X and X′ are similar or dissimilar and are selected from
  hydrogen,
  an alkyl group having up to 6 carbon atoms,
  a perfluoroalkyl group having up to 4 carbon atoms,
  phenyl amino,
  an alkylamino group having up to 4 carbon atoms, a dialkylamino group having up to 8 carbon atoms,
  an alkylsulfonylamino group having up to 4 carbon atoms, halogen (fluorine, chlorine, bromine or iodine), hydroxyl,
  an alkoxy group having up to 4 carbon atoms,

a perfluoroalkoxyl group having up to 4 carbon atoms,
cyano,
carboxy,
carbamoyl,
an alkylcarbamoyl group having up to 5 carbon atoms,
a dialkylcarbamoyl group having up to 9 carbon atoms,
a carbalkoxy group having up to 6 carbon atoms,
an alkylmercapto group having up to 4 carbon atoms,
a perfluoroalkylmercapto group having up to 4 carbon atoms,
an alkylsulfonyl group having up to 4 carbon atoms,
a perfluoroalkylsulfonyl group having up to 4 carbon atoms, sulfamoyl,
an alkylsulfamoyl group having up to 4 carbon atoms,
or a dialkylsulfamoyl group having up to 8 carbon atoms.

3,981,877

PIPERIDYLIDENE DERIVATIVES OF CARBOXY-5H-DIBENZO[a,d]CYCLOHEPTENE

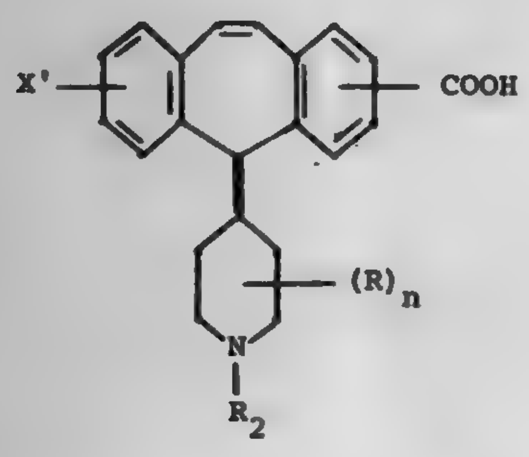
John D. Prugh, Chalfont, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 280,685, Aug. 14, 1972, Pat. No. 3,960,872, which is a continuation of Ser. No. 9,049, Feb. 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 4,123, Jan. 19, 1970, abandoned. This application June 5, 1974, Ser. No. 476,631

Int. Cl.² C07D *211/78*

U.S. Cl. 260—293.62 2 Claims

1. A 5H-dibenzo[a,d]cycloheptene compound of the formula



wherein
the carboxyl group is in the 1-, 2-, or 3-position;
R_2 is hydrogen, a lower alkyl or a lower alkenyl substituent;
R is methyl or ethyl and replaces one or more of the hydrogens in positions 2, 3, 5 or 6 of the piperidine ring, provided that only one of positions 3 and 5 is substituted in any one compound;
n is 0, 1 or 2; and
X' is selected from hydrogen and an alkyl group having up to 6 carbon atoms.

3,981,878

4-PHENYLMERCAPTOPIPERIDINE NITRILES

Adrian Charles Ward Curran, Reading, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

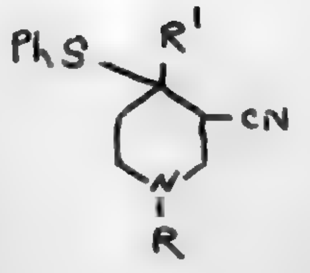
Continuation-in-part of Ser. No. 299,995, Oct. 24, 1972, Pat. No. 3,845,064. This application May 10, 1974, Ser. No. 468,726

Claims priority, application United Kingdom, Oct. 29, 1971, 50431/71

Int. Cl.² C07D *211/60*

U.S. Cl. 260—293.73 2 Claims

1. A compound of the formula



wherein R is loweralkyl or phenylloweralkyl, R^1 is hydrogen or loweralkyl and Ph is phenyl, or a pharmaceutically acceptable acid addition salt thereof.

3,981,879

PREPARATION OF CYANOPYRIDINES

Glenn R. Elion, Avenel, and Arthur E. Klink, Lebanon, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 18, 1975, Ser. No. 633,057

Int. Cl.² C07D *213/57*

U.S. Cl. 260—294.9 5 Claims

1. A process for the production of cyanopyridines from alkyl pyridines wherein the alkyl group contains 1 to 2 carbon atoms which comprises passing as a reactant stream a gaseous mixture comprising:

1. an alkyl substituted pyridine;
2. ammonia;
3. steam; and
4. oxygen

wherein the mole ratios of said reactants are:
ammonia:alkyl pyridine, 1:1 to 10:1;
steam:alkyl pyridine, 0.01:1 to 10:1;
oxygen:alkyl pyridine, 2:1 to 50:1

the improvement being passing said reactant stream over a fixed bed ammoxidation catalyst at a temperature of about 280°C. to 400°C. and wherein said catalyst consists essentially of ($V_2O_5+MoO_3+P_2O_5+SnO_2$)/pumice in a molar ratio of 2.5:1.0:0.015:3.5 wherein the weight % loading of the catalyst on the pumice support is in the range from about 5 to 50%.

3,981,880

RACEMIC PROSTAGLANDINS OF THE 2-SERIES AND ANALOGS THEREOF

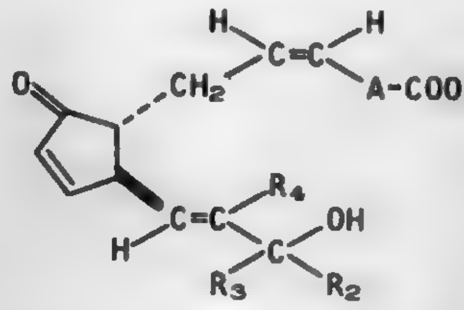
William P. Schneider, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 807,405, March 14, 1968, abandoned. This application Dec. 6, 1974, Ser. No. 530,439

Int. Cl.² C07C *177/00*

U.S. Cl. 260—468 D 12 Claims

1. A racemic compound of the combination of the formula:



wherein the side-chain hydroxy is in S configuration, and the mirror image of that formula; wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one to 3 chloro or alkyl of one to 4 carbon atoms, inclusive; wherein R_2 is $-(CH_2)_a-CH_3$ wherein *a* is 2, 3, 4, 5, or 6, or $-(CH_2)_d-X$ wherein d is zero, one, 2, 3, or 4 and X is isobutyl, tert-butyl, 3,3-difluorobutyl, 4,4-difluorobutyl, or 4,4,4-trifluorobutyl; wherein R_3 and R_4 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein A is trimethylene or $-CH_2-Z-$ wherein Z is ethylene substituted with one or 2 fluoro, methyl, or ethyl; and pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,981,881

2-[(4-PHENYL-TETRAHYDROPYRIDINYL)ALKYL]-1H-ISOINDOLE-1,3(2H)-DIONES

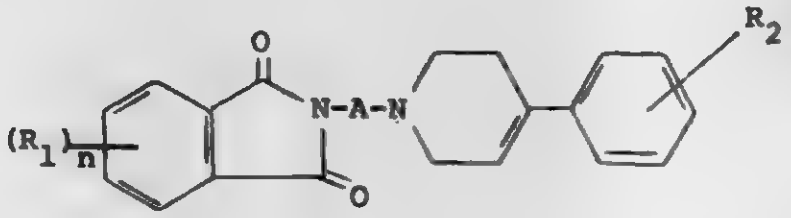
Peter C. Wade, Pennington, N.J., and B. Richard Vogt, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 14, 1975, Ser. No. 604,748

Int. Cl.² C07D *211/70*

U.S. Cl. 260—295 M 10 Claims

1. A compound having the formula



or a pharmaceutically acceptable salt thereof, wherein A is an alkylene group having 1 to 8 carbon atoms; R_1 is hydrogen, halogen, alkyl, alkoxy, alkylthio, nitro, amino or cyano; R_2 is hydrogen, halogen, alkyl, alkoxy, trifluoromethyl, nitro, amino or cyano; and *n* is 1 or 2, with the proviso that when *n* is 2, R_1 is alkyl, alkoxy, or halogen; wherein alkyl, alkoxy, and alkylthio are groups having 1 to 4 carbon atoms.

3,981,882

PROCESS FOR PREPARING 4-ARYL OF HETERO-6-AMINO-3,4-DIHYDROPYRID-2-ONE-3,5-DICARBOXYLIC ACID ESTER

Horst Meyer; Friedrich Bossert, both of Wuppertal; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

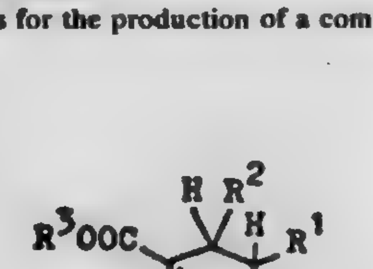
Division of Ser. No. 531,999, Dec. 12, 1974, which is a division of Ser. No. 390,193, Aug. 21, 1973, Pat. No. 3,925,395. This application July 16, 1975, Ser. No. 596,507

Claims priority, application Germany, Aug. 31, 1972, 2242797

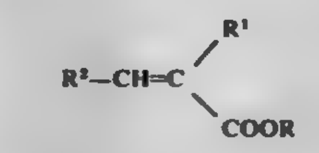
Int. Cl.² C07D *213/55*

U.S. Cl. 260—295.5 R 6 Claims

1. A process for the production of a compound of the formula:

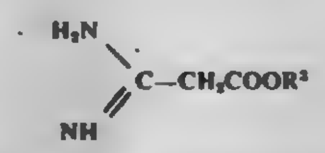


wherein R^1 is hydrogen or straight or branched chain lower alkyl; R^2 is lower alkyl, lower alkenyl, lower alkynyl, cycloalkyl of 3 to 7 carbon atoms, cycloalkenyl of 3 to 7 carbon atoms, aryl unsubstituted or substituted by 1 to 3 of the same or different substituents selected from the group consisting of lower alkyl, lower alkoxy, halogen, nitro, cyano, trifluoromethyl, carb. lower alkoxy and SO_n-lower alkyl wherein *n* is 0, 1 or 2, or R^2 is naphthyl, quinolyl, isoquinolyl, pyridyl, pyrimidyl, thenyl, suryl or pyrryl unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of lower alkyl, lower alkoxy and halogen; and R^3 is straight or branched chain lower alkyl, straight or branched chain lower alkenyl, straight or branched chain lower alkynyl, or straight or branched chain lower alkyl, straight or branched chain lower alkenyl or straight or branched chain lower alkynyl interrupted by 1 or 2 oxygen atoms;
which comprises reacting an α,β-unsaturated carboxylic acid ester of the formula



$$R^2-CH=C\begin{matrix}R^1\\ COOR\end{matrix}$$

wherein R is alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms or alkynyl of 2 to 6 carbon atoms; and R^1 and R^2 are as above defined, with an amidine of the formula:



$$\begin{matrix}H_2N\\ NH\end{matrix}C-CH_2COOR^3$$

wherein R^3 is as above defined, and recovering the compound produced.

3,981,883

MANUFACTURE OF 3-AMINO-2,1-BENZISOTHIAZOLES

Rolf Niess, Schifferstadt, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

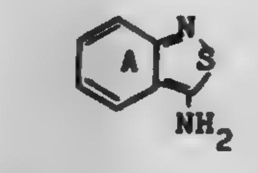
Filed Mar. 6, 1975, Ser. No. 556,155

Claims priority, application Germany, Mar. 18, 1974, 2412975

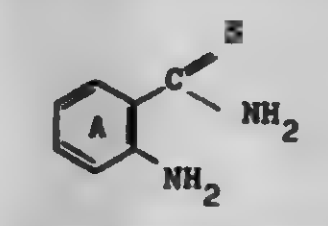
Int. Cl.² C07D *277/60*

U.S. Cl. 260—304 A 10 Claims

1. In a process for the manufacture of 3-amino-2,1-benzisothiazoles of the formula



wherein the ring A is unsubstituted or substituted by chloro, bromo, nitro, C_1- to C_4-alkyl, benzyl, phenyl, amino, C_1- to C_4-alkylamino or -dialkylamino, phenylamino, acetyl, benzoyl, hydroxy, methoxy, ethoxy, phenoxy, sulfamoyl, C_1- to C_4-mono- or di-alkyl-substituted sulfamoyl, phenylsulfamoyl, methylsulfonyl, ethylsulfonyl or phenylsulfonyl, by oxidative ring closure of a thioamide of the formula



the improvement which comprises effecting the ring closure in about 85 to 110% sulfuric acid at temperatures of about 10° to 160°C.

3,981,884
MULTICHROMOPHORIC BENZOTRIAZOLE ULTRAVIOLET STABILIZERS

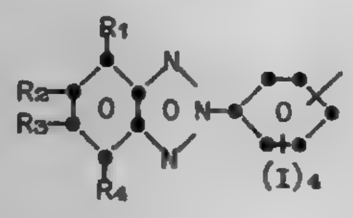
Richard H. S. Wang, and Joseph S. Zannucci, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 3, 1974, Ser. No. 502,333
Int. Cl.² C07D *249/20*
U.S. Cl. 260—308 B **34 Claims**

1. A composition of matter comprising multichromophoric compounds having the formula:

A—B—C

wherein A is a group having the structure



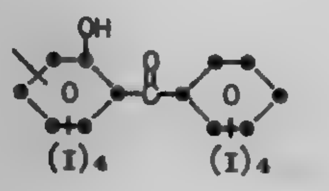
wherein

R_1, R_2, R_3 and R_4 are hydrogen, chloro, bromo, lower alkyl, cycloalkyl, phenyl, lower alkyl phenyl, phenyl-substituted-phenyl, alkoxy, cyano, carboxy and the substituents R_1 R_2, R_2 and R_3, and R_3 and R_4, combined with the carbon atoms to which they are attached, are joined alkylene groups completing a carbocyclic ring, which ring can also be substituted with one or more of the substituents listed above for R_1, R_2, R_3 and R_4;

I is the same as R_1, R_2, R_3 and R_4 and is present on all positions of the benzenoid ring, except the carbon atom attached to the heterocyclic ring and the carbon atom attached to the B group connecting the heterocyclic aromatic A group with the aromatic C group, wherein B is a linking group connecting A and C and is alkylene, phenylene, carbonyloxy, oxycarbonylalkyleneoxy, oxycarbonyl, alkyleneoxycarbonyloxy, oxyalkylenecarbonyloxy, oxycarbonyloxy, alkyleneoxy, oxyalkylene, alkyleneoxyalkyleneoxy, oxyalkylenephenylenealkyleneoxy, sulfinyldioxy, oxy(alkoxy)phosphinooxy, N-alkylamino carbonyl, N-phenylaminocarbonyl, N-alkylaminocarbonylalkyleneoxy, N-phenylaminocarbonylalkyleneoxy, N-alkylaminocarbonylamino, N,N-dialkylaminocarbonyl, N-phenylaminocarbonyl, N-alkylaminocarbonyl, N,N-diphenylaminocarbonyl, N-alkylamino, N-phenylamino, N-alkylaminoalkyleneoxy, N-phenylaminoalkyleneoxy, oxyalkyleneoxy, oxyphenyleneoxy, alkyleneaminoalkylene, phenyleneaminophenylene, phenyleneaminoalkylene and alkyleneaminophenylene; and

wherein

C is a hydroxybenzophenone group having the formula



wherein

I is the same substituent as listed above and is present in all positions of the benzoid rings except the carbon atom attached to the B group connecting the A and C moieties, said B connecting group is attached to the benzoid ring in the ortho, meta or para position from the keto group of the benzophenone, and said I substituents can all be one of the substituents listed above or different listed substituents.

3,981,885
2-ALKYL-PHENYLHYDRAZONOMIDAZOLENINES

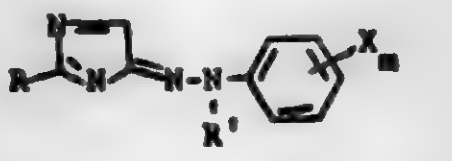
Karl Heinz Buchel, Wuppertal-Elberfeld; Paul-Ernst Frohberger; Hans Scheinpflug, both of Leverkusen, and Edgar Enders, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 261,828, June 12, 1972, Pat. No. 3,925,551. This application July 24, 1975, Ser. No. 598,604

Claims priority, application Germany, June 15, 1971, 2129524

Int. Cl.² C07D *233/88*
U.S. Cl. 260—309 **3 Claims**

1. A 2-substituted phenylhydrazonoimidazolenine of the formula



in which

R' is alkylcarbonyl, alkoxycarbonyl or alkylsulfonyl wherein the alkyl or alkoxy moiety contains from 1 to 6 carbon atoms; or arylcarbonyl, aryloxycarbonyl or optionally chlorine substituted arylsulfonyl wherein the aryl moiety contains 6 to 10 carbon atoms,

X is halogen, nitro, or alkyl, haloalkyl, alkoxy, alkythio, alkylamino or dialkylamino wherein the alkyl or alkoxy moiety contains up to 6 carbon atoms, and

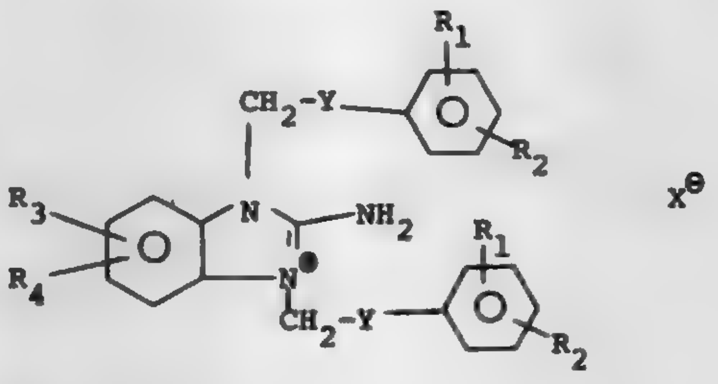
a. R is alkyl of up to 16 carbon atoms, and *m* is 1 to 4, or
b. R is alkyl of 2 to 16 carbon atoms, and *m* is 0 to 4.

3,981,886
AMINO-BENZIMIDAZOLE DERIVATIVES

Harry L. Yale, New Brunswick, and James A. Bristol, Boonton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jan. 20, 1975, Ser. No. 542,158
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976
Int. Cl.² C07D *235/30*
U.S. Cl. 260—309.2 **12 Claims**

1. A compound of the structure



wherein

Y is oxygen or sulfur;

R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, halo, lower alkyl, lower alkoxy, trifluoromethyl or N,N-dimethylsulfonamido;

R_3 and R_4 are the same or different and are selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halo, phenyl, naphthyl, phenyl lower alkyl, naphthyl lower alkyl, or phenyl or naphthyl substituted with an R_1 or R_2 group; and

X is selected from the group consisting of Cl, Br or I.

3,981,887
SULFOXIDES AND SULFONES

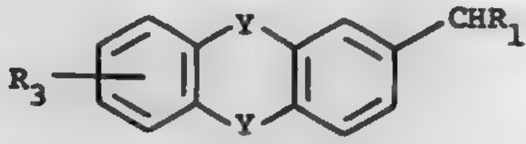
Joachim Gante; Hans-Adolf Kurmeier; Werner Mehrhof, and Albrecht Wild, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed July 31, 1974, Ser. No. 493,459

Claims priority, application Germany, Aug. 4, 1973, 2339617

Int. Cl.² C07D *335/12, 339/08, 327/08*
U.S. Cl. 260—327 P **9 Claims**

1. A compound of the formula



wherein R_1 is COOH, $COOR_4$, CH_2OH or CH_2OR_5; R_2 is CH_3 or C_2H_5; R_3 is F, Cl or Br; R_4 is alkyl of 1–8 carbon atoms; R_5 is alkanoyl of 2-4 carbon atoms; one of the Y groups is SO or SO_2 and the other Y group is CH_2, O, S, SO or SO_2; or a physiologically acceptable salt of those compounds wherein R_1 is COOH.

3,981,888
PROCESS FOR PREPARING (1-OXO-2-PHENYL, HALOPHENYL OR THIENYL-2-METHYL-6,7-DICHLORO-5-INDANYL-OXY)ACETIC ACID

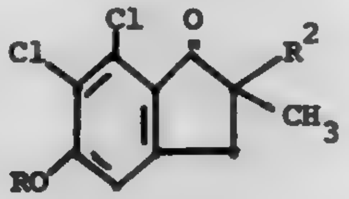
Warren K. Russ, Jr., Piscataway; George G. Hazen, and Earl M. Chamberlin, both of Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed July 30, 1974, Ser. No. 492,652

The portion of the term of this patent subsequent to Apr. 13, 1993, has been disclaimed.

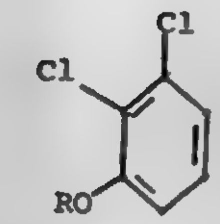
Int. Cl.² C07D *333/24*
U.S. Cl. 260—332.2 A **5 Claims**

1. The process for preparing a compound of the formula:

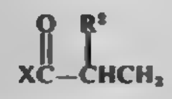


wherein R^2 is phenyl, halophenyl or thienyl, R is CH_2COOH, R^1 or CH_2COOR^1, and wherein R^1 is lower alkyl or halo lower alkyl selected from the group consisting of methyl, ethyl, isopropyl, trifluoromethyl, propyl and butyl; phenyl or substituted phenyl selected from the group consisting of nitrophenyl, tolyl, xylyl and ethylphenyl; benzyl or nuclear substituted benzyl selected from the group consisting of p-chlorobenzyl and p-nitrobenzyl comprising the steps of:

a. reacting under Friedel-Crafts conditions wherein said conditions comprise the use of a Lewis acid catalyst selected from the group consisting of aluminum trichloride, $SnCl_4$, $AlBr_3$ and BF_3; and the use of an organic solvent which does not react with the reactants; and wherein said reaction is carried out at a temperature from about 0°C. to about 50°C; an ether derivative of 2,3-dichlorophenol of the formula:



wherein R is as defined above and a 2-substituted proprionyl halide of the formula:



$$X\overset{\overset{O}{\|}}{C}-\overset{\overset{R^2}{|}}{C}HCH_3$$

wherein R^2 is as defined above; and X is halo; wherein the molar ratio of the reactants may range from about 2:1 respectively to about 1:4 respectively; and wherein the amount of catalyst ranges from about 25 to about 200 mole % based on the ether derivative of 2,3-dichlorophenol; and

b. reacting the resulting propiophenone of Step a.) with formaldehyde in the presence of an acid selected from the group consisting of trifluoroacetic acid, methanesulfonic acid, borontrifluoride, H_2SO_4, HF and phosphoric acid; wherein the molar ratio of the propiophenone of Step a.) to formaldehyde, is in the range of from about 1:1 to about 1:10; wherein the molar ratio of the acid relative to the propiophenone ranges from about 0.05 to about 0.99; and wherein the reaction is carried out at a temperature in the range of from about 25°C to about 150°C.

3,981,889
METHOD OF MANUFACTURING CIS,CIS-2,4,6-TRIISOPROPYL-1,3,5-TRIOXANE

Masao Fujita, Amagasaki; Takuya Akiyama, Nagaokakyo; Yoshito Saeki, Suita, and Yasuhiko Ueno, Kawanishi, all of Japan, assignors to Ogawa & Co., Ltd., Japan

Filed Apr. 22, 1974, Ser. No. 463,175

Claims priority, application Japan, June 4, 1973, 48-64116; June 4, 1973, 48-64117; Nov. 6, 1973, 48-126043

Int. Cl.² C07D *323/04*
U.S. Cl. 260—340 **2 Claims**

1. A method for producing cis,cis-2, 4, 6-triisopropyl-1, 3, 5-trioxane by cyclic trimerization of isobutylaldehyde, which comprises adding dropwise under stirring isobutylaldehyde to a 52 to 60 weight % solution of sulfuric acid, and stirring the resultant mixture after the addition is completed, the reaction temperature being from −5°C to 10°C and the mole ratio of sulfuric acid to isobutylaldehyde being from 0.1:1 to 10:1.

2. A method for producing cis,cis-2, 4, 6-triisopropyl-1, 3, 5-trioxane by cyclic trimerization of isobutylaldehyde, which comprises adding dropwise under stirring isobutylaldehyde to a 75 to 85 weight % solution of phosphoric acid, and stirring the resultant mixture after the addition is completed, the reaction temperature being from −5°C to 10°C and the mole ratio of phosphoric acid to isobutylaldehyde being from 0.1:1 to 10:1.

3,981,890

2-(N-THIOCARBAMOYL-N-SUBSTITUTED-AMINO)-3,4-METHYLENEDIOXY BENZHYDROLS

George A. Cooke, Denville, and William J. Houlihan, Mountain Lakes, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

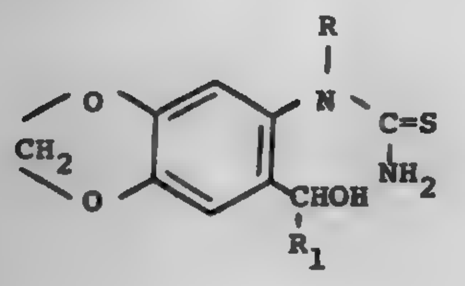
Division of Ser. No. 343,817, March 22, 1973, Pat. No. 3,875,093, which is a continuation of Ser. No. 141,011, May 6, 1971, abandoned. This application Jan. 20, 1975, Ser. No. 542,216

The portion of the term of this patent subsequent to Apr. 1, 1992, has been disclaimed.

Int. Cl.² C07D *317/44*

U.S. Cl. 260—340.5 **2 Claims**

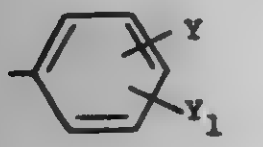
1. The compound of the formula:



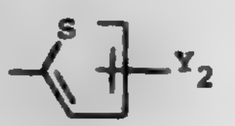
in which

R is alkyl of 1 to 5 carbon atoms, cycloalkyl of 3 to 6 carbon atoms or cycloalkylalkyl in which the cycloalkyl portion is of 3 to 6 carbon atoms and the alkyl is straight chain alkyl of 1 to 3 carbon atoms, and

R_1 is



or



in which Y and Y_1 are the same or different and are hydrogen, fluoro, chloro, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, nitro or trifluoromethyl, provided that no more than one of Y and Y_1 are trifluoromethyl or nitro, or Y and Y_1 are on adjacent carbon atoms and together form a methylenedioxy, and Y_2 is hydrogen, fluoro, chloro or alkyl radical of 1 to 3 carbon atoms.

3,981,891

CYCLOPENTANONE DERIVATIVES, ODORIFEROUS COMPOSITIONS CONTAINING THEM AND PROCESS OF PREPARATION THEREOF

Charles Jerome Louis Celli, Eaubonne; Marcel Plattier, Antibes, and Paul Jose Teisseire, Grasse, all of France, assignors to Societe Anonyme Roure Bertrand Dupont, Paris, France

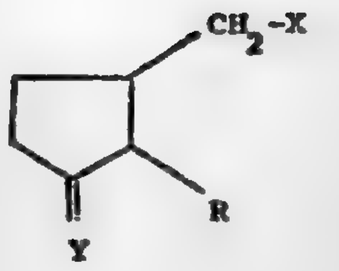
Continuation-in-part of Ser. No. 322,747, Jan. 11, 1973, Pat. No. 3,951,876. This application May 3, 1974, Ser. No. 466,702

Claims priority, application France, Jan. 18, 1972, 72.01509; July 17, 1973, 73.26210

Int. Cl.² C07C *49/28, 49/46;* **C07D** *317/72, 319/08*

U.S. Cl. 260—340.9 **18 Claims**

1. Cyclopentanone derivatives of the formula



in which R represents a hydrocarbon group of 3 to 7 carbon atoms, X represents a formyl, hydroxymethyl, lower alkoxymethyl, or lower alkylcarbonyl group and Y represents an oxo or ketal group,

with the proviso that R does not represent an n-pentyl group when, simultaneously, X represents a methylcarbonyl group and Y represents an oxo group.

3,981,892

POLYCYCLIC LACTONES AS ODOR- AND TASTE-MODIFYING AGENTS

Werner Skorianetz, Geneva, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

Filed July 23, 1974, Ser. No. 491,032

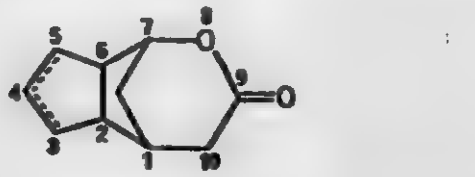
Claims priority, application Switzerland, Aug. 1, 1973, 11267/73

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 10, 1976

Int. Cl.² C07D *493/00*

U.S. Cl. 260—343.2 R **4 Claims**

1. A tricyclic lactone of formula



I

wherein one of the rings contains a single or a double bond in one of the positions indicated by the dotted lines.

3,981,893

2-AMINO-4 H-PYRANE

Horst Meyer; Friedrich Bossert, both of Wuppertal; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

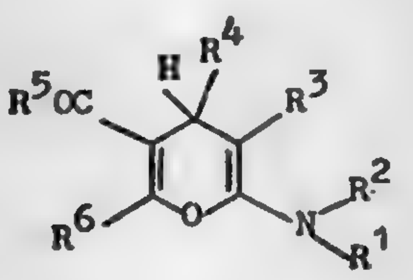
Division of Ser. No. 526,800, Nov. 25, 1974, which is a division of Ser. No. 375,809, July 2, 1973, Pat. No. 3,897,462. This application May 19, 1975, Ser. No. 578,465

Claims priority, application Germany, July 19, 1972, 2235406

Int. Cl.² C07D *309/22*

U.S. Cl. 260—345.8 **5 Claims**

1. A compound of the formula



wherein

R^1 and R^2 are the same or different and are each hydrogen or lower alkyl;

R^3 is lower alkyl;

R^4 is furyl unsubstituted or substituted by lower alkyl, halogen or lower alkoxy;

R^5 is —OR'' wherein R'' is lower alkyl, lower alkenyl or cycloalkyl of 3 to 7 carbon atoms; and

R^6 is hydrogen or lower alkyl.

3,981,894

CHEMICAL COMPOUNDS

Gordon H. Phillipps, Wembley; Brian M. Bain, Chalfont St. Peter, and John C. Clark, Gerrards Cross, all of England, assignors to Glaxo Laboratories Limited, Greenford, England

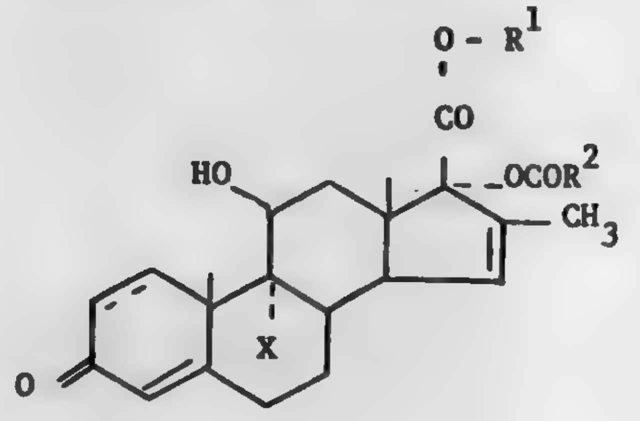
Filed Aug. 29, 1975, Ser. No. 608,982

Claims priority, application United Kingdom, Aug. 30, 1974, 38089/74

Int. Cl.² C07J *3/00*

U.S. Cl. 260—397.1 **9 Claims**

1. Compounds of the general formula



I

wherein R^1 represents a C_{1-4} alkyl or halo-C_{1-4} alkyl group, R^2 represents a methyl, ethyl, n-propyl or isopropyl group, X represents a hydrogen, chlorine or fluorine atom and — represents a single or double bond.

3,981,895

NOVEL AUTOXIDATIVE DERIVATIVES OF MALEINIZED MONOCARBOXYLIC FATTY ACID

Bruce Leary, Frankston, and Frederick John Lubbock, Beaumaris, both of Australia, assignors to Dulux Australia Ltd., Melbourne, Australia

Filed Nov. 29, 1974, Ser. No. 528,546

Claims priority, application Australia, Dec. 11, 1973, 5951/73

Int. Cl.² C09F *5/00, 7/00*

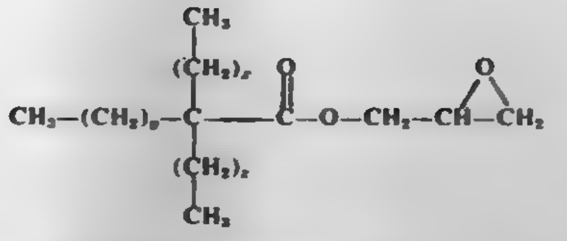
U.S. Cl. 260—404.8 **2 Claims**

1. A derivative of an autoxidisable maleinised monocarboxylic fatty acid, said derivative being the product obtained by heating together:

a. an autoxidisable maleinised monocarboxylic fatty acid comprising the reaction product of 1 mol of maleic anhydride per mol of monocarboxylic fatty acid and

b. a diol selected from 2,2-bis (4-hydroxy cyclohexyl)propane and the reaction product of 1 mol of 2,2-bis (p-hydroxy phenyl)propane with 2 mol of an alkylene oxide selected from ethylene, propylene and butylene oxide, so as to form a mono-ester of said diol and open the maleic anhydride ring, and reacting the resulting ring-opened product by heating with

c. an alkylene oxide selected from ethylene, propylene and butylene oxide and a compound of the formula:



$$CH_3-(CH_2)_y-\overset{\overset{\displaystyle CH_3}{|}}{\underset{\underset{\displaystyle CH_3}{|}}{\overset{(CH_2)_x\ |}{\underset{|\ (CH_2)_z}{C}}}}-\overset{\displaystyle O}{\overset{\|}{C}}-O-CH_2-\overset{\ \ \ O}{CH-CH_2}$$

where x, y and z are integers and $x + y + z = 4–6$ inclusive, so as to obtain a mono-ester of said oxide (c), said derivative being characterised by having both carboxyl and hydroxyl groups, and an acid value of 40–100 KOH/gm and being further characterised by the presence of a mono-ester linkage of (b) and a mono-ester linkage of (c).

3,981,896

PHENYLSILOXY VANADIUM OXIDE CATALYSTS

Horst Pauling, Bottmingen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

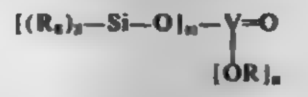
Continuation-in-part of Ser. No. 248,046, April 27, 1974, Pat. No. 3,919,250. This application Feb. 21, 1975, Ser. No. 551,946

Claims priority, application Switzerland, Mar. 1, 1974, 2932/74

Int. Cl.² C07F *9/00*

U.S. Cl. 260—429 R **12 Claims**

1. Compounds of the general formula



$$[(R_6)_3-Si-O]_m-\underset{\underset{\displaystyle [OR]_n}{|}}{V}=O \qquad (III)$$

wherein

R_6 is phenyl substituted, in one or more positions with an electron withdrawing group; R is selected from the group consisting of alkyl, cycloalkyl, lower alkyl substituted cycloalkyl, phenyl, phenyl lower alkyl, lower alkyl substituted phenyl; lower alkyl substituted phenyl lower alkyl, —Si $(R_6)_3$ and Si $(R_5)_3$; R_5 is selected from the group consisting of alkyl, phenyl lower alkyl, cycloalkyl, lower alkyl-substituted cycloalkyl, phenyl; lower alkyl-substituted phenyl-lower alkyl, and lower alkyl substituted phenyl; *m* is an integer from 1 to 3; and *n* is an integer of from 0 to 2 with the proviso that the sum of *m* and *n* is 3.

3,981,897

METHOD FOR MAKING CERTAIN HALONIUM SALT PHOTOINITIATORS

James V. Crivello, Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 2, 1975, Ser. No. 574,007

Int. Cl.² C07F *9/66*

U.S. Cl. 260—440 **7 Claims**

1. A method for making diarylhalonium salts of the formula,

$[(R)_a (R^1)_b X]^+ [YF_6]^-$,

which comprises effecting contact under aqueous conditions between a diarylhalonium bisulfate salt of the formula,

$[(R)_a (R^1)_b X]^+ [HSO_4]^-$,

and a Group VA alkali hexafluoro salt of the formula,

MYF_6

and thereafter recovering the diarylhalonium Group VA hexafluoride compound from the resulting mixture, where R is a monovalent aromatic group, R^1 is a divalent aromatic group, X is a halogen radical, M is an element selected from the class of hydrogen, alkali metal and alkaline earth metal, Y is selected from P, As and Sb, is a whole number equal to 0 or 2, b is a whole number equal to 0 or 1, and the sum of a+b is equal to 2, or the valence of X.

3,981,898

POLYSILOXANES CONTAINING HYDROXYL GROUPS

Friedrich Lohse, Oberwil, Switzerland; Kurt Munk, Wyhlen, Germany, and Heinz Rembold, Arlesheim, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

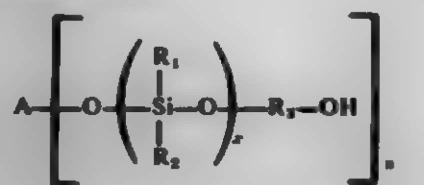
Filed Mar. 17, 1975, Ser. No. 558,996

Claims priority, application Switzerland, Mar. 25, 1974, 4107/74

Int. Cl.^{2} C07F *7/18*

U.S. Cl. 260—448.8 R **5 Claims**

1. A polysiloxane of formula I



$$A\left[O\left(\underset{R_2}{\overset{R_1}{Si}}-O\right)_x R_3-OH\right]_n \qquad (I)$$

wherein A denotes a di- or three-valent aliphatic or cycloaliphatic-aliphatic residue with 2–15 C atoms in the molecule, R_1 and R_2 each denote a methyl, ethyl, propyl or phenyl, and wherein R_1 and R_2 on the same Si atom denote identical substituents and within the siloxane chain denote different substituents, R_3 denotes an alkylene with 2–6 C atoms, a lower alkyl-substituted alkylene with 2–6 C atoms in the alkylene chain, or a cycloaliphatic-aliphatic residue, n denotes the number 2 or 3 and x denotes a number from 2 to 20.

3,981,899

TRIAMINOGUANIDINE CYANOFORMATE

Milton B. Frankel, Tarzana, Calif., and Lionel A. Dickinson, Indian Head, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 25, 1968, Ser. No. 747,785

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 10, 1976

Int. Cl.^{2} C07C *121/42*

U.S. Cl. 260—465.5 R **3 Claims**

1. $[(NH_2NH)_3C] + [C(CN)_3] -$

3,981,900

PREPARATION OF ALIPHATIC DINITRILES

Pierre Chabardés, Lyon; Pierre Gandilhon, Charly; Charles Grard, Lyon, and Michel Thiers, Rhone, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Continuation of Ser. No. 738,838, June 21, 1968, abandoned. This application Apr. 30, 1971, Ser. No. 139,204

Claims priority, application France, June 22, 1967, 67.111536

Int. Cl.^{2} C07C *120/00, 121/20, 121/26*

U.S. Cl. 260—465.8 D **9 Claims**

1. In a process for converting acrylonitrile to its straight chain linear di-cyano dimer or its straight chain linear dicyano hydrodimer which comprises dimerizing acrylonitrile in the presence of molecular hydrogen

at a temperature of 50°C to 120°C

under a hydrogen pressure of 1 to 50 bars and

in the presence of a catalyst selected from the group consisting of ruthenium salts of mineral and organic acids, complexes formed between a ruthenium halide and an electron donor and ruthenium chelate complexes,

the improvement which comprises

adding a catalyst activator to the reaction mixture in an amount of 1 to 25%, calculated as metal of the weight of the ruthenium introduced by said catalyst wherein said catalyst activator is selected from the group consisting of metallic ruthenium, metallic platinum, metallic nickel, metallic rhodium, RuO_2, $RuO(OH)_2$ and $Ru(OH)_3$.

3,981,901

NOVEL URETHANE POLYTHIOLS

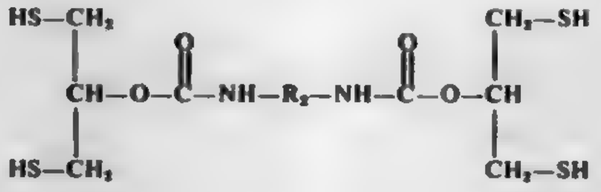
James Leverette Guthrie, Ashton, and Clifton Leroy Kehr, Silver Spring, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 546,709, Feb. 3, 1975. This application July 24, 1975, Ser. No. 598,594

Int. Cl.^{2} C07C *149/26*

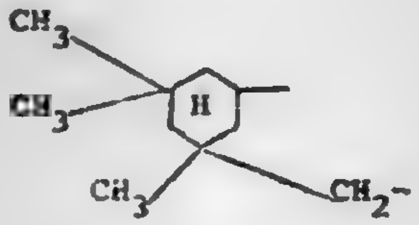
U.S. Cl. 260—468 E **1 Claim**

1. A polythiol having the formula



$$\begin{array}{lcr}\mathrm{HS-CH_2} & & \mathrm{CH_2-SH}\\ \mathrm{CH-O-\overset{O}{\overset{\|}{C}}-NH-R_2-NH-\overset{O}{\overset{\|}{C}}-O-CH} & & \\ \mathrm{HS-CH_2} & & \mathrm{CH_2-SH}\end{array}$$

in which
R_2 is



3,981,902

5-OXA-17,18-DEHYDROPROSTAGLANDIN-$F_{1\alpha}$-TYPE ANALOGS

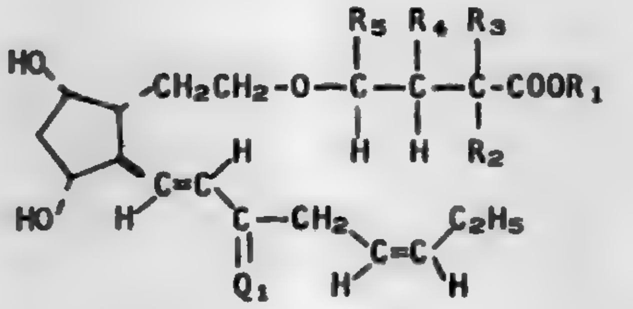
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 361,991, May 21, 1973, Pat. No. 3,931,279. This application Dec. 6, 1974, Ser. No. 530,234

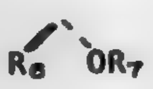
Int. Cl.^{2} C07C *61/28, 69/74, 177/00*

U.S. Cl. 260—468 D **10 Claims**

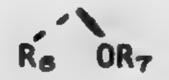
1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein Q_1 is



or



wherein R_6 and R_7 are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different; wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; wherein R_3 is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro; wherein R_2 is hydrogen or fluoro, with the proviso that R_2 is fluoro only when R_3 is hydrogen or fluoro; and wherein R_4 and R_5 are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different, with the proviso that no more than one of R_3, R_4, and R_5 is alkyl; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,981,903

CYCLOPROPANE CARBOXYLIC ACID ESTERS

Masachika Hirano, Ashiya; Isao Ohno, Minoo; Yoshitoshi Okuno, Toyonaka; Osamu Magara, Osaka; Nobushige Itaya, Nishinomiya; Toshio Nishioka, Takarazuka; Toshio Mizutani; Nobuo Ohno, both of Toyonaka; Takashi Matsuo, Nishinomiya, and Hisami Takeda, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

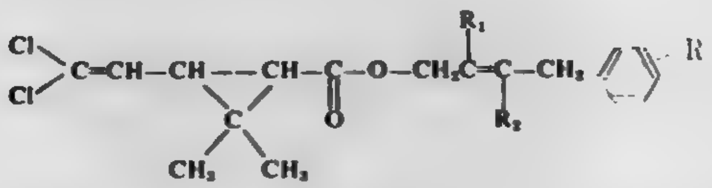
Filed July 25, 1974, Ser. No. 491,637

Claims priority, application Japan, July 28, 1973, 48-85223

Int. Cl.^{2} C07C *69/74*

U.S. Cl. 260—468 H **6 Claims**

1. Cyclopropanecarboxylic acid esters represented by the formula,



wherein R is a hydrogen atom, a halogen atom, a methyl or a methoxy group, and R_1 and R_2 are hydrogen atom, methyl group or a halogen atom.

3,981,904

NOVEL URETHANE POLYTHIOLS

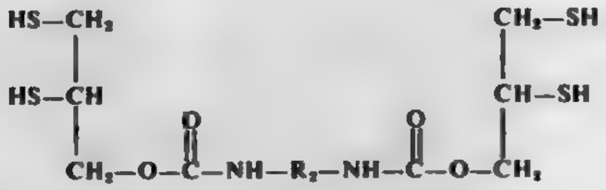
James Leverette Guthrie, Ashton, and Clifton Leroy Kehr, Silver Spring, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 546,709, Feb. 3, 1975, abandoned. This application July 24, 1975, Ser. No. 598,912

Int. Cl.^{2} C07C *101/44*

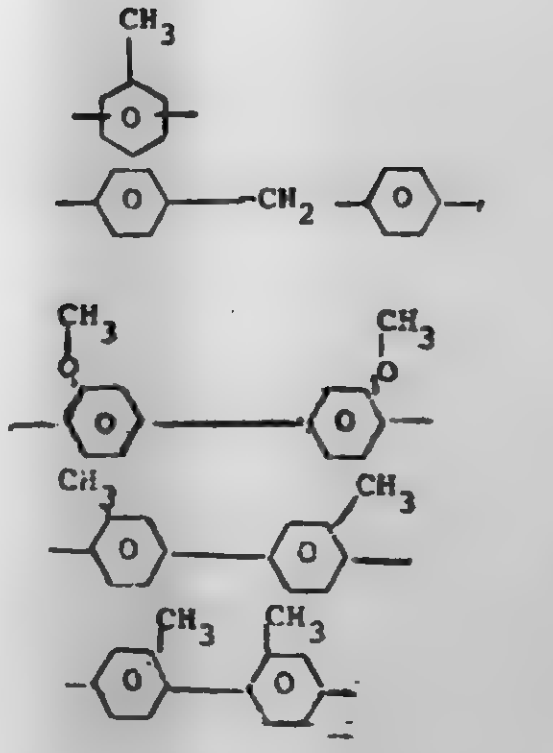
U.S. Cl. 260—471 C **6 Claims**

1. A polythiol having the formula



$$\begin{array}{lcr}\mathrm{HS-CH_2} & & \mathrm{CH_2-SH}\\ \mathrm{HS-CH} & & \mathrm{CH-SH}\\ \mathrm{CH_2-O-\overset{O}{\overset{\|}{C}}-NH-R_2-NH-\overset{O}{\overset{\|}{C}}-O-CH_2} & & \end{array}$$

in which
R_2 is



, or

3,981,905

2-(SUBSTITUTED PHENYL) PROPIONIC ACIDS

Stewart Sanders Adams; Bernard John Armitage; John Stuart Nicholson, and James Gordon Tantum, all of Nottingham, England, assignors to Boots Pure Drug Company Limited, Nottingham, England

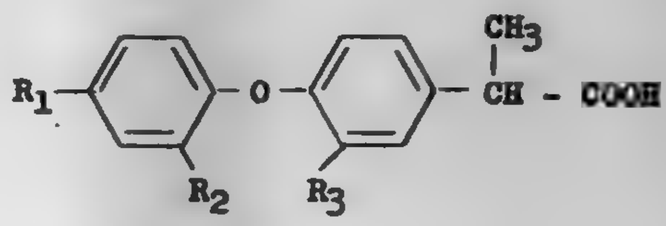
Continuation of Ser. No. 123,108, March 10, 1971, abandoned. This application Nov. 13, 1973, Ser. No. 415,319

Claims priority, application United Kingdom, Mar. 16, 1970, 12570/70

Int. Cl.^{2} C07C *65/14, 101/447*

U.S. Cl. 260—473 R **6 Claims**

1. A compound of the formula



in which R_1 is halogen; R_2 and R_3 are each selected from the group consisting of hydrogen and halogen, with the proviso that at least one of R_2 and R_3 is hydrogen; together with the pharmaceutically acceptable lower alkyl esters, inorganic salts and organic salts thereof.

3,981,906

PROCESS FOR PREPARING ALKYL 4,4'-(ETHYLENEDIOXY)BIS-BENZOATES

Yohei Fukuoka, Fuji; Toshio Kato, Kurashiki; Norio Imai, Fuji; Joji Nishikido, Fuji; Masato Hamada, Yokohama; Hiroshi Mikami, Chigasaki; Hirohumi Iwasaki, Moriyama, and Toshihisa Koike, Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 7, 1975, Ser. No. 575,229

Claims priority, application Japan, May 9, 1974, 49-50713

Int. Cl.^{2} C07C *69/76*

U.S. Cl. 260—473 R **9 Claims**

1. In a process for preparing an alkyl 4,4'-(ethylenedioxy)-bis-benzoate comprising reacting an alkyl p-hydroxybenzoate and ethylene dichloride with a recycling alkyl p-(2-chloroethoxy)benzoate in the presence of an alkali carbonate, the improvement which comprises at the first step reacting an

excess alkyl p-hydroxybenzoate with an alkyl p-(2-chloroethoxy)benzoate with heating in the presence of an alkali carbonate and an inert organic solvent until almost said alkyl p-(2-chloroethoxy)benzoate is consumed to produce an alkyl 4,4'-(ethylenedioxy)bis-benzoate and at the second step adding ethylene dichloride to the reaction system and continuing the heating to produce an alkyl p-(2-chloroethoxy)benzoate which is recycled.

3,981,907

METHOD OF PRODUCING HIGHLY UNSATURATED COMPOUNDS BY REACTING 1,3-CONJUGATED DIENE COMPOUNDS WITH DERIVATIVES OF DIMERS OF BUTADIENES AND PRODUCTS

Saburo Hattori; Yoshiharu Morita, both of Tokyo; Yoshio Ikeshi, Kawasaki, and Tadao Sato, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Japan

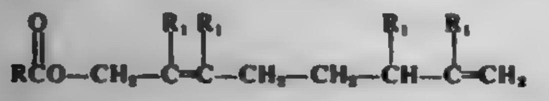
Continuation-in-part of Ser. No. 109,553, Jan. 25, 1971, abandoned. This application Mar. 18, 1975, Ser. No. 559,563

Claims priority, application Japan, Jan. 28, 1970, 45-7484; Feb. 25, 1970, 45-16092; Feb. 25, 1970, 45-16093; Mar. 6, 1970, 45-19136

Int. Cl.^{2} C07C *67/28*

U.S. Cl. 260—488 H **12 Claims**

1. A method for the production of an alkapolyenyl group containing ester in which one molecule of a 1,3-conjugated diene bond containing compound is linked to an alkadienyl group of said ester and which has at least 12 carbon atoms and at least 3 carbon-carbon double bonds, characterized in that an alkadienyl ester represented by the formula



$$R\overset{O}{\overset{\|}{C}}O-CH_2-\overset{R_1}{\overset{|}{C}}=\overset{R_1}{\overset{|}{C}}-CH_2-CH_2-\overset{R_1}{\overset{|}{C}}H-\overset{R_1}{\overset{|}{C}}=CH_2$$

in which R is methyl, ethyl, propyl or phenyl and each R_1 is independently selected from the group consisting of hydrogen and methyl, is reacted in the presence of a rhodium compound catalyst selected from the group consisting of rhodium chloride, rhodium bromide, rhodium nitrate, rhodium acetate, rhodium propionate, rhodium acetylacetonate, π- allyl - rhodium chloride, tetrakis(ethylene)dischlorodirhodium and bis(cycloocta-1,5-diene)dichlorodirhodium, with a 1,3-conjugated diene bond containing compound selected from the group consisting of 1,3-butadiene, isoprene and straight-chain dimers thereof, the reaction being conducted at a temperature in the range of 50°–250°C.

3,981,908

PREPARATION OF GLYCOL ESTERS

Wolfgang Ganzler, Darmstadt-Arheilgen; Klaus Kabs, Seeheim, and Gunter Schröder, Ober-Ramstadt, Darmstadt, all of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Filed Sept. 30, 1974, Ser. No. 510,613

Claims priority, application Germany, Nov. 12, 1973, 2356389

Int. Cl.^{2} C07D *67/05*

U.S. Cl. 260—497 R **7 Claims**

1. In a process for preparing glycol esters in a liquid phase by the reaction of an olefin with oxygen and a carboxylic acid, the improvement wherein the reaction is carried out at a temperature from about 50° to 200°C. in the presence of a catalyst consisting essentially of:

A. a member selected from the group consisting of compounds of boron, aluminum, silicon, and phosphorus which are soluble in the liquid reaction medium, and

B. a member selected from the group consisting of compounds of iron and copper which are soluble in the liquid reaction medium,

at least one of the catalyst components being a halide.

3,981,909

PROCESS FOR PRODUCING PER-P-TOLUIC ACID AND UTILIZING THE SAME

Nobuo Isogai; Takashi Okawa, and Takako Takeda, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 27, 1975, Ser. No. 562,805

Claims priority, application Japan, Apr. 8, 1974, 49-40799; June 26, 1974, 49-73119; June 26, 1974, 49-73120

Int. Cl.^{2} C07C *179/10*

U.S. Cl. 260—502 A **3 Claims**

1. A process for producing per-p-toluic acid, which comprises autooxidizing p-tolualdehyde, free of reaction inhibiting substances, in the form of a solution having a concentration of 10 to 50% by weight of p-tolualdehyde in a solvent of acetone or ethylacetate with a gas containing molecular oxygen, the autooxidation being conducted at a temperature of 10° to 50°C and under a pressure of 1 to 60 kg/cm^2 gage.

3,981,910

SULFUR CONTAINING TRIALKOXYBENZOYLAMINO CARBOXYLIC ACIDS

Heribert Offermanns, Grossauheim, and Klaus Posselt, Wachtberg-Villiprott, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

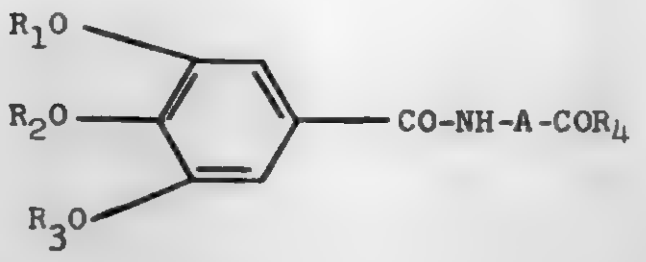
Filed May 8, 1974, Ser. No. 468,087

Claims priority, application Austria, May 15, 1973, 4232/73

Int. Cl.^{2} C07C *147/13, 149/31*

U.S. Cl. 260—516 **14 Claims**

1. A compound of the formula



wherein:

A is alkylidene having 2 to 5 carbon atoms and which is substituted by alkyl thio having 1 to 4 carbon atoms or mercapto, at least two of R_1, R_2 and R_3 are alkyl of 1 to 5 carbon atoms and the other R_1, R_2 and R_3 is alkyl of 1 to 5 atoms, hydrogen or the acyl of alkanoic acid of 2 to 4 carbon atoms and R_4 is hydroxy or alkoxy with 1 to 5 carbon atoms and their pharmaceutically acceptable salts.

3,981,911

PROCESS FOR PREPARING (1-OXO-2-CYCLOPENTYL-2-METHYL-6,7-DICHLORO-5-INDANYLOXY)ACETIC ACID

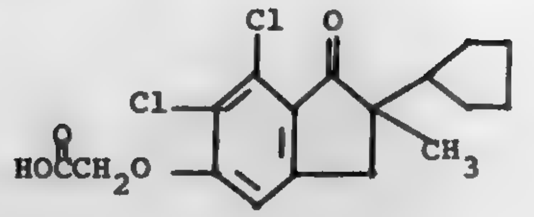
Meyer Sletzinger, North Plainfield, and George G. Hazen, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 15, 1974, Ser. No. 442,696

Int. Cl.^{2} C07C *65/14, 69/95*

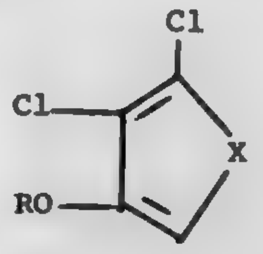
U.S. Cl. 260—520 C **6 Claims**

1. A process for preparing (1-oxo-2-cyclopentyl-2-methyl-6,7-dichloro-5-indanyloxy)acetic acid of the structure:



comprising the steps of

a. reacting under Diels-Alder conditions a conjugated diene of the structure:



and 5-cyclopentyl-5-methyl-2-cyclopentenone in a substantially inert solvent, at a temperature of from 20° to 300°C. and at a pressure of 1 to 10 atmospheres; and

b. aromatizing the adduct obtained from Step (a) with the elimination of X; wherein R is CH_2COOH, R', or CH_2COOR' and wherein R' is lower alkyl; phenyl or substituted phenyl, aralkyl or nuclear substituted aralkyl having from 7 to about 20 carbon atoms; and wherein X represents two hydrogen atoms, SO, SO_2, O, or NH in an inert solvent at a temperature of 25° to 300°C.; and

c. if R is R' then hydrolyzing the resulting product from step (b) and treating with halo acetic acid to form the desired product and if R is CH_2COOR' hydrolyzing and acidifying the product of step (b) to obtain the desired product.

3,981,912

PROCESS FOR THE PREPARATION OF UNSATURATED CARBOXYLIC ACIDS BY THE CATALYTIC OXIDATION IN GASEOUS PHASE OF THE CORRESPONDING ALDEHYDES

Giancarlo Battiston, Baranzate (Milan); Guido Petrini, Milan; Giordano De Alberti, Besnate (Varese), and Romano Covini, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Nov. 7, 1975, Ser. No. 629,986

Claims priority, application Italy, Nov. 12, 1974, 29320/74

Int. Cl.^{2} C07C *51/32*

U.S. Cl. 260—530 N **3 Claims**

1. A process for the preparation of acrylic acid or methacrylic acid, comprising reacting in vapor phase acrolein or methacrolein with molecular oxygen or an oxygen-containing gas, at a temperature between 200° and 350°C, in the presence of a solid catalyst, and with a contact time between 0.5 and 5 seconds, wherein the catalyst consists essentially of molybdenum, vanadium, tin, and one of the elements selected from the class consisting of chromium, nickel and manganese, and oxygen chemically combined with the above-indicated elements, the atomic ratios of the elements being represented by the empirical formula:

$$Mo_{12}V_aSn_bX_cO_d,$$

wherein:

X is Cr or Ni or Mn;

a is between 0.5 and 10;

b is between 0.4 and 4;

c is between 0.3 and 3.5; and

d is a number that satisfies all the valency requirements of the other elements.

3,981,913

MONO-SUBSTITUTED UREAS

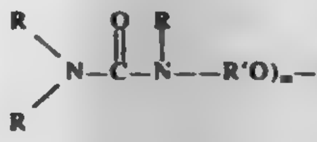
Kenneth H. Markiewitz, Wilmington, Del., assignor to ICI United States Inc., Wilmington, Del.

Division of Ser. No. 372,445, June 21, 1973, which is a division of Ser. No. 880,892, Nov. 28, 1969, Pat. No. 3,763,106. This application Sept. 13, 1974, Ser. No. 505,652

Int. Cl.^{2} C07C *127/15*

U.S. Cl. 260—553 R **11 Claims**

1. A substituted urea characterized by the generalized formula



$$\begin{matrix}R\\ \\ R\end{matrix}\!\!>\!N-\overset{O}{\overset{\|}{C}}-\overset{R}{\overset{|}{N}}--R'O)_m-CH_2CHR''O)_nH$$

wherein *n* is an integer from 2 to 14, *m* is 0 or 1, R' is an alkylene group containing from 3 to 5 carbon atoms, each R'' is independently hydrogen or methyl, and each R is independently selected from the group consisting of —H and —CH_2OH.

3,981,914

N-ALKYLSULFONYLPERFLUOROALKANESULFONANILIDES

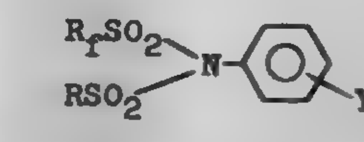
Edward L. Mutsch, Woodbury Township, Washington County, and Joseph Kenneth Harrington, Edina, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 3, 1971, Ser. No. 168,736

Int. Cl.^{2} C07C *143/74*

U.S. Cl. 260—556 F **10 Claims**

1. A compound of the formula



wherein R_f is perfluoroalkyl of 1 to 2 carbon atoms, R is lower alkyl or lower haloalkyl, Y is selected from halogen, nitro, cyano, alkyl, haloalkyl, alkoxy, haloalkoxy, alkylthio, haloalkylthio, alkanoyl, haloalkanoyl, alkanoylamino, haloalkanoylamino, alkylsulfinyl, haloalkylsulfinyl, alkylsulfonyl, haloalkylsulfonyl, alkylsulfonoxy and haloalkylsulfonoxy and *n* is 0–5, provided that the R and Y moieties contain not more than four carbon atoms each.

3,981,915

AMIDES OF 1-AMINOCYCLOPENTANE CARBOXYLIC ACID

Harvey E. Alburn, West Chester, and Norman H. Grant, Wynnewood, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

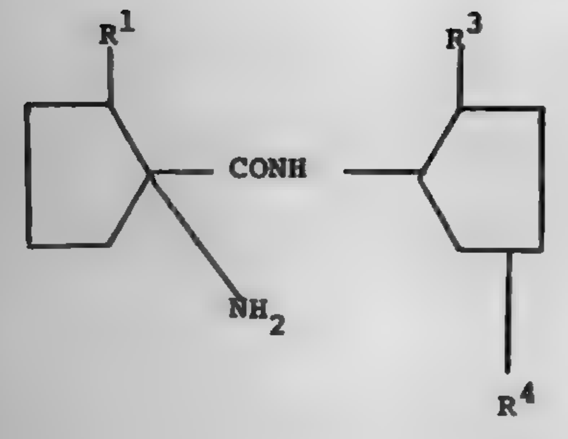
Continuation of Ser. No. 209,335, Dec. 17, 1971, Pat. No. 3,803,229. This application Aug. 6, 1973, Ser. No. 386,257

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976

Int. Cl.^{2} C07C *103/737*

U.S. Cl. 260—557 R **1 Claim**

1. An amide of 1-aminocyclopentanecarboxylic acid of the compound having the following formula:



wherein R^1 is selected from the group consisting of hydrogen, lower alkoxy, hydroxy, lower alkyl and nitro; R^3 is selected from the group consisting of hydrogen, lower alkyl, halogen and hydroxy and R^4 is either lower alkyl or hydrogen with the proviso that R^3 is either hydroxy or hydrogen when R^4 is lower alkyl; with the further proviso that R^1, R^3 and R^4 are not all hydrogen.

3,981,916
REDUCTION OF NITROPARAFFIN SUBSTRATES TO THEIR CORRESPONDING OXIMES USING A SILVER SALT CATALYST

John F. Knifton, Poughquag, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed July 9, 1970, Ser. No. 53,702

Int. Cl.² C07C *131/04*

U.S. Cl. 260—566 A **11 Claims**

1. A process for reducing mixtures of mono-nitrated paraffin substrates containing 3 to 40 carbon atoms, to the corresponding paraffinone oxime products without producing substantial quantities of the fully reduced paraffinic amines, consisting essentially of:

a. forming a homogenous reaction mixture of the following components in the proportions indicated:
   1. a molar equivalent of said mono-nitroparaffins to be reduced,
   2. from about 1 to 100 molar equivalents of a water-miscible nitrogenous base selected from the group consisting of monodentate amines, bidentate amines and multidentate amines, said base having a pKa strength between about 9.5 to 11.5, and being capable of solubilizing or chelating silver salts,
   3. from about 0.1 to 2 molar equivalents of silver salt said silver salt being selected from the group consisting of silver salts of mineral acids and silver salts of organic acids, said silver salts being soluble in said nitrogenous base, and
   4. from 0 to 100 molar equivalents of water;

b. heating said reaction mixture at temperatures ranging from about 40° to 120°C, in the presence of a carbon monoxide atmosphere, at superatmospheric pressures ranging from about 300 psig to 1000 psig, until substantially all of the said mono-paraffins are reduced to the corresponding paraffinone oxime products, and

c. isolating the paraffinone oximes contained therein.

3,981,917
CHEMICAL COMPOUNDS

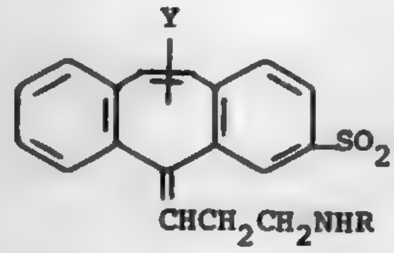
Edward L. Engelhardt, Gwynedd Valley, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

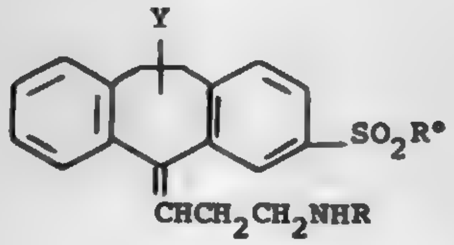
Division of Ser. No. 297,710, July 25, 1963, Pat. No. 3,922,305, which is a continuation-in-part of Ser. No. 215,770, Aug. 9, 1962, abandoned, which is a continuation-in-part of Ser. No. 140,223, Sept. 25, 1961, abandoned, which is a continuation-in-part of Ser. No. 120,835, May 24, 1961, abandoned. This application Apr. 11, 1975, Ser. No. 567,157

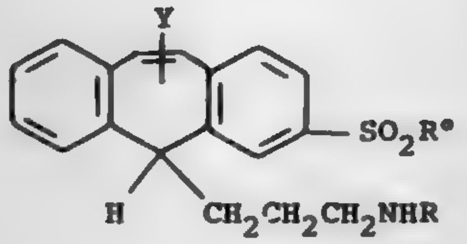
Int. Cl.² C07C *87/28, 87/29*

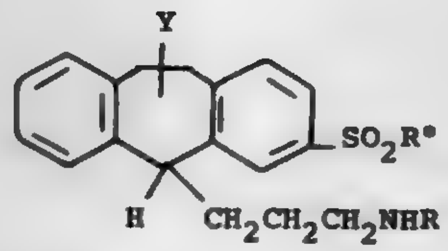
U.S. Cl. 260—570.8 TC **5 Claims**

1. A compound selected from the group consisting of









and the non-toxic acid addition salts thereof; wherein R° is a lower alkyl, R is a lower alkyl, and Y is hydrogen.

3,981,918
ISOPHORONE PRODUCTION USING A POTASSIUM HYDROXIDE CATALYST

John Reginald Walton, Hull, and Bertram Yeomans, Hessle, both of England, assignors to BP Chemicals International Limited, London, England

Filed Apr. 21, 1975, Ser. No. 570,175

Claims priority, application United Kingdom, May 15, 1974, 21651/74

Int. Cl.² C07C *45/00*

U.S. Cl. 260—586 C **3 Claims**

1. A process for the production of isophorone by feeding a mixture of acetone, water and an alkali to an intermediate point in a reaction column operating at elevated temperature and pressure and under an acetone/water azeotrope reflux, passing from the bottom of said column a fraction containing isophorone to a hydrolysis column also operating at elevated temperature and pressure wherein acetone is separated overhead and returned to said reaction column and a fraction containing water, isophorone and high-boiling compounds is removed from the bottom of said hydrolysis column and thereafter isophorone is recovered from said bottom fraction wherein the invention comprises feeding a mixture consisting of 65 to 85% w/w acetone, 35 to 15% w/w water and 0.7 to 0.3% w/w potassium hydroxide to said intermediate point in said reaction column at such a rate as to maintain an acetone/-water azeotrope reflux having a potassium hydroxide concentration in the range 300 to 1000 ppm within said reaction column.

3,981,919
RACEMIZATION OF OPTICALLY ACTIVE ALLETHROLONE

Takeaki Umemura, Takarazuka, and Fukashi Horiuchi, Kawani, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jan. 22, 1975, Ser. No. 542,904

Claims priority, application Japan, Jan. 25, 1974, 49-11314

Int. Cl.² C07C *45/00;* **C07B** *20/00;* **C07C** *29/00*

U.S. Cl. 260—586 R **8 Claims**

1. A process for preparing racemic allethrolone which comprises reacting (−) allethrolone with a phosphorus chloride compound selected from the group consisting of phosphorus trichloride, phosphorus pentachloride, phosphorus oxychloride, triphenylphosphite dichloride, diphenyltrichlorophosphorane, and triphenylphosphine dichloride, in the presence of a Lewis acid, separating the 4-chloro-allethrolone and hydrolyzing racemic 4-chloro-allethrolone thus obtained in the presence of a weak base.

3,981,920
METHOD FOR PREPARING CYCLOPENTENONE DERIVATIVES

George Hermann Buchi, Cambridge, Mass., assignor to Firmenich S.A., Geneva, Switzerland

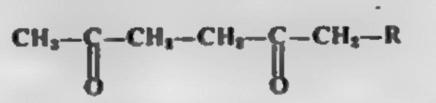
Continuation of Ser. No. 436,680, March 2, 1965, abandoned. This application May, 1968, Ser. No. 728,050

Claims priority, application Switzerland, Mar. 3, 1974, 2638/64

Int. Cl.² C07C *49/12*

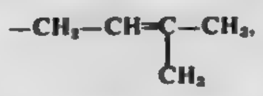
U.S. Cl. 260—593 R **8 Claims**

1. A process for the preparation of a dione of the formula



$$CH_3-\underset{\underset{O}{\|}}{C}-CH_2-CH_2-\underset{\underset{O}{\|}}{C}-CH_2-R$$

wherein R represents a member selected from the group consisting of $-CH_2-CH=CH_2$, $-CH_2-CH=CH-CH_3$,



$$-CH_2-CH=\underset{\underset{CH_3}{|}}{C}-CH_3,$$

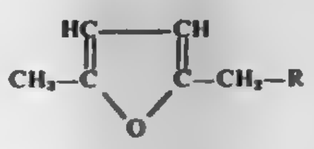
$-CH_2-CH=CH-CH_2-CH_3$, $-CH_2-CH_2-CH=CH-CH_3$, $-CH_2-CH_2-CH_2-CH=CH_2$ and $-CH_2-CH=CH-CH=CH_2$ which comprises

a. metallating 2-methylfuran in the 5-position by an interchange reaction with an alkali metal-organic compound selected from the group consisting of lower alkyl sodium, lower alkyl lithium, phenyl sodium, phenyl lithium, benzyl sodium and benzyl lithium, said step being conducted in an inert atmosphere and in an organic solvent medium at a temperature of from about 60°C to about −30°C;

b. condensing the resulting metal derivative of 2-methylfuran in an organic solvent medium, in an inert atmosphere and at a temperature of from the reflux temperature of the solvent to about −30°C with a halide of the formula

$R-CH_2-Br$

wherein R has the previously indicated significance in order to form a 2,5-disubstituted furan of the formula



and,

c. treating the disubstituted furan at a temperature of from about 100° to about 150°C with an aqueous acid selected from the group consisting of mineral acids and strong organic acids to cause the opening of the furan ring.

3,981,921
PROCESS FOR PRODUCING KETONES

Gerd Bohmholdt, Westerholt; Hinrich Husemann, Marl, and Helmut Riedel, Gelsenkirchen-Buer, all of Germany, assignors to Veba-Chemie AG, Gelsenkirchen-Buer, Germany

Filed Dec. 21, 1970, Ser. No. 100,339

Claims priority, application Germany, Dec. 27, 1969, 1965186

Int. Cl.² C07C *45/00*

U.S. Cl. 260—586 R **9 Claims**

1. In a process for the oxidation of olefins to ketones by hydration at a temperature of 80° to 160°C and a pressure between 10 and 100 atmospheres followed by dehydrogenation at a temperature between 130° and 180°C of the secondary alcohols formed, the improvement which comprises carrying out simultaneously with the hydration an organic liquid phase extraction using the olefin starting material therefor on a fixedly disposed catalyst bed composed of acid organic ion exchangers thereby absorbing secondary alcohol and ether by-product formed, separating said liquid phase extract from the hydration reaction mixture, separating said secondary alcohol and ether from said liquid phase and thereafter feeding said secondary alcohol-ether mixture to a dehydrogenation step during which said ether is separated by purging.

3,981,922
DI-OLEFINIC KETONES

Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

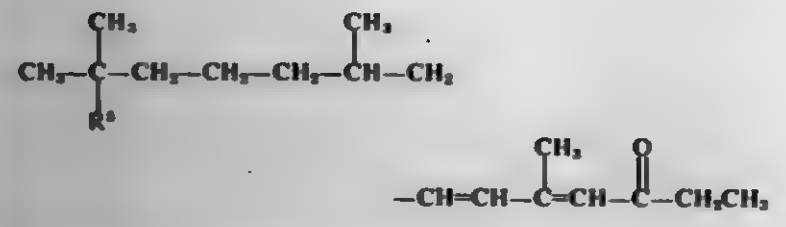
Continuation-in-part of Ser. No. 201,167, Nov. 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 187,898, Oct. 8, 1971, Pat. No. 3,752,843, which is a continuation-in-part of Ser. No. 111,701, Feb. 1, 1971, abandoned. This application May 9, 1974, Ser. No. 468,350

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² C07C *49/20*

U.S. Cl. 260—593 R **3 Claims**

1. A compound of the formula:



$CH_3-\overset{CH_3}{\underset{R^5}{C}}-CH_2-CH_2-CH_2-\overset{CH_3}{CH}-CH_2$

$-CH=CH-\overset{CH_3}{C}=CH-\overset{O}{\overset{\|}{C}}-CH_2CH_3$

in which R^5 is hydrogen or methyl.

3,981,923
DEHYDROGENATION OF ALCOHOLS TO KETONES

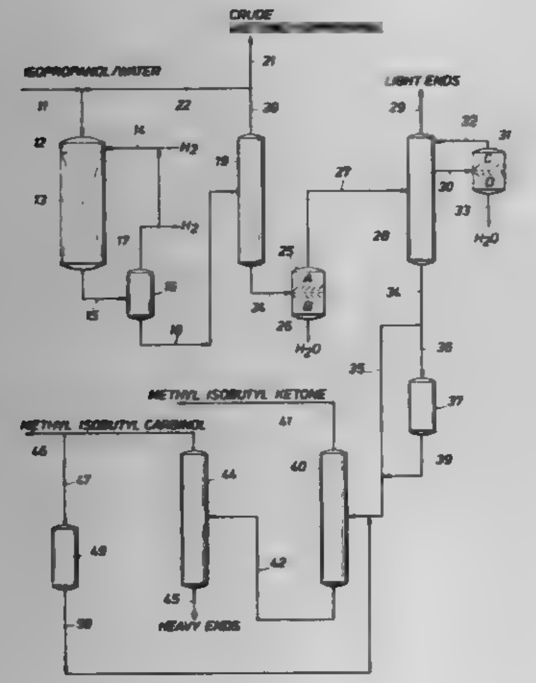
Bernhard Stouthamer, and Aries Kwantes, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 44,051, June 8, 1970, Pat. No. 3,875,239. This application Sept. 16, 1974, Ser. No. 506,623

Claims priority, application Netherlands, June 11, 1969, 6908875

Int. Cl.² C07C *45/16*

U.S. Cl. 260—596 **3 Claims**



1. A process for converting an acyclic aliphatic secondary monoalcohol having from 3 to 6 carbon atoms into an aliphatic ketone having the same number of carbon atoms as the secondary monoalcohol which comprises passing the monoalcohol over a catalyst consisting essentially of from 0.01% by weight to 1% by weight of platinum on a non-acidic porous alumina support having an average pore diameter of greater than 250A and a specific surface area from about 5 to 100 m^2/g at a temperature of from 250° to 400°C and a pressure of from 1 atmosphere to 5 atmospheres.

3,981,924
DIELS-ALDER ADDUCT PRODUCT

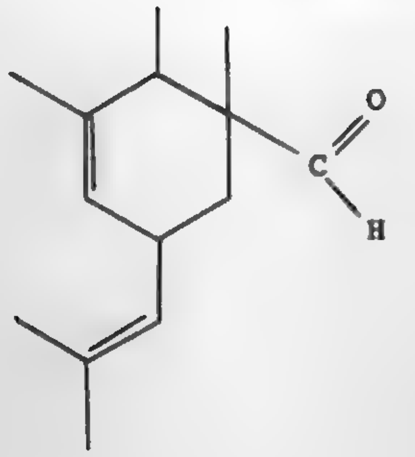
John B. Hall, Rumson, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 462,750, April 22, 1974, Pat. No. 3,929,895. This application June 26, 1975, Ser. No. 590,473

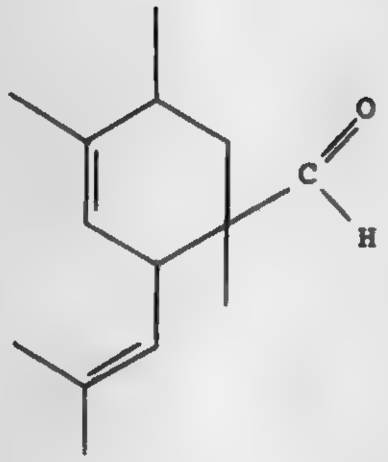
Int. Cl.² C07C *47/45*

U.S. Cl. 260—598 **1 Claim**

1. A composition consisting essentially of a mixture of chemical compounds having the structures:



and



3,981,925
SELECTIVE HYDROFORMYLATION PROCESS USING HOMOGENEOUS CATALYSTS

Irving Schwager, Lompoc, Calif., and John F. Knifton, Poughquag, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed May 8, 1972, Ser. No. 251,639

Int. Cl.² C07C *45/08*

U.S. Cl. 260—604 HF **11 Claims**

1. A process for preparing primarily linear aldehyde products by the hydroformylation of alpha olefins containing from 2 to 30 carbon atoms, through the catalytic addition of hydrogen and carbon monoxide to said olefins at elevated temperatures and pressures consisting essentially of:

a. admixing each mole of said alpha olefin to be hydroformylated with from 0.001 to 0.1 millimoles of a ligand stabilized platinum dihalide complex selected from the group consisting of:

$PtCl_2[Ph_2PCH_2CH_2PPh_2]$
$PtCl_2[P(n\text{-}Bu)_3]_2$
$PtCl_2[PPh(CH_3)_2]_2$
$PtCl_2[P(p\text{-}CH_3.C_6H_4)_3]_2$
$PtCl_2[P(OPh)_3]_2$
$PtCl_2[PCl(Ph)_2]_2$
$PtCl_2(PPh_3)_2$
$PtCl_2(AsPh_3)_2$
$PtCl_2(Ph_2AsCH_2CH_2AsPh_2)$
$PtCl_2(SbPh_3)_2$
$PtCl_2$(o-Phenanthroline)
$PtCl_2(SPh_2)_2$
$PtBr_2(PPh_3)_2$ and
$PtCl_2(PPh_3)_2$

catalyst complex, and from 0.001 to 1.0 moles of a Group IVA metal halide selected from the group consisting of $SnCl_4$, $SnCl_2$ and $GeCl_2$, said mole ratio of Group IVA halide ligand stabilized platinum II dihalide complex ranging from 1:1 to

10:1, in a deoxygenating atmosphere to form a deoxygenated reaction admixture,

b. pressurizing said reaction admixture between about 100 and 3000 psig with an excess of carbon monoxide and hydrogen over what is required by stoichiometry to satisfy the needs of aldehyde-forming hydroformylation reaction, said mole ratio of H_2:CO ranging from 0.033 to 30 moles of hydrogen for each mole of carbon monoxide,

c. heating said pressurized reaction admixture between 25°C to 125°C, until formation of said aldehyde products takes place, and

d. isolating said aldehyde product contained therein.

3,981,926
PURIFICATION OF SOLID ORGANIC PEROXIDES

Jan van Holten, Zwijndrecht, and Cornelis Ribbens, Dordrecht, both of Netherlands, assignors to N.V. Chefaro Maatschappij, Rotterdam, Netherlands

Filed Mar. 3, 1969, Ser. No. 803,841

Claims priority, application Netherlands, Mar. 4, 1968, 6803015

Int. Cl.² C07C *179/14*

U.S. Cl. 260—610 D **5 Claims**

1. In the method of purifying an impure aliphatic diacyl peroxide which is solid at normal temperature and has a melting point below 120°C. and which has unreacted acid chloride, free fatty acid and/or alkali salts present as impurities therewith, comprising the steps of heating an aqueous suspension of said impure aliphatic diacyl peroxide to a temperature above said melting point for converting said suspension to an aqueous emulsion of the melted peroxide and then separating the resulting aqueous phase containing said impurities and the liquid peroxide phase by means of a centrifugal separator, whereupon the separated peroxide phase consisting essentially of the purified aliphatic diacyl peroxide is solidified by cooling to below said melting point; the improvement of effecting said heatng of the aqueous suspension of the impure aliphatic diacyl peroxide by injecting finely divided steam, at a pressure between 2 and 5 atmospheres and a temperature between 120° and 150°C., respectively, into said suspension during its continuous transport, with a linear speed in the range between 0.5 and 2.0m/sec., in at least one path leading to said separator so as to avoid any substantial decomposition of said peroxide therein.

3,981,927
1,2,2,2-TETRAFLUOROETHYL ETHERS AND PROCESS FOR PREPARING THEM

Günther Siegemund, Hofheim, Taunus, and Roman Muschaweck, Frankfurt am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 8, 1974, Ser. No. 495,897

Claims priority, application Germany, Aug. 10, 1973, 2340560

Int. Cl.² C07C *43/00, 43/12*

U.S. Cl. 260—614 F **3 Claims**

1. A 1,2,2,2-tetrafluoroethyl ether of the formula

$CF_3CHF-O-R,$

wherein R is methyl or ethyl.

3,981,928
PERFLUOROTERTIARYALKYL ETHERS

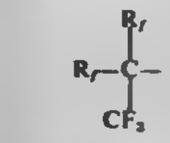
Frank J. Pavlik, West St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 538,556, March 30, 1966, abandoned, which is a continuation-in-part of Ser. No. 246,022, Dec. 20, 1962, abandoned, which is a continuation-in-part of Ser. No. 234,222, Oct. 30, 1962, Pat. No. 3,385,904. This application Apr. 13, 1970, Ser. No. 32,477

Int. Cl.² C07C *43/12*

U.S. Cl. 260—615 F **2 Claims**

1. A monohydroxyalkyl, perfluorotertiaryalkyl ether, said monohydroxyalkyl group having no more than 16 carbon atoms and said perfluorotertiaryalkyl group having the structure



$R_f-\overset{R_f}{\underset{CF_3}{C}}-$

where R_f is a perfluoroalkyl radical of less than 10 carbon atoms.

3,981,929
METHOD OF SEPARATING METHYLOLPHENOLS FROM SOLUTIONS

Robert Elliott Davis, Oklahoma City, Okla., and Friedrich Josef Weck, Hacienda Heights, Calif., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Continuation-in-part of Ser. Nos. 716,337, March 27, 1968, abandoned, and Ser. No. 321,046, Jan. 4, 1973, abandoned. This application May 16, 1974, Ser. No. 470,348

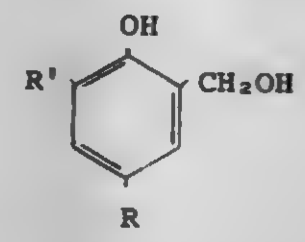
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² C07C *39/06, 39/27*

U.S. Cl. 260—621 K **9 Claims**

1. A method of separating methylolphenol from a phenolic impurity which comprises:

contacting (A) an organic solution containing (1) an organic solvent; (2) at least one phenolic impurity and (3) about 1% to about 20% by weight of the methylolphenol having the formula

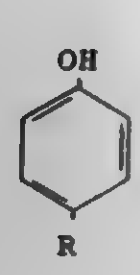


in which R is selected from the group consisting of hydrogen, phenyl, bromine, chlorine and alkyl radicals having from 3 to 8 carbon atoms and R′ is selected from the group consisting of hydrogen, phenyl, chloro, CH_2OH and alkyl radicals having from 1 to 9 carbon atoms

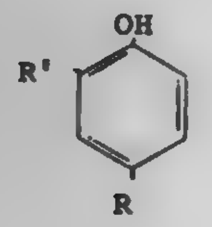
with (B) an aqueous alkaline borate solution containing lithium ions and being free of substantial amounts of other alkali metal ions, for a period of time sufficient for a solid complex of lithium and boron to form with said methylolphenol, the organic solution being contacted with said aqueous alkaline borate solution for at least about 0.5 hour at a temperature of between about 20° and about 40°C. and thereafter contacting said solid complex with a dilute inorganic acid and an organic solvent for said methylolphenol to dissolve said complex and provide an aqueous phase containing the lithium and boron values of said complex and an organic phase containing the methylolphenol portion of said complex and separating said phases, the concentration of lithium and boron ions in the alkaline borate solution being sufficient to provide at least about one lithium ion and one boron ion for every two moles of said methylolphenol in said organic solution;

said organic solvent being selected from the group consisting of benzene, toluene, xylenes, alkyl benzene, hexane, heptane, octane, nonane, kerosene, mineral spirits, petroleum ether, butyl ether, isopropyl ether, hexyl ethers, chloroform, carbon tetrachloride, chlorobenzene, monohydric alcohols having from 8 to 17 carbon atoms per molecule and mixtures thereof and said phenolic impurity being at least one member of the group consisting of

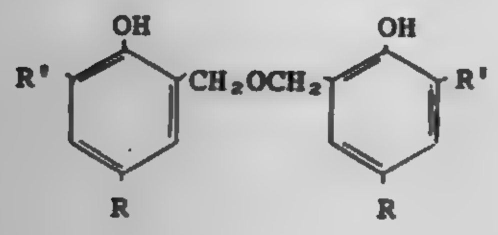
a. unreacted starting materials having the formula



b. partially reacted starting materials having the formula

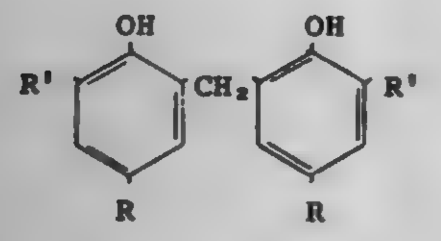


c. degradation products of the methylolphenol having the formula



and

d. degradation products of the methylolphenol having the formula



in which R and R' in each instance are as hereinbefore defined for the methylolphenol.

3,981,930

DIACETYLENE DIOL DERIVATIVES AND PROCESS FOR PREPARING THE SAME

Takashi Nishida; Yoichi Ninagawa, both of Kurashiki; Yoshiaki Omura, Okayama; Fumio Mori; Yoshin Tamai, both of Kurashiki; Takeo Hosogai, Okayama; Yoshiji Fujita, and Kazuo Itoi, both of Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Okayama, Japan

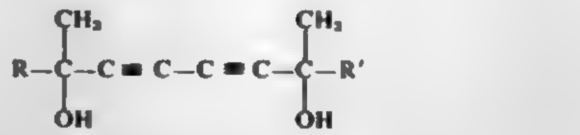
Division of Ser. No. 448,700, March 6, 1974, Pat. No. 3,923,918. This application May 1, 1975, Ser. No. 573,569

Claims priority, application Japan, Mar. 19, 1973, 48-32274; Jan. 14, 1974, 49-7268; Jan. 14, 1974, 49-7269

Int. Cl.² C07C *33/04*

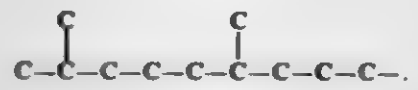
U.S. Cl. 260—635 Y **6 Claims**

1. A compound having the general formula



$$R-\overset{CH_3}{\underset{OH}{C}}-C\equiv C-C\equiv C-\overset{CH_3}{\underset{OH}{C}}-R' \qquad (I)$$

wherein R and R' are the same or different and represent saturated or unsaturated hydrocarbon residues having 11 carbon atoms represented by the following carbon atom skeleton:



$$C-\overset{C}{C}-C-C-C-\overset{C}{C}-C-C-C-.$$

3,981,931

DIOLS BY TRANSESTERIFICATION USING MAGNESIA CATALYSTS

William E. Smith, Schenectady, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Mar. 13, 1974, Ser. No. 450,587

Int. Cl.² C07C *29/00, 27/00*

U.S. Cl. 260—635 R **7 Claims**

1. A process for preparing diols which comprises reacting an alkane diol acetate with a lower alkanol in the presence of a transesterification catalyst selected from the group consisting of mixtures of magnesium oxide and magnesium hydroxide and mixtures of magnesium oxide, magnesium hydroxide and manganese oxide at a temperature of from about 100°C to about 250°.

3,981,932

ETHYNYLBENZENE COMPOUNDS AND DERIVATIVES THEREOF

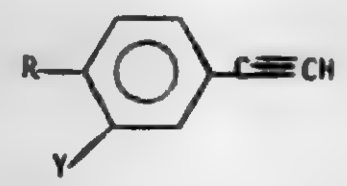
Julius Diamond, Morris Plains, N.J., assignor to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 493,590, Aug. 1, 1974, Pat. No. 3,898,292. This application May 14, 1975, Ser. No. 574,797

Int. Cl.² C07C *79/10*

U.S. Cl. 260—645 **8 Claims**

1. A compound of the formula



where R is alkyl having 3–7 carbon atoms or cycloalkyl having 5–7 ring carbon atoms and Y is iitro.

3,981,933

PROCESS FOR MAKING DINITROTOLUENE

Newell C. Cook, Schenectady, and Gary C. Davis, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 486,356, July 8, 1974. This application Aug. 18, 1975, Ser. No. 605,398

Int. Cl.² C07C *79/10*

U.S. Cl. 260—645 **1 Claim**

1. The process for making dinitrotoluene which comprises (1) forming a solution of toluene in methylene chloride, (2) adding a mixture of concentrated sulfuric acid having a concentration of at least 90% and concentrated nitric acid of at least 90% concentration to the methylene chloride solution at a temperature of from 42° to 45°C., the said acid being close to the stoichiometric amount required to attach two nitro groups to the toluene, and (3) extracting the dinitrotoluene from the reaction mixture with additional methylene chloride.

3,981,934

METHOD FOR DRYING TRINITROTOLUENE

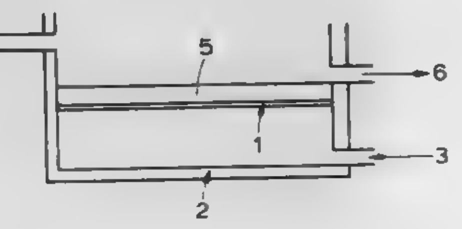
Odd Rüber, Gullaug pr. Drammen, Norway, assignor to Dyno Industrier A.S., Oslo, Norway

Filed Sept. 19, 1974, Ser. No. 507,781

Claims priority, application Norway, Sept. 20, 1973, 3698/73

Int. Cl.² C07C *79/10;* **F26B** *7/00*

U.S. Cl. 260—645 **4 Claims**



1. A method of drying melted aqueous trinitrotoluene, said method comprising:

continuously passing a layer of melted aqueous trinitrotoluene over a porous surface while maintaining the height of said layer no more than 4.5 cm;

simultaneously forcing hot air upwardly through said porous surface and said melted trinitrotoluene thereby drying said melted trinitrotoluene; and

said step of passing said melted aqueous trinitrotoluene over said porous surface being carried out at a speed such that the drying time of said melted aqueous trinitrotoluene is approximately 2.5 minutes.

3,981,935

AZEOTROPIC NITRATION OF BENZENE

Robert McCall, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 10, 1975, Ser. No. 639,875

Int. Cl.² C07C *79/10*

U.S. Cl. 260—645 **15 Claims**

1. In a two-stage continuous process for the mononitration of benzene having a first stage comprising the steps of

feeding fresh benzene and nitric acid in about stoichiometric proportions to produce nitrobenzene into a first-stage reaction vessel containing nitrobenzene, benzene and sulfuric acid;

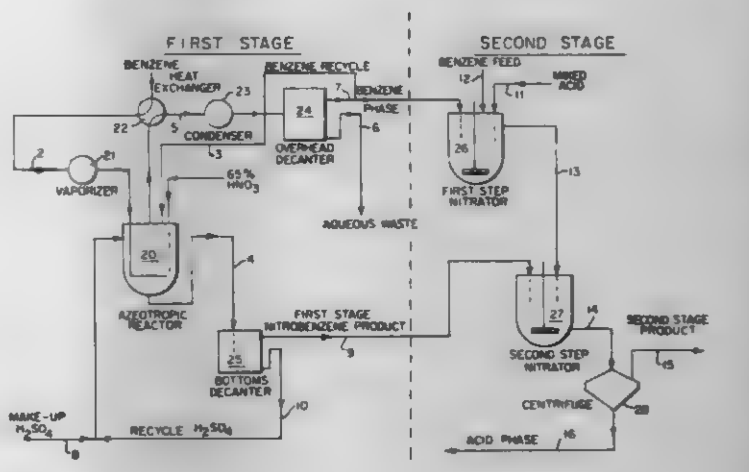
mixing the ingredients in the reaction vessel and reacting benzene and nitric acid at a temperature in the range of about 120° to 160°C.;

vaporizing an azeotrope of a water phase containing nitric acid and a hydrocarbon phase containing benzene and nitrobenzene, and removing the azeotrope from the reaction vessel;

condensing the azeotrope and separating the aqueous phase from the hydrocarbon phase;

feeding excess benzene into the reaction vessel to maintain the total input of benzene to the reaction vessel above stoichiometric relative to the nitric acid fed thereto and to enhance the vaporization of the azeotrope, said excess benzene being either recycle stream of the hydrocarbon phase from the condensed azeotrope, or fresh benzene, or a combination of both; and

withdrawing from the reaction vessel a mixture of acids and a first-stage nitrobenzene product phase, separating the nitrobenzene product phase



and recycling the acids to the reaction vessel;

with the sulfuric acid concentration in the reaction vessel being controlled within the range of 55 to 70 percent by weight relative to the sulfuric acid plus water present by adjusting one or more of the reaction temperatures and the rates of feeding nitric acid and benzene to the reaction vessel;

the improvement of feeding to at least one second-stage reaction vessel at least about half of the hydrocarbon phase separated from the aqueous phase of the azeotrope, said second-stage reaction vessel containing nitrobenzene, benzene, nitric acid and sulfuric acid, wherein the benzene from said hydrocarbon phase is reacted with nitric acid at a temperature in the range of about 65° to 75°C. to produce a second-stage nitrobenzene product.

3,981,936

METHOD FOR THE PREPARATION OF BIS-(BROMOMETHYL)-TETRACHLOROBENZENES AND THEIR USE AS FLAME-PROOFING AGENTS

Egon Petersen, Neunkirchen-Seelscheid; Werner Schmidt, St. Augustin, and Klaus-Dieter Steffen, Troisdorf-Oberlar, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Mar. 27, 1974, Ser. No. 455,153

Claims priority, application Germany, Mar. 31, 1973, 2316204

Int. Cl.² C07C *25/14*

U.S. Cl. 200—651 R **11 Claims**

1. A process for preparing a bis-(bromomethyl)-tetrachlorobenzene which comprises contacting a bis-(chloromethyl)-tetrachlorobenzene at a temperature between 20° and 180°C with a bromide of an element of group 1 to group 3 inclusive of the periodic system or hydrogen bromide in a solvent for said bis-(chloromethyl)-tetrachlorobenzene in which solvent the corresponding bis-(bromomethyl)-tetrachlorobenzene is substantially insoluble, said solvent being selected from the group consisting of alcohols, ethers and ketones.

3,981,937

DEHYDROHALOGENATION OF 3,4-DICHLORO-1-BUTENE

John B. Campbell, and Robert Edward Tarney, both of Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 633,435, April 25, 1967, abandoned, which is a continuation-in-part of Ser. No. 554,978, June 3, 1966, abandoned. This application Feb. 13, 1970, Ser. No. 11,351

Int. Cl.^{2} C07C *21/20*

U.S. Cl. 260—655 **22 Claims**

1. In a process for directly producing 2-chloro-1,3-butadiene by reacting 3,4-dichloro-1-butene with an aqueous solution containing at least about 15% by weight of alkaline material selected from the group consisting of alkali metal hydroxides and alkaline earth metal hydroxides the improvement of obtaining very substantial increases in reaction rate with a higher percentage conversion and a reduction in the percentage of the unwanted by-product, alpha-chloroprene, by carrying out the process at a temperature of about 0°–100°C and in the presence of from about 0.01% to 10% by weight, based on the weight of 3,4-dichloro-1-butene, of an organic quaternary ammonium compound catalyst in which the nitrogen is attached to four radicals by covalent bonds wherein:

a. at least one of the radicals is a (C_6–C_{20}) alkyl or alkenyl radical or at least two of the radicals are (C_7–C_{20}) aralkyl radicals, or

b. at least one of the radicals is a (C_7–C_{20}) aralkyl radical having bonded thereto a (C_6–C_{20}) alkyl or alkenyl radical, or

c. at least one radical is an alkyl, alkenyl, or aralkyl radical containing up to 20 carbon atoms and containing a hydroxy or ether group in a position beta to the nitrogen, and

d. the remaining radicals are (C_1–C_{20}) alkyl or alkenyl radicals, or (C_7–C_{20}) aralkyl radicals.

3,981,938

METHOD FOR PRODUCING DRY ALKYL HALIDES

John M. Steele; Fredric M. Hanak, both of Lake Jackson; Guillermo J. Nino, Houston, and John E. Panzarella, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 8, 1974, Ser. No. 486,541

Int. Cl.^{2} C07C *17/16*

U.S. Cl. 260—657 **7 Claims**

1. A method for producing substantially dry $C_{1\text{-}4}$ alkyl halides which comprises reacting the corresponding $C_{1\text{-}4}$ alkanol with at least 10% excess over stoichiometry of hydrogen halide at a temperature of at least 50°C. to about 180°C under 25 to 400 psig. pressure to maintain a substantial portion of the water of reaction in the liquid phase; withdrawing the organic halide-hydrogen halide vapor phase from the reaction zone, and contacting the same with a descending stream of organic halide-hydrogen halide liquid reflux; withdrawing the vapors from said contacting zone in a dry state; and separating the organic halide from the hydrogen halide.

3,981,939

HYDROCHLORINATION OF VINYLIDENE CHLORIDE TO PRODUCE METHYL CHLOROFORM

Walter Lobunez, Princeton, and Sidney Berkowitz, Highland Park, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 886,071, Dec. 18, 1969, abandoned. This application June 13, 1975, Ser. No. 586,782

Int. Cl.^{2} C07C *17/04, 17/08*

U.S. Cl. 260—658 R **4 Claims**

1. The method of hydrochlorinating vinylidene chloride to produce methyl chloroform, which comprises continuously introducing into the reactor vinylidene chloride and hydrogen chloride concurrently into a liquid body of an anhydrous carrier, of the group consisting of 1,1,2-trichloroethane and perchloroethylene, containing suspended in it a hydrochlorination catalyst, at a temperature below 75°C, and maintaining the reactants in contact with the liquid body until a major portion of the vinylidene chloride has been converted to methyl chloroform, and continuously withdrawing from said reactor a mixture including methyl chloroform, catalyst and carrier, separating methyl chloroform from catalyst and carrier and returning catalyst and carrier to the liquid body to maintain the liquid body at a steady volume.

3,981,940

SOLID OLEFIN REACTION CATALYST AND METHOD OF USING SAME

Ernest A. Zuech, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 816,052, April 14, 1969, Pat. No. 3,940,346. This application July 23, 1975, Ser. No. 598,525

Int. Cl.^{2} C07C *3/62*

U.S. Cl. 260—683 D **30 Claims**

1. A process for converting at least one feed olefin hydrocarbon in accordance with the olefin reacton which comprises contacting the feed olefin with a catalyst system comprising (a) molybdenum oxide or tungsten oxide associated with a suitable support material, and (b) at least one organoaluminum compound, wherein the (a) component of the catalyst system is treated with nitric oxide, nitrosyl halide, or an inorganic base material prior to contact with (b).

12. A process for converting at least one feed olefin hydrocarbon in accordance with the olefin reaction which comprises contacting the feed olefin with a catalyst system comprising (a) molybdenum oxide or tungsten oxide associated with a suitable support material, and (b) at least one organoaluminum halide compound.

3,981,941

PROCESS OF MAKING LINEAR ALPHA-OLEFINS BY ETHYLENE OLIGOMERIZATION

Stephen Allan Butter, East Windsor, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 1, 1975, Ser. No. 618,531

Int. Cl.^{2} C07C *3/20*

U.S. Cl. 260—683.15 D **15 Claims**

1. In a process for oligomerizng ethylene to linear alpha-olefins utilizing a titanium halide-organoaluminum halide oligomerization catalyst, the improvement comprising carrying out said process in the presence of a halogenated phosphorus compound of the following general formula:

$$(R)_yP(X)_{n-y}$$

in which X is halogen, *n* is 1–5 and R is aryl with *y* being 0, 1 or 2 thereby enhancing control of the product oligomers to a narrow molecular weight range of linear alpha-olefins.

3,981,942

HF ALKYLATION PROCESS AND REACTION TEMPERATURE CONTROL SYSTEM

Robert F. Zabransky, Oak Brook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 534,399, Dec. 19, 1974, which is a continuation-in-part of Ser. No. 468,955, May 10, 1974, Pat. No. 3,948,603. This application Aug. 7, 1975, Ser. No. 602,947

Int. Cl.^{2} C07C *3/54*

U.S. Cl. 260—683.48 **6 Claims**

1. A process for alkylating an isoparaffin with an olefinic feed stream, containing at least two olefins, which process comprises the steps of:

a. reacting said isoparaffin with said feed stream, in admixture with a hydrogen fluoride catalyst, in an alkylation reaction zone, at alkylating conditions resulting in a reaction product effluent containing normally liquid alkylate;

b. regulating the temperature of the reaction mixture, within said reaction zone, through indirect contact of said reaction mixture with a cooling medium passing through conduit means through said reaction zone, the flow of said cooling medium being adjusted by first flow-varying means connected to said conduit means;

c. separating said reaction product effluent into a hydrocarbon phase and an acid phase;

d. recycling a first portion of said hydrocarbon phase to said reaction zone, the flow of said first portion of hydrocarbon phase being adjusted by second flow-varying means connected to the recycle conduit to said reaction zone;

e. recovering said normally liquid alkylate from a second portion of said hydrocarbon phase;

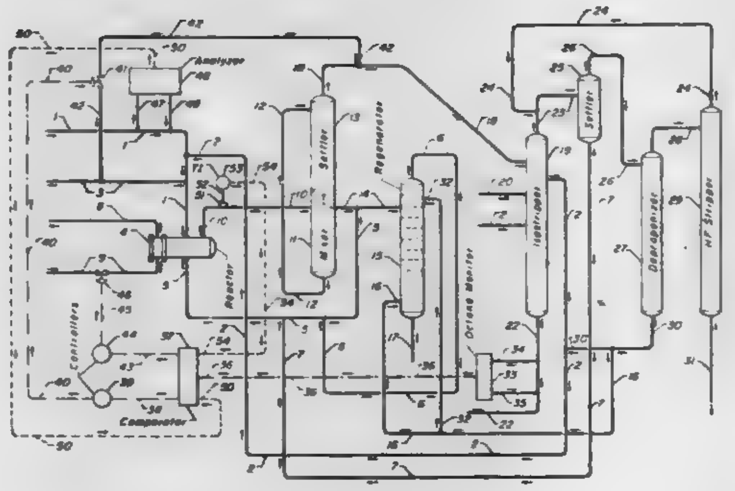
f. introducing a sample of said olefinic feed stream prior to reacting step (a) into a first hydrocarbon analyzer and developing therein a first process output signal representative of a composition characteristic of said olefinic feed stream;

g. sensing a reaction zone temperature and developing a second process output signal representative of said temperature;

h. introducing a sample of said alkylate into a second hydrocarbon analyzer and developing therein a third process output signal which is representative of a composition characteristic of said sample;

i. transmitting said first, said second and said third process output signals to comparator means and developing therein a computer output signal in response to and as a function of said three process output signals; and,

j. transmitting said computer output signal to said first and said second flow-varying means, whereby the rate of flow of said cooling medium passing through conduit means through said reaction zone and the rate of flow of said recycled hydrocarbon phase passing through the recycle conduit to said reaction zone are adjusted in response to and as a function of said three process output signals.



3,981,943

RUBBER COMPOSITIONS OF POLYISOPRENE α-METHYLSTYRENE, DIVINYLBENZENE AND DIALKYL PEROXIDE

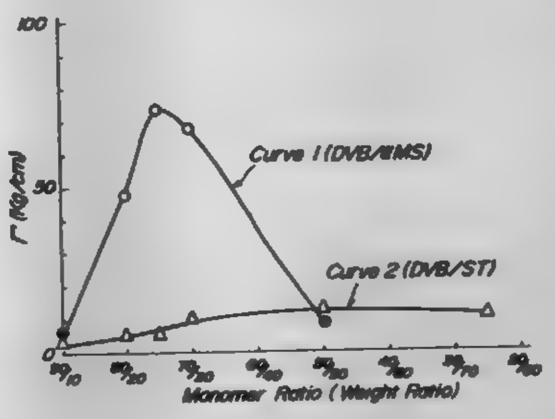
Ryota Fujio, Akigawa; Nobuyuki Kataoka, Tokyo; Yoshihide Fukabori, and Shiro Anzai, both of Higashi-Murayama, all of Japan, assignors to Bridgestone Fire Company Limited, Tokyo, Japan

Filed Apr. 15, 1974, Ser. No. 461,046

Claims priority, application Japan, Apr. 13, 1973, 48-41316; June 30, 1973, 48-73852

Int. Cl.^{2} C08L *9/00*

U.S. Cl. 260—880 R **8 Claims**



1. A one shot mouldable and curable homogeneous rubber composition having a high Young's modulus, consisting essentially of

100 parts by weight of a mixture of the following ingredients (a) and (b),

said ingredient (a) being polyisoprene rubber having at least 90% of cis-1,4bonds, and

said ingredient (b) being a monomer mixture composed of divinylbenzene and α-methylstyrene,

c. 0.5–2.5 parts by weight of a dialkyl peroxide to initiate polymerization of monomers of monomer mixture (b) and to cause cross-linking between the polymer formed from monomer mixture (b) and ingredient (a), and

d. 0.1–2.5 parts by weight of at least one compound selected from group consisting of aromatic secondary amines and alkyl substituted phenols to secure the heat resistance and stability of the cured rubber, the weight ratio of divinylbenzene/α-methylstyrene in said ingredient (b) being 80/20–65/35 and the weight ratio of said ingredient (a)/-said ingredient (b) being 65/35–50/50, and the rubber composition cured at 120°–180°C having a Young's modulus of 100–500 Kg/cm^2, a tear energy Γ of at least 20 Kg/cm and a tensile strength retention at 100°C of at least 60%.

3,981,944

METHOD FOR PRODUCING IMPACT RESISTANT THERMOPLASTIC RESIN BY CONTINUOUS BULK POLYMERIZATION

Takehiko Okamoto; Akihiko Kishimoto; Ikuo Nagai; Hiroshi Sato; Hotsuma Okasaka, and Masakazu Inoue, all of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 204,018, Dec. 2, 1971, abandoned. This application June 12, 1974, Ser. No. 478,535

Int. Cl.^{2} C08L *9/02, 9/06*

U.S. Cl. 260—880 R **9 Claims**

1. The method for the manufacture of high impact resistant thermoplastic resin by continuous bulk polymerization which comprises the steps of:

A. continuously charging a prepolymerization reactor with (1) a vinyl monomer solution of a vinyl composition which contains about 1–40 percent by weight of a diene type rubber polymer or a graft polymer obtained by extracting rubber polymer particles or vinyl monomer grafter rubber polymer particles in latex with vinyl monomers wherein said vinyl monomers consist of

- a. 60–90 percent by weight of styrene and 40–10 percent by weight of acrylonitrile or
- b. 0–70 percent by weight of styrene, 50–98 percent by weight of methylmethacrylate and 0–35 percent by weight of acrylonitrile and (2) 5–20 percent by weight of water;

B. mixing said monomer solution so as to maintain a substantially uniform mixture;

C. prepolymerizing said monomer solution at about 95°–130°C until the concentration of the solid contents of the resulting reaction product is about 40–75 percent by weight, with generation of vapor of water and monomer during said prepolymerization reaction;

D. while simultaneously condensing the vapor volatilized during the prepolymerization reaction, separating the monomer solution from the resulting condensate and recycling the monomer solution at a rate of 20–60 percent by weight of feed monomer solution back to the prepolymerization reaction whereby a prepolymer solution is obtained;

E. charging said prepolymer solution in a polymerization reactor;

F. plug-flow advancing said prepolymer solution through said second reactor while gradually heating said prepolymer solution in a plurality of stages, starting at a temperature of about 100°–170°C up to about a temperature of 170°–270°C, polymerizing said prepolymer solution while vaporizing and recycling 5–20 percent by weight of the volatiles until the concentration of the solid components is at least about 90 percent by weight.

3,981,945

COATING COMPOSITIONS COMPRISING A POLYSULFONE AND A FLUOROCARBON POLYMER

Terence Edwin Attwood, Kimpton, and Barry William Farrant, St. Neots, both of England, assignors to Imperial Chemical Industries Limited, London, England

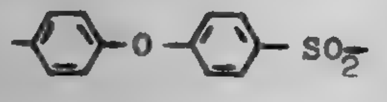
Filed Apr. 16, 1974, Ser. No. 461,408

Claims priority, application United Kingdom, Nov. 19, 1973, [illegible]

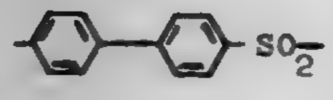
Int. Cl.² C08L *27/18*

U.S. Cl. 260—900 **9 Claims**

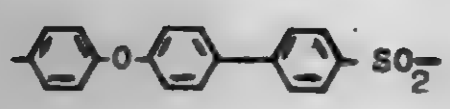
1. A coating composition which comprises a polymer mixture of (a) 10% to 90% by weight of at least one thermoplastic aromatic polysulphone having repeat units

i)


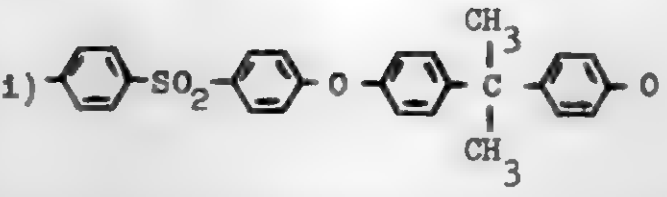
alone or in conjunction with repeat units selected from at least one of

ii)


and

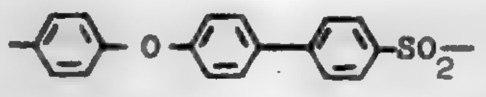


;

iii)


$-C_6H_4-SO_2-C_6H_4-O-C_6H_4-C(CH_3)_2-C_6H_4-O-$;

or repeat units (ii) or (iii) in conjunction with repeat units

iv)


and, correspondingly, 90% to 10% by weight of at least one fluorocarbon polymer selected from polytetrafluoroethylene and copolymers of tetrafluoroethylene with up to 15% by weight of another unsaturated monomer, said composition being in the form of a dispersion of said fluorocarbon polymer dispersed in a solution of said thermoplastic aromatic polysulphone in a solvent therefor.

3,981,946

PERFORATED PLATE OF STEAM REFORMING VALVE

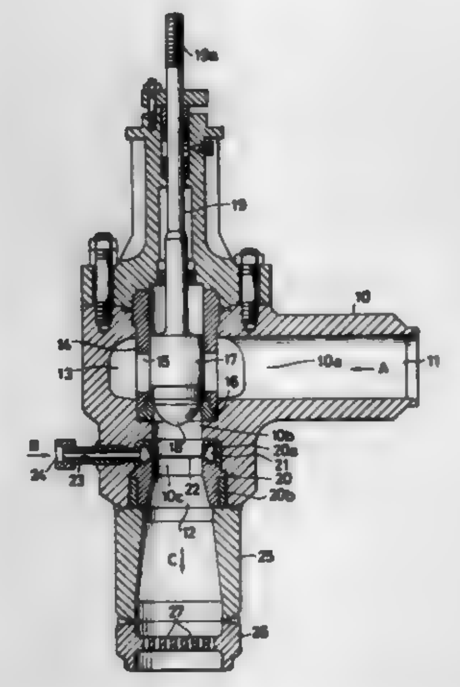
Masahiro Soya, Kawasaki, and Shokichi Kubota, Matsudo, both of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Feb. 5, 1975, Ser. No. 547,406

Claims priority, application Japan, Feb. 12, 1974, 49-16301; Feb. 12, 1974, 49-16302

Int. Cl.² B01F *3/04*

U.S. Cl. 261—64 R **4 Claims**



1. In a steam reforming valve having pressure reducing valve means for reducing the pressure of superheated steam at high temperature and high pressure and temperature reducing means for reducing the temperature of the superheated steam by spraying water thereinto, a perforated plate comprising: a part fixed to a main structural part of said valve on the downstream side of said temperature reducing means with respect to the direction of flow of the steam within said main structural part; and a disc part held by said fixed part and having a plurality of through-holes for passing steam and sprayed water therethrough, said disc part having an outer periphery formed integrally with said fixed part and has at the inner part thereof a plurality of through-slits mutually communicating at the central part of the disc part and extending outward toward said outer periphery, and edge parts of the disc part defining said slits constituting free end parts relative to said fixed part, whereby thermal stresses in the disc part can be relieved.

3,981,947

METHOD FOR RECLAIMING WATERLOGGED PLASTIC INSULATED CONDUCTOR CABLE

Stanley Kaufman, Flanders, and Raffaele Antonio Sabia, Lincroft, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 208,420, Dec. 15, 1971, Pat. No. 3,733,426. This application Nov. 22, 1972, Ser. No. 308,659

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² H01B *11/02, 3/30*

U.S. Cl. 264—36 **4 Claims**

1. A method of purging water present in the interstices of multipair sheathed plastic-insulated conductor telephone cable and for thereafter sealing said cable against further entry of water, comprising the steps of:

pumping into said cable a nongelling purgant characterized by complete miscibility in the water present; and thereafter

purging said nongelling purgant and included water therein by

pumping into said cable a gelling purgant characterized by complete miscibility with said first purgant

said gelling purgant characterized by an initial viscosity at the time of said pumping of less than 100 centipoises at any temperature between 35° and 90° Fahrenheit and a capability to gel in a predetermined period of the order of 24 hours after entering into said cable, and wherein said gelling purgant consists of an aromatic solvent oil containing greater than 90 weight percent aromatic molecules and equal amount by weight of a first and a second material, said first material consisting of from 25 to 150 grams of isocyanate prepolymer per liter of solution and said second material consisting of from 80 to 120 grams of hydroxyl-terminated polybutadiene per liter of solution and substantially 4 grams per liter of solution of dibutyl tin dilaurate.

3,981,948

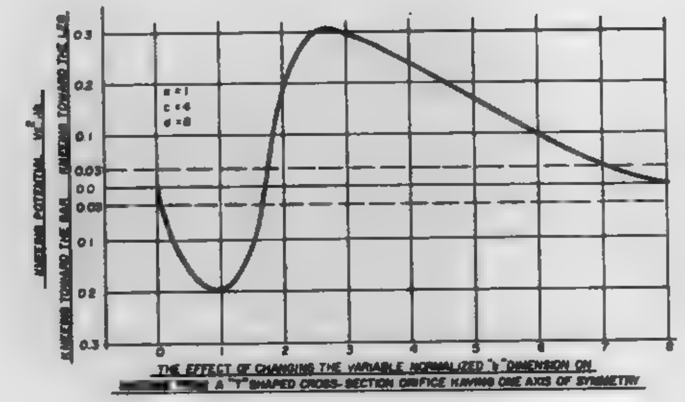
ARRANGEMENTS IN SPINNERETS OF SPINNING ORIFICES HAVING SIGNIFICANT KNEEING POTENTIAL

Bobby M. Phillips, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 2, 1975, Ser. No. 538,066

Int. Cl.² B28B *21/54*

U.S. Cl. 264—40.7 **10 Claims**



1. A method for melt spinning, from inelastic materials, extruded lengths of predetermined cross-sections by arranging and spacing two or more spinning orifices with respect to each other so that the extruding material from each such arranged spinning orifices coalesces to form a single extruded length of predetermined cross-section, wherein the spinning orifices of each arrangement are each of non-round cross-section and has either one axis or no axis of symmetry in the plane of the spinneret and is so dimensioned that the coordinates of the centroid of the square of the velocity profile of the extruding material in the plane perpendicular to the axis of the orifice, as determined by

$$(V^2)_{centroid} = \frac{\int_A V^2 \vec{r}\, dA}{\int_A V^2\, dA}$$

and the coordinates of the centroid of the velocity profile of the extruding material in the plane perpendicular to the axis of the orifice, as determined by

$$(V)_{centroid} = \frac{\int_A V \vec{r}\, dA}{\int_A V\, dA}$$

are non-coincident at each orifice exit so that the flow of the extruding material from the orifice has non-axisymmetric emergence behavior, where

$(V^2)_{centroid}$ is the centroid of the square of the velocity profile;

$(V)_{centroid}$ is the centroid of the velocity profile;

$\int_A$ is the integral over the orifice cross-section area;

V^2 is the square of the velocity at any radius vector location r;

r is the radius vector from the origin of any set of orthogonal coordinate axes to any point *r* within the orifice cross-section; and

*d*A is the differential area element.

3,981,949

METHOD OF FORMING A CELLULAR ARTICLE HAVING AN INTEGRAL, COLOR-INTENSITY VARIED DECORATIVE PATTERN ON ITS SURFACE

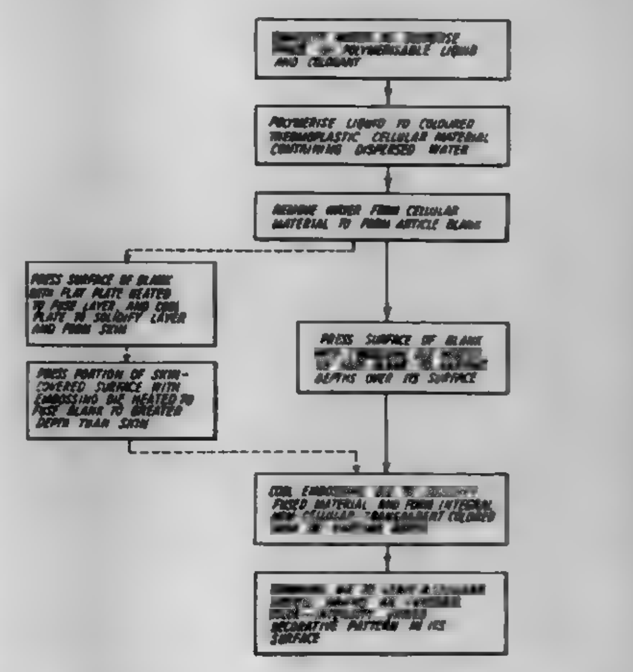
James Ernest Ryan, Knebworth, and Rodney Smale, Hatfield, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed July 2, 1973, Ser. No. 375,936

Claims priority, application United Kingdom, July 11, 1972, 32346/72

Int. Cl.² B29D *27/04*

U.S. Cl. 264—41 **5 Claims**


POLYMERISABLE LIQUID AND COLOURANT
POLYMERISE LIQUID TO COLOURED THERMOPLASTIC CELLULAR MATERIAL CONTAINING DISPERSED WATER
REMOVE WATER FROM CELLULAR MATERIAL TO FORM ARTICLE BLANK
PRESS SURFACE OF BLANK WITH FLAT PLATE HEATED TO FUSE LAYER, AND COOL PLATE TO SOLIDIFY LAYER AND FORM SKIN
PRESS PORTION OF SKIN-COVERED SURFACE WITH EMBOSSING DIE HEATED TO FUSE BLANK TO GREATER DEPTH THAN SKIN
PRESS SURFACE OF BLANK
DEPTHS OVER ITS SURFACE
FUSED MATERIAL AND FORM INTEGRAL
DECORATIVE PATTERN IN ITS SURFACE

1. A method of forming a cellular polymeric article having an integral, color-intensity varied decorative pattern in its surface, comprising

forming a cellular polymeric blank by steps including emulsifying water as the disperse phase with a continuous phase comprising one or more polymerisable liquids and a colourant wherein the continuous phase is polymerisable to a transparent coloured thermoplastic material when polymerised separately from the aqueous phase, casting and polymerising the continuous phase while maintaining the aqueous phase dispersed therethrough to form a water-filled cellular thermoplastic material, and removing the water from the cellular material to obtain said blank, and

pressing a surface of the blank with an embossing die heated sufficiently to fuse the cellular material and shaped so that the material becomes fused to varying depths over its surface, and thereafter cooling the embossing die so as to solidify the fused material and form a skin integral with the unfused cellular material, the various depth of fusion producing corresponding variations in the thickness of the transparent coloured skin thus formed, whereby the depth of colour varies according to the skin thickness and provides the integral, color-intensity varies decorative pattern.

3,981,950
METHOD FOR PRODUCTION OF CEMENT-BONDED MOLDED ARTICLES PARTICULARLY LIGHTWEIGHT FIBER BOARDS

Fridolin Fletzer; Hubert Strasser, both of Ferndorf, and Hans Tschernuth, Villach, all of Austria, assignors to Osterreichisch-Amerikanische Magnesit Aktiengesellschaft, Radenthein, Austria

Filed Dec. 11, 1973, Ser. No. 423,723

Claims priority, application Austria, Dec. 11, 1972, 10489/72

Int. Cl.² B29J *5/00*

U.S. Cl. 264—109 **8 Claims**

1. Method for the production of cement-bonded molded articles comprising the steps of:

a. feeding to a heated molding duct formed of endless belts a molding composition comprising a base material selected from the group consisting of wood fiber, wood chips, lignocelluloses, mineral fibers, glass fibers, plastic chips, expanded silicates, expanded glass and granules of foamed plastics and a binder consisting essentially of a portland cement which contains 1 to 30% by weight of a calcium-halogen aluminate of the composition $11CaO.-7Al_2O_3.CaX_2$, wherein X is any halogen;

b. heating the molding composition in the molding duct to cause the binder to set and form a molded article, and

c. removing the molded article from the molding duct.

3,981,951
DECORATIVE ROD MAKING

Seymour I. Richman, Rochester, N.Y., assignor to Rochester Button Company, Rochester, N.Y.

Continuation of Ser. No. 300,134, Oct. 24, 1972, abandoned. This application Oct. 7, 1974, Ser. No. 512,845

Int. Cl.² B29C *17/14, 21/00*

U.S. Cl. 264—140 **6 Claims**

1. A method of making reproduceable button rods, said method comprising:

a. mixing a thixotropic agent and coloring material into quantities of liquid resin material to produce a plurality of different-colored thixotropic resins of approximately equal viscosity;

b. separating each of said colored thixotropic resins into portions and adding catalyst and promoter agents to said separated portions of each of said colored thixotropic resins;

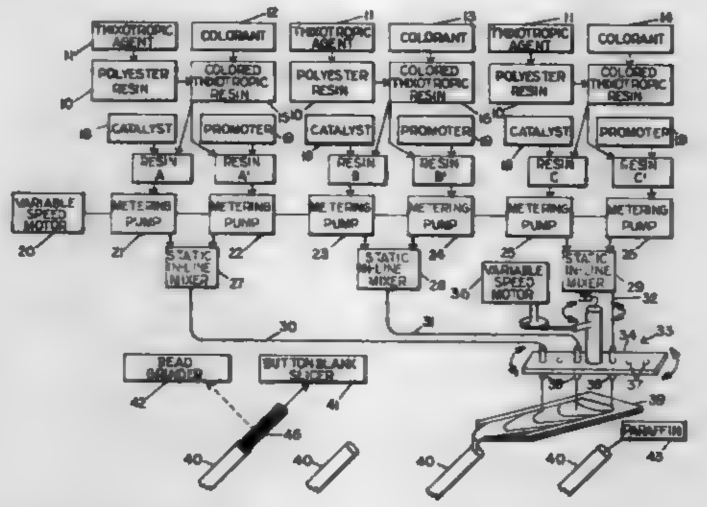
c. recombining said resin portions for each color and mixing said recombined resins to form accelerated resins each having an approximately equal and relatively low apparent viscosity from 2500 to 6000 centipoise to allow a relatively fast rate of flow;

d. feeding each of said accelerated thixotropic resins through nozzle means to drop each of said resins into an inclined trough promptly after said recombining;

e. moving said nozzle means repeatedly in a predetermined and substantially exactly reproducible motion to lay each of said resins in a predetermined and repeated pattern in said trough without entrapping air bubbles so said resins combine in a single stream without mixing said resins together;

f. metering the flow of each of said resins through said nozzle means at a substantially exactly reproduceable rate to form said predetermined resin pattern;

g. flowing said stream of said patterned resins a predetermined and reproduceable distance down a predetermined and reproduceable incline of said trough to shape said repeated pattern;



h. flowing said shaped pattern into an inclined casting tube without entrapping air bubbles to form a reproduceable repeated pattern of said resins extending substantially uniformly throughout the length of said casting tube;

i. letting said resins rest in said inclined casting tube at a relatively high apparent viscosity increased by said thixotropic agent by at least 20% from said low apparent viscosity to maintain said reproduceable resin pattern; and

j. removing a cast rod of said resins from said tube before said resins are completely hardened.

3,981,952
FIBROUS MATERIALS

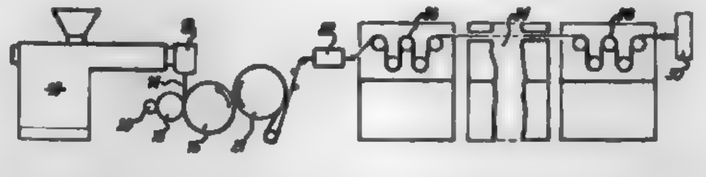
James Nelson Ruddell, Portadown, and Samuel McMeekin, Hillsborough, both of Northern Ireland, assignors to Lambeg Industrial Research Association, Lisburn, Northern Ireland

Filed July 24, 1972, Ser. No. 274,690

Claims priority, application United Kingdom, July 27, 1971, 35153/71; Sept. 3, 1971, 41157/71

Int. Cl.² B32B *3/10, 5/02*

U.S. Cl. 264—147 **17 Claims**



1. A process for treating a travelling film made from a molecularly-orientable synthetic thermoplastic organic polymer which includes the steps of pressing at least one side of the film, while it is in an unoriented condition and a molten deformable state, against a travelling surface in such a way that there is no relative movement between the surface of the film and travelling surface at the point of contact between the two, said travelling surface having, as an integral part thereof, a homogeneous series of high frequency discrete deformations so as to produce a homogeneous series of discrete deformations on said film, the frequency of the deformations being at least 100 per inch measured in every direction along the film surface, thereafter cooling said film to a non-molten state in which said deformations are substantially retained, whereby the tendency of cracks which occur in the film after drawing to propagate is substantially reduced, and subsequently drawing said film.

3,981,953
METHOD FOR CASTING BLOCKS HAVING FRACTURED FACE

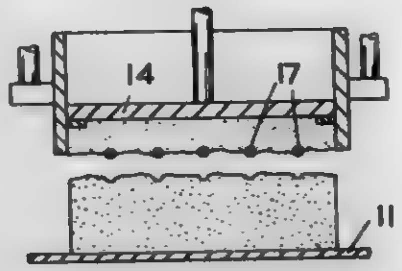
Donald John Haines, 12 Judges Close, Hereford, England

Filed Mar. 19, 1974, Ser. No. 452,661

Claims priority, application United Kingdom, July 4, 1973, 16801/73; July 20, 1973, 34698/73

Int. Cl.² B28B *3/02*

U.S. Cl. 264—163 **4 Claims**



1. A method of producing a plurality of cast blocks for building constructions, decorative panels and the like; each block having a substantially identical surface pattern on the face thereof to be exposed, the pattern taking the form of recessed lines impressed in said surface with the areas between said recessed lines having a random split appearance and contour, comprising successively filling a mold box having side walls and a bottom wall with a mass of semi-dry mix of the material from which the building element is to be formed, embedding the same frame in the material, the frame including a number of rigid interspaced elements, the center lines of which lie in a plane spaced from said bottom wall; compacting the mass of material with the elements of said frame embedded in the compacted mass so that a portion of the mass lies above said elements of the frame and a portion of the mass lies below said elements of the frame; then moving the frame and its elements relative to that compacted mass so as to randomly fracture the compacted mass in the space between said elements substantially along said plane, and removing the frame together with the portion of the compacted mass located above said elements of the frame to produce a pattern on each cast block wherein the fractured surface between said elements forms said areas having the random split appearance that is positioned between the impressed recessed lines forming said surface pattern on said exposed face of each of the cast blocks.

3,981,954
METHOD OF MELAMINE GLAZING OF POLYESTER SUBSTRATES

Salvatore Algieri, Somerville; Jonas Weiss, Plainfield, both of N.J., and Werner Theodor Raudenbusch, Rijsvijk, Netherlands, assignors to American Standard, Inc., New York, N.Y.

Continuation of Ser. No. 355,250, April 27, 1973, abandoned. This application Dec. 30, 1974, Ser. No. 537,498

Int. Cl.² B29D *9/08;* **B29G** *1/00*

U.S. Cl. 264—240 **1 Claim**

1. A method of molding a composite article involving separately introducing reacting materials into the mold to produce a multi-layered article wherein one layer is self-sustaining prior to compositing, said method consisting essentially of:

a. preparing a polyester resin by reacting substantially equimolar parts of a phthalic acid and an alpha beta unsaturated polycarboxylic acid with a polyhydric alcohol in stochiometric amounts;

b. mixing approximately 2 parts each of a tri allyl and a di-allyl melamine with approximately 6 parts of the polyester resin of step (a) to form a moldable polyester allyl melamine composition;

c. molding the polyester-allyl melamine composition of step (b) into a substrate by subjecting the composition to a pressure at about 430 p.s.i., at a temperature of about 150°C, up to about 6 minutes;

d. applying an allyl melamine resin in solid form to the molded substrate while said substrate is still hot and then continuing to subject the hot molded substrate to the heat and pressure of step (c) for about 1½ minutes to form a cured laminating polyester product having a relatively thin allyl melamine resin glazed coat of about 25–45 microns, the glaze coat being cross-linked and bound to the allyl melamine contained in the substrate.

3,981,955
METHOD OF ROTATIONAL MOLDING REINFORCER-INCORPORATED PLASTICS

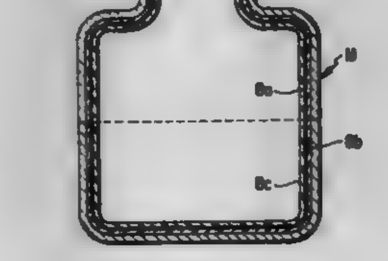
Yasuhiko Otani, and Setsuo Imada, both of Kobe, Japan, assignors to Kobe Steel Ltd., Kobe, Japan

Filed Oct. 23, 1973, Ser. No. 408,528

Claims priority, application Japan, Oct. 21, 1972, 47-105570

Int. Cl.² B29C *5/04*

U.S. Cl. 264—255 **8 Claims**



1. A method for preparing reinforcer-incorporated articles by rotational molding, which comprises adding to a rotatable mold a reinforcer and a thermoplastic binder, said thermoplastic binder having an apparent density greater than that of the reinforcer, said thermoplastic binder being added in an amount smaller by weight than the amount of reinforcer but in an amount sufficient to support the reinforcer on the mold wall, heating said mold to a temperature sufficient to melt said thermoplastic binder and rotating said mold to cause said thermoplastic binder to flow along the inner wall of said mold and wherein said reinforcer is caused to at least partially float on said thermoplastic binder due to the said apparent density differential between said reinforcer and said thermoplastic binder and whereby the movement of said reinforcer and said thermoplastic binder causes the formation of a reinforcer layer having a plurality of voids therein, feeding a liquid matrix into the mold so as to impregnate the liquid matrix into the plurality of voids by rotating the mold, and solidifying the matrix impregnated into the voids in the rotary mold to form a hardened matrix, having a reinforcer layer.

3,981,956
CONTINUOUS AUTOMATED PLASTIC MOLDING METHOD

Wilbert Redmer, Boca Raton; Kenneth Rolin, Del Ray Beach, and Herman Nittel, Boca Raton, all of Fla., assignors to Abbott Laboratories, North Chicago, Ill.

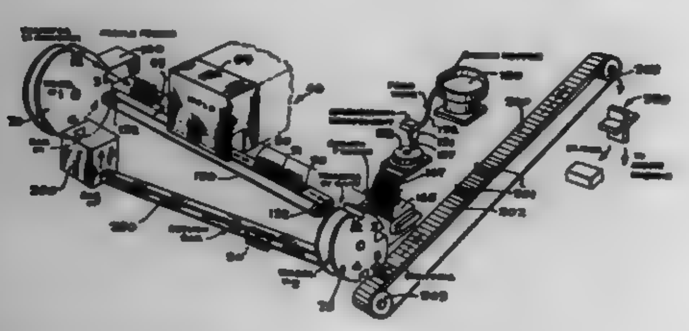
Division of Ser. No. 241,934, April 7, 1972. This application Dec. 13, 1974, Ser. No. 532,552

Int. Cl.² B29C *1/06;* **B28B** *5/04*

U.S. Cl. 264—275 **2 Claims**

1. A method of molding an article employing a molding machine having mold sections for receiving a mold core or insert, said method comprising:

providing a carrier having a mold core or insert supporting means thereon for presenting the mold core or insert to the mold in said molding machine;
providing a pair of opposed, rotatable, indexable, trunnion transfer wheels positioned on each side of said molding machine and a conveyor arranged for transfer of said carrier from one of the trunnion transfer wheels to the other, said transfer wheels having a plurality of carrier receiving positions thereon and receiving and transferring said carrier to various positions around the periphery thereof;
inserting the carrier in one of said trunnion transfer wheels;



indexing said transfer wheel to the conveyor;
transferring the carrier from said transfer wheel to said conveyor;
conveying the carrier from the transfer wheel to the mold in the molding machine;
molding an article about said mold core or insert on said carrier;
removing said carrier from the molding machine with the article remaining on the carrier;
conveying the carrier from the molding machine to the other of said trunnion transfer wheels;
inserting said carrier on said other transfer wheel;
indexing said other transfer wheel away from the conveyor; and
removing the molded article from the carrier.

3,981,957
PROCESS FOR PREPARING FINELY DIVIDED POLYMERS

Robert A. van Brederode, Baytown, Tex., and Robert A. Steinkamp, Baton Rouge, La., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 6, 1975, Ser. No. 602,213

Int. Cl.² C08F *6/00*

U.S. Cl. 260—878 R **17 Claims**

1. A process for producing high density polymer powder comprising:
heating a normally solid thermoplastic polymer to form a melt,
intimately mixing into said melt from 10 to 50 weight percent of a solvent, and
discharging said mixture through an atomizing nozzle.

3,981,958
GRAFT COPOLYMERS AND PROCESS FOR PRODUCING SAME

Kunihiko Nakashima, Gifu; Ryoichi Muroi, Nagoya; Mitsuo Imai, Gifu, and Kenji Sato, Tajimi, all of Japan, assignors to Toyoda Gosei Kabushiki-Kaisha (Toyoda Synthetics Co., Ltd.), Japan

Filed Apr. 18, 1974, Ser. No. 462,182

Claims priority, application Japan, Apr. 19, 1973, 48-43669; Apr. 19, 1973, 48-51170; Apr. 19, 1973, 48-133612

Int. Cl.² C08F *255/06*

U.S. Cl. 260—878 R **12 Claims**

1. A generally transparent, rubbery elastomeric graft copolymer consisting essentially of an ethylene/propylene/nonconjugated diene terpolymer backbone and a graft polymerized moiety consisting essentially of lower alkyl methacrylate in a weight ratio of 0.1–20, said graft copolymer being free of ungrafted polymer.

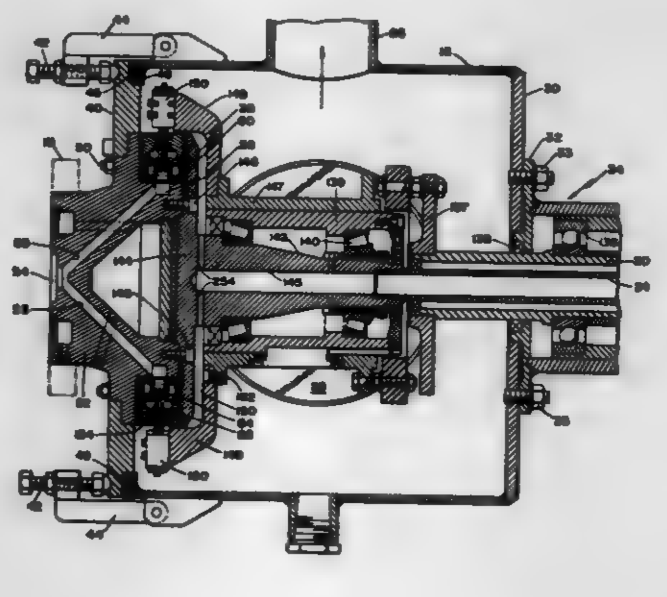
3,981,959
PELLETIZING METHOD

David William Cuff, Chepachet, R.I., assignor to Leesona Corporation, Warwick, R.I.

Continuation of Ser. No. 414,699, Nov. 12, 1973, abandoned, which is a division of Ser. No. 287,276, Sept. 8, 1972, Pat. No. 3,792,950. This application Feb. 12, 1975, Ser. No. 549,375

Int. Cl.² B28B *11/16*

U.S. Cl. 264—142 **9 Claims**



1. A method of extruding thermoplastic material comprising the steps of, heating the thermoplastic material to make it fluid, conveying the heated material to an extrusion die having at least one extrusion orifice in the form of a finite length passage of significant extent, forcing the material through the orifice and outward from said die, directing a liquid coolant under pressure into contact with the outer surface of said material passing through said orifice, and vaporising part of said coolant immediately upon entrance of the coolant to said orifice while simultaneously contacting the material with said coolant to form at least a solidified wall surrounding an inner core of the material while simultaneously lubricating the wall of said orifice by said non-vaporized coolant to facilitate passage of the material therethrough.

3,981,960
REPROCESSING METHOD OF CARAMIC NUCLEAR FUELS IN LOW-MELTING NITRATE MOLTEN SALTS

Giovanni Brambilla, Stagno; Giacomo Caporali, and Mario Zambianchi, both of Pisa, all of Italy, assignors to AGIP Nucleare S.p.A., Rome, Italy

Filed Apr. 24, 1973, Ser. No. 353,955

Claims priority, application Italy, Apr. 27, 1972, 23583/72; Apr. 27, 1972, 23584/72

Int. Cl.² C01G *56/00*

U.S. Cl. 423—5 **11 Claims**

1. The method of reprocessing ceramic nuclear fuel, wherein said fuel is mixed with a molten, eutectic mixture of at least two alkali metal nitrates, heated to a temperature in the range between 200°C and 300°C, and then subjecting said molten nuclear fuel-containing mixture to the action of a gaseous stream containing nitric acid vapours.

3,981,961
METHOD OF SELECTIVE STRIPPING OF PLUTONIUM FROM ORGANIC SOLVENTS LOADED WITH PLUTONIUM

André Bathellier, Sceaux, and Michel Germain, Marcoussis, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 21, 1973, Ser. No. 427,349

Claims priority, application France, Dec. 28, 1972, 72.46655

Int. Cl.² B01D *11/00*

U.S. Cl. 423—9 **8 Claims**

1. A method of selective stripping of plutonium from an organic solvent loaded with plutonium comprises countercurrently contacting said organic solvent loaded with plutonium with an aqueous stripping solution containing a salt of hydroxylamine and formic acid, the concentration of the formic acid in the reaction medium being within the range of 1M to 5M.

3,981,962
DECOMPOSITION LEACH OF SULFIDE ORES WITH CHLORINE AND OXYGEN

Gary A. Smyres, Sparks; Philip R. Haskett, Reno; Bernard J. Scheiner, Sparks, and Roald E. Lindstrom, Reno, all of Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed June 30, 1975, Ser. No. 591,743

Int. Cl.² C01G *3/04, 9/04, 51/08, 11/00*

U.S. Cl. 423—35 **7 Claims**

1. A process for decomposing complex sulfide ores or concentrates comprising treating an aqueous slurry of the ore or concentrate by addition of a combination of gaseous chlorine and gaseous oxygen, the chlorine being added at a rate sufficient to provide a temperature of 90° to 160°C and in an amount only sufficient to convert sulfides of metals from the group consisting of zinc, copper, silver, nickel, cobalt and cadmium to chlorides, and the oxygen being added at a rate sufficient to maintain the temperature of 90° to 160°C and in an amount sufficient to ensure complete decomposition of the ore or concentrte and provide an oxygen partial pressure of 5 to 160 psig, whereby the metals from the group consisting of zinc, copper, silver, nickel, cobalt and cadmium are solubilized, metals from the group consisting of iron, antimony and arsenic are hydrolyzed to insoluble hydrous oxides, lead is converted to insoluble lead sulfate or chloride, and sulfur in the form of sulfide is converted largely to elemental sulfur.

3,981,963
IRON CHLORIDE ACTIVATED OXIDATION OF SULFIDE ORES

Kenneth Leslie Agnew, 100 Tilley Road, Sault Ste. Marie, Canada (P6B 3Y9)

Filed Jan. 22, 1975, Ser. No. 542,917

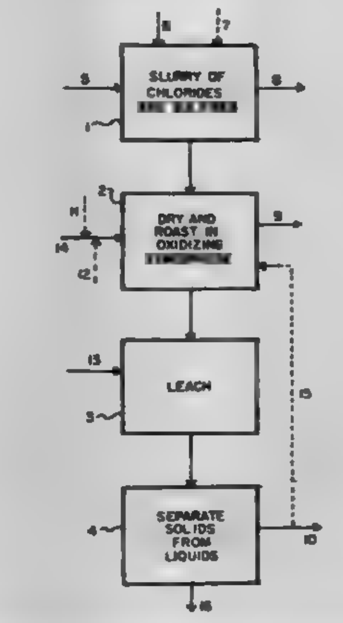
Int. Cl.² C01G *3/04, 9/04, 51/08, 53/08*

U.S. Cl. 423—39 **11 Claims**

7. A process for low-temperature roasting of finely-ground sulfides of the metallic group consisting of nickel, copper, cobalt, zinc and iron, containing at least seven percent sulfur, to produce water-insoluble iron oxide and water soluble non-ferrous salts, comprising adding iron chloride to the sulfides in an amount equal to at least ten percent of the amount of the metal sulfides to be oxidized, heating the mixed chlorides and sulfides at temperatures between 220° C and 450° C while passing an oxygen-containing gas through said mixture, and adding enough H_2O to ensure that said oxygen-containing gas includes at least enough water vapor to substantially satisfy the equation:

$$2\ FeCl_3 + 2\ H_2O + 2\ O_2 = 2\ Fe_2O_3 + 4\ HCl,$$

where the $FeCl_3$ is that in excess of the amount necessary to provide chloride ion to the non-ferrous metal chlorides formed, and where a ratio of between three mols of HCl to each mol of water vapor, and 0.1 mol of HCl to each mol of water vapor, is maintained in the atmosphere surrounding the calcine while it is cooled below 400° C, and leaching the water-soluble non-ferrous metal from the water-insoluble iron oxide with water so slightly acid as to be substantially without solvent action on ferric oxide.



3,981,964
SODIUM SULPHATE COMPOSITIONS AND THEIR PRODUCTION

Danvers A. Swales, Stockton-on-Tees, England, assignor to British Chrome & Chemicals Limited, Stockton-on-Tees, England

Filed Dec. 3, 1974, Ser. No. 529,177

Claims priority, application United Kingdom, Dec. 7, 1973, 56844/73

Int. Cl.² C01G *37/14;* **C01D** *5/00*

U.S. Cl. 423—53 **13 Claims**

1. A process of making a particulate composition of sodium sulphate containing chromium compound impurity and having stable, freeflowing, properties from chrome saltcake feed material containing sodium sulphate and sodium dichromate impurity, the process comprising subjecting the sodium dichromate to reduction in the presence of moisture to form a chrome saltcake product that is less susceptible to absorption of moisture than the chrome saltcake feed material, and the resulting composition is dried to freeflowing form.

8. A process of making a particulate composition of sodium sulphate containing chromium compound impurity and having stable, freeflowing, properties from chrome saltcake feed material containing sodium sulphate and sodium dichromate impurity, the process comprising subjecting the sodium dichromate in the said cake to double decomposition by reaction in the presence of moisture with a mineral acid salt having a cation other than sodium to form a chrome saltcake product that is less susceptible to absorption of moisture that the chrome saltcake feed material, and the resulting composition is dried to freeflowing form.

3,981,965
SUPPRESSION OF WATER POLLUTION CAUSED BY SOLID WASTES CONTAINING CHROMIUM COMPOUNDS

Alan B. Gancy, Syracuse, and Christian A. Wamser, Camillus, both of N.Y., assignors to Allied Chemical Corporation, Morris Township, N.J.

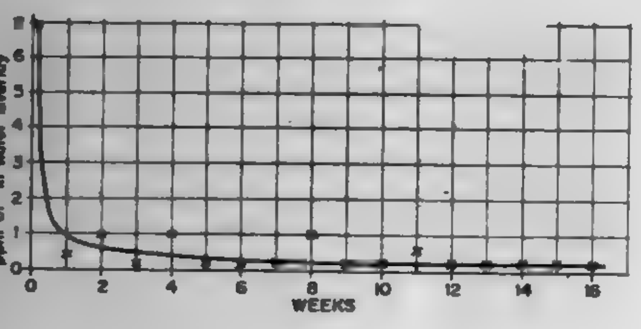
Continuation of Ser. No. 281,588, Aug. 17, 1972, abandoned. This application June 17, 1975, Ser. No. 587,780

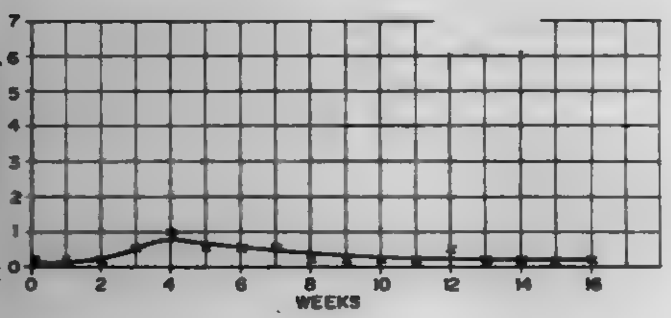
Int. Cl.² C01G *37/02, 37/00;* **C01B** *17/02*

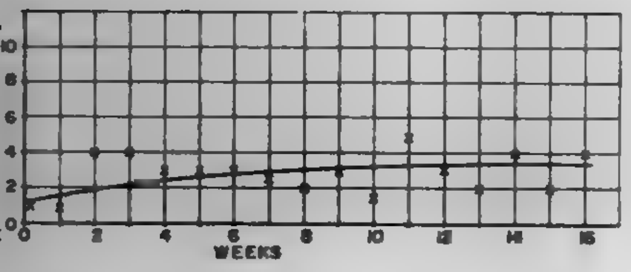
U.S. Cl. 423—55 **14 Claims**

1. A method fpr continuously insolubilizing essentially all water-solubilized hexavalent chromium compounds leached

from a chrome ore residue obtained by production of chromium chemicals for chromite ore by roasting the ore under alkaline oxidizing conditions to form water-soluble hexavalent chromium compounds, which comprises adding to said residue a sulfur-containing reductant, thereby continuously effecting reduction of said water-solubilized hexavalent chromium compounds in the presence of an aqueous medium under conditions sufficient to reduce said water-solubilized hexavalent chromium compounds to their insoluble form.







3,981,966

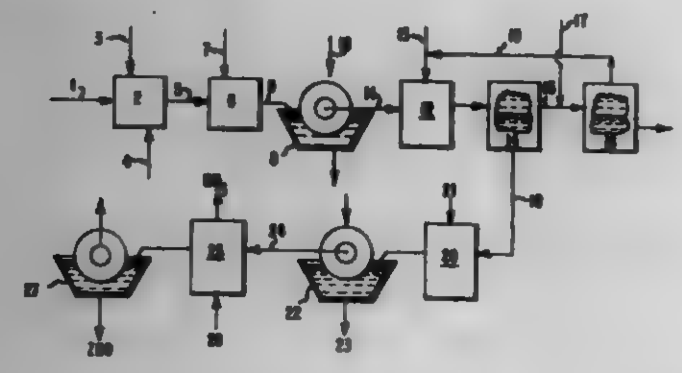
ZINC RECOVERY FROM ACIDIC AQUEOUS STREAMS

Everett Ira Baucom, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed July 26, 1974, Ser. No. 492,230

Int. Cl.² C01G *9/02*

U.S. Cl. 423—104 **9 Claims**



9. A process for the separation of zinc ion from metal ions including copper and iron contained in an acidic aqueous sulfate solution and recovery of zinc as hydrated zinc oxide which comprises the sequential steps of

a. adding sufficient calcium oxide to said solution to adjust the pH thereof to about 3.5 and maintaining said solution at a temperature of at least 60°C. for a period of at least 30 minutes while passing an oxygen containing gas therethrough,
b. adding of sufficient ammonium hydroxide to the product of step (a) to form and maintain in solution the tetrammine sulfate complexes of substantially all of the zinc and copper ions present,
c. separating the liquid and solids from step (b),
d. contacting one part by volume of the liquid from step (c) with less than one part of a substantially water-insoluble liquid hydrocarbon containing at least 0.10 moles per liter of a hydroxy oxime whereby the cupric ion is extracted from the aqueous liquid and separating the resultant aqueous and organic phases,
e. contacting the aqueous phase from step (d) with amounts of a slurry comprising sufficient ammoniacal calcium oxide and hydroxide to neutralize substantially all acid present and to convert the zinc tetrammine sulfate to zinc tetrammine hydroxide and to remove the sulfate ion by precipitation of calcium sulfate dihydrate,
f. separating the liquid and solids from step (e),
g. contacting the liquid from step (f) with a gas comprising water vapor whereby ammonia is liberated by the decomposition of the zinc tetrammine complex to hydrated zinc oxide which precipitates,
h. recovering zinc oxide from the product of step (g) by drying and thereafter heating the precipitate.

3,981,967

PROCESS FOR THE RECOVERY OF BOUND MERCURY FROM MERCURY-CONTAINING CATALYSTS

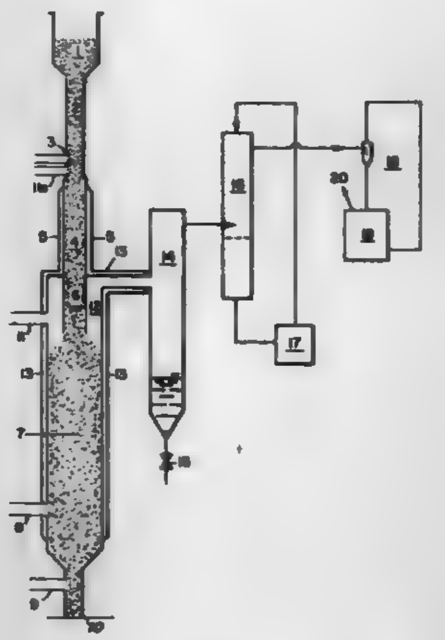
Heinz Maiwald; Gunter Hockele, and Hermann Sauer, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Nov. 3, 1971, Ser. No. 195,378

Claims priority, application Germany, Nov. 4, 1970, 2054102

Int. Cl.² C01G *13/04*

U.S. Cl. 423—107 **8 Claims**



1. In a process for the recovery of mercury (II) chloride from a spent activated carbon catalyst containing $HgCl_2$ and organic impurities comprising heating said catalyst to 270°–600°C while passing a carrier gas therethrough, withdrawing from said heated catalyst resultant gaseous mixture of carrier gas and desorbed mercury compounds; and introducing chlorine through a first inlet into the resultant withdrawn gaseous mixture containing HgCl to convert the HgCl to $HgCl_2$, the improvement which comprises a pretreatment step of contacting the spent catalyst with chlorine at a temperature of 100°–300°C prior to said heating of the catalyst to 270°–600°C while passing said carrier gas therethrough, the latter-mentioned chlorine being introduced through a second inlet separate and distinct from said first inlet, thereby avoiding depositions of carbon black and organic solid products and the formation and precipitation of metallic mercury and HgCl from the discharged carrier gas.

3,981,968

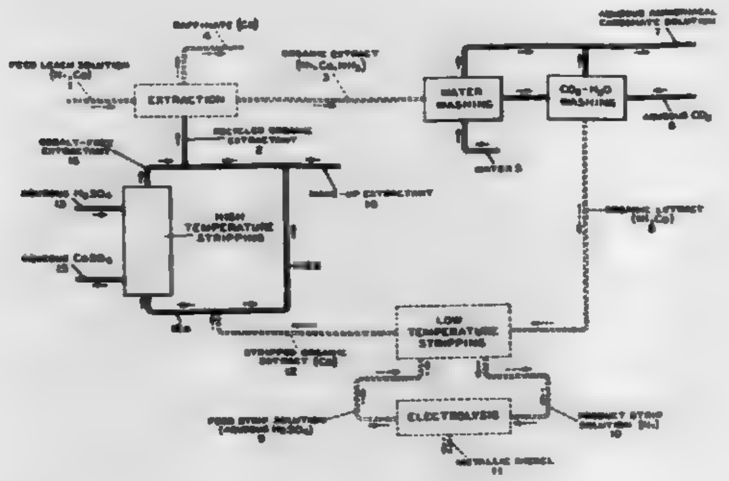
SOLVENT EXTRACTION OF NICKEL FROM AMMONIACAL SOLUTIONS

David J. Miller, Gretna, and Tadeusz K. Wiewiorowski, New Orleans, both of La., assignors to Freeport Minerals Company, New York, N.Y.

Continuation-in-part of Ser. No. 407,925, Oct. 19, 1973, abandoned. This application July 11, 1974, Ser. No. 487,560

Int. Cl.² C01G *51/10, 53/00*

U.S. Cl. 423—139 **22 Claims**



1. In a method for selectively recovering nickel from an aqueous ammoniacal solution containing nickel and cobalt wherein the solution is treated with an extractant comprising a substantially water immiscible organic liquid and an oxime or oxine compound capable of selectively extracting nickel into the extractant, to thereby extract substantially all the nickel into the extractant and a minor amount of the cobalt and ammonia present in the ammoniacal solution, and wherein the nickel is recovered from the extractant by stripping it at substantially ambient temperatures with an aqueous solution capable of withdrawing the nickel from the extractant into the aqueous solution:

the improvement for removing the cobalt from the extractant which comprises stripping at least a portion of the extractant with aqueous sulfuric acid at temperatures of about 170° to 300°F., after the extractant has been stripped with aqueous solution at substantially ambient temperatures to remove nickel from the extractant, to thereby remove from the extractant sufficient cobalt to permit recycle of the extractant to the extraction step of the process.

3,981,969

PRESSURIZED COLUMN SOLVENT EXTRACTION OF NICKEL FROM AMMONIACAL SOLUTIONS

Kenneth D. Uitti, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

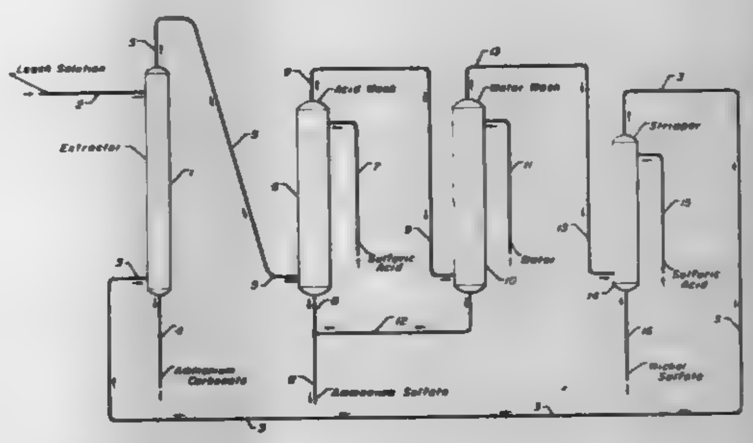
Filed Oct. 15, 1975, Ser. No. 622,584

Int. Cl.² C01G *53/10*

U.S. Cl. 423—139 **10 Claims**

1. A process for the recovery of nickel from an ammoniacal solution which comprises the steps of:

a. introducing a nickel-containing ammoniacal solution into a solvent extraction first column containing a plurality of spaced-apart perforated trays, or decks, and therein countercurrently contacting said ammoniacal solution, at a superatmospheric pressure in the range of about 100 to about 1,000 psig., with an organic solvent comprising an oxime and at least one hydrocarbon having from about three to about fifteen carbon atoms per molecule, and recovering a first solvent-rich, nickel-containing stream of reduced ammonia concentration;
b. introducing said first solvent-rich stream into a second column containing a plurality of spaced-apart perforated trays, or decks, and therein countercurrently contacting said first solvent-rich stream, at substantially the same pressure, with sulfuric acid, to provide (i) a solvent-lean ammonium sulfate stream and, (ii) a second solvent-rich, nickel- and free ammonium sulfate-containing stream;
c. introducing said second solvent-rich stream into a third column containing a plurality of spaced-apart perforated trays, or decks, and therein countercurrently contacting said second solvent-rich stream, at substantially the same pressure, with water to provide (i) an aqueous ammonium sulfate stream and, (ii) a third solvent-rich, nickel-containing stream substantially free from ammonium sulfate;
d. introducing said third solvent-rich stream into a fourth column containing a plurality of spaced-apart perforated trays, or decks, and therein countercurrently contacting said third solvent-rich stream, at substantially the same pressure, with sulfuric acid to provide (i) a fourth solvent-rich stream, substantially free from nickel, and, (ii) a concentrated nickel sulfate stream; and,
e. recovering said concentrated nickel sulfate stream from said fourth column.



3,981,970

METHOD FOR THE PRODUCTION OF A ZEOLITE MATERIAL

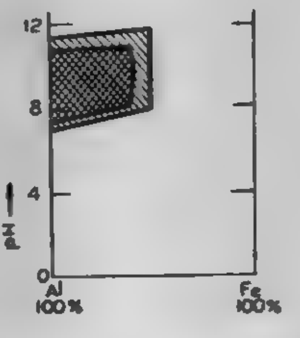
Takeo Wada, and Kazuo Okada, both of Suita, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 808,493, March 19, 1969, Pat. No. 3,622,268. This application July 16, 1971, Ser. No. 163,317

Claims priority, application Japan, Mar. 20, 1968, 43-18136; Apr. 10, 1968, 43-23846; July 25, 1968, 43-52704

Int. Cl.² C01B *25/00, 27/00*

U.S. Cl. 423—306 **6 Claims**



1. A method for the production of a zeolitic material represented by the formula:

$$R_xH_{5-x}(Al_yFe_{1-y})_4(P_lAs_{1-l})_3O_{16}\cdot zH_2O$$

wherein R represents Na or K, x, y, z and l are numerical values of $0 \leqq x \leqq 5$, $0 \leqq y \leqq 1$, $z \leqq 9$ and $0 \leqq l \leqq 1$, respectively; which comprises preparing an aqueous solution by dissolving in water (1) at least one source of aluminum and iron selected from the group consisting of their chlorides, sulfides, nitrates, phosphates, arsenates, sulfates, acetates, oxides, hydroxides, gels soluble in alkalis or acids and alum containing either iron or aluminum, (2) at least one source of phosphorus and arsenic selected from the group consisting of phosphorus pentoxide, phosphoric acid, and condensed acids which give phosphoric acid when dissolved in water, sodium phosphate, potassium phosphate, ammonium phosphate, said phosphates including the mono- and di-hydrogen salts thereof, water-soluble calcium phosphate, strontium phosphate, aluminum phosphate, iron phosphate, arsenic pentoxide, arsenic acid, arsenous acid, sodium arsenate, potassium arsenate, ammonium arsenate, said arsenates including the mono- and di-hydrogen salts thereof, and (3) at least one source of sodium and potassium selected from the group consisting of their hydroxides, oxides and salts in the ranges expressed in terms of the molar ratios of their oxides of

$$3.5 \leq (Al, Fe)_2O_3/(P, As)_2O_5 \leq 4.5 \text{ and } (K, Na)_2O/(Al, Fe)_2O_3 > 0.12$$

adjusting the pH of the solution to within the range of the cross-hatched area in FIGS. 1 to 4 and heating the solution at 150° to 250°C in a closed vessel to crystallize the zeolitic material and recovering the objective zeolitic material.

3,981,971

PROCESS FOR REDUCING NITROGEN OXIDES

Masami Saito, Kobe; Sumio Tani, Neyagawa; Tateo Ito, Kyoto, and Shigeaki Kasaoka, Okayama, all of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Japan

Filed Sept. 4, 1974, Ser. No. 503,164

Claims priority, application Japan, Sept. 13, 1973, 48-103545

Int. Cl.^{2} B01J *8/00;* **C01B** *17/00*

U.S. Cl. 423—239 **4 Claims**

1. A process for reducing nitrogen oxide contained in stack offgases to nitrogen and water which comprises reducing the nitrogen oxide by contacting stack offgases containing nitrogen oxide, oxygen, and sulfur dioxide with ammonia in the presence of a catalyst consisting essentially of a heavy metal sulfide selected from the group consisting of copper sulfide, iron sulfide, and mixtures thereof at a temperature in the range of about 250° to 550°C, the ammonia being present in an amount of from about 0.67 to 4 times the stoichiometric amount of the nitrogen oxide.

3,981,972

METHOD FOR DESULFURIZING FLUE GAS BY ACTIVE CARBON SUSPENSION

Yukio Hishinuma, and Zensuke Tamura, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 15, 1973, Ser. No. 388,462

Claims priority, application Japan, Aug. 25, 1972, 47-84519

Int. Cl.^{2} C01B *17/00;* **B01J** *8/00*

U.S. Cl. 423—244 **24 Claims**

1. A method for desulfurizing flue gas, comprising contacting a flue gas saturated with water and containing sulfur dioxide with an activated carbon suspension containing particles of activated carbon in an aqueous washing solution thereby absorbing the sulfur dioxide into said activated carbon suspension and forming a liquid containing sulfate ions at a low concentration in said activated carbon suspension, separating a portion of said liquid from said activated carbon suspension, and contacting said portion of liquid with fresh flue gas before said fresh flue gas contacts said activated carbon suspension thereby concentrating said portion of liquid containing sulfate ions at a low concentration and saturating said fresh flue gas with water before said fresh flue gas contacts said activated carbon suspension.

3,981,973

CRYSTAL GROWTH IN THE PRESENCE OF FINELY DIVIDED POLYTETRAFLUOROETHYLENE

John G. Richardson, Cleveland, Ohio, assignor to The Harshaw Chemical Company, Cleveland, Ohio

Filed Dec. 17, 1973, Ser. No. 425,320

Int. Cl.^{2} C01D *13/00, 5/00;* **C01G** *1/00*

U.S. Cl. 423—265 **3 Claims**

1. A crystal of an inorganic ionic metal salt crystallizable from an aqueous solution of said salt, said crystal consisting essentially of said inorganic ionic metal salt and at least one particle of water-wettable polytetrafluoroethylene polymer in a size range from about 0.05 μ to about 0.5 μ, formed in an aqueous suspensoid, said particle being occluded in said crystal which is formed in a size range from about 80 U.S. Standard mesh to about ¼ inch mesh.

3,981,974

METHOD FOR PRODUCING AN ALKALI METAL PYROPHOSPHATE

Peter Coad, Midwest City; Edward Conley Murray, Oklahoma City, both of Okla., and Homer Charles Reed, Newport Beach, Calif., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed May 20, 1974, Ser. No. 471,221

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.^{2} C01B *15/16, 25/26*

U.S. Cl. 423—315 **12 Claims**

1. A method for producing an alkali metal pyrophosphate comprising: admixing an alkali metal nitrate with aqueous phosphoric acid, heating said admixture to a temperature of at least about 700°C in the presence of a catalytic amount of at least one metal oxide selected from the group consisting of oxides of iron, vanadium, manganese and chromium for a period of time sufficient to produce said alkali metal pyrophosphate and gaseous reaction products and recovering said alkali metal pyrophosphate.

3,981,975

PREPARATION OF ANHYDROUS NITRIC ACID

Clifford L. Coon, Menlo Park, Calif., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 369,309, June 12, 1973, abandoned. This application Feb. 12, 1975, Ser. No. 549,198

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.^{2} C01B *21/46;* **C07C** *79/12*

U.S. Cl. 423—390 **9 Claims**

1. A method for preparing a solution of anhydrous nitric acid in methylene chloride comprising extracting an aqueous mixture of nitric acid and sulfuric acid with methylene chloride.

4. A method for preparing anhydrous nitric acid comprising:

a. preparing an aqueous solution of nitric acid and sulfuric acid;
b. extracting the aqueous acid mixture with methylene chloride;
c. separating the anhydrous nitric acid from the methylene chloride raffinate.

3,981,976

PROCESS FOR HYDROGEN ISOTOPE CONCENTRATION BETWEEN LIQUID WATER AND HYDROGEN GAS

William H. Stevens, Deep River, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Canada

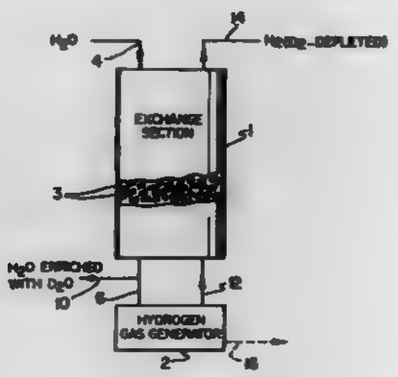
Continuation-in-part of Ser. No. 104,291, Jan. 6, 1971, abandoned. This application July 13, 1973, Ser. No. 379,177

Claims priority, application Canada, Jan. 28, 1970, 73320

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.^{2} B01D *5/02*

U.S. Cl. 423—580 **13 Claims**



1. In an isotope exchange process for hydrogen isotope concentration between liquid water and hydrogen gas, comprising:

a. contacting at a temperature in the range 15°C to 70°C, in an exchange section, liquid feed water and hydrogen gas from a reaction vessel, with one another and with a catalyst consisting of at least one catalytically active metal selected from Group VIII of the Periodic Table so that the deuterium isotope of hydrogen is transferred to and concentrated in the liquid water passing through and leaving the exchange section in either counter-current or cocurrent flow,
b. passing the liquid water thus enriched with the deuterium isotope of hydrogen concentrated therein to the reaction vessel wherein the hydrogen gas for the exchange section is generated from a portion of the enriched water and then passed through the exchange section, and
c. removing a portion of the water enriched in the exchange section, the improvement comprising:
d. the catalyst is provided in the exchange section as at least one catalyst assembly comprising the catalyst and a substantially liquid-water-repellent organic polymer or resin coating thereon selected from the group consisting of polyfluorocarbons, hydrophobic hydrocarbon polymers of medium to high molecular weight and silicones, and which is permeable to water vapour and hydrogen gas, whereby:
e. the or each catalyst assembly causes hydrogen isotope exchange and concentration in the exchange section as follows:

$$\text{HD gas} + H_2O \text{ vapour} \xrightleftharpoons{\text{catalyst}} H_2 \text{ gas} + \text{HDO vapour},$$

and

$$\text{HDO vapour} + H_2O \text{ liquid} \xrightleftharpoons[\text{surface}]{\text{liquid water}} \text{HDO liquid} + H_2O \text{ vapour}$$

so that direct contact between the catalyst metal and liquid water and wetting of the catalyst is retarded by the coating thereby retarding poisoning of the catalyst by the liquid water.

3,981,977

METHOD OF PRODUCING DEUTERIUM-OXIDE-ENRICHED WATER

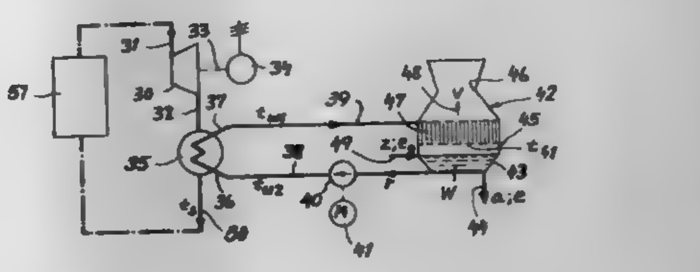
Heinrich Mandel, Essen, Germany, assignor to Rheinisch-Westfalisches-Elektrizitatswert Aktiengesellschaft, Essen, Germany

Continuation-in-part of Ser. No. 223,038, Feb. 2, 1972, abandoned, which is a continuation of Ser. No. 865,384, Oct. 10, 1969, abandoned. This application Aug. 3, 1972, Ser. No. 277,662

Claims priority, application Germany, Oct. 12, 1968, 1802867

Int. Cl.^{2} C01B *5/02*

U.S. Cl. 423—580 **3 Claims**



1. A method of increasing the concentration of heavy water in natural water, comprising the steps of:

circulating a flow of natural water through a cascade of treatment stages, each treatment stage comprising a steam turbine, a cooling circuit, a condenser, and an open-air cooling tower;
alternately elevating the temperature of said natural water in each treatment stage by indirect heat exchange with the exhaust steam of said turbine in said condenser and lowering the water temperature by exposure thereof to approximately ambient temperature in said open-air cooling tower whereby a fraction of the water evaporates in each treatment stage;
continuously transferring a portion of the cooled water from one cooling circuit to another in a predetermined cascade, at a rate exceeding the evaporation losses of all succeeding cooling circuits of the cascade, with progressive enrichment of the circulating water in its heavy-water content from one cooling circuit to the next;
continuously supplying fresh water to the first cooling circuit of the cascade at a rate balancing the evaporation thereof and the portion transferred therefrom to the next-following cooling circuit; and
continuously withdrawing part of the cooled water of the last cooling circuit in the cascade with an increased concentration of heavy water, the withdrawn part representing an excess of the supplied water over the combined evaporation losses of all cooling circuits.

3,981,978

WORKING UP AQUEOUS TITANIUM DIOXIDE HYDRATE SUSPENSIONS

Raoul Weiler, Berchem, and Henri Uwents, Ekeren, both of Belgium, assignors to Bayer Antwerpen N.V., Antwerp, Belgium

Filed May 14, 1975, Ser. No. 577,492

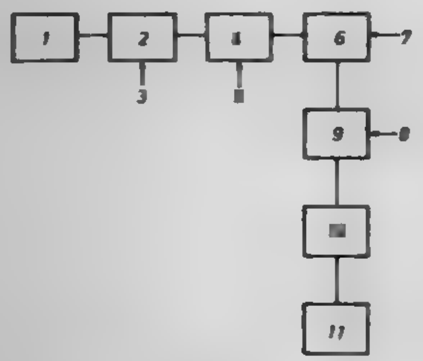
Claims priority, application Germany, May 17, 1974, 2423983

Int. Cl.^{2} C01G *23/04, 23/06, 23/08*

U.S. Cl. 423—610 **3 Claims**

1. In the recovery of titanium dioxide by subjecting an aqueous titanium dioxide hydrate suspension to at least one stage of filtering to form a filter cake, adjusting the composition and calcining the adjusted filter cake, the improvement which comprises pressure filtering the aqueous titanium dioxide hydrate suspension in a membrane filter under a pressure of 3 bars to 16 bars to form a homogeneous substantially

crack-free filter cake of a thickness of about 10 to 25 mm, and pressure washing the filter cake with liquid flowing at a rate



of 0.1 to 1 m/h under a pressure of 1 bar to 16 bars with water containing 0.8 to 4 g of Ti^{3+}/liter.

3,981,979
PROCESS FOR PRODUCING A PURE HIGH SURFACE AREA ALUMINA

David G. Braithwaite, Brookhaven, Miss., and Virgil L. Seale, Houston, Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 400,491, Sept. 24, 1973, abandoned, which is a continuation-in-part of Ser. No. 201,384, Nov. 23, 1971, abandoned. This application June 6, 1975, Ser. No. 584,783

Int. Cl.² C01F *7/02*

U.S. Cl. 423—628 **2 Claims**

1. A process for producing a pure, high surface area alumina which comprises reacting in an aqueous media an acidic aluminum salt from the group consisting of aluminum chloride and aluminum sulfate, with a lower aliphatic epoxide from the group consisting of ethylene oxide, 1,2-propylene oxide and epichlorohydrin, to form an alumina gel, washing said gel with an aqueous solution of ammonia which has a pH of at least 7, said gel being characterized as porous and filterable, separating said aqueous solution of ammonia from said gel, and then recovering the purified alumina as a product of the process.

3,981,980
RADIOPHARMACEUTICALS FOR CHOLESCINTIGRAPHY

Richmond J. Baker, West Beach, and Johan C. Bellen, Grange, both of Australia, assignors to The Council of the Institute of Medical and Veterinary Science and The University of Adelaide (Anti-Cancer Foundation), both of Adelaide, Australia

Filed Aug. 8, 1974, Ser. No. 495,875

Claims priority, application Australia, Aug. 24, 1973, #6155/73

Int. Cl.² A61K *43/00, 29/00;* **G01T** *1/161;* **G21H** *5/02*

U.S. Cl. 424—1 **9 Claims**

1. A radiopharmaceutical for cholescintigraphy formed by the reaction of pyridoxal and amino acids labelled with a radionuclide.

3,981,981
METHOD OF RADIOIMMUNOASSAY EMPLOYING DIFFUSION

Matti Antero Reunanen, Kupittaankatu 11-13 C 38, 20520 Turku 52, Finland

Filed Jan. 18, 1974, Ser. No. 434,733

Claims priority, application Finland, Jan. 25, 1973, 202/73

Int. Cl.² G01N *33/00;* **G21H** *5/02*

U.S. Cl. 424—1.5 **5 Claims**

1. A method of radioimmunoassay comprising the steps of:
a. bringing the large-molecule antibody of the small-molecule antigen to be determined into a slit-shaped chamber between dialysis membranes in a reaction vessel,
b. bringing the antigen to be determined into said vessel, into which a specified quantity of the radioactive form of this antigen has been added,
c. incubating, whereby the antigen and its radioactive form freely penetrate through the membranes and react with the antibody,
d. washing, whereby water and the unreacted antigen freely pass through the membranes, and
e. measuring the radioactivity of the washed complex remaining between the membranes, and
f. determining the antigen quantitatively.

3,981,982
RADIOIMMUNOASSAY FOR DETERMINING THE DIGOXIN CONTENT OF A SAMPLE

Raymond Oslapas, Libertyville, and Thomas Raymond Herrin, Waukegan, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Sept. 11, 1974, Ser. No. 505,185

Int. Cl.² G01N *33/00;* **G21H** *5/02;* **C07J** *19/00*

U.S. Cl. 424—1.5 **7 Claims**

1. A method of measuring the digoxin content of a serum sample which comprises the steps of:
a. adding digoxin antibody and a tracer amount of radioactively labeled 3-0-(4-Hydroxyphenethylcarbamoyl) digoxigenin reagent to said serum sample to form a mixture;
b. incubating said mixture to permit the digoxin in the sample and said radioactively labeled reagent to bind to the digoxin antibody;
c. adding a precipitating agent to the mixture to facilitate the formation of a precipitate and thereby separate the bound labeled digoxin from the free digoxin;
d. separating the supernatant liquid from the precipitate which is formed; and
e. measuring the radioactivity remaining in the precipitate.

6. A compound selected from the group consisting of 3-Chloroformyldigoxigenin and 3-0-(4-Hydroxyphenethylcarbamoyl) digoxigenin.

3,981,983
RAPID, RADIOCHEMICAL-LIGAND BINDING ASSAY FOR METHOTREXATE

J. Douglas Caston, Cleveland Heights, Ohio, and Barton A. Kamen, Rockville Centre, N.Y., assignors to Case Western Reserve University, Cleveland, Ohio

Filed June 30, 1975, Ser. No. 591,310

Int. Cl.² G01N *33/00;* **G21H** *5/02;* **A61K** *43/00*

U.S. Cl. 424—1.5 **12 Claims**

1. A method for determining the concentration of methotrexate in biological material comprising the steps of:
a radioisotopically relating the bound amounts of labeled methotrexate and known concentrations of methotrexate in a first system containing a predetermined amount of labeled methotrexate, a binder factor for methotrexate, a binder cofactor, and a predetermined amount of unlabeled methotrexate;
b radioisotopically determining the bound amount of said labeled methotrexate in a second system containing said predetermined amount of labeled methotrexate, said binder and said binder cofactor, and a test sample or said biological material to be determined; and
c correlating the bound amount of labeled methotrexate determined in step (b) through the relationship determined in step (a) to ascertain the concentration of methotrexate in the test sample.

3,981,984
COLOR FILM COATING OF TABLETS AND THE LIKE

Charles A. Signorino, King of Prussia, Pa., assignor to Colorcon Incorporated, West Point, Pa.

Continuation-in-part of Ser. No. 717,984, April 1, 1968, abandoned. This application June 30, 1972, Ser. No. 268,014

Int. Cl.² A61K *9/32, 9/34, 9/36, 9/38;* **C08K** *1/14, 1/26*

U.S. Cl. 424—33 **32 Claims**

1. A high-concentration pigment suspension for a polymer film coating of tablets and the like comprising a non-aqueous solvent, pigment particles dispersed in the solvent, and an edible protective colloid coating the pigment particles, said colloid being about 2.5% by weight of the pigment particles, and the percentage of solids in the suspension being about 39–47%.

3,981,985
POSITIVE-WORKING ELECTRON RESISTS

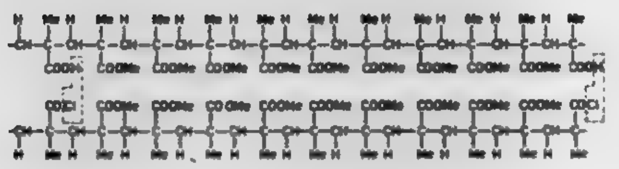
Edward David Roberts, Salfords, near Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 12, 1973, Ser. No. 424,113

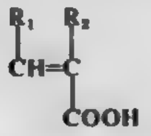
Claims priority, application United Kingdom, Dec. 21, 1972, 59063/72

Int. Cl.² B05D *3/06*

U.S. Cl. 427—43 **8 Claims**

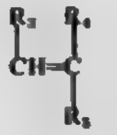


1. A cross-linkable positive working electron resist comprising a mixture of copolymers A - B and D - E wherein:
A is an unsaturated carboxylic acid of the formula



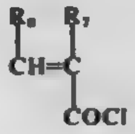
$$\overset{R_1}{\overset{|}{CH}}=\overset{R_2}{\overset{|}{\underset{\underset{COOH}{|}}{C}}}$$

B is an unsaturated organic compound of the formula



$$\overset{R_3}{\overset{|}{CH}}=\overset{R_4}{\overset{|}{\underset{\underset{R_5}{|}}{C}}}$$

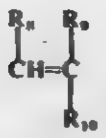
D is an unsaturated acid chloride of the formula



$$\overset{R_6}{\overset{|}{CH}}=\overset{R_7}{\overset{|}{\underset{\underset{COCl}{|}}{C}}}$$

and

E is an unsaturated compound of the formula



$$\overset{R_8}{\overset{|}{CH}}=\overset{R_9}{\overset{|}{\underset{\underset{R_{10}}{|}}{C}}}$$

wherein R_1, R_2, R_3, R_4, R_6, R_7, R_8 and R_9 are each moieties selected from the group consisting of aryl, alkyl and hydrogen, R_5 and R_{10} are each moieties selected from the group consisting of alkyl, saturated acyloxy, aryl and -COOR wherein R is alkyl, wherein the mixture contains essentially stoichiometric + or −50% quantities of A and D and wherein from 0.5 – 7.5 mol % of the mixture consists of A.

3,981,986
ZIRCONIUM-ALUMINUM-POLYOL BUFFERED ANTI-PERSPIRANT COMPLEXES

Andrew M. Rubino, New Providence, N.J., assignor to Armour Pharmaceutical Company, Phoenix, Ariz.

Continuation-in-part of Ser. No. 418,712, Nov. 23, 1973. This application Jan. 8, 1974, Ser. No. 431,639

Int. Cl.² A61K *7/00, 9/00;* **C07F** *7/00*

U.S. Cl. 424—47 **14 Claims**

1. An astringent, water soluble complex formed by reacting in an aqueous medium:
a. a basic aluminum-polyol compound, selected from the group consisting of complexes having the following general empirical formulas:

$$Al_2(H_2O)_{y-z}(OH)_{6-nx}(A)_n(R)_z \qquad (1)$$

wherein A is selected from the group consisting of chloride, bromide, iodide, sulfate and sulfamate; R is the coordinating moiety of a polyhydroxy compound having a carbon chain in which at least two carbon atoms link a hydroxyl group to said chain; *n* is a positive integer of from 1 to 4; *x* is the valence of *A*, *y* has a value of about 0.5 to 6 and is always such that $(y-z)$ does not give a negative value; and *z* is the number of available coordination sites, with *nx* being from 1 to 4,

$$nQ.Al_2(OH)_{4-5}A_{1-2}R_{1-4}(H_2O)_{0.5-4}$$

wherein *Q* is selected from the group consisting of zinc chloride, zinc iodide, zinc bromide, zinc hydroxy chloride, zinc hydroxy iodide, zinc hydroxy bromide, zirconyl chloride, zirconyl bromide, zirconyl iodide, zirconyl hydroxy bromide, zirconyl hydroxy iodide and zirconyl hydroxy chloride; *A* is an anion selected from the group consisting of chloride, bromide and iodide; *R* is the coordinating moiety of a polyhydroxy compound having at least two carbon atoms to which are attached at least two hydroxy groups, and *n* is the number of moles of *Q* and is at least 0.05, and

mixtures of (1) and (2);

b. a zirconium compound selected from trioxodizirconium salts and the group having the general empirical formula:

$$ZrO(OH)_{2-nz}B_z$$

wherein *z* may vary from 0.9 to 2, *n* is the valence of B, $2-nz$ is greater than or equal to 0, and *B* is selected from the group consisting of halide, nitrate, sulfamate, sulfate and mixtures thereof; and

c. an organic buffer selected from the group consisting of urea, an amino acid in which the number of amino groups is equal to the number of carboxyl groups in the molecule, an alkaline salt of said amino acids, hydroxy aluminum salt of said amino acid, and mixtures thereof, said zirconium and basic aluminum-polyol compounds being present in such amounts as to yield an Al/Zr mole ratio of about 10:1 to 1:10, and said organic buffer being present in such an amount that the pH of a 5 to 15 weight percent (based on the oxides of Al and Zr) aqueous solution of the complex is at least about 3;

and drying the reaction mixture to a friable solid which is said complex.

12. An aerosol anti-perspirant composition comprising an aerosol propellant, water, ethanol, and the complex according to claim 1, wherein said complex is present in an amount of about 5 to 15 weight percent of the anti-perspirant composition.

3,981,987
HAIR SETTING COMPOSITIONS CONTAINING EASILY REMOVABLE NEUTRALIZED COPOLYMERS

Wolfgang Linke; Karl Herrle; Wolfgang Schwarz, all of Ludwigshafen, and Johannes Perner, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Jan. 8, 1975, Ser. No. 539,417

Claims priority, application Germany, Feb. 1, 1974, 2404793

Int. Cl.^{2} A61K *7/11*

U.S. Cl. 424—47 **10 Claims**

1. A hair setting composition capable of producing a film on hair which can be washed off with water which comprises a 1 to 4% solution by weight of a water soluble polymeric resin in a solvent composed of one or more compounds selected from the group consisting of water and lower aliphatic alcohols wherein said resin is a copolymer of:

a. from 20 to 95% by weight of at least one compound selected from the group consisting of vinyl esters of aliphatic carboxylic acids of 2 to 20 carbon atoms and esters of acrylic and methacrylic acid with aliphatic alcohols of 1 to 6 carbon atoms, and

b. from 80 to 5% by weight of at least one compound selected from the group consisting of the half-esters of ethylenically unsaturated dibasic carboxylic acids of 4 to 5 carbon atoms with aliphatic alcohols of 6 to 24 carbon atoms;

which copolymer has been neutralized with from 10 to 150% by weight of the calculated theoretical amount of an inorganic or an organic base and wherein said copolymer, when measured as a 1% solution in isopropanol, has a relative viscosity of from 1.0 to 1.5.

7. The composition as set forth in claim 1 wherein the solvent additionally contains a halogenated hydrocarbon propellant gas.

3,981,988
DENTIFRICE INCLUDING A LUSTRE IMPARTING AGENT

Peter John Newman, Maidenhead, and Charles Andrew Watson, Ruislip, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,330

Claims priority, application United Kingdom, Apr. 11, 1973, 17292/73

Int. Cl.^{2} A61K *7/16*

U.S. Cl. 424—49 **3 Claims**

1. A toothpaste composition comprising in said toothpaste from about 5% to about 60% by weight of an abrasive cleaning agent having an average particle size of about 5 to about 25 microns, said abrasive cleaning agent being selected from the group consisting of silica xerogels, hydrated alumina, calcium carbonate, stabilized non-corrosive dicalcium phosphate, insoluble sodium metaphosphate and calcium pyrophosphate and a lustre agent of from about 0.1% to about 40% by weight of pyrogenic alumina, which consists predominantly of the gamma crystalline form, obtained by the flame-hydrolysis process in which aluminum chloride is reacted with hydrogen and oxygen in a flame, said alumina having a particle size of from about 10 to about 100 millimicrons.

3,981,989
ORAL PREPARATION

Nobuo Suganuma, Funabashi; Kunio Saito, Kasukabe; Masaki Koshimizu, Chiba; Nobuyuki Takada, Chigasaki, and Reiko Takamuro, Tokyo, all of Japan, assignors to The Lion Dentifrice Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 481,230, June 20, 1974, abandoned. This application Jan. 21, 1976, Ser. No. 651,178

Claims priority, application Japan, Nov. 26, 1973, 48-131648

Int. Cl.^{2} A61K *7/18, 7/28*

U.S. Cl. 424—50 **8 Claims**

1. An oral preparation which comprises a non-toxic vehicle and the combination of dextranase and gelatin or peptone, wherein the amount of dextranase in said oral preparation is 5000 – 1,500,000 units per gram of the oral preparation and wherein said gelatin or peptone is present in said oral preparation in amounts of 0.3 – 3 wt%.

3,981,990
SKIN PROTECTIVE COMPOSITIONS

Ralph Kelly, Cincinnati, and Edmond Jean Ritter, Loveland, both of Ohio, assignors to Cincinnati Milacron, Inc., Cincinnati, Ohio

Division of Ser. No. 46,561, June 15, 1970, which is a continuation-in-part of Ser. No. 696,509, Jan. 9, 1968, Pat. No. 3,630,934, which is a continuation-in-part of Ser. No. 613,095, Feb. 1, 1967, Pat. No. 3,538,009. This application Feb. 4, 1974, Ser. No. 439,118

Int. Cl.^{2} A61K *31/74*

U.S. Cl. 424—78 **9 Claims**

1. A skin protective lotion or creme consisting essentially of a skin irritation reducing effective amount of protective agent and a non-aqueous emollient, a humectant or a surfactant; said lotion or creme capable of reducing skin irritation compared to said lotion or creme without protective agent when applied to the skin prior to contact with a skin irritant; said protective agent containing two polar groups which are separated by at least 15 atoms a majority of which are carbon; said protective agent selected from the group consisting of:

A. the product obtained from the polymerization of 2 to 4 molecules of a monomeric ethylenically unsaturated C_{12} to C_{36} fatty acid, wherein the 2 to 4 carboxyl groups of the polymerization product have been converted to polar groups selected from the group consisting of hydroxyl; unsubstituted amino; substituted amino wherein the substituents are aliphatic radicals of 1 to 12 carbon atoms; unsubstituted amido; substituted amido wherein the substituents are aliphatic radicals of 1 to 12 carbon atoms, or said substituents taken together form a 3 to 6 membered ring with the amido nitrogen; and quaternary ammonium wherein the nitrogen substituents are alkyl of 1 to 6 carbon atoms; and

B. the hydrogenated derivatives of (A).

3,981,991
STABILIZATION OF INTERFERON

William Edgar Stewart, Herent, and Pierre Marie Hendrik Frans de Somer, Leuven, both of Belgium, assignors to Stichting REGA V.Z.W., Leuven, Belgium

Filed Apr. 3, 1975, Ser. No. 564,723

Claims priority, application Netherlands, Apr. 3, 1974, 7404589

Int. Cl.^{2} A61K *45/02*

U.S. Cl. 424—85 **7 Claims**

1. A method of stabilising interferon, comprising the following steps:

a. providing an aqueous interferon solution comprising from about 10^1 to about 10^6 interferon units per milliliter and having lost substantially none of its initial activity; and

b. treating said interferon solution with a combination of:

i. urea or guanidine-hydrochloride as an agent for disrupting non-covalent bonds;

ii. mercaptoethanol or ethanethiol as an agent for reducing disulfide bridges; and

iii. an agent selected from the group consisting of sodium dodecylsulfate, sodium decylsulfate, sodium dodecylsulfonate, dodecylamine and decylamine as a surface-active agent; said three agents being used in such amounts that the resulting solution comprises from 0.1 to 10M of urea or guanidine-hydrochloride, at least 10^{-3}M of mercaptoethanol or ethanethiol, and a onefold to fivefold excess of said surface-active agent calculated on the total amount of proteins in solution, respectively; so as to obtain an aqueous interferon solution which has been stabilised against activity losses.

3,981,992
DERIVATIVES OF 3β-(4′-OXO-α-L-RHAMNOSYL)-14β-HYDROXY-BUFA-4,20,22-TRIENOLIDE

Walter Lösel, Ingelheim am Rhein; Werner Traunecker, Munster-Sarmsheim, and Wolfgang Hoefke, Budenheim, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

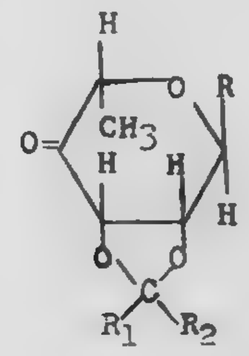
Filed July 30, 1975, Ser. No. 600,433

Claims priority, application Germany, Aug. 5, 1974, 2437693

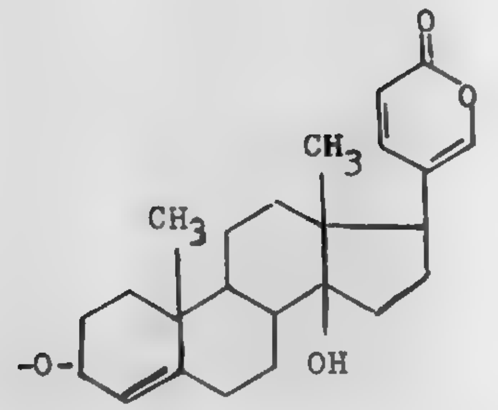
Int. Cl.^{2} A61K *31/705*

U.S. Cl. 424—182 **9 Claims**

1. A compound of the formula



wherein
R is



R_1 is hydrogen or alkoxy of 1 to 4 carbon atoms, and
R_2 is alkoxy of 1 to 4 carbon atoms, or
R_1 and R_2 together are oxygen.

8. A cardiotonic pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective cardiotonic amount of a compound according to claim 1.

3,981,993
O-ALKYL-O-N-PROPYL-O-PYRIMIDIN(2)YL-THIONOPHOSPHORIC ACID ESTERS

Fritz Maurer, Wuppertal; Ingeborg Hammann, Cologne, and Bernhard Homeyer, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

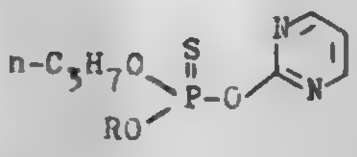
Filed Mar. 12, 1975, Ser. No. 557,699

Claims priority, application Germany, Mar. 28, 1974, 2415058

Int. Cl.^{2} C07F *9/65;* **A01N** *9/36*

U.S. Cl. 424—200 **9 Claims**

1. An O-alkyl-O-n-propyl-O-pyrimidin(2)yl-thionophosphoric acid ester of the formula



in which R is methyl or ethyl.

3,981,994
O-ALKYL-O-[1-PHENYL-5-CYANOALKYLMERCAPTO-1,2,4-TRIAZOL(3)YL]-THIONOPHOSPHORIC(PHOSPHONIC) ACID ESTERS

Hellmut Hoffmann, Wuppertal; Ingeborg Hammann, Colonge, and Wilhelm Stendel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

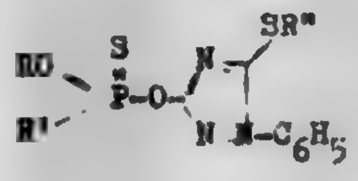
Filed Jan. 9, 1975, Ser. No. 539,898

Claims priority, application Germany, Jan. 26, 1974, 2403711

Int. Cl.^{2} A01N *9/36;* **C07F** *9/165, 9/40*

U.S. Cl. 424—200 **9 Claims**

1. An 0-alkyl-0-triazolyl-thionophosphoric-(phosphonic) acid ester of the formula



in which
R is alkyl with 1 to 6 carbon atoms,
R′ is alkyl or alkoxy with in either case 1 to 6 carbon atoms, and
R″ is cyanoalkyl with 1 to 4 carbon atoms.

3,981,995
PROCESS FOR CONTROL OF SHEEP MAGGOT FLY

Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 6, 1975, Ser. No. 556,049

Int. Cl.^{2} A01N *9/36*

U.S. Cl. 424—219 **1 Claim**

1. A process for the control of larvae of *Lucilia sericata* or *Lucilia cuprina* comprising the external application to sheep of an insecticidally effective amount of the compound S-propargyl-O-benzyl, ethylphosphonodithioate.

3,981,996

PHARMACEUTICAL SKIN COMPOSITIONS

Steven Leigh, South Croydon, England, assignor to Vymatt S.A., Lugano, Switzerland

Continuation-in-part of Ser. No. 334,274, Feb. 21, 1973, abandoned. This application June 20, 1974, Ser. No. 481,449

Int. Cl.^{2} A61K *31/56, 37/48, 47/00*

U.S. Cl. 424—243 **11 Claims**

1. A pharmaceutical composition, suitable for external application to human skin, which composition comprises a continuous hydrophobic phase of a pharmaceutically acceptable liquid, semi-solid, gel or solid material, having dispersed therein a pharmaceutically acceptable water-insoluble powder the particles of which carry adsorbed thereon an aqueous solution or dispersion of a member selected from the group consisting of (a) a polar organic compound selected from urea, dimethylsulphoxide, dimethylacetamide, dimeltylformamide, and tetrahydrofurfuryl alcohol, (b) a medicament and (c) mixtures of (a) and (b), said water-insoluble powder being inert to the hydrophobic medium and to the medicament and having an average particle size of greater than about 1 micron, and wherein the proportion of hydrophobic phase is from 20% to 80% by weight of the composition, the proportion of inert powder is from 5% to 60 % by weight of the composition, and the proportion of aqueous solution or dispersion is from 5% to 40% by weight of the composition.

3,981,997

ANALGESIC COMPOSITIONS COMPRISING 1H- OR RESPECTIVELY 2H-INDAZOLONE-3 (β-MORPHOLINO-ALKOXY) COMPOUNDS

Herbert Oelschlager; Uwe Matthiesen, both of Frankfurt am Main, and Wilhelm A. Behrendt, Niederweimar, Kr Marburg, Germany, assignors to Temmler Werke-Vereinigte Chemische Fabriken, Marburg, Lahn, Germany

Continuation of Ser. No. 485,633, July 3, 1974, abandoned, which is a continuation of Ser. No. 163,508, July 16, 1971, abandoned. This application May 16, 1975, Ser. No. 578,270

Claims priority, application Germany, July 17, 1970, 2035494; July 10, 1971, 2134592

Int. Cl.^{2} A61K *31/535*

U.S. Cl. 424—248 **3 Claims**

1. A pharmaceutical composition consisting essentially of an analgesically effective amount of 3-(β-morpholino-ethoxy)-4,5,6,7-tetrahydro-2H-indazole-hydrobromide and an inert carrier.

3. A pharmaceutical composition consisting essentially of an analgesically effective amount of 3-(γ-morpholino-propoxy)-iH-indazole or the hydrochloride thereof and an inert carrier.

3,981,998

BACTERICIDAL AND FUNGICIDAL 1,3,5 TRIALKANOL TRIAZINES

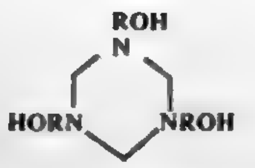
David A. Waldstein, 622 Bergen Ave., Jersey City, N.J. 07304

Filed Mar. 8, 1974, Ser. No. 449,368

Int. Cl.^{2} A01N *9/22*

U.S. Cl. 424—249 **14 Claims**

1. A composition useful as a bactericide and fungicide, said composition comprising a carrier and, as the active ingredient, a bactericidally and fungicidally effective amount of a mixture of 1,3,5 variegated and non-variegated trialkanol triazines of the formula



wherein each R is an alkyl moiety having from 1 to 4 carbon atoms, formed by mixing two or more monoalkanol amines having 1 to 4 carbon atoms and reacting said mixture with a stoichiometric amount of paraformaldehyde at a temperature of between 75° to 110°C under vacuum until the water produced by the reaction is substantially removed.

3,981,999

FISH DISEASE TREATMENT

Masanao Shimizu, Toyonaka; Yoshiyuki Takase, Amagasaki, and Kaoru Kouno, Nishinomiya, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 10, 1974, Ser. No. 513,824

Claims priority, application Japan, Oct. 13, 1973, 48-115006

Int. Cl.^{2} A61K *31/505*

U.S. Cl. 424—251 **13 Claims**

1. A method for controlling a bacteria-caused infectious disease in fish which comprises administering a composition of 5,8-dihydro-2-pyrrolidino-8-ethyl-5-oxopyrido[2,3-d]pyrimidine-6-carboxylic acid or its non-toxic acid-addition salt in a suitable carrier to said fish in an amount effective to prevent or control said infectious disease.

3,982,000

ALKYL-SUBSTITUTED-TRICYCLIC QUINAZOLINONES AS BRONCHODILATORS

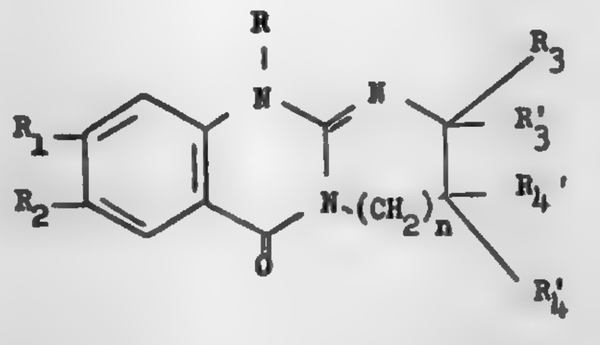
Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 325,081, Jan. 19, 1973, Pat. No. 3,905,976, which is a continuation-in-part of Ser. No. 201,982, Nov. 24, 1971, abandoned. This application Feb. 21, 1975, Ser. No. 551,734

Int. Cl.^{2} A61K *31/505*

U.S. Cl. 424—251 **11 Claims**

1. The method of effecting bronchodilation in animals comprising administering to an animal a bronchodilating effective amount of a compound of the formula:

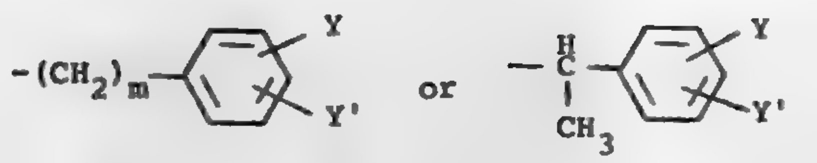


wherein each of R_1 and R_2 is, independently, hydrogen, fluoro, chloro or alkyl of 1 to 3 carbon atoms, or are either both hydroxy or both an alkoxy of 1 to 2 carbon atoms; or one is hydrogen and the other bromo, hydroxy or alkoxy of 1 to 2 carbon atoms;

n is 0 or 1,

each of R_3, R_3', R_4 and R_4' is hydrogen or alkyl of 1 to 3 carbon atoms provided that at least one but not more than three of R_3, R_3', R_4 and R_4' is alkyl,

R is alkyl of 1 to 5 carbon atoms,



m is 1 or 2, and

each of Y and Y' is, independently, hydrogen, fluoro, chloro or alkyl of 1 to 3 carbon atoms, or either both are hydroxy or both alkoxy of 1 to 2 carbon atoms; or one is hydrogen and the other bromo, hydroxy or alkoxy of 1 or 2 carbon atoms, provided that no more than two of R_1, R_2, Y and Y' are hydroxy, further provided that neither of R_1 and R_2 is hydroxy when either of Y and Y' is alkoxy and further provided that neither of Y and Y' is hydroxy when either of R_1 and R_2 is alkoxy, or a pharmaceutically acceptable acid addition salt thereof.

3,982,001

4-(3.4-METHYLENE DIOXY PHENYL)-PIPERIDINES

Wilhelm Heffe, Neuenegg; Fritz Hunziker, and Klaus Thoma, both of Berne, all of Switzerland, assignors to Sandoz, Inc., E. Hanover, N.J.

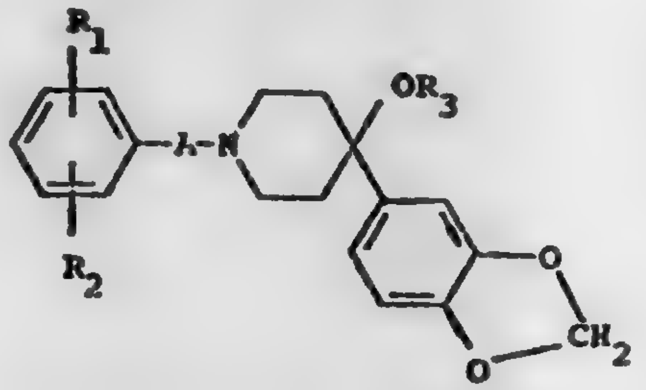
Filed Sept. 19, 1974, Ser. No. 507,449

Claims priority, application Switzerland, Sept. 25, 1973, 13718/73

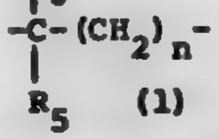
Int. Cl.^{2} C07D *405/04*

U.S. Cl. 424—267 **39 Claims**

1. A compound of the formula,

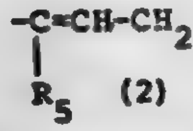


wherein R_1 and R_2 are the same or different and are in each case hydrogen, halogen, lower alkyl, hydroxy or lower alkoxy R_3 is hydrogen and A stands for groups of formula



$$-\overset{R_6}{\underset{R_5}{C}}-(CH_2)_n- \quad (1)$$

or



$$-\underset{R_5}{C}=CH-CH_2- \quad (2)$$

wherein R_5 and R_6 are independently, hydrogen or methyl and n is 0,1 or 2, or a pharmaceutically acceptable acid addition. salt thereof.

3,982,002

VINCAMINE 2-KETOGLUTARATE AND COMPOSITIONS CONTAINING VINCAMINE 2-KETOGLUTARATE

Fernando Montoro; Antonio Vila-Coro, and Jose Calatayud, all of Madrid, Spain, assignors to Especialidades Latinas Medicamentos Universales S.A., Madrid, Spain

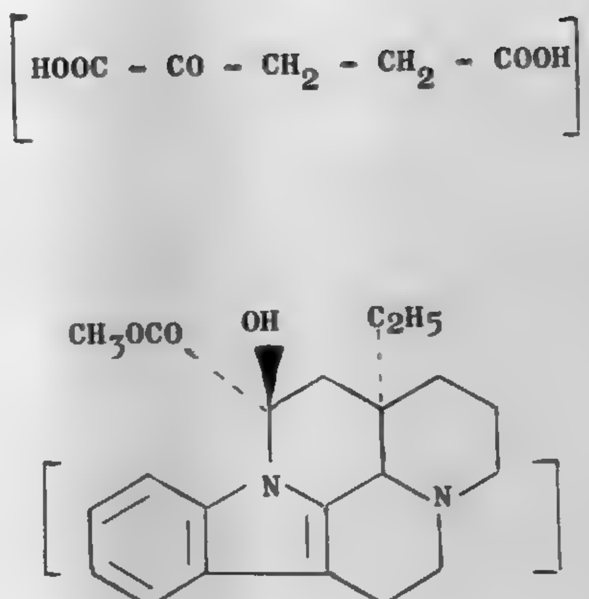
Filed Feb. 5, 1975, Ser. No. 547,191

Claims priority, application France, Sept. 6, 1974, 74.30299

Int. Cl.^{2} C07D *401/04*

U.S. Cl. 424—267 **3 Claims**

1. Vincamine 2-ketoglutarate of the following formula:



3,982,003

GELLING AND THICKENING AGENTS

John Richard Mitchell, East Leake; Keith Buckley, Melton Mowbray, and Ian Edward Burrows, Gaddesby, all of England, assignors to Mars Limited, London, England

Filed Apr. 14, 1975, Ser. No. 568,118

Claims priority, application United Kingdom, Sept. 4, 1974, 38663/74; Oct. 8, 1974, 43500/74

Int. Cl.^{2} A23L *1/04;* **A23K** *1/10*

U.S. Cl. 426—1 **23 Claims**

1. A food product comprising solid foodstuff and an aqueous phase, the aqueous phase having a pH value in the range 5 to 8.5 and being thickened or gelled by a deesterified natural pectin source material containing at least 5% pectic substance having a degree of esterification below 20%.

3,982,004

METHOD OF MANUFACTURING EDIBLE SOY PROTEIN-CONTAINING, SIMULATED MEAT PRODUCT

Shizuo Obata, Kashiwara; Yukiomi Yamato, and Hitoshi Taniguchi, both of Osaka, all of Japan, assignors to Fuji Oil Company, Ltd., Japan

Filed Mar. 4, 1975, Ser. No. 555,130

Claims priority, application Japan, Mar. 11, 1974, 49-28225

Int. Cl.^{2} A23L *1/31;* **A23J** *3/00*

U.S. Cl. 426—641 **11 Claims**

1. A method of manufacturing an edible soy protein containing, simulated meat product, which comprises mixing 10 to 50% by weight a fibrous soy protein product of fibril structure having a random orientation obtained by heating a slurry of proteinaceous material through a heat exchanger under high pressure with subsequent cooling and pumping into a collecting zone so as to produce elongated filaments of multimolecular polymers with 90 to 50% by weight of a non-textured protein paste capable of gelation when heated, shaping the mixture of said fibrous soy protein product and said non-textured material and subsequently heat-treating said shaped mixture to produce said simulated meat product.

3,982,005

2-TETRAHYDROFURFURYL-5-(METHYL OR PHENYL)-9β-METHYL-2′-OXY-6,7-BENZOMORPHANS AND SALTS THEREOF

Herbert Merz; Adolf Langbein, both of Ingelheim am Rhein; Gerhard Walther, and Klaus Stockhaus, both of Bingen (Rhine), all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

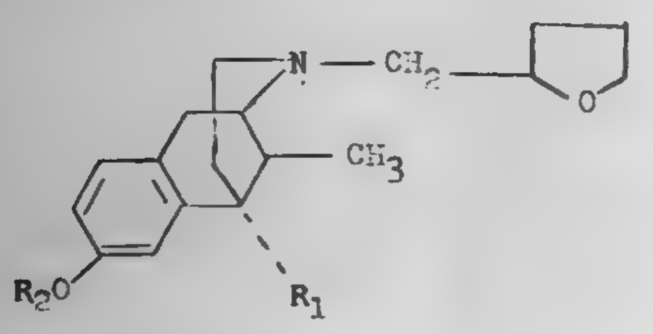
Filed July 30, 1975, Ser. No. 600,374

Claims priority, application Germany, Aug. 5, 1974, 2437610

Int. Cl.² C07D *221/26*

U.S. Cl. 424—267 11 Claims

1. A compound of the formula



wherein R_1 is methyl or phenyl, and
R_2 is hydrogen, methyl or acetyl,
or a non-toxic, pharmacologically acceptable acid addition salt thereof.

3,982,006

M-PHENYLENE DIOXAMIC ACID DERIVATIVES

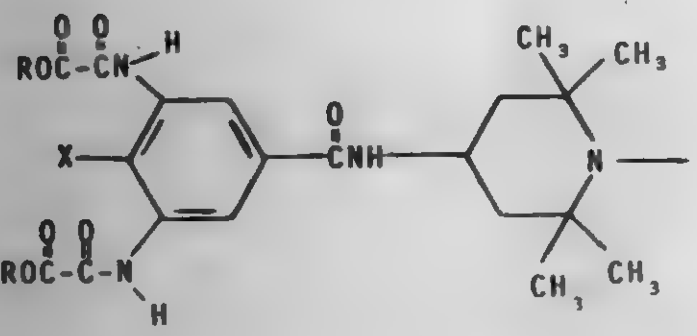
Charles M. Hall, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 1, 1975, Ser. No. 618,508

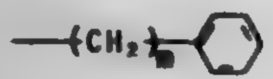
Int. Cl.² C07D *211/94, 211/66*

U.S. Cl. 424—267 11 Claims

1. A compound of the formula

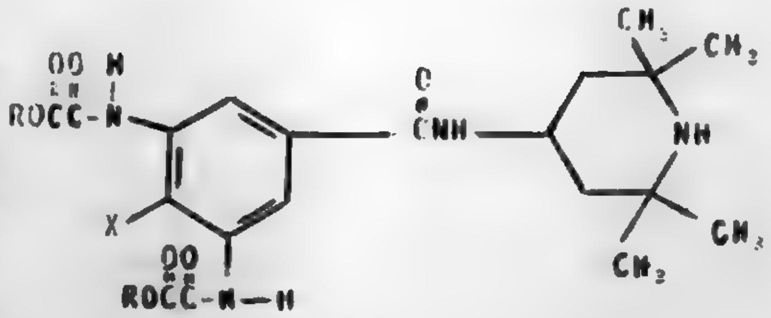


wherein R is selected from the group consisting of hydrogen, alkyl of one to eight carbon atoms, inclusive,

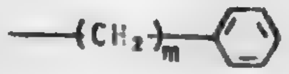


wherein *m* is 1 or 2 and a physiologically acceptable metal or amine cation;
X is selected from the group consisting of hydrogen, methyl, fluoro, chloro and bromo.

7. A compound of the formula



or a physiologically acceptable acid addition salt thereof wherein R is selected from the group consisting of hydrogen, alkyl of one to eight carbon atoms, inclusive,



wherein *m* is 1 or 2 and a physiologically acceptable metal or amine cation;
X is selected from the group consisting of hydrogen, methyl, fluoro, chloro and bromo.

3,982,007

SYNERGISTIC COMPOSITIONS

Georg Laber, and Eberhard Schutze, both of Vienna, Austria, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 386,847, Aug. 8, 1973, abandoned. This application Feb. 6, 1975, Ser. No. 547,545

Claims priority, application Switzerland, Aug. 14, 1972, 12008/72

Int. Cl.² A61K *31/425*

U.S. Cl. 424—270 7 Claims

1. A pharmaceutical composition useful in combatting fungi, bacteria or protozoa which comprises a first compound 6-chlorobenzisothiazolinone in free base or pharmaceutically acceptable acid addition salt form in combination with a second compound selected from the group consisting of 2-(2-chlorophenyl)-3-(5-nitro-2-furyl) acrolein guanylhydrazone, 2-(4-bromophenyl)-3-(5-nitro-2-furyl) acrolein guanylhydrazone, and 2-(4-chlorophenyl)-3-(5-nitro-2-furyl) acrolein guanylhydrazone, in free base or pharmaceutically acceptable acid addition salt form as the active ingredients said first compound being present in an amount of from 10 to 90% and said second compound being present in an amount of from 90 to 10% based on total weight of the active ingredients.

3,982,008

CALCIUM PHOSPHATE AND CALCIUMCHLOROPHOSPHATE COMPOSITIONS

Ashok Babubhai Amin, Ahmedabad, India, assignor to American Cyanamid Company, Stamford, Conn.

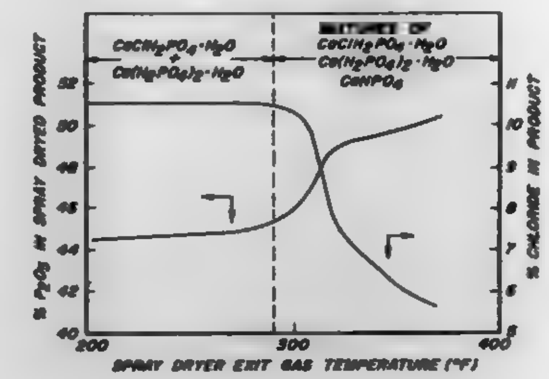
Continuation-in-part of Ser. No. 170,941, Aug. 11, 1971, which is a division of Ser. No. 791,944, Jan. 17, 1969, Pat. No. 3,652,206. This application Nov. 9, 1973, Ser. No. 414,588

Int. Cl.² A23K *1/175*

U.S. Cl. 426—2 2 Claims

2. A method for supplementing the phosphorus content in an animal's diet which comprises administering to the animal in the diet fed to the animal biologically acceptable amounts

of a composition comprising between about 1–73% monocalcium phosphate, 4–21% anhydrous dicalcium phosphate and 22–95% calcium chlorophosphate, the composition having a P/F ratio of 100 or greater.



3,982,009

GRAPE FLAVOR COMPOSITIONS, FOODSTUFFS AND CHEWING GUM CONTAINING BIS (CYCLOHEXYL) DISULFIDE AND METHODS FOR PRODUCING SAME

Gary Slangan, Toms River; Alan O. Pittet, Atlantic Highlands; Christopher Giacino, Califon; Denis E. Hruza, Sr., Bricktown, all of N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 518,818, Oct. 29, 1974, Pat. No. 3,917,870, which is a continuation-in-part of Ser. No. 401,665, Sept. 28, 1973, abandoned. This application Aug. 12, 1975, Ser. No. 603,918

Int. Cl.² A23L *1/235*

U.S. Cl. 426—3 2 Claims

1. A process for augmenting or enhancing the grape flavor or aroma of a foodstuff or a chewing gum which comprises adding thereto from 0.2 parts per billion up to 1000 parts per million of bis (cyclohexyl) disulfide based on the total weight of said foodstuff or chewing gum.

3,982,010

THIAZOLE CARDIOVASCULAR AGENTS

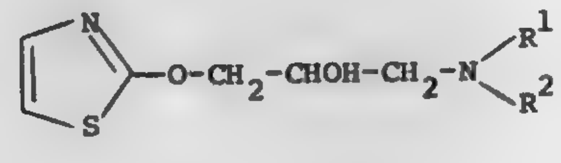
John A. Edwards, Los Altos, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 289,730, Sept. 15, 1972, Pat. No. 3,850,945, which is a continuation-in-part of Ser. No. 193,172, Oct. 27, 1971, abandoned. This application Sept. 19, 1974, Ser. No. 507,651

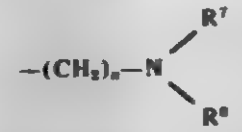
Int. Cl.² A61K *31/425*

U.S. Cl. 424—270 7 Claims

1. A pharmaceutical composition, for treating cardiovascular disorders in mammals by stimulating β-adrenergic receptor sites, consisting essentially of a pharmaceutically acceptable carrier and an effective amount of β-adrenergic stimulating agent selected from the group consisting of a pharmaceutically acceptable salt of a compound having the formula



wherein one of R^1 or R^2 is hydrogen and the other is selected from the group consisting of hydrogen, lower alkyl, cycloalkyl having 3 through 7 ring atoms, lower alkenyl, phenyl, phenylalkyl having up to 12 carbon atoms, alkylphenyl having up to 12 carbon atoms, α-methyl-β-phenylethyl, β-(3,4-dimethoxyphenyl)-ethyl, hydroxy lower alkyl, (lower alkoxy) lower alkyl, and the groups having the formulas —R′X or



$$-(CH_2)_n-N\begin{matrix} R^7 \\ \\ R^8 \end{matrix}$$

wherein R′ is lower alkyl, X is morpholine, piperidine or pyrrolidine, R^7 and R^8 are independently hydrogen or lower alkyl and *n* is a whole integer of from 1 through 4; and mixtures thereof.

3,982,011

PENICILLINS

Gunter Schmidt, and Karl Georg Metzger, both of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Germany

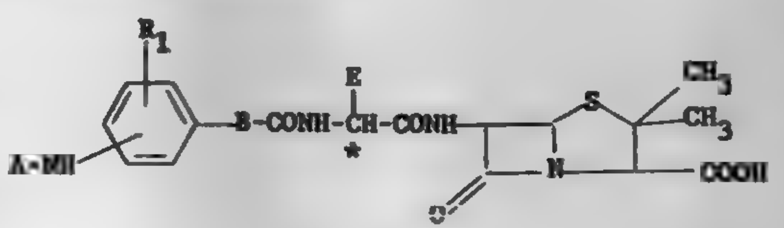
Division of Ser. No. 419,950, Nov. 29, 1973, Pat. No. 3,931,153. This application June 11, 1975, Ser. No. 585,890

Claims priority, application Germany, Dec. 8, 1972, 2260118

Int. Cl.² C07D *499/68, 499/70*

U.S. Cl. 424—271 21 Claims

1. A pharmaceutical composition for combatting infections in animals and humans comprising an antibacterially effective amount of a compound selected from the group consisting of a penicillin of the formula:



and the pharmaceutically acceptable nontoxic salts thereof wherein

- the carbon atom designated by * is asymmetrically substituted;
- R_1 is hydrogen, halo, lower alkyl, hydroxy, nitro or A—NH—;
- A is R_3CO— or R_4CS— in which
  - R_3 is hydrogen; lower alkyl; halo(lower alkyl); cycloalkyl of 3 to 11 carbon atoms unsubstituted or substituted by hydroxy or alkyl of 1 or 2 carbon atoms; cycloalkenyl of 3 to 11 carbon atoms; bicycloalkyl of up to 8 carbon atoms; bicyloalkenyl of up to 8 carbon atoms; aryl of 6 to 10 carbon atoms, unsubstituted or substituted by from 1 to 3 substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, nitro, amino and alkylsulfonyl of 1 to 4 carbon atoms, or substituted by methylenedioxy, azidoaryl of 6 to 10 carbon atoms; azido(lower alkyl); amino; or thienyl; and
  - R_4 is lower alkylamino or arylamino of 6 to 10 carbon atoms;
- B is a direct bond or —CH=CH-; and
- E is phenyl; phenyl substituted by hydroxy, azido, lower alkyl, lower alkoxy, lower alkylthio or chloro; or thienyl,

in combination with a pharmaceutical carrier.

3,982,012
4-HYDROXY-BENZIMIDAZOLE COMPOUNDS AND THERAPEUTIC COMPOSITIONS

Erich Fauland, Mannheim-Gartenstadt; Wolfgang Kampe, Heddesheim; Max Thiel, Mannheim; Wolfgang Bartsch, Viernheim, and Wolfgang Schaumann, Heidelberg, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim, Germany

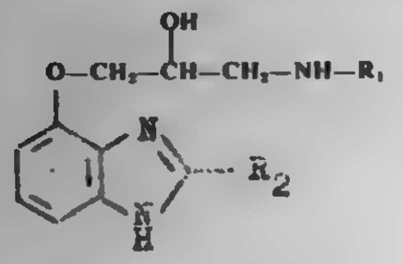
Filed June 10, 1975, Ser. No. 585,645

Claims priority, application Germany, July 5, 1974, 2432269

Int. Cl.^{2} C07D *235/08*

U.S. Cl. 424—273 14 Claims

1. 4-Hydroxy-benzimidazole compound of the formula:



(I)

wherein

R$_1$ is straight-chained or branched alkyl of up to 6 carbon atoms and

R$_2$ is hydrogen atom or lower alkyl of up to 3 carbon atoms and the pharmacologically compatible salts thereof.

3,982,013
5-PHENYLVINYLFURFURYLESTER OF CHRYSANTHEMUMIC ACID

Yoshio Katsuda, Osaka, Japan, assignor to Dainippon Jochugiku Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 399,418, Sept. 21, 1973, Pat. No. 3,932,470, which is a division of Ser. No. 112,061, Feb. 2, 1971, Pat. No. 3,796,730. This application July 30, 1975, Ser. No. 600,423

Claims priority, application Japan, June 28, 1966, 41-42289; Aug. 24, 1966, 41-55930; Dec. 23, 1966, 41-84365

Int. Cl.^{2} C07D *307/12*

U.S. Cl. 424—285 5 Claims

1. 5-phenylvinyl-furfurylester of chrysanthemumic acid.

3,982,014
ARTHROPOD MATURATION INHIBITORS

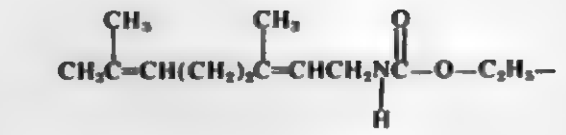
Meyer Schwarz, Kensington; Philip E. Sonnet, Bowie, and Nobel Wakabayashi, New Carrollton, all of Md., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 436,239, Jan. 24, 1974, Pat. No. 3,904,773, which is a division of Ser. No. 104,781, Jan. 7, 1971, Pat. No. 3,824,319. This application Mar. 24, 1975, Ser. No. 561,586

Int. Cl.^{2} A01N *9/12*

U.S. Cl. 424—300 2 Claims

1. A method of preventing the maturation of *Tenebrio molitor pupae* comprising applying to the pupae a maturation inhibiting amount of a compound of the formula



$$\mathrm{CH_3\overset{\overset{CH_3}{|}}{C}=CH(CH_2)_2\overset{\overset{CH_3}{|}}{C}=CHCH_2\underset{\underset{H}{|}}{N}\overset{\overset{O}{\|}}{C}-O-C_2H_5-}$$

3,982,015
N-PROPARGYL-ANILINOMETHYLENEMALODINITRILE DERIVATIVES

Jozef Drabek, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

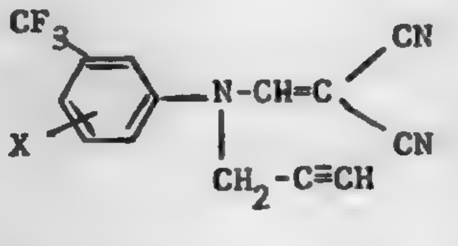
Filed Aug. 5, 1975, Ser. No. 602,055

Claims priority, application Switzerland, Aug. 14, 1974, 11137/74; Aug. 14, 1974, 11138/74; June 25, 1975, 8253/75

Int. Cl.^{2} A01N *9/20;* C07C *121/78*

U.S. Cl. 424—304 15 Claims

1. Compounds of the formula I



(I)

wherein X represents trifluoromethyl, chlorine, fluorine, bromine or iodine.

7. An insecticidal composition which contains as active component an insecticidally effective amount of a compound according to claim 1, together with a suitable carrier therefor.

3,982,016
BONE DEPOSITION BY 16-ARYL-13,14-DIHYDRO-PGE$_2$ p-BIPHENYL ESTERS

Alexander H. Walsh, Old Saybrook, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Aug. 6, 1975, Ser. No. 602,478

Int. Cl.^{2} A61K *31/215, 31/19*

U.S. Cl. 424—305 2 Claims

1. A method for increasing bone deposition for the treatment of osteopenia which comprises administering to a subject afflicted with bone loss a bone deposition increasing amount of a 16-aryl-13,14-dihydro-PGE$_2$ p-biphenyl ester wherein the aryl group of said 13,14-dihydro-PGE$_2$ p-biphenyl ester is phenyl; α- or β-naphthyl; dimethoxy phenyl; 3,4-methylenedioxyphenyl; 3,4,5-trimethoxyphenyl or mono-substituted phenyl wherein said substituent is chlorine, bromine, fluorine, trifluoromethyl, phenyl, methyl or methoxy.

3,982,017
INJECTABLE SOLUTIONS AND PROCESSES OF USING SUCH

Geraldine H. Thiele, R.D. 1, Box 191B, New Oxford, Pa. 17350

Continuation-in-part of Ser. No. 369,236, June 12, 1973, Pat. No. 3,924,000, which is a continuation-in-part of Ser. Nos. 113,362, Feb. 8, 1971, Pat. No. 3,741,204, and Ser. No. 123,830, March 12, 1971, Pat. No. 3,767,812, which is a continuation-in-part of said Ser. No. 113,362, said Ser. No. 369,236, is a continuation-in-part of Ser. No. 283,662, Aug. 25, 1972, Pat. No. 3,805,776, which is a continuation-in-part of Ser. No. 113,362, said Ser. No. 123,830, is a continuation-in-part of said Ser. No. 283,662, and said Ser. No. 283,663. This application June 25, 1974, Ser. No. 483,010

The portion of the term of this patent subsequent to June 26, 1990, has been disclaimed.

Int. Cl.^{2} A61K *31/20*

U.S. Cl. 424—318 14 Claims

1. A liquefied composition having a pH between 9 and 10 which consists of (i) 1 to 10 percent of sodium oleate, said sodium oleate being a non-necrotic sclerosing fatty acid salt, (ii) 0.1 to 5 percent of ethanol, (iii) a buffer, enough of said buffer being present to adjust the pH to the stated range, and (iv) water, said water being a liquid carrier.

3,982,018
4-ETHERS OF 3-AMINO-5-SULFAMOYLBENZOIC ACIDS

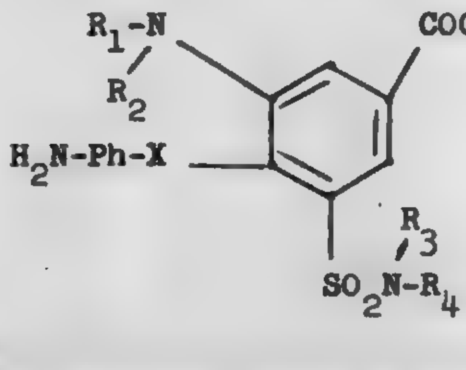
Lincoln Harvey Werner, Summit, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 386,828, Aug. 8, 1973, which is a continuation-in-part of Ser. No. 297,530, Oct. 13, 1972, Pat. No. 3,939,267. This application Oct. 4, 1974, Ser. No. 511,977

Int. Cl.^{2} A01N *9/20;* C07C *149/40*

U.S. Cl. 424—319 8 Claims

1. A 4-phenylether of the 3-amino-5-sulfamoylbenzoic acid corresponding to the formula



(I)

in which Ph is unsubstituted phenylene or phenylene substituted by one or two lower alkyl groups, R$_1$ is H-Ph-lower alkyl or H-Ph-lower akenyl, R$_2$ is hydrogen lower alkyl, lower alkenyl or lower alkynyl, R$_3$ is hydrogen or lower alkyl, X is sulfur, and R$_4$ is hydrogen or lower alkyl, or therapeutically useful ammonium, alkali or alkaline earth metal or acid addition salts thereof.

3,982,019
INSECTICIDAL COMPOSITIONS CONTAINING TRIFLUOROMETHYL UREAS AND METHOD OF CONTROLLING INSECTS USING SAID COMPOSITIONS

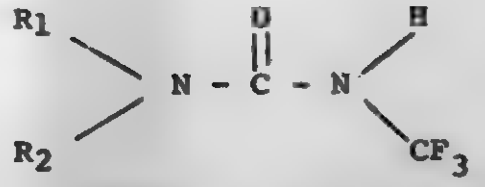
Sidney B. Richter, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 745,384, July 17, 1968, Pat. No. 3,895,061. This application Feb. 18, 1975, Ser. No. 545,651

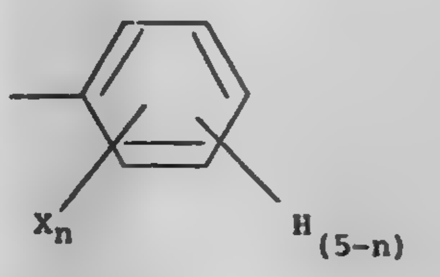
Int. Cl.^{2} A01N *9/20*

U.S. Cl. 424—322 2 Claims

1. An insecticidal composition comprising an inert carrier and, in a quantity toxic to insects, a compound of the formula



wherein R$_1$ is selected from the group consisting of alkyl having up to 10 carbon atoms, alkenyl having up to 10 carbon atoms, cycloalkyl having from 4 to 8 carbon atoms and



wherein X is selected from the group consisting of lower alkyl, lower alkenyl, chlorine, bromine, lower alkoxy, lower alkylthio, di (lower alkyl) amino, nitro, cyano and thiocyano; *n* is an integer from 0 to 3; and R$_2$ is selected from the group consisting of hydrogen and R$_1$.

3,982,020
SUBSTITUTED BENZYLIDENE HYDRAZINES FOR TREATING HYPERGLYCEMIA, OBESITY AND INFLAMMATION

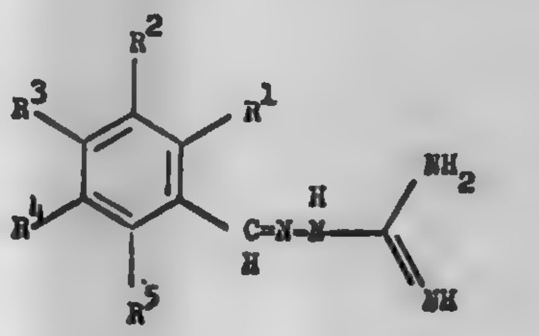
William J. Houlihan, and Robert E. Manning, both of Mountain Lakes, N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 20,418, March 17, 1970, abandoned, which is a continuation-in-part of Ser. No. 825,412, May 16, 1969, abandoned. This application Sept. 5, 1972, Ser. No. 286,320

Int. Cl.^{2} A61K *31/155*

U.S. Cl. 424—326 2 Claims

1. A method of treating hyperglycemia, obesity and inflammation which comprises administering to a mammal in need of said treatment orally or parenterally an anti-hyperglycemic, an anti-obesity or an anti-inflammatory effective amount of a compound of the formula:



where

R^1, R^2, R^3, R^4 and R^5 are H, halo having an atomic weight of 19 to 36, trifluoromethyl, phenyl or lower alkyl, provided that

1. there are no adjacent trifluoromethyl or phenyl groups,
2. at least one of R^1, R^2, R^3, R^4 or R^5 must be other than H,
3. R^1, R^2 or R^4 is not trifluoromethyl when R^1, R^2, R^4 or R^5 are only H, halo or trifluoromethyl and R^3 is H, and
4. both R^1 and R^5 are methyl, only, when R^2, R^3 and R^4 are other than hydrogen,

or a pharmaceutically acceptable acid addition salt thereof.

3,982,021

COMPOSITIONS FOR THE TREATMENT OF CORONARY DISEASES CONTAINING TETRAHYDRONAPHTHYLOXY-AMINOPROPANOLS

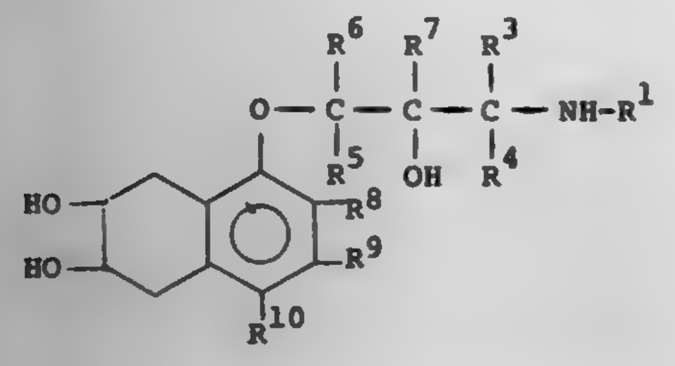
Frederic P. Hauck, Somerville; Christopher M. Cimarusti, Hamilton, and Venkatachala L. Narayanan, Hightstown, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 203,865, Dec. 1, 1971, Pat. No. 3,935,267, which is a continuation-in-part of Ser. No. 48,458, June 22, 1970, abandoned. This application Oct. 9, 1975, Ser. No. 621,176

Int. Cl.^{2} A61K *31/135*

U.S. Cl. 424—330 **4 Claims**

1. A pharmaceutical composition useful for the treatment of coronary diseases in mammalian species in need thereof, comprising an effective amount of a compound having the structure



or a stereoisomer or salt thereof, wherein R^1 is lower alkyl; R^3, R^4, R^5, R^6 and R^7 are the same or different and are hydrogen or lower alkyl; and R^8, R^9 and R^{10} are the same or different and are hydrogen, lower alkyl, lower alkoxy or cycloalkyl; and a pharmaceutically acceptable carrier therefor.

3,982,022

SYNERGISTIC COMPOSITION FOR THE CONTROL OF BACTERIA

Gerhard Hoel, Basel, Switzerland, and Hans Kundig, Johannesburg, South Africa, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 146,854, May 25, 1971, abandoned. This application May 15, 1974, Ser. No. 469,993

Claims priority, application Belgium, May 26, 1970, 89520

Int. Cl.^{2} A01N *9/24;* A61K *31/09*

U.S. Cl. 424—341 **4 Claims**

1. A composition for the control of bacteria comprising antibacterially effective amounts of 5-chloro-2-(2,4-dichlorophenoxy)-phenol and phenethyl alcohol in a proportion within the range of 3 to 1 and 1 to 5.

3,982,023

CHEWING GUMS OF LONGER LASTING SWEETNESS AND FLAVOR

Bernard J. Bahoshy, Mahopac; Robert E. Klose, West Nyack, both of N.Y., and Harold A. Nordstrom, Reading, Mass., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 295,313, Oct. 5, 1972, Pat. No. 3,943,258. This application Dec. 29, 1975, Ser. No. 644,705

Int. Cl.^{2} A23G *3/30*

U.S. Cl. 426—3 **6 Claims**

1. In a sweetened chewing gum composition which comprises gum base, flavor and major amount of sweet bulking agent selected from the group consisting of sugar, sugar alcohols and mixtures thereof and a non-dipeptide artificial sweetener in an amount sufficient to impart normal sweetness to a said gum the improvement which comprises at least 0.1% L-asparty lL-phenylalanine methyl ester by weight of the total gum composition whereby the normal sweetness and flavor is extended.

3,982,024

PRESERVATION OF ALCOHOLIC BEVERAGES

Miguel Maximo Oneto, Araoz 2260, Buenos Aires, Argentina

Filed June 23, 1972, Ser. No. 265,476

Claims priority, application Argentina, June 25, 1971, 236460; May 15, 1972, 242010; May 15, 1972, 242011

Int. Cl.^{2} C12G *1/00;* C12C *11/04*

U.S. Cl. 426—15 **10 Claims**

1. A method for the preservation of alcoholic beverages from a fermentation juice of at least one neutral fermentable sugar comprising the steps of mechanically removing from said beverage the microorganisms which cause disease in said beverage and any suspended material containing such organisms, and subsequently bottling and sealing said beverage, the step of removing said microorganisms and all subsequent treatment of the beverage including its bottling and sealing being done in a circuit free of air.

3,982,025

SOY CHEESE SPREAD AND PROCESS FOR PREPARING SAME

Yukio Hashimoto, Izumiotsu, and Fumiyuki Sunada, Osaka, both of Japan, assignors to Fuji Oil Company, Ltd., Osaka, Japan

Filed Dec. 9, 1974, Ser. No. 530,850

Claims priority, application Japan, Dec. 11, 1973, 48-139191

Int. Cl.^{2} A23L *1/20*

U.S. Cl. 426—46 **8 Claims**

1. A method for making a spreadable soy cheese product without using dairy product ingredients comprising

admixing an aged soy cheese, prepared by fermenting a soy milk with a lactic acid-forming cheese starter culture to form a curd, cooking said curd, and aging said cooked curd, with about 45 to 60 weight % of an edible oil or fat, based on the weight of the dry solids in said soy cheese, a cheese emulsifying melting salt and a sufficient quantity of water to provide a content thereof in said product of about 50 to about 75 weight %, based on the total weight of said product; and

vigorously agitating the resulting mixture at an elevated temperature with sufficient mechanical shearing force to form the ingredients thereof into a liquefied, homogeneous emulsion, without causing gellation of soy globulin contained in said soy cheese, thereby forming a spreadable soy cheese product having a paste-like consistency.

3,982,026

SILAGE AID

Rudolf Fahnenstich, Mombris; Wilhelm Schuler, Bad Homburg; Herbert Tanner, Hanau, and Otto Weiberg, Neu-Isenburg, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Continuation-in-part of Ser. No. 558,685, March 17, 1975, abandoned. This application Mar. 18, 1975, Ser. No. 559,495

Claims priority, application Germany, Mar. 16, 1974, 2412834

Int. Cl.^{2} A23K *1/00, 3/03*

U.S. Cl. 426—54 **12 Claims**

1. Silage containing as an additive thereto 0.01 to 5% a propylene glycol ester of propionic acid.

3,982,027

METHOD FOR PRODUCING A FEEDING STUFF SUITABLE FOR RUMINANTS

Claus Michael Valeur, Olstykke; Peter Bisgaard-Jespersen, Birkerod, and Henning Bernstorff Schrøder, Stenlose, all of Denmark, assignors to Dansk Landbrugs Grovvareselskab A.m.b.A., Copenhagen, Denmark

Filed Sept. 18, 1974, Ser. No. 507,023

Claims priority, application Denmark, Sept. 21, 1973, 5174/73

Int. Cl.^{2} A23K *1/22*

U.S. Cl. 426—69 **8 Claims**

1. A method of manufacturing a feed stuff suitable for ruminants comprising forming a liquid mixture, containing one part by weight of urea, 0.2 to 1.5 parts by weight of acetic acid, 3 to 0.25 parts by weight of molasses and water in an effective amount up to 50 percent by weight of the total liquid mixture, and intimately mixing said liquid mixture with a finely divided or ground starchy material in such proportions that the liquid mixture will amount to 15–30 percent by weight of the total mix.

3,982,028

PRESERVATIVES FOR FORAGE, HAY, GRAIN AND ANIMAL FEEDS

Francis Bellingham, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sept. 13, 1973, Ser. No. 396,666

Claims priority, application United Kingdom, Sept. 14, 1972, 42690/72

Int. Cl.^{2} A23K *1/00*

U.S. Cl. 426—69 **7 Claims**

1. Animal feedstuffs selected from the group consisting of compound feeds, feed blocks, liquid feed supplements, drenches, slow release pellets, ensiled green fodder, hay and grain, containing a mixture of isobutyraldehyde with a substance selected from the group consisting of AGS (Adipicglutaric-succinic) acid, acetic acid, formalin, sulphuric acid, and trioxane or a chlorinated mixture of isobutyraldehyde with urea.

3,982,029

PACKAGE INTENDED FOR PRESSURIZED CONTENTS

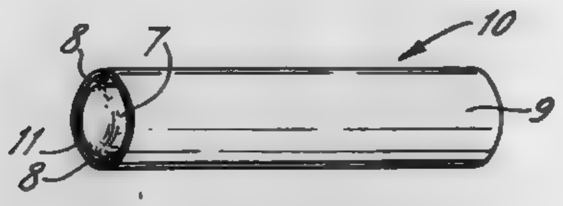
Gad A. Rausing, Lund, Sweden, assignor to Sobrefina SA, Fribourg, Sweden

Filed Oct. 10, 1973, Ser. No. 405,007

Claims priority, application Switzerland, Oct. 17, 1972, 15144/72

Int. Cl.^{2} B65D *5/40, 5/56;* B65B *31/02*

U.S. Cl. 426—106 **3 Claims**



1. Package of pressurized fluid comprising at least one inner container of plastic material, a filling of pressurized fluent material within the inner container, an open-ended outer shell surrounding the inner container of a non-extensible material, wherein the inner container consists of a piece of a plastic film tube sealed off along two flat sealing seams arranged at a distance from one another transversely to the tube, the length of the sealing seams appreciably exceeding the distance between them, said sealing seams along their entire length being in contact with the inside of said shell in such a way that the sealing seams are mechanically supported by the shell in order to prevent the sealing seams from being broken by the pressure inside the inner container.

3,982,030

PRESERVATION OF CRUSTACEA

D. Luis Gutierrez Alsina, Valencia, Spain, assignor to Gutix S.A., Valencia, Spain

Filed Apr. 16, 1974, Ser. No. 461,294

Claims priority, application Spain, May 14, 1973, 414753

Int. Cl.^{2} A23B *4/02*

U.S. Cl. 426—269 **3 Claims**

1. A composition for preserving crustacea by preventing melanosis, consisting essentially of about 25 to 35% by weight of magnesium carbonate, about 40 to 60% by weight of citric acid and about 15 to 25% by weight of a metabisulfite selected from the group consisting of sodium and potassium metabisulfite and mixtures thereof.

3,982,031

ALUM TANNING PROCESS FOR EDIBLE COLLAGEN CASING

Noel Ian Burke, Danville, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.

Filed Nov. 3, 1975, Ser. No. 628,260

Int. Cl.^{2} A22C *13/00*

U.S. Cl. 426—273 **7 Claims**

1. In a process for producing an edible collagen casing which comprises extruding an aqueous collagen slurry through a die into an aqueous coagulating medium to form a collagen casing, tanning the coagulated casing in a tanning bath containing aluminum salts and drying to produce an edible casing product, the improvement for tanning the collagen casing which comprises immersing the coagulated casing in a tanning bath which is free of any aluminum chelating agents and contains an admixture of aluminum ammonium sulfate and monobasic aluminum sulfate at a molar ratio in the range of 1:2 to 2:1, the aluminum ammonium sulfate being present in the bath in an effective amount at a concentration of less than 3% by weight.

3,982,032

PROCESS FOR THE PRODUCTION OF RICE CRACKERS

Eiji Koizumi, Niigata, Kamedamachi, Japan, assignor to Kameda Seika Co., Ltd., Japan

Continuation of Ser. No. 418,923, Nov. 26, 1973, abandoned. This application June 3, 1975, Ser. No. 583,428

Int. Cl.^{2} A21D *13/00*

U.S. Cl. 426—296 **3 Claims**

1. In a process for the production of rice-crackers using rice as the main raw material, said process consisting of washing the raw rice material; steaming and kneading the washed rice; cooling the material prepared by the steaming and kneading; extruding and cutting the cooled material to a desired size, thickness and shape; drying the shaped material; and baking or frying the dried material, followed by seasoning and drying, the improvement comprising continuously collecting the waste wash water used in the washing step to wash the rice and recirculating it for further use in washing fresh raw rice material until the recirculated wash water reaches a contaminate concentration in terms of chemical oxygen demand of up to about 40,000 ppm.

3,982,033

PROCESS FOR COATING PIZZA SHELLS WITH SAUCE

Santo Zito, Los Angeles, Calif., assignor to Fairmont Foods Company, Culver City, Calif.

Continuation-in-part of Ser. No. 880,880, Nov. 28, 1969, Pat. No. 3,631,818. This application Aug. 24, 1971, Ser. No. 174,394

Int. Cl.^{2} A23L *1/00*

U.S. Cl. 426—302 **5 Claims**

1. A method for applying pizza sauce material to a plurality of pizza shells, comprising the steps of:

moving a plurality of pizza shells to a pizza sauce application position;
interrupting the movement of said pizza shells after said pizza shells reach said application position for a time period during which pizza sauce material is applied to said pizza shells;
measuring a volumetric quantity of pizza sauce material for application to the pizza shells;
supplying the measured quantity of pizza sauce material to a plurality of distribution nozzles during said time period the pizza shells are in the application position;
rotating the plurality of distribution nozzles over the pizza shells while the measured quantities of pizza sauce material are discharged therefrom; and
discharging the pizza sauce material from said distribution nozzles in a path extending along at least a substantial portion of the radii of the pizza shells while said distribution nozzles are rotated in a circle above the pizza shells.

3,982,034
FLAVORING WITH 2,4,6-TRIMETHYL-S-TRITHIANE

Richard Arnold Wilson, Edison; Ira Katz, Elberon; Manfred H. Vock, Locust, all of N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 166,683, July 28, 1971, abandoned. This application Mar. 21, 1975, Ser. No. 560,717

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 10, 1976

Int. Cl.^{2} A23L *1/231, 1/235, 1/226*

U.S. Cl. 426—535 **1 Claim**

1. A process for altering, modifying or enhancing the black currant flavor of a foodstuff having a black currant taste which comprises adding thereto from about 0.02 up to 100 parts per million by weight of a substantially pure form of 2,4,6-trimethyl-S-trithiane.

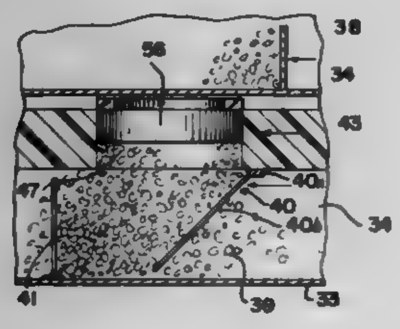
3,982,035
MOLDING APPARATUS AND METHOD

Gerald J. Orlowski, 7545 Ponderosa Court, Orland Park, Ill. 60462

Filed Sept. 20, 1974, Ser. No. 507,701

Int. Cl.^{2} A23G *3/00*

U.S. Cl. 426—454 **19 Claims**



1. A method forming a patty from a mass of agglomerable material comprising the steps of:
feeding agglomerable material into a hopper;
moving said material through said hopper and substantially upwardly into a mold position in communication with said hopper until said mold is filled with said material thereby forming a patty, said mold being located in a cavity and a plurality of said cavities being positioned in spaced radial relation around the center of a rotating turret, and a lower portion of each cavity, a working bottom face on a barrier means reciprocably mounted therein, and a mold bottom opening forming the surfaces of each mold,
moving said mold out of communication with said hopper by continued rotation of said turret,
reciprocating said barrier means through said cavity to collapse said mold and discharge said patty substantially downwardly therefrom through said mold bottom, and
separating said patty from said barrier means while maintaining the shape of the patty as formed by passing the interface of said patty and said barrier means across a wire cut-off means.

2. Apparatus for forming a plurality of uniformly shaped patties from a mass of agglomerable edible material comprising:
a frame,
a drive means retained on said frame,
a hopper attached to said frame for receiving a mass of agglomerable edible material,
a turret rotatably mounted to said frame and drivingly connected to said drive means including a plurality of cavities located in spaced angular and radial relation therearound, each cavity having a barrier means mounted for reciprocal movement axially therein, each said barrier means having a bottom surface coacting with a cavity to form a mold,
means in said hopper for moving agglomerable edible material through said hopper and substantially upwardly into said mold, filling it, and forming a patty therein as each mold opening is positioned in communication with said hopper during a portion of each turret rotation, and
means coacting with the turret reciprocating said barrier means through said cavity as said turret rotates to push a patty substantially downwardly out therefrom at a portion of rotation externally of said hopper,
and means connected to the frame for separating a patty from said barrier means in a manner preventing its deformation during separation.

3,982,036
CALCIUM PHOSPHATE AND CALCIUMCHLOROPHOSPHATE COMPOSITIONS

Ashok Babubhai Amin, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 170,938, Aug. 11, 1971, which is a division of Ser. No. 791,944, Jan. 17, 1969, Pat. No. 3,652,206. This application Oct. 15, 1973, Ser. No. 406,735

Int. Cl.^{2} A23B *4/04*

U.S. Cl. 426—471 **8 Claims**

1. A process for preparing a mixture of calcium phosphate and calcium chlorophosphate having a P/F ratio of 100 or greater which comprises:
spray-drying a solution comprising water, phosphoric acid, and calcium dichloride salt, the solution further characterized in having a solution P/F ratio of at least about 30 but less than 100 and a Ca/P mole ratio of which ranges from greater than 0.5 to about 1.0, the exit gas temperature of the spray dryer being from about 200°F. to about 380°F., and recovering the solid product therefrom.

3,982,037
PEELING FRUITS AND VEGETABLES BY MULTIPLE HEATINGS AND COOLINGS

Merle L. Weaver, Martinez; Charles C. Huxsoll, Moraga, and Robert P. Graham, El Cerrito, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 15, 1975, Ser. No. 541,318

Int. Cl.^{2} A23L *1/212*

U.S. Cl. 426—482 **6 Claims**

1. A process for peeling a product selected from the group of fruits and vegetables which are capable of skin-slipping, which comprises
subjecting the product to multiple heatings at a temperature of 212° F, each in the absence of any caustic or acid,

subjecting the product to cooling at a temperature of about 30° to 75° F. for a period of about 1 to 5 minutes, in the absence of any caustic or acid, immediately following each heating,
wherein each of said heatings is ineffective by itself to attain loosening of the skin on the product, but wherein the said multiple heatings in the aggregate and in conjunction with the subsequent coolings yield effective loosening of the skin without cooking of the flesh of the product, and
removing the so-loosened skin from the product.

3,982,038
METHODS FOR USING 3-FURYL β-CHALOCOGENALKYL SULFIDES FOR ALTERING THE ORGANOLEPTIC PROPERTIES OF FOODSTUFFS, AND COMPOSITIONS OF MATTER CONTAINING 3-FURYL β-CHALCOGENALKYL SULFIDES

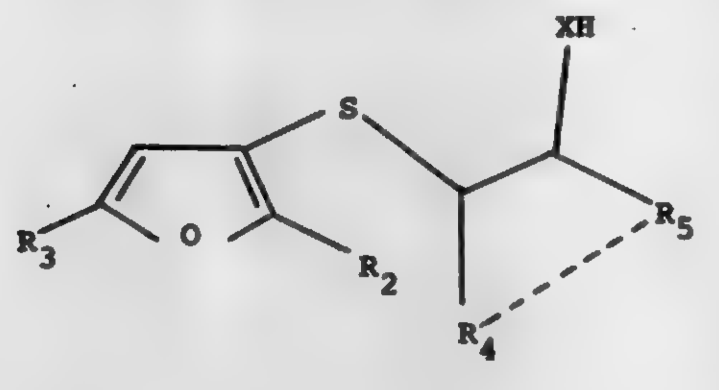
William J. Evers, Middletown; Igor A. Pelse, Long Branch, and Manfred Hugo Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 542,830, Jan. 21, 1975, Pat. No. 3,933,863. This application Sept. 17, 1975, Ser. No. 614,216

Int. Cl.^{2} A23L *1/231*

U.S. Cl. 426—535 **26 Claims**

1. A food flavor composition useful for augmenting or enhancing the meaty or nutty flavor of a foodstuff comprising from 0.5 ppm up to 90 percent by weight of said composition of a 3-furyl beta chalcogenalkyl sulfide having the structure:



wherein X is a chalcogen selected from the group consisting of oxygen and sulfur; R_2 and R_3 are each selected from the group consisting of methyl and hydrogen, at least one of R_2 or R_2 being methyl; and R_4 and R_5, taken separately, are each methyl, or R_4 and R_5 taken together, are tetramethylene, and when R_4 and R_5 taken together are tetramethylene, X and S are in a trans relationship, the remainder of said composition being one or more adjuvants which are both non-reactive and organoleptically compatible with said 3-furyl beta-chalcogenalkyl sulfide and which are selected from the group consisting of:
4-methyl-5-beta-hydroxyethyl thiazole;
2-Methyl butanethiol;
4-Mercapto-4-pentanone;
1-Mercapto-2-propanone;
Benzaldehyde:
Furfural;
Furfural alcohol;
2-Mercapto-propionic acid;
Alkyl pyrazine;
Methyl pyrazine;
2-Ethyl-3-methyl pyrazine;
Tetramethyl pyrazine;
Polysulfides;
Dipropyl disulfide;
Methyl benzyl disulfide;
Alkyl thiophenes;
2-Butyl thiophene;
2,3-Dimethyl thiophene;
5-Methyl furfural;
Acetyl furan;
2,4-Decadienal;
Guiacol;
Phenyl acetaldehyde;
δ-Limonene;
Acetoin;
Amyl acetate;
Maltol;
Ethyl butyrate;
Levulinic acid;
Piperonal;
Ethyl acetate;
n-Octanal;
n-Pentenal;
Hexanal;
Diacetyl
Monosodium glutamate;
Sulfur-containing amino acids;
Cysteine;
Hydrolyzed vegetable protein;
2-Methylfuran-3-thiol;
2-Methyldihydrofuran-3-thiol;
2,5-Dimethylfuran-3-thiol;
Hydrolyzed fish protein; and
Tetramethyl pyrazine.

3,982,039
USE OF MODIFIED WHEY SOLIDS AS MARGARINE ADDITIVE AND PRODUCT THEREOF

Gabriele E. Scibelli, New Rochelle, N.Y., and Joseph Vincent Feminella, Trumbull, Conn., assigners to Stauffer Chemical Company, Westport, Conn.

Filed Jan. 16, 1975, Ser. No. 541,559

Int. Cl.^{2} A23D *3/02*

U.S. Cl. 426—603 **8 Claims**

1. A margarine which comprises as an ingredient in its aqueous phase from about 0.5% to about 6%, by weight of the margarine, of the dried modified whey product which is formed by drying the second fraction which is obtained by passing partially delactosed cheese whey through the bed of a molecular sieve resin and which comprises a lactose content of from about 40% to about 50%, by weight, an ash content of from about 20% to about 30%, by weight, and a protein content to about 15% to about 20%, by weight.

3,982,040
EGG WHITE COMPOSITION

Robert Edward Oborn, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 16, 1975, Ser. No. 623,135

Int. Cl.^{2} A23L *1/32*

U.S. Cl. 426—614 **8 Claims**

1. An egg white composition comprising desugared egg white and from about 0.005% to about 1.0% by weight of the composition of an alkali metal bisulfite, said egg white composition being substantially dry.

3,982,041
HERMETICALLY SEALED RICE MIX

Gary J. Steen; Terrence A. Bedell, both of Houston, and Frank W. Myers, Cleveland, all of Tex., assignors to Riviana Foods Inc., Houston, Tex.

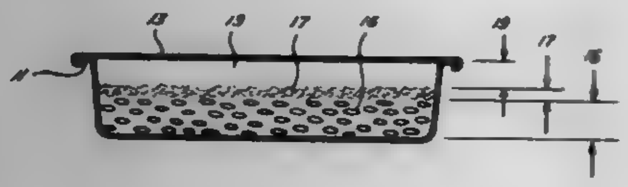
Filed July 1, 1974, Ser. No. 485,025

Int. Cl.^{2} B65D *85/70*

U.S. Cl. 426—618 **8 Claims**

1. A package of seasoned rice mix adapted for storage at ambient temperatures comprising an impervious container; a hygroscopic seasoning mix containing hydrolyzed vegetable protein in an amount between about 20% and about 50% by

weight of said hygroscopic seasoning mix; a dry precooked rice, said precooked rice having a moisture content as disposed in the container below about 5%; said dry precooked rice being from about 50% to about 95% of the rice mix net



weight and said hygroscopic seasoning mix ranging from about 5% to about 25% of the rice mix net weight; and means hermetically sealing said container with said rice and seasoning mix therein to prevent the entry of moisture into said container.

3,982,042
FROZEN CONFECTIONS MADE WITH STABILIZED COCOA-FLAVORED SYRUPS

Sidney Arden, Forest Hills, N.Y., assignor to Consolidated Foods Corporation, Englewood, N.J.

Division of Ser. No. 134,049, April 14, 1971, Pat. No. 3,821,420. This application Nov. 12, 1973, Ser. No. 415,093

The portion of the term of this patent subsequent to June 28, 1991, has been disclaimed.

Int. Cl.² A23G *1/00, 3/00*

U.S. Cl. 426—631 6 Claims

1. A quiescently frozen chocolate-flavored confection produced by the steps comprising providing a non-acid confection mix including sweetener, vegetable gum and water; adding to said mix at ambient temperature under agitation a stabilized cocoa-flavored syrup solution having a high cocoa content, said syrup comprising from about 18 to 25 weight percent cocoa, from about 35 to 45 weight percent of a sweetener, the equivalent of about 0.1 to 0.6 weight percent of an amylolytic enzyme having an activity of 4.4 mgs. alpha amylase per mg. starch, and sufficient water to produce a solution having between 58 and 65 weight percent solids, said weight percents being based on the total weight of the solution, and said cocoa comprising sufficient Dutch process cocoa to maintain a solution pH of about 5.5 to 7.5; pouring the resulting mixture into molds; and freezing the mixture.

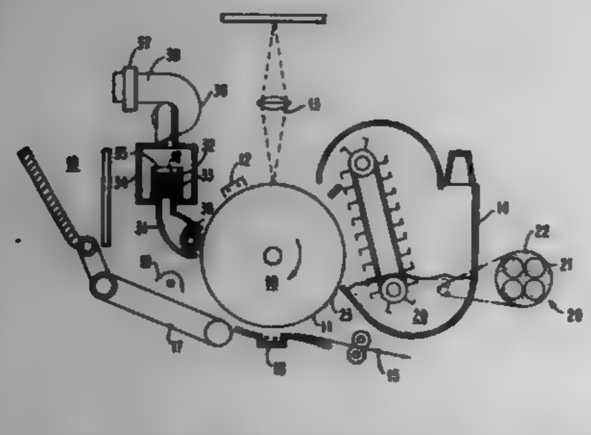
3,982,043
TRIBOELECTRIC FILTER AND METHOD OF USING IT IN AN ELECTROPHOTOGRAPHIC PRINTER

Henry Wellington Simpson, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 426,750, Dec. 20, 1973, abandoned. This application Mar. 3, 1975, Ser. No. 554,888

Int. Cl.² B05D *1/06;* G03G *21/00*

U.S. Cl. 427—14 4 Claims



1. In the method of producing successive printed images wherein a physical image is produced by: conveying a development mixture of relatively large carrier particles and relatively small toner particles into operative engagement with an imaging surface bearing a differential electrostatic charge image, at least the external surfaces of said carrier particles and said toner particles being of materials having a substantial triboelectric charge development characteristic therebetween and at least one of said materials being a dielectric; transferring a substantial part of said physical image to a support surface; and mechanically dislodging toner particles that remain on said imaging surface following said transfer step and entraining said dislodged toner particles in a gaseous medium to form a mixture thereof, the improvement comprising:

collecting said entrained toner particles from said mixture by passing said mixture through a body of carrier particles that are substantially identical to the carrier particles of said development mixture whereby the toner particles adhere to the body of carrier particles, and

mixing at least a portion of said body of carrier particles bearing collected toner particles into at least a portion of said development mixture.

3,982,044
SILVER HALIDE PHOTOGRAPHIC EMULSIONS USED FOR ELECTRON BEAM RECORDING

Junichi Matsuyama; Yoshiyuki Nakazawa; Yasuharu Nakamura; Reiichi Ohi, all of Minami-ashigara, Odawara, Japan, and Tokiharu Kondo, deceased, late of Minami-ashigara, Japan, by Yoshiharu Kondo, legal representative, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 455,089, March 27, 1974, abandoned, which is a continuation-in-part of Ser. No. 206,903, Dec. 10, 1971, abandoned. This application July 3, 1975, Ser. No. 593,337

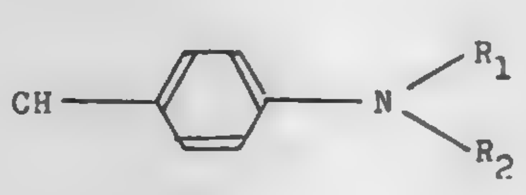
Claims priority, application Japan, Dec. 10, 1970, 45-109871

Int. Cl.² B05D *3/06*

U.S. Cl. 427—43 15 Claims

1. In a process for recording electron beams which comprises imagewise exposing to electron beams a photographic fine grain silver halide emulsion containing fine silver halide grains having a mean grain size by diameter no greater than 0.2 micron and processing said silver halide emulsion, the improvement wherein said photographic fine grain silver halide emulsion contains at least one compound represented by the following formula;

$$A - N = (CH - CH=)_n$$



wherein A represents an aliphatic group, an aryl group, or a 5- or 6-membered heterocyclic ring containing at least one nitrogen atom selected from the group consisting of a morpholine nucleus, a piperidine nucleus, a 2-thio-4-oxo-thiazolidine nucleus, a thiadiazole nucleus and a 1,3,4-triazole nucleus, R_1 and 2 represent a hydrogen atom or a lower alkyl group, and *n* represents 0 or 1; said at least one compound being present in an amount sufficient to sensitize said emulsion to electron beams.

3,982,045
METHOD OF MANUFACTURE OF ADDITIVE PRINTED CIRCUITBOARDS USING PERMANENT RESIST MASK

Peter E. Kukanskis, Watertown, Conn., assignor to MacDermid Incorporated, Waterbury, Conn.

Filed Oct. 11, 1974, Ser. No. 513,994

Int. Cl.² C23C *3/02*

U.S. Cl. 427—98 6 Claims

1. In the plating of a non-conductive substrate by an all-additive electroless plating process wherein the process includes the usual steps in sequence of treating the substrate surface with a precious metal catalyst solution to produce sites catalytic to the reduction thereon of a metal from an electroless metal plating solution, applying a permanently retained resist mask to portions of the catalytically activated surface to define a desired pattern resistive to deposition of electroless metal, accelerating the substrate surface by treatment in a dilute acid or alkali solution to reactivate the unmasked catalyzed areas, and then electrolessly plating the substrate in a reducing solution of the metal to be plated to provide the total desired thickness of metal deposit on the substrate, the improvement in such process which comprises: subjecting the substrate to another accelerating step in dilute acid or alkali solution subsequent to catalyzation but prior to application of the permanent resist mask, whereby to increase the surface resistivity between plated areas of the substrate and improve the plated metal adhesion.

3,982,046
INCANDESCENT LAMPS

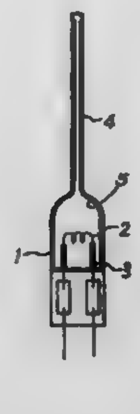
David Robert Mason; Susan Margaret Cole, both of Runcorn; John Michael Rees, and James Richard Coaton, both of London, all of England, assignors to Thorn Lighting Limited, London, England

Division of Ser. No. 434,381, Jan. 18, 1974, Pat. No. 3,902,091. This application Apr. 3, 1975, Ser. No. 564,768

Claims priority, application United Kingdom, Jan. 19, 1973, 2952/73

Int. Cl.² H01K *1/32*

U.S. Cl. 427—106 7 Claims



1. In the method of making a tungsten-halogen lamp comprising a light-transmitting envelope, internal components including a tungsten filament and supports thereof sealed within said envelope and a gaseous fill including halogen in said envelope, the improvement comprising the steps of:

coating at least those portions of the internal surface of the envelope and the exposed surfaces of said internal components, which tend to react with halogen during operation of the lamp, with a solution having dissolved therein a composition selected from metal phosphates and arsenates, said solution being capable of generating on being heated a potentially vitreous compound;

and heating said surfaces to form thereon a vitreous coating of said metal phosphate or arsenate.

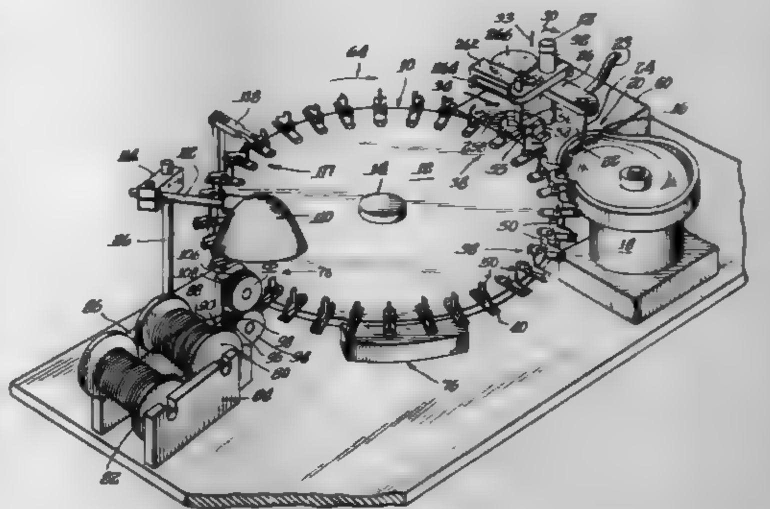
3,982,047
SOLDERING METHOD

Denver Braden, San Diego, Calif., assignor to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 569,634, April 18, 1975, which is a division of Ser. No. 467,528, May 6, 1974, abandoned. This application May 22, 1975, Ser. No. 580,099

Int. Cl.² C23C *17/00*

U.S. Cl. 427—123 4 Claims



1. A method of applying solder to contact means of an electrical component having a flat contact surface comprising the steps of placing said flat contact surface of said component against an independent support member of a solder rejecting material that is not secured to said component, while leaving the remaining portion of said contact means exposed, and applying a predetermined amount of melted solder over the exposed portion of said contact means while simultaneously forcing said flat contact surface of said component against said independent support member with a force sufficient to prevent any substantial amount of solder from flowing between said flat contact surface of said component and said support member so that said entire contact means is covered with solder except for said flat contact surface.

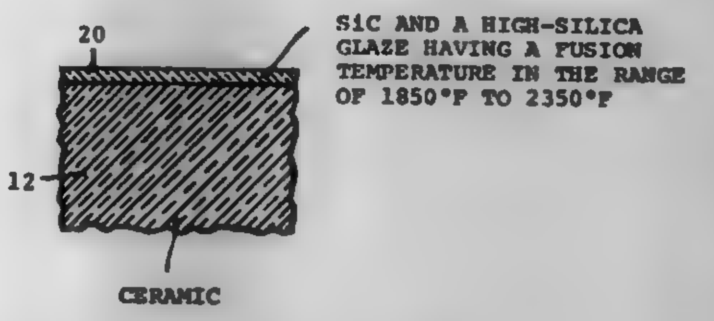
3,982,048
METHOD OF MAKING AN INSULATOR WITH A NON-LINEAR RESISTIVITY COATING OF GLASS BONDED SILICON CARBIDE

John E. Ziupko, Philadelphia, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Nov. 3, 1975, Ser. No. 628,033

Int. Cl.² B05D *5/12*

U.S. Cl. 427—126 6 Claims


20
SiC AND A HIGH-SILICA GLAZE HAVING A FUSION TEMPERATURE IN THE RANGE OF 1850°F TO 2350°F
12
CERAMIC

1. A method of making an electrical insulator comprising:
a. providing a ceramic body,
b. providing a non-linear resistivity coating material comprising particles of silicon carbide having a particle size of 400–650 mesh and a binder for said particles comprising a glass or a glass-forming material having a fusion temperature in the range of 1850° F to 2350° F, said silicon carbide particles being present in said coating material in a percentage of 10 to 30 percent by weight of said coating material,

- c. applying said coating material to said ceramic body to form a thin coating thereon,
- d. firing said coated ceramic body at a temperature in the range of 1850° F to 2350° F in an inert gaseous atmosphere to form on said ceramic body a glaze coating that has non-linear resistivity properties.

3,982,049

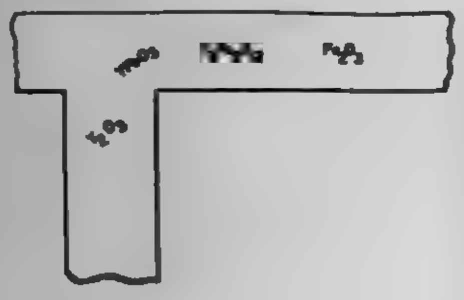
METHOD FOR PRODUCING SINGLE CRYSTAL FILMS

Jack E. Mee, Anaheim; Thomas N. Hamilton, Fullerton, both of Calif.; John L. Archer, Ames, Iowa, and David M. Heinz, Orange, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 833,268, June 16, 1969, abandoned. This application July 15, 1974, Ser. No. 488,360

Int. Cl.² C23C *11/08;* **H01F** *1/34*

U.S. Cl. 427—128 **13 Claims**



1. A method of optimizing the deposition of a deposit of a desired complex metal oxide, with respect to at least one selected characteristic of the deposit of said desired complex metal oxide, said at least one selected characteristic being selected from the group consisting of, location of the zone where said desired complex metal oxide deposits, size of the zone where said desired complex metal oxide deposits, rate of deposition of said desired complex metal oxide and purity of said desired complex metal oxide deposit, said method comprising:

performing steps A and B a plurality of times and performing step C prior to at least one repetition of step A;

- A. reacting metal halides with an oxidizing gas in a reaction chamber to form a deposit of a plurality of metal oxides at different locations on a substrate means, said metal oxides including said desired complex metal oxide, said oxidizing gas consisting of at least one gas selected from the group consisting of water vapor and O_2;
- B. determining from said deposit of a plurality of metal oxides the quality of said at least one selected characteristic of said desired complex metal oxide deposit which is obtained under the reaction conditions extant during the formation of said deposit of a plurality of metal oxides;
- C. altering at least one reaction condition, said at least one reaction condition being selected from the group consisting of substrate means temperature, the quantities of metal halides and the quantity of the oxidizing [illegible]
- D. determining from the qualities of said at least one selected characteristic of the deposits of a plurality of metal oxides formed under a plurality of different reaction conditions, the reaction conditions which yield a deposit of said desired complex metal oxide which is optimized with respect to at least one selected characteristic.

8. The method recited in claim 1 wherein said desired complex metal oxide is a garnet and the selected characteristic is the size of the zone in which said garnet is deposited.

9. The method recited in claim 1 wherein the desired complex metal oxide is an orthoferrite and the selected characteristic is the size of the zone in which said orthoferrite is deposited.

3,982,050

METHOD FOR COATING INNER FACES OF METAL PIPES OF SMALL DIAMETER

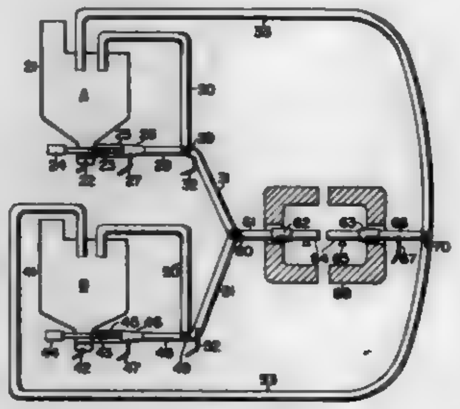
Haruhiro Kato, Kawasaki; Tsunehiko Toyoda, and Hiroyuki Tanabe, both of Yokohama, all of Japan, assignors to Dai Nippon Co., Ltd., Japan

Filed May 16, 1974, Ser. No. 470,670

Claims priority, application Japan, May 21, 1973, 48-56631

Int. Cl.² B05D *7/22, 1/24*

U.S. Cl. 427—181 **4 Claims**



1. A method for coating the inner faces of small diameter metal pipes which comprises feeding under pressure a stream of an air or inert gas-diluted powdery mixture composed of 20 to 90 parts by weight of a powdery resin having an average particle size of 5 to 100μ and 80 to 10 parts by weight of a carrier having a melting point at least as high as the melting point of said powdery resin and having an average particle size of 150μ to 5 mm and from 5 to 100 times greater than the average particle size of the powdery resin, said carrier forming substantially no part of said coating, through the interior of the metal pipe preheated to a temperature 20° to 70°C higher than the melting point of said powdery resin, at a rate of from 2 to 10 m/sec, so that the powdery mixture concentration is 5 to 40% by volume throughout the coating operation.

3,982,051

BACKSIZING CARPET WITH HOT MELT COMPOSITION OF ETHYLENE COPOLYMER, ATACTIC POLYPROPYLENE AND VULCANIZED RUBBER

David D. Taft, Columbus, Ohio, and Terry H. Shepler, St. Paul, Minn., assignors to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 216,242, Jan. 7, 1972, Pat. No. 3,849,353. This application Aug. 28, 1974, Ser. No. 501,415

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² B05D *5/10*

U.S. Cl. 427—207 **15 Claims**

1. A process for backsizing a tufted carpet having a primary textile backing and non-woven tufts of synthetic fibers protruding therefrom which comprises:

- a. heating to a temperature of about 160°F to 375°F, a hot melt coating composition, said hot melt composition consisting essentially of:
  - 1. copolymer of ethylene and unsaturated ester monomer selected from the group consisting of vinyl acetate; alkyl acrylate wherein the alkyl group contains 1-18 carbon atoms; and mixtures thereof; containing from about 40 to 85% by weight of ethylene and from about 15 to about 60% by weight of unsaturated ester monomer;
  - 2. atactic polypropylene; and
  - 3. vulcanized rubber; said composition based upon the combined weight of (1), (2), and (3) containing from about 5% to about 50% by weight of (1); about 10 to about 85% by weight of (2) and about 10 to about 50% of (3);
- b. applying a uniform coating in an amount from about 10 to 40 ounces per square yard of said composition in a molten state to the backside of said carpet at a coating station while moving said carpet past said station at a speed of from about 20 to 60 feet per minute; and
- c. thereafter solidifying said carpet by cooling it below its melting point.

3,982,052

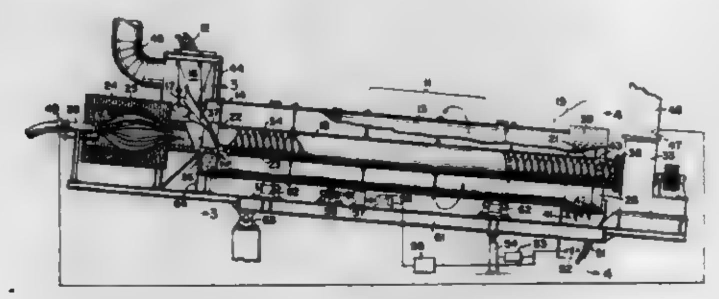
METHOD OF TREATING WET COAL GRANULES

Wendell E. Bearce, Box 241, St. Clairsville, Ohio 43950

Filed Jan. 27, 1975, Ser. No. 544,107

Int. Cl.² C10L *5/04, 5/24*

U.S. Cl. 427—212 **6 Claims**



1. The method of treating wet coal granules, comprising passing said wet coal granules through a dryer in the form of a heated cylindrical drum rotated about its axis while heated steel balls are moved through said wet granules and introducing a liquid petroleum derivative, which is essentially nonvolatile at the boiling point of water, into said dryer so as to effect simultaneous drying of the coal granules and uniform coating of their surfaces with said liquid petroleum derivative so as to obtain a relatively dry, oil-like coating on said granules which is dust free.

3,982,053

PROCESS FOR FLAMEPROOFING ORGANIC FIBER MATERIAL BY THE TRANSFER PROCESS

Fritz Mayer, Haltingen, Germany; Jörg Kern, Oberwil, and Hermann Nachbur, Dornach, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

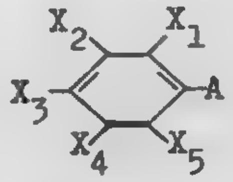
Filed June 18, 1974, Ser. No. 480,336

Claims priority, application Switzerland, June 22, 1973, 9187/73; July 26, 1973, 10929/73

Int. Cl.² C23C *11/00;* **C09K** *3/28*

U.S. Cl. 427—248 **12 Claims**

1. Process for flameproofing organic fiber material by the dry thermal transfer process which comprises applying to an inert carrier a preparation comprising a halogen compound of the formula



wherein A is halogen, hydroxyl, alkoxycarbonyl with 2 to 5 carbon atoms, halogenoalkoxy with 1 to 4 carbon atoms or halogenophenyl and X_1, X_2, X_3, X_4 and X_5 are each halogen, alkyl with 1 to 4 carbon atoms, hydroxyl or hydrogen, but at most one of the radicals X_1, X_2, X_3, X_4 and X_5 is alkyl or hydroxyl and at least one of the radicals is halogen, and X_1 and A can together be a radical of the formula —CO—O—CO—, bringing the carrier into contact with the surface of the fiber material which is to be flameproofed, thereafter subjecting the carrier and the material to be finished to a heat treatment at 150° to 220°C, until the halogen compound has been transferred to the fiber material, and then separating the finished material from the carrier.

3,982,054

METHOD FOR ELECTROLESSLY DEPOSITING METALS USING IMPROVED SENSITIZER COMPOSITION

Nathan Feldstein, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 226,294, Feb. 14, 1972, abandoned. This application Mar. 25, 1974, Ser. No. 454,155

Int. Cl.² C23C *3/02*

U.S. Cl. 427—299 **7 Claims**

1. A method for electrolessly plating a surface with a metal comprising the steps of:

sensitizing the surface with a solution made by mixing separate sources of divalent tin ion and tetravalent tin ion in a molar ratio of 1:1 to about 1000:1, where said divalent tin ion is present in a concentration of up to about 0.26 molar, said tetravalent tin ion is present in a concentration of up to about 0.125 molar, and has been aged for a period equivalent to at least 1 week at room temperature and also containing either an added soluble chloride salt or an added soluble bromide salt, or both, said salts being present in a concentration, in the ionized state, between about 0.5 M and saturation,

treating the sensitized surface with a catalyzing solution to provide catalytic nucleating sites thereon, and

electrolessly plating said metal on said catalyzed surface.

3,982,055

METHOD FOR ZINCATING ALUMINUM ARTICLES

Addison M. Howard, Exton, Pa., assignor to Eltra Corporation, Toledo, Ohio

Filed July 25, 1974, Ser. No. 491,700

Int. Cl.² C23C *3/00*

U.S. Cl. 427—309 **2 Claims**

1. A method for preparing an aluminum-containing body having substantially grease-free surfaces to receive an electrically deposited surface coating, which method includes the steps of etch cleaning and zinc-coating the body by immersion thereof for from 5 to 10 seconds in an aqueous sodium hydroxide bath ranging in normality from 1.3 to 2.7, and maintained at a temperature from 170° to 190°F., said bath also containing from 1-¾ to 3 percent of the tetrasodium salt of ethylenediamine tetraacetic acid and from 0.05 to 0.15 percent of zinc oxide, washing the etch cleaned and zinc-coated body, drying the washed body by removing wash water therefrom, etching the dried body in 40° Be nitric acid at a temperature not higher than about 110°F. for from 2 to 5 seconds, with the proviso that, when the body is an alloy containing as much as 2 percent of silicon, the nitric acid also contains from 1-½ to 3 percent of ammonium bifluoride, washing the etched body in cold running water, zincating the washed body by immersion thereof for from ½ second to 5 seconds in an aqueous bath maintained at a temperature from 120° to 160°F., said bath consisting of sodium hydroxide ranging in normality from 2-½ to 5, from 5 to 18 percent of the tetrasodium salt of ethylenediamine tetraacetic acid and from 0.4 to 2.5 percent of zinc, calculated as the metal, and washing the zincated body in cold running water.

3,982,056

METHOD FOR IMPROVING THE PRINTABILITY CHARACTERISTICS OF GLOSS CALENDERED PAPER

Charles Delbert Holder, Jr., Mobile, Ala., assignor to International Paper Company, New York, N.Y.

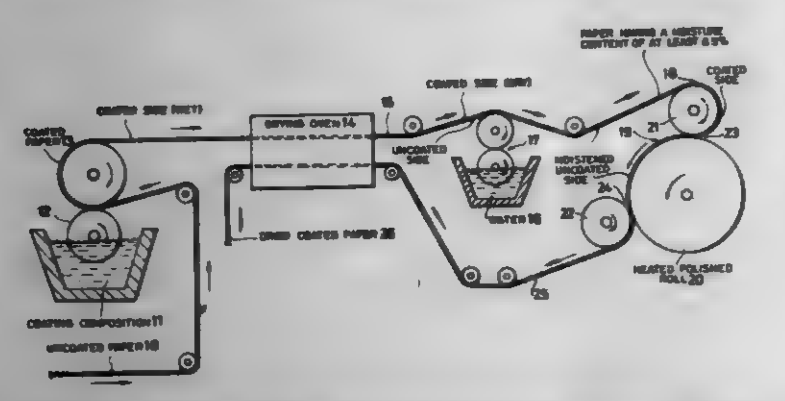
Filed Oct. 15, 1974, Ser. No. 514,739

Int. Cl.² B05D *3/12*

U.S. Cl. 427—361 **17 Claims**

1. A process for treating paper coated on one side, which comprises: applying a liquid only to the uncoated side in an amount sufficient to provide a moisture content of about 8.5

to 20% by weight in the paper; and then, gloss calendering the moistened paper with the unmoistened side of the paper pressed against the polished roll of the gloss calender, without moistening the polished roll of the gloss calender.



3,982,057

PAPER HONEYCOMB CUSHIONING PAD

William R. Briggs, Bowie, Md., and Eugene A. Ripperger, Austin, Tex., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

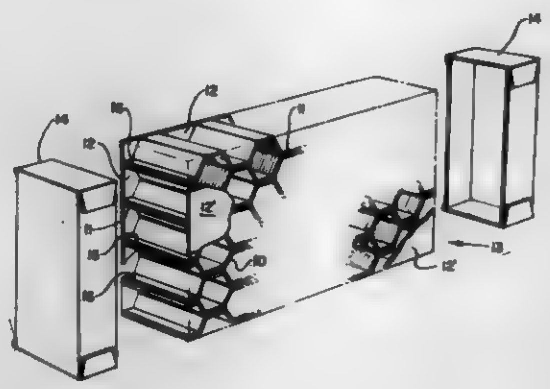
Filed June 21, 1974, Ser. No. 481,737

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.^{2} B32B *3/12*

U.S. Cl. 428—73 **3 Claims**

1. In a double faced expanded paper honeycomb cushioning pad adapted for preventing blowouts through the ends of said double faced expanded paper honeycomb cushioning pad upon impact, said double faced expanded paper honeycomb cushioning pad comprising a plurality of sheets of Kraft paper adhered together along parallel spaced apart glue lines, expanded to form air cells hexagonally shaped in cross section and bounded by portions of said sheets of Kraft paper, and double faced by facing sheets of Kraft paper adhered over the top and bottom of the expanded paper honeycomb cushioning pad, thereby forming in said double faced expanded paper honeycomb cushioning pad a plurality of adjacent closed air cells hexagonally shaped in cross section, said double faced expanded paper honeycomb cushioning pad having a pair of ends each comprising a row of vertically sliced air cells, the glue lines of said vertically sliced air cells being normal to said ends, the improvement which comprises means for preventing blowouts through said ends of said double faced expanded paper honeycomb cushioning pad, said blowout preventing means comprising two end caps, each of said two end caps being adhered to the exterior surfaces of said double faced expanded paper honeycomb cushioning pad adjacent to one of said two ends so as to close and seal each of said two ends, said end caps being constructed of 70 to 80 lb. Kraft paper tape, said Kraft paper tape being folded over said facing sheets and over the side surfaces of said double faced expanded paper honeycomb cushioning pad to a sufficient extent and adhered sufficiently tightly to said facing sheets and said side surfaces to prevent a blowout from occurring through either of said two ends of said double faced expanded paper honeycomb cushioning pad upon impact.



ELECTRICAL

3,982,058

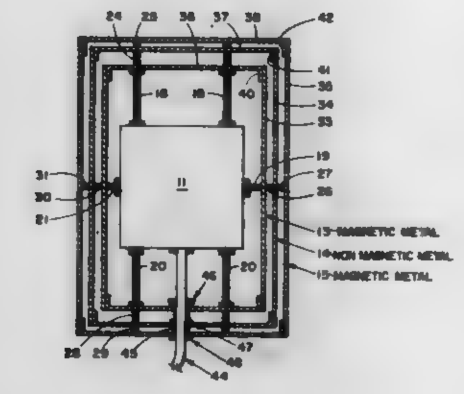
MAGNETIC AND ELECTRIC FIELD SHIELDING OF COMPUTER COMPONENTS FROM LIGHTNING

Robert D. Hill, Santa Barbara, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 13, 1975, Ser. No. 577,365

Int. Cl.^{2} H05K *9/00*

U.S. Cl. 174—2 **5 Claims**



1. A shield system surrounding electrical components for protecting them from changes in magnetic and electric fields caused by lightning comprising:

at least three walls of metal surrounding said components, said walls forming a plurality of containers which have a total shielding efficiency on the order of 10^6,

the outer and inner of said walls being made of magnetic metal for providing shielding from magnetic field disturbances of cloud-to-ground electric lightning strokes,

the walls intermediate said outer and inner walls made of a highly conductive non-magnetic metal for providing shielding from electric field disturbances of cloud-to-ground electric lightning strokes,

said walls being spaced apart from one another,

said containers being held spaced apart by dielectric material cemented to the containers; and

a conduit extending through said containers and leads and cables entering and leaving said containers through said conduit;

said conduit formed by continuous metal surfaces and said cables and leads having a flexible metallic covering which terminates at the conduit,

said conduit positioned to enter and leave the bottom ends of said containers in view of preponderantly horizontal magnetic field vectors that propagate from said lightning strokes.

5. A method of protecting electrical devices from changes in magnetic and electrostatic fields caused by lightning comprising:

entrapping a substantial portion of the magnetic field by enclosing the devices in a shield of magnetic metal symmetrically deployed a selected distance from the devices;

cancelling the electrostatic field by enclosing the devices in a shield of non-magnetizable metal symmetrically deployed within and spaced from said magnetic field entrapping shield;

entrapping and cancelling any remaining magnetic fields by enclosing the devices in a shield of magnetic metal symmetrically deployed within and in close proximity of said electrostatic field cancelling shield; and

forming a passage through said shields for accommodating cables and leads by installing a tubular member through said shields, the walls of said tubular member being made of the same material as the shield for cancelling said electrostatic field.

3,982,059

FLEXIBLE CABLE TERMINATION

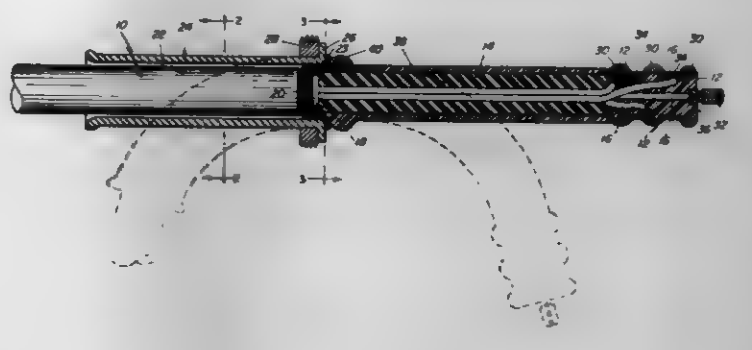
William P. Holland, West Redding, and William H. Merritt, Canton, both of Conn., assignors to The Machlett Laboratories, Incorporated, Stamford, Conn.

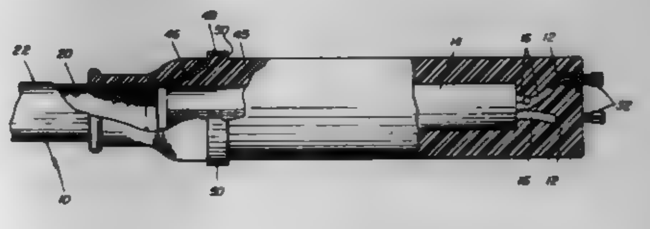
Continuation of Ser. No. 536,668, Dec. 26, 1974, abandoned.

This application Oct. 17, 1975, Ser. No. 623,294

Int. Cl.^{2} H02G *15/02;* **H01R** *11/02, 21/22*

U.S. Cl. 174—73 R **2 Claims**





1. A bendable terminal for an electrical cable adapted to be inserted into a hollow receptacle, said terminal including a plurality of insulated conductors, a casing of flexible insulating material over the conductors, a metallic grounding sheath over the casing, and a flexible insulating layer over the grounding sheath, comprising an extended end portion of the cable wherein the casing has a portion extending substantially beyond the ends of the grounding sheath and insulating layer, the ends of said conductors extending beyond the end of the casing, a bendable shield of self-supporting insulating material covering said extended portion of the casing, said shield being completely flexible throughout its thickness, a corona shield encircling the casing and having one end electrically connected to the end of the grounding sheath, and a tubular metal grounding member encircling the cable and having one end electrically connected to said corona shield and having its major portion extending over the cable in a direction away from said extended portion of the casing.

2. A bendable terminal for an electrical cable adapted to be inserted into a hollow receptacle, said terminal including at least one insulated conductor, a casing of flexible insulating material over the conductor, a metallic grounding sheath over the casing, and a flexible insulating layer over the grounding sheath, comprising an extended portion of the cable wherein the casing has a portion extending substantially beyond the ends of the grounding sheath and insulating layer, the end of said conductor extending beyond the end of the casing, a bendable shield of self-supporting insulating material covering said extended portion of the casing, said shield being completely flexible throughout its thickness, and an annular corona shield encircling the casing and projecting outwardly through the bendable shield and having ends of different diameters, the smaller end being connected to the grounding sheath beneath the bendable shield and the larger end overlying a circumferential portion of the outer surface of the bendable shield.

3,982,060

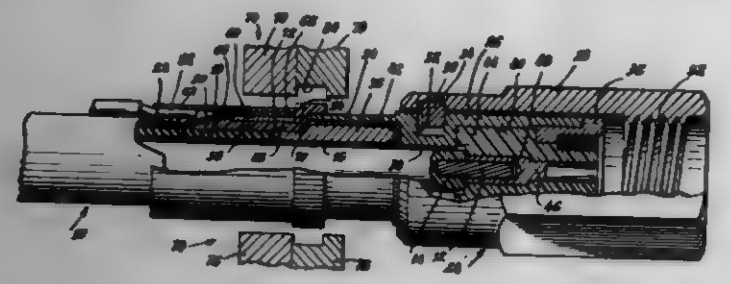
TRIAXIAL CABLE TERMINATION AND CONNECTOR SUBASSEMBLY

Roger P. Avery, Bethel, and Pasquale R. Petti, Waterbury, both of Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 367,757, June 7, 1973, abandoned. This application Feb. 20, 1975, Ser. No. 551,446

Int. Cl.² H01R *21/00, 17/04*

U.S. Cl. 174—75 C **13 Claims**



1. A combination comprising:

a triaxial cable having a center conductor, an inner conductive braid encircling said center conductor, a dielectric separating said center conductor and said inner braid, an outer conductive shielding braid encircling said inner braid, an inner insulating jacket separating said inner braid from said outer braid and stripped with said outer braid from one end of said inner braid to provide a stripped portion of inner braid, an outer insulating jacket encircling said outer shielding braid with said outer insulating jacket stripped from one end of said outer shielding braid to provide an exposed portion of said outer shielding braid;

a body of a conductive material, said body having an axially extending thin-walled rear ferrule portion overlapping the stripped portion of said inner braid;

a conductive clamp, at least a forward portion of said clamp being positioned in said rear ferrule portion with said clamp overlappingly engaged with the stripped portion of said inner braid and having the stripped portion of said inner braid wrapped around said forward portion to fit the stripped portion of said inner braid tightly between said clamp and said rear ferrule portion;

a crimp ferrule fitted over said outer jacket and the exposed portion of said outer braid;

an insulating bushing fitted between said inner jacket and said outer braid, said bushing being shaped and positioned to physically and electrically isolate said inner braid, clamp and body from said outer braid and crimp ferrule;

a metallic bushing positioned between said insulating bushing and said outer braid;

a first crimp formed in said crimp ferrule to secure said outer braid between said metallic bushing and said crimp ferrule; and

a second crimp formed in said rear ferrule portion and spaced axially from said first crimp to secure said rear ferrule portion to said conductive clamp and inner braid.

4. A subassembly adapted to secure a connector rear annular ferrule portion to a triaxial cable including a radially expandible outer annular conductive braid and a coaxial annular inner conductive braid separated from said outer braid by an inner insulating coaxial annular jacket located between said inner braid and said outer braid with one end of said inner braid extending axially beyond one end of said jacket and outer braid and expandible to form a folded back portion spaced radially outwardly of said inner braid one end with said folded back portion having a diameter less than the diameter of the inner periphery of said annular ferrule portion for passage with said inner braid one end into said annular ferrule portion, said subassembly comprising:

an axially extending insulating annular bushing having a tapered outer peripheral surface portion adjacent one end of said bushing tapering radially inwardly toward said bushing one end, said bushing having an outer peripheral surface portion of constant diameter less than the diameter of the expanded outer braid and an inner peripheral surface with a diameter larger than the diameter of the outer peripheral surface of said inner jacket to overlappingly engage said insulating bushing over said inner jacket in response to the axial movement of said bushing over said jacket;

a conductive annular clamp member having an inner peripheral surface of a diameter larger than the one end of said inner braid and less than the outer diameter of the peripheral surface of said inner jacket to prevent passage of said clamp member over said one end of said inner jacket in response to the movement of said clamp member axially over said inner braid, said clamp member having an outer peripheral surface of a diameter less than the diameter of the inner peripheral surface of said connector annular ferrule portion and controlling the radial position of said folded back portion of the inner braid in said ferrule portion in response to the folding back of said expanded inner braid over the outer peripheral surface of said clamp member and passage of said connector ferrule portion axially over said clamp member and folded back portion to thereafter enable deformation of said inner folded back portion against said clamp member in response to radial pressure against said annular ferrule portion; and

means on said clamp member and on said bushing securing said conductive clamp member coaxially to said insulating bushing with said bushing and clamp member extending axially away from each other and said tapered outer surface portion adjacent said bushing one end spaced from said clamp member to enable the installation of said bushing one end and surface of constant diameter between said inner jacket and expanded outer braid in response to the simultaneous axial movement of said bushing and clamp member over said inner jacket and inner braid, respectively, to thereafter enable deformation of said outer braid against said bushing in response to radial pressure against said expanded outer braid;

said clamp member and said bushing each having a wall thickness and formed of a respective material avoiding deformation in response to radial pressure of sufficient magnitude against said ferrule portion and expanded outer braid, respectively, to deform said ferrule portion and said inner and outer braids.

3,982,061

DATA TRANSFER CONTROL APPARATUS

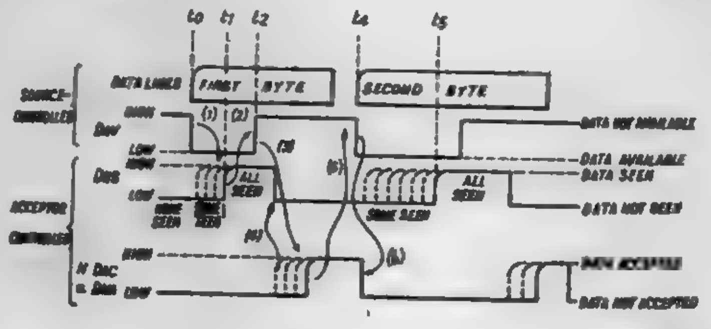
Howard Anthony Dorey, Godalming, and Robert John Cooke, Farnborough, both of England, assignors to The Solartron Electronic Group Limited, Farnborough, England

Filed Apr. 23, 1975, Ser. No. 570,688

Claims priority, application United Kingdom, May 1, 1974, 19155/74

Int. Cl.² H04Q *5/00*

U.S. Cl. 178—2 R **5 Claims**



1. A bit-parallel, byte-serial data transmission system comprising a data highway and first, second and third handshake lines, a plurality of more than two devices and a corresponding plurality of interfaces linking said devices to said data highway and to said handshake lines, said devices including at least one data source device and more than one data acceptor device, said interfaces including logic means operable to control the exchange of data between a source device and a plurality of acceptor devices, the first line carrying a two-level signal determined by said logic means of the interface of the source device and indicating whether or not validly acceptable data is available, the second line carrying a two-level signal determined by said logic means of the interfaces of the acceptor devices and indicating whether all or not all acceptor devices have seen data, the third line carrying a two-level signal determined by said logic means of the interfaces of the acceptor devices and indicating whether all or not all acceptor devices have accepted a byte of data, and wherein said logic means of the interfaces are constructed and arranged to establish the following handshake cycle of operations (1) to (6):

1. First line to data available level;
2. Second line to level for data seen by all acceptor devices;
3. Signal from interface of the source device commanding the interfaces of the acceptor devices to accept data;
4. Interfaces of acceptor devices accept data in response to (3);
5. Third line to level for data byte accepted by all acceptor devices;
6. Change data byte and re-set first line to data available level to recommence the cycle.

3,982,062

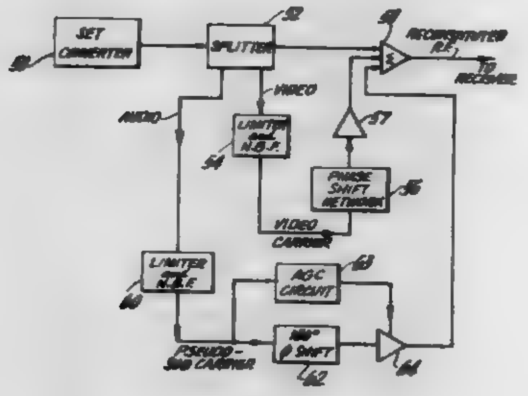
VIDEO ENCRIPTION SYSTEM

Kenneth Simons, Huntington Valley, Pa., assignor to Jerrold Electronics Corporation, Horsham, Pa.

Filed July 26, 1973, Ser. No. 382,820

Int. Cl.² H04N *1/44*

U.S. Cl. 178—5.1 **14 Claims**



1. In combination in video program encription apparatus for encripting the transmisson of a video program signal comprising video information amplitude modulating a video carrier and sound information frequency modulating in audio subcarrier, means for producing the video carrier without concomitant modulation products, means for phase shifting the video carrier, and means for linearly combining the amplitude modulated video carrier with said phase shifted video carrier for producing a resultant combination of said modulation products and a video carrier differing in phase from the original video carrier's phase, and receiver means for receiving said signal produced by said encription apparatus for reconstituting said phase shifted carrier to its original relative phase for permitting reception of said video program.

3,982,063

METHODS AND APPARATUS FOR REDUCING THE BANDWIDTH OF A VIDEO SIGNAL

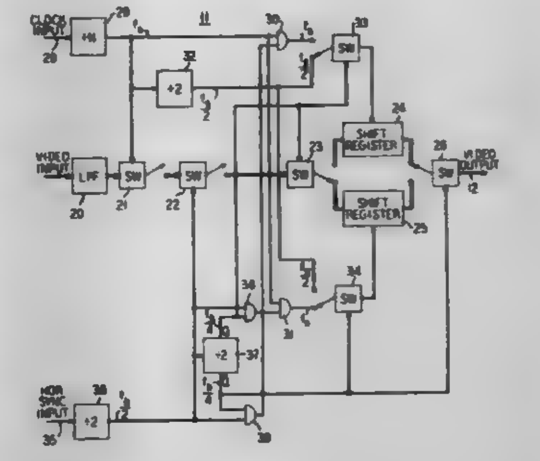
Earl Franklin Brown, Piscataway; Robert Lewis Ellenberger, Colts Neck; Alan Mayer Gordon; Pat Le Mar Gordon, both of Matawan, and John Ormond Limb, New Shrewsbury, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 3, 1975, Ser. No. 546,426

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² H04N *5/46, 7/18*

U.S. Cl. 178—6 **9 Claims**



1. Apparatus for reducing the bandwidth of the composite video signal generated by a television camera, or the like, said camera supplying in addition to the video signal a horizontal synchronization signal and a master clock signal, which comprises:

a first divider circuit for dividing the frequency of said horizontal synchronization signal by a factor of two;

a second divider circuit, connected to the output of said first divider circuit, for dividing the frequency thereof by a factor of two, said second divider circuit having first and second complementary outputs;

a third divider circuit for dividing the frequency of said master clock signal by a factor of N, where N is inversely proportional to the horizontal definition desired for the reduced bandwidth video signal;

a fourth divider circuit for dividing the frequency of the output from said third divider circuit by a factor of two;

first switching means, controlled by the output of said first divider circuit, for interrupting the transmission path of said video signal during alternate scanning lines in each field of said vido signal;

a first shift register of a capacity sufficient to store at least one complete scanning line of said video signal;

a second switching means, controlled by the first output of said second divider circuit, for alternately connecting the clock pulse input of said first shift register to the output of said third divider circuit or to the output of said fourth divider circuit;

a second shift register of a capacity sufficient to store at least one complete scanning line of said video signal;

third switching means, controlled by the second output of said second divider circuit for alternately connecting the clock pulse input of said second shift register to the output of said fourth divider circuit or to the output of said third divider circuit;

fourth switching means, connected to the output of said first switching means and controlled by the first output of said second divider circuit, for alternately routing the scanning lines of said video signal which are passed by said first switching means to said first or to said second shift register; and

fifth switching means controlled by the second output of said divider stage, for alternately selecting the output of said first and said second shift registers thereby to generate a composite video signal of reduced bandwidth.

3,982,064
COMBINED TELEVISION/DATA TRANSMISSION SYSTEM

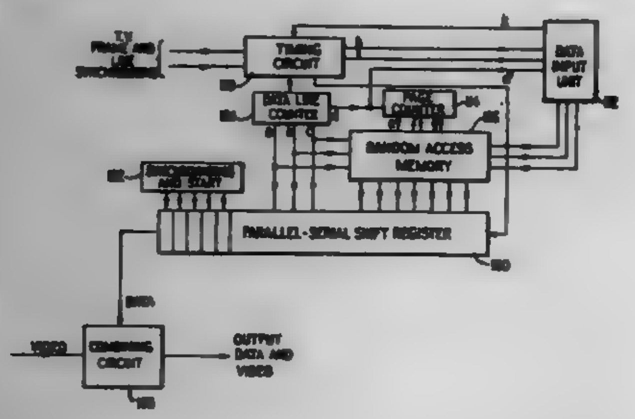
Bernard Sydney Barnaby, Ware, England, assignor to The General Electric Company Limited, London, England

Filed Sept. 5, 1974, Ser. No. 503,376

Claims priority, application United Kingdom, Sept. 4, 1973, 41445/73

Int. Cl.² H04N *7/00*

U.S. Cl. 178—5.6 **7 Claims**



1. A combined television/data transmission system for a television signal in which information characterizing a page of data to be displayed is digitally coded and transmitted in line scan periods that do not have picture information, in which each said page of data comprises a number of rows of data, each page of data being transmitted by transmitting a respective page address in a first said line scan period that does not have picture information, one or more subsequent periods of said line scan periods being utilized to transmit information relating to said rows of data, the information transmitted during each subsequent line scan period relating to a complete row of data in said respective page and containing in addition the row address in digitally coded form but not said respective page address, the end of transmission of a page of data being identified by a further one of said line scan periods in which a further page address is transmitted.

3,982,065
COMBINED TELEVISION/DATA RECEIVERS

Bernard Sydney Barnaby, Ware, and Donald Gordon Scott, London, both of England, assignors to The General Electric Company Limited, London, England

Filed Sept. 4, 1974, Ser. No. 503,172

Claims priority, application United Kingdom, Oct. 31, 1973, 50016/73

Int. Cl.² H04N *7/08*

U.S. Cl. 178—5.8 R **4 Claims**

1. Apparatus for a combined television/data receiving system of the kind responsive to a television signal

A. in which information characterizing data to be displayed in a page format comprising a number of rows of data is transmitted by a television/data signal in a television frame interval in television picture frame line scan periods that do not have picture information,

B. in which for each page in a first line scan period the page number is transmitted in digital coded form together with digital coded synchronizing pulses and other digital coded information

C. in which for each page in frame line scan periods subsequent to said first line scan period, which subsequent television frame line scan periods do not have picture information, lines of data for display in and associated with said page are sequentially transmitted

D. in which in each subsequent line scan period coded information relating to a complete row of characters is transmitted together with digital coded synchronizing pulses and coded information relating to the row address but not to said page address,

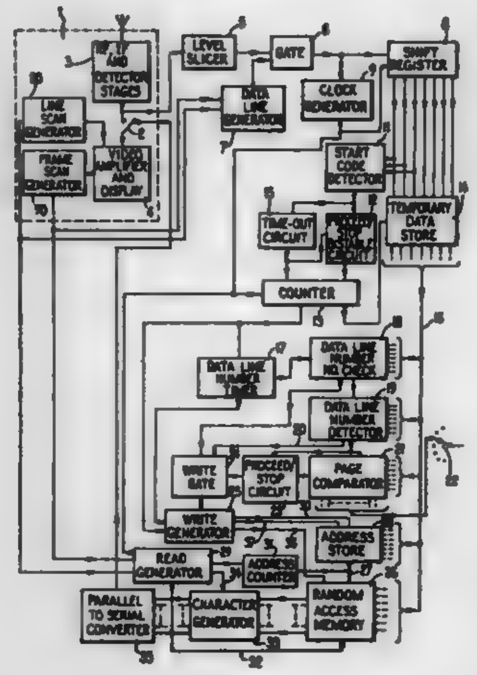
said apparatus comprising

I. selection means for selecting a desired page for display,

II. a start code detector,

III. synchronizing means for synchronizing said start code detector with the received television data signal,

IV. comparison means for comparing said transmitted page numbers with said selected desired page number and for providing an output signal when an equality is obtained,



V. main storage means connected for the reception of said information characterizing data to be displayed associated with the selected page,

VI. row address storage means operable in response to the output of said comparison means and to a received row address to store information relating to said row of characters associated with the selected page in a desired position within said main storage means,

VII. a television display and

VIII. display buffer means, connected between said storage means and said television display for conversion of said information characterizing rows of data stored in said storage means into said desired page of data for display on said television display.

3,982,066
METAL COATING FOR VIDEO DISCS

Frederick Russell Nyman, Carmel, Ind.; John Louis Vossen, Jr., Bridgewater; Dennis Glendon Fisher, Titusville, both of N.J., and George Frederick Nichols, Oaklandon, Ind., assignors to RCA Corporation, New York, N.Y.

Filed July 25, 1975, Ser. No. 599,128

Int. Cl.² B32B *15/08*

U.S. Cl. 178—6.6 R **8 Claims**

5. In a capacitive video frequency recording means in the shape of a disc having a spiral groove on a face thereof and video information in the form of geometric variations in said groove, said disc having a thin conductive layer on said face and a thin dielectric layer disposed over the conductive layer, the improvement which comprises employing as the conductive layer a trilayer film having a first layer of copper about 25 to 50 angstroms thick, a second layer of an alloy of nickel and chromium, which can contain up to 10 percent by weight of iron about 200 to about 400 angstroms thick and containing from about 20 to about 30 atomic percent of oxygen and a third layer of copper about 25 to 50 angstroms thick.

3,982,067
TELEVISION SIGNAL AMPLIFIER APPARATUS FOR COUNTERACTING EFFECTS OF UNWANTED SIGNAL COMPONENTS

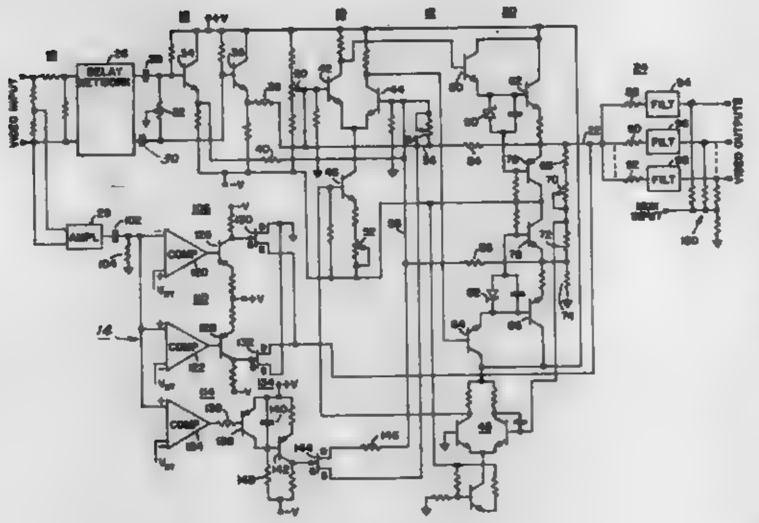
Eric R. Woods, and Russell G. Thompson, both of San Diego, Calif., assignors to General Dynamics Corporation, San Diego, Calif.

Filed Nov. 1, 1974, Ser. No. 519,979

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976

Int. Cl.² H04N *3/16*

U.S. Cl. 178—7.1 **10 Claims**



1. Television signal amplifier apparatus for counteracting the effects of unwanted signal components which can be introduced in the course of routing and processing of television signals having portions representing black and white picture regions and synchronizing signals, said apparatus comprising

a. video signal amplifier means for amplifying said television signals, said amplifier means having an input and an output,

b. first means responsive to said television signals at said input for detecting when said television signals represent the white region and are greater in absolute value than the value corresponding to a certain signal level in said white region,

c. second means responsive to said television signals at said input for detecting when said television signals represent the black region and are greater in absolute value than the value corresponding to a certain signal level in said black region,

d. third means responsive to said television signals at said input for detecting the occurrence of said synchronizing signals thereof,

e. switching means connected at said output operated by said first and second means for preventing the transmission of signals at said output when said signal levels are greater either than said certain signal level in said white region or said certain signal level in said black region, and

f. means operated by said third means for reducing the gain of said amplifier means such that said gain does not exceed unity gain during the absence of said synchronizing signals.

3,982,068
NOVEL TARGET FOR AN ULTRASONIC WAVE CAMERA AND DEVICES INCORPORATING SUCH A TARGET

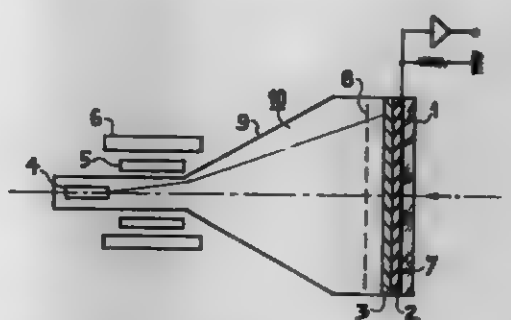
Daniel Charles; Lucien Guyot; Jean Philippe Reboul, and Guy Moiroud, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 15, 1975, Ser. No. 568,315

Claims priority, application France, Apr. 19, 1974, 74.13765

Int. Cl.² H04N *5/30;* **H01J** *31/49*

U.S. Cl. 178—7.2 **10 Claims**



1. A target for an ultrasonic camera device, characterised in that it comprises, a substrate which is exposed to incident ultrasonic waves, and applied to said substrate a retina made of a pyroelectric material and means for transforming the energy of said ultrasonic waves into thermal energy transmitted to said retina.

3,982,069
DECODING APPARATUS FOR USE IN MATRIX FOUR CHANNEL SYSTEMS OF A PLURALITY OF TYPES

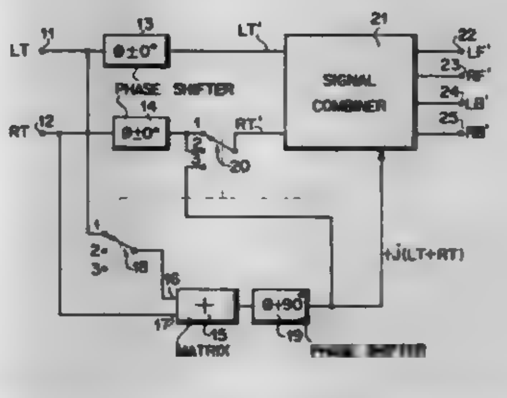
Susumu Takahashi, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1975, Ser. No. 622,173

Claims priority, application Japan, Oct. 16, 1974, 49-118898

Int. Cl.² H04R *5/00*

U.S. Cl. 179—1 GQ **6 Claims**



1. A decoding apparatus for use in matrix four channel systems of different types comprising:

first and second input terminals adapted to receive first and second composite signals to be decoded respectively;

first to fourth output terminals from which first to fourth output signals are derived out;

first phase shifter circuit means coupled to said first input terminal for producing a third composite signal;

second phase shifter circuit means coupled to said second input terminal and having substantially the same phase shifting characteristic as said first phase shifter circuit means;

matrix circuit means having first and second inputs, the second input of said matrix circuit means being coupled to said second input terminal of said decoding apparatus, said matrix circuit means being operative to produce a sum of input signals when they are applied to said first and second inputs of said matrix circuit means;

first switch means coupled between said first input of said matrix circuit means and said first input terminal of said decoding apparatus for selectively coupling said first input terminal of said decoding apparatus to said first input of said matrix circuit means in accordance with the type of the first and second composite signals to be decoded;

third phase shifter circuit means coupled to the output of said matrix circuit means and having a different phase shifting characteristic from said first and second phase shifter circuit means;

second switch means for selectively deriving out an output signal from said second phase shifter circuit means and an output signal from said third phase shifter circuit means in accordance with the type of said first and second composite signals to be decoded to provide a fourth composite signal, said second switch means being adapted to selectively derive out the output signal from said second phase shifter circuit means as said fourth composite signal when said first switch means couples said first input terminal of said decoding apparatus to said first input of said matrix circuit means; and

signal combining means adapted to generate first to fourth output signals on said first to fourth output terminals respectively by combining said third and fourth composite signals, when said first input terminal of said decoding apparatus is not coupled with said first input of said matrix circuit means and generate the first and second output signals on said first and second output terminals respectively by combining said third and fourth composite signals, and the third and fourth output signals on said third and fourth output terminals respectively by combining said third and fourth composite signals and a fifth composite signal which is produced by said third phase shifter circuit means when said first input terminal of said decoding apparatus is coupled to said first input of said matrix circuit means.

3,982,070
PHASE VOCODER SPEECH SYNTHESIS SYSTEM

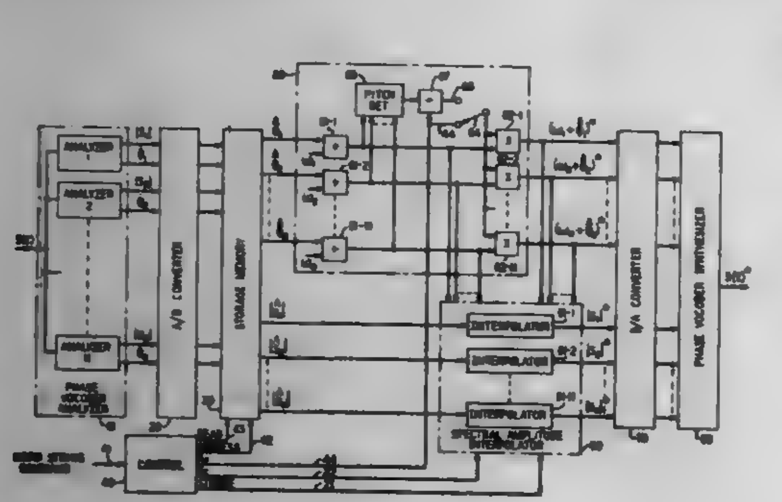
James Loton Flanagan, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 5, 1974, Ser. No. 476,577

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 20, 1976

Int. Cl.² G10L *1/00*

U.S. Cl. 179—1 SM **15 Claims**



1. Apparatus for synthesizing a natural sounding speech message from phase vocoder stored signals representative of a vocabulary of words comprising:

means for selectively extracting preselected locations of said stored signals for constructing a predetermined sequence of signals representative of said speech message;

means for altering the pitch parameters of said extracted signals; and

means for combining said pitch modified signals.

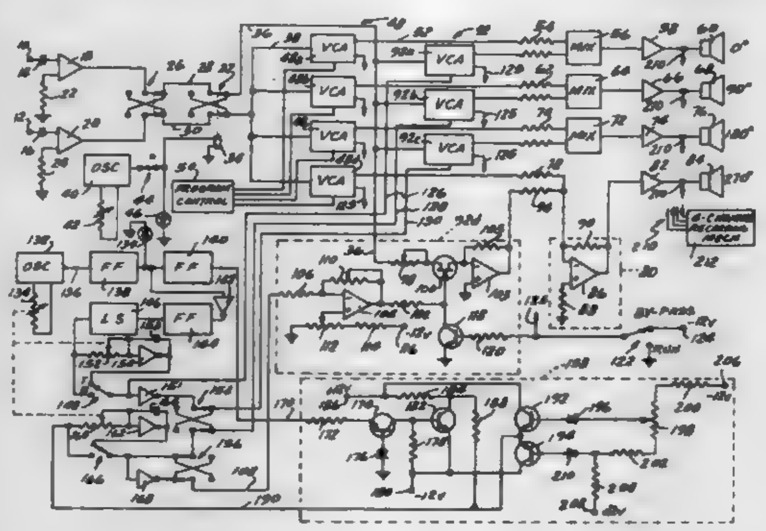
3,982,071
MULTICHANNEL SOUND SIGNAL PROCESSING SYSTEM EMPLOYING VOLTAGE CONTROLLED AMPLIFIERS

Edward A. Weiss, 322 N. Princeton Ave., Villa Park, Ill. 60181, and Harvey A. Brodsky, 9440 Lincolnwood Ave., Evanston, Ill. 60203

Filed Aug. 20, 1974, Ser. No. 499,029

Int. Cl.² H04R *5/00*

U.S. Cl. 179—1 GQ **20 Claims**



2. Apparatus for processing a plurality of sound signals including a first group of voltage controlled amplifiers, means for connecting a signal input of each of the voltage controlled amplifiers in said group to a first signal source, first control means connected to the amplifiers of said first group for energizing said amplifiers of said first group in a predetermined sequence, a second group of voltage controlled amplifiers, means for connecting each of the voltage controlled amplifiers in said second group to a second signal source, second control means connected to the amplifiers of the second group for energizing the amplifiers of the second group in a predetermined sequence, a plurality of mixers, each having inputs connected to the output of an amplifier of said first group and to an amplifier of said second group, said first control means comprising means for producing a plurality of a.c. control signals having the same frequency but separated in phase by equal increments, means for connecting each of said control signals individually to a voltage controlled amplifier, said second control means comprising means for providing a second plurality of a.c. control signals independent of the signals produced by said first control means, and means for connecting each of said second plurality of control signals individually to a voltage controlled amplifier of said second group.

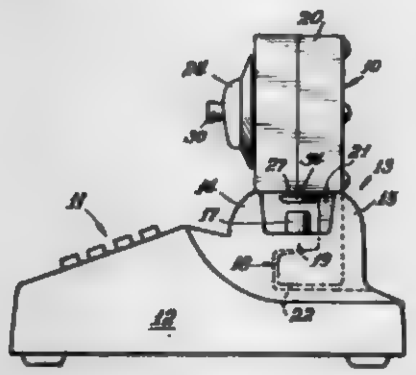
3,982,072
PHONE AID TIMING DEVICE

Jerald L. Dean, 419 E. Cass St., Albion, Mich. 49224

Filed Jan. 8, 1975, Ser. No. 539,287

Int. Cl.² H04M *1/21*

U.S. Cl. 179—2 TC **5 Claims**



1. An apparatus for restoring a telephone to the operable condition with regard to incoming calls after a predetermined interval of time during which the telephone has been disabled by removal of the hand set thereof from the telephone operating switch thereby permitting the switch to close, said apparatus comprising:

a. a frame adapted to be mounted on the base of said telephone when the hand set is removed therefrom, and having means for engaging the telephone base,
b. switch operating means adapted to be placed in a first position permitting the telephone operating switch to remain in closed circuit position, and in a second position in which said switch operating means depresses said switch to open the telephone circuit, and driving means for moving said switch operating means from said first to said second position, and
c. timer means having means for actuating said driving means for causing said switch operating means to move to said second position after said predetermined time interval, whereby said telephone is once again enabled to receive incoming calls,

wherein said switch operating means comprises:

1. a tubular housing,
2. a bolt slidably mounted in said housing,
3. a coil spring biasing said bolt outwardly,
4. latching means connected to said bolt, and means provided in said housing and said frame permitting said latching means to travel with said bolt, and
5. detent means for engaging said latching means when said bolt is in the position in which said spring is compressed,

wherein said timer is provided with cam means for disengaging said latching means from said detent means.

3,982,073
SYSTEM FOR MEASURING THE DURATION OF A TELEPHONE CALL

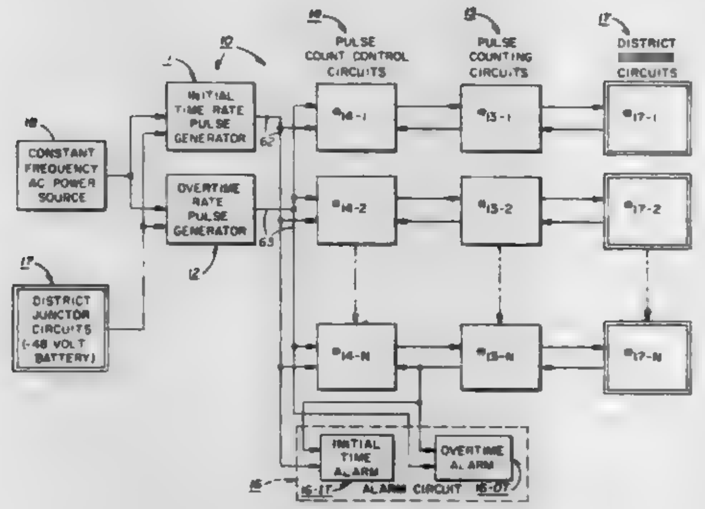
Gary L. Baltzer; Duane A. Desler, and George Pappas, all of Omaha, Nebr., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 29, 1975, Ser. No. 545,050

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 20, 1976

Int. Cl.² H04M *15/18*

U.S. Cl. 179—7.1 R **13 Claims**


PULSE COUNT CONTROL CIRCUITS
PULSE COUNTING CIRCUITS
DISTRICT CIRCUITS
INITIAL TIME RATE PULSE GENERATOR
CONSTANT FREQUENCY AC POWER SOURCE
OVERTIME RATE PULSE GENERATOR
DISTRICT JUNCTOR CIRCUITS (-48 VOLT BATTERY)
14-1
13-1
17-1
14-2
13-2
17-2
14-N
13-N
17-N
62
63
12
INITIAL TIME ALARM
OVERTIME ALARM
16-IT
ALARM CIRCUIT
16-OT

1. A system for measuring the duration of a telephone call, which comprises:

first and second pulse generating means for generating pulses at selected frequencies representative of a call initial time rate and a call overtime rate, respectively, and

pulse counting means for counting the pulses from said first pulse generating means until a maximum initial time period for the call initial time rate is reached, and for then counting the pulses from said second pulse generating means to measure the call overtime period.

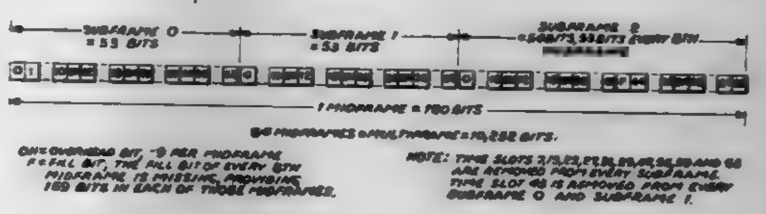
3,982,074
AUTOMATIC CHANNEL ASSIGNMENT CIRCUIT

James Monroe Clark, Cedar Grove, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Apr. 21, 1975, Ser. No. 570,057

Int. Cl.² H04J *3/06*

U.S. Cl. 179—15 BV **22 Claims**



1. An automatic channel assignment circuit coupled to a digital time division multiplex multiplexer and demultiplexer at one communication terminal to control the multiplexing of N transmit port signals having a first mixture of different bit rates into a transmitted synchronous data stream having a predetermined fixed data format and a given bit rate greater than the total rate of said first mixture of different bit rates and to control the demultiplexing of N receive port signals having a second mixture of different bit rates from a received synchronous data stream having said data format and said given bit rate, where N is an integer greater than one, comprising:

a first source of a first timing code identifying transmit time slots of said transmitted data stream;

a second source of a second timing code identifying receive time slots of said transmitted data streams; and

a circuit arrangement coupled to said first and second sources and to each of said multiplexer and said demultiplexer, said circuit arrangement responding to said first and second timing codes to produce at least one transmit control signal for coupling to said multiplexer and at least one receive control signal for coupling to said demultiplexer, said transmit control signal controlling the distribution of bits of each of said transmit port signals with equal spacing throughout said transmit time slots and said receive control signal controlling the extraction of bits of each of said receive port signals from said received data stream, said bits of each of said receive port signals being distributed with equal spacing throughout said receive time slots, said distribution of said bits of each of said transmit and receive port signals throughout said transmit and receive time slots being in agreement with its associated bit rate.

3,982,075
SYNCHRONIZATION SYSTEM FOR TIME DIVISION MULTIPLE ACCESS RELAY COMMUNICATIONS SYSTEM

Alan Kenneth Jefferis, Reading, and Kevin Hodson, Billericay, both of England, assignors to The Post Office, London, England

Filed Sept. 9, 1974, Ser. No. 504,349

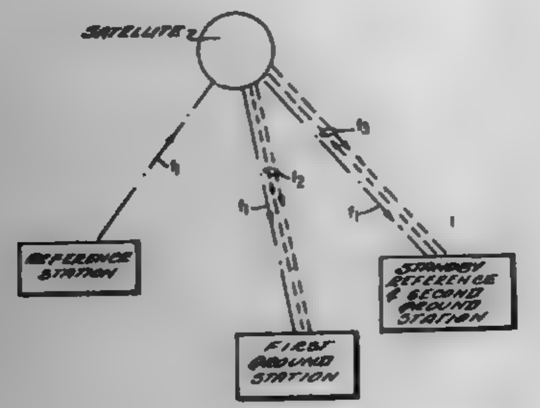
Int. Cl.² H04J *3/06*

U.S. Cl. 179—15 BS **31 Claims**

1. A synchronization system for a satellite communication Time Division Multiplex Access (TDMA) relay system having a predetermined frame period within which data bursts are transmitted and including a satellite relay and a plurality of ground stations, one of which is designated a reference station, said system comprising at each ground station:

transmitter means for transmitting a carrier signal having a frequency which is characteristic of the respectively corresponding ground station thereby defining a frequency division channel characteristic of the respectively corresponding ground station,

modulation means for modulating said carrier signal with a periodic signal having a period harmonically related to said frame period but which periodic signal is separate and distinct from said data bursts, phase comparator means at each non-reference ground station for comparing the phase relationship of its respectively corresponding periodic signal after transmission to and return from the satellite relay relative to the periodic signal transmitted from the designated reference ground station via the satellite, and

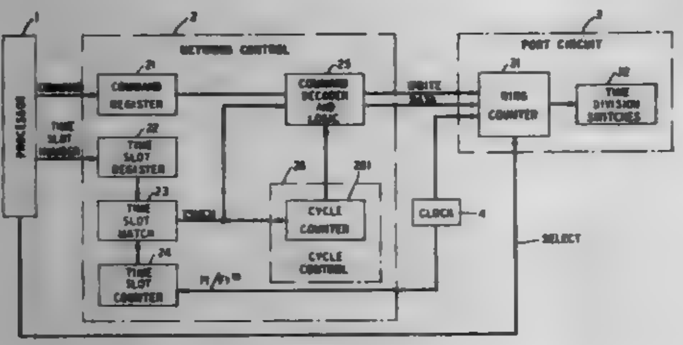


control means at said non-reference ground stations responsive to said phase relationship to align the phase relationship of the compared periodic signals to achieve synchronization of the TDMA signals at the satellite.

3,982,076
NETWORK CONTROL CIRCUIT FOR A TIME DIVISION SWITCHING SYSTEM

Donald Gifford Hill, and Theras Gordon Lewis, both of Boulder, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N. J. 07974

Filed Dec. 23, 1974, Ser. No. 535,576
Int. Cl.² H04J *3/02*
U.S. Cl. 179—15 AT **11 Claims**

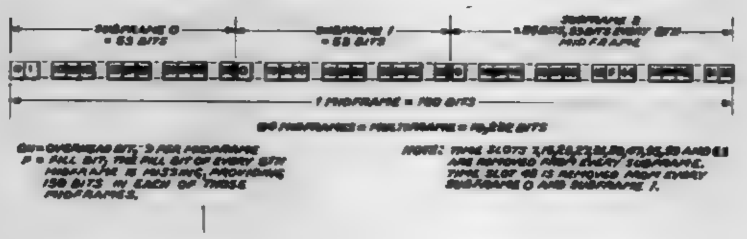


1. For use with a time division switching system capable of operating with various numbers of time slots, said system having port circuits including a ring counter having a number of stages equal to the largest number of time slots with which said system is capable of operating and circuitry for writing connection information into selected ones of said stages, and
means for engaging any one of said circuits on a telecommunications connection, the improvement comprising,
means for receiving information from said engaging means designating a particular time slot for said connection, and
means for controlling said writing circuitry to write connection information selectively into an individual one and a predetermined plurality of said stages in said engaged one of said circuits to cause connections therefrom in said designated time slot, said predetermined plurality being equal to the number of counter stages divided by the number of time slots in said system.

3,982,077
ASYNCHRONOUS MULTIPLEXER AND DEMULTIPLEXER COMBINATION

James Monroe Clark, Cedar Grove; Stuart Barry Cohen, Nutley, and Arthur Howard Magnus, Succasunna, all of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Apr. 7, 1975, Ser. No. 565,905
Int. Cl.² H04J *3/04*
U.S. Cl. 179—15 BV **19 Claims**

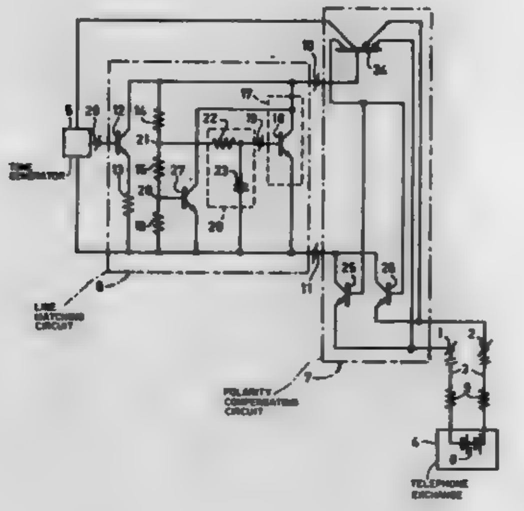


1. An asynchronous digital time division multiplex multiplexer and demultiplexer combination at one communication terminal to multiplex N asynchronous data transmit ports having a first mixture of different bit rates into a transmitted synchronous data stream having a predetermined fixed data format and a given bit rate greater than the total rate of said first mixture of different bit rates and to demultiplex N asynchronous data receive ports having a second mixture of different bit reates from a received synchronous data stream having said data format and said given bit rate, where N is an integer greater than one, comprising:
transmitting means coupled to a first propagation means to transmit said transmitted synchronous data stream on said first propagation means;
N transmit circuits each coupled to a different one of said N transmit ports and in common to said transmitting means;
receiving means coupled to a second propagation means to receive said received synchronous data stream from said second propagation means;
N receive circuits coupled in common to said receiving means and each of said N receive circuits coupled to a different one of said N receive ports;
first means coupled to said transmitting means to generate a first timing code identifying transmit time slots of said transmitted data stream;
second means coupled to said receiving means responsive to said received data stream to generate a second timing code identifying receive time slots of said received data stream; and
third means coupled to said first and second means and each of said N transmit and receive circuits, said third means responding sequentially to said first and second timing codes to produce transmit and receive port timing signals to control distribution of bits of each of said transmit ports with equal spacing throughout said transmit time slots and to control extraction of bits of each of said receive ports from said received data stream, said bits of each of said receive ports being distributed with equal spacing throughout said receive time slots, said distribution of said bits of each of said transmit and receive ports throughout said transmit and receive time slots being in agreement with its associated bit rate.

3,982,078
LINE MATCHING CIRCUIT FOR USE IN A TONE PUSHBUTTON DIALLING SUBSCRIBER'S SET PROVIDED WITH A TONE GENERATOR

Daniel Johannes Gerardus Janssen, and Cornelis Maria Hart, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 22, 1974, Ser. No. 472,284
Claims priority, application Netherlands, May 25, 1973, 7307296
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976
Int. Cl.² H04M *1/50, 1/00*
U.S. Cl. 179—81 R **5 Claims**



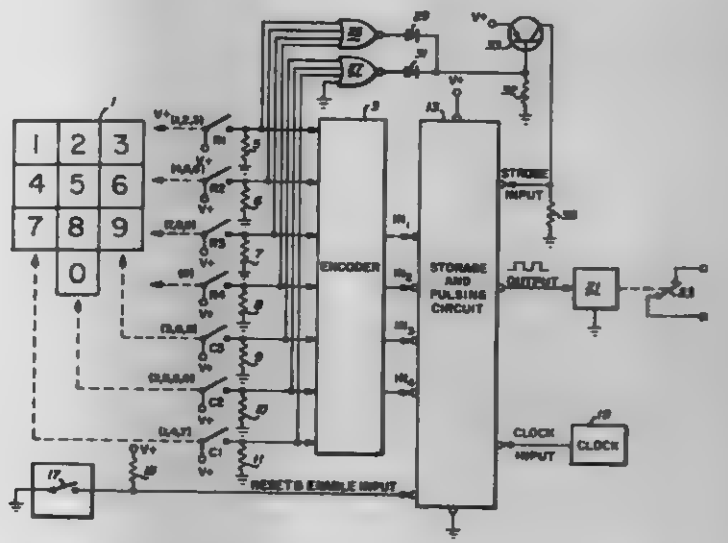
1. Line matching circuit for matching the impedance of a tone generator in a subscriber's pushbutton dialling set with a transmission line connected thereto, comprising two terminals, means for coupling said two terminals to said transmission line, a signal controlled alternating-current source means coupling the tone generator to said two terminals for supplying alternating currents at tone signal frequencies thereto, a potentiometer connected between said terminals, a low-pass filter having its input connected to a first tap on said potentiometer and its output connected to the input of an amplifier, the output of said amplifier being connected between the terminals to control the amplitude of slowly varying DC currents flowing through said transmission line in order to maintain a constant DC voltage across said terminals.

3,982,079
TOUCH-TO-ROTARY CONVERTER FOR A TELEPHONE INSTRUMENT

Steven Jon Hoehn, Redwood City, and Joseph Monroe Jackson, Menlo Park, both of Calif., assignors to Litton Business Telephone Systems, Inc., Sunnyvale, Calif.

Filed Apr. 16, 1975, Ser. No. 568,601
Int. Cl.² H04M *1/272*
U.S. Cl. 179—81 R **1 Claim**

1. A touch-to-dial pulse selecting and sending combination for a telephone instrument having:
a touch type selector pad having a plurality of push buttons arranged in a plurality of rows and columns;
a first plurality of switches, each one of said switches being associated with a corresponding one of said rows of push buttons for operation in response to depression of any push button in said respective row;
a second plurality of switches, each one of said switches being associated with a corresponding one of said columns of push buttons for operation in response to depression of any push button in said respective column;
encoder means, having input means containing a plurality of inputs corresponding in number to the sum of said first and second plurality of switches and an output means, for converting touch signals at said input means represented by an operated one of said first plurality of said switches and an operated one of said second plurality of switches to a coded number information signal at said output means;
means coupling each of said switches in circuit with a corresponding one of said input means of said encoder means;
storage and pulsing circuit means having an input for receiving coded number information signals, said storage and pulsing circuit means further having an output for providing a series of pulses corresponding in number to the number information previously presented at its said input, and said storage and pulsing circuit means further having a strobe input for receiving a strobe signal for registering coded number information presented at said input within said storage and pulsing circuit means;



means coupling said output means of said encoder means to said input of said storage and pulsing circuit means; and
relay means, said relay means being coupled to said output of said storage and pulsing circuit means responsive to pulses therefrom for opening a contact for the duration of each pulse;
the improvement comprising in combination therewith: strobe means responsive to the concurrent operation of at least one of said first plurality of switches and at least one of said second plurality of switches for providing a signal to said strobe input of said storage and pulsing circuit means at the end of a predetermined time interval greater than 50 nanoseconds and less than 150 milliseconds, said strobe means comprising:
first Nor gate means for providing an output in response to the operation of any one of said first plurality of row switches;
second Nor gate means for providing an output in response to the operation of any one of said second plurality of column switches; and
third Nand gate means responsive to concurrent outputs from said first gate means and said second gate means for providing an output at a predetermined interval of time thereafter to said strobe input, said third Nand gate means including:
first resistor means;
first and second diode means; and
transistor means having an emitter, base, and collector;
said first diode being connected in between the output of said first gate and said resistor and said second diode being connected in circuit between the output of said second gate and said resistor;
second resistor means;
means connecting a voltage source, said emitter, collector and said second resistor means in a series circuit;
means connecting said transistor base in circuit with said first resistor means for applying any voltage thereacross to said base;
whereby said transistor is switched between its non-conductive state in dependance upon the voltage at the base

thereof being greater or less than, respectively, a predetermined level to generate said strobe input signal at said collector.

3,982,080

AUTOMATIC CABLE BALANCING NETWORK

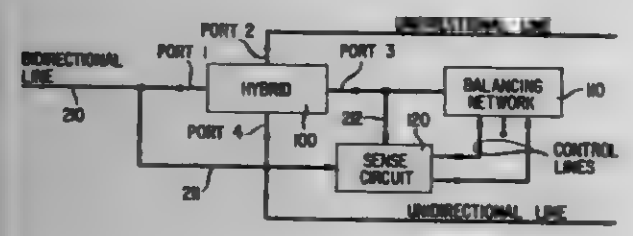
Richard Larry Ukeiley, Englishtown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 16, 1975, Ser. No. 541,415

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976

Int. Cl.² H04B *1/52*

U.S. Cl. 179—170 D **10 Claims**



1. Apparatus for automatically balancing a four signal port hybrid network having bidirectional signals at a fixed preselected one of said signal ports, comprising:

a balancing impedance network connected to a second preselected one of said signal ports of said hybrid network, and exhibiting a prechosen impedance having a preselected number greater than one of variable impedance parameters; and

a sense circuit responsive to signals present on said first and second preselected signal ports of said hybrid network for developing impedance control signals equal in number to said preselected number to control said impedance parameters, respectively.

3,982,081

KEYBOARD ASSEMBLY WITH OVERLAPPED FLEXIBLE PRINTED CIRCUIT CABLE SWITCH

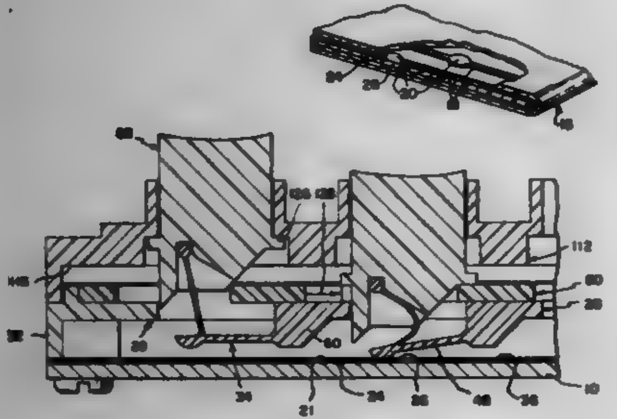
Henry William Demler, Jr., Lebanon, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 503,127, Sept. 4, 1974, abandoned. This application May 20, 1975, Ser. No. 579,104

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² H01H *13/70;* **H05K** *1/02*

U.S. Cl. 200—5 R **4 Claims**



1. A keyboard assembly comprising:

a. a flat flexible cable with a portion thereof folded back over on itself and having contacts deposited on both facing surfaces, contacts on one surface being directly across from contacts on the other surface;

b. means for connecting the contacts into electrical circuits;

c. a layer of insulating material positioned between the two contact-carrying surfaces and having holes therethrough, said holes being in registration with opposing contacts;

d. a spring plate, overlying the folded over cable and containing a plurality of resilient first spring members, said members being formed from and integral with the plate, each member comprising a horizontal arm with a vertical arm extending obliquely upwardly and with a pair of spaced, semispherical heads on either side projecting downwardly and positioned adjacent an outside surface of the folded over portion of the cable with each head being in direct alignment with a contact located on the inside surface; and

e. means for depressing the first spring members such that the horizontal arm rotates about its point of attachment with the plate and the semi-spherical heads push on the cable forcing the aligned contacts through the holes in the insulating material and into electrical engagement with the contacts on the facing surface.

3,982,082

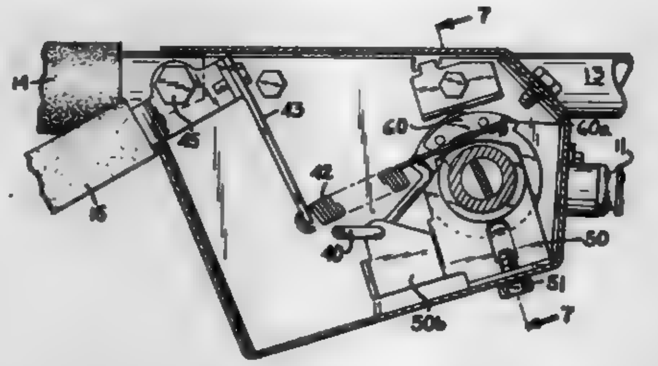
STARTING SYSTEM

Richard A. Thorud, Bloomington; William D. Wood, Minneapolis, and Derald D. Ramsey, Richfield, all of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Aug. 4, 1975, Ser. No. 601,345

Int. Cl.² A01D *35/24*

U.S. Cl. 200—44 **13 Claims**



1. A lawn and garden implement starting system, comprising:

a. a mechanical actuator responsive to operator control and movable between a first and second position in response thereto;

b. a switch actuator operably engaged with said mechanical actuator and responsive to movement thereof to rotate a first and second position;

c. switch means actuatable by rotation of a portion thereof between a first and second position for opening and closing a starting circuit for said implement;

d. means for mechanically transferring rotational movement of said switch actuator to said switch means, and

e. lockout means, responsive to operator control, being movable from a position of engagement with said switch actuator to a position of disengagement for selectively preventing rotational movement of said switch actuator in response to movement of said mechanical actuator.

3,982,083

CONTACT SYSTEM FOR AN OUTDOOR ELECTRICAL SWITCH

Arthur D. Crino, Tigard, Oreg., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 28, 1975, Ser. No. 625,859

Int. Cl.² H01B *31/00*

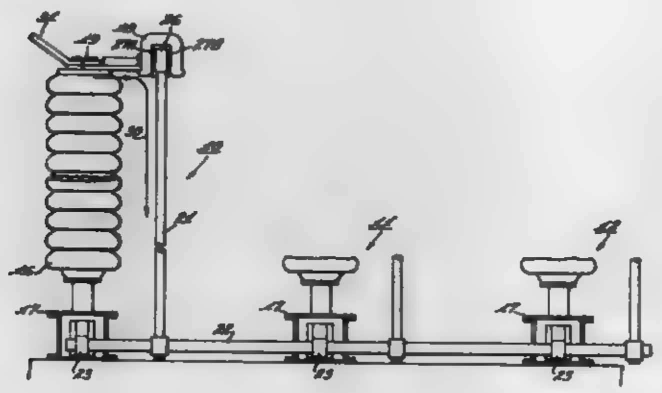
U.S. Cl. 200—48 A **5 Claims**

1. In a contact arrangement for an outdoor electrical switch having a blade arm pivotally supported for movement between open and closed positions and constructed and arranged to provide an L current path;

means for carrying the blade for pivotal movement;

a contact finger support carried by said means in position to be engaged by said blade when it is moved to a closed position;

a first set of contact fingers carried by said contact finger support; and



a second set of contact fingers carried by said contact finger support in opposing spaced relationship to said first set contact fingers and of a number greater than the number of contact fingers in said first set of contact fingers;

whereby the greater number of contact fingers opposes the magnetic forces on the blade to thereby establish good electrical engagement between the blade and the opposing greater number of contact fingers.

3,982,084

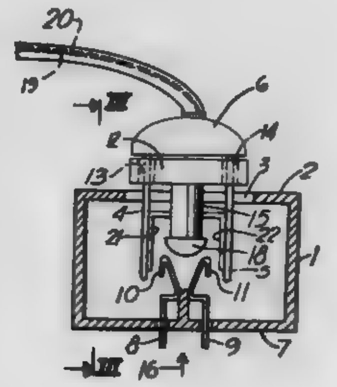
SHOCKPROOF ELECTRICAL WALL RECEPTACLE

Norman Cooperstein, Long Beach, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Oct. 23, 1975, Ser. No. 625,256

Int. Cl.² H01V *33/30*

U.S. Cl. 200—51.09 **2 Claims**



1. A shockproof electrical wall receptacle having a box with a wall side having an opening formed therethrough for the prongs of an electrical connector plug and a back side having a pair of electrically conductive circuit members passing therethrough into the box in electrically insulative relation with the box and with each other, said receptacle comprising

resilient ends of electrically conductive material extending from the ends of the electrically conductive circuit members in the box in spaced angular relation with each other in a generally V shape and positioned between the prongs of an electrical connector plug inserted in the box and spaced therefrom;

a housing of substantially rectangular parallelepiped configuration movably mounted in the opening in the box for selective insertion into the box flush with the wall side of the box and extension therefrom, said housing having a pair of spaced slots formed therein for accommodating the prongs of an electrical connector plug; and

a plunger affixed to the housing and extending through the opening through the wall side for movement in axial directions, said plunger having a head of electrically insulative material at an end in the box in proximity with the resilient ends of the circuit members equidistantly spaced therefrom and therebetween in a manner whereby in the absence of an electrical connector plug in the receptacle the housing extends from the box and the plunger is spaced from the resilient ends of the circuit members and the circuit members are maintained in open circuit relation although an electrically conductive object inserted into the box via either slot in the housing is free from contact with one of them and when an electrical connector plug is inserted in the housing, the housing is moved into the receptacle and said housing moves the plunger further into the box so that the head of the plunger abuts the resilient ends of the circuit members and moves said ends farther apart into electrical contact with the corresponding prongs of the electrical connector plug thereby closing the circuit of the circuit members via conductors connected to said prongs via said plug.

3,982,085

STOCK SENSING DEVICE

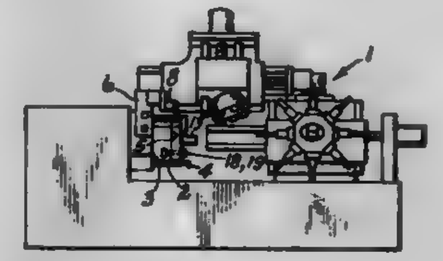
Joseph Henry Cox, Cincinnati, Ohio, assignor to Cincinnati Milacron, Inc., Cincinnati, Ohio

Filed Sept. 16, 1974, Ser. No. 506,286

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 20, 1976

Int. Cl.² H01H *3/16*

U.S. Cl. 200—61.41 **5 Claims**



1. In a machine tool, having a rotating chuck with work gripping members for holding a workpiece being machined, an apparatus for sensing sufficient chucking stock comprising:

a. a body, mounted to said rotating chuck, having its central axis coincident with the axis of rotation of said chuck;

b. an axial bore through the central axis of said body, through which predetermined increments of stock are fed for successive machining operations;

c. an indicator pin, slidably adapted in a radial bore in said body, and located within the dimensional range of the axial length of said work gripping members;

d. mechanical means urging said indicator pin inwardly towards the central axis of said body such that said pin bears on the outer diameter surface of various work sizes when present in said axial bore, and said pin moves inward radially to said central axis of said body when no stock is present at the inwardly-directed end of said indicator pin, and further wherein said mechanical means can trip a stationary signal means when no stock is present beneath said inwardly-directed end of said indicator pin and while said chuck is rotating; and

e. signal means mounted on said machine tool in a stationary position relative to said rotating chuck, wherein said signal means has a signal operator capable of engaging said mechanical means at a predetermined signal position while said body is rotating and said signal means is stationary.

3,982,086
ELECTRICAL SWITCH CONSTRUCTION

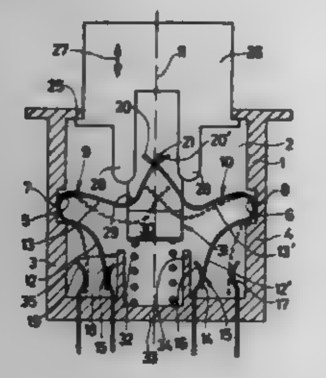
Erich Marquardt; Werner Storz, both of Rietheim, and Eckehardt Sachs, Spaichingen, all of Germany, assignors to Firma J. & J. Marquardt, Germany

Filed May 8, 1975, Ser. No. 575,531

Claims priority, application Germany, May 13, 1974, 2423075

Int. Cl.² H01H *13/36*

U.S. Cl. 200—67 DA **9 Claims**



1. An electrical switch, comprising a housing having spaced apart side walls each with a bearing recess, first and second laterally spaced fixed contacts located between said side walls, an actuator guided between said side walls for movement in directions toward and away from said fixed contacts, first and second substantially U-shape contact springs having first leg portions pivotally connected together, intermediate web portions pivoted in separate adjacent ones of said bearing recesses and second leg portions respectively movable toward and away from respective ones of said fixed contacts for electrical contact engagement therewith and in an opposite direction for disengagement therefrom, said actuator being movable through a path intercepting said first leg portions of said contact springs to flex said springs and thereafter pivot said intermediate portions in said bearing recesses and move said second leg portions.

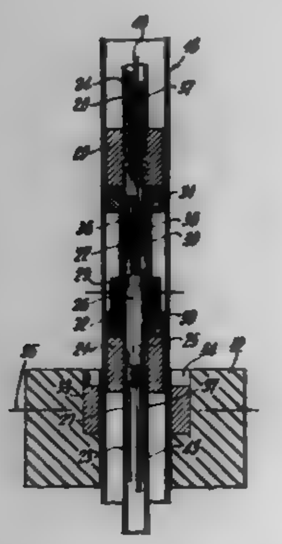
3,982,087
LIQUID-LEVEL INDICATING MEANS

Albert J. Bachman, Bristol, Conn., assignor to De Laval Turbine Inc., Princeton, N.J.

Filed Feb. 27, 1975, Ser. No. 553,508

Int. Cl.² H01H *35/18*

U.S. Cl. 200—84 C **22 Claims**



1. A magnetic-latching position-indicating transducer, comprising a magnetic-reed switch having contacts operable to open and close electric-circuit connections depending upon the presence or absence of a predetermined magnetic-field strength, an elongate non-magnetic tubular guide member encasing said switch near one to the exclusion of the other end thereof, an axially polarized annular magnetic latching element movably mounted upon said guide member and with respect to said switch over a displacement between a first position in actuating relation with said contacts to electrically close the same and a second position out of controlling relation with said contacts so as to electrically open the same, an annular pole-piece element of magnetic flux-conducting material carried at one end of said tubular guide member and fixedly positioned with respect to said switch and at said second position to coact with said latching element to magnetically restrain said latching element at said second position, an elongate non-magnetic tubular housing encasing said latching element and pole-piece element and guide member, and an axially polarized annular magnetic latch-actuating element guided by and movable along said tubular housing in the direction of said displacement and beyond the limits thereof, said latch-actuating element having a magnetic-field strength effectively exceeding that of said pole piece in terms of action upon said latching element, whereby displacement of said latch-actuating element between said positions is operative to determine the electrically open or closed condition of said contacts, and further whereby the electrically open condition of said contacts will be maintained by pole-piece retention of said latching element in its second position for such further displacements of said latch-actuating element as may occur away from said switch and beyond said second position.

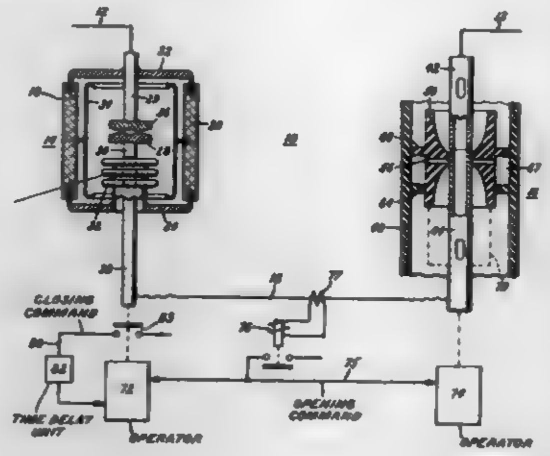
3,982,088
HIGH-VOLTAGE ELECTRIC CIRCUIT BREAKER COMPRISING SERIES-CONNECTED VACUUM INTERRUPTER AND FLUID BLAST INTERRUPTER

Joseph W. Porter, Media, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Apr. 3, 1975, Ser. No. 564,963

Int. Cl.² H01N *33/66*

U.S. Cl. 200—144 B **6 Claims**



1. A high-voltage alternating-current circuit breaker comprising:

a. a first circuit interrupter of the vacuum-type comprising a pair of contacts separable to establish an intercontact gap and a highly evacuated insulating housing enclosing said contacts,

b. a second circuit interrupter of the fluid-blast type comprising a pair of contacts separable to establish an intercontact gap and means for producing a fluid blast through said inter-contact gap upon contact separation,

c. means connecting said first and second interrupters electrically in series,

d. means for separating the contacts of said interrupters substantially simultaneously during circuit interruption to develop arcs across said gaps,

e. said second interrupter being characterized by a slower dielectric recovery rate than said vacuum interrupter during the initial period when recovery voltage is being applied across said inter-contact gaps immediately following arc extinction but an ability to withstand higher peak recovery voltages than said vacuum interrupter after said initial period if no breakdown occurs during said initial period,

f. and means for reclosing said vacuum interrupter immediately after said second interrupter has successfully withstood the recovery voltage applied thereacross and while said second interrupter remains open.

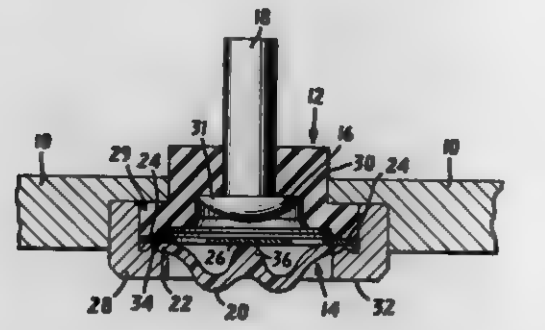
3,982,089
PUSHBUTTON SWITCH

Tom M. Hyltin, Dallas, Tex., assignor to Seiko Instruments Incorporated, Torrance, Calif.

Filed Nov. 29, 1974, Ser. No. 528,230

Int. Cl.² H01H *3/12*

U.S. Cl. 200—159 B **7 Claims**



1. A pushbutton switch adapted to be sealably mounted in an aperture of a casing, the switch comprising a housing including an outer conductive portion, an inner insulating portion, and a cavity in the housing; a flexible diaphragm enclosing the cavity and adapted to be accessible from outside the housing and casing, peripheral portions of the diaphragm being engaged by the housing to seal the cavity in the housing; a first electrically conducting contact member within the cavity and extending through the insulating portion of the housing into the casing; and a second electrically conducting contact member mounted between the housing portions with a resilient portion within the cavity between the first contact member and the diaphragm so that depressing the diaphragm moves the second contact member into engagement with the first contact member to close the switch.

3,982,090
DETENT COMPONENT

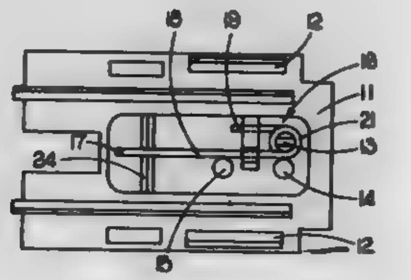
Keith Lewis, Burnley, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed June 2, 1975, Ser. No. 582,940

Claims priority, application United Kingdom, June 14, 1974, 26433/74

Int. Cl.² H01H *13/38*

U.S. Cl. 200—291 **2 Claims**



1. A detent component for use in a detent assembly of the kind capable of latching a linearly movable member in a predetermined position relative to a fixed member, the component including a mounting piece whereby the component can be secured to either the movable or the fixed member of a pair of relatively linearly movable members, and a cam follower carried by said mounting piece and engageable with a detent cam form on the other of said pair of members, said cam follower being defined by an upturned end region of a first limb of a hairpin type spring the second limb of which engages a stop on said mounting piece, the junction region of the first and second limbs defining a loop encircling an anchor post on the mounting piece and said first limb abutting a pair of spaced abutments on the mounting piece, said pair of abutments being positioned so that in use they are aligned parallel to the direction of relative movement of said members, and the resilience of the spring causing said first limb to engage said abutments so that the abutments define a rest position of said limb, in use, parallel to said direction of relative movement.

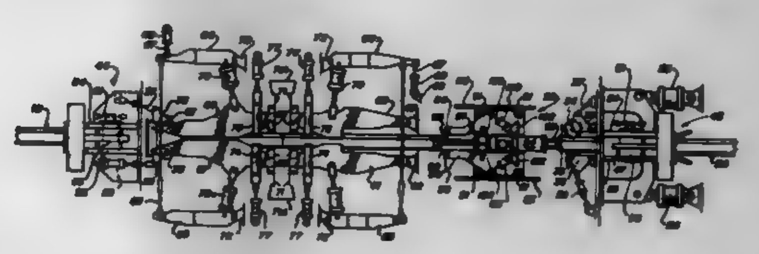
3,982,091
WELDING APPARATUS

Hans R. Zollinger, Geroldswil, Switzerland, assignor to H. A. Schlatter AG, Zurich, Switzerland

Filed Oct. 15, 1974, Ser. No. 514,396

Int. Cl.² B23K *11/04*

U.S. Cl. 219—101 **29 Claims**



1. Welding apparatus for welding rail sections together in end to end relationship to form a continuous rail comprising, in combination: a pair of vertical clamping assemblies for vertically clamping and aligning the respective ones of a pair of rail sections to be welded together to form a continuous rail, said vertical clamping assemblies including electrodes engageable with adjacent ends of a pair of rail sections to be welded together; means for causing current flow between said electrodes and through the ends of said rail sections in order to make a weld; a pair of horizontal clamping assemblies for horizontally clamping and aligning the respective ones of said pair of rail sections; said vertical clamping assemblies each comprising a pair of upper and a pair of lower lever arms, the lever arms of each pair being spaced on opposite sides of a rail section and being pivotally affixed for rotation in a vertical plane at one end thereof and having one of said electrodes connected between the opposite ends thereof so as to engage the upper and lower surfaces of said rail section when the respective pairs of said lever arms are pivotally rotated, said upper and lower pairs of lever arms being rigid in the vertical plane thereof and being flexible within limits in a horizontal plane, whereby no undue stress is placed on said lever arms during horizontal alignment of said rail sections, and means for pivotally rotating the respective pairs of lever arms to engage said electrodes with said rail section to vertically clamp said rail section between them.

3,982,092
ELECTRICALLY HEATED ZONED WINDOW SYSTEMS

James G. Marriott, Perrysburg, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Sept. 6, 1974, Ser. No. 503,808

Int. Cl.² H05B *1/02;* **E06B** *7/12;* **H05B** *3/10*

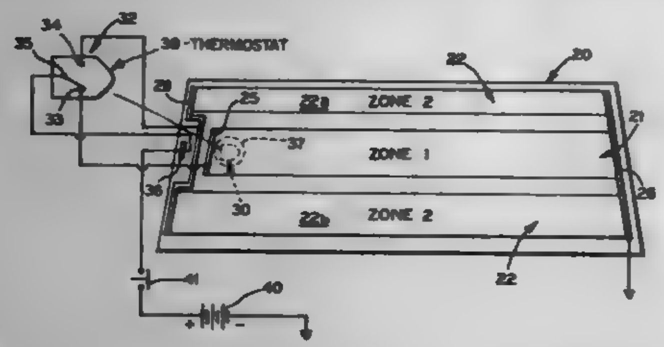
U.S. Cl. 219—203 **13 Claims**

1. In an electrically heated window system of the type having at least two heatable zones, wherein each zone is provided with its own independent electrical resistance heating element and a supply of electrical potential connectable to said heating elements of said zones for energization thereof, the improvement comprising:

a. means for producing a higher temperature in a selected region in one of said heatable zones than the average overall temperature produced by said heating element in said one zone;

b. means located at said selected region for sensing its said higher temperature; and

c. means operated by said temperature sensing means for initially connecting the heating element of said one heat-



able zone to said supply of electrical potential and then alternately cycling the electrical potential between the respective heating elements of said zones in accordance with the rise and fall of the temperature in said selected region.

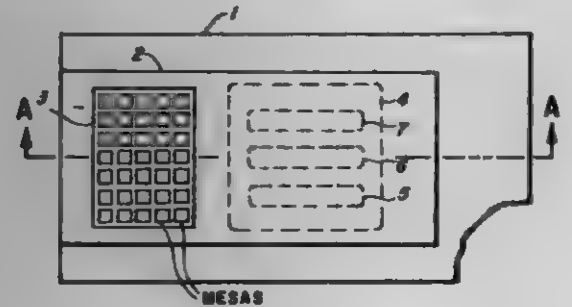
3,982,093
THERMAL PRINTHEAD WITH DRIVERS

W. S. Hearlon, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 16, 1974, Ser. No. 533,429

Int. Cl.² H05B *1/00*

U.S. Cl. 219—216 **7 Claims**



1. A thermal printhead comprising a plurality of mesas arranged on a substrate, each of said mesas containing heat dissipative semiconductor means for operation in either a quiescent or a heat dissipating state and switchable from said quiescent to said heat dissipating state in response to input signal to the mesa of amplitude as low as 0.4 milliamperes.

3,982,094
APPARATUS FOR FIXING TONER IMAGES

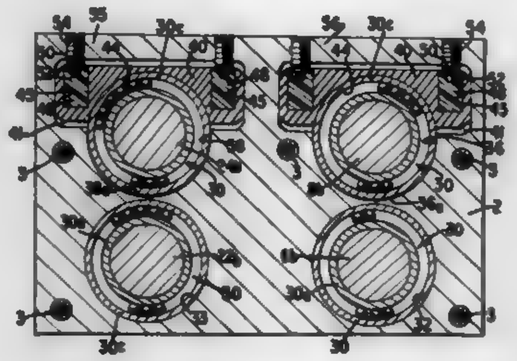
Francis L. Kratcoski, Lincolnshire, and William Brahos, Chicago, both of Ill., assignors to Oce-van der Grinten N.V., Venlo, Netherlands

Filed Jan. 2, 1975, Ser. No. 538,038

Int. Cl.² H05B *1/00;* G03G *15/20*

U.S. Cl. 219—216 **5 Claims**

1. Apparatus for fixing an image of fusible toner particles on flexible sheet material, comprising upright frames spaced apart at opposite side of the apparatus and defining a fixing zone therebetween, means for feeding said material with said image thereon into said zone at a substantially constant speed, two pressure rollers having coengaging smooth rigid peripheral surfaces pressed and rotated together, one over and upon the other, for engaging and advancing said material therebetween as said material passes said zone, means for rotating said rollers at a peripheral speed equal to said feeding speed, and means for constantly pressing each end of the upper of said rollers against the adjacent end of the lower of them under a selected force of between about 20 and about 3400 pounds per inch of length of the nip between said roller surfaces, said force being sufficiently great to join the toner particles superficially to one another and to the surface structure of said material by pressure as said material is advanced between said surfaces, each of said rollers having on its ends journals rotatable in respective surrounding anti-friction bearing units seated in respective recesses in said frames, each said bearing unit of the upper roller having a non-rotary outer bearing race that is free of constraint in downward direction otherwise than by the coengaging rigid peripheral surfaces of said rollers, a rigid pressure distributing block extending transversely over and seated on each said outer bearing race, each said block being displaceable vertically in a recess in one of said frames and having in each of its opposite end portions an upwardly open pocket containing a confined body of elastomeric material, a pressure member bearing downward upon each said elastomeric body, and adjustably settable means mounted in upper portions of said frames for holding each said pressure member pressed under a selected force against the related elastomeric body.



3,982,095
RESPIRATORY HUMIDIFIER

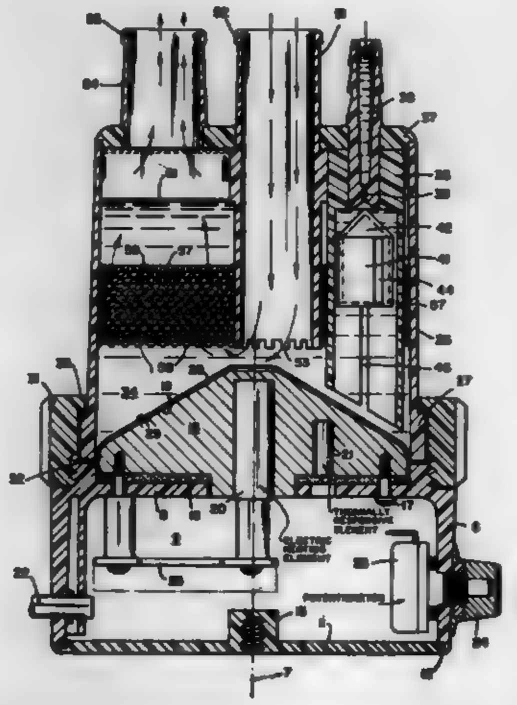
Thomas C. Robinson, Berkeley, Calif., assignor to Searle Cardio-Pulmonary Systems Inc., Emeryville, Calif.

Filed Oct. 4, 1973, Ser. No. 403,507

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 10, 1976

Int. Cl.² H05B *1/00;* A61M *15/00;* B01F *3/04*

U.S. Cl. 219—273 **8 Claims**



1. A respiratory humidifier comprising a base, a heater mounted on said base and having a first heat transfer surface, a container having a second heat transfer surface complementary to said first heat transfer surface, means associated with said base and said container for urging said first heat transfer surface and said second heat transfer surface substantially into abutment, means on said container for admitting liquid to the interior thereof at a lower location near said second heat transfer surface, means for establishing a predetermined liquid level in said container, means on said container for admitting gas to the interior thereof at a location near said second heat transfer surface and below said liquid level, means on said container for releasing gas therefrom at an upper location remote from said second heat transfer surface and above said liquid level, and a pad in and extending substantially completely across said container and disposed between said lower location and said upper location, said pad being permeable throughout to said liquid and to said gas and providing an extended surface for wetting by said liquid and said pad having an upper surface substantially coincident with said liquid level.

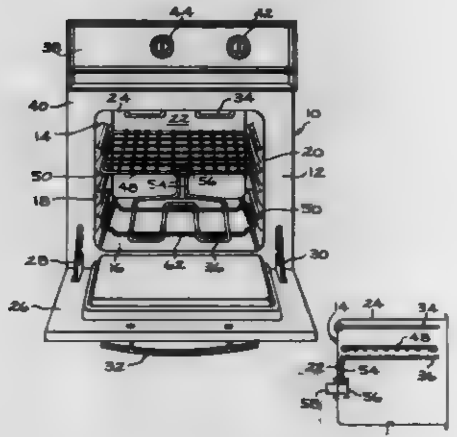
3,982,096
BAKING OVEN WITH TWO-SIDED BROILING

Raymond L. Dills, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 2, 1976, Ser. No. 646,411

Int. Cl.² F27D *11/02*

U.S. Cl. 219—403 **8 Claims**



1. A baking and broiling oven comprising:

an oven cooking cavity formed by a box-like oven liner and a front-opening access door;

vertically adjustable shelf means for supporting food at various elevations within the oven cooking cavity;

electrical resistance heating means for the oven including an upper horizontal broiling element located adjacent the top wall of the oven liner, and a lower horizontal baking element located adjacent the bottom wall of the oven liner;

the invention comprising the baking element having vertical terminal means arranged adjacent a vertical wall of the oven liner, the terminal means having an electrical plug connector arranged at an elevation slightly below the mid-height of the vertical wall, and an electrical plug receptacle mounted in the said vertical wall at an elevation slightly below the mid-height of the vertical wall for receiving the plug connector and making an electrical connection therebetween.

the plug connector being reversible in the plug receptacle so the baking element may be arranged closely parallel to the upper broiling element for performing a simultaneous two-sided broiling operation;

and support means for holding the baking element in the reversible elevated position.

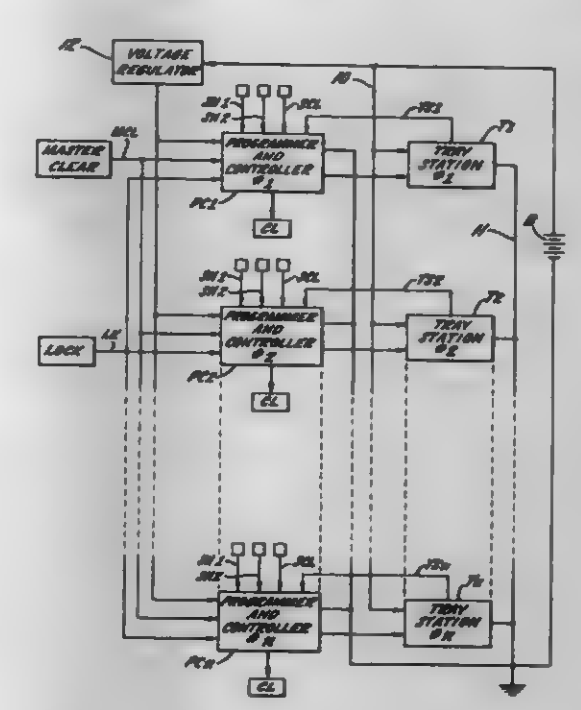
3,982,097
PROGRAMMABLE ELECTRONIC CONTROL SYSTEM FOR MULTIPLE ELECTRIC STATIONS

Gene J. Seider, Bloomington, and Michael C. Freund, Mendota Heights, both of Minn., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Apr. 30, 1975, Ser. No. 573,344

Int. Cl.² H05B *1/02*

U.S. Cl. 219—486 **24 Claims**


VOLTAGE REGULATOR
MASTER CLEAR
PROGRAMMABLE AND CONTROLLER #1
TRAY STATION #1
LOCK
PROGRAMMABLE AND CONTROLLER #2
TRAY STATION #2
PROGRAMMABLE AND CONTROLLER #N
TRAY STATION #N
CL

1. A programmable electronic control system for an array of food tray stations each of which is adapted to receive a food tray having a plurality of electrical heaters therein, said system comprising the combination of

a. a plurality of controllable power circuits associated with each tray station for supplying separately controllable power to each individual heater,

b. manually operable programming means connected to each power circuit and including means for generating control signals to enable or disable each separate power circuit to permit the programming of the entire array of tray stations,

c. manually operable station reset means connected to each programming means for removing any enabling control signals generated by the respective programming means to permit the re-programming of individual tray stations,

d. manually operable master reset means connected to all the programming means for removing any enabling control signals generated by any of the programming means to permit the re-programming of the entire array of tray stations,

e. and tray sensing means at each tray station for disabling the power circuits associated with the respective tray stations in response to the absence of trays at the respective stations, and for enabling the programming means associated with the repsective tray stations in response to the presence of trays at the respective stations.

3,982,098
HEATER AND CONTROL SYSTEM

Richard M. Trostler, 1730 Woodbend Drive, Claremont, Calif. 91711

Filed Dec. 23, 1974, Ser. No. 535,557

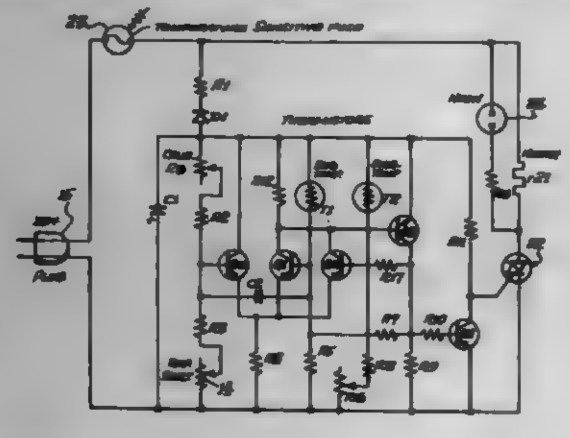
Int. Cl.² H05B *1/02*

U.S. Cl. 219—501 **9 Claims**

1. A combined heater, control circuit and power supply for water beds comprising;

a pair of elongated planar dielectric flexible members in bonded engagement on adjacent faces;

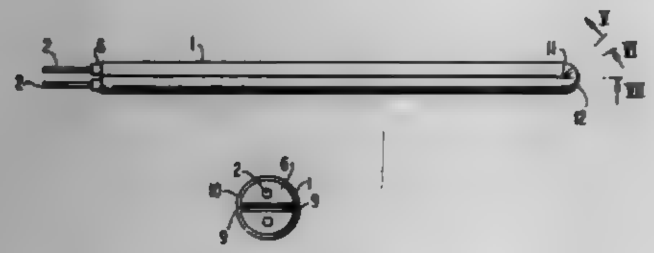
an electrical heating element between said members substantially covering one face of one of said flexible members except for a local region;
a circuit assembly positioned between said members in said localized region including a power supply adapted to be connected to the source of electrical current;
said circuit assembly including switch means for applying and interrupting electrical cuurrent to said heating element;
said circuit assembly means also including temperature sensing and control circuitry secured to said circuit assembly including a first temperature sensor positioned in thermal conductive relationship with a face of one of said members whereby the temperature of a body adjacent thereto may be sensed;
a second temperature sensor electrically connected to said circuit assembly extending off said circuit assembly and in thermal conduction relationship with said heating element; and
circuit means responsive to either said first or second temperature sensor to operate said switching means;
said circuit assembly and heating element being secured into a sealed unitary assembly between said members.



3,982,099

BILATERAL HEATER UNIT AND METHOD OF CONSTRUCTION

John W. Churchill, 12 Winthrop Ave., Beverly, Mass. 01915
Filed July 25, 1973, Ser. No. 382,295
Int. Cl.^{2} H05B *3/44*
U.S. Cl. 219—544 10 Claims

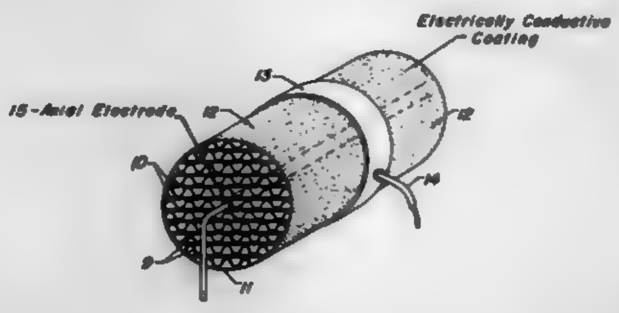


1. A heater unit comprising an elongated outer metallic sheath which is semicircular in cross section along at least a portion of the length thereof including the end portions, metal terminal means at respective end portions of the sheath extending within and in the longitudinal direction of the sheath, said metal terminal means having a portion lying within the sheath and having a portion extending outwardly beyond the end of the sheath, said portion of said metal terminal means lying within the sheath having a cross-sectional shape corresponding substantially to the cross-sectional shape of the sheath, an insulating end plug surrounding said metal terminal means and extending at least partially within said sheath, a resistor helix disposed within the sheath and secured to portions of said metal terminal means and extending therebetween, said resistor helix having a cross-sectional shape corresponding to the cross-sectional shape of the surrounding sheath, and compacted powder insulation completely filling the sheath and spacing the resistor helix and a portion of the metal terminal means from the sheath.

3,982,100

MONOLITHIC HONEYCOMB FORM ELECTRIC HEATING DEVICE

George L. Hervert, Woodstock, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Oct. 8, 1974, Ser. No. 513,028
Int. Cl.^{2} H05B *3/10*
U.S. Cl. 219—553 2 Claims

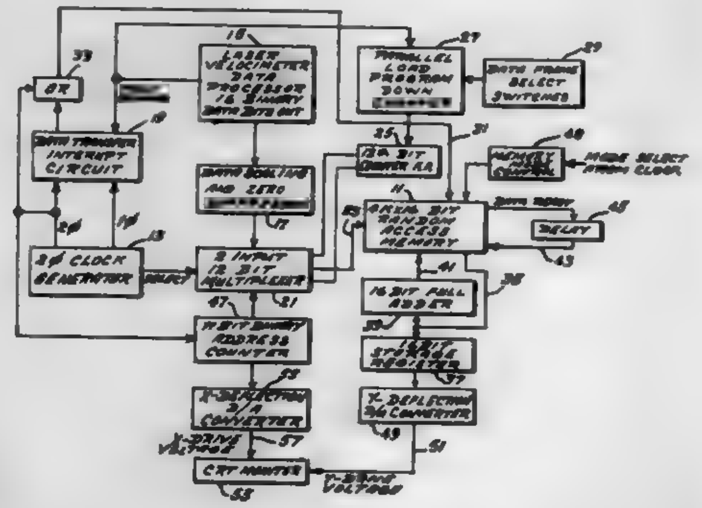


1. A resistance heating device which comprises in combination a rigid monolithic resistance heating element with an extended surface area comprising a honeycomb type structure with a plurality of passageways therethrough and resulting from an admixture of semiconductive refractory inorganic oxide particles with a thermally unifiable ceramic material, and said semiconductive particles have a semiconducting coating thereon with a conductivity of from about 10^{-8} to about 10^{2} inverse ohm-centimeters in turn provided by a carbonaceous pyropolymer formed from heating an organic pyrolyzable substance in a non-oxidizing atmosphere and in contact with particle surfaces at a temperature above about 400° C., and spaced electrodes are provided to opposing portions of said extended surface area element, whereby the resulting semiconductive element positioned between such electrodes will provide electric resistance heating from an electric energy supply to the electrodes.

3,982,101

LASER VELOCIMETER REAL TIME DIGITAL DATA ANALYZER

Henry T. Kalb, Manchester; Virgil A. Cline, Jr., and Bruce W. Bomar, both of Tullahoma, all of Tenn., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed May 19, 1975, Ser. No. 578,845
Int. Cl.^{2} G06F *15/30*
U.S. Cl. 235—152 3 Claims


LASER VELOCIMETER DATA PROCESSOR
PARALLEL LOAD PROGRAM DOWN COUNTER
DATA FRAME SELECT SWITCHES
DELAY
CRT MONITOR
57
55
51

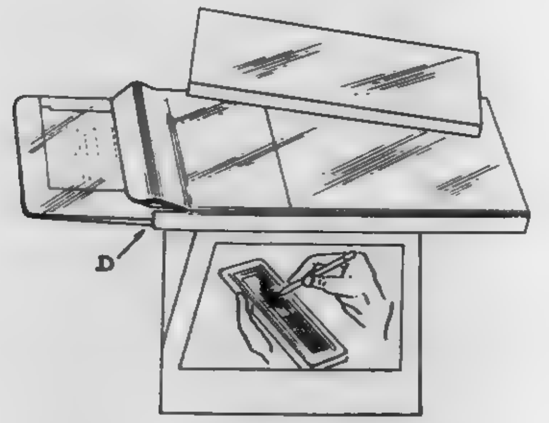
1. A digital analyzer for a velocimeter data processor comprising:
a. a clock having first and second phase outputs;
b. a data interrupt circuit fed by the first and second phase outputs of the clock and activated by a command from the data processor;

c. a multiplexer fed by the data processor;
d. a random access memory fed by the multiplexer and initiated by the data interrupt circuit and having a readout terminal and a data-in terminal;
e. a down counter fed by the command from the data processor;
f. a flip-flop activated by the down counter, the output thereof being fed to the multiplexer;
g. a full adder fed by the readout terminal of the random access memory and fed back thereto at the data-in terminal;
h. an address counter driven by the second phase of the clock and activating the multiplexer;
i. a cathode ray tube having an x-deflection terminal and a y-deflection terminal;
j. a first digital-to-analog converter fed by the random access memory and connected to the y-deflection terminal of the cathode ray tube; and
k. a second digital-to-analog converter fed by the address counter and connected to the x-deflection terminal of the cathode ray tube.

3,982,102

METHOD OF RECORDING BETS IN A LOTTERY AND SELECTING THE WINNERS BY ELECTRONIC COMPUTERS

Humberto José De Carvalho Cidade, Avenida Erasmo Braga, No. 277, Rio de Janeiro, Guanabara, Brazil
Filed Oct. 6, 1971, Ser. No. 187,050
Claims priority, application Brazil, Oct. 7, 1970, 222823
Int. Cl.^{2} G06K *1/00*
U.S. Cl. 235—61.6 E 1 Claim

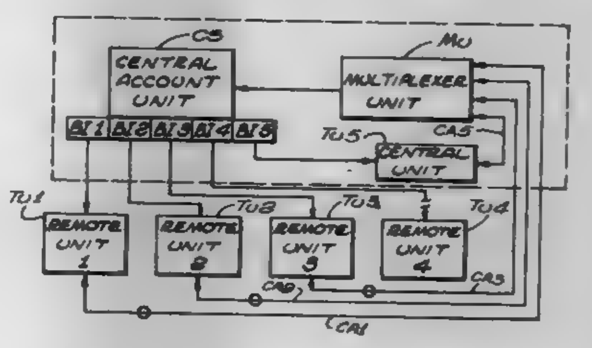


1. A method of recording bets in a public lottery based upon the outcome of one or more sporting events and selecting the winners comprising the steps of:
marking the name and address of the bettor, the number of bets, the amount of the bets and the prediction of the results of said sporting events on an entry sheet containing a list thereof,
placing said sheet on top of two Hollerith type punch cards adapted to operate in electronic computers,
said punch cards containing bet indicating spaces corresponding to the bet indicating spaces on said sheet,
placing the thus arranged sheet and punch cards in a manual perforating device,
perforating said sheet and cards by a punching instrument at the spaces on said sheet where the predictions have been marked,
marking the name and address of the bettor on said punch cards, for visual use one of said cards being retained by the bettor, the data on the other of said cards being recorded by means of computers on magnetic tapes,
composing a master punch card containing the data indicating the results of the particular sporting event or events and,
inserting said master card into a computer to select the winners of the contest based upon previously stored data appearing on the other of said punch cards.

3,982,103

CREDIT VERIFICATION SYSTEM

Robert N. Goldman, Kailua, Hawaii, assignor to Telecredit, Inc., Los Angeles, Calif.
Continuation-in-part of Ser. No. 406,063, Oct. 12, 1973, Pat. No. 3,891,830, which is a continuation of Ser. No. 150,601, June 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 558,127, June 16, 1966, Pat. No. 3,610,889. This application June 23, 1975, Ser. No. 589,649
Int. Cl.^{2} G06K *7/08, 19/08;* H04Q *11/04*
U.S. Cl. 235—61.7 B 12 Claims

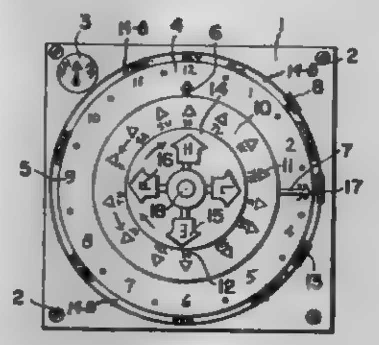


1. A system for use with credit cards, or the like, which includes a changeable recording medium, to control uses in relation to transactions, comprising:
a plurality of terminal sensing means for sensing said recording medium on said card to provide card identification signals, first card use signals, and second card use signals;
a central station means coupled for communication with at least some of said terminal sensing means during on-line operation, said central station means for receiving signals from specific of said terminal means during said on-line operation to provide approval-related signals responsive to signals from said specific terminal means;
and
a plurality of card processor means coinciding in number to said terminal sensing means and coupled thereto for providing approval-related signals other than during online operation, and for recording fresh first card use signals on said card to reflect each card-supported transaction and for recording fresh second card use signals on said card to reflect transactions not communicated to said central station means prior to approval.

3,982,104

TIDE AND TIME CALCULATING DEVICE

Philip M. Banner, 28 Oxford Road, Massapequa, N.Y. 11758
Continuation-in-part of Ser. No. 243,001, April 11, 1972, Pat. No. 3,825,181. This application June 13, 1974, Ser. No. 479,248
Int. Cl.^{2} G06C *3/00;* G04B *19/26*
U.S. Cl. 235—88 N 6 Claims



1. A tide time indicating device of the character described showing the precalculable relationship between tide, time, date and place comprising a base having a clock face disc with hour and minute numerals thereon, hands for hour minute and seconds displaying time at every moment connected to a motor drive means therefor, a clock motor driven tide disc

comprising marks corresponding to different tide phases and being set apart from each other through distances which correspond on said clock face disc to the times elapsing between said time phases, and a clock motor driven calendar disc comprising a predetermined sequence of regularly staggered marks at approximately 50 minutes apart corresponding to successive days, the space between two consecutive marks of said calendar disc at least corresponding on said time disc to the mean interval between the times when the same tide phase occurs at the same place on two consecutive days, a comparative rotatable secondary tide disc comprising marks corresponding to different earth places, the distance between any two ones of these marks corresponding on the time scale to the time interval between the times at which the same tide phases occur at the earth places to which said pair of marks correspond, each of said discs the clock face disc, tide disc, calendar disc and comparative secondary tide disc are coaxially mounted upon said base, also having an AM PM disc rotatably affixed upon said base turned by said drive means and all of the said discs being rotatably associated with said base each having setting crowns mounted upon said base for manual adjustment of said discs.

3,982,105

DEVICE FOR THE AUTOMATIC READING AND EVALUATION OF RECORDED CURVES

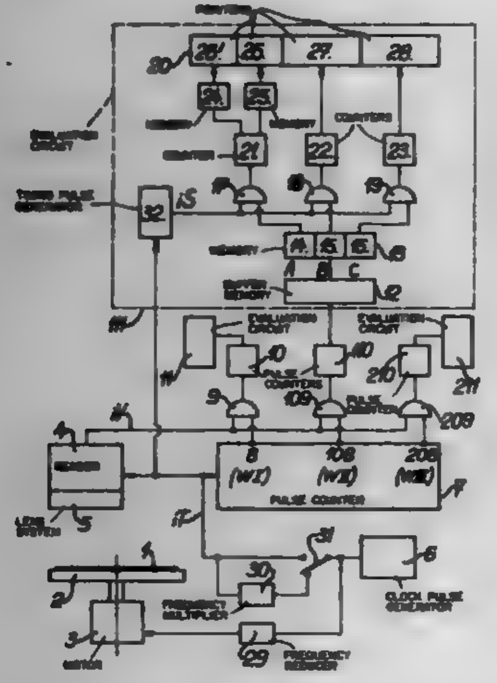
Karl Heinz Eberle, Carouge, Switzerland, assignor to TVI-Television Industrielle S.A., Switzerland

Filed Nov. 11, 1974, Ser. No. 522,868

Claims priority, application Switzerland, Nov. 16, 1973, 16157/73

Int. Cl.^{2} H03K *21/34*

U.S. Cl. 235—92 DN **1 Claim**



1. An automatic curve reader, for reading a plurality of curves disposed along generally parallel tracks, comprising: a clock pulse generator for developing a train of clock pulses; means receptive of said clock pulse train for displacing said curves along a direction generally parallel to said tracks at a rate determined by said clock pulses; scanning means receptive of said clock pulse train for periodically photoelectrically scanning transversely across said tracks and for passing clock pulses therethrough for the duration for which each curve is scanned; and counter means receptive of said clock pulse train for counting clock pulses passed through said scanning means at a rate determined by said clock pulses train and at counting intervals corresponding to the widths of said tracks, said counter means having a plurality of outputs each for developing an output signal representative of the number of clock pulses counted during a respective one of said counting intervals, whereby the different output signals developed by said counter means simultaneously represent widths of respective ones of said curves.

3,982,106

SYSTEM FOR MEASURING THE LONGITUDINAL OR ANGULAR DISPLACEMENT OF A MOVABLE COMPONENT

Theo Stutz, Basserdorf, Switzerland, assignor to Contraves AG, Zurich, Switzerland

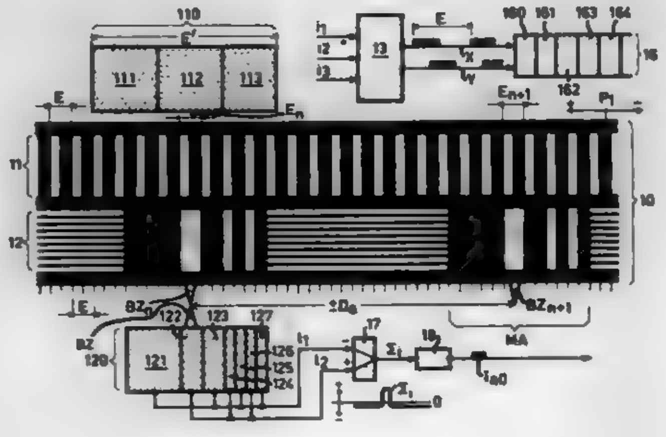
Continuation of Ser. No. 467,289, May 6, 1974, abandoned.

This application Nov. 10, 1975, Ser. No. 630,723

Claims priority, application Switzerland, May 14, 1973, 6792/73

Int. Cl.^{2} G06M *3/14*; H01J *5/16*

U.S. Cl. 235—92 GC **7 Claims**



1. An apparatus for measuring the longitudinal or angular displacement of a component, comprising a scale carrier adapted to be supported by the component and movable in a predetermined measurement direction, said scale carrier having a first track comprising an increment scale subdivided into equal graduation units, first stationary reading means defining a first reading location for reading the graduation units moving past the reading location, evaluation means in circuit with said first reading means and comprising an increment counter for the continuous storage of the algebraic sum of the graduation units of the increment scale moving past said first reading location and read by said first reading means, the movable scale carrier possessing a second track arranged substantially parallel to the increment scale, said second track containing a multiplicity of absolute value markings, each marking possessing a predetermined spacing from the next following marking, second stationary reading means defining a second reading location for reading the absolute value markings moving past the second reading location, said evaluation means including means for counting each said spacing in graduation units of the increment scale, the spacing of each marking from the next following marking characterizing an absolute value of its spacing from a null position, said evaluation means including a fixedly programmed allocation device, said evaluation means including means for determining the number of graduation units of the increment scale which have been counted sign-correct at the increment counter from the time of throughpassage of any given one of the absolute value markings up to the throughpassage of the next following absolute value marking, said evaluation means further ascertaining for said characteristic spacing value the associated correct absolute value from said fixedly programmed allocation device and correcting any possibly previously incorrect counter state of the increment counter to the correct absolute value.

3,982,107

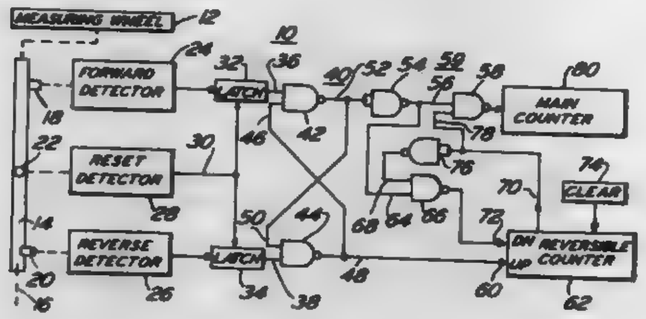
REVERSIBLE MEASURING MEANS

Michael Butler, Warminster, Pa., assignor to American Electronic Laboratories, Inc., Colmar, Pa.

Filed Sept. 9, 1974, Ser. No. 504,322

Int. Cl.^{2} G06M *3/14*; H03K *21/02*

U.S. Cl. 235—92 DN **10 Claims**



1. A reversible measuring means for measuring material moving past a station in a forward direction while taking into account movement in a reverse direction comprising a main counter for counting in the forward increasing direction only and a reversible counter for counting up from a fixed count and counting down to said fixed count, detector means including a plurality of sequentially energizable detectors delivering output signals indicative of the forward and reverse directions of movement and quantity of material moving past a station, and control means receiving signals from said detector means and activating said main counter for counting material moving past said station in the forward direction by increasing its count when the reversible counter has said fixed count and activating said reversible counter for counting up when material moves past said station in the reverse direction and activating said reversible counter for counting down to said fixed count when said material moves in the forward direction.

3,982,108

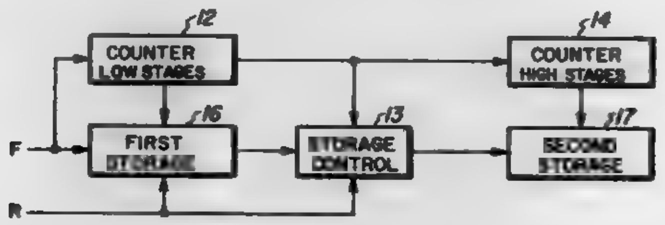
HIGH-SPEED COUNTER WITH RELIABLE COUNT EXTRACTION SYSTEM

James Othel Horsley, Moorestown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 31, 1975, Ser. No. 563,685

Int. Cl.^{2} H03K *21/08*

U.S. Cl. 235—92 EA **2 Claims**



1. The combination comprising,

counter means coupled to a source means for pulses to be counted, said counter means being divided into a first plurality of low order stages and a second plurality of high order stages;

first storage means for storing the count value in said first plurality of stages in response to said pulses to be counted;

means responsive to a first control signal for inhibiting the first storage means;

storage control means responsive to said first storage means, to said first control signal, and to said first plurality of stages for producing a store signal; and

second storage means coupled to the second plurality of stages for storing its count value in response to said store signal.

3,982,109

CIRCUIT ARRANGEMENT FOR THE FORMATION OF A SUM AND/OR DIFFERENCE SIGNAL

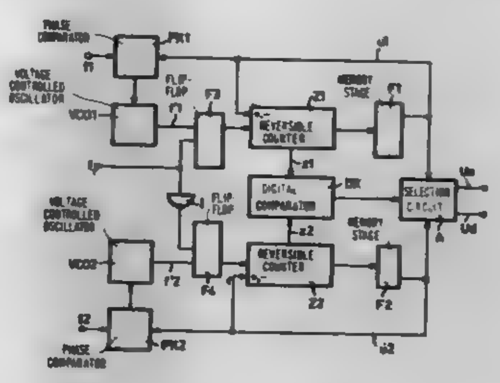
Martin Klinck, Uetersen, and Udo Mersiowsky, Hamburg, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 7, 1975, Ser. No. 565,937

Claims priority, application Germany, Apr. 27, 1974, 2420638

Int. Cl.^{2} G06F *15/20*; H03B *3/04*

U.S. Cl. 235—150.3 **12 Claims**



1. A circuit for the formation of a sum and difference signal whose frequencies correspond to the sum and the difference frequencies respectively of the frequencies of first and second input signals, comprising means for applying the two input signals to a comparator means as symmetrical triangular signals whose amplitude values increase and decrease as a linear function of time, said comparator means producing an output signal upon equality of the instantaneous values of the two triangular signals applied thereto, a selection circuit coupled to the output of the comparator means and responsive to said output signal, said selection circuit having output means for supplying said difference signal for a corresponding direction of the variation of the values of the triangular signals and said sum signal for an opposite direction of the variation of the values of the triangular signals, means for the formation of the triangular signals including first and second reversible counters each having the same counting capacity (Z_M) for each input signal received, means for applying to the inputs of said first and second counters first and second counting clock pulse trains respectively, which correspond to the frequency of said first and second input signals so that the counts represent the amplitude values of the triangular signals, first and second memory devices coupled to said first and second counters, respectively, and responsive to the attainment of the final count values of the respective counters to derive an output signal which reverses the counting direction of the relevant counter and represents a direction signal for the direction of the variation of the amplitude values of the triangular voltage, and means for driving the selection circuit with the output signals of the memory devices.

3,982,110

INPUT TRANSFER SYSTEM FOR ELECTRONIC COMPUTER

Yoshio Kawai, Tokyo, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1974, Ser. No. 532,103

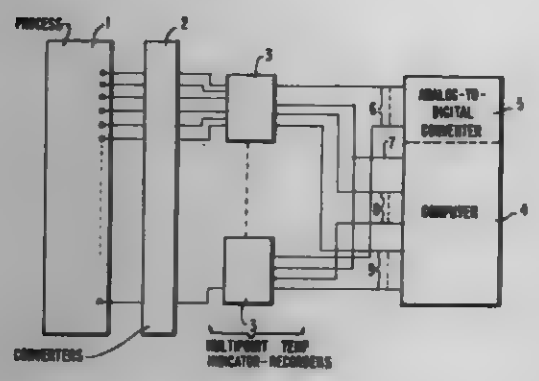
Claims priority, application Japan, Dec. 13, 1973, 48-139499

Int. Cl.^{2} H03K *13/02*; G01K *7/12*

U.S. Cl. 235—151.3 **3 Claims**

1. In a computer-controlled process control system including means for measuring a plurality temperatures at various points in the process and generating electric signals corresponding to the temperatures measured, a plurality of multipoint temperatures indicator-recorders connected to said measuring means and displaying and/or recording the measured temperatures, said multi-point temperature indicator-

recorders including linearity correcting means connected to outputs thereof for correcting the linearity of output analog signals, and an electronic digital computer for controlling the process, said computer having an analog-to-digital converter for converting input analog signals to digital signals for processing by said computer, the improvement comprising an input transfer system for automatically transferring and sequentially introducing the analog signals from each of said multi-point temperature indicator-recorders to said analog-to-digital converter in said computer, said transfer system including means in said multi-point temperature indicator-recorders for delivering input instruction signals to said computer to cause the automatic transfer of said analog signals.


PROCESS
1
2
3
ANALOG-TO-DIGITAL CONVERTER
5
6
7
COMPUTER
4
CONVERTERS
MULTIPOINT TEMP INDICATOR-RECORDERS

3,982,111

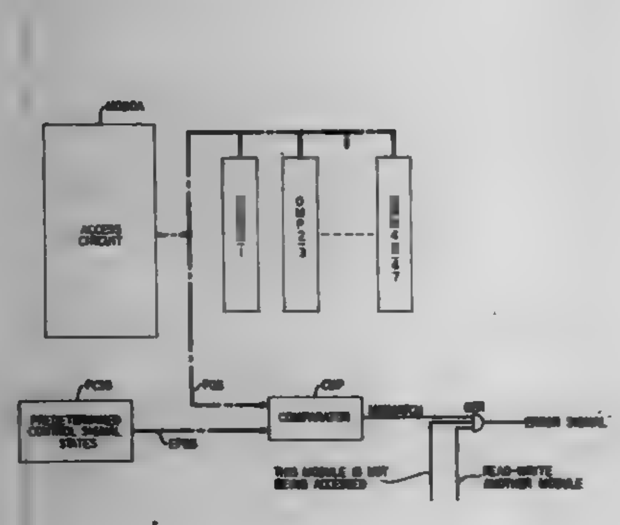
MEMORY DIAGNOSTIC ARRANGEMENT

Edward Mark Lerner, Glendale Heights, Ill.; David Cartwright Peterson, Neptune, N.J.; Terrence Thomas Quin, Holmdel, N.J., and Bernard George Ruel, Belmar, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 4, 1975, Ser. No. 601,477

Int. Cl.² G11C *29/00*

U.S. Cl. 235—153 AM **21 Claims**



1. For use with a memory system having an addressable memory module, means for providing an enable signal when said module is to be accessed, access means controlled by said enable signal for applying control signals including an address indication to leads extending to said module to control the accessing of information stored therein and in the absence of said enable signal for causing said leads to assume predetermined states; diagnostic apparatus comprising
  means connectable to said leads for detecting the states thereof and for providing a first indication if said leads are not in said predetermined states, and
  means jointly responsive to said first indication and to the absence of said enable signal for providing an error signal thereby indicating a potential malfunction in said memory system.

3,982,112

RECURSIVE NUMERICAL PROCESSOR

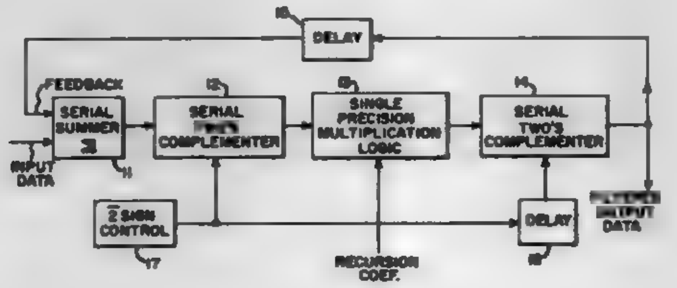
Fritz H. Schlereth, Baldwinsville, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Dec. 23, 1974, Ser. No. 536,009

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² G06F *7/38*

U.S. Cl. 235—156 **7 Claims**



1. In a recursive processor subject to error integration, the combination comprising:
   a. input terminal means for connection to a source of input data representing a time series, said input data being expressed in successive words in two's complement notation,
   b. a first two's complementer to which said input data from said input terminal means is coupled for inverting the sign of serial words coupled thereto in two's complement notation in response to a control signal,
   c. a numeric sub-processor coupled to the output of said first two's complementer for accepting input data in two's complement notation, said sub-processor being subject to a bias error which is consistently correlated with the sign of the input data,
   d. a second two's complementer to which the output of said subprocessor is coupled for inverting the sign of serial words coupled thereto in two's complement notation in response to a control signal, and
   e. control means coupled to the control input of said first and second two's complementers to invert and reinvert respectively the sign of alternate words to substantially cancel said bias error without changing the sign of the output data stream.

3,982,113

ACOUSTOELECTRIC WAVE SEMICONDUCTOR SIGNAL PROCESSING APPARATUS WITH STORAGE OF WEIGHTING FACTOR

Larry Allen Coldren, Leonardo, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

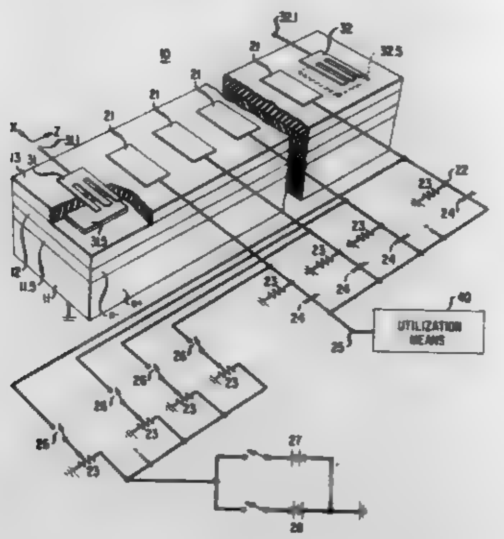
Filed Nov. 5, 1974, Ser. No. 520,924

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² G06G *7/19;* **H03H** *9/24*

U.S. Cl. 235—181 **11 Claims**

6. Apparatus which comprises:
   a. a body of semiconductor having a major surface coated by a dielectric layer which is coated with a piezoelectric layer, the thickness of the dielectric being such that an acoustic wave propagating along the surface undergoes nonlinear acoustoelectric interaction with the semiconductor;
   b. an array of electrodes for producing in the piezoelectric layer a pattern of stored electrical charges which varies in a first direction in response to a corresponding pattern of voltages applied to the electrodes;
   c. means for launching a pair of acoustic waves in the film, one of the waves propagating in the first direction and the other of the waves propagating in the opposite direction, said waves mutually interacting with the semiconductor, whereby an electrical response is generated by the semiconductor which as a function of time is a functional representation of the pattern depending upon the envelopes and frequencies of the acoustic waves.



3,982,114

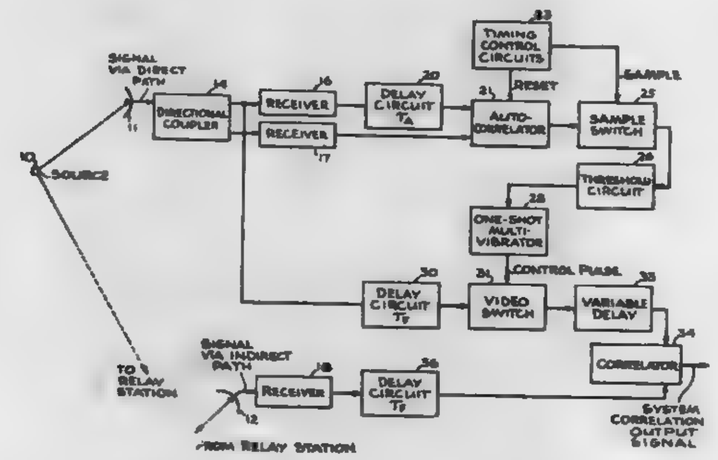
SIGNAL PROCESSING SYSTEM

William R. Hook, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 28, 1961, Ser. No. 136,141

Int. Cl.² G06F *15/34*

U.S. Cl. 235—181 **12 Claims**



1. A correlation system for two complex multifrequency input signals which may contain relatively strong narrow band components including the combination of: auto-correlator means responsive to one of the input signals, the auto-correlator means dividing the one input signal into two channels and including delay means in one of the channels for introducing a fixed relative timing displacement between the two signals, threshold means coupled to the auto-correlator means for indicating when the auto-correlation output signal exceeds a selected amplitude, first and second delay means each responsive to a different one of the input signals and introducing like delays thereto, gating means coupled to at least one of the delay means and controllably responsive to the threshold means, and correlator means coupled to said delay means and said gating means for correlating the two input signals therefrom.

3,982,115

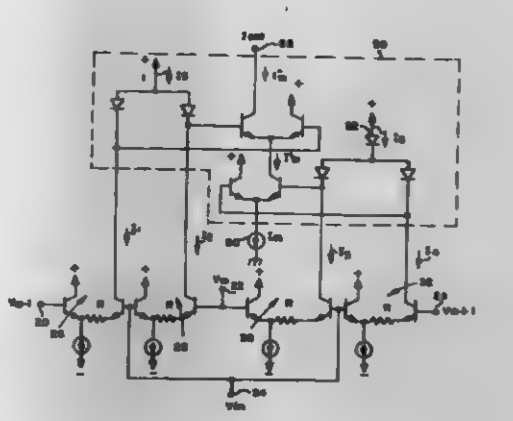
ELECTRONICALLY PROGRAMMABLE FUNCTION GENERATOR

Einar Oddbjorn Tran, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 31, 1975, Ser. No. 545,962

Int. Cl.² G06G *7/26*

U.S. Cl. 235—197 **4 Claims**



1. An electronically programmable function generator, comprising:
  means including a voltage comparator for generating at least two currents, said currents having a ratio which is the same ratio of voltages applied to said means to generate said currents; and
  means for combining the ratio of said currents to proportion a reference current as to said ratio of voltages, said proportion being a piecewise linear function.

3,982,116

SLIT ILLUMINATION SYSTEM FOR COPYING MACHINE

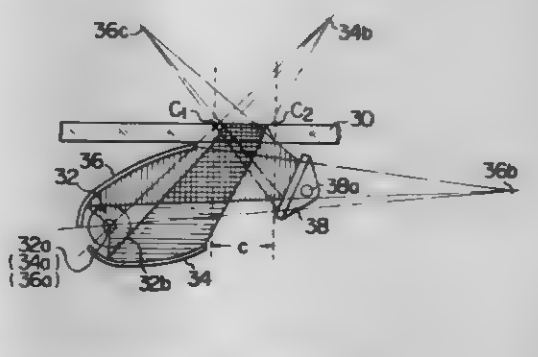
Nobuo Sakuma, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1975, Ser. No. 602,045

Claims priority, application Japan, Aug. 6, 1974, 49-89974

Int. Cl.² G03B *15/02, 27/54*

U.S. Cl. 240—1.3 **8 Claims**



1. A slit illumination system, comprising:
an elongated light source having an axis arranged parallel to a plane of the slit;
a first cylindrical mirror spaced farther from said plane than the light source and having an axis parallel to said axis of the light source, the first cylindrical mirror being arranged to reflect light from the light source into the slit;
a second cylindrical mirror spaced between said plane and the light source and having an axis parallel to said axis of the light source, the second cylindrical mirror being arranged to reflect light from the light source generally parallel to said plane; and
a third mirror arranged to reflect the light reflected from the second cylindrical mirror into the slit.

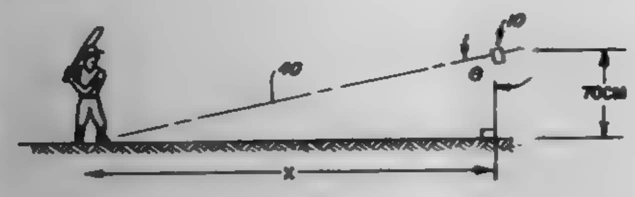
3,982,117
ELECTRONIC FLASH UNIT FOR CAMERAS

Frank W. Betlejewski, Elgin, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Dec. 16, 1974, Ser. No. 532,876

Int. Cl.² G03B *15/02*

U.S. Cl. 240—1.3 **14 Claims**



1. In a flash unit having a housing and a power source mounted therein, an exposure calculator comprising:

sighting means mounted on said housing for aligning said housing in a desired angular orientation relative to the ground;

an indicator means including a first movable member supported on said housing for free movement relative to said housing under the influence of gravity, said first movable member including an index portion alignable with indicia on the housing representative of aperture settings, whereby the angular orientation of the housing caused by aiming the flash unit at an object by means of said sighting means serves to move said index relative to said indicia to indicate the proper aperture setting; and

actuating means operatively associated with said first movable member for selectively restraining movement thereof, said actuating means being mounted on said housing and movable between a first position wherein the first movable member is free to move under the influence of gravity and a second position wherein the first movable member is restrained and held in its assumed orientation so that the proper aperture setting can be determined by the relative positioning of said index portion and said indicia.

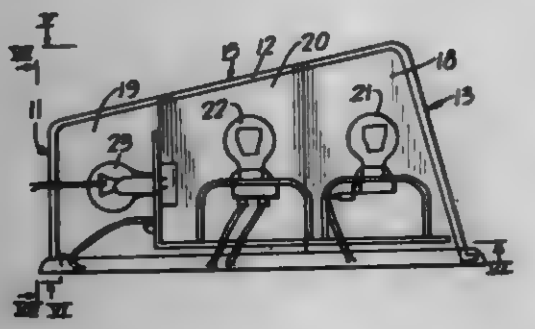
3,982,118
VEHICLE OUTSIDE LIGHT FIXTURE

Vaughn Thomas, East Orange, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Feb. 24, 1975, Ser. No. 552,120

Int. Cl.² B60Q *1/32*

U.S. Cl. 240—7.1 R **2 Claims**



1. An outside light fixture for a motor vehicle having rear fenders, said light fixture comprising

a housing having a front, rear, top, two sides, a front translucent part of a first color extending around the front and front areas of the sides and top of the housing, a rear translucent colorless part extending around the rear and rear areas of the sides and top of the housing and an intermediate translucent part of a second color different from the first extending around the sides and top between the front and rear parts, said housing being mounted on a rear fender with the front part up and the rear part down; and

a plurality of lamps in the housing each in the area of a corresponding one of the front, intermediate and rear parts.

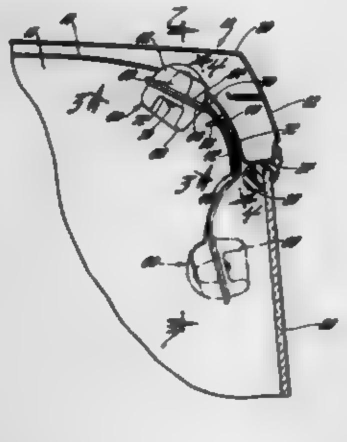
3,982,119
COMBINATION DOME AND CARGO LAMP

Peter J. Aluzzo, St. Clair Shores; Charles G. Gibson, Warren, and Albert T. Olson, West Bloomfield, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 21, 1975, Ser. No. 570,078

Int. Cl.² B60Q *1/24*

U.S. Cl. 240—7.25 **2 Claims**



1. A combination dome and cargo lamp assembly for the selective illumination of a passenger compartment and cargo area of a vehicle comprising: a connection plate adapted to be secured to the passenger compartment interior having a latch finger formed on one edge portion thereof, hinge means formed on said connection plate on an edge portion thereof opposite to that of said latch finger, a support plate having one edge connected to said hinge means for pivotal movement of said support plate between dome and cargo illumination positions, coacting means on said latch finger and said support plate for retaining said support plate in juxtaposed position with respect to said connection plate when in its dome illumination position, a lamp enclosure fixedly secured to said support plate and movable therewith for pivotal movement with respect to said connection plate between the dome and cargo illumination position, first and second lamps located within said enclosure, means for energizing said lamps including first switch means operative to maintain one of said lamps permanently deenergized when the lamp plate is in its dome position, said energizing means including second switch means for selectively energizing the other of said lamps when said lamp enclosure is in the dome position, said first switch means being responsive to pivotal movement of said support plate downwardly from said connection plate to complete an energization circuit for said one lamp, said lamp enclosure having a lens thereon faced in one direction when the lamp enclosure is in its dome position, said lamp lens being positioned to face in a direction opposite to said one direction when the lamp enclosure is located in its cargo illumination position.

3,982,120
FLASHLIGHT

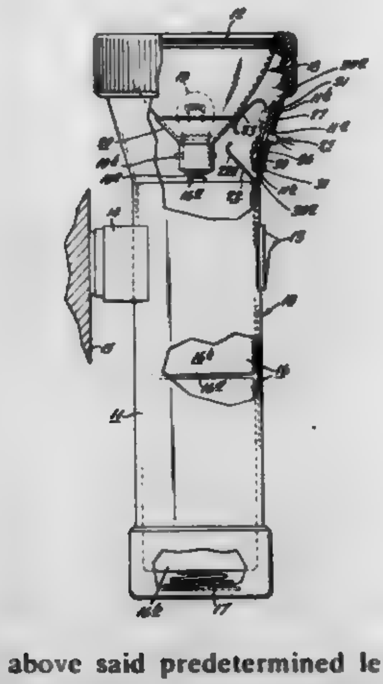
Richard R. Wynn, 1891 Cleveland Ave., Abington, Pa. 19001

Continuation-in-part of Ser. No. 480,038, June 17, 1974. This application Apr. 7, 1975, Ser. No. 564,781

Int. Cl.² F21L *7/00, 9/00*

U.S. Cl. 240—10.6 R **13 Claims**

1. In a lantern including a casing adapted to contain an electrical power supply for providing a voltage output of at least a predetermined level, lamp means providing a primary source of illumination for projecting a beam of light of one intensity level, said primary illumination source means having an electrical collector ring spaced from the inside of the casing, means removably mounting said lamp means and collector ring in said casing, and a switch for connecting said collector ring and lamp means to said power supply, the improvement comprising: a light-emitting diode providing a secondary source of illumination carried by said casing, and circuit means contained by said casing for connecting said power supply to said light-emitting diode to cause said light-emitting diode to emit light of an intensity level substantially lower than the intensity level of said primary illumination source when said voltage is above said predetermined level, said circuit means including an electrical contact releasably engaging said collector ring upon movement of said collector ring inwardly of said casing toward said contact, whereby said light-emitting diode can be energized to emit light to facilitate location of the lantern in the dark when the primary source of illumination is off and said light-emitting diode can be de-energized upon outward movement of said collector ring.



3,982,121
HEADLAMP TILTING SYSTEM IN A MOTOR VEHICLE

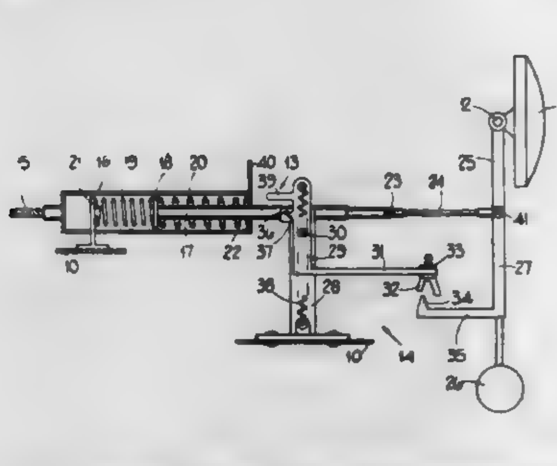
Frederick Raymond Patrick Martin, Kent, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Mar. 5, 1975, Ser. No. 555,714

Claims priority, application United Kingdom, Mar. 8, 1974, 10455/74

Int. Cl.² B60Q *1/10*

U.S. Cl. 240—7.1 LJ **5 Claims**



1. In a motor vehicle having a body, wheels on which said body is mounted and a headlamp mounted for tilting movement on said body, a headlamp tilting system comprising a headlamp tilting mechanism, and a headlamp securing mechanism which is arranged to override said headlamp tilting mechanism and which is normally de-activated to permit said headlamp tilting mechanism to tilt said headlamp, said headlamp tilting mechanism including an element which is normally maintained in tension and which is movable in response to variations in the attitude of said vehicle body relative to said wheels caused by variations in the load carried by said vehicle body, and a member disposed in a part of said headlamp tilting mechanism which connects said element with said headlamp, said member being arranged to activate said headlamp securing mechanism when it moves into a predetermined position, said member being biassed towards said predetermined position but being held against movement into said predetermined position by the tension in said element whereby, when a loss of tension occurs in said element, said member moves into its said predetermined position under the action of its bias to activate said headlamp securing mechanism which is arranged to limit tilting movement of said headlamp.

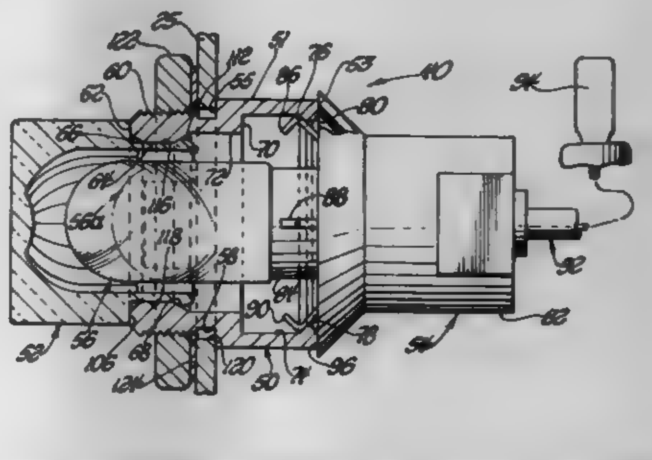
3,982,122
LAMP ASSEMBLY

Dale L. Bull, and Norman A. Rautiola, both of Reed City, Mich., assignors to Nartron Corporation, Reed City, Mich.

Filed Jan. 28, 1975, Ser. No. 544,773

Int. Cl.² F21V *17/00;* **F21Q** *3/00*

U.S. Cl. 240—152 **14 Claims**



1. A lamp assembly, comprising body means, said body means being adapted to be supported by associated support means, a first open end formed in said body means, a second open end formed in said body means, clearance passage means formed through said body means and operatively interconnecting said first and second open ends, lens means operatively connected to said body means as to be supported and carried thereby effectively closing said first open end, first detent-like latching means effective for detachably securing said lens means to said body means, and said second open end being adapted to have operatively connected thereto bulb socket means whereby bulb means carried by said socket means extends into said clearance passage means and upon energization emit light against said lens means, said first detent-like latching means being effective to enable said lens means to be removed from or attached to said body means without the necessity of having to cause relative motion as between said body means and said associated support means, and said bulb socket means also being disconnectable from said body means without the necessity of having to disconnect said lens means from said body means.

3,982,123
OPTICAL FIBER POWER TAPS

James Emanuel Goell, Roanoke SW., Va.; Tingye Li, Rumson, and Willis Martin Muska, Little Silver, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 11, 1974, Ser. No. 522,577

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

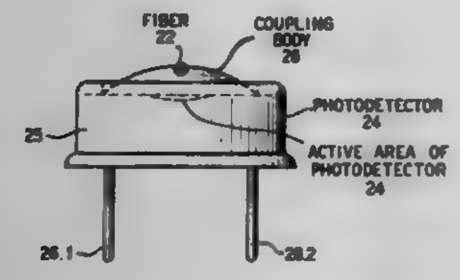
Int. Cl.² G02B *5/14*

U.S. Cl. 250—227 **6 Claims**

1. An arrangement for tapping optical power from an intermediate portion of an optical fiber waveguide without requiring that the fiber be terminated or broken, said fiber including a guiding region in which the optical power is essentially confined, and including a medium surrounding said guiding region, said arrangement being characterized by:

a body of dielectric material disposed in a coupling relationship to an intermediate length of said fiber, said body having an index of refraction which is approximately equal to or greater than the index of refraction of the medium surrounding said guiding region of said fiber and is selected to couple only a minor portion of the optical power propagating in said fiber waveguide guiding region toward a surface of said dielectric body laterally offset from said guiding region;

a photodetector contacting said laterally offset surface of said dielectric body and including an active area responsive to the wavelength of the optical signal to be propagated through said fiber, said active area of said photodetector being oriented to intercept the optical power coupled out of said guiding region of said fiber by said dielectric body; and

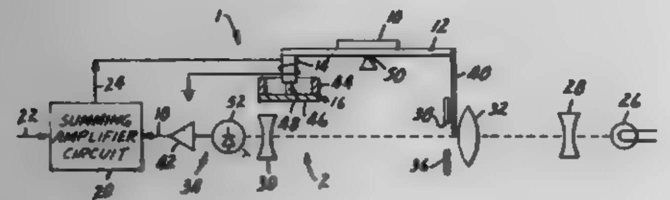


in which said guiding region of said fiber comprises an inner core formed of a low optical loss material, said medium surrounding the guiding region comprising an outer cladding of lower refractive index than that of said inner core; and

said dielectric body has an index of refraction greater than about 0.8 times the index of refraction of said outer cladding of said fiber.

3,982,124
ELECTRO-OPTICAL FEEDBACK SIGNAL PRODUCING APPARATUS

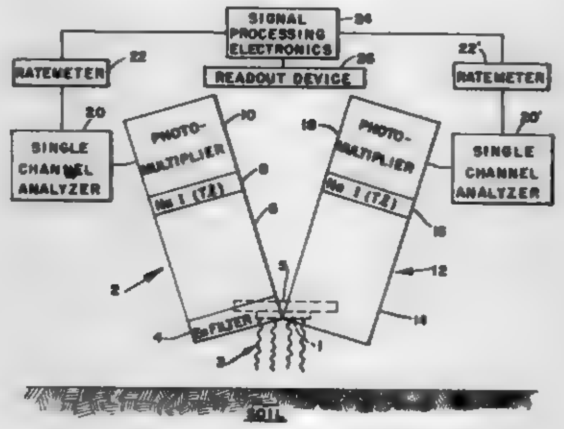
David J. Schoen, Marine on St. Croix, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 466,975, May 6, 1974, Pat. No. 3,919,545. This application Oct. 8, 1975, Ser. No. 620,635
Int. Cl.² H01J *3/14*
U.S. Cl. 250—237 R **11 Claims**



1. Electro-optical feedback signal producing apparatus for use in a control apparatus including: a light means for providing a uniform light flux distribution, a light to electric transducer having an output at which the feedback signal is provided, a light shutter positioned with respect to said light means for receiving said uniform light flux distribution and operatively responsive to the operation of the control apparatus for controlling the passage of light via said shutter in accordance with the operation of the control apparatus and light control means positioned with respect to said light means and said light shutter for converging at said light to electric transducer the light flux presented at said light shutter.

3,982,125
METHOD AND APPARATUS FOR PROVIDING HEIGHT VARIATION COMPENSATION IN CERTAIN NUCLEAR GAUGING APPLICATIONS INCLUDING NUCLEAR MINE DETECTION

Frederick L. Roder, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jan. 9, 1975, Ser. No. 539,883
Int. Cl.² G01V *5/00*
U.S. Cl. 250—253 **3 Claims**



1. A photon backscatter nuclear gauging system which enables compensation for variation in system placement comprising:

a photon radiation source having a monenergetic output and adapted such that a medium to be discerned is irradiated by said source when said source is disposed substantially at a selected distance therefrom;

first and second collimated detector means disposed in selected relation with respect said source, each of said detector means having a respective selected orientation with respect said medium to be discerned and each detector means adapted to detect photon backscatter reflected from said medium;

a photon energy discriminator means of the K edge filter variety, said photon energy discrimination means disposed between said first detector means and said medium to be discerned and adapted to filter photon backscatter impinging upon said first detector;

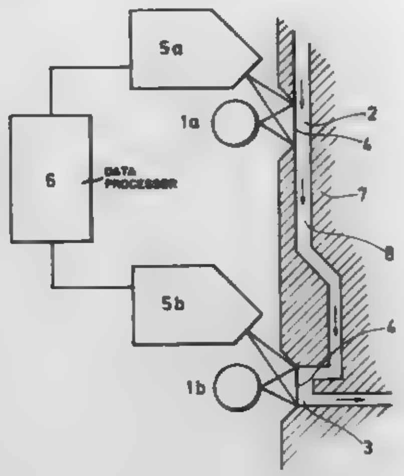
and electronic circuitry means associated with said first and second detectors and adapted to process the output of said first and second detectors such that a signal output representative of the average atomic number of said medium to be discerned is obtained.

3,982,126
METHOD AND DEVICE FOR DETERMINING PARTICLE SIZE CATEGORIES OF PARTICLES DISPERSED IN A LIQUID

Georg Christian von Alfthan, Helsinki, Finland, assignor to Outokumpu Oy, Helsinki, Finland
Filed Mar. 5, 1974, Ser. No. 448,383
Int. Cl.² G01N *23/20*
U.S. Cl. 250—272 **6 Claims**

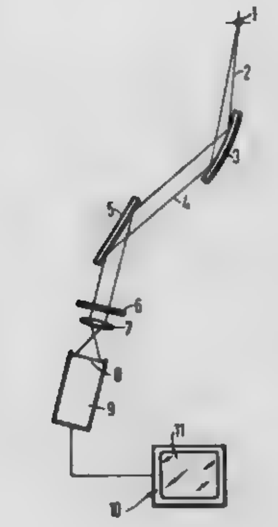
1. A method of determining the mean size of particles dispersed in a liquid which comprises causing a sample of the liquid containing such particles to flow at a steady rate through an elongated straight flow channel having a uniform cross section and maintaining said flow undisturbed for a sufficient distance along said channel for the establishment of a uniform flow velocity distribution over the cross section of the liquid taken perpendicular to the direction of flow at a measuring point to produce a strong flow velocity gradient in the immediate vicinity of a boundary of said channel at said

measuring point and thereby obtain a distribution of particles in said vicinity in which relatively smaller ones of said particles tend to be nearer the said boundary than relatively coarser ones of said particles, passing X-ray radiation from an X-ray source into said boundary area of the channel, taking a measurement of the fluorescent radiation from said area to determine the average depth at which the particles move through the channel, said depth being a measure of the particle mean size and taking a second fluorescent radiation measurement at a reference point at which the distribution of said particles is different from the distribution at said first mentioned measurement point.



3,982,127
METHOD AND APPARATUS FOR DISPLAYING THE INTERNAL STRUCTURE OF AN OBJECT

Werner Hartmann, Berkheim; Hans-Joachim Queisser; Gregor Markewitz, both of Stuttgart; Ulli Rettenmaier, Reichenbach; Gunter Sprater, Stuttgart, and Rüdiger Kniep, Hilden, all of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Goettingen, Germany
Filed July 14, 1975, Ser. No. 595,588
Claims priority, application Germany, July 17, 1974, 2434391; Mar. 19, 1975, 2512103; Jan. 31, 1975, 2503986
Int. Cl.² G01N *21/34, 23/00*
U.S. Cl. 250—273 **28 Claims**

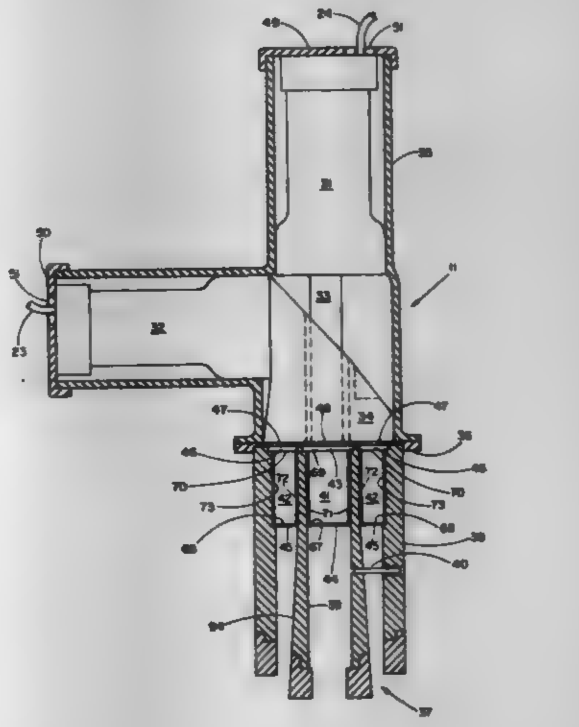


1. A method of displaying an image of the internal structure of an object which comprises:

a. exposing said object to a primary beam of radiation sufficient to generate emission of a secondary beam of radiation from said object;
b. intercepting said secondary beam by a luminescent screen responsive to said secondary beam to emit a visible image of said object;
c. optically magnifying said image;
d. receiving the magnified image on the photosensitive surface of a television camera;
e. scanning said surface; and
f. producing an electronically enlarged visual image of the image on said scanned surface,
   1. the resolving power of said screen being greater than the resolving power of said surface.

3,982,128
DUAL CRYSTAL SCINTILLATION PROBE

Mark W. Groch, Mount Prospect, and Frank R. Whitehead, Arlington Heights, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.
Filed Mar. 17, 1975, Ser. No. 559,227
Int. Cl.² G01T *1/20*
U.S. Cl. 250—363 S **15 Claims**



1. A scintillation probe for detecting and measuring radiation comprising transducer means having a central radiation receiving element from which associated signals are generated in response to radiation incident thereon, a peripheral radiation receiving element encircling said central radiation receiving element and from which associated signals are generated in response to radiation incident thereon which signals are distinguishable from signals associated with said central radiation receiving element, tabulating means for separately tabulating the signals associated with said central and peripheral radiation receiving elements, and collimating means defining a generally conical spatial region of acceptance centered on a surface of said central radiation receiving element and further defining a cylindrical absorption region of space coaxial with respect to the aforesaid conical region wherein radiation emanating from said conical region and directed at said central radiation receiving element is not absorbed by said collimating means and radiation emanating from said cylindrical region and directed at said peripheral radiation receiving element is absorbed by said collimating means.

3,982,129

METHOD AND MEANS OF MONITORING THE EFFLUENT FROM NUCLEAR FACILITIES

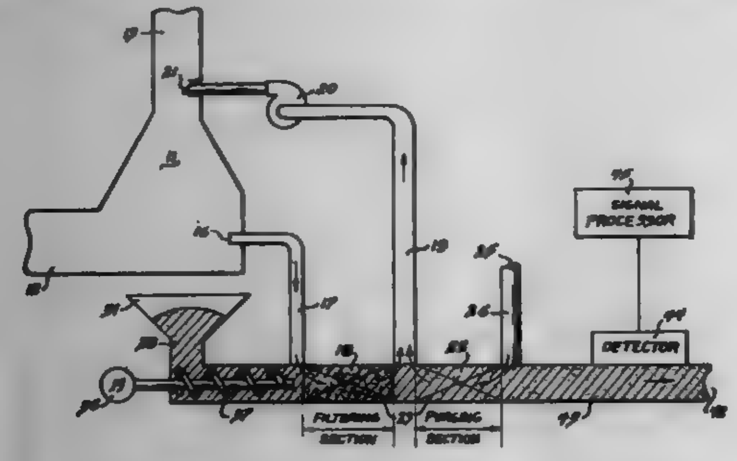
Kenneth R. Lattin, and Gerald L. Erickson, both of Richland, Wash., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Nov. 22, 1974, Ser. No. 526,190

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.² G01T *1/20*

U.S. Cl. 250—364 **8 Claims**



1. A method of measuring quantities of adsorbable radioactive materials on a continuous basis in a stream of gas containing nonadsorbable radioactive materials comprising in sequence the steps of:

a. passing the stream of gas through an adsorbent filter;
b. conveying the adsorbent filter through a filter section while passing the stream of gas through the adsorbent filter;
c. conveying the adsorbent filter through a purging section while passing a purging gas through the adsorbent filter;
d. conveying the adsorbent filter to a detecting section; and
e. measuring in the detecting section the radiation emitted by radioactive materials remaining on the adsorbent filter.

3,982,130

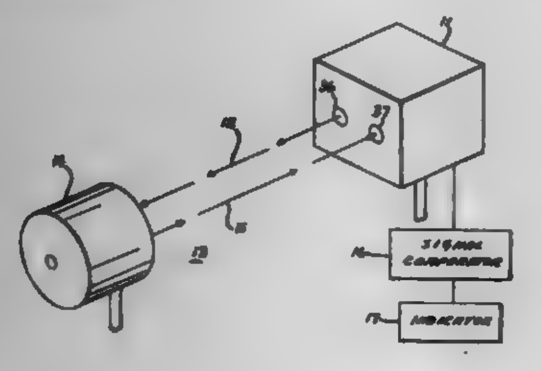
ULTRAVIOLET WAVELENGTH SMOKE DETECTOR

Terry M. Trumble, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 10, 1975, Ser. No. 621,338

Int. Cl.² G01N *21/12, 21/26*

U.S. Cl. 250—373 **4 Claims**



1. A system for detecting, at a location, smoke having a determined suspended particulate means diameter size comprising:

a. An ultraviolet source providing a first ultraviolet radiation beam at a first ultraviolet wavelength and a second ultraviolet radiation beam at a second ultraviolet wavelength;
b. means for directing said first and said second ultraviolet beams successively to traverse the said location;
c. means for detecting the respective signal levels of the said first and the said second beams after they have traversed the said location, and providing a signal proportional to each of the respective signal levels of each beam;
d. means responsive to the said signal level of each beam for providing an output signal when the ratio of the said signal levels is a determined value indicative that said particulate mean diameter particles are present in the said beams; and
e. means cooperating with the said output signal for providing an indication.

3,982,131

NEUTRON DETECTOR CABLE MONITORING

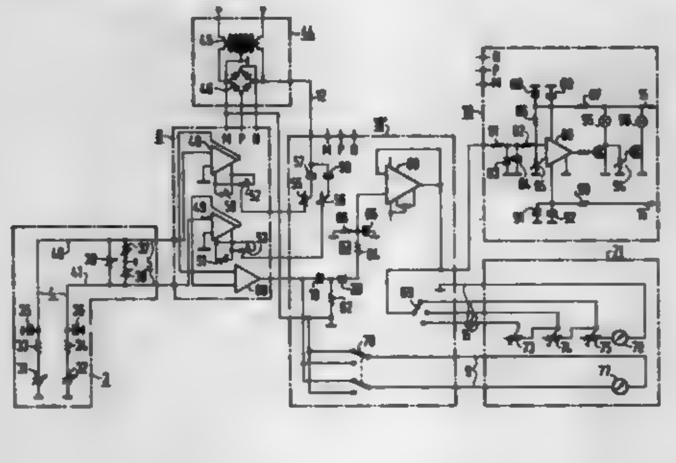
Pierre Haller, Erlangen, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim, Germany

Filed Aug. 13, 1975, Ser. No. 604,115

Claims priority, application Germany, Aug. 20, 1974, 2439954

Int. Cl.² G01T *3/00*

U.S. Cl. 250—390 **4 Claims**



1. A neutron detector arrangement comprising a neutron detector of the (n, e) process type, and a system comprising an operational current amplifier having an input and an input offset voltage adjustment circuit, a cable containing a conductor and insulation for the conductor, said cable connecting said detector to said input, a source of A-C current, connecting means for connecting said source to said circuit, said amplifier having an output, a cable insulation resistance-limit indicator, and filter means for filtering A-C current from said output and connecting the filtered output to said limit-indicator.

3,982,132

PATIENT RESTRAINING STRAP FOR SCINTIPHOTOGRAPHY

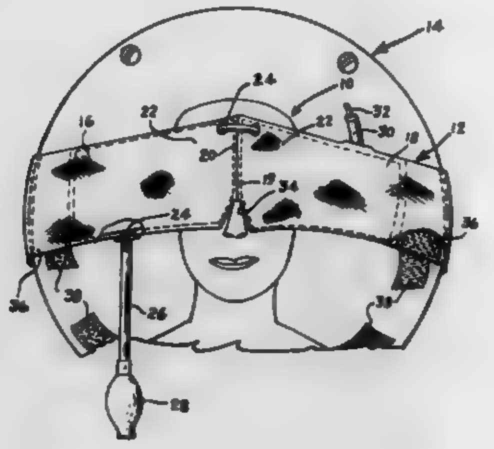
Thomas D. Kay, and John W. Harper, both of San Antonio, Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 13, 1975, Ser. No. 550,110

Int. Cl.² G01N *21/00, 23/00*

U.S. Cl. 250—456 **1 Claim**

1. The combination of a patient restraining strap and scintillation camera comprising a plurality of fastening elements secured in preselected locations to said camera, said restraining strap being formed of a body having an elongated configuration, fastening means located on the interior portion of said body for removable and adjustable attachment to said fastening elements on said camera, said body being in the form of a pair of cloth-like bags connected together in side-by-side relationship along the longitudinal dimension of said body, each of said bags containing a resilient expandable bladder therein, a pipe interconnecting said bladders, means connected to one of said bladders for expanding said bladders, means connected to the other of said bladders for deflating said bladders and a cut-out portion located at the connection of said bags for allowing the nose of a patient to protrude therethrough whereby said restraining strap, when expanded, comfortably immobilizes against said camera the head of a patient undergoing treatment by said scintillation camera.



3,982,133

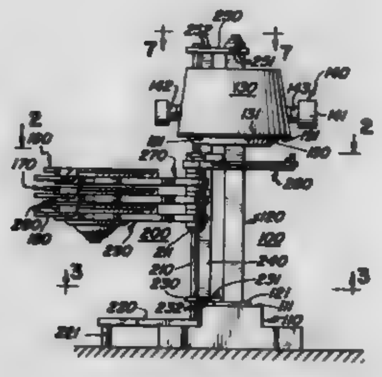
COLLIMATOR CHANGER FOR SCINTILLATION CAMERA

Edward C. Jupa, Berwyn; Raymond L. Meeder, Palos Heights, and Edward K. Richter, Buffalo Grove, all of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Continuation of Ser. No. 306,703, Nov. 15, 1972, abandoned. This application Jan. 16, 1974, Ser. No. 433,736

Int. Cl.² G21K *1/02*

U.S. Cl. 250—505 **5 Claims**



1. In combination:

a detector support means;
a radiation detector mounted on said detector support means in a vertically mobile manner for selective positioning in one of a plurality of vertically separated collimator changing positions;
a plurality of collimators suitable for radiation imaging and adapted for interchangeable mounting on said detector;
means for securing a selected one of said collimators to said detector to the exclusion of all other of said collimators; and
collimator changing and storage means comprising a single collimator support column positioned proximate to said detector support means, and a plurality of support arms mounted at vertically separated positions on said collimator support column in a laterally rotatable cantilevered manner, each of said support arms being adapted to carry a single one of said collimators and to transport it between a storage position remote from said detector and a collimator changing position.

3,982,134

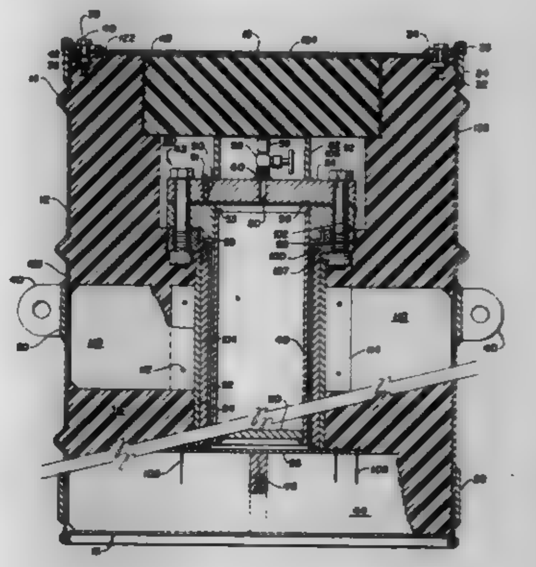
SHIPPING CONTAINER FOR NUCLEAR FUELS

William R. Housholder, 807 Mullins St., Johnson City, Tenn. 37601, and Norman L. Greer, 1409 Central Ave., Elizabethton, Tenn. 37643

Continuation-in-part of Ser. No. 447,320, March 1, 1974, abandoned. This application Sept. 19, 1974, Ser. No. 507,588

Int. Cl.² G21F *1/00*

U.S. Cl. 250—506 **23 Claims**



1. A container for nuclear materials comprising a metal housing, a pressure vessel and gamma shield assembly in said housing, positioning means extending between said housing and said assembly for spacing the same, and insulation essentially filling the space between said assembly and housing, said insulation comprising water beads encapsulated in plastic.

3,982,135

PHASE MATCHING IN A LAMINAR STRUCTURE

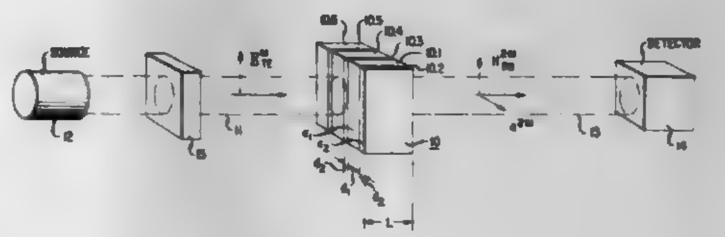
Jan Peter van der Ziel, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 14, 1975, Ser. No. 540,872

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 20, 1976

Int. Cl.² H02M *5/04*

U.S. Cl. 307—88.3 **16 Claims**



1. A nonlinear optical device comprising a multilayered body including a plurality of pairs of layers of material having sufficiently different refractive indices to substantially cancel dispersion produced when a plane wave optical beam at a fundamental frequency propagates through said layers and parallel thereto, at least one of said layers of each pair comprising a nonlinear material and the thickness of said layers relative to one another being effective to phase match said beam to the second harmonic thereof and being smaller than the wavelength corresponding to said fundamental frequency.

3,982,136

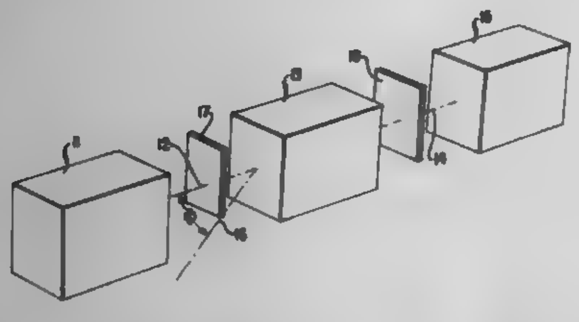
TERNARY FERROELECTRIC FLUORIDE NONLINEAR DEVICES

John George Bergman, Jr., Rumson; Glen Robert Crane, Scotch Plains, and Howard Joseph Guggenheim, Somerville, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 23, 1975, Ser. No. 598,187

Int. Cl.² H02M *5/04*

U.S. Cl. 307—88.3 **4 Claims**



1. A device comprising a crystalline body consisting essentially of the compound $BaXF_4$, where X is a divalent transition metal ion, collected from the group consisting of Zn, Ni, Co, Fe, Mn and Mg or mixtures thereof, with means for introducing into said crystalline body a beam of coherent plane polarized electromagnetic radiation at 1.06 ± 0.1 microns and means for extracting a beam of coherent electromagnetic radiation at 0.53 ± 0.05 micron emitted from said body, the said body being positioned in such a way that the angle between the beam of first frequency and the optic axis of said crystalline body is such that the first beam and second beam are noncritically phase matched within the crystal.

3,982,137

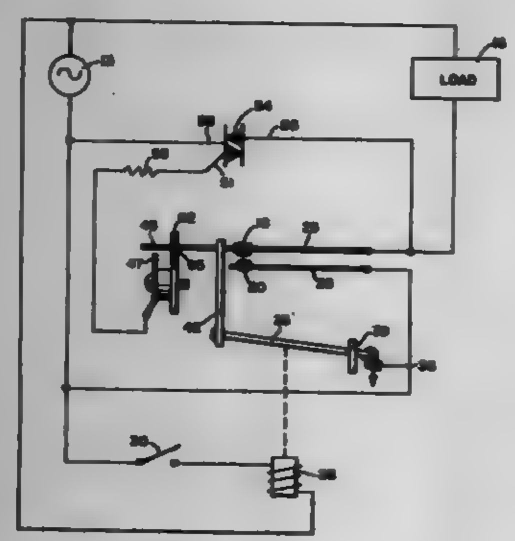
ARC SUPPRESSOR CIRCUIT

John K. Penrod, Bellbrook, Ohio, assignor to Power Management Corporation, Dayton, Ohio

Filed Mar. 27, 1975, Ser. No. 562,809

Int. Cl.² H02H 7/22

U.S. Cl. 307—136 **11 Claims**



1. In a switching circuit comprising current carrying primary contact points and auxiliary contact points means, semiconductor means having power conducting terminals connected across said primary contact points and gate terminal means connected to said auxiliary contact point means for providing gating signals to said semiconductor means, the method of closing said primary contact points while power is applied without arcing by temporarily providing gating signals to said semiconductor means comprising the steps of:

first closing said auxiliary contact point means to provide gating signals to said semiconductor means,

closing said primary contact points, and

thereafter opening said auxiliary contact point means while said primary contact points are closed to remove said gating signals so that said semiconductor means does not continue conducting current thereby to protect said semiconductor means from carrying current to the load continuously should said primary contact points fail to close or close with an appreciable resistance therebetween.

3,982,138

HIGH SPEED-LOW COST, CLOCK CONTROLLED CMOS LOGIC IMPLEMENTATION

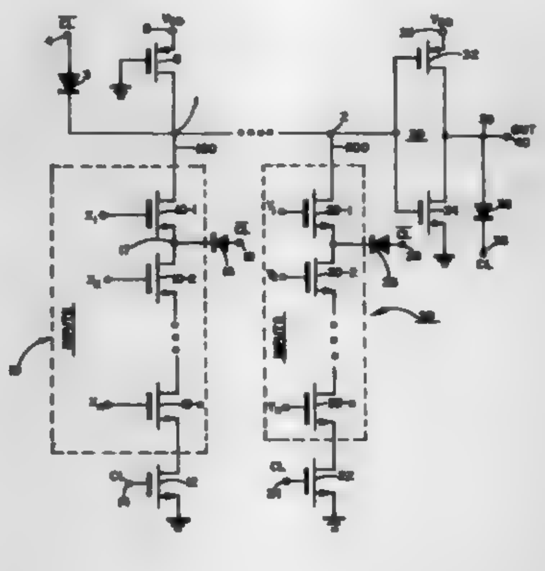
James A. Luisi, Anaheim; Clarence W. Padgett, Fountain Valley, and Dana C. Street, Placentia, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 9, 1974, Ser. No. 513,368

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976

Int. Cl.² H03K *19/08, 19/36*

U.S. Cl. 307—205 **10 Claims**



1. A synchronous circuit for implementing functions of logic having an operating cycle comprising an active and a recovery segment and including,

source means for supplying a plurality of reference potentials,

a data node adapted to be charged to a first of said reference potentials or to be discharged to a second of said reference potentials,

a data output terminal to receive a signal thereat representative of the reference potential of said data node,

at least one semiconductor device connected between said data node and said reference potential source means,

current source means connected to said data node to charge said data node to said first reference potential, and

timing signal means connected to said at least one semiconductor device to enable said data node to be discharged through a conduction path of said at least one semiconductor device and to said second reference potential during the active segment of the circuit operating cycle,

said current source means including a source of constant current and a source of periodic current to charge said data node to said first reference potential,

said source of constant current connected to said reference potential source means to charge said data node to said first reference potential during the recovery segment of the circuit operating cycle to thereby compensate for residual leakage current from said at least one semiconductor device, and

said source of periodic current connected to said timing signal means to periodically charge said data node to said first reference potential during the recovery segment of the circuit operating cycle.

3,982,139

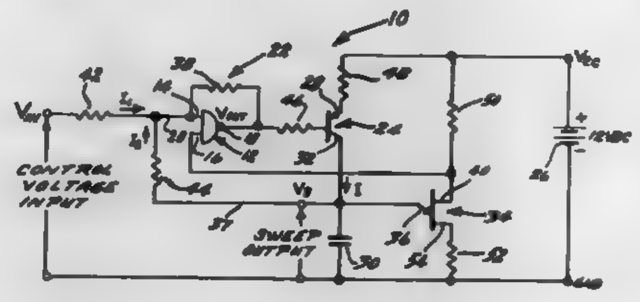
EXPONENTIAL SWEEP MULTIVIBRATOR

Stephen R. Troy, 104-20 89th Ave., Richmond Hill, N.Y. 11418

Filed Apr. 21, 1975, Ser. No. 570,064

Int. Cl.² H03K *4/08*

U.S. Cl. 307—228 **11 Claims**



1. an exponential sweep multivibrator comprising a digital device having first and second inputs and an output, means electrically connected to said digital device for accepting a control voltage and directing said control voltage to said first input of said digital device, a feedback circuit electrically connected between said first input and said output of said digital device, means electrically connected to said output of said digital device for converting said digital device output voltage into a current, capacitor electrically connected to said voltage converting means, a DC source electrically connected to said voltage converting means, a voltage sensitive switching means, said switching means having at least two terminals, one of said terminals being electrically connected to said capacitor and said second input of said digital device and the other of said terminals being electrically connected to said first input of said digital device whereby said multivibrator is capable of producing an output waveshape which is an essentially exponential function with respect to time.

3,982,140

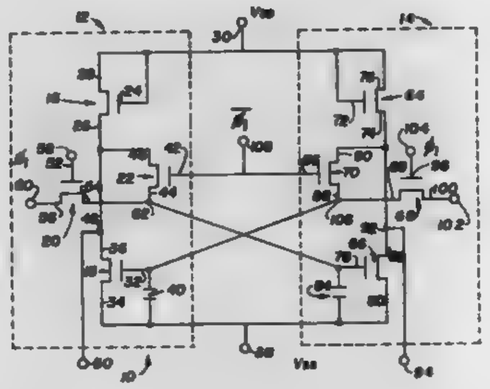
HIGH SPEED BISTABLE MULTIVIBRATOR CIRCUIT

George C. Lockwood, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed May 9, 1975, Ser. No. 575,913

Int. Cl.² H03K *3/286, 3/353, 5/20*

U.S. Cl. 307—279 **12 Claims**



1. In a bistable circuit having two symmetrical circuit sections and having a first stable state when one section is conducting and a second stable state when the other section is conducting, the improvement comprising:

a source of reference voltage,

a first voltage storage means connected to said first section to cause it to initially conduct at a rate proportional to its stored voltage,

means for periodically applying the reference voltage to said first voltage storage means during a first predetermined period and for isolating said source of reference voltage from said first storage means during a second predetermined period,

a source of information voltage,

a second voltage storage means connected to said second section to cause it to initially conduct at a rate proportional to its stored voltage,

means for periodically applying the information voltage to said second storage means during said first predetermined period and for isolating said source of information voltage from said second storage means during said second predetermined period, and

means for deactivating both said circuit sections during said first predetermined period and for activating said circuit sections during said second predetermined period.

3,982,141

VOLTAGE MAINTENANCE APPARATUS

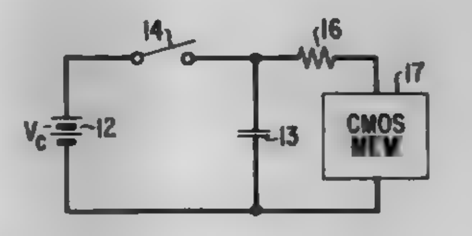
John Alexander Copeland, III, Watchung, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 7, 1974, Ser. No. 512,849

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976

Int. Cl.² H03K *1/02*

U.S. Cl. 307—296 **4 Claims**



1. In combination:

a semiconductor memory having a resistance-voltage characteristic which is similar to MOS memories;

said memory being adapted to be connected in parallel with a d-c power supply for applying to the memory a voltage V_t;

said memory being capable of storing electrical data provided the applied voltage is a minimum value V_f;

means for temporarily maintaining an applied voltage between V_f and V_t in the event of accidental disconnection of the power supply comprising a capacitor in parallel with the memory and the power supply;

and means for increasing the time during which the applied voltage can be temporarily maintained above V_f comprising a resistor which is other than any internal resistance of the capacitor, connected between the capacitor and the memory, the resistor having a resistance R substantially defined by the Equation R “= $0.4\,(V_{ct} - V_f)/I_f$ where I_f is the capacitor discharge current at voltage V_f and V_{ct} is the initial voltage across the capacitor.

3,982,142

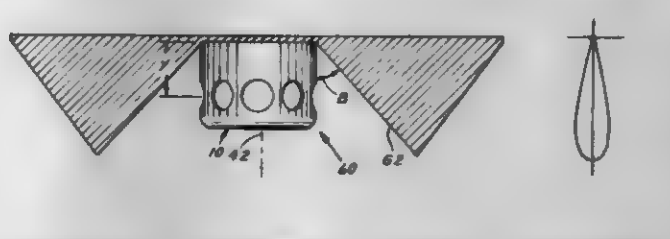
PIEZOELECTRIC TRANSDUCER ASSEMBLY AND METHOD FOR GENERATING A CONE SHAPED RADIATION PATTERN

Ralph W. Goble, Eldora, Colo., assignor to Sontrix, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 412,884, Nov. 5, 1973. This application May 20, 1974, Ser. No. 471,280

Int. Cl.² H01L *41/04*

U.S. Cl. 310—8.2 **23 Claims**



1. A piezoelectric transducer assembly for generating a radiation pattern of acoustical energy having a cone shaped

cross section relative to a selected axis, said assembly comprising:

a resonant chamber having side walls and closed ends and a selected resonant frequency, said chamber being positioned with its longitudinal axis parallel with the side walls and defining the selected axis of said assembly, said chamber having a plurality of spaced apart sound transmitting apertures defined in its side walls about its longitudinal axis, the centerpoints of said apertures defining a plane substantially perpendicular to said selected axis;

piezoelectric transducer means mounted within said chamber for generating therein along said selected axis a spherical radiation pattern of acoustical energy at the resonant frequency of said chamber whereby similar radiation patterns of said acoustical radiation are emitted from each of said apertures along their center axes; and,

means defining a conical reflecting surface positioned at an acute angle β to the longitudinal axis of the chamber to receive and reflect acoustical waves radiating from the centerpoints of said apertures towards said reflecting surface, said conical reflecting surface being spaced apart from the plane of the centerpoints of said apertures a predetermined distance y at which acoustical waves at said resonant frequency radiating from said apertures towards said reflecting surface are reflected away from said reflecting surface in a cone shaped radiation pattern, said distance y being measured along the side walls of the chamber.

3,982,143

PIEZOELECTRIC DIAPHRAGM ELECTRO-ACOUSTIC TRANSDUCER

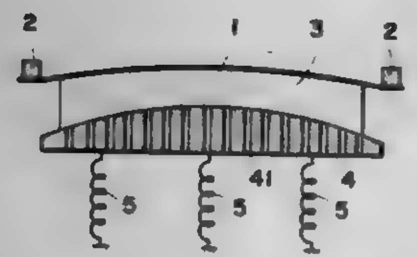
Masahiko Tamura, and Takashi Oyaba, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 12, 1975, Ser. No. 549,341

Claims priority, application Japan, Feb. 18, 1974, 49-19528[U]

Int. Cl.² H01L *41/08*

U.S. Cl. 310—9.1 **8 Claims**



1. In a piezoelectric electro-acoustic transducer comprising a support means of a stiff material, a flexible diaphragm having a piezoelectric property and supported at its edge portions by the support means, a base plate of a stiff material, and a resilient backing member compressedly covered at one side with the base plate and brought into contact at its other side with the diaphragm so as to tension and resiliently support the flexible diaphragm, the improvement comprised in that said base plate is provided with a surface curved to be at least one of concave and convex, which curved surface is the base plate surface in contact with the resilient backing member, at least one of the resilient backing and tension of said flexible diaphragm varying locally thereacross due to said curvature of said base plate surface.

3,982,144

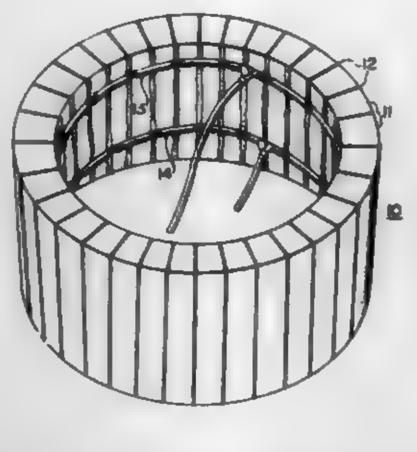
DIRECTIONAL LOW-FREQUENCY RING HYDROPHONE

Peter H. Rogers, Reston, and Joseph F. Zalesak, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 23, 1974, Ser. No. 500,206

Int. Cl.² H01L *41/04*

U.S. Cl. 310—9.6 **6 Claims**



1. A method of low frequency operation of a small sized free-flooded circumferentially polarized ring-type hydrophone which comprises:

operating said hydrophone at an operating range which is more than two octaves below any of its axisymmetric, mechanical resonant frequency.

3,982,145

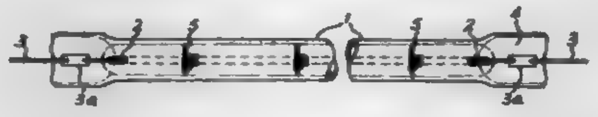
FILAMENT SUPPORTS FOR TUBULAR ELECTRIC INCANDESCENT LAMPS

Jerome M. Liptow, South Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 24, 1975, Ser. No. 552,102

Int. Cl.² H01J *1/16, 17/50;* **H01K** *1/18*

U.S. Cl. 313—274 **5 Claims**



1. An electric lamp comprising a tubular envelope and a coiled filament extending therethrough and supported intermediate its ends from the inner wall of said envelope by at least one wire support,

said support comprising a wire having an outer convex polygonal loop portion characterized by substantially straight segments with sharp bends between successive segments, said outer loop portion engaging the inner wall of said envelope and being connected to a central coiled portion attached to the filament coil.

3,982,146

FLUID COOLED COMMUTATED ELECTRIC MOTOR

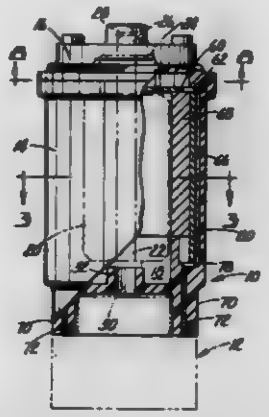
Stephen G. Hokky, North Olmsted, Ohio, assignor to Airborne Manufacturing Company, Elyria, Ohio

Continuation-in-part of Ser. No. 341,539, March 15, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,174

Int. Cl.² H02K *5/00*

U.S. Cl. 310—89 **7 Claims**

1. In an electric motor having a housing and cover means forming a fluid tight enclosure, a commutator within said enclosure, an improved brush assembly comprising, a pair of brushes, said cover means slidably mounting said brushes within said enclosure with one end of each brush in engagement with said commutator, first and second sets of mounting means and reaction means carried by said cover means within said enclosure, at least one of said means of each set being formed of low resistance current carrying material and extending externally of said cover means, a pair of torsion springs each formed of a low electrical resistance homogenous current carrying material, each torsion spring having first and second opposite end portions and a central coiled portion, the central coiled portion of each of said springs being wrappingly engaged around one of said mounting means within said enclosure, the first end portion of each of said springs engaging one of said reaction means, the second end portion of each of said springs engaging the end of one of the brushes opposite the end thereof engaging the commutator, each of said springs acting as the sole current carrier to its respective brush, whereby each spring acts both as a biasing element and sole current carrying element thereby providing brushes free of separate electrical connections and means to direct cooling fluid from within said enclosure to the region of said brushes and said springs.



3,982,147

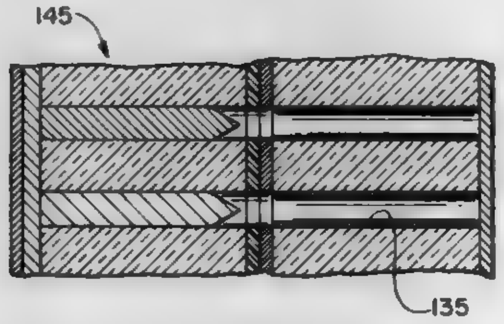
ELECTRIC DEVICE FOR PROCESSING SIGNALS IN THREE DIMENSIONS

Charles Redman, 2020 Huntington Drive, Los Cruces, N. Mex. 88001

Filed Mar. 7, 1975, Ser. No. 556,525

Int. Cl.² H01J *1/30, 1/34, 29/04, 29/50*

U.S. Cl. 313—309 **2 Claims**



1. An area and time processing electronic device comprising:

an electrical insulator having opposed input and output faces;

a planar control grid, intermediate the input and output faces and substantially parallel thereto being integral with and (bisecting) traversing the electrical insulator, the combination of electrical insulator and control grid providing a plurality of parallel evacuated chambers which are continuous between the input and output faces;

a plurality of conducting fibers occupying the parallel evacuated chambers extending from the input face and terminating short of the control grid;

detection means including an input face seal, electrically coupled to the input face, for detecting energy incident to the input face, said detection means comprising a semiconductor layer deposited on the input face so as to seal the evacuated chambers and a thin film conductor deposited on the semiconductor layer so as to sandwich the semiconductor between the input face and the thin film conductor; and

output means, including an output face seal, electrically coupled to the output face, said output means further including a second plurality of conducting fibers occupying the evacuated chambers extending from the output face and terminating substantially short of the control grid so that the length of the remaining evacuated space is greater than the length of the conducting fibers.

3,982,148

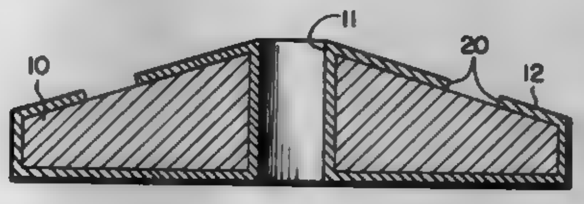
HEAT RADIATING COATING AND METHOD OF MANUFACTURE THEREOF

Richard B. Kaplan, Hollywood; Sebastian Gonnella, Arleta, and Walter M. Abrams, Van Nuys, all of Calif., assignors to Ultramet, Pacoima, Calif.

Filed May 7, 1975, Ser. No. 570,281

Int. Cl.² H01J *35/08*

U.S. Cl. 313—330 **5 Claims**



1. A heat radiating coating for a refractory core, said coating consisting of a layer of rhenium having a thickness of no less than about 25 microns and a heat radiating emissivity on the order of 0.9, said coating covering at least a portion of the core and consisting of a multiplicity of needle-like radiation-reflecting elements disposed adjacent to each other and at such steep angles that outgoing radiation is reflected until substantially all heat is released from the core.

3,982,149

CAMERA TUBE HAVING A TARGET WITH HETEROJUNCTION

Jan Dieleman, and Arthur Marie Eugene Hoeberechts, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

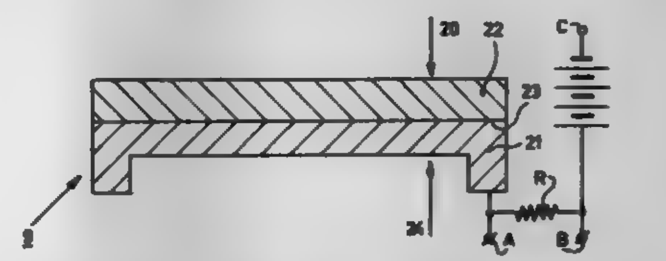
Filed Oct. 17, 1974, Ser. No. 515,455

Claims priority, application Netherlands, Oct. 27, 1973, 7314804

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² H01J *29/45, 31/38*

U.S. Cl. 313—366 **13 Claims**



1. A camera tube comprising an evacuated envelope and within the envelope an electron source, a target to be scanned by an electron beam emerging from said source, said target comprising a radiation-receiving silicon layer which on the side to be scanned by the electron beam has a chalcogen-containing layer which forms a hetero junction with the silicon layer, said chalcogen-containing layer comprising gallium.

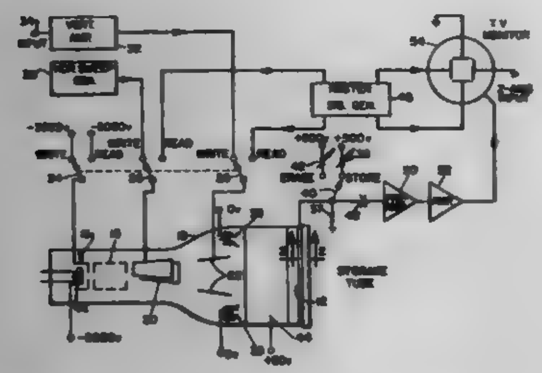
3,982,150
BISTABLE STORAGE TUBE HAVING STORAGE DIELECTRIC OF PHOSPHOR PARTICLES COATED WITH SECONDARY EMISSIVE MATERIAL

Ralph A. Mossman, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Division of Ser. No. 37,378, May 7, 1960, Pat. No. 3,862,450, which is a continuation of Ser. No. 618,129, Feb. 23, 1967, abandoned. This application Apr. 8, 1974, Ser. No. 458,947

Int. Cl.² H01J *29/39, 29/10*

U.S. Cl. 313—398 **5 Claims**



1. A storage dielectric capable of bistable storage of a charge image formed thereon, comprising:

a plurality of separate particles of phosphor material; and secondary emissive material coated on at least part of the surface of said phosphor particles with substantially all of the secondary emissive material in said storage dielectric being bonded to the phosphor particles only on the surface of said phosphor particles and substantially uniformly distributed throughout the storage dielectric, said secondary emissive material having a higher secondary electron emission efficiency than said phosphor material.

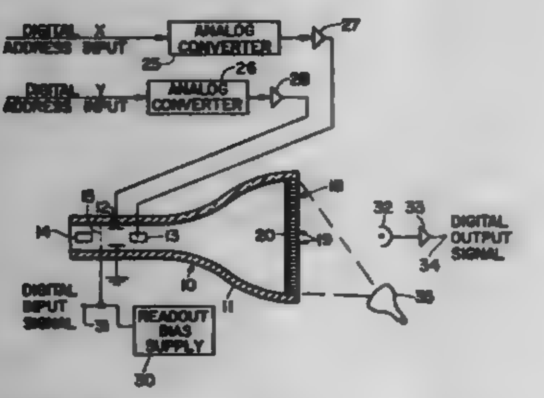
3,982,151
OPTICAL INFORMATION STORAGE SYSTEM

Bruno F. Ludovici, Owego, N.Y., and Gerhard K. Megla, Raleigh, N.C., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 677,185, Oct. 23, 1967. This application Nov. 19, 1973, Ser. No. 416,976

Int. Cl.² H01J *29/12, 29/89*

U.S. Cl. 313—465 **4 Claims**



1. An optical information storage system comprising

a cathode ray tube having a face plate consisting of a plurality of light-conducting optical fibers, each fiber having a core of photochromic glass of selected refractive index and a cladding on said core of light transmitting material of relatively lower refractive index, said fibers being arranged in side-by-side parallel contacting relation to each other in a hermetically sealed bundle,

a layer of phosphor adjacent said face plate within said cathode ray tube,

means for directing an electron beam on said layer of phosphor,

means for changing the energy level of said electron beam,

output means disposed on that side of said face plate opposite said phosphor layer in light receiving relationship with respect to said face plate for generating an electrical signal that is related to the intensity of the light emerging from the fibers of said plate, and

means for applying a digital input signal to said means for changing the energy level of said electron beam.

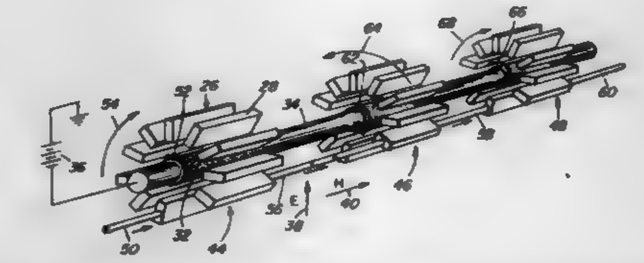
3,982,152
CASCADE CROSSED FIELD DEVICE

William A. Smith, Winchester, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 25, 1974, Ser. No. 526,651

Int. Cl.² H01J *25/34*

U.S. Cl. 315—3.6 **6 Claims**



1. A crossed-field traveling wave electron interaction device comprising:

an envelope;

a plurality of axially aligned electrically coupled energy amplifier stages in a cascade array disposed within said envelope;

each of said cascaded stages comprising a slow wave structure for propagating electromagnetic wave energy having input and output energy coupling means; and

plural means for generating and directing electrons along a path adjacent to each said slow wave structure to interact in energy exchanging relation with said propagating wave energy;

means for providing mutually perpendicular electric and magnetic fields along said interaction paths;

means for coupling electromagnetic wave energy drive signals to said input coupling means of a first of said cascade stages to initiate operation;

means for intercoupling wave energy signals from the output coupling means of said first stage to subsequent stage input coupling means to sequentially cause operation of each succeeding stage; and

means for coupling the combined energy amplified output signals from the output coupling means of the last stage in the array to a utilization load.

3,982,153
RAPID WARM-UP HEATER CIRCUIT

Glen Alden Burdick, Waterloo, and Edward Izydor Zmuda, Seneca Falls, both of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Nov. 12, 1975, Ser. No. 631,231

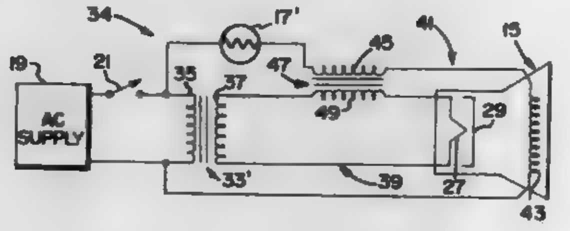
Int. Cl.² H01F *13/00*

U.S. Cl. 315—8 **6 Claims**

1. In a color display device employing a cathode ray tube and utilizing a degaussing circuit including a temperature responsive resistive element, an improvement in the circuit means for energizing heater means associated with thermionic emission means within said tube to effect rapid warm-up of said heater upon initiation of an operating mode, the improvement in said circuit means comprising:

an AC power supply having switching means to control the AC output thereof, said degaussing circuit being connected to said AC output and energized through said switching means;

a first transformer having a primary winding activated by the closing of said switching means, and a secondary winding series connected to said heater element to provide a circuit for energizing said heater; and



an inductive means having one portion series connected in said heater circuit and a related portion series connected to said degaussing circuit for providing an induced transitory increase of heater potential responsive to said temperature responsive resistive element upon the activation of said switching means.

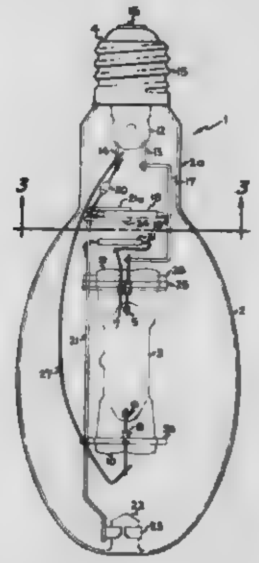
3,982,154
ARC DISCHARGE LAMP CONSTRUCTION FOR STARTER ELECTRODE VOLTAGE DOUBLING

Dale K. Mize, Mentor, and William H. Lake, Novelty, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 2, 1975, Ser. No. 609,506

Int. Cl.² H01J *17/34*

U.S. Cl. 315—51 **10 Claims**



1. An arc discharge lamp comprising:

a vitreous arc tube containing an ionizable medium and having two main electrodes plus a starter electrode sealed therein;

an outer envelope enclosing said arc tube and having a pair of inleads sealed thereinto;

a voltage doubling circuit comprising a diode and a capacitor within said outer envelope connected in series across said inleads, said capacitor being of rigid construction with two stiff leads, one of said stiff leads being fastened to one of said inleads;

a mount frame including said capacitor as a structural component, said mount frame having a portion fastened to the other stiff lead and supporting said arc tube;

said diode being poled to develop a positive potential on said frame portion whereby to oppose positive ion electrolysis through the walls of said arc tube;

connections from said inleads to the main electrodes in the arc tube;

and means connecting said mount frame portion to said starter electrode in order to apply a positive voltage thereto to facilitate starting.

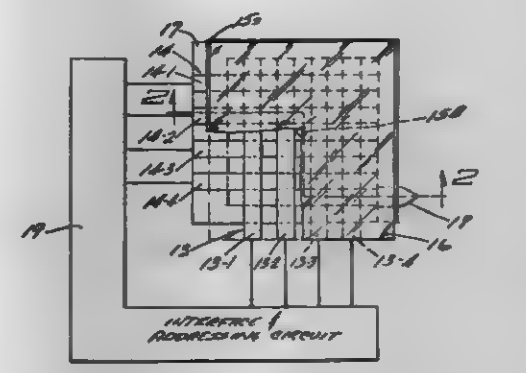
3,982,155
SATURATED PHOTON CONDITIONING OF MULTIPLE GASEOUS DISCHARGE PANEL

Michael E. Fein, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 18, 1972, Ser. No. 254,648

Int. Cl.² H05B *37/00*

U.S. Cl. 315—169 TV **3 Claims**



1. In a process for conditioning the gaseous discharge medium of a plurality of to be addressed display cells for uniform operation at reduced voltage in the operation of a multiple gas discharge display/memory panel comprised of a matrix of display cells formed by opposing dielectric charge storage surfaces and electrode arrays, at least one cell being a pilot cell in the on-state for the photon conditioning of the other matrix display cells,

the improvement wherein the sustaining voltage applied to each pilot cell is sufficiently greater in amplitude than the sustaining voltage applied to the other display cells so as to provide a conditioning photon flux sufficient to reduce the required write voltage of the other display cells to a minimum level V_{180} such that the provision of additional conditioning photons would not significantly further reduce the amplitude of the required writing pulse.

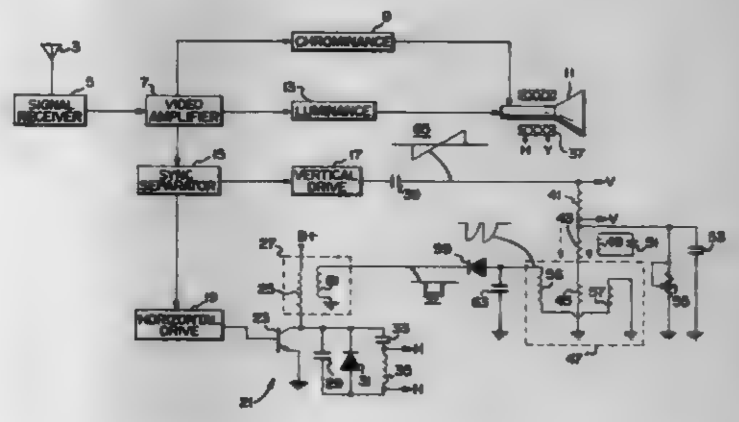
3,982,156
TOP-BOTTOM PIN-CUSHION CORRECTION CIRCUIT

Tex K. Monroe, Batavia, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Oct. 14, 1975, Ser. No. 622,134

Int. Cl.² H01J *29/70, 29/76*

U.S. Cl. 315—400 **9 Claims**



1. In a cathode ray tube scanning system having a deflection yoke with horizontal and vertical deflection windings coupled to sources of deflection current at horizontal and vertical scan rates and said deflection yoke associated with a cathode ray tube, a top-bottom pin-cushion correction circuit comprising:

a source of flyback pulse signals at the horizontal scan rate;

a saturable reactor having a control winding and an output winding;

means for coupling said control winding of said saturable reactor to said source of flyback pulse signals, said means including a unidirectional conduction device and a resonating capacitor for effecting a resonant circuit with said control winding;

means for coupling said output winding of said saturable reactor to said source of deflection current at a vertical scan rate; and

means for tuning said output winding of said saturable reactor to said horizontal scan rate; said means including a parallel connected capacitor and impedance shunting said output winding.

3,982,157

EQUIPMENT FOR SPOUTING POWDER OR FLUID HAVING MECHANISM FOR PREVENTING ELECTRIC SHOCK

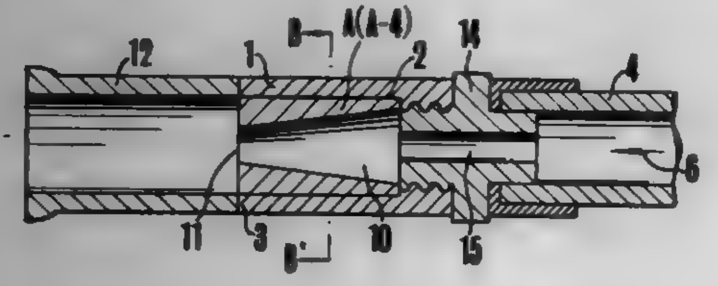
Kanae Azuma, and Minoru Ochiai, both of Ashikaga, Japan, assignors to Kohkoku Chemical Industry Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1975, Ser. No. 557,303

Claims priority, application Japan, Mar. 15, 1974, 49-29805; June 5, 1974, 49-63685; June 12, 1974, 49-69040

Int. Cl.^{2} H05F *1/02*

U.S. Cl. 317—2 J **18 Claims**



1. Apparatus for spouting powder or fluid including means for preventing operational problems caused by static electricity without grounding devices, comprising a spout tube embodying a nozzle and defining a flow passage through which said powder or fluid flows, said powder or fluid being spouted from said nozzle, a transport tube through which said powder or fluid moves to said spout tube, a main body which contains said powder or fluid and which is connected to said transport tube and a projecting electricity-eliminating member composed of a material having volume resistivity of $10^8\Omega$-cm or less, which is placed in said flow passage facing the flow layer of said flowing powder or fluid and which is electrostaticaly connected to said main body, said projecting electricity-eliminating member being configured in the form of a pyramidal body having a pointed top and arranged in the spout tube passage held by a pillar fixed on the interior wall of the spout tube, said pointed top being arranged to oppose the flow of the powder or fluid.

3,982,158

POWER DISTRIBUTION CONTROL SYSTEM

Wolfgang Knauer, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed July 15, 1974, Ser. No. 488,634

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 20, 1976

Int. Cl.^{2} H02H *3/00*

U.S. Cl. 317—9 R **18 Claims**

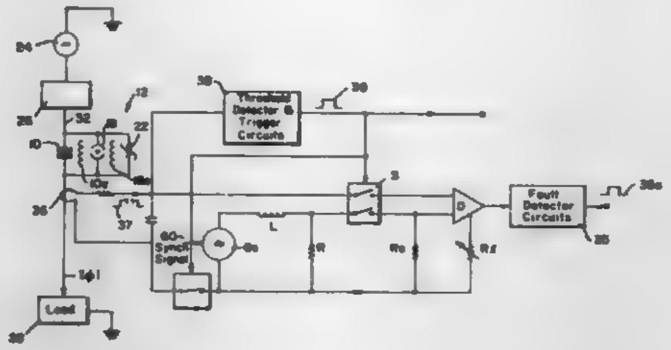
12. The method of controlling ac electric power transmission to provide fault protection comprising the following steps:

establishing a threshold for early detection of potential faults along a power transmission path;

sensing the line signal in the transmission path and producing a threshold signal when it is beyond the established threshold;

producing a reference wave in synchronism with the transmission path;

reducing the impedance on the reference wave upon threshold signalling to produce a simulated fault wave signal representing the minimum fault value at which the path is to be interrupted;



comparing the line signal and the simulated fault wave in a monitoring time period less than a time period for substantial build-up of power resulting from a fault condition to provide a fault signal for line signal beyond the simulated fault wave signal; and

interrupting power transmission in response to the fault signal while maintaining the transmission path closed in the absence of a fault signal.

3,982,159

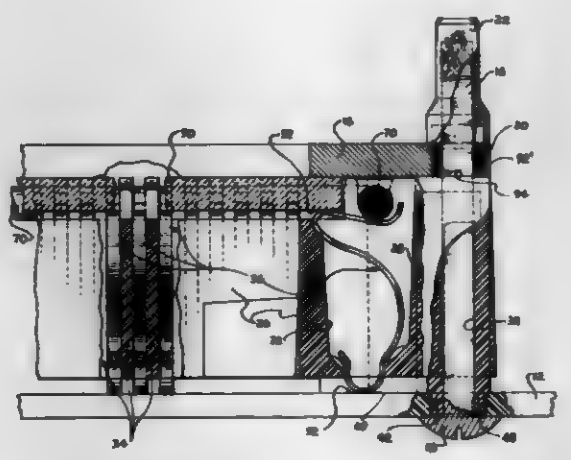
LEADLESS PACKAGE RETAINING FRAME

Richard Kay Dennis, Etters, and Edward Leal Hadden, Mechanicsburg, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 11, 1974, Ser. No. 522,925

Int. Cl.^{2} H05K *1/04*

U.S. Cl. 317—101 CC **11 Claims**



1. A leadless package assembly comprising a rectangular retaining frame having four side members formed of dielectric material and including a plurality of contact cavities, each cavity having an opening adjacent the top of the frame and an opening adjacent the bottom of the frame and a cam surface adjacent the top frame opening; a resilient conductive contact in each cavity, each contact including a first nose exposed through said top frame opening and a second nose exposed through said bottom frame opening, an interconnecting portion joining said noses, such portion including a cam follower segment adjacent said first nose engagable with said cam surface and a bowed spring member extending from said cam follower segment to said second nose; said rectangular frame including mounting means for use in securing the rectangular frame on a circuit board or like member having contact pads adjacent said lower frame openings for forming electrical connections with said second noses; whereby positioning of a leadless package on the top of the frame with contacts on the package in alignment with the top frame openings for forming electrical connections with said first noses and movement of said package toward said openings engages the contact pads on the package with the first noses, and forces such noses into their respective cavities and moves said cam follower segments along the cam surfaces to wipe such noses along the package pads, stress said bowed portions, wipe said second noses along the pads on the circuit board and force the first and second noses against their respective pads.

3,982,160

SYSTEM FOR CONTROLLING TENSION OF MAGNETIC TAPE

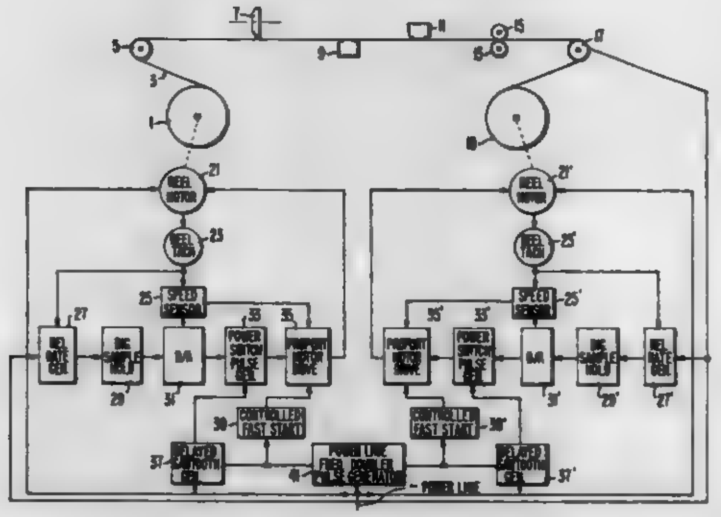
Arthur Marvin Goldschmidt, Moorestown; William Arnold Dischert, Jobstown, and Joseph Richard West, Haddonfield, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 12, 1975, Ser. No. 557,534

Claims priority, application United Kingdom, Mar. 14, 1974, 11430/74

Int. Cl.^{2} B65H *59/38*

U.S. Cl. 318—7 **16 Claims**



1. In a system for magnetically recording signals on a moving web, apparatus for maintaining tension in said web comprising:

means for propelling said web along a path;

a first reel for said web;

a first motor associated with said first reel;

a source of alternating energizing voltage for said first motor;

first means for producing a first signal representative of the rotational velocity of said first reel;

second means for producing a second signal representative of the linear velocity of said web;

a first servo loop responsive to said first and second signals for controlling said reel comprising:

means for supplying a periodically varying reference signal in timed relation with said alternating energizing voltage;

signal rate control means coupled to said first and second means for generating an output signal representative of the rotational speed of said web reel in relation to the linear web speed; and

control means responsive to said reference signal and said output signal of said signal rate control means for variably energizing said first motor to maintain substantially uniform tension in said moving web.

3,982,161

TIME-RATIO CONTROL HAVING BIDIRECTIONAL SPEED POTENTIOMETER

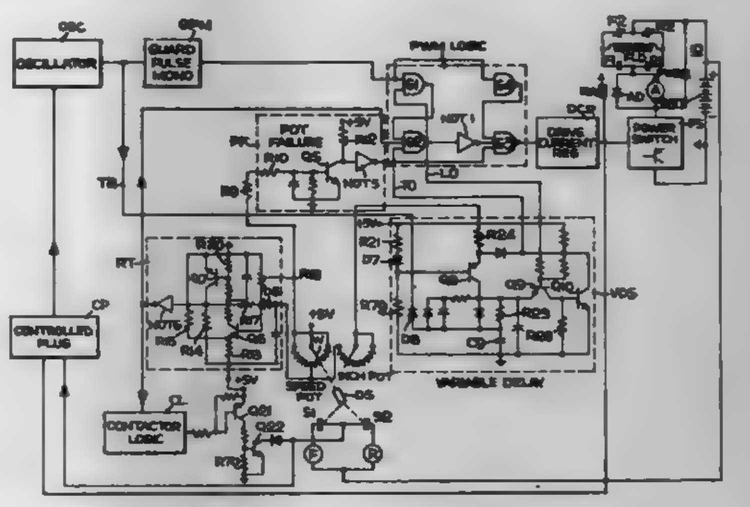
Michael H. Grace, Griffith, Ind., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sept. 3, 1974, Ser. No. 502,973

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.^{2} H02P *7/08*

U.S. Cl. 318—257 **1 Claim**



1. In a vehicle driven by a d.c. traction motor energized by unidirectional pulses of current supplied from a battery through a semiconductor power switch and having forward and reverse contactors which control the direction of said motor to propel said vehicle in the forward and reverse directions respectively, a time-ratio control for selectively varying the duty cycle of said pulses to thereby regulate the speed of said motor including a variable delay RC timing circuit having a timing capacitor in series with a bidirectional speed potentiometer, said speed potentiometer having a resistance element provided with a midtap and a movable wiper adapted to slidably engage said resistance element to vary the resistance of said speed potentiometer in series with said timing capacitor and thereby regulate the time duration and duty cycle of said pulses, said RC timing circuit being in series with the resistance of said speed potentiometer between said wiper and said midtap, whereby movement of said wiper in either direction from said midtap increases the resistance in said timing circuit and thereby varies the time duration of said pulses, and direction control means for completing respective energizing circuits to said forward and reverse contactors when said wiper is moved in opposite directions away from said midtap.

3,982,162

CENTRIFUGES

David William Olliffe, 86 Forester Road, Southgate, Crawley, Sussex, England

Division of Ser. No. 61,602, Aug. 6, 1970, Pat. No. 3,832,614. This application Apr. 19, 1974, Ser. No. 462,540

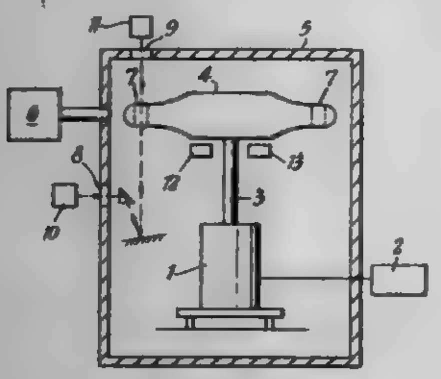
Claims priority, application United Kingdom, Aug. 13, 1969, 40446/69

Int. Cl.^{2} H02P *5/16*

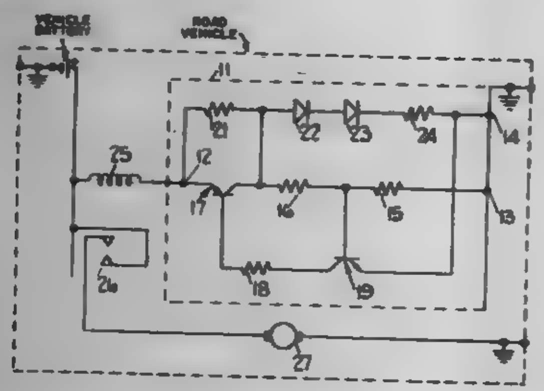
U.S. Cl. 318—313 **13 Claims**

1. In a centrifuge operable with a variety of rotors, with each rotor there being associated a maximum speed of rotation defined by an element carried by a respective one of said rotors, the centrifuge having means for sensing said element to prevent increase in the speed of rotation of said rotor when the maximum speed is reached, the improvement which resides in said element being a surface portion having, along an annular path centered on the axis of said rotor, a length defining the maximum speed and a property along its length which distinguishes said surface portion from the remainder of said annular path; said sensing means being arranged to sense said property of the surface portion without contact with said rotor to produce a signal having a time duration which is a function

of said length; and means for sensing when the time duration of the signal has fallen to a predetermined value, wherein said rotor is an analytical rotor with at least two compartments to receive samples and carrying distinct portions corresponding to respective compartments in addition to said surface portion which also defines a predetermined angular position of said rotor, the centrifuge comprising a compartment examining system for sensing radiation passed through said compartments to produce corresponding signals; at least one signal path to which the signals will be fed; means for controlling which of the signals in each revolution of said rotor is conveyed through said signal path; said sensing means being also arranged to sense said distinct portions without contact with said rotor and operable in conjunction with said controlling means so that said signal path will carry a signal corresponding to just one of said compartments, and so that said one compartment will be defined.

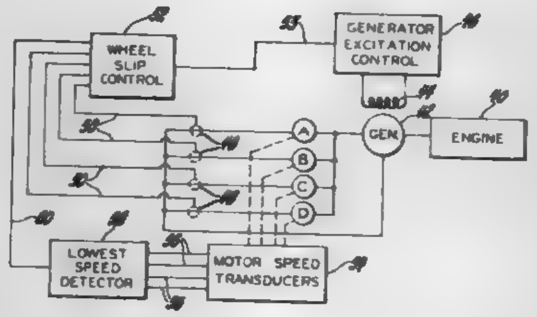


3,982,163
TEMPERATURE SENSITIVE ELECTRONIC SWITCHING ARRANGEMENTS
William Frank Hill, Stafford, England, assignor to The Lucas Electrical Company Limited, Birmingham, England
Filed Dec. 3, 1973, Ser. No. 420,897
Claims priority, application United Kingdom, Dec. 2, 1972, 55798/72
Int. Cl.² G05D *23/30*
U.S. Cl. 318—473 13 Claims



1. A temperature sensitive electronic switching device for an externally powered DC load circuit automatically operable in response to a change in temperature to switch between a first state of high resistance and a second state of low resistance, said switching device thereby controlling current flow through said DC load circuit, said switching device comprising in combination a casing, a single pair of terminals on said casing for connection in said DC load circuit, and a switching circuit means within said casing defining a series circuit between said terminal pair, said series circuit including a first resistor, a first normally non-conductive transistor disposed across said resistor, a second normally non-conductive transistor regeneratively coupled to said first transistor, and a biasing means for said second transistor including a positive temperature coefficient thermistor, said biasing means automatically turning on said second transistor upon a rise in temperature above a preselected value to regeneratively switch on said first transistor and thereby provide a low resistance current path between said terminal pair by-passing said resistor, said biasing means further automatically serving to turn off said second transistor upon a subsequent decrease in temperature below said preselected value to switch off said first transistor and thereby provide a high resistance current path between said terminal pair through said resistor.

3,982,164
LOCOMOTIVE WHEEL SLIP CONTROL
Alfred P. de Buhr, Downers Grove, and Bruce R. Meyer, Western Springs, both of Ill., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 18, 1974, Ser. No. 534,078
Int. Cl.² H02P *5/50*
U.S. Cl. 318—52 5 Claims



1. A wheel slip control for a locomotive having a power supply and an electrical traction motor driving locomotive wheels subject to slipping for limiting the maximum percent wheel slip comprising

means coupled to the motor for providing a current signal I corresponding to the motor current,

means for providing a speed signal n corresponding to motor speed for a non-slipping condition of the motor,

a function generator connected to respond to said current signal I programmed to produce an output signal as a function of I representing E/n where E is back emf of the motor,

and a circuit having as inputs said current signal, said speed signal and said E/n signal operative to calculate and produce from said inputs a limit voltage a programmed amount in excess of $V = E + IR$ where V is the voltage of the motor for a non-slipping condition and R is motor resistance, and the programmed amount in excess of V represents a desired percent slip, and

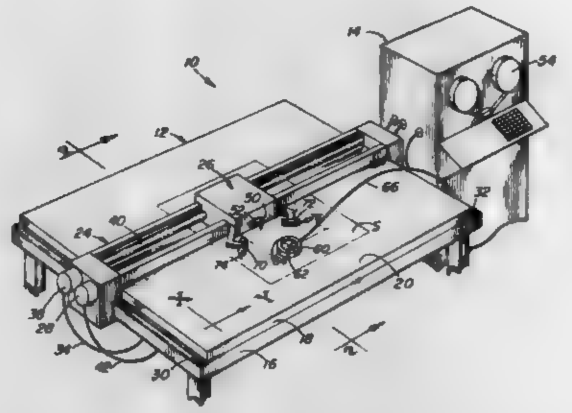
means responsive to said limit voltage for limiting the maximum voltage supplied to the motor to a value corresponding to said limit voltage thereby establishing a maximum percent slip of wheels driven by the motor.

3,982,165
APPARATUS FOR DIGITIZING AND PLOTTING
Leonard G. Rich, West Hartford, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.
Filed Sept. 10, 1974, Ser. No. 504,844
Int. Cl.² G05B *19/36*
U.S. Cl. 318—568 17 Claims

1. In a device having a support table and a carriage translatable by means of a servomotor over an exposed supporting surface defined on the table, the improvement comprising:

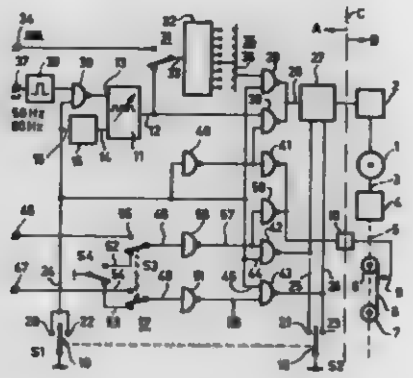
a manually movable cursor freely positionable on the exposed supporting surface of the table and having a visible index to identify coordinate locations on the surface;

electromagnetic radiation means carried above the exposed supporting surface of the table on both the carriage and the movable cursor for detecting the positioning of the cursor and carriage relative to one another and producing corresponding relative position signals identifying the location of the index relative to the carriage, the radiation means being mounted in unobstructing relationship with the visible index of the cursor when viewed from above the supporting surface; and



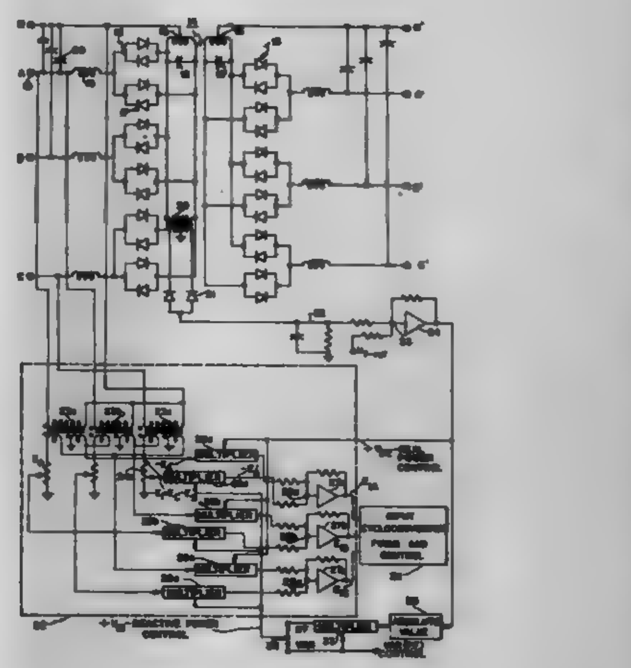
drive means connected to the support table and the carriage and responsive to the position signals from the electromagnetic radiation means for moving the carriage toward a preselected position relative to the cursor on the exposed supporting surface of the table.

3,982,166
CONTROL UNIT FOR PAPER TRANSPORT
Sebastianus Sijtstra, and Willem Boom, both of Almelo, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 12, 1974, Ser. No. 460,281
Claims priority, application Netherlands, Apr. 16, 1973, 7305266
Int. Cl.² H02K *37/00*
U.S. Cl. 318—696 10 Claims



1. A control unit for paper transport in recording instruments energized from a 50 or 60 Hz AC supply source comprising, a controllable oscillator, a motor supply circuit connected to a stepping motor having a drive shaft for driving a paper roller, a paper speed selection switch coupled to the motor supply circuit, a change-over switch for selectively switching the output of the controllable oscillator to the selection switch and directly to the motor supply circuit to provide normal and fast paper transport speeds, respectively, in the normal paper transport position of the switch the oscillator has a frequency of substantially n times 300 Hz, where n is an integer, means connecting a synchronizing input of the oscillator to the AC supply via a pulse shaper and means including the change-over switch for effectively connecting the oscillator in the fast paper transport position of the change-over switch to a timing circuit, said timing circuit being energized via the change-over switch to produce a time-variable signal for controlling the oscillator frequency from a low value to a high value.

3,982,167
CURRENT CONTROL SYSTEM FOR HIGH FREQUENCY LINK CYCLOCONVERTER
Paul M. Espelage, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed July 31, 1975, Ser. No. 600,879
Int. Cl.² H02M *5/27*
U.S. Cl. 321—61 14 Claims



1. A cycloconverter system comprising

a polyphase cycloconverter circuit in cascade with a high frequency resonant tank circuit and having in each phase a series filter inductor connectable to a source of low frequency line voltage,

a cycloconverter control circuit for controlling the in-phase and quadrature components of input line current in each phase and for maintaining the tank voltage within predetermined limits,

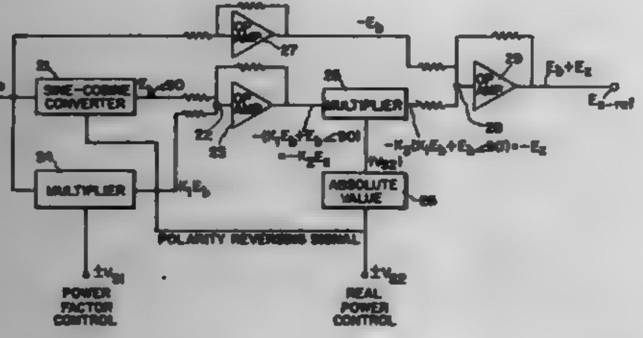
said control circuit including a tank voltage feedback circuit for sensing the tank voltage and comparing to a reference voltage to derive a tank voltage error signal, phase and amplitude shifter means for generating per phase cycloconverter reference signals for controlling the real power and in-phase input current component in dependence upon the polarity and magnitude of said tank voltage error signal and for independently controlling the reactive power and quadrature input current component in dependence upon the polarity and magnitude of a reactive power control signal, and firing and control means in effect actuated by said cycloconverter reference signals for controlling said cycloconverter.

3,982,168
PHASE SHIFTER FOR CONTROLLING THE POWER COMPONENTS AND POWER FACTOR OF A CYCLOCONVERTER
Bimal K. Bose, Troy, and Paul M. Espelage, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Mar. 26, 1975, Ser. No. 562,338
Int. Cl.² H02M *5/27*
U.S. Cl. 321—69 R 14 Claims

11. A phase shifter circuit for generating cycloconverter reference signals for independently and linearly controlling the real power and reactive power components of the cycloconverter comprising

converter means for converting input sine wave signals representative of the per phase line voltage to a cosine wave signal of proportional amplitude having a polarity dependent upon the polarity of a real power control signal, first multiplier means for varying the amplitude and polarity of said input sine wave signals in dependence upon the magnitude and polarity of a reactive power control signal to thereby generate a variable amplitude sine wave signal,

second multiplier means for varying the magnitude of said cosine wave signal in dependence upon the magnitude of said real power control signal to thereby generate a variable amplitude cosine wave signal,



first summing means for summing said variable amplitude sine wave and cosine wave signals to generate a summation signal, and

second summing means for summing said input sine wave signals and summation signal to generate a cycloconverter reference signal for controlling the real and reactive power components of the cycloconverter.

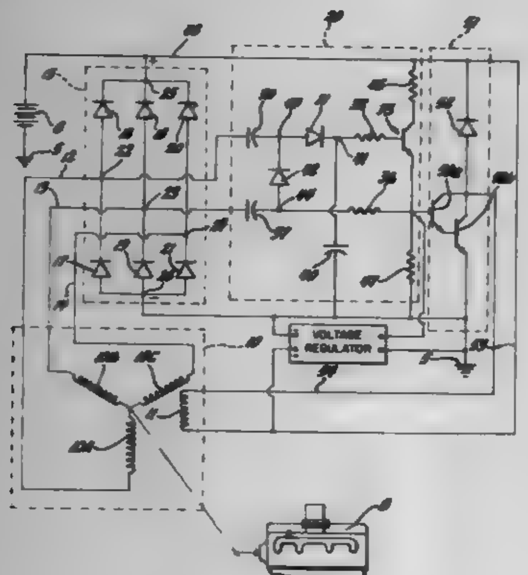
3,982,169
EXCITATION SYSTEM FOR A SELF-EXCITED ALTERNATOR

Donald L. Cummins, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 25, 1975, Ser. No. 607,199

Int. Cl.² H02P *9/08*

U.S. Cl. 322—28 **4 Claims**



1. An excitation system for a self-excited alternator having a field winding positioned in operative relationship with the output windings thereof comprising in combination with a potential regulator circuit of the type including a transistor switching arrangement effective, when in the electrical circuit closed condition to complete an energizing circuit for the alternator field winding: a capacitor connected in circuit with said alternator output windings in such a manner that it is charged in a first direction during selected half cycles and in a second direction during the other half cycles of a selected phase of the alternator alternating current output potential; and means responsive to the charge upon said capacitor and the potential of said selected half cycles of said alternator output potential acting in series aiding relationship for triggering said transistor switching arrangement to the electrical circuit closed condition to complete an energizing circuit for said alternator field winding.

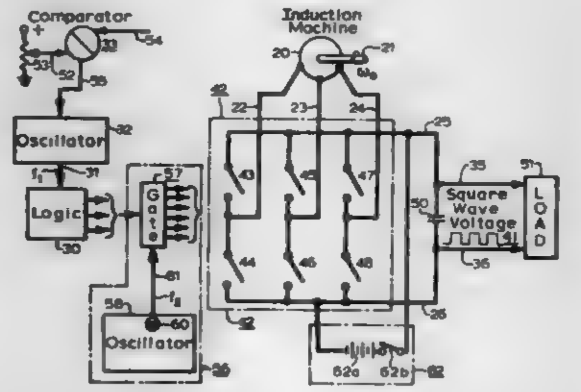
3,982,170
VARIABLE SPEED, CONSTANT FREQUENCY INDUCTION GENERATOR SYSTEM

David James Gritter, Elmhurst, and George Heary Studtmann, Mount Prospect, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 28, 1975, Ser. No. 636,331

Int. Cl.² H02P *9/00*

U.S. Cl. 322—47 **12 Claims**



1. The method of controlling an a-c voltage generating system in which an induction machine is driven as a generator, comprising the steps of:

exciting the generator from a switching system including a plurality of controllable switches and a pair of bus conductors;

regulating the frequency of operation of the switches in accordance with a first frequency f_1, to regulate the amplitude of a d-c voltage established on the bus conductors; and

additionally regulating the operation of the switches in accordance with a second frequency f_2 and in a pattern such that the output voltage on the bus conductors is effectively reversed each time the switches are operated in accordance with the frequency f_2, thus providing on the bus conductors an alternating voltage the frequency of which is controllable independently of the induction generator speed.

2. An a-c voltage generating system including an induction machine coupled to a switching system having a pair of bus conductors and a plurality of switches, a first logic circuit connected to supply firing pulses to regulate operation of the system switches, and a first oscillator circuit connected to provide timing pulses at a first frequency f_1 for regulating operating of the first logic circuit, characterized in that:

each switch in the switching system is a power switch, capable of passing current in either direction when turned on by a firing pulse and capable of being turned off at any time; and further comprising

a second logic circuit, including a gate circuit coupled between said first logic circuit and said power switches, and a second oscillator circuit, coupled to said gate circuit, the gate circuit being connected to operate as a function of the pulses provided by both the first and second oscillator circuits, to turn on the power switches in the inverter circuit in accordance with the operating frequencies of both the first and second oscillator circuits, to provide a controlled a-c output voltage on the inverter bus conductors.

3,982,171
GATE CURRENT SOURCE

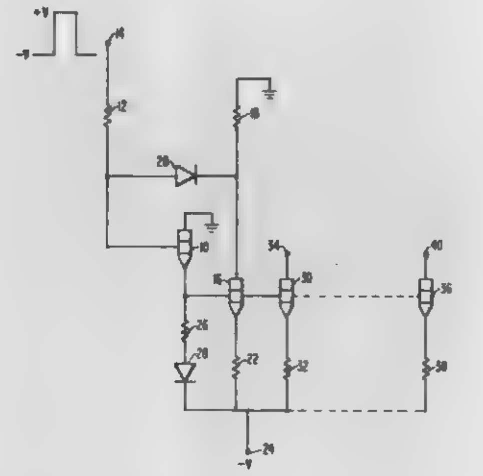
John Edwin Gersbach, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 2, 1974, Ser. No. 430,276

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 20, 1976

Int. Cl.² G05F *3/08*

U.S. Cl. 323—1 **6 Claims**



1. A current source comprising

a current reference circuit, including a first transistor having a base electrode and an emitter electrode, a second transistor having a collector electrode, an emitter electrode and a base electrode coupled to the emitter electrode of said first transistor, a non-linear feedback circuit coupled between said collector electrode and the base electrode of said first transistor, an input terminal for receiving a voltage pulse coupled to the base electrode of said first transistor, a voltage supply source terminal and a first impedance coupling said voltage supply source terminal to the emitter electrode of said second transistor, and

a current sink circuit, including an output current terminal, a second impedance and a third transistor having a collector electrode, an emitter electrode and a base electrode coupled to the base electrode of said second transistor, said collector electrode of said third transistor being connected to said output current terminal and said emitter electrode of said third transistor being connected to said voltage supply terminal through said second impedance.

3,982,172
PRECISION CURRENT-SOURCE ARRANGEMENT

Rudy Johan van de Plassche, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

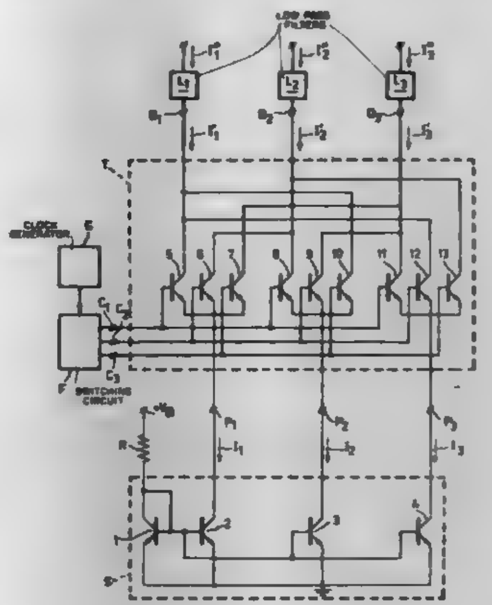
Filed Apr. 16, 1975, Ser. No. 568,726

Claims priority, application Netherlands, Apr. 23, 1974, 7405441

Int. Cl.² G05F *1/56*

U.S. Cl. 323—1 **12 Claims**

1. A precision current source arrangement for producing *n* accurately identical currents comprising, a multiple current source which supplies *n* approximately identical currents, a coupling circuit with *n* input terminals coupled to said multiple current source and *n* output terminals, means including a clock generator for coupling a periodic control signal to the coupling circuit in a cyclically permuting fashion, said coupling circuit including means responsive to the periodic control signal for selectively interconnecting said *n* input terminals with said *n* output terminals so as to establish a connection pattern between the *n* input terminals and the *n* output terminals such that each of the output terminals within a constant cycle time, which is defined by the control signal, is consecutively coupled to each of the input terminals during *n* identical time intervals and during each time interval each of the output terminals is coupled to a separate input terminal.



3,982,173
AC-DC VOLTAGE REGULATOR

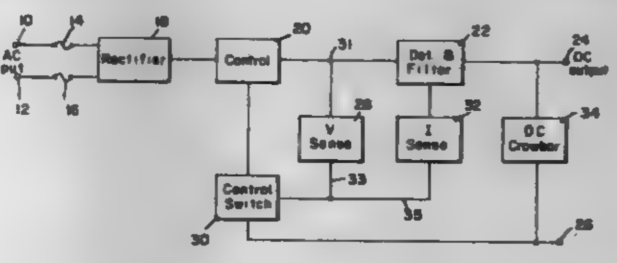
Clyde Raymond Berry, Goleta, and Robert J. Cinzori, Santa Barbara, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 10, 1974, Ser. No. 459,811

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 20, 1976

Int. Cl.² G05F *1/56, 1/64*

U.S. Cl. 323—17 **9 Claims**



1. An efficient voltage regulation network for converting an unregulated AC input voltage into a regulated DC output voltage across a load, said network comprising:

a. a series pass control element for conducting current a given portion of each cycle of AC input voltage coupled thereto,

b. means connected to the output of said control element for detecting and filtering the output voltage thereof and providing a DC ripple voltage, said detection means disconnecting said control element from said load once each cycle of AC input voltage applied to said control element and preventing said control element from turning on more than one each cycle of AC input voltage applied thereto,

c. means connected to the output of said control element for sensing the changes in voltage thereat and for generating a control potential at a control node, and

d. means coupled between said control node and the input of said series pass control element and responsive to the voltage generated at control node for controlling the time during each cycle of AC input voltage that said series pass control element is conducting current to an output load, whereby said control element provides the required amount of output current for a varying load on said regulator and the latter, in turn, determines the varying level of voltage at the output of said series pass control element.

3,982,174
SWITCHING VOLTAGE REGULATOR WITH LOW RFI NOISE

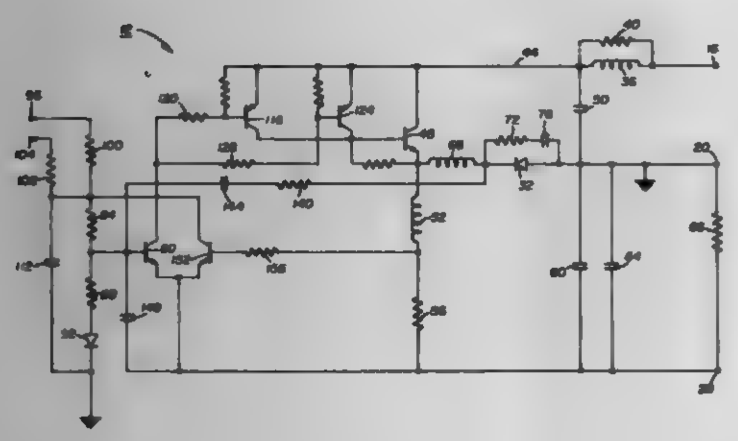
Harry L. Maddox, Reynoldsburg, Ohio, assignor to Western Electric Company, Inc., New York, N.Y.

Filed June 2, 1975, Ser. No. 583,089

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² G05F *1/56*

U.S. Cl. 323—17 **12 Claims**



8. In a switching voltage regulator for receiving an unregulated direct current input voltage between an input terminal and a reference terminal thereof and for generating a regulated direct current output voltage across a load between an output terminal thereof and the reference terminal;

- an induction coil;
- a first transistor, having a base, a collector and an emitter, connected with its emitter-collector circuit path in series with the coil between the input and the output terminals, with the emitter-collector path between the input terminal and the coil;
- a diode, connected between the reference terminal and a point between the series connected first transistor and coil, and poled to be nonconductive when the first transistor is conductive;
- means for applying a control signal to the base of the first transistor to cyclically drive the first transistor (a) from full conduction to cutoff to interrupt a current flow between the input and the output terminals and through the first transistor and the coil to induce a voltage in the coil of a polarity to forward bias the diode and establish a current path between the reference terminal and the output terminal and through the diode and the coil (b) from cutoff to partial conduction at a controlled rate to again establish the current path between the input terminal and the output terminal and to reduce the current flow through the diode at a controlled rate, and (c) from partial conduction to full conduction at a more rapid rate when the current flow through the diode has been reduced to a predetermined value, to generate the regulated direct current output voltage across the load between the output terminal and the reference terminal, [illegible]
- means for sensing the value of the current flow to the output terminal and for varying the value of the control signal, when the current flow reaches a predetermined maximum value, to control the conduction of the first transistor to limit the current flow to the output terminal to the predetermined maximum value.

3,982,175
POWER REGULATING DEVICE

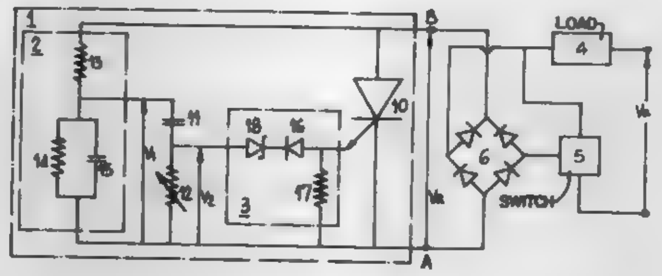
Maurice Sauvanet, Fontenay-le-Fleury, France, assignor to Silec-Semi-Conducteurs, Paris, France

Filed Sept. 25, 1974, Ser. No. 509,162

Claims priority, application France, Sept. 26, 1973, 73.34562

Int. Cl.² G05F *5/00*

U.S. Cl. 323—18 **11 Claims**



1. A power regulating device operating by suppressing periodically full half cycles of power applied to a load from an alternating voltage source comprising:

- means connected to said alternating voltage source for producing a rectified voltage across first and second terminals,
- a controllable semiconductor element including an anode, a cathode and a control electrode of the type which is triggered by the current sinking from its control electrode, said anode and cathode being connected to said first and second terminals, respectively,
- an RC circuit comprising at least a resistor and a capacitor connected in series, said capacitor being connected to be charged from said first terminal and said resistor being connected to said second terminal, and
- a two electrode threshold device connected between said control electrode and the junction of said resistor and said capacitor, whereby the controllable semi-conductor element is periodically conducting for one-half-cycles of the alternating voltage source.

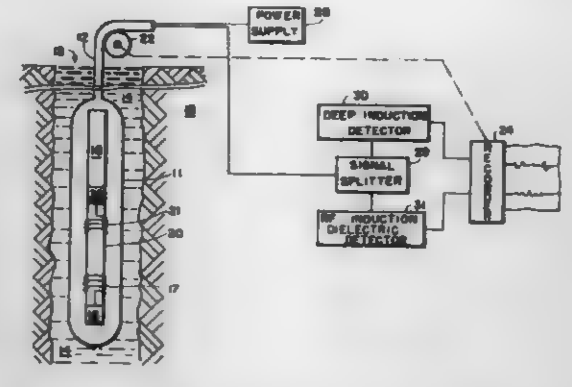
3,982,176
COMBINATION RADIO FREQUENCY DIELECTRIC AND CONVENTIONAL INDUCTION LOGGING SYSTEM

Richard A. Meador, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 11, 1974, Ser. No. 531,562

Int. Cl.² G01V *3/10, 3/18*

U.S. Cl. 324—6 **13 Claims**



1. A method for determining the characteristics of earth formations in the vicinity of a well borehole, comprising the steps of:

- generating in a well borehole a radio frequency electromagnetic field in the frequency range of 10 megahertz to 60 megahertz;
- detecting at a spaced distance from the location of generation of said radio frequency electromagnetic field the total field amplitude of said radio frequency field, said amplitude being a function of the conductivity and permittivity of the earth formations in the vicinity of the borehole and generating a signal representative thereof;
- normalizing said total field signal with respect to air;
- simultaneously with said generating and detecting steps, generating a conventional induction log measurement of the conductivity of the earth formations in the vicinity of the borehole; and
- combining said induction log conductivity measurement and said normalized radio frequency total field signal according to a predetermined functional relationship to derive indications of oil prospective zones penetrated by the borehole.

3,982,177
SOIL SAMPLE CONDUCTIVITY MEASUREMENT UTILIZING A BRIDGE CIRCUIT AND PLURAL ELECTRODE CELL

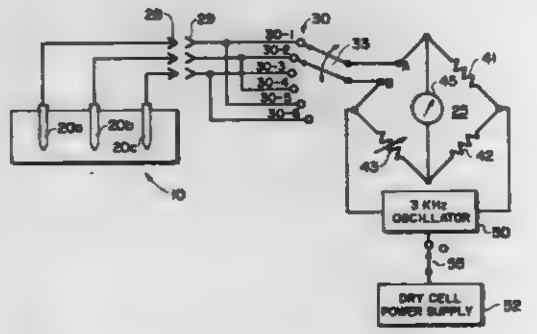
John W. Walker, Belmar, and Douglas C. Pearce, Sea Girt, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 8, 1970, Ser. No. 79,099

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² G01V *3/06;* **G01N** *27/04;* **G01R** *27/00*

U.S. Cl. 324—13 **2 Claims**



2. Apparatus for determining the conductivity of a soil sample comprising a calibrated fluid-tight cell filled with a sample of soil to be analyzed, a pair of electrodes chemically inert to salts and acids within said soil, said electrodes projecting into a soil containing portion within said cell and connectable externally of said cell, a resistance measuring bridge circuit, and means for connecting said soil electrodes into a portion of said bridge circuit, said bridge circuit including a current supply of unknown magnitude and a frequency between 1.5 kHz and 10 kHz.

3,982,178
METHOD OF DETERMINING ADEQUACY OF SUBSTRATE MEMORY WIRE DURING THE PLATING PROCESS

Marden H. Seavey, Jr., Westford; Joseph M. Wyman, Framingham, and Emil Toledo, Newton, all of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 29, 1975, Ser. No. 545,249

Int. Cl.² G01R *33/12*

U.S. Cl. 324—34 R **8 Claims**

1. A method of evaluating memory wire substrates during plating processing to determine adequacy for memory wire applications comprising:

- plating reference memory wire substrates of known good quality in a sequence of selected plating process solutions and performing selected tests after the processing step of each solution;
- determining the acceptable ranges of properties at each selected test is performed;
- plating new memory wire substrates in a like sequence of solutions; and
- testing said new wire substrates after selected plating steps to determine those substrates having properties lying within said acceptable ranges.

3,982,179
MAGNETIC GRADIENT DETECTOR WITH MEANS FOR ADJUSTING THE PARALLELISM OF THE SENSORS

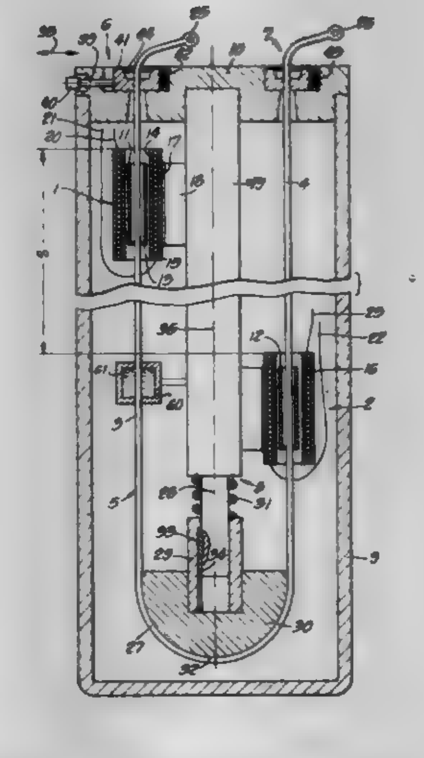
Friedrich M. O. Forster, Grathwohlstrasse 4, D-7410 Reutlingen, Germany

Filed Feb. 21, 1975, Ser. No. 551,640

Claims priority, application Germany, Feb. 22, 1974, 2408547

Int. Cl.² G01R *33/02*

U.S. Cl. 324—43 G **13 Claims**



1. A magnetic gradient detector having two magnetic field sensors, the magnetic axes of which are parallel to an imaginary line, said sensors being installed a predetermined distance from one another along the imaginary line and having respective electrical outputs connected together to provide an electrical signal corresponding to the gradient of the magnetic fields present at the location of the two magnetic field sensors, the improvement comprising:

- each magnetic field sensor is connected to a separate wire maintained in axial tension, said wires being arranged parallel to each other and to the imaginary line; and
- first and second means respectively connected to said wires for adjustably shifting the wires in planes perpendicular to each other and to the respective wires.

3,982,180
APPARATUS FOR TESTING MULTICONDUCTOR CABLES FOR CONTINUITY, CORRECT CONNECTIONS, AND THE ABSENCE OF SHORT CIRCUITS BETWEEN CONDUCTORS

Henry Edge Vaiden, Winston-Salem, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 20, 1974, Ser. No. 534,767

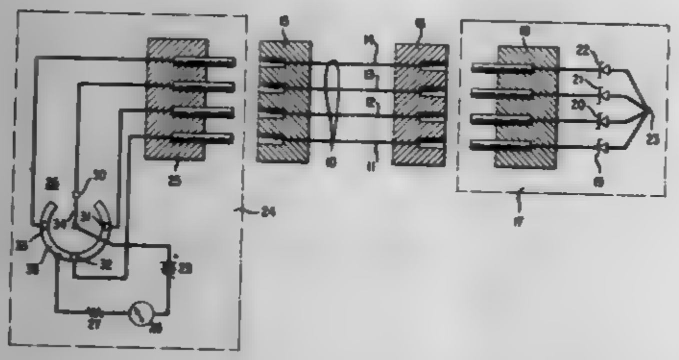
Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976

Int. Cl.² G01R *31/02*

U.S. Cl. 324—51 **9 Claims**

5. Apparatus for testing the electrical continuity between terminals on a first device and terminals on a second device where said first device terminals should be connected in a preassigned order to a plurality of conductors and said second device terminals should likewise be connected in a preassigned order to said conductors, said apparatus comprising:

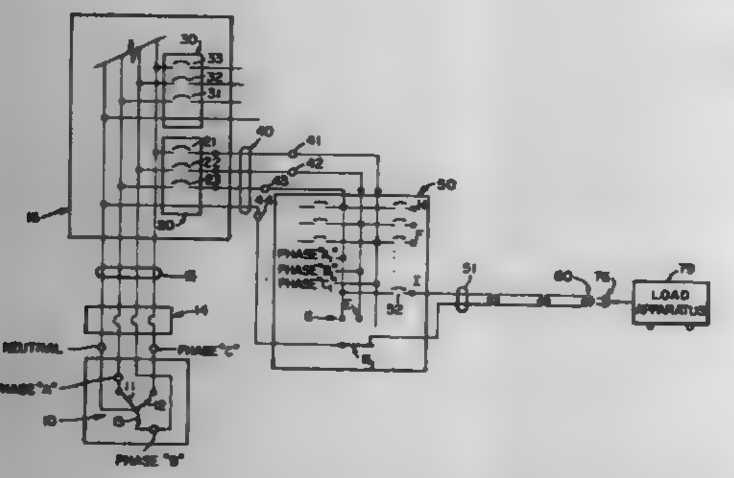
a plurality of first means, each having first and second terminals, each responsive to a first current flowing in a first direction between said terminals to produce a first voltage drop which is unique to said first voltage drops of all other of said first means and each responsive to a second current flowing in a second direction between said terminals to produce a second voltage drop where all of said second voltage drops of said first means are substantially equal,



said first means having their first terminals all electrically connected together and their second terminals arranged for connection to said first device terminals, respectively,
second means for applying a DC potential between any one of said second device terminals and at least one of its remaining terminals, and
third means for indicating the current flowing from said source.

3,982,181
APPARATUS AND METHOD FOR TRACING ENERGIZED AC CIRCUITS

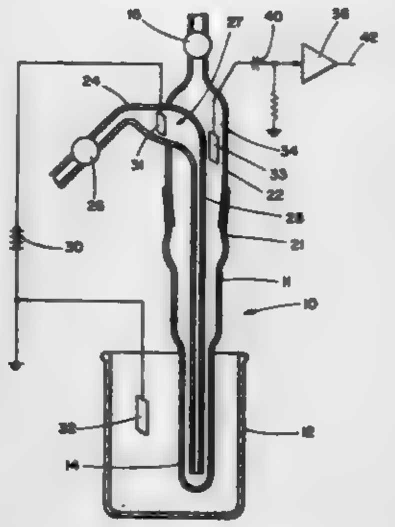
John Thomas Ferony, 17-40 Francis Lewis Blvd., Whitestone, N.Y. 11357, and Kenneth Louis Schmieder, 64-82 58 Road, Maspeth, N.Y. 11378
Filed May 21, 1975, Ser. No. 579,427
Int. Cl.² G01R *19/16*
U.S. Cl. 324—66 15 Claims



1. For use in an AC power distribution network having a plurality of live AC circuits each including a circuit protective device, a system for identifying a particular one of said plurality of live circuits and comprising:
load means adapted to be coupled to said particular one of said plurality of live circuits for introducing a DC current in said circuit; and
test means adapted to be coupled across the circuit protective device of each of said plurality of live circuits for detecting said DC current in said particular one of said circuits thereby to indentify said particular circuit.

3,982,182
CONDUCTIVITY CELL FOR PARTICLE STUDY DEVICE

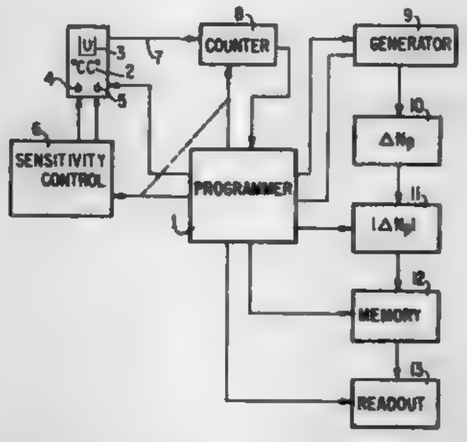
Walter R. Hogg, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.
Continuation-in-part of Ser. No. 387,548, Aug. 13, 1973. This application Jan. 21, 1975, Ser. No. 543,011
Int. Cl.² G01N *27/00*
U.S. Cl. 324—71 CP 15 Claims



1. In a particle study device wherein a liquid electrolyte containing particles is caused to traverse an electrical sensing zone of small dimensions and wherein said device has a conductivity cell including two electrodes in the electrolyte for establishing a variable resistance which is a function of the conductivity of the electrolyte and which is connected to an electrical sensing circuit including the sensing zone to provide compensation for changes in electrolyte conductivity, the improvement comprising said conductivity cell including a long and narrow column of electrolyte between said electrodes with each of said electrodes being in the electrolyte at opposite ends of said column.

3,982,183
PARTICLE SIZING APPARATUS

Claude Jean Collineau, Margency, and Jacques Andre Pontigny, Montmorency, both of France, assignors to Coulter Electronics, Inc., Hialeah, Fla.
Filed Feb. 20, 1975, Ser. No. 551,328
Int. Cl.² G01N *27/00*
U.S. Cl. 324—71 CP 14 Claims

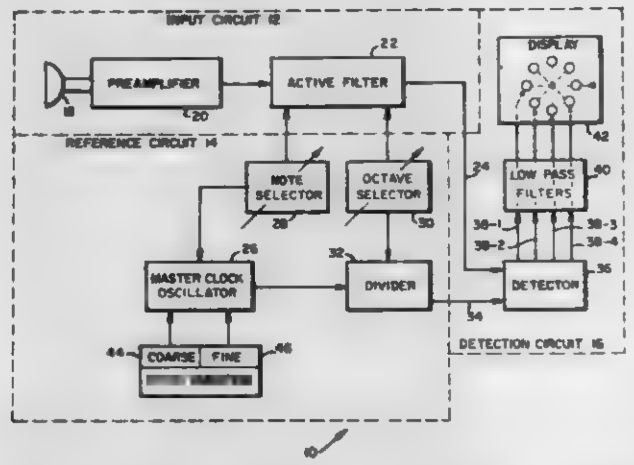


1. Apparatus for obtaining mass or volume distribution of a sample of particles having various sizes suspended in a fluid, said apparatus comprising:

A. detecting means for sequentially producing a series of electrical pulse trains of one pulse per particle, each pulse representing the volume or mass of said particle, said detecting means including means for establishing a particle size threshold which is sequentially variable such that appearance of said pulses for each successive value of said threshold is contingent upon said particles having sizes exceeding said threshold value,
B. sequential counting means connected to said detecting means for receiving and counting the pulses in said pulse trains and furnishing in synchronism with variations of said threshold a series of output signals, comprising a series of cascaded binary counting units including a multipole switch having a plurality of studs, the output of each of said binary counting units being connected to a stud of the multi-pole switch, and means for actuating said multipole switch in synchronism with the variation of said threshold,
C. measuring means for measuring the time between the start of each counting and appearance of the corresponding output signals, such as to obtain signals having durations representing numbers of counted particles for the respective threshold values,
D. differential calculating means for sequentially counting values representing the difference between each pair of successive durations thus obtained, and
E. display means for successively displaying said differential values.

3,982,184
PHASE DIFFERENT DETECTOR AND DISPLAY

Albert E. Sanderson, Carlisle, Mass., assignor to Inventronics, Inc., Carlisle, Mass.
Continuation of Ser. No. 399,920, Sept. 24, 1973, abandoned, which is a division of Ser. No. 249,942, May 3, 1972, abandoned. This application May 6, 1974, Ser. No. 467,221
Int. Cl.² G01R *25/00*
U.S. Cl. 324—83 15 Claims

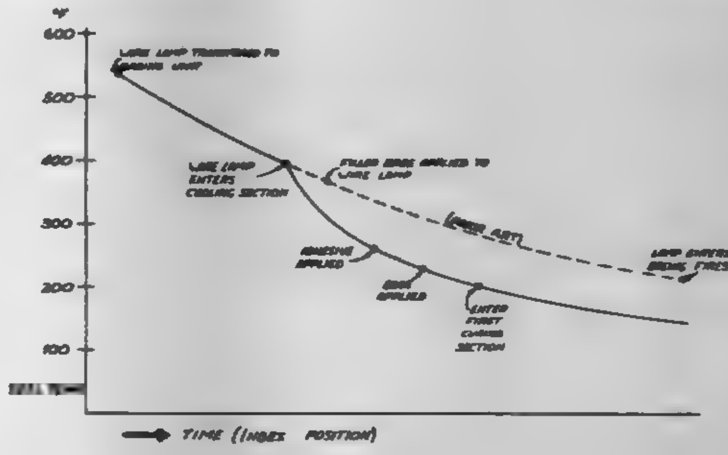


1. A phase difference display for continuously displaying the phase difference between a binary input signal at an unknown frequency and a binary clock signal at a known frequency, said phase difference display comprising:

A. first input means for receiving the binary input signal of unknown frequency,
B. second input means for receiving the binary clock signal of a known frequency, and
C. comparison and display circuit means including:
   i. means responsive to the binary clock signal for producing a plurality of binary spaced phase reference signals at a known frequency, said reference signals including a first phase reference signal and a second phase reference signal that is other than a complement of the first phase reference signal,
   ii. a phase difference detector including a plurality of logical combination means connected to receive each of the phase reference signals, each of said logical combination means combining, according to a binary logical function, the input signal of unknown frequency from said first input means and a corresponding one of the phase reference signals for transmitting a binary logical output signal which has a duty cycle that varies in accordance with the phase relationship between the input signal from said first input means and the corresponding phase reference signal, and
   iii. a plurality of visual display means, each said visual display means being responsive to one of the binary logical output signals for displaying the phase relationship between the input signal from said first input means and the corresponding phase reference signal, said plurality of visual display means providing a continuous display of the direction of change and the rate of change of the phase of the input signal from said first input means.

3,982,185
LAMP BASING USING UV CURABLE ADHESIVE

Michael G. Shinn, Memphis, Tenn., and Billy G. Fransen, Opelousas, La., assignors to General Electric Company, Schenectady, N.Y.
Filed June 25, 1975, Ser. No. 590,096
Int. Cl.² H01R *3/00*
U.S. Cl. 339—144 R 8 Claims



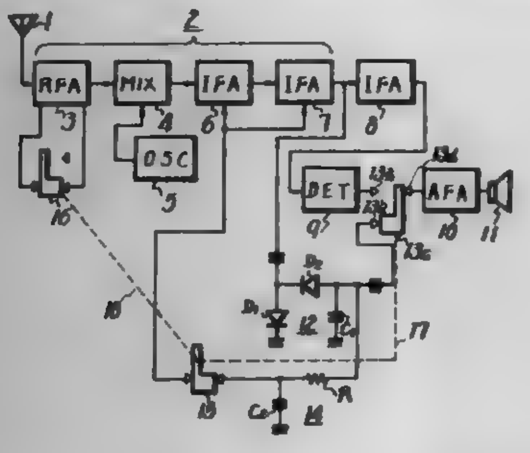
1. A process for joining a base to a wire lamp comprising the steps of:
cooling the seal area of said wire lamp to less than 300°F;
warming said base to a temperature above ambient and below 180°F;
applying an ultraviolet curable adhesive to one of said wire lamp and base;
applying said base to said wire lamp; and
curing said adhesive by irradiation with ultraviolet light to bond said base to said wire lamp.

3,982,186
FM RECEIVER WITH DETECTOR FOR MULTI-PATH RECEPTION

Hiroshi Furuno, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 22, 1975, Ser. No. 570,358
Claims priority, application Japan, May 1, 1974, 49-49180
Int. Cl.² H04B *1/06*
U.S. Cl. 325—344 7 Claims

3. In an FM receiver having a receiving circuit comprised of an RF amplifier and an IF amplifier for receiving an FM broadcast signal to which said receiver is selectively tuned, an FM detector coupled to said IF amplifier for converting the received FM signal to a corresponding audio signal, an audio amplifier for amplifying said audio signal, and a loudspeaker coupled to said audio amplifier for producing audible sounds corresponding to the signal amplified by said audio amplifier, the improvement comprising: amplitude detecting means coupled to said receiving circuit for detecting amplitude modulation components in said received FM broadcast signal caused by multi-path reception of said FM broadcast signal, said amplitude detecting means producing relatively low frequency output signals in response to detected amplitude modulation components; and means for selectively applying said corresponding audio signal produced by said FM detector and said low frequency output signals produced by said amplitude

detecting means to said audio amplifier, whereby said loudspeaker produces audible sounds corresponding to said audio signal, or a characteristic audible sound corresponding to said output signals and indicative of said multi-path reception.



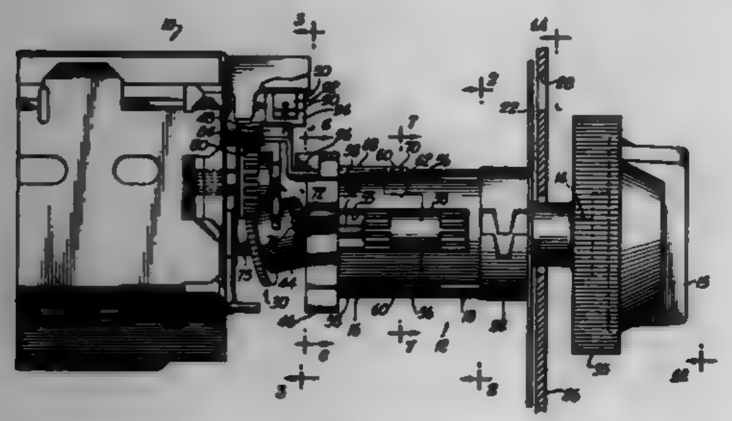
3,982,187
AFC DEFEAT MECHANISM

Joe G. Badger, and Alarico A. Valdettaro, both of Bloomington, Ind., assignors to Sarkes Tarzian, Inc., Bloomington, Ind.

Division of Ser. No. 503,979, Sept. 6, 1974, Pat. No. 3,906,805. This application Mar. 31, 1975, Ser. No. 563,316

Int. Cl.^{2} H04B *1/06*

U.S. Cl. 325—457 **6 Claims**



1. In a television tuner of the type having a detented selector shaft rotation of which is effective to tune said tuner to one of a plurality of discrete frequencies, a fine tuning mechanism, a fine tuning shaft coupled to said fine tuning mechanism, rotation of said fine tuning shaft being effective to tune said tuner over a predetermined range of frequencies about each of said discrete frequencies, and an automatic frequency control circuit, an automatic frequency control defeat mechanism comprising:

a switch affixed to said television tuner and electrically coupled to said automatic frequency control circuit, operation of said switch being effective to defeat the operation of said automatic frequency control circuit;

cam means affixed to said selector shaft for rotation therewith, said cam means having a predetermined number of lobes equal in number to the number of detent positions of said selector shaft;

a first lever pivotably attached to said tuner for engaging said cam means and said switch, said first lever being operative to operate said switch for defeating the operation of said automatic frequency control circuit upon the rotation of said selector shaft between detent positions thereof; and

means operatively coupled to said fine tuning mechanism and said switch for defeating the operation of said automatic frequency control circuit in response to the operation of said fine tuning mechanism, said means for defeating the operation of said automatic frequency control circuit in response to the operation of said fine tuning mechanism including a second lever pivotally attached to said tuner and engageable by a portion of said fine tuning mechanism, a portion of said first lever being interposed between said second lever and said switch.

3,982,188
STATION SELECTING DEVICE HAVING IMPROVED NOISE DISCRIMINATION CIRCUITRY

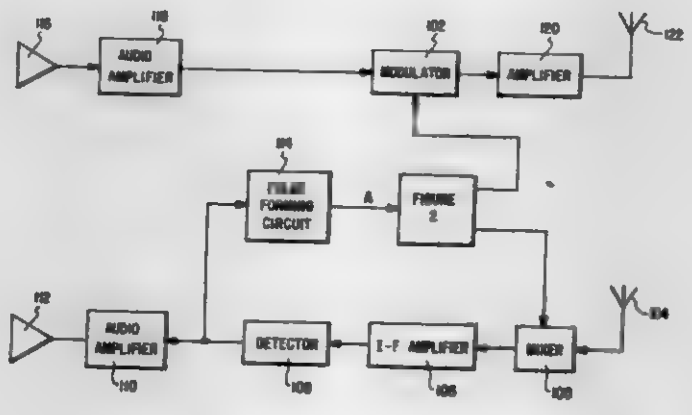
Mitsuo Matsuzawa, and Kaoru Mitarai, both of Tokyo, Japan, assignors to Trio Electronics Incorporated, Tokyo, Japan

Filed Nov. 14, 1974, Ser. No. 523,862

Claims priority, application Japan, June 18, 1974, 49-69557

Int. Cl.^{2} H04B *1/32*

U.S. Cl. 325—470 **2 Claims**



1. A multichannel communication system having a station selecting device, said station selecting device comprising

information signal receiving means for receiving information signals over at least one of a plurality of channels;

means for generating a train of first pulses of predetermined width and period;

first signal generating means responsive to said train of first pulses for automatically, sequentially generating a plurality of first signals respectively corresponding to the information signals of said plurality of channels of said information signal receiving means;

said information signal receiving means including means responsive to said plurality of first signals and said information signals to generate a respective plurality of intermediate frequency signals, the frequencies of said intermediate frequency signals being a predetermined difference between said first signals and the information signals;

sensing signal generating means responsive to said intermediate frequency signals for generating a sensing signal for each of said channels;

means for integrating said sensing signal; and

threshold means for generating a control signal to stop said first signal generating means by blocking the application of said train of first pulses to said first signal generating means in response to said first pulses and the integrated sensing signal whenever the sensing signal exceeds the threshold of said threshold means during the occurrence of one of said first pulses

whereby the sensing signals are normally discriminated from noise signals since the latter signals, when integrated, do not exceed said threshold during the occurrence of said first pulses.

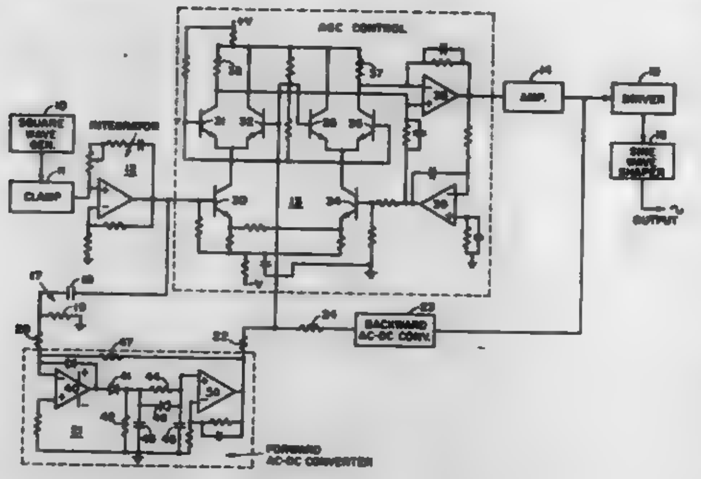
3,982,189
SQUARE WAVE TO SINE WAVE CONVERTER

William O. Brooks, Canoga Park, and Clifford B. Hill, Westlake Village, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 25, 1975, Ser. No. 635,201

Int. Cl.^{2} H03K *5/156*

U.S. Cl. 328—27 **5 Claims**



1. A wave shaping circuit, comprising in combination:

a source of square waves of variable frequency;

means for integrating said square waves thereby to develop corresponding triangular waves.

an amplifier having an automatic gain control circuit;

means for coupling said triangular waves to the input of said amplifier;

means for controlling the operation of the automatic gain control circuit of said amplifier in response to amplitude variations both in the triangular waves produced by said means for integrating said square waves and in the triangular waves present at the output of said amplifier so as to minimize any such changes in said last-mentioned triangular waves as the frequency of the square waves is varied;

a sine wave shaper for converting triangular waves to sine waves; and

means for feeding the output of said amplifier to the input of said sine wave shaper thereby to develop at the output thereof sine waves having a high degree of purity and amplitude uniformity.

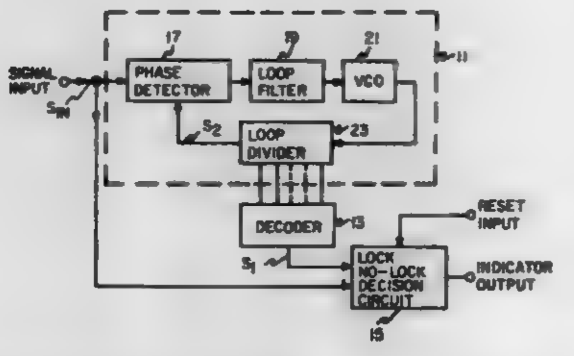
3,982,190
PHASELOCK CIRCUITRY WITH LOCK INDICATION

Dietrich H. Schaefer, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed July 31, 1975, Ser. No. 600,539

Int. Cl.^{2} H03B *3/04*

U.S. Cl. 328—110 **8 Claims**



1. Phaselock circuitry comprising:

phaselock loop first means including means for receiving an input signal and a feedback signal of variable frequency and providing an output signal indicative of the phase difference between said signals, said feedback signal being provided by means including controllable oscillator means,

second means for providing a pulse train signal S_X synchronous with said input signal,

third means for providing a pulse train signal S_Y synchronous with said feedback signal,

decision circuit fourth means receiving S_X and S_Y as inputs and including coincidence determination means and counting means, said fourth means providing an output signal having a first state indicative of a lock condition or a second state indicative of a no-lock condition, whereby, said fourth means output signal state depends on the degree of concurrence between S_X and S_Y,

said input signal being a pulse train signal and S_X being the same signal as said input signal.

3,982,191
CHARGE STORAGE TUBE AND METHOD FOR OPERATING THE SAME

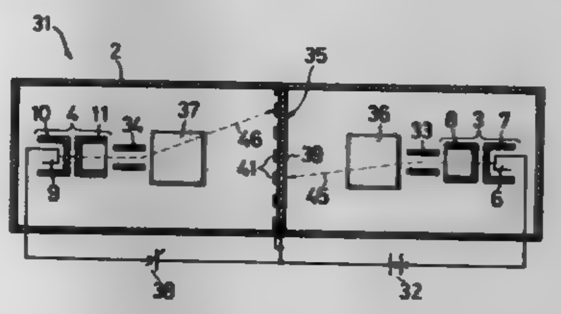
Hajime Takita, and Takehumi Katow, both of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1975, Ser. No. 547,964

Claims priority, application Japan, Feb. 9, 1974, 49-016576

Int. Cl.^{2} G11C *11/34, 11/26*

U.S. Cl. 328—124 **11 Claims**



1. A charge storage tube comprising a target, means for writing a signal in said target by generating pairs of electron-holes within said target and means for reading out said signal by scanning electron beams on said target, wherein said target comprises a semiconductor substrate with a specific resistance greater than 1 ohm/cm, an insulating layer formed on said semiconductor substrate and a metal electrode with openings formed on said insulating layer, hetero junction diodes being formed between said insulating layer and said semiconductor substrate, means for changing the target potential of said target above and below a first cross-over potential of an accelerating potential of said electron beams.

3,982,192
MINIPOWERED OPTIONAL SELF CHECKING ELECTRONIC TIMER FOR ORDNANCE

John E. Newton, East Aurora, N.Y.; Maxine Bohacz, Boonton, and Jerry H. Lyon, Stanhope, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 3, 1970, Ser. No. 78,315

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 10, 1976

Int. Cl.^{2} H03K *5/13, 5/159*

U.S. Cl. 328—129 **9 Claims**

1. A time delay circuit including:

a first shift register having an input and an output;

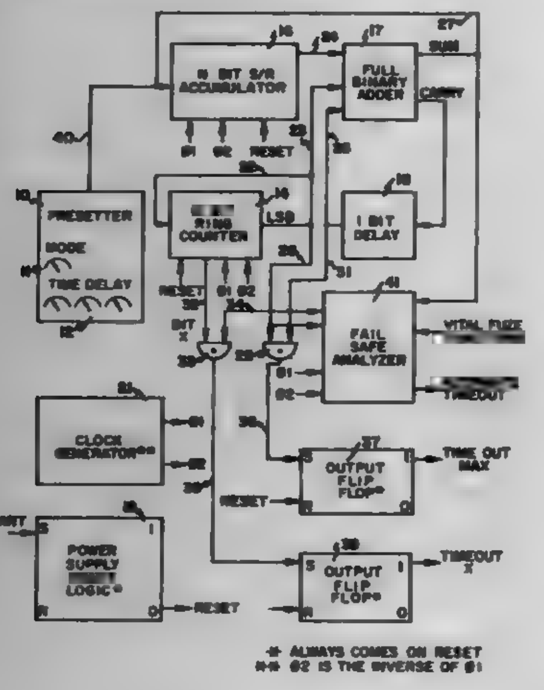
a second shift register having an input and an output;

means for connecting said input of said first shift register to said output thereof;

a full binary adder having first, second and third inputs, a sum output and a carry output;

means for connecting said output of said second shift register to said first input of said full binary adder;

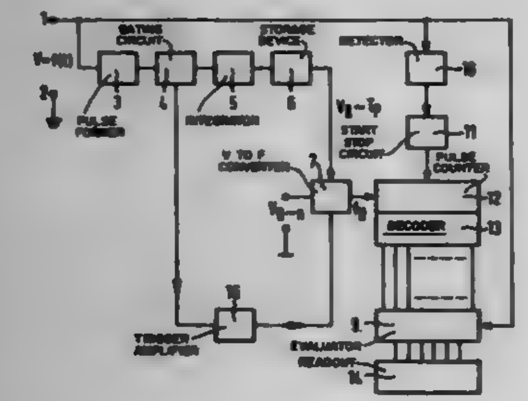
means for connecting said sum output to said input of said second shift register;
means for connecting said output of said first shift register to said second input of said full binary adder;
delay means for connecting said carry output to said third input of said binary full adder;



an "And" gate having first and second inputs;
means for connecting said output of said first shift register to said first input of said "And" gate; and
means for connecting said third input of said binary full adder to said second input of said "And" gate.

3,982,193
CIRCUIT ARRANGEMENT FOR GENERATING A SAMPLING PULSE RASTER ADAPTED TO THE VARIABLE PERIOD OF QUASIPERIODIC EVENTS

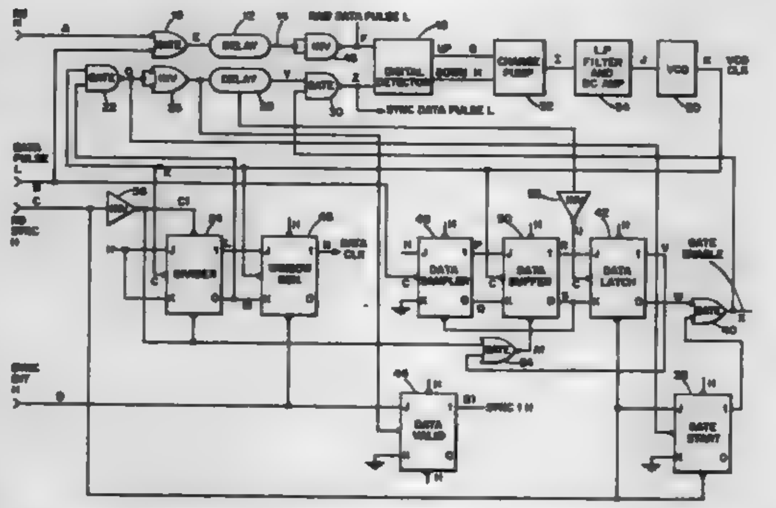
Albert Maringer, Karlsruhe, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Dec. 20, 1974, Ser. No. 534,832
Claims priority, application Germany, Dec. 21, 1973, 2364154
Int. Cl.² H03K *3/84, 21/30, 3/72*
U.S. Cl. 328—151 **8 Claims**



1. A circuit for generating a sampling pulse raster wherein its repetition frequency is adapted to the variable period of quasiperiodic events, comprising,
a voltage-frequency converter having at least a first input terminal and a second input terminal,
means for applying to said first input terminal a first voltage proportional to the total number of sampling raster points,
means for applying to said second input terminal a second voltage proportional to the period of said event being sampled,
an output terminal of said converter at which the converter output voltage frequency is inversely proportional to said second voltage and directly proportional to said first voltage, and
means for generating a sampling pulse raster from the signal at said converter output terminal, said means comprising,
a multiple counting stage pulse counter to one input of which is applied the voltage-frequency converter output signal,
a start-stop circuit which is addressed by a pulse marking the beginning of the event, connected to a second input of said pulse counter, and
means for generating raster signals from the counting stage outputs of said counter.

3,982,194
PHASE LOCK LOOP WITH DELAY CIRCUITS FOR RELATIVE DIGITAL DECODING OVER A RANGE OF FREQUENCIES

Chao S. Chi, Shresbury; Peter T. McLean, Stow, and Norman A. Field, Acton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Feb. 18, 1975, Ser. No. 550,693
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 20, 1976
Int. Cl.² H03B *3/04;* **H03K** *5/18*
U.S. Cl. 328—155 **10 Claims**



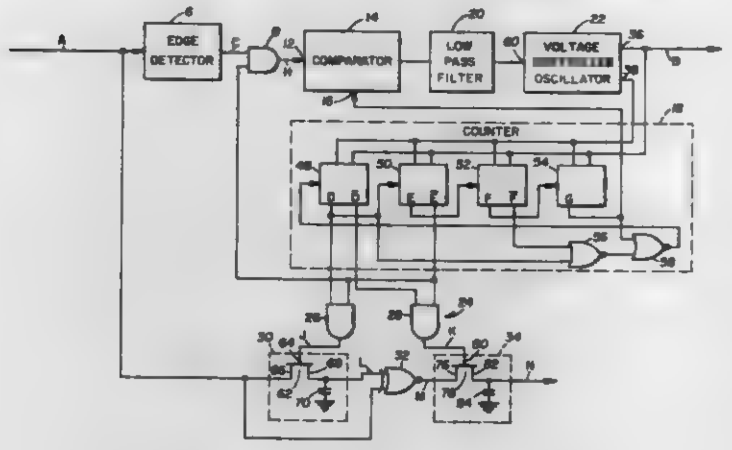
1. In an apparatus for synchronizing clock signals and data pulses, the combination comprising:
A. a variable frequency oscillator for providing a continuous series of said clock signals;
B. first delay means responsive to said data pulses for providing a first predetermined delay;
C. second delay means responsive to said clock signals for providing a second and third predetermined delay;
D. means responsive to said second delay means for reconditioning said data pulses to said clock signals;
E. means for comparing the output of said reconditioning means with said first delay means; and
F. means responsive to said comparing means for varying the frequency of said variable frequency oscillator.

3,982,195
METHOD AND APPARATUS FOR DECODING DIPHASE SIGNALS

Kenneth W. Turner, Des Plaines, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed May 29, 1975, Ser. No. 581,989
Int. Cl.² H03K *9/00*
U.S. Cl. 329—50 **13 Claims**

1. An apparatus for decoding a diphase signal, the apparatus providing diphase data and clock information comprising:
means for generating a clock control signal derived from the diphase signal and related to the clock which initially generated the diphase signal;

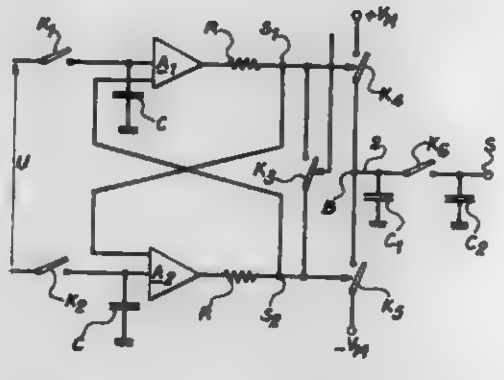
a controlled frequency oscillator the frequency of which is determined by said clock control signal derived from the clock information of the diphase signal;
a counter advanced by the output of said controlled frequency oscillator said counter having a plurality of distinct states;
means, responsive to selected states of said counter, for decoding data information from said diphase signal; and



said clock control signal generating means includes an edge detector responsive to a change in the level of said diphase signal and providing an output signal in response thereto, said clock control signal generating means including means responsive to a selected state of said counter for suppressing selected edge detector output signals having predominantely data information so that said signal controlling said oscillator is regular and directly related to the clock frequency which initially generated the diphase signal.

3,982,196
DIFFERENTIAL VOLTAGE AMPLIFIER

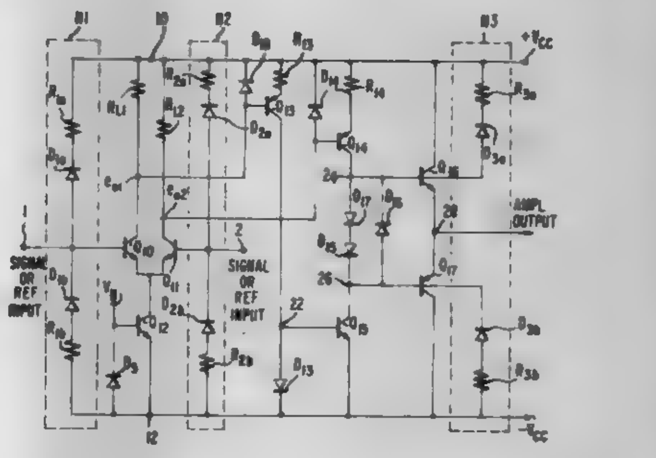
Robert Poujois, Grenoble, France, assignor to Commissariat a l'Energie Atomique, Grenoble, France
Filed Feb. 28, 1975, Ser. No. 553,996
Claims priority, application France, Mar. 1, 1974, 74.07078
Int. Cl.² H03F *3/45*
U.S. Cl. 330—9 **12 Claims**



1. A voltage amplifier essentially comprising:
an unstable circuit having one position of unstable equilibrium and two distinct positions of equilibrium which can be maintained for a certain period of time, each of said distinct positions of equilibrium corresponding to an input signal polarity,
an input stage for applying signals to the input of said unstable circuit for a given period of time,
said unstable circuit switching from said unstable state of equilibrium to the distinct position of equilibrium corresponding to the sign of the signal applied to the input of said unstable circuit in response to the amplitude of the signal applied to said input being greater than the noise signal at said input,
means for returning said unstable circuit to its position of unstable equilibrium,
means for calibrating the output of said unstable circuit at the voltage $+V_M$ or at the voltage $-V_M$ according to which of said distinct positions of equilibrium said unstable circuit switches,
and means for integrating the calibrated signal which appears at the output of said bistable circuit for a given period of time.

3,982,197
RADIATION RESPONSIVE VOLTAGE DIVIDING CIRCUIT

Otto Heinrich Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Feb. 4, 1974, Ser. No. 439,542
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976
Int. Cl.² H03F *3/08*
U.S. Cl. 330—33 **9 Claims**



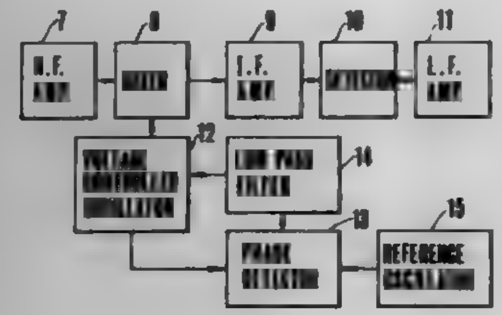
1. In a circuit having a circuit node to which is coupled a reverse-biased semiconductor junction which passes a leakage current when subjected to incident radiation, means for clamping said node to a predetermined voltage at radiation levels higher than some predetermined level including:
first and second terminals for the application therebetween of an operating potential;
first and second impedances;
first and second radiation responsive elements, said elements being of the type which in the absence of radiation have a high equivalent impedance which decreases in response to radiation;
means connecting said first impedance in series with said first element between said first terminal and said circuit node; and
means connecting said second impedance in series with said second element between said second terminal and said circuit node.

3,982,198
OSCILLATORS

Noboru Saikaishi; Yukio Numata; Tetsuo Takahashi; Morio Kumagai, and Michinori Naito, all of Tokyo, Japan, assignors to Trio Electronics Incorporated, Tokyo, Japan
Filed Sept. 25, 1974, Ser. No. 509,274
Claims priority, application Japan, Oct. 23, 1973, 48-119187
Int. Cl.² H04B *1/16*
U.S. Cl. 331—27 **2 Claims**

1. An oscillator for a broadcasting receiver comprising a voltage controlled oscillator the output frequency of which is the local oscillation frequency output for said broadcast receiver, means for forcibly varying the oscillation frequency of said voltage controlled oscillator, a reference oscillator having an oscillation frequency equal to to half the allocated frequency spacing between individual broadcast stations in the

broadcast band, means for setting said reference oscillator to oscillate at a duty ratio of 50%, a phase detector for detecting the phase difference between the oscillation frequency of said voltage controlled oscillator and that of said reference oscillator, means for filtering the output of said phase detector for producing a DC voltage, and a phase synchronizing loop for feeding back said DC voltage to said voltage controlled oscillator, whereby when the oscillation frequency of said voltage controlled oscillator is varied, said local oscillation frequency output is varied stepwise in accordance with said allocated frequency spacing by synchronizing with only an odd multiple of the oscillation frequency of said reference oscillator.



3,982,199

DIGITAL FREQUENCY SYNTHESIZER

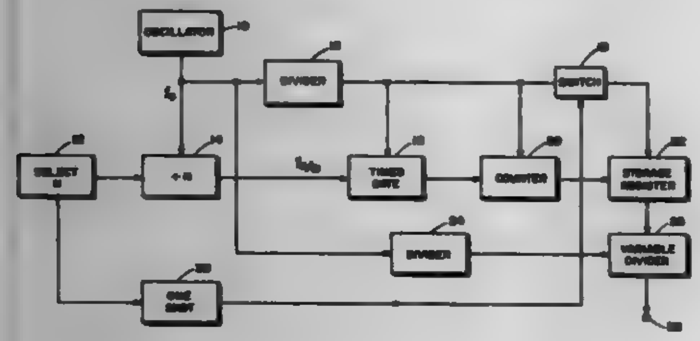
Norman Green, Baltimore, Md., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 6, 1975, Ser. No. 538,686

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² H03K *29/00*

U.S. Cl. 331—51 **10 Claims**



1. A digital frequency synthesizer comprising:
a source of a reference frequency signal;
a variable digital frequency divider means for dividing said reference frequency signal by a selected integer N;
a counter for accumulating a count related to the number of cycles of a frequency signal applied thereto;
gate means for applying, when open, the reference frequency as divided by said variable digital frequency divider means to said counter, said gate means being open for a predetermined time period;
programmable variable digital frequency divider means responsive to the count accumulated in said counter for setting the divisor thereof in proportion thereto and for dividing a frequency signal applied thereto by said divisor; and,
means for applying said reference frequency signal to said programmable variable digital frequency divider.

3,982,200

ELECTRON BEAM GAS DISCHARGE LASER PRESSURE CONTROL

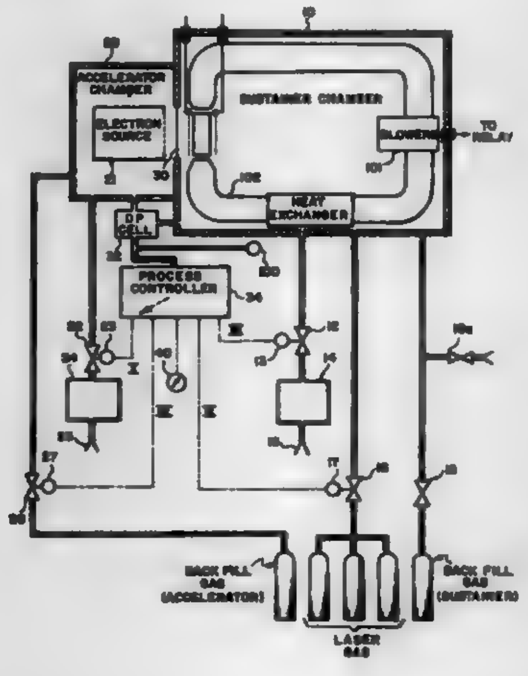
Ethan D. Hoag, Boston, and Henry E. Pease, Malden, both of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Sept. 4, 1973, Ser. No. 394,350

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl. H01s *3/22*

U.S. Cl. 331—94.5 P **9 Claims**



1. Method of operating a two chamber gas laser of the type having an accelerator chamber and a sustainer chamber separated from each other by a thin diaphragm comprising:
continuously sampling pressures from each of said chambers during simultaneous pumpdown thereof and generating continuously a pressure differential signal and applying said signal to modulate the rate of accelerator chamber pumpdown during initial pumpdown of said two chambers,
continuing said continuous generation of a pressure differential signal and applying said signal to modulate the rate of backfill of the sustainer chamber,
then during laser operation continuing said continuous generation of a pressure differential signal and modulating sustainer chamber pressure thereby,
and maintaining the pressure differential across said diaphragm within 2/10 of an atmosphere throughout said operations.

3,982,201

CW SOLID STATE LASER

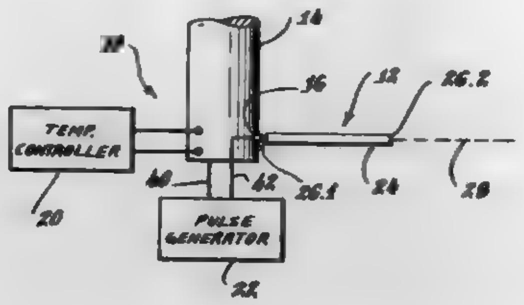
L. Jay Rosenkrantz, Brookfield Center; Robert S. Rowley, Ridgefield, both of Conn., and John B. Schroeder, Vashon, Wash., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 24, 1975, Ser. No. 543,812

Int. Cl.² H01S *3/094*

U.S. Cl. 331—94.5 P **8 Claims**

1. A continuous wave producing solid state laser comprising:
a main solid state laser capable of being end pumped into a lasing mode; and
an array of pump light emitting semiconductor diode lasers arranged to direct their pump light onto an end of the solid state laser for enhanced absorption in the laser and stimulation of the emission of a laser beam therefrom,
means for pulsing the diode lasers of the array at a low duty cycle rate, of not more than ten percent, the pulses each being sufficient to pump the main laser and the repetition rate being sufficient for the pulses to maintain a continuous lasing output from the main laser.



3,982,202

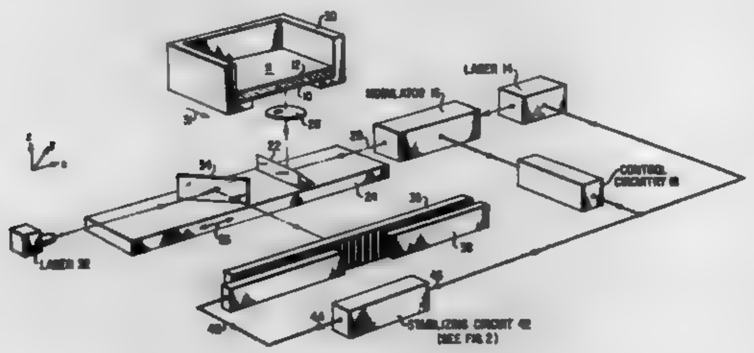
STABILIZATION OF LASER OUTPUT

Thomas Goldstein, Woodbridge, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 2, 1975, Ser. No. 592,370

Int. Cl.² H01S *3/13*

U.S. Cl. 331—94.5 S **6 Claims**



1. In combination, a pulse-operated laser, means external to said laser for generating timing signals for driving said laser to control the pulse-mode operation thereof, said timing signals including uniformly spaced-apart signals and randomly occurring nonuniformly spaced-apart signals, and a phase-locked-loop circuit interposed between said generating means and said laser for processing said timing signals to in effect remove the randomly occurring nonuniformly spaced-apart signals therefrom to provide laser driving signals that are uniformly spaced apart and whose frequency is an integral multiple of said uniformly spaced-apart timing signals.

3,982,203

METHOD OF PREVENTING POST PULSING OF Q-SWITCHED LASER

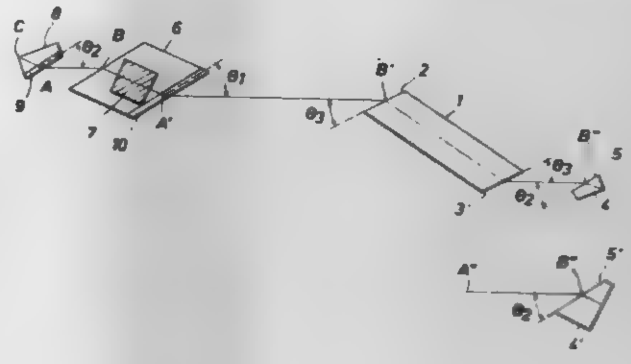
Michiel de Wit, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 28, 1973, Ser. No. 429,474

Int. Cl.² H01S *3/00*

U.S. Cl. 331—94.5 Q **1 Claim**

1. A method of preventing post pulsing of an acousto-optically Q-switched laser system comprising a laser cavity which includes therein a laser rod, first reflecting means mounted along the optical axis of said rod, feedback reflecting means mounted on the opposite side of said rod from said first reflecting means at an angle to said axis, optical pumping means for exciting the laser rod, and an acousto-optic Q-switch mounted on the optical axis of the laser rod between the laser rod and the feedback reflecting means and energizable for deflecting radiation from said laser rod to said feedback reflecting means to provide lasing action as a Q-switched pulse of lasing energy, said method comprising:
placing a filtering material within the laser cavity between said laser rod and said optical pumping means wherein the filtering material is substantially transparent to pumping radiation and substantially opaque to radiation at the lasing wavelength, and
preventing residual radiation emitted in random directions from the laser rod at the lasing wavelength from being deflected into the rod into directions near enough to the axial direction to be regeneratively amplified, by absorption of said radiation in the filtering material during periods when the acousto-optic Q-switch is energized and following the generation of the Q-switched pulse of lasing energy.



3,982,204

LASER DISCHARGE TUBE ASSEMBLY

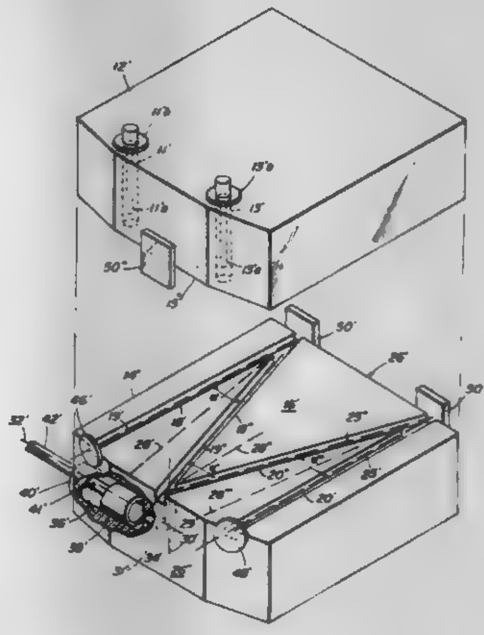
Keimpe Andringa, Sherborn, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Feb. 11, 1974, Ser. No. 441,087

The portion of the term of this patent subsequent to Jan. 6, 1993, has been disclaimed.

Int. Cl.² H01S *3/03, 3/083*

U.S. Cl. 331—94.5 D **2 Claims**



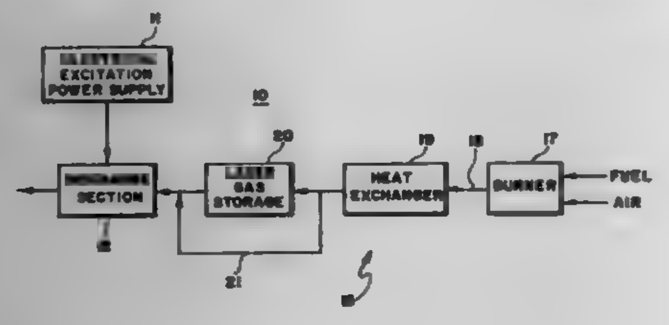
1. In combination:
a. a resonator;
b. a laser gas discharge tube assembly disposed in such resonator, such assembly having a pair of blocks, one of such blocks having an optically smooth surface and the other one of such blocks having at least a pair of grooves formed in a portion of an optically smooth surface thereof, such pair of grooves being arranged in a V-shape, the surfaces of the pair of blocks being in mutual contact to form a laser capillary;
c. means for confining a laser gas in such laser capillary;
d. means for directing a first pair of oppositely polarized laser waves through the laser capillary in a first direction and a second pair of oppositely polarized laser waves through said laser capillary in a direction opposite to such first direction, each one of such polarized waves having a different frequency; and

e. a polarization dispersive structure disposed in the path of the two pairs of waves comprising: an anisotropic crystal, the crystallographic axis of such crystal being oriented to produce different delays to the oppositely sensed polarized laser waves passing therethrough, such delays being related to such orientation.

3,982,205
METHOD FOR PRODUCING A LASABLE GASEOUS MIXTURE FOR USE IN AND OPERATION OF ELECTRON BEAM-SUSTAINER STABILIZED CARBON DIOXIDE LASERS

George W. Sutton, Lexington, and Diarmaid H. Douglas-Hamilton, Boston, both of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Oct. 17, 1974, Ser. No. 515,672
Int. Cl.² H01S *3/22, 3/09*
U.S. Cl. 331—94.5 G **12 Claims**



1. A method of preparing an active medium for gas laser devices which comprises the steps of:

a. burning a hydrocarbon fuel in the presence of air under conditions to consume at least substantially all the oxygen to produce products of combustion comprising at least carbon dioxide, nitrogen and hydrogen;

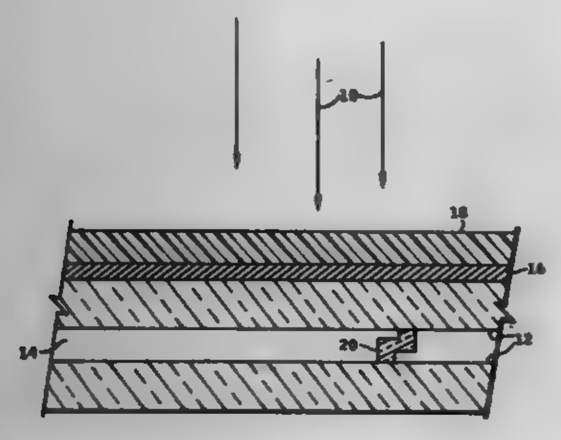
b. cooling said products of combustion to a temperature to at least effect condensation of water vapor in said products of combustion for removal of condensable matter in said products of combustion; and

c. collecting the remainder of said cooled products of combustion for supply to a laser as the active medium therefor.

3,982,206
SYSTEM FOR PROTECTION FROM LASER RADIATION

Peter D. Poulsen, Huntsville, Ala., assignor to General Dynamics Corporation, San Diego, Calif.

Division of Ser. No. 280,312, Aug. 14, 1972, Pat. No. 3,871,739. This application Nov. 27, 1974, Ser. No. 527,669
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976
Int. Cl.² H01S *3/02*
U.S. Cl. 331—94.5 T **10 Claims**



1. A protective cover window for use with high energy infrared lasers which comprises:

a plate which is substantially transparent to infrared radiation, positioned in the path of radiation from an infrared laser, and

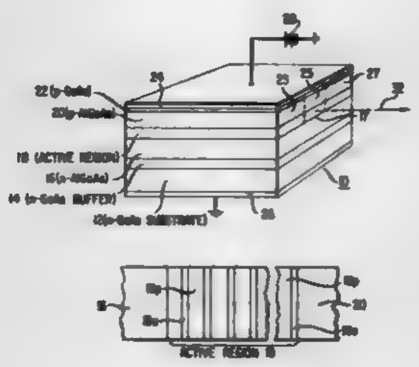
a coating on at least one surface of said plate, said coating comprises a fluorinated ethylene-propylene polymer which rapidly vaporizes without leaving a residue when subjected to intense infrared radiation,

whereby any surface contamination on said coating is carried away with the vaporizing material.

3,982,207
QUANTUM EFFECTS IN HETEROSTRUCTURE LASERS

Raymond Dingle, Summit, and Charles Howard Henry, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 7, 1975, Ser. No. 556,305
Int. Cl.² H01S *3/00*
U.S. Cl. 331—94.5 H **10 Claims**



1. In a heterostructure laser, a multilayered semiconductor body comprising:

first and second wide bandgap layers,

an active region situated between and contiguous with said first and second layers, CHARACTERIZED IN THAT,

said active region includes a plurality of active layers and a plurality of passive layers interleaved with one another,

said passive layers having a wider bandgap than said active layers, thereby forming energy barriers between said active layers,

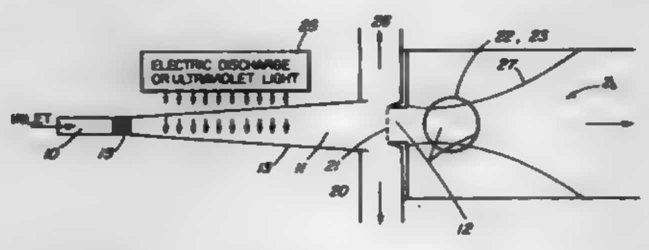
said passive layers being sufficiently thin to permit carriers to tunnel through or hop over said energy barriers when said body is suitably pumped, and

said active layers being sufficiently thin to produce quantum effects in said body including separating the discrete energy levels of carriers in said active layers.

3,982,208
CW SHOCK INITIATED HF/DF LASER

Morton Camac, Lexington, Mass., assignor to Aerodyne Research Incorporated, Bedford, Mass.

Filed June 30, 1975, Ser. No. 591,603
Int. Cl.² H01S *3/09*
U.S. Cl. 331—94.5 G **11 Claims**



1. A method of producing laser radiation from chemical reaction comprising:

providing a flow of a first reaction gas mixture comprising a first reaction gas and an initiator for a second reaction gas,

providing a separate flow of a second reaction gas, said first reaction gas and said second reaction gas being reactive with each other to form a vibrationally excited product

providing a flow of a noble gas buffer to one of said first reaction gas mixture and said second reaction gas,

mixing said gases in a moving stream of supersonic flow at a temperature below the effective reaction temperature of said gases,

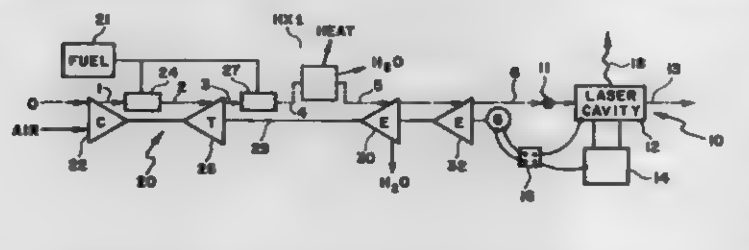
establishing a shock wave in the path of flow of said mixed gases at a boundary between a supersonic flow region and a reaction zone, said shock wave being adapted to cause an abrupt increase in temperature of said gases, and

extracting laser energy from said gases in said reaction zone.

3,982,209
COMBUSTION-ELECTRIC LASER

George W. Sutton, Lexington, and Diarmaid H. Douglas-Hamilton, Boston, both of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Oct. 17, 1974, Ser. No. 515,673
Int. Cl.² H01S *3/22, 3/09*
U.S. Cl. 331—94.5 G **19 Claims**



1. Method of producing high power gas laser action comprising an energy population inversion in a gaseous lasing species in a gas laser having a high power density in relation to weight and volume of associated equipment and stored fluids comprising:

a. exothermically burning a hydrocarbon fuel with ambient air to produce gaseous combustion products comprising energy of combustion and a gas mixture comprising a polyatomic lasing gas, diluent and deactivant gases, said deactivant gases comprising hydrogen and water vapor;

b. isentropically expanding the combustion products gas mixture;

c. removing said water vapor;

d. reducing the temperature of the combustion products to less than about 300°K using said energy of combustion;

e. passing said cooled combustion products through a laser beam producing region in said laser;

f. maintaining an electrical discharge in said laser beam producing region; and

g. controlling said discharge and combustion products passage rate to produce an energy population inversion in said polyatomic lasing gas and to generate a laser beam in said laser beam producing region.

3,982,210
AUTOMATIC GAIN CONTROL CIRCUIT FOR A CRYSTAL OSCILLATOR

James Keith Gehrke, Carpentersville, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

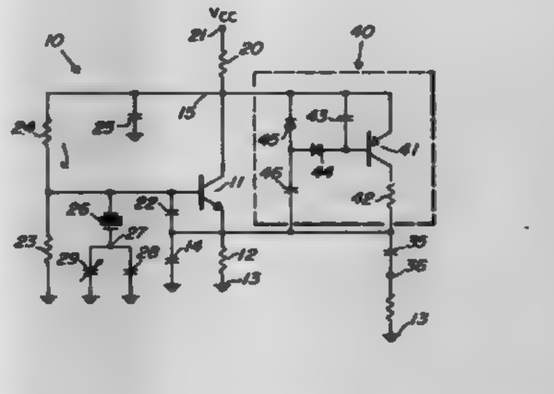
Filed Oct. 22, 1975, Ser. No. 624,617
Int. Cl.² H03B *3/02, 5/36*
U.S. Cl. 331—109 **7 Claims**

1. An automatic gain control circuit for a crystal oscillator comprising:

a. a crystal controlled oscillator with an output and including a transistor with a fixed bias in combination with a tank circuit;

b. transistor means having first, second and control terminals, the first and second terminals coupling said transistor means in parallel with the trnsistor of said oscillator for providing an alternate current path for current flowing to the transistor when said transistor means is conducting to reduce the current gain of said transistor; and

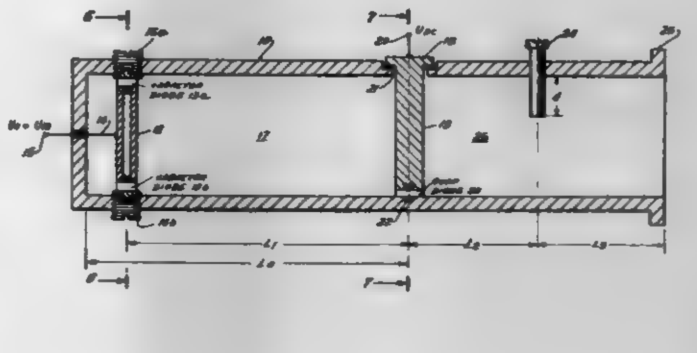
c. biasing means coupled to the output of said oscillator and to the control terminal of said transistor means for sensing the amplitude of signals at the output of said oscillator and controlling the conduction of said transistor means to maintain the signals approximately at a predetermined level.



3,982,211
LINEARIZED VARACTOR FREQUENCY MODULATED SEMI-CONDUCTOR DIODE OSCILLATOR

György Géza Endersz, Alvsjo, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation-in-part of Ser. No. 476,915, June 6, 1974, abandoned. This application May 1, 1975, Ser. No. 573,778
Claims priority, application Sweden, June 25, 1973, 7308906
Int. Cl.² H03C *3/22*
U.S. Cl. 332—30 V **7 Claims**



1. A linearized frequency modulated semiconductor oscillator, preferably operating in the microwave range, comprising: an active semiconductor element for generating a wave having a fundamental frequency and at least a second harmonic frequency; a frequency modulator in the form of a voltage dependent capacitor, adapted to be connected to a source of constant voltage upon which is superimposed a modulating voltage; and a reactance circuit for compensating for non-linear changes in the capacitance of said capacitor and to compensate for the non-linearity in the fundamental frequency due to the change in said capacitance, said reactance circuit having a transfer function $H(j\omega)$ with poles situated in or close to the frequency location of one of the harmonics of said semiconductor element, and said reactance circuit at one of these harmonics being strongly coupled to said semiconductor element, but weakly coupled to said voltage dependent capacitor, the absolute value $|H(j\omega)|$ of said transfer function being chosen so that

$$\left|\left|\frac{d^2 \omega_a}{d\,Um^2}\right| - \left|\frac{d^2 \omega_m}{d\,Um^2}\right|\right| \leqslant \epsilon$$

where U*m* indicates the modulating voltage, and ω*m* indicates the corresponding deviation from the oscillator fundamental frequency, the factor

$$\frac{d^2 \omega_m}{d\,Um^2}$$

being given from the modulation characteristic of the frequency modulator and having an opposite sign relatively the factor

$$\frac{d^2 \omega_a}{d\,Um^2}\,.$$

frequency perturbation ω*a* caused by the harmonics of the semiconductor element being determined by the relation

$$\omega_a = \frac{n^2 - 1}{2} \left(\frac{an}{a1}\right)^2 \left|H\,(j\omega)\right|^2$$

where *n* = 1, 2, 3, . . . is the order number of the chosen harmonic, an/al
is the amplitude of the n:th harmonic normalized to the fundamental al. and ϵ is a number determined by the desired linearity within the actual deviation range.

3,982,212
SWITCHING ARRANGEMENTS

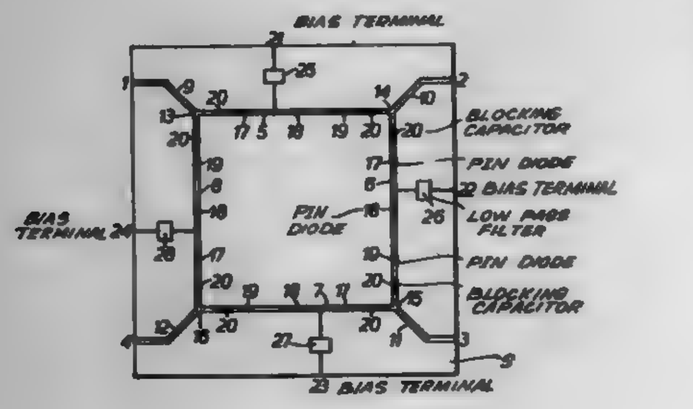
John Richard Wallington, London, and John Graham Richings, Burnham-on-Crouch, both of England, assignors to The Marconi Company Limited, Chelmsford, England

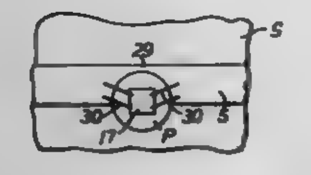
Filed May 2, 1975, Ser. No. 573,981

Claims priority, application United Kingdom, June 14, 1974, 26414/74

Int. Cl.² H01P *1/15*

U.S. Cl. 333—7 D **4 Claims**





1. A switching device having four ports for routing very high frequency signals of center wavelength λ in selectable routes between said ports in response to applied biasing signals, said device comprising a groundplane and four microstrips connected end-to-end to form a closed loop having four microstrip junctions; each of said microstrips being generally of uniform width but having at lengthwise intervals of *n*λ/4, *n* being an odd integer, at least one portion reduced in width so as to form a narrow web of microstrip; each given microstrip having, for each of said at least one portions contained therein, a variable impedance PIN diode connecting each such web of said given microstrip to said groundplane, each given microstrip having a terminal means coupled thereto for applying said biasing signals, said PIN diodes being responsive to said biasing signal to assume a low-impedance state so as to provide an electrical shunt between said microstrip and said groundplane, whereby to prevent the passage of said very high frequency signals through said microstrip conductor, and said PIN diode being responsive to the absence of said biasing signals to assume a high impedance state so as to provide an open circuit between said microstrip and said groundplane, whereby to allow the passage of said very high frequency signals through said microstrip conductor.

3,982,213
MONOLITHIC RECIPROCAL LATCHING FERRITE PHASE SHIFTER

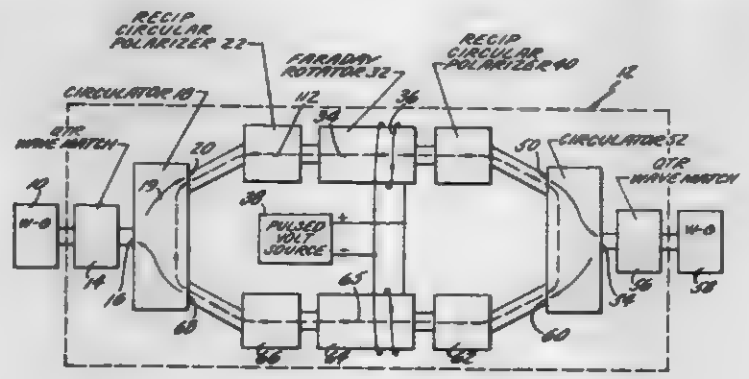
Peter W. Smith, and An-Hwa Soong, both of Westport, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 16, 1975, Ser. No. 568,770

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 10, 1976

Int. Cl.² H01P *1/18*

U.S. Cl. 333—31 A **5 Claims**



1. A reciprocal, latching ferrite phase shifter for providing selectable phase delays to linearly polarized microwaves of electromagnetic radiation propagating between wave transmission waveguides in opposite directions, comprising:

- a plurality of electrical coil windings;
- a plurality of permanent magnets; and
- a geometrically symmetrical, monolithic, solid ferrite structure of generally rectangular shape, having a pair of ends of rectangular cross-section and adapted to interface with a related waveguide, said structure having a centrally disposed slot extending transversely entirely through said structure and extending longitudinally along a substantial portion of said structure providing a pair of similar, independent wave transmission paths, one of said windings being disposed around each of said paths and operable in response to voltage pulses applied thereto for latching said paths in a magnetic state, each configuration of winding and path thereby comprising first means for providing a phase shift to waves of circular polarization being transmitted therethrough, each of said paths having portions, at opposite ends of each of said windings, shaped to provide second means for converting waves between plane polarization and circular polarization in a reciprocal fashion, each of said second means of said paths being contiguous to a related one of two further portions, each of said further portions having a pair of said permanent magnets disposed on opposite surfaces thereof to provide a magnetic field transverse to the longitudinal axis of said structure and each further portion being shaped to provide, in combination with said pair of magnets, third means for providing selective, directional propagation of waves such that waves propagating into the respective end of said structure from the related waveguide pass into one of said paths but not into the other of said paths and waves propagating from the other of said paths pass through the respective end of said structure into the related waveguide but not into the other one of said paths.

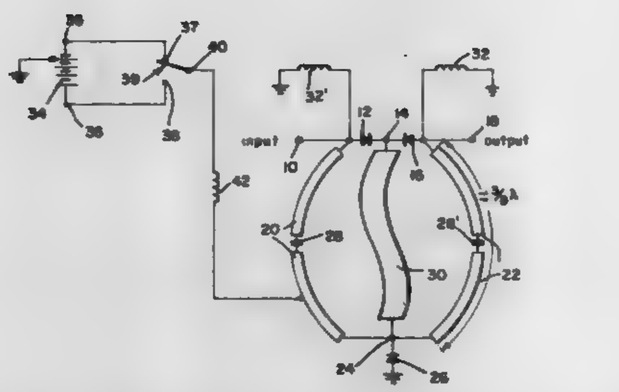
3,982,214
180° PHASE SHIFTING APPARATUS

Richard W. Burns, Orange, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 23, 1975, Ser. No. 625,344

Int. Cl.² H03H *7/30*

U.S. Cl. 333—31 R **10 Claims**



1. An apparatus for selectively introducing a predetermined phase shift in a signal, said apparatus comprising an input terminal and an output terminal; a first unidirectionally conducting device connected from said input terminal to an intermediate junction; a second unidirectionally conducting device connected from said intermediate junction to said output terminal; first, second and third segments of transmission line connected from said input terminal, said intermediate terminal and said output terminal, respectively, to a common junction, said first, second and third segments of transmission line each being greater than one-quarter wavelength and less than one-half wavelength long at the frequency of said signal; a third unidirectionally conducting device connected from said common junction to a third junction maintained at a substantially fixed reference potential; and means coupled to said first, second and third unidirectionally conducting devices for simultaneously rendering said first, second and third devices conductive or non-conductive.

3,982,215
METAL PLATED BODY COMPOSED OF GRAPHITE FIBRE EPOXY COMPOSITE

Gerald Joy-Pak Lo, Montreal; Francis Leo Papworth, Dollard des Ormeaux; Nicolas Elmars Tenne-Sens, Lachine; Michael Valentine O'Donovan, Dorval, and Gerald Dziub, St. Laurent, all of Canada, assignors to RCA Corporation, New York, N.Y.

Filed Mar. 8, 1973, Ser. No. 339,194

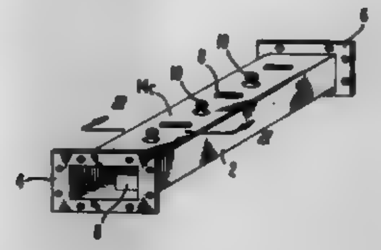
Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976

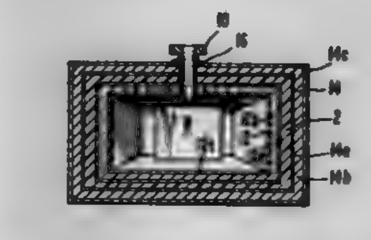
Int. Cl.² H01P *1/20, 3/12, 11/00*

U.S. Cl. 333—73 W **1 Claim**

1. A hollow microwave waveguide filter having good inner surface electrical conductivity comprising

- a tubular shaped body composed of graphite fibre epoxy composite,
- said body having its inner surface slightly roughened,
- a thin flash coating of hardened nickel on said inner surface,
- a thicker coating of copper on said nickel coating,
- a coating of silver over said copper coating,
- a thin flash outer coating of hardened nickel on the outer surface of said body,
- a thicker outer coating of copper on said outer nickel coating
- solder areas on said outer copper coating, said solder having a melting point of up to about 150°C., and





- a coating of silver over said solder areas and outer copper coating.

3,982,216
ELECTROMAGNETIC COORDINATE SWITCHING DEVICE

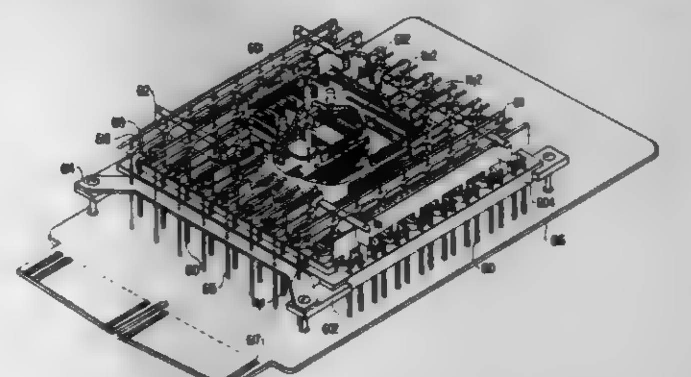
Sadayuki Mitsuhashi; Norio Suzuki, and Kazuyoshi Nago, all of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Sept. 9, 1975, Ser. No. 611,767

Claims priority, application Japan, Sept. 9, 1974, 49-103588

Int. Cl.² H01H *67/14*

U.S. Cl. 335—112 **9 Claims**



1. An electromagnetic coordinate switching device of the divisionally excited type comprising;

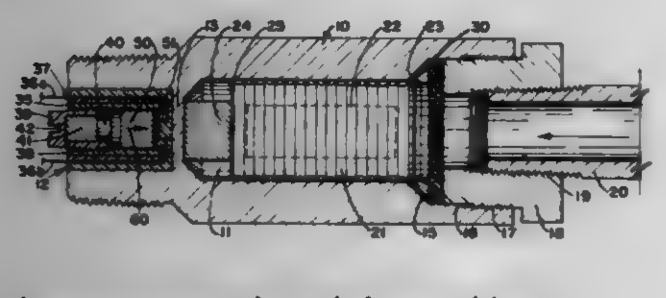
- a plurality of switching means, each with two ends, having a magnetic self-holding action such that said means conducts only when both ends are in magnetic fields having the same orientation;
- a magnetic shunt means having sides, and a top and bottom with through apertures therebetween, said apertures arranged in rows and columns such that the apertures are located at the crosspoints of said rows and columns, at least one of said switching means being inserted in each of said apertures such that a magnetic field at one end of the switch is not felt at the other end;
- a plurality of first elongated coil means each having two leads, surrounding each of said rows on the top of said shunt means with a space between said coil means and said shunt means such that a second elongated coil means can be placed therebetween, said first elongated coil means selectively operable to apply a magnetic field simultaneously, in a direction away from said shunt means, to the switching means contained in said row;
- a plurality of second elongated coil means each having two leads, surrounding each of said columns, in the space between said first elongated coil means and said shunt

means, selectively operable to apply a magnetic field simultaneously, in a direction toward the shunt means, to all of said switching means in said column;
a plurality of third elongated coil means having two leads, surrounding each of said rows on the bottom of said shunt means selectively operable to apply a magnetic field simultaneously, in a direction away from said shunt means, to all of said switching means in said row;
a plurality of fourth elongated coil means each having two leads, surrounding each of said columns on the bottom of said third coil means selectively operable to apply a magnetic field simultaneously, in a direction toward the shunt means, to the switching means contained in said row; and
a plurality of magnetic shield means arranged between adjacent first excitation coils and adjacent fourth excitation coils to insulate each coil from any magnetic field caused by adjacent coils.

3,982,217
PRESSURE-OPERATED SWITCH

David E. Reynolds, Littleton, Colo., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 537,985, Jan. 2, 1975, which is a division of Ser. No. 459,151, April 8, 1974, Pat. No. 3,935,567. This application Apr. 14, 1975, Ser. No. 567,584
Int. Cl.² H01H *85/02*
U.S. Cl. 335—207 **7 Claims**



1. A pressure-responsive switch comprising:
a. a housing;
b. first and second axially aligned chambers formed in said housing and separated by a partition;
c. pressure-responsive means extending into said second chamber;
d. a first magnet means attached to said pressure-responsive means so that, when unpressured, said first magnet means is in contact with said partition;
e. a contact means mounted in said first chamber;
f. a second magnet means rigidly mounted in said first chamber;
g. a third magnet means slidably mounted in said first chamber between said partition and said second magnet means; and
h. a second contact means carried by said third magnet in a manner to mate with said first-mentioned contact means.

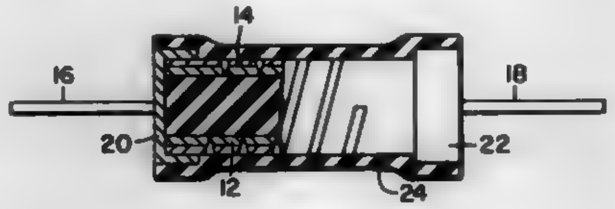
3,982,218
TEMPERATURE SENSING DEVICE AND METHOD

Meryle D. W. Adler, and John T. Brown, both of Bradford, Pa., assignors to Corning Glass Works, Corning, N.Y.

Filed Sept. 19, 1974, Ser. No. 507,284
Int. Cl.² B05D *5/12*; H01C *7/04*
U.S. Cl. 338—22 R **19 Claims**

1. A device for sensing temperature comprising
a dielectric substrate,
a first adherent electroconductive film of a metallic oxide on the exterior surface of said substrate,
a layer of metal disposed over substantially the entire surface of said metallic oxide film selected from the group consisting of nickel, chromium, platinum, zirconium, zinc, molybdenum, and iron, and
a pair of terminals affixed to the ends of said substrate in electrical contact with said layer of metal.

8. A method of forming a temperature sensing device comprising
providing a dielectric substrate,
forming an adherent coating of an electroconductive metallic oxide on the surface of said substrate,

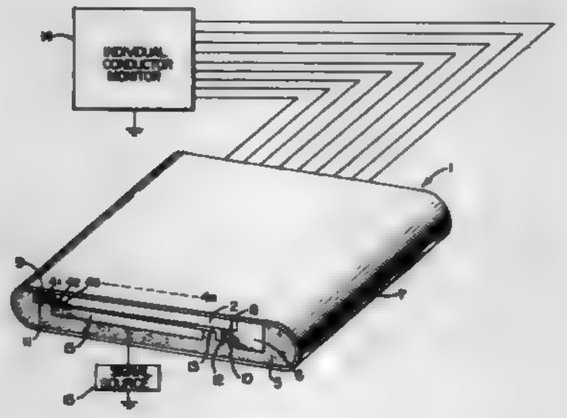


applying a layer of metal over substantially the entire surface of said metallic oxide selected from the group consisting of nickel, chromium, platinum, zirconium, zinc, molybdenum, and iron, and then
heating the composite so formed to a temperature up to 750°C.

3,982,219
DIGITAL PRESSURE/RANGE TRANSDUCER

Dale J. Rehak, Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 19, 1975, Ser. No. 551,186
Int. Cl.² H01C *10/06*
U.S. Cl. 338—96 **9 Claims**

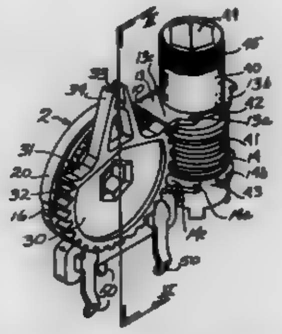


1. A pressure transducer comprising:
a first element made of rigid material;
a plurality of parallel bare conductors attached to one surface of said first element; and
a second element having at least one electrically conductive surface; and
means to assemble said first and second element in such a manner that said plurality of parallel bare conductors is facing said at least one conductive surface of said second element but spaced apart therefrom, and such that the space between said at least one conductive surface and said plurality of parallel bare conductor progressively increases in a direction at right angles to the longitudinal axis of each of said plurality of parallel conductors such that said first and second elements form a wedge shape, said means to assemble said first and second elements being compressible whereby said plurality of parallel bare conductors will, under the influence of a force applied to said transducer, progressively contact said at least one conductive surface in an ordered sequence, the number of said plurality of parallel bare conductors contacting said at least one conductive surface under the influence of a given force being directly related to the magnitude of said force; the last said means including a first irregular shaped compressible element having a pocket in which said second element is secured, a ledge to support one edge of said first element and a channel, a second irregular shaped compressible element located in said channel and having a protrusion to support the other edge of said first element such that said other edge of said first element is separated from said at least one conductive surface of said first element by a distance greater than the distance that said one edge of said first element is separated from said at least one conductive surface of said second element, and a protective sheath covering the entire assembled pressure transducer.

3,982,220
VARIABLE RESISTANCE CONTROL

Arthur L. Rozema; John D. Van Benthuysen, both of Elkhart, Ind., and John Zdanys, Edwardsburg, Mich., assignors to CTS Corporation, Elkhart, Ind.

Continuation of Ser. No. 447,968, March 4, 1974, abandoned. This application Sept. 23, 1974, Ser. No. 508,349
Int. Cl.² H01c *10/34*; H01C *1/12*
U.S. Cl. 338—174 **12 Claims**

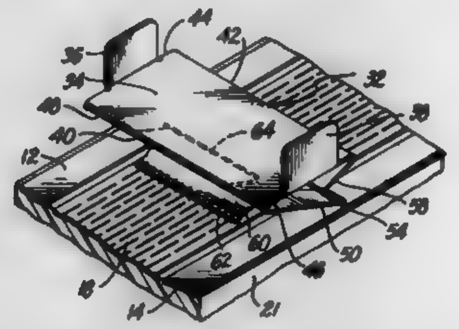


1. A variable resistance control comprising a collector element, a resistance element disposed in spaced relationship with the collector element, a driven member supported by the collector element, a contactor carried by the driven member for wiping the collector element and the resistance element intermediate the ends thereof, a yoke integral with one of said collector element and said resistance element, and a driving member rotatably supported by the yoke and operably engaging the driven member, said yoke comprising at least one arm adapted for deformation for securing the driving member to the yoke.

3,982,221
CONTACT SPRING FOR VARIABLE RESISTANCE DEVICE

Ronald Eugene Smith, Riverside, Calif., assignor to Bourns, Inc., Riverside, Calif.

Filed Dec. 2, 1974, Ser. No. 528,761
Disclosure was also published under second Trial Voluntary Protest Program on Feb. 10, 1976
Int. Cl.² H01C *1/12*
U.S. Cl. 338—202 **15 Claims**

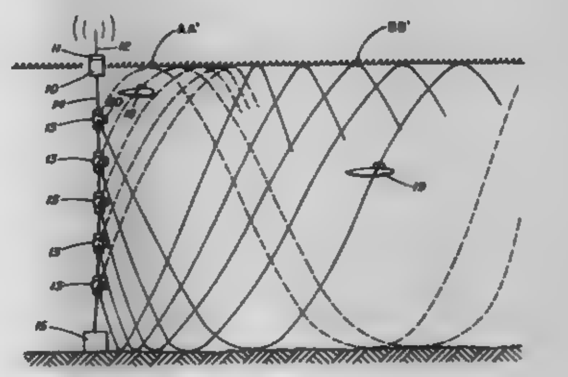


1. A contact spring, suitable for use in a variable resistance device having a resistance strip, a collector strip adjacent said resistance strip, electrical terminals associated with said resistance and collector strips, and means to move a contact spring across the surfaces of said resistance and collector strips, said contact spring comprising:
a base member adapted for attachment to said spring moving means,
electrically conductive contact means depending from said base member, said contact means comprising a cantilever spring means adapted for sliding electrical contact with said resistance and collector strips so as to effect a short circuit therebetween, and
a stiffly flexible, resilient back-up means depending from said base member toward said contact means, said back-up means being disposed in the flexing path of said contact means to retard flexing thereof toward said base member,
whereby a substantially greater contact force is established between said contact means and said resistance and collector strips when said contact means flexes into said back-up means than would be established by the spring force of said contact means alone.

3,982,222
DEEP HYDROPHONE STRING

Robert J. Urick, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 22, 1965, Ser. No. 502,713
Int. Cl.² G01S 9/66
U.S. Cl. 340—2 **5 Claims**



1. A deep hydrophone string for detecting the presence of underwater vessels comprising:
a floating buoy,
an anchor member,
a cable means connecting said buoy and said anchor member,
a plurality of hydrophone units supported by said cable means and spaced at predetermined intervals thereon between said buoy and said anchor member,
an array of hydrophones within each of said units and so arranged therein to receive sound waves emanating from vessels positioned within the annular zone defined by a conical pencil of rays upwardly-divergent from the array,
an array of hydrophones within each of said units and so arranged therein to receive sound waves emanating from vessels positioned within the annular zone defined by a conical pencil of rays downwardly-divergent from the unit,
means within each of said units for amplifying and transmitting signals of any sound waves so received through said cable to the buoy, and
means within said buoy for transmitting said signals to a surface monitor.

3,982,223

COMPOSITE ACOUSTIC LENS

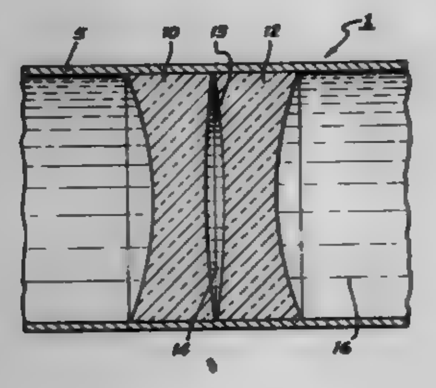
Philip S. Green, Redwood City, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed July 10, 1972, Ser. No. 270,274

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.² H04B *13/00*

U.S. Cl. 340—8 L 17 Claims



1. A composite acoustic lens adapted for use in fluid media including at least a pair of lens elements composed of a solid lens medium and a liquid filler medium included between said pair of lens elements, the materials of said lens medium and fluid filler medium being selected so that the velocity of propagation of acoustic waves in the medium on at least one side of the said composite acoustic lens is intermediate the velocity of the acoustic waves in the media of the lens and the filler, said lens element material being selected so that acoustic waves have a velocity of propagation therein which is higher than their velocity of propagation in the said medium on at least one side of the said composite acoustic lens.

3,982,224

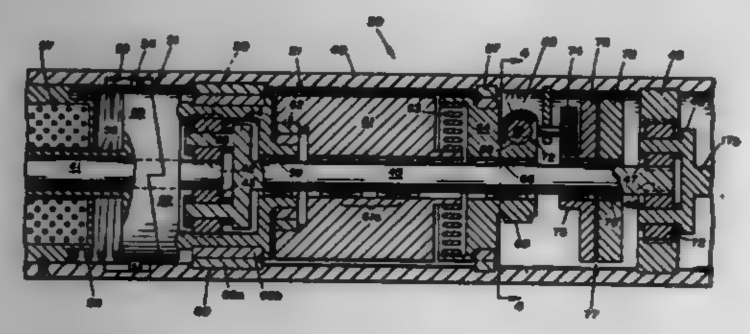
METHOD AND APPARATUS FOR TRANSMITTING DOWNHOLE INFORMATION FROM A WELL

Bobbie Joe Patton, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 23, 1973, Ser. No. 390,828

Int. Cl.² G01V *1/40*

U.S. Cl. 340—18 NC 27 Claims



1. A method of transmitting information from a downhole location in a well through a liquid medium in the well, said method comprising:

generating an acoustical pressure wave signal in said liquid at a point downhole in said well, said wave signal having a constant frequency and phase state; and

altering said wave signal in response to said information to be transmitted to shift the phase state of said signal, said shift of said phase state being carried out in a time period which produces, when said wave signal is synchronously rectified, a time for said phase state shift effectively equal to zero.

3,982,225

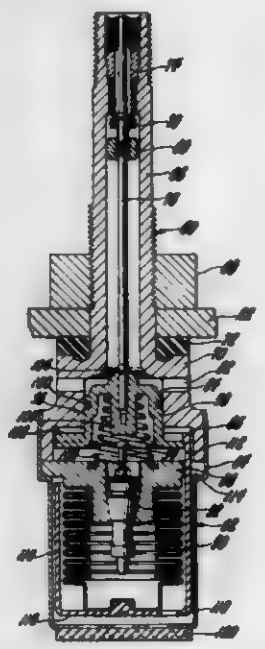
PNEUMATIC SWITCH FOR LOW TIRE PRESSURE WARNING SYSTEM

Manfred P. H. Schlanzky, Alpena, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 8, 1975, Ser. No. 638,968

Int. Cl.² B60C *23/02*

U.S. Cl. 340—58 3 Claims



1. In a low pressure warning system for a vehicle mounted pneumatic tire assembly normally inflated to a normal operating pressure, a low pressure sensing unit for providing a signal when the tire inflation pressure drops to a certain amount below the normal operating pressure comprising

a support member secured to the said tire assembly,

an expansible chamber fixed to the support and including a wall portion movable in response to the differential of air pressures acting on the movable portion, the exterior of the chamber being exposed to the tire inflation pressure and the interior of the chamber being charged to a reference pressure,

the chamber including a normally closed valve effective when opened to provide air communication between the interior and exterior of the chamber thereby tending to equalize the interior and exterior air pressures,

valve actuating means,

means operating the valve actuating means to open the valve for charging the reference pressure in the chamber to the normal operating pressure when the tire is normally inflated, and

means actuated by the movable wall portion connected to signal actuating means for producing a signal when the tire inflation pressure drops a first amount below the chamber reference pressure and further connected to the valve actuating means for opening the valve when the tire inflation pressure drops a second amount larger than the said first amount below the chamber reference pressure to relieve pressure from the chamber interior whereby the pressure differential acting on the movable wall portion is limited to a value insufficient to damage the expansible chamber.

3,982,226

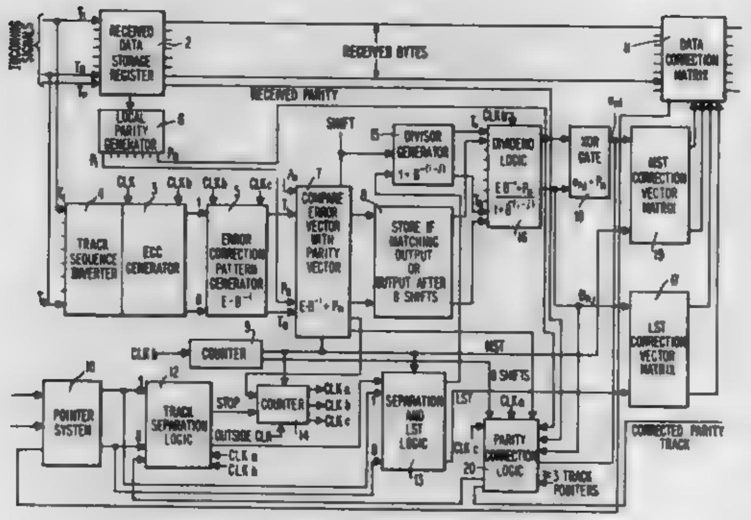
MEANS AND METHOD FOR ERROR DETECTION AND CORRECTION OF DIGITAL DATA

William H. Bunker, and Juan A. Rodriguez, both of Boulder, Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Apr. 3, 1975, Ser. No. 564,741

Int. Cl.² G06F *11/12*

U.S. Cl. 340—146.1 AL 12 Claims



1. Apparatus for identifying and correcting errors in one or two tracks of digital information derived from a multi-track medium, bits of data from ones of the tracks forming a byte, said tracks including a parity track, said bytes including *n* data bytes D_1–D_n and an error checking code ECC byte of *i* bits, said error checking code ECC being related to said data bytes according to the relation

$$ECC = \left[\begin{array}{l} n=7 \\ m=1 \\ \Sigma \quad D_n X^m \\ n=1 \\ m=7 \end{array}\right] [X^0 + X^3 + X^4 + X^5 + X^6]$$

comprising:

logic means for operating sequentially upon each of *n* received data bytes and an ECC byte to produce an error term E, said error term being equal to zero in the absence of errors in the received data and ECC bytes;

second logic means for regressively operating upon said error term $-i$ times to produce the vector EB^{-i};

means for accepting signals representative of data bits of the digital information and responsive thereto for deriving a parity character P_n which in combination with a data byte D_n produces an even number of data bits of a first kind;

combining means for logically combining a regressed error vector and a parity vector P_n on a bit-by-bit basis to form the expression $EB^{-i} + P_n$;

a data correction matrix;

parity correction logic means coupled to said logic means and to said means for accepting for receiving an error vector and a parity vector and operative to apply a signal to said data correction matrix to correct the *i*th data track to conform with said parity vector when said regressed error vector equals said parity vector;

means for receiving track pointers indicating the presence of errors in ones of said tracks and for disabling the correction apparatus when three or more tracks are in error;

track separation logic means coupled to said means for receiving and responsive to track pointers for identifying the separation $(i-j)$ between a most significant track *i* which is associated with a lower-order polynomial term and a least significant track *j* which is associated with a higher-order polynomial term of the polynomial

$$\begin{array}{l} m=1 \\ n=7 \\ \;\Sigma \quad D_n X^m; \\ m=7 \\ n=1 \end{array}$$

a divisor generator coupled to said track separation logic for selecting the term $1 + B^{-(i-j)}$ in accordance with track separation $(i-j)$;

dividend logic means for dividing said regressively operated vector by the output of said divisor generator to produce an error vector e_{nj} for data in the least significant track *j* in error;

logic means for combining on a bit-by-bit basis said derived parity character P_n and said error vector e_{nj} to produce an error vector e_{ni} for data in the most significant track *i* in error;

means for associating said error vectors e_{ni} and e_{nj} with the data tracks *i* and *j* respectively; and

said data correction matrix receiving uncorrected data and said error vectors and combining said data and said vectors to invert the polarity of erroneous bits of said uncorrected data in accordance with the characteristics of said error vectors.

3,982,227

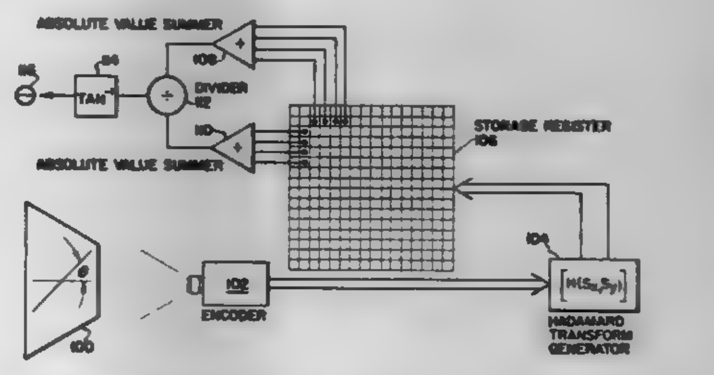
PATTERN RECOGNITION MACHINE FOR ANALYZING LINE ORIENTATION

Reuben E. Joynson, Alplaus, and Joseph L. Mundy, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 2, 1975, Ser. No. 582,689

Int. Cl.² G06K *9/00*

U.S. Cl. 340—146.3 AE 18 Claims



1. A computing machine for determining the angle of line and edge information from a two-dimensional data scene, comprising in combination:

first data means for producting a first signal representative of the sum of a first set of two dimensional Hadamard transform coefficients of a scene, said first set consisting of the Hadamard transform coefficients having a sequency of one along a first axis of said scene and sequencies of two, three, four, and five along a second axis of said scene;

second means for producing a second signal representative of the sum of a second set of two-dimensional Hadamard transform coefficients of said scene, said second set consisting of the Hadamard transform coefficients having a sequency of one along said second axis of said scene and sequencies of two, three, four and five along said first axis of said scene;

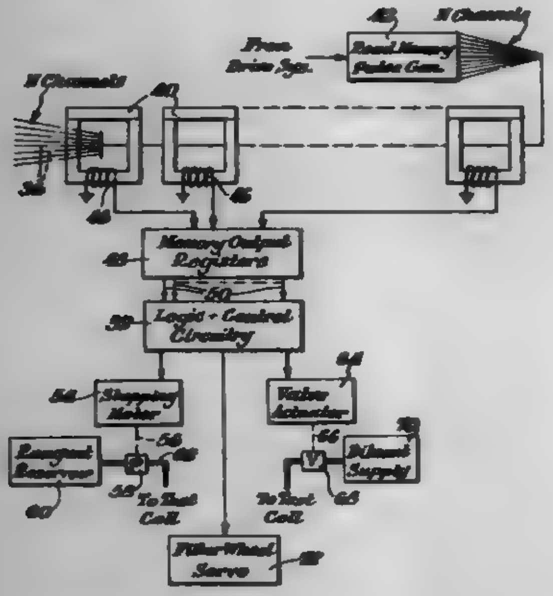
dividing circuit means for producing a third signal representative of the quotient of said first signal divided by said second signal;

arctangent calculating circuit means for producing an output signal proportional to the arctangent of said third signal, whereby said output signal is representative of the angle of line and edge information in said scene with said first axis.

3,982,228

PROGRAMMABLE CONTROLLER

Vincent W. Bankoski, Jr., Newark, Del., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.
Filed Aug. 7, 1975, Ser. No. 602,752
Int. Cl.^{2} G05B *19/02*; G06F *1/00*; G11C *11/06*
U.S. Cl. 340—172.5 **10 Claims**



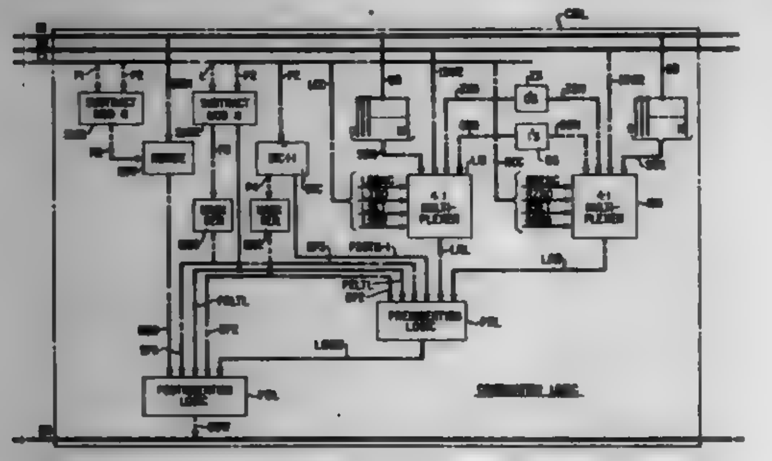
1. In a process controller for controlling various routines and sub-routines of a process operated in accordance with different program inputs, said controller having mechanisms for effecting said sub-routines, logic circuitry responsive to digital input signals for controlling said mechanisms, and a programmer responsive to said program inputs for generating said digital signals thereby to control said routines and subroutines, the improvement wherein said programmer comprises:

a read only memory having a plurality of cores each having a secondary winding coupled to said logic circuitry for providing said digital input signals, a plurality of primary winding each adapted to be selectively energized in accordance with said program inputs, and mechanical means to magnetically link selected ones of said cores with selected ones of said primary windings.

3,982,229

COMBINATIONAL LOGIC ARRANGEMENT

David Michael Rouse, Columbus, Ohio, and Betty Ann Sproule, Odessa, Tex., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 8, 1975, Ser. No. 539,328
Int. Cl.^{2} G06F *7/00*
U.S. Cl. 340—172.5 **11 Claims**



11. In a data processor including control means for specifying option instructions which define at least one of a plurality of logical operations, combinational logic circuit comprising

a subtractor circuit responsive to the bit position of a start bit of a quantum of bits in an input data word and to an indication of the intended bit position of the start bit in an output data word for generating a rotate indication defining the number of bit positions that the quantum must be rotated,

a rotate circuit responsive to the rotate indication and to said input data word for rotating said input data word the number of bit positions indicated by said rotate indication,

first and second mask generators for respectively generating masks for bit positions before and after the quantum in the output data word,

first and second multiplexers responsive to said option instructions for respectively generating the bit values of the bit positions of the output data word before and after the quantum in the output data word,

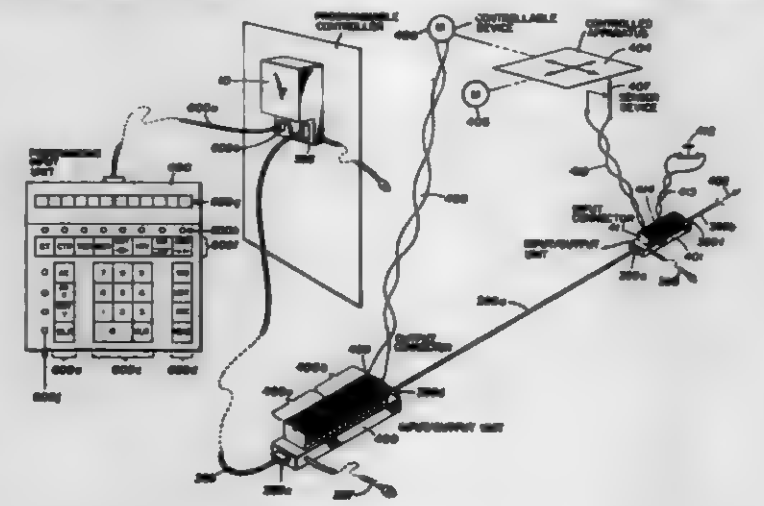
a first insertion logic circuit responsive to said masks and to said bit values generated by said multiplexers for generating a logical result data word with said bit values in the bit positions before and after the quantum in the output data word, and

a second insertion logic circuit responsive to said logical result data word, said masks and said rotated input data word for generating an output data word with the quantum in the defined rotated position and the generated bit values in the bit positions before and after the quantum.

3,982,230

PROGRAMMABLE LOGIC CONTROLLER WITH FLAG STORAGE

Bobby G. Burkett, Richardson, and Raymond W. Henry, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 7, 1974, Ser. No. 431,589
Int. Cl.^{2} G06F *3/06*
U.S. Cl. 340—172.5 **7 Claims**



1. In a programmable controller for selectively connecting and disconnecting an alternating current power signal to each of *m* output devices in response to computed respective on/off states generated by execution of a control program stored in a memory means on *n* binary parameters, wherein the value of each of said parameters corresponds to the on/off state of a respective input device, the combination which comprises:

a. a readable and writable image register having at least *m* + *n* single bit storage locations for temporarily storing a set of said *n* binary parameters and a set of on/off states for said *m* output devices;

b. timing means responsive to said alternating current power signal for generating an initiate input/output control signal once each half cycle of said power signal;

c. means coupled to said timing means and responsive to said initiate input/output control signal for writing and reading single bit words into and out of said image register, said means including:

i. sampling means for sampling the on/off states of said *n* input devices and generating a set of *n* respective single bit binary parameters corresponding to the on/off state of said input devices when an initiate input/output control signal is received;

ii. first transfer means for serially writing said *n* single bit binary parameters generated by said sampling means into said image register; and

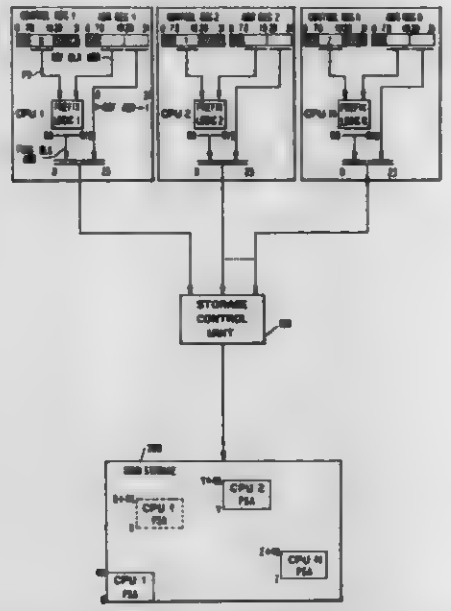
iii. second transfer means for serially reading *m* single bit previously computed on/off states for said output devices out of said image register means for transmission to said output devices; and

d. computing means coupling to said memory means and to said image register and responsive to said control program and to said single bit binary parameters for computing the on/off states of the output devices.

3,982,231

PREFIXING IN A MULTIPROCESSING SYSTEM

William A. Bernstein, Kingston, and Robert H. Doggett, Ulster Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 239,894, March 31, 1972. This application Apr. 16, 1974, Ser. No. 461,336
Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976
Int. Cl.^{2} G06F *1/00*
U.S. Cl. 340—172.5 **4 Claims**



1. In a shared storage multiprocessing system that includes a plurality of processors and an addressable storage arranged into blocks of storage for storing blocks of data, a method by which each of said processors may access all of said blocks of data comprising the steps of:

providing a prefix number for one of said processors having a zero value which is equal to the block address of a prefixed storage area consisting of a block of storage assigned to said one processor,

providing reference block addresses for said one processor,

detecting the zero value of said prefix number and the values of said reference block addresses provided for said one processor,

providing storage block addresses for said one processor for accessing all of said blocks of data in accordance with the detected values including:

a storage block address having a value which is equal to the zero value of the prefix number provided for said one processor for accessing the block of data in the prefixed storage area assigned to said one processor when the reference block address having a value which is equal to zero is detected, and

other storage block addresses having values which are equal to the reference block addresses provided for said one processor for accessing blocks of data other than the block of data contained in the prefixed storage area assigned to said one processor when reference block addresses having values which are greater than zero are detected,

providing prefix numbers for the remaining processors having different predetermined values which are greater than zero and equal to the block addresses of different prefixed storage areas consisting of blocks of storage assigned to said remaining processors,

providing reference block addresses for each of said remaining processors,

detecting the predetermined value of the prefix number and the values of the reference block addresses provided for each of said remaining processors, and

providing storage block addresses for each of said remaining processors for accessing all of said blocks of data in accordance with the detected values including:

a first storage block address having a value which is equal to the predetermined value of the prefix number provided for said remaining processor for accessing the block of data in the prefixed storage area assigned to said remaining processor when the reference block address having a value which is equal to zero is detected,

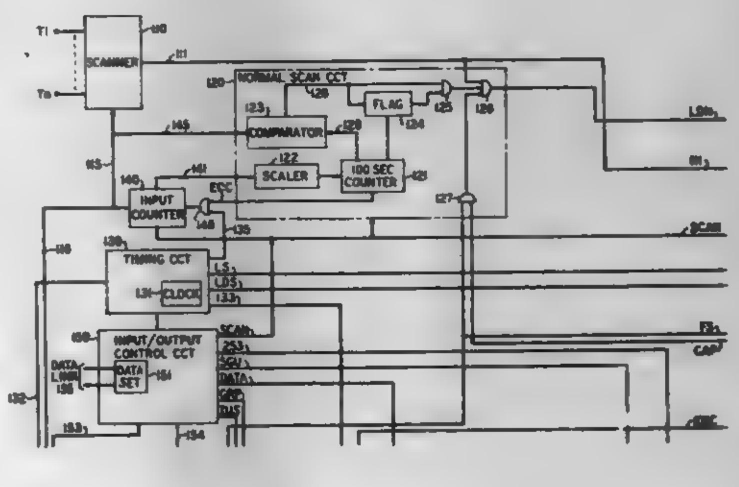
a second storage block address having a value which is equal to zero for accessing the block of data in the prefixed storage area assigned to said one processor when the reference block address having a value which is equal to the predetermined value of the prefix number provided for said remaining processor is detected, and

other storage block addresses having values which are equal to the reference block addresses provided for said remaining processor for accessing blocks of data other than the blocks of data in the prefixed storage areas assigned to said one processor and said remaining processor when reference block addresses having values which are greater than zero and not equal to the predetermined value of the prefix number provided for said remaining processor are detected.

3,982,232

TRAFFIC USAGE DATA GATHERING APPARATUS

Richard Henry Etra, Forest Hills, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 16, 1975, Ser. No. 541,496
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976
Int. Cl.^{2} G06F *1/00*
U.S. Cl. 340—172.5 **16 Claims**



1. Apparatus for gathering data pertaining to the status of each of a plurality of inputs comprising, means for scanning said plurality of inputs in succession, individual means associated with each of said inputs for storing control information associated with each said input, and control means operable with said scanning means for gathering said data from each of said inputs in accordance with said control information associated with each said input.

3,982,233

CORE MEMORY WITH IMPROVED SENSE-INHIBIT RECOVERY TIME

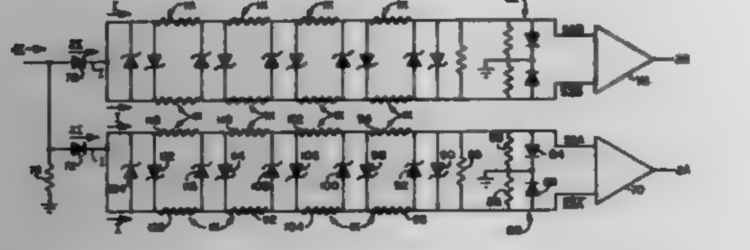
Rex John Crookshanks, Palos Verdes Estates, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Feb. 19, 1974, Ser. No. 443,712

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.^{2} G11C *7/02, 11/06*

U.S. Cl. 340—174 DC **24 Claims**



1. A magnetic core memory comprising at least one array of magnetic cores;

a plurality of conductors inductively coupled for selectively switching cores in the array and for sensing output voltage signals generated by selectively switched cores;

a sense amplifier coupled to at least one of said conductors to sense output voltage signals generated thereon by selectively switched cores; and

a non-linear electrical circuit connected to the at least one conductor to modify electric signals appearing thereon, said electrical circuit being connected to the one conductor at a position intermediate the array with the one conductor being inductively coupled to magnetic cores of the array on each side of the connection position and with magnetic cores inductively coupled to the conductor on at least one side of the connection being disposed along the conductor between the connection position and the sense amplifier, said conductor being coupled to carry current between a current source and a current sink with a connection position and cores inductively coupled to the conductor on both sides thereof being disposed between the current source and current sink.

3,982,234

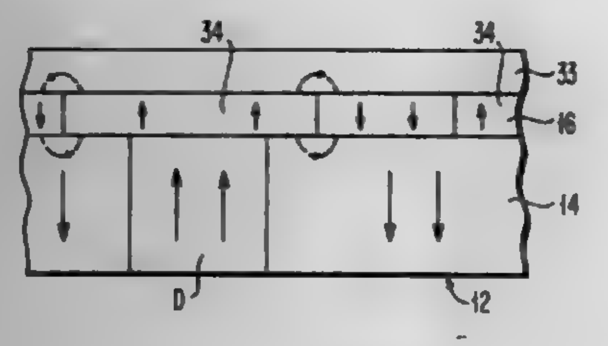
HARD-MAGNETIC FILM OVERLAY APPARATUS AND METHOD FOR MAGNETIC MOBILE DOMAIN CONTROL

Otto Voegeli, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 1, 1974, Ser. No. 484,476

Int. Cl.^{2} G11C *11/14*

U.S. Cl. 340—174 TF **25 Claims**



1. A single-wall magnetic domain arrangement comprising:

a first layer of materials in which mobile magnetic domains can be moved;

a second layer of magnetically hard material placed contiguous to a surface of said first layer; and stationary magnetic domains in said second layer arranged in a permanent arbitrarily selected control configuration to provide a predetermined path substantially independent of the bias field for the movement of the mobile domains in said first layer.

3,982,235

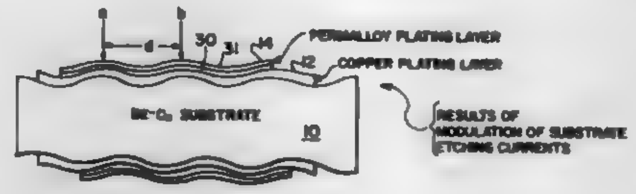
SINUSOIDAL FILM PLATED MEMORY WIRE

Charles Bennett, Framingham, and Emil Toledo, Newton, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 28, 1974, Ser. No. 501,305

Int. Cl.^{2} G11C *11/155*

U.S. Cl. 340—174 PW **5 Claims**



1. A magnetic memory wire comprising:

an inner core non-magnetic beryllium-copper substrate;

a layer of fine to medium grained copper adjacent said inner core; and

a magnetic layer adjacent said copper layer, said magnetic layer comprising two layers of cobalt permalloy having a peak to peak distance of between 4 to 8 mils, wherein the outer surface of said magnetic layer sinusoidally changes in diameter throughout its length.

3,982,236

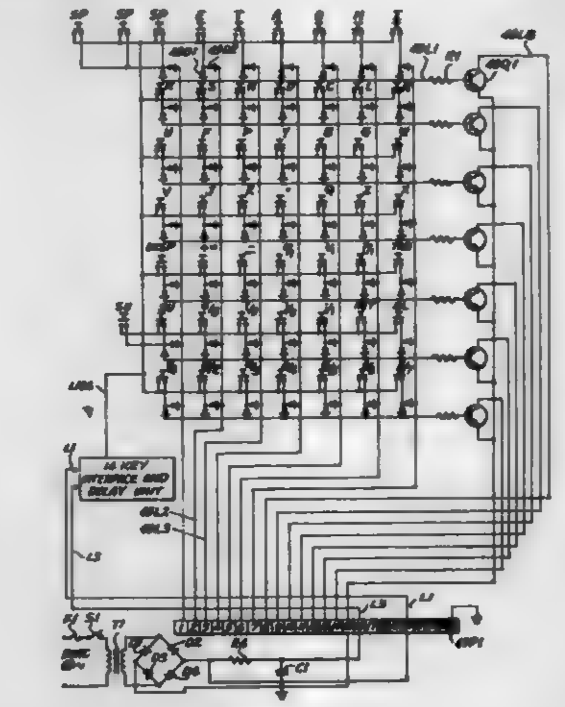
COMMUNICATIONS AND CONTROL METHOD AND APPARATUS FOR PERSONS WHO MAY HAVE MUSCULAR INCOORDINATION AND/OR SPASTICITY

Haig Kafafian, 4201 Cathedral Ave. N.W., Washington, D.C. 20016

Filed Dec. 24, 1974, Ser. No. 536,176

Int. Cl.^{2} H04Q *3/00;* **G06C** *7/00*

U.S. Cl. 340—147 R **3 Claims**



1. A method of communication and/or control for persons who are handicapped including reducing the probability of error due to insufficient motor control, muscular incoordination spasticity and the like, comprising:

a. establishing for every function in a multiplicity of functions a unique combination of designators;

b. generating a pair of complete man-machine language output signals representative of two of said unique designators;

c. providing at least one actuatable interface means for selectively generating said output signals upon at least a dual actuation of said input interface means;

d. connecting utilization means to the pair of output signals for producing a function commensurate with actuation of said input interface means,

e. disabling said producing means for a time delay interval which may be selectively varied whereby said producing means is rendered impervious to subsequent actuations of said input interface means prior to expiration of the time delay so that spastic or other extraneous movements by the handicapped operator causing inadvertent actuations of said input interface means do not produce undesired functions.

3,982,237

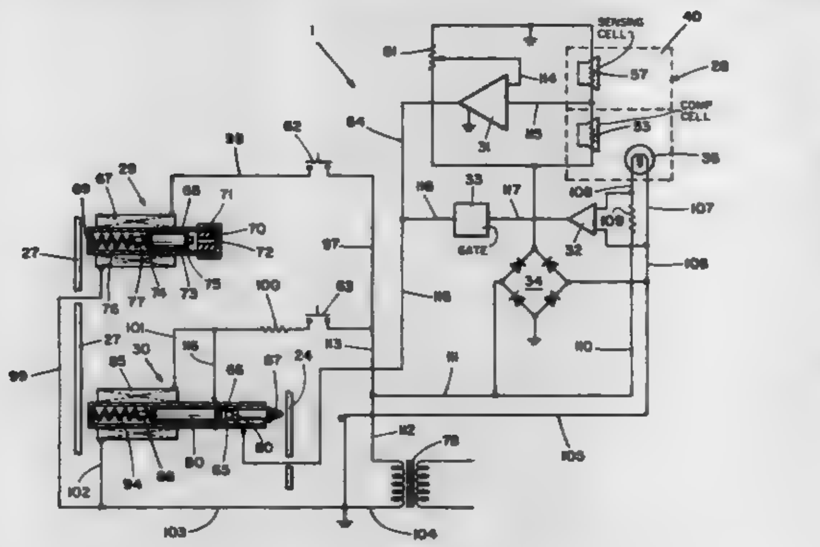
COMBINATION DOOR CHIME AND PARTICULATE PRODUCTS OF COMBUSTION DETECTOR

David J. Conville, Libertyville, and Burke J. Crane, Lombard, both of Ill., assignors to Rixson-Firemark, Inc., Franklin Park, Ill.

Filed Feb. 28, 1975, Ser. No. 553,907

Int. Cl.^{2} G08B *17/10*

U.S. Cl. 340—237.5 **9 Claims**



1. In a door chime having a pair of spaced tone bars and an associated tone bar striker mechanism with the striker mechanism being capable of single-note two-note, and sustained-repetitive note striking of the tone bars, and a cover having access openings enabling particulate products of combustion to pass therethrough, the improvement comprising a detector for the particulate products of combustion located within the door chime and at least substantially obscured by the cover, and means electrically interconnecting the tone bar striker mechanism with the detector to actuate the striker mechanism to a state of sustained-repetitive two-note striking of the tone bars in response to the detection of the particulate products of combustion by the detector.

3,982,238

TIME BASED MONITORING SYSTEM

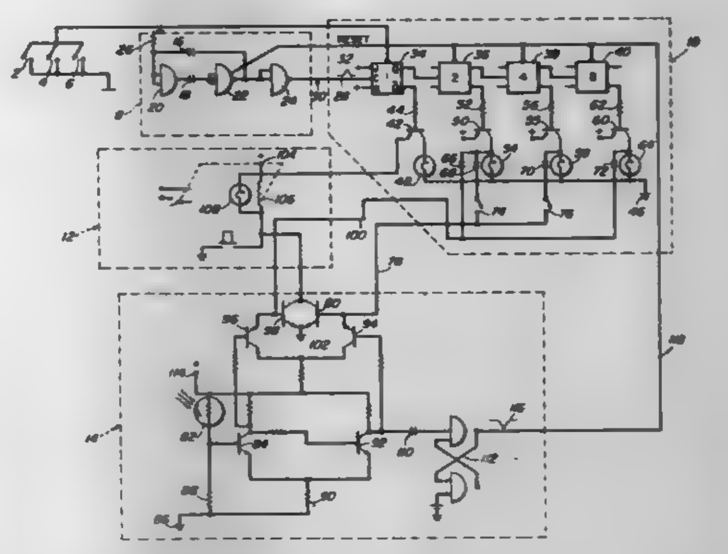
William L. Byers, Glidden St., Newcastle, Maine 04553

Filed Aug. 22, 1974, Ser. No. 499,399

Int. Cl.^{2} G08B *21/00*

U.S. Cl. 340—279 **9 Claims**

1. A monitoring system for the notification of locations external to the monitored area of a prolonged absence of normal human ambulatory mobility within the monitored area, comprising in combination a resettable clock adapted to give a continuing sequence of electrical pulses at known time intervals, a counter adapted to count said pulses and to give an output signal when the number of pulses counted reaches a predetermined number; one or more reset switches directly responsive to normal human ambulatory mobility adapted to directly reset said clock and counter; said reset switches being located in geographic locations independent of the person of the monitored individual; said geographic locations being so chosen that the reset switches will not function in the absence of normal human ambulatory mobility; and an alarm responsive to said output signal.



3,982,239

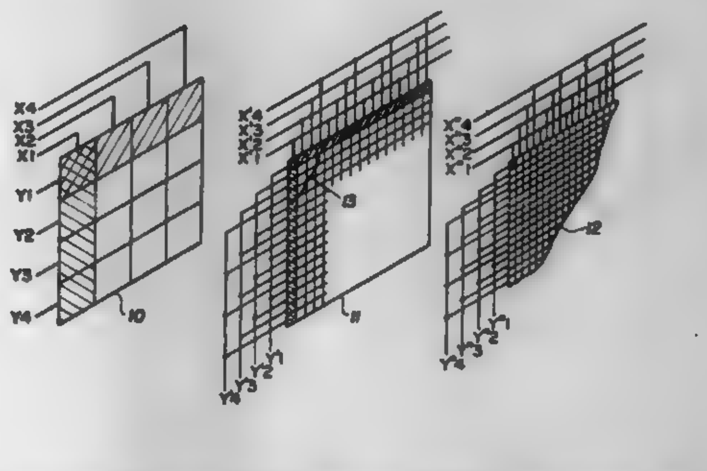
SATURATION DRIVE ARRANGEMENTS FOR OPTICALLY BISTABLE DISPLAYS

Solomon Sherr, Hartsdale, N.Y., assignor to North Hills Electronics, Inc., Glen Cove, N.Y.

Continuation-in-part of Ser. No. 330,227, Feb. 7, 1973, Pat. No. 3,848,247. This application July 22, 1974, Ser. No. 490,556

Int. Cl.^{2} G06F *3/14*

U.S. Cl. 340—324 M **19 Claims**



1. A display assembly using material which exhibits at least two characteristic modes of operation in accordance with the electric field applied, the first being a quiescent state at substantially zero potential and the second being assumed in response to a voltage of at least a predetermined magnitude, comprising: the assemblage of said material in substantially planar form with spaced conductive means on opposing faces thereof to define a plurality of discrete areas, each of the conductive means on one side of said material embracing a first plurality of discrete areas, each of the conductive means on the other side of said material embracing a second plurality of said discrete areas, and each one of said second plurality of areas appearing within a different one of said first plurality of areas; and control means operative to establish a substantially zero potential between the conductive means of preselected discrete areas, to establish a potential of a first polarity and at least said predetermined magnitude on the remaining conductive means of said first plurality, and to establish a potential of the opposite polarity and at least said predetermined magnitude on the remaining conductive means of said second plurality.

3,982,240
BIPOLAR A/D CONVERTER USING TWO COMPARATORS

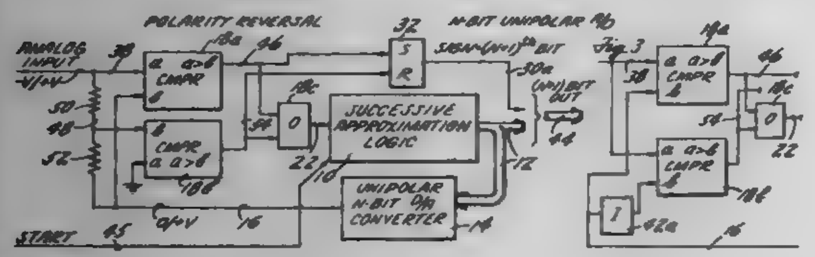
Glenn C. Wachner, Riverside, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sept. 19, 1974, Ser. No. 507,647

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² H03K *13/06*

U.S. Cl. 340—347 AD **3 Claims**



1. Bipolar analog to digital conversion apparatus for providing a digital manifestation of an analog input signal, comprising:

successive approximation logic means for providing a digital output signal manifestation, said means responsive to an incrementing input signal to increment the digital value at its output;

digital to analog conversion means responsive to the output of said successive approximation logic means for providing an output signal which comprises an analog manifestation of the value of the digital output of said successive approximation logic;

first comparator means, responsive to the analog input signal and to the output of said digital to analog conversion means, for providing a first output signal indicative of the analog input signal being of the same polarity as and greater in magnitude than the output of said digital to analog conversion means;

means for summing the input signal and the output of said digital to analog conversion means to provide a sum-signal manifestation of said signals;

second comparator means, responsive to said sum signal and a reference potential, for providing a second output signal when said sum signal has a polarity with respect to said reference potential which is opposite to that of the output of said digital to analog conversion means; and

means responsive to both of said comparator means for providing said incrementing signal input to said successive approximation logic means.

3,982,241
SELF-ZEROING ANALOG-TO-DIGITAL CONVERSION SYSTEM

Jesse B. Lipcon, Brighton, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Aug. 19, 1974, Ser. No. 498,500

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 20, 1976

Int. Cl.² H03K *13/02*

U.S. Cl. 340—347 CC **30 Claims**

13. An analog-to-digital conversion system for converting analog inputs into coded digital numbers, said system comprising:

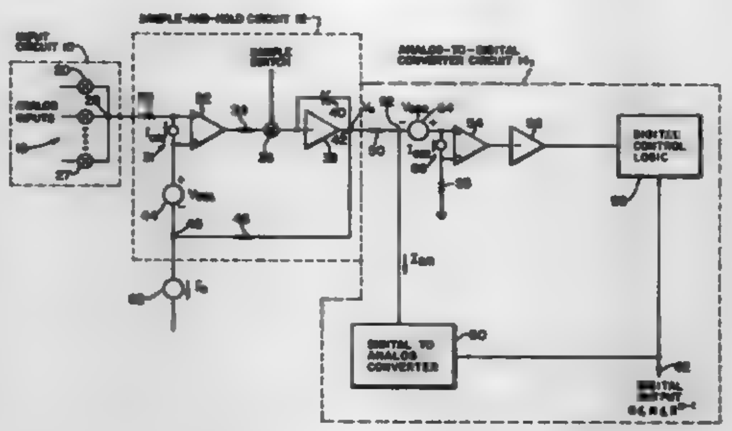
A. means for selecting one of a plurality of said analog inputs;

B. a sample and hold circuit for storing an input analog voltage;

C. a conversion circuit for quantifying said analog voltage into a digital number;

D. comparing means shared by said sample and hold circuit and said conversion circuit for comparing voltages; and

E. switching means for switching said system, said switching means when in a first position enabling said comparing means to compare a voltage from said analog input to a voltage from said sample and hold circuit, said switching means when in a second position enabling said comparing means to compare a voltage from said conversion circuit to a voltage established by said comparing means when said switching means was in said first position; wherein the offset errors in said analog-to-digital conversion system are cancelled such that said system is substantially self-zeroing.



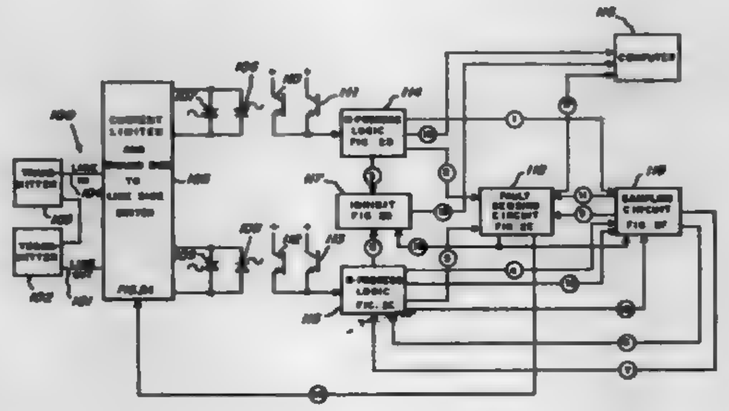
3,982,242
McCULLOH RECEIVER

Herman E. Sheffield, Houston, Tex., and Paul D. Welshans, Pedley, Calif., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 23, 1975, Ser. No. 616,116

Int. Cl.² G08B *24/00*

U.S. Cl. 340—409 **24 Claims**



1. A receiver for receiving coded signals on a McCulloh loop having a line out side connected to a first terminal of a source of current and a line in side connected to a second terminal of the source at ground, said receiver for providing to a computer an output having a single polarity regardless of the polarity of said coded signals, said receiver comprising:

N process logic circuit means for receiving said coded signals on said line out side and for providing a single polarity first output regardless of the polarity of said coded signals;

G process logic circuit means for receiving said coded signals on said line in side and for providing a single polarity second output regardless of the polarity of said coded signals;

fault sensing circuit means connected to said N and G process logic circuit means for providing a third output indicative of a fault condition on said loop and for connecting said line in side from said second terminal to said first terminal of said source upon the occurrence of a fault condition; and,

wherein said first, second and third outputs are supplied to a computer to provide an indication of said coded signals and said fault condition.

3,982,243
DEVICE FOR TRANSMISSION OF INFORMATION FROM AN INFORMATION EMITTER TO AN INFORMATION SEEKER

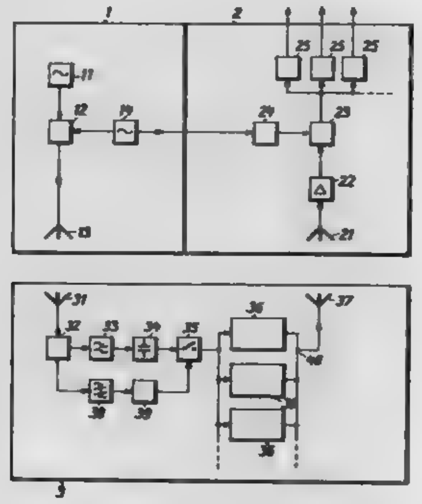
Per-Olof Gerhard Gustavsson, Pixbo, and Bo Anders Morwing, Molndal, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Nov. 5, 1974, Ser. No. 520,975

Claims priority, application Sweden, Nov. 30, 1973, 7316256

Int. Cl.² G01S *9/56*

U.S. Cl. 343—6.5 R **6 Claims**



1. An information transmission system comprising an information emitter and an information seeker; said information seeker comprising transmitter means for transmitting an interrogation signal which is a carrier signal modulated by a modulating signal having a given frequency; said information emitter comprising receiver means for receiving the interrogating signal, storage means connected to said receiver means for temporarily storing the energy in the received interrogating signal, and emitter means energized by the energy stored in said storage means for emitting information pulses of an information carrying signal, said information pulses having a repetition rate related to said given frequency and components which are simultaneously damped oscillations of specific frequencies; and said information seeker further comprising further receiver means for receiving said information pulses of information carrying signal, modulator means for modulating said information pulses of information carrying signal with a signal having a frequency which is an integral multiple of said given frequency, and a plurality of frequency sensitive detector means, connected in parallel with said modulator means, for detecting different ones of said information pulses of information carrying signal, each of said frequency sensitive detector means comprising, connected in series, a band-pass filter means for passing a signal having frequencies corresponding to one of said specific frequencies, a demodulator means, and a second filter means for passing signals having said given frequency of the modulating signal.

3,982,244
RADAR ANTENNA, MONOPULSE COMPARATOR NETWORK AND MIXER SIMULATOR

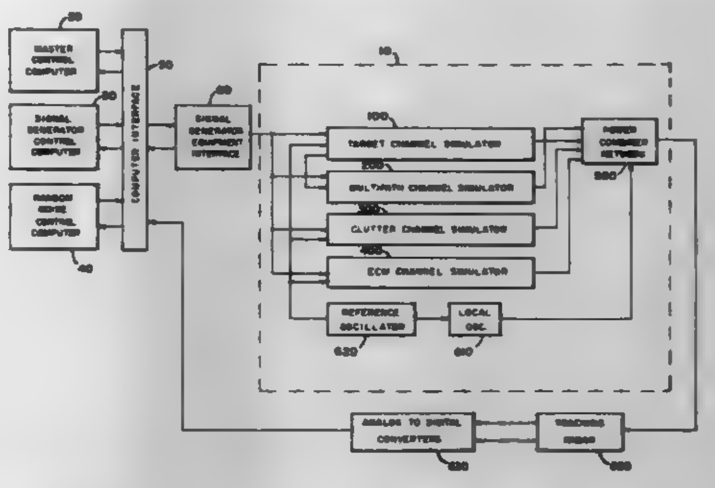
Robert C. Ward, Huntsville, and Franklin M. Waddle, Hartselle, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 30, 1975, Ser. No. 591,925

Int. Cl.² G01S *9/02, 7/40, 9/22*

U.S. Cl. 343—16 M **6 Claims**

1. A radar antenna, monopulse comparator network, and mixer simulator comprising: a plurality of channel simulators, each of said channel simulators having separate sum, azimuth difference, and elevation difference output signals; each of said channel simulators having plural inputs for providing control signals thereto; a power combiner network having inputs coupled to receive said channel simulator output signals for combining like signals from the respective channels, said combiner network having respective composite outputs of said sum azimuth difference and elevation difference signals for coupling to radar tracking intermediate frequency circuits.


MASTER CONTROL COMPUTER
SIGNAL GENERATOR CONTROL COMPUTER
RANDOM NOISE CONTROL COMPUTER
COMPUTER INTERFACE
SIGNAL GENERATOR EQUIPMENT INTERFACE
TARGET CHANNEL SIMULATOR
MULTIPATH CHANNEL SIMULATOR
CLUTTER CHANNEL SIMULATOR
ECM CHANNEL SIMULATOR
POWER COMBINER NETWORK
REFERENCE OSCILLATOR
LOCAL OSC.
ANALOG TO DIGITAL CONVERTERS
TRACKING RADAR
100
500
620
610
40

3,982,245
SIDELOBE CANCELLER WITH PROGRAMMABLE CORRELATION SIGNAL WEIGHTING

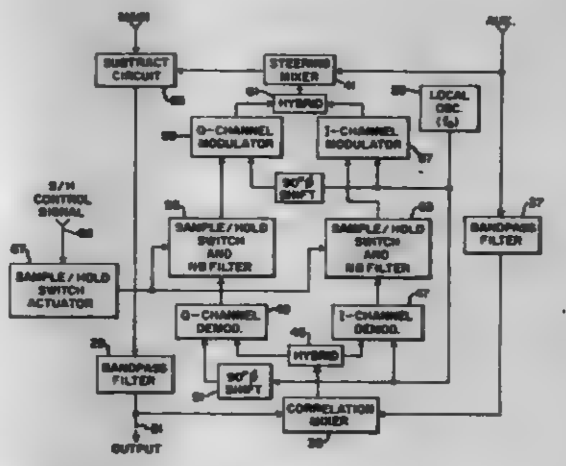
Hendrick H. Soule, Jr., Marcellus, and John F. Jureller, Syracuse, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed July 15, 1974, Ser. No. 488,395

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² G01S *3/06*

U.S. Cl. 343—100 LE **8 Claims**



1. In a canceller:

a. a main signal transmission channel having an output terminal and an input terminal coupled to receive a signal which may include both desired and undesired signal content;

b. an auxiliary signal transmission channel coupled to receive a signal including primarily said undesired signal;

c. cross correlation means connected to the output terminal of said main signal transmission channel and to said auxiliary signal transmission channel for detecting the relative amplitude and phase of said main and auxiliary channel signals and generating a correlation signal indicative of the result of such correlation;

d. correlation signal processing means including narrowband filter means and switch means connected in series relation, said switch means being selectively operable to pass the correlation signal generated by said cross correlation means;

e. a compensating cross feed network coupled to said auxiliary signal transmission channel to receive said undesired

signal and to said correlation signal processing means to receive the correlation signal as processed thereby, said cross feed network being responsive to the signals coupled thereto to generate a correction signal of amplitude and phase corresponding to the undesired signal content of the main signal transmission channel; and

f. means interposed between said main channel input and output terminals for subtracting said correction signal from said main channel signal thereby to reduce the undesired signal content thereof.

3,982,246

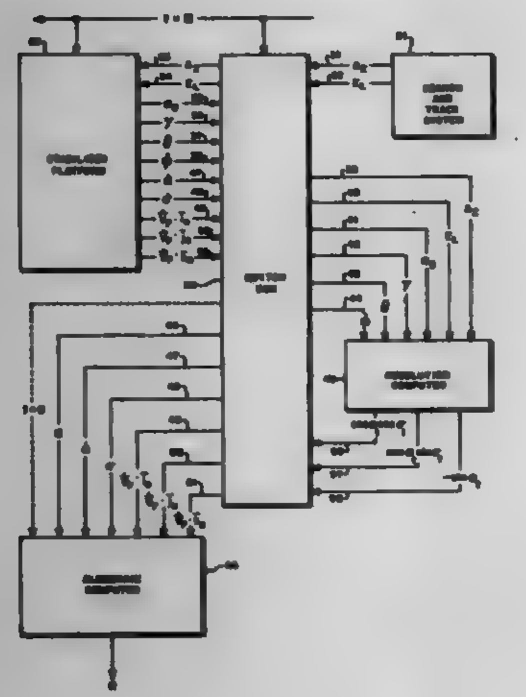
GENERAL METHOD OF GEOMETRICAL PASSIVE RANGING

Bertram H. Luber, Elkins Park, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 20, 1961, Ser. No. 90,605

Int. Cl.² G01S *11/00*

U.S. Cl. 343—112 C **7 Claims**



2. A system carried by a fighter for passively determining range between the fighter and a radiation emitting target travelling at a constant velocity, comprising in combination: a search and track antenna system operable to generate signals proportional to the azimuth and elevation angles of the line of sight to the target with respect to the coordinate system of the fighter, a stabilized platform for defining an inertial reference coordinate system, said stabilized platform being slaved to said search and track system and responsive to said azimuth and elevation signals to determine and generate signals proportional to angular and angular rate deviations of the line of sight from said inertial reference system, said stabilized platform including means for generating signals proportional to fighter acceleration components along the axes of said inertial reference system, resolver means connected to said stabilized platform operable to transform said angular and angular rate signals and said acceleration component signals into terms of said inertial reference coordinate system, means coupled to said resolver operable to determine and display the range between said fighter and said target.

3,982,247

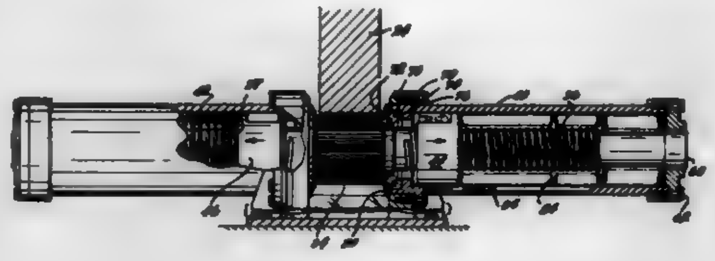
ANTENNA SPRING COUNTERWEIGHT

Kurt Simoneit, Poway, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Apr. 9, 1975, Ser. No. 566,242

Int. Cl.² H01Q *3/02*

U.S. Cl. 343—766 **24 Claims**



1. In an antenna of the type having primary reflective structure means and means to pivot said structure means in the elevation direction, said pivot means comprising drive motor means, the improvement of which comprises inertia counterbalance means comprising:

driven means responsive to the motion of said drive motor means;

a housing;

guide means fast on said driven means and rotatable in said housing;

follower means interacting with said guide means and adapted for translation along said guide means between positions corresponding to antenna zenith and horizontal elevation positions; and

resilient means within said housing and alternately compressed and relaxed by the movement of said follower means.

3,982,248

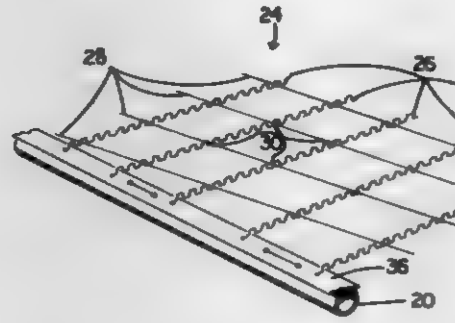
COMPLIANT MESH STRUCTURE FOR COLLAPSIBLE REFLECTOR

John S. Archer, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed July 1, 1974, Ser. No. 484,635

Int. Cl.² H01Q *15/16, 15/20*

U.S. Cl. 343—840 **11 Claims**



1. A structure comprising:

a supporting frame having spaced supporting members;

a wire mesh panel positioned between said members including parallel first wires extending linearly the full distance between and terminally secured to said members, parallel second wires totally distinct from said first wires disposed in crossing realtion to said first, and means joining said first and second wires at their crossing points, whereby said first wires have segments extending between said second wires;

said first wires being parallel and having a generally spring-like configuration along their full length between said members such that said first wire segments are resiliently extensible and contractable in their endwise direction; and

said compliant first wires being under a predetermined preload.

3,982,249

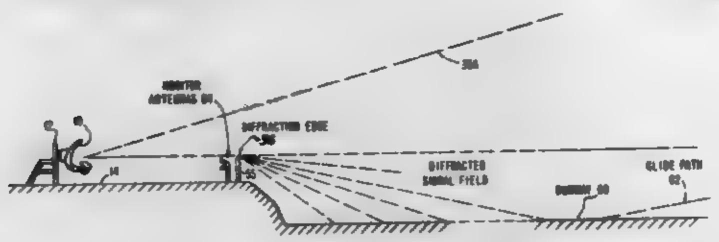
MICROWAVE RADIATION METHOD AND APPARATUS WITH A COMBINED DIFFRACTION EDGE AND RADIATION SCREEN

Donald J. Toman, Pleasantville, N.Y., assignor to Tull Aviation Corporation, Armonk, N.Y.

Filed May 30, 1975, Ser. No. 582,204

Int. Cl.² H01Q *15/02, 1/52*

U.S. Cl. 343—841 **15 Claims**



1. In the operation of a radio guidance system for transmitting directional microwave guidance signals in a pattern generally along and just above the horizon for the azimuth guidance portion of an instrument landing system,

the method of overcoming low angle signal distortion problems by interposing a radiation screen in the low angle portion of the signal pattern and terminating the upper portion of the radiation screen in a horizontal diffraction edge to thereby provide a diffraction pattern of azimuth guidance microwave energy signals at low angles beyond the diffraction edge which is substantially undistorted in azimuth,

said diffraction pattern replacing the original low angle portion of the signal pattern intercepted by the radiation screen.

3,982,250

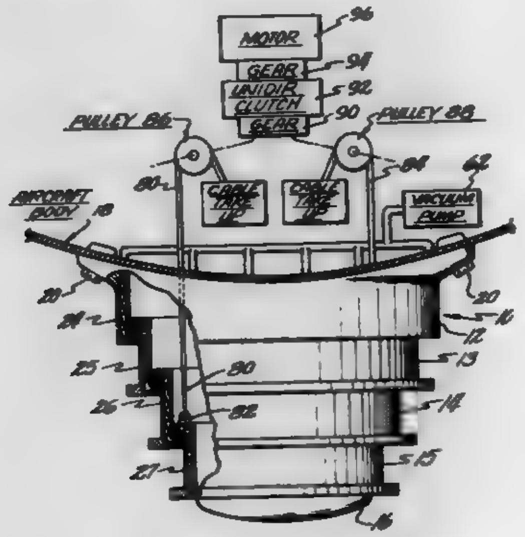
RETRACTABLE RADOME

Carl J. Giannatto, Satellite Beach, Fla., and Theodore Watkin, Stamford, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 15, 1975, Ser. No. 622,791

Int. Cl.² H01Q *1/42*

U.S. Cl. 343—872 **2 Claims**



1. A retractable radome, comprising:

at least two casing means, each having a cavity extending therethrough along a common longitudinal axis, said casing means being of successively smaller dimensions for nesting of a smaller dimension casing within a next adjacent larger dimension casing to permit relative mobility of adjacent casings in a coaxial telescoping manner from a fully retracted to a fully extended coaxial position, each of said casing means including inner wall surface means and outer wall surface means, the outer wall surface means of a smaller dimension casing and the inner wall surface means of a next adjacent larger dimension casing being relatively disposed in a vacuum sealing relationship for providing a vacuum chamber therebetween, said inner and outer wall surface means of each casing defining a central area therebetween, said central area having a plurality of vacuum conduit means disposed therethrough for providing a continuous vacuum path between successive vacuum chambers;

vacuum means connected to said conduit means for selectively providing a vacuum atmosphere within said conduit means; and

means connected to the smallest casing for retracting all of said casings in the absence of a vacuum atmosphere in said conduit means.

3,982,251

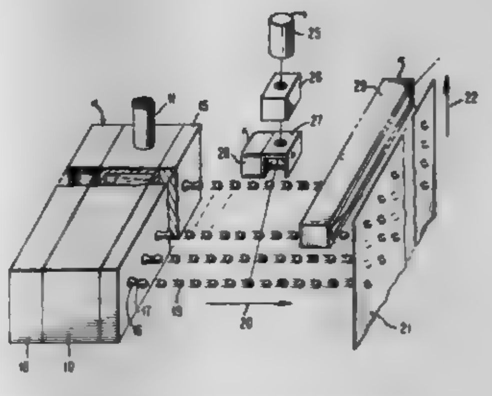
METHOD AND APPARATUS FOR RECORDING INFORMATION ON A RECORDING MEDIUM

Frederick Hochberg, Yorktown Heights, N.Y., assignor to IBM Corporation, Armonk, N.Y.

Continuation of Ser. No. 499,884, Aug. 23, 1974, abandoned. This application May 6, 1975, Ser. No. 575,094

Int. Cl.² G01D *15/18*

U.S. Cl. 346—1 **52 Claims**



1. An apparatus for recording information on a recording medium including:

means to produce a liquid stream formed of a material sensitive to a selected source of energy so as to change from transparent to a color when subjected thereto;

and selector means to selectively subject various portions of the stream to the selected source of energy in accordance with a desired print pattern to be recorded on the recording medium to cause each of the selectively subjected portions to print on the recording medium.

3,982,252

LIGHT EXPOSURE APPARATUS FOR MANUFACTURING COLOR PICTURE TUBES

Eiichi Yamazaki, Ichihara; Koichi Maruyama, Mobara; Toshio Ueda, Mobara; Hiroshi Yokomizo, Mobara, and Iwao Ogura, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 22, 1974, Ser. No. 499,563

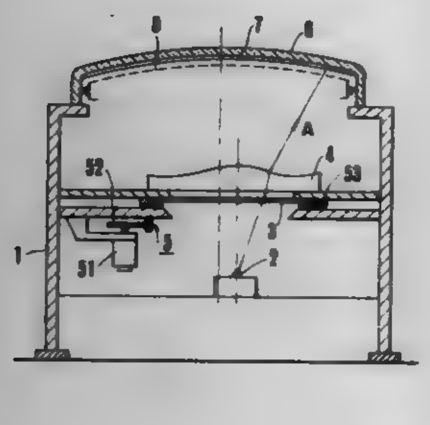
Claims priority, application Japan, Aug. 29, 1973, 48-96096; Aug. 29, 1973, 48-96097

Int. Cl.² G03B *41/00*

U.S. Cl. 354—1 **9 Claims**

1. In a light exposure apparatus of the class having a light source, an illumination intensity correcting filter, an exposing light path correction lens, a face plate provided with a colour selection electrode of a colour picture tube, and a casing wherein said light source, said illumination intensity correcting filter and said exposing light path correction lens are disposed in said casing by taking a predetermined position, and said face plate is removably disposed on the top portion of said casing so as to be exposed to light from said light source said illumination intensity correcting filter and said exposing light path correction lens, the improvement wherein

said illumination intensity correcting filter is formed as an assembly of individual elements, said elements being sufficient in number to obtain the number of desired elemental changes in light transmissivity required for exposing the area of said screen, each of said elements operable to provide a region restricting light transmission therethrough corresponding to the exposure light quantity which is required to expose the corresponding part of a fluorescent screen coated on the inner surface of said face plate, each said element being formed discretely, each of said regions having a predetermined particular value of light transmissivity distributed in accordance with the desired elemental area distribution of said exposure light quantity.



3,982,253

OPTICAL SYSTEM FOR OBTAINING LINEAR IMAGE AND RECORDED DEVICE UTILIZING THE OPTICAL SYSTEM

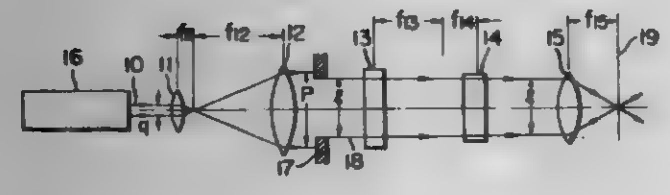
Takeshi Goshima, Tokyo, and Kiyonobu Endo, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1975, Ser. No. 554,196

Claims priority, application Japan, Mar. 4, 1974, 49-25563

Int. Cl.^{2} G03B *41/00*

U.S. Cl. 354—4 **8 Claims**



1. A linear image composition device comprising:

a beam generator means for generating a beam;

a first rectangular beam producing means for causing the beam generated by said beam generator means to be a first parallel light beam with rectangular cross section;

a second rectangular beam producing means for producing a second parallel light beam with rectangular cross section the ratio of the length and breadth of which exceeds that of said first parallel light beam, said second parallel light beam being produced from said first parallel light beam by using a plurality of lenses; and

a beam converging means to which the second parallel light beam with rectangular cross section is applied.

3,982,254

DIGITAL INDICATION SYSTEM FOR A CAMERA

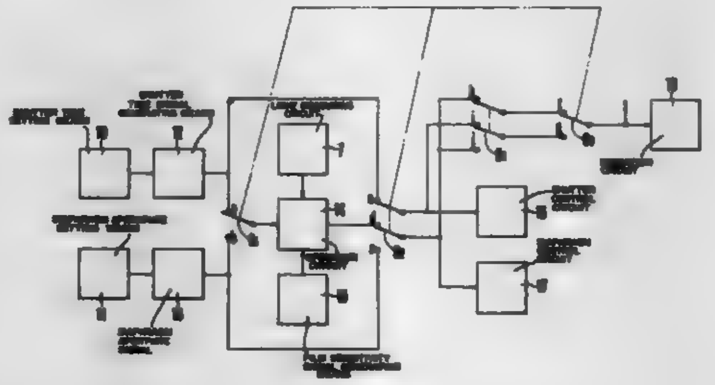
Tadashi Ito, Kanagawa; Soichi Nakamoto, Machida, and Sadao Yamada, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Tokyo Shibaura Electric Co., Ltd., both of, Japan

Filed Mar. 24, 1975, Ser. No. 561,624

Claims priority, application Japan, Mar. 29, 1974, 49-35772

Int. Cl.^{2} G03B *17/20*

U.S. Cl. 354—53 **14 Claims**



1. An indication system of a camera comprising:

a. a shutter time setting means;

b. a shutter time signal generating means coupled with said shutter time setting means to generate a shutter time signal;

c. a diaphragm aperture setting means;

d. a diaphragm aperture signal generating means, coupled with said diaphragm aperture setting means to generate a diaphragm aperture signal;

e. a first switching means responsive to said shutter time signal and said diaphragm aperture signal, for selecting one of said signals and for supplying said selected signal as an output signal; and

f. an indication circuit responsive to the output of said first switching means and having:

a register means being coupled to the output of said first switching means for memorizing and reading out digital information being supplied from said first switching means,

a decoder means for converting the information read out by the register means into a representative signal for indicating the related information, and

an indication means responsive to the signal from the decoder means for digitally indicating said information and for distinguishing the content of said information in a part of said digital indication.

3,982,255

IMAGE STABILIZATION SYSTEM

Carl Orlando, New Shrewsbury, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 17, 1974, Ser. No. 533,580

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976

Int. Cl.^{2} G03B *39/00*

U.S. Cl. 354—70 **5 Claims**

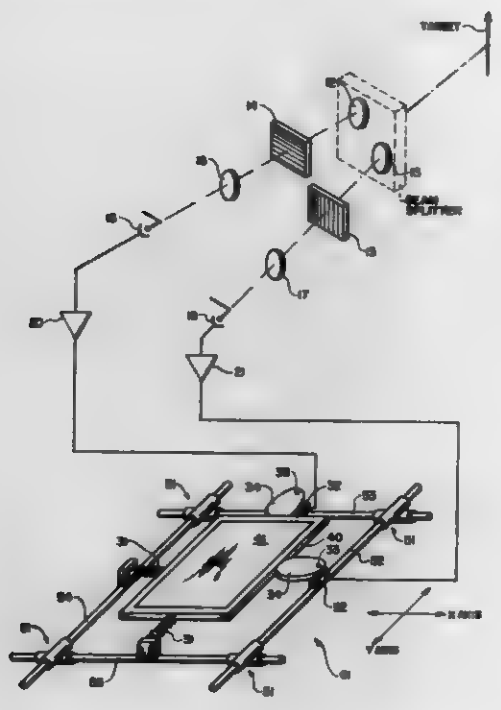
1. An image stabilization system for maintaining a fixed relationship between a target to be photographed and an image of the target to be recorded on a photographic film comprising:

a. a primary lens system for receiving light rays from said target and for splitting said light rays into first and second light beams;

b. first and second optical density wedges each having a scale of continuous linear density gradations, said wedges being positioned with their respective scales at angles to each other and in position for said first wedge to transmit said first light beam and said second wedge to transmit said second light beam;

c. first and second photo-electric means responsive to said first and second transmitted light beams, respectively, for producing variable first and second output voltages; and

d. means responsive to said first and second output voltages for moving said photographic film in all directions on a given plane in consonance with the variations in said first and second output voltages.



3,982,256

ROTARY SHUTTER BLADE MECHANISM FOR CAMERAS

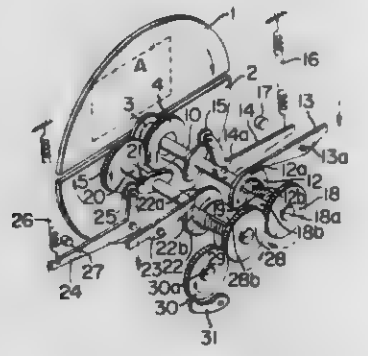
Sachio Ohmori, and Shuji Kimura, both of Yokohama, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed June 5, 1975, Ser. No. 583,899

Claims priority, application Japan, June 18, 1974, 49-68684

Int. Cl.^{2} G03B *9/16*

U.S. Cl. 354—253 **4 Claims**



1. A rotary shutter blade driving mechanism in which the driving energy of the rotary shutter blade is recovered by a driving spring of said shutter blade in the course of deceleration of said blade, comprising:

driving shaft means for driving the shutter blade in one direction only;

auxiliary actuating means adapted to give one-directional rotative force to said driving shaft means;

rotary cam means secured to said driving shaft means and having at its periphery at least one pair of accelerating portions and at least one pair of decelerating portions;

reciprocating lever means having an engaging portion engageable with said accelerating and decelerating portions and pivotally mounted relative to said rotary cam means;

main actuating means adapted to give to said lever means a rotative force of the direction in which said engaging portions come to contact said rotary cam means; and

means for locking said driving shaft means when respective foremost ends of said accelerating portions are engaged with said engaging portion of said lever means, wherein said accelerating portions are so designed as to receive rotating motion of said lever means caused by the urging force of said main actuating means while pressing said engaging portion against said accelerating portions for turning said cam means in said one direction when said means for locking said driving shaft means is released, while said decelerating portions are so designed as to turn said lever means, upon rotation of said cam means, through said engaging portion in the direction opposed to the urging force of said main actuating means and to let said lever means return to its original position for stopping said driving shaft means, and said cam means is so formed that the foremost end of each accelerating portion will be positioned adjacent to the rearmost end of each decelerating portion.

3,982,257

MEANS FOR ENABLING STOPPED-DOWN MEASUREMENT IN EXPOSURE CONTROL CAMERA EMPLOYING FULL-APERTURE MEASURING SYSTEM

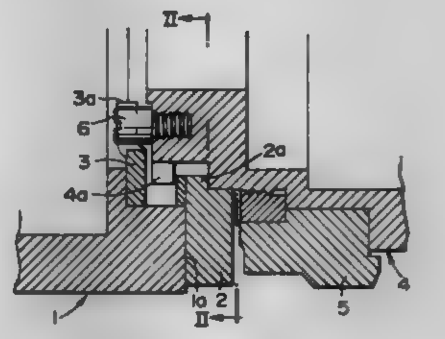
Shiyuichi Togashi, Tokyo, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Aug. 18, 1975, Ser. No. 605,232

Claims priority, application Japan, Aug. 19, 1974, 49-98354[U]; Aug. 19, 1974, 49-98356[U]

Int. Cl.^{2} G03B *9/06, 7/00*

U.S. Cl. 354—286 **7 Claims**



1. In a photographic single lens reflex camera provided with a full-aperture measurement type exposure control device and having a diaphragm interlocking member which is connected with a variable resistor to control the exposure in accordance with information concerned with the diaphragm, means for enabling stopped-down measurement when an interchangeable lens is mounted to the camera body comprising a first mount means formed on the end face of the camera body, a second mount means formed on the end face of the interchangeable lens to be engaged with said first mount means for securing the lens to the camera body by rotating the lens, a pin fixed to the lens and brought into engagement with the diaphragm interlocking member to move the diaphragm interlocking member to a full-aperture position when the lens is rotated to be secured to the camera body, and a diaphragm operating member provided in the interchangeable lens which is manually operable to stop down the diaphragm.

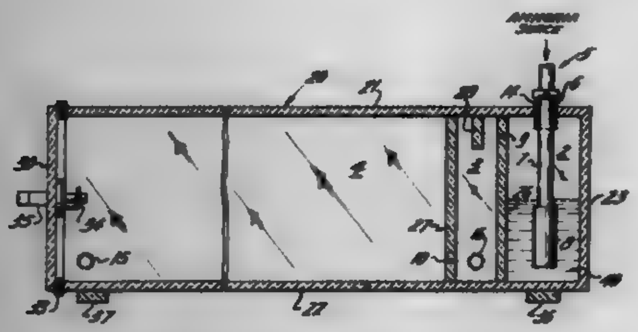
3,982,258
PHOTOGRAPHIC PLATE DEVELOPER APPARATUS

Walter N. Czebiniak, Sunnyvale, Calif., assignor to GAF Corporation, New York, N.Y.

Filed July 1, 1974, Ser. No. 484,951

Int. Cl.² G03D *7/00*

U.S. Cl. 354—300 **14 Claims**



1. An apparatus for exposing sensitized photographic plates to a developer, comprising a housing, a first chamber within said housing for moisture conditioning dry developer, a second chamber within said housing for accommodating the sensitized photographic plates, means communicating between said first and second chambers for conveying said moisturized developer from said first chamber to said second chamber, means within said housing for preventing moisturized developer in the liquid state from entering said second chamber, means providing access to said second chamber for entry and removal of said plates, said means for preventing liquid developer from entering said second chamber comprising a trap having first conveying means communicating with said first chamber and second conveying means communicating with said second chamber, said means communicating between said first and second chambers being formed by said first and second conveying means, said trap having a first wall common with said first chamber and a second wall common with said second chamber.

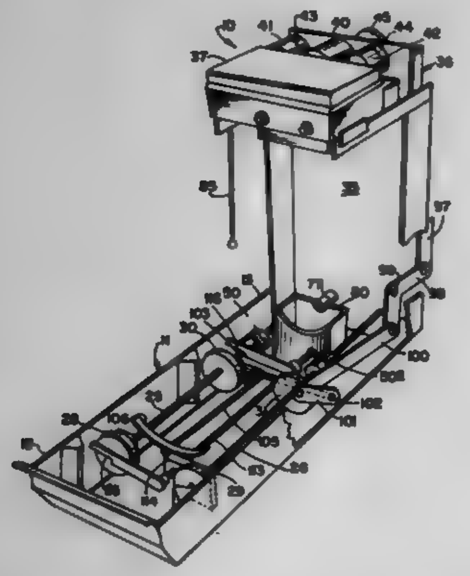
3,982,259
PHOTOGRAPHIC MATERIAL PROCESSING MODULE

Edward Van Baerle, 676 N. La Salle St., Chicago, Ill. 60610

Filed Dec. 13, 1974, Ser. No. 532,452

Int. Cl.² G03D *3/04*

U.S. Cl. 354—329 **6 Claims**



1. A photographic material processing module usable with a like module arranged in adjacent side-by-side relation, comprising:

a support having front and rear portions;
a cylindrical container for holding photographic material on the inside thereof, said container including a front cover and a rear cover having an opening for receiving and discharging processing liquids;
means on said support for positioning said container horizontally and for imparting processing movements thereto;
means on said support for feeding processing liquid into said container;
means on said support for discharging liquid from said container; and
means on said support for moving said container at the conclusion of a processing step in a first module to an adjacent second module for a subsequent processing step, said means for moving said container including a transport shaft mounted for rotation on said support and extending from front to rear, said transport shaft having container engaging means, a reversible electric motor, means connecting said motor to said transport shaft in driving relation and switch means causing said motor to rotate said transport shaft back and forth through a quarter revolution, whereby said container engaging means during shaft rotation in one direction engages and moves said container from one module to the next.

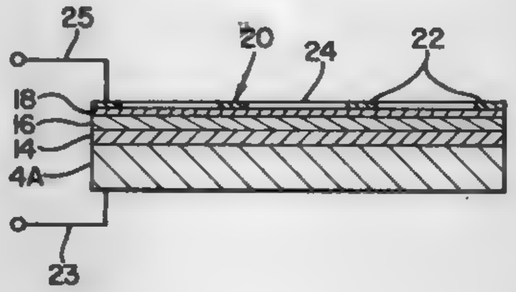
3,982,260
LIGHT SENSITIVE ELECTRONIC DEVICES

Fritz Wald, Wayland, Mass., assignor to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Filed Aug. 1, 1975, Ser. No. 601,327

Int. Cl.² H01L *27/14, 29/48*

U.S. Cl. 357—15 **10 Claims**



1. A light sensitive electronic device comprising an iron substrate and a layer of cadmium telluride having one side thereof bonded to and making an ohmic connection with said iron substrate.

3,982,261
EPITAXIAL INDIUM-GALLIUM-ARSENIDE PHOSPHIDE LAYER ON LATTICE-MATCHED INDIUM-PHOSPHIDE SUBSTRATE AND DEVICES

George A. Antypas, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.

Continuation of Ser. No. 291,457, Sept. 22, 1972, abandoned. This application Aug. 12, 1974, Ser. No. 496,487

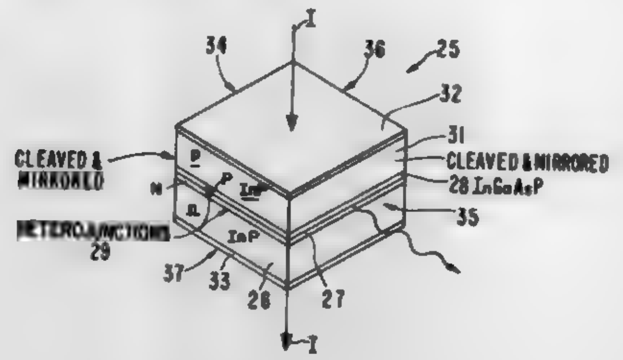
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 20, 1976

Int. Cl.² H01L *29/205, 31/00;* H01S *31/19*

U.S. Cl. 357—16 **9 Claims**

1. A lattice-matched heterojunction device comprising:
a substrate comprising a binary III-V compound of the elements indium and phosphorus and having a lattice constant falling within the range of 5.45 to 6.05 angstrons;
an epitaxial quaternary III-V layer of the compound InGaAsP joined to the surface of said substrate to form a heterojunction with said substrate, said epitaxial layer

having a lattice constant matched to within 0.5 percent of the lattice constant of said substrate to form a lattice matched heterojunction between said substrate and said epitaxial layer.



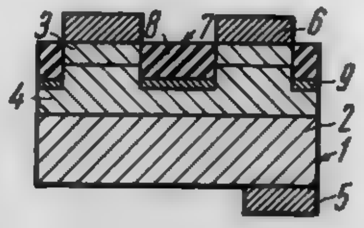
3,982,262
SEMICONDUCTOR INDICATING INSTRUMENT

Anatoly Prokofievich Karatsjuba, Zeleny pereulok, 3, kv. 56, Ljubertsy-1 Moskovskoi oblasti; Tatyana Georgievna Kmita, Odesskaya ulitsa, 17, kv. 63, Moscow; Igor Ivanovich Kruglov, 15 Parkovaya ulitsa, 46, korpus 1, kv. 35, Moscow; Vladimir Ivanovich Kurinny, ulitsa Vavilova, 58, korpus 2, kv. 90, Moscow; Anatoly Ivanovich Kurnosov, prospekt Mira, 190a, kv. 20, Moscow; Igor Veniaminovich Ryzhikov, 9 Parkovaya ulitsa, 49, korpus 1, kv. 67, Moscow, and Vladimir Vasilievich Judin, Schelkovskoe shosse, 87, korpus 1, kv. 195, Moscow, all of U.S.S.R.

Filed Apr. 17, 1974, Ser. No. 461,718

Int. Cl.² H01L *33/00*

U.S. Cl. 357—17 **2 Claims**



1. A semiconductor display device consisting of a silicon-carbide crystal and comprising: an n-type conductivity region; a first diffused region of p-type conductivity; a second diffused region disposed between said regions; a first ohmic contact attached to said n-type region; several second ohmic contacts attached to said first region; light-emitting patches of which the topology is determined by the size and shape of said contacts; and an additional region of silicon carbide, incorporating clusters of structural radiation defects with a concentration of 10^{18} cm^{-3} to $10^{22}cm^{-3}$; said additional region being located between said second contacts, and the thickness whereof being about 0.5 mu larger than that of said first region.

3,982,263
INTEGRATED CIRCUIT DEVICE COMPRISING VERTICAL CHANNEL FET RESISTOR

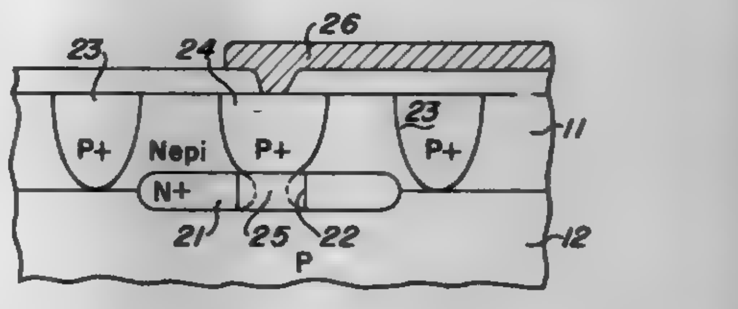
Robert C. Dobkin, Menlo Park, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 466,225, May 2, 1974, Pat. No. 3,886,001. This application Mar. 12, 1975, Ser. No. 557,464

Int. Cl.² H01L *29/80, 27/02, 29/34, 29/78*

U.S. Cl. 357—22 **4 Claims**

1. A channel FET resistor in the substrate of a monolithic integrated circuit device, said substrate being of a first conductivity type, said channel FET resistor comprising,
a buried layer region of a second conductivity type in the substrate, said buried layer region being band-shaped with an opening therethrough,
an epitaxial layer of said second conductivity type on said substrate and over said buried layer,
an isolation region of said first conductivity type in said epitaxial layer around said buried layer region, said isolation region extending completely through said epitaxial layer thereby to isolate a portion of said epitaxial layer including that portion overlying said buried layer region,
a channel region of said first conductivity type in said epitaxial layer within that portion isolated by said isolation region and extending completely through said epitaxial layer, through the opening in said buried layer and into said substrate, and
a surface contact contacting said channel region.



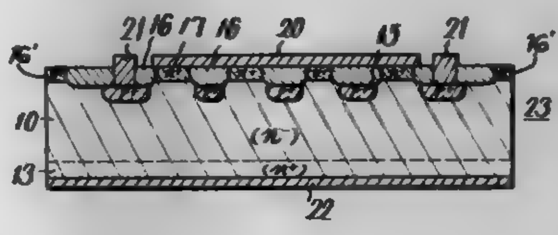
3,982,264
JUNCTION GATED FIELD EFFECT TRANSISTOR

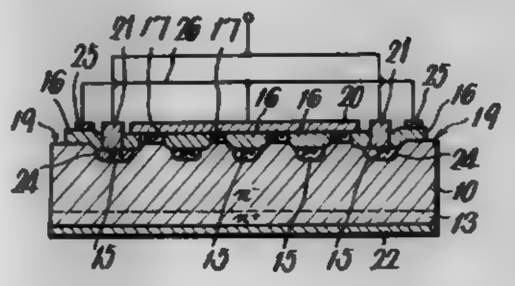
Akiyasu Ishitani, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 384,234, July 31, 1973, Pat. No. 3,852,864. This application Jan. 27, 1975, Ser. No. 544,508 Claims priority, application Japan, Apr. 25, 1973, 48-47445

Int. Cl.² H01L *29/80*

U.S. Cl. 357—22 **11 Claims**

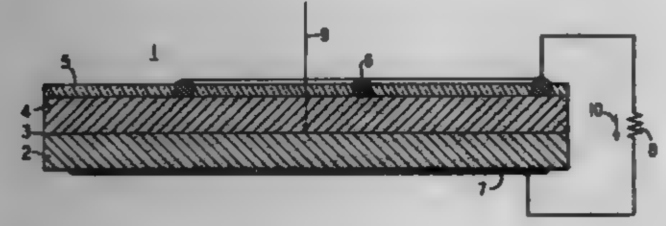




1. A junction gated field effect transistor having a semiconductor substrate having formed on one major surface thereof;
a drain region of low impurity concentration of one impurity type in said semiconductor substrate;
a mosaic shaped gate region in said semiconductor substrate having regions of high impurity concentration of the opposite impurity type defining a grid of bars formed on the drain region;
the portion of said semiconductor substrate lying between the bars of said grid providing channels, the length of said channels being relatively short compared to their widths;

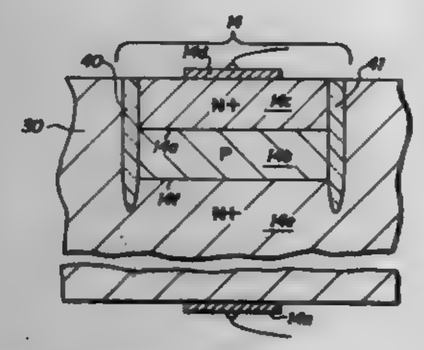
a corresponding mosaic grid of bars of insulating material forming a layer overlying said mosaic shaped gate region and aligned therewith, the areas between the bars of said insulating layer mosaic being smaller than areas between the bars of said grid forming said gate region;
a gate electrode connected to said mosaic shaped gate region;
a plurality of semiconductor source regions of high impurity concentration of said one impurity type formed on the substrate in the areas between the bars of said grid forming the insulating layer; and
a conductive plate source electrode overlying said insulating layer and in contact with said source regions.

3,982,265
DEVICES CONTAINING ALUMINUM-V SEMICONDUCTOR AND METHOD FOR MAKING
Wilbur Dexter Johnston, Jr., Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 19, 1975, Ser. No. 614,848
Int. Cl.² H01L *27/14*
U.S. Cl. 357—30 **14 Claims**



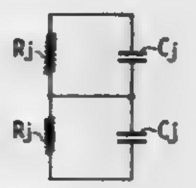
1. A p-n junction device comprising:
a first layer including III–V semiconductor;
a second layer including aluminum-V semiconductor; and
a layer of aluminum-V oxide located on said second layer.

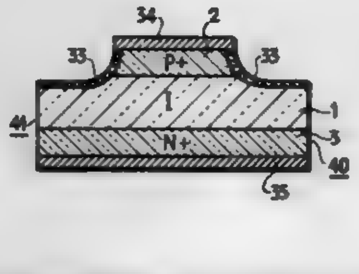
3,982,266
INTEGRATED INJECTION LOGIC HAVING HIGH INVERSE CURRENT GAIN
Walter T. Matzen, and Wilton L. Workman, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 9, 1974, Ser. No. 530,774
Int. Cl.² H01L *27/04*
U.S. Cl. 357—44 **6 Claims**



1. A fanout logic system which comprises:
a. a heavily doped first conductivity type semiconductor substrate having a second conductivity type epitaxial layer formed on one surface thereof,
b. a wide bipolar transistor formed in said epitaxial layer with the epitaxial layer forming the collector of said transistor,
c. a pair of isolation zones extending from the surface of said epitaxial layer through the lower boundary thereof and extending laterally from the base of said transistor to isolate a portion of said epitaxial layer,
d. heavily doped first conductivity type regions between the ends of said isolation zones opposite said wide bipolar transistor, said regions extending through said epitaxial layer, and
e. a plurality of diffused collectors in said epitaxial layer within said zones to form a multiple-collector bipolar transistor, complementary to said wide bipolar transistor with said epitaxial layer forming the common base region thereof, with the base-emmiter junction width equalling the base-collector junction width and wherein said epitaxial layer forming the collector of said wide bipolar transistor also forms the base of said multiple collector bipolar transistor.

3,982,267
PIN DIODE WITH A THICK INTRINSIC ZONE AND A DEVICE COMPRISING SUCH A DIODE
Raymond Henry, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Apr. 15, 1975, Ser. No. 568,363
Claims priority, application France, Apr. 16, 1974, 74.13206
Int. Cl.² H01L *29/34*
U.S. Cl. 357—52 **4 Claims**

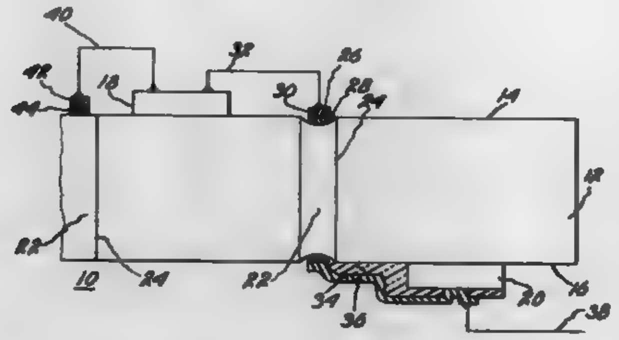




1. A PIN diode comprising an intrinsic semi-conductor plate having two opposite faces respectively carrying a first and a second semi-conductor layer, highly doped with an impurity of a given type in the case of the first layer and with a impurity of opposite type in the case of the second, and a lateral surface having a degree of roughness giving to the leakage resistance a value, lower than few hundred megohms.

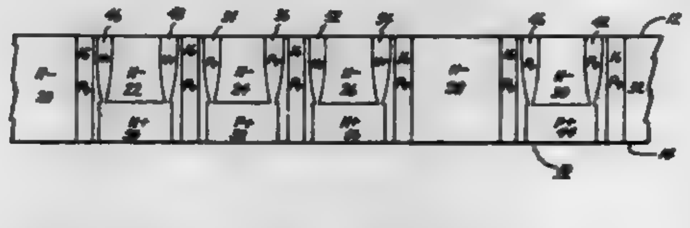
3,982,268
DEEP DIODE LEAD THROUGHS
Thomas R. Anthony, and Harvey E. Cline, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 411,295, Oct. 30, 1973, abandoned. This application Mar. 14, 1975, Ser. No. 558,221
Int. Cl.² H01L *29/06, 27/04, 29/04, 23/48*
U.S. Cl. 357—55 **29 Claims**

1. A semiconductor device comprising
a body of single crystal semiconductor material having first and second major opposed surfaces comprising respectively, the top and bottom surfaces thereof, a first preferred level of resistivity, a preferred first type conductivity, a first preferred type conductivity, and a vertical axis aligned substantially parallel with a first preferred crystal axis of the material of the body;
at least one of the opposed major surfaces having a preferred planar crystal orientation which is one selected from the group consisting of (111), (110) and (100);
at least one region of second and opposite type conductivity having a second predetermined level of resistivity, and opposed end surfaces, disposed in the body and extending between and terminating in the two major opposed surfaces of the body, each of the end surfaces is coextensive with a respective one of the major surfaces, the material of the at least one region consisting of recrystallized semiconductor material of the body formed in situ in the body by the migration of a melt of metal-rich semiconductor material through the entire body, from one opposed major surface to the other, by thermal gradient zone melting at a predetermined elevated temperature along a thermal gradient aligned substantially parallel with the first preferred crystal axis and the vertical axis of the body and having the metal distributed substantially uniformly throughout the entire region, the level of concentration of the metal therein being determined by the solid solubility limit of that metal in that semiconductor material of the body at that predetermined elevated temperature of migration, the metal comprising a sufficient quantity of at least one dopant impurity material to impart the second type conductivity and second predetermined level of resistivity thereto, each of the at least one regions being a low electrical resistance path for conducting electrical currents between the major opposed surfaces of the body;



each of the at least one region of second type conductivity having a vertical axis which is aligned substantially parallel with the first crystal axis;
a P-N junction formed by the contiguous surfaces of the materials of each region and the body;
at least one electrical device associated with one of the two major surfaces of the body;
at least one electrical device associated with the other of the two major surfaces of the body, and
means for electrically connecting the electrical devices associated with the respective two major opposed surfaces via the at least one region of second type conductivity.

3,982,269
SEMICONDUCTOR DEVICES AND METHOD, INCLUDING TGZM, OF MAKING SAME
Manuel L. Torreno, Jr., Schenectady, N.Y.; Bruno F. Kurz, deceased, late of Schenectady, N.Y. (by Elizabeth Kurz-Beerli, executrix), and Surinder Krishna, Ballston Lake, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Nov. 22, 1974, Ser. No. 526,225
Int. Cl.² H01L *29/04, 27/04, 7/00*
U.S. Cl. 357—60 **11 Claims**



1. A homogeneous integrated power structure including:
a body of semiconductor material having two major opposed surfaces forming respectively the top and bottom surfaces of the body, a predetermined level of resistivity, a predetermined first type conductivity, a predetermined lifetime, and a vertical axis substantially perpendicular to the major opposed surfaces;
at least one of the major opposed surfaces having a preferred crystal planar orientation;
a plurality of planar regions disposed in the body and extending between, and terminating in, the opposed major surfaces, and being oriented in a direction aligned with a first preferred crystal axis of the crystal structure of the material of the body;
each planar region having two major opposed surfaces oriented substantially perpendicular to the major opposed surfaces of the body and substantially parallel to the vertical axis of the body and a second preferred crystal axis of the material of the body;
the planar regions are oriented with respect to each other so that selected ones thereof at least intersect, and are integral, with, each other so as to divide the body into a plurality of spaced regions of the original material of the body;
the material of each planar region is of a predetermined second and opposite type conductivity and consists of recrystallized semiconductor material of the body;
the recrystallized material of each planar region is formed in situ by the migration of a melt of metal-rich semiconductor material of the body by thermal gradient zone melting at a predetermined elevated temperature along a thermal gradient aligned substantially parallel with the second predetermined crystal axis and the vertical axis of the body, the metal of the melt is substantially uniformly distributed throughout the recrystallized material of the region and has a predetermined uniform level of concentration which is determined by the solid solubility limits of that metal in that semiconductor material at that predetermined elevated temperature of migration;
the metal of the melt consisting of at least one dopant impurity material to impart the type conductivity and resistivity to the recrystallized material of the planar region;
a plurality of P-N junctions electrically isolating the spaced regions from each other;
each P-N junction being formed by the abutting contiguous surfaces of each major surface of a planar region and the material of the body, an end portion of each P-N junction being exposed at the opposed major surfaces of the body;
at least one signal or control semiconductor device having an electrical characteristic of functioning at less than 1 ampere and at less than 500 volts formed in one of the spaced regions;
at least one power semiconductor device having an electrical characteristic of functioning at no less than 1 ampere and at no less than 500 volts, and
electrical circuit means for electrically connecting together all the semiconductor devices formed in the body.

3,982,270
DEEP DIODE VARACTORS
Harvey E. Cline, and Thomas R. Anthony, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 411,149, Oct. 30, 1973, abandoned. This application Feb. 27, 1975, Ser. No. 553,660
Int. Cl.² H01L *29/04, 29/92, 7/00*
U.S. Cl. 357—60 **32 Claims**

1. A semiconductor varactor comprising
a body of semiconductor material having two opposed major surfaces forming respectively the top and bottom surfaces of the body, a predetermined level of resistivity, a predetermined first type conductivity, a preferred crystal structure and a vertical axis substantially perpendicular to the major opposed surfaces;
at least one of the opposed major surfaces having a predetermined crystal planar orientation which is one selected from the group consisting of (100), (110) and (111);

a plurality of spaced planar regions of recrystallized semiconductor material of the body having a second and opposite type conductivity than that of the body and a predetermined level of resistivity formed in the body and so oriented as to be aligned with a first preferred crystal axis of the material of the body;

each of the spaced planar regions having two opposed major surfaces extending between, and terminating in, the opposed major surfaces extending betweeen, and terminating, in, the opposed major surfaces of the body and oriented substantially perpendicular thereto and substantially parallel with the vertical axis of the body and a second preferred crystal axis of the material of the body;

the recrystallized material is formed in situ by the migration of a melt of metal-rich semiconductor material of the body by thermal gradient zone melting at a predetermined elevated temperature along a thermal gradient substantially parallel with the second preferred crystal axis and the vertical axis of the body and has a predetermined level of concentration of the metal of the melt as determined by the solid solubility limit of that metal in that semiconductor material at that predetermined elevated temperature of migration and the metal is distributed substantially uniformly throughout the entire region;

the metal consisting of at least one dopant impurity material to impart the type conductivity and level of resistivity to the planar region;

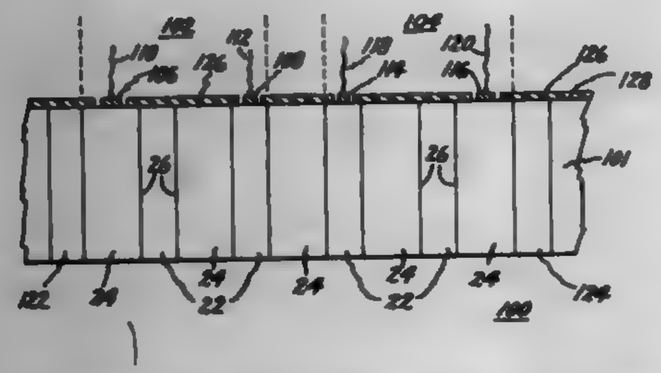
a P-N junction formed by the abutting, contiguous surfaces of the material of each of the planar regions and the material of the body;

each P-N junction being substantially perpendicular to, and exposed at, the major opposed surfaces of the body;

the spaced planar regions and the material of the body between each pair of planar regions defining a lamellar structure of a plurality of integral diodes arranged in a series electrical circuit;

electrical contact means affixed to selected surface areas of the body to enable a predetermined number of P-N junctions to be biased by an applied potential; and

the electrical characteristic of the varactor is a voltage dependent capacitance.



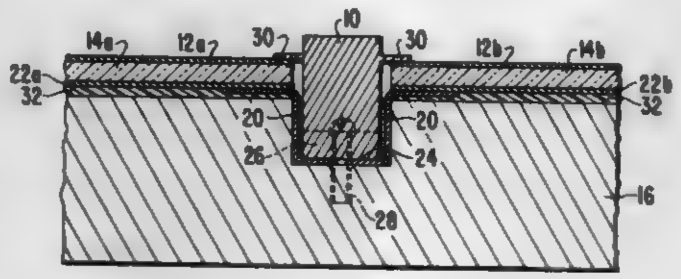
3,982,271
HEAT SPREADER AND LOW PARASITIC TRANSISTOR MOUNTING

Daniel Olivieri, Huntington Station, N.Y., and Robert James Secci, Delran, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 7, 1975, Ser. No. 548,010
Int. Cl.² H01L *23/02*; **H01P** *3/08*
U.S. Cl. 357—81 **7 Claims**

1. In a transistor mounting apparatus of the type used in high power microstrip circuits including a transistor wherein said transistor is mounted in a slot formed in a circuit carrier block formed of electrically and thermally conductive material serving as a heat sink and electric ground, further including a non-conductive substrate having on one face a strip line conductor and on the other face a conductive ground plane, said ground plane being positioned to be mounted on said circuit carrier block, said substrate, including said strip line conductor and said ground plane arranged to receive said transistor, and further including electrically conductive connections between said transistor and said strip line conductor, the improvement comprising:

a strip of thin, soft, deformably, electrically and thermally conductive material, said strip being positioned in said slot and clamped against the bottom wall of said slot by said transistor, the respective ends of said strip being joined with an electrical and thermal connection to said ground plane at respective opposite portions thereof adjacent said slot, said ground plane including said strip ends being affixed to said block.



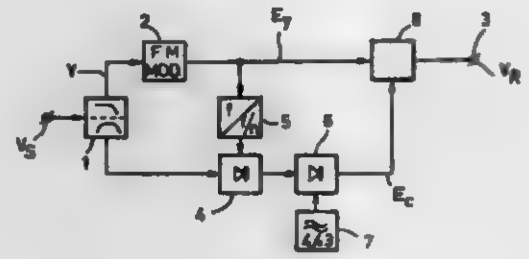
3,982,272
COLOR TELEVISION SYSTEM IN WHICH THE CHROMINANCE SUBCARRIER IS LOCKED TO THE FREQUENCY-MODULATED LUMINANCE SIGNAL

Leonardus Adrianus Johannes Verhoeven; Maarten Rutger de Haan, and Peter Johannes Michiel Janssen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 3, 1974, Ser. No. 466,626

Claims priority, application Netherlands, Feb. 13, 1974, 7401934

Int. Cl.² H04N *9/40, 9/39, 5/79*
U.S. Cl. 358—4 **13 Claims**

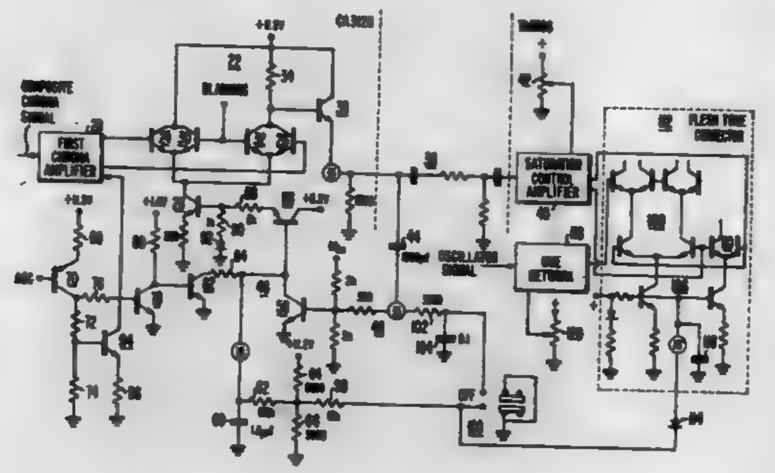


1. A colour television transmitter for the transmission of a colour television signal having luminance and chrominance information, said transmitter comprising means for frequency modulating a first carrier with the luminance information, whereby the modulated first carrier has an instantaneously varying frequency, means for modulating a second carrier wave with the chrominance information, the frequency of the second carrier wave being between zero and the first-order lower side-band of the frequency modulated first carrier corresponding to the highest luminance modulation frequency, and means for locking the frequency of the second carrier to the instantaneous frequency of the modulated first carrier by a constant integral ratio.

3,982,273
SWITCHING ARRANGEMENT FOR FLESH TONE CORRECTION AND CHROMINANCE OVERLOAD CONTROL CIRCUITS

Larry Allen Cochran, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 27, 1975, Ser. No. 580,715
Int. Cl. ²H04N *9/535*
U.S. Cl. 358—27 **5 Claims**



1. In a color television receiver including chrominance signal processing apparatus, a system for altering operating characteristics of said signal processing apparatus comprising:

at least one chrominance signal amplifier having a controllable gain characteristic;

signal detection means, coupled to said signal amplifier and responsive to excursions of picture interval chrominance signals having an amplitude exceeding a predetermined level, for providing gain control signals to said signal amplifier;

a source of quiescent direct gain control voltage;

means for coupling said gain control signals and said gain control voltage to said amplifier;

switching means coupled to said detection means and to said source of gain control voltage for simultaneously altering said predetermined level and said quiescent gain control voltage so as to increase permissible peak excursions of said chrominance signals while relatively maintaining the level of other portions of said chrominance signals.

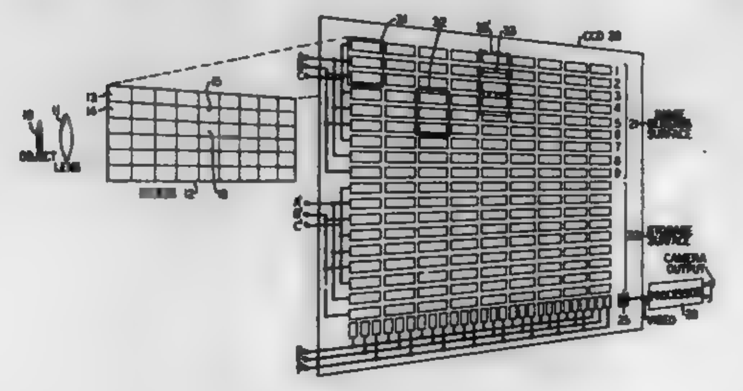
3,982,274
COLOR CODING FILTER FOR CHARGE-COUPLED-DEVICE CAMERA

Sooyoung Chai, Madison Township, Middlesex County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 3, 1974, Ser. No. 502,289

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² H04N *9/04, 3/16*
U.S. Cl. 358—41 **21 Claims**



1. A color coding filter for use with an imaging device for converting light into electrical signals using a multiple-field format, the imaging device having a sensing surface being divided into an array of rectilinear resolution cells distinctive for each field, the cells defining a grid-pattern in each field and the cell boundaries in successive fields being displaced in at least one dimension to form overlapping grid patterns in the successive fields,

the filter comprising a plurality of rectilinear zones which are arranged in direct correspondence to the cell array of the sensing surface so that all light from a scene impinging on any cell of the sensing surface passes through a corresponding zone in the filter,

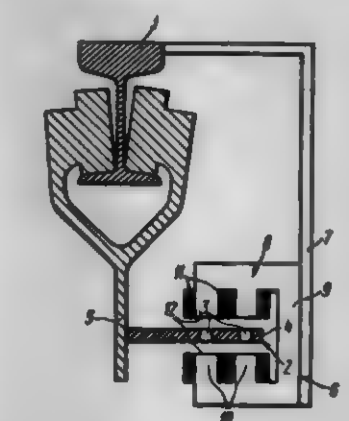
a plurality of discrete color areas being contained within each filter zone and being arranged so that the zone boundaries may be redefined with the change of cell boundaries during successive fields,

the transmissivity characteristic of each color filter area being selected to produce a desired color coding for each zone.

3,982,275
READ-WRITE APPARATUS FOR USE IN A CONVEYOR CONTROL

Ivan Vasilievich Antonets, ulitsa Kirova, 8, kv. 21; Igor Kasianovich Mlynchik, ulitsa Polbina, 55, kv. 47, and Alexandr Pavlovich Panov, proezd Polbina, 32, kv. 119, all of Ulyanovsk, U.S.S.R.

Filed May 27, 1975, Ser. No. 581,416
Int. Cl.² G11B *5/00*
U.S. Cl. 360—1 **3 Claims**



1. A read-write apparatus for use in a conveyor control device located on the track of the conveyor, the apparatus comprising (1) a carrier having a non-magnetic backing and serving for information recording, storage and playback during its movement along the track; permanent magnets pressed into said backing and spaced at preset distances; (2) a unit for recording the information, including a magnetic core to concentrate magnetic flux in a gap formed between a pair of substantially parallel limb portions of the latter, and having pole pieces spaced in pairs at preset distances, on opposite sides of said carrier, and having opposite poles that are directed towards each other; coils located on said pole pieces for magnetizing said core, to generate an electric signal that builds up the flux in said core; a yoke for said core, common for said pole pieces; (3) a unit located on said track for reading the information, including a magnetic-field pickup for determining the magnitude and direction of the magnetic field built up by said carrier during its movement along the track; input and output electrodes in said pickup; a non-linear excitation circuit in said reading unit for increasing the amplitude of the current pulses on said input electrodes, the input of said excitation circuit being connected with said voltage source, while its output is connected to one of said input electrodes; (4) voltage source means for at least one of said recording and said reading units; (5) a decoder of heteropolar pulses in said reading unit for separating signals of opposite polarities; and (6) an output unit, also in said reading unit, for generating a signal; said decoder being made in the form of a diode bridge which connects said output electrodes with said output unit.

3,982,276

METHOD OF COPYING MAGNETIC RECORDINGS PROVIDED ON A MAGNETIZABLE MEDIUM HAVING A GREATER COERCIVE FORCE BEFORE THAN AFTER RECORDING

Jan Roos, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

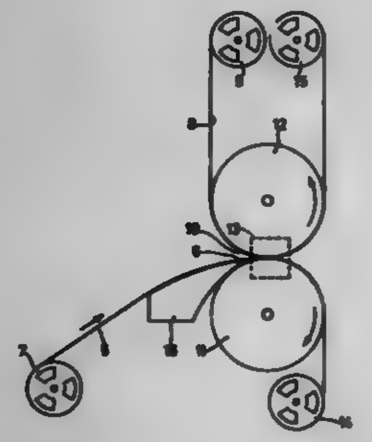
Continuation of Ser. No. 297,716, Oct. 16, 1972. This application Apr. 18, 1974, Ser. No. 461,874

Claims priority, application Netherlands, Oct. 21, 1971, 7114533

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² G11B *5/86*

U.S. Cl. 360—17 **2 Claims**



1. A method of copying magnetic recordings provided onto a first magnetisable recording medium on a second magnetisable recording medium comprising the steps of recording on the first magnetisable medium while in a state of reduced coercivity, thereafter increasing the coercive force of the first magnetisable medium to a value, H_c , said first medium consists of a magnetic material having the general formula M_5R, wherein M is at least one transfer metal of the first long period and R is at least one rare earth metal, said medium, before providing the recordings to be copied on it, being subjected to hydrogen gas under pressure to reduce the coercive force thereof, the hydrogen gas pressure being removed before copying is carried out to increase the coercive force of said first magnetizable medium, contacting the magnetic surfaces of the first magnetisable medium in a state of higher coercivity with the recording thereon and of the second magnetisable medium with each other, subjecting said magnetizable mediums while the surfaces thereof are in contact with one another to a magnetic auxiliary field to form on the second magnetizable medium a duplicate of the recording on the first magnetizable medium, and then separating said magnetizable mediums from each other, the coercive force H_{c_1}, the coercive force H_{c_2} of the second magnetisable medium and the field strength H of the magnetic auxiliary field fulfilling the requirement: $aH_{c_2} < H < (H_{c_1})/a$ with $1 < a < 2$.

3,982,277

TIMING-ERROR COMPENSATION FOR LOW-SPEED TAPE SYSTEMS

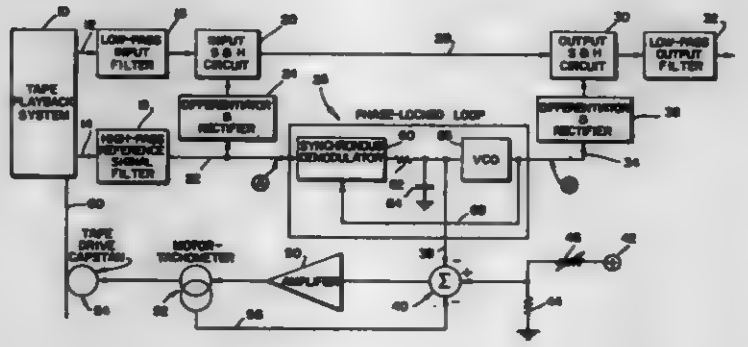
Thomas K. Naylor, Belmont, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Dec. 26, 1973, Ser. No. 427,883

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 20, 1976

Int. Cl.² G11B *27/10*

U.S. Cl. 360—27 **13 Claims**



1. A system for deriving a time-error compensated analog signal from a tape on which an original analog signal was recorded together with a clock signal, said clock signal having a frequency greater than the highest frequency component of interest in said original analog signal and the nominal speed of said tape being below one inch per second, comprising means for moving said tape and deriving therefrom the separate analog and clock signals recorded thereon, control means responsive to the clock signal derived from said tape for controlling the speed of said tape such that slow changes therein are compensated so that the average speed of said tape remains constant and for generating a corrected clock signal whose frequency is constant and equal to the average frequency of the clock signal derived from said tape, sampling means for taking samples of the analog signal derived from said tape in synchronism with the clock signal derived from said tape, and means controlled by the corrected generated clock signal for operating on successive samples taken by said sampling means at equally spaced intervals to reconstitute the original analog signal therefrom.

DESIGN PATENTS

GRANTED SEPTEMBER 21, 1976

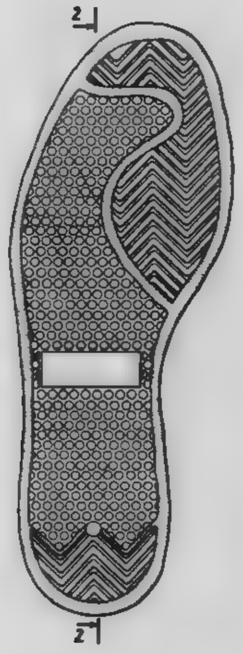
ERRATA

For CLASS	See PATENT NO.
025–085	241,534
025–082	241,535
025–074	241,536
011–152	241,567
015–065	241,568
015–027	241,569
012–015	241,571
016–042	241,575
016–032	241,576
016–025	241,577
016–005	241,578

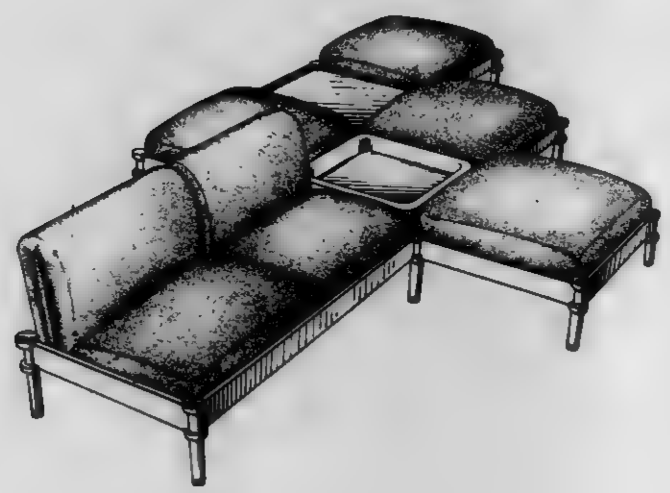
DESIGNS

SEPTEMBER 21, 1976

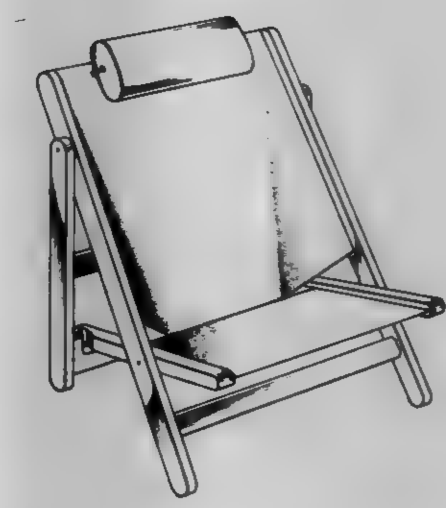
241,484
TREAD FOR FOOTWEAR
Jose Paredes Castano, Elche, Alicante, Spain, assignor to Jose Paredes, S.L., Elche, Alicante, Spain
Filed Dec. 18, 1974, Ser. No. 533,892
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



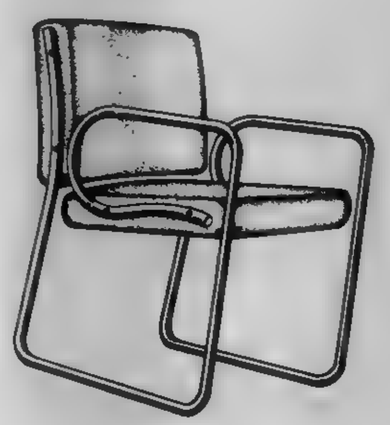
241,485
COMBINED SEAT, TABLE, PLANTER AND MULTIPLE BENCH UNIT OR SIMILAR ARTICLE
Leif Blodee, Holland, Mich., assignor to The Gunlocke Company, Wayland, N.Y.
Filed July 1, 1974, Ser. No. 484,806
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—4



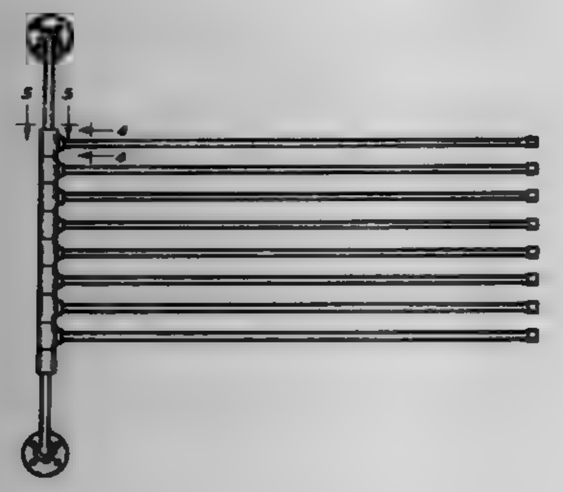
241,486
LOUNGE CHAIR
Raoul Eugene Rodriguez, Denver, Colo.
(6160 Southwood Drive, Littleton, Colo. 80121)
Filed Dec. 16, 1974, Ser. No. 533,455
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—37



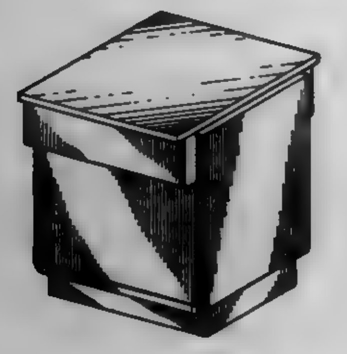
241,487
CHAIR OR THE LIKE
Charles A. Gibilterra, Granada Hills, Calif., assignor to Vecta Group, Inc.
Continuation-in-part of abandoned design application Ser. No. 319,626, Dec. 29, 1972. This application Dec. 30, 1974, Ser. No. 537,177
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



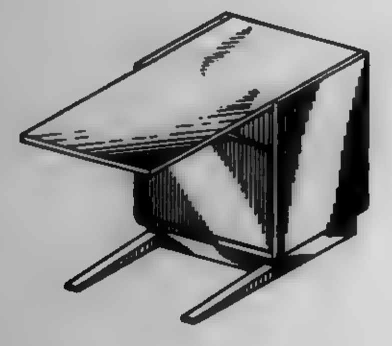
241,488
RACK FOR BLANKETS OR THE LIKE
Joan C. Stenberg, Rte. 1, Box 88, Bristol, Wis. 53104
Filed Aug. 11, 1975, Ser. No. 603,550
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—124



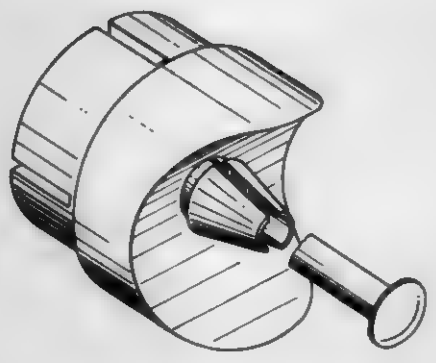
241,489
MODULAR DISPLAY CABINET OR SIMILAR ARTICLE
James H. Karlin, Streamwood, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 9, 1975, Ser. No. 539,894
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—158



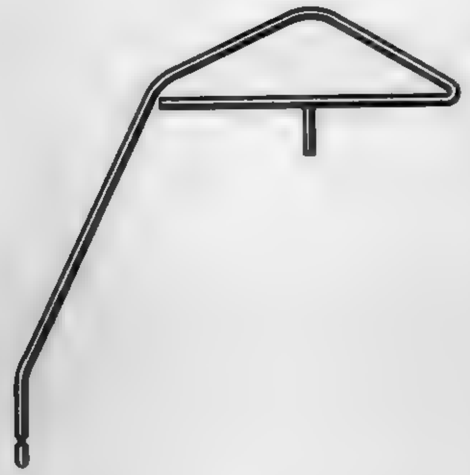
241,490
MODULAR DISPLAY TABLE OR SIMILAR ARTICLE
James H. Karlin, Streamwood, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 9, 1975, Ser. No. 539,895
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—158



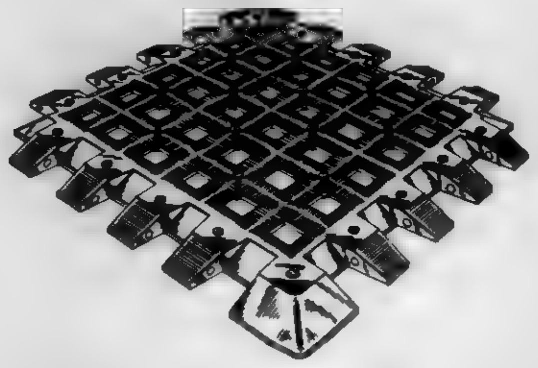
241,491
CHAIR CONNECTOR
Robert W. O'Halloran, 1146 Harrison St., Hollywood, Fla. 33020
Filed Dec. 7, 1972, Ser. No. 312,923
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



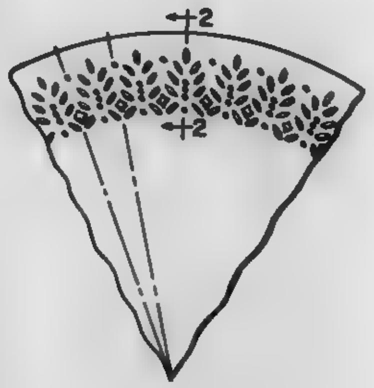
241,492
COMBINED SHOPLIFTING-PROOF GARMENT HANGER AND SUPPORT THEREFOR
Nils Ingemar Schwalbe, 9 St. Eriksgatan, 112 39, Stockholm, Sweden
Filed Sept. 23, 1974, Ser. No. 508,467
Claims priority, application Sweden Mar. 25, 1974
Term of patent 14 years
Int. Cl. D6—*04;* D20—*02*
U.S. Cl. D6—191



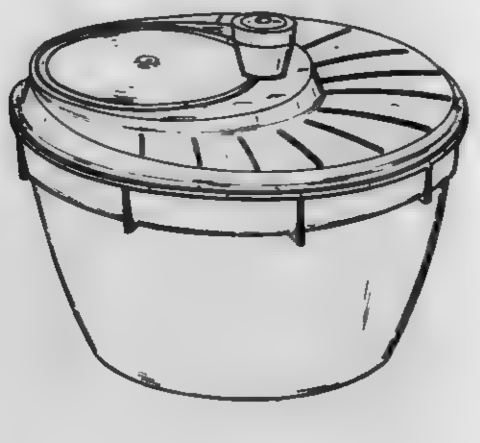
241,493
MODULAR FLOOR MAT
Ralph Ettlinger, Jr., Glencoe, and Glenn L. Beall, Gurnee, Ill., assignors to Economics Laboratory, Inc., St. Paul, Minn.
Filed Dec. 12, 1974, Ser. No. 531,891
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209



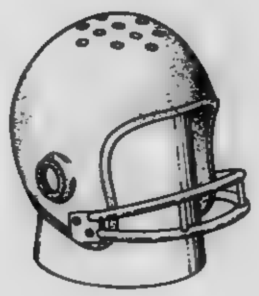
241,494
PLATE OR SIMILAR ARTICLE
Ottorino N. Mercadante, Corning, N.Y., assignor to Corning Glass Works
Filed July 15, 1974, Ser. No. 488,223
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—36



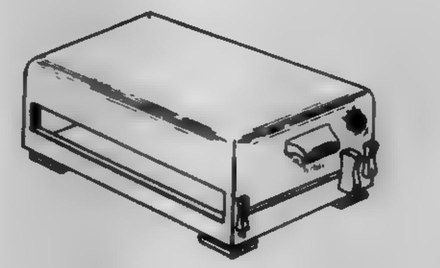
241,495
SALAD DRYER
Jean Mantelet, Paris, France, assignor to Moulinex Societe Anonyme, Bagnolet, France
Filed Nov. 14, 1974, Ser. No. 523,874
Claims priority, application France May 16, 1974
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—47



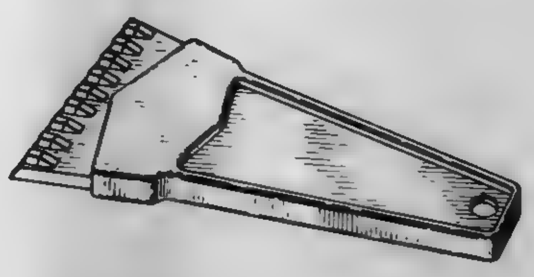
241,496
SALT OR PEPPER SHAKER
Marshall L. Grode, 1132 Laurel Way, Beverly Hills, Calif. 90210, and Rene Alkoff, 1530 N. Laurel Ave., Hollywood, Calif. 90046
Filed July 17, 1975, Ser. No. 596,713
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—56



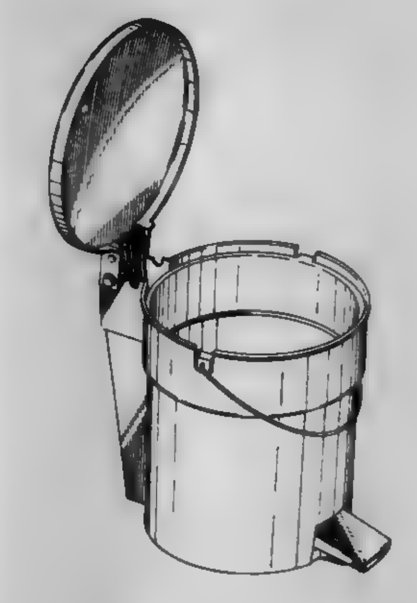
241,497
TOASTER
Delmas H. Bialock, 128 Lakeside Terrace, Lenoir, N.C. 28645
Filed Nov. 25, 1974, Ser. No. 526,622
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—91



241,498
SCRAPER
Lloyd T. Smith, Newton, Kans., assignor to S/V Tool Company, Inc., Newton, Kans.
Filed Sept. 12, 1975, Ser. No. 612,694
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—184



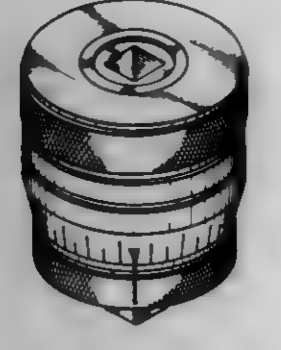
241,499
FOOT-OPERATED RECEPTACLE
William B. Raftery, Winchester, Va., assignor to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Mar. 25, 1975, Ser. No. 561,792
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—195



241,500
TORQUE LIMITING DEVICE

Ralph R. Leonard, 1822 S. 266th Place,
Kent, Wash. 98031
Filed Aug. 7, 1975, Ser. No. 602,919
Term of patent 14 years
Int. Cl. D8—*05*

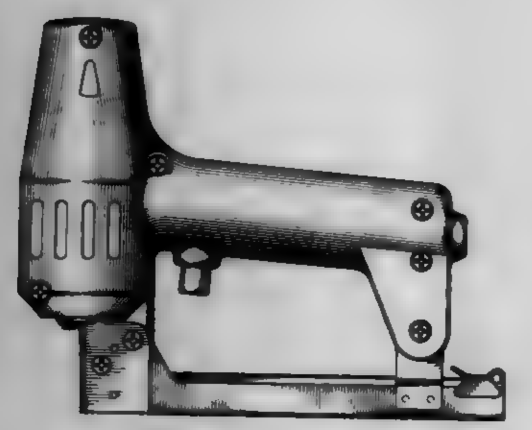
U.S. Cl. D8—24



241,501
FASTENER DRIVING TOOL

Richard H. Doyle, Mount Prospect, Salvatore L. Morabito, Northlake, and Andrew I. Yohana, Des Plaines, Ill., assignors to Duo-Fast Corporation
Filed June 5, 1975, Ser. No. 583,958
Term of patent 14 years
Int. Cl. D8—*05*

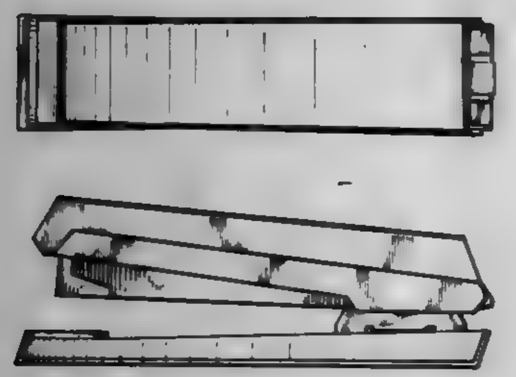
U.S. Cl. D8—49



241,502
DESK STAPLER

Albrecht Goertz, Nassau, Bahamas, assignor to Acco International Inc., Chicago, Ill.
Filed Nov. 22, 1974, Ser. No. 526,326
Term of patent 14 years
Int. Cl. D19—*02*

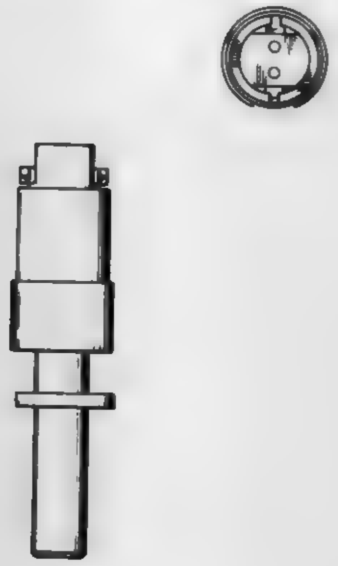
U.S. Cl. D8—50



241,503
INJECTOR SLEEVE REMOVING TOOL

Robert E. Parker and Paul E. Parker, both of 2047 Angelcrest Drive, Hacienda Heights, Calif. 91745
Filed May 23, 1975, Ser. No. 580,314
Term of patent 3½ years
Int. Cl. D8—*05*

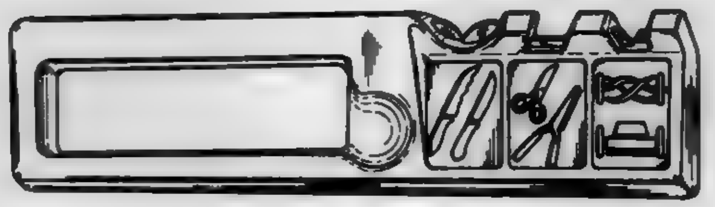
U.S. Cl. D8—51



241,504
SHARPENING IMPLEMENT

Kurt Krusche, Frankfurt am Main, and Hubert Zimmermann, Seeheim, Germany, assignors to Allstar Verbrauchsguter GmbH & Co. KG, Frankfurt am Main, Germany
Filed Oct. 30, 1975, Ser. No. 627,382
Term of patent 14 years
Int. Cl. D8—*05*

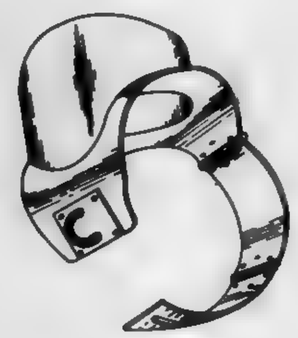
U.S. Cl. D8—93



241,505
GUARD FOR AN AUTOMOBILE COLUMN LOCK

Billy G. Henry, 1723 W. 60th St.,
Los Angeles, Calif. 90047
Filed June 19, 1975, Ser. No. 588,615
Term of patent 14 years
Int. Cl. D8—*07*

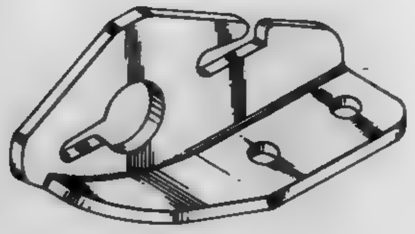
U.S. Cl. D8—113



241,506
CHAIN AND HOOK LOCK

Peter J. Condos, 626 Jamestown Road,
Burbank, Calif. 91504
Filed Nov. 7, 1975, Ser. No. 629,922
Term of patent 14 years
Int. Cl. D8—*07*

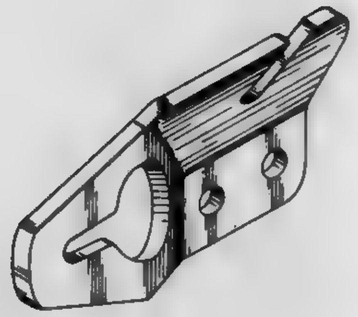
U.S. Cl. D8—137



241,507
CHAIN AND HOOK LOCK

Peter J. Condos, 626 Jamestown Road,
Burbank, Calif. 91504
Filed Nov. 7, 1975, Ser. No. 629,923
Term of patent 14 years
Int. Cl. D8—*07*

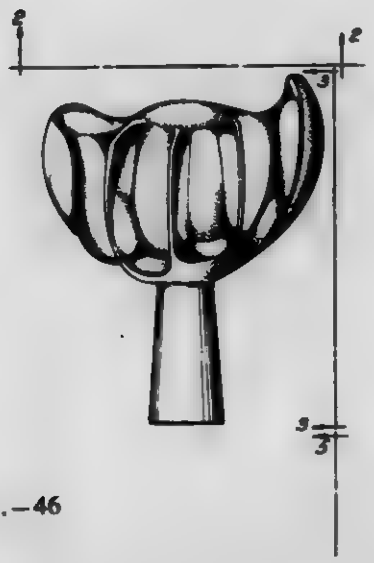
U.S. Cl. D8—137



241,508
CONTOURED HANDLE

Donald L. Agate, 4531 Parkway Drive,
Hobe Heights, Fla. 33455
Filed Dec. 20, 1974, Ser. No. 535,121
Term of patent 14 years
Int. Cl. D8—*01*

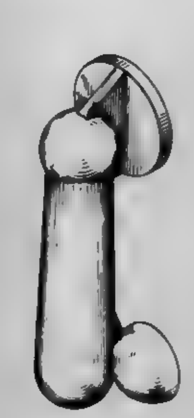
U.S. Cl. D8—147



241,509
DOOR KNOCKER OR SIMILAR ARTICLE

Douglas Hinsdale Worrall, Jr., 121 W. Chestnut Hill Ave.,
Philadelphia, Pa. 19118
Filed Aug. 18, 1975, Ser. No. 605,273
Term of patent 14 years
Int. Cl. D8—*09*

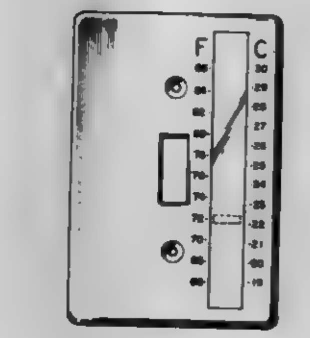
U.S. Cl. D8—177



241,510
COMBINED SWITCH PLATE AND THERMOMETER

Donald M. Fisher, R.F.D. 1, Stilesville, Ind. 46180
Filed Apr. 2, 1976, Ser. No. 673,203
Term of patent 14 years
Int. Cl. D8—*09*

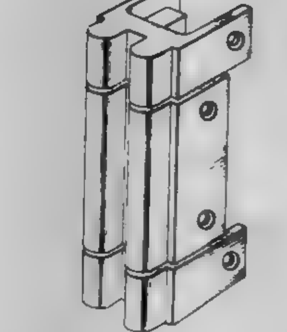
U.S. Cl. D8—181



241,511
MODULAR HINGE

M. Vincent Sanderford, 130 Pearson Drive, and Philip J. Davis, Rte. 3, P.O. Box 279, both of Morganton, N.C. 26865
Original design application Sept. 14, 1974, Ser. No. 392,202, now Patent No. 236,797. Divided and this application Jan. 3, 1975, Ser. No. 538,312
Term of patent 14 years
Int. Cl. D8—*09*

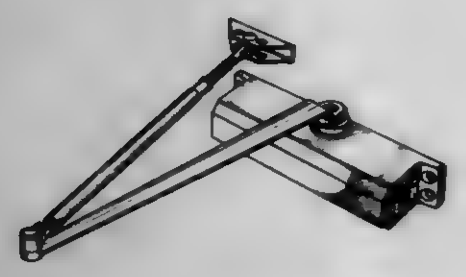
U.S. Cl. D8—189



241,512

DOOR CLOSER

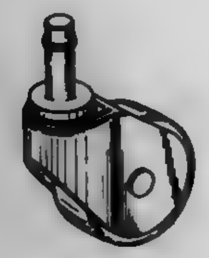
Etsuo Hiraishi, Hiroshima, Japan, assignor to Ryobi Ltd., Fuchu-shi, Hiroshima-ken, Japan
Filed Mar. 4, 1975, Ser. No. 555,311
Claims priority, application Japan Sept. 6, 1974
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—203



241,513

CASTER

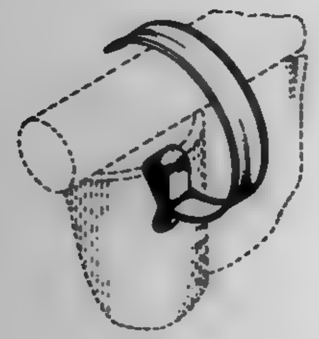
Frank J. Fontana, Stratford, Conn., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed Jan. 16, 1975, Ser. No. 541,641
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—226



241,514

DECORATOR CLIP

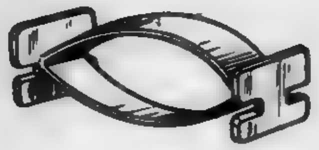
Orville T. Stall, Newport Beach, Calif.
(13545 Excelsior, Norwalk, Calif. 90650)
Filed Nov. 10, 1975, Ser. No. 630,691
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—248



241,515

SPRING FOR BI-FOLD DOORS AND THE LIKE

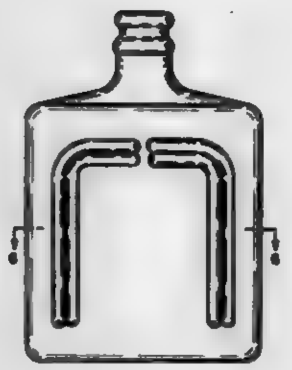
Kenneth E. Hewson, 626 Colony Drive, Troy, Mich. 48084
Filed July 18, 1973, Ser. No. 380,291
Term of patent 14 years
Int. Cl. D8—*08, 09*
U.S. Cl. D8—259



241,516

PLASTIC CONTAINER FOR LIQUIDS

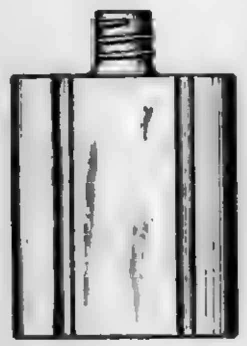
Robert M. Harris, Jr., Reseda, Calif., assignor to Foremost-McKesson, Inc., San Francisco, Calif.
Filed Apr. 14, 1975, Ser. No. 567,513
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40



241,517

BOTTLE

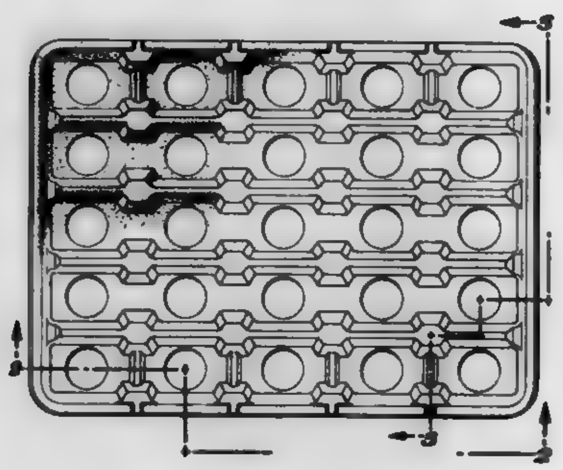
Victor Koenigsberg, Franklin Square, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Mar. 25, 1975, Ser. No. 561,812
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—167



241,518

PACKAGING TRAY FOR PORTION CUPS

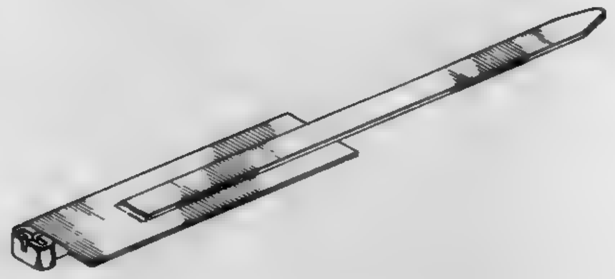
Gilbert R. Chadbourne, Oakland, Maine, assignor to Keyes Fibre Company
Filed Sept. 16, 1974, Ser. No. 506,276
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—242



241,519

CABLE SECURING STRAP

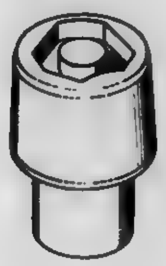
Lyle H. Mathews, 917 N. College Drive, Santa Maria, Calif. 93454
Filed June 23, 1975, Ser. No. 589,615
Term of patent 14 years
Int. Cl. D9—*06*
U.S. Cl. D9—252



241,520

VEHICLE WHEEL LOCKING NUT

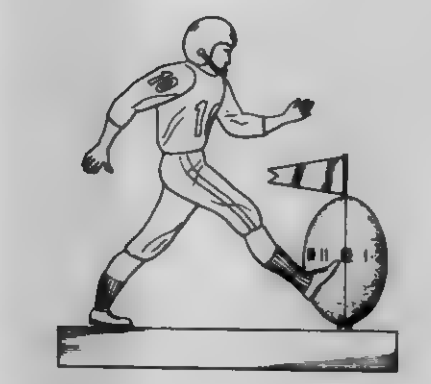
Yoshinobu Fujita and Yasuji Fukuyama, Los Angeles, Calif., assignors to Fujita Industrial Co., Ltd., Santa Monica, Calif.
Filed Sept. 16, 1974, Ser. No. 506,284
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—273



241,521

CLOCK OR SIMILAR ARTICLE

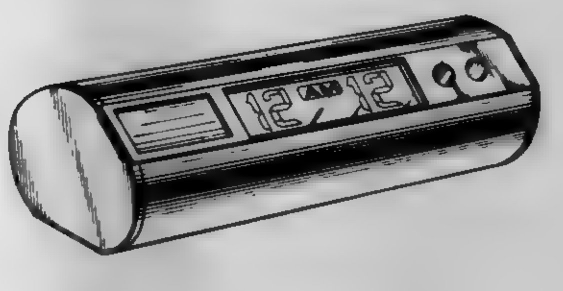
James O. O'Brien, 2101 Hawk Lane, Rolling Meadows, Ill. 60008
Filed Mar. 3, 1975, Ser. No. 554,647
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—8



241,522

TABLE CLOCK

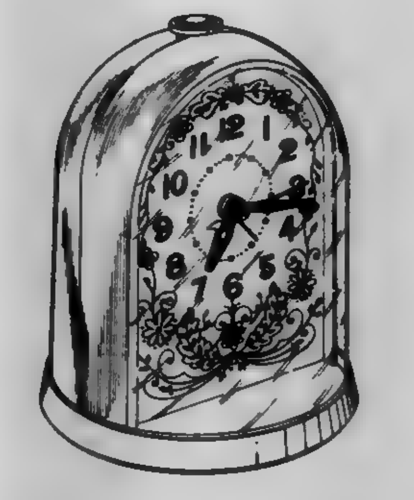
Haruhiko Tateishi, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 14, 1974, Ser. No. 523,875
Claims priority, application Japan Sept. 9, 1974
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



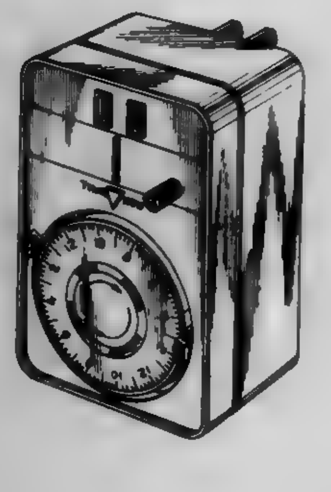
241,523

CLOCK OR SIMILAR ARTICLE

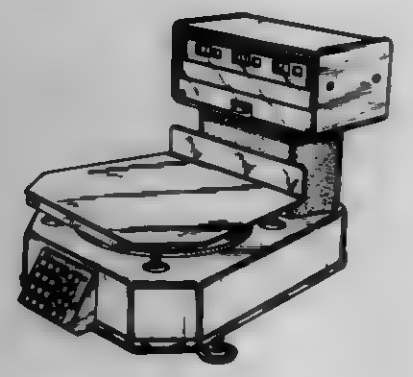
Arthur M. Felske, Westport, Conn., assignor to General Electric Company
Filed May 7, 1975, Ser. No. 575,384
Term of patent 7 years
Int. Cl. D10—*01*
U.S. Cl. D10—23



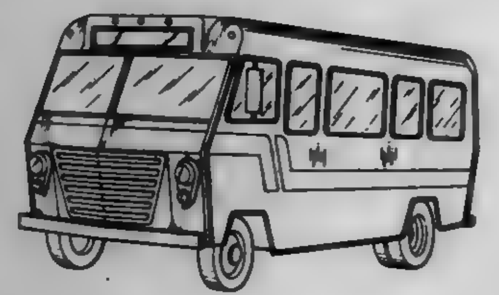
241,524
TIMER OR SIMILAR ARTICLE
Olle E. Haggstrom, Trumbull, Conn., assignor to General Electric Company
Filed Nov. 13, 1974, Ser. No. 523,234
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D10—40



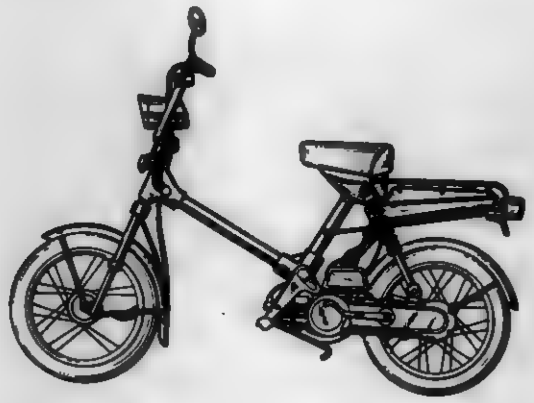
241,525
DIGITAL SCALE
Edward C. Karp, Belvidere, Ill., assignor to Sanitary Scale Company, Belvidere, Ill.
Filed June 2, 1975, Ser. No. 583,057
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—91



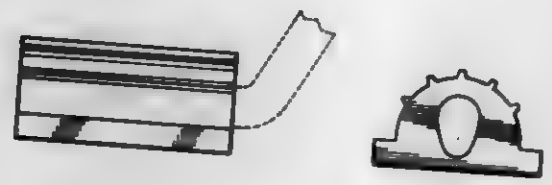
241,526
BUS
Ronald E. Haugen, Clayton David Partin, Jerry Clarence Brickman, and Joseph Frederick Vinci, Forest City, Iowa, assignors to Winnebago Industries, Inc., Forest City, Iowa
Filed Nov. 15, 1974, Ser. No. 524,128
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—84



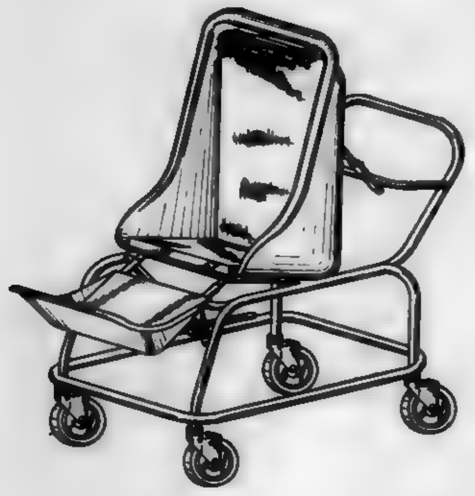
241,527
MOTORCYCLE
Yoshikazu Kojo, Kawagoe, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 15, 1975, Ser. No. 641,084
Claims priority, application Japan June 17, 1975
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110



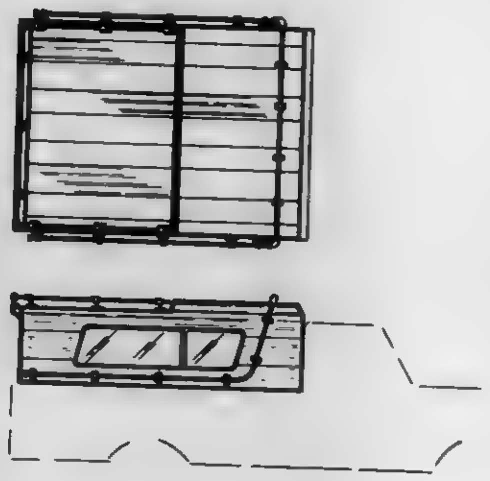
241,528
KICKSTAND SUPPORT
Joseph J. Massa and James P. Massa, both of 2728 Martin Way, White Bear Lake, Minn. 55110, and Paul W. Werneke, 425 N. Smith Ave., St. Paul, Minn. 55102
Filed May 2, 1975, Ser. No. 573,825
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—120



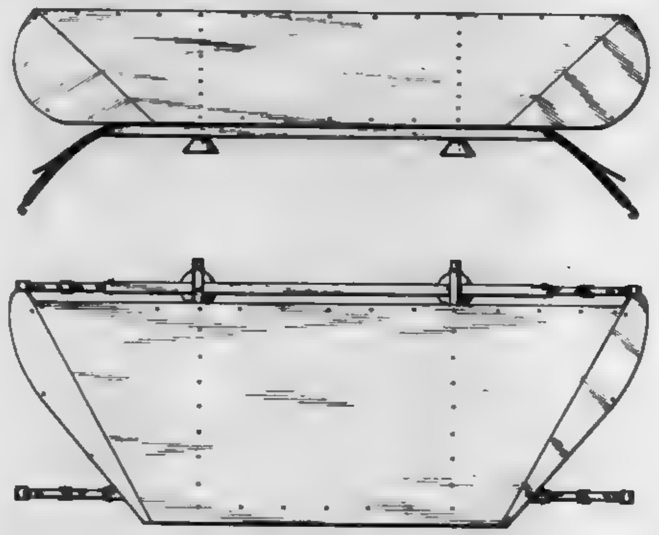
241,529
CHILD'S FLEXION WHEELCHAIR
Thomas R. Blue, 17802 Norwood Park, Tustin, Calif. 92680
Filed Sept. 2, 1975, Ser. No. 609,311
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—131



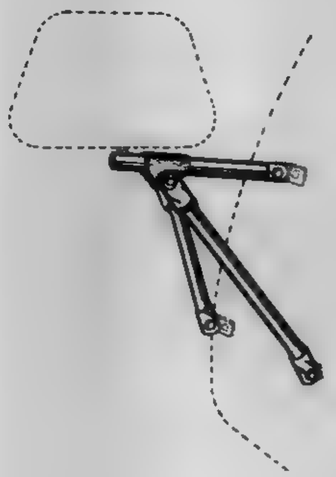
241,530
COVER FOR A PICKUP TRUCK BED
Frank N. Hayes, N. 3rd St., Womelsdorf, Pa. 19567
Filed Sept. 5, 1974, Ser. No. 503,621
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



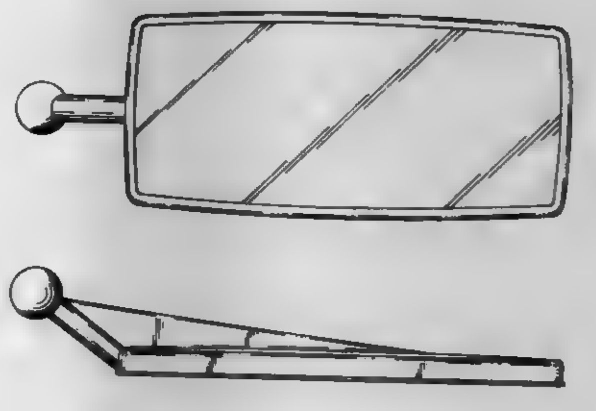
241,531
VEHICLE AIR DEFLECTOR
David C. Mueller, Aurora, Colo., assignor to Donna M. Mueller, Aurora, Calif.
Filed Feb. 26, 1975, Ser. No. 590,612
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181



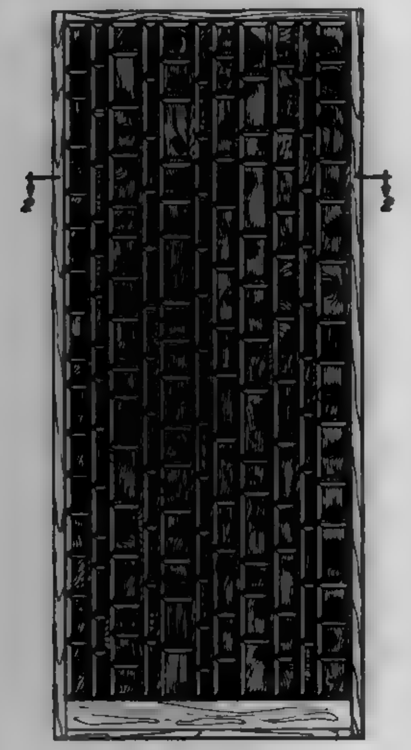
241,532
VEHICLE DOOR MIRROR MOUNTING BRACKET
Joseph R. Bourassa, Huntington, and Manuel Lopez, Trumbull, Conn., assignors to Parker-Hannifin Corporation, Shelton, Conn.
Filed Sept. 13, 1974, Ser. No. 505,737
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187



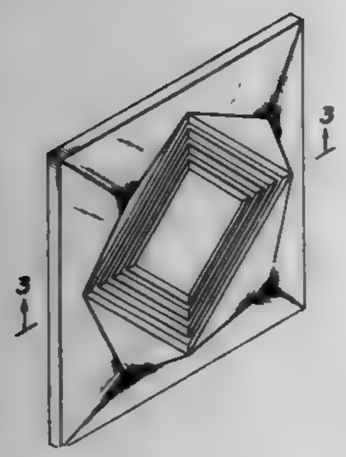
241,533
AUTOMOBILE SIDE VIEW MIRROR
Charles W. Guimond, 1826 Norwood Drive, Grosse Pointe Woods, Mich. 48236
Filed Mar. 19, 1975, Ser. No. 559,904
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187



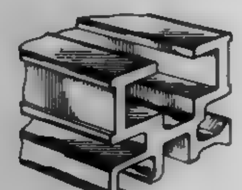
241,534
DECORATION PANEL OR THE LIKE
Robert T. Bogan, P.O. Box 26208,
Albuquerque, N. Mex. 87125
Filed Feb. 1, 1974, Ser. No. 438,547
Term of patent 14 years
Int. Cl. D25—*01, 02*
U.S. Cl. D25—85



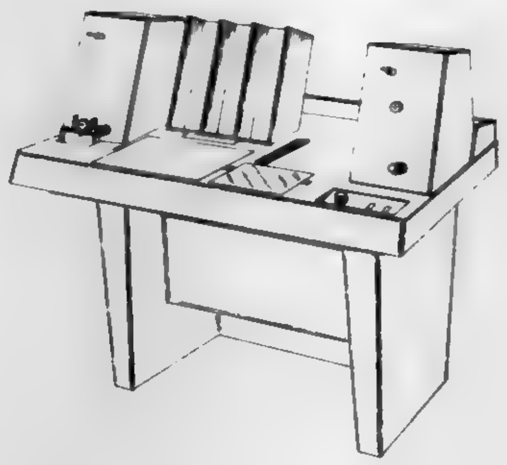
241,535
DECORATIVE PLASTIC PANEL FOR DOORS AND THE LIKE
Warren G. Stichtenoth, 186 Yorkwood Lane,
Cincinnati, Ohio 45238
Filed Dec. 16, 1974, Ser. No. 533,412
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—82



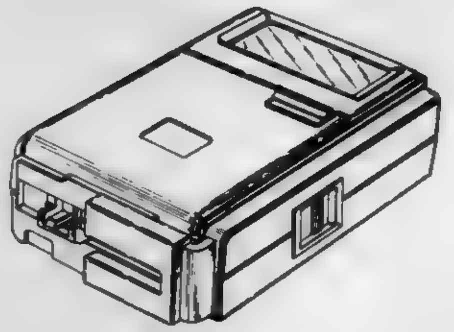
241,536
EXTRUSION FOR MOUNTING MODULAR UNITS
Irving W. Shell, 442 W. Wellington, Chicago, Ill. 60657
Filed Oct. 10, 1974, Ser. No. 513,899
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



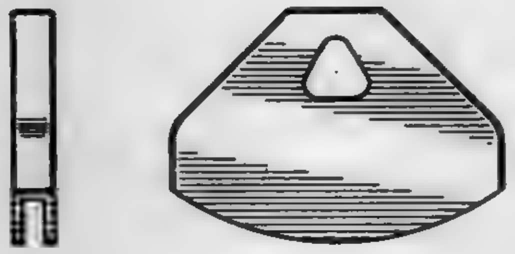
241,537
FILM LOADING CONSOLE OR THE LIKE
Richard J. Olson, Pittsford, N.Y., assignor to Eastman
Kodak Company, Rochester, N.Y.
Filed Apr. 10, 1975, Ser. No. 567,041
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D16—34



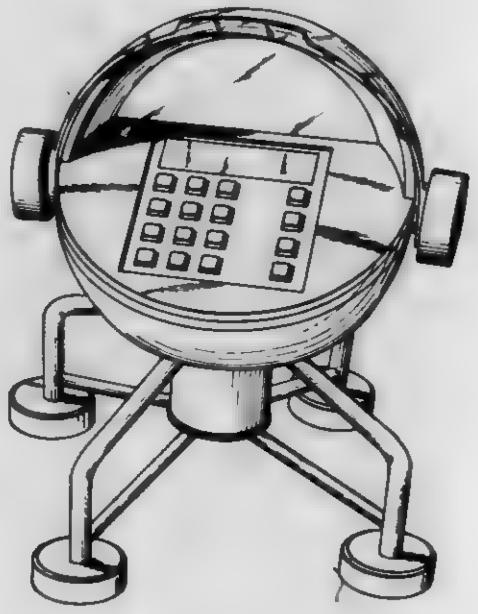
241,538
ELECTRONIC FLASH UNIT
Samuel F. Swayze, Rochester, N.Y., assignor to Eastman
Kodak Company, Rochester, N.Y.
Filed Apr. 8, 1975, Ser. No. 566,637
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42



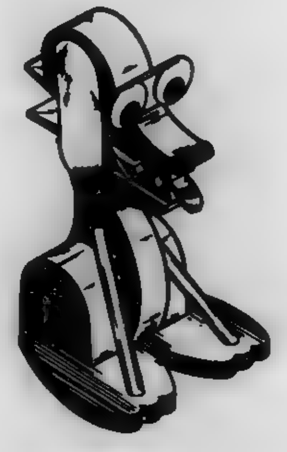
241,539
KEY LABEL
Yvonne J. Iverson, Bloomington, Minn.
(8801 Chowen Ave. S., Minneapolis, Minn. 55431)
Filed Mar. 28, 1975, Ser. No. 562,825
Term of patent 14 years
Int. Cl. D19—*08*
U.S. Cl. D19—13



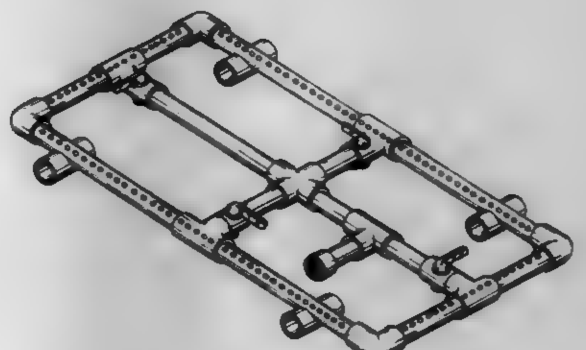
241,540
CONSOLE FOR TEACHING ARITHMETICS
Donald Charles Stephan, Poway, and George William Cone, La Jolla, Calif., assignors to Eric F. Burtis, Redwood City, Calif.
Filed Oct. 25, 1974, Ser. No. 517,987
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—62



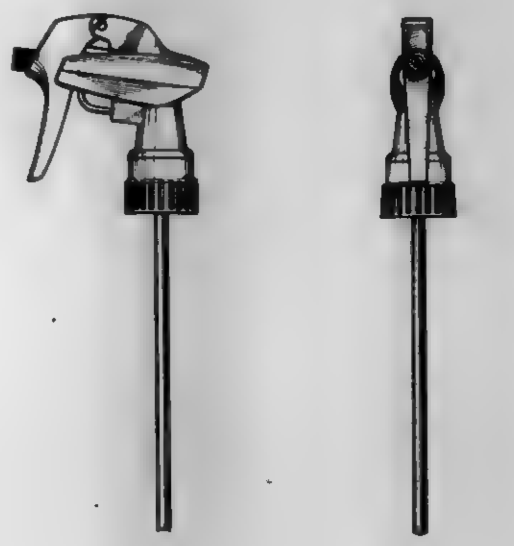
241,541
PAPER HOLDER
Ellis D. Kohl, 3923 Zenaho St., San Diego, Calif. 92122
Filed Oct. 21, 1974, Ser. No. 516,271
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—86



241,542
DIRECTIONAL SPRINKLER
Elmer O. Thurston, 150 Chenault Road,
Lexington, Ky. 40502
Filed Mar. 14, 1975, Ser. No. 558,297
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—7

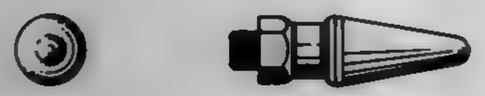


241,543
SPRAYER
Tetsuya Tada, 2–6, 3-chome, Nishinakanobu,
Shinagawa-ku, Tokyo, Japan
Filed Nov. 7, 1975, Ser. No. 629,921
Claims priority, application Japan May 8, 1975
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—17



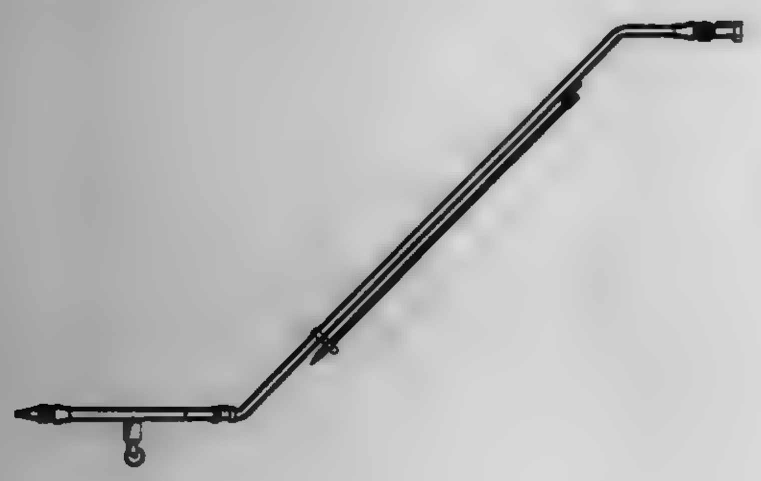
241,544
NOZZLE FOR AN AIR LINE

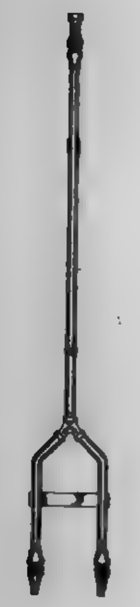
David Anthony Whitbread, Luton, England, assignor to
F. Brauer Limited, Harpenden, England
Filed May 20, 1974, Ser. No. 471,195
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34



241,545
WATER SPRAYER

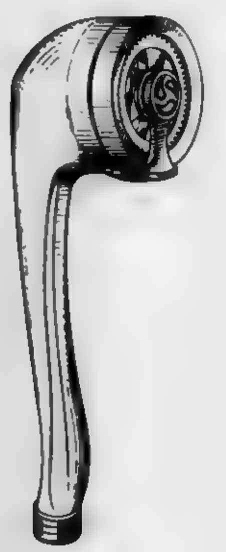
Harold Gene Smith, 7512 St. Philomena Way,
Citrus Heights, Calif. 95610
Filed Jan. 19, 1976, Ser. No. 650,129
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35





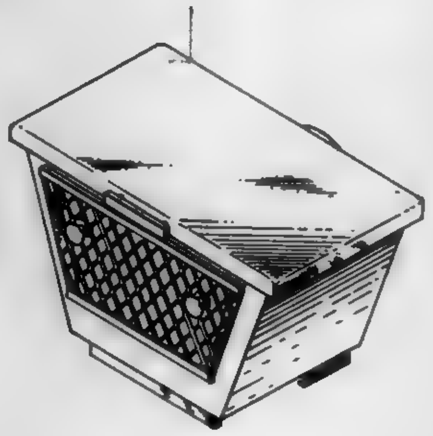
241,546
HAND HELD SHOWERHEAD

Leandro P. Rizzuto, Brooklyn, N.Y., assignor to
Conair Corporation
Filed Mar. 22, 1976, Ser. No. 669,194
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



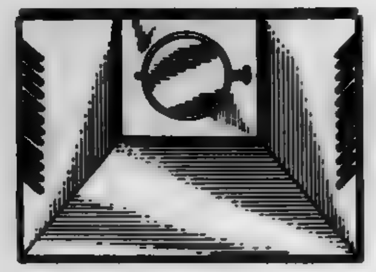
241,547
COMBINED FIREPLACE AND HEATING STOVE

Edwin S. F. Francis, 3930 Hobbs St.,
Victoria, British Columbia, Canada
Filed Aug. 7, 1975, Ser. No. 602,746
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



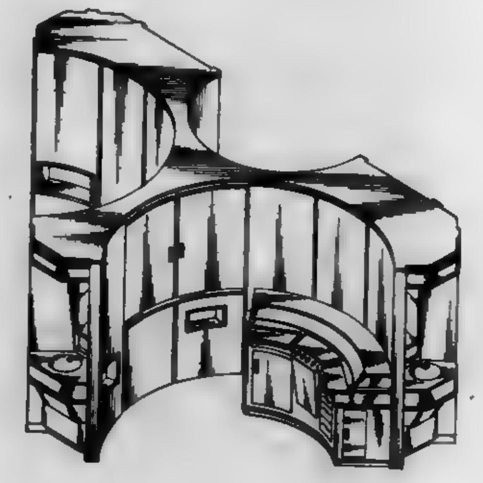
241,548
AIR-CIRCULATING FIREPLACE

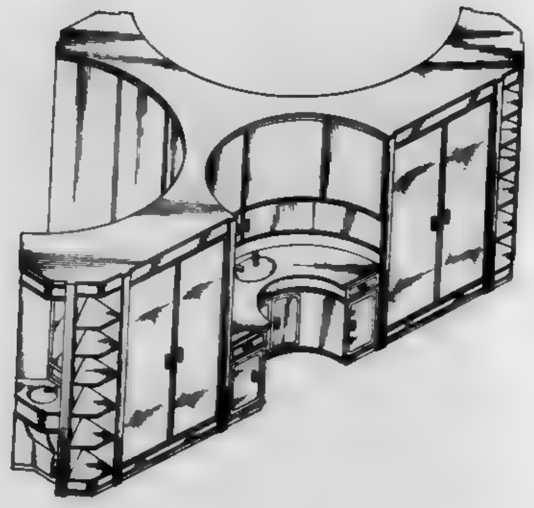
Lawrence M. Rheingold, Baldwin, and Alfred P. Rheingold, Freeport, N.Y., assignors to Templet Industries, Inc., Plainview, Long Island, N.Y.
Filed Sept. 23, 1975, Ser. No. 615,995
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



241,549
MODULAR MEDICAL OR DENTAL OPERATORY UNIT

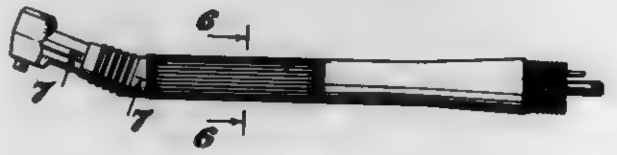
James E. Rota, 2479 Pesquera Drive,
Los Angeles, Calif. 90049
Filed Nov. 11, 1974, Ser. No. 522,427
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—1 B





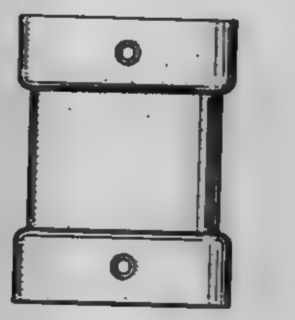
241,550
DENTAL DRILL HANDPIECE

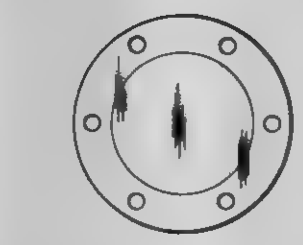
Marius J. Morin, 4610 Sepulveda Blvd.,
Torrance, Calif. 90505
Filed Oct. 29, 1975, Ser. No. 626,748
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 D



241,551
SINGLE POLE-SINGLE THROW SWITCH STRUCTURE

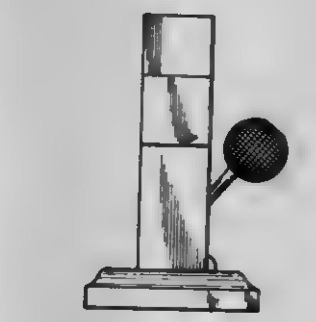
Ted N. Tilman, 3538 Telegraph Drive,
San Jose, Calif. 95132
Filed May 9, 1974, Ser. No. 468,442
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R





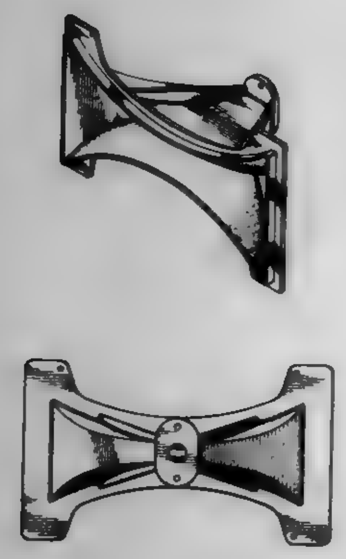
241,552
COMBINED ECCLESIASTICAL MICROPHONE AND SUPPORT THEREFOR

Casimir L. Timm, La Porte, Ind., assignor of a fractional part interest to Lawrence Peska Associates, Inc., New York, N.Y.
Filed Mar. 10, 1975, Ser. No. 556,703
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D26—14 J



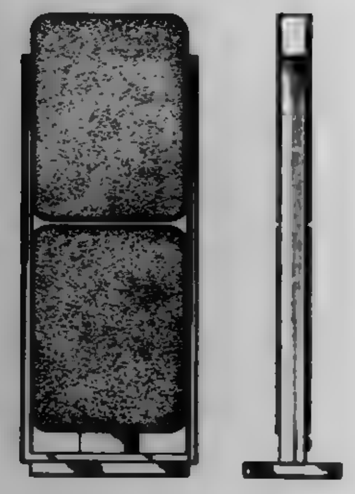
241,553
SPEAKER HORN

Jonas A. Renkus, 2327 Benton Way,
Santa Ana, Calif. 92706
Filed July 14, 1975, Ser. No. 595,542
(Filed under Rule 47(b) and 35 U.S.C. 118)
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



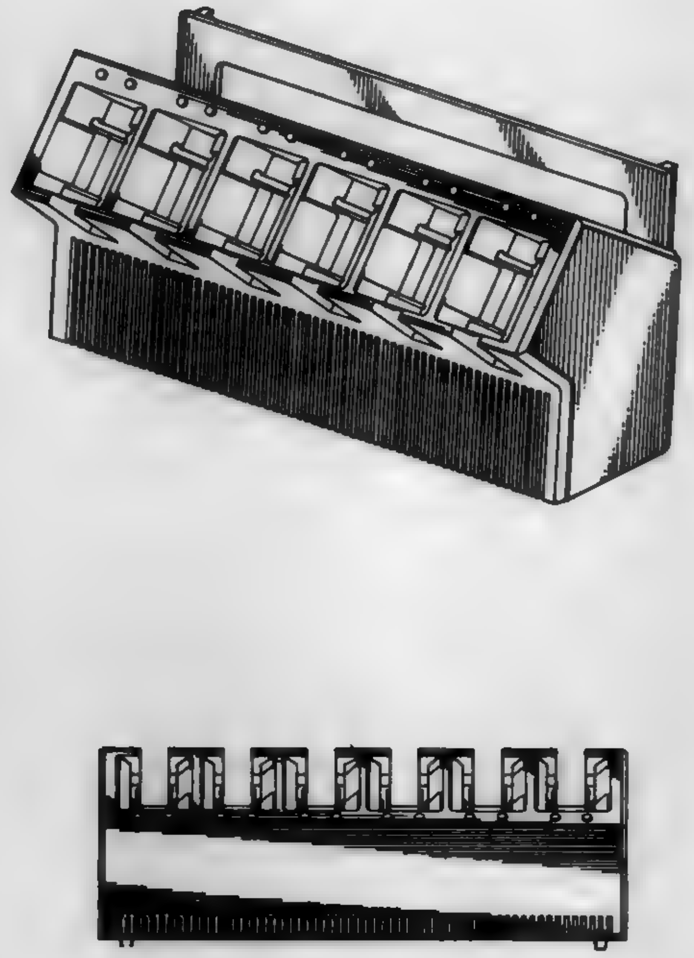
241,554
SPEAKER ENCLOSURE

Jose Juan Bertagni, Newport Beach, and Haskell M. Metz, Laguna Beach, Calif., assignors to Bertagni Electroacoustic Systems Inc., Costa Mesa, Calif.
Filed Aug. 13, 1975, Ser. No. 604,449
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



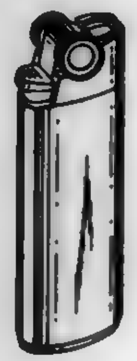
241,555
MULTIPLE BATTERY CHARGER OR SIMILAR ARTICLE

Arnold S. Goldman and Richard J. Toth, Fort Lauderdale, Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 13, 1975, Ser. No. 540,741
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15 B



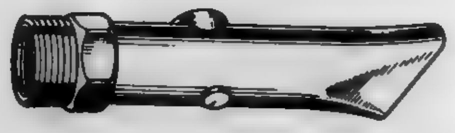
241,556
CIGARETTE LIGHTER

Yoshihiko Matsuo, Yokohama, Yoshimi Kurata, Tokyo, and Shyuhei Wakita, Fujisawashi, Japan, assignors to Kanazawa Industries Co., Ltd., Tokyo, Japan
Filed Apr. 8, 1975, Ser. No. 566,671
Claims priority, application Japan Dec. 12, 1974
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



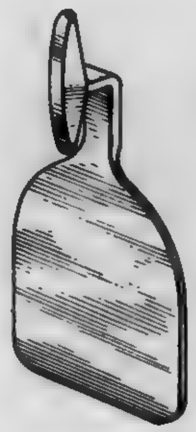
241,557
ANIMAL WATERING VALVE

Jarl Rune Olde, 4 Laduvagen, 75247 Uppsala, Sweden
Filed May 27, 1975, Ser. No. 581,116
Claims priority, application Sweden Nov. 25, 1974
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



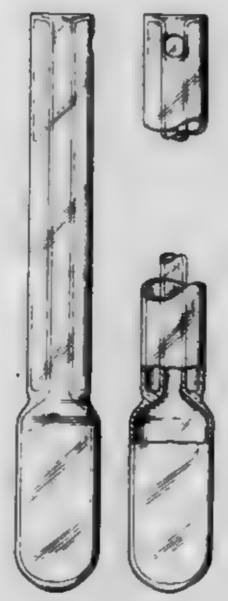
241,558
ANIMAL IDENTIFICATION TAG

Jackson T. Schwindt and Maurice A. Whitney, Cody, Wyo., assignors to Y-Tex Corporation, Cody, Wyo.
Filed Apr. 25, 1975, Ser. No. 571,751
Term of patent 14 years
Int. Cl. D30—*08*
U.S. Cl. D30—43



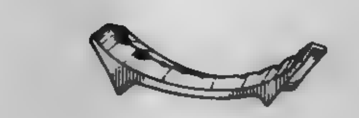
241,559
PROFESSIONAL EBULLIOSCOPE

Robert Rakowski, 3411 Rosalie Ave.,
Baltimore, Md. 21234
Filed Apr. 9, 1975, Ser. No. 566,409
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D32—1 R



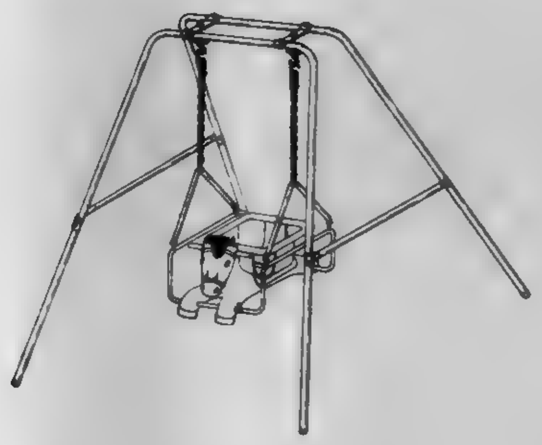
241,560
GAME RACKET YOKE

William E. Portz, North Madison, and Pete Cosmos, Sr., Ashtabula, Ohio, assignors to True Temper Corporation, Cleveland, Ohio
Filed Nov. 4, 1974, Ser. No. 520,240
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 ST



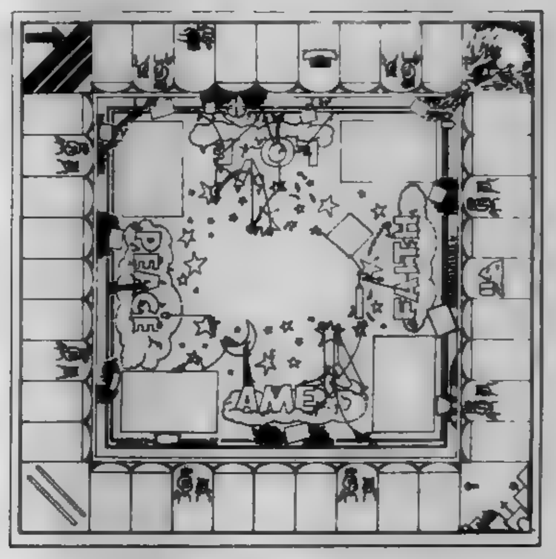
241,561
CHILD'S SWING AND SUPPORT FRAME ASSEMBLY OR SIMILAR ARTICLES

William R. Tomalinas, Jr., Wapwallopen, Pa., assignor to Roth American, Inc., Wilkes-Barre, Pa.
Filed Mar. 12, 1975, Ser. No. 557,518
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 M

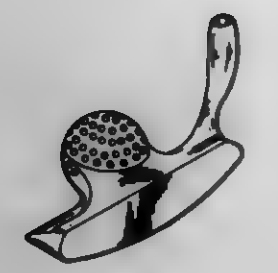


241,562
GAME BOARD

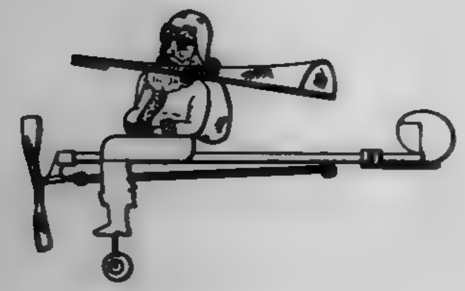
Jack Skoler, 51—15 Van Kleeck St.,
Elmhurst, N.Y. 11373
Filed Apr. 29, 1975, Ser. No. 572,927
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



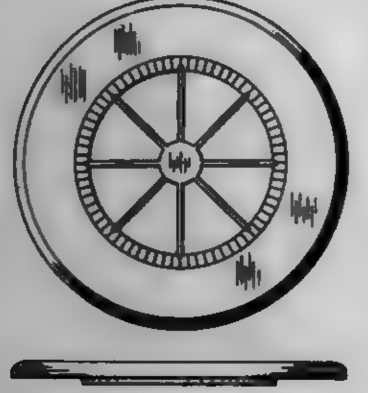
241,563
GOLF CLUB HEAD
Jimmy C. McCord, Rte. 4, Box 20,
Roanoke, Ala. 36274
Filed Sept. 5, 1975, Ser. No. 610,551
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



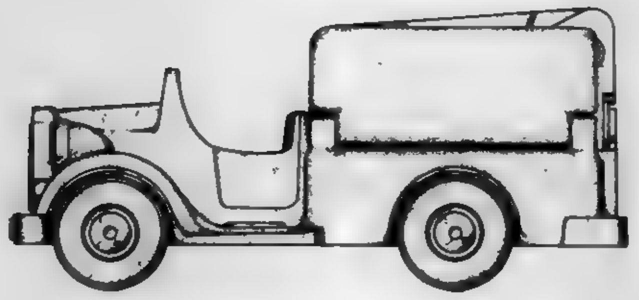
241,564
TOY AIRPLANE
Robert G. Kabchef, 217 Donna Lyn Drive
Smyrna, Ga. 30080
Filed Sept. 26, 1974, Ser. No. 509,437
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HH



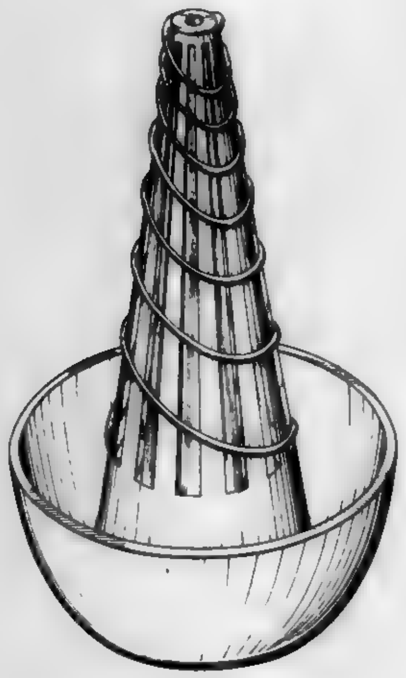
241,565
AERIAL TOY
Lester V. Molenaar, Box 777, W. Highway 40,
Willmar, Minn. 56201
Filed Apr. 7, 1975, Ser. No. 565,526
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HS



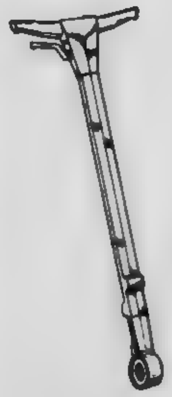
241,566
TOY TRUCK
George T. Roberts, Mason, and Scott C. Dennison, Cincinnati, Ohio, assignors to General Mills Fun Group, Inc., Minneapolis, Minn.
Filed Apr. 14, 1975, Ser. No. 567,911
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



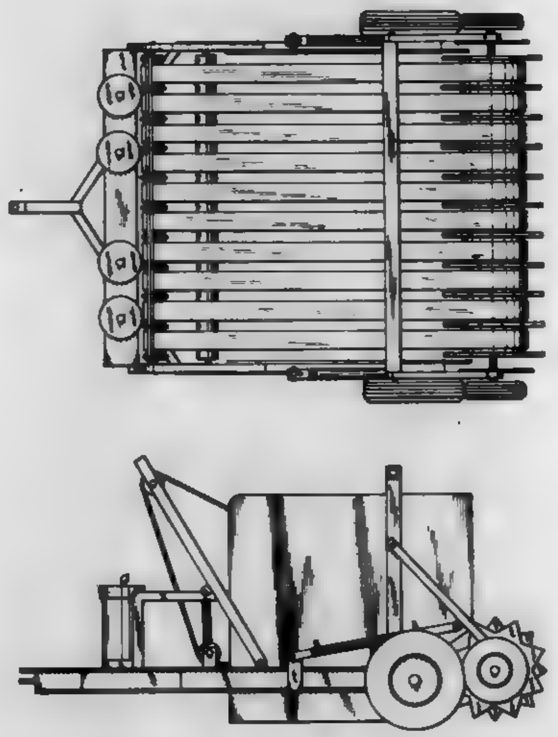
241,567
VINE PLANTER
Will Clarke England, 7310 Eastcrest,
Austin, Tex. 78752
Filed Apr. 30, 1975, Ser. No. 572,972
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—152



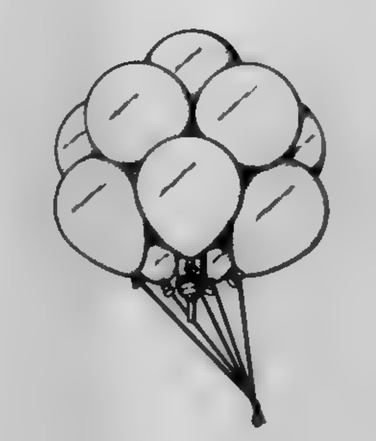
241,568
HANDLE FOR A FLOOR TREATING MACHINE OR THE LIKE
Arthur Herzog, Wallisellen, Zurich, Switzerland, assignor to Diethelm & Co. AG, Zurich, Switzerland
Filed May 31, 1974, Ser. No. 475,031
Claims priority, application Switzerland Dec. 10, 1973
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—65



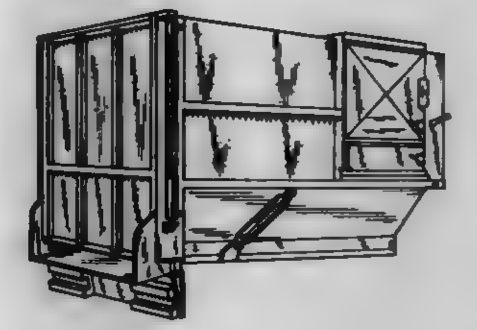
241,569
MACHINE FOR ROLLING ROUND BALES OF HAY
Joseph B. Kucera, Traer, Iowa, assignor of a fractional part interest to Rudolph L. Lowell, Des Moines, Iowa
Filed Oct. 28, 1975, Ser. No. 626,248
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—27



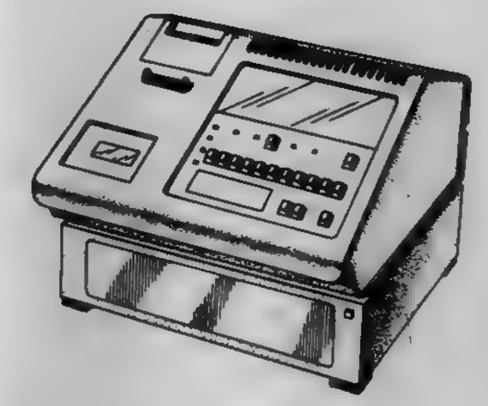
241,570
DECORATIVE LAMP
John H. Holtvoigt, Tipp City, Ohio, assignor to The Dolly Toy Company, Tipp City, Ohio
Continuation-in-part of abandoned design application Ser. No. 173,740, Aug. 20, 1971. This application Feb. 8, 1973, Ser. No. 330,591
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 C



241,571
REFUSE CONTAINER
Stanley W. Worthington, Waterloo, Iowa, assignor to Wayne Engineering Corporation, Cedar Falls, Iowa
Filed Dec. 16, 1974, Ser. No. 532,940
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D12—15

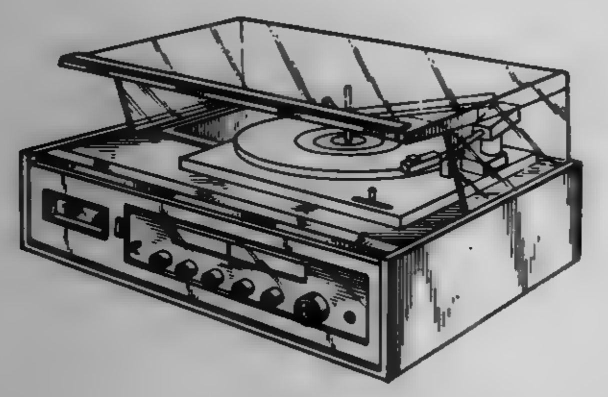


241,572
CASH REGISTER
Takaaki Dobashi and Toshio Kurokawa, Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan
Filed Dec. 2, 1974, Ser. No. 528,617
Claims priority, application Japan Aug. 7, 1974
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D52—4 A



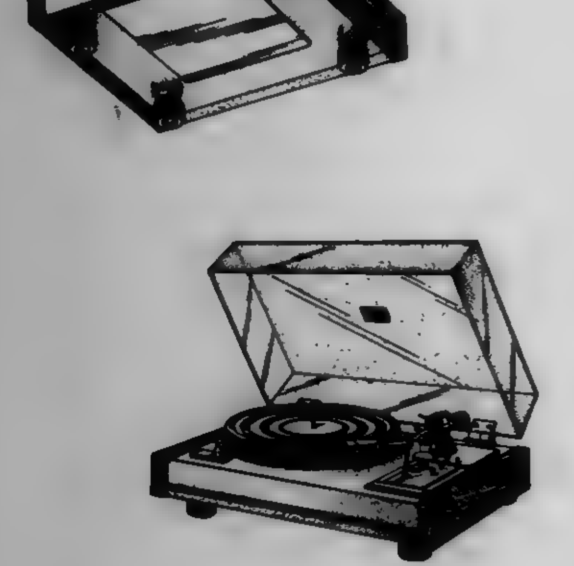
241,573
COMBINED PHONOGRAPH AND TUNER

Melvin H. Boldt, Glenview, and David P. Chuboff, North Barrington, Ill., assignors to Zenith Radio Corporation
Filed May 23, 1974, Ser. No. 472,748
Term of patent 7 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R



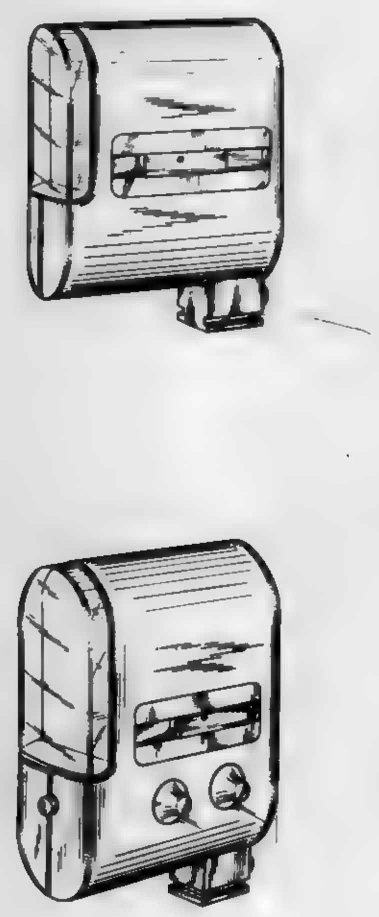
241,574
RECORD PLAYER

Hitoshi Mukai and Takashi Kashidaira, Tokyo, Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan
Filed Jan. 3, 1975, Ser. No. 538,481
Claims priority, application Japan July 8, 1974
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R



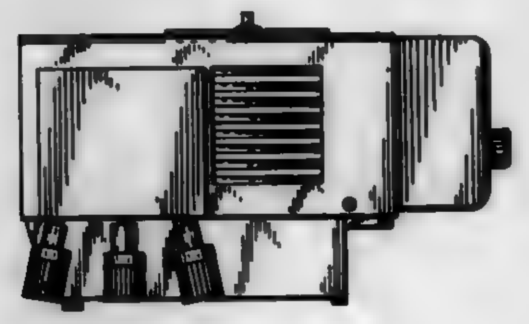
241,575
FLASH UNIT

Hans-Ulrich Schade, Pfuhl, Germany, assignor to Foto-Quelle GmbH, Nurnberg, Germany
Filed Sept. 16, 1974, Ser. No. 506,073
Claims priority, application Germany June 14, 1974
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42



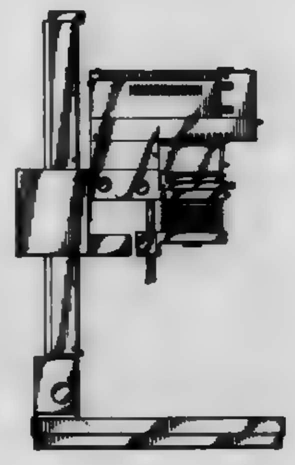
241,576
COLOR MIXING HEAD FOR PHOTOGRAPHIC ENLARGER

Mario Gandini, Brixen, near Bozen, Italy, assignor to Durst AG. Fabrik Fototechnischer Apparate Bozen
Filed Dec. 10, 1974, Ser. No. 531,231
Claims priority, application Italy June 12, 1974
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—32



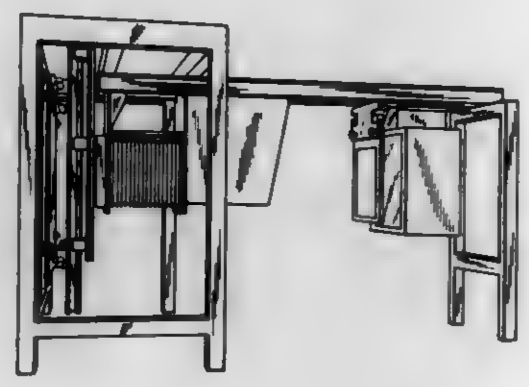
241,577
PHOTOGRAPHIC ENLARGER

Wilmut Pramstraller, Brixen, Italy, assignor to Durst AG. Fabrik Fototechnischer Apparate Bozen
Filed Mar. 12, 1975, Ser. No. 557,820
Claims priority, application Italy Sept. 13, 1974
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—25



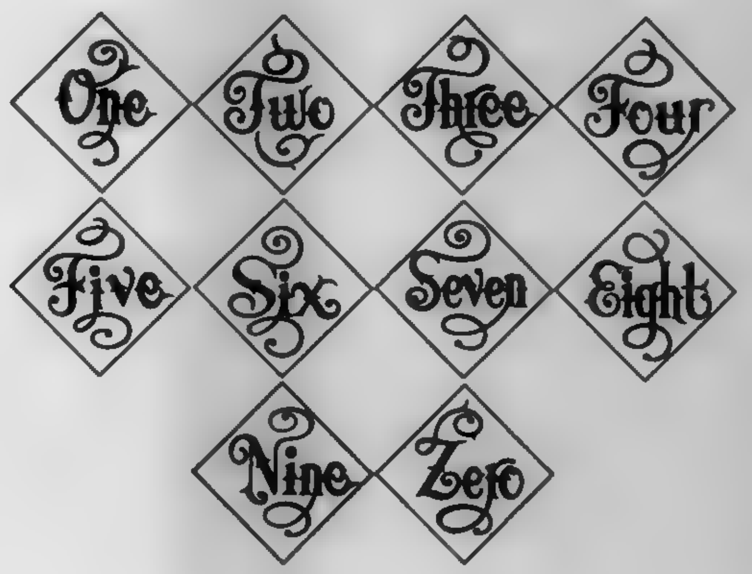
241,578
PHOTOGRAPHIC CAMERA

Joseph H. Wally, Jr., Shawnee Mission, Kans., Robert L. Wall, Raytown, Mo., and Samuel E. Wilson, Mission, Kans., assignors to Filminiature Systems, Inc., Kansas City, Mo.
Filed May 9, 1975, Ser. No. 576,086
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—5



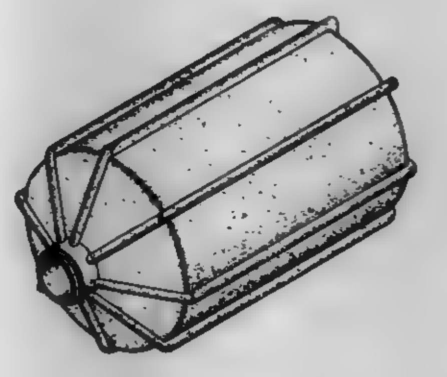
241,579
NUMERICAL LOGOTYPE FONT

Ray J. Harris, 7627 Colehaven, Boise, Idaho 83704
Filed Aug. 8, 1974, Ser. No. 492,389
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12 B

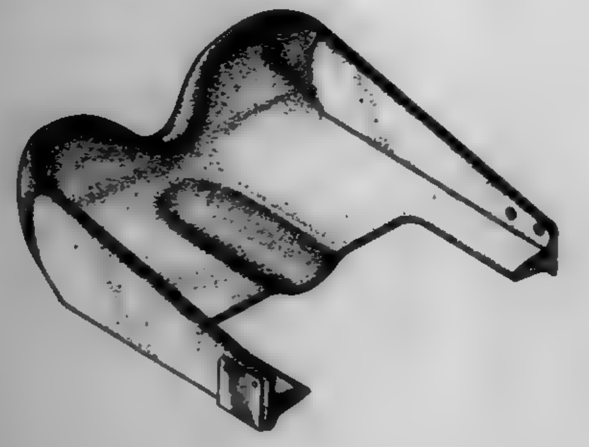


241,580
ELASTIC DEFLATABLE AIR BAG FOR INHALATION SYSTEM OR THE LIKE

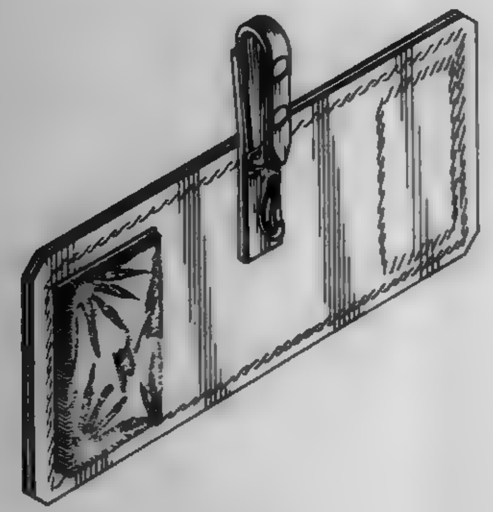
Robert A. Huddy, 1044 Balboa Drive, Arcadia, Calif. 91006
Filed June 2, 1975, Ser. No. 582,784
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D83—1 G



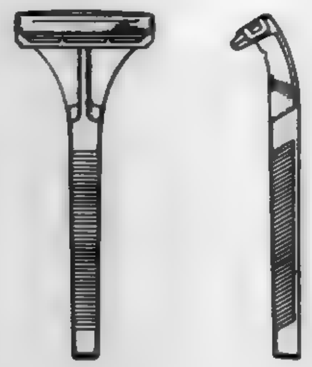
241,581
SHAMPOO TRAY
Frank E. Gonzales, 7842 Santa Monica Ave.,
Stanton, Calif. 90680
Filed July 26, 1974, Ser. No. 492,052
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



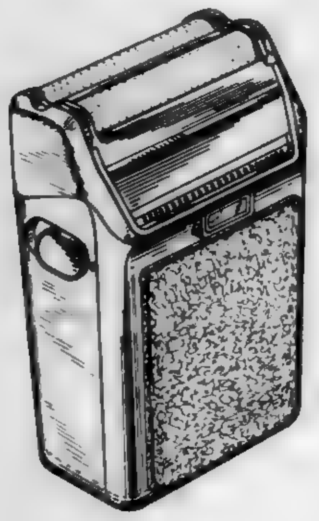
241,582
KEY CASE
Lynn Stark, 21614 85th St. SW.,
Edmonds, Wash. 98020
Filed Nov. 27, 1974, Ser. No. 527,563
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—8



241,583
DISPOSABLE RAZOR
Tamoru Asano, Gifu, Japan, assignor to Sanwa
Cutlery Co., Ltd., Tokyo, Japan
Filed Oct. 25, 1974, Ser. No. 517,930
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



241,584
ELECTRIC SHAVER
Hermann R. Schaefer, Bridgeport, Conn., assignor to
Sperry Rand Corporation, Bridgeport, Conn.
Filed Feb. 24, 1975, Ser. No. 552,634
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



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TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF SEPTEMBER, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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- Abolins, Visvaldis; Cooper, Glenn D.; and Lee, Gim F., Jr., to General Electric Company. Blends of a polyphenylene ether resin, alkenyl aromatic resins modified with EPDM rubber and graft polymerized high rubber content polymers. 3,981,841, Cl. 260-42.180.
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  - Brambilla, Giovanni; Caporali, Giacomo; and Zambianchi, Mario, 3,981,960.
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  - Takashima, Masaru, 3,981,721.
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  - Reed, Charles Paul, 3,981,116.
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- Alsina, D. Luis Gutierrez, to Gutix S.A. Preservation of crustacea. 3,982,030, Cl. 426-269.000.
- Alsop, George Michael, to Union Carbide Corporation. Method and apparatus for testing materials for levels of agents inhibitory or toxic to microorganisms. 3,981,777, Cl. 195-103.50R.
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  - Higuchi, Takeru; Hussain, Anwar A.; and Shell, John W., 3,981,303.
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  - Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,981,868.
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- AMF Incorporated: *See—*
  - Perkins, Joseph R., 3,981,590.
- Amin, Ashok Babubhai, to American Cyanamid Company. Calcium phosphate and calciumchlorophosphate compositions. 3,982,008, Cl. 426-2.000.
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  - Belcher, Ronald; Townshend, Alan; and Bogdanski, Stanley L., 3,981,585.
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- Andorf, Paul; Franz, Dietmar; Lieb, Alfred; Upper, Gerd; and Guttropf, Walter, to Carl Freudenberg, Firma. Robot finger. 3,981,528, Cl. 294-99.00R.
- Andre, Lee R., to Ford Motor Company. Shock absorber for motor vehicle. 3,981,380, Cl. 188-282.000.
- Andrews, Laurance R., to United Technologies Corporation. ECM and EDM tooling for producing holes in airfoil trailing edges. 3,981,786, Cl. 204-224.00M.
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- Anthon, Erik W., to Optical Coating Laboratory, Inc. Spatial filtering for error detection. 3,981,562, Cl. 350-162.0SF.
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- Antonets, Ivan Vasilievich; Mlynchik, Igor Kasianovich; and Panov, Alexandr Pavlovich. Read-write apparatus for use in a conveyor control. 3,982,275, Cl. 360-1.000.
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- Banks, William B., to Automation Products, Inc. Method and apparatus for measuring a physical property of a fluid material that varies nonlinearly relative to the density of the fluid. 3,981,183, Cl. 73-61.10R.
- Banner, Philip M. Tide and time calculating device. 3,982,104, Cl. 235-88.00N.
- Baratta, Francis I.: *See—*
  - Hammond, Ogden H., III; and Baratta, Francis I., 3,981,175.
- Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
  - Hartig, Wolfgang; Berges, Dietrich; and Schippers, Heinz, 3,981,131.
- Barnaby, Bernard Sydney, to General Electric Company Limited, The. Combined television/data transmission system. 3,982,064, Cl. 178-5.600.
- Barnaby, Bernard Sydney; and Scott, Donald Gordon, to General Electric Company Limited, The. Combined television/data receivers. 3,982,065, Cl. 178-5.80R.
- Barradas, George, to Venus Electric Limited. Hair dryer. 3,981,314, Cl. 132-9.000.
- Barrington, Burchus Q.; Farley, David L.; and Morrisett, O. L., to Halliburton Company. Method and apparatus for testing wells. 3,981,188, Cl. 73-155.000.
- Barry-Wehmiller Company: *See—*
  - Babunovic, Momir; and Kay, John C., 3,981,389.
- Barth, Gerald Dean; and Wagner, David Prugh, to Illinois Tool Works Inc. Apparatus for assembling a screw and compressible washer. 3,981,170, Cl. 72-88.000.
- Bartolomei, Leroy A., to Optical Coating Laboratory, Inc. Striped dichroic filter with butted stripes and dual lift-off method for making the same. 3,981,568, Cl. 350-317.000.
- Bartsch, Wolfgang: *See—*
  - Fauland, Erich; Kampe, Wolfgang; Thiel, Max; Bartsch, Wolfgang; and Schaumann, Wolfgang, 3,982,012.
- BASF Aktiengesellschaft: *See—*
  - Dehnert, Johannes, 3,981,873.
  - Linke, Wolfgang; Herrle, Karl; Schwarz, Wolfgang; and Perner, Johannes, 3,981,987.
  - Niess, Rolf, 3,981,883.
- BASF Wyandotte Corporation: *See—*
  - Cenker, Moses; Narayan, Thirumurti L.; and Kan, Peter T., 3,981,829.
  - Demou, John G.; Pizzini, Louis C.; and Patton, John T., Jr., 3,981,828.
- Bashkirtsev, Vyacheslav Nikolaevich: *See—*
  - Poverenny, Alexandr Mikhailovich; Semin, Jury Alexeevich; Chumakov, Mikhail Petrovich; Gagarina, Antonina Vasilievna; Khanina, Maria Kronidovna; Tkachenko, Evgeny Alexandrovich; and Bashkirtsev, Vyacheslav Nikolaevich, 3,981,772.
- Bathellier, Andre; and Germain, Michel, to Commissariat a l'Energie Atomique. Method of selective stripping of plutonium from organic solvents loaded with plutonium. 3,981,961, Cl. 423-9.000.
- Battiston, Giancarlo; Petrini, Guido; De Alberti, Giordano; and Covini, Romano, to Montedison S.p.A. Process for the preparation of unsaturated carboxylic acids by the catalytic oxidation in gaseous phase of the corresponding aldehydes. 3,981,912, Cl. 260-530.00N.
- Baucom, Everett Ira, to Du Pont de Nemours, E. I., and Company. Zinc recovery from acidic aqueous streams. 3,981,966, Cl. 423-104.000.
- Bauder, Carl J., to Cambridge Filter Corporation. Fluid pressure sensing apparatus. 3,981,192, Cl. 73-212.000.
- Bauer, John R.; and Forney, Joseph M., to Goodyear Tire & Rubber Company, The. Safety support for pneumatic tires. 3,981,341, Cl. 152-158.000.
- Baumann, Ernst. Shock absorber and guide rail assembly including the same. 3,981,486, Cl. 256-13.100.
- Baxmann, Fritz: *See—*
  - Frese, Albert; Baxmann, Fritz; and Dittmann, Walter, 3,981,849.
- Bayer Aktiengesellschaft: *See—*
  - Buchel, Karl Heinz; Frohberger, Paul-Ernst; Scheinpflug, Hans; and Enders, Edgar, 3,981,885.
  - Hoffmann, Hellmut; Hammann, Ingeborg; and Stendel, Wilhelm, 3,981,994.
  - Markusch, Peter; Dieterich, Dieter; and Reiff, Helmut, 3,981,831.
  - Maurer, Fritz; Hammann, Ingeborg; and Homeyer, Bernhard, 3,981,993.
  - Metzger, Carl; Eue, Ludwig; and Schmidt, Robert Rudolf, 3,981,714.
  - Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,981,882.
  - Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,981,893.
  - Radlmann, Eduard; Schaffner, Heinz; Lorenz, Gunter; and Nischk, Gunther, 3,981,842.
  - Schmidt, Gunter; and Metzger, Karl Georg, 3,982,011.
  - Ziemek, Peter, 3,981,869.
- Bayer Antwerpen N.V.: *See—*
  - Weiler, Raoul; and Uwents, Henri, 3,981,978.
- BBC Brown Boveri & Company Limited: *See—*
  - Weiss, Gerhard, 3,981,444.
- Bearce, Wendell E. Method of treating wet coal granules. 3,982,052, Cl. 427-212.000.
- Beaudry, Samuel B.: *See—*
  - Winchell, Harry S.; Wells, Dale K.; Lamb, James F.; and Beaudry, Samuel B., 3,981,769.
- Beaufait, Daniel L.: *See—*
  - Koral, Joseph F.; and Beaufait, Daniel L., 3,981,531.
- Beauvoir, Max G. Process for obtaining sapogenin particularly hecogenin from plant material such as agave sisalana leaves. 3,981,867, Cl. 260-239.55A.
- Beck, Norman L.: *See—*
  - Luebke, Clem J.; Beck, Norman L.; and Daniels, Lowell W., 3,981,044.
- Bedell, Terrence A.: *See—*
  - Steen, Gary J.; Bedell, Terrence A.; and Myers, Frank W., 3,982,041.
- Beecham Group Limited: *See—*
  - Clayton, John Peter; and Ferres, Harry, 3,981,866.
- Behrendt, Wilhelm A.: *See—*
  - Oelschlager, Herbert; Matthiesen, Uwe; and Behrendt, Wilhelm A., 3,981,997.
- Belcher, Ronald; Townshend, Alan; and Bogdanski, Stanley L., to Anacon, Inc. Molecular cavity analysis-filter cavity. 3,981,585, Cl. 356-87.000.
- Bell & Howell Company: *See—*
  - Betlejewski, Frank W., 3,982,117.
  - Bookless, George William, 3,981,582.
  - Koeber, Henry Jacob, 3,981,423.
  - Sample, Winfield, 3,981,198.
- Bell Telephone Laboratories, Incorporated: *See—*
  - Bergman, John George, Jr.; Crane, Glen Robert; and Guggenheim, Howard Joseph, 3,982,136.
  - Brown, Earl Franklin; Eilenberger, Robert Lewis; Gordon, Alan Mayer; Gordon, Pat Le Mar; and Limb, John Ormond, 3,982,063.
  - Chai, Sooyoung, 3,982,274.
  - Coldren, Larry Allen, 3,982,113.
  - Copeland, John Alexander, III, 3,982,141.
  - Dingle, Raymond; and Henry, Charles Howard, 3,982,207.
  - Etra, Richard Henry, 3,982,232.
  - Flanagan, James Loton, 3,982,070.
  - Goell, James Emanuel; Li, Tingye; and Muska, Willis Martin, 3,982,123.
  - Goldstein, Thomas, 3,982,202.
  - Hill, Donald Gifford; and Lewis, Theras Gordon, 3,982,076.
  - Jaeger, Raymond Edward; and Miller, Thomas John, 3,981,705.
  - Johnston, Wilbur Dexter, Jr., 3,982,265.
  - Kaufman, Stanley; and Sabia, Raffaele Antonio, 3,981,947.
  - Lerner, Edward Mark; Peterson, David Cartwright; Quin, Terrence Thomas; and Ruel, Bernard George, 3,982,111.
  - Rouse, David Michael; and Sproule, Betty Ann, 3,982,229.
  - Ukeiley, Richard Larry, 3,982,080.
  - Vaiden, Henry Edge, 3,982,180.
  - van der Ziel, Jan Peter, 3,982,135.
- Bellen, Johan C.: *See—*
  - Baker, Richmond J.; and Bellen, Johan C., 3,981,980.
- Bellingham, Francis, to Imperial Chemical Industries Limited. Preservatives for forage, hay, grain and animal feeds. 3,982,028, Cl. 426-69.000.
- Beloit Corporation: *See—*
  - Page, Robert E., 3,981,650.
  - Sokolow, Nickolas N., 3,981,673.
- Bender, Martin: *See—*
  - Schulte, Fritz; Riecker, Johann G.; and Bender, Martin, 3,981,778.
- Bender, Peter: *See—*
  - Luther, Hans Werner; and Bender, Peter, 3,981,246.
- Bendix Corporation, The: *See—*
  - Green, Norman, 3,982,199.

Bennett, Charles; and Toledo, Emil, to United States of America, Navy. Sinusoidal film plated memory wire. 3,982,235, Cl. 340-174.0PW.

Berezhnoi, Igor Alexandrovich; Elatontsev, Albert Ivanovich; Ignatiev, Vladimir Vasilievich; Ivlev, Djuis Danilovich; Mayanov, Boris Veniaminovich; Svinukhov, Vasily Andriyanovich; Kuzmin, Vladimir Petrovich; Evdokimov, Igor Alexandrovich; and Zhidkov, Boris Alexeevich, deceased (by Zhidkova, Ljudmila Vasilievna, administratrix). Air-cushion landing gear for aircraft. 3,981,462, Cl. 244-100.00A.

Berg, Edward T. Reglet structure. 3,981,108, Cl. 52-61.000.

Berge, Arthur. Apparatus for displaying changeable arrangements of indicia. 3,981,090, Cl. 40-64.00R.

Berges, Dietrich: *See—*
Hartig, Wolfgang; Berges, Dietrich; and Schippers, Heinz, 3,981,131.

Bergman, John George, Jr.; Crane, Glen Robert; and Guggenheim, Howard Joseph, to Bell Telephone Laboratories, Incorporated. Ternary ferroelectric fluoride nonlinear devices. 3,982,136, Cl. 307-88.300.

Bergstein, Frank D.; and Nerenberg, Robert W., to Bergstein Packaging Trust. Carton with tightly sealed end closures. 3,981,432, Cl. 229-37.00R.

Bergstein Packaging Trust: *See—*
Bergstein, Frank D.; and Nerenberg, Robert W., 3,981,432.

Berkowitz, Sidney: *See—*
Lobunez, Walter; and Berkowitz, Sidney, 3,981,939.

Berlyn, Robin Wilfrid; and Hutchinson, James David, to Pulp and Paper Research Institute of Canada. Method for segregating bark and foliage from wood chips and twigs. 3,981,453, Cl. 241-21.000.

Berman, Kirill Adolfovich: *See—*
Medovar, Boris Izrailevich; Saenko, Vladimir Yakovlevich; Schupak, Grigory Bentsionovich; Alferov, Jury Fedorovich; Karpov, Vladimir Fedorovich; Berman, Kirill Adolfovich; Pogoretsky, Vitaly Vasilievich; Ovseichuk, Vitaly Alexandrovich; Zabolotsky, Petr Stepanovich; Boiko, Georgy Alexandrovich; Oleinik, Vladimir Ivanovich; Grodzitsky, Stanislav Vitalievich; Popov, Viktor Andreevich; and Chvertko, Anatoly Ivanovich, 3,981,349.

Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, to American Cyanamid Company. Derivatives of 9-oxo-13-trans-prostenoic acid amides. 3,981,868, Cl. 260-240.00J.

Bernstein, William A.; and Doggett, Robert H., to International Business Machines Corporation. Prefixing in a multiprocessing system. 3,982,231, Cl. 340-172.500.

Berry, Clyde Raymond; and Cinzori, Robert J., to Hughes Aircraft Company. AC-DC voltage regulator. 3,982,173, Cl. 323-17.000.

Berthagen, Nils Ture Lennart. Insulating unit. 3,981,111, Cl. 52-171.000.

Berthold, Werner; von Konig, Anita; and Timmler, Helmut, to AGFA-Gevaert, A.G. Stabilization of developed photographic images. 3,981,731, Cl. 96-50.00R.

Bertsch, Arville E.: *See—*
Stant, Ivan H.; and Bertsch, Arville E., 3,981,207.

Bessire, Jean-Jacques; and Loardon, Francis, to Eresa S.A. Mirror follow-up device for a film projector. 3,981,572, Cl. 352-112.000.

Bethlehem Steel Corporation: *See—*
Kranenberg, Helmut; and Hostetter, Richard S., Jr., 3,981,752.

Betlejewski, Frank W., to Bell & Howell Company. Electronic flash unit for cameras. 3,982,117, Cl. 240-1.300.

Bewersdorf, Elmer D.: *See—*
McCain, William B.; Cosgrove, James F.; and Bewersdorf, Elmer D., 3,981,212.

Bezaudun, Jean; and Weisang, Joseph Edouard, to Compagnie Francaise de Raffinage. Electrode for fuel cell. 3,981,746, Cl. 429-13.000.

Bianchi, Massimo: *See—*
Conti, Paolo; and Bianchi, Massimo, 3,981,161.

Bielfeldt, Friedrich Bernd; and Handler, Klaus, to Krauss-Maffei Aktiengesellschaft. Injection-molding machine, especially for thermosetting or thermally cross linkable synthetic resins. 3,981,662, Cl. 425-247.000.

Bijttebier, Gaspar A. H. Process and apparatus for separating supple sheets from a stack. 3,981,495, Cl. 271-18.300.

Billi S.p.A.: *See—*
Balzano, Oberdan; and Dondoli, Lando, 3,981,160.
Conti, Paolo; and Bianchi, Massimo, 3,981,161.

Bilodeau, Richard D., to Monsanto Company. Takeout apparatus for a blow molding machine. 3,981,667, Cl. 425-387.00B.

Bingham, Henry; Glassford, John Gilmour; and Pope, Noel Cuthbert, to Hard Metals Limited. Disc cutting unit for use on rock boring machines. 3,981,370, Cl. 175-373.000.

Bio-Medical Sciences, Inc.: *See—*
Larsson, Raymond P.; and Witonsky, Robert J., 3,981,683.

Birat, Jean-Pierre: *See—*
Alberny, Robert; Leclercq, Alain; and Birat, Jean-Pierre, 3,981,345.

Bisgaard-Jespersen, Peter: *See—*
Valeur, Claus Michael; Bisgaard-Jespersen, Peter; and Schroder, Henning Bernstorff, 3,982,027.

Bittner, John R.; and Weaner, Ronald D., to General Electric Company. Right hand margin control system. 3,981,383, Cl. 197-63.000.

Bittner, Oszkar; and Fisher, Chester Donald, to Sprout, Waldron & Company, Inc. Main shaft support for pellet mills. 3,981,664, Cl. 425-331.000.

Bjorkstrom, Gosta, to Aktiebolaget Platmanufaktur. Lubricating swabbing means for glass container machine. 3,981,711, Cl. 65-165.000.

Black, Dennis A.; and Brucken, Byron L., to General Motors Corporation. Automotive air conditioning system with variable speed traction drive transmission. 3,981,157, Cl. 62-243.000.

Blake, Lawrence Webster: *See—*
Lieber, Clement Eugene; and Blake, Lawrence Webster, 3,981,197.

Blake, Theodore M. Dispensing paint trimmer. 3,981,595, Cl. 401-48.000.

Blanchard, Richard Lewis, to American Can Company. Cover for plates and stacking devices therefor. 3,981,401, Cl. 206-508.000.

Blanton, Elmer Ladelle: *See—*
Tucker, Gerald L.; and Blanton, Elmer Ladelle, 3,981,713.

Bleck, Walter. Body plate serving to secure drain pipes in embankments. 3,981,153, Cl. 61-16.000.

Blise, Bernard G.; and Jessen, Norman H., to Lehman, William O., a part interest. Flow meter system. 3,981,194, Cl. 73-229.000.

Block, Jacob; and Marans, Nelson Samuel, to W. R. Grace & Co. Inhibition of scale on saline water heat exchange surfaces with iminodiacetic acid compounds. 3,981,779, Cl. 203-7.000.

Bloom, William, to Emjay Industries, Inc. Book holder. 3,981,522, Cl. 281-34.000.

Blore, Terence John: *See—*
Steels, Gordon; and Blore, Terence John, 3,981,656.

Blum, Josef; Lamm, Heinz; and Sprang, Alfred, to Daimler-Benz Aktiengesellschaft; and Fried. Krupp Gesellschaft mit beschrankter Haftung. Sealing strip particularly for rotary engines. 3,981,644, Cl. 418-122.000.

Bodle, Ronald L.: *See—*
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Boehringer Ingelheim GmbH: *See—*
Losel, Walter; Traunecker, Werner; and Hoefke, Wolfgang, 3,981,992.
Merz, Herbert; Langbein, Adolf; Walther, Gerhard; and Stockhaus, Klaus, 3,981,874.
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Boehringer Mannheim G.m.b.H.: *See—*
Fauland, Erich; Kampe, Wolfgang; Thiel, Max; Bartsch, Wolfgang; and Schaumann, Wolfgang, 3,982,012.
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Boeing Company, The: *See—*
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Funston, Nelson Edward, 3,981,152.
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Bogdanski, John J., to Pitney-Bowes, Inc. Endless belt envelope flap moistening system. 3,981,270, Cl. 118-257.000.

Bogdanski, Stanley L.: *See—*
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Bohacz, Maxine: *See—*
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Bohmholdt, Gerd; Husemann, Hinrich; and Riedel, Helmut, to Veba-Chemie AG. Process for producing ketones. 3,981,921, Cl. 260-586.00R.

Boiko, Georgy Alexandrovich: *See—*
Medovar, Boris Izrailevich; Saenko, Vladimir Yakovlevich; Schupak, Grigory Bentsionovich; Alferov, Jury Fedorovich; Karpov, Vladimir Fedorovich; Berman, Kirill Adolfovich; Pogoretsky, Vitaly Vasilievich; Ovseichuk, Vitaly Alexandrovich; Zabolotsky, Petr Stepanovich; Boiko, Georgy Alexandrovich; Oleinik, Vladimir Ivanovich; Grodzitsky, Stanislav Vitalievich; Popov, Viktor Andreevich; and Chvertko, Anatoly Ivanovich, 3,981,349.

Boise Cascade Corporation: *See—*
Thornhill, Dewey B.; and Frank, Ralph E., Jr., 3,981,433.

Bokenkamp, Donald G., to Dolphin International, Inc. Riser pipe stacking system. 3,981,369, Cl. 175-5.000.

Bolea Camprubi, Anselmo, to Incotex, S.A. Crossing warp mechanism. 3,981,331, Cl. 139-54.000.

Boller, Arthur; and Scherrer, Hanspeter, to Hoffmann-La Roche Inc. Mixtures of liquid crystals. 3,981,817, Cl. 252-299.000.

Bolliger, Edwin, to J. Bobst & Fils S.A. Safety clutch device. 3,981,382, Cl. 192-150.000.

Bolster, Robert N., to United States of America, Navy. Grease composition. 3,981,810, Cl. 252-32.70E.

Bom, Cornelis Johannes Gerardus: *See—*
van der Lely, Cornelis; van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, 3,981,366.

Bomar, Bruce W.: *See—*
Kalb, Henry T.; Cline, Virgil A., Jr.; and Bomar, Bruce W., 3,982,101.

Bontrager, Lloyd J. Lift mechanism for a camper top. 3,981,529, Cl. 296-23.00C.

Bookless, George William, to Bell & Howell Company. Microfilm copyboard with document index. 3,981,582, Cl. 355-75.000.

Boom, Willem: *See—*
Sijtstra, Sebastianus; and Boom, Willem, 3,982,166.

Boots Pure Drug Company Limited: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; Nicholson, John Stuart; and Tantum, James Gordon, 3,981,905.

Booz, David L.; Brown, Ford J.; and Merwarth, Richard J., to Western Electric Company, Inc. Apparatus for conveying articles to form layers of fusible metal thereon. 3,981,392, Cl. 198-377.000.

Bore, Pierre: *See—*
Ghilardi, Giuliana; Bore, Pierre; and Grollier, Jean-Francois, 3,981,676.
Ghilardi, Giuliana; Bore, Pierre; and Grollier, Jean-Francois, 3,981,678.

Borg-Warner Corporation: *See—*
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Gritter, David James; and Studtmann, George Henry, 3,982,170.
Ivey, John Saxon; and Braybrook, Kenneth Albert, 3,981,068.
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Borrelli, Nicholas F.: *See—*
Araujo, Roger J.; Borrelli, Nicholas F.; Crow, John D.; and Seward, Thomas P., III, 3,981,707.

Borysko, Emil, to Ethicon, Inc. Thermal attachment of surgical sutures to needles. 3,981,307, Cl. 128-339.000.

Bose, Bimal K.; and Espelage, Paul M., to General Electric Company. Phase shifter for controlling the power components and power factor of a cycloconverter. 3,982,168, Cl. 321-69.00R.

Boshoff, Pieter Nico Sinclair, to Pienaar, Hendrik Lukas. Aid in the management of clinical emergencies in medical and dental practices and other circumstances. 3,981,398, Cl. 206-223.000.

Bossert, Friedrich: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,981,882.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,981,893.

Bottoms, Harry Simister, to Lucas Aerospace Limited. Gear pumps and motors. 3,981,646, Cl. 418-190.000.

Bourns, Inc.: *See—*
Smith, Ronald Eugene, 3,982,221.

Bowman, Donald E., to Catalyst Research Corporation. Time delay fuse. 3,981,222, Cl. 86-1.00R.

Boyd, David M.: *See—*
Kellar, James S.; Carson, Don B.; and Boyd, David M., 3,981,797.

Boyle, Robert M. Soft contact lens inspection device. 3,981,593, Cl. 356-239.000.

BP Chemicals International Limited: *See—*
Walton, John Reginald; and Yeomans, Bertram, 3,981,918.

Braden, Denver, to Illinois Tool Works Inc. Soldering method. 3,982,047, Cl. 427-123.000.

Bradford, Christopher William; and Middleton, Harry, to Johnson Matthey & Co., Limited. Electroplating of gold and gold compounds therefor. 3,981,782, Cl. 204-46.00G.

Bradshaw, George B., to United States of America, Air Force. High temperature radioisotope capsule. 3,981,805, Cl. 250-493.000.

Brady Air Controls, Inc.: *See—*
Holt, Corbly LeRoy, 3,981,319.

Brady, Arthur M.: *See—*
DeVito, George, 3,981,343.

Brahos, William: *See—*
Kratcoski, Francis L.; and Brahos, William, 3,982,094.

Braithwaite, David G.; and Seale, Virgil L., to Nalco Chemical Company. Process for producing a pure high surface area alumina. 3,981,979, Cl. 423-628.000.

Braithwaite, David G.: *See—*
Ries, Donald G.; and Braithwaite, David G., 3,981,798.

Brambilla, Giovanni; Caporali, Giacomo; and Zambianchi, Mario, to AGIP Nucleare S.p.A. Reprocessing method of caramic nuclear fuels in low-melting nitrate molten salts. 3,981,960, Cl. 423-5.000.

Brandenstein, Manfred: *See—*
Ernst, Horst M.; Brandenstein, Manfred; and Olschewski, Armin, 3,981,610.

Brandon, Clarence W., to Brandon, Orpha B., a part interest. Sonic or energy wave generator and modulator. 3,981,624, Cl. 417-53.000.

Brandon, Orpha B.: *See—*
Brandon, Clarence W., 3,981,624.

Branson Ultrasonics Corporation: *See—*
Summo, Arthur M., 3,981,759.

Braybrook, Kenneth Albert: *See—*
Ivey, John Saxon; and Braybrook, Kenneth Albert, 3,981,068.

Breisch, John H.; and Brown, William L., 4th, to Midland-Ross Corporation. Gas powered motor. 3,981,229, Cl. 92-72.000.

Breu, Dennis Ludwig, to Sperry Rand Corporation. Variable turn coil winder. 3,981,333, Cl. 140-1.000.

Briaire, Henricus Cornelis Johannes, to IWS Nominee Company Limited. Method and device for the felting of sliver and suchlike into felted yarns. 3,981,129, Cl. 57-35.000.

Bridgestone Fire Company Limited: *See—*
Fujio, Ryota; Kataoka, Nobuyuki; Fukabori, Yoshihide; and Anzai, Shiro, 3,981,943.

Briggs, George Oliver, to International Basic Economy Corporation. Screw type apparatus for drying moist polymeric materials. 3,981,658, Cl. 425-205.000.

Briggs & Stratton Corporation: *See—*
Harkness, Joseph R., 3,981,289.

Briggs, William R.; and Ripperger, Eugene A., to United States of America, Army. Paper honeycomb cushioning pad. 3,982,057, Cl. 428-73.000.

Bristol, James A.: *See—*
Yale, Harry L.; and Bristol, James A., 3,981,886.

British Chrome & Chemicals Limited: *See—*
Swales, Danvers A., 3,981,964.

British Industrial Plastics Limited: *See—*
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Broaster Co., The: *See—*
Luebke, Clem J.; Beck, Norman L.; and Daniels, Lowell W., 3,981,044.

Brock, Gregory C., Jr.: *See—*
Gambill, Ulysses T.; and Brock, Gregory C., Jr., 3,981,669.

Brocklehurst, Charles E., to Riegel Textile Corporation. Apparatus for the manufacture of disposable diapers or other articles having stop motion devices therein. 3,981,763, Cl. 156-352.000.

Brodsky, Harvey A.: *See—*
Weiss, Edward A.; and Brodsky, Harvey A., 3,982,071.

Brody, Frederick, deceased: *See—*
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  - Chazan, Jean Bernard; Coussediere, Daniel; and Gasc, Jean-Claude, 3,981,861.

- Covini, Romano: *See—*
  - Battiston, Giancarlo; Petrini, Guido; De Alberti, Giordano; and Covini, Romano, 3,981,912.
- Cox, Joseph Henry, to Cincinnati Milacron, Inc. Stock sensing device. 3,982,085, Cl. 200-61.410.
- Crane, Burke J.: *See—*
  - Conville, David J.; and Crane, Burke J., 3,982,237.
- Crane, Glen Robert: *See—*
  - Bergman, John George, Jr.; Crane, Glen Robert; and Guggenheim, Howard Joseph, 3,982,136.
- Crawford, John T., to Towmotor Corporation. Vehicle hood assembly. 3,981,375, Cl. 180-69.00C.
- Creare, Incorporated: *See—*
  - Hawkes, Ivor, 3,981,540.
- Crecelius, John D.: *See—*
  - Krey, John F.; Regelson, Ephraim; and Crecelius, John D., 3,981,449.
- Crino, Arthur D., to Allis-Chalmers Corporation. Contact system for an outdoor electrical switch. 3,982,083, Cl. 200-48.00A.
- Crivello, James V., to General Electric Company. Method for making certain halonium salt photoinitiators. 3,981,897, Cl. 260-440.000.
- Crochet, Gerald J., Sr. Coupling mechanism adapted to latch object to object substantially coterminously with uncovering universal movement means between objects. 3,981,517, Cl. 280-478.00R.
- Crofton, John Walter, to Deering Milliken Research Corporation. Wet mop construction having pile fabric mopping element. 3,981,040, Cl. 15-229.00A.
- Crookes, Richard William: *See—*
  - Williams, Malcolm; Crookes, Richard William; and Jones, Christopher Robin, 3,981,287.
- Crookshanks, Rex John, to Ampex Corporation. Core memory with improved sense-inhibit recovery time. 3,982,233, Cl. 340-174.0DC.
- Crouch, William R. Apparatus for holding a paint brush. 3,981,399, Cl. 206-15.200.
- Crow, John D.: *See—*
  - Araujo, Roger J.; Borrelli, Nicholas F.; Crow, John D.; and Seward, Thomas P., III, 3,981,707.
- CTS Corporation: *See—*
  - Rozema, Arthur L.; Van Benthuysen, John D.; and Zdanys, John, 3,982,220.
- Cuff, David William, to Leesona Corporation. Pelletizing method. 3,981,959, Cl. 264-142.000.
- Cululi, John J.; and Ash, Glenn R. Bicycle frame mounted rear view mirror. 3,981,567, Cl. 350-307.000.
- Cummins, Donald L., to General Motors Corporation. Excitation system for a self-excited alternator. 3,982,169, Cl. 322-28.000.
- Cuneo, Edward A., to Minnesota Mining and Manufacturing Company. Metal-clad dielectric sheeting having an improved bond between the metal and dielectric layers. 3,981,691, Cl. 29-195.000.
- Curran, Adrian Charles Ward, to John Wyeth & Brother Limited. 4-phenylmercaptopiperidine nitriles. 3,981,878, Cl. 260-293.730.
- Currier, Robert F. Hanger device. 3,981,471, Cl. 248-317.000.
- Curry, Christian O. Slidable tool grip. 3,981,043, Cl. 16-110.00R.
- Curtis, Terry W. Horse walker having a continuously variable transmission and folding booms. 3,981,274, Cl. 119-29.000.
- Curtiss-Wright Corporation: *See—*
  - Haberski, Richard J., 3,981,354.
- Cusic, John W.; Ellefson, Charles R.; and Woo, Chi Min, to G. D. Searle & Co. 2-Substituted-9-phenyl-2,3,4,4a,9,9a-hexahydro-1H-indeno[2,1-c]pyridines and related compounds. 3,981,875, Cl. 260-293.540.
- Custer, Warren L. Variable volume air wall. 3,981,445, Cl. 237-1.00A.
- Czajkowski, George J., to Universal Oil Products Company. Method for the removal and inhibition of metal scale formation in a hydrocarbon processing unit. 3,981,740, Cl. 134-2.000.
- Czajkowski, Norman; and McMann, John H. S., to United States of America, Navy. Fluidic link master/slave fuze system. 3,981,239, Cl. 102-7.200.
- Czebiniak, Walter N., to GAF Corporation. Photographic plate developer apparatus. 3,982,258, Cl. 354-300.000.
- D-J Enterprises, Inc.: *See—*
  - Rumph, Joel D., 3,981,039.
- Dahl, Hilbert D.: *See—*
  - Doerr, Richard E.; McCain, David L.; and Dahl, Hilbert D., 3,981,541.
- Dahltron Corporation: *See—*
  - Wickenberg, Chester H., 3,981,625.
- Dai Nippon Co., Ltd.: *See—*
  - Kato, Haruhiro; Toyoda, Tsunehiko; and Tanabe, Hiroyuki, 3,982,050.
- Daicel, Ltd.: *See—*
  - Yoshizaki, Hiroyuki; Takanohashi, Hiromitsu; Masuda, Yoshitaka; Hozumi, Yukio; Ohi, Akira; and Sonoyama, Yuzo, 3,981,843.
- Daimler-Benz Aktiengesellschaft: *See—*
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  - Helmer, Josef, 3,981,614.
- Dainippon Jochugiku Kabushiki Kaisha: *See—*
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- Dainippon Pharmaceutical Co., Ltd.: *See—*
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- Daiwa Boseki Kabushiki Kaisha: *See—*
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- Dake, Norman W. Prefabricated stair construction. 3,981,112, Cl. 52-184.000.
- Dalgleish, Jack Frank. Container for coins and similar disc shaped members. 3,981,395, Cl. 206-.820.
- D'Amato, Michael A. Hydraulic motor with orbiting drive member. 3,981,641, Cl. 418-61.00R.
- Damberg, Ejvind, to A/S Raaco Storage Systems. Arrangement at corner joints in a knock-down shelving unit. 3,981,251, Cl. 108-154.000.
- Dan River Inc.: *See—*
  - Pangle, James C., Jr.; and Hicks, Alton D., 3,981,836.
- Danford, Jack Dewayne. Grain storage and shipping containers. 3,981,083, Cl. 34-19.000.
- Danfoss A/S: *See—*
  - Brown, Alvin E.; and Thun, Niels, 3,981,191.
  - Vind, Holger Wilhelm, 3,981,075.
- Daniel, Bryan D.: *See—*
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- Daniel, Wayne A.; and Daniel, Bryan D., to Vesta. Three dimensional relief puzzle. 3,981,506, Cl. 273-157.00R.
- Daniels, Lowell W.: *See—*
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- Dansk Industri Syndikat A/S: *See—*
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- Dansk Landbrugs Grovvareselskab A.m.b.A.: *See—*
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- Darda, Helmut. Toy vehicle with component for storing energy in response to motion in opposite directions. 3,981,098, Cl. 46-206.000.
- Dashevsky, Zinovy Moiseevich; Kaller, Yakov Alexandrovich; Kolomoets, Nikolai Vasilievich; and Sgibnev, Igor Vladimirovich. Thermoelement and thermopile based thereon. 3,981,751, Cl. 136-225.000.
- Dauphinais, Henry F. Shoulder strap retainer. 3,981,050, Cl. 24-76.000.
- Davies, Terrence Ardern: *See—*
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- Davis, Gary C.: *See—*
  - Cook, Newell C.; and Davis, Gary C., 3,981,933.
- Davis, Howard G.; Hovey, Emerson B.; and Sylvester, Edwin E., to USM Corporation. Method for bonding resin film to metal. 3,981,762, Cl. 156-322.000.
- Davis, Robert Elliott; and Weck, Friedrich Josef, to Kerr-McGee Corporation. Method of separating methylolphenols from solutions. 3,981,929, Cl. 260-621.00K.
- Dayco Corporation: *See—*
  - Dodson, Walter L., 3,981,059.
  - Miranti, Joseph P., Jr.; and Woodland, Carl R., 3,981,206.
- de la Guardia, Mario, to Carson Products Company. Depilatory formulation. 3,981,681, Cl. 8-161.000.
- De Laval Turbine Inc.: *See—*
  - Bachman, Albert J., 3,982,087.
- De Alberti, Giordano: *See—*
  - Battiston, Giancarlo; Petrini, Guido; De Alberti, Giordano; and Covini, Romano, 3,981,912.
- Dean, Jerald L. Phone aid timing device. 3,982,072, Cl. 179-2.0TC.
- de Buhr, Alfred P.; and Meyer, Bruce R., to General Motors Corporation. Locomotive wheel slip control. 3,982,164, Cl. 318-52.000.
- Deering Milliken Research Corporation: *See—*
  - Crofton, John Walter, 3,981,040.
- de Haan, Maarten Rutger: *See—*
  - Verhoeven, Leonardus Adrianus Johannes; de Haan, Maarten Rutger; and Janssen, Peter Johannes Michiel, 3,982,272.
- Dehlen, Bengt Lars Arne, to Trelleborgs Gummifabrik Aktiebolag. Lining and fastener arrangement for devices having surfaces subject to wear. 3,981,117, Cl. 52-509.000.
- Dehnert, Johannes, to BASF Aktiengesellschaft. Sulfur containing dyes of the quinonaphthalone series. 3,981,873, Cl. 260-289.00H.
- Delbar Products, Inc.: *See—*
  - Szilagyi, Jane M., 3,981,474.
- Deminet, Czeslaw; and Gillette, Roger B., to Boeing Company, The. All glass composite building panels. 3,981,294, Cl. 126-271.000.
- Demler, Henry William, Jr., to AMP Incorporated. Keyboard assembly with overlapped flexible printed circuit cable switch. 3,982,081, Cl. 200-5.00R.
- Demogenes, Christos; and Stone, Robert A., to Garrett Corporation, The. Cooled infrared suppressor. 3,981,448, Cl. 239-127.300.
- Demole, Edouard P., to Firmenich S.A. Aromatic compositions. 3,981,311, Cl. 131-144.000.
- Demou, John G.; Pizzini, Louis C.; and Patton, John T., Jr., to BASF Wyandotte Corporation. Flexible cellular polyurethane foam compositions having increased flame retardance. 3,981,828, Cl. 260-2.5AC.
- Den Herder, Marvin J.; and Warne, Thomas Martin, to Standard Oil Company (Indiana). Hydraulic fluid. 3,981,813, Cl. 252-75.000.
- Denisova, Maria Vasilievna: *See—*
  - Aimbinder, Mark Borisovich; Zhitomirsky, Mikhail Iosifovich; Denisova, Maria Vasilievna; Grabilin, Anatoly Mikhailovich; Lapushkin, Grigory Alexeevich; Kupershmidt, Moisei Zusievich; Mazov, Jury Alexeevich; Terentiev, Viktor Petrovich; Sergeev, Jury Vasilievich; and Muzylev, Vladimir Sergeevich, 3,981,130.
- Dennis, Richard Kay; and Hadden, Edward Leal, to Du Pont de Nemours, E. I., and Company. Leadless package retaining frame. 3,982,159, Cl. 317-101.0CC.

- Deschler, Gerhard; Wittmann, Dieter; and Trier, Reinhold, to Maschinenfabrik Augsburg-Nurnberg AG. Cam for controlling valves of an internal combustion engine. 3,981,281, Cl. 123-90.600.
- Desler, Duane A.: *See—*
  - Baltzer, Gary L.; Desler, Duane A.; and Pappas, George, 3,982,073.
- de Somer, Pierre Marie Hendrik Frans: *See—*
  - Stewart, William Edgar; and de Somer, Pierre Marie Hendrik Frans, 3,981,991.
- Deters, Elmer M., to Weil-McLain Co., Inc. Liquid dispensing and vapor recovery system utilizing an injector and an improved vapor flow control unit. 3,981,334, Cl. 141-46.000.
- Deters, Elmer M., to Weil-McLain Co., Inc. Liquid dispensing and vapor recovery system utilizing an injector and a valve for permitting operation of leak detecting apparatus. 3,981,335, Cl. 141-46.000.
- Deurloo, Johannis Martinis, to Draka Kabel B.V. Connector plug with permanently connected cable. 3,981,555, Cl. 339-105.000.
- Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
  - Fahnenstich, Rudolf; Schuler, Wilhelm; Tanner, Herbert; and Weiberg, Otto, 3,982,026.
  - Offermanns, Heribert; and Posselt, Klaus, 3,981,910.
- DeVault, Robert; and Maloof, Ralph, to Sidewinder Marine, Inc. Water jet propulsion apparatus. 3,981,262, Cl. 115-12.00R.
- DeVito, George, to Brady, Arthur M. Counterbalancing mechanism for rolling doors. 3,981,343, Cl. 160-9.000.
- Dewar, Bruce Ian: *See—*
  - James, George Stephen; Dewar, Bruce Ian; and Moergeli, Walter Rudolf, 3,981,787.
- de Wit, Michiel, to Texas Instruments Incorporated. Method of preventing post pulsing of Q-switched laser. 3,982,203, Cl. 331-94.50Q.
- Diamond, Julius, to William H. Rorer, Inc. Ethynylbenzene compounds and derivatives thereof. 3,981,932, Cl. 260-645.000.
- Diamond Shamrock Corporation: *See—*
  - Christie, Nick J.; and Karnilaw, John, 3,981,679.
  - Olson, Richard O.; and Pohto, Gerald R., 3,981,790.
  - Papalos, John G.; and Lee, James S., 3,981,837.
- Di Bella, Eugene P.; Keyworth, Donald A.; and Rosen, Marvin, to Tenneco Chemicals, Inc. Flame-retardant emulsion containing 1,1,2,3,4-,4-hexabromobutene-2. 3,981,806, Cl. 252-8.100.
- Dick Blick Company: *See—*
  - Flaherty, John W.; Ingersoll, Robert C.; and Goodrich, William F., 3,981,105.
- Dickinson, Lionel A.: *See—*
  - Frankel, Milton B.; and Dickinson, Lionel A., 3,981,899.
- Dieleman, Jan; and Hoeberechts, Arthur Marie Eugene, to U.S. Philips Corporation. Camera tube having a target with heterojunction. 3,982,149, Cl. 313-366.000.
- Dieterich, Dieter: *See—*
  - Markusch, Peter; Dieterich, Dieter; and Reiff, Helmut, 3,981,831.
- Digital Equipment Corporation: *See—*
  - Chi, Chao S.; McLean, Peter T.; and Field, Norman A., 3,982,194.
  - Lipcon, Jesse B., 3,982,241.
- Dills, Raymond L., to General Electric Company. Baking oven with two-sided broiling. 3,982,096, Cl. 219-403.000.
- Di Maio, Anthony E.; and Swier, Willem, to Marson Fastener Corporation. Compressed air rivet setting tool. 3,981,177, Cl. 72-391.000.
- Dingle, Raymond; and Henry, Charles Howard, to Bell Telephone Laboratories, Incorporated. Quantum effects in heterostructure lasers. 3,982,207, Cl. 331-94.50H.
- Dini, Mamiliano, to European Rotogravure Association. Method and apparatus for determining doctor blade position in a rotogravure process. 3,981,238, Cl. 101-154.000.
- Dischert, William Arnold: *See—*
  - Goldschmidt, Arthur Marvin; Dischert, William Arnold; and West, Joseph Richard, 3,982,160.
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- Dittmann, Walter: *See—*
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- Dixon, William F., to Gleason Works, The. Process and system for forming finished parts from powder metal. 3,981,725, Cl. 75-200.000.
- Dmitrovsky, Morris; and Kokke, Antoine H., to Amstar Corporation. Continuous crystallization. 3,981,739, Cl. 127-60.000.
- Doane, William M.: *See—*
  - Weaver, Mary Ollidene; Bagley, Edward B.; Fanta, George F.; and Doane, William M., 3,981,100.
- Dobkin, Robert C., to National Semiconductor Corporation. Integrated circuit device comprising vertical channel FET resistor. 3,982,263, Cl. 357-22.000.
- Dodson, Walter L., to Dayco Corporation. Textile cot. 3,981,059, Cl. 29-127.000.
- Doerr, Richard E.; McCain, David L.; and Dahl, Hilbert D., to Continental Oil Company. Shallow underground coal slurry concentration sump. 3,981,541, Cl. 302-11.000.
- Doggett, Robert H.: *See—*
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- Dolphin International, Inc.: *See—*
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- Dompas, John, to Metallurgie Hoboken-Overpelt. Mold for the continuous vertical casting of billets. 3,981,351, Cl. 164-283.00R.
- Donaghy, James G., to International Playtex, Inc. Molded brassiere cups. 3,981,310, Cl. 128-464.000.
- Dondoli, Lando: *See—*
  - Balzano, Oberdan; and Dondoli, Lando, 3,981,160.
- Doniat, Denis; Porta, Augusto; and Bugnet, Bernard, to Societe Anonyme Automobiles Citroen. Process for producing electric current by the electrochemical oxidation of an active anodic metal, especially zinc. 3,981,747, Cl. 429-15.000.
- Dorey, Howard Anthony; and Cooke, Robert John, to Solartron Electronic Group Limited, The. Data transfer control apparatus. 3,982,061, Cl. 178-2.00R.
- Doris, Thomas A., Jr., to United States of America, Army. Projectile. 3,981,243, Cl. 102-52.000.
- Dorst, Heinz Otto: *See—*
  - Harwood, Frank Stuart; and Dorst, Heinz Otto, 3,981,102.
- Douglas-Hamilton, Diarmaid H.: *See—*
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  - Sutton, George W.; and Douglas-Hamilton, Diarmaid H., 3,982,209.
- Douglas, Peter; Pedder, David John; Swallow, Peter John; and Davies, Terrence Ardern, to Square D Company. Electrical contact materials. 3,981,726, Cl. 75-206.000.
- Dover Corporation: *See—*
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- Dow Chemical Company, The: *See—*
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- Drabek, Jozef, to Ciba-Geigy Corporation. N-propargyl-anilinomethylenemalodinitrile derivatives. 3,982,015, Cl. 424-304.000.
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- Draka Kabel B.V.: *See—*
  - Deurloo, Johannis Martinis, 3,981,555.
- Dreher, Alfred J., to Texstar, Inc. Grit blasting machine and method. 3,981,104, Cl. 51-9.00M.
- Dresser Industries, Inc.: *See—*
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- Ducret, Lucian C.: *See—*
  - Atwood, John G.; and Ducret, Lucian C., 3,981,041.
- Dudley, Robert E., to Tracey, Richard M.; and Brunstrom, Gerald R., part interest to each. Airport terminal. 3,981,464, Cl. 244-114.00R.
- Dully, Joseph H., to Varian Associates. Lateral semiconductive device and method of making same. 3,981,073, Cl. 29-580.000.
- Dulux Australia Ltd.: *See—*
  - Leary, Bruce; and Lubbock, Frederick John, 3,981,895.
- Dunn, Karl L.; and Reynolds, Gordon S., to Sorenson Research Co., Inc. Gas sampling catheter assembly and method. 3,981,297, Cl. 128-2.00G.
- DuPage Manufacturing Company: *See—*
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- Du Pont de Nemours, E. I., and Company: *See—*
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  - Contractor, Rashmikant M.; and Hwang, Sang-Hak, 3,981,047.
  - Dennis, Richard Kay; and Hadden, Edward Leal, 3,982,159.
  - Fowler, John Rayford; and Hogan, Edward Merrick, 3,981,415.
  - Kelly, Thomas James, 3,981,854.
  - Langsdorf, William P., 3,981,870.
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- Dziewulski, Ted, to Phillips Petroleum Company. Hanging pot with detachable tray. 3,981,099, Cl. 47-35.000.
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- E. R. Squibb & Sons, Inc.: *See—*
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- Eakes, James H.; Henderson, James G.; and Henderson, James M. Apparatus for forming a yarn package. 3,981,055, Cl. 28-21.000.
- Eastman Kodak Company: *See—*
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  - Ownby, James C., 3,981,822.
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- Eberhard Hoesch & Sohne: *See*—
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- Eberle, Karl Heinz, to TVI-Television Industrielle S.A. Device for the automatic reading and evaluation of recorded curves. 3,982,105, Cl. [illegible]
- Eberly, Paul E., to Exxon Research and Engineering Company. Aromatization process and catalysts. 3,981,794, Cl. 208-138.000.
- Eckstein, Gershon. Irrigation pipes with dripper units and method of its manufacture. 3,981,452, Cl. 239-542.000.
- Ecology Control, Inc.: *See*—
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- Eddy, Kenneth Harmon; and McGill, Kenneth Harmon, to Dresser Industries, Inc. Helicopter transportable drilling rig. 3,981,485, Cl. [illegible]
- Eddy, William C., to Aspro, Incorporated. Traction control apparatus. 3,981,545, Cl. 303-21.0EB.
- Edgington, Leslie N.: *See*—
  - Sinnett, James M.; Edgington, Leslie N.; and Asiala, Carl F., 3,981,465.
- Edwards, Bobbie Lee, to Cincinnati Milacron, Inc. Liquid reaction molding press. 3,981,671, Cl. 425-453.000.
- Edwards, John A., to Syntex (U.S.A.) Inc. Thiazole cardiovascular agents. 3,982,010, Cl. 424-270.000.
- Eernisse, Errol P.; and Peterson, Gary D., to United States of America, Energy Research and Development Administration. Variable gas leak rate valve. 3,981,480, Cl. 251-129.000.
- Eftefield, Larry G., to Caterpillar Tractor Co. Dual hydraulic motor drive system. 3,981,150, Cl. 60-425.000.
- Ehrenskjold, Nils Oluf; and Munk, Torben, to Gori-Vaerk A/S. Foldable propellers. 3,981,613, Cl. 416-142.000.
- Eigenmann, Ludwig. Light retroreflective system for sign surfaces. 3,981,557, Cl. 350-104.000.
- Eilenberger, Robert Lewis: *See*—
  - Brown, Earl Franklin; Eilenberger, Robert Lewis; Gordon, Alan Mayer; Gordon, Pat Le Mar; and Limb, John Ormond, 3,982,063.
- Eisai Co., Ltd.: *See*—
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- Eldridge, Harry H.; Jones, Robert A.; Lindner, Gordon M.; and Hight, Paul H., to United States of America, Energy Research and Development Administration. Automatic box loader. 3,981,406, Cl. 214-6.0FS.
- Electricite de France (Service National): *See*—
  - Taulier, Hubert Henri Leon; and Brugeilles, Gerard, 3,981,598.
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Ghilardi, Giuliana; Bore, Pierre; and Grollier, Jean-Francois, to L'Oreal. Lyophilized dyes and the use thereof to color keratinic fibers. 3,981,678, Cl. 8-11.000.
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Gilberto, Paul, to USM Corporation. Exhaust muffler for pneumatic tool or machine. 3,981,377, Cl. 181-36.00A.
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Green, Norman, to Bendix Corporation, The. Digital frequency synthesizer. 3,982,199, Cl. 331-51.000.
Green, Philip S., to Stanford Research Institute. Composite acoustic lens. 3,982,223, Cl. 340-8.00L.
Greenhalgh, Milton Sharples; and Lever, Ray Clarence, to General Electric Company. Apparatus for the manufacture of an electrical conductor covered with a crosslink cured polymeric insulation. 3,981,653, Cl. 425-113.000.
Greenwood, Arthur R.; and Lemberger, Earl S., to Universal Oil Products Company. Regeneration method for gravity-flowing catalyst particles. 3,981,824, Cl. 252-415.000.
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Vladimir Fedorovich; Berman, Kirill Adolfovich; Pogoretsky, Vitaly Vasilievich; Ovseichuk, Vitaly Alexandrovich; Zabolotsky, Petr Stepanovich; Boiko, Georgy Alexandrovich; Oleinik, Vladimir Ivanovich; Grodzitsky, Stanislav Vitalievich; Popov, Viktor Andreevich; and Chvertko, Anatoly Ivanovich, 3,981,349.

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Gustavsson, Per-Olof Gerhard; and Morwing, Bo Anders, to Telefonaktiebolaget L M Ericsson. Device for transmission of information from an information emitter to an information seeker. 3,982,243, Cl. [illegible]

Guthrie, James Leverette; and Kehr, Clifton Leroy, to W. R. Grace & Co. Novel urethane polythiols. 3,981,901, Cl. 260-468.00E.

Guthrie, James Leverette; and Kehr, Clifton Leroy, to W. R. Grace & Co. Novel urethane polythiols. 3,981,904, Cl. 260-471.00C.

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Gutner, Kenneth H. Drawer slide. 3,981,553, Cl. 312-347.000.

Gutridge, Jack E.; and Schuller, James J., to Pullman Incorporated. Anti-pilferage lock for box car doors. 3,981,524, Cl. 292-31.000.

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Hahn, Thomas M.; and Sholtes, George T., to General Electric Company. Food particle macerating means. 3,981,456, Cl. 241-46.00R.

Haines, Donald John. Method for casting blocks having fractured face. 3,981,953, Cl. 264-163.000.

Halasz, Alexander; Brody, Frederick, deceased; and by Newman, Richard, executor, to Clairol Incorporated. Oxidative hair dye compositions containing N-substituted o-phenylenediamines and method for their use. 3,981,677, Cl. 8-10.200.

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Hall, Richard W.; and Sonnenberg, Sven, to Kelsey-Hayes Company. Hydraulic intensifier control system. 3,981,622, Cl. 417-46.000.

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Harkness, Joseph R., to Briggs & Stratton Corporation. Automatic compression relief mechanism for internal combustion engines. 3,981,289, Cl. 123-182.000.

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Hartig, Wolfgang; Berges, Dietrich; and Schippers, Heinz, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. High speed twisting machine. 3,981,131, Cl. 57-58.540.

Hartmann, Werner; Queisser, Hans-Joachim; Markewitz, Gregor; Rettenmaier, Ulli; Sprater, Gunter; and Kniep, Rudiger, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Method and apparatus for displaying the internal structure of an object. 3,982,127, Cl. 250-273.000.

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Hauck, Frederic P.; Cimarusti, Christopher M.; and Narayanan, Venkatachala L., to E. R. Squibb & Sons, Inc. Compositions for the treatment of coronary diseases containing tetrahydronaphthyloxyaminopropanols. 3,982,021, Cl. 424-330.000.

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Hawkes, Ivor, to Creare, Incorporated. Rock breaking apparatus. 3,981,540, Cl. 299-62.000.

Hayashi, Takashi: *See—*

Takeuchi, Yasumasa; Ikeda, Takehiko; Sekimoto, Akira; Hayashi, Takashi; Sasaki, Toshimi; and Atsumi, Sabulo, 3,981,830.

Hayes, Douglas R.; and Phipps, Charles M., to United Technologies Corporation. Investment casting mold and process. 3,981,344, Cl. 164-26.000.

Hayes, Douglas R.; and Perron, James S., to United Technologies Corporation. Method and apparatus for directional solidification. 3,981,346, Cl. 164-60.000.

Hazen, George G.: *See—*

Russ, Warren K., Jr.; Hazen, George G.; and Chamberlin, Earl M., 3,981,888.

Sletzinger, Meyer; and Hazen, George G., 3,981,911.

Healy, Robert N., to Exxon Production Research Company. Oil recovery method using microemulsions. 3,981,361, Cl. 166-252.000.

Hedlund, Junior M., to Hedlund Manufacturing Co., Inc. Material handling system. 3,981,635, Cl. 417-551.000.

Hedlund Manufacturing Co., Inc.: *See—*

Hedlund, Junior M., 3,981,635.

Heffe, Wilhelm; Hunziker, Fritz; and Thoma, Klaus, to Sandoz, Inc. 4-(3.4-Methylene dioxy phenyl)-piperidines. 3,982,001, Cl. 424-267.000.

Hehr International Inc.: *See—*

Oiler, Philip R., 3,981,067.

Heimes, Willy, to Palitex Project-Company G.m.b.H. Yarn guide eyelet and monitoring mechanism in a textile yarn processing machine. 3,981,134, Cl. 57-81.000.

Heinz, David M.: *See—*

Mee, Jack E.; Hamilton, Thomas N.; Archer, John L.; and Heinz, David M., 3,982,049.

Heinzer, Paul, to Wifo Wissenschaftliches Forschungs-Institut A.G. Electrophotographic copying machine with seamless image forming and transfer band. 3,981,578, Cl. 355-16.000.

Helmer, Josef, to Daimler-Benz Aktiengesellschaft. Pump wheel for a hydrodynamic unit. 3,981,614, Cl. 416-180.000.

Hemfort, Heinrich; Pautsch, Gunthard; and Kohlstette, Werner, to Westfalia Separator AG. Centrifuge having a system for controlling the temperature of the liquid to be centrifuged or of one of the components thereof. 3,981,437, Cl. 233-11.000.

Henderson, Cyril; and Close, Albert R., to American Safety Equipment Corporation. Single retractor continuous loop restraint system. 3,981,535, Cl. 297-389.000.

Henderson, James G.: *See—*

Eakes, James H.; Henderson, James G.; and Henderson, James M., 3,981,055.

Henderson, James M.: *See—*

Eakes, James H.; Henderson, James G.; and Henderson, James M., 3,981,055.

Hengst, Bruno: *See—*

Buddenberg, Adolf; Hengst, Bruno; and Weskamp, Josef, 3,981,651.

Henin, Jean Pierre: *See—*

Chielens, Alain; and Henin, Jean Pierre, 3,981,350.

Henrick, Clive A., to Zoecon Corporation. Di-olefinic ketones. 3,981,922, Cl. 260-593.00R.

Henrion, W. S., to Texas Instruments Incorporated. Thermal printhead with drivers. 3,982,093, Cl. 219-216.000.

Henry, Charles Howard: *See—*

Dingle, Raymond; and Henry, Charles Howard, 3,982,207.

Henry, Raymond, to Thomson-CSF. Pin diode with a thick intrinsic zone and a device comprising such a diode. 3,982,267, Cl. 357-52.000.

Henry, Raymond W.: *See—*

Burkett, Bobby G.; and Henry, Raymond W., 3,982,230.

Herrin, Thomas Raymond: *See—*

Oslapas, Raymond; and Herrin, Thomas Raymond, 3,981,982.

Herrle, Karl: *See—*

Linke, Wolfgang; Herrle, Karl; Schwarz, Wolfgang; and Perner, Johannes, 3,981,987.

Herrmann, John R.; and Alexander, Robert L., to Gilbert, G. S. Beckwith. Load bearing pallet. 3,981,249, Cl. 108-52.100.

Hervert, George L., to Universal Oil Products Company. Monolithic honeycomb form electric heating device. 3,982,100, Cl. 219-553.000.

Herzner, Hans. Displaced piston machine. 3,981,645, Cl. 418-161.000.

Hess, Johann T.; and Kucklick, Frederick C., to Grotnes Machine Works, Inc. Method and apparatus for expanding spirally welded pipe. 3,981,172, Cl. 72-370.000.

Heyman, Philip Michael; Quinn, Robert Leon; and Gorog, Istvan, to RCA Corporation. Electrochromic display device. 3,981,560, Cl. 350-160.00R.

Hicks, Alton D.: *See—*

Pangle, James C., Jr.; and Hicks, Alton D., 3,981,836.

Higgs, William York, to Intercontinental Marine Limited. Life saving buoy for small vessels. 3,981,036, Cl. 9-9.000.

Hight, Paul H.: *See—*

Eldridge, Harry H.; Jones, Robert A.; Lindner, Gordon M.; and Hight, Paul H., 3,981,406.

Higuchi, Takeru; Hussain, Anwar A.; and Shell, John W., to Alza Corporation. Bioerodible ocular device. 3,981,303, Cl. 128-260.000.

Higuchi, Takeshi: *See—*

Nakayama, Shozo; Toriyama, Takeshi; and Higuchi, Takeshi, 3,981,629.

Hilbig, Jack H., to Rohr Industries, Inc. Roller lip seal for surface effect ships. 3,981,260, Cl. 114-67.00R.

Hilfman, Lee, to UOP Inc. Desulfurization of black oil utilizing a pretreated cobalt-molybdenum catalyst. 3,981,796, Cl. 208-215.000.

Hill, Charles E.: *See—*

Armbrust, William D.; Shallenberger, Dennis J.; and Hill, Charles E., 3,981,477.

Hill, Clifford B.: *See—*

Brooks, William O.; and Hill, Clifford B., 3,982,189.

Hill, Donald Gifford; and Lewis, Theras Gordon, to Bell Telephone Laboratories, Incorporated. Network control circuit for a time division switching system. 3,982,076, Cl. 179-15.0AT.

Hill, Frank E.: *See—*

Fogelberg, Mark J.; and Hill, Frank E., 3,981,146.

Hill, Robert D., to United States of America, Navy. Magnetic and electric field shielding of computer components from lightning. 3,982,058, Cl. 174-2.000.

Hill, William Frank, to Lucas Electrical Company Limited, The. Temperature sensitive electronic switching arrangements. 3,982,163, Cl. 318-473.000.

Hilti Aktiengesellschaft: *See—*

Maier, Elmar, 3,981,424.

Himmler, Gunther, to Gebr. Hofmann KG. Method of and device for testing the shock absorbers of a vehicle. 3,981,174, Cl. 73-11.000.

Hirano, Masachika; Ohno, Isao; Okuno, Yoshitoshi; Magara, Osamu; Itaya, Nobushige; Nishioka, Toshio; Mizutani, Toshio; Ohno, Nobuo; Matsuo, Takashi; and Takeda, Hisami, to Sumitomo Chemical Company, Limited. Cyclopropane carboxylic acid esters. 3,981,903, Cl. 260-468.00H.

Hishinuma, Yukio; and Tamura, Zensuke, to Hitachi, Ltd. Method for desulfurizing flue gas by active carbon suspension. 3,981,972, Cl. 423-244.000.

Hitachi, Ltd.: *See—*

Hishinuma, Yukio; and Tamura, Zensuke, 3,981,972.

Ito, Kazuhiro; Kawamura, Masao; Ono, Yuichi; and Morioka, Makoto, 3,981,764.

Yamazaki, Eiichi; Maruyama, Koichi; Ueda, Toshio; Yokomizo, Hiroshi; and Ogura, Iwao, 3,982,252.

Hitco: *See—*

Trelease, Robert B., 3,981,689.

Hitzman, Donald O., to Phillips Petroleum Company. Fermentation of oxygenated hydrocarbon compounds with thermophilic microorganisms. 3,981,774, Cl. 195-49.000.

Hix, Charles M., Jr., to Arcadia Refining Company. System for recovering petroleum fluids from underwater fissures. 3,981,154, Cl. 61-101.000.

Hiyama, Yutaka: *See—*

Sato, Seiko; Hiyama, Yutaka; and Yokota, Mitsuhisa, 3,981,608.

Hoag, Ethan D.; and Pease, Henry E., to Avco Everett Research Laboratory, Inc. Electron beam gas discharge laser pressure control. 3,982,200, Cl. 331-94.50P.

Hobbs, James W.: *See—*

Christie, David A.; and Hobbs, James W., 3,981,793.

Hochberg, Frederick, to International Business Machines Corporation. Method and apparatus for recording information on a recording medium. 3,982,251, Cl. 346-1.000.

Hockele, Gunter: *See—*

Maiwald, Heinz; Hockele, Gunter; and Sauer, Hermann, 3,981,967.

Hocking, Thomas A., to International Harvester Company. Safety support for harvester combine feeders. 3,981,126, Cl. 56-15.900.

Hocking, Thomas A.: *See—*

Kerber, Dathan R.; Hocking, Thomas A.; and Vande Wiele, John L., 3,981,125.

Hodson, Kevin: *See—*

Jefferis, Alan Kenneth; and Hodson, Kevin, 3,982,075.

Hoeberechts, Arthur Marie Eugene: *See—*

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Hoechst Aktiengesellschaft: *See—*

Siegemund, Gunther; and Muschaweck, Roman, 3,981,927.

Hoefke, Wolfgang: *See—*

Losel, Walter; Traunecker, Werner; and Hoefke, Wolfgang, 3,981,992.

Hoeflinger, Irene Burns; and Cohen, Diana. Carrel apparatus for use in learning. 3,981,086, Cl. 35-60.000.

- **Hoehn, Steven Jon; and Jackson, Joseph Monroe, to Litton Business Telephone Systems, Inc.** Touch-to-rotary converter for a telephone instrument. 3,982,079, Cl. 179-81.00R.
- **Hoffmann, Hellmut; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft.** O-Alkyl-O-[1-phenyl-5-cyanoalkylmercapto-1,2,4-triazol(3)yl]-thionophosphoric(phosphonic) acid esters. 3,981,994, Cl. 424-200.000.
- **Hoffmann-La Roche Inc.:** *See—*
  - Boller, Arthur; and Scherrer, Hanspeter, 3,981,817.
  - Pauling, Horst, 3,981,896.
  - Szkrybalo, William, 3,981,860.
- **Hofmann, Eberhard:** *See—*
  - Staudt, Heinrich; and Hofmann, Eberhard, 3,981,634.
- **Hofstetter, Robert A.** Safety can opener. 3,981,411, Cl. 220-267.000.
- **Hogan, Edward Merrick:** *See—*
  - Fowler, John Rayford; and Hogan, Edward Merrick, 3,981,415.
- **Hogg, Walter R., to Coulter Electronics, Inc.** Conductivity cell for particle study device. 3,982,182, Cl. 324-71.0CP.
- **Hokky, Stephen G., to Airborne Manufacturing Company.** Fluid cooled commutated electric motor. 3,982,146, Cl. 310-89.000.
- **Holan, Leif A.** Stand. 3,981,468, Cl. 248-167.000.
- **Holder, Charles Delbert, Jr., to International Paper Company.** Method for improving the printability characteristics of gloss calendered paper. 3,982,056, Cl. 427-361.000.
- **Holland, William P.; and Merritt, William H., to Machlett Laboratories, Incorporated, The.** Flexible cable termination. 3,982,059, Cl. 174-73.00R.
- **Holt, Corbly LeRoy, to Brady Air Controls, Inc.** Cycling air volume control. 3,981,319, Cl. 137-211.000.
- **Home Curtain Corporation:** *See—*
  - Taylor, Hervey, 3,981,255.
- **Homeyer, Bernhard:** *See—*
  - Maurer, Fritz; Hammann, Ingeborg; and Homeyer, Bernhard, 3,981,993.
- **Honeywell Inc.:** *See—*
  - Sheffield, Herman E.; and Welshans, Paul D., 3,982,242.
- **Hook, William R., to TRW Inc.** Signal processing system. 3,982,114, Cl. 235-181.000.
- **Hool, Gerhard; and Kundig, Hans, to Ciba-Geigy Corporation.** Synergistic composition for the control of bacteria. 3,982,022, Cl. 424-341.000.
- **Hoos, Gerald.** Lens selector. 3,981,564, Cl. 350-255.000.
- **Hopper, William H. L., to Kennecott Copper Corporation.** Stop-weld composition and the method of using it. 3,981,753, Cl. 148-23.000.
- **Horbach, Stephen.** Molding apparatus selectively operable for either injection or transfer molding. 3,981,655, Cl. 425-181.000.
- **Horiuchi, Fukashi:** *See—*
  - Umemura, Takeaki; and Horiuchi, Fukashi, 3,981,919.
- **Horn Construction Co., Inc.:** *See—*
  - Potter, Stannard M., 3,981,378.
- **Horsley, James Othel, to RCA Corporation.** High-speed counter with reliable count extraction system. 3,982,108, Cl. 235-92.0EA.
- **Hosogai, Takeo:** *See—*
  - Nishida, Takashi; Ninagawa, Yoichi; Omura, Yoshiaki; Mori, Fumio; Tamai, Yoshin; Hosogai, Takeo; Fujita, Yoshiji; and Itoi, Kazuo, 3,981,930.
- **Hostetter, Richard S., Jr.:** *See—*
  - Kranenberg, Helmut; and Hostetter, Richard S., Jr., 3,981,752.
- **Houlihan, William J.; and Manning, Robert E., to Sandoz, Inc.** Substituted benzylidene hydrazines for treating hyperglycemia, obesity and inflammation. 3,982,020, Cl. 424-326.000.
- **Houlihan, William J.:** *See—*
  - Cooke, George A.; and Houlihan, William J., 3,981,890.
- **Housholder, William R.; and Greer, Norman L.** Shipping container for nuclear fuels. 3,982,134, Cl. 250-506.000.
- **Hovey, Emerson B.:** *See—*
  - Davis, Howard G.; Hovey, Emerson B.; and Sylvester, Edwin E., 3,981,762.
- **Howard, Addison M., to Eltra Corporation.** Method for zincating aluminum articles. 3,982,055, Cl. 427-309.000.
- **Howard, Curtis E.; and Calvin, Douglas G., to Texaco Inc.** Methods and steam samplers with inertial latch. 3,981,189, Cl. 73-155.000.
- **Howard, David F.:** *See—*
  - McCardle, Arthur, Jr.; Israel, George H., Jr.; Trombetta, Frank J.; and Howard, David F., 3,981,450.
- **Howell, Eddie P., to Atlantic Richfield Company.** Method for measuring the thermal conductivity of well casing and the like. 3,981,187, Cl. 73-154.000.
- **Howmet Corporation:** *See—*
  - Nurminen, John I.; and Sturgis, David H., 3,981,352.
- **Hoyer, Peter.** Mounting facia plates on building structures. 3,981,115, Cl. 52-235.000.
- **Hozumi, Yukio:** *See—*
  - Yoshizaki, Hiroyuki; Takanohashi, Hiromitsu; Masuda, Yoshitaka; Hozumi, Yukio; Ohi, Akira; and Sonoyama, Yuzo, 3,981,843.
- **Hruza, Denis E., Sr.:** *See—*
  - Slangan, Gary; Pittet, Alan O.; Giacino, Christopher; Hruza, Denis E., Sr.; and Shuster, Edward J., 3,982,009.
- **Hsieh, Paul Y.:** *See—*
  - Oh, Chan Soo; and Hsieh, Paul Y., 3,981,558.
- **Huber, Wolfgang; and Schrecke, Horst G., to SKF Industrial Trading and Development Company, B.V.** Spinning ring supported by a slider bearing. 3,981,135, Cl. 57-124.000.
- **Hudgin, Donald E.; and Zawadzki, Thomas, to Princeton Polymer Laboratories, Incorporated.** Degradable hydrocarbon polymers containing a metal compound and a benzotriazole. 3,981,856, Cl. 526-4.000.
- **Hudson, James M.:** *See—*
  - Niswender, Gordon Dean; and Hudson, James M., 3,981,863.
- **Hughes Aircraft Company:** *See—*
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  - Burns, Richard W., 3,982,214.
  - Knauer, Wolfgang, 3,982,158.
- **Huille, Michel Ernest Antoine:** *See—*
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- **Hujer, Friedrich:** *See—*
  - Weinert, Volker; Hujer, Friedrich; and Knapp, Walter, 3,981,579.
- **Hull, George Scott; Chaney, Louie V.; and Watson, Richard Dean, to Johnson Sheet Metal Works Corporation.** Burial casket with improved sealing system. 3,981,054, Cl. 27-17.000.
- **Hultgren, Lars Evert; and Engwall, Olof, to Thermospray AG.** Method and means for air purification during spray-painting. 3,981,694, Cl. 55-90.000.
- **Hunter, Edwin J., to Toro Company, The.** Water operated control apparatus and method. 3,981,446, Cl. 239-1.000.
- **Hunziker, Fritz:** *See—*
  - Heffe, Wilhelm; Hunziker, Fritz; and Thoma, Klaus, 3,982,001.
- **Husemann, Hinrich:** *See—*
  - Bohmholdt, Gerd; Husemann, Hinrich; and Riedel, Helmut, 3,981,921.
- **Hussain, Anwar A.:** *See—*
  - Higuchi, Takeru; Hussain, Anwar A.; and Shell, John W., 3,981,303.
- **Hutchins, Burleigh M., Jr.:** *See—*
  - Abrahams, Louis; Hutchins, Burleigh M., Jr.; and Waters, James L., 3,981,620.
- **Hutchinson, James David:** *See—*
  - Berlyn, Robin Wilfrid; and Hutchinson, James David, 3,981,453.
- **Hutterer, Johann, to Williams, David Godfrey, a part interest.** Rotary piston machine. 3,981,638, Cl. 418-34.000.
- **Huxsoll, Charles C.:** *See—*
  - Weaver, Merle L.; Huxsoll, Charles C.; and Graham, Robert P., 3,982,037.
- **Hwang, Sang-Hak:** *See—*
  - Contractor, Rashmikant M.; and Hwang, Sang-Hak, 3,981,047.
- **Hyltin, Tom M., to Seiko Instruments Incorporated.** Pushbutton switch. 3,982,089, Cl. 200-159.00B.
- **IBM:** *See—*
  - Romankiw, Lubomyr T., 3,981,844.
- **ICI United States Inc.:** *See—*
  - Markiewitz, Kenneth H., 3,981,913.
- **Ignatiev, Vladimir Vasilievich:** *See—*
  - Berezhnoi, Igor Alexandrovich; Elatontsev, Albert Ivanovich; Ignatiev, Vladimir Vasilievich; Ivlev, Djuis Danilovich; Mayanov, Boris Veniaminovich; Svinukhov, Vasily Andriyanovich; Kuzmin, Vladimir Petrovich; Evdokimov, Igor Alexandrovich; and Zhidkov, Boris Alexeevich, deceased, 3,981,462.
- **Ihashi, Yoshio:** *See—*
  - Hattori, Saburo; Morita, Yoshiharu; Ihashi, Yoshio; and Sato, Tadao, 3,981,907.
- **Iino, Hirokazu.** Fibrous cleaning materials impregnated with a latex-mixture. 3,981,741, Cl. 134-6.000.
- **Ikeda, Hisao:** *See—*
  - Murata, Minoru; Sugiyama, Koichi; and Ikeda, Hisao, 3,981,735.
- **Ikeda, Takehiko:** *See—*
  - Takeuchi, Yasumasa; Ikeda, Takehiko; Sekimoto, Akira; Hayashi, Takashi; Sasaki, Toshimi; and Atsumi, Sabulo, 3,981,830.
- **Ilfrey, William T.:** *See—*
  - Walker, James M.; Ilfrey, William T.; and Schaeffer, Philippe H., 3,981,357.
- **Illinois Tool Works Inc.:** *See—*
  - Barth, Gerald Dean; and Wagner, David Prugh, 3,981,170.
  - Braden, Denver, 3,982,047.
  - Jorgensen, Arne R., 3,981,607.
- **Imada, Setsuo:** *See—*
  - Otani, Yasuhiko; and Imada, Setsuo, 3,981,955.
- **Imai, Mitsuo:** *See—*
  - Nakashima, Kunihiko; Muroi, Ryoichi; Imai, Mitsuo; and Sato, Kenji, 3,981,958.
- **Imai, Norio:** *See—*
  - Fukuoka, Yohei; Kato, Toshio; Imai, Norio; Nishikido, Joji; Hamada, Masato; Mikami, Hiroshi; Iwasaki, Hirohumi; and Koike, Toshihisa, 3,981,906.
- **Imperial Chemical Industries Limited:** *See—*
  - Asher, Brian Roy; and Thompson, Morice William, 3,981,839.
  - Attwood, Terence Edwin; and Farrant, Barry William, 3,981,945.
  - Bellingham, Francis, 3,982,028.
  - Ryan, James Ernest; and Smale, Rodney, 3,981,949.
- **Incotex, S.A.:** *See—*
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- **Ingersoll, Robert C.:** *See—*
  - Flaherty, John W.; Ingersoll, Robert C.; and Goodrich, William F., 3,981,105.
- **Inokuma, Hiroyuki:** *See—*
  - Habu, Teiji; Yamaguchi, Hisashi; Wada, Tsuneo; Sasaki, Takashi; Ishii, Hiroki; Omura, Takayoshi; and Inokuma, Hiroyuki, 3,981,857.

- **Inoue, Masakazu:** *See—*
  - Okamoto, Takehiko; Kishimoto, Akihiko; Nagai, Ikuo; Sato, Hiroshi; Okasaka, Hotsuma; and Inoue, Masakazu, 3,981,944.
- **Inoue, Shozo, to Canon Kabushiki Kaisha.** Multicolor electrophotographic copier with liquid developing. 3,981,576, Cl. 355-4.000.
- **Institut de Recherches de la Siderurgie Francaise (IRSID):** *See—*
  - Alberny, Robert; Leclercq, Alain; and Birat, Jean-Pierre, 3,981,345.
- **Interconsal Associates, Inc.:** *See—*
  - Ciano, John A., 3,981,527.
- **Intercontinental Marine Limited:** *See—*
  - Higgs, William York, 3,981,036.
- **Intermountain Research and Development Corporation:** *See—*
  - Lobunez, Walter; Kim, Nam Kyun; and Rau, Eric, 3,981,686.
- **International Basic Economy Corporation:** *See—*
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- **International Business Machines Corporation:** *See—*
  - Abell, William A., Jr.; Field, Thomas R.; Haus, Ralph A.; and Shakib, Iraj D., 3,981,386.
  - Bernstein, William A.; and Doggett, Robert H., 3,982,231.
  - Feinstein, Paul, Jr.; and Sokol, Gary Leo, 3,981,497.
  - Gersbach, John Edwin, 3,982,171.
  - Hochberg, Frederick, 3,982,251.
  - Simpson, Henry Wellington, 3,982,043.
  - Voegeli, Otto, 3,982,234.
- **International Environmental Dynamics, Inc.:** *See—*
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- **International Flavors & Fragrances Inc.:** *See—*
  - Evers, William J.; Pelse, Igor A.; and Vock, Manfred Hugo, 3,982,038.
  - Hall, John B., 3,981,924.
  - Slangan, Gary; Pittet, Alan O.; Giacino, Christopher; Hruza, Denis E., Sr.; and Shuster, Edward J., 3,982,009.
  - Wilson, Richard Arnold; Katz, Ira; Vock, Manfred H.; and Shuster, Edward J., 3,982,034.
- **International Harvester Company:** *See—*
  - Hocking, Thomas A., 3,981,126.
  - Kerber, Dathan R.; Hocking, Thomas A.; and Vande Wiele, John L., 3,981,125.
  - Phillips, Carmen S.; and Mecklin, Charles D., 3,981,391.
- **International Paper Company:** *See—*
  - Holder, Charles Delbert, Jr., 3,982,056.
- **International Playtex, Inc.:** *See—*
  - Donaghy, James G., 3,981,310.
- **International Telephone and Telegraph Corporation:** *See—*
  - Clark, James Monroe, 3,982,074.
  - Clark, James Monroe; Cohen, Stuart Barry; and Magnus, Arthur Howard, 3,982,077.
  - Moore, John R., 3,981,422.
  - Richardson, Alexander Laidlaw, 3,981,440.
  - Slathar, Donald A.; and Neutkens, Christiaan H., 3,981,394.
- **Inventronics, Inc.:** *See—*
  - Sanderson, Albert E., 3,982,184.
- **Irvine, Gerald O., to Scorpion, Inc.** Unitary frame and engine support for snowmobile. 3,981,373, Cl. 180-5.00R.
- **Irwin, John A., to General Motors Corporation.** Ceramic combustion liner. 3,981,142, Cl. 60-39.650.
- **Isenson, Raymond S.:** *See—*
  - Ambrosini, Leonard R.; and Isenson, Raymond S., 3,981,241.
- **Ishii, Hiroki:** *See—*
  - Habu, Teiji; Yamaguchi, Hisashi; Wada, Tsuneo; Sasaki, Takashi; Ishii, Hiroki; Omura, Takayoshi; and Inokuma, Hiroyuki, 3,981,857.
- **Ishii, Yoshio:** *See—*
  - Manabe, Keiji; and Ishii, Yoshio, 3,981,077.
- **Ishikawa, Masakazu:** *See—*
  - Ban, Masashi; Ishikawa, Masakazu; and Uemura, Hiroshi, 3,981,147.
- **Ishitani, Akiyasu, to Sony Corporation.** Junction gated field effect transistor. 3,982,264, Cl. 357-22.000.
- **Islas, John J., to Victor Comptometer Corporation.** Compound bow. 3,981,290, Cl. 124-24.00R.
- **Isogai, Nobuo; Okawa, Takashi; and Takeda, Takako, to Mitsubishi Gas Chemical Company, Inc.** Process for producing per-p-toluic acid and utilizing the same. 3,981,909, Cl. 260-502.00A.
- **Israel, George H., Jr.:** *See—*
  - McCardle, Arthur, Jr.; Israel, George H., Jr.; Trombetta, Frank J.; and Howard, David F., 3,981,450.
- **Itaya, Nobushige:** *See—*
  - Hirano, Masachika; Ohno, Isao; Okuno, Yoshitoshi; Magara, Osamu; Itaya, Nobushige; Nishioka, Toshio; Mizutani, Toshio; Ohno, Nobuo; Matsuo, Takashi; and Takeda, Hisami, 3,981,903.
- **Ito, Kazuhiro; Kawamura, Masao; Ono, Yuichi; and Morioka, Makoto, to Hitachi, Ltd.** III-V Compound semi-conductor crystal growth from a liquid phase on a substract including filtering liquid phase. 3,981,764, Cl. 156-622.000.
- **Ito, Tadashi; Nakamoto, Soichi; and Yamada, Sadao, to Canon Kabushiki Kaisha; and Tokyo Shibaura Electric Co., Ltd.** Digital indication system for a camera. 3,982,254, Cl. 354-53.000.
- **Ito, Tateo:** *See—*
  - Saito, Masumi; Tani, Sumio; Ito, Tateo; and Kasaoka, Shigeaki, 3,981,971.
- **Itoh, Tsuneyoshi:** *See—*
  - Kondo, Fumio; Kondo, Masayuki; Itoh, Tsuneyoshi; and Sato, Koji, 3,981,709.
- **Itoi, Kazuo:** *See—*
  - Nishida, Takashi; Ninagawa, Yoichi; Omura, Yoshiaki; Mori, Fumio; Tamai, Yoshin; Hosogai, Takeo; Fujita, Yoshiji; and Itoi, Kazuo, 3,981,930.
- **Ivey, John Saxon; and Braybrook, Kenneth Albert, to Borg-Warner Corporation.** Method of making a sheet metal hub assembly. 3,981,068, Cl. 29-523.000.
- **Ivlev, Djuis Danilovich:** *See—*
  - Berezhnoi, Igor Alexandrovich; Elatontsev, Albert Ivanovich; Ignatiev, Vladimir Vasilievich; Ivlev, Djuis Danilovich; Mayanov, Boris Veniaminovich; Svinukhov, Vasily Andriyanovich; Kuzmin, Vladimir Petrovich; Evdokimov, Igor Alexandrovich; and Zhidkov, Boris Alexeevich, deceased, 3,981,462.
- **Iwabuchi, Arata, to Mitsui Petrochemical Industries, Ltd.** Collapsible high speed boat. 3,981,035, Cl. 9-2.00C.
- **Iwaki, Tsutomu:** *See—*
  - Fukuda, Masataro; Iwaki, Tsutomu; and Kawano, Hiroshi, 3,981,749.
- **Iwasaki, Hirohumi:** *See—*
  - Fukuoka, Yohei; Kato, Toshio; Imai, Norio; Nishikido, Joji; Hamada, Masato; Mikami, Hiroshi; Iwasaki, Hirohumi; and Koike, Toshihisa, 3,981,906.
- **Iwatsu Electric Co., Ltd.:** *See—*
  - Takita, Hajime; and Katow, Takehumi, 3,982,191.
- **IWS Nominee Company Limited:** *See—*
  - Briaire, Henricus Cornelis Johannes, 3,981,129.
- **J. Bobst & Fils S.A.:** *See—*
  - Bolliger, Edwin, 3,981,382.
- **J. & J. Marquardt, Firma:** *See—*
  - Marquardt, Erich; Storz, Werner; and Sachs, Eckehardt, 3,982,086.
- **J. P. Stevens & Co., Inc.:** *See—*
  - Sexton, William B., 3,981,256.
- **Jackes-Evans Manufacturing Company:** *See—*
  - Cornwell, Alexander M., Jr., 3,981,413.
- **Jackle, Reinhard, to Gebruder Staiger, Fabrik fur Feinmechanik und Elektrotechnik — Kunststoffspritzerei.** Self contained battery operated clock fabricated on a single printed circuit board. 3,981,139, Cl. 58-23.00R.
- **Jackson, Joseph Monroe:** *See—*
  - Hoehn, Steven Jon; and Jackson, Joseph Monroe, 3,982,079.
- **Jackson, William M.; and Peters, Edwin E., to Gulf & Western Manufacturing Company.** Method for joining pipes. 3,981,061, Cl. 29-157.00T.
- **Jacobs, John E., to United States of America, Health, Education and Welfare.** Dual frequency acoustic gas composition analyzer. 3,981,176, Cl. 73-24.000.
- **Jaeger, Raymond Edward; and Miller, Thomas John, to Bell Telephone Laboratories, Incorporated.** Method of making optical waveguides from glass fibers. 3,981,705, Cl. 65-2.000.
- **Jaffe, Herbert:** *See—*
  - Franklin, Stanley; and Jaffe, Herbert, 3,981,254.
- **James, David Richard.** Lifting apparatus. 3,981,484, Cl. 254-148.000.
- **James, George Stephen; Dewar, Bruce Ian; and Moergeli, Walter Rudolf, to Parel Societe Anonyme.** Electrochemical circulating bed cell. 3,981,787, Cl. 204-252.000.
- **Jeniszewski, Kasimir.** Guide means for boring bars. 3,981,210, Cl. 82-1.400.
- **Janssen, Daniel Johannes Gerardus; and Hart, Cornelis Maria, to U.S. Philips Corporation.** Line matching circuit for use in a tone pushbutton dialling subscriber's set provided with a tone generator. 3,982,078, Cl. 179-81.00R.
- **Janssen, Peter Johannes Michiel:** *See—*
  - Verhoeven, Leonardus Adrianus Johannes; de Haan, Maarten Rutger; and Janssen, Peter Johannes Michiel, 3,982,272.
- **Japan Storage Battery Co., Ltd.:** *See—*
  - Yonezu, Kunio; Tsubota, Masaharu; and Asai, Kenji, 3,981,742.
- **Japan Synthetic Rubber Co., Ltd.:** *See—*
  - Takeuchi, Yasumasa; Ikeda, Takehiko; Sekimoto, Akira; Hayashi, Takashi; Sasaki, Toshimi; and Atsumi, Sabulo, 3,981,830.
- **Jaworski, Ernest G., to Monsanto Company.** Method for increasing the sucrose content of growing plants. 3,981,718, Cl. 71-113.000.
- **Jeannet, Jean-Pierre; and Leuba, Jean-Pierre, to Tesa S.A.** Adjustable meter. 3,981,201, Cl. 73-431.000.
- **Jedo, Antoni, to Centralny Osrodek Projektowokonstrukcyjny Maszyn Gorniczych "Komag".** Baum jig. 3,981,799, Cl. 209-457.000.
- **Jefferis, Alan Kenneth; and Hodson, Kevin, to Post Office, The.** Synchronization system for time division multiple access relay communications system. 3,982,075, Cl. 179-15.0BS.
- **Jensen, Gerald A.; and Lee, Conrad E., to Pako Corporation.** Stripping and transfer roller assembly for sheet film processors. 3,981,496, Cl. 271-80.000.
- **Jensen, Harry Thomas, to United Technologies Corporation.** Electrical interconnection circuitry from a rotating body to a relatively stationary body. 3,981,611, Cl. 416-61.000.
- **Jeromin, Lothar S.:** *See—*
  - Nelson, Alan C.; and Jeromin, Lothar S., 3,981,727.
- **Jerrold Electronics Corporation:** *See—*
  - Simons, Kenneth, 3,982,062.
- **Jesensky, Alexander; Meller, Frederick D.; Patzke, Robert C.; and Willey, Gilbert W., to Addressograph Multigraph Corporation.** Optical device. 3,981,574, Cl. 353-101.000.
- **Jessen, Norman H.:** *See—*
  - Blise, Bernard G.; and Jessen, Norman H., 3,981,194.

- Johansen, Robert J., to Aubrey Manufacturing, Incorporated. Rangehood electrical wiring connection arrangement and method of connecting same. 3,981,069, Cl. 29-526.000.
- Johansson, Ernst Lennart: *See—*
  - Lundstrom, Hans Per Olof; and Johansson, Ernst Lennart, 3,981,368.
- John Wyeth & Brother Limited: *See—*
  - Curran, Adrian Charles Ward, 3,981,878.
- Johns-Manville Corporation: *See—*
  - Loeffler, Romain Eugene; and Rollins, Forrest Theodore, 3,981,708.
- Johns, Robert C., Jr., to Clark Equipment Company. Hydraulic drive assist for scrapers. 3,981,374, Cl. 180-14.00A.
- Johns, Robert H. Practice violin and bow. 3,981,219, Cl. 84-275.000.
- Johnsen, Edward L. Continuous business form or the like adapted for subsequent processing into combination mailing envelopes and return envelopes having a common back ply panel. 3,981,435, Cl. [illegible]
- Johnson, Allen M. L., to Raymond Lee Organization, Inc., The, a part interest. Dual level toilet flusher. 3,981,029, Cl. 4-67.00A.
- Johnson, Ernest D.; and Wright, Hugh W., to Goodyear Tire & Rubber Company, The. Clamping insert. 3,981,118, Cl. 52-716.000.
- Johnson, John R., to Owens-Illinois, Inc. Apparatus for surface treating glass containers. 3,981,710, Cl. 65-158.000.
- Johnson, Lloyd D., to Emhart Industries, Inc. Apparatus for applying adhesive to carton flaps. 3,981,122, Cl. 53-374.000.
- Johnson Matthey & Co., Limited: *See—*
  - Bradford; Christopher William; and Middleton, Harry, 3,981,782.
- Johnson Sheet Metal Works Corporation: *See—*
  - Hull, George Scott; Chaney, Louie V.; and Watson, Richard Dean, 3,981,054.
- Johnston, Ross W.; and Witty, Barrie W., to Sperry Rand Corporation. Printhead for impact printer. 3,981,236, Cl. 101-93.140.
- Johnston, Ross W.: *See—*
  - Thomas, Roy D.; and Johnston, Ross W., 3,981,235.
- Johnston, Wilbur Dexter, *Jr.*, to Bell Telephone Laboratories, Incorporated. Devices containing aluminum-V semiconductor and method for making. 3,982,265, Cl. 357-30.000.
- Jones, Charles A. Method of making a compressed wood panel from peeled logs. 3,981,338, Cl. 144-309.00D.
- Jones, Christopher Robin: *See—*
  - Williams, Malcolm; Crookes, Richard William; and Jones, Christopher Robin, 3,981,287.
- Jones, Ferris E. Furniture combination. 3,981,533, Cl. 297-173.000.
- Jones, Lloyd R.; and Roberts, Frederick W., deceased (by Roberts, Dorothy A., executrix), to Rolock Incorporated. Gas density detecting apparatus. 3,981,178, Cl. 73-30.000.
- Jones, Robert A.: *See—*
  - Eldridge, Harry H.; Jones, Robert A.; Lindner, Gordon M.; and Hight, Paul H., 3,981,406.
- Jones, Robert N., to Xerox Corporation. Xerographic imaging member having hexagonal selenium in inter-locking continuous paths. 3,981,728, Cl. 96-1.500.
- Jordan, Kenneth T.; and Sowers, Norman A., to Sperry Rand Corporation. Power transmission. 3,981,648, Cl. 418-267.000.
- Jorgensen, Arne R., to Illinois Tool Works Inc. Boring bar with removable and indexable cutting insert. 3,981,607, Cl. 408-146.000.
- Joseph Lucas Industries: *See—*
  - Smith, Trevor Stanley, 3,981,141.
- Joto Chemical Company Limited: *See—*
  - Yamamoto, Sadanori; and Osada, Isao, 3,981,840.
- Joynson, Reuben E.; and Mundy, Joseph L., to General Electric Company. Pattern recognition machine for analyzing line orientation. 3,982,227, Cl. 340-146.3AE.
- Judin, Vladimir Vasilievich: *See—*
  - Karatsjuba, Anatoly Prokofievich; Kmita, Tatyana Georgievna; Kruglov, Igor Ivanovich; Kurinny, Vladimir Ivanovich; Kurnosov, Anatoly Ivanovich; Ryzhikov, Igor Veniaminovich; and Judin, Vladimir Vasilievich, 3,982,262.
- Jupa, Edward C.; Meeder, Raymond L.; and Richter, Edward K., to G. D. Searle & Co. Collimator changer for scintillation camera. 3,982,133, Cl. 250-505.000.
- Jureller, John F.: *See—*
  - Soule, Hendrick H., Jr.; and Jureller, John F., 3,982,245.
- K-tel International, Inc.: *See—*
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  - Miyazaki, Tsutomu; Kato, Takashi; and Miyamoto, Noriaki, 3,981,132.
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  - Nakayama, Shozo; Toriyama, Takeshi; and Higuchi, Takeshi, 3,981,629.
- Kaczmarek, Al. Device for processing refuse. 3,981,455, Cl. 241-32.000.
- Kaes, Hans-Herbert: *See—*
  - Broemer, Heinz; Kaes, Hans-Herbert; and Pfeil, Emanuel, 3,981,736.
- Kafafian, Haig. Communications and control method and apparatus for persons who may have muscular incoordination and/or spasticity. 3,982,236, Cl. 340-147.00R.
- Kaiser, Fritz: *See—*
  - Voigtlander, Wolfgang; Kaiser, Fritz; Schaumann, Wolfgang; and Stach, Kurt, 3,981,862.
- Kalb, Henry T.; Cline, Virgil A., Jr.; and Bomar, Bruce W., to United States of America, Air Force. Laser velocimeter real time digital data analyzer. 3,982,101, Cl. 235-152.000.
- Kaller, Yakov Alexandrovich: *See—*
  - Dashevsky, Zinovy Moiseevich; Kaller, Yakov Alexandrovich; Kolomoets, Nikolai Vasilievich; and Sgibnev, Igor Vladimirovich, 3,981,751.
- Kameda Seika Co., Ltd.: *See—*
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- Kamen, Barton A.: *See—*
  - Caston, J. Douglas; and Kamen, Barton A., 3,981,983.
- Kamezawa, Yasutoki: *See—*
  - Takahashi, Kenzi; Kouchi, Toshihiro; Kamezawa, Yasutoki; and Aizawa, Tatsuo, 3,981,730.
- Kampe, Wolfgang: *See—*
  - Fauland, Erich; Kampe, Wolfgang; Thiel, Max; Bartsch, Wolfgang; and Schaumann, Wolfgang, 3,982,012.
- Kan, Peter T.: *See—*
  - Cenker, Moses; Narayan, Thirumurti L.; and Kan, Peter T., 3,981,829.
- Kantor, Frederick W. Rotary thermodynamic compressor. 3,981,627, Cl. 417-207.000.
- Kaplan, Richard B.; Gonnella, Sebastian; and Abrams, Walter M., to Ultramet. Heat radiating coating and method of manufacture thereof. 3,982,148, Cl. 313-330.000.
- Karasawa, Tamotsu, to Canon Kabushiki Kaisha. Light-modulating device. 3,981,565, Cl. 350-266.000.
- Karashima, Masashi. Showcase. 3,981,552, Cl. 312-250.000.
- Karatsjuba, Anatoly Prokofievich; Kmita, Tatyana Georgievna; Kruglov, Igor Ivanovich; Kurinny, Vladimir Ivanovich; Kurnosov, Anatoly Ivanovich; Ryzhikov, Igor Veniaminovich; and Judin, Vladimir Vasilievich. Semiconductor indicating instrument. 3,982,262, Cl. 357-17.000.
- Karnilaw, John: *See—*
  - Christie, Nick J.; and Karnilaw, John, 3,981,679.
- Karpov, Vladimir Fedorovich: *See—*
  - Medovar, Boris Izrailevich; Saenko, Vladimir Yakovlevich; Schupak, Grigory Bentsionovich; Alferov, Jury Fedorovich; Karpov, Vladimir Fedorovich; Berman, Kirill Adolfovich; Pogoretsky, Vitaly Vasilievich; Ovseichuk, Vitaly Alexandrovich; Zabolotsky, Petr Stepanovich; Boiko, Georgy Alexandrovich; Oleinik, Vladimir Ivanovich; Grodzitsky, Stanislav Vitalievich; Popov, Viktor Andreevich; and Chvertko, Anatoly Ivanovich, 3,981,349.
- Kasaoka, Shigeaki: *See—*
  - Saito, Masumi; Tani, Sumio; Ito, Tateo; and Kasaoka, Shigeaki, 3,981,971.
- Kasuya, Kyoko: *See—*
  - Saikawa, Isamu; Takano, Shuntaro; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; Kasuya, Kyoko; and Kodama, Yutaka, 3,981,865.
- Kataoka, Nobuyuki: *See—*
  - Fujio, Ryota; Kataoka, Nobuyuki; Fukabori, Yoshihide; and Anzai, Shiro, 3,981,943.
- Kato, Haruhiro; Toyoda, Tsunehiko; and Tanabe, Hiroyuki, to Dai Nippon Co., Ltd. Method for coating inner faces of metal pipes of small diameter. 3,982,050, Cl. 427-181.000.
- Kato, Takashi: *See—*
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  - Miyazaki, Tsutomu; Kato, Takashi; Ueda, Shozo; and Yoshizawa, Toshio, 3,981,551.
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- Katow, Takehumi: *See—*
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- Katsuda, Yoshio, to Dainippon Jochugiku Kabushiki Kaisha. 5-Phenylvinylfurfurylester of chrysanthemumic acid. 3,982,013, Cl. 424-285.000.
- Katz, Ira: *See—*
  - Wilson, Richard Arnold; Katz, Ira; Vock, Manfred H.; and Shuster, Edward J., 3,982,034.
- Kauffman, Andrew G.; and Michelson, James D. Boat docking device. 3,981,261, Cl. 114-230.000.
- Kaufman, Stanley; and Sabia, Raffaele Antonio, to Bell Telephone Laboratories, Incorporated. Method for reclaiming waterlogged plastic insulated conductor cable. 3,981,947, Cl. 264-36.000.
- Kaufman, Warren F., to Ford Motor Company. Engine exhaust gas recirculating control. 3,981,283, Cl. 123-119.00A.
- Kawabata, Hidetoshi: *See—*
  - Tanaka, Susumu; Enoguchi, Yuji; Ogawa, Masaya; Kawabata, Hidetoshi; Kurita, Takaji; Fujiwara, Takao; Murasaki, Hiroshi; and Wada, Kenichi, 3,981,575.
- Kawai, Yoshio, to Kureha Kagaku Kogyo Kabushiki Kaisha. Input transfer system for electronic computer. 3,982,110, Cl. 235-151.300.
- Kawakami, Waichiro: *See—*
  - Taniguchi, Masao; Machi, Sueo; Kawakami, Waichiro; Hashimoto, Shoji; Kawamura, Keita; and Aoki, Shingi, 3,981,815.

- Kawamura, Kazuhiro; and Mizutani, Kunihiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Protective device for rotary engine oil seal. 3,981,642, Cl. 418-91.000.
- Kawamura, Keita: *See—*
  - Taniguchi, Masao; Machi, Sueo; Kawakami, Waichiro; Hashimoto, Shoji; Kawamura, Keita; and Aoki, Shingi, 3,981,815.
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- Kay, John C.: *See—*
  - Babunovic, Momir; and Kay, John C., 3,981,389.
- Kay, Thomas D.; and Harper, John W., to United States of America, Air Force. Patient restraining strap for scintiphotography. 3,982,132, Cl. 250-456.000.
- Kehr, Clifton Leroy: *See—*
  - Guthrie, James Leverette; and Kehr, Clifton Leroy, 3,981,901.
  - Guthrie, James Leverette; and Kehr, Clifton Leroy, 3,981,904.
- Keim, Cameron D., to Gerber Products Company. Container with improved pour spout. 3,981,430, Cl. 229-17.00R.
- Kellar, James S.; Carson, Don B.; and Boyd, David M., to UOP Inc. Control of hydrocarbon deasphalting process. 3,981,797, Cl. 208-309.000.
- Kelly, Edward A. Sewing machine lubrication system and pump therefor. 3,981,257, Cl. 112-256.000.
- Kelly, Ralph; and Ritter, Edmond Jean, to Cincinnati Milacron, Inc. Skin protective compositions. 3,981,990, Cl. 424-78.000.
- Kelly, Thomas James, to Du Pont de Nemours, E. I., and Company. Chloroprene polymer isolation. 3,981,854, Cl. 528-481.000.
- Kelsey-Hayes Company: *See—*
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  - Hall, Richard W.; and Sonnenberg, Sven, 3,981,622.
- Kemira Oy: *See—*
  - Evilampi, Toivo; and Laamanen, Virpi, 3,981,737.
- Kemp, Donald P., to Gast Manufacturing Corporation. Compressor head construction. 3,981,631, Cl. 417-312.000.
- Kennametal Inc.: *See—*
  - Armbrust, William D.; Shallenberger, Dennis J.; and Hill, Charles E., 3,981,477.
- Kennecott Copper Corporation: *See—*
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- KeNova AB: *See—*
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- Kenyon, Robert Sydney; Garnett, John Lyndon; and Liddy, Michael James. Enzyme insolubilization. 3,981,775, Cl. 195-68.000.
- Kerber, Dathan R.; Hocking, Thomas A.; and Vande Wiele, John L., to International Harvester Company. Leveling mechanism for harvester headers. 3,981,125, Cl. 56-14.500.
- Kern, Jorg: *See—*
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- Kiritani, Masataka; and Ogata, Yasuhiro, to Fuji Photo Film Co., Ltd. Process for preparing microcapsules. 3,981,821, Cl. 252-316.000.
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- Klappenecker, Karl; Burkhardt, Gisbert; and Rapparlie, Hans, to Licentia Patent-Verwaltungs-G.m.b.H. Apparatus for separating a letter stack. 3,981,493, Cl. 271-10.000.
- Klein, Max, to Normac, Inc. Reactor process conditions control. 3,981,855, Cl. 526-63.000.
- Klier, Shimon. Continuous treatment of textile materials. 3,981,162, Cl. 68-5.00E.
- Klinck, Martin; and Merziowsky, Udo, to U.S. Philips Corporation. Circuit arrangement for the formation of a sum and/or difference signal. 3,982,109, Cl. 235-150.300.
- Klink, Arthur E.: *See—*
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- Klomp, Edward D.: *See—*
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- Kluge, Albert E., Jr., to Caterpillar Tractor Co. Vehicle protection means. 3,981,376, Cl. 180-70.00P.
- Kmelisch, Wolfgang, to Siemens Aktiengesellschaft. Twin drive for rolling mills. 3,981,171, Cl. 72-249.000.
- Kmita, Tatyana Georgievna: *See—*
  - Karatsjuba, Anatoly Prokofievich; Kmita, Tatyana Georgievna; Kruglov, Igor Ivanovich; Kurinny, Vladimir Ivanovich; Kurnosov, Anatoly Ivanovich; Ryzhikov, Igor Veniaminovich; and Judin, Vladimir Vasilievich, 3,982,262.
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- Knifton, John F., to Texaco Inc. Reduction of nitroparaffin substrates to their corresponding oximes using a silver salt catalyst. 3,981,916, Cl. 260-566.00A.
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- Knight, Bill J. Anode casting machine. 3,981,353, Cl. 164-332.000.
- Knox, John Henderson, to University of Edinburgh. Gradient storage method for liquid chromatography. 3,981,801, Cl. 210-31.00C.
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- Koch, Ulrich H.: *See—*
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  - Saikawa, Isamu; Takano, Shuntaro; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; Kasuya, Kyoko; and Kodama, Yutaka, 3,981,865.
- Koeber, Henry Jacob, to Bell & Howell Company. Two speed planetary gear train. 3,981,423, Cl. 226-42.000.
- Koen, Toshiharu, to Victor Company of Japan, Limited; and Nifco Inc. Push-pull-lock device for slide shaft. 3,981,599, Cl. 403-107.000.
- Koenig, Robert John, to United Technologies Corporation. Coolable blade tip shroud. 3,981,609, Cl. 415-117.000.
- Kohkoku Chemical Industry Co., Ltd.: *See—*
  - Azuma, Kanae; and Ochiai, Minoru, 3,982,157.
- Kohlstette, Werner: *See—*
  - Hemfort, Heinrich; Pautsch, Gunthard; and Kohlstette, Werner, 3,981,437.
- Koike, Toshihisa: *See—*
  - Fukuoka, Yohei; Kato, Toshio; Imai, Norio; Nishikido, Joji; Hamada, Masato; Mikami, Hiroshi; Iwasaki, Hirohumi; and Koike, Toshihisa, 3,981,906.
- Koizumi, Eiji, to Kameda Seika Co., Ltd. Process for the production of rice crackers. 3,982,032, Cl. 426-296.000.
- Kojima, Yasuhiro; Matunaga, Niiti; and Nawa, Motoki, to Nippon Toki Kabushiki Kaisha. Process for manufacturing printed substrates and decalcomania compositions used therefor. 3,981,761, Cl. 156-235.000.
- Kokke, Antoine H.: *See—*
  - Dmitrovsky, Morris; and Kokke, Antoine H., 3,981,739.
- Kokubu, Yoshikazu; Okazaki, Isao; and Shikano, Haruo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Caustic alkali producing multiple vertical diaphragm type electrolytic cell admitting of easy assembly. 3,981,788, Cl. 204-266.000.
- Kolomoets, Nikolai Vasilievich: *See—*
  - Dashevsky, Zinovy Moiseevich; Kaller, Yakov Alexandrovich; Kolomoets, Nikolai Vasilievich; and Sgibnev, Igor Vladimirovich, 3,981,751.
- Komatsu, Miwako: *See—*
  - Saikawa, Isamu; Takano, Shuntaro; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; Kasuya, Kyoko; and Kodama, Yutaka, 3,981,865.
- Kondo, Fumio; Kondo, Masayuki; Itoh, Tsuneyoshi; and Sato, Koji, to Tokyo Kogaku Kikai Kabushiki Kaisha. Edge processing of chemically toughened lenses. 3,981,709, Cl. 65-30.00E.
- Kondo, Masayuki: *See—*
  - Kondo, Fumio; Kondo, Masayuki; Itoh, Tsuneyoshi; and Sato, Koji, 3,981,709.
- Kondo, Tokiharu, deceased: *See—*
  - Matsuyama, Junichi; Nakazawa, Yoshiyuki; Nakamura, Yasuharu; Ohi, Reiichi; and Kondo, Tokiharu, deceased, 3,982,044.
- Konermann, Hans-Ewald: *See—*
  - Freytag, Johannes; and Konermann, Hans-Ewald, 3,981,846.

Konishiroku Photo Industry Co., Ltd.: *See—*
Habu, Teiji; Yamaguchi, Hisashi; Wada, Tsuneo; Sasaki, Takashi; Ishii, Hiroki; Omura, Takayoshi; and Inokuma, Hiroyuki, 3,981,857.
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Thayer, William Stansbury; and Thomas, Charles Edward, 3,981,758.
Koppers, Kurt, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Cutting tool. 3,981,057, Cl. 29-96.000.
Koral, Joseph F.; and Beaufait, Daniel L., to General Motors Corporation. Vehicle body sunroof. 3,981,531, Cl. 296-137.00G.
Koshimizu, Masaki: *See—*
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Kossler, Ivo; and Habr, Karel. Flow-through capillary viscometer. 3,981,182, Cl. 73-55.000.
Kouchi, Toshihiro: *See—*
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Kouno, Kaoru: *See—*
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Kovar, Henry Charles, to Cornelius Company, The. Coin size tester. 3,981,384, Cl. 194-102.000.
Kraftwerk Union Aktiengesellschaft: *See—*
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Kranenberg, Helmut; and Hostetter, Richard S., Jr., to Bethlehem Steel Corporation. Method for controlling the temperature of steel during hot-rolling on a continuous hot-rolling mill. 3,981,752, Cl. 148-12.00D.
Kratcoski, Francis L.; and Brahos, William, to Oce-van der Grinten N.V. Apparatus for fixing toner images. 3,982,094, Cl. 219-216.000.
Krauss-Maffei Aktiengesellschaft: *See—*
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Kreuzer, Laurence G., to DuPage Manufacturing Company. Two-part worm drive clamp with variable length band-forming part. 3,981,053, Cl. 24-274.00R.
Krey, John F.; Regelson, Ephraim; and Crecelius, John D., to United States of America, Navy. Exhaust cooling system. 3,981,449, Cl. 239-127.300.
Krishna, Surinder: *See—*
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Kroebig, Helmut L., to United States of America, Air Force. Plasma deposited rider rings for hot displacer. 3,981,155, Cl. 62-6.000.
Krol, Salomon, to Groupe Europeen pour la Technique des Turbines a Vapeur G.E.T.T. Continuous connection device for the mobile blades of a turbo-machine. 3,981,615, Cl. 416-190.000.
Kruger, Emilio; Ruffini, Guglielmo; Gandini, Giovanni; and Ghislandi, Franco, to Vita Mayer & C. Treatment of wood chips with an alkali metal borohydride solution followed by mechanical defibration. 3,981,765, Cl. 162-80.000.
Kruglov, Igor Ivanovich: *See—*
Karatsjuba, Anatoly Prokofievich; Kmita, Tatyana Georgievna; Kruglov, Igor Ivanovich; Kurinny, Vladimir Ivanovich; Kurnosov, Anatoly Ivanovich; Ryzhikov, Igor Veniaminovich; and Judin, Vladimir Vasilievich, 3,982,262.
Krusko, Evelyn H., to Scott Paper Company. Multilayer one-piece disposable diapers. 3,981,306, Cl. 128-287.000.
Kubota, Shokichi: *See—*
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Laamanen, Virpi: *See—*
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Laber, Georg; and Schutze, Eberhard, to Sandoz Ltd. Synergistic compositions. 3,982,007, Cl. 424-270.000.
L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
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Laitner, Charles F. A., Jr., to Caterpillar Tractor Co. Key retaining device. 3,981,600, Cl. 403-318.000.
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Lamb, James F.: *See—*
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Landers, Adrian L., to Adco-West Machinery Manufacturing Company. Log turning apparatus. 3,981,393, Cl. 198-379.000.
Langbein, Adolf: *See—*
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Langsdorf, William P., to Du Pont de Nemours, E. I., and Company. Plant growth regulant carbamoylphosphonates. 3,981,870, Cl. 260-242.000.
Lapushkin, Grigory Alexeevich: *See—*
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Lark, John C., to Standard Oil Company (Indiana). Starch/polyester resin composition. 3,981,833, Cl. 260-9.000.
Larson, Willis August, to Globe-Union Inc. Method of fabricating keyboard apparatus. 3,981,757, Cl. 156-8.000.
Larsson, Raymond P.; and Witonsky, Robert J., to Bio-Medical Sciences, Inc. Temperature responsive sterility indicator. 3,981,683, Cl. 23-253.0TP.
Lattin, Kenneth R.; and Erickson, Gerald L., to United States of America, Energy Research and Development Administration. Method and means of monitoring the effluent from nuclear facilities. 3,982,129, Cl. 250-364.000.
Laudien, Dieter: *See—*
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Leary, Bruce; and Lubbock, Frederick John, to Dulux Australia Ltd. Novel autoxidative derivatives of maleinized monocarboxylic fatty acid. 3,981,895, Cl. 260-404.800.
Leclercq, Alain: *See—*
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Le Cornec, Andre. Dwelling house. 3,981,110, Cl. 52-169.00R.
Leduc, Gerard; and Leduc, Michel. Hydraulic swash plate pumps. 3,981,630, Cl. 417-269.000.

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Lee, Michael John, to A. J. Bingley Limited. Apparatus for thermally machining thermoplastics sheet. 3,981,230, Cl. 93-33.00H.
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LeFebre, Halbert Allen. Metering pump. 3,981,632, Cl. 417-413.000.
Leffel, Myron J. Artificial fishing bait. 3,981,094, Cl. 43-35.000.
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Leigh, Steven, to Vymatt S.A. Pharmaceutical skin compositions. 3,981,996, Cl. 424-243.000.
Lemberger, Earl S.: *See—*
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Lenczycki, Joseph J. Dental implant and method of mounting the same in the jaw bone. 3,981,079, Cl. 32-10.00A.
Leppard, Colin James, to CJB Development Limited. Process for the removal of carbon dioxide from gases. 3,981,698, Cl. 55-31.000.
Lerner, Edward Mark; Peterson, David Cartwright; Quin, Terrence Thomas; and Ruel, Bernard George, to Bell Telephone Laboratories, Incorporated. Memory diagnostic arrangement. 3,982,111, Cl. 235-153.0AM.
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Levy, Jean Michel Bloch, to Central Corsetera S.A. Apparatus for shaping a brassiere. 3,981,670, Cl. 425-398.000.
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Linke, Wolfgang; Herrle, Karl; Schwarz, Wolfgang; and Perner, Johannes, to BASF Aktiengesellschaft. Hair setting compositions containing easily removable neutralized copolymers. 3,981,987, Cl. 424-47.000.
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Lo, Gerald Joy-Pak; Papworth, Francis Leo; Tenne-Sens, Nicolas Elmars; O'Donovan, Michael Valentine; and Dziub, Gerald, to RCA Corporation. Metal plated body composed of graphite fibre epoxy composite. 3,982,215, Cl. 333-73.00W.
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Lobunez, Walter; and Berkowitz, Sidney, to FMC Corporation. Hydrochlorination of vinylidene chloride to produce methyl chloroform. 3,981,939, Cl. 260-658.00R.
Lockwood, George C., to NCR Corporation. High speed bistable multivibrator circuit. 3,982,140, Cl. 307-279.000.
Loeffler, Romain Eugene; and Rollins, Forrest Theodore, to Johns-Manville Corporation. System for producing blankets and webs of mineral fibers. 3,981,708, Cl. 65-4.00R.
Lohse, Friedrich; Munk, Kurt; and Rembold, Heinz, to Ciba-Geigy Corporation. Polysiloxanes containing hydroxyl groups. 3,981,898, Cl. 260-448.80R.
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Lubar, Bertram H., to United States of America, Navy. General method of geometrical passive ranging. 3,982,246, Cl. 343-112.00C.
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Ludlow, Kenneth G., to United States of America, Air Force. Launch lock device. 3,981,467, Cl. 244-158.000.
Ludovici, Bruno F.; and Megla, Gerhard K., to Corning Glass Works. Optical information storage system. 3,982,151, Cl. 313-465.000.
Luebke, Clem J.; Beck, Norman L.; and Daniels, Lowell W., to Broaster Co., The. Receptacle handle assembly. 3,981,044, Cl. 16-114.00A.
Luisi, James A.; Padgett, Clarence W.; and Street, Dana C., to Rockwell International Corporation. High speed-low cost, clock controlled CMOS logic implementation. 3,982,138, Cl. 307-205.000.
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Lundqvist, Karl Gustav Emanuel. Spike tool. 3,981,526, Cl. 294-25.000.
Lundsgart, Henning Borge, to Dansk Industri Syndikat A/S. Fluid flow control valve. 3,981,478, Cl. 251-29.000.
Lundstrom, Hans Per Olof; and Johansson, Ernst Lennart, to Sandvik Aktiebolag. Coupling means in a drilling machine. 3,981,368, Cl. 173-104.000.
Lunsford, Jimmy L.; Schroff, Dennis E.; and Steffey, David R., to General Motors Corporation. Gas turbine engine geometry control. 3,981,140, Cl. 60-39.030.
Lupke, Gerd P.H. Apparatus for making high speed corrugated plastic tubing. 3,981,663, Cl. 425-326.00B.
Luther, Hans Werner; and Bender, Peter, to Rheinmetall G.m.b.H. Fin-stabilized subcaliber projectile. 3,981,246, Cl. 102-93.000.

- Lutz, Albert William; and Walworth, Bryant Leonidas, to American Cyanamid Company. 2,3,5-Substituted-6-trifluoromethyl-1,3-diazin-4-ones herbicides. 3,981,715, Cl. 71-92.000.
- Lynch, Robert T.; and Reis, James J., to Northrop Corporation. Class of transform digital processors for compression of multidimensional data. 3,981,443, Cl. 235-156.000.
- Lyon, Jerry H.: *See—*
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  - Kukanskis, Peter E., 3,982,045.
- MacDonnell, Robert W.; and Shander, Otto A., to R. W. Mac Company. Constant contact side bearing. 3,981,548, Cl. 308-226.000.
- Machi, Sueo: *See—*
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- Madonna, Nicholas W. Easily attached bicycle locking apparatus. 3,981,166, Cl. 70-234.000.
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- Magnus, Arthur Howard: *See—*
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- Maier, Elmar, to Hilti Aktiengesellschaft. Explosive charge driven setting gun. 3,981,424, Cl. 227-10.000.
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- Manwiller, Carl Harding; and Sperati, Carleton Angelo, to Du Pont de Nemours, E. I., and Company. Polytetrafluoroethylene molding powder. 3,981,852, Cl. 526-250.000.
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  - Block, Jacob; and Marans, Nelson Samuel, 3,981,779.
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- Marconi Company Limited, The: *See—*
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- Margalit, Nehemiah, to ESB Incorporated. Non-aqueous, primary battery having a blended cathode active material. 3,981,748, Cl. 429-164.000.
- Maringer, Albert, to Siemens Aktiengesellschaft. Circuit arrangement for generating a sampling pulse raster adapted to the variable period of quasiperiodic events. 3,982,193, Cl. 328-151.000.
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- Marriott, James G., to Libbey-Owens-Ford Company. Electrically heated zoned window systems. 3,982,092, Cl. 219-203.000.
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- Matsuzawa, Mitsuo; and Mitarai, Kaoru, to Trio Electronics Incorporated. Station selecting device having improved noise discrimination circuitry. 3,982,188, Cl. 325-470.000.
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- Medovar, Boris Izrailevich; Saenko, Vladimir Yakovlevich; Schupak, Grigory Bentsionovich; Alferov, Jury Fedorovich; Karpov, Vladimir Fedorovich; Berman, Kirill Adolfovich; Pogoretsky, Vitaly Vasilievich; Ovseichuk, Vitaly Alexandrovich; Zabolotsky, Petr Stepanovich; Boiko, Georgy Alexandrovich; Oleinik, Vladimir Ivanovich; Grodzitsky, Stanislav Vitalievich; Popov, Viktor Andreevich; and Chvertko, Anatoly Ivanovich. Electroslag remelting plant. 3,981,349, Cl. 164-252.000.
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- Merz, Herbert; Langbein, Adolf; Walther, Gerhard; and Stockhaus, Klaus, to Boehringer Ingelheim GmbH. 2-Tetrahydrofurfuryl-5-(methyl or phenyl)-9β-methyl-2'-oxy-6,7-benzomorphans and salts thereof. 3,982,005, Cl. 424-267.000.
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- **Miyazaki, Tsutomu; Kato, Takashi; Ueda, Shozo; and Yoshizawa, Toshio, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho.** Means for transporting yarn packages produced by spinning machinery. 3,981,551, Cl. 312-250.000.
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- **Moiroud, Guy:** *See—*
  - Charles, Daniel; Guyot, Lucien; Reboul, Jean Philippe; and Moiroud, Guy, 3,982,068.
- **Molina, Orlando G., to Rockwell International Corporation.** Postemulsifiable dye penetrant system and method for using same. 3,981,185, Cl. 73-104.000.
- **Molins Machine Company, Inc.:** *See—*
  - Massey, William A., 3,981,082.
- **Molitor, Victor D.** Purifier. 3,981,699, Cl. 55-208.000.
- **Momonoi, Kaishu:** *See—*
  - Saikawa, Isamu; Takano, Shuntaro; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; Kasuya, Kyoko; and Kodama, Yutaka, 3,981,865.
- **Monrick Holdings Limited:** *See—*
  - Ratowsky, Simon, 3,981,488.
- **Monroe, Tex K., to GTE Sylvania Incorporated.** Top-bottom pincushion correction circuit. 3,982,156, Cl. 315-400.000.
- **Monsanto Company:** *See—*
  - Bilodeau, Richard D., 3,981,667.
  - Jaworski, Ernest G., 3,981,718.
  - Rogers, Lawrence W., 3,981,458.
- **Montedison S.p.A.:** *See—*
  - Battiston, Giancarlo; Petrini, Guido; De Alberti, Giordano; and Covini, Romano, 3,981,912.
- **Montoro, Fernando; Vila-Coro, Antonio; and Calatayud, Jose, to Especialidades Latinas Medicamentos Universales S.A.** Vincamine 2-ketoglutarate and compositions containing vincamine 2-ketoglutarate. 3,982,002, Cl. 424-267.000.
- **Moody, Roy A.; and Fulton, Ronald T., to Panduit Corporation.** Smooth exterior dual clamp. 3,981,048, Cl. 24-16.0PB.
- **Moore Business Forms, Inc.:** *See—*
  - Maalouf, George E., 3,981,523.
- **Moore Industries:** *See—*
  - Moore, Leonard W.; Bodle, Ronald L.; and Fiederer, Conrad, 3,981,199.
- **Moore, John R., to International Telephone and Telegraph Corporation.** Method of breaking glass fibers and tool therefor. 3,981,422, Cl. 225-2.000.
- **Moore, Leonard W.; Bodle, Ronald L.; and Fiederer, Conrad, to Moore Industries.** Pressure transducer. 3,981,199, Cl. 73-420.000.
- **Moreau, Lorenzo.** Motorized snow vehicle stand. 3,981,372, Cl. 180-5.00R.
- **Morelli, Basilio:** *See—*
  - Papoff, Paolo; and Morelli, Basilio, 3,981,487.
- **Morgan, J. Robert.** Eyeglass structure. 3,981,569, Cl. 351-47.000.
- **Mori, Fumio:** *See—*
  - Nishida, Takashi; Ninagawa, Yoichi; Omura, Yoshiaki; Mori, Fumio; Tamai, Yoshin; Hosogai, Takeo; Fujita, Yoshiji; and Itoi, Kazuo, 3,981,930.
- **Mori, Koshiro:** *See—*
  - Moriyama, Akio; Fukai, Masakazu; Asai, Komei; and Mori, Koshiro, 3,981,816.
- **Mori, Yasunobu; and Otsuka, Shinjiro, to Suzuki Motor Company Limited.** Electrolytically formed composite coatings. 3,981,781, Cl. 204-16.000.
- **Morioka, Makoto:** *See—*
  - Ito, Kazuhiro; Kawamura, Masao; Ono, Yuichi; and Morioka, Makoto, 3,981,764.
- **Morita, Yoshiharu:** *See—*
  - Hattori, Saburo; Morita, Yoshiharu; Ihashi, Yoshio; and Sato, Tadao, 3,981,907.
- **Moriyama, Akio; Fukai, Masakazu; Asai, Komei; and Mori, Koshiro, to Matsushita Electric Industrial Co., Ltd.** Liquid crystal display device. 3,981,816, Cl. 252-299.000.
- **Morrisett, O. L.:** *See—*
  - Barrington, Burchus Q.; Farley, David L.; and Morrisett, O. L., 3,981,188.
- **Morwing, Bo Anders:** *See—*
  - Gustavsson, Per-Olof Gerhard; and Morwing, Bo Anders, 3,982,243.
- **Moses, Andrianus, to Enkes N.V.** Sheet winch. 3,981,208, Cl. 74-812.000.
- **Moskowitz, David; and Uy, James C., to Ford Motor Company.** Apex seal composition for rotary engines. 3,981,062, Cl. 29-182.700.
- **Mossman, Ralph A., to Tektronix, Inc.** Bistable storage tube having storage dielectric of phosphor particles coated with secondary emissive material. 3,982,150, Cl. 313-398.000.
- **Motiva, Ltd.:** *See—*
  - Schwartz, Robert C., 3,981,573.
- **Motorola, Inc.:** *See—*
  - Gehrke, James Keith, 3,982,210.
  - Gilbert, Paul B., 3,981,265.
- **Moulin, Guy Jean:** *See—*
  - Galzy, Pierre; and Moulin, Guy Jean, 3,981,773.
- **MTP Kasei Co., Ltd.:** *See—*
  - Takeuchi, Yasumasa; Ikeda, Takehiko; Sekimoto, Akira; Hayashi, Takashi; Sasaki, Toshimi; and Atsumi, Sabulo, 3,981,830.
- **Mueller, Hans W.; and Shattuck, Richard E., to SCM Corporation.** Typing machine key action. 3,981,385, Cl. 197-17.000.
- **Mundy, Joseph L.:** *See—*
  - Joynson, Reuben E.; and Mundy, Joseph L., 3,982,227.
- **Munk, Kurt:** *See—*
  - Lohse, Friedrich; Munk, Kurt; and Rembold, Heinz, 3,981,898.
- **Munk, Torben:** *See—*
  - Ehrenskjold, Nils Oluf; and Munk, Torben, 3,981,613.
- **Munker, Gert, to Palitex Project-Company G.m.b.H.** Mechanism for transporting a yarn end in a textile machine. 3,981,128, Cl. 57-34.00R.
- **Munro, Hamish David, to Procter & Gamble Company, The.** Hard surface cleaning composition. 3,981,826, Cl. 252-526.000.
- **Murasaki, Hiroshi:** *See—*
  - Tanaka, Susumu; Enoguchi, Yuji; Ogawa, Masaya; Kawabata, Hidetoshi; Kurita, Takaji; Fujiwara, Takao; Murasaki, Hiroshi; and Wada, Kenichi, 3,981,575.
- **Murata, Minoru; Sugiyama, Koichi; and Ikeda, Hisao, to NCR Corporation.** Process for making a stable, relatively high concentration, solution of an organic color-reactive colorless dye in oil. 3,981,735, Cl. 106-27.000.
- **Muroi, Ryoichi:** *See—*
  - Nakashima, Kunihiko; Muroi, Ryoichi; Imai, Mitsuo; and Sato, Kenji, 3,981,958.
- **Murphy, Patrick Henry:** *See—*
  - Gust, Raymond Edward; and Murphy, Patrick Henry, 3,981,414.
- **Murray, Edward Conley:** *See—*
  - Coad, Peter; Murray, Edward Conley; and Reed, Homer Charles, 3,981,974.
- **Murray, Harry Elmer.** Urethral catheter. 3,981,299, Cl. 128-349.00B.
- **Muschaweck, Roman:** *See—*
  - Siegemund, Gunther; and Muschaweck, Roman, 3,981,927.
- **Muska, Willis Martin:** *See—*
  - Goell, James Emanuel; Li, Tingye; and Muska, Willis Martin, 3,982,123.
- **Musso, Elisabeth:** *See—*
  - Ray, Ranjan; and Musso, Elisabeth, 3,981,722.

- **Mutsch, Edward L.; and Harrington, Joseph Kenneth, to Minnesota Mining and Manufacturing Company.** N-alkylsulfonylperfluoroalkanesulfonanilides. 3,981,914, Cl. 260-556.00F.
- **Muzylev, Vladimir Sergeevich:** *See—*
  - Aimbinder, Mark Borisovich; Zhitomirsky, Mikhail Iosifovich; Denisova, Maria Vasilievna; Grabilin, Anatoly Mikhailovich; Lapushkin, Grigory Alexeevich; Kupershmidt, Moisei Zusievich; Mazov, Jury Alexeevich; Terentiev, Viktor Petrovich; Sergeev, Jury Vasilievich; and Muzylev, Vladimir Sergeevich, 3,981,130.
- **Mydels, John W., to Allis-Chalmers Corporation.** Spring trip cultivator shank assembly. 3,981,367, Cl. 172-265.000.
- **Myer, William R., to Geometric Machine and Design Corporation.** Latching means for releasably supporting a driven rotatable member. 3,981,509, Cl. 279-1.00R.
- **Myers, Claude V., to Cities Service Company.** Apparatus for drying carbon black pellets. 3,981,659, Cl. 425-222.000.
- **Myers, Frank W.:** *See—*
  - Steen, Gary J.; Bedell, Terrence A.; and Myers, Frank W., 3,982,041.
- **Nachbur, Hermann:** *See—*
  - Mayer, Fritz; Kern, Jorg; and Nachbur, Hermann, 3,982,053.
- **Nagai, Ikuo:** *See—*
  - Okamoto, Takehiko; Kishimoto, Akihiko; Nagai, Ikuo; Sato, Hiroshi; Okasaka, Hotsuma; and Inoue, Masakazu, 3,981,944.
- **Nagai, Tsuyoshi, to Arakawashatai Kogyo Kabushiki Kaisha.** Locking device for adjustable seat track structure. 3,981,473, Cl. 248-430.000.
- **Nagaike, Naofumi:** *See—*
  - Yamanaka, Akira; Terakado, Katsumi; and Nagaike, Naofumi, 3,981,530.
- **Nagashima, Toshio:** *See—*
  - Okada, Ryuzo; Nagashima, Toshio; Kito, Hidetoshi; Tsukamoto, Takuzo; Nakaguchi, Michiharu; and Handa, Kenichi, 3,981,271.
  - Tsukamoto, Takuzo; Nakaguchi, Mitsuharu; Kito, Hidetoshi; Nagashima, Toshio; Shirata, Akihiko; and Tsuda, Shinichi, 3,981,268.
- **Nago, Kazuyoshi:** *See—*
  - Mitsuhashi, Sadayuki; Suzuki, Norio; and Nago, Kazuyoshi, 3,982,216.
- **Naito, Michinori:** *See—*
  - Saikaishi, Noboru; Numata, Yukio; Takahashi, Tetsuo; Kumagai, Morio; and Naito, Michinori, 3,982,198.
- **Nakaguchi, Michiharu:** *See—*
  - Okada, Ryuzo; Nagashima, Toshio; Kito, Hidetoshi; Tsukamoto, Takuzo; Nakaguchi, Michiharu; and Handa, Kenichi, 3,981,271.
- **Nakaguchi, Mitsuharu:** *See—*
  - Tsukamoto, Takuzo; Nakaguchi, Mitsuharu; Kito, Hidetoshi; Nagashima, Toshio; Shirata, Akihiko; and Tsuda, Shinichi, 3,981,268.
- **Nakamoto, Soichi:** *See—*
  - Ito, Tadashi; Nakamoto, Soichi; and Yamada, Sadao, 3,982,254.
- **Nakamura, Akiyoshi, to Minolta Camera Kabushiki Kaisha.** Retrofocus wide angle lens system. 3,981,563, Cl. 350-214.000.
- **Nakamura, Shoji, to Kyoei Steel Works, Ltd.** Method for receiving molten steel from an electric furnace. 3,981,719, Cl. 75-13.000.
- **Nakamura, Yasuharu:** *See—*
  - Matsuyama, Junichi; Nakazawa, Yoshiyuki; Nakamura, Yasuharu; Ohi, Reiichi; and Kondo, Tokiharu, deceased, 3,982,044.
- **Nakashima, Kunihiko; Muroi, Ryoichi; Imai, Mitsuo; and Sato, Kenji, to Toyoda Gosei Kabushiki-Kaisha (Toyoda Synthetics Co., Ltd.).** Graft copolymers and process for producing same. 3,981,958, Cl. 260-878.00R.
- **Nakayama, Shozo; Toriyama, Takeshi; and Higuchi, Takeshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho.** Swash-plate type compressor for air conditioning of vehicles. 3,981,629, Cl. 417-269.000.
- **Nakazawa, Yoshiyuki:** *See—*
  - Matsuyama, Junichi; Nakazawa, Yoshiyuki; Nakamura, Yasuharu; Ohi, Reiichi; and Kondo, Tokiharu, deceased, 3,982,044.
- **Nalco Chemical Company:** *See—*
  - Braithwaite, David G.; and Seale, Virgil L., 3,981,979.
  - Miller, Richard C.; and Payne, Charles C., 3,981,820.
  - Ries, Donald G.; and Braithwaite, David G., 3,981,798.
- **Narayan, Thirumurti L.:** *See—*
  - Cenker, Moses; Narayan, Thirumurti L.; and Kan, Peter T., 3,981,829.
- **Narayanan, Venkatachala L.:** *See—*
  - Hauck, Frederic P.; Cimarusti, Christopher M.; and Narayanan, Venkatachala L., 3,982,021.
- **Nartron Corporation:** *See—*
  - Bull, Dale L.; and Rautiola, Norman A., 3,982,122.
- **Nasbold, Robert Wilfred, to Cincinnati Milacron, Inc.** Machine boring tool. 3,981,606, Cl. 408-124.000.
- **National Semiconductor Corporation:** *See—*
  - Dobkin. Robert C., 3,982,263.
- **Nawa, Motoki:** *See—*
  - Kojima, Yasuhiro; Matunaga, Niiti; and Nawa, Motoki, 3,981,761.
- **Naylor, Thomas K., to American Optical Corporation.** Timing-error compensation for low-speed tape systems. 3,982,277, Cl. 360-27.000.
- **NCR Corporation:** *See—*
  - Gottschlich, James A., 3,981,387.
  - Lockwood, George C., 3,982,140.
  - Murata, Minoru; Sugiyama, Koichi; and Ikeda, Hisao, 3,981,735.
- **Neal, Louis A.** Mail box. 3,981,436, Cl. 232-17.000.
- **Nelson, Alan C.; and Jeromin, Lothar S., to Xerox Corporation.** Signal amplification by charging and illuminating a partially developed latent electrostatic image. 3,981,727, Cl. 96-1.300.
- **Nelson, Alvin I.; Singh, B. P. N.; and Singh, Surjan, to University of Illinois Foundation.** Apparatus for the preparation of a soybean beverage base. 3,981,234, Cl. 99-483.000.
- **Nelson, George R., Jr., to Grumman Aerospace Corporation.** Method and apparatus for preventing pump cavitation. 3,981,618, Cl. 417-12.000.
- **Nelson, Norman A., to Upjohn Company, The.** 5-Oxa-17,18-dehydroprostaglandin-F_1 -type analogs. 3,981,902, Cl. 260-468.00D.
- **Nerenberg, Robert W.:** *See—*
  - Bergstein, Frank D.; and Nerenberg, Robert W., 3,981,432.
- **Neubert, Rolf; Schiebenhofer, Harm; and Wehling, Rolf, to Fried. Krupp Gesellschaft mit beschrankter Haftung.** Open-end spinning unit. 3,981,133, Cl. 57-58.950.
- **Neutkens, Christiaan H.:** *See—*
  - Slathar, Donald A.; and Neutkens, Christiaan H., 3,981,394.
- **Newman, Peter John; and Watson, Charles Andrew, to Lever Brothers Company.** Dentifrice including a lustre imparting agent. 3,981,988, Cl. 424-49.000.
- **Newman, Richard, executor:** *See—*
  - Halasz, Alexander; Brody, Frederick, deceased; and Newman, Richard, executor, 3,981,677.
- **Newton, John E.; Bohacz, Maxine; and Lyon, Jerry H., to United States of America, Army.** Minipowered optional self checking electronic timer for ordnance. 3,982,192, Cl. 328-129.000.
- **Neyraud, Rene, to Verdol S.A.** Device for making tuft fabric. 3,981,253, Cl. 112-79.00A.
- **Nichols, George Frederick:** *See—*
  - Nyman, Frederick Russell; Vossen, John Louis, Jr.; Fisher, Dennis Glendon; and Nichols, George Frederick, 3,982,066.
- **Nicholson, John Stuart:** *See—*
  - Adams, Stewart Sanders; Armitage, Bernard John; Nicholson, John Stuart; and Tantum, James Gordon, 3,981,905.
- **Nicolas, Gerard, to Commissariat a l'Energie Atomique.** Method of connecting electronic microcomponents. 3,981,076, Cl. 29-626.000.
- **Niess, Rolf, to BASF Aktiengesellschaft.** Manufacture of 3-amino-2,1-benzisothiazoles. 3,981,883, Cl. 260-304.00A.
- **Nifco Inc.:** *See—*
  - Koen, Toshiharu, 3,981,599.
- **Nikawitz, Edward J., to Givaudan Corporation.** Bacteriostatic substituted benzanilide compositions and methods for their use. 3,981,814, Cl. 252-107.000.
- **Nilson, Billy N., to KeNova AB.** Self-closing closures. 3,981,419, Cl. 222-494.000.
- **Ninagawa, Yoichi:** *See—*
  - Nishida, Takashi; Ninagawa, Yoichi; Omura, Yoshiaki; Mori, Fumio; Tamai, Yoshin; Hosogai, Takeo; Fujita, Yoshiji; and Itoi, Kazuo, 3,981,930.
- **Nino, Guillermo J.:** *See—*
  - Steele, John M.; Hanak, Fredric M.; Nino, Guillermo J.; and Panzarella, John E., 3,981,938.
- **Nippon Electric Company, Ltd.:** *See—*
  - Mitsuhashi, Sadayuki; Suzuki, Norio; and Nago, Kazuyoshi, 3,982,216.
- **Nippon Gakki Seizo Kabushiki Kaisha:** *See—*
  - Oya, Akiyoshi, 3,981,217.
- **Nippon Kogaku K.K.:** *See—*
  - Mimura, Kazuo, 3,981,591.
  - Ohmori, Sachio; and Kimura, Shuji, 3,982,256.
- **Nippon Paint Co., Ltd.:** *See—*
  - Tsuchida, Shozo; and Okai, Sakuo, 3,981,583.
- **Nippon Toki Kabushiki Kaisha:** *See—*
  - Kojima, Yasuhiro; Matunaga, Niiti; and Nawa, Motoki, 3,981,761.
- **Nischk, Gunther:** *See—*
  - Radlmann, Eduard; Schaffner, Heinz; Lorenz, Gunter; and Nischk, Gunther, 3,981,842.
- **Nishida, Takashi; Ninagawa, Yoichi; Omura, Yoshiaki; Mori, Fumio; Tamai, Yoshin; Hosogai, Takeo; Fujita, Yoshiji; and Itoi, Kazuo, to Kuraray Co., Ltd.** Diacetylene diol derivatives and process for preparing the same. 3,981,930, Cl. 260-635.00Y.
- **Nishikido, Joji:** *See—*
  - Fukuoka, Yohei; Kato, Toshio; Imai, Norio; Nishikido, Joji; Hamada, Masato; Mikami, Hiroshi; Iwasaki, Hirohumi; and Koike, Toshihisa, 3,981,906.
- **Nishioka, Toshio:** *See—*
  - Hirano, Masachika; Ohno, Isao; Okuno, Yoshitoshi; Magara, Osamu; Itaya, Nobushige; Nishioka, Toshio; Mizutani, Toshio; Ohno, Nobuo; Matsuo, Takashi; and Takeda, Hisami, 3,981,903.
- **Niswender, Gordon Dean; and Hudson, James M., to Micromedic Diagonistics, Inc.** Cyanocobalamin derivatives. 3,981,863, Cl. 536-25.000.
- **Nittel, Herman:** *See—*
  - Redmer, Wilbert; Rolin, Kenneth; and Nittel, Herman, 3,981,956.
- **Nitto Electric Industrial Co., Ltd.:** *See—*
  - Yamamoto, Katsumi; Fujimori, Masahiro; Fujinawa, Masahiro; and Sonoda, Sanenobu, 3,981,074.
- **Nobinger, Louis C.** Apparatus for bending conduits. 3,981,173, Cl. 72-389.000.
- **Noguchi, Masaaki; Bunda, Tsuchio; and Sumiyoshi, Masaharu, to Toyota Jidosha Kogyo Kabushiki Kaisha.** Device for purifying exhaust gases by catalytic reaction. 3,981,145, Cl. 60-288.000.

- **Nordson Corporation:** *See—*
  - Scholl, Charles H., 3,981,416.
- **Nordstrom, Harold A.:** *See—*
  - Bahoshy, Bernard J.; Klose, Robert E.; and Nordstrom, Harold A., 3,982,023.
- **Norlin Music, Inc.:** *See—*
  - Luce, David A., 3,981,218.
- **Normac, Inc.:** *See—*
  - Klein, Max, 3,981,855.
- **North Hills Electronics, Inc.:** *See—*
  - Sherr, Solomon, 3,982,239.
- **Northrop Corporation:** *See—*
  - Lynch, Robert T.; and Reis, James J., 3,981,443.
- **Nosek, Thaddeus W.**, to Borg-Warner Corporation. Self-contained multiplate wet clutch. 3,981,381, Cl. 192-70.180.
- **Nuclear Power Company (Whetstone) Limited:** *See—*
  - Middleton, John Ernest, 3,981,770.
- **Nugarus, Anthony R.**, to Restaurant Technology, Inc. Anti-stick grill. 3,981,233, Cl. 99-422.000.
- **Numata, Yukio:** *See—*
  - Saikaishi, Noboru; Numata, Yukio; Takahashi, Tetsuo; Kumagai, Morio; and Naito, Michinori, 3,982,198.
- **Nunziato, Charles.** Golf club head construction. 3,981,507, Cl. 273-164.000.
- **Nurminen, John I.; and Sturgis, David H.**, to Howmet Corporation. Metal casting mold with bonded particle filter. 3,981,352, Cl. 164-358.000.
- **Nutley, Paul John:** *See—*
  - McDowell, John David, Jr.; and Nutley, Paul John, 3,981,421.
- **N.V. Chefaro Maatschappij:** *See—*
  - van Holten, Jan; and Ribbens, Cornelis, 3,981,926.
- **Nyman, Frederick Russell; Vossen, John Louis, Jr.; Fisher, Dennis Glendon; and Nichols, George Frederick**, to RCA Corporation. Metal coating for video discs. 3,982,066, Cl. 178-6.60R.
- **Obata, Shizuo; Yamato, Yukiomi; and Taniguchi, Hitoshi**, to Fuji Oil Company, Ltd. Method of manufacturing edible soy protein-containing, simulated meat product. 3,982,004, Cl. 426-641.000.
- **Oborn, Robert Edward**, to Procter & Gamble Company, The. Egg white composition. 3,982,040, Cl. 426-614.000.
- **Oce-van der Grinten N.V.:** *See—*
  - Kratcoski, Francis L.; and Brahos, William, 3,982,094.
- **Ochiai, Minoru:** *See—*
  - Azuma, Kanae; and Ochiai, Minoru, 3,982,157.
- **Ochiai, Sadamasa.** Method for detecting liquid leak and a cable therefor. 3,981,181, Cl. 73-40.50R.
- **Odier, Marc G.** Puzzle with irregular pentagonal pieces. 3,981,505, Cl. 273-157.00R.
- **O'Donovan, Michael Valentine:** *See—*
  - Lo, Gerald Joy-Pak; Papworth, Francis Leo; Tenne-Sens, Nicolas Elmars; O'Donovan, Michael Valentine; and Dziub, Gerald, 3,982,215.
- **Oelschlager, Herbert; Matthiesen, Uwe; and Behrendt, Wilhelm A.**, to Temmler Werke-Vereinigte Chemische Fabriken. Analgesic compositions comprising 1H- or respectively 2H-indazolone-3 (β-morpholino-alkoxy) compounds. 3,981,997, Cl. 424-248.000.
- **Oetiker, Hans.** Clamping device with tightening device. 3,981,049, Cl. 24-20.0TT.
- **Offermanns, Heribert; and Posselt, Klaus**, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Sulfur containing trialkoxybenzoylamino carboxylic acids. 3,981,910, Cl. 260-516.000.
- **Ogata, Yasuhiro:** *See—*
  - Kiritani, Masataka; and Ogata, Yasuhiro, 3,981,821.
- **Ogawa & Co., Ltd.:** *See—*
  - Fujita, Masao; Akiyama, Takuya; Saeki, Yoshito; and Ueno, Yasuhiko, 3,981,889.
- **Ogawa, Masaya:** *See—*
  - Tanaka, Susumu; Enoguchi, Yuji; Ogawa, Masaya; Kawabata, Hidetoshi; Kurita, Takaji; Fujiwara, Takao; Murasaki, Hiroshi; and Wada, Kenichi, 3,981,575.
- **Ogden, Dennis H.**, to British Industrial Plastics Limited. Vehicle retardation. 3,981,602, Cl. 404-71.000.
- **Ogura, Iwao:** *See—*
  - Yamazaki, Eiichi; Maruyama, Koichi; Ueda, Toshio; Yokomizo, Hiroshi; and Ogura, Iwao, 3,982,252.
- **Oh, Chan Soo; and Hsieh, Paul Y.**, to Timex Corporation. Liquid crystal electro-optical display. 3,981,558, Cl. 350-160.0LC.
- **Ohi, Akira:** *See—*
  - Yoshizaki, Hiroyuki; Takanohashi, Hiromitsu; Masuda, Yoshitaka; Hozumi, Yukio; Ohi, Akira; and Sonoyama, Yuzo, 3,981,843.
- **Ohi, Reiichi:** *See—*
  - Matsuyama, Junichi; Nakazawa, Yoshiyuki; Nakamura, Yasuharu; Ohi, Reiichi; and Kondo, Tokiharu, deceased, 3,982,044.
- **Ohmori, Sachio; and Kimura, Shuji**, to Nippon Kogaku K.K. Rotary shutter blade mechanism for cameras. 3,982,256, Cl. 354-253.000.
- **Ohno, Isao:** *See—*
  - Hirano, Masachika; Ohno, Isao; Okuno, Yoshitoshi; Magara, Osamu; Itaya, Nobushige; Nishioka, Toshio; Mizutani, Toshio; Ohno, Nobuo; Matsuo, Takashi; and Takeda, Hisami, 3,981,903.
- **Ohno, Nobuo:** *See—*
  - Hirano, Masachika; Ohno, Isao; Okuno, Yoshitoshi; Magara, Osamu; Itaya, Nobushige; Nishioka, Toshio; Mizutani, Toshio; Ohno, Nobuo; Matsuo, Takashi; and Takeda, Hisami, 3,981,903.
- **Oiler, Philip R.**, to Hehr International Inc. Method of splicing and products thereof. 3,981,067, Cl. 29-522.000.
- **Okada, Kazuo:** *See—*
  - Wada, Takeo; and Okada, Kazuo, 3,981,970.
- **Okada, Ryuzo; Nagashima, Toshio; Kito, Hidetoshi; Tsukamoto, Takuzo; Nakaguchi, Michiharu; and Handa, Kenichi**, to Fuji Xerox Co., Ltd. Magnetic brush type developer for use in an electrophotographic machine. 3,981,271, Cl. 118-637.000.
- **Okai, Sakuo:** *See—*
  - Tsuchida, Shozo; and Okai, Sakuo, 3,981,583.
- **Okamoto, Takehiko; Kishimoto, Akihiko; Nagai, Ikuo; Sato, Hiroshi; Okasaka, Hotsuma; and Inoue, Masakazu**, to Toray Industries, Inc. Method for producing impact resistant thermoplastic resin by continuous bulk polymerization. 3,981,944, Cl. 260-880.00R.
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  - Hirano, Masachika; Ohno, Isao; Okuno, Yoshitoshi; Magara, Osamu; Itaya, Nobushige; Nishioka, Toshio; Mizutani, Toshio; Ohno, Nobuo; Matsuo, Takashi; and Takeda, Hisami, 3,981,903.
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- **Olson, Albert T.:** *See—*
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- **Olson, Richard O.; and Pohto, Gerald R.**, to Diamond Shamrock Corporation. Dimensionally stable anode and method and apparatus for forming the same. 3,981,790, Cl. 204-286.000.
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  - Habu, Teiji; Yamaguchi, Hisashi; Wada, Tsuneo; Sasaki, Takashi; Ishii, Hiroki; Omura, Takayoshi; and Inokuma, Hiroyuki, 3,981,857.
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  - Nishida, Takashi; Ninagawa, Yoichi; Omura, Yoshiaki; Mori, Fumio; Tamai, Yoshin; Hosogai, Takeo; Fujita, Yoshiji; and Itoi, Kazuo, 3,981,930.
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- **Orimo, Katsumi:** *See—*
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- **Quintana, Michael A.,** to Malden Mills, Inc. Textile package. 3,981,400, Cl. 206-407.000.
- **R. W. Mac Company:** *See—*
  - MacDonnell, Robert W.; and Shander, Otto A., 3,981,548.
- **Radlmann, Eduard; Schaffner, Heinz; Lorenz, Gunter; and Nischk, Gunther,** to Bayer Aktiengesellschaft. Substantially non-inflammable acrylonitrile polymers containing antimony salts. 3,981,842, Cl. 260-45.75B.
- **Ramich, Gary Allen,** to American Can Company. Easy opening carton for frozen comestible. 3,981,434, Cl. 229-51.0TS.
- **Ramsdale, Roy,** to Alex L. Clark Limited. Slide frame. 3,981,092, Cl. 40-158.00R.
- **Ramsey, Derald D.:** *See—*
  - Thorud, Richard A.; Wood, William D.; and Ramsey, Derald D., 3,982,082.
- **Rao, Ganta Venkateswara; Garinger, Dale Albert; and Shoup, Floyd Kent,** to United States of America, Agriculture. Gluten washing and dewatering device. 3,981,738, Cl. 127-25.000.
- **Rapparlie, Hans:** *See—*
  - Klappenecker, Karl; Burkhardt, Gisbert; and Rapparlie, Hans, 3,981,493.
- **Rasmussen, Howard J.:** *See—*
  - Rutili, Renzo N.; and Rasmussen, Howard J., 3,981,470.
- **Ratony, Alexander,** to Starr, Robert N. Staggered channel wing-type aircraft. 3,981,460, Cl. 244-13.000.
- **Ratowsky, Simon,** to Monrick Holdings Limited. Carrier for processing photographic material and apparatus for rotating the carrier. 3,981,488, Cl. 259-72.000.
- **Rau, Eric:** *See—*
  - Lobunez, Walter; Kim, Nam Kyun; and Rau, Eric, 3,981,686.
- **Rauch, Philippe; and Tinchon, Jacques,** to Teleco Inc. Device for blocking at a given torque a rotating machine driven by a hydraulic turbine. 3,981,186, Cl. 73-151.000.

- **Raudenbusch, Werner Theodor:** *See—*
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- **Rausing, Gad A.,** to Sobrefina SA. Package intended for pressurized contents. 3,982,029, Cl. 426-106.000.
- **Rautiola, Norman A.:** *See—*
  - Bull, Dale L.; and Rautiola, Norman A., 3,982,122.
- **Ray, Ranjan; and Musso, Elisabeth,** to Allied Chemical Corporation. Amorphous alloys in the U-Cr-V system. 3,981,722, Cl. 75-122.700.
- **Raymond Lee Organization, Inc., The:** *See—*
  - Arnold, Carl R.; and Arnold, Charles D., 3,981,365.
  - Brooks, Susie C., 3,981,032.
  - Christensen, Gordon R., 3,981,063.
  - Cooperstein, Norman, 3,982,084.
  - Johnson, Allen M. L., 3,981,029.
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  - Minnick, Jim N., 3,981,295.
  - Siegel, Joseph, 3,981,028.
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- **Raynolds, Stuart,** to Du Pont de Nemours, E. I., and Company. Durable textile treating adducts. 3,981,807, Cl. 252-8.800.
- **Raytheon Company:** *See—*
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- **RCA Corporation:** *See—*
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  - Heyman, Philip Michael; Quinn, Robert Leon; and Gorog, Istvan, 3,981,560.
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  - Nyman, Frederick Russell; Vossen, John Louis, Jr.; Fisher, Dennis Glendon; and Nichols, George Frederick, 3,982,066.
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  - Yocom, Perry Niel; and Dismukes, John Pickett, 3,981,819.
- **Reagan, William J.; and Chen, Nai Y.,** to Mobil Oil Corporation. Hydrocarbon conversion catalyst. 3,981,825, Cl. 252-455.00R.
- **Reaux, James R.:** *See—*
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- **Reboul, Jean Philippe:** *See—*
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- **Redman, Charles.** Electric device for processing signals in three dimensions. 3,982,147, Cl. 313-309.000.
- **Redmer, Wilbert; Rolin, Kenneth; and Nittel, Herman,** to Abbott Laboratories. Continuous automated plastic molding method. 3,981,956, Cl. 264-275.000.
- **Reed, Charles Paul,** to Alcan Aluminum Corporation. Sheathing system for building structures. 3,981,116, Cl. 52-484.000.
- **Reed, Frederick P.,** to United States of America, America. Gas operated launcher. 3,981,093, Cl. 42-1.00F.
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- **Reedy, Charles E.; and Carlson, Edwin S.,** to ACF Industries, Incorporated. Bottom operable tank car valve. 3,981,481, Cl. 251-144.000.
- **Rees, John Michael:** *See—*
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- **Rehak, Dale J.,** to United States of America, Army. Digital pressure/-range transducer. 3,982,219, Cl. 338-96.000.
- **Reiff, Helmut:** *See—*
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- **Renner, Alfred,** to Ciba-Geigy AG. High surface area polycondensation polymer particulates based on urea and formaldehyde. 3,981,845, Cl. 260-69.00R.
- **Restaurant Technology, Inc.:** *See—*
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- **Reunanen, Matti Antero.** Method of radioimmunoassay employing diffusion. 3,981,981, Cl. 424-1.500.
- **Reverberi, Leo.** Waterproof garment of reduced cumbersomeness. 3,981,026, Cl. 2-1.000.
- **Reynolds, David E.,** to Continental Oil Company. Pressure-operated switch. 3,982,217, Cl. 335-207.000.
- **Reynolds, Gordon S.:** *See—*
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- **Reynolds Metals Company:** *See—*
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- **Rhodes, John M.** Plastic rotary printing screens construction method therefor. 3,981,237, Cl. 101-128.200.
- **Rhone-Poulenc S.A.:** *See—*
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- **Ribbens, Cornelis:** *See—*
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- **Rice, Richard M.,** to Reynolds Metals Company. Hydraulic cascade drive system. 3,981,149, Cl. 60-424.000.
- **Rich, Leonard G.,** to Gerber Scientific Instrument Company, The. Apparatus for digitizing and plotting. 3,982,165, Cl. 318-568.000.
- **Richard, Byron G.,** to Gates Rubber Company, The. Conveying belt. 3,981,390, Cl. 198-844.000.
- **Richardson, Alexander Laidlaw,** to International Telephone and Telegraph Corporation. Digital signal detector. 3,981,440, Cl. 235-92.0FQ.
- **Richardson, John G.,** to Harshaw Chemical Company, The. Crystal growth in the presence of finely divided polytetrafluoroethylene. 3,981,973, Cl. 423-265.000.
- **Richings, John Graham:** *See—*
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- **Richter, Sidney B.,** to Velsicol Chemical Corporation. Insecticidal compositions containing trifluoromethyl ureas and method of controlling insects using said compositions. 3,982,019, Cl. 424-322.000.
- **Ricoh Co., Ltd.:** *See—*
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- **Riecker, Johann G.:** *See—*
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- **Riedel, Helmut:** *See—*
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- **Ries, Donald G.; and Braithwaite, David G.,** to Nalco Chemical Company. Liquid/liquid extraction using certain ethers and esters. 3,981,798, Cl. 208-323.000.
- **Rieser, Elmer P.:** *See—*
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- **Ring, David F.,** to Kimberly-Clark Corporation. Low density tampon of intermeshed deformable strip material and inserter therefor. 3,981,305, Cl. 128-285.000.
- **Rinio, Johannes Augustus.** Cable hauling device. 3,981,483, Cl. 254-76.000.
- **Ripperger, Eugene A.:** *See—*
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- **Risse, John T.; and Taggart, James C.,** to United States of America, Energy Research and Development Administration. Vehicle fuel system. 3,981,321, Cl. 137-255.000.
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Rogers, Peter H.; and Zalesak, Joseph F., to United States of America, Navy. Directional low-frequency ring hydrophone. 3,982,144, Cl. 310-9.600.

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Roof, Lewis B., to Phillips Petroleum Company. Fluid detecting system. 3,981,179, Cl. 73-61.10C.

Roos, Axel Sven Olof; Faber, Kurt Heinrich Albert Erich; and Wirfelt, Sven Axel Olof, to Sandvik Aktiebolag. Cutting insert and cutting tool. 3,981,058, Cl. 29-96.000.

Roos, Jan, to U.S. Philips Corporation. Method of copying magnetic recordings provided on a magnetizable medium having a greater coercive force before than after recording. 3,982,276, Cl. 360-17.000.

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Ross, Thomas D.; and Owen, Samuel S., to United States of America, Army. Infrared suppressor. 3,981,143, Cl. 60-264.000.

Rosvold, Warren C., to Signetics Corporation. Vacuum sputtering apparatus. 3,981,791, Cl. 204-298.000.

Roto-Finish Company: *See—*
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Rousar, Ivo; Cezner, Vaclav; Franz, Milan; and Matusek, Miroslav, to Vyzkumny Ustav Anorganicke Chemie. Apparatus for decomposing alkali metal amalgams. 3,981,490, Cl. 266-169.000.

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Rubino, Andrew M., to Armour Pharmaceutical Company. Zirconium-aluminum-polyol buffered anti-perspirant complexes. 3,981,986, Cl. 424-47.000.

Ruddell, James Nelson; and McMeekin, Samuel, to Lambeg Industrial Research Association. Fibrous materials. 3,981,952, Cl. 264-147.000.

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Rumph, Joel D., to D-J Enterprises, Inc. Portable golf ball washing device. 3,981,039, Cl. 15-21.00A.

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Russ, Warren K., Jr.; Hazen, George G.; and Chamberlin, Earl M., to Merck & Co., Inc. Process for preparing (1-oxo-2-phenyl, halophenyl or thienyl-2-methyl-6,7-dichloro-5-indanyloxy)acetic acid. 3,981,888, Cl. 260-332.20A.

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Ryan, Vernon L. Adjustable support apparatus. 3,981,500, Cl. 272-85.000.

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Saikawa, Isamu; Takano, Shuntaro; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; Kasuya, Kyoko; and Kodama, Yutaka, to Toyama Chemical Co., Ltd. Bis-type penicillins and process for producing the same. 3,981,865, Cl. 260-239.100.

St. Clair, John C. Use of solar energy heat gathering and storing systems to increase farm crop yields. 3,981,151, Cl. 60-641.000.

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Saito, Masumi; Tani, Sumio; Ito, Tateo; and Kasaoka, Shigeaki, to Kurashiki Boseki Kabushiki Kaisha. Process for reducing nitrogen oxides. 3,981,971, Cl. 423-239.000.

Sakai, Tosimitu: *See—*
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Sample, Winfield, to Bell & Howell Company. Transducing methods and transducers. 3,981,198, Cl. 73-407.00R.

Sanderson, Albert E., to Inventronics, Inc. Phase different detector and display. 3,982,184, Cl. 324-83.000.

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- Hardtmann, Goetz E., 3,982,000.
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Sato, Kichiro. Pressure regulation valve device. 3,981,327, Cl. 137-613.000.

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Sato, Seiko; Hiyama, Yutaka; and Yokota, Mitsuhisa, to Tokyo Shibaura Denki Kabushiki Kaisha. Turbine control system. 3,981,608, Cl. 415-15.000.

Sato, Tadao: *See—*
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Saulnier, Theodore Alexander, to RCA Corporation. Photographic method employing organic light-scattering particles for producing a viewing-screen structure. 3,981,729, Cl. 96-36.100.

Sauvanet, Maurice, to Silec-Semi-Conducteurs. Power regulating device. 3,982,175, Cl. 323-18.000.

Savage, Phillip D., to Hall Ski-Lift Company, Inc. Timing gate for ski-lifts. 3,981,248, Cl. 104-173.0ST.

Savin Business Machines Corporation: *See—*
- Gardiner, Kenneth W.; and Schaefer, Louis F., 3,981,267.

Saxholm, Rolf. Magnetically responsive, biologically active substance and associated methods and apparatus. 3,981,776, Cl. 195-103.50R.

Sayous, Leon, to Societe Nationale des Petroles d'Aquitaine. Device for emitting mechanical waves. 3,981,379, Cl. 181-118.000.

Schacht, Louis L. Inclined bedrest. 3,981,031, Cl. 5-327.00B.

Schade, Otto Heinrich, Jr., to RCA Corporation. Radiation responsive voltage dividing circuit. 3,982,197, Cl. 330-33.000.

Schaefer, Dietrich H., to Rockwell International Corporation. Phase-lock circuitry with lock indication. 3,982,190, Cl. 328-110.000.

Schaefer, James Clement, to ESB Incorporated. Method of preparing a lithium-aluminum electrode. 3,981,743, Cl. 429-218.000.

Schaefer, Louis F.: *See—*
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Scherrer, Claude-Jacques; Mauleon, Jean-Louis; and Gmerek, Jean-Daniel, to Compagnie Francaise de Raffinage; and Universal Oil Products Company, part interest to each. Compositions for inhibiting the corrosion of metals. 3,981,780, Cl. 203-7.000.

Scherrer, Hanspeter: *See—*
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Scherzinger, Werner, to Mayer & Cie. Maschinenfabrik. Textile-pattern-peg selection and insertion arrangement. 3,981,159, Cl. 66-1.00R.

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Schimoler, Louis C. Dog grooming tool. 3,981,275, Cl. 119-83.000.

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Schlanzky, Manfred P. H., to General Motors Corporation. Pneumatic switch for low tire pressure warning system. 3,982,225, Cl. 340-58.000.

Schlein, Allen P. Positive-locking surgical clamp. 3,981,308, Cl 128-346.000.

Schlereth, Fritz H., to General Electric Company. Recursive numerical processor. 3,982,112, Cl. 235-156.000.

Schmidt, Gunter; and Metzger, Karl Georg, to Bayer Aktiengesellschaft. Penicillins. 3,982,011, Cl. 424-271.000.

Schmidt, Robert Rudolf: *See—*
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Schneider, William P., to Upjohn Company, The. Racemic prostaglandins of the 2-series and analogs thereof. 3,981,880, Cl. 260-468.00D.

Schoeps, Knut Christian, to Atlas Copco Aktiebolag. Pneumatic vane motor. 3,981,647, Cl. 418-259.000.

Scholl, Charles H., to Nordson Corporation. Apparatus for melting and dispensing thermoplastic material. 3,981,416, Cl. 222-146.00R

Schoon, David J., to Minnesota Mining and Manufacturing Company. Electro-optical feedback signal producing apparatus. 3,982,124, Cl. 250-237.00R.

Schotten, Alfons; Spolgen, Hermann Josef; and Rilling, Ulrich, to Eberhard Hoesch & Sohne. Plate type press filter. 3,981,802, Cl. 210-91.000.

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Schubach, Theodor C., to Rohr Industries, Inc. Roof-to-sidewall joint structure for transit vehicle. 3,981,107, Cl. 52-11.000.

Schueler, Peter; Runge, Detlev; and Kuschmierz, Heinz, to Robert Bosch G.m.b.H. Fuel control system for supercharged, fuel injected internal combustion engines. 3,981,285, Cl. 123-119.00C.

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Schulte, Fritz; Riecker, Johann G.; and Bender, Martin, to Hartung, Kuhn & Co. Maschinenfabrik GmbH. Coke oven hood apparatus. 3,981,778, Cl. 202-263.000.

Schultz, Robert S. Method of making a pressure operated container for dispensing viscous products. 3,981,119, Cl. 53-37.000.

Schultz, Wilmer R. Back system for modular seating. 3,981,536, Cl. 297-444.000.

Schupak, Grigory Bentsionovich: *See—*
- Medovar, Boris Izrailevich; Saenko, Vladimir Yakovlevich; Schupak, Grigory Bentsionovich; Alferov, Jury Fedorovich; Karpov, Vladimir Fedorovich; Berman, Kirill Adolfovich; Pogoretsky, Vitaly Vasilievich; Ovseichuk, Vitaly Alexandrovich; Zabolotsky, Petr Stepanovich; Boiko, Georgy Alexandrovich; Oleinik, Vladimir Ivanovich; Grodzitsky, Stanislav Vitalievich; Popov, Viktor Andreevich; and Chvertko, Anatoly Ivanovich, 3,981,349.

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Schwager, Irving; and Knifton, John F., to Texaco Inc. Selective hydroformylation process using homogeneous catalysts. 3,981,925, Cl. 260-604.0HF.

Schwartz, Robert C., to Motiva, Ltd. Audio-visual slide projection system. 3,981,573, Cl. 353-15.000.

Schwarz, Erwin, to Ruti Machinery Works Ltd. Device for driving a carrier for a filling-thread gripper head on a loom. 3,981,332, Cl. 139-449.000.

Schwarz, Meyer; Sonnet, Philip E.; and Wakabayashi, Nobel, to United States of America, Agriculture. Arthropod maturation inhibitors. 3,982,014, Cl. 424-300.000.

Schwarz, Wolfgang: *See—*
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- Scott, Larkin B., to Perkin-Elmer Corporation, The. Continuously monitoring ratiometer. 3,981,586, Cl. 356-97.000.
- Scott, Norman H., to Universal Oil Products Company. Heat exchange method for series flow reactors. 3,981,792, Cl. 208-49.000.
- Scott Paper Company: *See—*
  - Krusko, Evelyn H., 3,981,306.
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- Seavey, Marden H., Jr.; Wyman, Joseph M.; and Toledo, Emil, to United States of America, Navy. Method of determining adequacy of substrate memory wire during the plating process. 3,982,178, Cl. 324-34.00R.
- See, Roy H. Brush guard for tractor. 3,981,521, Cl. 280-760.000.
- Seider, Gene J.; and Freund, Michael C., to Gould Inc. Programmable electronic control system for multiple electric stations. 3,982,097, Cl. 219-486.000.
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- Sekimoto, Akira: *See—*
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- Seris, Georges, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Combustible mixture for torches and burners. 3,981,692, Cl. 48-197.0FM.
- Sevoian, Martin. Marek's disease vaccine. 3,981,771, Cl. 195-1.300.
- Seward, Thomas P., III: *See—*
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- Sgibnev, Igor Vladimirovich: *See—*
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  - Stouthamer, Bernhard; and Kwantes, Arien, 3,981,923.
- Shepherd, Allen A. Sport-fishing apparatus. 3,981,095, Cl. 43-19.200.
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- Shimano, Takashi; Orimo, Katsumi; Yamamoto, Shoji; and Azuma, Masao, to Furukawa Electric Co., Ltd., The. Apparatus for producing a foamed thermoplastic resin article. 3,981,649, Cl. 425-4.00C.
- Shimizu, Masanao; Takase, Yoshiyuki; and Kouno, Kaoru, to Dainippon Pharmaceutical Co., Ltd. Fish disease treatment. 3,981,999, Cl. 424-251.000.
- Shinn, Michael G.; and Fransen, Billy G., to General Electric Company. Lamp basing using UV curable adhesive. 3,982,185, Cl. 339-144.00R.
- Shirata, Akihiko: *See—*
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- Siegemund, Gunther; and Muschaweck, Roman, to Hoechst Aktiengesellschaft. 1,2,2,2-Tetrafluoroethyl ethers and process for preparing them. 3,981,927, Cl. 260-614.00F.
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- Signorino, Charles A., to Colorcon Incorporated. Color film coating of tablets and the like. 3,981,984, Cl. 424-33.000.
- Sijtstra, Sebastianus; and Boom, Willem, to U.S. Philips Corporation. Control unit for paper transport. 3,982,166, Cl. 318-696.000.
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- Simoneit, Kurt, to Rohr Industries, Inc. Antenna spring counterweight. 3,982,247, Cl. 343-766.000.
- Simons, Kenneth, to Jerrold Electronics Corporation. Video encription system. 3,982,062, Cl. 178-5.100.
- Simpson, Henry Wellington, to International Business Machines Corporation. Triboelectric filter and method of using it in an electrophotographic printer. 3,982,043, Cl. 427-14.000.
- Singh, B. P. N.: *See—*
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- Slack, John A., to World Carpets. Rotatable display and storage stand for floor coverings. 3,981,405, Cl. 211-70.000.
- Slangan, Gary; Pittet, Alan O.; Giacino, Christopher; Hruza, Denis E., Sr.; and Shuster, Edward J., to International Flavors & Fragrances Inc. Grape flavor compositions, foodstuffs and chewing gum containing bis (cyclohexyl) disulfide and methods for producing same. 3,982,009, Cl. 426-3.000.
- Slathar, Donald A.; and Neutkens, Christiaan H., to International Telephone and Telegraph Corporation. Feeding and assembly apparatus. 3,981,394, Cl. 198-391.000.
- Sletzinger, Meyer; and Hazen, George G., to Merck & Co., Inc. Process for preparing (1-oxo-2-cyclopentyl-2-methyl-6,7-dichloro-5-indanyloxy)acetic acid. 3,981,911, Cl. 260-520.00C.
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- Smith, Carl Mayn; and Tiers, George Van Dyke, to Minnesota Mining and Manufacturing Company. Silicone-compatible azo dyestuffs. 3,981,859, Cl. 260-205.000.
- Smith, Charles A.; and Warren, Arthur D., to United States of America, Air Force. Droplet impact recorder. 3,981,264, Cl. 116-114.0AM.
- Smith, Harry D., to Sperry Rand Corporation. Aircraft engine automatic throttle control with automatic gain programming system. 3,981,442, Cl. 235-150.200.
- Smith, Lucius N. Apparatus for gathering and containerizing citrus fruit and the like. 3,981,127, Cl. 56-328.00R.
- Smith, Matthew S.; and Filippi, Ernest A. Launcher arrangement for rocket powered round. 3,981,225, Cl. 89-1.818.
- Smith, Peter W.; and Soong, An-Hwa, to United Technologies Corporation. Monolithic reciprocal latching ferrite phase shifter. 3,982,213, Cl. 333-31.00A.
- Smith, Richard E.; and Griswold, Augustus W., to Xerox Corporation. Mag brush housing with detachable sump section. 3,981,272, Cl. 118-637.000.
- Smith, Robert J. Heat transfer and conditioning unit. 3,981,291, Cl. 126-110.00R.
- Smith, Ronald Eugene, to Bourns, Inc. Contact spring for variable resistance device. 3,982,221, Cl. 338-202.000.
- Smith, Trevor Stanley, to Joseph Lucas Industries. Fuel control system for gas turbine engine. 3,981,141, Cl. 60-39.28R.
- Smith, William A., to Raytheon Company. Cascade crossed field device. 3,982,152, Cl. 315-3.600.
- Smith, William E., to General Electric Company. Diols by transesterification using magnesia catalysts. 3,981,931, Cl. 260-635.00R.
- Smits-Geurts, Louisa Josephina. Pull means for slidable member for dosing device. 3,981,420, Cl. 222-505.000.
- Smyres, Gary A.; Haskett, Philip R.; Scheiner, Bernard J.; and Lindstrom, Roald E., to United States of America, Interior. Decomposition leach of sulfide ores with chlorine and oxygen. 3,981,962, Cl. 423-35.000.
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- Snyder, Donald H. Work stand for bicycles. 3,981,491, Cl. 269-64.000.
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- Soya, Masahiro; and Kubota, Shokichi, to Tokico Ltd. Perforated plate of steam reforming valve. 3,981,946, Cl. 261-64.00R.
- Spangle, Lloyd B., to Dow Chemical Company, The. Apparatus for measuring the density of a cement slurry. 3,981,202, Cl. 73-438.000.
- Speed, Sidney E., to Swiss Aluminum Limited. Foaming of metal by the catalyzed and controlled decomposition of zirconium hydride and titanium hydride. 3,981,720, Cl. 75-20.00F.
- Spencer, Robert, to Simon-Barron Limited. Press having torque responsive drive coupling. 3,981,665, Cl. 425-331.000.
- Sperati, Carleton Angelo: *See—*
  - Manwiller, Carl Harding; and Sperati, Carleton Angelo, 3,981,852.
- Sperman, Jacob H. Air bearing construction. 3,981,546, Cl. 308-5.00R.
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- Starr, Robert N.: *See—*
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- Steele, John M.; Hanak, Fredric M.; Nino, Guillermo J.; and Panzarella, John E., to Dow Chemical Company, The. Method for producing dry alkyl halides. 3,981,938, Cl. 260-657.000.
- Steels, Gordon; and Blore, Terence John, to Baker Perkins Holdings Limited. Moulding of high boiled sugar and like confections. 3,981,656, Cl. 425-182.000.
- Steen, Gary J.; Bedell, Terrence A.; and Myers, Frank W., to Riviana Foods Inc. Hermetically sealed rice mix. 3,982,041, Cl. 426-618.000.
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- Szkrybalo, William, to Hoffmann-La Roche Inc. 2,3:4,5-Di-O-substituted gluconates. 3,981,860, Cl. 536-4.000.
- Szpur, Roman. Dispensing and applicating device and production of same. 3,981,304, Cl. 128-269.000.
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- Taylor, Hervey, to Home Curtain Corporation. Curtain hemming device. 3,981,255, Cl. 112-155.000.
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- Toda, Kooichiro, to France Bed Co. Ltd. Mattress. 3,981,033, Cl. 5-351.000.
- Todd, Clinton Harvey, to RCA Corporation. Method of air letting an evacuated cathode ray tube. 3,981,554, Cl. 316-2.000.
- Togashi, Shiyuichi, to Fuji Photo Optical Co., Ltd. Means for enabling stopped-down measurement in exposure control camera employing full-aperture measuring system. 3,982,257, Cl. 354-286.000.

- Toivonen, Harry. Fishing lure. 3,981,096, Cl. 43-42.390.
- Tokico Ltd.: *See—*
  - Azuma, Tomizo, 3,981,227.
  - Soya, Masahiro; and Kubota, Shokichi, 3,981,946.
- Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
  - Kondo, Fumio; Kondo, Masayuki; Itoh, Tsuneyoshi; and Sato, Koji, 3,981,709.
- Tokyo Plywood Kabushiki Kaishi: *See—*
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- Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
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  - Seavey, Marden H., Jr.; Wyman, Joseph M.; and Toledo, Emil, 3,982,178.
- Toman, Donald J., to Tull Aviation Corporation. Microwave radiation method and apparatus with a combined diffraction edge and radiation screen. 3,982,249, Cl. 343-841.000.
- Tomecek, Jerry J.; and Hagerty, Philip J., to Tekonsha Engineering Company. Brake controller and short circuit probe disconnect. 3,981,544, Cl. 303-21.0AF.
- Toray Industries, Inc.: *See—*
  - Okamoto, Takehiko; Kishimoto, Akihiko; Nagai, Ikuo; Sato, Hiroshi; Okasaka, Hotsuma; and Inoue, Masakazu, 3,981,944.
- Torbet, Philip A.; and Eager, Cyril Thomas, to Burke Company, The. Hanger for suspended concrete forms. 3,981,469, Cl. 248-235.000.
- Toriyama, Takeshi: *See—*
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- Toro Company, The: *See—*
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  - Thorud, Richard A.; Wood, William D.; and Ramsey, Derald D., 3,982,082.
- Torreno, Manuel L., Jr.; Kurz, Bruno F., deceased (by Kurz-Beerli, Elizabeth, executrix); and Krishna, Surinder, to General Electric Company. Semiconductor devices and method, including TGZM, of making same. 3,982,269, Cl. 357-60.000.
- Torrington Company, The: *See—*
  - Alling, Richard Lassen; and Woiten, Richard John, 3,981,060.
  - Carullo, Paul A., 3,981,549.
- Toth, Anton: *See—*
  - Meyer, Gerhard; Toth, Anton; and Laudien, Dieter, 3,981,847.
- Towmotor Corporation: *See—*
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- Toyama Chemical Co., Ltd.: *See—*
  - Saikawa, Isamu; Takano, Shuntaro; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; Kasuya, Kyoko; and Kodama, Yutaka, 3,981,865.
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  - Ban, Masashi; Ishikawa, Masakazu; and Uemura, Hiroshi, 3,981,147.
  - Kawamura, Kazuhiro; and Mizutani, Kunihiko, 3,981,642.
  - Noguchi, Masaaki; Bunda, Tsuchio; and Sumiyoshi, Masaharu, 3,981,145.
- Traa, Einar Oddbjorn, to Tektronix, Inc. Electronically programmable function generator. 3,982,115, Cl. 235-197.000.
- Tracey, Richard M.: *See—*
  - Dudley, Robert E., 3,981,464.
- Traunecker, Werner: *See—*
  - Losel, Walter; Traunecker, Werner; and Hoefke, Wolfgang, 3,981,992.
- Trelease, Robert B., to Hitco. Insulator. 3,981,689, Cl. 29-183.000.
- Trelleborgs Gummifabrik Aktiebolag: *See—*
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- Trostler, Richard M. Heater and control system. 3,982,098, Cl. 219-501.000.
- Troy, Stephen R. Exponential sweep multivibrator. 3,982,139, Cl. 307-228.000.
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  - Gaines, Donald R.; Smallegan, Jon M.; and Trudeau, William H., 3,981,065.
- True Temper Corporation: *See—*
  - Portz, William E., 3,981,502.
- Trumble, Terry M., to United States of America, Air Force. Ultraviolet wavelength smoke detector. 3,982,130, Cl. 250-373.000.
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- Tsilibes, George N., to Xerox Corporation. Optical system for an electrophotographic printing machine. 3,981,577, Cl. 355-4.000.
- Tsubota, Masaharu: *See—*
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- Tsuchida, Shozo; and Okai, Sakuo, to Nippon Paint Co., Ltd. Apparatus for automatically processing photopolymer plates. 3,981,583, Cl. 355-100.000.
- Tsuda, Shinichi: *See—*
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- Tsukamoto, Takuzo; Nakaguchi, Mitsuharu; Kito, Hidetoshi; Nagashima, Toshio; Shirata, Akihiko; and Tsuda, Shinichi, to Fuji Xerox Co., Ltd. Device for controlling electric potential applied to developing electrode in an electrophotographic duplicator. 3,981,268, Cl. 118-8.000.
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- Tsukuda, Mitsuo. Game board with game piece storage area. 3,981,503, Cl. 273-136.00K.
- Tuccillo, Joseph J., to Pennwalt Corporation. White gold alloy. 3,981,723, Cl. 75-165.000.
- Tucker, Gerald L.; and Blanton, Elmer Ladelle, to Mississippi Chemical Corporation. Urea-zinc oxide composition and process. 3,981,713, Cl. 71-28.000.
- Tull Aviation Corporation: *See—*
  - Toman, Donald J., 3,982,249.
- Tunkel, Norman: *See—*
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- Turner, Clarence A. Self-centering tool holding apparatus. 3,981,211, Cl. 82-36.00R.
- Turner, Jeanette A. Sunbathing accessory. 3,981,030, Cl. 5-327.00R.
- Turner, Kenneth W., to Teletype Corporation. Method and apparatus for decoding diphase signals. 3,982,195, Cl. 329-50.000.
- Turunen, Lasse Juhani; Rimpinen, Heikki; Orsma, Tauno; and Peurala, Aimo, to G. A. Serlachius Oy. Machine for filling a sack with piece goods and closing mouth opening of the sack. 3,981,121, Cl. 53-159.000.
- TVI-Television Industrielle S.A.: *See—*
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- Uitti, Kenneth D., to UOP Inc. Pressurized column solvent extraction of nickel from ammoniacal solutions. 3,981,969, Cl. 423-139.000.
- Ukeiley, Richard Larry, to Bell Telephone Laboratories, Incorporated. Automatic cable balancing network. 3,982,080, Cl. 179-170.00D.
- Ultramet: *See—*
  - Kaplan, Richard B.; Gonnella, Sebastian; and Abrams, Walter M., 3,982,148.
- Umemura, Takeaki; and Horiuchi, Fukashi, to Sumitomo Chemical Company, Limited. Racemization of optically active allethrolone. 3,981,919, Cl. 260-586.00R.
- Union Carbide Corporation: *See—*
  - Alsop, George Michael, 3,981,777.
  - Chiu, Herman, 3,981,046.
  - Papa, Anthony Joseph; and Proops, William Robert, 3,981,827.
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    - Weaver, Mary Ollidene; Bagley, Edward B.; Fanta, George F.; and Doane, William M., 3,981,100.
    - Weaver, Merle L.; Huxsoll, Charles C.; and Graham, Robert P., 3,982,037.
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    - Kalb, Henry T.; Cline, Virgil A., Jr.; and Bomar, Bruce W., 3,982,101.
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  - Hayes, Douglas R.; and Perron, James S., 3,981,346.
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- Urbanek, Edwin A.; and Teumer, Roger G., to Xerox Corporation. Photoelectrophoretic electrostatic tacking capstan web tension system. 3,981,459, Cl. 242-75.440.
- Urick, Robert J., to United States of America, Navy. Deep hydrophone string. 3,982,222, Cl. 340-2.000.
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- Vaiden, Henry Edge, to Bell Telephone Laboratories, Incorporated. Apparatus for testing multiconductor cables for continuity, correct connections, and the absence of short circuits between conductors. 3,982,180, Cl. 324-51.000.
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- Van Baerle, Edward. Photographic material processing module. 3,982,259, Cl. 354-329.000.
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- van Brederode, Robert A.; and Steinkamp, Robert A., to Exxon Research and Engineering Company. Process for preparing finely divided polymers. 3,981,957, Cl. 260-878.00R.
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- Van Dam, Max; and Gallo, Stephen Robert, to Polychrome Corporation. Silver halide photographic materials containing the addition products of lower alkylene oxides and organic polyamines as anti-fog compounds. 3,981,733, Cl. 96-67.000.
- van de Plassche, Rudy Johan, to U.S. Philips Corporation. Precision current-source arrangement. 3,982,172, Cl. 323-1.000.
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- van der Ziel, Jan Peter, to Bell Telephone Laboratories, Incorporated. Phase matching in a laminar structure. 3,982,135, Cl. 307-88.300.
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- van Dyke, John C., to Woods Research and Development Corporation. Method of making a set water-in-oil emulsion including a continuous resin phase. 3,981,835, Cl. 260-29.6NR.
- Vanelli Coralli, Giorgio; and Brunelli, Alessandro, to Viro Innocenti S.p.A. Protected cylinder lock. 3,981,168, Cl. 70-417.000.
- van Holten, Jan; and Ribbens, Cornelis, to N.V. Chefaro Maatschappij. Purification of solid organic peroxides. 3,981,926, Cl. 260-610.00D.
- Vanhoof, Pierre M.; and Clarebout, Pierre M., to A. Christiaens Societe Anonyme. Derivatives of 2-amino-(1,2,3,4-tetrahydronaphthalene). 3,981,872, Cl. 260-247.20A.
- Vardell, William G.: *See—*
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- Veit, Herbert F., to Robertshaw Controls Company. Emergency breathing means. 3,981,302, Cl. 128-203.000.
- Veitl, Giswalt, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Corrosion-resistant structural shape clad by rolling and welding and comprising a base material and a cladding material and method of producing such a structural shape. 3,981,426, Cl. 228-118.000.
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- Venus Electric Limited: *See—*
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- Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft: *See—*
  - Veitl, Giswalt, 3,981,426.
- Verhoeven, Leonardus Adrianus Johannes; de Haan, Maarten Rutger; and Janssen, Peter Johannes Michiel, to U.S. Philips Corporation. Color television system in which the chrominance subcarrier is locked to the frequency-modulated luminance signal. 3,982,272, Cl. 358-4.000.
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- Vig, John R., to United States of America, Army. Method of treating quartz crystal resonators. 3,981,687, Cl. 29-25.350.
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  - Montoro, Fernando; Vila-Coro, Antonio; and Calatayud, Jose, 3,982,002.
- Vind, Holger Wilhelm, to Danfoss A/S. Method of making high-duty PTC-resistor. 3,981,075, Cl. 29-612.000.
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  Medovar, Boris Izrailevich; Saenko, Vladimir Yakovlevich; Schupak, Grigory Bentsionovich; Alferov, Jury Fedorovich; Karpov, Vladimir Fedorovich; Berman, Kirill Adolfovich; Pogoretsky, Vitaly Vasilievich; Ovseichuk, Vitaly Alexandrovich; Zabolotsky, Petr Stepanovich; Boiko, Georgy Alexandrovich; Oleinik, Vladimir Ivanovich; Grodzitsky, Stanislav Vitalievich; Popov, Viktor Andreevich; and Chvertko, Anatoly Ivanovich, 3,981,349.

Zabransky, Robert F., to Universal Oil Products Company. HF alkylation process and reaction temperature control system. 3,981,942, Cl. 260-683.480.

Zalesak, Joseph F.: *See*—
  Rogers, Peter H.; and Zalesak, Joseph F., 3,982,144.

Zambianchi, Mario: *See*—
  Brambilla, Giovanni; Caporali, Giacomo; and Zambianchi, Mario, 3,981,960.

Zannucci, Joseph S.: *See*—
  Wang, Richard H. S.; and Zannucci, Joseph S., 3,981,884.

Zasio, John J.: *See*—
  Buelow, Fred K.; and Zasio, John J., 3,981,070.

Zawadzki, Thomas: *See*—
  Hudgin, Donald E.; and Zawadzki, Thomas, 3,981,856.

Zdanys, John: *See*—
  Rozema, Arthur L.; Van Benthuysen, John D.; and Zdanys, John, 3,982,220.

Zeuch, Klaus; and Stadter, Josef, to Siemens Aktiengesellschaft. Apparatus for temperature measurement. 3,981,196, Cl. 73-343.00B.

Zhidkov, Boris Alexeevich, deceased: *See*—
  Berezhnoi, Igor Alexandrovich; Elatontsev, Albert Ivanovich; Ignatiev, Vladimir Vasilievich; Ivlev, Djuis Danilovich; Mayanov, Boris Veniaminovich; Svinukhov, Vasily Andriyanovich; Kuzmin, Vladimir Petrovich; Evdokimov, Igor Alexandrovich; and Zhidkov, Boris Alexeevich, deceased, 3,981,462.

Zhidkova, Ljudmila Vasilievna, administratrix: *See*—
  Berezhnoi, Igor Alexandrovich; Elatontsev, Albert Ivanovich; Ignatiev, Vladimir Vasilievich; Ivlev, Djuis Danilovich; Mayanov, Boris Veniaminovich; Svinukhov, Vasily Andriyanovich; Kuzmin, Vladimir Petrovich; Evdokimov, Igor Alexandrovich; and Zhidkov, Boris Alexeevich, deceased, 3,981,462.

Zhitomirsky, Mikhail Iosifovich: *See*—
  Aimbinder, Mark Borisovich; Zhitomirsky, Mikhail Iosifovich; Denisova, Maria Vasilievna; Grabilin, Anatoly Mikhailovich; Lapushkin, Grigory Alexeevich; Kupershmidt, Moisei Zusievich; Mazov, Jury Alexeevich; Terentiev, Viktor Petrovich; Sergeev, Jury Vasilievich; and Muzylev, Vladimir Sergeevich, 3,981,130.

Ziebrecht, Hans-Jorg: *See*—
  Warnow, Detlef; and Ziebrecht, Hans-Jorg, 3,981,301.

Ziemba, Richard T.: *See*—
  Buzzell, Colby E.; and Ziemba, Richard T., 3,981,245.

Ziemek, Peter, to Bayer Aktiengesellschaft. Process for the preparation of heterocyclic compounds. 3,981,869, Cl. 260-240.00G.

Zimmer, George A.; and Struttmann, Hilarius S., to Borg-Warner Corporation. Bearing improvement. 3,981,550, Cl. 308-194.000.

Zimmerman, Otto J.; and Mock, Walton L., to Smico Corporation. Oscillating free swinging sifter apparatus. 3,981,403, Cl. 209-366.500.

Zito, Santo, to Fairmont Foods Company. Process for coating pizza shells with sauce. 3,982,033, Cl. 426-302.000.

Zletz, Alex, to United States of America, Air Force. Silicone fluids as a corrosion inhibitor for perfluorinated polyether fluids. 3,981,811, Cl. 252-49.600.

Zletz, Alex, to United States of America, Air Force. High temperature thermally stable greases. 3,981,812, Cl. 252-49.600.

Zlupko, John E., to General Electric Company. Method of making an insulator with a non-linear resistivity coating of glass bonded silicon carbide. 3,982,048, Cl. 427-126.000.

Zmuda, Edward Izydor: *See*—
  Burdick, Glen Alden; and Zmuda, Edward Izydor, 3,982,153.

Zoecon Corporation: *See*—
  Henrick, Clive A., 3,981,922.

Zollinger, Hans R., to H. A. Schlatter AG. Welding apparatus. 3,982,091, Cl. 219-101.000.

Zuech, Ernest A., to Phillips Petroleum Company. Solid olefin reaction catalyst and method of using same. 3,981,940, Cl. 260-683.00D.

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 78,315	3,982,192	Feb. 10, 1976	Sep. 21, 1976	B 511,885	3,981,346	Jan. 27, 1976	Sep. 21, 1976
B 79,099	3,982,177	Jan. 13, 1976	Sep. 21, 1976	B 511,909	3,981,183	Feb. 17, 1976	Sep. 21, 1976
B 150,142	3,981,767	Jan. 27, 1976	Sep. 21, 1976	B 512,745	3,981,294	Jan. 13, 1976	Sep. 21, 1976
B 163,463	3,981,659	Jan. 27, 1976	Sep. 21, 1976	B 512,849	3,982,141	Feb. 3, 1976	Sep. 21, 1976
B 270,274	3,982,223	Feb. 17, 1976	Sep. 21, 1976	B 513,368	3,982,138	Feb. 3, 1976	Sep. 21, 1976
B 308,659	3,981,947	Jan. 27, 1976	Sep. 21, 1976	B 513,789	3,981,599	Feb. 3, 1976	Sep. 21, 1976
B 339,194	3,982,215	Feb. 3, 1976	Sep. 21, 1976	B 515,455	3,982,149	Jan. 27, 1976	Sep. 21, 1976
B 356,187	3,981,222	Jan. 20, 1976	Sep. 21, 1976	B 519,979	3,982,067	Feb. 3, 1976	Sep. 21, 1976
B 359,901	3,981,729	Jan. 13, 1976	Sep. 21, 1976	B 520,924	3,982,113	Jan. 27, 1976	Sep. 21, 1976
B 378,513	3,981,750	Jan. 27, 1976	Sep. 21, 1976	B 521,600	3,981,458	Jan. 27, 1976	Sep. 21, 1976
B 379,177	3,981,976	Jan. 27, 1976	Sep. 21, 1976	B 521,986	3,981,607	Feb. 3, 1976	Sep. 21, 1976
B 386,257	3,981,915	Feb. 3, 1976	Sep. 21, 1976	B 522,577	3,982,123	Jan. 27, 1976	Sep. 21, 1976
B 394,350	3,982,200	Jan. 13, 1976	Sep. 21, 1976	B 523,885	3,981,040	Feb. 17, 1976	Sep. 21, 1976
B 403,507	3,982,095	Feb. 10, 1976	Sep. 21, 1976	B 526,190	3,982,129	Feb. 17, 1976	Sep. 21, 1976
B 405,726	3,981,241	Jan. 13, 1976	Sep. 21, 1976	B 527,054	3,981,559	Feb. 17, 1976	Sep. 21, 1976
B 412,068	3,981,244	Jan. 13, 1976	Sep. 21, 1976	B 527,669	3,982,206	Jan. 13, 1976	Sep. 21, 1976
B 417,014	3,981,851	Jan. 13, 1976	Sep. 21, 1976	B 527,999	3,981,682	Feb. 3, 1976	Sep. 21, 1976
B 427,883	3,982,277	Jan. 20, 1976	Sep. 21, 1976	B 528,761	3,982,221	Feb. 10, 1976	Sep. 21, 1976
B 430,276	3,982,171	Jan. 20, 1976	Sep. 21, 1976	B 532,969	3,981,706	Jan. 13, 1976	Sep. 21, 1976
B 430,334	3,981,677	Jan. 27, 1976	Sep. 21, 1976	B 533,580	3,982,255	Feb. 3, 1976	Sep. 21, 1976
B 439,542	3,982,199	Jan. 27, 1976	Sep. 21, 1976	B 534,313	3,981,675	Jan. 27, 1976	Sep. 21, 1976
B 443,163	3,981,242	Feb. 3, 1976	Sep. 21, 1976	B 534,314	3,981,786	Feb. 10, 1976	Sep. 21, 1976
B 443,712	3,982,233	Jan. 27, 1976	Sep. 21, 1976	B 534,333	3,981,480	Feb. 17, 1976	Sep. 21, 1976
B 452,672	3,981,602	Jan. 13, 1976	Sep. 21, 1976	B 534,767	3,982,180	Feb. 3, 1976	Sep. 21, 1976
B 452,883	3,981,735	Jan. 27, 1976	Sep. 21, 1976	B 535,076	3,981,718	Jan. 20, 1976	Sep. 21, 1976
B 459,811	3,982,173	Jan. 20, 1976	Sep. 21, 1976	B 535,386	3,981,150	Jan. 13, 1976	Sep. 21, 1976
B 460,441	3,981,828	Jan. 13, 1976	Sep. 21, 1976	B 535,391	3,981,386	Jan. 27, 1976	Sep. 21, 1976
B 461,336	3,982,231	Feb. 3, 1976	Sep. 21, 1976	B 535,466	3,981,309	Jan. 27, 1976	Sep. 21, 1976
B 461,352	3,981,681	Jan. 13, 1976	Sep. 21, 1976	B 535,813	3,981,819	Jan. 27, 1976	Sep. 21, 1976
B 461,874	3,982,276	Jan. 27, 1976	Sep. 21, 1976	B 535,928	3,981,466	Jan. 13, 1976	Sep. 21, 1976
B 465,145	3,981,148	Jan. 27, 1976	Sep. 21, 1976	B 5[illegible],009	3,982,112	Jan. 27, 1976	Sep. 21, 1976
B 467,412	3,981,265	Jan. 13, 1976	Sep. 21, 1976	B 537,102	3,981,829	Jan. 13, 1976	Sep. 21, 1976
B 468,350	3,981,922	Jan. 13, 1976	Sep. 21, 1976	B 537,709	3,981,368	Jan. 13, 1976	Sep. 21, 1976
B 470,348	3,981,929	Jan. 13, 1976	Sep. 21, 1976	B 538,686	3,982,199	Jan. 13, 1976	Sep. 21, 1976
B 471,221	3,981,974	Jan. 13, 1976	Sep. 21, 1976	B 540,632	3,981,600	Jan. 13, 1976	Sep. 21, 1976
B 472,284	3,982,078	Jan. 13, 1976	Sep. 21, 1976	B 540,872	3,982,135	Jan. 20, 1976	Sep. 21, 1976
B 476,577	3,982,070	Jan. 20, 1976	Sep. 21, 1976	B 541,376	3,981,690	Feb. 17, 1976	Sep. 21, 1976
B 481,600	3,981,235	Jan. 27, 1976	Sep. 21, 1976	B 541,415	3,982,080	Feb. 3, 1976	Sep. 21, 1976
B 481,737	3,982,057	Jan. 13, 1976	Sep. 21, 1976	B 541,496	3,982,232	Jan. 27, 1976	Sep. 21, 1976
B 483,256	3,981,723	Feb. 10, 1976	Sep. 21, 1976	B 542,158	3,981,886	Jan. 13, 1976	Sep. 21, 1976
B 488,395	3,982,245	Jan. 27, 1976	Sep. 21, 1976	B 545,050	3,982,073	Jan. 20, 1976	Sep. 21, 1976
B 488,634	3,982,158	Jan. 20, 1976	Sep. 21, 1976	B 545,630	3,981,337	Jan. 27, 1976	Sep. 21, 1976
B 491,032	3,981,892	Feb. 10, 1976	Sep. 21, 1976	B 546,426	3,982,063	Jan. 27, 1976	Sep. 21, 1976
B 492,301	3,981,073	Jan. 13, 1976	Sep. 21, 1976	B 546,911	3,981,058	Jan. 13, 1976	Sep. 21, 1976
B 496,487	3,982,261	Jan. 20, 1976	Sep. 21, 1976	B 548,155	3,981,477	Jan. 13, 1976	Sep. 21, 1976
B 498,500	3,982,241	Jan. 20, 1976	Sep. 21, 1976	B 549,198	3,981,975	Jan. 13, 1976	Sep. 21, 1976
B 499,227	3,981,344	Jan. 27, 1976	Sep. 21, 1976	B 549,244	3,981,125	Jan. 27, 1976	Sep. 21, 1976
B 499,352	3,981,391	Jan. 27, 1976	Sep. 21, 1976	B 549,394	3,981,611	Jan. 27, 1976	Sep. 21, 1976
B 501,122	3,981,385	Feb. 17, 1976	Sep. 21, 1976	B 550,693	3,982,194	Jan. 20, 1976	Sep. 21, 1976
B 501,415	3,982,051	Jan. 13, 1976	Sep. 21, 1976	B 554,283	3,981,152	Jan. 27, 1976	Sep. 21, 1976
B 501,993	3,981,606	Jan. 13, 1976	Sep. 21, 1976	B 558,251	3,981,289	Jan. 13, 1976	Sep. 21, 1976
B 502,289	3,982,274	Jan. 13, 1976	Sep. 21, 1976	B 558,973	3,981,126	Feb. 10, 1976	Sep. 21, 1976
B 502,973	3,982,161	Jan. 27, 1976	Sep. 21, 1976	B 560,717	3,982,034	Feb. 10, 1976	Sep. 21, 1976
B 504,169	3,981,219	Jan. 13, 1976	Sep. 21, 1976	B 565,180	3,981,685	Jan. 27, 1976	Sep. 21, 1976
B 505,126	3,981,745	Feb. 10, 1976	Sep. 21, 1976	B 568,770	3,982,213	Feb. 10, 1976	Sep. 21, 1976
B 506,286	3,982,085	Jan. 20, 1976	Sep. 21, 1976	B 575,757	3,981,170	Jan. 27, 1976	Sep. 21, 1976
B 506,744	3,981,176	Jan. 13, 1976	Sep. 21, 1976	B 579,104	3,982,081	Jan. 27, 1976	Sep. 21, 1976
B 507,647	3,982,240	Jan. 27, 1976	Sep. 21, 1976	B 583,089	3,982,174	Jan. 27, 1976	Sep. 21, 1976
B 508,940	3,981,321	Feb. 17, 1976	Sep. 21, 1976	B 584,520	3,981,149	Jan. 27, 1976	Sep. 21, 1976
B 510,588	3,981,539	Jan. 27, 1976	Sep. 21, 1976	B 586,387	3,981,311	Feb. 3, 1976	Sep. 21, 1976
B 510,855	3,981,059	Jan. 27, 1976	Sep. 21, 1976	B 747,785	3,981,899	Feb. 10, 1976	Sep. 21, 1976
B 511,156	3,981,364	Jan. 27, 1976	Sep. 21, 1976	B 843,038	3,981,785	Feb. 3, 1976	Sep. 21, 1976
B 511,407	3,981,485	Feb. 10, 1976	Sep. 21, 1976				

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21st DAY OF SEPTEMBER, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. H. Robins Company, Incorporated: *See*—
  - Weistead, William J., Jr., Re. 28,973.
- Aizu, Keiichiro: *See*—
  - Kumada, Akio; Aizu, Keiichiro; and Furuhata, Yoshio, Re. 28,971.
- Blockwick, Thomas Nicholas, to Ocean Systems, Inc. System and barrier for containing an oil spill. Re. 28,966, Cl. 61-1.00F.
- Boehringer Ingelheim GmbH: *See*—
  - Weber, Karl-Heinz; Merz, Herbert; Zeile, Karl; Giesemann, Rolf; and Danneberg, Peter, Re. 28,972
- Buzzetta, Frank Vincent: *See*—
  - Rothman, Julius; Tacconelli, Edmond Andrew; and Buzzetta, Frank Vincent, Re. 28,975.
- Cabot Corporation: *See*—
  - Morgan, Allan C.; and Jordan, Merrill E., Re. 28,974.
- Danneberg, Peter: *See*—
  - Weber, Karl-Heinz; Merz, Herbert; Zeile, Karl; Giesemann, Rolf; and Danneberg, Peter, Re. 28,972.
- Devron Engineering Ltd.: *See*—
  - Dove, Norman F., Re. 28,968.
- Dove, Norman F., to Devron Engineering Ltd. Steam supply apparatus. Re. 28,968, Cl. 137-608.000.
- Furuhata, Yoshio: *See*—
  - Kumada, Akio; Aizu, Keiichiro; and Furuhata, Yoshio, Re. 28,971.
- Giesemann, Rolf: *See*—
  - Weber, Karl-Heinz; Merz, Herbert; Zeile, Karl; Giesemann, Rolf; and Danneberg, Peter, Re. 28,972.
- Hamilton, William H., to Pennwalt Corporation. Flow through type drying apparatus. Re. 28,965, Cl. 34-92.000.
- Hitachi, Ltd.: *See*—
  - Kumada, Akio; Aizu, Keiichiro; and Furuhata, Yoshio, Re. 28,971.
- Jordan, Merrill E.: *See*—
  - Morgan, Allan C.; and Jordan, Merrill E., Re. 28,974.
- Kabushiki Kaisha Seisan Nihon Sha Ltd.: *See*—
  - Naito, Kakuji, Re. 28,969.
- Kumada, Akio; Aizu, Keiichiro; and Furuhata, Yoshio, to Hitachi, Ltd. Light modulator element. Re. 28,971, Cl. 350-150.000.
- Merz, Herbert: *See*—
  - Weber, Karl-Heinz; Merz, Herbert; Zeile, Karl; Giesemann, Rolf; and Danneberg, Peter, Re. 28,972.
- Morgan, Allan C.; and Jordan, Merrill E., to Cabot Corporation. Process for making carbon black. Re. 28,974, Cl. 423-450.000.
- Naito, Kakuji, to Kabushiki Kaisha Seisan Nihon Sha Ltd. Integral reclosable bag. Re. 28,969, Cl. 150-3.000.
- Ocean Systems, Inc.: *See*—
  - Blockwick, Thomas Nicholas, Re. 28,966.
- Pennwalt Corporation: *See*—
  - Hamilton, William H., Re. 28,965.
- Rothman, Julius; Tacconelli, Edmond Andrew; and Buzzetta, Frank Vincent. Flexible welding nozzle apparatus. Re. 28,975, Cl. 219-130.000.
- Shapiro, Justin J. Liquid dispensing device. Re. 28,970, Cl. 222-50.000.
- Tacconelli, Edmond Andrew: *See*—
  - Rothman, Julius; Tacconelli, Edmond Andrew; and Buzzetta, Frank Vincent, Re. 28,975.
- Weber, Karl-Heinz; Merz, Herbert; Zeile, Karl; Giesemann, Rolf; and Danneberg, Peter, to Boehringer Ingelheim GmbH. 5-Aryl-1H-1,5-benzodiazepine-2,4-diones. Re. 28,972, Cl. 260-239.30B.
- Weiss, Dieter, to Weiss KG. Work locating apparatus. Re. 28,967, Cl. 92-14.000.
- Weiss KG: *See*—
  - Weiss, Dieter, Re. 28,967.
- Weistead, William J., Jr., to A. H. Robins Company, Incorporated. 3-(Omega-substituted alkyl)-indoles. Re. 28,973, Cl. 260-293.610.
- Zeile, Karl: *See*—
  - Weber, Karl-Heinz; Merz, Herbert; Zeile, Karl; Giesemann, Rolf; and Danneberg, Peter, Re. 28,972.

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- Acco International Inc.: *See*—
  - Goerts, Albrecht. 241,502.
- Agate, Donald L. Contoured handle. 241,508, 9-21-76, Cl. D8—147.
- Alkoff, Rene: *See*—
  - Grode, Marshall L., and Alkoff. 241,496.
- Allstar Verbrauchsguter GmbH & Co. KG: *See*—
  - Krusche. Kurt, and Zimmermann. 241,504.
- Asano, Tamoru, to Sanwa Cutlery Co., Ltd. Disposoble razor. 241,583, 9-21-76, Cl. D95—3.
- Beall, Glenn L.: *See*—
  - Ettlinger, Ralph, Jr., and Beall. 241,493.
- Bertagni Electroacoustic Systems, Inc.: *See*—
  - Bertagni, Jose J., and Metz. 241,554.
- Bertagni, Jose J., and H. M. Metz, to Bertagni Electroacoustic Systems, Inc. Speaker enclosure. 241,554, 9-21-76, Cl. D26—14.
- Bialock, Delmas H. Toaster. 241,497, 9-21-76, Cl. D7—91.
- Blodee, Leif, to The Gunlocke Co. Design for a combined seat, table planter and multiple bench unit, or similar article. 241,485, 9-21-76, Cl. D6—4.
- Blue, Thomas R. Child's flexion wheelchair. 241,529, 9-21-76, Cl. D12—131.
- Bogan, Robert T. Decorative panel or the like. 241,534, 9-21-76, Cl. D25—85.
- Boldt, Melvin H., and D. P. Chuboff, to Zenith Radio Corp. Combined phonograph and tuner. 241,573, 9-21-76, Cl. D56—4.
- Bourassa, Joseph R., and M. Lopez, to Parker-Hannifin Corp. Vehicle door mirror mounting bracket. 241,532, 9-21-76, Cl. D12—187.
- Brauer, F., Ltd.: *See*—
  - Whitbread, David A. 241,544.
- Brickman, Jerry C.: *See*—
  - Haugen, Ronald E., Partin, Brickman, and Vinci. 241,526.
- Burtis, Erie F.: *See*—
  - Stephan, Donald C., and Cone. 241,540.
- Castano, Jose P., to Jose Paredes, S.L. Tread for footwear. 241,484, 9-21-76, Cl. D2—320.
- Chadbourne, Gilbert R., to Keyes Fibre Co. Packaging tray for portion cups. 341,518, 9-21-76, Cl. D9—242.
- Chuboff, David P.: *See*—
  - Boldt, Melvin H., and Chuboff. 241,573.
- Colgate-Palmolive Co.: *See*—
  - Koenigsberg, Victor. 241,517.
- Conair Corp.: *See*—
  - Rizzuto, Leandro P. 241,546.
- Condos, Peter J. Chain and hook lock. 241,506, 9-21-76, Cl. D8—137.
- Condos, Peter J. Chain and hook lock. 241,507, 9-21-76, Cl. D8—137.
- Cone, George W.: *See*—
  - Stephan, Donald C., and Cone. 241,540.
- Corning Glass Works: *See*—
  - Mercadante, Ottorino N. 241,494.
- Cosmos, Pete, Sr.: *See*—
  - Portz, William E., and Cosmos. 241,560.
- Dai Nippon Insatsu Kabushiki Kaisha: *See*—
  - Tateishi, Haruhiko. 241,522.
- Davis, Philip J.: *See*—
  - Sanderford, M. Vincent, and Davis. 241,511.
- Dennison, Scott G.: *See*—
  - Roberts, George T., and Dennison. 241,566.
- Diethelm & Co. AG: *See*—
  - Herzog, Arthur. 241,568.
- Dobashi, Takaaki, and T. Kurokawa, to Fuji Electric Co., Ltd. Cash register. 241,572, 9-21-76, Cl. D52—4.
- Dolly Toy Co., The: *See*—
  - Holtvoight, John H. 241,570.
- Doyle, Richard H., S. L. Morabito, and A. I. Yohana, to Duo-Fast Corp. Fastener driving tool. 241,501, 9-21-76, Cl. D8—49.
- Duo-Fast Corp.: *See*—
  - Doyle, Richard H., Morabito, and Yohana. 241,501.
- Durst AG. Fabrik Fototechnizsher Apparate Bozen: *See*—
  - Gandini, Mario. 241,576.
  - Pramstraller, Wilmut. 241,577.
- Eastman Kodak Co.: *See*—
  - Olson, Richard J. 241,537.
  - Swayze, Samuel F. 241,538.
- Economics Laboratory, Inc.: *See*—
  - Ettlinger, Ralph, Jr., and Beall. 241,493.
- England, Will C. Vine planter. 241,567, 9-21-76, Cl. D11—152.
- Ettlinger, Ralph, Jr., and G. L. Beall, to Economics Laboratory, Inc. Modular floor mat. 241,493, 9-21-76, Cl. D6—209.
- Feiske, Arthur M., to General Electric Co. Clock or similar article. 241,523, 9-21-76, Cl. D10—23.
- Filminiature Systems, Inc.: *See*—
  - Wally, Joseph H., Jr., Wall, and Wilson. 241,578.
- Fisher, Donald M. Combined switch plate and thermometer. 241,510, 9-21-76, Cl. D8—181.
- Fontana, Frank J., to Stewart-Warner Corp. Caster. 241,513, 9-21-76, Cl. D8—226.
- Foremost-McKesson, Inc.: *See*—
  - Harris, Robert M., Jr. 241,516.
- Foto-Quelle GmbH: *See*—
  - Schade, Hans-Ulrich. 241,575.
- Francis, Edwin S. F. Combined fireplace and heating stove. 241,547, 9-21-76, Cl. D23—97.
- Fuji Electric Co., Ltd.: *See*—
  - Dobashi, Takaaki, and Kurokawa. 241,572.
- Fujita Industrial Co., Ltd.: *See*—
  - Fujita, Yoshinobu, and Fukuyama. 241,520.
- Fujita, Yoshinobu, and Y. Fukuyama, to Fujita Industrial Co., Ltd. Vehicle wheel locking nuts. 241,520, 9-21-76, Cl. D8—273.
- Fukuyama, Yasuji: *See*—
  - Fujita, Yoshinobu, and Fukuyama. 241,520.
- Gandini, Mario, to Durst AG. Fabrik Fototechnizsher Apparate Bozen. Color mixing head for photographic enlarger. 241,576, 9-21-76, Cl. D16—32.
- General Electric Co.: *See*—
  - Felske, Arthur M. 241,523.
  - Haggstrom, Olle E. 241,524.
- General Mills Fun Group, Inc.: *See*—
  - Roberts, George T., and Dennison. 241,566.
- Gibilterra, Charles A., to Vecta Group, Inc. Chair or the like 241,487, 9-21-76, Cl. D6—56.
- Goertz, Albrecht, to Acco International Inc. Desk stapler. 241,502, 9-21-76, Cl. D8—50.
- Goldman, Arnold S., and R. J. Toth, to Motorola, Inc. Multiple battery charger or similar article. 241,555, 9-21-76, Cl. D26—15.
- Gonzales, Frank E. Shampoo tray. 241,581, 9-21-76, Cl. D86—10.
- Grode, Marshall L., and R. Alkoff. Salt or pepper shaker. 241,496, 9-21-76, Cl. D7—56.
- Guimond, Charles W. Automobile side view mirror. 241,533, 9-21-76, Cl. D12—187.
- Gunlocke Co., The: *See*—
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139AW	3,981,288
139E	3,981,287
182	3,981,289
CLASS 124	
24R	3,981,290
CLASS 126	
110R	3,981,291
121	3,981,292
271	3,981,293
	3,981,294
	3,981,295
343.5R	3,981,296
CLASS 127	
25	3,981,738
60	3,981,739
CLASS 128	
2G	3,981,297
81R	3,981,298
142R	3,981,300
145.8	3,981,301
203	3,981,302
260	3,981,303
269	3,981,304
285	3,981,305
287	3,981,306
339	3,981,307
346	3,981,308
349B	3,981,299
419P	3,981,309
464	3,981,310
CLASS 131	
144	3,981,311
CLASS 132	
7	3,981,312
9	3,981,313
	3,981,314
CLASS 134	
2	3,981,740
6	3,981,741
167R	3,981,315
CLASS 136	
202	3,981,750
225	3,981,751
CLASS 137	
73	3,981,316
75	3,981,317
86	3,981,318
211	3,981,319
240	3,981,320
255	3,981,321
318	3,981,322
344	3,981,323
556.6	3,981,324
587	3,981,325
604	3,981,326
608	Re.28,968
613	3,981,327
614.2	3,981,328
615	3,981,329
636.4	3,981,330
CLASS 139	
54	3,981,331
449	3,981,332
CLASS 140	
1	3,981,333
CLASS 141	
46	3,981,334
	3,981,335
CLASS 144	
3D	3,981,336
241	3,981,337
309D	3,981,338
CLASS 148	
12B	3,981,752
23	3,981,753
155	3,981,754
171	3,981,755
CLASS 149	
19.3	3,981,756
CLASS 150	
3	Re.28,969
36	3,981,339
52R	3,981,340
CLASS 152	
158	3,981,341
347	3,981,342
CLASS 156	
8	3,981,757
64	3,981,758
73.5	3,981,759
110A	3,981,760
235	3,981,761
322	3,981,762
352	3,981,763
622	3,981,764
CLASS 160	
9	3,981,343
CLASS 162	
80	3,981,765
161	3,981,766
198	3,981,767

199	3,981,768
CLASS 164	
26	3,981,344
49	3,981,345
60	3,981,346
89	3,981,347
[illegible]	3,981,348
252	3,981,349
[illegible]	3,981,350
	3,981,351
332	3,981,353
[illegible]	3,981,352
CLASS 165	
2	3,981,355
79	3,981,354
179	3,981,356
CLASS 166	
.5	3,981,357
[illegible]	3,981,358
224R	3,981,360
[illegible]	3,981,359
[illegible]	3,981,361
[illegible]	3,981,362
[illegible]	3,981,363
311	3,981,364
CLASS 171	
63	3,981,365
CLASS 172	
[illegible]	3,981,366
265	3,981,367
CLASS 173	
104	3,981,368
CLASS 174	
[illegible]	3,982,058
[illegible]	3,982,059
75C	3,982,060
CLASS 175	
[illegible]	3,981,369
373	3,981,370
[illegible]	3,981,371
CLASS 176	
[illegible]	3,981,769
37	3,981,770
CLASS 178	
2R	3,982,061
5.1	3,982,062
[illegible]	3,982,064
5.8R	3,982,065
[illegible]	3,982,063
[illegible]	3,982,066
7.1	3,982,067
7.2	3,982,068
CLASS 179	
[illegible]	3,982,069
	3,982,071
1SM	3,982,070
2TC	3,982,072
7.1R	3,982,073
15AT	3,982,076
[illegible]	3,982,075
[illegible]	3,982,074
	3,982,077
[illegible]	3,982,078
	3,982,079
[illegible]	3,982,080
CLASS 180	
5R	3,981,372
	3,981,373
14A	3,981,374
69C	3,981,375
70P	3,981,376
CLASS 181	
36A	3,981,377
50	3,981,378
118	3,981,379
CLASS 184	
282	3,981,380
CLASS 192	
70.18	3,981,381
150	3,981,382
CLASS 194	
102	3,981,384
CLASS 195	
1.3	3,981,771
1.4	3,981,772
31R	3,981,773
[illegible]	3,981,774
68	3,981,775
103.5R	3,981,776
	3,981,777
CLASS 197	
17	3,981,385
18	3,981,386
63	3,981,383
168	3,981,387
189	3,981,388
CLASS 198	
308	3,981,391
377	3,981,392
379	3,981,393

391	3,981,394
655	3,981,389
844	3,981,390
CLASS 200	
5R	3,982,081
44	3,982,082
48A	3,982,083
51.09	3,982,084
61.41	3,982,085
[illegible]	3,982,086
[illegible]	3,982,087
[illegible]	3,982,088
[illegible]	3,982,089
291	3,982,090
CLASS 202	
263	3,981,778
CLASS 203	
7	3,981,779
	3,981,780
CLASS 204	
16	3,981,781
46G	3,981,782
[illegible]	3,981,783
105R	3,981,784
195S	3,981,785
224M	3,981,786
[illegible]	3,981,787
[illegible]	3,981,745
	3,981,788
272	3,981,789
[illegible]	3,981,790
[illegible]	3,981,791
CLASS 206	
[illegible]	3,981,395
15.2	3,981,399
109	3,981,396
178	3,981,397
223	3,981,398
407	3,981,400
[illegible]	3,981,401
534.2	3,981,402
CLASS 208	
[illegible]	3,981,792
[illegible]	3,981,793
138	3,981,794
[illegible]	3,981,795
215	3,981,796
[illegible]	3,981,797
323	3,981,798
CLASS 209	
366.5	3,981,403
457	3,981,799
CLASS 210	
6	3,981,800
31C	3,981,801
91	3,981,802
178	3,981,803
516	3,981,804
CLASS 211	
1.3	3,981,404
70	3,981,405
CLASS 214	
6FS	3,981,406
8.5E	3,981,407
506	3,981,408
CLASS 219	
101	3,982,091
130	Re.28,975
203	3,982,092
216	3,982,093
	3,982,094
273	3,982,095
403	3,982,096
486	3,982,097
501	3,982,098
544	3,982,099
553	3,982,100
CLASS 220	
5R	3,981,409
6	3,981,410
267	3,981,411
270	3,981,412
334	3,981,413
CLASS 222	
38	3,981,414
50	Re.28,970
[illegible]	3,981,415
[illegible]	3,981,416
193	3,981,417
[illegible]	3,981,418
[illegible]	3,981,419
[illegible]	3,981,420
521	3,981,421
CLASS 224	
2	3,981,422
CLASS 226	
42	3,981,423
CLASS 227	
10	3,981,424
155	3,981,425

CLASS 228	
118	3,981,426
122	3,981,427
175	3,981,428
194	3,981,429
CLASS 229	
[illegible]	3,981,430
[illegible]	3,981,431
[illegible]	3,981,432
[illegible]	3,981,433
51TS	3,981,434
69	3,981,435
CLASS 232	
17	3,981,436
CLASS 233	
11	3,981,437
26	3,981,438
CLASS 235	
61.6E	3,982,102
61.7B	3,982,103
[illegible]	3,982,104
91R	3,981,439
[illegible]	3,982,105
	3,982,107
92EA	3,982,108
92FQ	3,981,440
[illegible]	3,982,106
[illegible]	3,981,441
150.2	3,981,442
150.3	3,982,109
151.3	3,982,110
152	3,982,101
[illegible]	3,982,111
156	3,981,443
	3,982,112
181	3,982,113
	3,982,114
197	3,982,115
CLASS 236	
1R	3,981,444
CLASS 237	
1A	3,981,445
CLASS 239	
1	3,981,446
124	3,981,447
127.3	3,981,448
	3,981,449
265.31	3,981,450
	3,981,451
542	3,981,452
CLASS 240	
1.3	3,982,116
	3,982,117
7.1LJ	3,982,121
7.1R	3,982,118
7.25	3,982,119
[illegible]	3,982,120
152	3,982,122
CLASS 241	
21	3,981,453
24	3,981,454
32	3,981,455
46R	3,981,456
46.17	3,981,457
CLASS 242	
43R	3,981,458
75.44	3,981,459
CLASS 244	
13	3,981,460
17.13	3,981,461
[illegible]	3,981,462
[illegible]	3,981,463
114R	3,981,464
122A	3,981,465
[illegible]	3,981,466
158	3,981,467
CLASS 248	
167	3,981,468
235	3,981,469
291	3,981,470
317	3,981,471
[illegible]	3,981,472
[illegible]	3,981,473
487	3,981,474
500	3,981,475
CLASS 249	
42	3,981,476
135	3,981,477
CLASS 250	
227	3,982,123
[illegible]	3,982,124
253	3,982,125
272	3,982,126
273	3,982,127
363S	3,982,128
364	3,982,129
373	3,982,130
[illegible]	3,982,131
456	3,982,132
493	3,981,805
505	3,982,133
506	3,982,134

CLASS 251	
29	3,981,478
63.6	3,981,479
129	3,981,480
[illegible]	3,981,481
152	3,981,482
CLASS 252	
8.1	3,981,[illegible]
[illegible]	3,981,[illegible]
32.7E	3,981,[illegible]
	3,981,810
33.3	3,981,[illegible]
49.6	3,981,811
	3,981,812
62.52	3,981,844
75	3,981,813
107	3,981,814
182	3,981,815
299	3,981,816
	3,981,817
[illegible]	3,981,818
301.16	3,981,820
301.4S	3,981,819
316	3,981,821
403	3,981,822
415	3,981,823
	3,981,824
[illegible]	3,981,825
526	3,981,826
CLASS 254	
76	3,981,483
148	3,981,484
186R	3,981,485
CLASS 256	
13.1	3,981,486
CLASS 259	
4R	3,981,487
72	3,981,488
CLASS 260	
2.5AC	3,981,828
	3,981,829
2.5AM	3,981,831
2.5AN	3,981,827
2.5EP	3,981,832
2.5HA	3,981,830
[illegible]	3,981,833
17R	3,981,834
[illegible]	3,981,835
[illegible]	3,981,836
29.7SO	3,981,837
31.6	3,981,838
33.6R	3,981,839
42	3,981,840
42.18	3,981,841
45.75B	3,981,842
	3,981,843
[illegible]	3,981,845
78TF	3,981,847
117	3,981,857
201	3,981,858
205	3,981,859
239BC	3,981,864
239.1	3,981,865
	3,981,866
239.3B	Re.28,972
239.55A	3,981,867
240G	3,981,869
240J	3,981,868
242	3,981,870
243R	3,981,871
247 2A	3,981,872
[illegible]	3,981,873
293.54	3,981,874
	3,981,875
293.61	Re.28,973
293.62	3,981,876
	3,981,877
293.73	3,981,878
294.9	3,981,879
[illegible]	3,981,881
295.5R	3,981,882
[illegible]	3,981,883
[illegible]	3,981,884
[illegible]	3,981,885
309.2	3,981,886
327P	3,981,887
332.2A	3,981,888
[illegible]	3,981,889
340.5	3,981,890
[illegible]	3,981,891
343.2R	3,981,892
345.8	3,981,893
397.1	3,981,894
[illegible]	3,981,895
429R	3,981,896
[illegible]	3,981,897
[illegible]	3,981,898
465.5R	3,981,899
[illegible]	3,981,900
[illegible]	3,981,880
	3,981,902
[illegible]	3,981,901
[illegible]	3,981,903
471C	3,981,904
473R	3,981,905

	3,981,906
[illegible]	3,981,907
497R	3,981,908
502A	3,981,909
516	3,981,910
520C	3,981,911
530N	3,981,912
553R	3,981,913
556F	3,981,914
[illegible]	3,981,915
[illegible]	3,981,916
570.8TC	3,981,917
[illegible]	3,981,918
[illegible]	3,981,919
	3,981,921
593R	3,981,920
	3,981,922
596	3,981,923
[illegible]	3,981,924
[illegible]	3,981,925
[illegible]	3,981,926
614F	3,981,927
615F	3,981,928
621K	3,981,929
635R	3,981,931
635Y	3,981,930
[illegible]	3,981,932
	3,981,933
	3,981,934
	3,981,935
651R	3,981,936
[illegible]	3,981,937
657	3,981,938
[illegible]	3,981,939
[illegible]	3,981,940
683.15D	3,981,941
683.48	3,981,942
[illegible]	3,981,957
	3,981,958
[illegible]	3,981,943
	3,981,944
900	3,981,945
CLASS 261	
64R	3,981,946
CLASS 264	
[illegible]	3,981,947
40.7	3,981,948
41	3,981,949
[illegible]	3,981,950
[illegible]	3,981,951
142	3,981,959
147	3,981,952
163	3,981,953
[illegible]	3,981,954
255	3,981,955
275	3,981,956
CLASS 266	
80	3,981,489
169	3,981,490
CLASS 269	
64	3,981,491
328	3,981,492
CLASS 271	
10	3,981,493
	3,981,494
18.3	3,981,495
80	3,981,496
126	3,981,497
193	3,981,498
276	3,981,499
CLASS 272	
85	3,981,500
CLASS 273	
55R	3,981,501
73F	3,981,504
73G	3,981,502
[illegible]	3,981,503
157R	3,981,505
	3,981,506
[illegible]	3,981,507
200B	3,981,508
CLASS 279	
1R	3,981,509
CLASS 280	
33.99H	3,981,510
79.3	3,981,511
81.5	3,981,512
[illegible]	3,981,513
[illegible]	3,981,515
263	3,981,516
[illegible]	3,981,517
730	3,981,518
744	3,981,519
748	3,981,520
760	3,981,521
765	3,981,514
CLASS 281	
34	3,981,522
CLASS 282	
27.5	3,981,523
CLASS 292	
31	3,981,524

259R	3,981,525
CLASS 294	
25	3,981,526
99R	3,981,527
	3,981,528
CLASS 296	
23C	3,981,529
35R	3,981,530
137G	3,981,531
CLASS 297	
[illegible]	3,981,532
173	3,981,533
219	3,981,534
389	3,981,535
444	3,981,536
452	3,981,537
454	3,981,538
CLASS 298	
35M	3,981,539
CLASS 299	
62	3,981,540
CLASS 302	
11	3,981,541
CLASS 303	
20	3,981,542
21AF	3,981,543
	3,981,544
21EB	3,981,545
CLASS 307	
88.3	3,982,135
	3,982,136
136	3,982,137
205	3,982,138
228	3,982,139
279	3,982,140
296	3,982,141
CLASS 308	
5R	3,981,546
98	3,981,547
194	3,981,550
226	3,981,548
235	3,981,549
CLASS 310	
8.2	3,982,142
9.1	3,982,143
9.6	3,982,144
89	3,982,146
CLASS 312	
250	3,981,551
	3,981,552
347	3,981,553
CLASS 313	
274	3,982,145
309	3,982,147
330	3,982,148
366	3,982,149
398	3,982,150
465	3,982,151
CLASS 315	
3.6	3,982,152
8	3,982,153
51	3,982,154
169TV	3,982,155
400	3,982,156
CLASS 316	
2	3,981,554
CLASS 317	
2J	3,982,157
9R	3,982,158
101CC	3,982,159
CLASS 318	
7	3,982,160
52	3,982,164
257	3,982,161
313	3,982,162
473	3,982,163
568	3,982,165
696	3,982,166
CLASS 321	
61	3,982,167
69R	3,982,168
CLASS 322	
28	3,982,169
47	3,982,170
CLASS 323	
1	3,982,171
	3,982,172
17	3,982,173
	3,982,174
18	3,982,175
CLASS 324	
6	3,982,176
13	3,982,177
[illegible]	3,982,178
43G	3,982,179
51	3,982,180
[illegible]	3,982,181
71CP	3,982,182
	3,982,183
83	3,982,184

CLASS 325	
344	3,982,186
457	3,982,187
470	3,982,188
CLASS 328	
27	3,982,189
110	3,982,190
124	3,982,191
129	3,982,192
151	3,982,193
155	3,982,194
CLASS 329	
50	3,982,195
CLASS 330	
9	3,982,196
33	3,982,197
CLASS 331	
27	3,982,198
51	3,982,199
94.5D	3,982,204
94.5G	3,982,205
	3,982,208
	3,982,209
94.5H	3,982,207
94.5P	3,982,200
	3,982,201
94.5Q	3,982,203
94.5S	3,982,202
94.5T	3,982,206
109	3,982,210
CLASS 332	
30V	3,982,211
CLASS 333	
7D	3,982,212
31A	3,982,213
31R	3,982,214
73W	3,982,215
CLASS 335	
112	3,982,216
207	3,982,217
CLASS 338	
22R	3,982,218
96	3,982,219
174	3,982,220
202	3,982,221
CLASS 339	
105	3,981,555
144R	3,982,185
275T	3,981,556
CLASS 340	
2	3,982,222
8L	3,982,223
18NC	3,982,224
[illegible]	3,982,225
146 1AL	3,982,226
146.3AE	3,982,227
147R	3,982,236
172.5	3,982,228
	3,982,229
	3,982,230
	3,982,231
	3,982,232

174DC	3,982,233
174PW	3,982,235
174TF	3,982,234
237.5	3,982,237
279	3,982,238
[illegible]	3,982,239
347AD	3,982,240
347CC	3,982,241
[illegible]	3,982,242
CLASS 343	
[illegible]	3,982,243
16M	3,982,244
100LE	3,982,245
112C	3,982,246
766	3,982,247
[illegible]	3,982,248
[illegible]	3,982,249
872	3,982,250
CLASS 346	
1	3,982,251
CLASS 350	
[illegible]	3,981,557
[illegible]	Re.28,971
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162SF	3,981,562
214	3,981,563
255	3,981,564
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285	3,981,566
307	3,981,567
317	3,981,568
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47	3,981,569
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12	3,981,570
112	3,981,572
125	3,981,571
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15	3,981,573
101	3,981,574
CLASS 354	
1	3,982,252
4	3,982,253
53	3,982,254
70	3,982,255
253	3,982,256
286	3,982,257
300	3,982,258
329	3,982,259
CLASS 355	
1	3,981,575
3R	3,981,085
4	3,981,576
	3,981,577
16	3,981,578
18	3,981,579
24	3,981,580
44	3,981,581
75	3,981,582

100	3,981,583
CLASS 356	
70	3,981,584
87	3,981,585
97	3,981,586
127	3,981,589
152	3,981,587
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178	3,981,590
201	3,981,591
237	3,981,592
239	3,981,593
246	3,981,594
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15	3,982,260
16	3,982,261
17	3,982,262
22	3,982,263
	3,982,264
30	3,982,265
44	3,982,266
52	3,982,267
55	3,982,268
60	3,982,269
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81	3,982,271
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4	3,982,272
27	3,982,273
41	3,982,274
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17	3,982,276
27	3,982,277
CLASS 401	
48	3,981,595
	3,981,596
190	3,981,597
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28	3,981,598
107	3,981,599
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68	3,981,601
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98	3,981,603
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72B	3,981,604
88	3,981,605
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15	3,981,608
117	3,981,609
291C	3,981,610
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61	3,981,611
66	3,981,612
142	3,981,613
180	3,981,614
190	3,981,615
215	3,981,623

233	3,981,616
[illegible]	3,981,617
CLASS 417	
12	3,981,618
38	3,981,619
42	3,981,620
44	3,981,621
46	3,981,622
53	3,981,624
63	3,981,625
[illegible]	3,981,626
207	3,981,627
247	3,981,628
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312	3,981,631
413	3,981,632
474	3,981,633
499	3,981,634
551	3,981,635
566	3,981,636
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22	3,981,637
34	3,981,638
[illegible]	3,981,639
51	3,981,640
61R	3,981,641
91	3,981,642
119	3,981,643
122	3,981,644
161	3,981,645
[illegible]	3,981,646
259	3,981,647
267	3,981,648
CLASS 423	
[illegible]	3,981,960
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35	3,981,962
39	3,981,963
53	3,981,964
55	3,981,965
104	3,981,966
107	3,981,967
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1	3,981,980
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33	3,981,984
47	3,981,986
	3,981,987

49	3,981,988
50	3,981,989
78	3,981,990
85	3,981,991
182	3,981,992
200	3,981,993
	3,981,994
219	3,981,995
243	3,981,996
248	3,981,997
249	3,981,998
251	3,981,999
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271	3,982,011
273	3,982,012
285	3,982,013
300	3,982,014
304	3,982,015
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318	3,982,017
319	3,982,018
322	3,982,019
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CLASS 425	
4C	3,981,649
72S	3,981,650
83	3,981,651
111	3,981,652
113	3,981,653
115	3,981,654
181	3,981,655
182	3,981,656
198	3,981,657
205	3,981,658
222	3,981,659
232	3,981,660
247	3,981,661
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326B	3,981,663
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371	3,981,666
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1	3,982,003
2	3,982,008
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248	3,982,053
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175	3,981,675
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[illegible]	3,981,856
63	3,981,855
82	3,981,849
227	3,981,846
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250	3,981,852
255	3,981,853
263	3,981,848
267	3,981,851
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D6—	4	241,485
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	56	241,487
	124	241,488
	158	241,489
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	191	241,491
		241,492
	209	241,493
D7—	36	241,494
	47	241,495
	56	241,496
	91	241,497
	[illegible]	241,498
	195	241,499
D8—	24	241,500
	[illegible]	241,501
	50	241,502
	51	241,503
	93	241,504
	113	241,505
	137	241,506
		241,507
	147	241,508
	177	241,509
	181	241,510
	189	241,511
	203	241,512
	226	241,513
	[illegible]	241,514
	259	241,515
	273	241,520
D9—	40	241,516
	167	241,517
	242	241,518
	252	241,519
D10—	8	241,521
	15	241,522
	23	241,523
	[illegible]	241,524
	[illegible]	241,525
D11—	152	241,567
D12—	15	241,571
	84	241,526
	110	241,527
	120	241,528
	131	241,529
	156	241,530
	181	241,531
	[illegible]	241,532
		241,533
D15—	27	241,569
	[illegible]	241,568
D16—	5	241,578
	25	241,577
	32	241,576
	34	241,537
	42	241,538
		241,575
D19—	13	241,539
	62	241,540
	86	241,541
D23—	7	241,542
	17	241,543
	34	241,544
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	97	241,547
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D24—	[illegible]	241,549
	D	241,550
D25—	74	241,536
	82	241,535
	85	241,534
D26—	[illegible]	241,551
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		241,554
	J	241,552
	[illegible]	241,555
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D30—	13	241,557
	43	241,558
D32—	[illegible]	241,559
D34—	5GH	241,563
	SS	241,562
	ST	241,560
	M	241,561
	15AJ	241,566
	[illegible]	241,564
	[illegible]	241,565
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D52—	4A	241,572
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		241,574
D64—	12B	241,579
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DESIGN PATENTS

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September 28, 1976

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PATENT NOTICES

Certificates of Correction for the Week of Sept. 28, 1976

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Disclaimers

3,469,686.—*Henry W. Gutsche*, St. Louis, *Darrel M. Harris*, Kirkwood, and *Robert J. Walsh*, Ballwin, Mo. RETAINING TRAYS FOR SEMICONDUCTOR WAFERS AND THE LIKE. Patent dated Sept. 30, 1969. Disclaimer filed July 1, 1976, by the assignee, *Semicon Systems, Inc.*

The term of this patent subsequent to September 23, 1983, has been disclaimed.

3,920,976.—*Bruce A. Christensen* and *George A. Raymond*, Minneapolis, Minn. INFORMATION STORAGE SECURITY SYSTEM. Patent dated Nov. 18, 1975. Disclaimer filed May 20, 1976, by the assignee, *Sperry Rand Corporation.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

Dedications

3,381,485.—*Ralph K. Crooks, James M. Hardenbrook, Richard D. Leis, James C. Swain,* and *David L. Thomas*, Columbus, Ohio. GENERAL PURPOSE UNDERWATER MANIPULATING SYSTEM. Patent dated May 7, 1968. Dedication filed July 23, 1976, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,622,251.—*Charles Malcolm Allen*, Columbus, Ohio. SEALED PISTON COMPRESSOR OR PUMP. Patent dated Nov. 23, 1971. Dedication filed July 23, 1976, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,895,761.—*David G. Mills*, Beloit, Wis. REMOVABLE MUFFLER UNIT FOR GRANULATOR APPARATUS OR THE LIKE. Patent dated July 22, 1975. Dedication filed Aug. 9, 1976, by the assignee, *Beloit Corporation.*

Hereby dedicates to the Public the entire remaining term of said patent.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 28, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-2-76
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-2-76
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-3-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	11-17-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-8-76
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-21-75
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	11-10-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-4-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-27-76
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-8-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	6-2-75
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-10-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-20-76
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-22-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	9-11-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	1-26-76

Expiration of patents: The patents within the range of numbers indicated below expire during September 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,901,749 to 2,907,096, inclusive
Plant Patents	Numbers 1,861 to 1,869, inclusive

REISSUES

SEPTEMBER 28, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,976

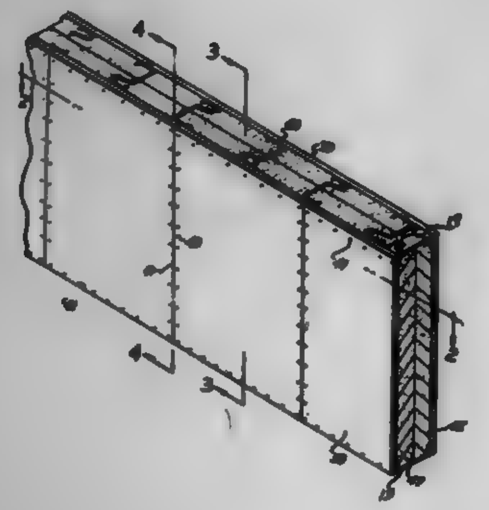
METHOD OF MAKING WALLS

Daniel L. Zinn, 2545 Beaufait, Detroit, Mich. 48207

Original No. 3,841,051, dated Oct. 15, 1974, Ser. No. 382,605, July 25, 1973. Continuation of Ser. No. 257,943, May 30, 1972, abandoned, which is a division of Ser. No. 74,022, Sept. 21, 1970, abandoned. Application for reissue Nov. 20, 1975, Ser. No. 633,747

Int. Cl.² E04B *1/74*; **E04C** *3/07*

U.S. Cl. 52—747 **10 Claims**



1. A method of constructing a sound attenuating wall between parallel fixed structures of a building comprising the steps of:

a. placing a series of double-flange elongated studs in lateral displacement between said structures, with each stud being so mounted and formed as to have a first flange of greater resiliency and a second flange of lesser resiliency, while arranging and mounting the studs in reversed alternation so that the more resilient flanges of spaced adjacent studs face in opposite directions and equally, the less resilient flanges of spaced adjacent studs also face in opposite directions; and the first flanges of one side of the wall are laterally and alternately displaced, and equally, the second flanges of one side of the wall are laterally and alternately displaced;

b. placing wall panels on one side of said series of studs so that the outer edges of adjacent panels are adjacent each other and the less resilient flanges and the central portions of panels on such side are adjacent the more resilient flanges;

c. and finally, affixing the outer edges of the wall panels on such side to the less resilient flanges on such side, with the central intermediate portions of the panels having resilient bearings at the more resilient flanges of such side [.]*;*

d. with each such more resilient flange being substantially smooth and substantially free of external protuberances; so that substantially the entire area of each such more resilient flange provides a resilient overall bearing area for the adjacent central portion of a panel.

Re. 28,977

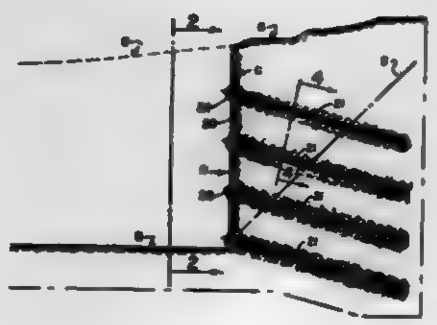
METHOD FOR THE CONSTRUCTION OF A RETAINING WALL

Edward E. Mason, Vancouver, Canada, assignor to Shotcrete Engineering, Ltd., Vancouver, Canada

Original No. 3,638,435, dated Feb. 1, 1972, Ser. No. 24,510, Apr. 1, 1970. Application for reissue Jan. 25, 1974, Ser. No. 436,446

Int. Cl.² E02D *5/18, 5/36*

U.S. Cl. 61—39 **10 Claims**



1. In a method of forming a retaining wall for an excavation cut for restraining an embankment of earth, including the steps of:

a. forming a skin against the excavation cut with pneumatically applied concrete;

b. forming reinforced dowels in a general arrangement of rows, one above the other, and extending from the skin into the earth embankment by drilling boreholes therein, inserting reinforcing rods into the boreholes with end portions of the rods projecting from the boreholes and filling the boreholes with grout;

c. forming wale beams along the dowel rows with pneumatically applied concrete directed against the skin, against the ends of the dowels and about the reinforcing rod projections; and

d. applying a locking means at the ends of the reinforcing rod projections to secure the [wall] *wale* beams to the dowels and thereby integrate the components into a unitary structure.

Re. 28,978

FAIL-SAFE SUBSEA FLUID TRANSPORTATION SYSTEM

Warren B. Brooks, Darien, Conn., assignor to Mobil Oil Corporation, New York, N.Y.

Original No. 3,454,083, dated July 8, 1969, Ser. No. 649,935, June 29, 1967. Application for reissue Feb. 24, 1971, Ser. No. 118,251

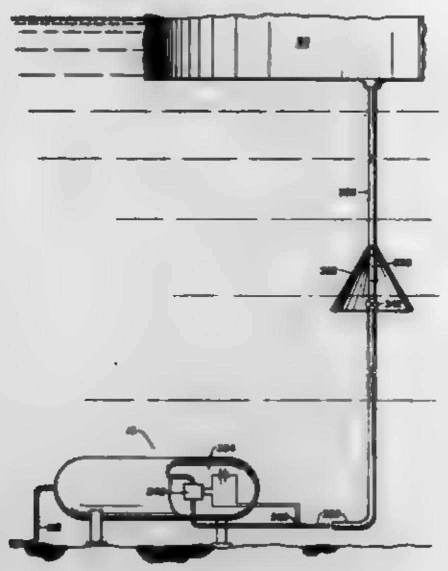
Int. Cl.² E21B *43/01, 15/02*

U.S. Cl. 166—.5 **9 Claims**

7. A method of recovering a fluid such as oil or the like escaping from a crack in a flowline or the like submerged in a body of water, the method comprising:

locating a fluid containing container over and adjacent said crack;

passing at least some of the fluid trapped within said container



upwardly through a conduit to the surface of the water; and disposing of the fluid at the surface of the water.

Re. 28,979

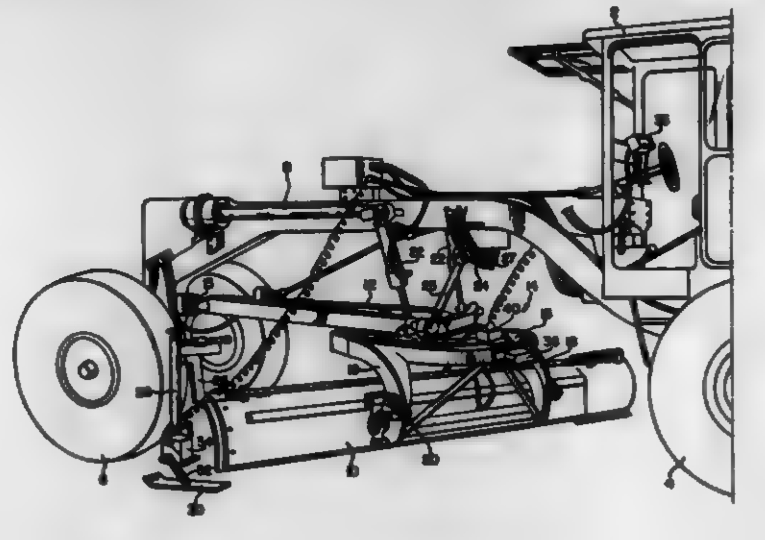
CONTROL SYSTEM FOR ROAD GRADER

George E. Long, Monroe; Floyd C. Johnson, Seattle, and Dennis L. Reese, Kirkland, all of Wash., assignors to Grad-Line, Inc., Woodinville, Wash.

Original No. 3,971,452, dated Feb. 12, 1974, Ser. No. 125,293, Mar. 17, 1971. Application for reissue Mar. 19, 1975, Ser. No. 559,910

Int. Cl.² E02F *3/85*

U.S. Cl. 172—4.5 **14 Claims**



1. In a traveling machine having a movable frame, an elongated surface working element supported by said frame, and adjustment means on the machine to independently adjust the elevation of each end of the element and its rotational position relative to said frame, said machine being adapted to establish a planar surface having a predetermined cross [shape] *slope* angle defined as the angle between the surface established and a horizontal plane, said angle being located in a vertical plane perpendicular to the direction of travel of the machine, a control system comprising in combination;

grade sensing and control means operatively associated with said working element and said adjustment means for sensing a present grade datum and maintaining one end of said working element at a predetermined elevation related to said grade datum during travel of the machine,

a slope sensing unit operatively associated with said working element and having means to produce a slope signal proportional to the degree of inclination of said element relative to a horizontal plane,

input slope signal means providing a constant signal of predetermined value corresponding to the desired slope angle of the working element,

slope signal mixing means adapted to produce a difference signal representing the difference between said input slope signal and said sensed slope signal,

slope control means responsive to said difference signal for controlling said adjustment means for correcting the elevation of the other end of said working element to maintain said desired slope angle, and

position sensing means operatively associated with said working element and responsive to the rotary position of said working element relative to the machine frame for modifying the given slope setting of said input slope signal means in relation to the rotary position of said working element, whereby said element establishes a planar surface having said predetermined cross slope regardless of the rotary position thereof during travel of said machine.

Re. 28,980

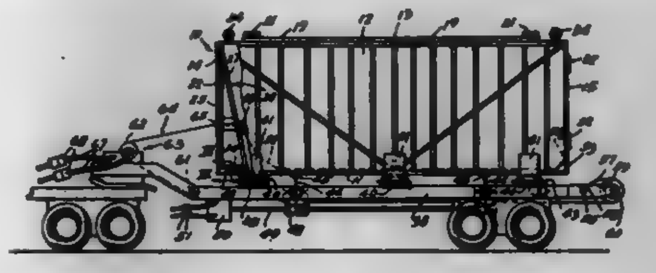
DISCRETE MATERIAL TRANSPORTING AND DUMPING APPARATUS AND METHOD

Harold B. Mackenzie, 330 Naperville Road, Wheaton, Ill. 60187

Original No. 3,720,328, dated Mar. 13, 1973, Ser. No. 114,005, Feb. 9, 1971. Application for reissue Jan. 22, 1975, Ser. No. 543,188

Int. Cl.² B65G *67/02*

U.S. Cl. 214—38 D **22 Claims**



1. The combination of a discrete material transporting and dumping apparatus and a supporting structure therefor, comprising:

a large capacity container having a bottom wall with opposite coextensive spaced side walls rising therefrom, a top wall, a front end and a rear end, and defining therein a discrete material receiving chamber;

means on said bottom wall for removably supporting the container on said supporting structure;

a forwardly and rearwardly reciprocable pusher structure in said chamber having a front side facing toward said front end and a rear side directed toward said rear end, with edges close to said bottom, side and top walls;

driving means mounted on said supporting structure; means for releasably connecting the pusher structure to said driving means for actuating the pusher structure reciprocably between said front and rear ends;

closure door means at said rear end;

said pusher structure being operable by said driving means when the door means are open to discharge the material contents from said chamber through the open rear end; and

means on said supporting structure to hold the container against displacement by reason of driving force of said driving means acting on said pusher.

18. A method of transporting and dumping solid discrete material, comprising:

at a loading site filling a large capacity material-receiving chamber within a container with discrete material, said *container having a mobile pusher at one end of the chamber and an opposite unloading end of the chamber provided with an opening defined by the unloading ends of the chamber walls, and selectively operable closure door means closing the opening;*

transferring the container to a dumping site;

positioning the container so that the pusher end is adjacent to and in alignment with a pusher driving means mounted separately and independently of the container on a supporting structure;

releasably connecting said separate and independent pusher driving means to said mobile pusher;

opening said closure door means for discharge of the material through said unloading end opening;

activating the driving means to apply thrust force to said pusher and thereby moving the pusher in said chamber toward said unloading end opening and ejecting the discrete material load contents from the chamber;

holding the container against displacement relative to said supporting structure and said driving means as the thrust force is applied to the load contents by the pusher;

after ejection of said load contents releasing said driving means from the pusher; and

transferring the container away from said driving means.

Re. 28,981

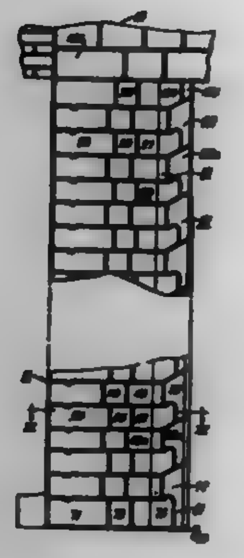
REFRACTORY SHAPES AND JAMB STRUCTURE OF COKE OVEN BATTERY HEATING WALL

Jack Hyde, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Original No. 3,878,053, dated Apr. 15, 1975, Ser. No. 394,301, Sept. 4, 1973. Application for reissue Dec. 3, 1975, Ser. No. 637,156

Int. Cl.^{2} C10B *1/00, 1/06, 29/00*

U.S. Cl. 202—223 **15 Claims**



1. In a coke oven battery having heating walls with vertical flues therein, a jamb structure at the ends of each heating wall comprised of horizontal courses of refractory brick shapes comprising:

a. a plurality of vertically arranged adjacent interdigitating refractory jamb shapes with each shape having top and bottom parallel planar sloping surfaces coacting with adjacent jamb and intermediary end wall refractory shapes.

Re. 28,982

BLENDS OF THERMOPLASTIC COPOLYESTER ELASTOMERS WITH VINYL CHLORIDE POLYMERS

Robert W. Crawford, and William K. Witsiepe, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 3,718,715, dated Feb. 27, 1973, Ser. No. 145,062, May 19, 1971. Application for reissue Nov. 8, 1974, Ser. No. 522,110

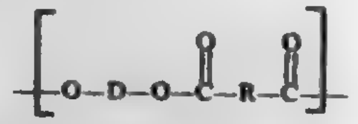
Int. Cl.^{2} C08L *67/02*

U.S. Cl. 260—873 **19 Claims**

1. A uniform blend of about 5–95% by weight vinyl chloride polymer having a tensile modulus of at least about 50,000 p.s.i. and about 95–5% by weight of at least one *elastomeric* thermoplastic segmented copolyester [polymer] containing (1) about 5–90 weight percent long chain ester units derived from at least one long chain glycol having a molecular weight of about 600—6000 and having a melting point of less than about 60°C. and a carbon-to-oxygen ratio of at least about 2 and at least one low molecular weight dicarboxylic acid having a molecular weight less than about 300 and (2) about 10–95 weight percent short chain ester units derived from at least one low molecular weight diol having a molecular weight of less than about 250 and at least one low molecular weight dicarboxylic acid having a molecular weight of less than about 300, said long chain ester units and short chain ester units randomly joined head-to-tail through ester linkages, said long chain ester units being represented by the formula

$$\left[-O-G-O-\overset{O}{\overset{\|}{C}}-R-\overset{O}{\overset{\|}{C}}-\right]$$

and said short chain ester units being represented by the formula



$$\left[-O-D-O-\overset{O}{\overset{\|}{C}}-R-\overset{O}{\overset{\|}{C}}-\right]$$

where G is a divalent radical remaining after the removal of terminal hydroxy groups from said long chain glycol; R is a divalent radical remaining after removal of carboxyl groups from said dicarboxylic acid; and D is a divalent radical remaining after removal of hydroxyl from said low molecular weight diol [.] *; said copolyester having an inherent viscosity of at least 0.6.*

Re. 28,983

RESISTANCE AND MODULUS REINFORCING MATERIALS

Michel Jacques Sindzingre, Cachan; Michel Villamayor, Fontenay-aux-Roses, and Alain Robert, Elancourt, all of France, assignors to Association pour la Recherche et le Developpement des Methodes et Processus Industriels A.R.M.I.N.E.S., Paris, France

Original No. 3,758,369, dated Sept. 11, 1973, Ser. No. 118,187, Feb. 23, 1971. Application for reissue Oct. 7, 1975, Ser. No. 620,496

Claims priority, application France, Feb. 23, 1970, 70.06383

Int. Cl.^{2} B32B *5/16*

U.S. Cl. 428—114 **4 Claims**

1. A composite material having improved mechanical properties comprising, a resistant material, a reinforcing material with high modulus and a matrix material, said resistant material is flat, disposed parallel to a director plane and is selected from the group consisting essentially of steel, titanium, nickel and alloys thereof, said high modulus reinforcing material is selected from the group consisting essentially of boron, silicon carbide, titanium boride, aluminium diboride and magnesium diboride, said high modulus reinforcing material being in the form of flakes or bands and disposed parallel to the director plane.

Re. 28,984

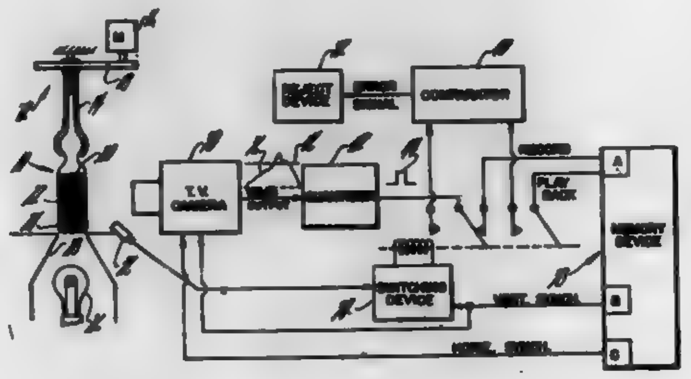
ARTICLE INSPECTION BY SUCCESSIVELY TELEVISED IMAGES

William H. Drinkuth, Hebron, and Edward J. Stephens, Manchester, both of Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Original No. 3,598,907, dated Aug. 10, 1971, Ser. No. 730,377, May 20, 1968. Application for reissue Mar. 14, 1975, Ser. No. 558,303

Int. Cl.^{2} H04N *7/00*

U.S. Cl. 178—6 **15 Claims**



10. A method for inspecting *liquid filled* articles comprising the steps of

a. placing the article at an inspection station,

b. scanning the article with a television camera to produce an electric signal which varies in accordance with the image seen by said camera,

c. storing said signal in a memory device for subsequent use,

d. rotating the article so that the orientation of the inspection portion with respect to the camera is altered,

e. stopping rotation of the article to cause swirling of the liquid,

f. scanning the article a second time with said camera to produce a second electric signal,

g. synchronizing said signals with respect to one another, and

h. comparing said signals to provide an error signal whenever said first and second signals do not bear a predetermined relationship to one another.

Re. 28,985

ALARM CLOCK TIMER WITH MANUALLY OPERABLE RESET MECHANISM

Robert L. Boyles, Wayland, and Samuel Polonsky, Medway, both of Mass., assignors to General Electric Company, Bridgeport, Conn.

Original No. 3,740,502, dated June 19, 1973, Ser. No. 241,963, Apr. 7, 1972. Application for reissue Nov. 24, 1975, Ser. No. 634,893

Int. Cl.^{2} H01H *43/04*

U.S. Cl. 200—38 FA **6 Claims**

1. In an alarm clock mechanism the improvement comprising:

a. a timing mechanism;

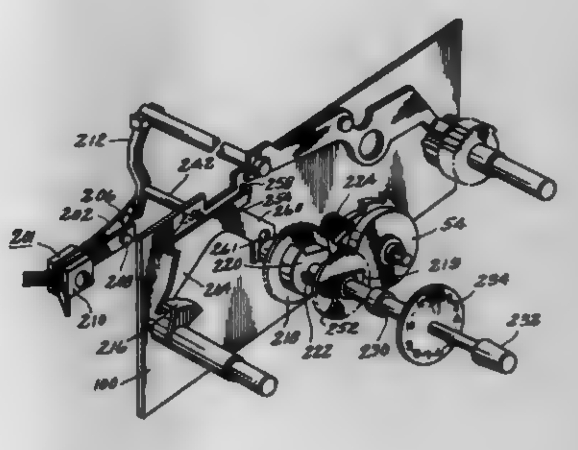
b. a supporting structure;

c. a first cam member rotatably mounted on said supporting structure;

d. a second cam member rotatably mounted on said supporting structure in coaxial relationship with said first cam member and axially movable with respect thereto, *said second cam member having a longitudinal axis and being mounted for rotation about said axis, said second cam member having a first side facing generally toward said first cam member and another side facing generally away from said first cam member, said first side including a generally flat raised surface, a generally flat lower surface longitudinally spaced from said raised surface away from said first cam member, and a generally curved surface with a radially indented portion positioned between said lower surface and said raised surface;*

e. one of said cam members being caused to rotate by said timing mechanism;

f. means for manually adjusting the relative angular position of said cam members;



g. an on-off control mechanism having a resilient member exerting a spring force urging said second cam member axially toward said first cam member;

h. said second cam member being disposed to move axially under the influence of said spring force to permit said control mechanism to be moved to its on position upon relative rotation of said cam members through a predetermined relative angular position;

i. [one of said cam members] *said first cam member* including a cam follower [which is] rotatable with said [one of said cam members] *first cam member* for cooperation with *said* [raised and lower cam] surfaces of [the other] *said second* cam member to permit said resilient member to move said second cam member toward said first cam member to permit the control mechanism to be moved to its on position; and

j. said cam follower being mounted for movement with respect to the [cam member on which it is supported] *first cam member* for permitting said cam follower to remain on the [lower cam surface of said other cam member] *curved surface of said second cam member* so that said timing mechanism is not required to move said cam follower from a lower cam surface on said [other] *second* cam member to a higher cam surface of said [other] *second* cam member against the force of said resilient member.

Re. 28,986

STATIC INVERTER WHEREIN A PLURALITY OF SQUARE WAVES ARE SO SUMMED AS TO PRODUCE A SINUSOIDAL OUTPUT WAVE

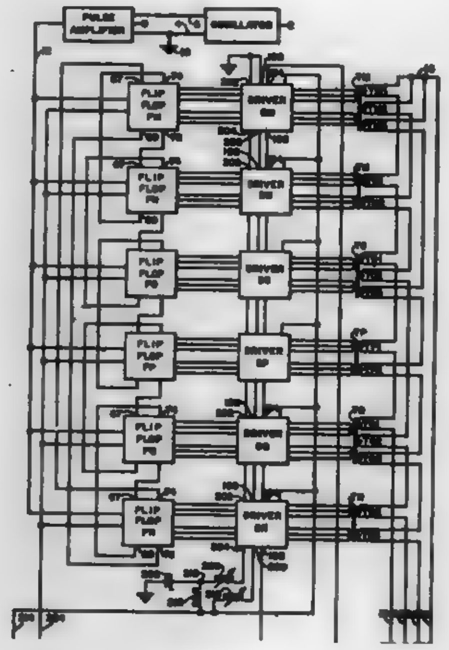
Theodore M. Heinrich, American Township, County of Allen, and Andress Kernick, Lima, both of Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original No. 3,491,282, dated Jan. 20, 1970, Ser. No. 117,966, June 19, 1961. Application for reissue Aug. 25, 1975, Ser. No. 607,403

Int. Cl.^{2} H02M *7/537*

U.S. Cl. 321—5 **28 Claims**

1. In an apparatus for inverting unidirectional potential into alternating potential of a predetermined frequency, an N number of phase displaced voltage generators, N being at least 3, each said generator having a square shaped output voltage wave of said predetermined frequency *and same amplitude*, and means *for dimensioning said square shaped output voltages in amplitude, and for* combining the outputs of said generators to produce a resulting voltage wave of stepped configuration, the magnitudes of *dimensioned* said output voltage waves being so related to the magnitudes of the phase displacement of said generators that said resulting wave generally follows the configuration of a sine wave and contains a lesser quantity of harmonics than are contained in said output waves of said generators.



PATENTS

GRANTED SEPTEMBER 28, 1976

ERRATA

For CLASS	See PATENT NO.
051-295	3,982,359
060-650	3,982,378
060-659	3,982,379
214-001 Q	3,982,627
299-064	3,982,688
242-055.19 A	3,982,701
254-184	3,982,728
280-011.37 H	3,982,747
280-018	3,982,748
350-096 C	3,982,810
323-078	3,982,814
356-103	3,982,816
418-149	3,982,864
071-118	3,982,931
429-163	3,982,957
429-057	3,982,958
429-199	3,982,960
429-034	3,982,961
429-019	3,982,962
134-100	3,982,965
429-136	3,982,966
252-460	3,983,072
252-470	3,983,073
252-500	3,983,074
252-511	3,983,075
252-518	3,983,076
252-520	3,983,077
252-540	3,983,078
252-545	3,983,079
526-240	3,983,083
526-015	3,983,095
526-064	3,983,096
526-049	3,983,097
536-017	3,983,102
536-009	3,983,103
536-024	3,983,104
424-078	3,983,209
424-170	3,983,213
424-180	3,983,214
426-329	3,983,251
428-403	3,983,254
178-006.8	3,983,328
313-113	3,983,513
354-086	3,983,567

PATENTS

GRANTED SEPTEMBER 28, 1976

NOTE—Cross reference listings of applications published under the first and second Trial Voluntary Protest Programs are located in the back of this Issue. These entries will be in numerical order by document publication number.

GENERAL AND MECHANICAL

3,982,278

ALIGNMENT DEVICE FOR ARTIFICIAL LIMBS

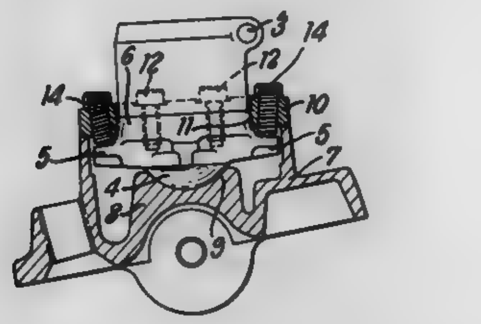
Denis Ronald William May, London, England, assignor to J. E. Hanger & Company Limited, London, England

Filed Jan. 29, 1976, Ser. No. 653,605

Claims priority, application United Kingdom, Feb. 21, 1975, 7288/75

Int. Cl.² A61F *1/08, 1/04*

U.S. Cl. 3—21 **5 Claims**



1. An alignment device for a tube socket and an artificial limb element comprising two oppositely facing concentric part-spherical convex surfaces formed on the end of the socket which are engaged by complementary concave surfaces formed within the limb element and within a clamping ring, clamping screws passing through plain holes in the ring into threaded holes in the limb element, tightening of which can induce a controlled degree of frictional resistance between the said part-spherical surfaces, and at least one pair of jacking screws passing through threaded holes in the ring on at least one diameter thereof to engage abutments on the socket, the arrangement being such that an angular alignment between the socket and the limb element set by operation of the jacking screws can be maintained by pure friction between the part spherical surfaces.

3,982,279

MECHANICAL PROSTHESIS OF THE KNEE

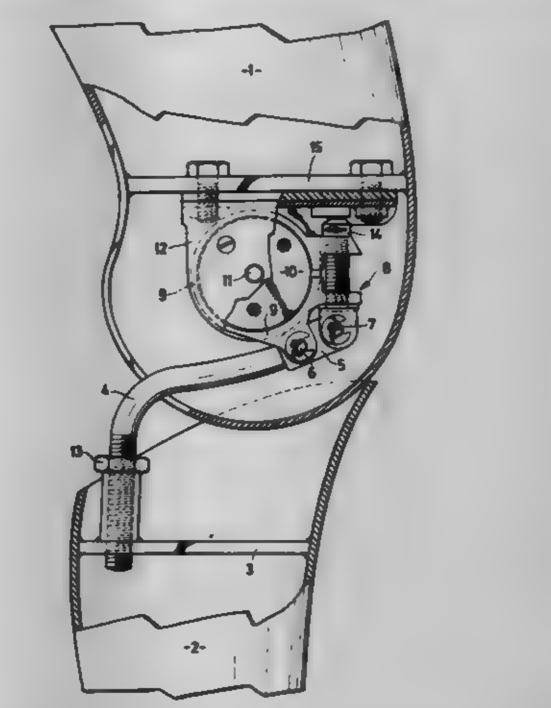
Mario Capella Valenti, and Jorge Capella Samaranch, both of General Mitre, 188 - 1^{o}, Barcelona-6, Spain

Filed Mar. 6, 1975, Ser. No. 556,112

Int. Cl.² A61F *1/04, 1/08*

U.S. Cl. 3—27 **5 Claims**

1. A mechanical prosthesis of a knee with a brake system for locking the knee and comprising a thigh member; a leg member; brake means joining said thigh and leg members and having a drum member in said thigh member; an inverted U-shaped support integral with said drum member, the base of said U-shaped support being fixed to a rigid plate member on said thigh member; a band member surrounding said drum and being open at a single point; two parallel and perforated flat radial lugs on said band and located respectively above and below said opening; a tie-rod passing through said lugs, said tie-rod being bevelled on its upper portion; a nut engaging a threaded portion of said tie-rod on said upper portion of said tie-rod; pin means passing through said nut and said tie-rod to lock said nut to said tie-rod; lever means with unequal arms connected to the lower portion of said tie-rod, said lower portion of said tie-rod being U-shaped, said band having a projection on which said lever means is pivoted, the shorter arm of said lever means being connected with said tie-rod and the longer arm of said lever means being curved at its rear portion to form a substantially vertical portion, said vertical portion of said longer arm being threaded, and a nut engaging the threaded portion of said longer arm and abutting a portion on said leg member.



3,982,280

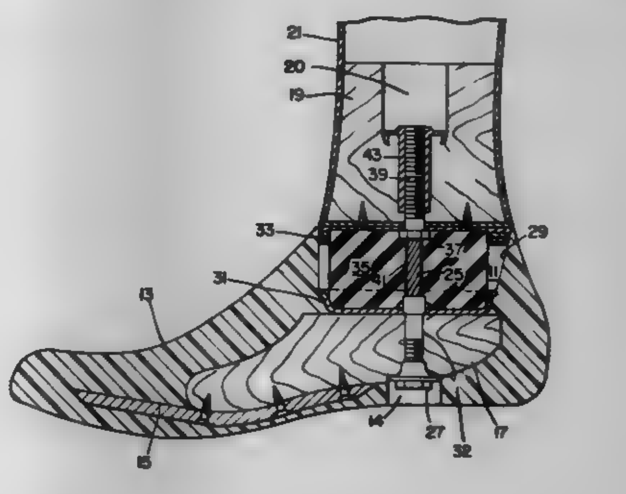
FUNCTIONAL ANKLE FOR A PROSTHETIC LIMB

Charles C. Asbelle, Oakland; Gene R. Helmuth, Castro Valley; William R. Applegate, and Gerald K. Porter, both of Oakland, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser, No. 357,049, May 3, 1973, abandoned. This application Oct. 6, 1975, Ser. No. 619,873

Int. Cl.² A61F *1/04, 1/08*

U.S. Cl. 3—32 **1 Claim**



1. An ankle device for a prosthetic limb comprising:
- a. shin block;
- b. a foot;
- c. a cable assembly;
- d. a bumper assembly;
- e. said bumper assembly including an upper ankle bumper fixture, a lower ankle bumper fixture and an elastomeric bumper;
- f. said upper ankle bumper fixture including a top plate and a plurality of supporting plates; said top plate having a

length, width and thickness wherein said length is greater than said width and said thickness is substantially less than said width and length; said plurality of support plates having a length, width and thickness wherein the length, width and thickness of each of said support plates is about the same as the length, width and thickness of said top plate; each of said support plates having an about elliptical opening that has a major axis coincidental with the centerline of said length; said top plate and said plurality of support plates being stacked and interconnected to form an elliptical bumper opening for receiving the upper region of said elastomeric bumper;

g. said lower ankle bumper fixture having a length, width and thickness forming an about elliptical surface having about the same size as said elliptical bumper opening and having a lip about the periphery of said elliptical surface, said lip extending vertically upward along the sides and vertically upward and radially outward along the ends;

h. said elastomeric bumper having a length, width and thickness having an about elliptical cross section when said cross section is taken on a horizontal plane and about flat upper and lower about elliptical surfaces lying in respective horizontal planes;

i. said height of said elastomeric bumper being greater than the combined thickness of all of said plurality of support plates and the height of said lip;

j. the upper region of said elastomeric bumper being positioned in said elliptical bumper opening of said upper ankle bumper fixture, said upper surface of said elastomeric bumper abutting and being fixedly attached to said top plate of said upper ankle bumper fixture, said lower surface of said elastomeric bumper abutting, being vertically supported by, and being fixedly attached to said lower ankle bumper fixture, and said lower region of said elastomeric bumper being laterally supported by said lip of said lower ankle bumper fixture;

k. said foot being made of flexible foam material and having a cavity formed in the upper region thereof, said bumper assembly being positioned within said cavity wherein said upper ankle bumper fixture is in wedged contact with said foot adjacent to the upper region of said cavity;

l. said shin block, foot, top plate, elastomeric bumper and lower ankle bumper fixture each having an opening for receiving said cable assembly, said openings having coincidental centerlines;

m. said cable assembly positioned within said openings for rigidly interconnecting said shin block, foot and bumper assembly; whereby

n. transverse rotary motion of said foot about the long axis of the shin is allowed when externally applied torque exceeds the opposing, resistive force of said elastomeric bumper; and the restorative force of said elastomeric bumper causes said foot to tend to return to its original at-rest orientation with respect to the long axis of the shin when said externally applied torque is lessened.

3,982,281
HIP-JOINT PROSTHESIS DEVICE

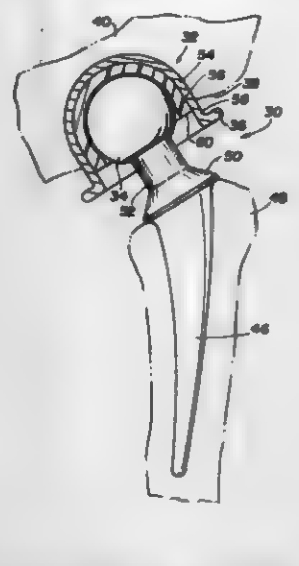
Richard P. Gilberty, 824 Hunt Lane, Manhasset, N.Y. 11030

Filed July 25, 1975, Ser. No. 598,752

Int. Cl.^{2} A61F *1/24*

U.S. Cl. 3—1.913 **5 Claims**

1. In a hip-joint prosthesis device of the type surgically implanted in a manually shaped acetabular opening having an assembly of outer and inner spherical cups frictionally engaged about a spherical head of said device, the improvement to said outer spherical cup comprising a cylindrical wall section thereon extending in pending relation beyond said inner cup so as to define a clearance space for settling movement of said device within said acetabular opening, and a laterally oriented lip on said wall section adapted to engage the anatomical bounding structure of said acetabular opening only after said settling movement of said device, whereby said lip is assisted in limiting the settling movement of said device by favorable secondary tissue changes occurring in said acetabular opening prior to said engaging contact of said lip.



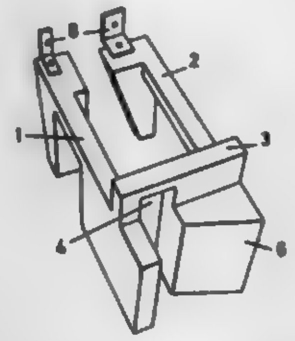
3,982,282
REDUCING WATER CONSUMPTION IN WATER CLOSETS

Ch'ng Seow Kong, 31, Sennett Terrace, Singapore, Singapore

Filed May 1, 1975, Ser. No. 573,719

Int. Cl.^{2} A47K *17/00*

U.S. Cl. 4—1 **4 Claims**



1. Apparatus for reducing water consumption in a water closet associated with a cistern having means for filling the cistern with water to a predetermined level and means for discharging water from the cistern to the water closet, the apparatus comprising a one-piece structure shaped to permit insertion into the cistern without prior removal of any portion of the filling means and the discharging means, and comprising two lateral webs and a cross-piece connecting the two webs, the height of each of the webs being substantially equal to or less than said predetermined water level, the shape of the apparatus being such that it does not interfere with the mechanical operation of the cistern filling means or the cistern discharging means, the apparatus having a predetermined volume substantially at or below said predetermined water level greater than 25% of the total volume of water in the cistern when filled to said predetermined level, whereby the volume of water discharged from the cistern on flushing is reduced by substantially the volume of the structure.

3,982,283
WATER CONSERVING DEVICE FOR FLUSHING APPARATUS

John E. Goldring, Pebble Beach, Calif., assignor to Jegco, Inc., Pebble Beach, Calif.

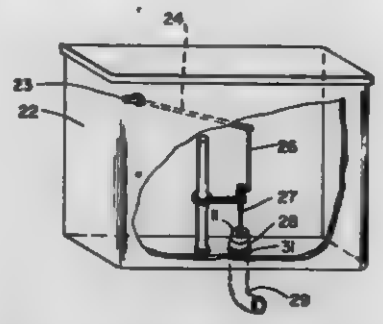
Filed Apr. 7, 1975, Ser. No. 565,940

Int. Cl.^{2} E03D *1/34*

U.S. Cl. 4—67 A **6 Claims**

1. A water saving device for use in conjunction with a water closet buoyant flush valve, comprising a disk formed of a high specific gravity material and adapted to be secured to said

flush valve to reduce the buoyancy thereof, said disk including a hole extending eccentrically therethrough and a slot extending generally radially from side hole to the periphery of said disk, said eccentric hole defining a weakened area in said disk whereby the disk may be deformed to selectively move the opposed surfaces of said slot from and toward each other.



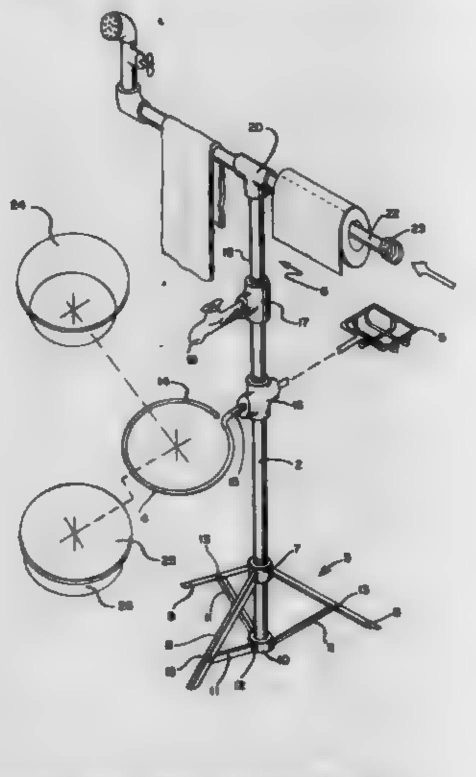
3,982,284
PORTABLE WASH STAND

Sylvester J. Becker, 633 Washington Ave., East Alton, Ill. 62024

Filed Aug. 27, 1974, Ser. No. 500,880

Int. Cl.^{2} A47K *3/22;* A61H *33/06*

U.S. Cl. 4—145 **15 Claims**



1. A portable wash stand comprising,

base means, said base means comprising a collapsible tripod,

an elongated vertical support member mounted on said base means,

basin and soap dish means pivotally mounted to the vertical support member,

fluid dispensing means operably attached to said vertical support member.

3,982,285
COMBINED GRAB BAR AND SHOWER HEAD FIXTURE

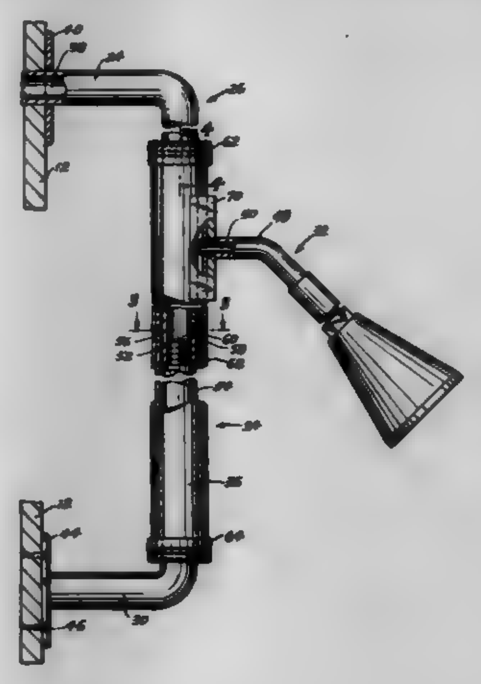
R. Douglas Roberts, Jr., 845 Forest Hills Drive, Nashville, Tenn. 37220

Filed July 17, 1975, Ser. No. 596,834

Int. Cl.^{2} B05B *15/06*

U.S. Cl. 4—145 **9 Claims**

1. In a combined grab bar and shower assembly, grab bar means having opposed end regions and an intermediate elongated region extending between said opposed end regions, a pair of fixing means respectively connected operatively with said opposed end regions of said grab bar means for fixing said opposed end regions thereof to a wall with said intermediate region spaced from said wall so as to be accessible to an individual taking a shower, at least one of said end regions of said grab bar means having a hollow interior space which can be placed in communication with a supply of water to be used for shower purposes, shower head means for providing a shower spray, said shower head means also having a hollow interior space, and mounting means operatively connected with said grab bar means and with said shower head means for mounting the latter on said grab bar means with the hollow interior space of said shower head means communicating with the hollow interior space of said one end region of said grab bar means, whereby the assembly forms a combined grab bar and shower fixture, said mounting means including at least a portion of said intermediate region of said grab bar means which is formed with a hollow interior space communicating with said hollow interior space of said one end region of said grab bar means, and said hollow interior of said shower head means communicating with said hollow interior space of said one end region of said grab bar means through said hollow interior space of said intermediate region of said grab bar means, said mounting means further including a hollow sleeve surrounding and at least partly spaced from said portion of said intermediate region of said grab bar means, said sleeve having opposed ends fluid-tightly engaging said intermediate region of said grab bar means, and the portion of said intermediate region of said grab bar means which is formed with said hollow interior space communicating with said hollow interior space of said one end region of said grab bar means being formed at a wall thereof with at least one opening providing communication between the interior of said sleeve and the interior space of said portion of said intermediate region of said grab bar means, and said shower head means being carried by said sleeve and having its hollow interior space communicating with the interior of said sleeve so that water will flow through the hollow interior space of said one end region of said grab bar means and the hollow interior space of said portion of said intermediate region of said grab bar means through said opening into the interior of said sleeve to be received therefrom by the hollow interior space of said shower head means.



3,982,286
SWIMMING POOL COVER

Elton Gordon Foster, 2034 Dryden Road, Houston, Tex. 77025

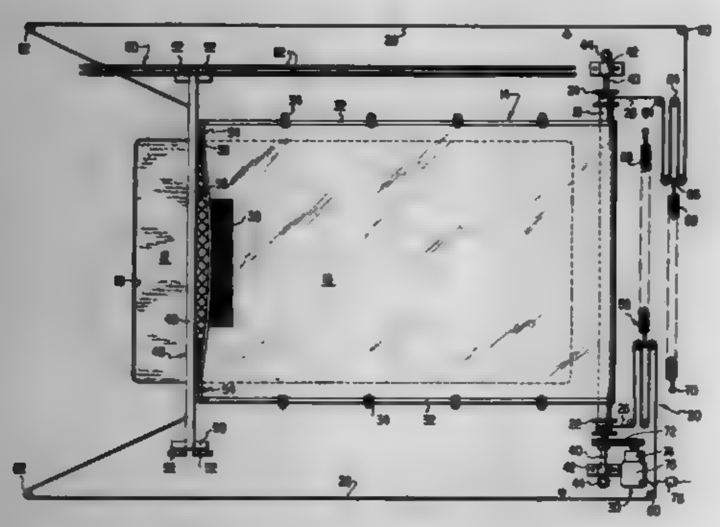
Filed Oct. 15, 1974, Ser. No. 514,754

Int. Cl.^{2} E04H *3/19*, *3/16;* F16L *21/02*

U.S. Cl. 4—172.14 **11 Claims**

1. A swimming pool cover comprising

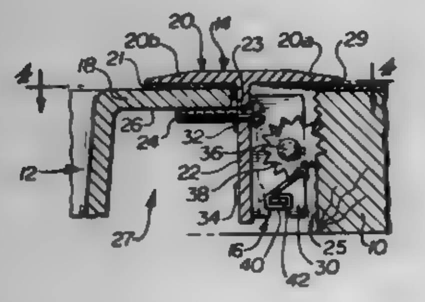
a reel having a water-impermeable cover spooled thereon providing a water permeable section adjacent the free end thereof;
means operatively connected to the cover for spooling and unspooling the same across a swimming pool including
a trolley above the surface of water in the pool for traversing the pool,



means for moving the trolley, and
attachment means connecting the trolley to the cover; and
means for removing accumulated rainwater from the top of the cover in response to spooling movement while retaining debris thereon comprising
means responsive to increased weight on the cover for moving the free cover end generally downwardly and placing the permeable section adjacent water level.

3,982,287
DEVICE FOR ATTACHING A SINK RIM TO A DRAINBOARD

Howard Miller, 14316 37th Ave. NE., Seattle, Wash. 98125
Filed Mar. 21, 1975, Ser. No. 560,871
Int. Cl.² E03C *1/33*
U.S. Cl. 4—187 A **16 Claims**

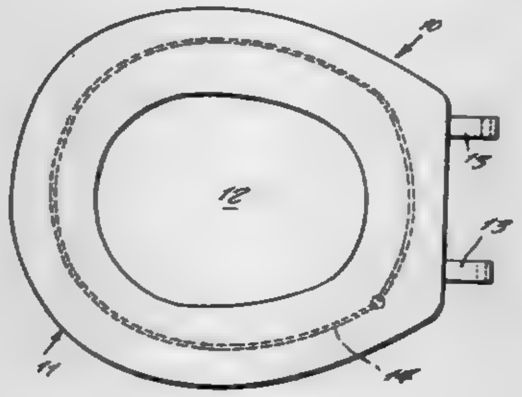


1. In an apparatus for attaching a sink assembly to a horizontally disposed drainboard, said drainboard having an upper surface and an aperture therein for receiving said sink, the periphery of said aperture being defined by inwardly facing, substantially vertical edge surfaces on said drainboard, said sink assembly including a sink having an upper, peripheral rim flange and including a peripheral, horizontally disposed, rim member and means operably connecting said rim member to the peripheral flange of said sink, said rim member being so constructed to overlie and engage the upper surface of said drainboard adjacent said aperture and being so constructed and associated with said sink to support the weight of said sink when said sink is inserted in said aperture, said rim member having an outer peripheral edge, said sink assembly being adapted for insertion in a downward direction into said aperture, an improvement in said apparatus for preventing upward retrograde movement of said sink assembly from said aperture once said sink assembly is inserted into said aperture, comprising:

a rotatable member and means for mounting said rotatable member to said sink assembly, said rotatable member having a periphery and a plane of rotation, the periphery of said rotatable member having members thereon for gripping and engaging the substantially vertical edge surface of the aperture in said drainboard, said rotatable member being positioned below said rim member such that the periphery of said rotatable member is spaced inwardly from the peripheral edge of said rim member and such that said plane of rotation is oriented transversely to the edge surface of the aperture in the drainboard, said edge surface engaging members being capable of contacting said edge surface of the aperture to rotate said rotatable member in a first direction as said sink assembly is inserted into said aperture, said rotatable member, including said edge surface members on the periphery thereof, and said means for mounting said rotatable member being so constructed as to move said edge surface engaging members on the periphery of said rotatable member outwardly towards said edge surface of said aperture as said rotatable member rotates, and
means operatively associated with said rotatable member for preventing said rotatable member for rotating in a direction opposite to said first direction.

3,982,288
NIGHT LIGHT TOILET SEAT

Mel Borne, P.O. Box 474, Palm City, Fla. 33490
Filed Apr. 10, 1975, Ser. No. 566,963
Int. Cl.² A47K *13/00*
U.S. Cl. 4—237 **3 Claims**



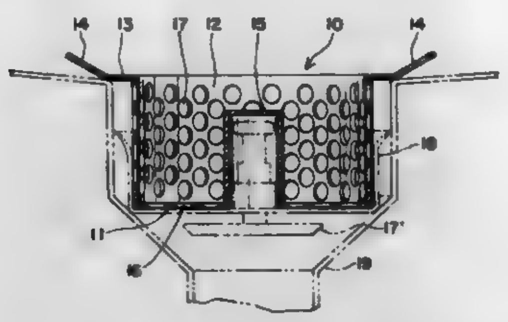
1. In a night light toilet seat, the combination of a toilet seat member made of transparent resin or plastics, said toilet seat having hinged plates secured to a rear end thereof for pivoting said toilet seat member between an upwardly vertical, non-use position and a horizontal utility position, and means being provided whereby said toilet seat member is illuminated; said means comprising a clear lucite rod being cast within an interior of said toilet seat member, the opposite ends of said lucite rod extending outwardly of an underside of said toilet seat member and aligned with a light source means.

3,982,289
DISPOSABLE SINK STRAINER

David Robbins, 123 W. 75th St., New York, N.Y. 10023
Filed Apr. 10, 1975, Ser. No. 567,039
Int. Cl.² E03C *1/26*
U.S. Cl. 4—292 **6 Claims**

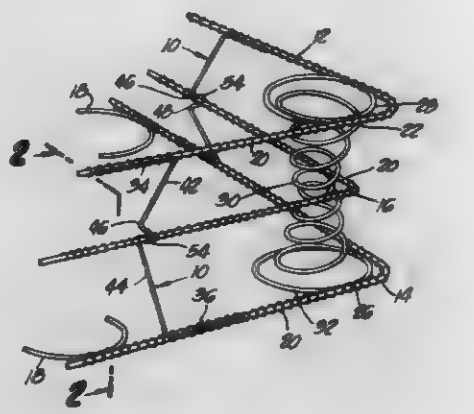
1. A disposable sink strainer adapted to be mounted on top of a conventional sink basket in a sink and removed therefrom, comprising:
a cylindrical portion having a plurality of openings therein forming a plurality of vertical columns;
a bottom portion substantially constituting a disc and integrally connected and depending from a lowermost portion of said cylindrical portion, said bottom portion being formed with a plurality of holes therein;

said cylindrical walls being of a size adapted to fit complementarily in said conventional sink strainer;
a rim extending horizontally and radially outwardly and integrally from an uppermost portion of said cylindrical portion and adapted to snugly engage the sides of the base of said sink; and
means integrally connected with said rim to remove said disposable sink strainer from said conventional sink strainer and sink.



3,982,290
MATTRESS EDGE STIFFENER

James T. Ward, 1418 N. Potrero Ave., South El Monte, Calif. 91733
Filed May 8, 1975, Ser. No. 575,979
Int. Cl.² H47C *23/02*
U.S. Cl. 5—260 **6 Claims**

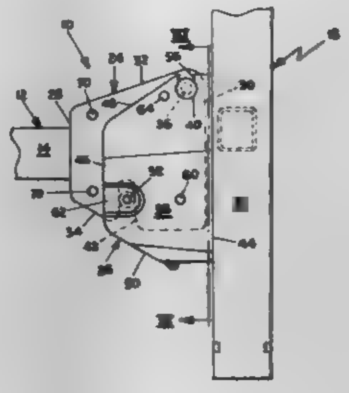


1. A single piece edge stiffener for mattresses having means at the extended ends thereof for securing said stiffener to the edge of a mattress, a pair of coplanar cantelever spring portions extending inwardly of said extended ends from each of said securing means and being integrally joined at the inner ends thereof in a substantially semi-circular anchor loop, said anchor loop being open at its inner end and coplanar with said cantelever spring portions and adapted to be disposed about a portion of said mattress.

3,982,291
BED FRAME LOCKING ASSEMBLY AND METHOD

Frank M. Damico, Hull, Mich., assignor to Joerns Furniture Company, Stevens Point, Wis.
Filed June 23, 1975, Ser. No. 589,375
Int. Cl.² A47C *27/08*
U.S. Cl. 5—294 **23 Claims**

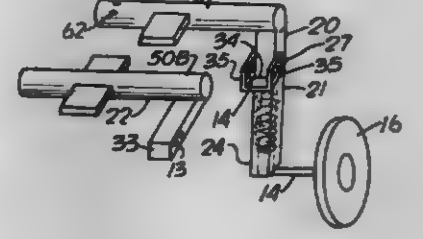
1. A bed frame locking assembly for attaching a support frame to a mattress support comprising:
first and second rigid, opposing brackets;
pivot means on at least one of said brackets for supporting the other of said brackets for pivotal movement with respect to the one bracket;
rigid connection means on at least one of said brackets for engaging the other of said brackets and receiving means on the other of said brackets for receiving said connection means; the engagement of said connection and receiving means preventing pivotal movement of said brackets with respect to each other when said pivot means is supporting said other bracket; and



camming means for camming said connection means into said receiving means when said brackets are pivoted with respect to each other about said pivot means whereby said brackets are locked together to rigidly secure a support frame to a mattress support.

3,982,292
BOAT TRAILER

Leo D. Johnson, Powell River, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed June 9, 1975, Ser. No. 584,974
Int. Cl.² B60C *13/00*
U.S. Cl. 9—1.2 **4 Claims**



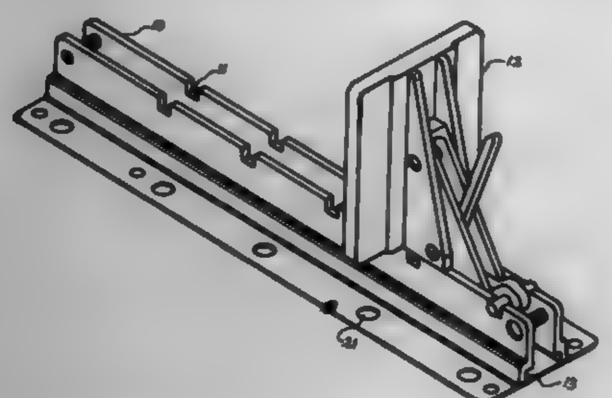
1. A wheel attachment assembly adaptable for detachably fastening of a wheel to a boat comprising
a pair of female sockets mounted laterally, a spaced distance apart, to one side of a boat,
a pair of male plugs, each shaped to matingly engage an individual said female socket,
a wheel and axle unit fixed to a support member fixed to a first said male plug, said support member fitted with a first bracket, with
the second said male plug fixed to a second bracket,
said first and second brackets fitted with detachable means to engage and attach to each other.

3,982,293
FOOT RESTS FOR KAYAKS

Otto Leonard Lagervall, 724 N. 34th Ave., Yakima, Wash. 98902
Filed Mar. 31, 1975, Ser. No. 563,346
Int. Cl.² B63B *29/00*
U.S. Cl. 9—7 **4 Claims**

1. A foot rest assembly for kayaks, comprising a pair of foot rest units, one unit adapted to be secured to each side of the hull inside the front of the kayak, each unit comprising a base and a pair of channel members with longitudinally spaced indexing slots, the members rising upwardly from the base and forming an inverted T-slot, said members serving as a track

and support for a foot pad assembly, the foot pad assembly comprising a hollow I-beam supporting a foot pad and a spring-actuated trigger connected to an indexing pin, said pin being adapted to engage a given pair of indexing slots.



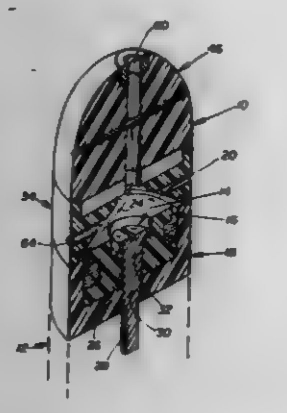
3,982,294
RETRIEVER

Emerald W. Hicken, 236 E. El Paso, Broken Arrow, Okla. 74012

Filed Oct. 9, 1975, Ser. No. 621,210

Int. Cl.² B63C *7/26*

U.S. Cl. 9—9 **7 Claims**



1. A retriever device for locating a submerged object comprising:

a base member axially threaded with left hand threads,
a spool positioned on the base member and being axially threaded with left hand threads,
a screw member holding the spool and base member in secure position against the object and having contiguous right and left hand threads,
a retaining member mounted on the base member including a partition having an axial opening, a flat upper surface, being thicker near its perimeter than adjacent said opening, and having a transverse opening from an outer edge to the axial opening,
a float member secured to the retaining member by water-soluble adhesive means, and
a line, having a first end attached to the float, passing through the axial opening of the retaining member, and having a second end attached to the spool.

3,982,295
DOCK LEVELING APPARATUS

Peter B. Burnham, Columbus, Ohio, assignor to Harsco Corporation, Camp Hill, Pa.

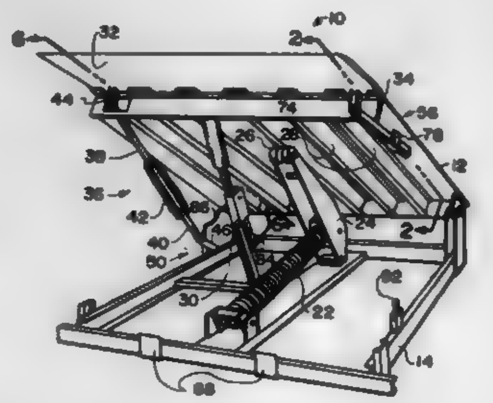
Filed May 21, 1975, Ser. No. 579,686

Int. Cl.² B65G *11/00*

U.S. Cl. 14—71.5 **12 Claims**

8. In the combination of dock leveling apparatus associated with a loading dock which is designed for loading and unloading vehicles; the loading dock having a generally planer upper surface; the apparatus including a ramp having front and rear portions and pivotally mounted at its rear portion; means associated with the ramp for releasibly blocking the upward movement of the ramp; means for pivoting the ramp upward upon release of said blocking means; lip means pivotally attached to the front portion of the ramp, said lip being for bridging the gap between the ramp and a bed of a vehicle and for limiting the descent of the front portion of the ramp below said bed; means for limiting the angle of pivot of the lip means from approximately parallel with the ramp to about a downwardly extending right angle with the ramp; means for automatically pivoting the lip upwardly from its right angle position to a projected position following (a) release of the ramp blocking means and (b) the upward pivoting movement of the ramp and during subsequent downward pivoting movement of the ramp; the automatic lip pivoting means comprising a straight arm pivoted from both ends, one end being pivoted from the lip and the other end pivoted from a short bar, the short bar being pivotally anchored to a substrate, said substrate being stationary relative to said dock, projecting means extending from the bar intermediate its pivot points for limiting the pivoting of said bar toward the substrate and means for releasing the automatic lip pivoting means during the ramp descent while the front portion of the ramp is above the level of the dock; lip lock means for maintaining the lip in projected position after the automatic lip pivoting means is released and until (1) the front portion of the ramp descends below the level of the dock to engage lip lock release means or (2) the lip is pivoted to a position near parallel with the ramp; the improvement comprising:

the projection means extending from the bar is adjustable in length to cooperatively coordinate the release of the automatic lip pivoting means with the time the lip lock means is positioned to support the lip in projected position.



3,982,296
HAIR BRUSH AND COMB CLEANING APPARATUS

Doris A. Russo, 24 W. Hill Drive, Los Gatos, Calif. 95030

Division of Ser. No. 376,629, July 5, 1973, Pat. No. 3,879,787.

This application Feb. 18, 1975, Ser. No. 550,843

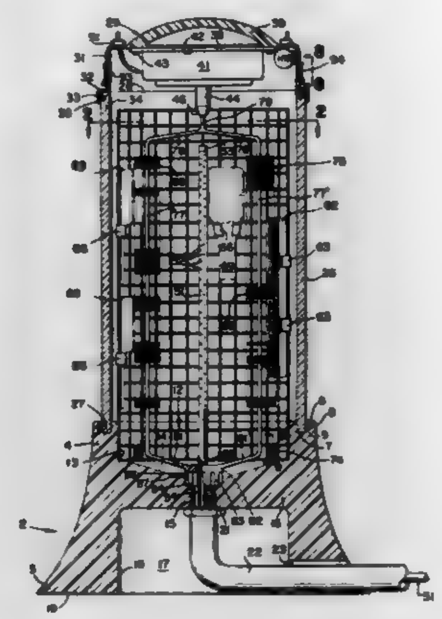
Int. Cl.² A46B *13/04*; A45D *24/40*

U.S. Cl. 15—38 **3 Claims**

1. A hair brush and comb cleaning and disinfecting apparatus, comprising:

a. a base member;
b. a hollow body sealingly supported on the base member and within which brushes and combs to be cleaned and disinfected are adapted to be supported;
c. a cover assembly closing the end of the hollow body remote from the base member to prevent the escape of cleaning and disinfecting fluids from said hollow body;
d. fluid delivery means projecting into said hollow body and adapted to disperse a cleaning and disinfecting fluid radially outwardly onto the brushes and combs to be cleaned;
e. rack means within said hollow body disposed about said fluid delivery means and on which brushes and combs to be cleaned are adapted to be detachably secured;

f. means associated with said base member for draining said cleaning and disinfecting fluid from the interior of said hollow body; and
g. motor means supported on said hollow body, and abrading means depending into said hollow body and adapted for rotation by said motor means to abrade the bristles and tines of brushes and combs supported within the hollow body.



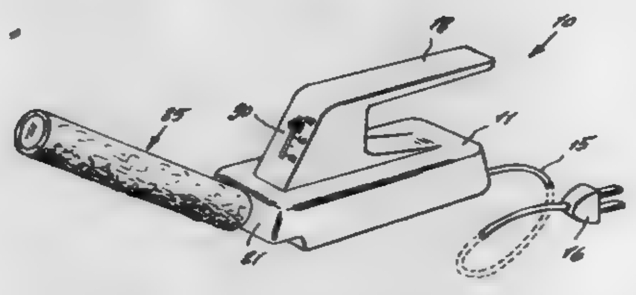
3,982,297
AUTOMATIC CLEANER

Carl Belluomo, 248 Brinsmade Ave., Bronx, N.Y. 10465

Filed May 27, 1975, Ser. No. 580,665

Int. Cl.² A46B *13/02*

U.S. Cl. 15—97 R **3 Claims**



1. In a portable power tool adaptable for use as an automatic cleaner, the combination of a case integral with a handle, an electric motor inside said case being connected to an extension cord protruding outwardly to said case and fitted with a male plug, a shaft of said motor having a bevel first gear mounted thereupon, said first gear engaging a bevel internal second gear having a hub protruding outwardly through a front wall of said case, said hub being journalled in a bearing opening of said wall, an outer end of said hub having a square socket opening, and a plurality of rollers selectively engagable in said socket opening; each said roller comprising a core fitted with a sleeve of a material for frictionally rubbing against a work, and a shaft secured inside said core protruding from a rear end thereof for engaging said socket opening, said rear end of said core having a concentric, hollowed out recess through a center of which said roller shaft extends and wherein said roller shaft has an annular groove within said recess which is engagable by a detend support on said case, said detend comprising an offset member transversely slidable respective to an axis of said roller shaft, said detent being slidable in an opening in a protrusion formed on said front wall, and a compression coil spring between said protrusion and a right angle portion of said offset member normally urging said detent to engage said annular groove.

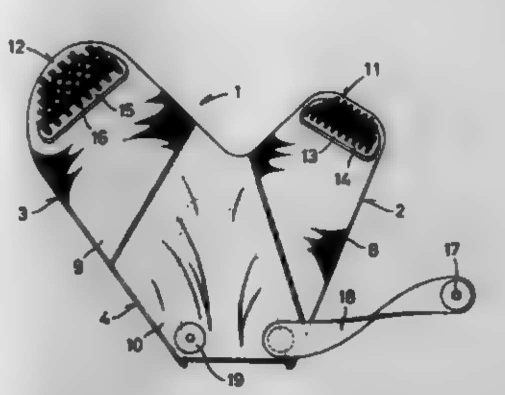
3,982,298
MITT TYPE SHOE CLEANER

Tunezo Ota, 10-21 Koshien-cho, Nishinomiya, Hyogo, Japan

Filed Sept. 24, 1975, Ser. No. 616,499

Int. Cl.² A41D *19/01*; A47L *23/10*

U.S. Cl. 15—106 **8 Claims**



1. A mitt type shoe cleaner comprising in combination,

a body comprising a relatively small first hollow portion into which the thumb is to be inserted, a relatively large second hollow portion into which the remaining four fingers are to be inserted, and a separate central portion located between and connecting said first and second hollow portions together at the front side of the body;
a first brush attached to the tip portion of said first hollow portion at the front side thereof; and,
a second brush attached to the tip portion of said second hollow portion at the front side thereof;
said first and second hollow portions being formed of a non-elastic flexible material, and said central portion being formed of an elastic flexible sheet material.

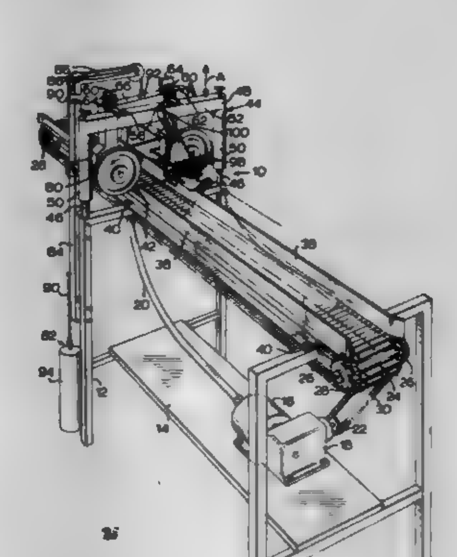
3,982,299
MEAT CUTTER

Louis Kompan, Kitchener, Canada, assignor to Burns Foods Limited, Kitchener, Canada

Filed May 1, 1975, Ser. No. 573,728

Int. Cl.² A22B *5/20*

U.S. Cl. 17—1 R **5 Claims**



1. A device for removing the backbone from a loin of pork comprising,

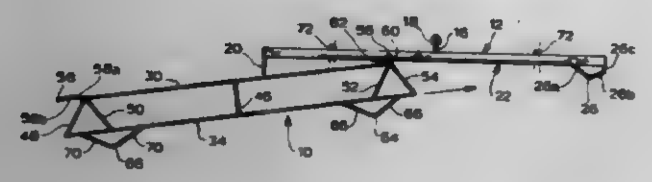
a. a conveyor assembly adapted to move a loin of pork through a cutting station with the backbone portion of the loin upwardly disposed and extending longitudinally of the conveyor,

b. a cutter assembly in said cutting station and disposed above said conveyor comprising,
  i. a cutter head mounted for movement upward away from and downwardly towards a predetermined plane disposed above said conveyor, said head being biased for movement downwardly towards said predetermined plane, said head having a leading end disposed in a direction opposite to the direction of travel of the conveyor through said cutting station,
  ii. a saw blade mounted on said head for movement in a cutting plane extending transversely across and spaced above said conveyor,
  iii. a guide shoe having a longitudinally elongated underside formed with a transverse concave curvature of sufficient depth to cause the underside to bear against the top and sides of the upwardly directed backbone ridge of a pork loin passing through said cutting station,
  iv. support means projecting forwardly from said cutter head for supporting said shoe in advance of said cutter head such that the vertical movement of the shoe results in a vertical movement of the head,
  v. mounting means connecting said shoe to said support means to permit movement of said shoe means in a direction transverse to the path of travel of the conveyor and about a vertical and a horizontal axis whereby the shoe may move to follow the longitudinally transverse curvature of the backbone and the longitudinally vertical curvature of the backbone to cause the cutter head and thereby the saw blade to be raised and lowered to follow the longitudinal vertical curvature of the backbone to provide a cut of uniform depth along the full length of the loin as it is driven through the cutting station.

3,982,300
HANGER FOR SMOKE HOUSE

Anthony Joseph Selkie, 234 Union St. East, Waterloo, Ontario; Leon Jaskulski, 7 Wareside Road, Etobicoke, Ontario, and Knud Erik Hansen, Unit 44, 3525 Brandon Gate Drive, Mississauga, Ontario, all of Canada

Filed Mar. 18, 1975, Ser. No. 559,526
Int. Cl.² A22C *15/00*
U.S. Cl. 17—44.4 15 Claims

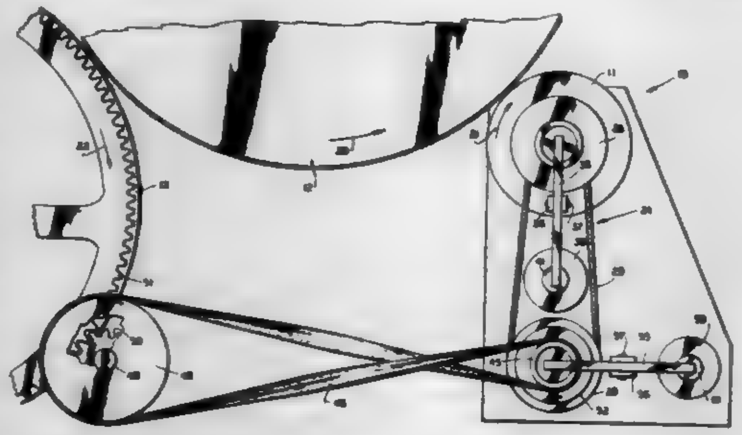


1. Support bar apparatus for use in a side-loading hanger system for supporting meat products such as sausages and the like on a moving conveyor system, during curing, said apparatus comprising;
  a support bar adapted for attachment to said conveyor system, said bar defining two ends;
  eye means at one said end of said bar;.
  catch means at the other said end of said bar, and,
  guide rod means located substantially alongside but spaced from said support bar, said guide rod means having two ends, one said end being attached to said catch means and the other said end to said support bar.

3,982,301
VARIABLE DRIVE MECHANISM FOR CARDING MACHINE

Lawrence Llach, Rte. 6, Oakdale Road, Canton, Ga. 30114, and Arturo Picas, 150 Viking Court No. 4, Athens, Ga. 30601

Filed Jan. 29, 1975, Ser. No. 545,195
Int. Cl.² D01G *31/00, 15/46*
U.S. Cl. 19—.25 3 Claims

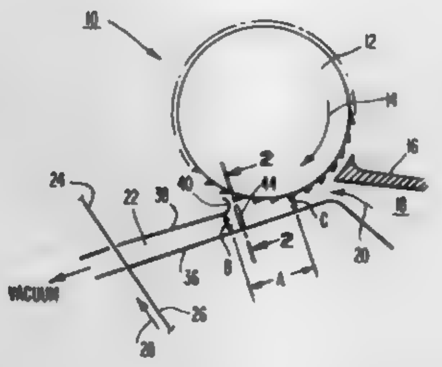


1. In a high production textile card system including a main cylinder, a licker-in cylinder and a doffer cylinder for working fibrous textile material and forming the textile material into a sliver and drive means for driving the main cylinder and the licker-in cylinder, the combination therewith of a variable width sheave belt drive system connected to and continuously driven by a sheave powered from said licker-in cylinder and including a driven variable width sheave, a second belt drive system connected in rotational driving relationship to said doffer cylinder and including a driving pulley, clutch means selectively interconnecting said driving pulley of said second belt drive system and said driven variable width sheave of said variable sheave belt drive system, and time controlled actuating means for engaging and disengaging said clutch means to start and stop the rotation of said doffer cylinder and for varying the width of a sheave of said variable width sheave belt drive system to vary the rotational speed of said doffer cylinder.

3,982,302
WEB FORMING APPARATUS AND METHOD

Lawrence Vaalburg, Brookhaven, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Apr. 10, 1975, Ser. No. 566,970
Int. Cl.² D01G *25/00*
U.S. Cl. 19—156.3 12 Claims

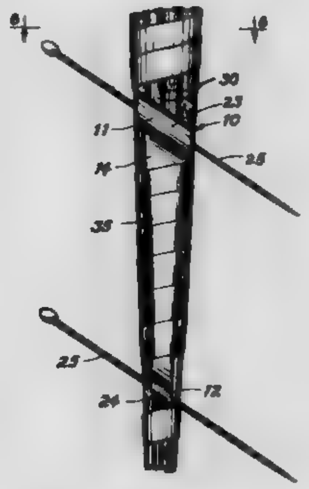


1. An apparatus for forming a fibrous web from a gaseous suspension of fibers, said apparatus including a fiberizing roll for separating fibers from a fibrous feed mat and entraining said fibers in a gaseous medium, a foraminous forming surface through which the gas of said suspension passes and upon which said fibers are condensed to form said fibrous web, a formation duct having an upstream end adjacent the fiberizing roll and and a downstream end adjacent the forming surface for providing a flow path for the gaseous suspension of fibers from said fiberizing roll to said forming surface; the improvement including a pair of passageways adjacent the upstream end of the formation duct, each passageway extending through a formation duct wall and said passageways being located only adjacent opposite side margins of the formation duct, and vacuum means communicating with said passageways for creating a lower pressure outside said duct than inside said duct for removing air from within upstream side margins of said formation duct to eliminate the adverse effect of vortices which are created adjacent said side margins by rotation of the fiberizing roll.

3,982,303
CORSAGE HOLDER

Robert A. Shulkin, E. 24122 Sprague, Liberty Lake, Wash. 99012

Filed Apr. 23, 1975, Ser. No. 570,559
Int. Cl.² A45F *5/08*
U.S. Cl. 24—6 5 Claims



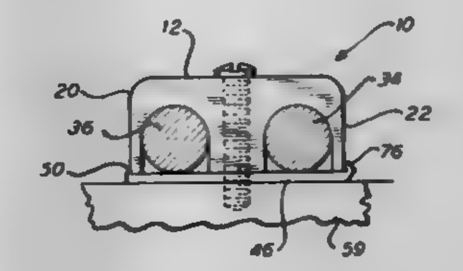
1. A corsage holder, comprising:
  a solid elongated body;
  a stem receiving surface formed along one longitudinal side of said body adapted to be fitted against the gathered stems of flowers arranged in a corsage;
  a tape receiving surface on the longitudinal side of said body opposite to said one longitudinal side; the tape receiving surface being adapted to be engaged by tape wrapped about the body and stems during construction of the corsage;
  opposed longitudinal side edges joining the stem and tape receiving surfaces;
  an open transverse aperture formed through the body, extending in open communication from one side edge to the other, the aperture being adapted to receive a corsage pin for fixing of the corsage to the clothing; said aperture beind inclined diagonally across the longitudinal sides of the body.

3,982,304
PLASTIC CLAMPING APPARATUS

Arnold Menshen, Beuler-Weg 52, Neuenrade Westphalia, Germany

Filed Dec. 11, 1974, Ser. No. 531,470
Int. Cl.² F16L *3/22;* A44B *21/00*
U.S. Cl. 24—73 AP 1 Claim

1. Integrally molded plastic clamping apparatus for securely clamping longitudinally extending members on a support surface, comprising:
1. a plastic body including:
  a. a base portion,
  b. a pair of side walls extending from the side edges of said base portion and formed integrally therewith,
  c. a pair of end walls extending from the end edges of said base portion and extending between the ends of said side walls and formed integrally with said base portion and said side walls,
  d. each of said side walls having a plurality of recesses formed therein extending from the outer free edge of the respective side wall towards said base portion, said recesses for receiving said longitudinally extending members and the recesses in each side wall being in coaxial alignment with the recesses in the other side wall,
  e. a fastener guide post formed integrally with and extending perpendicularly from said base portion and being enclosed by said side wall and end walls, said fastener guide post disposed between said coaxially aligned recesses and having a fastener receiving bore formed therethrough and extending perpendicularly with respect to said base portion;
2. a flat plastic mounting member having a fastener receiving aperture formed therein;
3. a plastic hinge portion formed between and integrally with an end edge of said mounting member and the outer free edge of one of said end walls;
4. said plastic being sufficiently flexible to permit said body to pivot through more than 90° away from said mounting member by said hinge portion to permit said coaxially aligned recesses to receive said longitudinally extending members and to permit said body to pivot toward said mounting member and permit the outer free ends of said side and end walls to engage said mounting member and to permit said bore and said aperture to be coaxially aligned, whereby upon a fastener extending through said coaxially aligned bore and said aperture and engaging said support surface, said longitudinally extending members are securely clamped in said recesses between said side walls and said supporting member and are secured to said support surface;
5. a plastic tab formed integrally with said mounting member and at the outer free end edge thereof, said tab providing a surface extending upwardly from said mounting member and being inclined slightly toward said mounting member whereby upon said plastic body being pivoted towards said mounting member, said tab slightly interferes with the outer free end wall of said plastic body thereby maintaining said plastic body and said mounting member closed during mounting of said clamping apparatus upon said support surface, and upon said clamping apparatus being mounted on said support surface said inclined surface for engaging said outer free end wall of said body thereby preventing outward expansion of said free end wall and thereby maintaining said longitudinally extending members within said recesses.



3,982,305
SHOULDER STRAP HOLDER PIN

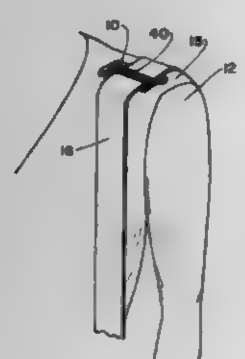
Ruth Meyer, Brooklyn, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Sept. 9, 1975, Ser. No. 612,013
Int. Cl.² A44B *21/00*
U.S. Cl. 24—85 R 2 Claims

1. An assembly adaptable for fastening to a garment over an external surface of said garment for the purpose of retaining

a strap in detachable engagement over the garment comprising.

- a flexible strap adaptable for suspension of a bag,
- a frame member in the form of a U-shaped section formed with two generally parallel spaced leg sections joined to a common base section, at a first end of each leg section,
- means fixed to the frame member for attachment of the assembly to a garment with the underside of the assembly lying adjacent the garment, and
- a bar member pivotably mounted to the frame member between the said leg sections of the frame member so as to rotate in a plane perpendicular to the plane of the axes of the said leg sections, with the said bar member fitted, adjacent a first end, to pivot means joined to each of said leg sections adjacent to the second end of each leg section, with

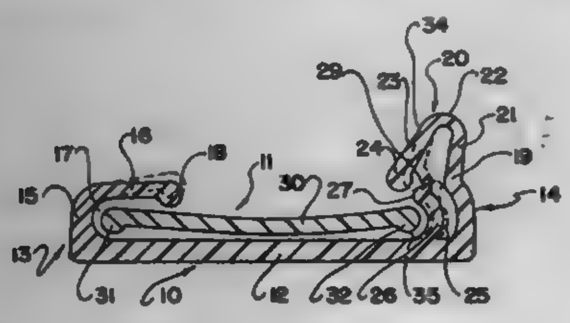


- the length of said bar member from said pivot means to the second end of said bar member being not greater than the length of each said leg section, so as to permit the bar member to rotate about said pivot means to a rest position in which it lies within the general confines of the frame and lies with the axis of the bar member parallel to the axes of the said leg sections,
- said bar member being spaced from each leg section, in said rest position, by the general thickness of said strap, so that the strap. when passed over the outer side of the assembly about each leg member and under the underside of the assembly about the bar member, is frictionally engaged to the frame member,
- said engaged strap being releaseable from engagement to said frame member, by manual rotation of the bar member away from the underside of the said frame member.

3,982,306
FASTENER FOR PLASTIC FILM SHEETING AND THE LIKE

Walter J. Curry, 337 Roberta Ave., Winnipeg, Manitoba, Canada

Filed July 7, 1975, Ser. No. 593,675
Int. Cl.² A44B *21/00*
U.S. Cl. 24—243 K **8 Claims**

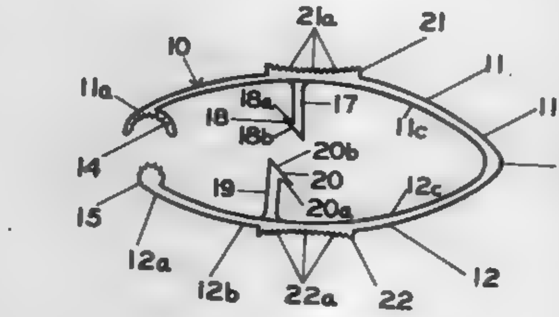


1. A clamping and holding assembly for flexible plastic film sheeting and the like, comprising in combination an elongated flexible channel member, an elongated locking strip detachably engageable within said channel member for clamping the associated film sheeting therebetween, and means cooperating between said locking strip and said channel member for detachably securing said strip within said channel member, said channel member including a base and a pair of side walls extending upwardly from said base one upon each side edge thereof, one of said side walls extending upwardly and then inwardly of the corresponding side edge of said base and an elongated bead formed on the inner edge of said one side wall, the other of said side walls having a portion extending upwardly from the corresponding side edge of said base and then curving over and having a portion which extends downwardly towards said base, a longitudinally extending bead formed on the inner edge of said portion of said other side wall which extends downwardly towards said base as aforesaid, and an elongated expansion member extending upwardly from said base inwardly of said other side wall and terminating spaced from said longitudinally extending bead of said other side wall and between said last mentioned bead and the portion of the other side wall extending upwardly from said base, the width of said locking strip being greater than the width between said beads whereby said bead of said other side wall is temporarily displaced outwardly as said locking strip engaged within said channel member.

3,982,307
FABRIC CLAMP

Gordon E. Smith, Sun Prairie, and Donald L. Evans, Lake Windsor, both of Wis., assignors to Med-Pro, Ltd., Sun Prairie, Wis.

Filed Feb. 4, 1976, Ser. No. 655,202
Int. Cl.² A44B *21/00*
U.S. Cl. 24—255 SL **14 Claims**



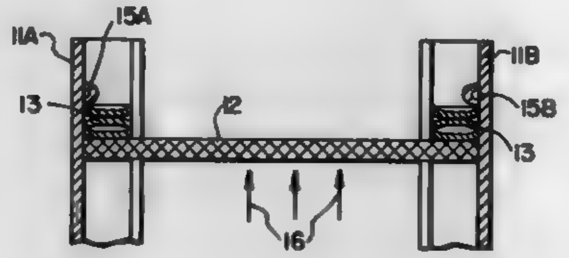
1. A fabric clamp comprising:

a. two arcuate members having fixed ends joined together, said arcuate members extending from said fixed ends in spaced outwardly bowed relation to free ends positioned in normally spaced relation, said arcuate members being formed of a flexible and resilient material to allow them to be displaced toward one another to cause engagement of said free ends and to allow the non-joined portions of said arcuate members to be displaced laterally with respect to one another;
b. a concave surfaced jaw on the free end of one of said arcuate members, the concave surface of said jaw facing said other free end;
c. a convex surfaced jaw on the free end of the other of said arcuate members, the convex surface of said jaw facing said concaved surfaced jaw;
d. a first latch member extending inwardly from one of said arcuate members and having a longitudinal projection on the end thereof; and
e. a second latch member extending inwardly from the other of said arcuate members and having a longitudinal projection on the end thereof in position to overlap and engage with the projection on said first latch member when said arcuate members are displaced toward each other to a closed position to maintain said concave and convex surfaced jaws in mating engagement;
f. said jaws and said latch member longitudinal projections being laterally unobstructed whereby said jaws may be released to their normally open position by laterally displacing said arcuate members until said projections on said latch members are no longer in overlapping engagement.

3,982,308
SEMICONDUCTOR DEVICE CLAMPING APPARATUS

Yoshitada Yoneda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1975, Ser. No. 608,302
Int. Cl.² H01R *13/54*; H01V *7/00*; H01L *23/42*
U.S. Cl. 24—263 R **4 Claims**

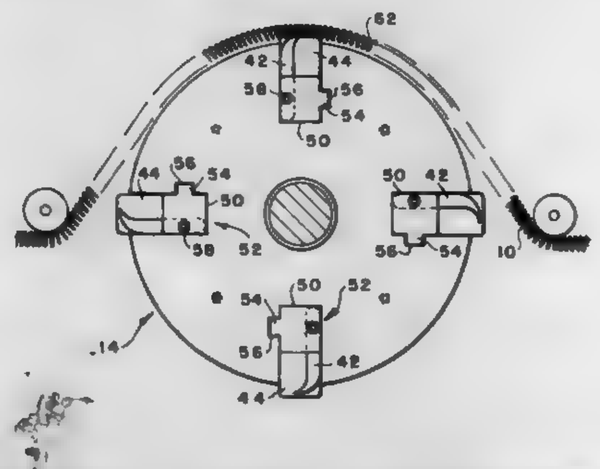


4. A clamping apparatus for holding a semiconductor device in compression comprising: first and second hollow supporting shafts, walls forming an axial slot in each of said shafts, a first supporting plate affixed to said shafts and holding said shafts in parallel, a second supporting plate spaced apart from said first supporting plate and adapted to slidably engage the hollow interior of said shafts through said axial slots, spring means for receiving an externally applied compressive force exerted on said plates, protrusions in said walls of said shafts for holding said second supporting plate in a predetermined position, said protrusions projecting into the hollow interior of said shafts to abut said second supporting plate, whereby a predetermined compressive force is maintained on a semiconductor device disposed between said plates.

3,982,309
METHOD OF PROVIDING CUT LOOP PILE FABRICS

Michael William Gilpatrick, Chesnee, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 542,111, Jan. 20, 1975. This application Aug. 8, 1975, Ser. No. 603,069
Int. Cl.² D06C *13/08*
U.S. Cl. 26—9 **1 Claim**

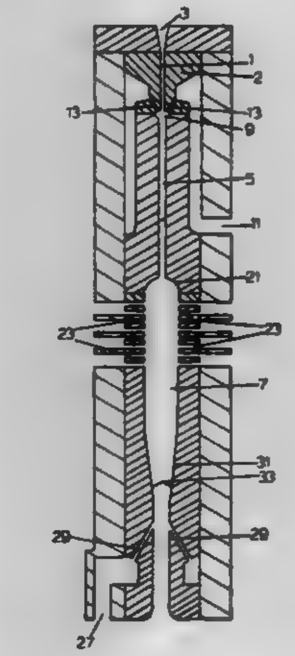


1. The method of providing a cut loop fabric from a loop fabric having a backing material on a machine having a rotor in which is mounted a plurality of rows of cutting modules, the module of each of said rows each having a plurality of guard members between which are recessed cutting blades with the guard members projecting beyond the extent of the cutting blades, the method comprising the steps of: rotating the rotor, passing the loop pile fabric into contact with the rotating rotor so that the guard members contact the backing material to prevent the cutting blades from cutting the backing material while they cut the loops of the loop pile fabric and taking up the fabric after the loops have been cut.

3,982,310
YARN CRIMPING PROCESS AND APPARATUS

David Ernest Beck, and Derek Walter Thom, both of Pontypool, England, assignors to Imperial Chemical Industries, London, England

Filed Dec. 5, 1974, Ser. No. 529,786
Claims priority, application United Kingdom, Dec. 7, 1973, 56774/73
Int. Cl.² D02G *1/20, 1/16, 1/12*
U.S. Cl. 28—1.3 **2 Claims**

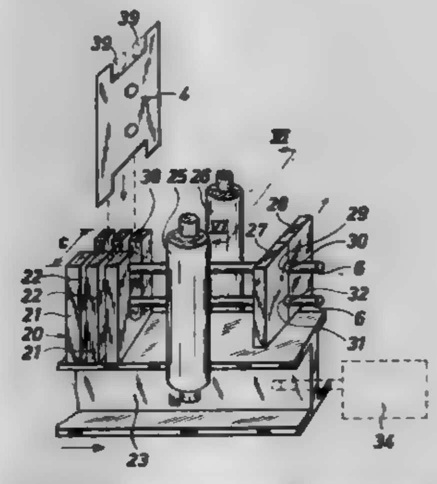


1. In a yarn crimping apparatus comprising in sequence an inlet conduit for yarn, hot fluid forwarding means, a throat conduit for yarn and fluid, and a stuffing chamber for a pad of yarn having means to allow radial escape of hot fluid, the improvement being comprised in that the crimping apparatus has control means comprising in combination a mechanical restricting means comprising a conical restricting outlet to the stuffing chamber and means toward the yarn exit end of the impinging apparatus to inject a cold fluid into the stuffing chamber.

3,982,311
CONVECTOR FOR HEATING BUILDINGS AND TOOLS AND METHOD FOR MANUFACTURING CONVECTOR MODULES FOR SUCH CONVECTORS

Gunnar Olaf Vestergaard Rasmussen, Rydsavej, 38, Parup, DK-5000 Odense, Denmark

Division of Ser. No. 316,491, Dec. 19, 1972, Pat. No. 3,844,340. This application June 28, 1974, Ser. No. 484,467
Claims priority, application Denmark, Dec. 20, 1971, 6237/71; Dec. 8, 1972, 6132/72
Int. Cl.² B23P *21/00*
U.S. Cl. 29—33 G **13 Claims**



1. In an apparatus for manufacturing convector modules for a convector, a tool for mounting lamella bodies on tubes in the convector modules, each of said convector modules including

at least two throughextending heat conducting horizontal tubes and a plurality of lamella bodies, said lamella bodies being mounted on the tubes and having parallel side lugs initially extending transverse to said tubes, said tool comprising tube carrying means for supporting the tubes onto which the lamella bodies are to be mounted; a movable cam member having parallel slots located one behind the other for transporting the lamella bodies with the side lugs of the lamella bodies exposed, said cam member comprising plural cam bodies providing recesses to receive said tubes; vertical bending rollers situated on each side of the cam member and being disposed to press against said exposed side lugs for bending the side lugs against said cam bodies into a position in which they are parallel with the tubes; and operating means connected to said cam member for moving the latter relative to the tube carrying means and the rollers.

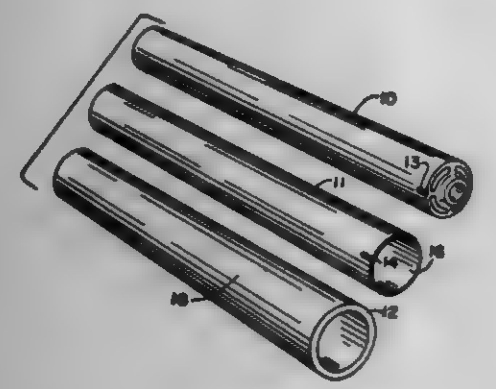
3,982,312
TUBULAR ROLLER SLEEVE

John O. Finzer, 1107 Ramona Road, Wilmette, Ill. 60091

Division of Ser. No. 441,326, Feb. 11, 1974, Pat. No. 3,877,125. This application Oct. 21, 1974, Ser. No. 516,585

Int. Cl.^{2} B21B *31/08*

U.S. Cl. 29—130 **3 Claims**



1. A printers roller including a metal core having a smooth outer peripheral surface of a certain diameter and continuous from end to end of the core, a tubular sleeve having a smooth internal surface of an inside diameter providing a close fit on the outer surface of said core and extending continuously substantially from end to end of said core, a tubular rubber sleeve vulcanized on the outer surface of said tubular sleeve and having a finish ground smooth outer surface and extending continuously substantially from end to end of said tubular sleeve, and removable means releasably securing said tubular sleeve on said core whereby said sleeve and the tubular rubber sleeve may be removed from the metal core as a unit, said means including a slot in the tubular sleeve at one end and a recessed way in the metal core at one end providing registering keyways in the tubular sleeve and in the metal core, and a removable key in said keyways.

3,982,313
METHOD FOR AUTOMATICALLY FASTENING DECK BOARDS TO STRINGERS

William B. Nelson, Jr., 125 Sunset Drive, West Monroe, La. 71291

Division of Ser. No. 538,910, Jan. 6, 1975, Pat. No. 3,957,191. This application Jan. 8, 1976, Ser. No. 648,033

Int. Cl.^{2} B23P *11/00*

U.S. Cl. 29—432 **12 Claims**

1. A method for automatically fastening a plurality of deck boards to a plurality of stringers, comprising the steps of:

a. providing a counterweighted pivotably mounted fastener gun above each stringer;

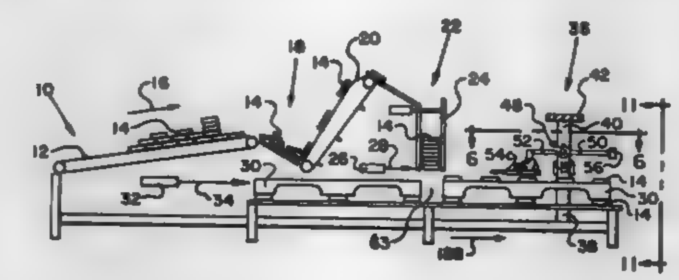
b. providing a positioning means on each said fastener gun to automatically raise and lower the position of said fastener gun as the height of the deck board varies, each said counterweight serving to counterweight the combined weight of each fastener gun and each positioning means;

c. providing an automatic firing means for said fastener guns;

d. providing said firing means with a plurality of automatic switch means, responsive to the forward motion of the deck boards, for automatically firing said fastener guns as said deck boards pass in contact with said automatic switch means;

e. positioning the plurality of stringers and deck boards beneath the counterweighted fastener guns; and

f. firing the fastener guns by means of the automatic switch means being activated by the forward motion of the deck boards.



3,982,314
METHOD OF PRODUCING TIN COATED STEEL SHEET USED FOR SEAMLESS STEEL CONTAINER

Keiji Ariga; Tadashi Nemoto, and Kenji Yasunaka, all of Kudamatsu, Japan, assignors to Kozo Yoshizaki, Tokyo, Japan

Continuation of Ser. No. 415,018, Nov. 12, 1975, abandoned. This application July 9, 1975, Ser. No. 594,196

Claims priority, application Japan, Nov. 14, 1972, 47-113548; Feb. 12, 1973, 48-16436

Int. Cl.^{2} B22D *11/126*

U.S. Cl. 29—527.4 **3 Claims**

1. A method of producing a tin coated steel substrate used for seamless steel containers comprising coating said steel substrate with 0.01 to 5 g/m^2 by weight of at least one compound selected from the group consisting of nickel oxide, cobalt oxide, copper oxide, tin oxide and a nickel-sulfur compound to form an intermediate layer, and then electroplating tin on said intermediate layer to form said tin coated steel substrate.

3,982,315
PHOTOELECTRIC DEVICE

Shuji Kubo, Kawasaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 364,314, May 29, 1973, abandoned. This application Jan. 9, 1975, Ser. No. 539,811

Claims priority, application Japan, June 2, 1972, 47-55284

Int. Cl.^{2} B01J *17/00*

U.S. Cl. 29—572 **5 Claims**

1. A process for fabricating photoelectric devices, comprising:

forming on a semiconductive substrate of one conductivity type having a first carrier concentration of semiconductive layer of opposite conductivity type having a second carrier concentration to define a p-n junction therewith to thereby cause a depletion layer to occur in said layer adjacent said substrate;

etching said semiconductive layer to a depth reaching said substrate and penetrating thereinto to provide a plurality of intersecting grooves to thereby produce a plurality of isolated regions of said opposite conductivity type

applying an insulating layer on said isolated regions and said grooves;

etching said insulating layer to provide exposed areas constituting light-receiving windows on said isolated regions of said opposite conductivity type;

applying a plurality of metal electrodes, a respective one of said electrodes being formed as an ohmic contact on only a portion of said exposed area of said layer on each said insolated region and another respective one of said electrodes being formed as an ohmic contact to said substrate beneath said layer via a respective one of said grooves; and

separating said substrate along grooves.

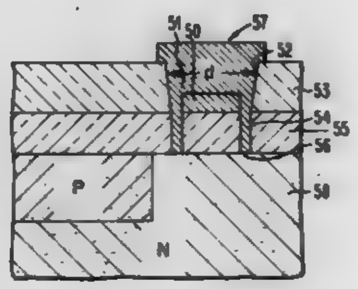
3,982,316
MULTILAYER INSULATION INTEGRATED CIRCUIT STRUCTURE

Harry C. Calhoun, Wappingers Falls; Larry E. Freed, Poughkeepsie, and Carl L. Kaufman, Wappingers Falls, all of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Division of Ser. No. 298,729, Oct. 18, 1972, Pat. No. 3,877,051. This application Nov. 27, 1974, Ser. No. 527,572

Int. Cl.^{2} B01J *17/00*

U.S. Cl. 29—577 **4 Claims**



1. In the method of forming via electrical contacts in a second layer of insulative material covering a planar semiconductor integrated circuit chip structure comprising a planar surface from which a plurality of regions of different types and concentrations of conductivity-determining impurities extend into the chip to provide the active and passive devices of the circuit, a first layer of insulative material covering said surface, said first and second insulative layers being etchable by the same etchant, a plurality of electrical contacts extending through openings in said first insulative layer respectively to said regions, and a metallization pattern formed on said first insulative layer connected to said contacts through said first layer, said metallization pattern being free of enlarged contact pads, the steps of:

etching a plurality of via holes extending through said second insulative layer into contact with said underlying metallizatiion pattern,

and forming a plurality of metallic connectors in and coextensive with said via holes,

said etching step being conducted so that the majority of said via holes have a horizontal dimension at least equal to the horizontal dimension of the directly underlying metallization, and

locating said majority of via holes above integrated circuit surface regions having such impurity types and concentration that would form Schottky Barrier contacts with the type of metal of the connectors in said via holes so that in the event of indadvertant etching through said first insulative layer in forming said majority of via holes, the metal forming said connectors will form a rectifying connection with the exposed surface regions.

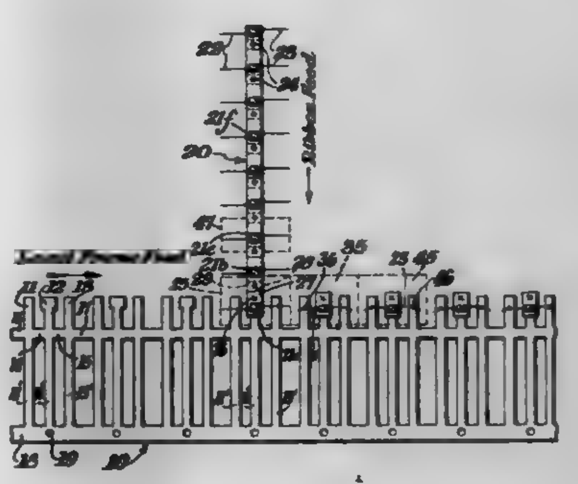
3,982,317
METHOD FOR CONTINUOUS ASSEMBLY AND BATCH MOLDING OF TRANSISTOR PACKAGES

Hubert Eysermans, Manchester, N.H., assignor to Sprague Electric Company, North Adams, Mass.

Filed July 31, 1975, Ser. No. 600,693

Int. Cl.^{2} B01J *17/00*

U.S. Cl. 29—588 **7 Claims**



1. A method for the continuous assembly and batch molding of transistor packages comprising:

a. feeding a set of essentially mutually parallel metal terminals to a predetermined position in a first work station, a plurality of said sets being formed in and being a part of a continuous lead frame, said sets being uniformly spaced, mutually parallel and interconnected by a bottom rail portion of said lead frame, an additional interconnection between the adjacent of said terminals being effected by a web portion of said lead frame intermediate the extreme ends of said terminals;

b. indexing an end portion of a continuous metal carrier ribbon to said first work station at about right angles to the direction of said feeding of said terminals thereto, said carrier ribbon having attached thereto a plurality of uniformly spaced transistor chips, two wires extending from each of said chips in opposite directions in about the plane of and away from said carrier ribbon, said carrier end portion bearing one of said transistors;

c. forming a weld between one of said terminals at said first work station and said carrier ribbon end portion;

d. cutting said carrier ribbon and separating said end portion therefrom;

e. welding one of said wires of said one transistor to an adjacent of said terminals in a second work station;

f. welding the other of said wires of said one transistor to the other adjacent terminal in a third work station;

g. separating from said continuous lead frame a strip portion thereof bearing ten or more of said transistors;

h. simultaneously molding in a multi-cavity mold each of said transistors of said strip in a protective resin; and

i. removing said bottom rail and said interconnecting webs.

3,982,318
MAGNETIC TRANSDUCER HEAD CORE MANUFACTURING METHOD

Douglas Joseph Hennenfent, Minneapolis, and Allan Lawrence Holmstrand, Bloomington, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Jan. 29, 1976, Ser. No. 653,578

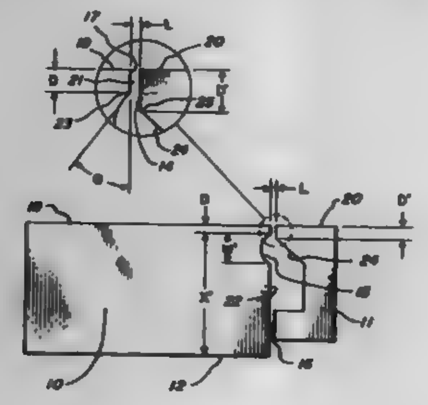
Int. Cl.^{2} G11B *5/22*

U.S. Cl. 29—603 **8 Claims**

1. In a method for manufacturing a magnetic transducing core comprising C and I elements bonded together and forming a common surface for transducing, and between facing C and I element surfaces intersecting the transducing surface, forming a flux gap in the flux path formed by the elements, an improvement for forming the shallower of the two faces form-

ing the flux gap with a depth equal to a first precisely predetermined distance, and comprising the steps of:

a. before bonding the elements together,
   i. machining on the I element a reference surface spaced apart from the transducing surface portion thereon, and
   ii. machining along the width dimension of the I element flux gap face a notch whose length is at least the width of the C element's flux gap face and whose line of intersection with the I element flux gap face nearer the I element transducing surface portion is spaced therefrom at least the first predetermined distance and is a second precise predetermined distance from the reference surface;



b. forming the C element with the depth of the flux gap face thereon greater than the first predetermined distance;
c. bonding the C element to the I element to form the flux gap, with one edge of the C element flux gap face opposing and within the notch; and
d. machining the transducing surface until the distance between the transducing surface and the reference surface equals the sum of the first and second predetermined distances.

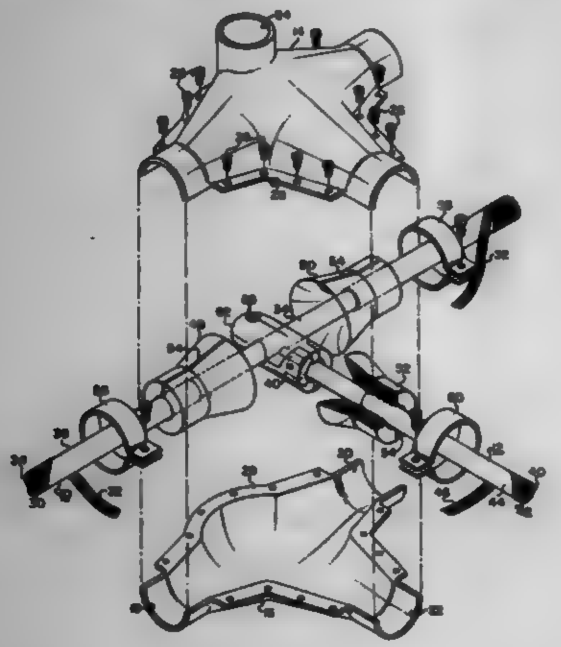
3,982,319
METHOD FOR CONNECTING A TAP ASSEMBLY TO AN ENERGIZED HIGH-VOLTAGE CABLE

Charles D. Bice, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 10, 1975, Ser. No. 540,205

Int. Cl.^{2} H02G *1/14*; H01R *7/04*, *7/20*

U.S. Cl. 29—628 2 Claims



1. A method of connecting a concentric tapping cable to an energized high-voltage concentric cable having a semiconductive layer adjacent to the outer conductor of the cable, said method comprising the steps of:

removing the outer conductor of the energized cable from around the cable insulation and the semiconductive layer;
attaching the tapping cable to a clamping means and placing the clamping means around a portion of the energized cable from which the outer conductor was removed;
placing a housng around the cables and the clamping means;
removing the semiconductive layer from a portion of the energized cable located at the side of the housing and the clamping means;
sliding the housing and clamping means along the energized cable until the clamping means is positioned over the portion of the cable from which the semiconductive layer and the outer conductor have been removed;
inserting a tool through an opening in the housing and adjusting the clamping means to provide electrical contact between the inner conductors of the energized and tapping cables; and
injecting an insulating material into said opening to insulate the clamping means from the housing.

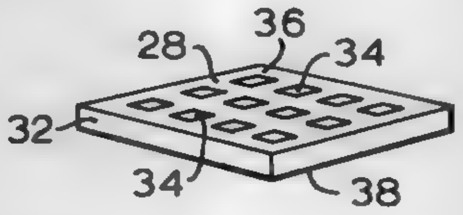
3,982,320
METHOD OF MAKING ELECTRICALLY CONDUCTIVE CONNECTOR

Leonard S. Buchoff, Bloomfield; Joseph P. Kosiarski, Englishtown, and Chris A. Dalamangas, Union, all of N.J., assignors to Technical Wire Products, Inc., Cranford, N.J.

Filed Feb. 5, 1975, Ser. No. 547,346

Int. Cl.^{2} H01R *9/00*

U.S. Cl. 29—630 R 7 Claims



1. The method of making an electrically conductive connector comprising the steps of:

A. assembling, alternately in parallel relationships, sheets of electrically conductive elastomeric material and sheets of electrically non-conductive elastomeric material into a block structure,
B. slicing from the block a plurality of slabs, each slab containing, alternately, elongated elements of electrically conductive elastomeric material,
C. assembling in parallel relationship said slabs of elongated elements into a stack of slabs, each slab being separated from the adjacent slab by a sheet of electrically non-conductive elastomeric marerial, and
D. slitting a connector element from the stack of slabs in a plane to which the elongated elements of electrically conductive material are essentially normal.

3,982,321
MACHINE AND PROCESS FOR ASSEMBLING CATHODES

Cass S. Kasper, Grosse Pointe, Mich., assignor to Inter-Lakes Engineering Co., Mount Clemens, Mich.

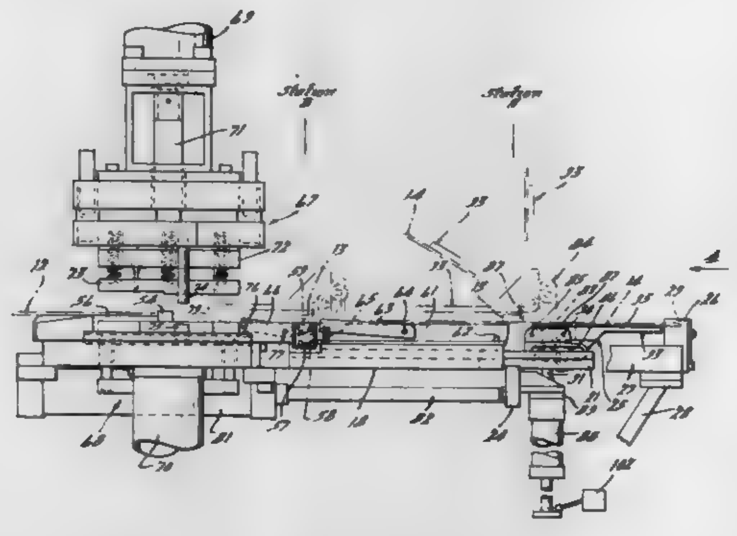
Filed Mar. 24, 1975, Ser. No. 561,615

Int. Cl.^{2} H01B *13/00*; B23P *21/00*

U.S. Cl. 29—624 9 Claims

1. In a process for assembling cathodes of the type having a metal sheet, a suspension bar, and a pair of straps connecting said bar and sheet, the steps of moving each sheet singly against stop means, nesting a pair of flat straps in spaced positions parallel to and spaced from said sheet, one portion of each strap extending toward said sheet, placing and retaining a suspension bar over the mid-portions of said straps, holding said one portion of said straps stationary while bending the portions of said straps remote from said sheet up and

over said bar so that the ends of the straps point toward said sheet, bodily moving the subassembly comprising the straps and bar toward said sheet until the end portions of said straps overlap said sheet, and fastening said overlapping portions of the strap to said sheet.



3,982,322
ARRANGEMENT FOR THE SWITCHING ON-AND-OFF OF A PRESSURIZED MEDIUM FLOW

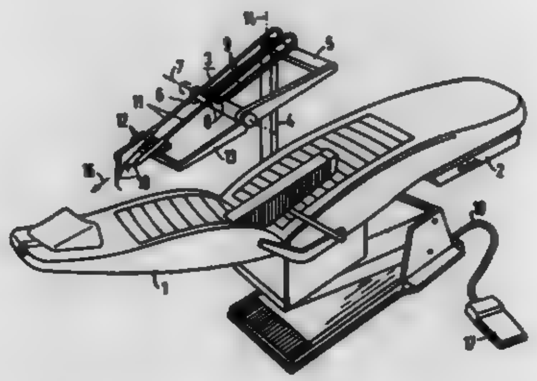
Ernst Otto Fleer, Bensheim-Auerbach, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Sept. 4, 1975, Ser. No. 610,253

Claims priority, application Germany, Sept. 12, 1974, 2443708

Int. Cl.^{2} A61C *19/02*

U.S. Cl. 32—22 8 Claims



1. In an arrangement for the switching on-and-off of a pressurized medium flow including a valve for receiving said flow from a pressurized medium conduit and for conducting it to an extracting location, the improvement comprising holder means for supporting said valve so as to have the positioning of the latter changeable between two end positions, said valve blocking flow of said pressurized medium in one of said end positions and permitting flow in the other of said end positions; and actuating means operatively connected with said valve so as to effect a positional change of said valve responsive to actuation of said actuating means.

3,982,323
COMBINATION INTERPOLATOR AND DISTANCE DIVIDER

Vuk Zecevic, Chicago, Ill., assignor to Jake Matiosian, Chicago, Ill., a part interest

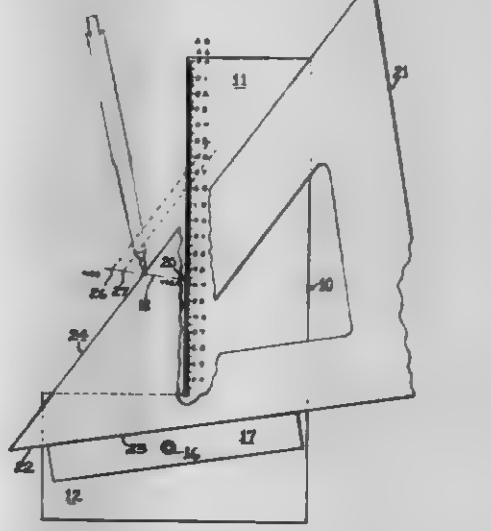
Filed July 7, 1975, Ser. No. 593,259

Int. Cl.^{2} G01B *3/00*

U.S. Cl. 33—1 C 1 Claim

1. A contour interpolator and distance divider instrument comprising

a. a substantially flat body member formed from a molded one-piece L-shaped member providing an elongated leg and a base portion extending at right angles thereto,
b. numerical scales including two sets of a series of numerals, with the series in one set progressively proceeding in an opposite direction along one edge of said elongated leg that joins with the top edge of said base portion,



c. an adjustable instrument support mounted on said base portion providing an elongated supporting edge extending beneath the top edge of said base portion,
d. means connecting said instrument support to said base portion of said body for pivotal movement about a fixed axis, and
e. a straight-edge instrument having one edge positionable upon said support and another edge movable over said numeral scales and said one edge of said leg as said support is pivoted into a predetermined position.

3,982,324
METHOD OF DETERMINING ACTUAL SIZE OF FLOW OPENINGS IN A TUBULAR MEMBER LOCATED IN A WELL

Stanley O. Hutchison, Bakersfield, and Glenn W. Anderson, Oildale, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

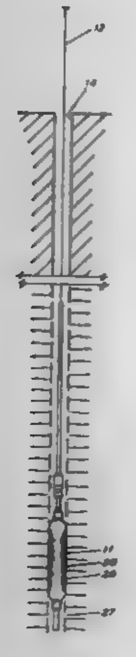
Filed Dec. 23, 1974, Ser. No. 535,777

Int. Cl.^{2} E21B *47/00*

U.S. Cl. 33—302 2 Claims

1. A method of obtaining the actual size of a flow opening in a tubular member located in a well penetrating an underground formation, comprising the steps of inserting into a well adjacent an opening in a tubular member positioned adjacent an underground formation an impression-forming material, said impression-forming material being capable of being at least partially extruded into said opening, contacting said tubular member adjacent said opening with said material for a period of time and at a pressure sufficient to extrude at least a portion of said material into said opening, removing said material containing said extrusion from contact with said tubular member, removing said material containing said extrusion from said well, measuring the size of said extrusion, and

comparing said extrusion with calibrated data of extrusion size vs. actual hole size obtained under simulated well conditions



and geometry with an equivalent impression material to determine the actual size of said opening in said tubular member.

3,982,325

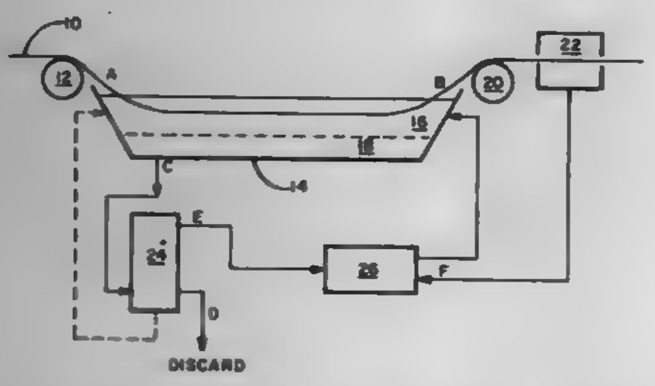
METHOD OF SOLVENT DRYING

Wayne C. Sigl, Black Creek, and Frederick O. Lassen, Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 30, 1975, Ser. No. 573,065

Int. Cl.² F26B *3/00*

U.S. Cl. 34—9 7 Claims



7. In a method of drying a wetted material by solvent exchange including the steps of providing a solvent bath, contacting the wetted material with the solvent bath, and removing the material,

the improvement wherein the solvent bath includes a mixture of solvents partitioned into a plurality of immiscible layers, including a layer tending to maintain a concentration rich in the liquid being removed and wherein the material does not contact the liquid-rich layer.

3,982,326

COUNTERCURRENT CONTACTING OF GAS AND GRANULAR MATERIAL IN PANEL BED

Arthur M. Squires, 245 W. 104 St., New York, N.Y. 10025

Filed Aug. 28, 1974, Ser. No. 501,277

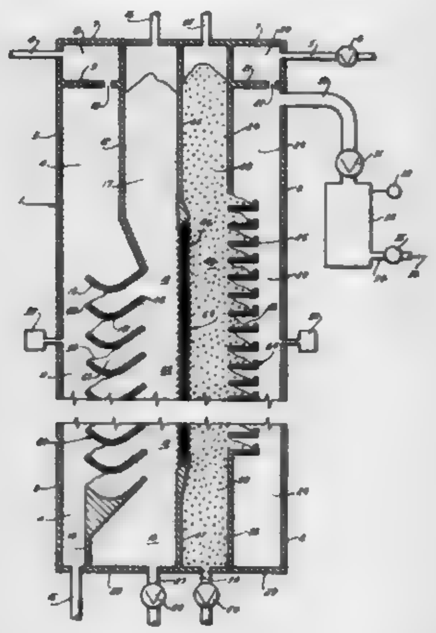
Int. Cl.² F26B *3/00, 5/00*

U.S. Cl. 34—22 21 Claims

1. A method of countercurrently contacting gas and granular material with each other to effect physical or chemical treatment comprising:

a. arranging granular material in a bed having a plurality of transversely disposed upwardly spaced gas entry portions separated by interposed supporting members having outer and inner edges with respect to the bed wherein said gas entry portions have gas entry faces with outer edges substantially contiguous with said outer edges of said supporting members and wherein a supporting member is gently curved and inclines downwardly and inwardly from its outer edge and then upwardly and inwardly toward its inner edge and wherein the inner edge of a typical supporting member is above the inner edge of the superjacent free surface of granular material and wherein said bed has gas exit portions spaced from said inner edges of said supporting members;

b. forwardly flowing gas in a substantially continuing flow from the gas entry portions into and through the granular material bed and outwardly from the gas exit portions to effect said treatment; and



c. thereafter causing a transient flow of an auxiliary gas to move in the direction in reverse to the flow of said gas in (b);

d. said transient reverse flow producing first a rise at a given rate of rise and subsequently a fall in the pressure difference between said gas exit portions and said gas entry portions, said difference produced by said transient reverse flow remaining greater than a first critical minimum difference for a time interval of less than about 150 milliseconds, said first critical difference being that difference at which a steady flow of gas in said reverse direction just proudces a localized spill of granular material from said gas entry faces, and said difference produced by said transient reverse flow peaking to a top value beyond a second critical minimum difference, which is the pressure difference at which a transient flow of gas in said reverse direction producing said pressure difference at said rate of rise just initiates a body movement of the granular material toward said gas entry faces to spill a portion of the granular material from the bed.

3,982,327

AIR-DISPENSING WEB-FLOATING APPARATUS

Eugene J. Kurie, Somerville, and Richard J. Yunghahn, Somerset, both of N.J., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed May 1, 1975, Ser. No. 573,614

Int. Cl.² B65H *17/32*

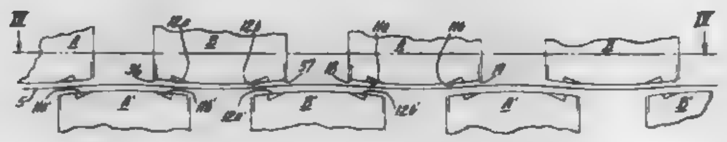
U.S. Cl. 34—156 5 Claims

1. In web treating apparatus having means for supporting a web along a path of movement therefor said apparatus comprising:

a plurality of pressure pads arranged in two series at opposite sides of said path, and having generally rectangular air-dispensing face surfaces spaced lengthwise along said path to face the path and the respective other series with the length of each face surface extending in transverse relation to the web path;

each of said surfaces having a reference plane in transverse perpendicular relation to said path and two substantially rectilinear parallel slots spaced in the lengthwise direction of the path at opposite sides of said plane, and two spaced parallel rows of louvers parallel to said slots located between, and in spaced relation with, said slots at opposite sides of said plane;

each louver being formed of a rectangular area sloping relative to the general plane of said face surface away from said refrence plane inwardly of the pad to form a shoulder with the face surface thereof perforated by a



rectilinear elongate slit-like opening contiguous with the interior of the pad and shaped to direct a jet of air upwardly along said sloped area toward said reference plane;

said slots being defined as substantially continuous slit-like elongate openings oriented and shaped to direct air in a direction generally perpendicular to the associated face surface and said web path, said slots and openings having a width not greater than about 0.06 of an inch, said slots and louver openings being contiguous with a common air-supply plenum region within said pad;

a length of each of the louvers, measured lengthwise of the louver rows, being substantially greater than the spacing between adjacent louvers and being a fixed multiple of such spacing, and the louvers of one row of a pad being staggered in respect to, and in longitudinally overlapping relation with, the louvers of the other row to position in general, each louver of one row opposite a space between louvers of the other row.

3,982,328

DRYER FOR MATERIAL COATED ON TWO SURFACES

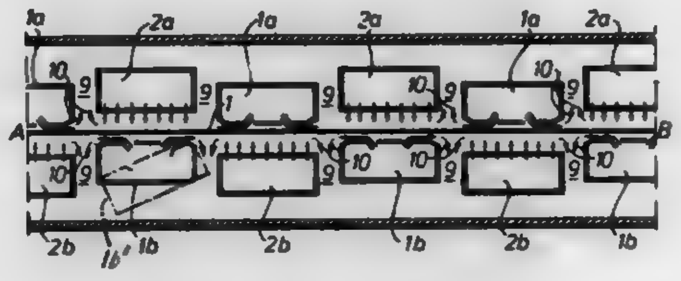
Rune Gustafsson, Stockholm; Ingemar Karlsson, and Rolf Akesson, both of Vaxjo, all of Sweden, assignors to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed May 28, 1975, Ser. No. 581,578

Claims priority, application Sweden, May 29, 1974, 7407119

Int. Cl.² F26B *13/20*

U.S. Cl. 34—156 5 Claims



1. An apparatus for the treatment of web or sheet material carried by means of air to advance the material in a fixed stable floating position without flutter in a conveying path through one or more decks of a treating plant to dry a double-coated material web, consisting of air supply means comprising a plurality of treatment blow boxes and fixing-chamber blow boxes distributed along the conveying path of the web and provided with apertures for outflow of the air against the material, and air exhaust means comprising a plurality of tap apertures provided in or adjacent the blow boxes, characterized in that the web path on each deck of the treating plant is between two blow box series respectively parallel to said path, series being built up of a combination of a number of nent blow boxes having a plurality of apertures for the air ated over the plane of the blow box for blowing air ndicularly against the web path, with an equal number of blow boxes designated as fixing chambers having apertures for air ejection in parallel with the material web path to fix the material, said series being disposed so that each fixing chamber blow box on one side of the web path faces a treatment blow box on the opposite side of the material web path, and each treatment blow box on the one side of the web path faces a fixing chamber mounted on the opposite side of the web path, the treatment boxes alternating with the fixing chambers in each of said blow box series.

3,982,329

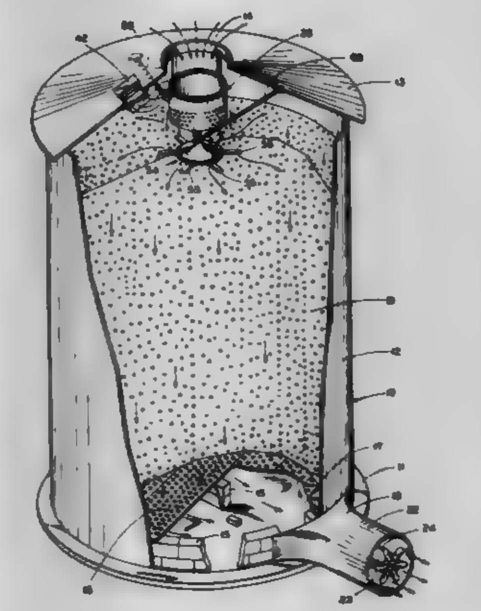
METHOD AND APPARATUS FOR DRYING GRAIN

Harold F. Dougherty, R.R. No. 2, Burchard, Nebr. 68323

Continuation of Ser. No. 363,512, May 24, 1973, abandoned, and a continuation-in-part of Ser. No. 328,042, Jan. 30, 1973, abandoned. This application Aug. 26, 1974, Ser. No. 500,748

Int. Cl.² F26B *3/06*

U.S. Cl. 34—22 17 Claims



1. In an apparatus for drying grain in a bin having ambient air thereabout and of the type used on or in the vicinity of the farm where the grain is grown and having openings at the top and at the bottom of the bin with the grain being held static in the bin in a location between the openings, the top opening being exposed to ambient air pressure, the improvement comprising:

blower means having an intake communicating with the bottom of said openings to apply a subatmospheric pressure to said one opening, thus introducing air into the top opening substantially at ambient pressure, said blower means discharging into said ambient air;

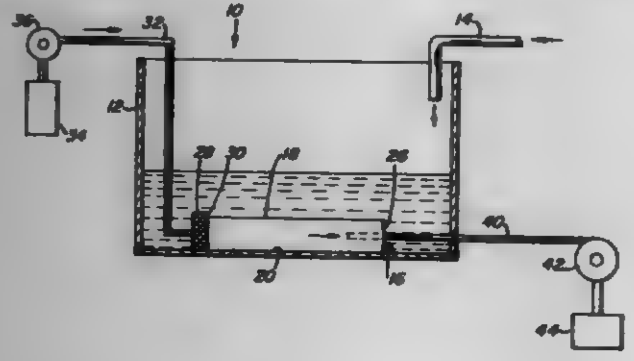
means communicating with said top opening and said ambient air to heat the ambient air entering the top opening before said air reaches the top layer of the grain in the bin;

whereby an air flow of heated air obtained from said ambient air is created downwardly through the entire depth of said grain.

3,982,330
METHOD AND APPARATUS FOR SIMULATING IN A MODEL THE DISBURSEMENT OF GAS AND DUST IN A MINE

Robert D. Saltsman, and Robert D. Harris, both of Delmont, Pa., assignors to Bituminous Coal Research, Inc., Monroeville, Pa.

Filed Aug. 6, 1975, Ser. No. 602,391
Int. Cl.² G09B *25/02*
U.S. Cl. 35—13 **15 Claims**

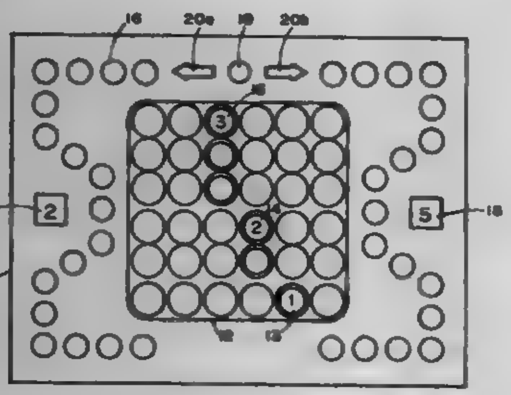


1. Apparatus for simulating in a model the emission of gas and dust during a mining operation comprising,
- a tank,
- first conduit means for conducting fluid into said tank,
- a housing positioned in said tank,
- said housing having a pair of sidewalls and top and bottom walls connected thereto with a sealed end portion and an open end portion,
- a foraminous member secured to said open end portion for directing fluid from the tank into said housing,
- indicia means passing at a controlled rate of flow through said foraminous member into mixture with said fluid in said housing for visually indicating the simulated emission of gas and dust from a mine face, and
- second conduit means extending through said housing sealed end portion and positioned adjacent one of said housing sidewalls for conveying said indicia means and said fluid from said housing.

3,982,331
EDUCATIONAL BOARD GAME

Arieh Solomon, Tel-Aviv, Israel, assignor to OR-DA Industries Ltd., Rehovot, Israel

Filed Mar. 20, 1975, Ser. No. 560,543
Claims priority, application Israel, Mar. 20, 1974, 44453
Int. Cl.² G09B *19/02*; A63F *3/00*
U.S. Cl. 35—31 D **7 Claims**

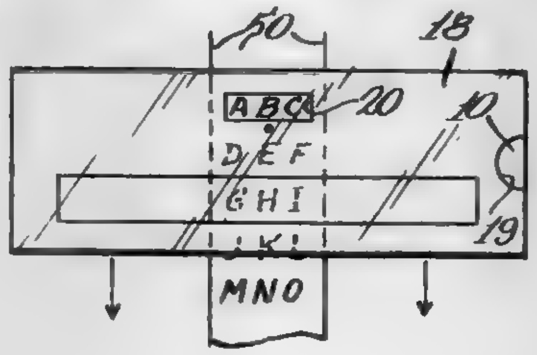


1. An educational board game comprising:
- a. a set of tokens, each of which consists of n visually similar units where $n = 1, 2, \ldots$, each unit having board engaging means thereon, multiple units tokens for which $n>1$ being connected together along a longitudinal axis with their board engaging means facing in the same direction and uniformly spaced apart;
- b. a board having a plurality of spaced unit engaging means whose pitch is the same as the pitch of the board engaging means of the multiple unit tokens;
- c. the engaging means of the tokens and board being cooperable for mounting selected tokens to the board;
- d. said unit engaging means defining only a single path with at least one discontinuity at an intermediate location for preventing certain of the tokens from being mounted on the board with all of their board engaging means engaged with unit engaging means adjacent the discontinuity; and
- e. manually manipulatable means bearing numbers corresponding to n for making a chance selection of one of the numbers thereby designating a token having the selected number of units for mounting on the board.

3,982,332
SPEED READING AID AND METHOD

Walter Szymczak, 5642 S. Kolmar Ave., Chicago, Ill. 60629

Continuation-in-part of Ser. No. 466,940, May 3, 1974, abandoned. This application Feb. 6, 1975, Ser. No. 547,760
Int. Cl.² G09B *17/02*
U.S. Cl. 35—35 B **3 Claims**



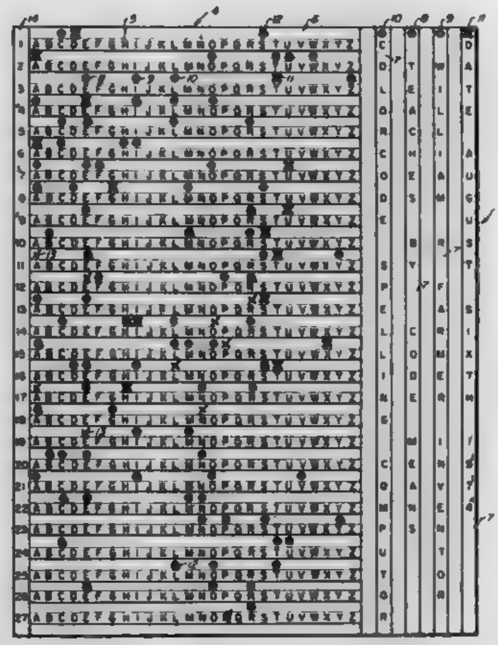
1. A hand held speed reading aid for reading columns of characters of various widths comprising a plurality of opaque cards each having a first viewing slot therein for viewing the entire width of one of said columns, the slots in said cards being of different horizontal widths corresponding to various widths of said columns, said cards being arranged in a stacked, superimposed relationship, the viewing slots in said cards being located such that the cards may be manipulated to isolate the slot of one of said cards for viewing, and means for holding said cards in said stacked relationship and accommodating said manipulation thereof, said means comprising a flat transparent pouch open at one end thereof.

3,982,333
COLORCODE SPELLER

William Robert Farmer, 215 Campbell St., New Westminister, British Columbia, Canada (V3M-5K8)

Filed Oct. 2, 1974, Ser. No. 511,454
Disclosure was also published under second Trial Voluntary Protest Program on Feb. 24, 1976
Int. Cl.² G09B *11/00*
U.S. Cl. 35—36 **7 Claims**

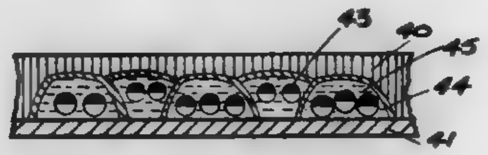
1. A color coded speller comprising:
- a surface;
- a plurality of horizontally disposed lines of alphabet letters on said surface;
- an equal plurality of horizontally disposed code marking lanes on said surface, each code marking lane disposed directly above a line of alphabet letters;
- said horizontal code marking lanes adapted to removably receive code marks;
- a plurality of vertically disposed word and sentence lanes on said surface adapted to removably receive alphabet letters whereby a teacher may place a code mark above a selected letter in some or all of said lines and a pupil may copy said selected letters in one of said vertically disposed lanes to spell words and sentences which were preselected by the teacher.



3,982,334
COMPARTMENTALIZED MICROMAGNET DISPLAY DEVICE

Clarence R. Tate, Fairfield, Ill., assignor to Thalatta, Inc., Fairfield, Ill.

Division of Ser. No. 23,424, March 27, 1970, Pat. No. 3,938,263, which is a continuation-in-part of Ser. No. 756,711, Aug. 6, 1968, abandoned, which is a continuation-in-part of Ser. No. 553,086, May 26, 1966, abandoned. This application June 24, 1975, Ser. No. 589,893
Int. Cl.² B43L *1/00*; G01D *15/06*
U.S. Cl. 35—66 **4 Claims**

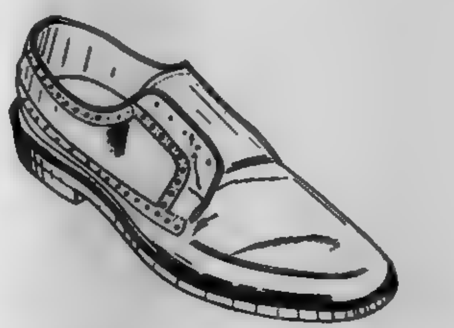


1. In a device adapted to provide a visual display when an exterior magnetic force is applied thereto, said device comprising a plurality of rotatable, multi-colored, non-magnetically interactive, permanently magnetized micromagnets disposed in a cavity within a body having a transparent surface; the improvement that comprises the presence of a plurality of relatively small fluid-containing compartments, in which said micromagnets are contained, within said cavity; said device being a sheet containing the micromagnets in relatively thin cavity between the front and rear surfaces of the sheet; with the proviso that the micromagnets in the sheet are sealed into cells or compartments by coating areas of rotatable micromagnets into cells or compartments by coating areas of rotatable micromagnets with a hardenable film-former so as to form a sheet having rotatable micromagnet inclusions in the sheet.

3,982,335
SHOE UPPERS

Victor Ralph Cunningham, Hutton, and David Leonard Boutle, Maldon, both of England, assignors to Porvair Limited, England

Continuation of Ser. No. 819,656, April 28, 1969, abandoned, which is a continuation-in-part of Ser. No. 620,792, March 6, 1967, abandoned, and Ser. No. 697,154, Jan. 11, 1968, abandoned. This application Oct. 12, 1971, Ser. No. 188,572
Claims priority, application United Kingdom, Jan. 11, 1967, 1608/67; Jan. 11, 1967, 1609/67; Mar. 7, 1966, 9974/66
The portion of the term of this patent subsequent to Apr. 24, 1990, has been disclaimed.
Int. Cl.² B32B *3/00*, *5/14*
U.S. Cl. 36—45 **8 Claims**



1. In a lasted shoe upper having in place of the upper leather thereof a water vapour permeable artificial leather sheet material which consists essentially of a strength-giving base layer forming the major part of the thickness of the material and a microporous non-cellular surface layer of elastomeric polyurethane on said base layer, the improvement wherein said strength-giving base layer consists essentially of microporous water-vapour permeable elastomeric polyurethane, the polyurethane of said microporous surface layer being the same as the polyurethane of said microporous base layer, said surface layer having a thickness of more than 0.005 inch and less than 0.05 inch and being more open and less dense, less tough, and more permeable to water vapour than said base layer, said layers being free of fibrous reinforcement and thereby having the elastomeric characteristics of said elastomeric polyurethane on stretching, and said shoe upper being resistant to formation of 'orange peel' surface effects when stretched in the lasting operation employed in its manufacture, said strength-giving base layer free from fibrous reinforcement being prouduced by a method which comprises forming on a support a continuous layer of a solution of elastomeric polyurethane working material in a solvent therefor, coagulating said layer, having said composition, by means of coagulating liquid, removing substantially all the solvent of said layer by washing with coagulating liquid, the coagulating liquid being a nonsolvent for said elastomeric working material and being at least partially miscible with the solvent for the elastomeric working material, and drying the resulting water vapor permeable flexible sheet material, said method including the step of stripping the coagulated layer from the support.

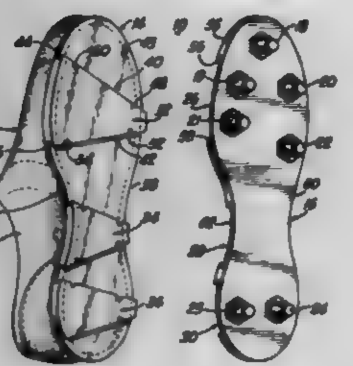
3,982,336
ATHLETIC SHOE WITH A DETACHABLE SOLE

Richard E. Herro, Rte. 5, Mound View Estates, Joliet, Ill. 60436

Filed Jan. 21, 1976, Ser. No. 650,893
Int. Cl.² A43C *15/00*; A43B *13/00*
U.S. Cl. 36—62 **7 Claims**

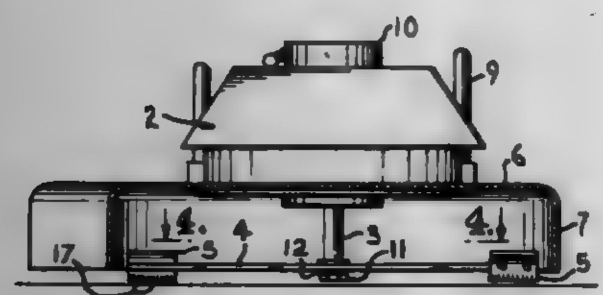
1. A shoe having a sole and opposed elongated side edges comprising:
- projection means extending between said side edges on the sole of the shoe, said projection means being tapered such that said projection means have opposed, tapered edges converging near one side edge of said shoe and;
- a detachable sole with tapered groove means designed to

mate with said projection means on said sole such that said detachable sole is released from said sole of said shoe



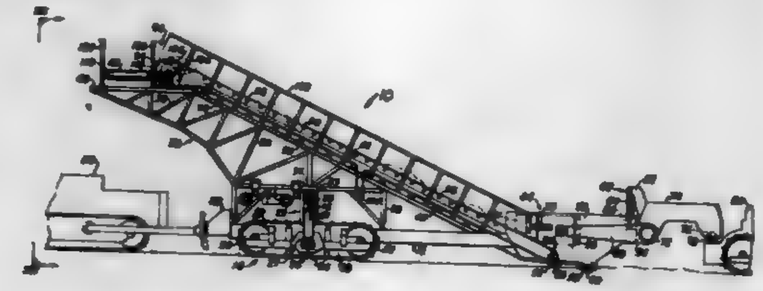
only when a force is applied across said shoe from said one side edge to the other side edge.

3,982,337
SNOW MOVING APPARATUS
Eugene L. Garriott, 614 E. Gordon, Marshall, Mo. 64340
Filed Sept. 19, 1975, Ser. No. 559,896
Int. Cl.² E01H *5/09, 5/02*
U.S. Cl. 37—43 L **1 Claim**



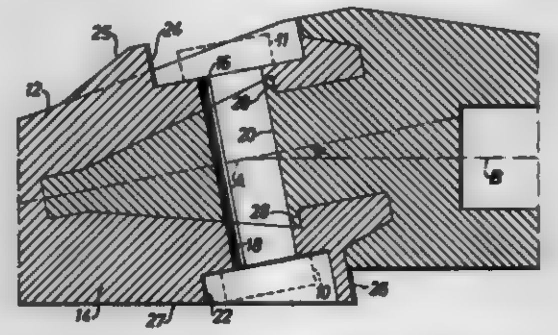
1. A snow moving apparatus comprising:
- a. a housing having a top wal and a side wall depending therefrom, said side wall having a discharge opening therein;
- b. means mounted on said housing to permit movement thereof along a selected path;
- c. a substantially vertical drive shaft depending from said top wall of said housing and means operatively connected thereto for selectively rotating same;
- d. an elongated support bar mounted on said drive shaft and extending normal thereto for rotation on a substantially horizontal plane, said support bar having opposite end portions; and
- e. a pair of unitary detachable plastic concavely curved impeller members each mounted on and along the edge of a respective opposite end portion of said support bar and generally coextensive therewith and having a lower flexible portion curved downwardly and forwardly from the support bar and of decreasing thickness terminating in a thin lower edge, said lower flexible portion having a plurality of longitudinally spaced slots extending upwardly therein from said lower edge to define a plurality of flexible teeth,
- f. said impeller members each having an upper portion curved upwardly and forwardly and of greater thickness than the depending portion of said lower flexible portion from said support bar and terminating in an end substantially parallel to said support bar, said curved portions cooperating to move snow laterally outwardly through the discharge opening in said housing side wall upon rotation of said drive shaft.

3,982,338
MATERIAL HANDLING APPARATUS
Perry J. Dick, and Perry J. Dick, Jr., both of Pittsburgh, Pa., assignors to Trumbull Corporation, Pittsburgh, Pa.
Filed Dec. 16, 1974, Ser. No. 532,774
Int. Cl.² E02F *5/00*
U.S. Cl. 37—102 **10 Claims**



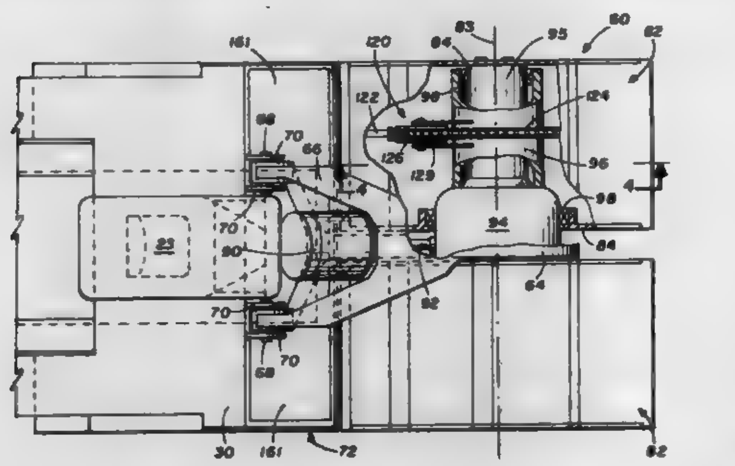
1. Material handling apparatus comprising,
a mobile support frame having ground traction means,
a scraper bowl secured to and positioned forwardly of said mobile support frame, said scraper bowl having a bottom wall with a downwardly deflected scraper blade secured to the forward end portion of said bottom wall and inwardly converging sidewalls,
means for raising and lowering said scraper bowl to move said scraper blade into and out of engagement with the ground,
an inclined endless conveyor secured to said mobile support frame and positioned thereon parallel to the direction of travel of said scraper bowl,
said inclined endless conveyor having a lower material receiving end portion positioned between said inwardly converging sidewalls and an upper material discharging end portion positioned rearwardly of said scraper bowl,
material moving means secured to said sidewalls for continuously moving the material loaded into said scraper bowl onto said material receiving end portion of said inclined endless conveyor and thereby convey the material upwardly and rearwardly to said material receiving end portion,
a transverse endless conveyor secured to said mobile support frame and intermediately positioned beneath said material discharging end portion to convey the material laterally in a selected direction, and
drive means for rotating said inclined endless conveyor and said transverse endless conveyor to convey the material from said scraper bowl by said inclined endless conveyor to said transverse endless conveyor.

3,982,339
REVERSIBLE SLIDE-ON DIGGER TOOTH WITH EASY REMOVAL ARRANGEMENT
Lennart Nilsson, 12232 Enskede, Stockholm 45, Sweden
Filed Feb. 24, 1975, Ser. No. 552,564
Claims priority, application Norway, Jan. 20, 1975, 160/75
Int. Cl.² E02F *9/28*
U.S. Cl. 37—141 T **2 Claims**



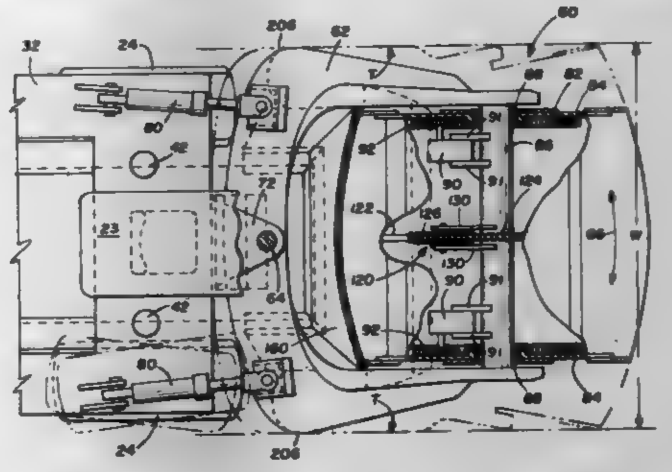
1. A tooth for a loading or excavating bucket, said tooth having a slide-on member and a support member for supporting said slide-on member; said slide-on member having a first wear surface and a second surface opposite thereto and forming with said wear surface a wedge-like front portion of said slide-on member, said slide-on member having further a rear portion having between said first and second surfaces two legs separated by a recess; said support member having a front portion engaging with said recess and two shoulders engaging with the ends, respectively, of said legs, and a rear portion having two opposite surfaces extending from said shoulders, said rear portion further having means for reversibly securing said support member to a forward terminal edge portion of a bucket with either of said opposite surfaces turned upwards relative to said bucket, said securing means comprising two legs defining a recess for receiving said terminal edge portion; said recess of said slide-on member and said front portion of said support member being symmetrical with respect to a first centre plane between said slide-on member legs to allow the slide-on member to be supported by the support member with said wear surface always facing downwards relative to said bucket although said support member has been reversed on said edge portion, depending upon the relative location of said opposite surfaces of said rear portion on said forward terminal edge portion, said first plane further extending at an angle to and intersecting a second centre plane between said support member legs such that the inclination of said wear surface to said second plane when on one side of said first plane, differs from the inclination of the wear surface, when on the other side of the first plane; a bolt extending through said legs of said slide-on member and said front portion of said support member and means for facilitating replacement of said slide-on member comprising a countersink in said wear surface, said bolt having an enlarged end member located in said countersink, the bottom of said countersink being substantially in the plane of either of said opposite surfaces of said rear portion of said support member at the corresponding shoulder when either surface is disposed adjacent the wear surface, whereby when the wear surface has been worn down to the bottom of said countersink, the enlarged end of said bolt will also be substantially worn away, enabling easy removal of said bolt and replacement of said slide-on member.

3,982,340
TWO WHEEL EXCAVATING AND LOADING SYSTEM
Charles R. Satterwhite, Dallas, Tex., assignor to Unit Rig and Equipment Co., Tulsa, Okla.
Continuation-in-part of Ser. No. 435,296, Jan. 21, 1974, Pat. No. 3,896,571. This application July 17, 1975, Ser. No. 596,677
Int. Cl.² E02F *3/24*
U.S. Cl. 37—190 **17 Claims**



1. An excavating and loading system comprising:
an excavating wheel assembly comprising two rigid excavating wheels, said excavating wheel assembly having a width at least equal to the widest portion of the remainder of the system;
each of said excavating wheels including a plurality of digging buckets located immediately adjacent one another to define the entire circumference of the excavating wheel, each bucket having a cutting edge which extends to a stationary wall, and a wall mounted for pivotal movement from a material receiving position to a material dumping position;
supporting and housing means extending between the two excavating wheels for supporting the excavating wheel assembly;
means supporting the two excavating wheels cantilever on the supporting and housing means for rotation with respect thereto;
each of said digging buckets extending continuously between a side wall thereof located immediately adjacent to the supporting and housing means and a side wall thereof defining one end of the excavating wheel assembly;
drive means for rotating the excavating wheels so that the digging buckets follow a circular path;
means located within the margins of the excavating wheel assembly and responsive to rotation of the excavating wheels for positively pivoting the movable wall of each digging bucket of the excavating wheels to the material receiving position when the bucket is in the lower and forward portion of the path and for positively pivoting the movable wall to the material dumping position when the bucket is in the upper and rearward portion of the path;
a vehicle for supporting and manipulating the excavating wheel supporting means and thereby positioning the excavating wheel assembly in engagement with material to be excavated; and
conveyor means mounted on the vehicle behind the excavating wheel assembly for movement around a course including a relatively low portion positioned to receive material from the digging buckets of the excavating wheels upon the positioning of the movable walls of the buckets in the material dumping position and a relatively high material delivery portion located rearwardly on the vehicle from the low portion.

3,982,341
TRANSVERSE OSCILLATION FOR EXCAVATING AND LOADING SYSTEM
Charles R. Satterwhite, Dallas, Tex., assignor to Unit Rig and Equipment Co., Tulsa, Okla.
Continuation-in-part of Ser. No. 435,296, Jan. 21, 1974, Pat. No. 3,896,571. This application July 17, 1975, Ser. No. 596,680
Int. Cl.² E02F *3/24*
U.S. Cl. 37—190 **10 Claims**



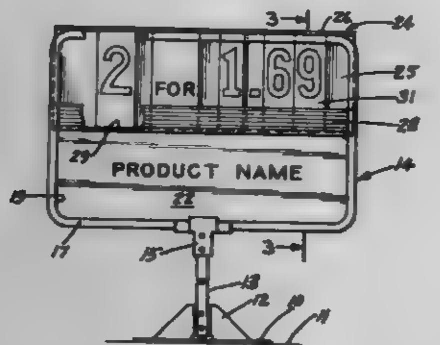
1. An excavating and loading system comprising in combination:
a vehicle, a main frame and a subframe on the vehicle;
means supporting the main frame of the vehicle for movement over a surface;
an excavating wheel means including a plurality of digging buckets located immediately adjacent one another to define the entire circumference of the excavating wheel and each having a cutting edge which extends to a stationary wall and a wall mounted for pivotal movement from a material receiving position to a material dumping position, said excavating wheel means being narrower than the widest portion of the vehicle;

a supporting and housing means rotatably supporting the excavating wheel means from the subframe whereby the excavating wheel means is positioned in the front of the main frame of the vehicle;
means for selectively varying the relative positioning of the subframe and the main frame whereby the excavating wheel means can be selectively raised or lowered to excavate at various depths;
drive means for rotating the excavating wheel means so that the digging buckets follow a circular path;
means located within the margins of the excavating wheel means and responsive to rotation thereof for positively positioning the movable wall in the material dumping position when the bucket is in the upper and rearward portion of the path;
conveyor means mounted on the vehicle entirely behind the excavating wheel assembly for movement around a course including a relatively low portion positioned to receive material from the digging buckets of the excavating wheel means and a material dumping position relatively high and located rearwardly on the vehicle;
means in said supporting and housing means for oscillating said excavating wheel means transverse to the direction of travel of the apparatus for forming an excavation wider than the widest portion of the vehicle whereby the vehicle can travel along the excavation;
said supporting and housing means comprising a yoke with the excavating wheel means mounted on said yoke for rotation about a horizontal axis;
said yoke being connected to said subframe to rotate about a vertically extending axis; and
actuator means connected between said subframe and said yoke for selectively oscillating said yoke about said vertical axis.

3,982,342

INTERCHANGEABLE PRICE INDICATING SIGN

Charles T. Moore, Minneapolis, Minn., assignor to Dayton-Hudson Corporation, Minneapolis, Minn.
Filed July 21, 1975, Ser. No. 597,361
Int. Cl.² G09F *3/20*
U.S. Cl. 40—5 **10 Claims**

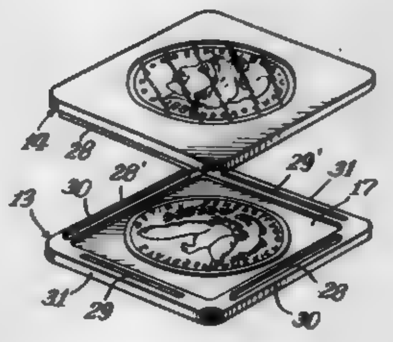


1. An interchangeable sign comprising:
A. a relatively flat rectangular frame open on at least one side, having narrow end and bottom walls and having a narrow retaining lip surrounding the opening,
B. means for supporting said frame,
C. a slot opening in the top of said frame extending the length thereof,
D. at least one product information-bearing card in said frame, of length greater than said opening, resting upon the inside bottom frame wall and retained by the portion of the lip adjacent the bottom and end walls,
E. at least one price indicia holder in said frame, of length greater than and width substantially lesser than said side opening,
  1. said indicia holder having a flat semi-rigid sheet material body and an outwardly extending flange along its top edge, said flange engaging the top edge of the frame to support the holder in said slot opening,
  2. a relatively narrow indicia holding pocket extending along the bottom edge of said holder, said pocket including a flat rectangular front wall parallel to and closely spaced from said flat body and contiguous with the bottom edge thereof,
  3. the bottom edge of said holder overlying said card and the ends of said indicia holder being retained by the lip adjacent the end walls, and
F. a plurality of interchangeable flat rectangular price indicia elements in said holder, the bottom edges of said indicia elements being held in said pocket and the top edges of said elements being retained by the lip adjacent to the top of the frame.

3,982,343

SIMULATED ARTICLE DISPLAY STRUCTURE

Josef F. Klingler, 1335 Gregory, Wilmette, Ill. 60091
Filed June 18, 1975, Ser. No. 588,069
Int. Cl.² G09F *3/02*
U.S. Cl. 40—27.5 **17 Claims**



1. A simulated coin display structure comprising: a first enclosure element having a transparent portion provided with an inner surface portion defining a representation of the front configuration of a coin to be displayed through said transparent portion of the first enclosure element; a complementary second enclosure element retained in association with said first enclosure element and having a transparent portion aligned with said first element transparent portion and provided with an inner surface portion defining a representation of the rear configuration of the coin to be displayed through said transparent portion of the second enclosure element, said surface configuration defined by said first and second enclosure element inner surface portions cooperatively comprising a representation of the outer surface of the coin to be displayed; and means for causing the observed color of the representation to correspond to that of the coin being simulated, said display structure having a weight preselected to simulate an actual such coin visually simulated in said enclosure elements.

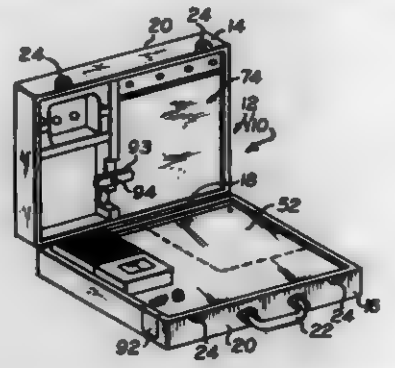
3,982,344

AUDIO-VISUAL DISPLAY DEVICE

Calman P. Phillips, 1049 Park Ave., New York, N.Y. 10028
Filed July 27, 1972, Ser. No. 275,486
Int. Cl.² G09F *13/10*
U.S. Cl. 40—106.1 **10 Claims**

1. A display device comprising:
a. a carrying case having two complementary case halves that are pivotally connected to one another for relative movement to and from a closed condition in which said halves are in close confronting relation and from and to an open condition in which said halves are substantially coplanar;
b. a light transmitting member in one of said case halves, means underlying said light transmitting member for illuminating same;

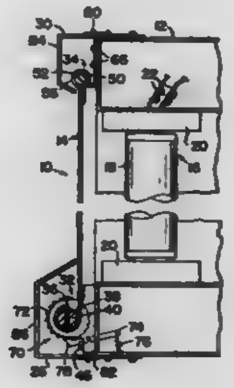
c. a transparency magazine including a backing member having a pair of spaced apart edges and a plurality of transparencies superposed thereon, means for hingedly mounting said transparencies to said backing member along corresponding substantially coplanar edges which includes one of said edges of said backing member;
d. complementary connecting means on said backing member adjacent the other of said edges of said backing member and operatively connected to the other half of said case for releasable securing said backing member to said other half of said case with said hinged connecting means adjacent said light transmitting member when said case is in said open condition; and
e. means for permitting pivotal movement of said backing member toward and away from said other half of said case, whereby transparencies overlying said backing member may be swung about said hinged connecting means into a display position overlying said light transmitting member and into a storage position underlying said backing member.



3,982,345

DISPLAY DEVICE WITH FLEXIBLE FACE

Kelly R. Coleman, 2367 Anna Ave., Clearwater, Fla. 33515
Continuation of Ser. No. 317,512, Dec. 22, 1972, abandoned.
This application May 23, 1975, Ser. No. 580,517
Int. Cl.² G09F *13/04*
U.S. Cl. 40—132 R **1 Claim**

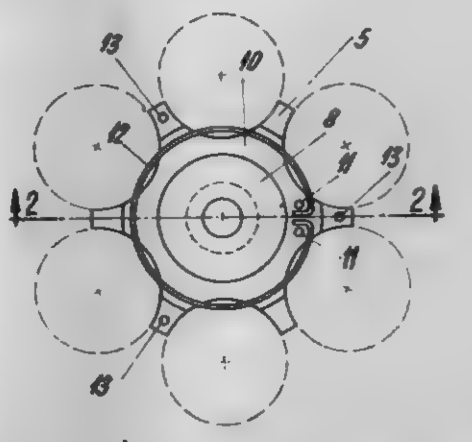


1. A display device comprising: frame means having a continuous peripheral portion surrounding an opening, display means extending across said opening, said display means including a flexible translucent sheet of synthetic polymeric material having indicia thereon, means for applying adjustable tensioning force to said sheet in a first direction in the plane of said sheet and means for applying adjustable tensioning force to said sheet in a second direction in the plane of said sheet and perpendicular to said first direction in order to impart rigidity thereto, each of said means including connecting means supported by said frame means and connected to a pair of oppositely disposed edges of said sheet, and a lighting assembly supported within said frame means and located relative to said sheet so as to transmit light therethrough, including four shield means each of which is adjustably mounted on said frame means for swinging movement between a first position in which it covers one of the connecting means associated with an edge of said sheet and a second position in which the respective connecting means is uncovered.

3,982,346

CARTRIDGE OR CARTRIDGE CASE EJECTORS FOR REVOLVER CYLINDERS

Andre Pliorget, 37 Chemin de Bellevue, Chatou (Yvelines), France
Filed Feb. 27, 1975, Ser. No. 553,788
Claims priority, application France, Mar. 7, 1974, 74.07721
Int. Cl.² F41C *15/00*
U.S. Cl. 42—68 **3 Claims**

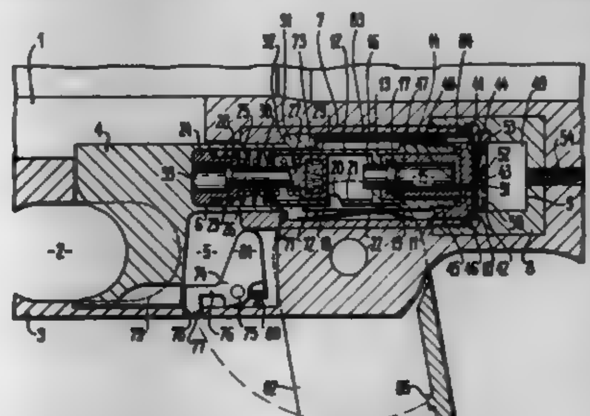


1. An ejector for ejecting cartridge cases from the cylinder of a revolver, comprising a pin for which the center of the revolver cylinder serves as a guide, a disc secured to the pin, there being a plurality of outwardly opening notches spaced about the periphery of the disc, a flexible annular element whose outer edges are smoothed off and which projects slightly from the bottom of each notch in said disc, and means securing said annular element to said disc against removal from said disc in a direction lengthwise of said pin but permitting retraction of said annular element into said notches, whereby when rimmed cartridges are introduced into chambers of the revolver cylinder the annular element retracts into said notches and slides along the cartridges, and when grooved cartridges are introduced into the cylinder chambers the annular element retracts into said notches as the cartridges pass but projects again and penetrates into the cartridge grooves as soon as the cartridge grooves are situated in front of the annular element.

3,982,347

TRIGGER MECHANISM FOR ELECTRICALLY IGNITED WEAPONS

Rudolf Brandl, Weiden; Tilo Möller; Karl Salle, both of Oberndorf, and Heinrich Streckfuss, Dettingen, all of Germany, assignors to Heckler & Koch GmbH, Oberndorf, Germany
Filed Feb. 7, 1975, Ser. No. 548,151
Claims priority, application Germany, Feb. 14, 1974, 2406933
Int. Cl.² F41C *19/12*
U.S. Cl. 42—84 **19 Claims**



1. A trigger mechanism for electrically ignited weapons having a source of electric energy and electrical ignition

means, leads connecting the source of energy with the electrical ignition means for a propelling charge contained in the weapon, a trigger, and a normally open switch which is interposed in one of said leads and which can be closed for igniting said ignition means by pulling the trigger, in which said source of energy comprises a piezoelectric body and a capacitor connected in parallel with said piezoelectric body, in which said trigger is coupled with a striker which is tripped from a tensioned position when said trigger is pulled and released for striking said piezoelectric body before said switch closes, and in which said leads are connected with said capacitor and a diode is arranged between said piezoelectric body and said capacitor, the polarity thereof being such that the charge produced as a result of the blow of said striker against said piezoelectric body flows into said capacitor but cannot flow back from said capacitor to said piezoelectric body and the electrical energy stored in said capacitor is available for igniting said ignition means when said switch subsequently closes, said striker being retained in the tensioned position by an engagement member, there being a striker spring arranged between trigger and striker, said striker spring being tensioned by pulling the trigger before the trigger engages said engagement member for releasing said striker.

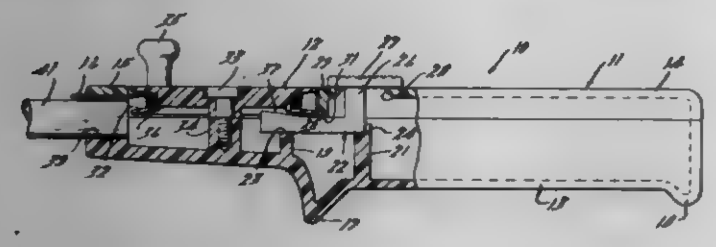
3,982,348

FISHING ROD HANDLE AND REEL

Maynard Wallace, 38172 Seaway Drive, Mount Clemens, [redacted]

Filed July 14, 1975, Ser. No. 595,358
Int. Cl.² A01K *87/00, 89/02*

U.S. Cl. 43—20 **7 Claims**



1. A combined fishing rod handle and reel comprising an elongated fishing rod handle, the rear portion of the handle being enclosed, the forward portion being upwardly open, a reel with a line groove rotatably mounted in the upwardly open forward portion of the handle and having upwardly and downwardly facing surfaces facing away from the line groove, line guide means on the handle forwardly of the reel, a releasable stop slidably mounted on the handle rearwardly of the reel, and complementary inclined surfaces on said stop and reel, the inclined surface on said reel being part of said downwardly facing surface, the stop having a thumb-engageable portion disposed rearwardly of the reel and being movable between a releasing position in which said complementary inclined surfaces are separated and a braking position in which the complementary inclined surfaces are engaged.

3,982,349

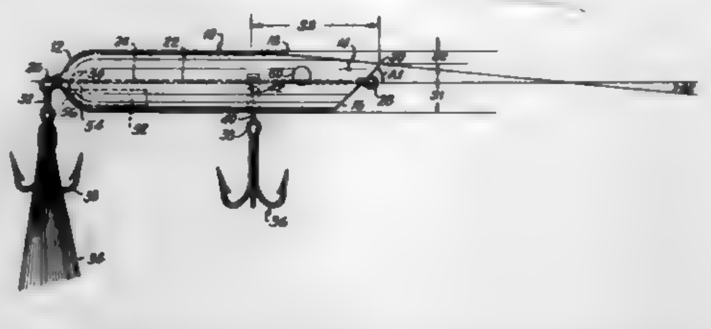
FISHING LURE

William H. Hills, 25 Woodhull Road, East Setauket, N.Y. 11733

Filed Mar. 29, 1974, Ser. No. 456,063
Int. Cl.² A01K *85/00*

U.S. Cl. 43—42.48 **16 Claims**

1. A fishing lure comprising an elongated, generally cylindrical body including first and second ends, said first end being at least substantially hemispherical, said second end being provided with first and second sloped and at least substantially planer surfaces intersecting along a line forming one extremity of said body, hook means connected to said body, said first and second surfaces being upper and lower surfaces respectively, said upper surface being at a shallower angle than said lower surface, and line attachment means on said body and located at said lower surface, said body having a longitudinal axis of symmetry and said first and second surfaces respectively forming angles of 6°–12° and 40°–50° with said axis.



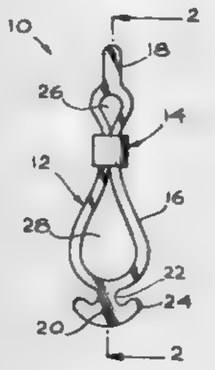
3,982,350

FISHING LINE WEIGHT

Donald W. Heckathorn, No. 20 Paseo Margarita, Camarillo Springs, Calif. 93010

Filed Nov. 6, 1974, Ser. No. 521,239
Int. Cl.² A01K *95/00*

U.S. Cl. 43—43.1 **5 Claims**



1. A device for attaching a stone or the like to a fishing line, said device comprising:

a flexible elastic strap having a certain total length when unstressed;

adjustable means attached to said strap to form at least a portion of said strap length into a substantially closed curve for encircling, engaging and conforming to an irregular peripheral surface of a stone;

attaching means connected to said strap for attaching said strap to a fishing line, said attaching means including a post projecting from said strap substantially perpendicular to the length thereof; and

a flange means formed on said post.

3,982,351

CAB MOUNTED REMOTE CONTROL APPARATUS

David W. Waldron, Valdosta, Ga., assignor to Lowndes Engineering Co.; Inc., Valdosta, Ga.

Continuation of Ser. No. 216,395, Jan. 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 20,364, March 17, 1970, Pat. No. 3,633,825. This application Feb. 15, 1974, Ser. No. 442,866

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 24, 1976

Int. Cl.² A01M *19/00*

U.S. Cl. 43—129 **10 Claims**

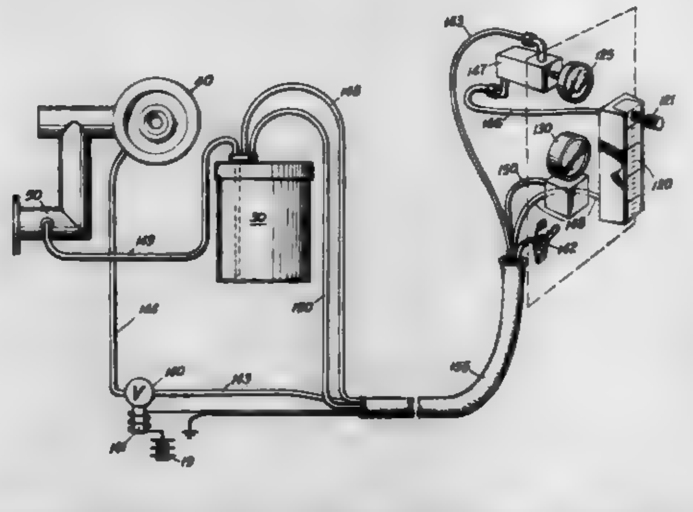
1. Apparatus for use in controlling a fog generator used in applying insecticides from a vehicle comprising in combination:

a. discharge head for use in developing a fog mixture of air and insecticide;

b. means for supplying insecticide under pressure to said discharge head including a supply tank;

c. means for supplying air pressure means to said discharge head; and,

d. control means operatively associated with said insecticide supply means for controlling the discharge of said insecticide under pressure, said control means including a flow meter having an adjustable flow rate control valve and thermometer means for sensing the temperature of insecticide flowing through said flow rate control valve and said flow meter, said flow meter and said thermometer means and said flow rate control valve being located in the vehicle operator's position and remote from said supply tank and from said discharge head, supply lines for said liquid including a first supply line in flow communication between said supply tank and said control means and a second supply line in flow communication between said control means and said discharge head, and transfer means for transferring liquid through said supply lines from said supply tank through said first supply line, through said flow meter, through said second supply line to said discharge head, said flow meter and said adjustable flow rate control valve being connected in series between said supply tank and said discharge head whereby flow of insecticide to said discharge head may be monitored and controlled in said vehicle operator's position in accord with temperature variations occuring in said insecticide, an electromagnetic valve in one of said supply lines operable between an insecticide off position and an insecticide discharge position, and switch means in said vehicle operator's position for controlling said electromagnetic valve whereby a vehicle operator may not only control the associated vehicle but may also completely control discharge of said insecticide, said flow meter and said thermometer being disposed adjacent to each other for simultaneous observation by the operator, said valve being disposed for manipulation thereof by the operator as he observes said flow meter.



3,982,352

KNOCK DOWN CONVERTIBLE TOY

J. Howard Branson, 127 S. Atlantic Ave., Haddonfield, N.J. [redacted]

Filed Apr. 7, 1975, Ser. No. 565,411
Int. Cl.² A63H *33/06*

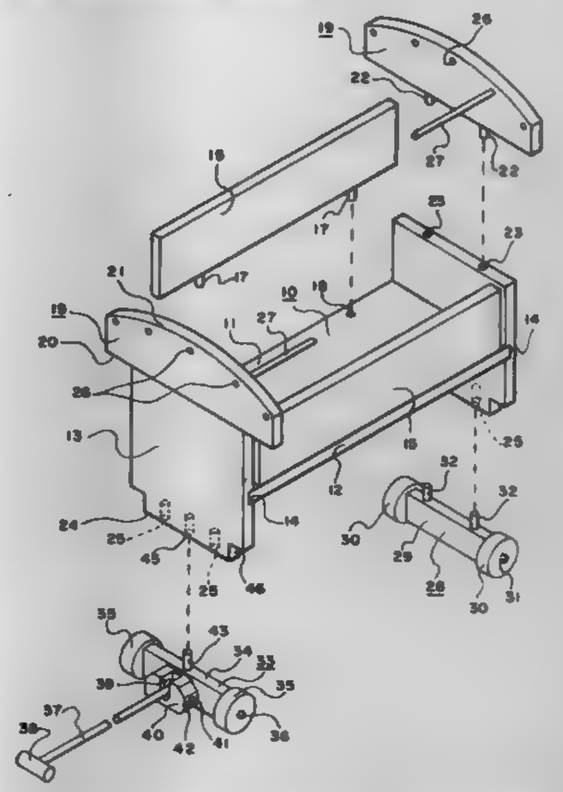
U.S. Cl. 46—17 **3 Claims**

1. A knockdown toy capable of being converted into a plurality of different toy configurations of beds, sofas and cradles comprising:

a basic frame formed of a flat horizontally disposed rectangular intermediate panel having one pair of sides longer than the other and complementary opposed end panels secured at approximately their mid points to the short sides thereof intermediate the end panels and perpendicular thereto;

two side panels of length approximating the long sides of the intermediate panel and of height approximating the distance the end panels project above the intermediate panel;

means for releasably securing each side panel to the long sides of the intermediate panel;



two end rocker panels each including an arcuate edge; and

means for releasably securing each rocker panel to either the upper or lower extremity of each end panel whereby selective assembly of the different components will create different toys.

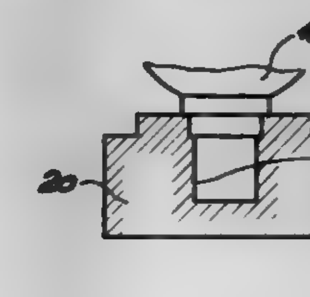
3,982,353

DOLL HEAD MOUNTING JOINT

Godtfred Kirk Christiansen, Billund, Denmark, assignor to Interlego A.G., Switzerland

Filed Jan. 31, 1975, Ser. No. 546,033
Int. Cl.² A63H *33/06*

U.S. Cl. 46—22 **1 Claim**



1. A mounting joint for quick detachably connecting a doll head to a supporting block comprising

a doll head having at least three means thereon for connecting elements thereto, one of said means comprising a cylindrical body connecting portion projecting from said head, said portion including three axially spaced coaxial sections each being of a different diameter, the one nearest the head being of greatest diameter, the most remote from the head being of the least diameter;

a body forming block adapted to receive said portion, said block having a central cavity and four studs projecting symmetrically about said cavity above the plane of its mouth, the diameter of said section most remote from said head being equal to that of said cavity, the diameter of said intermediate section being slightly greater than a circle tangent to the vertical surfaces of the studs at a point on said vertical surface of said stud nearest the cavity, the intermediate portion being thus frictionally engageable with the vertical surfaces at the said points of tangency, and the portion nearest the head constituting the neck of said doll head, being too large to be engaged within said vertical surfaces and abutting the tops of said four studs whereby said neck portion is visible above said studs.

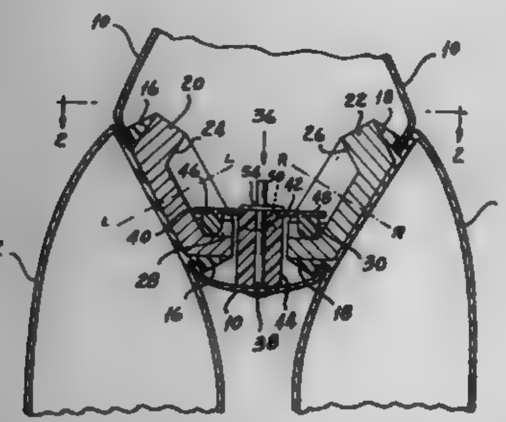
3,982,354
WALKING DOLL MECHANISM

Charles M. Hollingsworth, West Columbia, and Witold W. Kosicki, Columbia, both of S.C., assignors to Horsman Dolls Inc., Columbia, S.C.

Filed Sept. 11, 1975, Ser. No. 612,238

Int. Cl.² A63H *11/14*

U.S. Cl. 46—149 **14 Claims**



1. Walking simulating apparatus for a doll including in combination, a torso having a longitudinal axis, a pair of leg mounting openings in said torso, a pair of legs, means mounting said legs respectively in said mounting openings, for movement around respective axes, each of said mounting means forming a surface extending around the axis of rotation of its associated leg, a recess in each of said surfaces, a pair of arms, respective detent means on said arms, and means mounting said arms for pivotal movement around an axis extending between said leg mounting means and with said detent means in cooperative relationship with said surfaces, said arm mounting means comprising means for resiliently urging said detent means into engagement with said surfaces so that when said detents engage in said recesses said arms provide a releasable driving connection between said legs to simulate a walking movement of said doll, each of said surfaces for an appreciable extent from said recess in each direction around the associated said axis being symmetrical with respect to said associated axis to permit said driving connection to be released against the action of said resilient means in each direction of relative movement of said detent means with respect to the associated surfaces without damage to the apparatus.

3,982,355
ADJUSTABLE BLIND STRUCTURE

Anthony C. Piercey, 40 West Way, Heston, Hounslow, Middlesex, England

Filed Feb. 20, 1976, Ser. No. 659,914

Claims priority, application United Kingdom, Mar. 19, 1975, 11442/75

Int. Cl.² E05F *17/00;* **E06B** *7/086*

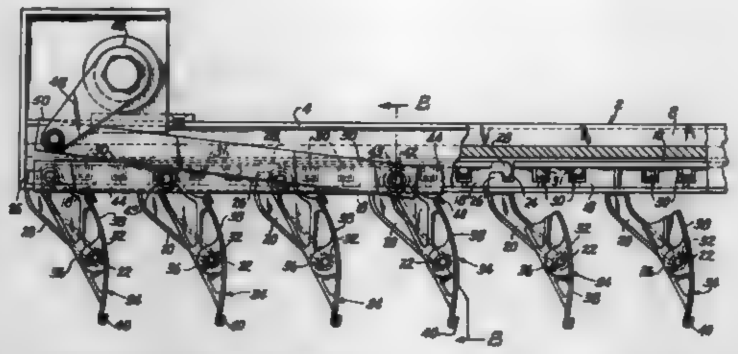
U.S. Cl. 49—74 **7 Claims**

1. In an adjustable slat blind mechanism having elongated supports extending along opposite sides of an opening and blind slats extending therebetween and pivoted thereto, the improvement comprising:

each of said supports defining an outwardly open channel extending therealong, the inner side faces of said channel having inwardly facing detent portions;

a plurality of slat brackets in said channel, each having latching portions engaging the said detent portions, each slat bracket having at least one supporting arm extending outwardly away from said channel and having a slat holder pivoted thereto; and

interengaging means on said slat brackets holding said brackets against relative movement along said channel whereby said supporting arms are held in predetermined spaced relation.



3,982,356
HONING MACHINE FOR FINISHING TROCHOIDAL BORE OF ROTOR HOUSING OF ROTARY ENGINE

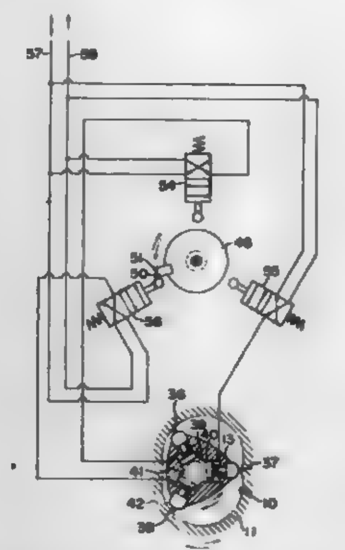
Satoshi Dojyo, and Tsutomu Yoshino, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Japan

Continuation of Ser. No. 319,000, Dec. 27, 1972, Pat. No. 3,851,422. This application Sept. 24, 1974, Ser. No. 508,901

The portion of the term of this patent subsequent to June 11, 1991, has been disclaimed.

Int. Cl.² E24B *19/08*

U.S. Cl. 51—34 J **6 Claims**



1. A honing machine for finishing a trochoidal bore of a workpiece by honing the inner wall surface thereof having an opening portion, comprising:

a. a honing head provided on its periphery with a honing stone which is biased outwardly into sliding contact with the inner wall surface of the workpiece for honing the same when rotatably received within the trochoidal bore,
b. a honing head shaft coaxially secured to said honing head,
c. means for rotating the honing head shaft,
d. a machine table for holding the workpiece in position,
e. means for controlling the position of the honing head and the machine table to draw a preset trochoid curve,
f. detecting means for detecting when the honing stone is on the opening portion,
g. bias-pressure control means for controlling the bias pressure of said honing stone toward said inner wall surface,
h. a pressurized fluid source communicating with said bias pressure control means for supplying thereto a liquid under pressure, and
i. honing control means hydraulically connected to said pressurized fluid source and responsive to said detecting means for decreasing the bias pressure of said honing stone toward said inner wall surface when said honing stone is on the opening portion of the inner wall surface.

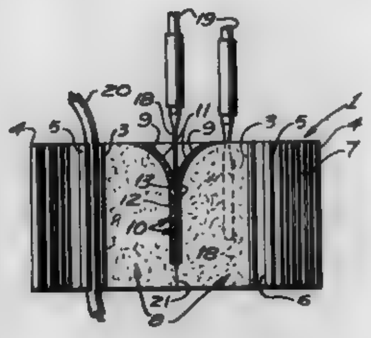
3,982,357
CLEANING DEVICE FOR CAUTERIZING KNIVES

John D. Eldridge, and William D. De Mayo, both of 1115 E. Elm, Fullerton, Calif. 92631

Filed Apr. 14, 1975, Ser. No. 567,627

Int. Cl.² B24B *3/54;* **A47L** *21/00*

U.S. Cl. 51—181 R **15 Claims**



1. A cleaning device for surgical cauterizing implements including cauterizing knives and cauterizing forceps, comprising:

a. a pair of abrasive elements disposed in yieldable mutual contact to receive cauterizing implements therebetween to abrade cauterized flesh therefrom;
b. and a porous penetrable plastic pad contiguous to the abrasive elements to receive cauterizing implements for wiping loosened cauterized remnants therefrom, said pad also forming a storage means for cauterizing implements and to aid in surgical count thereof.

3,982,358
LAMINATED RESINOID WHEELS, METHOD FOR CONTINUOUSLY PRODUCING SAME AND APPARATUS FOR USE IN THE METHOD

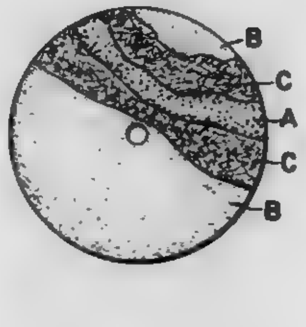
Heijiro Fukuda, No. 123, 3-chome, Umegaoka, Nagaokakyo, Kyoto, Japan (617)

Division of Ser. No. 494,015, Aug. 1, 1974. This application Apr. 23, 1975, Ser. No. 570,980

Claims priority, application Japan, Oct. 9, 1973, 48-113718; Oct. 9, 1973, 48-113720; Oct. 9, 1973, 48-117761[U]; Mar. 18, 1974, 49-31284

Int. Cl.² B24D *7/14, 5/14*

U.S. Cl. 51—207 **6 Claims**



1. In an improved laminated resinoid wheel of the type comprising a core layer, and at least one pair of outer layers, wherein the core layer is made of an abrasive composition containing abrasive grains, and said at least one pair of layers are arranged on the opposite sides of the core layer symmetrically thereof and made of an abrasive composition containing abrasive grains different in size from those of the abrasive composition of the core layer, wherein the improvement comprises:

front and rear surfaces of said wheel being rough-surfaced by a terminal unit of rolling rolls coated with a soft material.

3,982,359
ABRASIVE MEMBER OF BONDED AGGREGATES IN AN ELASTOMERIC MATRIX

Karl Elbel, and Kurt Wolfinger, both of Pforzheim, Germany, assignors to ROC A.G., Zug, Switzerland

Continuation-in-part of Ser. No. 416,830, Nov. 19, 1973, abandoned, which is a continuation of Ser. No. 88,981, Nov. 12, 1970, abandoned, which is a continuation-in-part of Ser. No. 834,885, June 19, 1969, abandoned. This application June 10, 1975, Ser. No. 585,465

Claims priority, application Germany, June 21, 1968, 1752612

Int. Cl.² B24D *3/22, 3/28*

U.S. Cl. 51—295 **9 Claims**

1. A shaped, flexible, resilient abrasive member essentially consisting of a matrix of elastomeric material and a plurality of aggregates embedded in said matrix in spaced relationship and bonded to each other by said material, each aggregate essentially consisting of a multiplicity of grains of abrasive material and of a bonding agent more rigid than said elastomeric material and bonding said grains to each other, said matrix having a Shore A hardness of 75 to 20, and said aggregates having a Shore D hardness of at least 65.

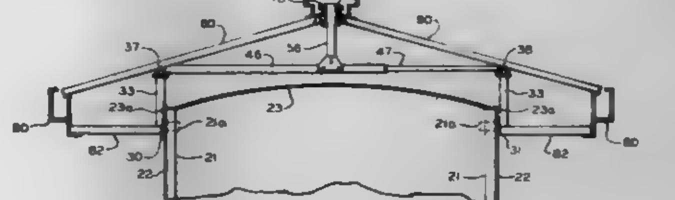
3,982,360
MOBILE HOME ROOF APPARATUS

Ernest L. Newman, Box 139, R.F.D. No. 2, Owego, N.Y. 13827

Continuation of Ser. No. 452,753, March 20, 1974, abandoned. This application Apr. 7, 1975, Ser. No. 565,527

Int. Cl.² E04B *7/00, 7/04*

U.S. Cl. 52—22 **9 Claims**



1. An added roof structure for use on a house trailer having an existing sheet-metal roof, comprising, in combination: a first plurality of vertically-extending support posts spaced apart from each other along a first side of said trailer and fixedly mounted against said side of said trailer; a second plurality of vertically-extending rigid support posts spaced apart from each other along a second side of said trailer and mounted against said second side of said trailer, each of said support posts extending from a level below said existing sheet-metal roof to a level above said existing sheet-metal roof; a first longitudinally-extending strip means fastened to and interconnecting the upper ends of said support posts of said first plurality; a second longitudinally-extending strip means fastened to and interconnecting the upper ends of said support posts of said second plurality; a plurality of rigid laterally-extending support bracket means each extending between and attached to said first and second longitudinally-extending strip means to prevent lateral relative movement between said first and second longitudinally-extending strip means; a third plurality of rigid support posts each affixed to and extending upwardly from a respective one of said laterally-extending support bracket means; third longitudinally-extending strip means affixed to an interconnecting said third plurality of support posts adjacent their upper ends; a first plurality of mutually-interlocking roof sheet means each supported by said third strip means and said first strip means; a second plurality of mutually-interlocking roof sheet means each supported by said third strip means and said second strip means; a first member fixed to and extending from one of said support posts of said third plurality adjacent an end of said trailer downwardly and laterally outwardly beyond one of said support posts of said first plurality adjacent said end of said trailer

and being connected to said one of said support posts of said first plurality; a second member extending laterally across and affixed to said end of said trailer at a level below said existing roof; and a plurality of metal sheets each connected to said first and second members.

3,982,361
MODIFIED STRUCTURE FOR LINING GENERALLY CURVED SURFACES

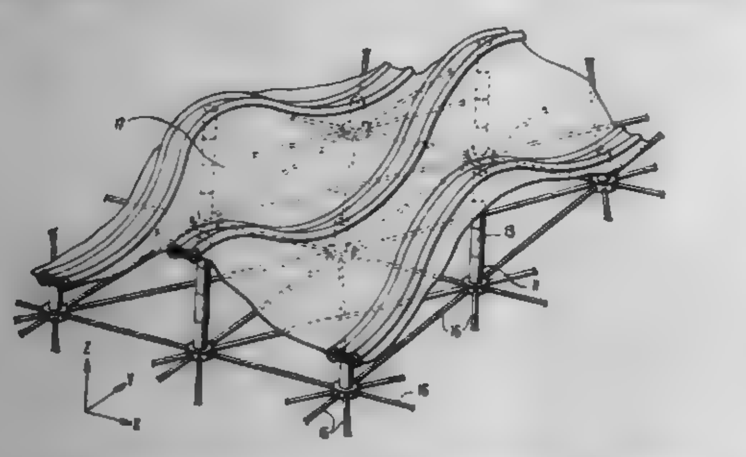
Ernst Deutsch, and Bernhard Reifenscheid, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 457,214, April 1, 1974, abandoned. This application Dec. 23, 1974, Ser. No. 535,983

Claims priority, application Germany, Dec. 21, 1973, 2363706

Int. Cl.² E04B *7/14, 7/10*

U.S. Cl. 52—80 **22 Claims**



1. An assembly for sheathing a network thereby forming a structure having generally curved surfaces comprising:

a. a connector panel or strip adapted to be joined to the network via a firm or elastic intermediate element, said connector panel or strip comprising at least two associated clamping plates or strips and a filling panel therebetween to regulate the distance between the individual clamping plates or strips, said connector panel or strip holding two bearing profile members of a weather resistant and aging-resistant vulcanized elastomer, and

b. a covering panel attached to at least one of the bearing profile members held by the connector panel or strip, said covering panel being shaped to fit said network and comprising a fabric cover stretched in the manner of a diaphram so that it exhibits a spatial double curvature and is under tensile stress.

3,982,362
INSULATED STRUCTURE OF END-JOINED CANS AND STUCCOED MESH

Alvin Edward Moore, Manini Way, Diamondhead, Rte. 1, Bay St. Louis, Miss. 39520

Filed Feb. 24, 1975, Ser. No. 552,622

Int. Cl.² E04C *1/06*

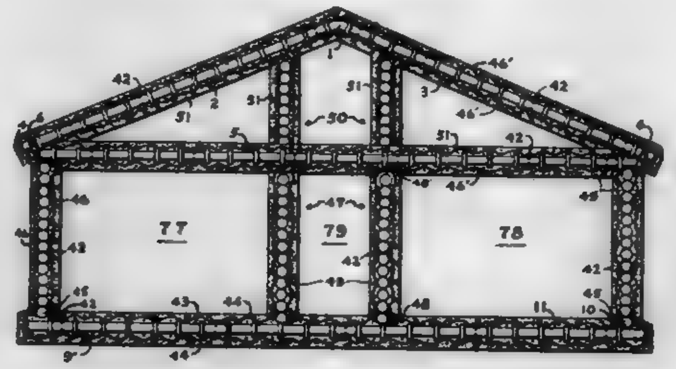
U.S. Cl. 52—91 **15 Claims**

1. Structure, including:

in upright walls, angularly joined at corners and defining an interior space, a plurality of uprightly stacked sets of intersecting, substantially horizontal rows of cans; each of said sets comprising a plurality of joints, each angularly joining a pair of said horizontal rows at one of said corners; each of said rows comprising: a plurality of end-joined, coaxial cans having substantially horizontal axes and can sidewalls each of which surrounds and encloses a canned space and can-cover elements at ends of said sidewalls; gaseous material in said cans; and connecting means fastening together ends of each pair of adjacent cans in the row;

each of said horizontal rows of cans comprising: at one of its ends a first-named row-end can-cover element which is closely adjacent to the mesh and to stucco of an outer wall surface; and at its other end a second-named can-cover element that is spaced from the mesh and stucco of another outer wall surface, the said second-named can-cover element being in contact with an intervening can sidewall that is between this second-named can-cover element and said last-named wall surface;

each of said corner joints comprising: a pair of row-end cans having intersecting axes, one of said row-end cans having a said can-end cover element in abutting relation with a can sidewall of the other of said row-end cans; and connecting means fastening said abutting cover element and sidewall, comprising a piece of strength-providing material and rod-like elements fastening said piece to said row-end cans;



the said sets of horizontal, intersecting rows of cans comprising a bottom set and a plurality of upper sets, stacked one above the other; each of said upper sets comprising at each of two diagonally-arranged wall corners a said first-named row-end can-cover element that is above a said intervening can sidewall, and at each of two other diagonally-arranged wall corners a said intervening can sidewall that is above a said first-named row-end can-cover element;

mesh, adapted to receive and hold stucco, on exterior sides of said can rows; interior wall material on inner sides of said can rows; rod-like elements, holding and positioning said mesh on said can rows; top, water-shedding structure; and means fastening said top structure to upper portions of said upright walls.

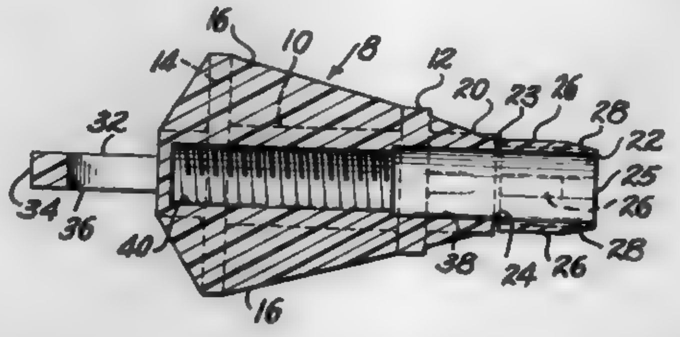
3,982,363
FRANGIBLE INSERT

John P. Dorris, Newport Beach, Calif., assignor to DDK Investments, Ltd., Fountain Valley, Calif.

Filed Oct. 18, 1974, Ser. No. 516,139

Int. Cl.² E04C *5/16, 5/00*

U.S. Cl. 52—98 **9 Claims**



1. An insert, comprising: a body portion adapted to be anchored in concrete, said body portion having circumferentially spaced longitudinally extending ribs on the exterior thereof for anchoring the same against rotation in said concrete; a prong at one end of said body portion adapted to be driven into a relatively smaller size hole in a mold prior to casting the concrete, said prong having circumferentially spaced longitudinally extending ridges on the exterior thereof to prevent rotation thereof in said hole, said one end of said body portion being larger in outside diameter than said prong and forming an abutment for engagement with said mold, said prong having a cylindrical bore which extends completely therethrough and into said body portion, said cylindrical bore having screw threads in that portion thereof which is disposed in said body portion; and readily frangible cylindrical means between said body portion and said prong, said frangible means being formed by a narrow groove at the abutment end of said body portion and axially spacing said prong from said body portion and constituting the sole connecting means between said prong and said body portion, said prong being of such design and dimensions as to be slightly contractible when driven into said relatively smaller hole in said mold.

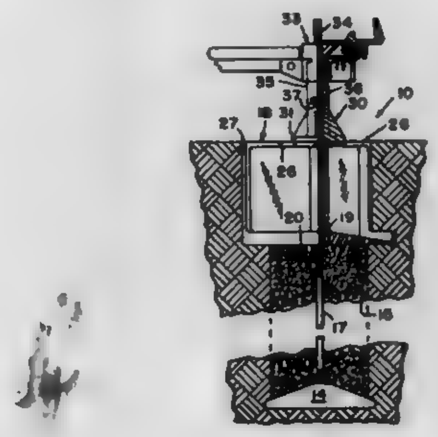
3,982,364
PREFABRICATED SUPPORT AND FLOOR SYSTEM FOR BUILDING

Louis W. Horvath, Huntsville, Ala., assignor to Spaceair Products, Inc., Huntsville, Ala.

Filed Aug. 23, 1974, Ser. No. 500,129

Int. Cl.² E04D *15/00;* **E04B** *7/02*

U.S. Cl. 52—126 **3 Claims**



1. A prefabricated support and floor system comprising: a plurality of ground support means arranged in a rectangular grid, each ground support means including connecting means providing tie flange means extending toward adjacent ground support means; a plurality of panel receiver means each connected at its ends to the tie flange means of adjacent ground support means, each panel receiver means comprising an elongated extrusion including a horizontal flange, depending central flanges extending downwardly of said horizontal flange and received in a pair of tie flange means on associated connector means, and at least one pair of horizontally elongated flanges extending upwardly of said horizontal flange and defining a horizontally elongated channel; a plurality of floor panel means, each including sheet material providing a floor and a peripheral frame defining a tongue flange received in an associated channel of associated panel receiver means and secured thereto; and wall support base means secured to and extending between adjacent ones of said ground support means and extending continuously around the periphery of said gridwork for supporting the upright walls of a building.

3,982,365
DISTRIBUTION BLOCKS FOR THE FORMATION OF JOINTS RESISTING TO DIFFERENTIAL SETTLING AND JOINTS OBTAINED BY USING SAID BLOCKS

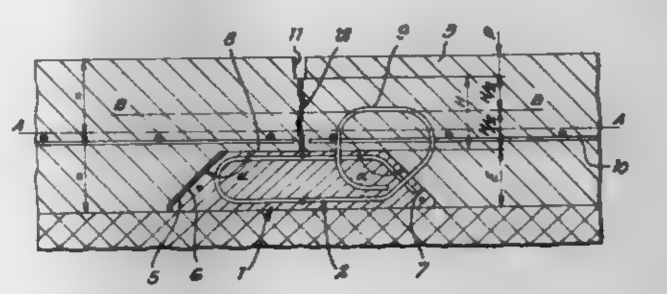
Albert D. G. Noël, deceased, late of Brussels, Belgium, by Josette D. Noël, sole heir, 1160 Brussels, Belgium

Filed June 18, 1975, Ser. No. 587,984

Int. Cl.² E04B *1/62;* **E01C** *11/02*

U.S. Cl. 52—125 **3 Claims**

1. A distribution block, comprising: a body having a trapezoidal longitudinal section with the small base at the top, and at least one profiled bar having one end thereof embedded in said body and projecting outwardly from an inclined face thereof, the other end of said profiled bar being embedded in said body and projecting upwardly from said small base, the connecting intermediate portion of said bar connecting said ends being disposed above the upper surface of said small base and above the surface of said inclined face, said connecting intermediate portion forming a generally U-shaped gripping element, a substantial portion of which is disposed above said body for handling the block.



3,982,366
STRUCTURAL SPACE ELEMENT

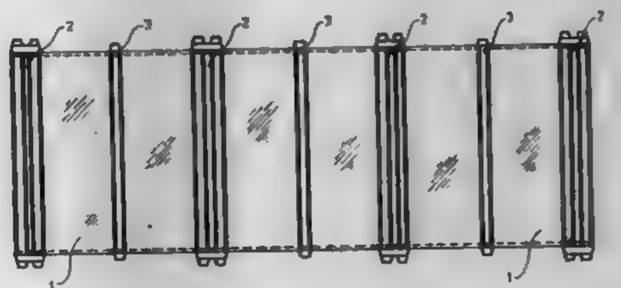
Jalo P. Haapala, Temppelikatu 8 A 23, 00100 Helsinki 10, Finland

Filed Mar. 12, 1975, Ser. No. 557,553

Claims priority, application Finland, Nov. 27, 1974, 3425/74

Int. Cl.² E04B *5/48;* **E04C** *1/30*

U.S. Cl. 52—220 **13 Claims**



1. A building structure comprising at least two space elements, each of said space elements comprising a tube element having two generally vertical walls along with a generally horizontal floor and ceiling, each of said tube elements having first collar means transversely circumscribing the outside of the respective tube element at spaced intervals, each of said tube elements having second collar means transversely circumscribing the outside of the respective tube elements at spaced intervals, said first circumscribing collar means being arranged in alternate spaced relationship with said second circumscribing collar means along the longitudinal length of each of said tube elements, said first circumscribing collar means on each tube element protruding further from each tube element than said second collar means on each respective tube element, said two space elements being mated with one another with said first circumscribing collar means disposed opposite said second circumscribing collar means such that the first circumscribing collar means on one space element mates with the second circumscribing collar means on the other space element and the second circumscribing collar means on said one space element mates with the first circumscribing collar means on the other space element, whereby said space elements are thereby spaced from one another as determined by said mating circumscribing collar means, said space between said two space elements being adapted to accommodate conduits, insulation, utilities and the like for said building structure, said mating circumscribing collar means of said two space elements forming a beam-pillar-ring having generally horizontal beams and generally vertical pillars for supporting said building structure.

3,982,367

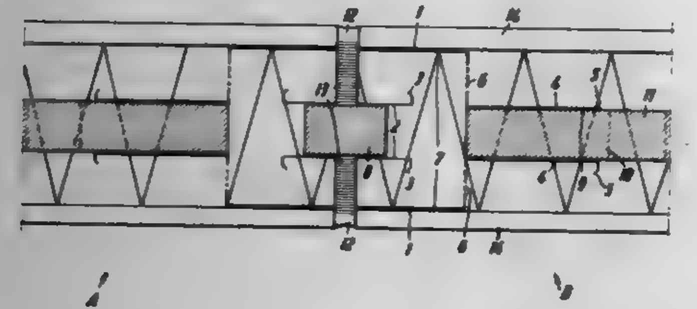
EDGE REINFORCEMENT FOR SANDWICH-TYPE BUILDING PANEL

Olov Jonsson, Olivedalsgatan 14 b, S-41310 Göteborg, and Edward Miaszewski, Framgangen 210-81, S-41280 Goteborg, both of Sweden

Filed Nov. 4, 1974, Ser. No. 520,914

Int. Cl.² E04C *1/00*

U.S. Cl. 52—309 **8 Claims**



1. A construction panel comprising:

a pair of rigid plates having transversely spaced apart edges;

a hardened mass of synthetic-resin foam between said plates bonding the same together;

an elongated rigid edge-reinforcing member of laterally open box-shape received between said plates and said edges and spanning the thickness of the space between them, said member having cheeks lying along opposite internal faces of said plates and defining a laterally open groove adapted to receive a spline, said member being further formed with a section extending transverse to the plates and provided with a plurality of holes for the passage of the synthetic-resin foam in liquid condition through said member, said member having extensions formed with hooks anchoring the member in said mass; and

a spline for connecting the panel to a like panel, said spline being received in said groove, said member comprising a pair of like parallel profiles each abutting a respective one of said plates and having an inner section parallel to the respective plate and defining a side of said groove.

3,982,368

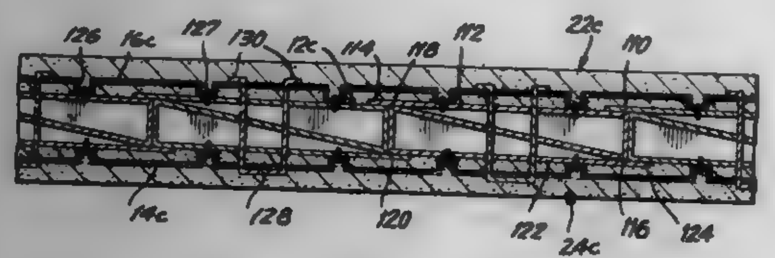
WALL CONSTRUCTION AND METHOD TO MAKE SAME

Arthur Perrin, Miami, Fla., assignor to American Volkscastle International Inc., Fort Lauderdale, Fla.

Continuation of Ser. No. 397,455, Sept. 14, 1973, which is a continuation of Ser. No. 173,136, Aug. 19, 1971, which is a continuation-in-part of Ser. No. 16,125, March 3, 1970. This application Dec. 18, 1974, Ser. No. 534,014

Int. Cl.² E04B *1/16*

U.S. Cl. 52—381 **8 Claims**



6. A wall structure comprising two parallel slabs of sprayed concrete arranged in a spaced-apart, vertical array on opposite sides of a vertically extending hollow core through which no cementitious material penetrates connecting said slabs, a layer of reticulated reinforcing material embedded within each said slab of concrete sprayed thereon and affixed to an underlying face of said core, said core comprising a plurality of elongated, hollow enclosures arranged in juxtaposition with their lengthwise dimensions vertical, each said enclosure formed from sheets of stiff, imperforate material folded to form a hollow section of rectangular cross section having a pair of opposing side faces to be positioned in the plane of the wall and perpendicular thereto a pair of verticaly extending end faces with a portion of said folded sheet extending diagonally between said side faces within said hollow section, an extension tab integral with a side face projecting outwardly beyond each hollow section to overlie a portion of the side face of each adjacent enclosure, and a plurality of rigid metal members extending transversely of said core between said layers of reinforcing material and slabs at spaced intervals.

3,982,369

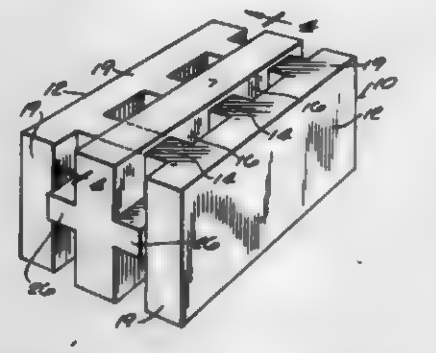
INSULATED BUILDING BLOCK

Henry P. Keleske, 5515 N. Danbury Road, Milwaukee, Wis. 53217

Filed Apr. 18, 1975, Ser. No. 569,254

Int. Cl.² E04B *2/00*

U.S. Cl. 52—407 **3 Claims**



1. In a rectangular building block having spaced parallel rectangular sidewalls with spaced webs extending transversely therebetween and voids between adjacent webs, the improvement comprising a thermal and moisture insulation strip attached to said webs and extending therebetween parallel to said sidewalls, said insulation strip extending beyond the edge of said sidewalls in the plane of the strip on all four edges of the block by a predetermined amount and having edges at right angles to said plane positioned to butt against the corresponding edge of an adjacent block in any direction to accomodate a mortar joint of predetermined width when the blocks are stacked to form a wall, and further comprising laterally extending flanges in the center of said insulating strip, said flanges contacting the inner surfaces of said sidewalls and acting to obstruct air flow through the open portion of said voids.

3,982,370

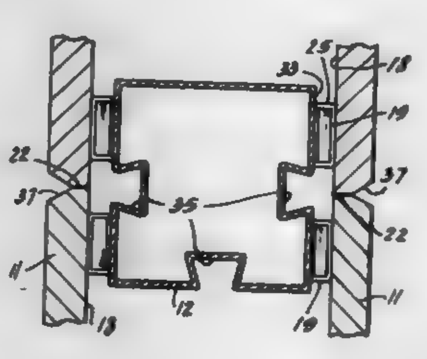
WALL SYSTEM HAVING DETACHABLE WALL PANELS AND A METHOD OF ASSEMBLING SAME

Donald R. Buffington, Atlanta, Ga., assignor to Anning-Johnston Company, Orlando, Fla.

Filed Nov. 30, 1971, Ser. No. 203,134

Int. Cl.² E04B *5/52*

U.S. Cl. 52—481 **6 Claims**



1. A panel for use in a wall assembly having a plurality of parallel or generally parallel, substantially equally spaced, magnetically attractive metal studs extending from a horizontal or substantially horizontal transverse member to form a frame for receiving a plurality of said panels to form said wall assembly,

said panel comprising a panel member of predetermined length and width and having an upper edge and a back surface,

at least two generally parallel rows of elongated magnetic units disposed on said back surface of said panel member, the spacing between said rows being substantially equal to the spacing between said metal studs,

each of said magnetic units including a U-shaped iron channel member having a bight portion interconnecting a pair of leg portions, said channel members being adhesively secured to said back surface of said panel member with the leg portions extending outwardly therefrom, and each of said magnetic units including a permanent magnet disposed in each of the channels between the leg portions,

said upper edge of said panel member being insertable into said transverse member of the frame with said rows of magnetic units positioned over the metal studs to attach and hold said panel by magnetic attraction with the leg portion of each of said magnetic units in contact with a stud.

3,982,371

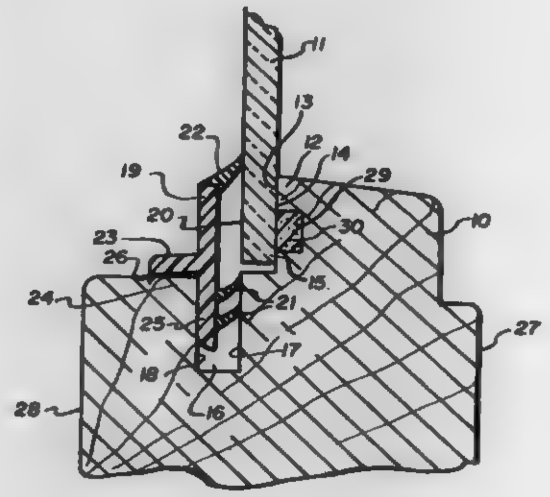
PANEL HOLDING STRUCTURE

Willi Preu, Dubuque, Iowa, assignor to Scovill Manufacturing Company, Dubuque, Iowa

Filed May 2, 1973, Ser. No. 356,293

Int. Cl.² E06B *3/58*

U.S. Cl. 52—498 **1 Claim**



1. A panel holding structure, comprising: a frame; retaining step means on said frame for engaging a first side surface of an edge of said panel, the frame having a groove defined by spaced surfaces and located adjacent to said step means; and an elongated glazing stop engaging a second side surface of said panel edge, the glazing stop having a rigid stem positioned in said groove and extending therefrom adjacent to said second side surface of said panel, yieldable pressure means on said stem engaging said panel and one said groove surface for aid in retaining said stem in said groove and said panel against said step means, and a rigid flange extending from said stem adjacent to and overlying and engaging a portion of said frame adjacent said groove and on the side thereof opposite to said retaining step means, said frame portion and adjacent said groove surface being arranged at a first angle, and said rigid flange and rigid stem being arranged at a second angle embracing and smaller than said first angle, said frame portion having a surface adjacent said groove, and said flange being provided with an integral elongated sharp spur edge in pressure engagement with said frame portion surface.

3,982,372

FACADE WALL ASSEMBLY

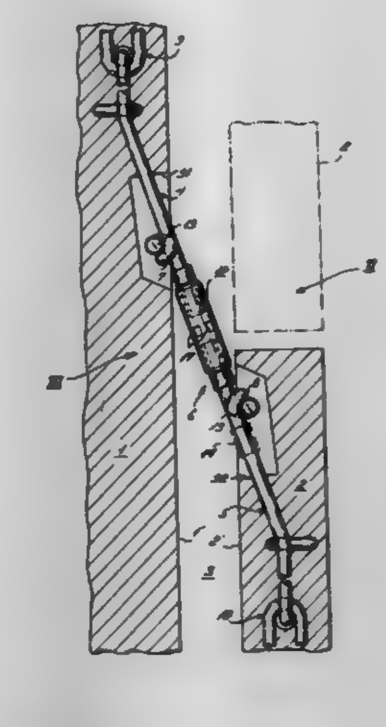
Ernst Haeussler, Grashofstrasse 47, 4300 Essen-Bredeney, Germany

Filed Jan. 20, 1976, Ser. No. 650,683

Claims priority, application Germany, Feb. 4, 1975, 2504454

Int. Cl.² E04B *2/88*

U.S. Cl. 52—513 **12 Claims**



1. A wall assembly comprising:

an upright wall having a front face;

a loop of stranded wire rope anchored in said wall and projecting from said face;

a facade plate having a back face turned toward said front face;

a loop of stranded wire rope anchored in said plate and projecting from said back face;

an elongated rigid hanger having an upper end hooked into the wall loop and a lower end hooked into the facade loop, whereby said facade plate is suspended by said hanger from said wall; and

means for varying the length of said hanger between its said ends.

3,982,373

STANDING RIB ROOF

Lyle L. Wilson; Robert N. McDonald; Richard W. Mullin, and Durwood E. Graddy, all of Eufaula, Ala., assignors to American Buildings Company, Eufaula, Ala.

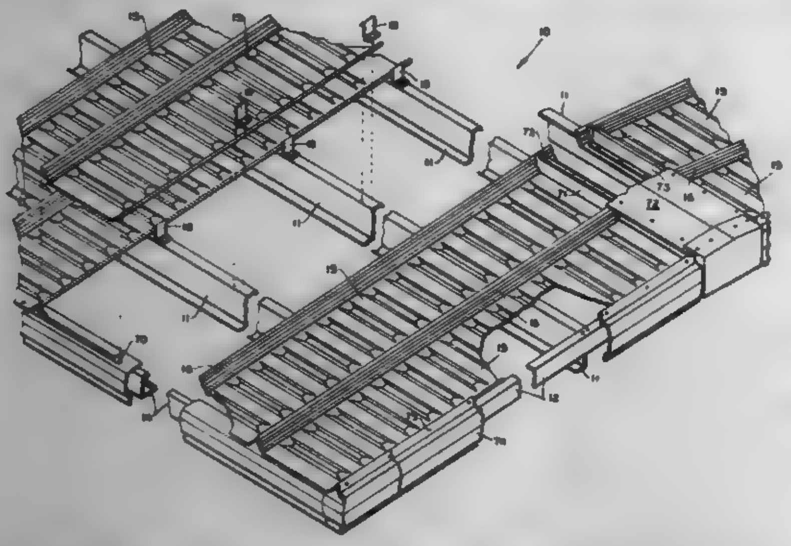
Filed May 22, 1975, Ser. No. 580,053

Int. Cl.² E04D *1/00*

U.S. Cl. 52—588 **7 Claims**

1. A standing rib roof structure for installation on the framing of a building including purlins for supporting said roof structure, said roof structure comprising a plurality of panels, each of said plurality of panels including: a first raised edge extending generally longitudinally of said panel, a male locking member carried on said first raised edge and arranged substantially perpendicularly to said panel to be substantially perpendicular to said purlins, a plurality of locking lips spaced along said male locking member and facing downwardly towards said purlins; a second raised edge extending generally longitudinally of said panel and parallel to said first raised edge, a female locking member carried on said second raised edge, said female locking member being arranged substantially perpendicularly to said panel to be substantially perpendicular to said purlins and substantially parallel to said male locking member, a locking lip extending along said female locking member and facing upwardly; said male locking mem-

ber and said female locking member being so constructed and arranged that said female locking member is receivable over said male locking member through motion directed along said male locking member generally perpendicular to said purlins and said locking lip of said female locking member will be engaged under said locking lips of said male locking member; said roof structure further including a plurality of panel clips, each panel clip of said plurality of panel clips including a hermaphroditic locking member comprising a secondary female locking member for receiving said male locking member, a locking ledge facing upwardly for engaging one of said locking lips on said male locking member, and a secondary male locking member for being received within said female locking member, said secondary male locking member including a downwardly facing locking lip for engaging said locking lip on said female locking member, said panel clips being so constructed and arranged that said secondary female locking member is engageable with said male locking member through motion directed along said male locking member generally perpendicular to said purlins, and said female locking member is engageable with said secondary male locking member through motion directed along said secondary male locking member generally perpendicular to said purlins, said female locking member being engageable with said secondary male locking member both with and without said secondary locking member's being engaged with said male locking member.



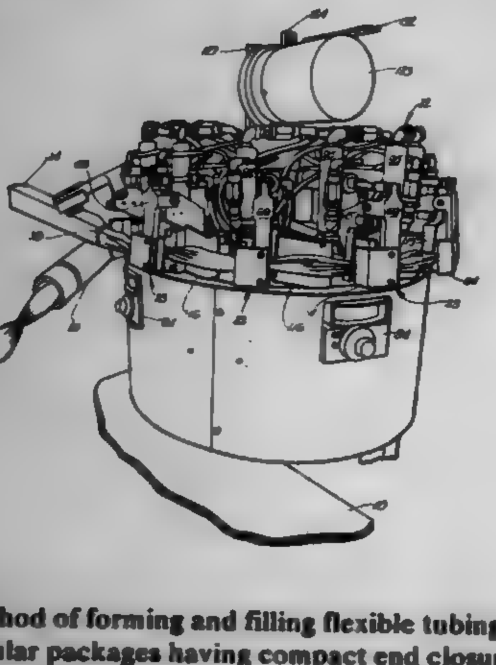
3,982,374
APPARATUS AND METHOD FOR CONTINUOUSLY FORMING AND FILLING TAMPON SACKS

Jean E. Schaefer, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed July 1, 1974, Ser. No. 484,813

Int. Cl.² B65B *9/12*

U.S. Cl. 53—28 **16 Claims**



1. A method of forming and filling flexible tubing to provide closed tubular packages having compact end closures concentric with the longitudinal axis of the tubing, comprising the steps of continuously advancing a length of flexible tubing in a path of travel, engaging and gathering the tubing radially inwardly at a first point and fastening together the gathered tubing to form a leading end closure, introducing a charge of filling material into the tubing from its trailing end and propelling the charge forwardly through the tubing until it comes to rest at said leading end closure, engaging and gathering the tubing radially inwardly at a second point spaced rearwardly from said first end closure and lying beyond the charge of filling material, and fastening together the gathered tubing at said second point to form a closed package containing the charge of filling material, and thereafter sequentially forming and filling additional packages in like manner, with the trailing end closure of the package just formed also serving as the leading end closure for the next to be formed package.

3,982,375
PROCESS AND A DEVICE FOR WRAPPING ARTICLES, MORE PARTICULARLY, GROUPS OF CIGARETTES

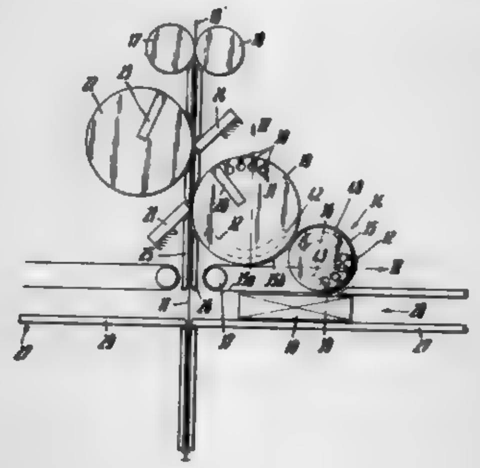
Heinz Focke, Verden, Aller, Germany, assignor to Focke & Pfuhl, Verden, Aller, Germany

Filed Feb. 19, 1975, Ser. No. 551,211

Claims priority, application Germany, Feb. 19, 1974, 2407767

Int. Cl.² B65B *11/16, 19/22*

U.S. Cl. 53—32 **17 Claims**



1. A process for wrapping a main blank and a flap blank about a group of objects, such as cigarettes, such that said blanks overlap wherein said group of objects travels along a first path comprising the steps of:

a. feeding a single web of wrapping material from a supply source;
b. cutting a main blank from said web of material;
c. cutting a flap blank from said web of material;
d. feeding said flap blank in a second path to place it on the group of objects;
e. feeding the main blank in a third path which intersects the first path of travel of the group of objects; and
f. folding said main blank around said group of objects such that a portion overlaps said flap blank.

3,982,376
APPARATUS FOR FILLING AND SEALING RETORT FOODS

Masaomi Ikeda, Yokohama, Japan, assigner to Toyo Seikan Kaisha Limited, Tokyo, Japan

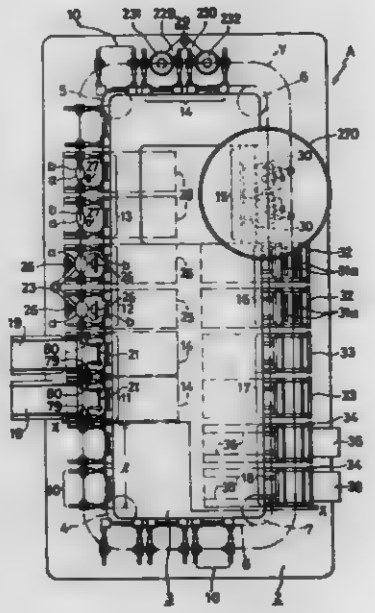
Filed June 27, 1975, Ser. No. 591,258

Claims priority, application Japan, Sept. 4, 1974, 49-101605

Int. Cl.² B65B *57/02, 3/12, 43/36*

U.S. Cl. 53—53 **18 Claims**

1. A filling and sealing apparatus for a plurality of retort pouches to store retort food stuffs comprising, in combination, an endless transfer means having a plurality of gripper means which are equally spaced from each other, said endless transfer means being intermittently movably disposed around an outer periphery of a platform, a first station including a plurality of pouch supplying means which are disposed in searies with respect to a travelling path of the retort pouches and a plurality of actuating means to actuate said grippers, said actuating means being actuable to cause said gripper means to grip the retort pouches, a second station including a plurality of retort pouch opening means and a plurality of retort pouch dilating means associated therewith to open and dilate the retort pouches gripped by said gripper means, said second station being located in the travelling path of the retort pouches at a position adjacent said first station, a third station located in the travelling path of the retort pouches at a position adjacent said second station and including a plurality of sensing means to sense opened conditions of the respective retort pouches for generating an electric signal when a defectively opened retort pouch is sensed, and a plurality of gripper releasing means responsive to the electric signal to cause said gripper means to release the retort pouch having a defective opening, a fourth station disposed in the travelling path of the retort pouches at a position spaced from the third station and including means for supplying solid materials into the retort pouches, a fifth station disposed in the travelling path of the retort pouches at a position spaced from the fourth station and including means for supplying viscous liquid into the retort pouches in which the solid materials is put, a sixth station disposed in the travelling path of the retort pouches at a position adjacent said fifth station and including a dilating means to release remaining air from the respective retort pouches and primary sealing means to primarily seal the opening portions of the respective retort pouches, a seventh station disposed in the travelling path of the retort pouches at a position adjacent the sixth station and including a secondary sealing means to secondarily seal the opening portions of the respective retort pouches which have been primarily sealed, an eighth station disposed in the travelling path of the retort pouches at a position adjacent the seventh station and including a cooling means to cool the sealed portions of the respective retort pouches for thereby solidifying the sealed portions and a releasing means to release the retort pouches, and driving means having means to intermittently move said endless transfer means at a preselected speed.



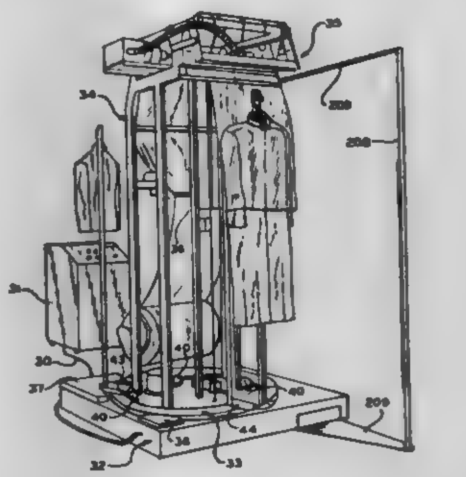
3,982,377
AUTOMATIC BAGGING MACHINE

Charles C. Vanderpool, Waverly, N.Y., assignor to BMT Manufacturing Corporation, Elmira, N.Y.

Continuation of Ser. No. 141,882, May 10, 1971. This application May 7, 1974, Ser. No. 467,679

Int. Cl.² B65B *57/00, 43/30*

U.S. Cl. 53—66 **29 Claims**



26. Apparatus for automatically applying a bag, closed at the sides and one end, to an item supported at a bagging station, the bagging material being supplied in tubular form from a continuous web, said apparatus comprising, in combination;

a. means for engaging and holding the leading end of said web in open condition;
b. power driven means for moving said open end over the items;
c. means for effecting a seal transversely of said web at a distance from said leading end in predetermined relation to the length of the item;
d. means for severing said web transversely, adjacent the areas of said seal, thereby forming an individual bag from the severed portion and a new leading end for movement over the next item; and
e. means for releasing said engaging means from said open end of the individual bag.

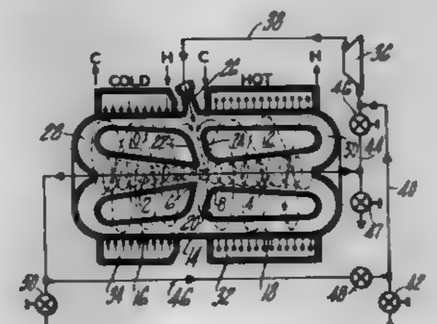
3,982,378
ENERGY CONVERSION DEVICE

Joachim S. Sohre, 1 Lakeview Circle, Ware, Mass. 01082

Filed Mar. 13, 1975, Ser. No. 557,953

Int. Cl.² F25B *9/02*

U.S. Cl. 60—650 **27 Claims**



15. An energy exchange system including:

a casing having a fluid separation chamber therein;

annular inner bodies in the casing at opposite sides of and defining the chamber, each inner body being spaced from the walls of the chamber to define an annular passage surrounding the body and communicating with the chamber, each annular passage communicating at its end remote from the chamber with the axial passage within the associated inner body, said axial passages in the inner bodies also communicating with the chamber, thereby establishing a continuous duct through the annular passage and the axial passage for a return flow of fluid from the chamber;

nozzle means for delivering a helical flow of operating fluid into said chamber for a separation of the fluid into hot and cold streams with one stream flowing around each inner body; and

energy exchange means associated with each inner body for changing the energy level in the streams flowing around the inner bodies.

3,982,379
STEAM-TYPE PEAK-POWER GENERATING SYSTEM

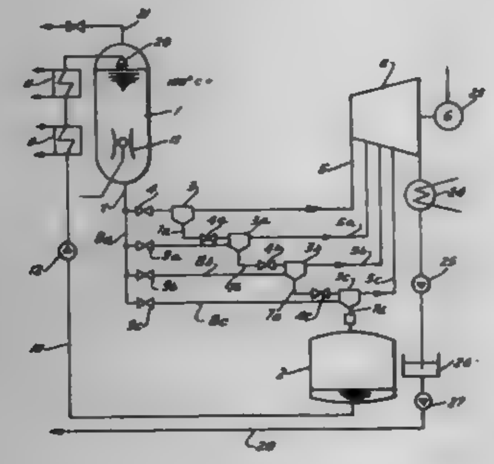
Paul Viktor Gilli, Graz, and Georg Beckmann, Vienna, both of Austria, assignors to Siempelkamp Giesserei KG, Krefeld, Germany

Filed Aug. 14, 1975, Ser. No. 604,811

Claims priority, application Austria, Aug. 14, 1974, A641/74

Int. Cl.² F01K *3/00*

U.S. Cl. 60—659 17 Claims



1. A steam system comprising:
a high-pressure generally closed reservoir;
means for heating a body of water in said high-pressure reservoir above 100°C;
a low-pressure generally closed reservoir;
a discharge conduit connected between a lower region of said high-pressure reservoir and said low-pressure reservoir for conducting heated water from the former toward the latter;
an expansion-type steam generator in said conduit and having a steam outlet;
a restriction in said discharge conduit between said generator and said high-pressure reservoir, whereby said heated water is at least partially converted into steam in said generator; and
a steam-powered load connected to said outlet of said generator.

3,982,380
DEVICE FOR SEALING THERMOPLASTIC OVERWRAPS

Enzo Seragnoli, Bologna, Italy, assignor to G. D. Societa per Azioni, Italy

Filed June 24, 1975, Ser. No. 589,896

Claims priority, application Italy, July 10, 1974, 3439/14

Int. Cl.² B65B *51/14*

U.S. Cl. 53—77 3 Claims

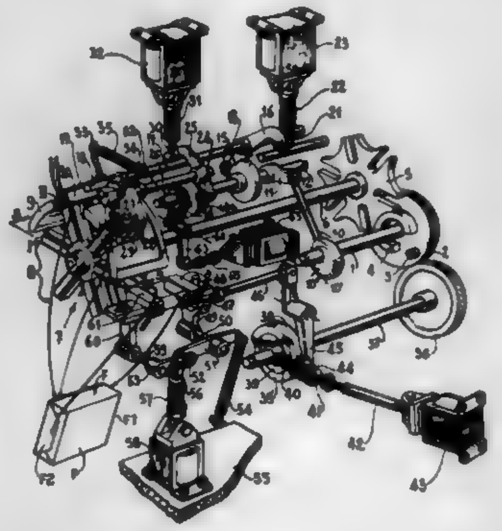
1. A device for sealing thermoplastic overwraps on cigarette packets, comprising;

packet-transferring means having means for moving it at a plurality of speed levels subject to periodic halts, the transferring means being receptive during each halt of a cigarette packet and of thermoplastic overwrap material for it at a first station, and having successive halting stations for successively heat-sealing the thermoplastic overwrap material on a single portion of the packet;

successive sealing contrivances, one disposed at each successive station in a position adjacent the transferring means, each contrivance being mounted for movements back and forth into and from contact with said single portion of the packet;

support means for each sealing contrivance, supporting it in said position for effecting said movements at a speed dependent on said speed levels;

control cam means having a follower linkage including a cam follower, for performing the movements of each sealing contrivance, and having a cam which has a plurality of cam surfaces to enable performing the movements of one of the sealing contrivances with different ratios of movements into contact and movements away from contact with the packet depending on different positions of the respective cam follower relative to said cam surfaces;



a heat sensor in said one sealing contrivance; and

heat compensator means for controlling the position of the cam follower relative to said cam surfaces in response to a level of heat sensed by the heat sensor to control the ratios of the movements of said one heating contrivance so as to compensate for the level of heat sensed by the heat sensor.

3,982,381
APPARATUS FOR TRANSVERSELY SEALING A WRAPPER HOSE

Hans-Ulrich Bolli, Schleitheim, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Germany

Filed Feb. 4, 1976, Ser. No. 655,248

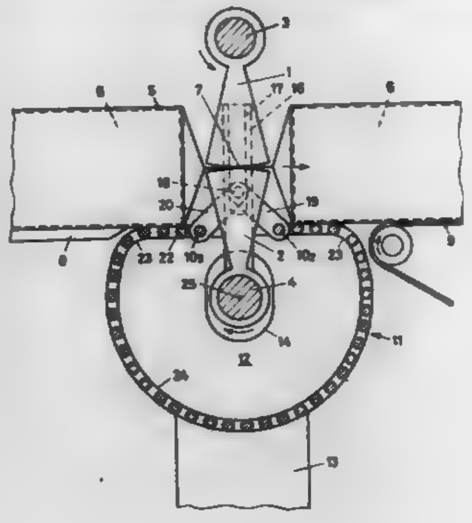
Claims priority, application Switzerland, Feb. 4, 1975, 1323/75

Int. Cl.² B65B *51/16*

U.S. Cl. 53—180 R 2 Claims

1. In an apparatus for periodically forming transverse seams in a longitudinally advanced wrapper hose for transversely sealing the wrapper hose between articles previously arranged therein, the apparatus including cooperating rotary upper and lower sealing shoes between which the wrapper hose passes and which periodically pinch the wrapper hose walls together and transversely seal them to one another; the lower sealing shoe being affixed to a rotary shaft; the improvement comprising

a. a drive arm affixed to said shaft spaced from said lower sealing shoe and being in alignment therewith;
b. means defining a radially extending guide groove in said drive arm;
c. two connecting rods jointed to one another by a joint pin extending into said groove and being radially slidable therein; and
d. a flexible bar grate arranged to support the wrapper hose in the zone of said sealing shoes and formed of a plurality of parallel-spaced, interconnected bars; two of said bars constituting end bars articulated to the one and the other connecting rod; the space between the two end bars being greater than the space between any other two bars; said lower sealing shoe projecting into the space between said end bars; said bar grate being rotated by said shaft through said drive arm, said joint pin and said connecting rods in synchronism with said lower sealing shoe.



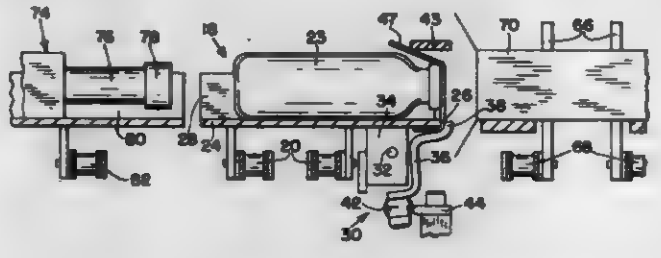
3,982,382
ARTICLE BUCKET WITH CIRCULAR CLAMP

Walter H. Vogel, Hoffman Estates, Ill., assignor to Crompton & Knowles Corporation, Worcester, Mass.

Filed May 22, 1975, Ser. No. 579,767

Int. Cl.² B65B *5/04*

U.S. Cl. 53—252 6 Claims



1. In a packaging machine having a conveyor with a plurality of buckets thereon for carrying articles and means for transferring the articles from the buckets into cartons, the improvement comprising:

a. each article bucket having a bottom plate with a top surface, a bottom surface and a front edge over which the article is transferred into a carton;
b. a clamp mounted on said article buckets and having a clamping jaw which is movable between a closed position and an open position, wherein said clamping jaw is effective, in open position, to allow a leaflet to be partially inserted between the bottom surface of said article bucket and said clamping jaw so that the remaining portion of said leaflet extends horizontally beyound the front edge of said article bucket and effective, in the closed position, to deflect the horizontally extending portion of an inserted leaflet to a substantially vertical position and to clamp said leaflet against said front edge;
c. means for inserting a leaflet between said bottom surface and said open clamping jaw; and
d. means for opening and closing said clamp so that said clamp is open to receive a leaflet, closed to deflect and clamp said leaflet, and opened to release said leaflet for transfer of an article from said bucket, whereby said article will engage the vertically extending portion of said leaflet as it passes over the front edge of said bucket and carry it into a carton.

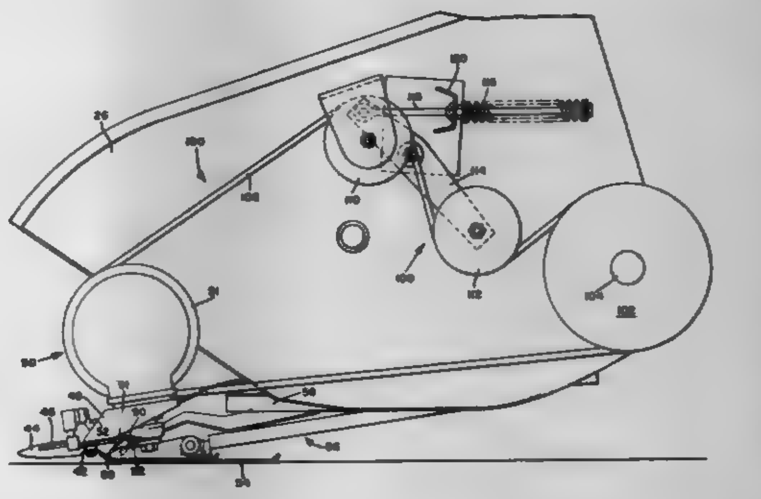
3,982,383
HARVESTING PLATFORM WITH A FLOATING CUTTER BAR

Roger Eugene Mott, Bettendorf, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Nov. 13, 1974, Ser. No. 523,509

Int. Cl.² A01D *69/08*

U.S. Cl. 56—11.6 17 Claims



1. A harvesting platform for a mobile harvesting machine comprising: a transversely elongated platform frame having opposite sides; a platform floor extending between the opposite sides; a transverse flexible cutter bar assembly including a reciprocatable sickle, extending between the opposite sides forwardly of the floor and operative to flex vertically to a limited degree to follow the contour of the ground; means mounting the cutter bar assembly on the platform frame for vertical adjustment relative thereto so that the cutter bar assembly follows the contour of the ground; a drive mechanism having a rotary input element and a reciprocating output element drivingly connected to the sickle, the drive mechanism being mounted on one end of the cutter bar assembly for vertical adjustment therewith, and a belt drive means mounted on one side of the platform frame on the same side of the platform as the drive mechanism and operatively connected thereto, said belt drive means including belt tensioning means operative to to provide belt tension regardless of the vertically adjusted position of the drive mechanism relative to the platform frame.

3,982,384
ROW CROP HARVESTING HEADER

Glen Willard Rohweder, Moline, Ill., and Edward John Hengen, Bettendorf, Iowa, assignors to Deere & Company, Moline, Ill.

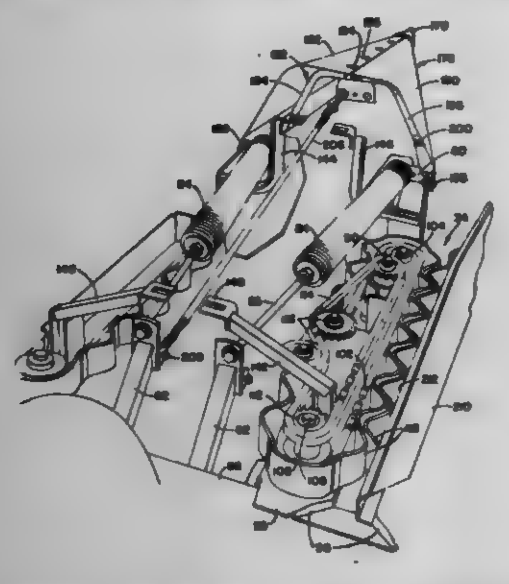
Filed Feb. 21, 1975, Ser. No. 551,526

Int. Cl.² A01D *45/02*

U.S. Cl. 56—106 38 Claims

1. A row crop harvesting header for a harvesting machine adapted to advance over a field of row planted crops, comprising: a transversely elongated main frame; a plurality of transversely spaced row units extending forwardly from the main frame, each row unit including a row unit frame, means mounting the row unit frame on the main frame for independent vertical floating adjustment of the forward end of the row unit, a pair of laterally spaced elements mounted on the row unit frame and defining a generally fore and aft passageway adapted to receive a row of crop material as the machine advances, conveyor means mounted on the row unit frame and having opposite rearwardly moving inner runs on opposite sides of the passageway and operative to engage the crop material and move it rearwardly along the passageway, and cutting means mounted on the row unit frame generally below

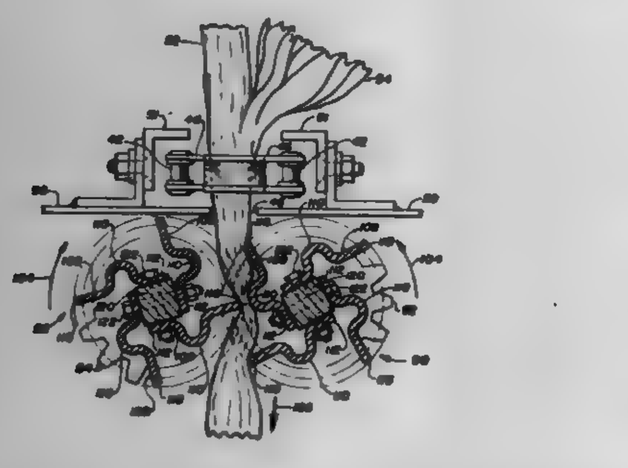
the forward end of the conveyor means for severing the crop material relatively close to the ground as the crop material moves rearwardly along the passageway; a hood means respectively mounted on each pair of adjacent row units and covering the area between the passageways of the adjacent row units, the opposite sides of each hood means at least partly forming said pair of laterally spaced elements that define the edges of the passageways, each hood means including first and second portions respectively attached to and independently vertically adjustable with the respective adjacent row units; and a forwardly converging divider member respectively mounted on each pair of adjacent row units and extending forwardly from the hood means, the forward end of each divider member moving between the adjacent rows as the machine advances.



3,982,385

STALK ROLLS FOR CORN HARVESTERS

Myles Hyman, Lancaster, Pa., assigner to Sperry Rand Corporation, New Holland, Pa.
Filed July 3, 1975, Ser. No. 592,964
Int. Cl.^{2} A01D *45/02*
U.S. Cl. 56—106 **6 Claims**

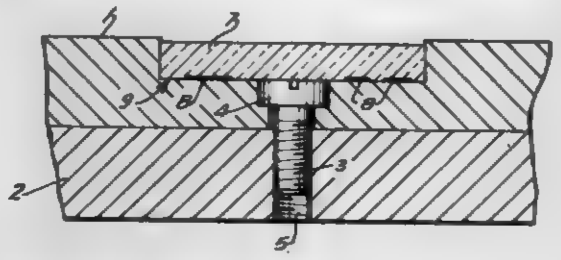


1. In a row crop corn harvester header attachable to a forage harvester and including a plurality of shield units spaced transversely apart to provide an elongated passage therebetween to receive corn stalks for the removal of ears therefrom by said header, each unit having a straight member extending longitudinally along one side of each passage and having an edge coacting with an edge on the straight member on the adjacent unit to define a narrow stripping slot through which corn stalks can pass but not the ears, endless flexible members having lugs spaced therealong and supported for movement of an elongated span thereof along one side of said elongated passage adjacent and substantially parallel to said edge of said straight member on said unit, means to drive said endless flexible members to move said elongated spans thereof on opposite sides of said passage in similar directions to positively move corn stalks along said passage and narrow slot, stalk rolls carried by each unit adjacent said passage in substantially parallel relation to and beneath said straight members, and means to rotatably drive said rolls on opposite sides of said passage in opposite rotary directions to engage corn stalks in said passage and pull them downward as the lugs on said endless flexible members move them along said slot, thereby to cause the ears to engage the edges of said slot between said straight members and be separated from said stalks as they are pulled downward by said stalk rolls; the improvement comprising each stalk roll having a plurality of elongated flutes connected in circumferentially spaced relationship around the axes of each stalk roll, said flutes being similar and each including a rib extending outwardly from one surface of said flute and the opposite edge portions being within a common plane, means connecting one of said edge portions of each flute to said roll at evenly spaced circumferential positions and extending substantially tangentially from said roll, whereby said ribs extend outwardly from the edge portion of the next adjacent flute on said roll, and bearing means supporting the opposite ends of said rolls in positions to dispose the axes of adjacent rolls in suitable positions to enable the outermost edges of the outer edge portions of said flutes on one roll to be suquentially spaced from the ribs on the other roll a distance appreciably less than the diameter of corn stalks engaged thereby, and means to index said rolls to effect such sequential relation of successive outer edges and ribs of said flutes as said rolls are rotated.

3,982,386

WATCHES, AND A METHOD OF MAKING THEM

Jean-Jacques Desaules, 3, rue Beau-Site, 2416 Les Brenets, Switzerland
Continuation-in-part of Ser. No. 343,436, March 21, 1973, abandoned. This application May 16, 1975, Ser. No. 578,113
Claims priority, application Switzerland, Mar. 23, 1972, 4318/72; Mar. 23, 1972, 4319/72
Int. Cl.^{2} G04F *1/00*
U.S. Cl. 58—1 R **10 Claims**



1. A method of making watch movements with sequential serial markings, comprising;

making a recess in a surface porton of each of a series of plate portions of uniform watch movements, at a location which is visible during service and repair of the corresponding watch movement, the recess having a maximum extension over the plate portion which is small compared with a radius of the watch movement;

fitting a series of plaques, each into one of the recesses, each plaque carrying a sequential serial marking; and

attaching the fitted plaque to each of said plate portions, in the corresponding recess, to sequentially serially mark the watch movements.

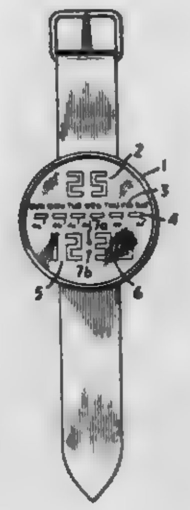
3,982,387

SOLID STATE ELECTRONIC TIMEPIECE

Kojiro Tanaka, Yachiyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan
Filed Dec. 24, 1974, Ser. No. 536,106
Claims priority, application Japan, Dec. 25, 1973, 49-3971
Int. Cl.^{2} G04B *19/30*
U.S. Cl. 58—50 R **8 Claims**

1. In an electronic timepiece: an oscillator for producing a high frequency time signal suitable as a time standard; means

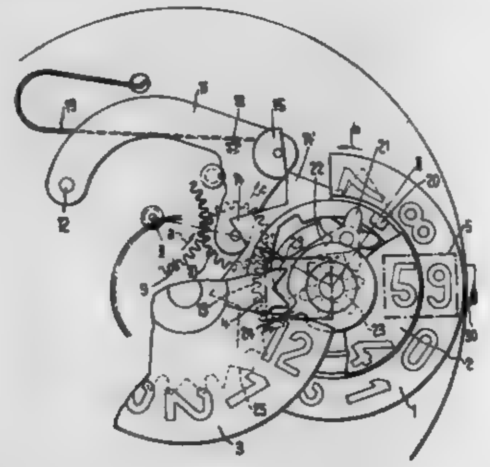
receptive of the time signal for dividing it into at least hour, minute and second drive signals; time display means receptive of the hour and minute drive signals for displaying the time in hours and minutes; and second display means receptive of the second drive signal for continuously displaying an indication of the time in seconds, said second display means comprising six energizable display elements operalble when energized to provide a light output, and circuit means responsive to the second drive signal for repeatedly and sequentially energizing said six display elements at ten-second intervals to effet flashing of each display element at one-second increments for a period of ten seconds to obtain a repeating succession of flashing light outputs at one-second increments thereby displaying a continuous indication of the time in seconds.



3,982,388

DIGITAL DISPLAY MECHANISM FOR A TIME-KEEPER

Charles Guyot, Tavannes, and Jacques Muller, Reconvilier, both of Switzerland, assignors to Ebauches Tavannes SA, Tavannes, Switzerland
Filed Feb. 28, 1975, Ser. No. 554,139
Claims priority, application Switzerland, Apr. 5, 1974, 4839/74
Int. Cl.^{2} G04B *27/06, 19/24, 19/02*
U.S. Cl. 58—85.5 **7 Claims**

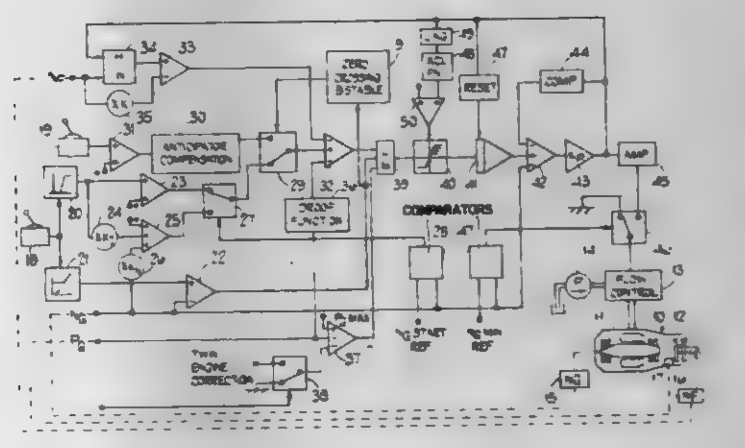


1. An instantaneous digital display mechanism for a timekeeper comprising a first indication disc, a second indication disc adjacent thereto, dirve mechanism including a first toothed wheel connected to said first indication disc, a driving wheel, an intermediate wheel in engagement with said first toothed wheel and said driving wheel, a main lever on which said intermediate wheel is pivoted, a ratchet wheel connected to said first indication disc, a dog on said main lever engageable with the teeth of said ratchet wheel, and means to correct said display mechanism, said dog being disengageable from said ratchet wheel by the automatic displacement of the said main lever by cooperation of said driving wheel, said intermediate wheel and said first toothed wheel during normal working and also by the manual displacement of the said main lever by the said means to correct said display mechanism.

3,982,389

ELECTRONIC FUEL CONTROL FOR A GAS TURBINE ENGINE

Paul Manwaring Maker, Loughton, England, assignor to Lucas Industries Limited, Birmingham, England
Filed July 7, 1975, Ser. No. 593,300
Claims priority, application United Kingdom, July 9, 1974, 30315/74
Int. Cl.^{2} F02C *3/10*
U.S. Cl. 60—39.16 R **4 Claims**



1. An electronic fuel control for a gas turbine engine having a gas turbine gas generator and a separate power turbine driven by the gas generator, the fuel control comprising an integrator, an output difference amplifier for comparing the output signal of said integrator with a gas generator actual speed signal derived from a gas generator speed transducer, a fuel flow control actuated by said output difference amplifier for varying the fuel flow to the engine, means for generating a power turbine speed demand signal, a power turbine actual speed transducer for producing a power turbine actual speed signal which is higher than the output signal of said output difference amplifier in normal use, a "highest wins" gate circuit having input terminals connected respectively to said power turbine actual speed transducer and to the output terminal of said output difference amplifier and an output terminal at which the higher of the signals at its two input terminals appears in use, a further difference amplifier connected to receive the output of said gate with an attenuated signal derived from the power turbine actual speed transducer, said attenuated signal being so attenuated that in normal running conditions the output of the further difference amplifier is less than the output signal of the output difference amplifier, a power turbine speed difference amplifier connected to receive said power turbine speed demand signal and the output signal of said further difference amplifier to produce a power turbine speed error signal which is of positive polarity when the power turbine speed demand signal exceeds the output signal from said further difference amplifier and means connecting the output terminal of the power turbine speed difference amplifier to the input terminal of the integrator.

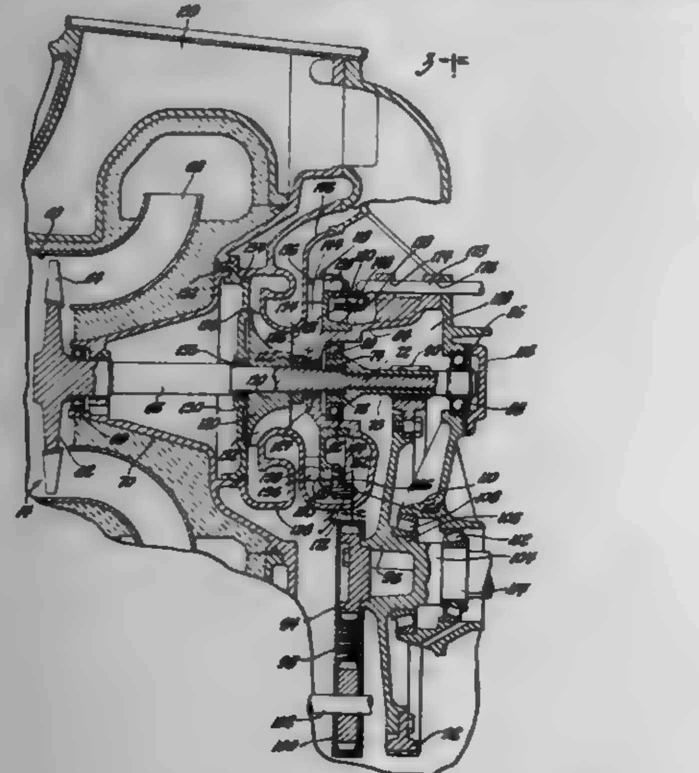
3,982,390

GAS TURBINE ENGINE COOLING SYSTEM

Albert H. Bell, III, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
Continuation of Ser. No. 499,480, Aug. 22, 1974, abandoned. This application Jan. 7, 1976, Ser. No. 647,449
Int. Cl.^{2} F02C *7/02, 7/12*
U.S. Cl. 60—39.16 R **1 Claim**

1. In a two-shaft gas turbine engine of the type including a first shaft having an engine compressor on one end thereof and a gasifier turbine on the opposite end thereof and a power

turbine shaft having a power turbine on one end thereof and means coupled thereto for transferring power from the power turbine shaft to an output power shaft and wherein housing means are located radially outwardly of and circumferentially of said power turbine means, the improvement comprising: an air brake compressor including a centrifugal impeller connected to said power turbine shaft on the opposite end thereof from the power turbine thereon, a plurality of blades on said impeller each having an axial inlet and a radial outlet, inlet and discharge duct means for directing ambient pressure air into said air brake compressor and for directing pressurized air therefrom, means forming a cooling chamber arranged circumferentially around and radially outwardly of the housing means, means forming an outlet from said cooling chamber in communication with atmosphere for maintaining said cooling chamber at atmospheric pressure, said discharge duct means directing pressurized air from said air brake compressor into said cooling chamber for flow therethrough to atmosphere for cooling the engine turbine during operation thereof, said air brake compressor absorbing energy from the power turbine shaft and compressing ambient air for flow through said cooling chamber and subsequent discharge to atmosphere during engine operation, means including inlet guide vanes having a first control position to direct an elevated mass air flow through the compressor to produce an elevated power absorption by the air brake compressor during a first engine operating mode and to produce pressurized air flow through said cooling chamber during the first engine operating condition, said inlet guide vanes having a second position to throttle air flow into said compressor to produce a mass air flow therethrough less than said first mass air flow thereby to produce a minimum power absorption during a second engine operating condition and a continued flow of pressurized air through said atmospheric cooling chamber for cooling the engine during the second condition of operation thereof.



3,982,391
APPARATUS AND PROCESS FOR MECHANICAL POWER PRODUCTION BY ACETYLENE COMBUSTION

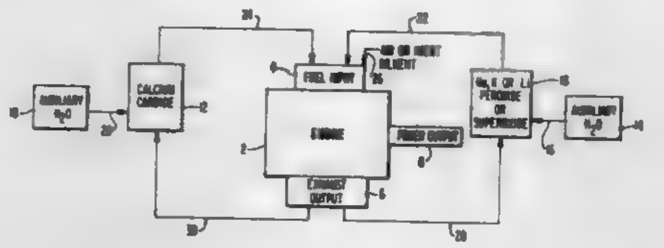
Orr E. Reynolds, 6828 Granby St., Bethesda, Md. 20034
Filed Sept. 20, 1974, Ser. No. 507,591
Int. Cl.² F02B *43/00;* F02C *3/20*
U.S. Cl. 60—39.02 **17 Claims**

1. An apparatus, comprising:

a. a combustion engine having a combustion zone for burning acetylene with an oxygen-containing gas to produce mechanical power and exhaust gases including H_2O and oxides of carbon, the combustion engine including fuel input means, exhaust output means and power output means;

b. a first structure defining a reaction zone for containing a compound selected from the group consisting of sodium peroxide, potassium peroxide, lithium peroxide, sodium superoxide, potassium superoxide and lithium superoxide for reacting H_2O with the compound to produce oxygen and for reacting oxides of carbon with by-products of the reaction of the H_2O with the compound;

c. a first conduit connecting the exhaust means to the first structure for supplying exhaust gases, including H_2O and oxides of carbon, thereto;



d. a second conduit connecting the first structure to the fuel input means for supplying oxygen thereto;

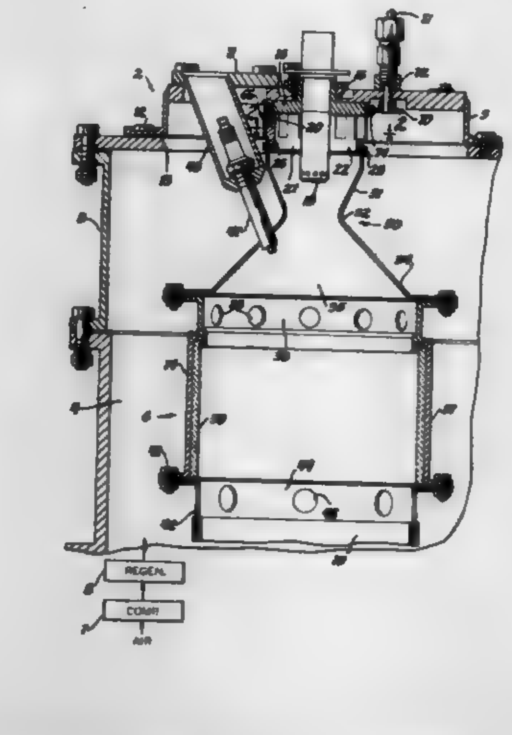
e. a second structure defining a reaction zone for containing calcium carbide for reacting H_2O with the calcium carbide to produce a product consisting essentially of calcium oxide and aceytlene and for reacting oxides of carbon with the calcium oxide;

f. a third conduit connecting the exhaust means to the second structure for supplying exhaust gases, including H_2O and oxides of carbon, thereto; and

g. a fourth conduit connecting the second structure to the fuel input means for supplying acetylene thereto.

3,982,392
COMBUSTION APPARATUS

David E. Crow, Glastonbury, Conn., assignor to General Motors Corporation, Detroit, Mich.
Continuation of Ser. No. 502,277, Sept. 3, 1974, abandoned. This application Jan. 19, 1976, Ser. No. 650,242
Int. Cl.² F02C *7/22*
U.S. Cl. 60—39.23 **1 Claim**

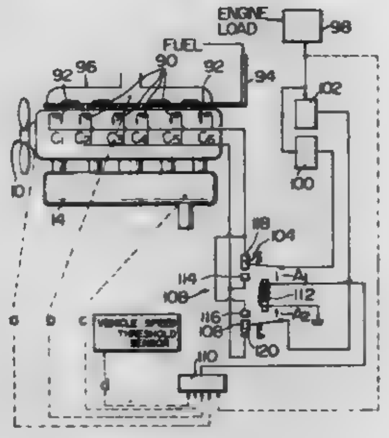


1. In combustion apparatus for a gas turbine engine comprising, in combination, means defining a housing adapted to receive a flow of hot compressed air, a combustion liner in the housing comprising liner wall means extending from the upstream end of the liner to the downstream end thereof, said liner wall means including prechamber wall means having a

converging wall portion and a downstream streamlined imperforate throat section both defining a noncombustion fuel prevaporization chamber, said throat section defining an outlet from the prevaporization chamber, said liner wall means including a diverging cone connected to said throat section to define a combustion reaction chamber downstream of said throat section, a fuel spray nozzle supported on said liner wall means including a tip portion thereon located concentrically within said prevaporization chamber and spaced axially upstream of said imperforate throat section and operative to direct a fuel spray into said prevaporization chamber, said prechamber wall means including a primary air swirler for admitting hot compressed air from the housing into said prevaporization chamber, said swirler being variable in effective area to vary the primary air flow swirl into said prevaporization chamber to control the degree of mixing between said fuel spray and said primary air as well as the air fuel ratio thereof, said imperforate throat section providing a smooth flow path for mixed air and fuel from the noncombustion prevaporization chamber across the inner wall of said downstream diverging cone for maintaining a flame front on the inner surface of said diverging cone downstream of said throat section, said liner wall means including a row of primary air ports immediately adjacent to and downstream of the diverging cone at the downstream end of the combustion reaction chamber for admitting additional primary combustion air radially into the combustion reaction zone, said diverging cone diverging from the longitudinal axis of said liner wall means at an angle of about 33° and said cone having a length with respect to the diameter of said throat section to produce a ratio of cone length to throat diameter in the range of 2.0 through 2.2 for maintaining a flow of noncombusted prevaporized and mixed fuel and air from the prevaporization chamber into said combustion reaction chamber and to maintain the flame front on the inner wall of said diverging cone downstream and exteriorly of said prevaporization chamber, said combustion reaction chamber having an outlet diameter about four times that of said throat to prevent undesirable entrance of the flame front from said reaction chamber into said noncombustion prevaporization chamber.

3,982,393
INTERNAL COMBUSTION ENGINE EXHAUST CLEANING METHOD AND SYSTEM

Kenji Masaki, and Masaaki Saito, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Dec. 12, 1974, Ser. No. 531,986
Claims priority, application Japan, Dec. 21, 1973, 48-143296
Int. Cl.² E02B *75/10*
U.S. Cl. 60—274 **14 Claims**



2. A method of cleaning exhaust gases from a multicylinder internal combustion engine comprising the steps of:

supplying a first air-fuel mixture richer than stoichiometric mixture into a first group of engine cylinders consisting of more than half the number of total cylinders of the engine and a second air-fuel mixture leaner than stoichiometric mixture into a second group of engine cylinders consisting of the remaining cylinders of the engine during low load engine operation;

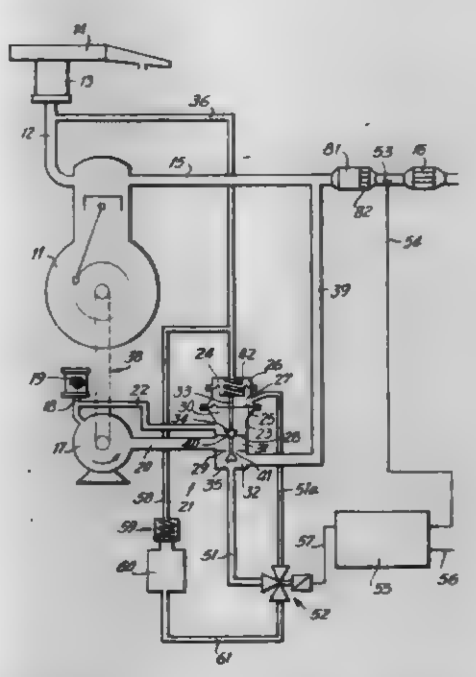
supplying the first air-fuel mixture into the second group of engine cylinders and the second air-fuel mixture into the first group of engine cylinders during medium and high load engine operation; and

afterburning in an afterburner the gases discharged from all the engine cylinders;

whereby the temperature in the reburning means is rapidly elevated so that the reburning means effectively functions during the low load engine operation, while the temperature is prevented from excessive elevation during medium and high load engine operation.

3,982,394
CONTROL INSTALLATION FOR THE PROPORTIONING OF A SECONDARY AIR QUANTITY FOR ACHIEVING OPTIMUM COMBUSTION OR AFTER-BURNING IN INTERNAL COMBUSTION ENGINES

Gunter Hartel, Rosellen, Germany, assignor to Deutsche Vergaser GmbH & Co. Kommanditgesellschaft, Neuss, Germany
Filed May 23, 1974, Ser. No. 472,884
Claims priority, application Germany, May 25, 1973, 2326718
The portion of the term of this patent subsequent to Jan. 13, 1976, has been disclaimed.
Int. Cl.² F02B *75/10*
U.S. Cl. 60—276 **3 Claims**



1. An installation for the proportionate addition of secondary air employed in the optimum after-burning of the exhaust gases of an internal combustion engine, including; an engine-driven air pump, control means for introducing predetermined quantities of said secondary air; means located externally of said control means being responsive to at least one of a plurality of engine operating conditions consisting of the pressure of the engine suction side, the engine exhaust gas back-pressure, engine rotational speed, exhaust gas oxygen content, and exhaust gas carbon monoxide content for regulating said control means; said control means including means for the withdrawal of a protion of the secondary air conveyed through said control means and conducting said withdrawn secondary air to the suction side of said air pump, said air pump returning said secondary air from the pressure side of said air pump to said control means; means for determining the rate of feed of the secondary air and the quantity of the air portion withdrawn from said control means to said air pump, said means including two spaced conical valve means controlling flow passages through said control means, said valve means being mounted on a common actuating control rod and being posi-

tioned so that, during an increase of the fed quantity of second air, the quantity of the withdrawn air portion is reduced, said actuating control rod for said conical valve means being rigidly connected to two spaced upper and lower membranes having unequal operative surfaces, said membranes defining therebetween a first control pressure chamber communicating with the exhaust gas back-pressure of said engine, and a second control pressure chamber located above the upper membrane communicating with the suction side pressure of said engine, the improvement comprising: sensor means for measuring the oxygen content or carbon monoxide content in the exhaust gas; a catalytically operative element being positioned upstream of said sensor means for converting deleterious materials in said exhaust gas into other harmless materials.

3,982,395

EXHAUST SYSTEM FOR MULTI-CYLINDER INTERNAL COMBUSTION

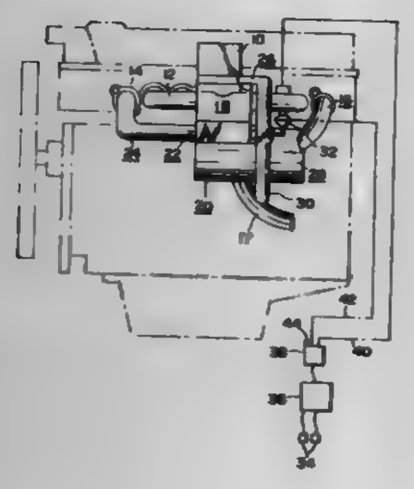
Kohichi Hasegawa, Mishima, and Toshiaki Konomi, Susono, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed June 16, 1975, Ser. No. 587,052

Claims priority, application Japan, Feb. 10, 1975, 50-17867[U]

Int. Cl.² F02M *25/06*

U.S. Cl. 60—278 **5 Claims**



1. An exhaust system for a multi-cylinder internal combustion engine, comprising:

an exhaust gas recirculating circuit connected to an exhaust pipe of one engine cylinder for recirculating to an intake manifold of the engine the entire amount of exhaust gas which is discharged from said one engine cylinder;

switching means provided in said exhaust gas recirculating circuit for switching the flow of the recirculating exhaust gas in response to a value of a predetermined parameter indicating particular operating conditions of said engine;

heat exchanging means provided in said exhaust gas recirculating circuit in contact with said intake manifold of said engine for heating said intake manifold by heat exchange with said recirculating exhaust gas; and

a reactor provided in the exhaust manifold of said engine for receiving for cleaning purposes the entire amount of exhaust gases which are discharged from engine cylinders other than said one engine cylinder.

3,982,396

THERMAL REACTOR WITH SLIDABLE SUPPORTS FOR INNER CORE

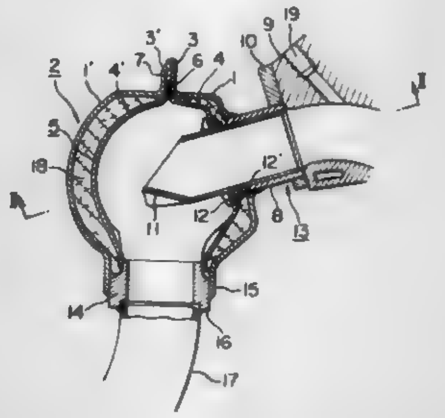
Motoo Suzuki, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1975, Ser. No. 581,651

Claims priority, application Japan, Sept. 6, 1974, 49-103186

Int. Cl.² F01N *3/10, 7/10*

U.S. Cl. 60—282 **3 Claims**



1. A thermal reactor comprising a shell formed from two pieces having flanges extending outwardly from the interior of the shell, which pieces are joined to each other at the flanges thereof and which flanges define a concave portion, a tubular core formed from two pieces having flanges extending outwardly from the interior of the core, which second-named pieces are joined to each other at the flanges thereof and which flanges define a convex portion, said convex portion being slidably supported within said concave portion, said core having a discharge opening, said shell having an outlet open end, a space being provided between said shell and core, at least one inlet pipe secured to said shell and extending therethrough into the core, seal ring means slidably positioned on the inlet pipe and engaging the core in a fluid tight manner, and an outlet pipe secured at one end to said core to connect to said opening, said outlet pipe also being secured at a peripheral portion thereof to the outlet open end in said shell, and adiabatic material having high heat resistance in the space defined between said shell and core, an outlet end of said outlet pipe being connected to an exhaust pipe of an engine.

3,982,397

APPARATUS FOR AFTERBURNING THE EXHAUST GASES OF AN INTERNAL COMBUSTION ENGINE TO REMOVE POLLUTANTS THEREFROM

Pierre Alfred Laurent, 62, Avenue Theophile Gautier, 75016 Paris, France

Filed Feb. 11, 1974, Ser. No. 441,517

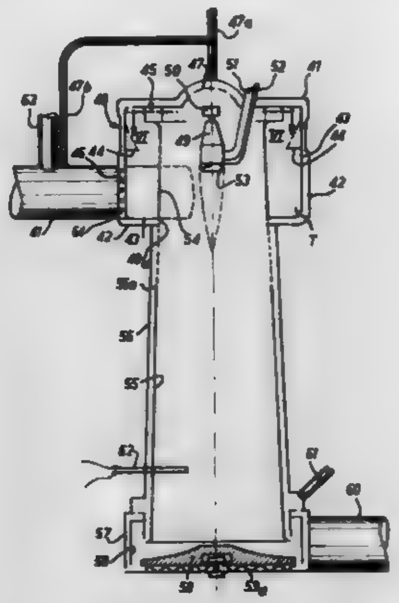
Claims priority, application France, Feb. 12, 1973, 73.04925

Int. Cl.² F01N *3/14;* **F02B** *75/10*

U.S. Cl. 60—286 **23 Claims**

1. An apparatus for after-burning combustible pollutants in the exhaust gases of an internal combustion engine, said apparatus comprising a reactor for burning the exhaust gases, means for introducing secondary air into the reactor, a toroidal body disposed upstream of said reactor for receiving the exhaust gases from the engine and imparting high rotational speed thereto before introduction of exhaust gases into said reactor, distributor means for introducing the exhaust gases into said reactor from said toroidal body with substantial suppression of the rotational momentum of the gases, a first obstacle serving as a flame holder mounted inside said toroidal body and having an annular face at which a first flame is produced, said reactor comprising a body having an inner surface which is approximately a surface of revolution around an axis, and a second obstacle disposed within said inner surface substantially along said axis and serving as a second

flame holder at which a second flame is produced with a surrounding gas recirculation zone, said second obstacle having a diameter between 15 and 40% of the diameter of the reactor to provide a contact time of 1 to 3×10^{-3} seconds of the gas flow in the said recirculation zone.



3,982,398

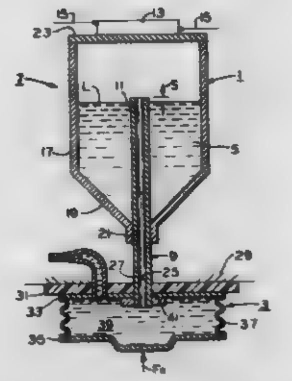
THERMAL ACTUATOR, METHOD OF CONTROLLING SUCH AND ACTUATING SYSTEM

Paige W. Thompson, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Jan. 15, 1974, Ser. No. 433,594

Int. Cl.² F03G *7/06*

U.S. Cl. 60—531 **30 Claims**



1. A thermal actuator comprising a pair of means for containing a vaporizable liquid, one of said containing means being generally filled with the liquid and the other of said containing means being filled only to a selected fill level therein with the liquid, means thermally associated with said other containing means and operable generally between an energized state for heating only the liquid in said other containing means to effect its vaporization and a de-energized state so as to permit cooling of the vapor in said other containing means thereby to respectively establish pressure differentials acting in opposite directions between said containing means, means communicated with said containing means for effecting the transfer of the liquid from said other containing means to said one containing means at one transfer rate and the return of the transferred liquid at another transfer rate different than the one transfer rate, said transfer effecting means including a portion within said other containing means having an opening predeterminately disposed at least generally coextensively with the selected fill level for passing only vapor created in said other containing means through said transfer effecting means to said one containing means in response to the establishment of the pressure differential acting in one of the opposite directions when said heating means is in its energized state and the vapor being condensed back to the liquid at least when subjected to the relatively cooler liquid in said one containing means, and the return of the liquid at the other transfer rate through said transfer effecting means being effected in response to the establishment of the pressure differential acting in the other of the opposite directions when said heating means is in its de-energized state.

3,982,399

FUEL DEGASSING METHOD

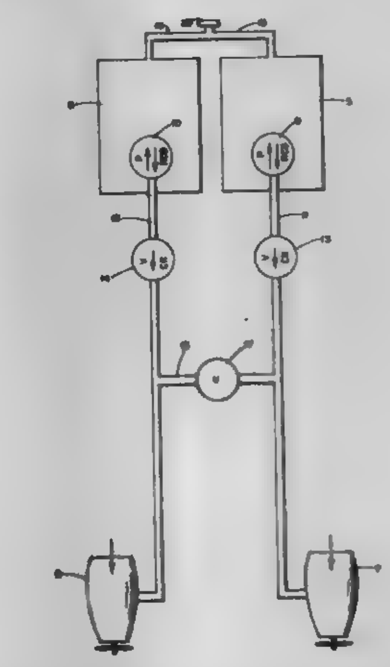
Earl T. Rookey, Long Beach, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Sept. 25, 1974, Ser. No. 509,238

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 24, 1976

Int. Cl.² F01B *21/04, 25/00;* **F02C** *9/04*

U.S. Cl. 60—706 **4 Claims**



1. A method of operating a fuel system in an aircraft equipped with two or more fuel tanks, each tank having a reversible fuel booster pump submerged therein and connected to an engine fuel supply line, said tanks being vented to atmosphere, and means to selectively reverse the rotation of said fuel booster pumps, said method comprising reversing the rotation of the fuel booster pump in the unused fuel tanks when all engine fuel is being supplied from one tank only, whereby the reversed fuel booster pump agitates the fuel in said unused tanks to release entrained air and vapor from said fuel to escape from said tank vents.

3,982,400

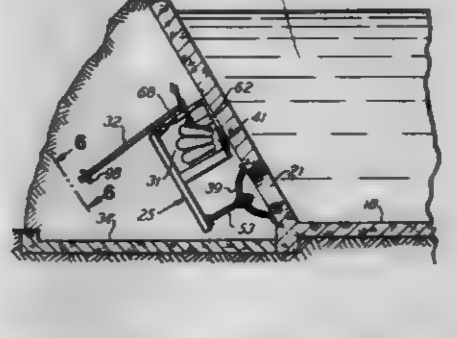
DISTRIBUTION VALVE FOR IRRIGATION CHANNELS

Donald E. Benkert, 999 E. Valley Blvd., Unit No. 50, Alhambra, Calif. 90032

Filed Nov. 24, 1975, Ser. No. 634,371

Int. Cl.² E02B *7/40*

U.S. Cl. 61—24 **11 Claims**



1. In a walled irrigation channel having ported side walls the combination comprising a frame, hinge means supporting the frame adjacent a port, a valving member on the frame adapted

to seal the port, a fluid powered actuator supported adjacent the wall and bearing on the frame, means remote from the port for supplying fluid under pressure to the actuator, and means for adjusting the position of the valving member with respect to the frame, said hinge means having a pivot point substantially coincident with the plane of closure of the valving member at the port.

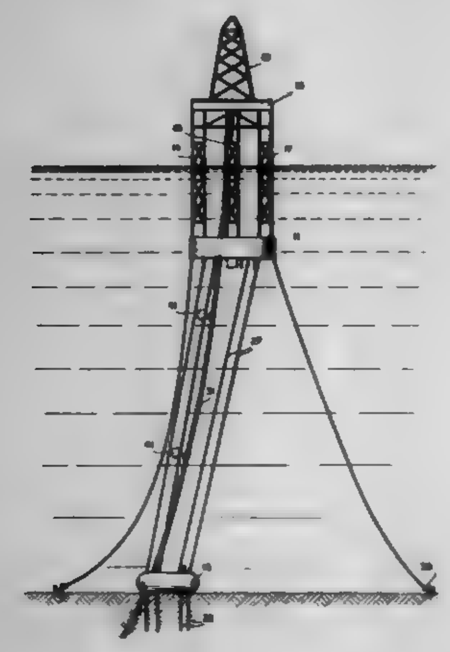
3,982,401
MARINE STRUCTURE WITH DETACHABLE ANCHOR

John T. Loggins, Metairie, La., assignor to Texaco Inc., New York, N.Y.

Filed Apr. 2, 1975, Ser. No. 564,522

Int. Cl.² B63B *35/44*

U.S. Cl. 61—93 **7 Claims**



1. Method for commencing directional drilling of an underwater well from a buoyant tension leg marine structure which includes; a buoyant base having a deck holding well drilling equipment thereon, a first anchor at the ocean floor having a registration passage therein, cable means under tension, connecting said marine structure to said first anchor whereby to partially overcome the buoyancy of said structure and to establish a vertical position defined by a substantially vertical relationship between said anchor and said marine structure and second anchor means depending from said deck connected to discrete anchors disposed at the ocean floor and positioned radially outward from said first anchor, which includes the steps of;

laterally displacing said buoyant structure from its neutral position to establish a predetermined angle of inclination thereof with said first anchor,

fixing said marine structure in said laterally displaced position,

fixing the lower end of an elongated drill string conductor to said first anchor and the upper end thereof to said working deck in a position to receive a drill string from said drilling equipment.

3,982,402
SUBMARINE PIPELINE LAYING VESSEL

Alexander Craig Lang, Huntington Beach, Calif., and Peter Alan Lunde, Houston, Tex., assignors to Santa Fe International Corporation, Orange, Calif.

Filed May 5, 1975, Ser. No. 574,433

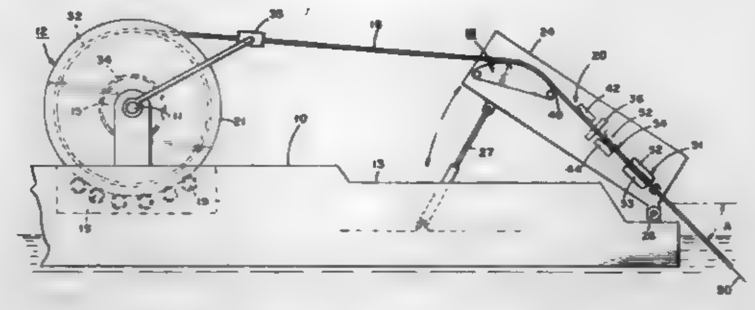
Int. Cl.² F16L *1/00*; B63B *35/04*; B65H *75/00*

U.S. Cl. 61—109 **8 Claims**

1. A vessel for continuously laying a pipeline on the bed underlying a body of water, comprising:

a pipe supply reel mounted for rotation on said vessel about its horizontal axis;

drive means for rotating said reel thereby unwinding a pipe section;



a diverter structure having one end coupled to one end of said vessel and having the other end extending upwardly in the direction of said reel and at an acute angle relative to the deck of said vessel; and

pipe-conditioning means mounted on said diverter structure for conditioning said pipe section and discharging the conditioned pipe section into said body of water.

3,982,403
LAYING CABLES AND THE LIKE UNDER WATER

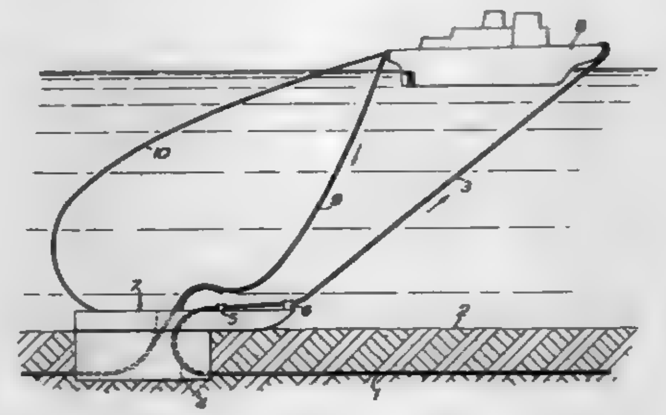
Norman Howard Waterhouse, Windsor, England, assignor to BICC Limited, London, England

Filed Dec. 4, 1974, Ser. No. 529,565

Claims priority, application United Kingdom, Dec. 6, 1973, 56534/73

Int. Cl.² F16L *1/00*; E02F *5/02*

U.S. Cl. 61—72.4 **10 Claims**



1. A method of laying a flexible member below the bed of a body of water comprising forming a trench in the bed and laying it in a line having with respect to the flexible member at least one characteristic selected from a greater strength and another cost and burying the line; and then in a separate second operation after the line has been buried laying said flexible member from a cable-laying ship by a submerged plough caused to follow the path of said line and to re-form a trench on substantially the same route, lay the flexible member therein, and bury it.

3,982,404
INDIVIDUAL QUICK-FREEZING OF MOIST ARTICLES USING DEEP FLUIDIZED BED AND INPUT CONDITIONER

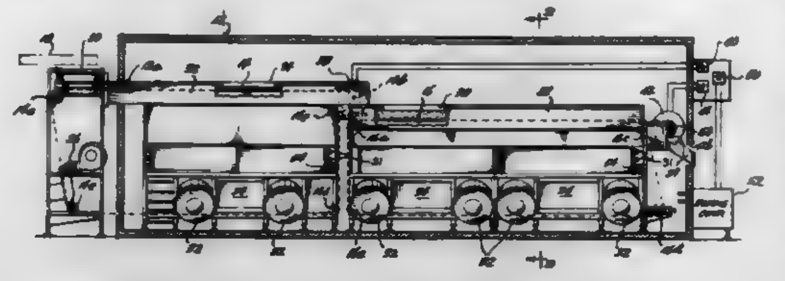
Milan R. Overbye, Kent, Wash., assignor to Lewis Refrigeration Co., Woodinville, Wash.

Filed Nov. 4, 1974, Ser. No. 520,294

Int. Cl.² F25D *17/06*

U.S. Cl. 62—57 **11 Claims**

1. In I.Q.F. preservation of food and similar articles having surface moisture, the freezing process comprising first subjecting the articles amassed in a first deposit on a foraminous conveyor to flow of gas upwardly through the conveyor and such articles thereon at subfreezing temperature for a selected first time period which takes the articles predominantly to the incipient point of freezing where substantially all of the above-freezing sensible heat is removed without removing the latent heat, with said deposit of articles being in a fluidized state during said first time period, and thereupon subjecting such articles massed in a second deposit, at least a few times deeper than the first deposit, to deep-bed mass fluidization freezing created at least partially by gas at subfreezing temperatures flowed upwardly through the mass for a selected second time period several times longer than the first time period which removes all remaining latent heat from such articles and depresses their temperature materially below freezing throughout.



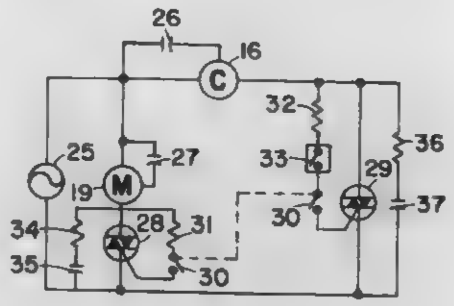
3,982,405
HAZARDOUS DUTY ROOM AIR CONDITIONER

Jack D. Seigler, 546 Beryl, San Antonio, Tex. 78213, and Gerald L. Rodgers, 14211 Turtle Rock, San Antonio, Tex. 78232

Division of Ser. No. 467,146, May 6, 1974, Pat. No. 3,911,693. This application July 23, 1975, Ser. No. 598,334

Int. Cl.² F25D *17/00*; F25B *49/00*

U.S. Cl. 62—181 **2 Claims**



1. A control circuit for an air conditioner for use in hostile environments, comprising:

a compressor motor having a first internal overload circuit;

a fan motor having a second internal overload circuit;

a pair of triacs each having a respective low current triggering means, one of said triacs being connected in circuit with said compressor motor and the other of said triacs being connected in circuit with said fan motor;

thermostat means for controlling the triggering means of said one triac to prevent operation of said compressor motor when room temperature is below a predetermined level;

manual double pole, double throw switch means for controlling the application of power to said air conditioner by simultaneously connecting said triggering means of both said triacs to a power source.

3,982,406
REFRIGERATOR WATER STORAGE AND DISPENSING SYSTEM WITH WATER FILTER

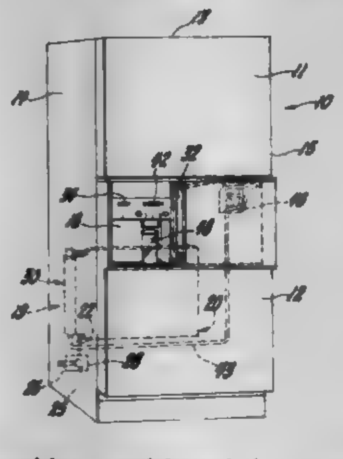
Robert S. Hanson, Kettering, and Louis D. Benasutti, Fairborn, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1975, Ser. No. 636,211

Int. Cl.² F25D *23/12*; B67D *5/62*

U.S. Cl. 62—339 **3 Claims**

1. In combination with a domestic refrigerator for dispensing chilled water; a refrigerator insulated cabinet having a chilled water dispensing service area accessible from the exterior of said cabinet, a cold water supply water storage tank in the fresh food storage compartment of said refrigerator having a notched upper corner adjacent one vertical edge of said tank, said tank having a lower inlet and an outlet in said notched upper corner, said tank having a serpetine storage volume comprising a plurality of substantially horizontally extending passes connecting said inlet and said outlet, the uppermost pass extending at a first upwardly inclined axis toward said outlet for purging air from said passes to said outlet, said outlet inclined at a second upwardly inclined axis equal to or greater than said first axis, said outlet terminating at a location recessed inwardly from said one vertical edge of said tank, wherein the improvement comprises an elongated hollow filter cartridge positioned in vertically juxtaposed relation to said one tank edge having an upper inlet adaptor and a lower outlet adaptor, granular water conditioner in said cartridge, said inlet adaptor including a housing forming an upper chamber having an integral tube extending therefrom at a downwardly inclined axis complementary with the said second upwardly inclined axis, fastening means for sealingly connecting said tank outlet and said integral tube to form an assembly of said water storage tank and said cartridge, whereby said filter cartridge upper chamber is at the highest elevation of the water storage tank and cartridge assembly, and conduit means connecting said lower outlet adaptor with water dispenser means in the service area, whereby chilled water from said tank is purged of air and filtered just prior to being dispensed at the service area.



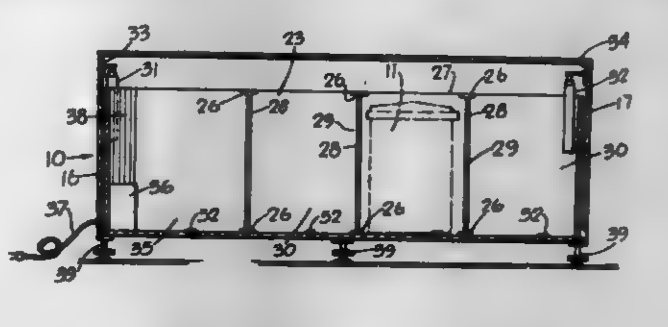
3,982,407
GARBAGE CONTAINER UNIT

Jean Guy Guenette, Toronto, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Jan. 7, 1975, Ser. No. 539,120

Int. Cl.² F25D *11/00*

U.S. Cl. 62—441 **5 Claims**



1. A garbage container unit, which comprises:

a. a rectangularly shaped open top box having a bottom base with a plurality of drainage holes therein, a pair of upwardly extending vertical endwalls, a pair of upwardly extending vertical sidewalls, said base, said endwalls and said sidewalls defining a rectangularly shaped chamber therein;

b. a plurality of horizontally placed channel brackets affixed to an upper inside surface of said bottom base, said channel brackets additionally affixed to the top edges of said vertical sidewalls;

c. a plurality of vertically placed rectangularly shaped partition boards having air passageways therethrough, said partition board detachably mounted in said channel brackets for dividing said rectangularly shaped chamber into a plurality of smaller compartments, said smaller compartments varying in dimensions according to placement of said partition boards;
d. a cover hingably mounted onto one said sidewall of said box;
e. a cooling means contained in one said smaller compartment, said cooling means including an electric motor communicating a refrigerant unit, cool air from said refrigerant passing through said air passageways from one said smaller compartment to another said smaller compartment;
f. a plurality of garbage can members, one said garbage can member contained in each said smaller compartment; and
g. a plurality of self leveling foot members affixed to said base of said box, each said foot member including a flat reinforcing member joined to a bottom face of said base, wherein a threaded aperture extends upwardly through said reinforcing member into said base, a horizontally placed rod having a threaded outer surface, said rod threadably engaging into said aperture, a disc member affixed to a bottom of said rod, and a locking nut contained on said rod between said reinforcing member and said disc.

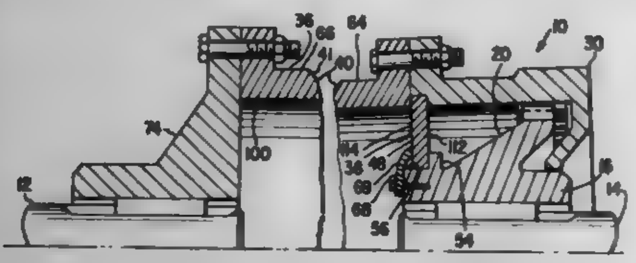
3,982,408
FLEXIBLE GEAR COUPLING HAVING A SHEAR SPACER AND SLEEVE CAPTURING MEANS

John Wright, Baltimore, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed May 13, 1975, Ser. No. 577,060

Int. Cl.² F16D *3/18*

U.S. Cl. 64—9 R **4 Claims**



1. A flexible gear type coupling for connecting a pair of substantially coaxially aligned shafts to transmit torque therebetween, comprising:
a hub means having external gear teeth surrounding an outer portion thereof and rotatably connected to one of said shafts,
  said hub means including a radially outwardly extending flange axially spaced from an end portion of said hub means forming a shoulder portion between said flange and said end portion;
a sleeve means surrounding said hub means and having internal gear teeth surrounding an inner portion thereof and in meshing engagement with said external gear teeth,
  said sleeve means including a circumferentially extending recess around said inner portion of said sleeve means and in radial alignment with said shoulder portion;
a shear spacer means connected between said sleeve means and the other of said shafts for transmitting torque from said one shaft to said other shaft,
said shear spacer means being adapted to shear when excessive torque is applied thereto for protecting said coupling from damage by said excessive torque;
a capturing means interposed between said hub means and said sleeve means for maintaining said sleeve means substantially concentric about said hub means upon shearing of said shear spacer means,
said capturing means comprising an annular ring secured in said recess and extending radially inwardly therefrom and surrounding said shoulder portion in close proximity thereto for axial abuttment with said radially outwardly extending flange; and
a separating means for axially separating sheared portions of said shear spacer means upon shearing thereof to prevent contact between said sheared portions while said coupling is rotating.

3,982,409
WEFT-KNITTING METHOD AND APPARATUS

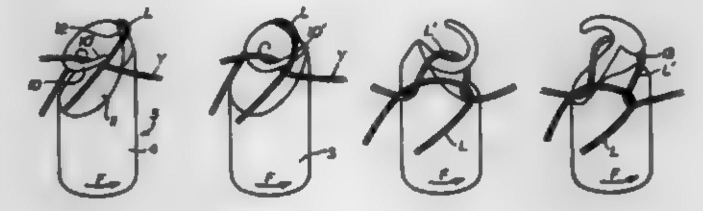
Jean-Jacques Conroux, Sciez-Jussy, France; Daniel Pilet, Borex (Vaud), Switzerland, and Christian Roehrich, Archamps, France, assignors to Battelle Memorial Institute, Carouge-Geneve, Switzerland

Filed Nov. 18, 1975, Ser. No. 633,105

Claims priority, application Switzerland, Nov. 19, 1974, 015357/74

Int. Cl.² D04B *35/00*

U.S. Cl. 66—1 R **8 Claims**



1. A knitting method comprising the steps of sequentially:
a. forming a filament loop around a cylindrical body,
b. disposing another filament section diametrically over the end of said body,
c. retaining said section at said end of said body,
d. sliding said loop off said body over said end by pulling on the legs of said loop in a first direction to surround said section of filament to each side of said end of said body,
e. pulling said section surrounded by said loop in a second direction opposite said first direction to form another such loop around said body, and
f. repeating steps (b) through (e) with the loop formed in step (e).

3,982,410
APPARATUS FOR THE CONTINUOUS TREATMENT OF AN ADVANCING WEB

Nelson F. Getchell, Great Falls, Va.; Norman R. S. Hollies, Bethesda, and Samuel S. Stanton, Chevy Chase, both of Md., assignors to Cotton Incorporated, New York, N.Y.

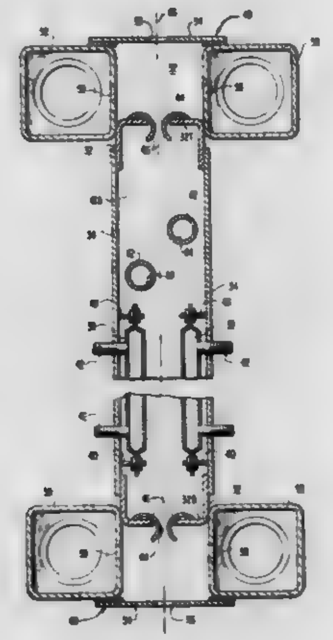
Continuation-in-part of Ser. No. 329,145, Feb. 2, 1973, Pat. No. 3,908,408. This application May 20, 1974, Ser. No. 471,692

Int. Cl.² D06B *3/10*

U.S. Cl. 68—5 E **5 Claims**

1. Apparatus for treating a continuously advancing web of material with a fluid comprising:
sleeve-like reaction chamber means having an entrance opening and exit opening;
a pair of partitions in said chamber means, one of said partitions being adjacent said entrance opening and the other of said partitions being adjacent said exit opening, said partitions having inlet and outlet openings aligned with said entrance and exit openings;
a pair of end walls and a pair of side walls interconnecting said partitions to define a fluid treatment chamber within said sleeve-like reaction chamber means for receiving a web of material traveling along a path from said inlet opening to said outlet opening;
each side wall having a dimension extending perpendicular to the direction of travel of said web and defining a length of said treatment chamber;

each end wall having a dimension extending perpendicular to the direction of travel of said web and defining a width of said treatment chamber;
said length having an extent which is multiple times the extent of said width;
a plurality of pipes for conducting pressurized fluid into said treatment chamber, said pipes each projecting through one of said walls and into said treatment chamber and extending parallel to the length of said treatment chamber spaced inwardly from said side walls and on opposite sides of said travel path of said web;



said pipes each including fluid discharge openings spaced therealong and being directed toward said travel path of said web so as to direct fluid toward a web traveling through said treatment chamber and to provide penetration of the fluid throughout the web during travel of the web through said treatment chamber; and evacuation means for withdrawing fluid from said treatment chamber between said entrance opening and said one partition and from between said exit opening and said other partition;
said evacuation means being arranged to allow material to enter and exit said sleeve-like chamber means without there occuring substantial leakage of gases from said sleeve-like chamber means.

3,982,411
WET TREATMENT DEVICE FOR DYEING TEXTILE MATERIAL IN THE FORM OF AN ENDLESS ROPE

Hans Kreitz, Stolberg, Rhineland, Germany, assignor to Firma H. Krantz, Aachen, Germany

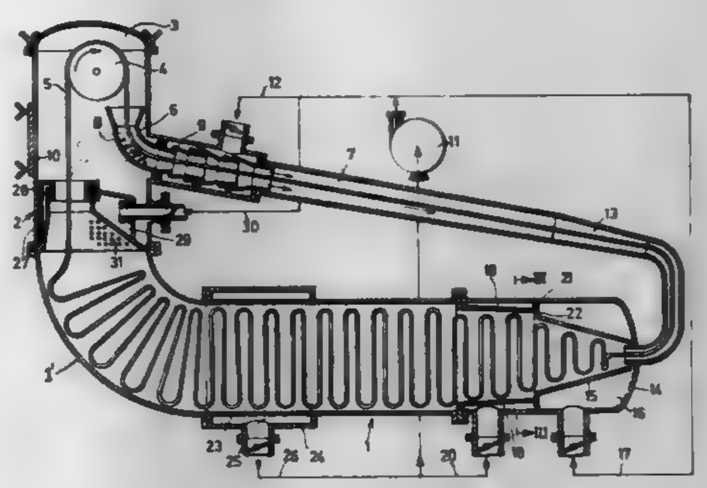
Filed May 30, 1975, Ser. No. 582,202

Claims priority, application Germany, June 26, 1974, 7421693

Int. Cl.² D06B *3/24, 3/28*

U.S. Cl. 68—177 **5 Claims**

1. A wet treatment device for dyeing textile materials in the form of a curved rope comprising a pressure tank having a horizontal storage portion including first and second ends, an upwardly curved portion at said first end, a vertical deflection portion rising from said upwardly curved portion, a driving tube having one end leading into said deflection portion and another end, said other end of said tube leading into said second end of said storage portion, said one end of said driving tube having a curved mouth portion, means for shifting said curved mouth portion through an angle of 180° between first and second positions, respectively, in which said curved portion faces directly upwardly and in which said curved portion faces directly downwardly, said rope extending through said storage portion, said deflection portion, and into said curved mouth portion of said driving tube, means to charge said storage portion with treatment liquid, a plurality of ring nozzles in said driving tube adjacent said curved mouth portion, means to charge said nozzles with treatment liquid under pressure for feeding said rope in stretched condition through said driving tube to form loops in said storage portion and advance said rope through the treatment liquid in said storage portion into said deflection portion, and means providing access to said ring nozzles for replacement thereof.



3,982,412
YARN HANDLING PNEUMATIC DEVICE

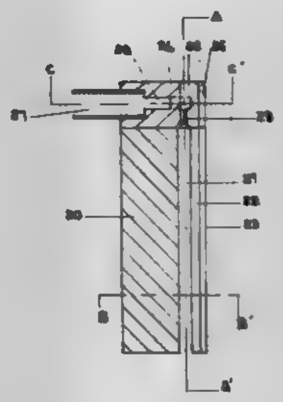
Bernard Isoard, Ecully, and Paul Juppet, Lyon, both of France, assignors to Rhone-Poulenc-Textile, Paris, France

Filed Dec. 9, 1974, Ser. No. 531,065

Claims priority, application France, Dec. 13, 1973, 73.44960; Oct. 1, 1974, 74.33252; Oct. 1, 1974, 74.33251

Int. Cl.² D06B *1/08;* **B65H** *17/32*

U.S. Cl. 68—200 **15 Claims**

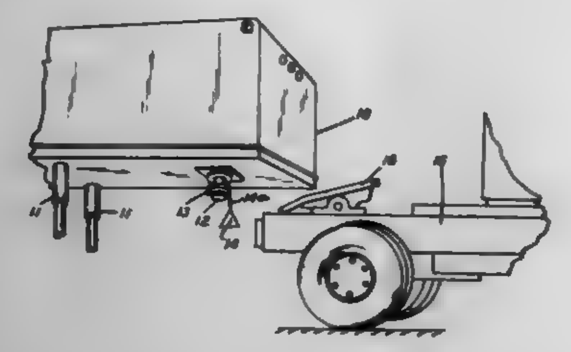


1. A pneumatic yarn-handling nozzle comprising a body having a top portion and a bottom portion, a yarn passage extending from the top portion to the bottom portion, a slot formed in the body and extending along a generating line of the yarn passage and providing communication between the yarn passage and the exterior of the body for substantially the whole length of the yarn passage, said slot having a chamfered outer portion extending along the length thereof, said nozzle having an upper part with a chamber therein, a fluid inlet into the chamber and at least two fluid outlet orifices communicating said chamber with the yarn passage in the body, and a further slot in the upper part permitting the passage of the yarn from the exterior into the yarn passage, the cross-section of the yarn passage increasing from the top portion toward the bottom portion.

3,982,413
KING PIN LOCK FOR SEMI-TRAILERS

Richard A. Stone, 7235 17th Ave. S., Minneapolis, Minn. 55423, and Mathias H. Riesgraf, 4945 Pennine Pass, Columbia Heights, Minn. 55421

Filed Mar. 17, 1975, Ser. No. 559,144
Int. Cl.² F16B *41/00*
U.S. Cl. 70—229 1 Claim



1. In combination with a semi-trailer vehicle having a depending king pin with a circumferential locking groove formed in the lower portion thereof;

a lock to obstruct and thus prevent connection of the trailer with the fifth wheel of a tractor, said lock comprising

a pair of generally semi-circular similar locking segments each having a pair of mating overlapping end portions of reduced thickness and forming a body of substantially the same width as the groove in the trailer king pin,

the inside diameter of each semi-circular segment being substantially equal to the diameter of the circumferential king pin groove to permit the segments to be received in locking position in the king pin groove and completely surround the same,

means for locking the two pairs of mating overlapped end portions of the two segments together in locking king pin position surrounding said king pin within the groove thereof to positively obstruct and prevent the king pin from entering the receiving slot of the fifth wheel of a tractor,

said locking means including pivotal means connecting the mating portions of one end of said locking segments,

the mating portions of the other end of said segment having lock receiving passages therein and disposed in registration when the segments are in closed locking position,

a lock element passing through the passage in one of the segments and received in locking position within the passage in the mating end of the second segment when the segments are in closed position, and

the passage of said second segment having a latch-receiving keyway and said lock including a spring latch element to permit the same to be snapped into locking position within said keyway when the segments are in closed position.

3,982,414
MACHINE FOR MAKING CORRUGATED FLEXIBLE CYLINDRICAL DUCT

Leroy E. Anderson, Detroit Lakes, Minn., assignor to Manufacturers Systems, Inc., Detroit Lakes, Minn.

Division of Ser. No. 410,234, Oct. 26, 1973, Pat. No. 3,876,321. This application Jan. 31, 1975, Ser. No. 545,814
Int. Cl.² B21C *37/12*
U.S. Cl. 72—50 6 Claims

1. Corrugated, flexible, cylindrical duct forming mechanism for producing such duct from an elongated strip of light-gauge aluminum, comprising:

a. a frame,

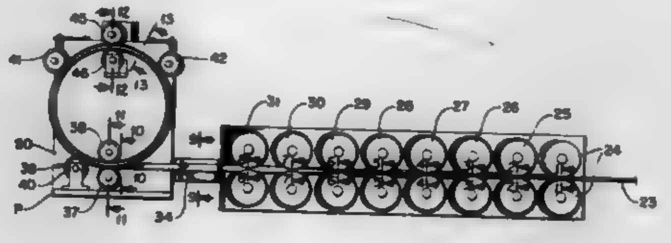
b. powered roller means carried by said frame for producing longitudinally extending corrugations in such a metal strip and forming oppositely extending side edge portions thereon as it passes therebetween,

c. fixed guide die means carried by said frame and positioned adjacent said roller means in metal strip-receiving relation thereto and being constructed and arranged to preform, for subsequent interlocking, such side edge portions of such a strip into seam elements as it passes therethrough,

d. a pair of powered rollers carried by said frame in fixed position adjacent said guide die means in position to receive therebetween such a metal strip after is passes therethrough,

e. a curvature-inducing roller carried by said frame and rotatably mounted adjacent said pair of powered rollers in position to engage such a metal strip shortly after it has passed therebetween and having a metal strip-engaging surface spaced from the plane of the metal strip as it passes between said pair of powered rollers,

f. forming guide means carried by said frame and constructed and arranged to engage such a strip and guide the seam element of one edge thereof after it passes said curvature-inducing roller in a curved spiral path back into overlapping relation with the seam element adjacent the corrugation of its opposite edge portion at a point directly ahead of said pair of powered rollers,



g. said pair of powered rollers each having free end portions bearing cooperative seam-forming elements constructed and arranged to receive and engage therebetween such overlapping seam elements of such a strip and form then into an interlocking seam connecting the adjacent side edge portions of the adjacent convolutions of the strip and constituting one entire leg of a corrugation of the spiral duct so formed, and

h. a pair of powered finishing rolls carried by said frame and positioned at the opposite side of the so-formed spiral duct relative to said pair of powered rollers and constructed and arranged to receive and engage such a so-formed seam therebetween and to flatten and shape the same to extend radially of the so-formed spiral duct and parallel to the corresponding legs of the other corrugations of the metal strip.

3,982,415
FORMING METHOD AND MACHINE FOR SPLINING POWER TRANSMISSION MEMBERS

James Thomas Killop, Warren, Mich., assignor to Anderson-Cook, Inc., Fraser, Mich.

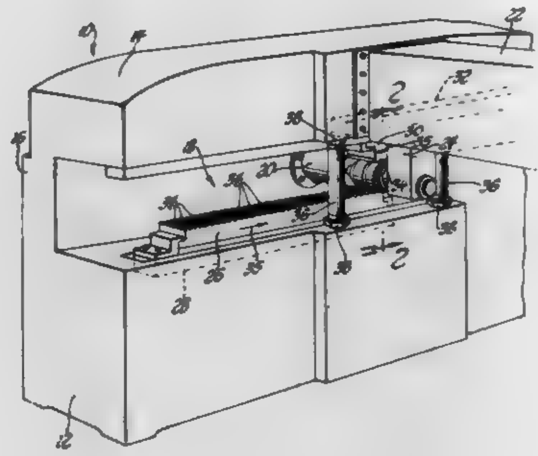
Continuation-in-part of Ser. No. 537,887, Jan. 2, 1975, abandoned. This application Aug. 21, 1975, Ser. No. 606,398
Int. Cl.² B21D *9/14, 53/28*
U.S. Cl. 72—88 50 Claims

1. A machine for forming splines in a thin-walled annular sleeve portion of a power transmission member having an annular end wall, the machine comprising the combination of:

a pair of elongated dies slidably mounted with respect to each other in a spaced and parallel relationship and movable between an end-to-end relationship and an overlapping relationship, each of said dies including teeth spaced along the length thereof:

an externally toothed pinion-type mandrel having an end for supporting the power transmission member by being received within the thin-walled sleeve portion thereof and engaged with the end wall thereof, the mandrel having a central axis about which the teeth thereof are generated; and

means mounting the mandrel between the dies for rotational movement about the central axis of the mandrel, the mounting means including means for engaging the end wall of the member in an opposed relationship to the end of the mandrel so as to cooperate therewith in securing the member on the mandrel, sliding movement of the dies from their end-to-end relationship to their overlapping relationship engaging the dies with the annular sleeve portion of the member supported on the mandrel to mesh the die teeth and the mandrel teeth with the annular sleeve portion of the member therebetween, and the meshing of the die teeth and mandrel teeth deforming the sleeve portion of the member radially with respect to the central axis of the mandrel to form the splines in a rolling manner as the mandrel is rotated about its central axis on the mounting means.



49. A power transmission member comprising: an end wall of an annular shape extending about a central axis of the member; the end wall extending radially with respect to the axis and having a flat shape so as to permit mounting of the member for use; an annular sleeve portion extending axially from the end wall; said sleeve portion being formed with splines by a rolling process incorporating a toothed mandrel received within the sleeve portion and a pair of elongated racks having teeth along their lengths; the splines formed in the sleeve portion being relatively tough due to the minimal amount of work hardening resulting from the rolling process; and the end wall maintaining its flatness during the rolling process so the splined member may be mounted for use.

3,982,416
INDEXING WEDGE DRIVE FOR COLD TUBE REDUCING MILLS AND THE LIKE

Dezsoe Albert Pozsgay, Pittsburgh, and William R. Scheib, Sewickley, both of Pa., assignors to Aetna-Standard Engineering Company, Ellwood City, Pa.

Filed Nov. 19, 1975, Ser. No. 633,483
Int. Cl.² B21B *21/00*
U.S. Cl. 72—214 6 Claims

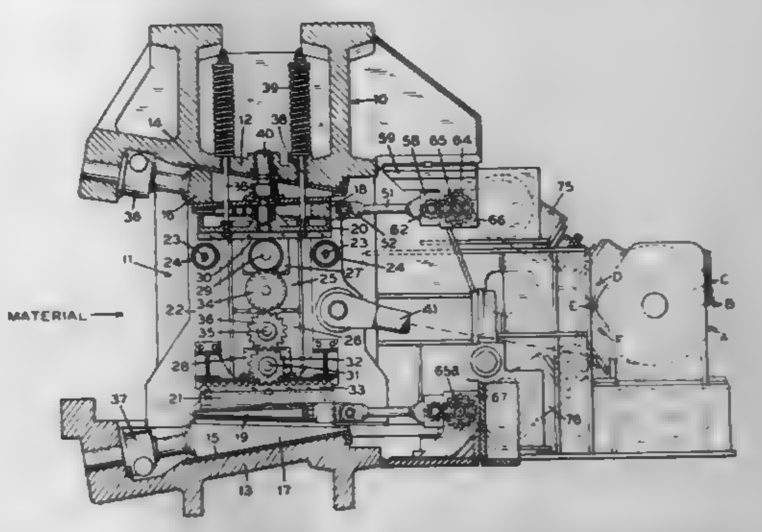
1. An indexing wedge drive for a cold tube reducing mill or the like, where the mill includes a mill housing forming an opening for receiving workpieces, a movable roll carriage mounted for limited reciprocating movement in said opening, in the direction of the workpiece pass line, carriage drive means including a main crank for reciprocating said carriage, grooved mill rolls in said carriage rotatable in conjunction with and as a function of the reciprocating movement of the carriage, backing plates for supporting said mill rolls, reciprocatable positioning wedges interposed between said backing plates and said mill housing and movable in a first direction to bring the mill rolls into operating positions and in a second direction to accommodate limited separation of the mill rolls, characterized particularly by the provision of improved means for effecting timed reciprocating movement of said wedges, which means comprises,

a. input drive shaft means connected to said carriage drive means and rotatable therewith,

b. an indexable wedge drive shaft associated with each of said wedges, supported by said housing and extending transversely of the workpiece pass line, one above and one below, adjacent the respective wedges,

c. drive links operatively associating each of said wedges with its respective indexable wedge drive shaft,

d. means forming an eccentric connection between said drive links and said wedge drive shafts, whereby rotation of the drive shafts through a cyclic increment will reciprocate said wedges out of, or back into, roll closing position,



e. index drive means connected to each of said indexable wedge drive shafts and driven by said input drive shaft means,

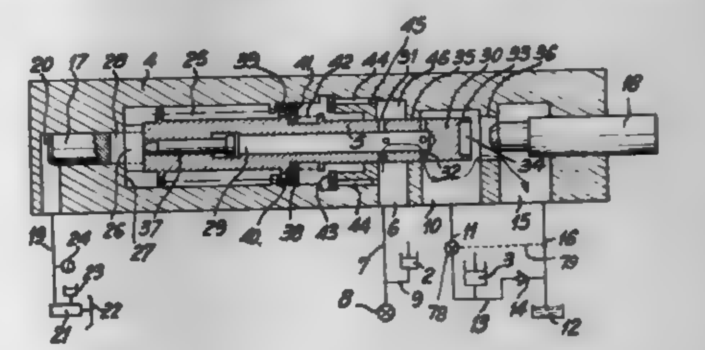
f. said index drive means being synchronized with said drive shaft means and main crank for indexing said wedge drive shafts through a cyclic increment as said main drive crank reaches the end of its stroke in each direction,

g. said index drive means holding said wedge drive shafts stationary throughout the principal portion of the operating strokes of said main drive crank.

3,982,417
DEVICE FOR CONTROLLING A MOVABLE MEMBER ON A MACHINE TOOL

Paul Cailloux, Val de Marne, France, assignor to Promecam Sisson-Lehmann, Saint-Denis, France

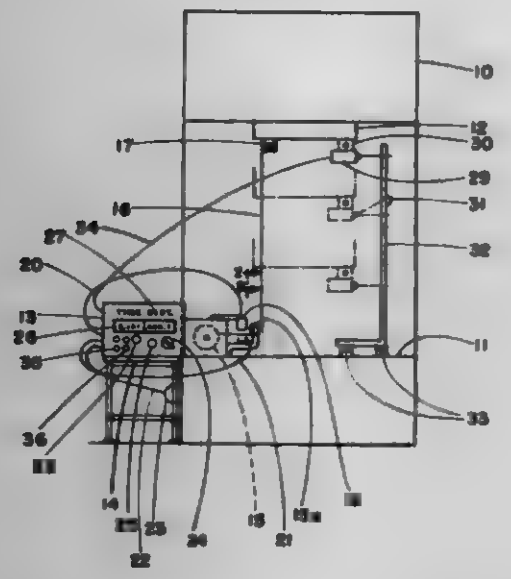
Filed Dec. 31, 1975, Ser. No. 645,882
Claims priority, application France, Jan. 20, 1975, 75.01596
Int. Cl.² B21J *9/12, 9/20*
U.S. Cl. 72—453.01 12 Claims



1. In a machine tool comprising a driven member for performing an operation such as bending or shearing a sheet-metal workpiece, a hydraulic control system for controlling the movements of said driven member, at different speeds including at least one relatively fast speed for approach and one relatively low speed for working, and also for automatically stopping said member in an adjustable position at the end of its stroke, said hydraulic control system comprising a single distributor a slide valve provided in said distributor, actuating means associated with said slide valve and adapted to be operated by the operator, a mechanical device adapted to actuate also said slide valve, a plurality of successive control members associated with said movable member to be driven, and adapted to actuate said mechanical device in order to produce different movements of said slide valve, and complementary passages provided in said distributor body and in said slide valve and being so arranged that the actuation of actuating means by the operator imparts the desired progressiveness to the fast motion of said driven member, the other successive actions exerted on said slide valve by said mechanical device controlling at least the change of speed and the stoppage of said driven member at the end of its stroke.

3,982,418
PRESS BRAKE TESTING APPARATUS
George W. Leavesley, New Britain, and Dever C. Cleavenger, Souderton, both of Pa., assignors to The Budd Company, Troy, Mich.

Filed Dec. 24, 1975, Ser. No. 644,223
Int. Cl.² G01P *3/36*
U.S. Cl. 73—11 6 Claims

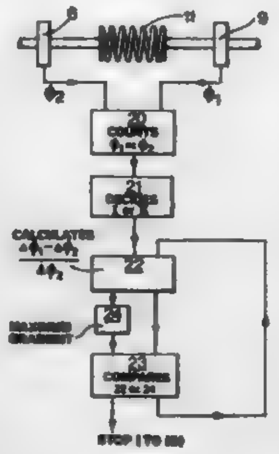


1. Press brake testing apparatus, comprising in combination, a test unit, a connection from the test unit to replace the usual plug-in connection for press hand control, a flexible indicia strand connectible to the press ram, a take-up means for the flexible strand as the connected end follows the movements of the ram, pick-up means providing spaced pulses to the unit in response to movement of the ram and the spaced indicia on the flexible strand, means for cutting off the operating power for said ram and applying the ram-stop brake, and electrical digital read-out means responsive to the ram and strand movement and pick-up means for indicating the ram stopping action of the press brake.

3,982,419
APPARATUS FOR AND METHOD OF DETERMINING ROTATIONAL AND LINEAR STIFFNESS
John T. Boys, Christ Church, New Zealand, assignor to Standard Pressed Steel Co., Jenkintown, Pa.

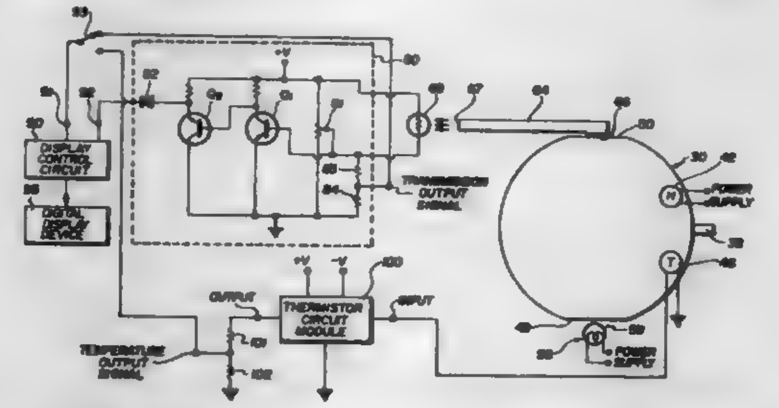
Continuation-in-part of Ser. No. 357,920, May 7, 1973, abandoned. This application Sept. 19, 1974, Ser. No. 507,417
Claims priority, application United Kingdom, May 9, 1972, 21480/72
Int. Cl.² B25B *23/14*
U.S. Cl. 73—139 89 Claims

77. Apparatus for determining torque gradient comprising means for developing a signal representative of the instantaneous torque applied to a rotary member, storage means for storing a series of signals representative of instantaneous torque and gradient register means for sequentially subtracting a stored signal from an instantaneous torque signal and developing a signal representative of the torque gradient.



3,982,420
METHOD AND APPARATUS FOR DETERMINING THE PASTING TEMPERATURE OF STARCH AND THE LIKE
Charles W. Blevins, North Little Rock, Ark., and Thomas F. Protzman, Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Jan. 20, 1975, Ser. No. 542,323
Int. Cl.² G01N *25/02, 33/10*
U.S. Cl. 73—17 R 4 Claims

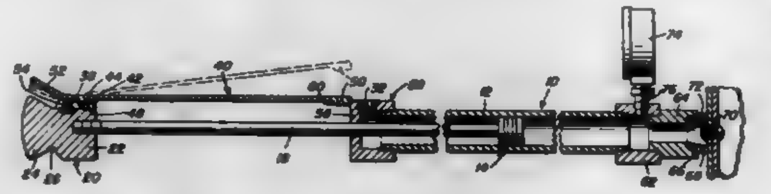


1. The method of determining the pasting temperature of starch and the like, comprising the steps of mixing a predetermined quantity of starch sample into a predetermined quantity of water to form a starch slurry, heating said slurry, continuously monitoring the temperature of said slurry as it is heated, directing a light beam in a direction through said starch slurry while heating said slurry, detecting the light passed through said slurry by said light beam and creating a signal proportional to the amount of light detected, transmitting said signal to a display device and displaying the light transmissivity through said slurry on said display device, placing said display device in a hold condition when transmissivity of light through said slurry reaches a predetermined threshold representative of the pasting temperature of the starch, and causing said display device to display the temperature of said slurry during said hold condition when said predetermined light threshold is reached.

3,982,421
SEAL TESTER
Richard G. Wallace, R.D. No. 1- Box 16T, Blairstown, N.J. 07825

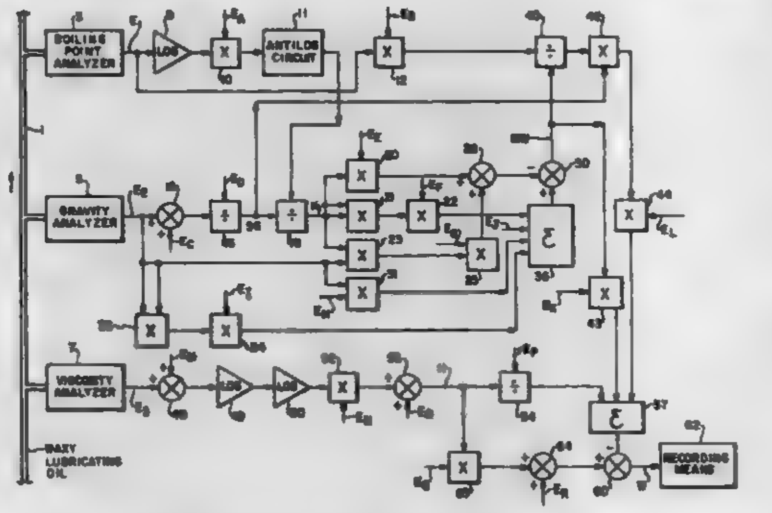
Filed Nov. 6, 1975, Ser. No. 629,512
Int. Cl.² G01M *3/26*
U.S. Cl. 73—40 11 Claims

1. A seal tester for screws, rivets, and like fasteners, said tester comprising an elongated hollow cylinder having first and second ends, an annular sealing head mounted on the first end of the cylinder and directly communicating with the interior thereof, said sealing head projecting forwardly of said first end for reception about and enclosure of the projecting end of a secured fastener, said sealing head being formed of a readily compressible resilient air impermeable material for conformance to and air excluding engagement with a surface about and through which the fastener is secured, manual means operable through the second end of the cylinder and movable to a position developing a negative pressure therein upon an air excluding engagement of said head, and a negative pressure measuring gauge mounted in communication with the interior of the cylinder.



3,982,422
MEANS FOR MEASURING THE WAX CONTENT OF WAXY OIL
Charles W. Harrison, Nederland; Theodore C. Mead, Port Arthur; Howard R. Moreland, Houston, and Frank L. Barger, Port Arthur, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 8, 1975, Ser. No. 575,760
Int. Cl.² G01N *11/00*
U.S. Cl. 73—53 18 Claims

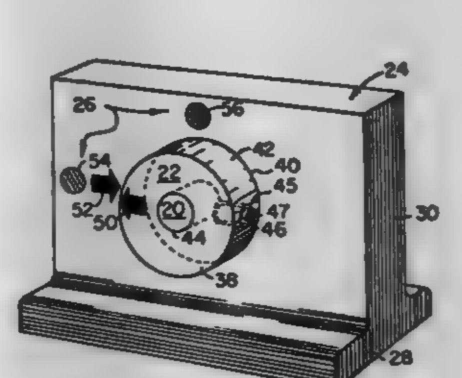


1. Means for measuring the wax content of waxy oil, comprising means for sensing a boiling point of the waxy oil and providing a corresponding signal, means for sensing the gravity of the waxy oil and providing a signal corresponding thereto, means for sensing the viscosity of the waxy oil and providing a signal representative thereof, and means connected to all the sensing means for providing a signal corresponding to the wax content of the waxy oil in accordance with the signals from the sensing means.

3,982,423
MUCUS TESTING PROCESSES AND DEVICES
Samuel R. Schuster, Wellesley, Mass., assignor to Ovutime, Inc., Wellesley, Mass.

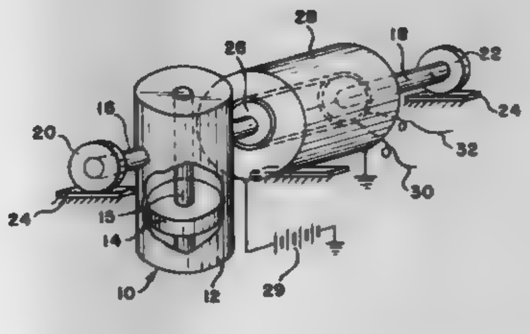
Continuation-in-part of Ser. No. 462,298, April 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 433,767, Jan. 16, 1974, abandoned, which is a continuation-in-part of Ser. No. 300,187, Oct. 24, 1972, and a continuation-in-part of Ser. No. 472,611, May 23, 1974, which is a continuation-in-part of said Ser. No. 300,187.
This application Nov. 12, 1974, Ser. No. 523,047
Int. Cl.² G01N *33/16*
U.S. Cl. 73—54 7 Claims

1. A device for testing mucus from a bodily cavity, said device comprising a base, inner bearing means and outer bearing means composed of glass, said inner bearing means and said outer bearing means being arranged for motion with respect to each other on said base, means for biasing said inner bearing means and said outer bearing means for said motion, and means for indicating the occurrence of said motion, said inner bearing means and said outer bearing means have inner and outer cylindrical bearing surfaces, each of said bearing surfaces having a surface finish ranging from approximately 0.2 microns to 3.2 microns in valley to peak height, the clearance between said bearing surfaces ranging from approximately 0.25 microns to 254.0 microns, said means for indicating including indicia movable with at least one of said bearing elements and indicia fixed in operation with respect to said base, said base including an upright plate having a slot, said inner bearing member having a key, said key being removably retained by said slot, one of said indicia being located on said plate and the other of said indicia being located on said outer bearing member.



3,982,424
APPARATUS FOR MEASURING METACENTRIC HEIGHT OF A SHIP
Robert W. Peach, 888 Pine Trail, Arnold, Md. 21012

Filed Jan. 13, 1976, Ser. No. 648,637
Int. Cl.² B63B *9/08*
U.S. Cl. 73—65 6 Claims



1. Ship stability measuring apparatus comprising an indicator arranged to indicate values of metacentric height, roll sensing means for generating a first electrical signal of one polarity throughout the period a vessel rolls from a first to a second extremity and a second electrical signal of opposite polarity throughout the period the vessel rolls from said second to said first extremity, electrical charge receiving means and means for charging said electrical charge receiving means in response to said first electrical signal, means for discharging said electrical charge receiving means in response to said second electrical signal, means for generating a signal in response to the discharging charge from said charge receiving means which is representative of the total period the vessel rolls from said first to said second and then to said first extremity, and means for connecting said last named means to said indicator to indicate the magnitude of said last mentioned signal in terms of metacentric height.

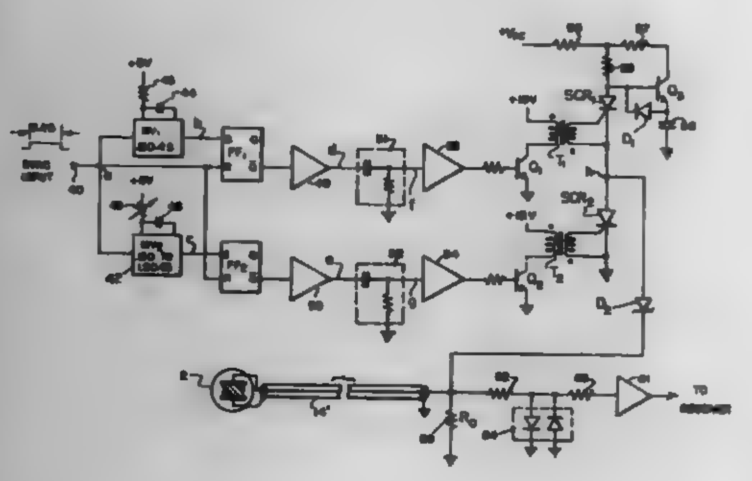
3,982,425
ULTRASONIC INSPECTION SYSTEM

Robert E. McLain, Woodland Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 14, 1974, Ser. No. 433,036

Int. Cl.² G01N *29/00*

U.S. Cl. 73—67.8 S 13 Claims



1. In an ultrasonic inspection system having means for remotely controlling the position of an ultrasonic transducer from a console that is situated at least about 100 feet away, said positioning means carrying only an ultrasonic transducer connected to said console by a transmission line of arbitrary length through which said console energizes said transducer with high-voltage pulses, and through which said console receives from said transducer low-voltage echo pulses, means at said console for transmitting an energizing pulse to said transducer through said transmission line, said pulse generating means being comprised of

a capacitor,

means for precharging said capacitor prior to generating each pulse,

first timed switching means for discharging said capacitor into said transmission line at the time a drive pulse is to begin, and

second timed switching means for shunting discharge current from said capacitor away from said transmission line when a drive pulse is to terminate, whereby transmission lines normally used over short distances may be extended to over 100 feet without requiring any change at said transducer, and the system still remains operative.

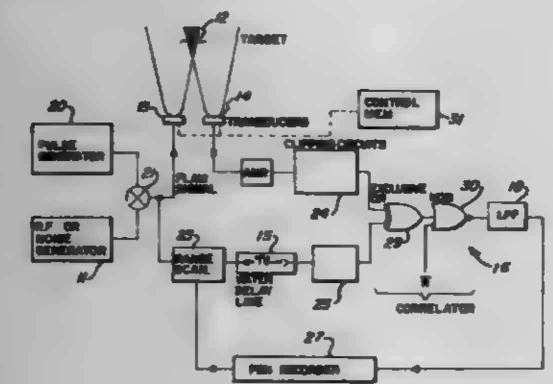
3,982,426
RANDOM SIGNAL FLAW DETECTOR SYSTEM

Vernon L. Newhouse, and George R. Cooper, both of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Jan. 2, 1975, Ser. No. 538,190

Int. Cl.² G01N *29/04*

U.S. Cl. 73—67.9 11 Claims



1. A flaw detection system, comprising:

a random noise source producing an output signal in the ultrasound frequency range;

a transmitter to transmit said output signal from said random noise source toward a target to be inspected for flaws;

delay means connected with said noise source to receive the output signal coupled to said transmitter;

a receiver to receive said output signal when reflected back from said target under inspection; and

correlator means including an exclusive-OR circuit, a NOR gate, and a low pass filter, said exclusive-OR circuit being connected with said delay means and said receiver to receive the outputs therefrom, said correlator means responsive to receipt of outputs by said exclusive-OR circuit from said delay means and said receiver providing an output indicative of predetermined characteristics of a flaw in the target.

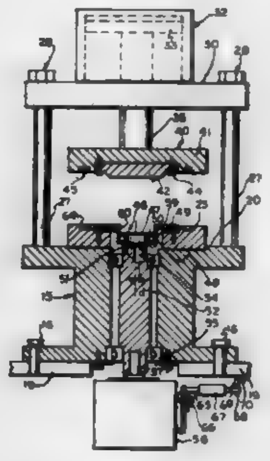
3,982,427
APPARATUS FOR WORKING AND TESTING SOLID ELASTOMERS

John M. Decker, 6809 Old Chesterbrook Road, McLean, Va. 22201

Filed June 6, 1975, Ser. No. 584,377

Int. Cl.² G01N *3/32*

U.S. Cl. 73—101 8 Claims



1. Apparatus for shear stressing a sample of solid elastomer which sample has opposed faces lying generally in parallel planes substantially perpendicular to a central axis of the sample, said apparatus comprising, in combination, a frame, a first sample-engaging die mounted in said frame for holding one face of said sample having an axis adapted to be set parallel to said sample central axis, a second die also mounted to said frame for engaging the other face of said sample and having an axis also adapted to be set parallel to the central axis of the sample, said second die axis being aligned parallel with but not coincident with the axis of the first die, and drive means for gyrating the second die without rotation of said second die per se in a path of small radius around the axis of said first die.

3,982,428
GROOVED WHEEL-CONTACT ROLLERS FOR VEHICLE TESTING APPARATUS

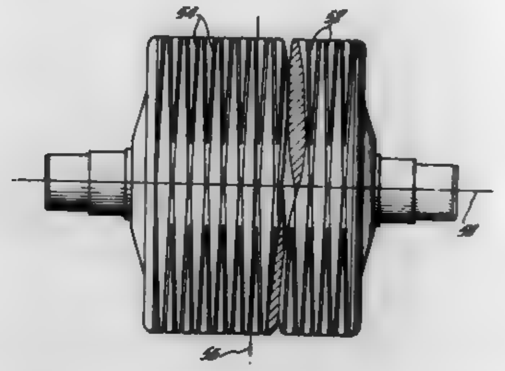
Jack A. Wilson, West Covina, Calif., assignor to Clayton Manufacturing Company, El Monte, Calif.

Filed Apr. 14, 1975, Ser. No. 567,993

Int. Cl.² G01L *5/28*

U.S. Cl. 73—126 19 Claims

1. A vehicle test bed having a first roller for engaging the left vehicle wheel to rotate therewith by frictional peripheral contact, and a second roller for engaging the right vehicle wheel to rotate therewith by frictional peripheral contact, said first and second rollers each having at least one helical groove in its wheel-engaging periphery to improve traction between the interengaging surfaces of the roller and wheel, the groove in the first roller having an opposite angle of inclination from that of the groove in the second roller.



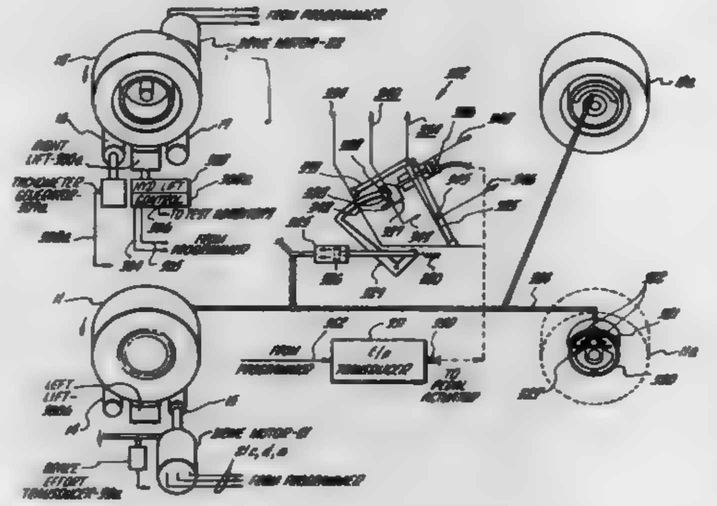
3,982,429
COMPUTER TYPE BRAKE ANALYZER

Edwin Lee Cline, Los Angeles County, Calif., assignor to Clayton Manufacturing Company, El Monte, Calif.

Continuation-in-part of Ser. No. 382,538, July 25, 1973, Pat. No. 3,899,916, which is a continuation-in-part of Ser. No. 811,168, March 27, 1969, abandoned. This application May 5, 1975, Ser. No. 574,283

Int. Cl.² G01L *5/28*

U.S. Cl. 73—126 15 Claims



1. In an apparatus for analyzing the braking performance of a wheeled vehicle having wheel brakes individually associated with at least two wheels, the combination which comprises:

test means for rotating said wheels of the vehicle for a test period during which the brakes are applied;

brake effort signal generating means including the test means for producing a separate brake effort signal for each wheel, each brake effort signal being proportional to the braking effort of the respective wheels while the wheel brakes are being applied;

brake effort imbalance generating means responsive to the brake effort signals for each wheel for producing a brake effort imbalance signal representative of the difference between the braking effort of the two wheels;

test level signal generating means responsive to the brake effort signals upon application of the wheel brakes for producing a test level signal when at least one of the brake effort signals reaches a signal representative of a pre-establisghed brake effort; and

output signal generating means responsive to the brake effort imbalance signal for producing an output signal having a time duration in excess of the test period when the braking effort imbalance exceeds a pre-determined acceptable percentage of brake effort imbalance.

3,982,430
PROCESS AND DEVICE FOR IMMOBILIZING A MOBILE COMPONENT OF A TIRE TESTING DEVICE RELATIVE TO A FIXED COMPONENT THEREOF

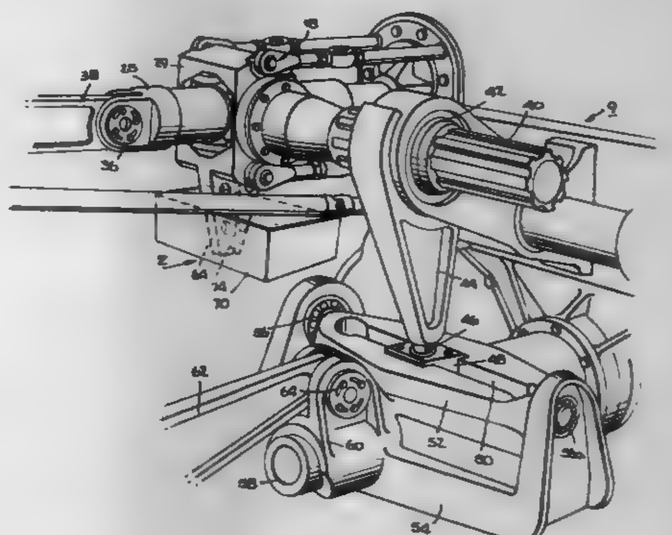
Olivier Pommellet, St.-Cloud, and Guy Drioton, Rueil-Malmaison, both of France, assignors to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of France

Continuation-in-part of Ser. No. 477,001, June 6, 1974, abandoned, and a continuation-in-part of Ser. No. 477,002, June 6, 1974, Pat. No. 3,937,076. This application Dec. 30, 1975, Ser. No. 645,452

Claims priority, application France, June 6, 1973, 73.20621, June 6, 1973, 73.21137

Int. Cl.² G01M *17/02*

U.S. Cl. 73—146 10 Claims



3. In combination, a tire testing device including a mobile component and an eutectic bath, said eutectic bath comprising a fixed receptacle, an eutectic alloy contained within said receptacle and temperature control means for heating and cooling said alloy, said mobile component extending into said bath such that when said eutectic alloy is cooled below its solidus/liquidus, said mobile component is locked with respect to said fixed receptacle.

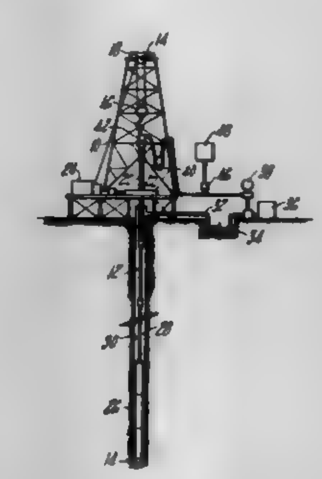
3,982,431
CONTROL SYSTEM FOR BOREHOLE SENSOR

Donald S. Grosso, West Hartford, and Einar Asmundsson, Middle Haddam, both of Conn., assignors to Teleco Inc., Middletown, Conn.

Filed May 12, 1975, Ser. No. 576,628

Int. Cl.² E21B *47/00*

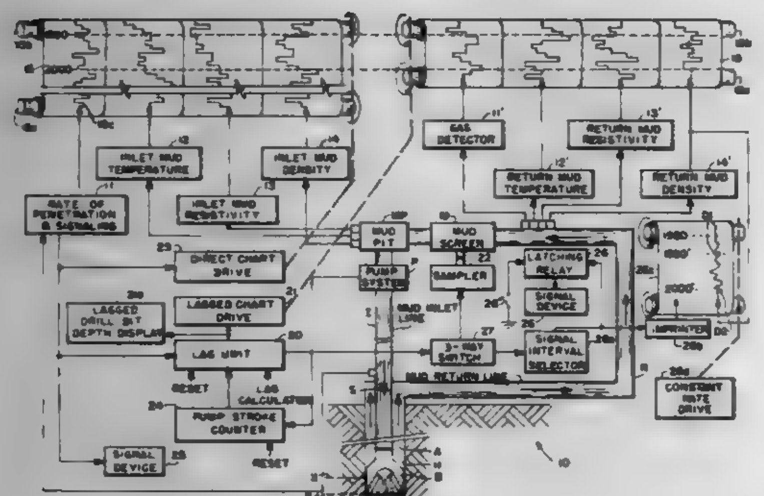
U.S. Cl. 73—151 36 Claims



20. The method of controlling a borehole sensor having a plurality of movable signal producing borehole parameter sensors and positioning means associated with each parameter sensor for positioning the parameter sensors for measuring parameters of a borehole, including the steps of:

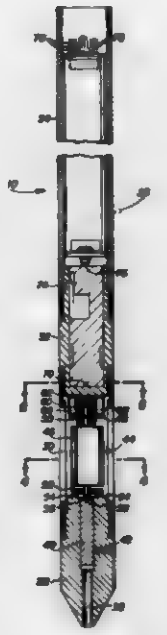
operating each positioning means to position each parameter sensor in a first predetermined position;
generating a first stop signal to terminate the operation of each positioning means upon receipt of a position signal from the associated parameter sensor when the associated parameter sensor has reached its first predetermined position;
generating a first completion signal when all parameter sensors are at their first predetermined positions;
detecting signals from each parameter sensor and generating an output;
reoperating the positioning means to move each parameter sensor from its first position to a second position in response to the output from the associated parameter sensor and the occurrence of said completion signal;
determining when each parameter sensor has reached its second position and generating a second stop signal to terminate operation of the associated energizing means; and
measuring the movement of each parameter sensor from its first position to its second position and generating information commensurate with said movements.

3,982,432
WELL MONITORING AND ANALYZING SYSTEM
William D. Hammond, Reforma 76-504, Mexico City, Mexico
Filed Jan. 15, 1975, Ser. No. 541,199
Int. Cl.² E21B *47/00*
U.S. Cl. 73—151.5 **25 Claims**



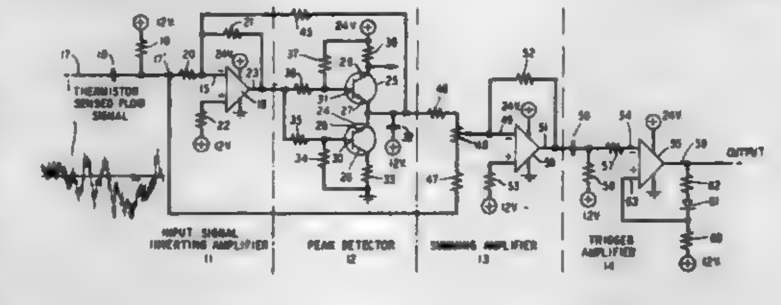
12. A system for monitoring a well bore being drilled with a drill string, drill bit and drilling fluid comprising:
- a. output measuring and recording means for measuring and recording the output values of one or more parameters of said drilling fluid and/or matter included in a given sample of said drilling fluid after said fluid sample is ejected from said drill string and bit into the well bore and circulated to the well surface;
- b. display means for forming a visual display representative of said output parameter values;
- c. lag means responsive to the drill bit depth within the well bore and to the volume of fluid injected into the well bore for automatically relating the visual display of parameter values for a particular sample with the bore depth at which such sample was ejected from said drill string into the well bore; and
- d. a strip chart recorder means included in said display means which is driven at a constant rate independent of the drill bit penetration rate.

3,982,433
SPINNER TOOL FOR BOREHOLES
Beauford F. Stout, Grandview, Tex., assignor to Worthwell Surveys, Inc., Forth Worth, Tex.
Filed Dec. 5, 1974, Ser. No. 530,015
Int. Cl.² E21B *47/10*
U.S. Cl. 73—155 **15 Claims**



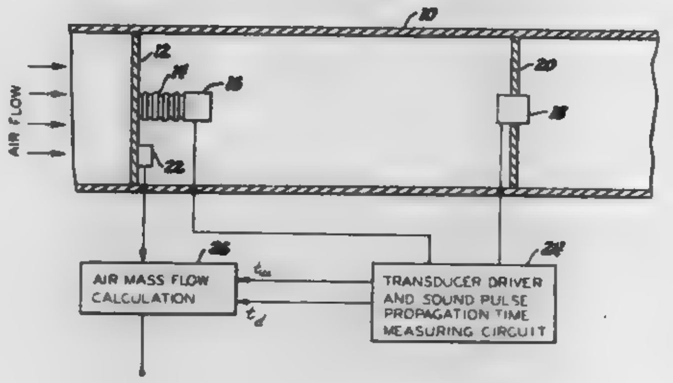
1. A spinner tool for detecting radially directed fluid flow in boreholes comprising:
an elongate, cylindrical housing;
a portion of the housing having a plurality of axially extending, angularly disposed slots formed therein at spaced apart points around the circumference of the housing;
an impeller rotatably supported in the housing and comprising a plurality of axially extending rigid blades positioned in alignment with the slots of the housing for actuation by fluid flow therethrough;
the blades having a substantially J-shaped cross-section and extending adjacent to the angularly disposed slots to resist radially directed fluid flow therethrough;
means responsive to rotation of the impeller under the action of fluid flowing through the slots in the housing for generating an output signal;
a shaft having the impeller mounted thereon;
the lower end of the shaft being rotatably supported on a ball which is in turn supported on the housing; and
the point of the shaft which engages the ball being exposed to the radially directed fluid flow through the angularly disposed slots to allow self-cleaning thereof.

3,982,434
FLUID FLOW SIGNAL PROCESSING CIRCUIT
Charles Louis McMurtrie, North Plainfield, N.J., assignor to Eastech, Inc., Edison, N.J.
Filed Mar. 14, 1975, Ser. No. 558,280
Int. Cl.² G01F *1/32*; H03B *1/04*; H04B *15/00*
U.S. Cl. 73—194 VS **20 Claims**



10. A method for processing an input composite signal having at least a first signal and at least one other signal of a lower frequency than said first signal and of an amplitude greater than amplitudes of said first signal and comprising
inverting the phase of said composite signal,
detecting peak amplitudes of said first signal in the inverted composite signal,
storing detected peak amplitude indicating signals in combination with said inverted composite signal, and
combining said input composite signal with the stored combination of said peak amplitude indicating signals of said inverted composite signal to produce an output signal of a frequency related to said first signal and of an amplitude greater than a said second signal component thereof.

3,982,435
AIR MASS FLOW MEASURING APPARATUS
John L. Harned, Grosse Pointe Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 18, 1975, Ser. No. 642,006
Int. Cl.² G01F *1/86, 1/66*
U.S. Cl. 73—194 M **3 Claims**


AIR FLOW
10
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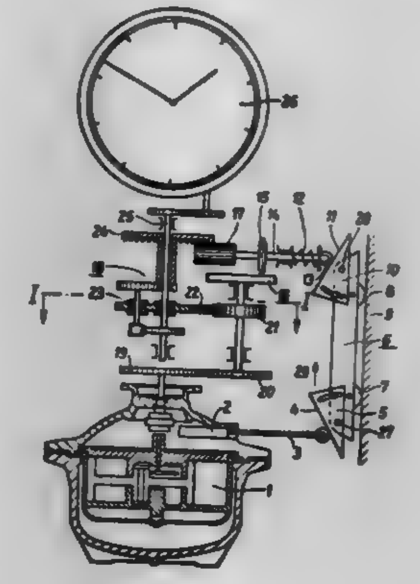
28
AIR MASS FLOW CALCULATION
TRANSDUCER DRIVER AND SOUND PULSE PROPAGATION TIME MEASURING CIRCUIT

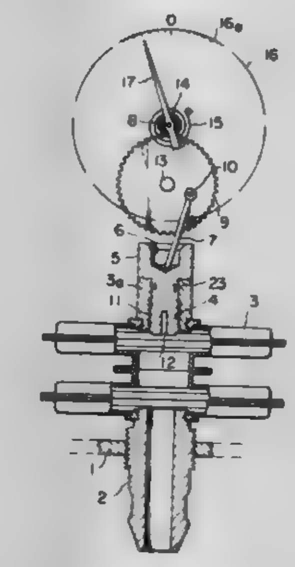
1. An apparatus for meaasuring the air mass flow through a passage comprising
a pair of sound pulse transducers disposed at upstream and downstream locations of the passage respectively,
means for varying the spacing between the sound pulse transducers as a function of air density,
a circuit coupled to the sound transducers for measuring upstream and downstream sound propagation times,
a temperature transducer mounted in the passage for measuring the air temperature,
and electrical means responsive to the upstream and downstream sound propagation time measurements and the temperature measurement for determining the air mass flow through the passage.

3,982,436
FLUID-VOLUME MEASURING APPARATUS
Eberhard Friebel, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed June 12, 1975, Ser. No. 586,163
Claims priority, application Germany, June 28, 1974, 2431752
Int. Cl.² G01F *1/08*
U.S. Cl. 73—233 **12 Claims**

1. In a fluid-volume measuring apparatus equipped with a device for converting volume in dependence upon temperature, the device including: a summing gear arrangement having a controllable regulating transmission, and a motion transmitting arrangement for controlling the regulating transmission, the motion transmitting arrangement comprising: temperature sensitive actuation means for moving a plunger in response to changes in temperature of the fluid being measured; a movable carriage movable along a path transverse to the direction of movement of said plunger; said carriage having first cam means defining a control edge for receiving said plunger in engagement therewith whereby said carriage moves along said path in dependence upon the movement of said plunger; and, linkage means arranged transverse to said path for controlling the regulating transmission; said carriage having second cam means defining a control edge for acting on said linkage means in response to the movement of said carriage along said path, said control edges each having a contour selected with regard to the dependence of the temperature expansion coefficient of the fluid to be measured on the temperature of said fluid.



3,982,437
READILY ZEROED PRESSURE GAGE OF SPHYGMOMANOMETER
Shine Sekizawa, Fujisawa, Japan, assignor to Tokyo Iryoki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 28, 1976, Ser. No. 653,376
Int. Cl.² G01L *7/06*
U.S. Cl. 73—410 **5 Claims**



1. In a sphygmomanometer having a casing (1), an inflatable bag for detecting blood pressure, and a hose connected at its one end to the bag, the combination therewith of a pressure gage comprising:
a pipe fitting (2, 20) inserted through and fixed to a wall of the casing and connected at one outer end thereof to the other end of the hose;
an expansible, pressure-sensitive, metallic element (3) having a hollow interior and a central axis and connected at one axial end thereof coaxially and communicatively with the other inner end of the pipe fitting within the casing, the other axial end of the metallic element undergoing axial displacement in accordance with detected blood pressure transmitted through the hose as air pressure into the interior of the element;

an actuating member (5, 18) connected to said other axial end of the metallic element thereby to undergo axial displacement unitarily therewith;

a pressure indicating pointer (17) adapted to indicate the blood pressure on a calibrated scale (16*a*) upon being actuated by said displacement;

transmission means (7, 10, 9 14, 8) for transmitting said displacement from the actuating member to the pointer; and

adjustment means (11, 4, 12, 21, 19, 22) adjustably operable by a tool inserted through the pipe fitting from said one outer end thereof to vary the position of the actuating member relative to the transmission means thereby to move and adjust the pointer to the zero graduation on the scale for zero gage pressure.

3,982,438

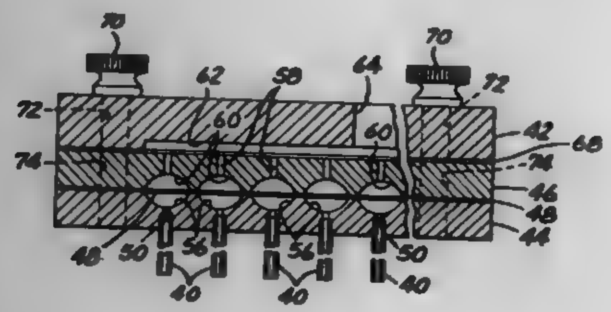
MULTIPLE SAMPLE PIPETTING APPARATUS

William J. Byrd, Solana Beach, Calif., assignor to The Salk Institute for Biological Studies, San Diego, Calif.

Filed June 23, 1975, Ser. No. 589,023

Int. Cl.² B01L *3/02*

U.S. Cl. 73—425.6 16 Claims



1. Apparatus for pipetting a plurality of predetermined quantities of a liquid, comprising:

a collector plate having a plurality of openings, the lower portion of the collector plate being adapted to receive a plurality of elongated hollow collector tubes in said openings, said opening communicating the lower surface with the upper surface, each of said openings in said upper surface having an enlarged generally smooth portion of a first predetermined volume;

a manifold plate having a recess in the lower surface thereof and an aperture communicating said recess with the opposite side thereof, said recess communicating fluid pressure from said aperture to said recess;

an intermediate plate located between said manifold plate and said collector plate and having openings generally coextensive with the openings in said collector plate, said openings communicating with said recess of said manifold plate, each of the openings having an enlarged generally smooth portion on the side adjacent said collector plate, each of said enlarged portions having a second predetermined volume;

a flexible impervious diaphragm positioned between said intermediate plate and said collector plate and adapted to be deflected upwardly or downwardly within each of said enlarged portions of said openings of said intermediate plate and collector plate, respectively, in response to selective application of fluid pressure thereto;

a plurality of elongated hollow collector tubes secured to the lower side of said collector plate within said openings;

means for connecting said manifold plate aperture to sources of positive and negative fluid pressure for deflecting said flexible diaphragm in opposite directions, respectively; and,

frame means for supporting said plates, said frame means being connected to at least one of said plates.

3,982,439

APPARATUS FOR SLOWING HEAD PIECES AND SAMPLES COMING FROM A ROLLING MILL

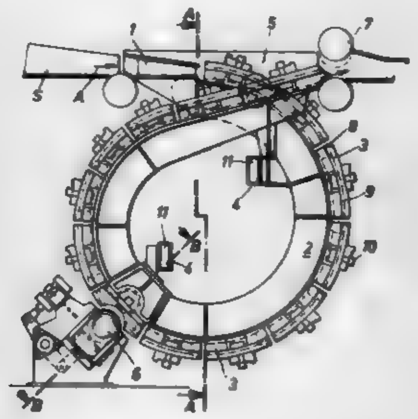
Erich Reth, Duisburg-Buchholz; Karl-Heinz Varwig, Mulheim, and Karl-Heinz Backhaus, Rheinhausen, all of Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

Filed Aug. 22, 1975, Ser. No. 606,927

Claims priority, application Germany, Sept. 14, 1974, 2444014

Int. Cl.² G01N *1/04*

U.S. Cl. 73—423 R 6 Claims



1. Apparatus for decelerating the forward speed of head or sample pieces of bar-shaped rolled material, and having a brake flute in which the material to be decelerated is brought to a near or complete halt from rolling speed, characterized by

a. said brake flute is configured in the shape of a loop for deflecting said head or sample pieces from their original path of movement into planes substantially parallel with that original path of movement, said flute being positined substantially parallel to said path; and

b. means for moving said flute laterally into and out of said path.

3,982,440

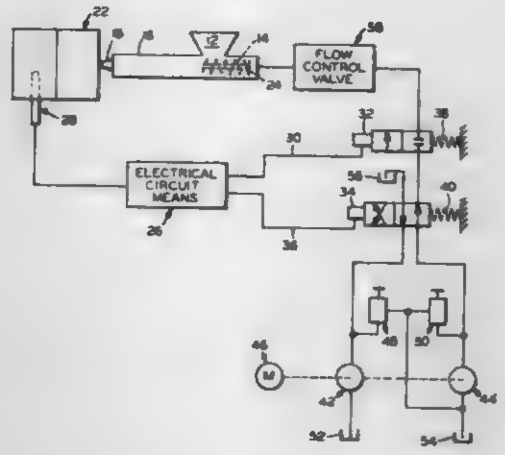
METHOD OF DETERMINING MOLDED PART PROFILE

Rodney J. Groleau, Plantsville, and Donald C. Paulson, Southington, both of Conn., assignors to Control Process, Incorporated, Plantsville, Conn.

Filed Aug. 13, 1975, Ser. No. 604,248

Int. Cl.² B29F *1/06*

U.S. Cl. 73—432 R 10 Claims



10. A method for determining the existence of material flow at a given location in the molding machine as a means of effecting a check of the quality of the part being molded therein comprising the steps of:

a. establishing a theoretical value for the level of the pressure that should exist at the given location under normal material flow conditions;

b. mounting a pressure sensor at the given location in the molding machine in the path of flow of the material;

c. obtaining a sensing by means of the pressure sensor of the level of the pressure existing at the given location so as to establish an actual value for the pressure level thereat;

d. comparing the theoretical value for the level of the pressure at the given location with the actual value for the level of the pressure thereat so as to establish if the theoretical and actual values are the same within predetermined tolerances that normal material flow conditions prevail and if the theoretical and actual values differ by more than the predetermined tolerances that abnormal material flow conditions prevail; and

e. establishing an actual index for a part being molded in the molding machine through use of the information derived from said sensing if normal material flow conditions prevail and automatically indicating abnormal material flow conditions if such conditions prevail.

3,982,441

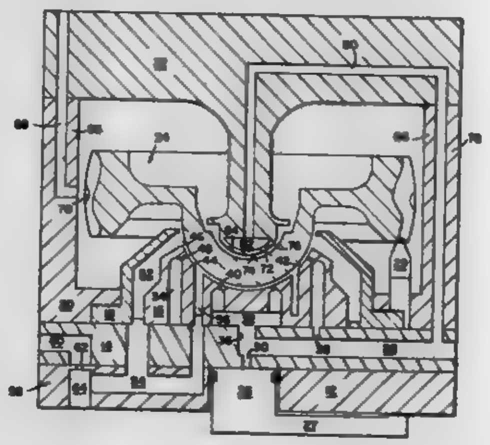
GYRO HAVING FLUIDIC BEARING WITH DUAL ORIFICES AND EXHAUSTS

Rayburn K. Widner, Arab, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 28, 1975, Ser. No. 554,336

Int. Cl.² G01C *19/12, 19/16, 19/26*

U.S. Cl. 74—5.7 6 Claims



1. A gyro comprising a stator housing, a rotor rotatably mounted in said stator housing by fluidic bearing means, said fluidic bearing means having a plurality of inwardly circumferentially arranged ports that have means for admitting fluid to said plurality of inwardly circumferentially arranged ports and said plurality of inwardly circumferentially arranged ports opening into a fluidic space defined between said rotor and said stator housing, a plurality of outwardly circumferentially arranged ports with means for directing fluid to said plurality of circumferentially arranged ports and said plurality of circumferentially arranged ports opening into the fluidic space defined between said rotor and said stator housing, a first circumferentially arranged exhaust from said fluidic bearing space and being located between said plurality of inwardly circumferentially arranged ports and said plurality of outwardly circumferentially arranged ports, a second circumferentially arranged exhaust located radially outwardly of said plurality of outwardly circumferentially arranged ports, and an exhaust channel between each of said plurality of inwardly circumferentially arranged ports and said plurality of outwardly circumferentially arranged ports and in fluid communication with said first exhaust and said second exhaust.

3,982,442

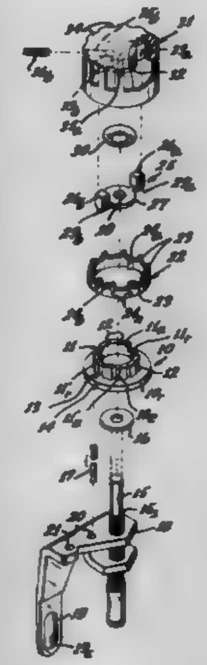
PRECISION SHAFT REGULATOR MECHANISM

John Shiurila, Pleasanton, Calif., assignor to The Singer Company, New York, N.Y.

Filed Dec. 20, 1974, Ser. No. 534,940

Int. Cl.² F16H *35/18*

U.S. Cl. 74—10 R 10 Claims



1. In a precision control mechanism for regulating the turning of a shaft, the combination comprising:

a. means on said shaft and operable to turn said shaft;

b. cam means concentric with said shaft and operatively connected to said first means, said cam means having control surfaces with lobes and recesses;

c. means to meter the amount of turning of said shaft, said metering means being driven by said means to turn said shaft.

3,982,443

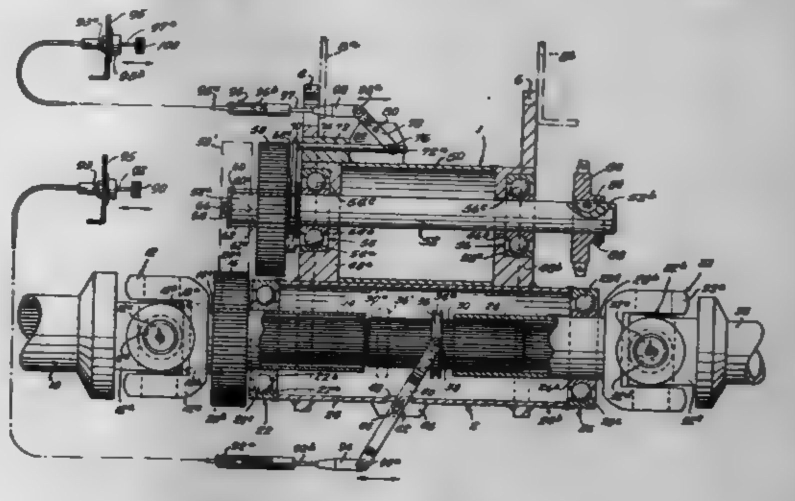
POWER TAKE-OFF UNIT

Troy W. Fitch, Greenville, Tex., assignor to Eagle Custom Manufacturing Company, Greenville, Tex.

Filed Jan. 20, 1975, Ser. No. 542,092

Int. Cl.² F16H *37/00*; F16D *13/22*

U.S. Cl. 74—15.88 3 Claims



1. A power take-off unit adapted for mounting between the transmission and the drive shaft of a vehicle comprising: first and second hollow cylindrical housings; means securing said first housing to said second housing such that said first and second housings are parallel; a hollow internally splined drive shaft; a universal joint secured to one end of said drive shaft, a second end of said drive shaft extending into said first housing; a first bearing rotatably securing said drive shaft to said first housing; a drive gear secured to said drive shaft between said universal joint and said first housing; a hollow internally

splined driven shaft; a universal joint secured to one end of said driven shaft, a second end of said driven shaft extending into said first housing, the second end of said driven shaft being spaced from the second end of said drive shaft; a second bearing rotatably securing said driven shaft to said first housing, said first and second bearings being arranged to maintain said drive shaft and said driven shaft in axial alignment; an externally splined coupling shaft; means secured to said coupling shaft for moving said coupling shaft between a first position wherein opposite ends of said coupling shaft extend into the second ends of said drive shaft and said driven shaft and a second position wherein one end of said coupling shaft is spaced from the second end of said drive shaft; a power take-off shaft; means rotatably securing said power take-off shaft in said second hollow cylindrical housing such that opposite ends of said power take-off shaft extend outwardly of opposite ends of the second housing; a driven gear secured to a first end of said power take-off shaft; and means to move said driven gear between a first position engaging said drive gear and a second position disengaged from said drive gear.

3,982,444

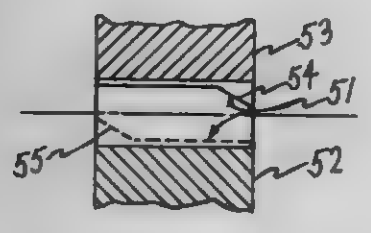
CONSTANT TOOTH-LOAD GEARING

William S. Rouverol, 52 Lovell Ave., Mill Valley, Calif. 94941

Filed May 30, 1975, Ser. No. 582,088

Int. Cl.^{2} F16H *55/06*

U.S. Cl. 74—462 **20 Claims**



1. In a pair of mating gears,
teeth having working surfaces formed to contact on load lines,
the locus of said load lines as said gears rotate comprising a field of contact,
the boundaries of said working surfaces formed to provide a shape to said field that alters the length of each of said load lines as said gears rotate,
the change of moment of any of said load lines produced by said shape in response to a small rotation of said gears being balanced by an equal and opposite change of moment produced simultaneously by at least one other of said load lines, said field being shaped to have at least one corner at which the boundaries of said field make an angle greater than 90°.

3,982,445

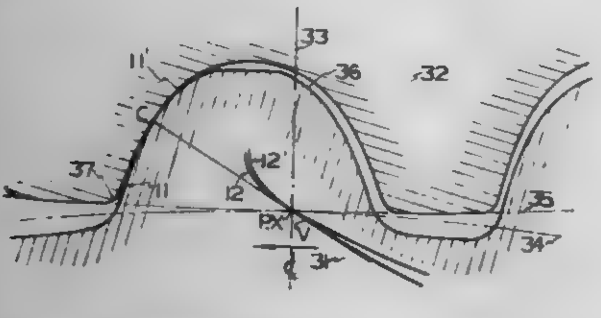
HIGH TORQUE GEARING

William S. Rouverol, 1521 Shattuck Ave., Berkeley, Calif. 94709

Filed Sept. 2, 1975, Ser. No. 609,360

Int. Cl.^{2} F16H *55/06*

U.S. Cl. 74—462 **14 Claims**



1. In a pair of toothed gears,
mating teeth formed to have active profiles perpendicular to the pitch line of said pair which have at least one culmination point substantially removed from said pitch line,
said profiles of at least one of said pair having a variable-curvature portion with curvature that increases with distance from the pitch surface of said one of said pair,
one of said active profiles having a convex portion engaging a concave portion on the other of said active profiles,
said concave portion having a slightly larger radius of curvature at said culmination point than said convex portion,
the evolute of said variable-curvature portion being tangent to a line passing through said culmination point and the pitch point of said pair at a point adjacent to said pitch point.

3,982,446

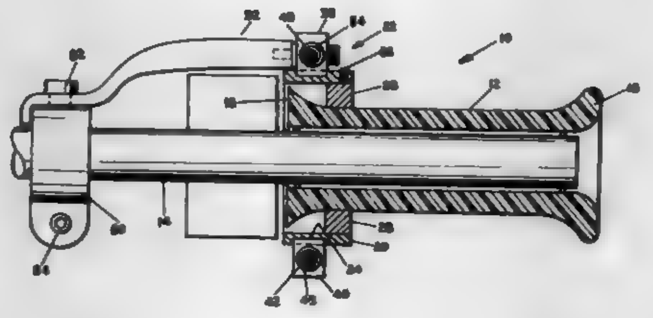
CRUISE CONTROL APPARATUS FOR HAND GRIP THROTTLE CONTROL

Andrew Van Dyken, P.O. Box 32, 2492 85th St., Byron Center, Mich. 49315

Filed May 30, 1975, Ser. No. 581,742

Int. Cl.^{2} G05G *1/08;* F16D *49/10*

U.S. Cl. 74—488 **11 Claims**



1. Cruise control apparatus for a hand grip throttle mechanism rotatably mounted on a handlebar comprising:
an annular collar positioned on the outer periphery of the hand grip for rotation therewith, said collar having a gripping surface formed around the outer periphery thereof; and
holding means non-rotatably mounted on the handlebar for engaging and selectively holding the gripping surface and hand grip at any desired throttle setting, said holding means including non-rotatable retaining means encircling the handlebar in position for engagement with the gripping surface, the retaining means being movable between a released position, wherein the collar is freely rotatable with respect to the retaining means, and an actuated position, wherein the retaining means is clamped on the gripping surface so as to hold the hand grip at a given throttle setting, said holding means further comprising manual actuation means for selectively moving the retaining means between its released and actuated positions.

3,982,447

CONVOLUTED ROTOR STRUCTURES

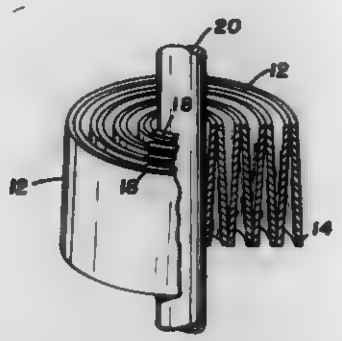
David W. Rabenhorst, Clarksville, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed Sept. 2, 1975, Ser. No. 609,362

Int. Cl.^{2} F16C *15/00*

U.S. Cl. 74—572 **10 Claims**

1. An inertial energy storage device for rotation about a shaft, comprising:
rim means carried on the shaft and comprised of a plurality of substantially concentric ring elements formed of essentially anisotropic material having substantial tensile strength along longitudinal axes thereof; and,



means for holding alternate adjacent edges of the concentric ring elements together.

3,982,448

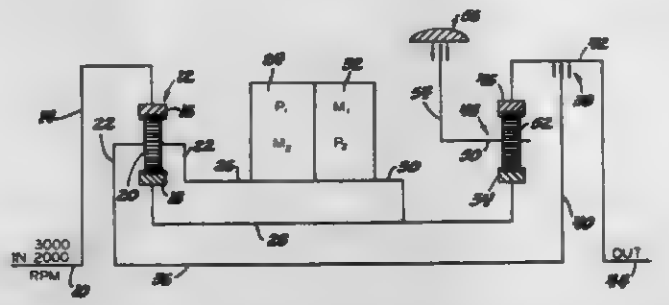
INPUT-SPLIT HYDROMECHANICAL TRANSMISSION

James C. Polak, Indianapolis, and Phillip J. Ross, Brownsburg, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 27, 1975, Ser. No. 562,808

Int. Cl.^{2} F16H *47/04*

U.S. Cl. 74—687 **3 Claims**



1. A hydromechanical transmission, having first and second input-split drive ranges, comprising; input means; output means; variable ratio hydrostatic transmission means including first positive displacement pump-motor means having a drive shaft, and second positive displacement pump-motor means in fluid communication with said first-pump-motor means and having a drive shaft; first planetary gear means disposed in power flow relation between said input means and said first and second-pump motor means including a first member continuously connected to said input means, a second member continuously connected to said drive shaft of said first pump-motor means, and a third member continuously connected to said drive shaft of said second pump-motor means; selectively operable clutch means for selectively connecting said second member of said first planetary gear means and said output means; second planetary gear means including a first member continuously connected to said third member of said first planetary gear means, a second member continuously connected to said output means; and a third member; and means including selectively engageable friction drive establishing means for controlling the speed of said third member of said second planetary gear means, only said friction drive establishing means being engaged to established an input-split first drive range and only said clutch means being engaged to establish an input-split second drive range.

3,982,449

PORTABLE POWER OPERATED PIPE WRENCH

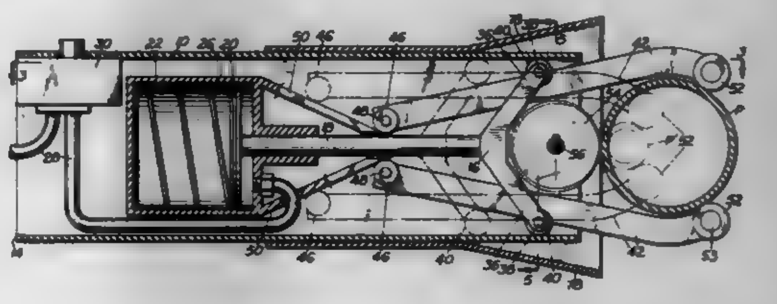
Frank J. Choate, Jr., 3465 Arbon St., Salem, Oreg. 97303

Filed Nov. 10, 1975, Ser. No. 630,656

Int. Cl.^{2} B25B *17/00*

U.S. Cl. 81—57.18 **8 Claims**

1. A portable power operated pipe wrench, comprising
a. a tubular body housing having forward and rearward ends,
b. longitudinally movable yoke means slidably mounted in said housing in extending and retracting movements,
c. power means for driving said yoke means longitudinally,
d. a pair of opposed pipe engaging arms pivotally supported on said yoke means,
e. said arms having front pipe engaging ends arranged to engage a pipe in a closing pivoted positioning of said arms and to receive and release a pipe in an opening pivoted positioning,



f. a drive roller in said housing arranged to be brought into engagement with a pipe in the closing pivoted positioning of said arms,
g. guide means in said housing engageable by the rearward ends of said arms arranged to pivot said arms to their closing pivoted positioning in a retracted position of said yoke means and to pivot said arms to their opening pivoted positioning in an extended position of said yoke means,
h. and drive receiving means in said housing connected with said drive roller arranged for driving connection with an outside power source.

3,982,450

PLASTIC FORCEPS HINGE

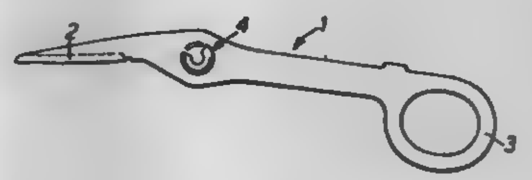
William Francis Marsh, Walmer, England, assignor to Haffenden-Richborough Limited, England

Filed Apr. 28, 1975, Ser. No. 571,944

Claims priority, application United Kingdom, May 20, 1974, 22378/74

Int. Cl.^{2} B25B *7/06*

U.S. Cl. 81—416 **4 Claims**



1. In a hand tool including a pair of identical separable members each comprising an elongated unitary body member having a jaw adjacent one end, a handle adjacent the other end, and pivot means intermediate said jaw and handle, said pivot means comprising a projection and a recess, said recess comprising a slot extending along the arc of a circle and including a main portion and a widened end portion, said projection comprising a base and an enlarged head and being positioned on said member on another part of said circle, said widened end portion of said slot being of a size to receive the enlarged head of a projection of a second member when said members are moved laterally towards each other in one relative angular position, said slot being of a size to receive the base portion of the projection of said second member and engage said enlarged head to retain said members against lateral separation when the two members are rotated from the said one angular position to a second normal working position in which said members are pivotally movable relative to each other.

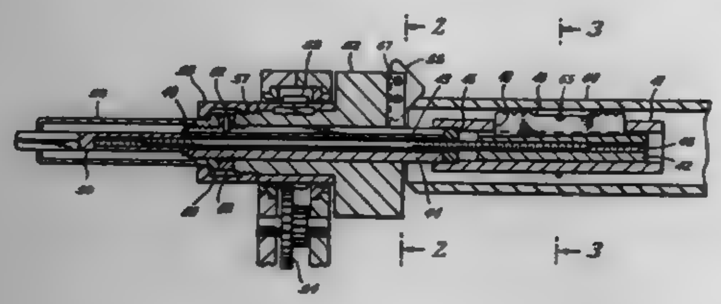
3,982,451
FACING TOOL

Guy T. Gilmore, Crosby, Tex., assignor to Multi-Fab, Inc., Houston, Tex.

Division of Ser. No. 506,416, Sept. 16, 1974. This application Sept. 8, 1975, Ser. No. 611,355

Int. Cl.² B23B *3/22*

U.S. Cl. 82—4 C 2 Claims



1. A facing tool having a base member to be mounted in a tube, a supporting column extending from said base member and anchored thereto by means of an axial shaft, a rotating column on said supporting column and a gear train extending from a source of power to said rotating column, a slip housing formed by said base member, and said supporting column and retractible slips mounted in said housing, a mandrel in said housing, bearing against said slips, and movable longitudinally to selectively extend and retract said slips laterally, said axial shaft extending through the supporting column and having a head on the extended end, adjacent said supporting column, and a handle secured to said supporting column, the longitudinal movement of said rotating member being effected by rotating said handle in a selected direction.

3,982,452
TOOL CLAMPING DEVICES

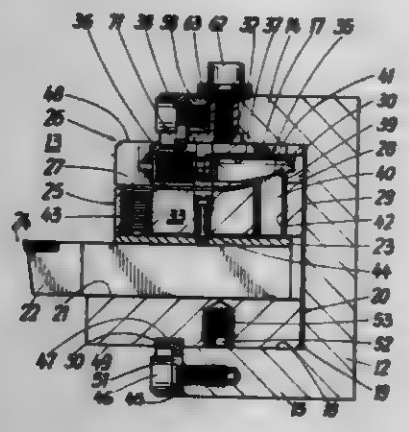
Helmut Scheiffele, Schwaikheim, Germany, assignor to Hahn & Kolb, Germany

Filed June 2, 1975, Ser. No. 582,894

Claims priority, application Germany, June 6, 1974, 2427413

Int. Cl.² B23B *29/00*; B26D *1/00*

U.S. Cl. 82—36 R 18 Claims



1. A tool clamping device, usable in a turning machine in conjunction with a tool, having a working end and a shank, and wherein a material to be worked is applied to the working end of said tool from a selected direction, comprising:
- a support, adapted for mounting on said turning machine and including two rigid, parallel and mutually facing clamping surfaces;
- at least one tool holder, adapted for insertion in said support, and having means for clamping said tool shank, a first clamping surface in said selected direction from said clamping means, and a second parallel and oppositely facing clamping surface, said tool shank clamping means for engaging said tool shank in a fixed position with respect to said second clamping surface, independent of insertion and clamping of said tool holder in said support;
- spreading means on said tool holder, between said tool shank clamping means and said first clamping surface, for expanding said tool holder to clamp said tool holder between the clamping surfaces of said support;
- means for actuating said clamping means and said spreading means;
- and guide means, for guiding motion of said tool holder between said support clamping surfaces in a direction substantially perpendicular to the direction between said tool shank and the working end of said tool.

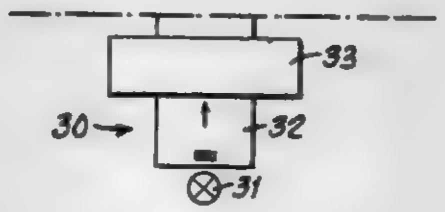
3,982,453
METHOD OF ASSEMBLING NUMBERED DOCUMENTS IN ORDER

Salvatore F. D'Amato, Floral Park, and Francis T. Moss, Woodside, both of N.Y., assignors to American Bank Note Company, New York, N.Y.

Filed July 15, 1974, Ser. No. 488,448

Int. Cl.² B26D *7/06*; B65B *63/00*

U.S. Cl. 83—23 7 Claims



1. Method of assembling distinctively numbered documents in separate assemblages, each assemblage including a multiplicity of documents bearing all numbers within one of a multiplicity of consecutive sets, said documents being derived from a lot consisting of a multiplicity of stacks of multiple document sheets, in which lot the documents in corresponding locations of successive sheets are numbered in consecutive numerical order, the documents on each sheet are arranged by rows and columns and are numbered in a nonconsecutive numerical order in which successive members of the order bear numbers separated by a fixed difference, and the numbers on the first sheet in each stack follow consecutively the numbers on the last sheet in the preceding stack, comprising:
- a. subdividing each stack into a plurality of arrays of individual documents, with only one document from one sheet in each array, the documents of each array being numbered consecutively;
- b. transferring the arrays from each stack to one of a plurality of tributary conveyors in said nonconsecutive order so that the number on the first sheet in each array is separated from the number on the first sheet in the next array by said fixed difference; said tributary conveyors being equal in number to the number of stacks in a lot, so that the arrays in each group of corresponding positions on the tributary conveyors include documents bearing all numbers within one of said consecutive sets;
- c. delivering simultaneously one array from one group of corresponding positions on all the tributary conveyors to consecutive locations along a main conveyor;
- d. moving each group of simultaneously delivered arrays along the main conveyor to a locality beyond the tributary conveyors before repeating the delivering step (c);
- e. repeating steps (c) and (d) until all the arrays from said groups of corresponding positions on the tributary conveyors are transferred to the main conveyor; and
- f. removing each said group of arrays from the main conveyor as a consecutively numbered assemblage.

3,982,454
APPARATUS FOR THE CONTROL AND REGULATION OF CUTTING INTERVAL AND SYNCHRONISM AT A CUTTING MECHANISM FOR THE MACHINING OF STRIP MATERIAL

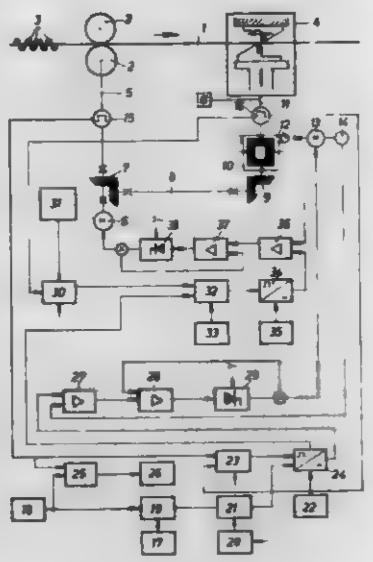
Franz Schneider, and Helmut Braitinger, both of Goppingen, Germany, assignors to L. Schuler GmbH, Germany

Filed June 4, 1975, Ser. No. 583,526

Claims priority, application Germany, June 11, 1974, 2428219

Int. Cl.² B26D *5/38*

U.S. Cl. 83—74 18 Claims



1. Apparatus for the control and regulation of the cutting interval for a strip material advanced by roll feed means and of the synchronism of a cutting mechanism effecting the cutting operation with the strip material during the cutting step, wherein a common main drive serves for effecting movements of the cutting mechanism and of the strip material along its travel path and an auxiliary drive is additionally effective on movements of one of the cutting mechanism and the strip material by way of a superposed gear system, the apparatus comprising desired value pickup means for providing an output indicative of the cutting interval, at least one actual value pickup means for providing an output indicative of at least one of the length of the strip material traversed since the preceding cutting step and the travel velocity of the strip material and at least one of the stroke length and travel velocity of the cutting mechanism, comparison means responsive to the desired and actual value pickup means for comparing the actual values of at least one of the travel velocities of the strip material and the cutting mechanism and of the length of the strip material traversed since the preceding cutting step and the stroke length of the cutting mechanism with each other and with the desired value of the cutting interval, the comparison means being connected to control value pickup means for regulating at least the auxiliary drive until the cutting step is conducted.

3,982,455
DEVICE FOR SLITTING BILLETS

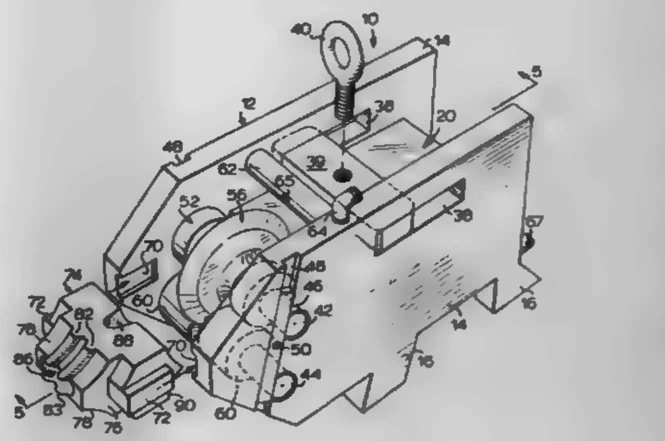
Raymond Earl Bowman, Oshawa, Canada, assignor to Co-Steel International Limited, Whitby, Canada

Filed Mar. 25, 1975, Ser. No. 561,776

Int. Cl.² B26D *1/22*, *1/28*, *7/06*

U.S. Cl. 83—105 10 Claims

1. A device for slitting billets rolled to produce a multiple stranded bar, comprising:
- a frame;
- a guide member mounted on the frame and having a passage therethrough, the guide member being locatable between the rolls of a stand;
- a circular knife rotatably mounted on the frame behind the guide member and having at least one blade peripherally bevelled to provide at least one pair of lateral shoulders;
- means mounted on the frame below the knife to direct the strands against the shoulders of the knife blade whereby the strand is split in advance thereof;



- means mounted on the frame behind the knife and having separate passages to receive and channel the individual strands split by the knife;
- the guide member, the directional means, and the delivery means forming a linear path axially with the gap between the rolls of the stand.

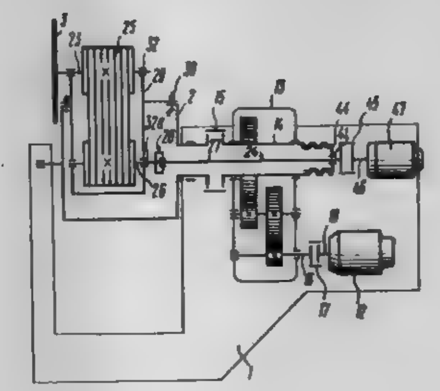
3,982,456
CIRCULAR SAW FOR CUTTING ROLLED PRODUCTS

Nikolai Ivanovich Krylov, 1 Novokuzmiaskaya 25, kv. 26; Boris Vasilievich Popov, Zelenodolskaya ulitsa 24, kv. 110, both of Moscow; Pavel Ivanovich Sidorov, Bykovskoe shosse, 26, kv. 124, Malakhovka 3, Moskovskoi oblasti, and Jury Efimovich Kim, ulitsa Malomoskovskaya 3, kv. 43, Moscow, all of U.S.S.R.

Filed Sept. 29, 1975, Ser. No. 617,707

Int. Cl.² B23D *45/04*, *45/12*, *47/12*

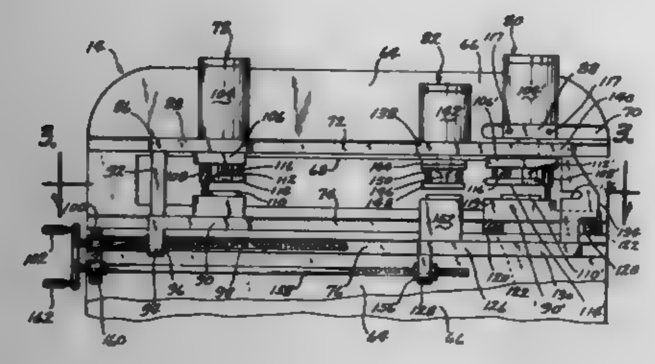
U.S. Cl. 83—490 5 Claims



1. A circular saw for cutting rolled products, comprising: a housing; a carrier mounted on said housing; a hollow shaft of said carrier; an autonomous drive connected to said hollow shaft to bring said carrier into rotation; a casing secured dismountably on said carrier; a driven shaft arranged in said casing parallel to said hollow shaft of said carrier; a saw disk fixed on said driven shaft; a driving shaft built up of two parts interconnected by means of a detachable joint and mounted in said hollow shaft coaxially therewith; a means for connecting the parts of said driving shaft; one part of said driving shaft set up in said casing and linked mechanically with said driven shaft; a motor located on the housing; a shaft of said motor coupled with the other part of said driving shaft, said part of said driving shaft coupled with said shaft of said motor so that it has a possibility of displacing axially when these parts of said driving shaft are being detached.

3,982,457
NOTCHING MACHINE

Robert N. Berry, 4214 Newland, Cedar Falls, Iowa 50613
Filed Mar. 21, 1975, Ser. No. 560,776
Int. Cl.² B26D *5/12*
U.S. Cl. 83—516 7 Claims



1. A notching machine comprising:

support means;

a pair of spaced apart end presses mounted on said support means;

an intermediate press mounted on said support means in a line with said end presses;

each of said presses including a punch and a die in vertical spaced registered alignment with one another, said punch being selectively vertically movable into said die,

said support means and said presses forming horizontal window when said punches are spaced from said dies, said window having a height defined by the spaces between said punches and said dies and having width at least as long as the distance between the outside edges of said punches and dies of said two end presses,

said window being free from obstruction so as to permit a sheet of metal to pass therethrough continuously in a horizontal direction transverse to said line;

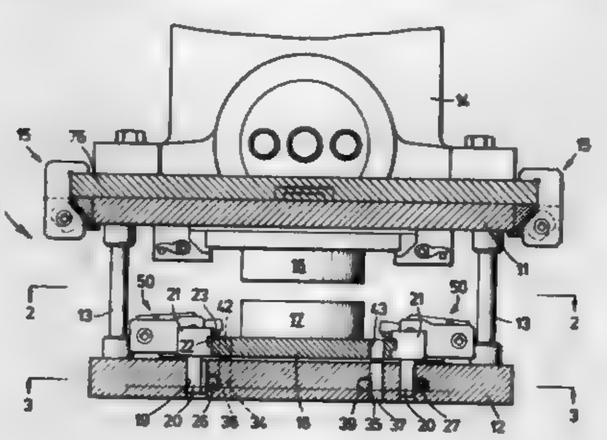
a sliding frame carrying said intermediate press and being movably mounted to said support means for movement along said line;

said sliding frame comprising an upper member connected to said intermediate punch, a lower member connected to said intermediate die, and a vertical member interconnecting said upper and lower members whereby said slide frame causes said punch and said die to move in unison whenever said slide frame moves along said line.

3,982,458
DIE SET

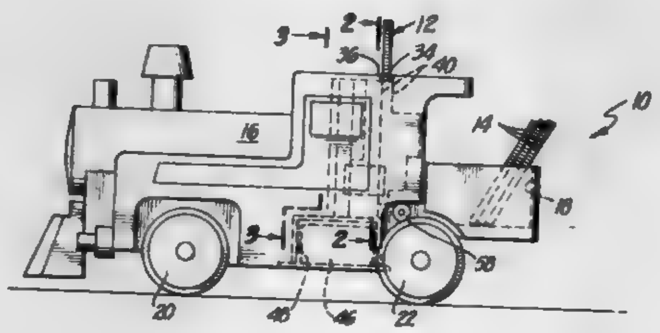
Tetsuichi Terasaka, No. 54, 1-chome Choeiji, Higashi-Osaka, Osaka, Japan
Filed Nov. 24, 1975, Ser. No. 634,839
Claims priority, application Japan, June 24, 1975, 50-89639[U]
Int. Cl.² B26F *1/06*
U.S. Cl. 83—685 4 Claims

1. A die set comprising a first die holder movable towards and away from a second die holder spaced below said first die holder detachably fixed to a ram of a press machine by connector means, a first die detachably secured to said first die holder, a second die having a setting plate supported at both sides by means of opposed pairs of supports mounted on the second die holder so as to be movable up and down, plural positioning pins slidably inserted in said second die holder and fittable into holes provided in said setting plate, drive means for elevating and lowering the supports and the positioning pins in the simultaneous manner that the formers move reversely to the latters, and a clamp means for firmly holding the setting plate on the second die holder.



3,982,459
TOY MUSICAL VEHICLE

Kenzo Akiyama, Long Beach, Calif., assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Feb. 13, 1975, Ser. No. 549,526
Claims priority, application Japan, Feb. 25, 1974, 49-22108
Int. Cl.² G10F *1/12, 5/06*
U.S. Cl. 84—83 9 Claims



1. A musical instrument having in combination a compressed gas source, a wind chest connected to said source, a plurality of sound producing means for use in producing sounds in response to a stream of compressed gas located adjacent to said wind chest, valve means for controlling the flow of gas from said wind chest to each of said sound producing means, and a rotary actuator for controlling the operation of said valve means, in which the improvement comprises:

said rotary actuator being located in a recess which is immobile with respect to the remainder of said instrument extending 180 degrees around the periphery of said actuator, said recess fitting with respect to said actuator in such a manner that said actuator is held by the confines of said recess so that it can be rotated and so that it cannot move in a axial direction as it is rotated,

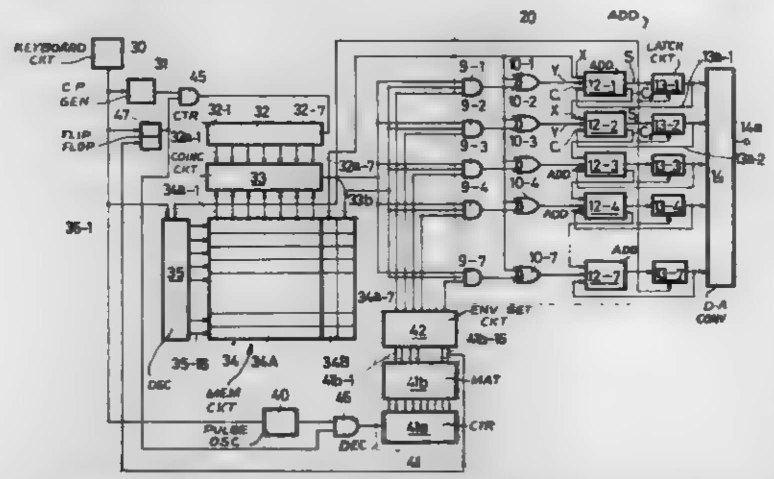
each of said valve means including a movable body capable of being moved in controlling the flow of gas from said wind chest, each of said bodies including a cam follower, said body being located during the operation of said instrument so that said cam followers extend into said recess,

cam actuating means on said actuator for selectively moving said bodies so as to activate said valve means during rotation of said actuator, said actuator being located so that said cam actuating means will engage said cam followers during rotation of said actuator and

rotary drive means located so as to extend into said recess for engaging the periphery of said actuator in order to continuously rotate said actuator during the operation of said instrument, said actuator being held within said recess by gravity so that there is engagement between the periphery of said actuator and said drive means.

3,982,460
MUSICAL-TONE-WAVEFORM FORMING APPARATUS FOR AN ELECTRONIC MUSICAL INSTRUMENT

Nobuharu Obayashi; Hikaru Hashizume; Noriji Sakashita; Seiji Kameyama; Sadaaki Ezawa; Toshio Kugisawa; Yutaka Washiyama; Tatsunori Kondo, and Hironori Watanabe, all of Hamamatsu, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan
Filed Sept. 16, 1975, Ser. No. 613,931
Claims priority, application Japan, Sept. 17, 1974, 49-107401
Int. Cl.² G10F *1/00*
U.S. Cl. 84—1.03 14 Claims

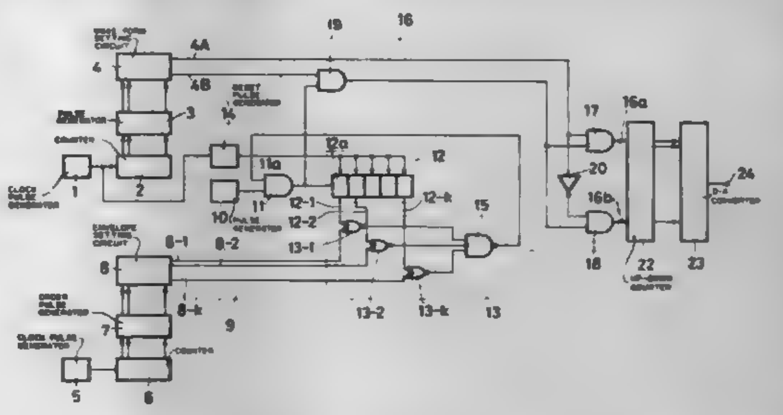


1. Apparatus for forming a musical-tone waveform for an electronic musical instrument, at least one cycle of said musical-tone waveform being divided in amplitude by dividing lines spaced at equal intervals, sampling points on time axis being determined from respective crossing points between the waveform and the dividing lines, distance between initial and final of the sampling points being represented as a number of pulses such that each sampling point can be represented by a pulse number, said waveform at each sampling point having an increase, decrease or equal tendency, said apparatus comprising memory means wherein the pulse number of each sampling point is set up in the form of a digital signal and wherein additionally said tendency is set up in the form of a digital signal, envelope setting means wherein an envelope of said musical-tone waveform is subjected to sampling and the analog amount of each sampling point is set up in the form of a digital signal, and accumulatively adding means wherein an output digital signal of the envelope setting means is accumulatively added to or subtracted from an output digital signal of said memory means and a D-A converter means, said accumulatively adding means being connected at its output to said D-A converter means for converting output signals into analog signals.

3,982,461
MUSICAL-TONE SIGNAL FORMING APPARATUS FOR ELECTRONIC MUSICAL INSTRUMENT

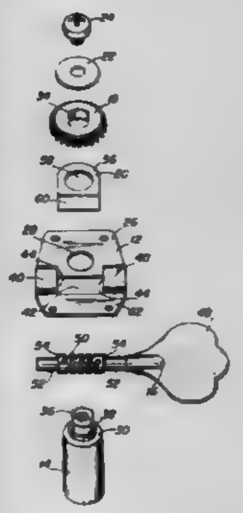
Toshio Kugisawa, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan
Filed June 5, 1975, Ser. No. 584,368
Claims priority, application Japan, June 6, 1974, 49-64381
Int. Cl.² G10F *1/00*
U.S. Cl. 84—1.03 6 Claims

1. A musical-tone signal forming apparatus for an electronic musical instrument comprising a musical-tone waveform setting means in which at least one cycle of a musical-tone waveform is subjected to sampling at n points and the amplitude thereof at each sampling point is compared with the amplitude at the preceding sampling point and an INCREASE, equal or DECREASE signal is generated as a digital signal to indicate the relationship determined, an envelope setting means in which an envelope of a musical tone is subjected to sampling at m points and the analogue amount at each sampling point is generated in order as a digital signal corresponding thereto, a pulse generating means whereby a pulse signal of which the pulse number corresponds to the digital signal value produced by the envelope setting means is repeatedly generated, a distribution means including addition and subtraction output terminals and in which output signals of the pulse generating means are distributed either to said addition output terminal or said subtraction output terminal according to the digital signals of the musical-tone waveform setting means, an up-down counter means in which output signals of the addition output terminal and the subtraction output terminal are respectively added or subtracted, and a D-A converter means in which digital signals generated in order from the up-down counter means are converted into analogue signals.



3,982,462
STRINGED INSTRUMENT MACHINE HEAD

Helmut F. K. Schaller, Kuckucksweg 16, 8501 Feucht, Germany
Filed Dec. 2, 1975, Ser. No. 637,105
Int. Cl.² G10D *3/14*
U.S. Cl. 84—306 8 Claims



3. A stringed instrument machine head comprising: a base member with a first opening passing vertically therethrough, a vertical string post journalled in and passing through said first opening of said base member for rotation relative thereto about a vertical axis, said string post having a lower portion extending downwardly from said base member and adapted to have a musical string attached thereto and wound thereon, said string post also having an upper portion extending upwardly from said base member and an upwardly facing radial shoulder adjacent the bottom surface of said base member, a worm gear fixed to said upper portion of said string post, a horizontal worm shaft with an axially extending worm, said worm shaft also having two axially extending bearing portions defining cylindrical bearing surfaces on opposite sides of said worm and a thumb turn at one end thereof, means on said base member defining two spaced downwardly facing inverted U-

shaped bearing surfaces which respectively receive said two bearing portions of said worm shaft and rotatably support said worm in meshing relationship with said worm gear, and a leaf spring, said leaf spring having a first portion through which said post passes located between said base member and said worm gear and a second portion engaging the bottom of said worm, said leaf spring being of such undeflected shape as to be held in a deflected state between said base member and said worm and worm gear so as to resiliently urge both said string post and said worm shaft upwardly relative to said base member to seat said upwardly facing shoulder of said string post against said base member and to seat said bearing surfaces of said worm shaft against the bights of said downwardly facing inverted U-shaped bearing surfaces of said base member.

3,982,463

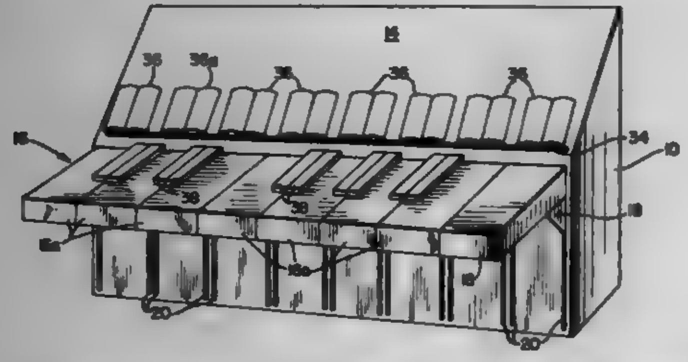
PIANO-LIKE MUSICAL INSTRUMENT

James B. Waters, Jr., 12111 Parklawn Drive, Suite 206, Rockville, Md. 20852

Filed Jan. 13, 1975, Ser. No. 540,564

Int. Cl.² G09B *15/02*

U.S. Cl. 84—476 **14 Claims**



1. A piano-like musical instrument arranged to be played by two or more people simultaneously, comprising: a plurality of tone producing blocks, such as several blocks comprising an octave, each tone block including a tone generator therein and means thereon for manually actuating said tone generator; a music score for each tone producing block, each music score including all the notes of a tune to be played thereon; visual coding means on said music score located only on the notes of the score and corresponding to the tone block assigned to that score; and an upstanding structure, said tone blocks being mounted thereon and arranged side by side in piano keyboard fashion, said upstanding structure including a generally vertical face and means on said face for individually attaching said tone blocks thereto.

3,982,464

DRILLING AND REAMING

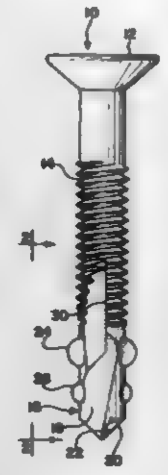
Henry Anton Sygnator, Arlington Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 28, 1975, Ser. No. 608,427

Int. Cl.² F16B *25/00*

U.S. Cl. 85—47 **3 Claims**

1. A drilling and reaming screw including a threaded shank intermediate a driving head and a generally cylindrical drill point including a pair of flutes each terminating in radially extending cutting edges and formed in opposing quadrants of the cylindrical drill point between a pair of lands in opposing quadrants of the cylindrical drill point, a transverse dimension defined by the opposing land portions being substantially constant over an axial extent of the drill point and said transverse dimension being substantially equal to the radial dimension defined by the radially extending cutting edges, the flutes having an uppermost extremity and a lowermost extremity terminating at said cutting edge, at least two reaming wings each of a predetermined, limited, thickness, radial extent and longitudinal extent formed on the land portions of the drill point of the screw and at different axial locations thereon, the at least two reaming wings located intermediate the uppermost and lowermost extremities of the drilling flutes, a first of the two reaming wings located adjacent the cutting edge and being of a first radial dimension greater than the radial dimension of the cutting edge, a second of the two reaming wings located adjacent the uppermost extremity of the flute and being of a second radial dimension greater than the first radial dimension, the lowermost extremity of the second reaming wing being spaced axially from the uppermost extremity of the first reaming wing permitting the region formed by said lowermost extremity, said uppermost extremity and the section of the land therebetween to define a chip exhaust reservoir when operatively associated with a work panel, all of said at least two reaming wings being frangibly associated with the shank of the screw so that two or more juxtaposed work panels may be fastened by providing a clearance hole in a first of said work panels while minimizing the heat generated therefrom and separating the wings from the shank when they abut a second, harder, work panel.



3,982,465

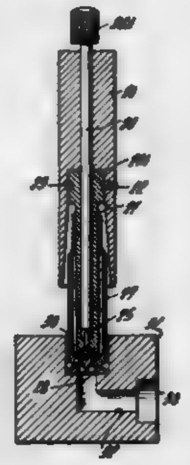
CARTRIDGE CASE DECAPPING TOOL

Fritz M. Schabauer, 1309 N. Windsor Ave., Bayshore, N.Y. 11706

Continuation-in-part of Ser. No. 346,738, Feb. 4, 1973, abandoned. This application Nov. 13, 1974, Ser. No. 523,505

Int. Cl.² F42B *33/10*

U.S. Cl. 86—36 **10 Claims**



1. A decapping tool for removal of a spent primer from a cartridge case by means of an explosive charge, the cartridge case comprising a tubular member with an open end and a closed end, the latter end having a primer recess extending into its outer surface and flash hole means through the closed end from the recess to the interior of the cartridge case, the tool comprising:

A. a cylindrical sleeve for insertion into the inside of a cartridge case, said sleeve comprising:

1. a section having an external diameter slightly smaller than the open end of the cartridge case.
2. a squared-off end adapted to fit snugly against the inter surface of the closed end of the cartridge case around the flash hole means.
3. a cylindrical cavity extending axially into said squared-off end to receive an ejection primer and hold it immediately adjacent the inner surface of the closed end of the cartridge case, and
4. a longitudinal bore from the cavity to the other end of the sleeve;

B. a handle attached to said sleeve remote from said squared-off end to permit said squared-off end to be held firmly against the inner surface of the closed end; and

C. a firing pin slidably positioned in the bore, the length of the firing pin being greater than the length of the sleeve from the cavity to the other end thereof, one end of said pin extending beyond the other end of the sleeve for application of mechanical firing force to said one end of said firing pin to drive the other end of said firing pin against said ejection primer to explode the ejection primer.

3,982,466

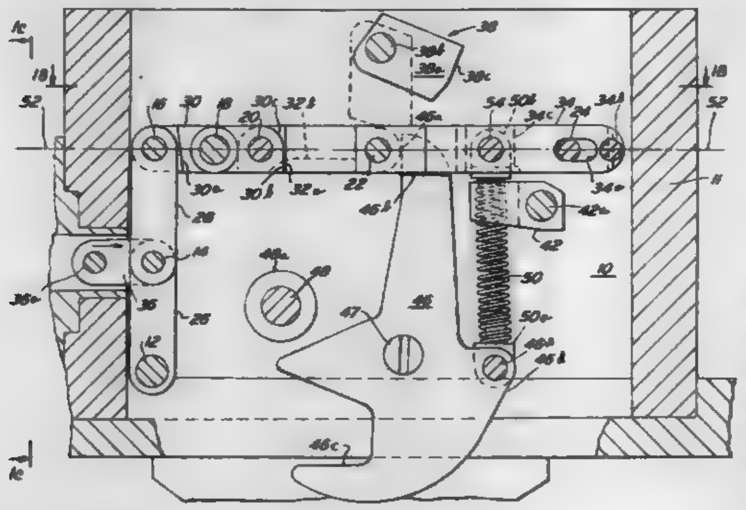
COMPOUND ACTION RELEASE LINKAGE

Curtis K. Baker, 25 Tally Ho Drive, Warminster, Pa. 18974

Filed Aug. 14, 1974, Ser. No. 497,405

Int. Cl.² F41F *5/02*

U.S. Cl. 89—1.5 G **5 Claims**



1. A release mechanism comprising:

a support means;

a releasable member pivotally connected to said support means for movement to and from a latched position;

a first link pivotally connected at its proximal end to said support means to thereby form a first spatially fixed axis of rotation;

a second link pivotally connected at its proximal end to the distal end of said first link;

a thrust link pivotally connected to said first and second links for simultaneously urging said first and second links to and from a toggle position;

a third link pivotally connected at its proximal end to the distal end of said second link, said third link having a shoulder at its distal end;

said third link additionally pivotally connected intermediate its ends to said support means to thereby define a second axis of rotation spatially fixed with respect to said first axis of rotation;

said first and second axes of rotation lying in a plane making an acute angle with a vertical plane;

a fourth link pivotally connected at its proximal end to the distal end of said third link, said fourth link having a shoulder at its proximal end;

a fifth link pivotally and slidably connected to said support means to thereby define a third axis of rotation coplanar with said second axis of rotation;

connective means for pivotally connecting said fourth link and said fifth link, said connective means including a surface for retaining said releasable member in said latched position; and

spring means pivotally connected to said releasable member and to said fifth link for urging said releasable member from said latched position, for urging said releasable member into abutment with said connective means surface, and for urging said third link shoulder and said fourth link shoulder into abutment.

3,982,467

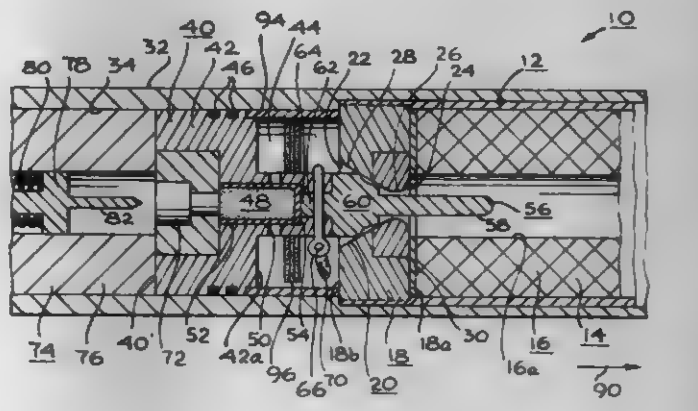
LAUNCH CARTRIDGE ARRANGEMENT

Matthew S. Smith, 4400 Sarah, Apt. 29, Burbank, Calif. 91505, and Ernest A. Filippi, 5859 E. Ida Place, Greenwood Village, Englewood, Colo. 80110

Continuation-in-part of Ser. No. 364,658, May 29, 1973, Pat. No. 3,886,841. This application Mar. 27, 1975, Ser. No. 562,785

Int. Cl.² F41F *3/04*

U.S. Cl. 89—1.818 **13 Claims**



11. In an improved launch cartridge for launching a rocket powered round from a spike type launcher wherein the rocket powered round has a tailpipe, a rocket propellent grain, a nozzle block and walls in said nozzle block defining a nozzle passageway therethrough communicating said tailpipe with said rocket propellent grain, and wherein the spike of the spike type launcher is insertable into the tailpipe of the rocket powered round, and the launch cartridge is of the type that is detachably insertable into the tailpipe of the rocket powered round intermediate the forward end of the spike of the spike type launcher and the aft end of the nozzle block of the rocket powered round, the improvement to the launch cartridge comprising, in combination:

a probe means;

coupling means for selectively detachable coupling of said probe means to said launch cartridge; and

means for driving said probe means into nozzle sealing engagement with said walls in said nozzle block for the condition of said probe means detached from said launch cartridge and when said rocket powered round is launched.

3,982,468

PISTON AND OBTURATOR ASSEMBLY FOR AUTOLOADING FIREARMS

Val A. Browning, Ogden, Utah, assignor to Browning Arms Company, Morgan, Utah

Filed Nov. 1, 1972, Ser. No. 302,655

Int. Cl.² F41D *5/10*

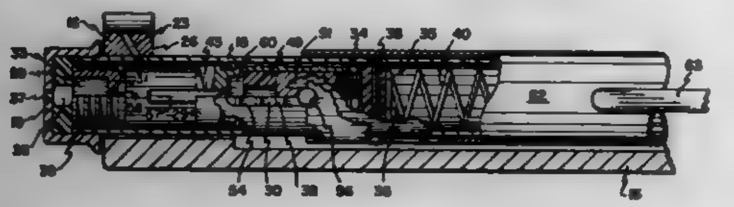
U.S. Cl. 89—193 **17 Claims**

1. In an autoloading firearm of the type in which reloading is actuated by firing gases tapped from the barrel into a gas chamber attached to the magazine to drive a piston connected to a loading mechanism, the improvement comprising:

a cylindrical obturator slidably disposed in the gas chamber and arranged to be driven away from said piston by the tapped gases;

gas relief means opposite said obturator from said piston; and

valve means cooperative between said obturator and the piston to vent the gases from the gas chamber through said gas relief means when said obturator and the piston move apart; wherein

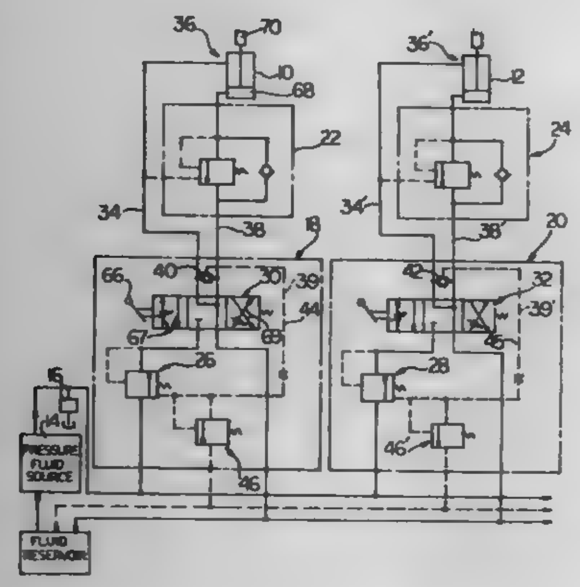


said obturator has a channel formed axially therethrough and said valve means includes a member which withdraws from said channel when said obturator is driven away from the piston to allow the firing gases to vent through said channel.

3,982,469
APPARATUS FOR CONTROLLING WORK ELEMENT OPERATING PRESSURES IN A FLUID SYSTEM

Donald L. Bianchetta, Coal City, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 23, 1976, Ser. No. 651,890
Int. Cl.² F15B *11/16*
U.S. Cl. 91—412 **5 Claims**



1. In a fluid system having a pressurized fluid source connected to at least one working element through a safety pressure relief valve constructed to open in response to a first preselected pressure, and a control valve assembly having a flow control valve positioned between a directional control valve and the pressurized fluid source, said directional control valve having a first conduit connected to one end of the work element for controllably passing fluid therebetween, the improvement comprising:

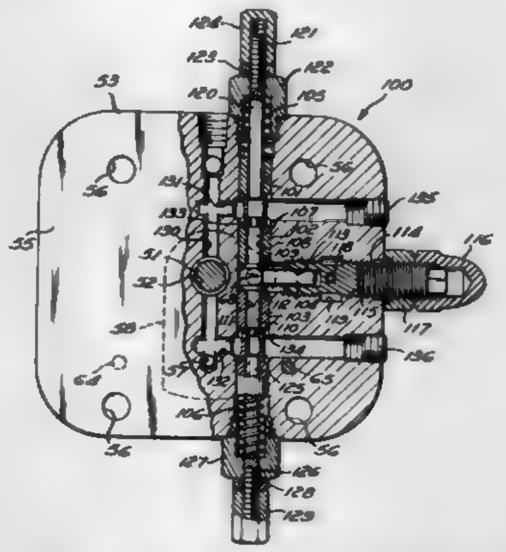
signal means in fluid communication with the first conduit for sensing the fluid pressure in said conduit and delivering said sensed pressure as a pressure signal to the flow control valve for controllably biasing said flow control valve toward an open position in response to said delivered pressure signal; and

a signal pressure relief valve connected in fluid communication with the signal means for controllably passing fluid from the signal means for limiting the pressure on the working element to a second preselected value, said second preselected value being less than said first preselected value of said safety pressure relief valve.

3,982,470
CONTROL SYSTEM FOR AXIAL PISTON FLUID ENERGY TRANSLATING DEVICE

Cecil E. Adams, and Leo H. Dillon, both of Columbus, Ohio, assignors to Abex Corporation, New York, N.Y.

Filed Aug. 4, 1975, Ser. No. 601,554
Int. Cl.² F15B *13/14*; F01B *3/00, 13/04*
U.S. Cl. 91—506 **17 Claims**

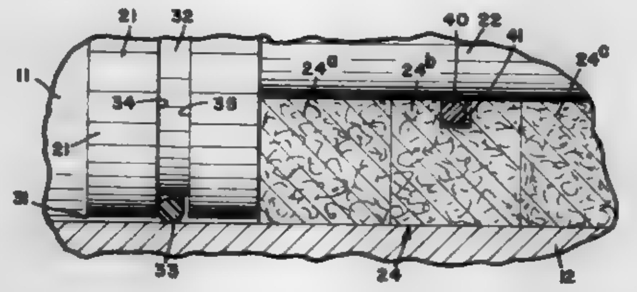


1. A control for an axial piston type variable displacement fluid energy translating device having a housing, a cover plate closing an opening in the housing, a pair of fluid ports, a pivotably mounted thrust plate for changing the displacement of the device, a servo fluid motor for pivoting the thrust plate between a position of maximum fluid displacement in one direction and a position of maximum displacement in the other direction with a centered position of minimum fluid displacement therebetween, means for supplying servo pressure fluid to operate said fluid motor including a control valve for selectively operating the servo fluid motor to move the thrust plate to the position set by the control valve, and the improvement comprising: an auxiliary control device, an operating member operatively connecting the auxiliary control device with the control valve, the auxiliary control device including stop means for setting an operating member position in which the control valve is in the thrust plate centered position, and means biasing the operating member into the position set by the stop member to cause the control valve to operate the servo fluid motor to move the thrust plate to the centered position.

3,982,471
SEAL IN PUMP PISTON INTERMITTENTLY PERMITTING CONDUCTION OF PUMP FLUID

John F. Finger, Beresford, S. Dak., assignor to Sioux Steam Cleaner Corporation, Beresford, S. Dak.

Filed Dec. 18, 1974, Ser. No. 533,979
Int. Cl.² F01M *1/04*; F16J *15/16*
U.S. Cl. 92—156 **1 Claim**



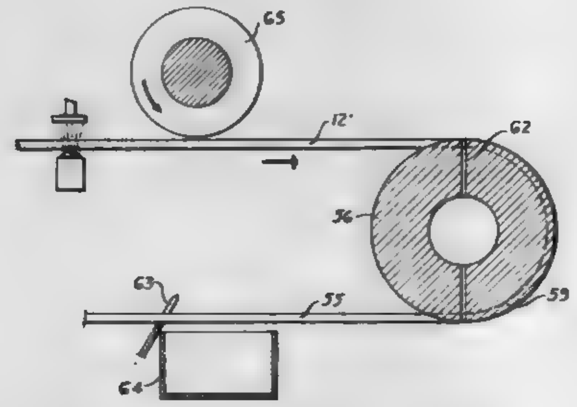
1. In a liquid pump comprising a cylinder having inlet and outlet passage means and a piston reciprocable in said cylinder, said piston having an enlarged head of smaller diameter than said cylinder, a stem of reduced diameter, a compressible packing carried by said stem, and means carried by said stem for adjustably compressing said packing against said head for slidingly sealing engagement laterally with said cylinder, the improvement which comprises:

a. a peripheral groove around said head,
b. an annular member located in but only partially filling said groove, the width of said groove being greater than the thickness of said annular member and the difference between the inside diameter of said cylinder and the diameter of said piston at the bottom of said groove being greater than the difference between the inner and outer diameters of said annular member, and
c. means preventing passage of liquid along said stem beneath said packing.

3,982,472
ENVELOPE MACHINE WITH WINDOW PATCH REMOVAL MECHANISM

George F. Howatt, Holden, Mass., assignor to New England Envelope Manufacturing Co., Worcester, Mass.

Division of Ser. No. 487,906, July 12, 1974, Pat. No. 3,869,965, which is a continuation of Ser. No. 335,725, Feb. 26, 1973, abandoned. This application Jan. 24, 1975, Ser. No. 543,676
Int. Cl.² B31B *1/12, 1/82*
U.S. Cl. 93—61 A **1 Claim**



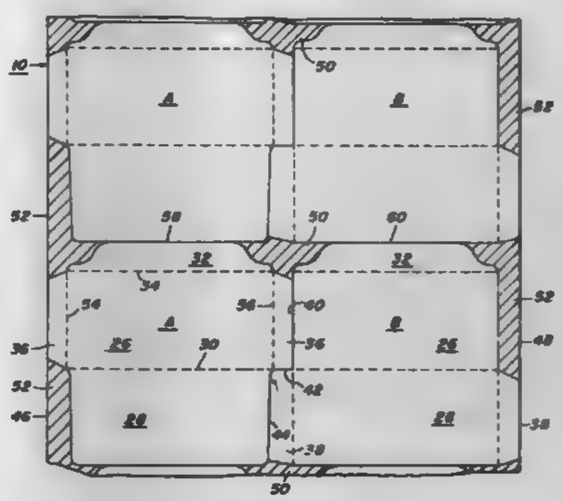
1. An envelope machine, comprising:
a. an elongated frame,
b. a conveyor mounted in the frame for carrying longitudinally of the frame envelope blanks having window openings,
c. a window applicator mounted on the frame above the conveyor and spaced upstream a substantial distance from the discharge end of the conveyor, the window applicator dropping a window patch toward the conveyor irrespective of whether an envelope blank is present or not,
d. a roller forming a part of the conveyor at the discharge end and having suction passages, and
e. means operative when an envelope blank is missing to apply suction to the roller to carry a window patch around the roller to the underside of the conveyor.

3,982,473
ENVELOPE-MAKING METHOD

John Roberts, IV, East Liverpool, Ohio, assignor to American Paper Products Company, Youngstown, Ohio

Filed June 26, 1975, Ser. No. 590,581
Int. Cl.² B31B *1/16*
U.S. Cl. 93—63 M **4 Claims**

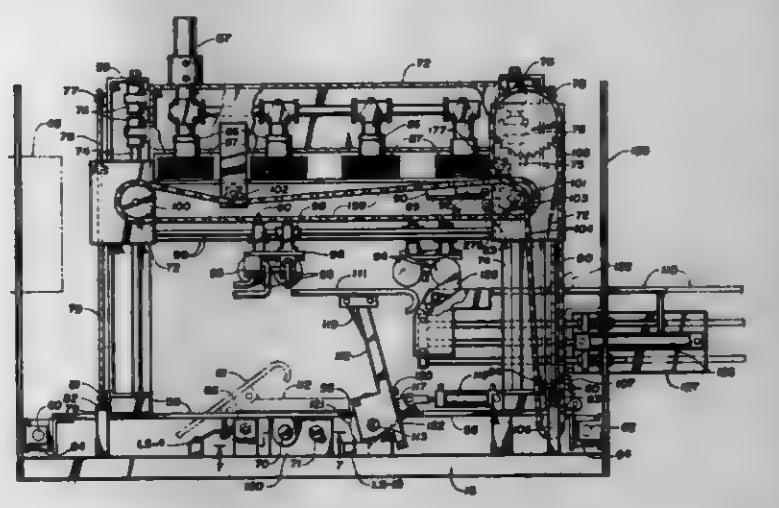
1. A method for making envelopes from a continuous web of paper such that the cut blanks can move essentially continuously from one or more cutting stations to envelope-gumming and folding stations, which comprises passing said continuous web through at least one rotating die roll and a backup anvil roll to sever from the web at least two envelope blanks in side-by-side relationship with the sealing flaps of the envelope blanks extending in the same direction and with the side flaps of one adjacent envelope being on the back panel of the blank while the side flaps of the other adjacent envelope are on the front panel of the blank.



3,982,474
CASE ERECTING AND FORMING MACHINE

Robert N. Klund, Stillwater, Minn., assignor to Delkor Industries, Inc., Minneapolis, Minn.

Filed May 23, 1975, Ser. No. 580,365
Int. Cl.² B31B *1/80*; B65B *43/30*
U.S. Cl. 93—53 SD **8 Claims**



1. Apparatus for opening rectangular knockeddown cases comprising:

a pair of opposed movably mounted frames;

frame moving means for controllably moving said frames toward and away from each other to form a case opening area between said frames;

rotary means carried by said frames for engaging opposite sides of a case as it is received between said frames and for progressing such a case between said frames in a direction transverse to the direction of relative movement of said frames;

means mounted on said frames for maintaining said rotary means in engagement with such a case while it is disposed between said frame;

means for altering the direction of rotation of at least one of said rotary means carried by one of said frames (and constructed and arranged) to open such a case between said frames as they are moved away from each other by said frame moving means;

control means connected with said frame moving means for arresting the opening movement of said frames when such a case has reached an open position and for closing the same after the case has been removed therefrom; and

means for moving such a case away from said case opening area after the case has been so opened.

3,982,475
DOUBLE-WALL FACADE ELEMENT FOR BUILDINGS HAVING AN OVERPRESSURE VENTILATING OR AIR CONDITIONING INSTALLATION

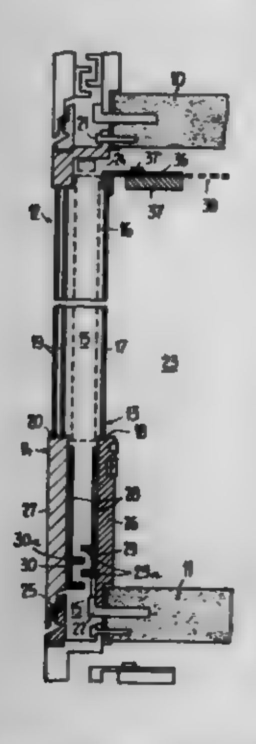
Ernst Wild, Stafa, Switzerland, assignor to Electrowatt AG, Zurich, Switzerland

Filed June 2, 1975, Ser. No. 583,194

Claims priority, application Switzerland, June 12, 1974, 8021/74

Int. Cl.² F24F *7/00, 13/00*

U.S. Cl. 98—31 **18 Claims**



1. A double-wall facade element for a building operating with an overpressure ventilating or air conditioning installation, said facade element comprising an inner wall and an outer wall, said inner wall and outer wall being arranged in spaced relationship from one another to form therebetween an intermediate compartment, said facade element having a first substantially horizontally extending edge and a second substantially horizontally extending edge, means defining a throughpassage opening for exhaust air at the inner wall at the region of the first horizontally extending edge of the facade element, means defining an exhaust opening for the exhaust air at the outer wall at the region of the second horizontally extending edge of the facade element, both of said openings being in flow communication with one another through the agency of the intermediate compartment disposed between the inner wall and outer wall, said throughpassage opening possessing a flow cross-section which is greater than the flow cross-section of the exhaust opening but smaller than the flow cross-section of the intermediate compartment, check valve means arranged at the region of the exhaust opening and responsive to external pressure increases in order to throttle the flow cross-section of the exhaust opening, so that there is adjusted a pressure gradient in the intermediate compartment between the throughpassage opening and the exhaust opening, said pressure gradient being smaller than the difference between the partial pressure of the water vapor internally of the building and the partial pressure of the water vapor at the outside of the building with an external temperature which is lower in contrast to the temperature internally of the building.

3,982,476
COOKING APPARATUS

Jack S. McLane, Atlanta, Ga.

Filed Oct. 12, 1971, Ser. No. 187,972

Int. Cl. A47j *37/07*

U.S. Cl. 99—339 **4 Claims**

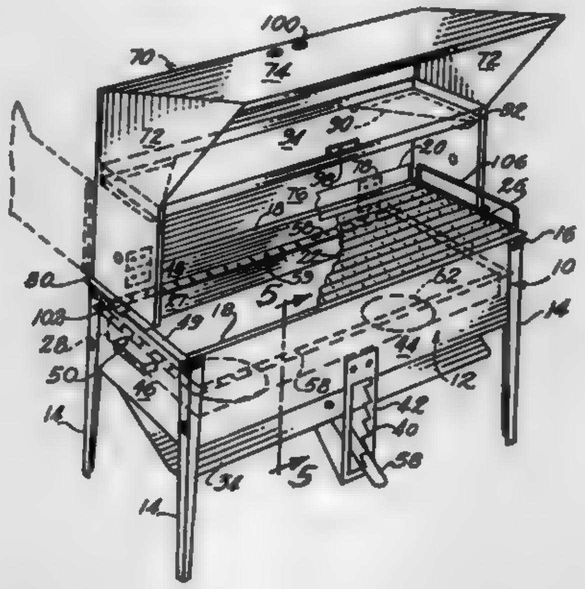
1. In a cooking device:

a. a container body supported on ground engaging members at respective corners thereof and said container body having damper openings in the bottom thereof and controlled ventilation therethrough,

b.a foraminous, corrugated food platform supported on said container body above said bottom

c.a movable fuel support pan movably supported on said body beneath said food platform and above said openings in the body,

d.support means for said fuel pan extending through said bottom of said container,



e.a damper plate mounted beneath said container body and being movable with respect thereto, and means connecting said damper plate and said fuel support pan for simultaneous operation and including a manually operated control means which moves both said damper plate and said pan simultaneously.

f. the periphery of said support means for said fuel pan having a plurality of openings therein through which the air passes.

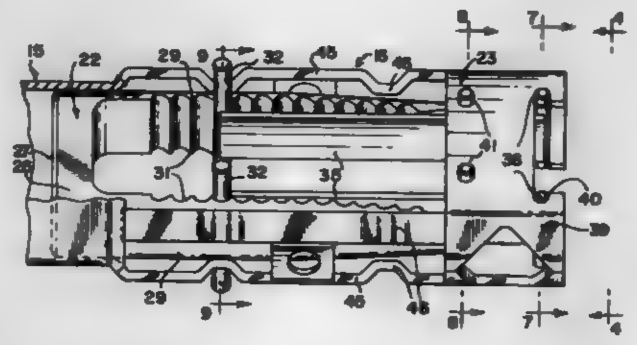
3,982,477
MOLD WITH PLUG TAKE-UP MECHANISM

Daniel L. Orloff, and Charles H. Johnson, both of Madison, Wis., assignors to Oscar Mayer & Co. Inc., Madison, Wis.

Filed Mar. 11, 1975, Ser. No. 557,300

Int. Cl.² A47J *27/20*

U.S. Cl. 99—351 **13 Claims**



1. A tubular loaf mold adapted for receiving a stuffable food material to be processed for continuously producing a loaf food product comprising: an elongated hollow body open at both ends, means on one end for receiving a cover for closing said one end, a plug positionable and movable within said body, and a take-up mechanism at the end of the body opposite said one end coacting with the plug to accommodate expansion and contraction of the food material during processing thereof, said take-up mechanism including means connected to the mold and coacting with said plug for retarding movement of said plug in both directions, wherein a predetermined force against the plug is necessary to move same in the mold.

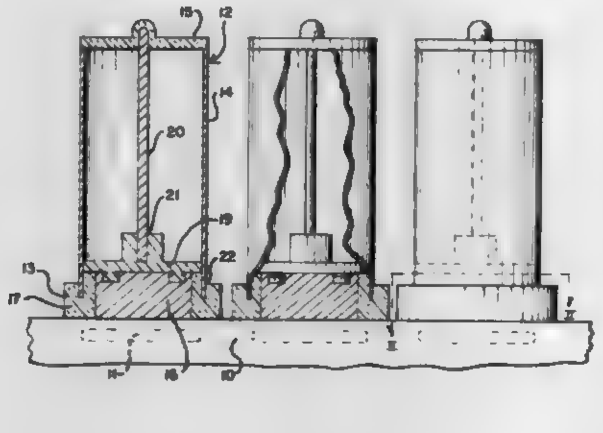
3,982,478
FOOD PREPARATION AND STORAGE DEVICE

Edward T. Szewczyk, 2578 Royal View Drive, Allison Park, Pa. 15101

Filed Nov. 3, 1975, Ser. No. 627,896

Int. Cl.² A47J *37/04*

U.S. Cl. 99—419 **6 Claims**



1. A device for preparing and storing food comprising:

a. an element base member having a thermally conductive heating element therein,

b. a cooking chamber comprised of a base member, cylindrical wall members and a lid member, said members adapted to form a closed chamber,

c. said base of said cooking chamber member having a conductive core adapted to engage said heating element and heat transfer means adapted to conduct heat from said element and said base; and

d. receptacle means within said cooking chamber to receive drippings from said food.

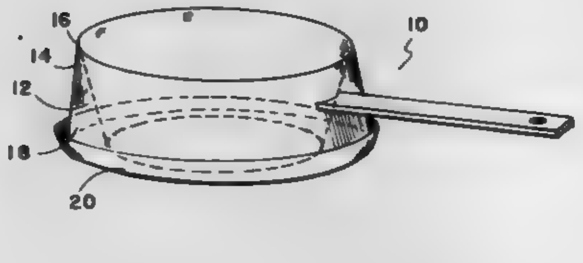
3,982,479
ENERGY SAVING COOKING UTENSIL

Jacob W. Sova, 450 Victory Way, Wyckoff, N.J. 07481

Filed May 2, 1975, Ser. No. 574,114

Int. Cl.² A47J *27/00*

U.S. Cl. 99—447 **3 Claims**



1. An energy saving cooking utensil comprising:

an inner member having the shape and dimensions of a standard stove-top cooking utensil including a base, side perimeter walls and an upper perimeter rim;

an outer flange extending outwardly and downwardly from the upper perimeter rim of said inner member and integrally formed with said upper perimeter rim;

said outer flange having a base rim which extends beyond the circumferential perimeters of said inner member and of a heating unit of a stove;

said outer flange and said side perimeter walls defining a heat circulation passage about the perimeter of said inner member;

a plurality of spaced apart apertures along the top of said upper perimeter rim to permit drainage during washing;

3,982,480
COLUMN FOR DRAINING A WHEY-CURD MIXTURE

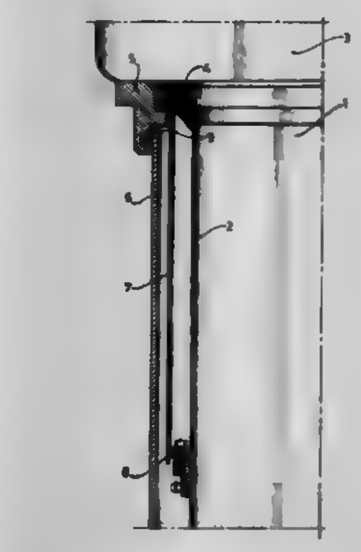
Gerrit George Kamphuis, Gorredijk, Netherlands, assignor to Stork Amsterdam B.V., Amstelveen, Netherlands

Filed Aug. 25, 1975, Ser. No. 607,818

Claims priority, application Netherlands, Aug. 27, 1974, 7411421

Int. Cl.² A01J *25/11*

U.S. Cl. 99—456 **4 Claims**



1. Whey-curd draining column to be used in a cheese-producing machine, which column consists of an upright, perforated sleeve connected at its upper end to a supply tank for a mixture of curd and whey and at its lower end cooperating with a discharge member for the curd, a jacket arranged around the upper part of the perforated sleeve, said jacket encircling the sleeve at its lower end via a sealing member, and forming an annular space around the sleeve and having such a length that at its lowermost point the absolute liquid pressure is not higher than the absolute pressure within the sleeve.

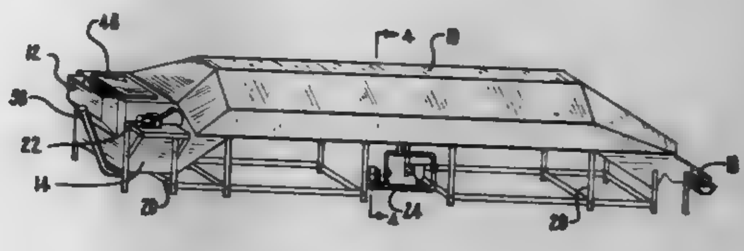
3,982,481
FOOD PROCESSING APPARATUS

Edward T. Console, 39 Gonzales St.; Anthony G. Wilson, 48 Eaton Ave., both of Watsonville, Calif. 95076, and Joseph G. Lamandri, 205 Harkleroad Ave., Santa Cruz, Calif. 95060

Filed Aug. 18, 1972, Ser. No. 281,974

Int. Cl.² A47J *27/58*

U.S. Cl. 99—477 **5 Claims**



1. Apparatus for food processing with steam comprising:

a steam chamber,

a conveyor through said chamber for food transport,

a plurality of steam emission nozzles communicating with said chamber and directed at said conveyor,

a steam supply connected to said nozzles, and steam return means above said conveyor for collecting steam and being connected to said nozzles and communicating with said chamber for recirculating steam in said chamber, said nozzles comprising venturis for mixing steam from said steam supply and said steam return means.

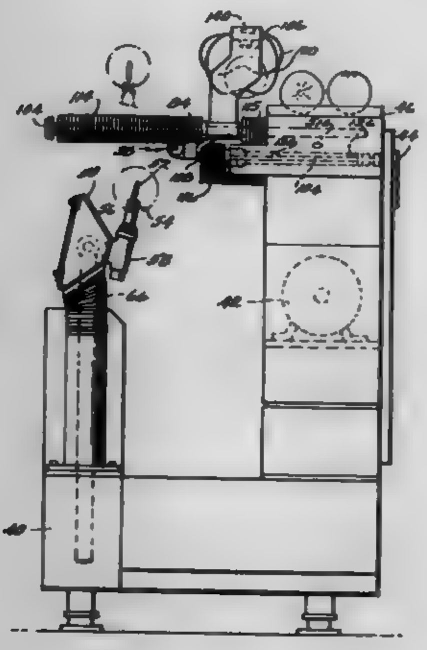
3,982,482
FRUIT PEELING APPARATUS

John D. Webb, Clearwater, and Alan F. Houghton, Dunedin, both of Fla., assignors to Webb's Machine Design, Clearwater, Fla.

Filed Nov. 22, 1974, Ser. No. 526,331

Int. Cl.² A23N *7/00*

U.S. Cl. 99—491 **63 Claims**



37. Apparatus for peeling fruit having a peel and an edible interior portion comprising:

means for inserting a conductive member into said interior portion,

means for cutting into the fruit to a variable depth,

means for detecting the electrical impedence of the fruit between the point of cutting and said conductive member and producing an electrical control signal as a function thereof and

means for controling the depth of cutting as a function of said control signal.

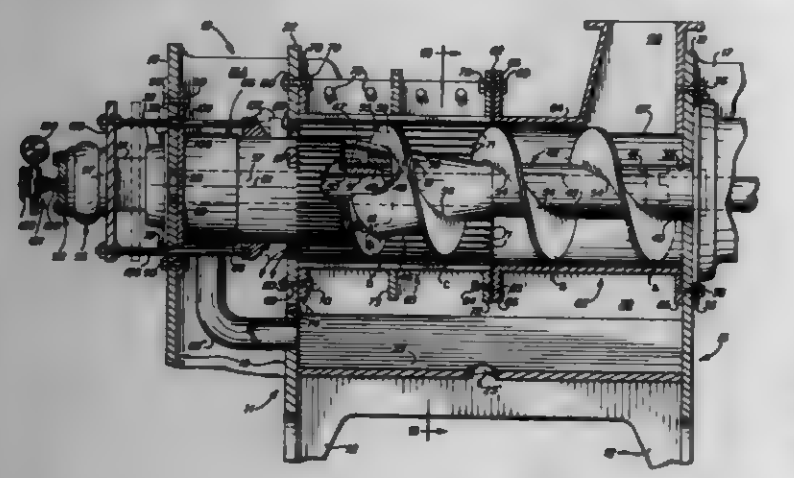
3,982,483
MOISTURE REDUCTION PRESS

Thomas C. Bird, Scottsdale, Ariz., and Walter J. Paetzold, Hereford, Tex., assignors to Corral Industries, Inc., Phoenix, Ariz.

Filed Apr. 25, 1975, Ser. No. 571,569

Int. Cl.² B30B *9/18*

U.S. Cl. 100—117 **3 Claims**



1. A press for extracting liquid from plastic material comprising:

a frame,

a shaft at least a part of the periphery being in the form of a truncated cone rotatably mounted on said frame and having a worm section of positive pitch formed along at least a part of its outer periphery,

the truncated cone of said shaft tapering from its apex near the upstream end of said shaft toward the downstream end thereof,

a first cylinder mounted on said frame and surrounding the worm section of said shaft,

said first cylinder being closed at its upstream end and open at its downstream end,

the upstream end of said first cylinder being provided with an opening in its periphery for receiving plastic material, the perforated downstream portion of the periphery of said first cylinder is formed by spaced bars arranged longitudinally of said shaft around at least a part thereof

at least a part of the downstream portion of the periphery of said first cylinder being perforated for passing liquid extruded from the plastic material,

a ring mounted on said frame for axial movement to and from the downstream end of said first cylinder for controlling said opening of said first cylinder,

pressure means for exerting predetermined pressure on said ring for biasing said ring toward the periphery of said partial opening, said pressure means comprising an inflatable means adaptable for receiving fluid under pressure of predetermined values,

a second perforated cylinder mounted on said frame in axial alignment with the downstream end of said shaft and protruding through an aperture in said ring into abutting aligned contact with the periphery of the cone of said shaft whereby the plastic material extruded by said worm section of said shaft moves over the outer periphery of said second cylinder, the perforations of said second cylinder are formed by spaced bars arranged longitudinally of said shaft around at least a part thereof

said second cylinder passing therethrough liquid pressed from said extruded material by said ring, and

detachably mounted wear shoes mounted on the downstream side of the last flight of said worm section at the downstream end of said shaft.

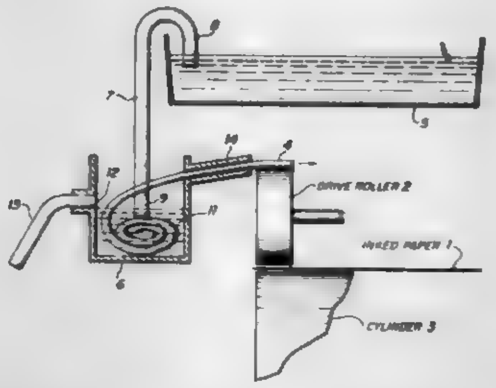
3,982,484
ROLLER MOISTENING WICK SYSTEM FOR PREVENTING DRIPPING WITHIN A DUPLICATING MACHINE

Thomas M. Madigan, Pittsford, N.Y., assignor to Itek Corporation, Lexington, Mass.

Filed Jan. 3, 1975, Ser. No. 538,487

Int. Cl.² B41F *7/38, 23/02*

U.S. Cl. 101—422 **2 Claims**



1. In a duplicating machine, an improved wick system for preventing ink build-up on a paper drive roller which transports said paper within said duplicating machine, said system comprising:

a. a roller wick reservoir for containing fluid therein;

b. a roller wick having one end thereof positioned within said roller wick reservoir and having an opposite end contacting said drive roller;

c. a sleeve member positioned between said roller wick reservoir and said drive roller for surrounding and supporting said roller wick to orient said roller wick in an upward direction with respect to said roller wick reservoir, and for preventing dripping of water within said roller wick into lower portions of said duplicating machine;

d. a relay wick reservoir having a substantially greater fluid capacity than said roller wick reservoir for containing large quantities of fluid to be supplied to said roller wick reservoir over greatly extended time periods;

e. a relay wick having a first terminal portion within said relay wick reservoir and a second terminal portion within said roller wick reservoir, said relay wick being substantially fatter than said roller wick and being positioned directly over said roller wick reservoir, thereby to continuously supply relatively abundant quantities of fluid to said roller wick reservoir; and

f. overflow means formed within said roller wick reservoir for draining any excess quantities of fluid supplied to said roller wick reservoir by said relay wick.

3,982,485
WASHING MACHINES FOR PRINTING OR PROCESSING TABLES

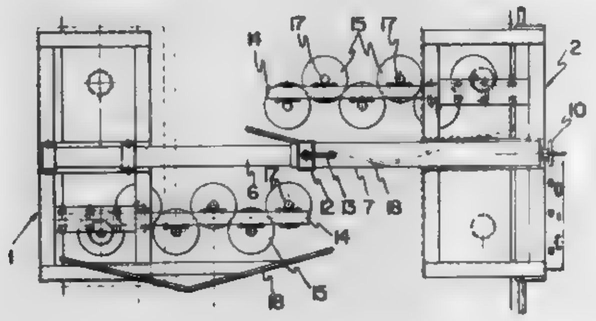
Salvador Gali Mallofre, Londres 29-1°,2ª, Barcelona, Spain

Filed June 24, 1975, Ser. No. 589,834

Claims priority, application Spain, Nov. 20, 1974, 432.130

Int. Cl.² B41F *35/00;* B41L *41/00*

U.S. Cl. 101—425 **1 Claim**



1. A washing machine for printing or processing tables, the washing machine comprising:

an arrangement of two complementary carriages, each of said carriages adapted to be mounted for movement on laterally extending rails mounted on opposite sides of a printing table to be cleaned;

means for adjustably coupling said carriages together transversely of said printing table to permit adjustment corresponding to the width of said printing table, said means for coupling comprising a tubular body mounted on each of said carriages, said tubular bodies being joined in telescopic relationship for coupling one of said carriages to the other of said carriages;

each of said carriages having a cantilever arm extending across more than half the width of said printing table, each of said arms supporting a plurality of circular brushes, a gear on each of said brushes for receiving a driving force from an adjacent one of said brushes or from a drive means, said brushes being mounted along each of said arms in a zig-zag arrangement;

each of said brushes being carried by pneumatic pistons for movement of the brushes to and from the surface of the table, the path of travel of said piston being longer than the distance which separates the brushes from the table, a valve for regulating pressure applied by said brushes; and

said tubular bodies being provided with a spindle and a fixed nut capable of adjustment in either direction relative to the width of the table, and a handwheel connected by means of the spindle to the fixed nut for adjustment of the relative position between said telescoping tubular bodies and, therefore, the width between the carriages.

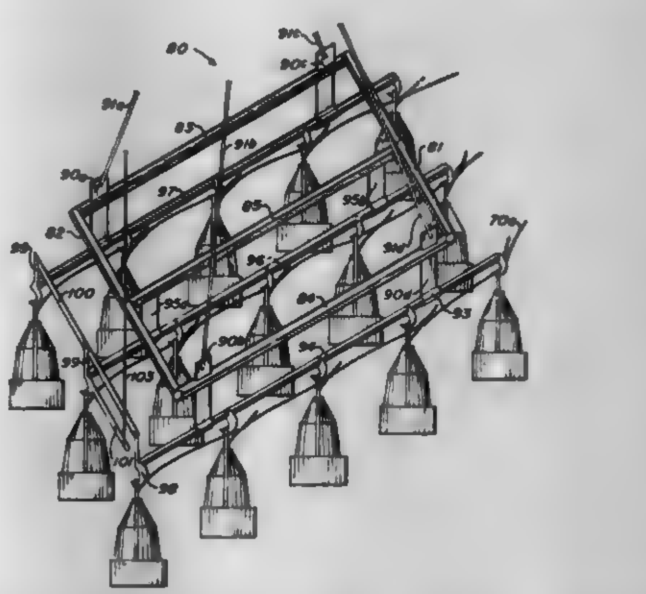
3,982,486
NON-EXPENDABLE POSITIONING FRAME FOR MULTIPLE EXPLOSIVE CHARGES

Robert E. Eckels, 2101 Youngfield, Golden, Colo. 80401

Filed Jan. 14, 1975, Ser. No. 540,952

Int. Cl.² F42B *3/02*

U.S. Cl. 102—24 HC **10 Claims**



1. Non-expendable frame apparatus for the remote, simultaneous placing of a plurality of explosive charges at predetermined space intervals, comprising:

a. open frame means of sufficient strength to support a plurality of individual, separate explosive charges laterally spaced from each other and suspended therefrom;

b. means for suspending said open frame means in a generally horizontal position from at least one overhead haul rope;

c. releasable holding means depending downwardly from said open frame means at predetermined spacing for individually holding each one of a plurality of explosive charges; and

d. release means interconnected with said releasable holding means for simultaneously releasing all of the explosive charges in their predetermined position.

3,982,487
MICRO-DELAYED DETONATOR FOR BALLISTIC ROCKETS AND ROCKETS THUS EQUIPPED

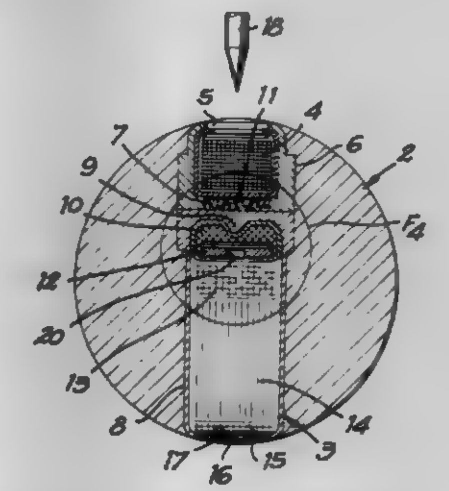
Adelin F. Richelle, Agimont, Belgium, and Hans D. Harnau, Koblenz, Germany, assignors to S.A. Prb. Societe Anonyme, Brussells, Belgium

Filed June 4, 1974, Ser. No. 476,206

Claims priority, application Belgium, June 14, 1973, [illegible]

Int. Cl.² F42C *1/00*

U.S. Cl. 102—70 R **1 Claim**



1. A delay train for a rocket, comprising:

a body having a continuous bore therethrough;

a first housing in said bore enclosing a primary primer;

striking means to fire said primary primer upon impact of said rocket;

a second housing in said bore enclosing a secondary primer seated on a support therein and having a wall closing said bore between said first housing and secondary primer, said wall defining with said first housing a closed delay chamber therebetween;

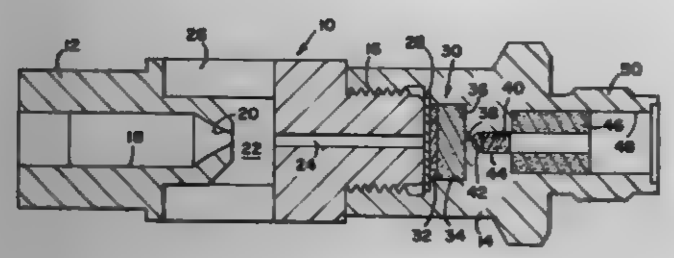
an anvil on the inside of said wall directed toward said secondary primer; and

pressure absorbing material in said delay chamber, said pressure absorbing material being an elastic material having a cellular structure.

3,982,488
FLUERIC THROUGH BULKHEAD ROCKET MOTOR IGNITOR

Edward L. Rakowsky, Kinnelon, and Vincent P. Marchese, Morris Township, Morris County, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 19, 1975, Ser. No. 551,434
Int. Cl.² F42C *5/00*
U.S. Cl. 102—81 **1 Claim**



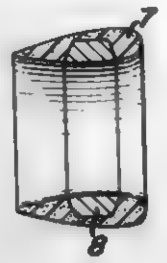
1. A rocket motor ignitor comprising a fluid resonance heating device comprised of a housing having an inlet port that is connected to a converging nozzle that injects fluid into a resonance tube with an open end to produce heating at said open end of said tube and exhaust ports for exhausting fluid from said housing; said heating device being connected to a propellant housing containing a first explosive charge that is in heating relation to said fluid resonance heating device for receiving heat therefrom, said fluid resonance heating device open end and said first explosive charge being separated by a metal closure disk and said first explosive charge being comprised of a first pickup charge adjacent said metal closure disk and a donor charge contiguous said first pickup charge; a second explosive charge mounted in said propellant housing and spaced from said first explosive charge by a thick bulkhead, said second explosive charge being comprised of a second pickup charge adjacent said bulkhead and a receptor charge contiguous said second pickup charge; and a solid propellant mounted in said housing adjacent said second explosive charge for being ignited thereby.

3,982,489
KINETIC ENERGY RING PROJECTILE

Abraham Flatau, 2003 Stockton Road, Joppa, Md. 21085; Donald N. Olson, 38 Atherton Road, Lutherville, Md. 21093, and Miles C. Miller, 504 Haverhill Road, Joppa, Md. 21085

Filed Nov. 29, 1972, Ser. No. 310,625
Int. Cl.² F42B *11/36, 13/00*
U.S. Cl. 102—92.4 **7 Claims**

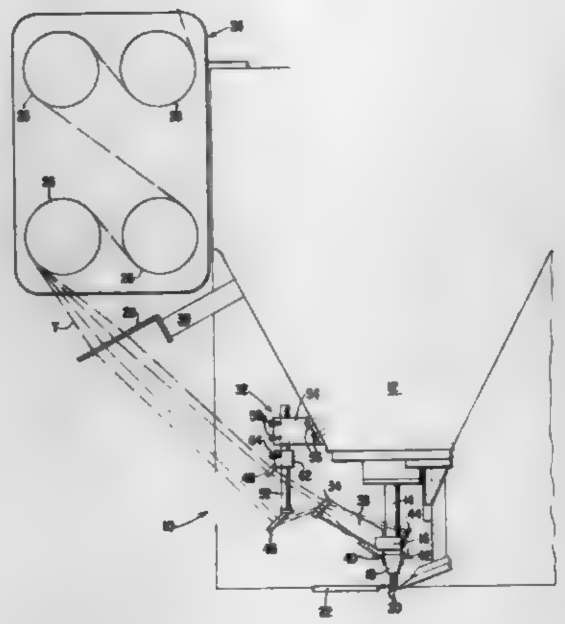
1. A non-lethal, non-fragmenting, kinetic energy type rotatable projectile comprising: an annular ring shaped, closed structure of a tear drop airfoil cross-section; said structure being composed of resilient material and defined externally by major annular inner and outer surfaces defining the diametric extent of said structure, and being terminated by leading and trailing edges defining the longitudinal extent of said structure; said structure defining an internal annular hollow portion which is occupied by a second unified material.



3,982,490
YARN JERKER SYSTEM FOR TUFTING MACHINES

Fred Bury, Blackburn, England, assignor to The Singer Company, New York, N.Y.

Filed Sept. 17, 1975, Ser. No. 614,031
Int. Cl.² D05C *15/18*
U.S. Cl. 112—79 R **5 Claims**



1. A yarn jerker system for a tufting machine having a frame supporting a reciprocating needle bar carrying a plurality of needles, said jerker system comprising a fixed jerker carried on the frame, and a reciprocating jerker carried by said needle bar for pulling yarn from the fixed jerker, at least one of said jerkers comprising first and second jerker members, means for adjustably mounting said first jerker member relative to said second jerker member and for adjustably mounting both said first and second jerker members relative to said tufting machine frame, whereby yarn threaded through said first jerker may be selectively controlled independently of yarn threaded through said second jerker.

3,982,491
AUTOMATIC SEWING MACHINE

William P. Herzer, Northborough, and Robert E. Cullen, Norwood, both of Mass., assignors to Union Special Corporation, Chicago, Ill.

Filed Aug. 12, 1974, Ser. No. 496,748
Int. Cl.² D05B *21/00*
U.S. Cl. 112—121.12 **71 Claims**

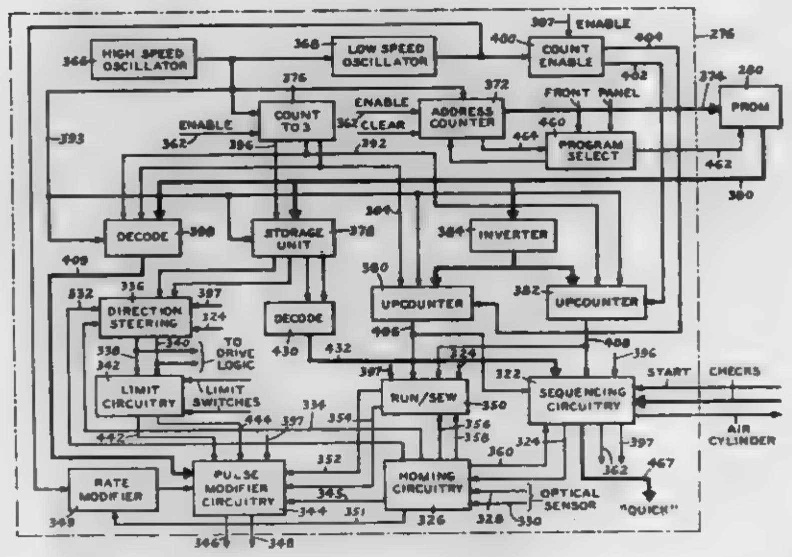
1. An automatic sewing machine comprising

a sewing needle,

a work holder for holding a work piece during sewing,

a nondestructive, nonvolatile storage element having a plurality of randomly addressable storage locations, said storage locations containing instructions for positioning the work holder and needle relative to one another in a plurality of positions,

electrical means for reading these instructions in a predetermined sequence, the electrical means having output signals representative of said sequentially read instructions, and

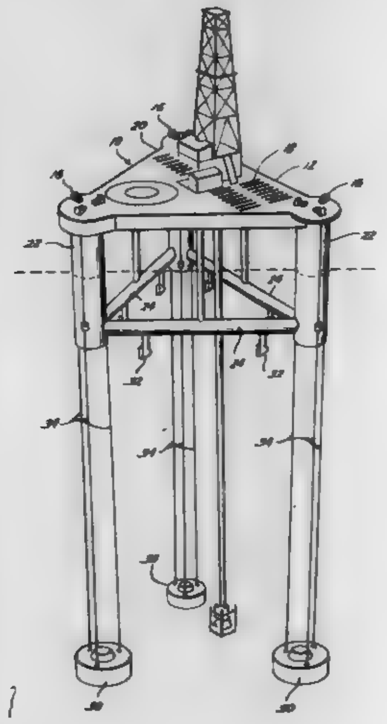


means responsive to said output signals for intermittently positioning the work holder relative to the needle at predetermined times to produce a predetermined pattern of movement and stitching without damaging the needle.

3,982,492
FLOATING STRUCTURE

Riddle E. Steddum, Houston, Tex., assignor to The Offshore Company, Houston, Tex.

Filed Apr. 25, 1975, Ser. No. 571,714
Int. Cl.² B63B *35/44*
U.S. Cl. 114—.5 D **6 Claims**



1. A floating structure adapted for mooring in a preselected position comprising

a platform having a reserve buoyancy, and

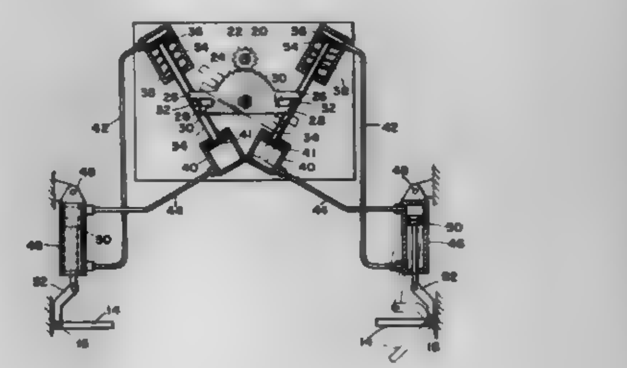
a plurality of mooring lines adapted to be connected to and extending vertically below said platform in parallel relationship to each other in the body of water in which the platform is floating,

said mooring lines being pretensioned so that the ratio of such pretension to the platform displacement falls in the range from 0.05 to 0.30.

3,982,493
SKID CONTROL MECHANISM FOR BOATS

Charles W. Cronin, 3949 Kansas, San Diego, Calif. 92104

Filed June 26, 1975, Ser. No. 590,589
Int. Cl.² B63H *25/44*
U.S. Cl. 114—144 R **5 Claims**



1. A skid control means for a boat having a steering mechanism comprising:

a. a pair of rigid flaps longitudinally hinged to opposite sides of the bottom of said boat and deflectable on the hinges thereof from a neutral position substantially flush with the bottom of said boat to an open, water-engaging position;

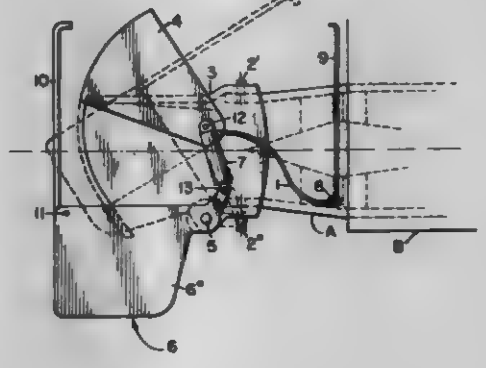
b. power means for moving said flaps between said neutral position and said water-engaging position;

c. said power means being positively and directly operated by said steering mechanism such that upon steering to the left, one of said flaps is activated, and upon steering to the right, the other of said flaps is activated.

3,982,494
AUXILIARY RUDDER FOR A JET PROPULSION UNIT

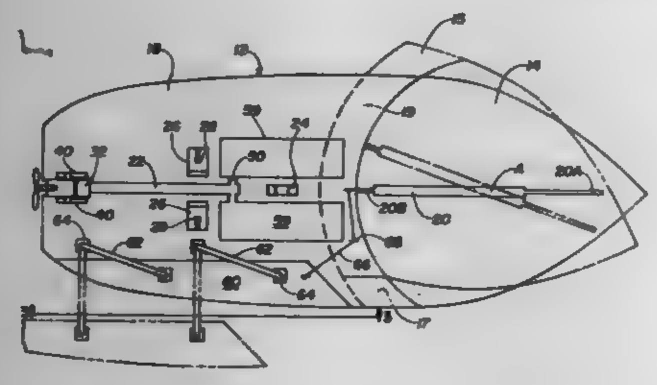
Jouko Juhani Posti, 95230 Maksniemi, Finland

Filed Mar. 24, 1975, Ser. No. 561,148
Claims priority, application Finland, Mar. 27, 1974, 930/74
Int. Cl.² B63H *11/10*
U.S. Cl. 115—12 R **8 Claims**



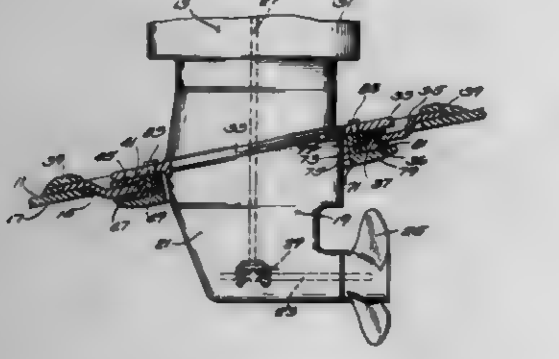
1. Auxiliary rudder apparatus for a water craft having a jet propulsion pump with a housing and a nozzle pivotably mounted on the housing for discharge of a propulsion jet, said apparatus comprising an auxiliary rudder element pivotably mounted on the nozzle for movement between a raised inoperative position and a lowered operative position, and a hydraulic cylinder coupled to the pump and the rudder element and operated by water pressure delivered by the pump to move the rudder automatically in inoperative position when the craft is driven at sufficiently high speed that the water pressure of the pump is adequate to operate the hydraulic cylinder.

3,982,495
BICYCLE POWERED BOAT
Gerald L. Hill, 1047 W. Union St., Whitehall, Pa. 18052
Filed June 9, 1975, Ser. No. 584,757
Int. Cl.² B63H *16/12*
U.S. Cl. 115—27 **10 Claims**



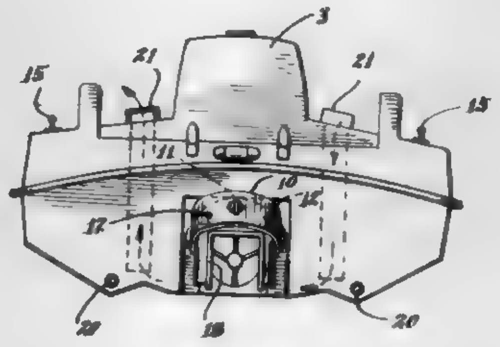
1. A bicycle powered boat comprising a single, hydrodynamically shaped hull, said hull having a forward section and a rear section, the rear portion of said forward hull section terminating in an arcuate surface and the forward portion of the rear hull section terminating in an arcuate surface, said arcuate surfaces being in frictional engagement with each other along an arcuate plane, means for securing said rear hull section to at least one portion of a bicycle, propeller and drive means connected to the aft portion of said rear hull section and positioned to be driven by engagement with the rear wheel of a bicycle, and means for securing said forward hull section to the front wheel portion of a bicycle for turning said front hull section relative to said rear hull section for steering said boat.

3,982,496
SEAL AND ISOLATION MOUNTING SYSTEM
Clarence E. Blanchard, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.
Continuation-in-part of Ser. No. 482,468, June 24, 1974. This application Nov. 17, 1975, Ser. No. 632,267
Int. Cl.² B63H *5/00*
U.S. Cl. 115—.5 S **14 Claims**



1. A marine propulsion device comprising a mounting plate adapted to be secured to the bottom of a boat hull in watertight relation and having therein an endless surface defining an opening, and a margin extending from said endless surface, a resilient member comprising an annular sealing portion including an endless surface defining a central opening and a plurality of angularly spaced extension which project outwardly from said annular sealing portion and constitute elastomeric mounts, a clamping member including an annular portion located within said central opening of said resilient member and defining a central opening and a flange portion extending outwardly from said annular portion, a marine propulsion lower unit extending through said opening in said clamping member and including a mounting flange, and means securing said clamping member to said mounting flange with said annular sealing portion of said resilient member located between said mounting plate and at least one of said lower unit mounting flange and said clamping member so as thereby to effect a watertight seal between said mounting plate and at least one of said lower unit mounting flange and said clamping member so as thereby to effect a watertight seal between said lower unit and said mounting plate and with said extension located between said margin of said mounting plate opening and one of said lower unit mounting flange and said clamping member flange so as thereby to support and vibrationally isolate said lower unit from said mounting plate.

3,982,497
JET-PROPELLED POWER BOAT
Charles A. Caron, 444 Bedford St., Stamford, Conn. 06904
Continuation-in-part of Ser. No. 507,073, Sept. 18, 1974, abandoned. This application Oct. 3, 1975, Ser. No. 619,502
Int. Cl.² B63B *5/24*
U.S. Cl. 115—70 **5 Claims**

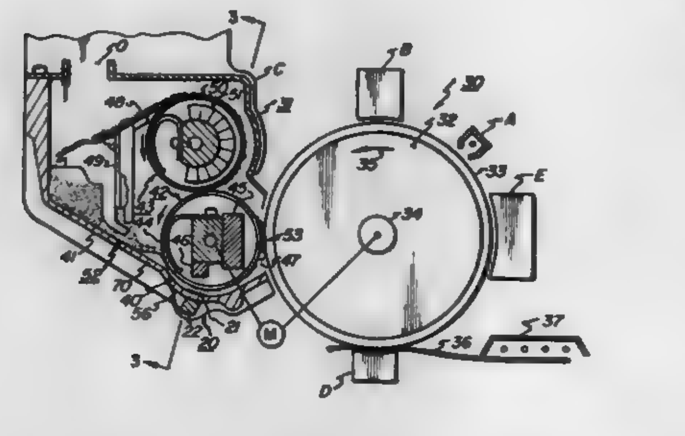


1. In a jet propelled, high speed fiberglass boat provided with a cockpit and deck raised above the floor of the cockpit on all sides, fore, aft, and both sides, a jet tunnel completely external to the boat and driven by an inboard engine, the improvements which comprise, in combination,

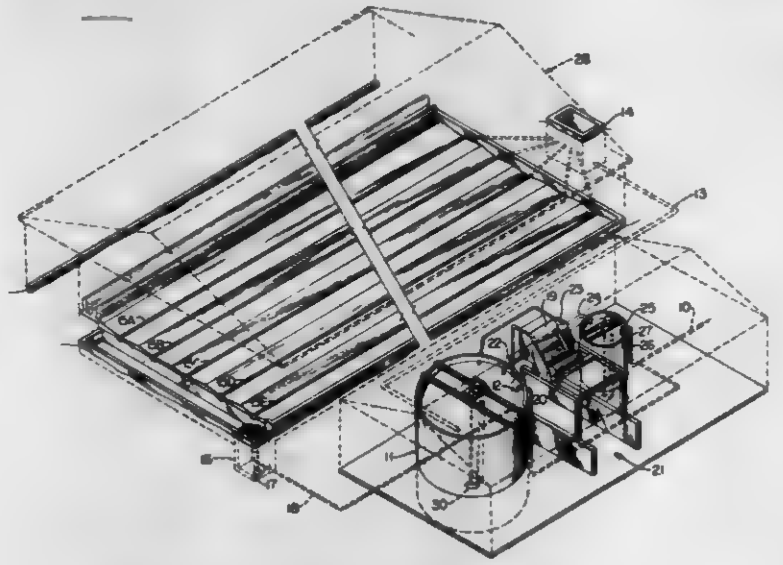
a. a completely rounded bow having a continuous surface,
b. a solid bulkhead between engine compartment and the rest of the boat, including the cockpit, preventing flow of any water from the cockpit to the engine compartment,
c. flotation in the form of cellular plastic,
d. rails along the edges of the cockpit raised above the deck, and
e. separate and independent ventilating means for the engine compartment having air intakes and exhaust at least as high as any part of the deck and located inboard of the rails.

3,982,498
DEVELOPMENT APPARATUS
David G. Wilcox, West Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 416,898, Nov. 19, 1973, Pat. No. 3,915,121. This application Mar. 26, 1975, Ser. No. 562,290
Int. Cl.² G03G *15/08*
U.S. Cl. 118—637 **17 Claims**

1. In an electrostatographic reproducing apparatus including:
a moving imaging surface;
means for forming an electrostatic image on said surface;
a developer supply means;
a development means for developing said electrostatic image on said imaging surface by the application of developer thereto comprising a moving member for supporting a first magnetic brush of said developer;
first magnetic field generating means for forming said first magnetic brush so that it extends out from said moving member with a first height; and
means for moving said member between said supply means and a development zone; the improvement wherein, said apparatus further includes:
means for reducing the height of said first magnetic brush, said height reducing means comprising a stationary member for supporting a second magnetic brush of said developer, said stationary member being spaced from said moving member and second magnetic field generating means for forming said second magnetic brush so that it extends out from said stationary member toward said moving member so as to engage said first magnetic brush to reduce said first height.

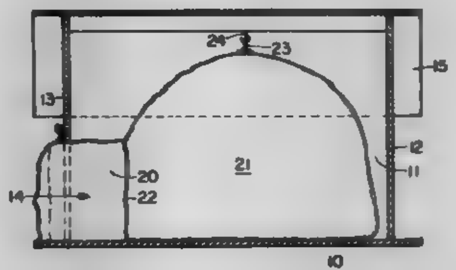


3,982,499
CONVERSION OF ANIMAL WASTE
Gerald P. Frankl, 342 Security Bank Bldg., Sioux City, Iowa 51101
Filed Jan. 30, 1975, Ser. No. 545,584
Int. Cl.² A01K *1/00*
U.S. Cl. 119—16 **27 Claims**



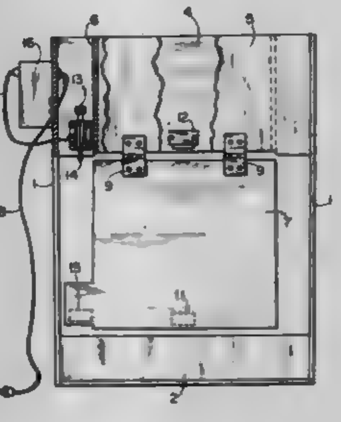
8. Apparatus for separating solid and liquids from a mixture comprising:
a cylindrical drum means,
means for imparting rotary motion to said drum means,
filter means arrayed around the lower peripheral area of said drum means, said filter means including a plurality of spaced bars arranged for forming an arcuate surface in surrounding relation relative to the lower peripheral area of said drum means,
fluidically porous endless belt means arranged to move between said spaced bars and said drum means for compressing said mixture against said drum means,
means introducing said mixture between said drum means and said filter means at the point the peripheral edge of said drum means is rotationally moving downward for compressing said mixture between said drum means and said filter means, and
means for collecting the liquid passing through said endless belt and the space between said spaced bars, whereby liquid from said mixture will pass through said filter means while solids will pass between said drum and will be discharged at the peripheral edge of said drum when said drum is moving upward.

3,982,500
LINER FOR DOGHOUSE
Orlean F. Marlatt, 1823 E. Broadway, Enid, Okla. 73701
Filed Feb. 7, 1975, Ser. No. 547,764
Int. Cl.² A01K *1/02*
U.S. Cl. 119—19 **5 Claims**



1. In combination with a doghouse having side walls, a roof and an entrance, a liner having an entrance portion with first and second ends and a bag lining portion, means for securing said bag lining portion to said first end, means for releasably rigidly securing said second end around the entrance of said doghouse and means for releasably attaching the outside of said bag portion at at least one location to the inside of said roof of said doghouse.

3,982,501
AUTOMATIC DOG AND CAT FEEDER
Angelo T. Marzocco, 4600 Nelson St., Fremont, Calif. 94538
Filed Dec. 4, 1974, Ser. No. 529,572
Int. Cl.² A01K *5/02*
U.S. Cl. 119—51.14 **2 Claims**



1. A dual purpose device primarily for feeding a dog or cat at a predetermined time automatically and for timing other devices if desired by the user comprising:
a compartment for food storage and electrical apparatus;
front and rear panels divided by cross members and supported by outer braces whereby forming said compartment;
a lid to close or open top of said compartment;
a lower panel to close or open bottom of said compartment;
means for attaching said panel to said compartment whereby enabling said lower panel to swing opening or closing said compartment;
a lower compartment for holding and positioning a separate tray or pan under said food compartment;
a base panel fastened between same said outer braces of said food compartment whereby forming the said lower compartment;
whereby all above said structures forming a single portable unit;
said device further includes a push type solenoid with selected thrust power and stroke of said solenoid rod means

for attaching and positioning said solenoid to interior wall of said front panel of said food compartment whereby when said lower panel of said food compartment is in a closed position and held closed by said magnetic catch and the said solenoid is activated a thrust action of said solenoid rod will make contact with a striker plate attached to said lower panel overpowering pull of said magnetic catch thereby releasing said lower panel from said food compartment, and allowing food in said food compartment to fall downward by gravity to said tray positioned in said lower compartment.

3,982,502
IGNITION SYSTEM FOR A ROTARY PISTON COMBUSTION ENGINE

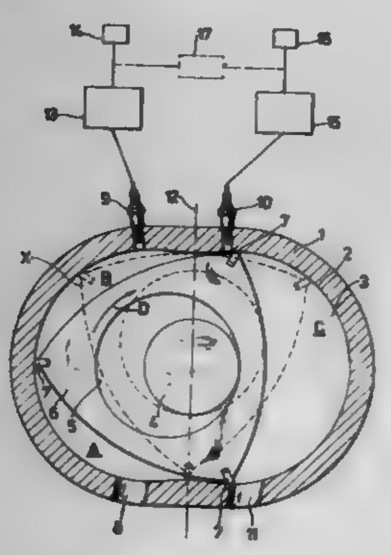
Siegfried Bargende, Weinsberg, Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm, Wurtt and Wankel GmbH, Lindau, Bodensee, both of, Germany

Filed Mar. 6, 1975, Ser. No. 555,790

Claims priority, application Germany, Mar. 16, 1974, 2412772

Int. Cl.² F02B *53/12*

U.S. Cl. 123—8.09 **4 Claims**



1. An ignition system for a four-stroke rotary piston combustion engine of the trochoid type comprising: a casing having an inner chamber bounded by a jacket with dual arc inside contour through which an eccentric shaft with an eccentric passes, a triangular piston rotatably mounted on said eccentric shaft, at least two spark plugs fitted in the jacket near the short axis, each spark plug being connected to its own ignition generator in an ignition system, and different ignition systems for the individual spark plugs, the spark plugs being mounted before and after the short axis along the rotational direction of the piston. the spark plug mounted before the short axis being connected to an ignition system that creates a long spark tail and the spark plug mounted after the short axis being connected to an ignition system that creates a high voltage rise speed.

3,982,503
AIR DENSITY COMPUTER FOR AN INTERNAL COMBUSTION ENGINE FUEL CONTROL SYSTEM

Theodore W. Keranen, Pontiac, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 23, 1972, Ser. No. 283,144

Int. Cl.² F02B *3/00;* **F02D** *1/04*

U.S. Cl. 123—32 EA **3 Claims**

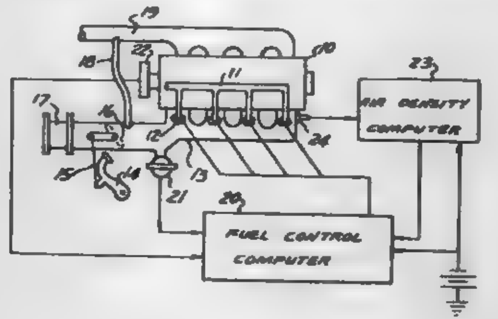
1. A fuel control system for an internal combustion engine having a controlled operating temperature, a throttle controlled air intake manifold, and at least one electrically controlled fuel injector mounted in the air intake manifold proximate the engine's intake valve port for spraying fuel into the engine in response to electrical signals comprising:

sensor means including an intake manifold pressure sensor adapted for communication with an internal combustion engine for generating signals indicative of the engine's operating parameters;

a temperature sensor means mounted in the air intake manifold proximate said fuel injector and outside the fuel spray emanating from said fuel injector for sensing the temperature of just the air in the immediate vicinity of the engine's intake valve port even after the engine has reached the controlled operating temperature and for generating a temperature signal indicative of the temperature of the air just prior to being inhaled by the engine;

constant current means, operative to communicate a constant current to said temperature sensor means;

inverter means for amplifying and inverting said temperature signal to generate an air density signal indicative of the relative density of the air being inhaled by the engine; and



a fuel control computer responsive to said sensor means signals including the signals from said pressure sensor for generating electrical signals indicative of the engine fuel requirements, said fuel control computer further responsive to said air density signal for compensating said electrical signals for changes in the density of the air being inhaled by the engine;

whereby said air density compensated electrical signals communicated to said at least one fuel injector controls the fuel delivery to the engine and maintains the desired fuel to air ratio during the warm-up period after the engine has reached the controlled operating temperature but the temperature of air being inhaled by the engine is still changing.

3,982,504
INTERNAL COMBUSTION ENGINE

Masaaki Noguchi, Nagoya; Masaharu Sumiyoshi, Toyota; Yukiyasu Tanaka, Okazaki, and Taro Tanaka, Chiryu, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 25, 1974, Ser. No. 445,785

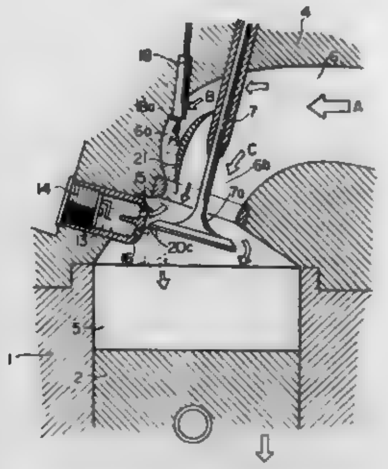
Claims priority, application Japan, Feb. 27, 1973, 48-23926; Nov. 6, 1973, 48-124663; Nov. 13, 1973, 48-127952; Nov. 23, 1973, 48-131836

The portion of the term of this patent subsequent to Aug. 17, 1993, has been disclaimed.

Int. Cl.² F02B *19/10, 19/16*

U.S. Cl. 123—32 SP **20 Claims**

1. An internal combustion engine including a cylinder, a piston, a cylinder head cooperating with said cylinder and said piston to define a main combustion chamber for the combustion of a lean air-fuel mixture, an intake valve having a valve stem and a valve head connected thereto, a suction port for introducing principally air or a lean air-fuel mixture to said main combustion chamber, a trap chamber for receiving a rich air-fuel mixture to provide a torch jet ignition and having at least one suction aperture through which said rich mixture is supplied into said trap chamber when said intake valve is opened, said suction aperture being so positioned to be upstream of said valve head when said intake valve is opened, said trap chamber also having at least one discharge aperture, means including said valve head in position downstream of said suction aperture for introducing said rich air-fuel mixture to said suction aperture, said suction and discharge apertures always being in communication with said main chamber during the time when said intake valve is kept closed so that the torch jet can spurt through both of said apertures, and so that during the compression stroke, the pressure at said suction and discharge apertures is substantially equal thereby preventing a substantial portion of said rich mixture received in said trap chamber from escaping therefrom, and a spark plug having a set of electrodes exposed to said trap chamber, the improvement comprising a fuel injection nozzle provided upstream of said intake valve for discharging fuel at a pressure higher than atmospheric pressure so that the rich mixture is supplied to said suction aperture when said intake valve is opened, and a separating wall which is provided in said trap chamber between said suction aperture and said discharge aperture and which separates said trap chamber into two portions, a suction portion and a discharge portion, the discharge portion communicating with said main chamber through said discharge aperture and the suction portion communicating with said suction port through said suction aperture when said valve head is in its open position, said discharge portion and said suction portion communicating with each other at a position remote from said suction and discharge apertures, thereby facilitating the introduction of the rich mixture through said suction aperture to said set of electrodes and holding said mixture thereat.



3,982,505
CIRCUITRY FOR CONTROLLING THE RESPONSE TIME OF ELECTROMAGNETIC DEVICES WITH A SOLENOID

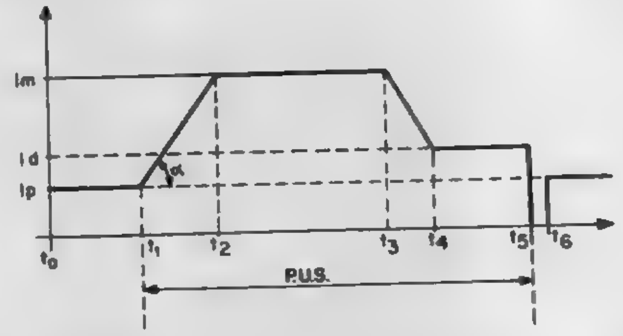
Jean-Pierre Rivere, Paris, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Sept. 5, 1974, Ser. No. 503,460

Claims priority, application France, Sept. 5, 1973, 73.32080

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 EA **6 Claims**



1. A method for controlling the response time of an electromechanical device having an actuating solenoid comprising:

applying three reference voltages from three reference voltage sources in a predetermined order to a voltage and current amplifier which drives the solenoid;

generating from the three reference voltages three corresponding currents through the solenoid, the three currents being a premagnetization current, a maximum excitation current of the solenoid and a de-excitation current of the solenoid;

sending the premagnetization current through the solenoid during a first phase;

saturating a source of reference voltage located at the input of an integrator which transforms the constant voltage of the source into a voltage which increases linearly with time;

applying the linearly increasing voltage to the voltage and current amplifier;

sending a current which increases linearly to the maximum excitation current through the solenoid during a second phase;

maintaining the maximum excitation current through the solenoid during a third phase;

decreasing the current through the solenoid to de-excitation value at the end of the third phase;

maintaining the de-excitation current through the solenoid during a fourth phase; and

reducing the current through the solenoid to zero during a fifth phase before the cycle is restarted by sending a premagnetization current through the solenoid.

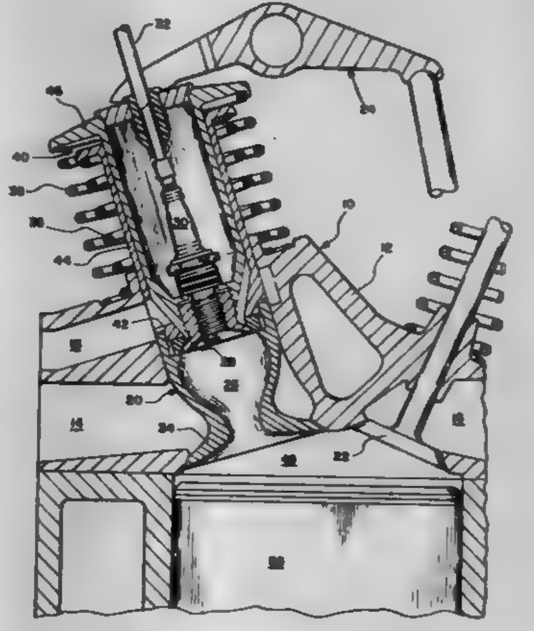
3,982,506
STRATIFIED CHARGE INTERNAL COMBUSTION ENGINE

John W. Holtrop, Rte. 1 Box 2052, Ridgecrest, Calif. 93555

Filed Apr. 28, 1975, Ser. No. 572,478

Int. Cl.² F02B *19/16, 17/00*

U.S. Cl. 123—75 B **3 Claims**



1. In an internal combustion reciprocating engine including a cylinder having a bore extending therethrough, a cylinder head having a substantially flat surface closing one end of the cylinder bore and a piston reciprocating in the cylinder bore, the improvement comprising:

a fuel intake and ignition system combination including;

- A. first and second intake ports in said cylinder head,
- B. first and second valve means in said cylinder head normally closing said ports from communication to said cylinder bore,
- C. each of said valve means being formed by hollow tubes coaxially arranged in said cylinder head for reciprocating sliding action with respect to each other and said cylinder head,
- D. said first valve means cooperating with said first port to admit a lean air-fuel mixture to said cylinder bore and having formed therein a rich mixture combustion chamber,

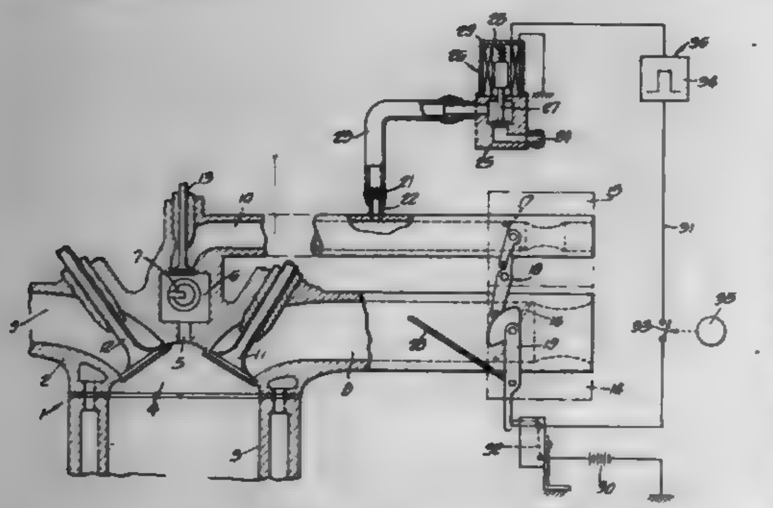
E. said second valve means cooperating with said second port to admit a rich fuel mixture to said rich combustion chamber; and

F. ignition electrode means coaxial with said second valve means and terminating adjacent said rich mixture chamber for igniting mixture therein;

G. the time of opening of said valves and the ignition of said rich fuel mixture being regulated such that, at ignition, said rich fuel-air mixture exists substantially within said rich combustion chamber, said lean-air fuel mixture exists in said cylinder bore and combustion initiated in said rich fuel mixture flows into said cylinder bore to ignite said lean fuel-air mixture therein.

3,982,507
AFTERBURNING PREVENTION DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Uratare Asaka, Kamifukuoka; Toru Hatanaka, Asaka, and Katsuichi Shiroyama, Shiki, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 10, 1974, Ser. No. 531,314
Claims priority, application Japan, Dec. 11, 1973, 48-137360
Int. Cl.² F02D *31/00*
U.S. Cl. 123—97 B 4 Claims

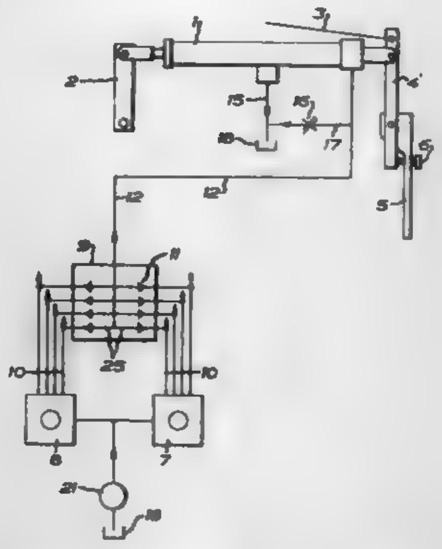


1. In an internal combustion spark ignition piston engine having a main combustion chamber and an auxiliary combustion chamber connected by a torch opening, the improvement comprising, in combination: means including a main intake passage for supplying a lean mixture to the main combustion chamber, a throttle valve in said passage, means including an auxiliary intake passage for supplying a rich mixture to the auxiliary chamber, a conduit for supplying atmospheric air to said auxiliary intake passage, a valve adapted to close said conduit, means for operating said valve to open said conduit, said means including a first device responsive to movement of said throttle valve toward closed position, said means also including a second device sensitive to speed of the engine, said first device including timing means, whereby said valve is opened for a timed interval when the throttle valve moves toward closed position while the engine speed is above a predetermined value.

3,982,508
SPEED REGULATORS FOR INTERNAL COMBUSTION ENGINES, PARTICULARLY DIESEL ENGINES, IN EARTH MOVERS AND WORKERS

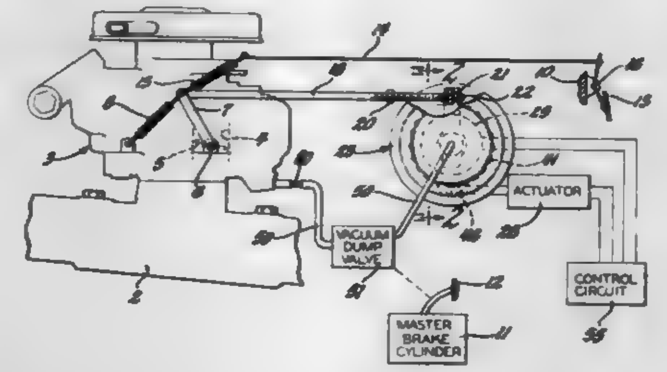
Bertil Norlin, and Karl Oscar Olsson, both of Eslov, Sweden, assignors to Akermans Verkstad AB, Eslov, Sweden
Filed Jan. 21, 1975, Ser. No. 542,809
Claims priority, application Sweden, Jan. 23, 1974, 7400846
Int. Cl.² F02D *11/02*
U.S. Cl. 123—97 R 6 Claims

1. An automatic speed regulator for the internal combustion engine of an earth moving machine or the like of the type having at least one hydraulically operated implement, a source of hydraulic fluid under pressure, an hydraulic pressure line connected to said implement, the means to selectively supply hydraulic fluid under pressure to said implement through said pressure line, a manually operable fuel control linkage whereby the speed of said engine may be controlled by controlling the fuel to said engine, a fuel control means the novelty comprising connecting means connecting said fuel control linkage to said fuel control means, said connecting means including extensible and retractable means, means to constantly bias said extensible and retractable means in one direction to reduce the flow of fuel to said engine to reduce the speed thereof, said extensible and retractable means including hydraulic means for biasing said extensible and retractable means to overcome the bias of said means to constantly bias said extensible and retractable means, said hydraulic means being connected to said source of hydraulic liquid under pressure when said hydraulically operated implement is supplied with fluid under pressure to operate it, and drain means for said extensible and retractable means so constructed and arranged that when fluid under pressure is not supplied to said implement, said extensible and retractable means will be biased by said means to constantly bias said extensible and retractable means to reduce the flow of fuel to said engine in order to reduce the speed thereof.



3,982,509
ENGINE THROTTLE POSITIONING APPARATUS

Ronald L. Colling, Millington, and Myron U. Trenne, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed July 14, 1975, Ser. No. 595,519
Int. Cl.² F02D *11/08*
U.S. Cl. 123—97 R 1 Claim



1. Apparatus for positioning a throttle on a vehicle mounted engine, manually or in response to an override signal, in or between a closed position for minimum engine power and a full open position for maximum engine power, the vehicle including brake means, the throttle positioning apparatus comprising:

return spring means attached to the throttle and effective to bias the throttle toward its closed position;

manual throttle positioning means attached to the throttle through a lost-motion spring having a greater spring constant than the return spring and effective to move the throttle against the return spring bias to an open position, whereby the throttle can be manually set;

a rigid link attached to the throttle to position the throttle independently of the manual throttle positioning means, the rigid link including first and second spaced stops;

clutch means including driving means and driven means, the driven means extending between the rigid link stops and movable, when engaged by the driving means, in one direction to engage the first stop and thereby move the throttle toward its closed position and in the other direction to engage the second stop and thereby move the throttle toward its full open position, the clutch means further including means responsive to the position of the driven member to generate a signal indicative of the position thereof;

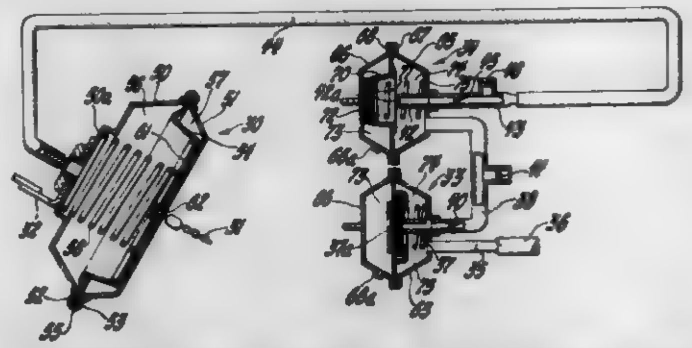
actuator means engaged with the clutch driving member and responsive to the clutch driven member position signal and the override signal, when the clutch driving and driven members are engaged, to position the clutch driven member, whereby the actuator means is capable of positioning the throttle through the clutch means and rigid link independently of the manual throttle positioning means;

means responsive to the vehicle brake means to generate a signal indicative of the actuation thereof; and

means responsive to the brake actuation signal to disengage the clutch means driving and driven members and thereby prevent throttle control by the override signal during vehicle braking.

3,982,510
THROTTLE MOTION CONTROL DEVICE

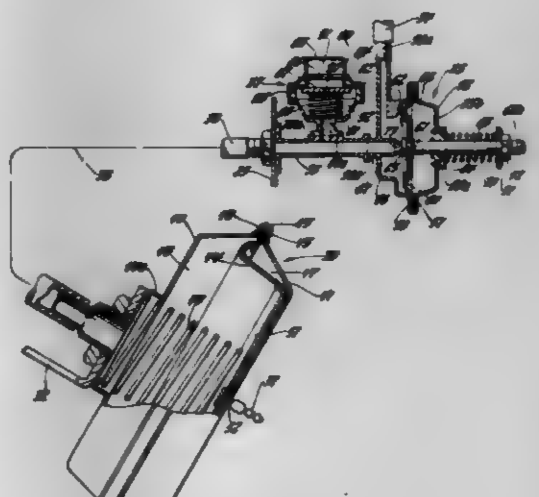
David L. Van Ostrom, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 15, 1975, Ser. No. 605,143
Int. Cl.² F02D *11/08*
U.S. Cl. 123—103 E 3 Claims



1. A throttle motion control device for an internal combustion engine having an induction system including a movable throttle for controlling flow through an induction passage and a manually actuated throttle control means operatively connected to the throttle to effect opening movement of the throttle, said throttle motion control device including a pneumatic power unit having a housing divided into a first chamber and a second chamber by a movable wall, said second chamber being in communication with the atmosphere, a flexible power connector operatively connected at one end to said movable wall and at its other end to said throttle control means, a first vacuum switch having an inlet and an outlet, said inlet being connected to said induction passage downstream of said throttle, a second vacuum switch having an inlet and an outlet, a first conduit means connecting said inlet of said second vacuum switch to said outlet of said first vacuum switch, said first conduit means including a first orifice controlling flow through said conduit means and a first bleed orifice to the atmosphere positioned between said first orifice and said second vacuum switch, a second conduit means connecting said outlet of said second vacuum switch to said first chamber, said second conduit means having a second orifice therein to control flow through said second conduit means and a second bleed orifice to the atmosphere positioned between said second orifice and said first chamber, said first vacuum switch and said second vacuum switch each being operable at selective predetermined inlet vacuum pressures to apply vacuum pressure in said first chamber whereby said power unit is actuated to apply a force of predetermined value to said throttle control means in a throttle closing direction.

3,982,511
THROTTLE MOTION CONTROL DEVICE

Robert C. Schniers, and David L. Van Ostrom, both of Flint, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 13, 1975, Ser. No. 549,542
Int. Cl.² F02D *11/08*
U.S. Cl. 123—103 E 4 Claims



1. A throttle motion control device for an automotive vehicle internal combustion engine used to warn the driver of excessive fuel consumption, as during acceleration, by providing a stiff accelerator pedal feel when manifold vacuum drops below a predetermined value, the engine having an introduction system including a movable throttle for controlling flow through an induction passage and a manually actuated throttle control means operatively connected to the throttle to effect opening movement of the throttle, said throttle motion control device including a pneumatic power unit having a housing divided into a first chamber and a second chamber by a movable wall, said second chamber being in communication with the atmosphere, a flexible power connector operatively connected at one end to said movable wall and at its other end to said throttle control means, a vacuum control valve having an inlet and an outlet, said inlet being connectable to said induction passage, a conduit connecting said outlet to said first chamber, said vacuum control valve being operable at a predetermined vacuum pressure in said induction passage to place said first chamber in fluid communication via said outlet and said inlet with said induction passage and, a vacuum pressure regulator operatively connected to said conduit between said first chamber and said vacuum control valve to limit vacuum pressure to said first chamber of said power unit to a predetermined maximum pressure value whereby said power unit can be actuated at a predetermined vacuum pressure to apply a force of maximum predetermined value to said throttle control means in a throttle closing direction.

3,982,512
DEVICE FOR AUTOMATICALLY ADJUSTING THE SPARK TIMING IN AN ELECTRONIC IGNITION SYSTEM FOR AN EXPLOSION ENGINE

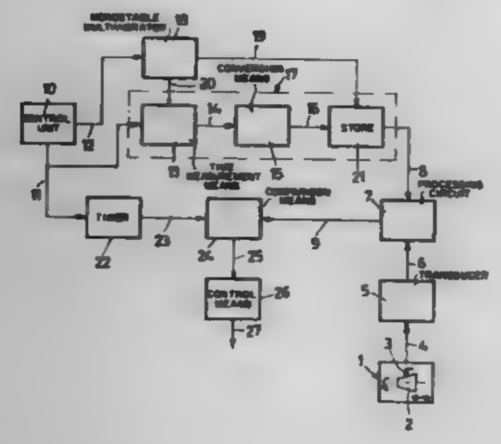
Giampaolo Garcea; Filippo Surace, and Edgardo Rogora, all of Milan, Italy, assignors to Alfa Romeo S.p.A., Milan, Italy

Filed Aug. 8, 1973, Ser. No. 386,744

Claims priority, application Italy, Aug. 16, 1972, 28235/72

Int. Cl.² F02P *5/04, 1/00*

U.S. Cl. 123—117 R **12 Claims**



1. A device for automatically adjusting the spark timing in an electronic ignition system for an explosion engine, comprising a spacial cam with a contact surface shaped so that its lifts represent the desired timing angle, defined as the angle of lag of the spark delivery with respect to a predetermined angular position of the drive shaft indicative of the end of dwell angle, for each single operating condition of the engine, a follower kept in engagement with said contact surface of the spacial cam so that its position is representative of the desired timing angle for each particular operating condition of the engine, relative movements between the cam and follower being provoked in two directions orthogonal to each other and orthogonal to the cam lifts as a function of the speed of rotation of the engine and of one of a further two variables representative of the operating condition of the engine consisting of the throttle angle and the suction in the engine intake pipe, and further comprising a transducer associated with said follower so as to produce a first electrical signal of a value variable with the position of the follower, switch means for measuring the time necessary for the engine to rotate through a predetermined dwell angle at each complete cycle of a cylinder of the engine, means for converting said time measurement into a second electrical signal, means for processing said first and second electrical signals to obtain a third electrical signal representative of the lag time corresponding to the desired timing angle measured by the follower, a timer operated at the moment of passage of the engine from said predetermined angular position indicative of the end of dwell angle so as to produce a fourth electrical signal of a value which increases with time, means for comparing said third and fourth signals and means for controlling the delivery of the spark which is sensitive to the attainment by said fourth signal of the value of said third signal.

3,982,513
CARBURETOR FOR TORCH IGNITED ENGINE

Yasuhiko Nakagawa, Fujisawa, and Meroji Nakai, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 3, 1974, Ser. No. 466,880

Claims priority, application Japan, May 7, 1973, 48-50479

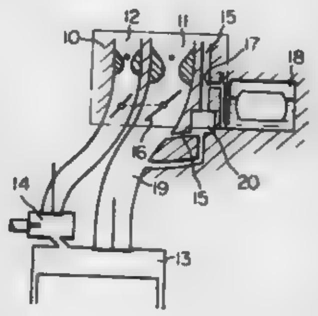
Int. Cl.² F02B *33/00*

U.S. Cl. 123—119 D **3 Claims**

1. In a combination of an internal combustion engine of the torch ignition type having a main combustion chamber and an antechamber provided with an ignition means and arranged fluidly in communication with the main combustion chamber such that a flame propagates from the antechamber to the main combustion chamber when a combustible mixture is ignited in the antechamber, and a carburetor having a main barrel provided with a main fuel jet and a main throttle valve for supplying a lean air-fuel mixture into the main combustion chamber, a secondary barrel for supplying a rich air-fuel mixture into the antechamber, and a float chamber, the improvement comprising:

an auxiliary passageway communicating with the atmosphere an opening exclusively into the main barrel downstream of the main throttle valve;

an auxiliary fuel jet communicating with the float chamber and opening into said auxiliary passageway; and a valve disposed in said auxiliary passageway between said auxiliary fuel jet and the main barrel, said valve being normally closed and adapted to open only when the magnitude of the negative gage pressure in an engine intake manifold exceeds a predetermined value, this value being reached during deceleration operation of the engine, so that an auxiliary air-fuel mixture may be drawn into the main barrel through said auxiliary passageway only during deceleration operation, in which said auxiliary air-fuel mixture is richer than said lean air-fuel mixture, so that spark-ignition in said antechamber and torch-ignition in said main combustion chamber are facilitated when said valve remains open due to fuel-enrichment of said lean air-fuel mixture which is fed to said main combustion chamber and is partly discharged into said antechamber.



3,982,514
METHOD AND MEANS FOR RECOVERING QUENCH LAYER COMBUSTIBLES FROM ENGINE COMBUSTION CHAMBERS

Stephen R. Turns, Warren, and Robert M. Siewert, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 21, 1975, Ser. No. 551,542

Int. Cl.² F02M *31/00*

U.S. Cl. 123—119 A **6 Claims**

1. The combination in an internal combustion engine of

wall means defining a variable volume combustion chamber in which cyclic combustion of air-fuel mixtures is performed in repetitive cycles including admission, compression, combustion, expansion and exhaust steps,

inlet and exhaust means for respectively admitting air-fuel mixtures to the chamber in the admission step and discharging burned products from the chamber in the exhaust step,

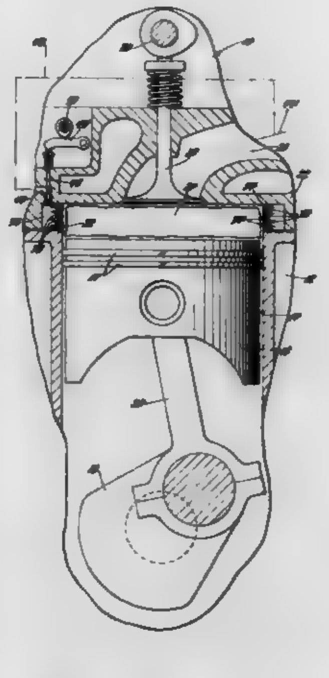
said combustion step leaving a quench layer of unburned and partially burned combustibles on said wall means which may be stripped off and discharged in the exhaust step, and the improvement comprising,

a collection volume adjacent said combustion chamber and separated therefrom by a stationary portion of said wall means, said portion having an areal pattern of perforations substantially coextensive therewith and interconnecting said combustion chamber and collection volume through said wall portion,

passage means connecting said collection volume to said inlet means,

valve means controlling the flow of fluids from said combustion chamber through said collection volume to said inlet means, and

actuating means operable in predetermined relation to the engine operating cycle to open said valve means for predetermined portions of the expansion and exhaust steps of said combustion chamber cycle, the timing of said opening being effective to selectively strip the quench layer from said stationary wall means portion and recirculate the quench layer products to the inlet means for readmission to the combustion chamber, thus preventing discharge of the recirculated quench layer combustibles to said exhaust means.



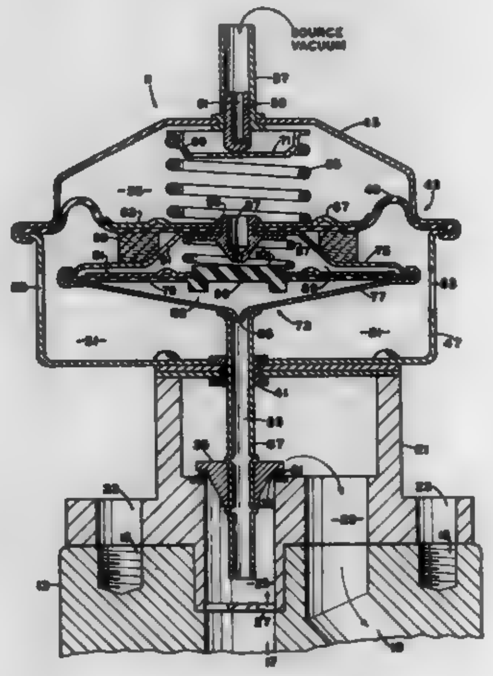
3,982,515
EXHAUST GAS RECIRCULATION CONTROL ASSEMBLY

Cyril E. Bradshaw, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 26, 1974, Ser. No. 464,379

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **5 Claims**



1. An exhaust gas recirculation controller of the type having structure defining an exhaust gas inlet and an exhaust gas outlet for recirculating exhaust gas in an internal combustion engine, said controller comprising:

a. housing means defining a vacuum chamber including first port means adapted for communicating with a source of vacuum, second port means communicating said vacuum chamber with the atmosphere;
b. first pressure responsive means disposed within said housing and movable in response to changes in vacuum in said chamber;
c. valve means operative to control communication of said exhaust gas inlet with said exhaust gas outlet, said valve means including a valve seat and a movable poppet;
d. means movably disposed within said housing means and defining an exhaust gas chamber including second pressure responsive means operatively movable in response to changes in exhaust gas pressure in said exhaust gas chamber for controlling flow of atmospheric air through said second port means; and
e. hollow stem means defining an exhaust gas passage continuously communicating said exhaust gas inlet with said exhaust gas chamber wherein said passage passes axially through said movable poppet and said hollow stem means is operable to move said poppet in response to movement of said first pressure responsive means.

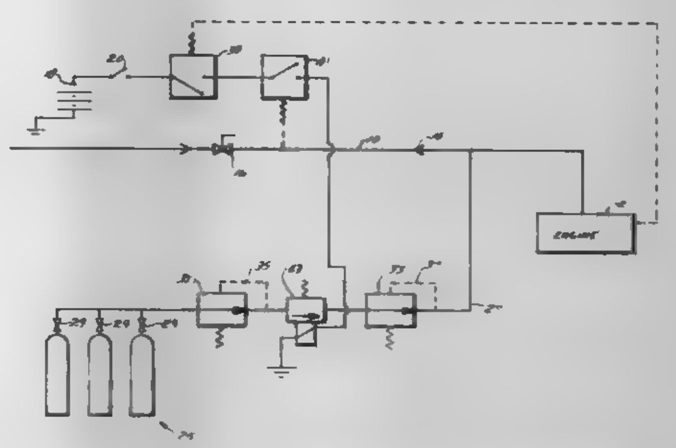
3,982,516
STANDBY SYSTEM

Kenneth T. Abernathy, Valencia, Calif., assignor to Dual Fuel Systems, Inc., Los Angeles, Calif.

Filed Nov. 11, 1974, Ser. No. 522,514

Int. Cl.² F02M *21/02*

U.S. Cl. 123—120 **8 Claims**



1. A standby system to provide a gaseous fuel to an internal combustion engine in the event of failure of a primary source of fuel, the system comprising:

a. means for providing an alternate source of a gaseous fuel;
b. means for communicating the alternate source with a fuel-air mixer of the engine including a line between the alternate source and the fuel-air mixer;
c. means for preventing communication between the alternate source and the fuel-air mixer unless the engine is producing a vacuum including:
    i. normally open switch means responsive to engine vacuum to close; and
    ii. normally closed solenoid valve means in the line, the coil of the solenoid valve means being in series electrical circuit with the vacuum switch means;
d. means for preventing communication between the alternate source and the fuel-air mixer unless there is a failure of the primary source including a normally open pressure switch means responsive to a predetermined lower than normal pressure in the primary source to close, the pressure switch means being in series circuit with the vacuum switch means and the coil of the solenoid valve means; and

- e. both communication prevention means include means for providing electrical current to the circuit through both switch means and the coil of the solenoid valve means.

3,982,517

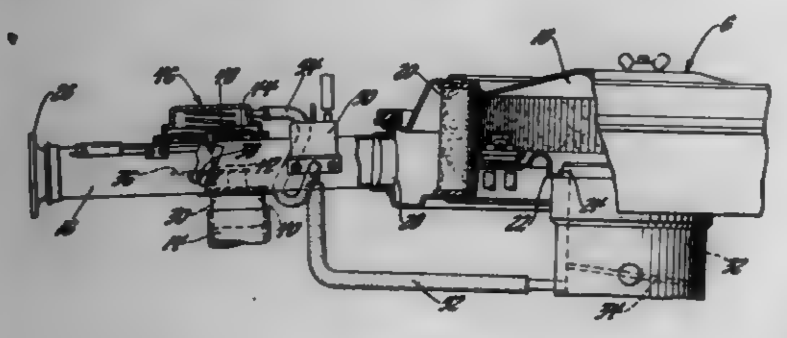
CLOSED LOOP CARBURETOR AIR-FUEL RATIO CONTROL

Douglas I. Fales, and William H. Holt, both of Flint, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 20, 1975, Ser. No. 623,966

Int. Cl.² F02M *31/00*

U.S. Cl. 123—122 D — 1 Claim



1. Apparatus for maintaining a substantially constant predetermined air-fuel ratio in a combustion engine having a carburetor and exhaust means, the apparatus comprising:

means for heating atmospheric air;

a metering valve effective to mix heated air from the air heating means with atmospheric air in variable ratio to produce air of varying temperature and hence density determined by the setting of the metering valve, the metering valve communicating with the carburetor to supply substantially all the air for engine combustion, the carburetor being effective to vary the air-fuel ratio in response to the changing temperature and hence density of the air supplied thereto;

sensor means in the exhaust means effective to generate a signal indicative of engine air-fuel ratio; and

valve actuation means continuously responsive to the air-fuel ratio signal to vary the valve setting to reduce the difference between the air-fuel ratio and the predetermined air-fuel ratio, whereby the air-fuel ratio is maintained substantially constant at the predetermined air-fuel ratio.

3,982,518

ELECTRONIC IGNITION DEVICE FOR INTERNAL COMBUSTION ENGINES

André Gabriel Lapeyronnie, Paris, France, assignor to Fournitures Internationales de Materieles Electroniques, Paris, France

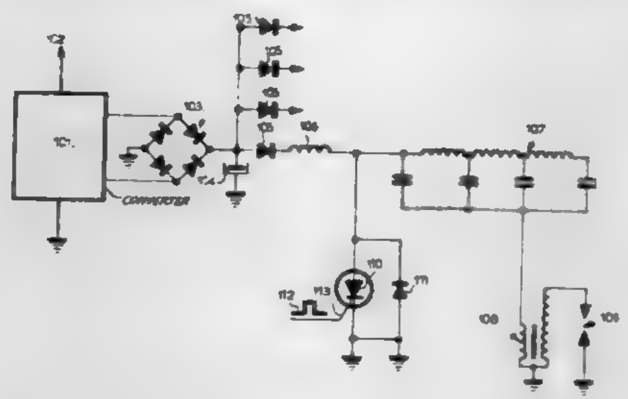
Division of Ser. No. 298,025, Oct. 16, 1972, Pat. No. 3,905,347. This application Jan. 28, 1975, Ser. No. 544,935

Claims priority, application France, Oct. 14, 1971, 71.36966

Int. Cl.² F02P *1/00*

U.S. Cl. 123—148 CB — 3 Claims

1. In an electronic ignition system for an internal combustion engine, a spark plug, coil means having primary and secondary windings, said secondary winding being connected electrically to said spark plug, delay line means connected electrically to said primary winding of said coil means for storing a voltage to be transferred to said primary winding during an interval determined by said delay line means, said delay line means also forming a buffer circuit, converter means for converting the D.C. voltage of a battery to an A.C. voltage, said converter means having an output, rectifier bridge means connected to said output of said converter means for converting the A.C. voltage thereof to a D.C. voltage, said rectifier bridge means having an output where the latter D.C. voltage is available, a diode and a capacitor means both connected to said output of said rectifier bridge means, said capacitor means being grounded for connecting the output of said rectifier bridge means to ground, a choke connected in series with said diode and said delay line means between the latter and said diode for transmitting the D.C. voltage available at said output of said rectifier bridge means to said delay line means to be stored thereby for transmission to said primary winding of said coil means, and an active switching means having an anode connected to a junction between said choke and delay line means, a cathode which is grounded, and a gate adapted to be connected with a switching logic circuit for receiving therefrom an activating pulse which renders said active switching means conductive to transmit the voltage stored by said delay line means to said primary winding of said coil means during a time determined by said delay line means.



3,982,519

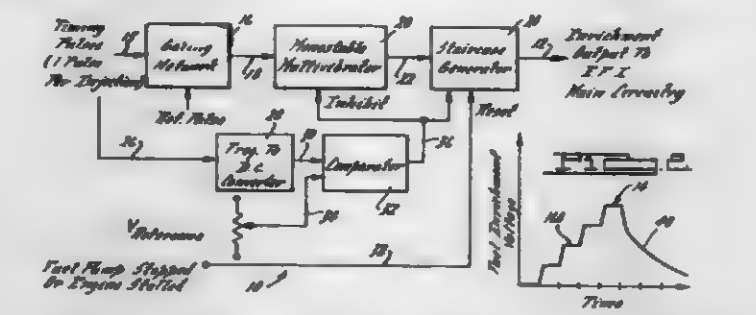
ELECTRONIC-FUEL-INJECTION-SYSTEM ENRICHMENT CIRCUIT FOR USE DURING ENGINE CRANKING

Roger A. Moon, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 27, 1975, Ser. No. 581,079

Int. Cl.² F02N *17/00*

U.S. Cl. 123—179 L — 6 Claims



1. In an electronic fuel injection system for controlling the injection of fuel into an internal combustion engine having an output shaft, said fuel injection system including circuit means for generating a fuel control electrical signal representative of a quantity of fuel to be injected into said engine, an enrichment circuit for use during cranking of said engine to increase the quantity of fuel represented by said fuel control electrical signal, said enrichment circuit comprising:

staircase generator circuit means for generating an enrichment electrical signal having a voltage the magnitude of which increases, subsequent to initiation of cranking of said engine, by discrete amounts at spaced instants in time the interval between which is determined by the angular velocity of the output shaft of said engine; and

circuit means for combining said enrichment electrical signal with at least one other electrical signal representative of a fuel quantity to be injected into said engine, said combined electrical signals producing said fuel control electrical signal, and the variability with time of said enrichment electrical signal during cranking of said engine tending to increase, as a function of time subsequent to initiation of cranking of said engine, the quantity of fuel represented by said fuel control electrical signal.

3,982,520

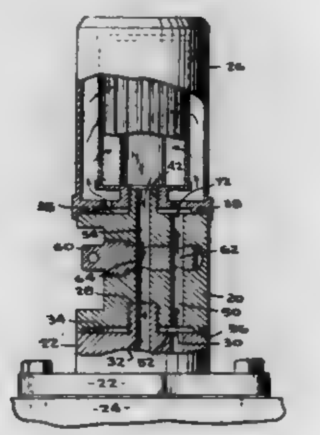
OIL FILTER MOUNTING MEANS

Bill L. Wheeler, P.O. Box 5, Cone, Tex. 79321

Filed Aug. 14, 1975, Ser. No. 606,203

Int. Cl.² F01M *1/10;* B01D *29/00*

U.S. Cl. 123—196 A — 7 Claims



1. An internal combustion engine including an oil filter mounting means for permitting a filter change without interruption of engine operation said oil filter mounting means comprising an adaptor member including adaptor mounting means engageable with the oil filter mounting engine fitting of the internal combustion engine to permit said adaptor to be mounted thereon, oil filter mounting adaptor fitting means on said adaptor means for permitting an oil filter to be mounted on said adaptor means, first conduit means extending through said adaptor means for providing communication between an oil outflow opening of said engine fitting and an inflow opening of an oil filter mounted on said adaptor fitting, second conduit means extending through said adaptor member for providing communication between an oil return opening of said engine fitting and an outflow opening of said oil filter mounted on said adaptor fitting and selectively operable valve means for closing said first and second conduit means to permit the changing of an oil filter member without interruption of engine operation.

3,982,521

HEAVY DUTY JIG SAW

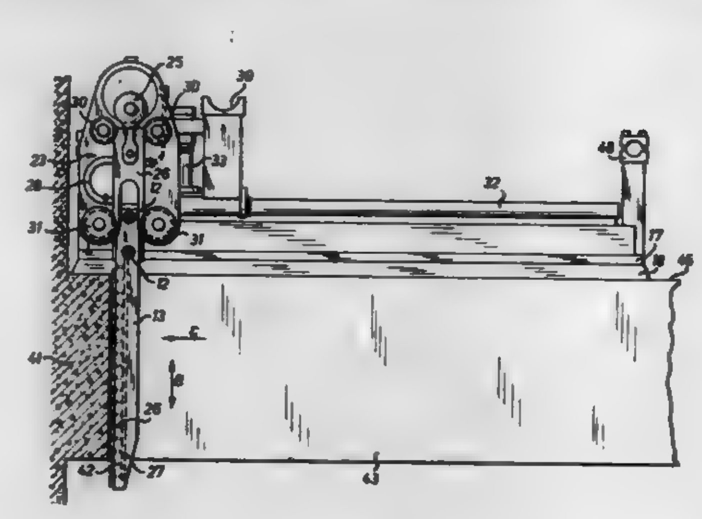
Hans Bieri, Toedistrasse 9, Pfaeffikon, Switzerland (8330)

Filed Oct. 20, 1975, Ser. No. 623,896

Claims priority, application Switzerland, Oct. 23, 1974, 14170/74

Int. Cl.² B28D *1/06;* B23B *45/14*

U.S. Cl. 125—16 R — 8 Claims



1. A jig saw comprising a first unit including base vacuum bell means, elastically flexible sealing skirt means secured to said bell means to face any supporting surface, elongated guide means rigidly secured to said bell means to extend substantially in parallel to said supporting surface, tool carrier means including a drive head movably secured to said elongated guide means, first hydraulic drive means as part of said tool carrier means for producing a reciprocating tool movement, separate second hydraulic drive means operatively connected to said tool carrier means for moving said tool carrier means along said elongated guide means, a second unit including vacuum pump means as well as hydraulic pump located remote from said first unit, and conduit means operatively interconnecting said first and second units.

3,982,522

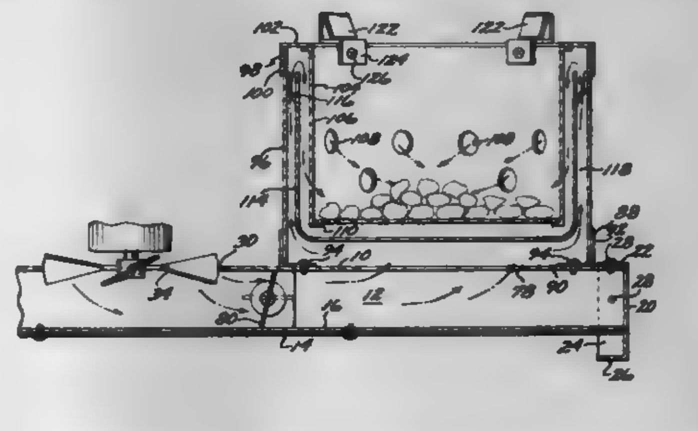
PORTABLE FORCED DRAFT COOKER

Fred W. Hottenroth, 1740 Interlachen St., Seal Beach, Calif. 90740, and Fred W. Hottenroth, III, 3415 Lama Ave., Long Beach, Calif. 90808

Filed Mar. 31, 1975, Ser. No. 563,842

Int. Cl.² F23M *3/18*

U.S. Cl. 126—2 — 6 Claims



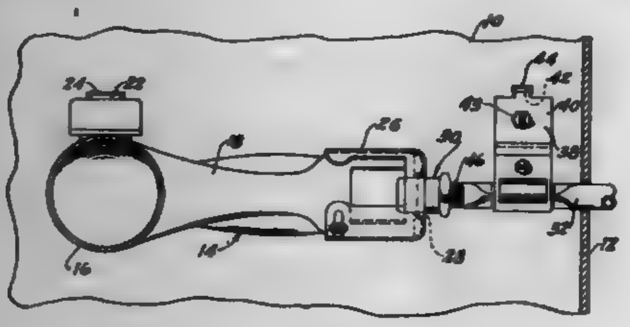
1. A portable forced draft solid fuel burning cooker that includes:

- a. a hollow duct defining elongate base having a top piece, said top piece having a central opening therein, and first and second openings on opposite sides of said central opening;
- b. an electrically operated blower assembly mounted on said top piece, said blower assembly when electrically energized directing a stream of air through said central opening into the interior of said base;
- c. manually operated switch means for turning said blower assembly on and off;
- d. first and second pivotally supported dampers inside said base and intermediately disposed between said central opening and first and second openings for controlling the quantity of air flowing to said first and second openings when said blower assembly is electrically energized;
- e. first and second heater assemblies mounted on said top piece above said first and second openings, each of said heater assemblies including an outer cylindrical shell secured to said top piece and in communication with the one of said first and second openings most adjacent thereto, a second inner cup shaped shell in which solid fuel is disposed, a ring that joins free peripheral edges of said first and second shells, said second shell of substantially less transverse area than said first shell and said first and second shells cooperating with said ring to define a confined space of annulus shape, a third cup shaped shell interposed in a fixed position between said first and second shells that subdivides said confined space into an outer first passage and an inner second passage in which air flowing thereto from said blower assembly is preheated by the combustion of said fuel prior to discharging across said fuel from a plurality of spaced openings in said second shell to support the combustion of said fuel, and first means for supporting said third cup shaped shell in a fixed position between said first and second shells; and

f. first and second handles operatively associated with said first and second dampers to control the position of the latter and regulate the quantity of air flowing from said blower assembly to said first and second heater assemblies.

3,982,523
MOUNTING MEANS FOR A DOMESTIC GAS OVEN BURNER ORIFICE MEMBER

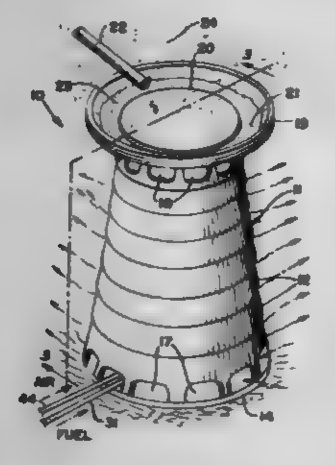
John J. Love, and Thomas P. Fleer, both of St. Louis, Mo., assignors to Emerson Electric Co., St. Louis, Mo.
Filed June 3, 1974, Ser. No. 475,754
Int. Cl.^{2} A21B *1/00*
U.S. Cl. 126—19 R **3 Claims**



1. In a gas range oven, a gas burner having an inlet, means supporting said burner in position in said oven for convenient removal and replacement, a gas supply conduit of circular cross-section having an end portion extending into said oven in axial alignment with said burner inlet, said conduit being externally screw threaded at its end and having a non-circular locating portion formed therein near its end, a generally cup-shaped orifice member having an internally threaded side wall and a metering orifice in its bottom wall mounted in screw-threaded engagement on the end of said conduit, means for fixing the end of said conduit axially and longitudinally, comprising: a bracket having a first portion formed with surfaces lying parallel with and against the surfaces of said non-circular portion of said conduit and a second portion including a locating tang entered into a locating aperture in a wall of said oven, means clamping said first portion of said bracket to said conduit and means rigidly attaching said second bracket portion to the oven wall.

3,982,524
HEATER FOR ORCHARDS AND THE LIKE

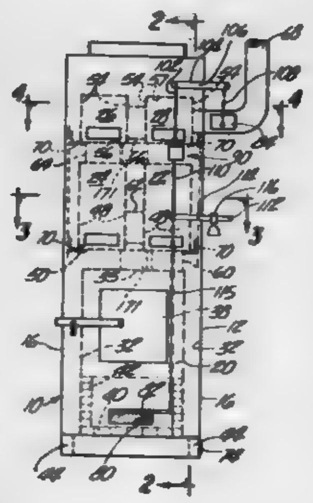
Richard E. Diggs, 12 A Road, Carthage, Mo. 64836
Filed July 30, 1975, Ser. No. 600,453
Int. Cl.^{2} A01G *13/06*
U.S. Cl. 126—59.5 **13 Claims**



1. A substantially pollution-free heater for orchards and the like to prevent freeze damage to crops, comprising an upright, open-ended, stackable, heat-transmitting housing having air inlet ports in a lower side wall portion thereof and heat outlet ports in an upper side wall portion thereof, burner means supported in the housing near the lower end of the housing and including an elongate body with an upper end and a lower end and having a fuel supply passage extending longitudinally therethrough and opening at one end thereof axially outwardly through the upper end of the body, said fuel supply passage extending at its other end laterally outwardly through the side of the body and connected with a source of fuel; a generally dish-shaped air deflector plate supported on the body near the upper end thereof; a fuel dispersing plate supported on the upper end of the body in spaced relation to the air deflector plate and defining an air inlet chamber therewith, the air deflector plate having an upwardly directed side wall extending adjacent and spaced from the peripheral edge of the fuel dispersing plate and defining therewith an annular air outlet from the air inlet chamber; an air inlet to the chamber directed circumferentially thereinto to impart a swirling motion to air in the chamber, whereby air exiting the chamber is caused to spin to thus impart turbulence to the flow of air and fuel entrained therein and conveys the fuel to a combustion zone whereat substantially pollution-free turbulent combustion occurs.

3,982,525
HOT AIR FURNACE

John A. Herman, P.O. Box 125, St. Marys & First St., Suttons Bay, Mich. 49682
Filed Mar. 3, 1975, Ser. No. 554,507
Int. Cl.^{2} F24H *3/14*
U.S. Cl. 126—99 R **17 Claims**



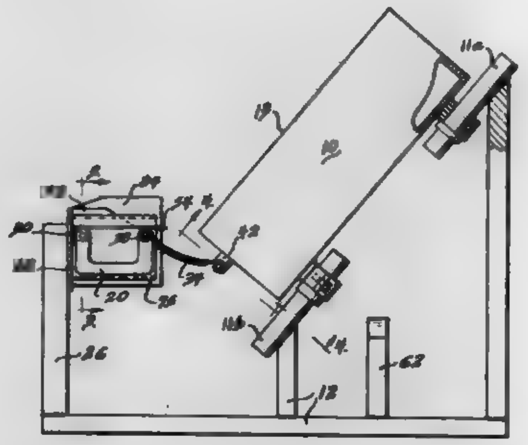
1. In a hot air furnace, the combination of; a rectilinear housing having an exhaust outlet, a firebox disposed in said housing, a plurality of heat exchange members forming elongated chambers within said housing and above said firebox, passage means communicating said chambers in series, one chamber at one end of said series of chambers being connected to said firebox to receive products of combustion therefrom and a chamber at the other end of said series of chambers being connected to said exhaust outlet to discharge products of combustion therefrom, one wall of said housing and one wall of each of said chambers being in common with each other, the remaining walls of said chambers being spaced from each other and from the walls of said housing to permit the passage of air, said housing having an air inlet adjacent the bottom of said housing for receiving relatively cool air, and an air outlet adjacent the top of said housing for discharging warm air passing around said heat exchange members.

17. In a hot air furnace, the combination of; a housing, a firebox in said housing, an air inlet formed in said firebox, a damper member movable between positions opening and closing said air inlet, an exhaust member communicating with said housing and with said firebox, said exhaust member forming an air intake opening, a closure member movable between open and closed positions relative to said intake opening, control means movable in response to changes in temperature

in said housing and being operatively connected to said damper member to move the latter from an open towards a closed position upon an increase in temperature in said housing and to simultaneously move the latter from a closed toward an open position, said control means including a shaft rotatably mounted in said housing, a bimetal element coiled about said shaft and being responsive to changes in temperature to coil and uncoil, said bimetal element having one end connected to said shaft and the other end fixed relative to said housing whereupon changes in temperature in said housing rotates said shaft, means operatively connecting said damper member and said closure member to move the latter upon rotation upon said shaft, an arm member movable in response to movement of said shaft, and a weight member on said arm movable longitudinally thereof to vary the response of rotation of said shaft for any given temperature.

3,982,526
TURNING COLLECTORS FOR SOLAR RADIATION

Amitzur Z. Barak, Chicago, Ill., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.
Filed May 20, 1975, Ser. No. 579,179
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—270 **12 Claims**

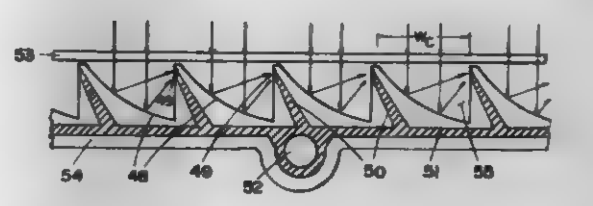


1. A device for turning a solar energy collector about the polar axis between at least two positions so that the frontal face of the collector at each position is directed approximately towards the sun as the sun tracks from east to west each day, comprising:

axle means upon which the collector is mounted free to rotate thereabout with the frontal face directed skyward, said axle means being aligned coplanar with the earth's polar axis so that rotation of the collector thereabout is in an east-west direction, a frame, a first heat responsive element which with solar radiation incident thereupon assumes a first stable state, and fixed shadow means for shading said first element from the sun's radiant energy during a first period of the daylight hours and for allowing the sun's radiant energy to be incident upon said first element during a second period of the daylight hours, said first element being responsive to being shaded by said shadow means to assume a second stable state, said first element being so coupled to the collector and said frame that in response to said first element being in said first state due to being radiated by said sun during said second period, the collector is rotated about said axle means to assume a first position whereby the collector's frontal face is approximately directed towards the sun during said second period, and that in response to said first element being in said second state due to being shaded from the sun by said shadow means during said first period the collector is rotated about said axle means to assume a second position whereby the collector's frontal face is approximately directed towards the sun during said first period.

3,982,527
METHOD AND APPARATUS FOR CONCENTRATING, HARVESTING AND STORING OF SOLAR ENERGY

Chen-yen Cheng, 9605 La Playa St. NE., Albuquerque, N. Mex. 87111, and Sing-Wang Cheng, No. 1, Lane No. 479, Fu-shing No. Road, Taipei, China /Taiwan
Filed Jan. 2, 1974, Ser. No. 429,500
Int. Cl.^{2} F24J *3/02*
U.S. Cl. 126—270 **15 Claims**



1. A panel collector for intercepting and concentrating solar rays and harvesting the energy of the solar rays as thermal energy comprising of an integrated reflector-heat sink-heat transfer surface panel having a front side and a back side which comprises:

(i). plurality of focusing reflectors, each having a focus with a relatively short focal length, for reflecting and converging the intercepted solar rays into sets of converging rays directed toward the respective foci; the reflector surfaces facing the front side of the integrated panel and existing within a zone, denoted as the reflector zone, which is within a certain depth from a reference plane that touches the front side of the integrated panel, the reflector surfaces dividing the panel into a bright region and a shadow region, which are respectively the region in front of, and the region behind the reflector surfaces with respect to the direction of solar rays falling perpendicular to the front side of the integrated panel,

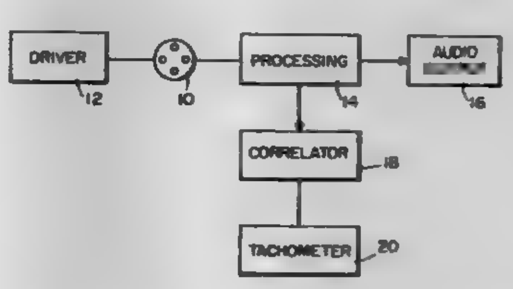
(ii). plurality of heat sinks placed close to the foci of the focusing reflectors for intercepting the sets of solar rays reflected and converged by the focusing reflectors, absorbing the energy of the rays and converting it solely into thermal energy therein;

(iii). at least a heat transfer surface that is located in the shadow region of the panel and is in contact with a heat absorbing medium, at least a major part of the heat transfer surface being located away from the immediate vicinity of any of the heat sinks; and

(iv). means constructed of a metal for conductively transmitting the thermal energy generated in the heat sinks to the heat transfer surface to thereby transmit the thermal energy to the heat absorbing medium.

3,982,528
APPARATUS FOR REFINING SIGNALS DERIVED FROM FETAL HEARTBEATS

Patrick G. Phillipps, Newton, Mass., assignor to Brattle Instrument Corporation, Cambridge, Mass.
Filed Feb. 24, 1975, Ser. No. 552,233
Int. Cl.^{2} A61B *5/02*
U.S. Cl. 128—2.05 T **15 Claims**



1. A device for providing a periodic electrical output derived from fetal heartbeats, comprising

a transducer for converting mechanical energy impressed with the fetal heart cycle into a raw electrical signal including energy carrying information related to said cycle,

signal processing circuitry means connected to said transducer to convert said information-carrying energy into a refined electrical signal,

correlation circuitry means connected to said signal processing circuitry means including first means for storing portions of said refined signal corresponding to successive current fetal heart cycles and second means for forming and storing a sample signal derived from portions of said refined signal corresponding to one or more previous fetal heart cycles, and third means for forming the correlation function in time between the signals stored in said first and second means, and

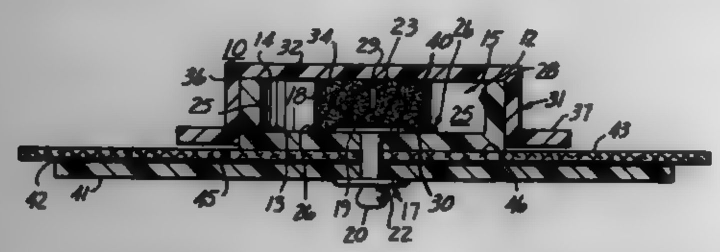
output circuitry means for detecting successive peaks of said correlation function corresponding to successive fetal heart cycles and providing an output signal based upon the occurrences of said peaks,

said output circuitry means including peak detector means for comparing the value of said correlation function to a reference related to the value of the most recently detected peak of said function, and delay means for providing said output signal only after a peak-free delay of predetermined length following the detection of a peak of said correlation function.

3,982,529

BIOELECTRODES

Takuya R. Sato, 5130 Randall St., Culver City, Calif. 90230
Continuation-in-part of Ser. No. 483,181, June 25, 1974, abandoned, and a continuation-in-part of Ser. No. 492,367, July 29, 1974, abandoned, which is a continuation-in-part of Ser. No. 228,827, Feb. 24, 1972, Pat. No. 3,834,373. This application Aug. 7, 1975, Ser. No. 602,611
Int. Cl.² A61B *5/04*
U.S. Cl. 2.06 E **41 Claims**



1. A bioelectrode applicable to a body part, comprising in combination:

an electrically insulating structure having a bottom portion and a lateral wall portion defining a cavity;

electric current conducting means including and electrode at said bottom portion;

means for retaining electrolyte, including a pad of electrolyte-absorbent resilient material in said cavity contacting said electrode at said bottom portion and projecting out of said cavity in an electrolyte containing relaxed condition;

a lateral space between said pad and said wall portion;

a removable cover on said structure compressing said resilient pad completely into said cavity, said lateral space being of a size to completely accommodate said pad when compressed completely into said cavity by said cover; and

means for attaching said structure to a body part.

28. A bioelectrode comprising in combination:

a silver, silver chloride electrode comprising a plurality of silver particles, a plurality of silver chloride particles, and an electrically insulating, water impermeable, inert organic matrix for said silver particles and said silver chloride particles, said silver particles and said silver chloride particles being interspersed with each other in and throughout said matrix, and said interspersed silver particles and silver chloride particles being in electrical contact with each other;

an electrical conductor connected to said silver, silver chloride electrode;

means for retaining an electrolyte at said silver, silver chloride electrode;

container means for said silver, silver chloride electrode and for at least part of said conductor and said electrolyte-retaining means;

an adhesive between said electrolyte retaining means and said container means, said adhesive being independent of said matrix and anchoring said electrolyte retaining means in said container means;

said silver particles being present in said organic matrix in an amount of from 15 to 70% by volume of said organic matrix with said interspersed silver particles and silver chloride particles;

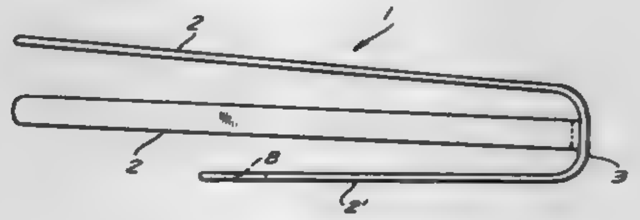
said silver chloride particles being present in said organic matrix in an amount of from 0.2% to 15% by volume of said organic matrix with said interspersed silver particles and silver chloride particles; and

said organic matrix constituting essentially the balance of the volume of said organic matrix with said interspersed silver particles and silver chloride particles.

3,982,530

PENIAL APPLIANCE

Egon Storch, 98-19 64th Ave., Forest Hills, N.Y. 11374
Filed Apr. 22, 1975, Ser. No. 570,527
Int. Cl.² A61F *5/00*
U.S. Cl. 128—79 **7 Claims**



1. A penial appliance for use in connection with the male organ of a person comprising, in combination:

a base:

a plurality of spaced apart elongated members extending from said base and defining an enclosure adapted to engage said male organ with the tips of said members engaging the body of said person;

said enclosure having a length at least as long as said male organ:

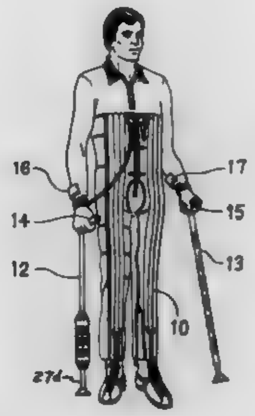
said base forming a barrier to said male organ; and

abutment means connected to the tips of said members against the body of said person is substantially non-irritating.

3,982,531

INFLATION DEVICE FOR A PNEUMATIC ORTHOSIS

Donald E. Shaffer, Newark, Del., assignor to Thiokol Corporation, Newtown, Pa.
Filed Apr. 30, 1975, Ser. No. 572,980
Int. Cl.² A61H *1/00*
U.S. Cl. 128—24 R **14 Claims**

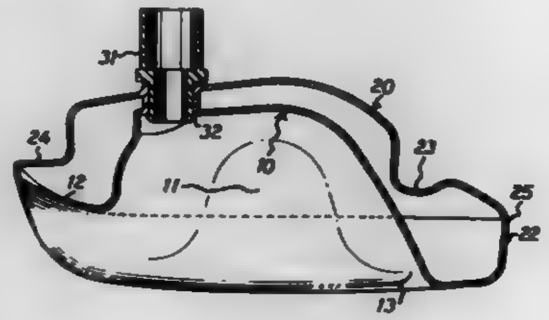


1. An inflatable orthosis system comprising, in combination, a cane, a gas generator in said cane, means for initiating the generation of gas by said generator, and conduit means communicably connected to the gas generator and to the inflatable orthosis to conduct the generated gas thereto.

3,982,532

BREATHING MASK, PARTICULARLY FOR ARTIFICIAL RESPIRATION

Matts Arne Bernhard Halldin, Lidingo, and Nils Rune Gustaf Andréasson, Stockholm, both of Sweden, assignors to Gnosjoplast AB, Gnosjo, Sweden
Filed Dec. 17, 1974, Ser. No. 533,497
Claims priority, application Sweden, Dec. 19, 1973, 7317152
Int. Cl.² A62B *18/02*
U.S. Cl. 128—146 **2 Claims**

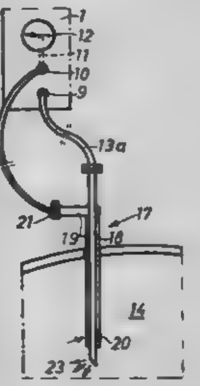


1. An integral breathing mask, particularly for artifical respiration, comprising an inner and outer wall of resilient material, the circumferential edges of said walls being connected to define a cup-shaped face mask having a variable volume internal air space therebetween and generally designed to surround the nose and mouth of the patient in a sealing manner, said outer wall being provided with a continuously open vent for venting the internal air space between the inner and outer resilient walls to the atmosphere, said inner and outer walls being connected at a point removed from the circumferential edges thereof to provide a tubular passage for admitting a breathing gas to the inside of the mask, said resilient outer wall being provided with a circumferential wall portion extending substantially perpendicular to the surface of the patient's face, and deformable resilient sealing pads formed on the inside of the inner wall for pressing against the sides of the nose and adjoining cheek portions of the patient, said inner wall having a rigid arcuate portion adjacent its circumference for pressing against the chin area of the patient, and said outer wall having opposed reinforced portions adjacent the circumferential wall portion for gripping and handling the mask.

3,982,533

INSUFFLATION APPARATUS

Peter P. Wiest, Berlin, Germany, assignor to F. M. Wiest KG, Germany
Filed Aug. 27, 1975, Ser. No. 608,163
Claims priority, application Germany, Mar. 14, 1975, 7508556[U]
Int. Cl.² A61M *13/00*
U.S. Cl. 128—184 **7 Claims**



1. In an insufflation apparatus, including means for introducing limited quantities of carbon dioxide into the human body for operational purposes, particularly for laparoscopy, and further including a control device for delivering the carbon dioxide having a first outlet connection nipple, a Veress needle, a first flexible tubing connected at one end to said Veress needle introduceable into a body cavity and at the opposite end to said first nipple, and a pressure gauge for indicating the pressure in the body cavity, the improvement comprising, in combination, a second connection nipple on said control device; a pipe connecting said pressure gauge to said second connection needle; a second flexible tubing connected at one end to said second connection nipple, means connected to the opposite end of said second tubing introduceable into said body cavity and adapted to be spaced from the tip of said Veress needle for detecting pressure within said body cavity, and means selectively operable to interconnect said first and second nipples.

3,982,534

INTRAVENOUS ADMINISTRATION SYSTEM

Thomas P. Buckman, 11561 Shelly Vista Drive, Tujunga, Calif. 91042
Filed Jan. 10, 1975, Ser. No. 539,953
Int. Cl.² A61M *5/16*
U.S. Cl. 128—214 C **23 Claims**

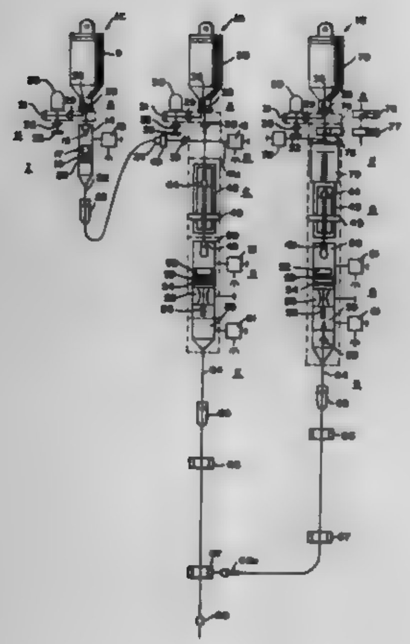
1. An intravenous administration system having a plurality of connected intravenous units operating in a cooperative and inter-related manner to provide controlled administration of several parenteral fluids through a single cannula said system comprising:

1. a primary intravenous set including
   - a. spike means adapted to connect the set to a container of intravenous fluid, conduit means connected to said spike means for conducting fluid from the intravenous fluid container,
   - b. vent means in communication with the conduit means,
   - c. a flowmeter connected to the aforesaid conduit means,
   - d. anti-air lock and anti-air embolism means connected to the outlet end of the flowmeter,
   - e. a flow control assembly connected to the aforesaid anti-air lock and anti-air embolism means, and adaptive means positioned ahead of the flowmeter for receiving the fluid connector of a secondary IV, said means incorporating a check valve for prevention of fluid flow

from a primary IV container to a secondary, and a second check valve for prevention of fluid flow from a secondary to the primary,

- f. a fluid reservoir and administration assembly in communication with the flow control assembly for administering the intravenous fluid to the patient,

2. a volumetric intravenous set including
   - a. spike means adapted to connect the set to a container of intravenous fluid, conduit means connected to said spike, means for conducting intravenous fluid from the intravenous fluid container,
   - b. a valve controlling flow through the conduit means, a vent valve in communication with the conduit means, a volumetric reservoir connected to the aforesaid conduit means,

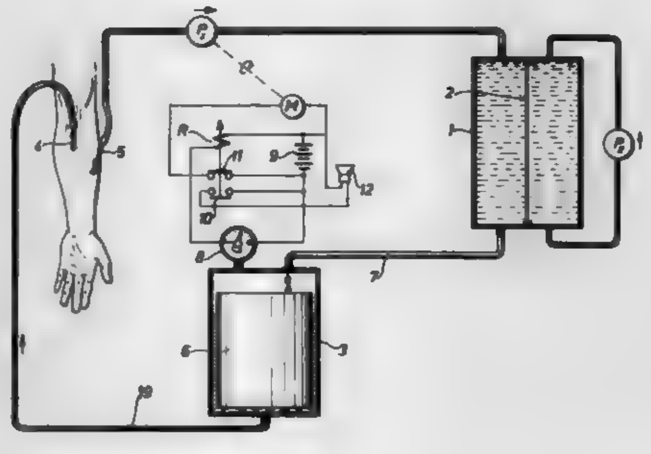


   - c. a flow meter connected fluidly to the aforesaid volumetric reservoir,
   - d. a flow control assembly connected to the flow meter, and
   - e. a fluid reservoir and administration assembly connected at one end to the flow control assembly and at the other end to the administration assembly of the primary set, and
3. a secondary intravenous set including
   - a. spike means adapted to connect the set to a container of intravenous fluid, conduit means connected to said spike, means for conducting intravenous fluid from the intravenous fluid container,
   - b. anti-air lock and anti-air embolism means connected to the aforesaid conduit means, and
   - c. administration means connected to the anti-air lock and anti-air emolism means, said administration means including a cannula fluidly connected to the primary set above the flow meter whereby intravenous fluid from the secondary set is fed into the primary set for administration thereby.

3,982,535

SIGNAL DEVICE FOR DIALYSIS APPARATUS

Per Svante Bahrton, Lojovagen 19, S-181 47 Lidingo, Sweden
Filed Mar. 4, 1975, Ser. No. 555,192
Claims priority, application Sweden, Mar. 15, 1974, 7403545
Int. Cl.^{2} A61M *1/03*
U.S. Cl. 128—214 E 7 Claims

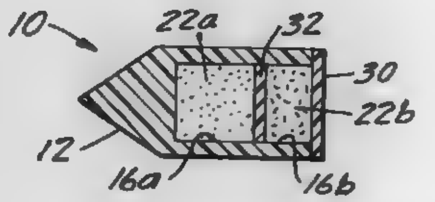


1. A dialysis apparatus, such as an artificial kidney, comprising:
- a circuit through which liquid blood is passed, said circuit including:
  - a pump (P_1) coupled in said circuit for transporting blood through said circuit;
  - a ventless float chamber (3) having an inlet at the upper portion thereof for receiving liquid blood and which is coupled in said circuit downstream of said pump, and a blood outlet in the bottom wall of said float chamber (3), said float chamber (3) always having a quantity of liquid blood therein; and
  - means for coupling a portion of a patient's blood circulation system to said blood outlet of said float chamber (3) and to said pump (P_1) to close said circuit through which said blood is passed;
- a float (6) within said ventless float chamber (3), said float (6) having a density slightly less than the mean value of the density of the liquid blood in said float chamber (3) so that the major portion of said float (6) will normally remain submerged in the liquid blood within said float chamber (3), said float (6) having a lower surface which is arranged to at least substantially block said outlet of said float chamber to at least substantially interrupt the supply of blood from said outlet of said float chamber responsive to a lowering of said float in the blood in said float chamber caused by a predetermined increase of air pressure above the blood in said float chamber; and
- an alarm signal device comprising:
  - detection means (8) coupled to said float chamber (3) for detecting a further predetermined increase in air pressure inside said float chamber (3) after a lowering of said float (6) which substantially blocks said blood outlet and which thereby substantially interrupts the blood supply to the patient's blood circulation system; and
  - electrical means (R, 9, 12) coupled to said detection means (8) for generating an alarm signal in response to said detection of said further predetermined increase in air pressure in said float chamber (3).

3,982,536

BALLISTIC INOCULATION OF ANIMALS AND PROJECTILE THEREFOR

Gerald P. Krogseng, Oakdale, and Fred R. Paul, Jr., Burnsville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 15, 1974, Ser. No. 524,121
Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976
Int. Cl.^{2} A61M *5/00, 5/18, 31/00*
U.S. Cl. 128—260 13 Claims

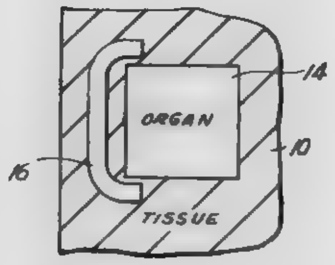


1. A ballistic implant shaped for penetrating the epidermal covering of a living animal body and lodging totally within the tissues of the animal body, the implant consisting essentially of a biologically compatible polymer body and an antigen contained within the polymer body in a manner permitting release of said antigen in response to the fluids and cells of the living animal body.

3,982,537

DYNAMIC IMPLANTS AND METHOD FOR IMPLANTING THE SAME

Louis Bucalo, 155 Roberts St., Holbrook, N.Y. 11741
Filed Dec. 30, 1974, Ser. No. 537,572
Int. Cl.^{2} A61M *1/00, 31/00*
U.S. Cl. 128—260 6 Claims

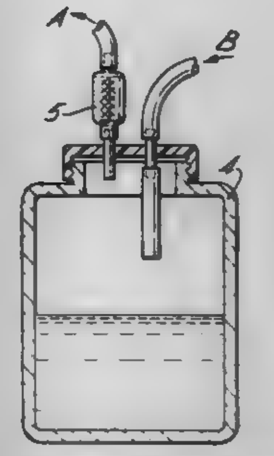


1. Method of treating a living being over a prolonged period of time with an agent which affects the health of said living being by causing said agent to be slowly released during said period of time within internal tissue of said living being, which comprises implanting in liquid molten condition a depot of a substance which solidifies in the internal tissue of said living being and which is safely absorbable by said living being, said substance solidifying at the temperature of the body of said living being and being molten and liquid at a higher temperature at which it is implanted, the implanting temperature not adversely affecting the living being during the implanting, said substance having distributed therethrough said agent which affects the health of said living being so that as said substance is absorbed by the living being the agent is released within the internal tissue of said living being to act on its health.

3,982,538

SAFETY VALVES FOR PROTECTION AGAINST LIQUID CONTAMINATION

Anthony Nelson Sharpe, Aylmer, Canada, assignor to N.V. Internationale Octrooi Maatschappij "Octropa", Rotterdam, Netherlands
Filed July 8, 1974, Ser. No. 486,298
Claims priority, application United Kingdom, July 9, 1973, 32526/73
Int. Cl.^{2} A61M *1/00*
U.S. Cl. 128—276 2 Claims

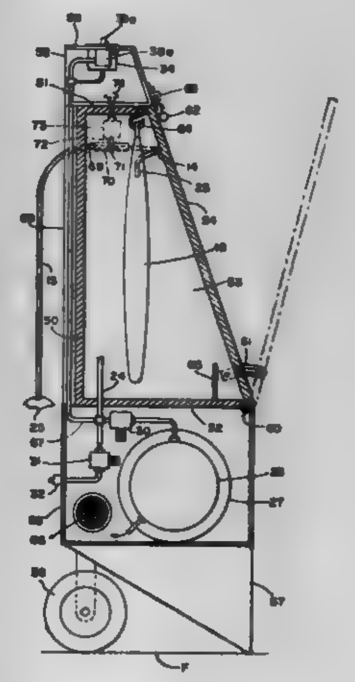


1. A safety valve for protection against fluid contamination comprising a hollow carrier adapted for insertion in a flow-line and containing a valve element consisting essentially of a granular or powdered gelling material which allows the flow through said carrier of gas in the absence of water, but which in the presence of water swells to block said carrier and prevent further flow, said gelling material being selected from the group consisting of gelatine, sodium alginate, agar, sodium carboxy methyl cellulose and swellable starch derivatives.

3,982,539

MEDICAL/SURGICAL SUCTION EQUIPMENT

Edward E. Muriot, Horsham, Pa., assignor to Health Technology Labs, Inc., Horsham, Pa.
Continuation of Ser. No. 497,838, Aug. 16, 1974, abandoned.
This application Sept. 17, 1975, Ser. No. 614,226
Int. Cl.^{2} A61M *1/00*
U.S. Cl. 128—276 17 Claims



1. Equipment for withdrawing body liquids comprising a vacuum chamber, a suction bag removably positioned in the vacuum chamber and having an opening for interconnecting the interior of the bag with the interior of the chamber, the bag further having an inlet connection comprising a tube the

wall of which is connected with the wall of the bag and extended therefrom to a point exterior of the vacuum chamber for intake of body liquid, a vacuum line adapted to be connected with a pressure reduction source of substantially constant reduced pressure, said line being connected with the vacuum chamber independently of the bag and being in communication with the interior of the vacuum chamber externally of the bag, and means for varying the pressure reduction in the vacuum chamber and thereby varying the suction in said bag comprising an adjustable bleed valve for introducing air into said line, the bag and tube being unitarily removable from the vacuum chamber independently of said vacuum line.

3,982,540

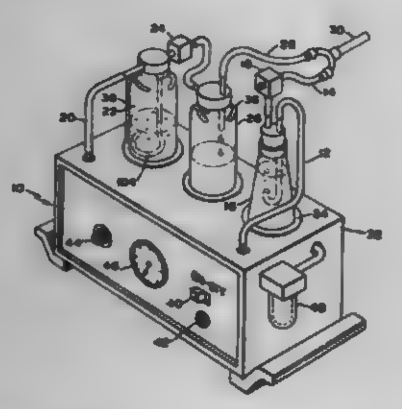
GASTROINTESTINAL ASPIRATOR PUMP SYSTEM AND METHOD

John R. Ross, 370 Clyde St., Brookline, Mass. 02167

Continuation-in-part of Ser. No. 333,871, Feb. 20, 1973, Pat. No. 3,885,567. This application Mar. 20, 1975, Ser. No. 560,161

Int. Cl.^{2} A61M *1/00*

U.S. Cl. 128—278 **14 Claims**



1. An aspirator pump and tube system for draining liquid from a human cavity comprising:

a. a mulitlumen tube, a portion of which is adapted to be inserted into such cavity, having a positive gas pressure lumen and a negative gas pressure lumen, said lumens being separated from each other by a partition wall within said tube;

b. means for supplying negative pressure gas to said negative gas pressure lumen;

c. means for supplying a plurality of positive gas pressure pulses to said positive gas pressure lumen, each of said pulses being of a first predetermined time duration and being spaced from each other by a second predetermined time duration;

d. said negative gas pressure lumen having a first aperture in an outside wall of said tube in the portion adapted to be inserted into such cavity, and said positive gas pressure lumen having a second aperture in said portion wall adjacent said first aperture;

e. indicator means responsive to the flow of gas into said positive gas pressure lumen for indicating the rate of said flow, and

f. indicator means responsive to the flow of gas out of said negative gas pressure lumen for indicating the rate of said latter flow.

3,982,541

EYE SURGICAL INSTRUMENT

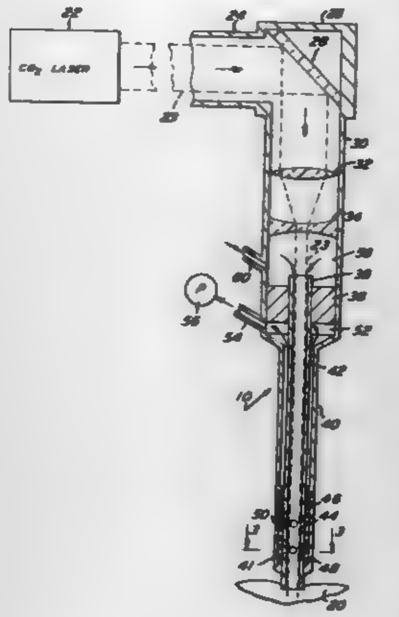
Francis A. L'Esperance, Jr., 1 E. 71st St., New York, N.Y. [illegible]

Filed July 29, 1974, Ser. No. 492,575

Int. Cl.^{2} A61B *17/36*; A61M *7/00*

U.S. Cl. 128—303.1 **17 Claims**

1. A method of surgically removing body tissue comprising the steps of contacting the body tissue with a probe open at a free end, passing a laser beam through a central passage in said probe and said open end to said tissue at a power level to effect vaporization of tissue, vaporizing only the surface portion of said tissue exposed to said laser beam in a manner so that said vaporizing step is surface phenomena at a depth not more than about one third millimeter, introducing a gas stream into the probe downstream from lenses associated with the laser beam, passing said gas stream through said probe in a direction towards said free end of said probe and out of said probe, and removing smoke and any vaporized portions of said tissue through said probe by way of said gas stream.



3,982,542

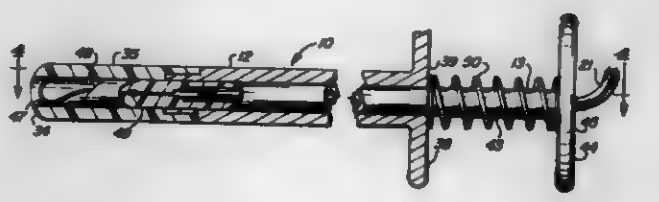
ELECTRORESECTROSCOPE AND METHOD OF LAPAROSCOPIC TUBAL STERILIZATION

John L. Ford, 4651 E. Palomino Road, and John Serafin, 4120 E. Earll Drive, both of Phoenix, Ariz. 85018

Filed Mar. 12, 1975, Ser. No. 557,469

Int. Cl.^{2} A61B *17/38*

U.S. Cl. 128—303.14 **5 Claims**



1. A resectroscope adapted for use during laparoscopic sterilization of a Fallopian tube, said resectroscope comprising:

a. an elongate tubular sheath having forward and rearward opening ends, at least the forward end thereof being electrically insulative;

b. grasping means slidably carried within said tubular sheath for extending from the forward end thereof to engage a Fallopian tube and retract a section thereof within the interior of the forward end of said sheath; and

c. means for subjecting said section of said Fallopian tube located interior of said forward opening to conditions sufficient for electroresection and electrocoagulation.

3,982,543

REDUCING CAPILLARITY OF POLYGLYCOLIC ACID SUTURES

Edward Emil Schmitt, and Martin Epstein, both of Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 354,043, April 24, 1973, Pat. No. 3,867,190, which is a continuation-in-part of Ser. No. 190,290, Oct. 18, 1971, Pat. No. 3,736,646. This application July 16, 1974, Ser. No. 489,004

Int. Cl.^{2} A61L *17/00*

U.S. Cl. 128—335.5 **4 Claims**

1. A surgical element comprising at least one strand of polyglycolic acid insoluble in each of xylene, toluene and chloroform having thereon a stiffening and capillarity reducing quantity of a copolymer of 15 to 85 mole percent glycolic acid and 85 to 15 mole percent lactic acid, said copolymer being soluble in each of xylene, toluene and chloroform, and having a melting point sufficiently below the melting point of polyglycolic acid to permit extrusion coating without melting of the polyglycolic acid.

3,982,544

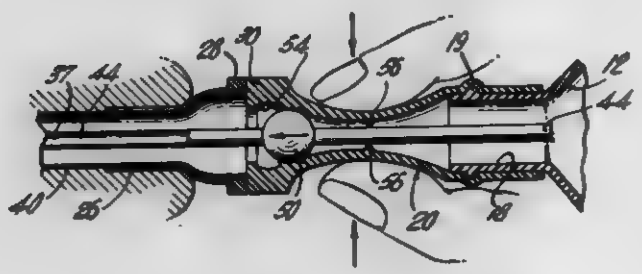
DEVICE FOR EVERTING A PROBE INTO A BODY CAVITY

Manfred Dyck, Somerville, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Nov. 18, 1974, Ser. No. 524,610

Int. Cl.^{2} A61M *25/00*

U.S. Cl. 128—349 R **8 Claims**



1. A device for delivering a double-walled probe having a pressurized annulus into a body cavity by the method of eversion, said device comprising:

a pressurizing chamber having an inlet port for introducing a pressurizing fluid therein;

an adapter having an axial bore therethrough, said adapter having proximal and distal ends and a resilient intermediate portion of a sufficient length to permit flexing and said adapter being removably attached at its proximal end to said pressurizing chamber;

an eversible tube having a closed and an open end, said open end being sealed to the distal end of said adapter bore precluding the unrestricted flow of pressurizing fluid from said chamber out of said adapter, the remainder of said tube extending through said adapter bore and into said chamber;

valve means carried on said tube near said closed end thereof; and

means in said adapter adjacent its distal end for seating said valve means to seal said pressurized annulus after said tube has been everted through said adapter, whereby when said resilient intermediate portion of said adapter is flexed said adapter bore is reduced in size thereby urging said valve means into said seating means.

3,982,545

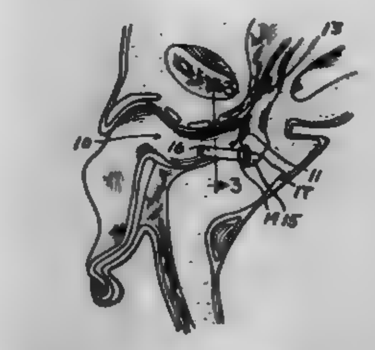
MIDDLE EAR AERATION AND IMPLANT

Herbert Silverstein, 269 Barwynne, Wynnwood, Pa.

Continuation of Ser. No. 499,630, Aug. 22, 1974, abandoned, which is a continuation of Ser. No. 354,523, April 26, 1973, abandoned, which is a continuation of Ser. No. 118,275, Feb. 24, 1971, abandoned. This application Oct. 24, 1975, Ser. No. 625,957

Int. Cl.^{2} A61M *27/00*; A61F *11/00*

U.S. Cl. 128—350 R **4 Claims**



1. A middle ear aeration implant for insertion through a hole drilled through the wall of the bony external canal in an area in which it is in communication with the middle ear and of a diameter in the order of 1.5 mm in diameter, said implant being of a resiliently yieldable inert elastomeric material having the characteristics of silicone rubber and comprising a tubular portion of a length substantially greater than the axial extent of the hole and of an outside diameter such as to be a snug fit in said hole and a flange at the posterior end of the tubular portion that is of a diameter in the neighborhood of 3.5 mm and in a plane at right angles to the axis thereof, the thickness of the flange and of the wall of the tubular portion being in the order of 0.25 mm thereby to enable the flange to be collapsed against the tubular portion and the length of the tubular portion being in the order of 1.5 cm. thereby to enable the flange to be collapsed against the tubular portion and the length of the tubular portion against which the flange is collapsed itself so collapsed that the thus collapsed part of the implant is of a cross sectional size and shape so closely approximating said outside diameter and also sufficiently stiff that it may be forced through said hole without damaging the bony structure with the anterior end of the implant protruding outwardly and with the resiliency of the material restoring the flange to its normal position, once the collapsed flange clears the bony structure, whereby when a pull is exerted at the anterior end of the implant, the flange is seated against the posterior surface of the bony structure with the snug fit of the tubular portion frictionally holding it against posterior movement.

3,982,546

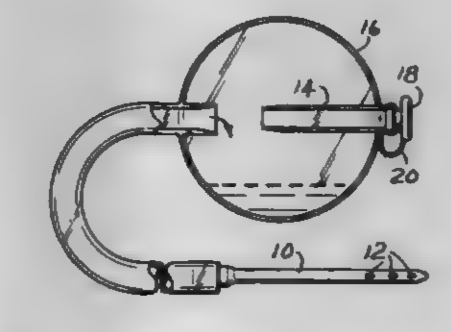
DEVICE FOR DRAINING A BODY CAVITY

John H. Friend, 10200 Arno Road, Galt, Calif. 95632

Filed Feb. 28, 1975, Ser. No. 554,173

Int. Cl.^{2} A61M *27/00*

U.S. Cl. 128—350 R **16 Claims**



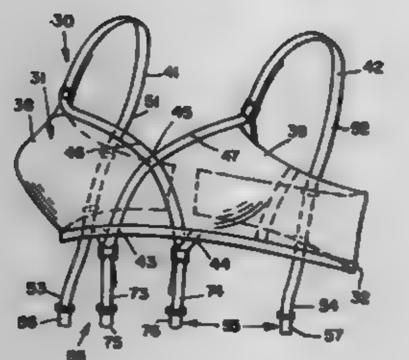
1. In a device for use with drainage means to carry out a procedure that includes withdrawing fluid from a cavity in the body of a patient, the combination of:

an intake tube for insertion into the cavity having coupling means at its outer end;
means including an outlet tube for cooperation with the intake tube to form a passage means from the intake tube for the drainage fluid,
said outlet tube having an outlet port at the outer end thereof for release of the drainage fluid and coupling means at its other end for cooperating with said intake tube coupling means;
means for opening and closing said outlet port; and
a reservoir means encompassing said coupling means, said passage means being designed so that it can be opened by actuation of said coupling means, and said reservoir means being in communication with said passage means to receive fluid from the intake tube when the outlet port is closed and said coupling means are actuated to open said passage means.

3,982,547
SKIRT, OR SLACKS SUPPORTING BRASSIERE

Amy Thelma Walker, 5422 Hawthorne Place, Washington, D.C. 20016

Filed June 11, 1975, Ser. No. 586,022
Int. Cl.² A41C *3/00*
U.S. Cl. 128—452 5 Claims

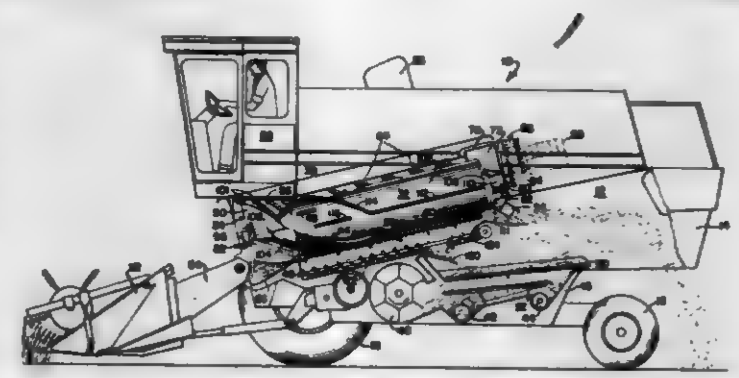


1. In combination
a brassiere having a lower chest band adapted to encompass the chest of the wearer; a body portion with a pair of bust cups extending upwardly from said lower chest band, the opposite ends of said band having fastening means at the rear of said chest,
a pair of shoulder straps, each extending upwardly, from a point of attachment to said chest band under one said cup, diagonally along the upper edge of the other said bust cup and thence over the shoulder of a wearer and thence downwardly of the back of the wearer to waist level and having a rearward spring clip at the lower terminal end thereof;
at least one pair of loops, each affixed to said chest band on an opposite side of the centre of the back of said chest band and slidably receiving one of said downwardly extending shoulder straps;
and a pair of adjustable length straps, each extending downwardly from a point of attachment of a shoulder strap with said chest band to waist level and having a forward spring clip at the lower terminal end thereof,
said rearward and forward clips being adapted to engage and support the waist band of a lower garment of the skirt, or slack, type.

3,982,548
HELICAL ELEMENT ROTOR-AXIAL FLOW COMBINE

Tom G. Stamp, Davenport, Iowa, and Neil C. Dunn, Moline, Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Aug. 28, 1975, Ser. No. 608,603
Int. Cl.² A01F *12/20*
U.S. Cl. 130—27 T 12 Claims

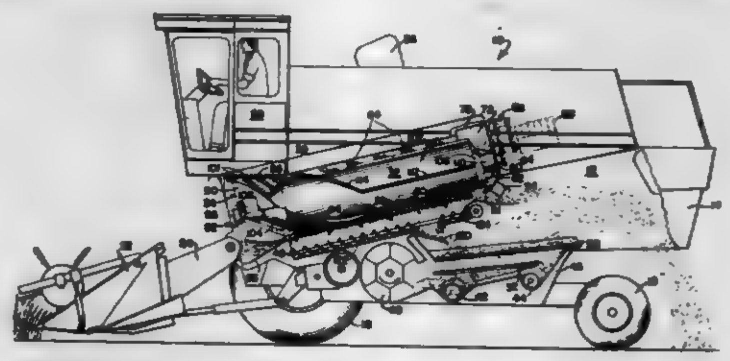


1. In an axial flow-type combine, in combination, an elongated generally cylindrical rotor casing having a concave establishing a forward threshing zone, and a grate establishing a rearward separating zone, the forward end of said threshing zone being provided with a forwardly and outwardly flared funnel-like frusto-conical transition section designed for reception of crop material, a series of spaced apart spiral transport fins fixedly secured to the upper region of said rotor casing internally thereof, a generally cylindrical imperforate tubular rotor mounted for rotation within said casing in coaxial relationship and substantially coextensive therewith, a vaned impeller on the forward end of said rotor within the frusto-conical transition section having vanes which sweep around the inner surface of said transition section in coextensive close proximity thereto for moving the crop material received in said transition section rearwardly into said threshing zone, a plurality of circumferentially spaced elongated helical rasp bars mounted on the outer cylindrical surface of said rotor in said threshing zone and designed for cooperation with said concave for threshing and impelling the crop material rearwardly, a plurality of circumferentially spaced elongated longitudinally extending bars mounted on the outer cylindrical surface of said rotor in said separating zone and designed for cooperation with said transport fins in such zone, first relatively short longitudinally extending rasp bars mounted on the outer cylindrical surface of the rotor within said threshing zone and means for driving said rotor.

3,982,549
HELICAL ELEMENT ROTOR-AXIAL FLOW COMBINE

Richard A. De Pauw, East Moline, and David J. Gustafson, Geneseo, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Aug. 28, 1975, Ser. No. 608,602
Int. Cl.² A01F *12/20*
U.S. Cl. 130—27 T 13 Claims



1. In an axial flow-type combine, in combination, an elongated generally cylindrical open-ended rotor casing having a concave establishing a forward threshing zone, and a grate establishing a rearward separating zone, the forward open end of said casing being designed for reception of crop material, a series of spaced apart spiral transport fins fixedly secured to the upper region of said rotor casing internally thereof, a rotor of a generally cylindrical imperforate tubular construction mounted for rotation within said casing in coaxial relationship and substantially co-extensive therewith, a plurality of circumferentially spaced elongated helical transport rasp bars mounted on the cylindrical peripheral region of said rotor in said threshing zone and designed for cooperation with said concave in such zone for threshing and impelling the crop material rearwardly, a plurality of circumferentially spaced elongated longitudinally extending bars mounted on the cylindrical peripheral region of said rotor in the separating zone and designed for cooperation with the transport fins for impelling the crop material rearwardly, and means for driving said rotor.

3,982,550
PROCESS FOR EXPANDING TOBACCO

Roger Z. de la Burde, Powhatan; Patrick E. Aument, Hopewell, both of Va.; Ray F. Dawson, Princeton, N.J., and Ronald A. Tamol, Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

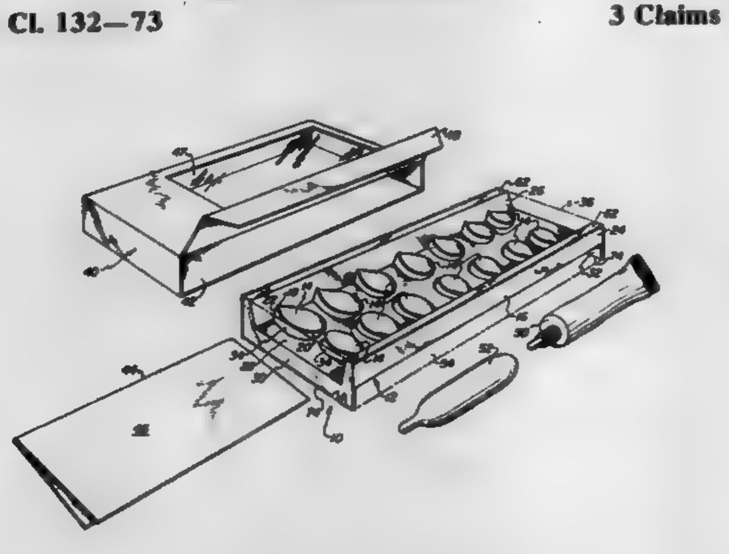
Filed June 5, 1975, Ser. No. 583,888
Int. Cl.² A24B *3/18*
U.S. Cl. 131—140 P 1 Claim

1. A process for expanding tobacco which comprises the steps of (1) subjecting tobacco to a vacuum of from about 15 to about 30 inches of mercury, (2) contacting the tobacco, while it is maintained under a vacuum of from about 15 to about 30 inches of mercury and a temperature of from about 0°C. to about 80°C., with a water spray to impregnate the tobacco with water to provide a tobacco product having a moisture content of from about 100 to 400 parts by weight per 100 parts of tobacco, (3) freezing said moisture-containing tobacco product by cooling said product to a temperature below 0°C., while maintaining the same under a vacuum of from about 15 to about 30 inches of mercury until substantially all of the moisture contained therein is frozen, and (4) rapidly heating the frozen moisture-impregnated tobacco at a temperature of from about 120°C. to about 320°C. for a period of from 0.5 to about 12 seconds to cause expansion thereof.

3,982,551
FALSE FINGERNAIL KIT

Edgar O. Bartolucci, Tuxedo Park, N.Y., assignor to Instore Advertising, Inc., Passaic, N.J.

Filed May 27, 1975, Ser. No. 580,591
Int. Cl.² A45D *29/00*
U.S. Cl. 132—73 3 Claims

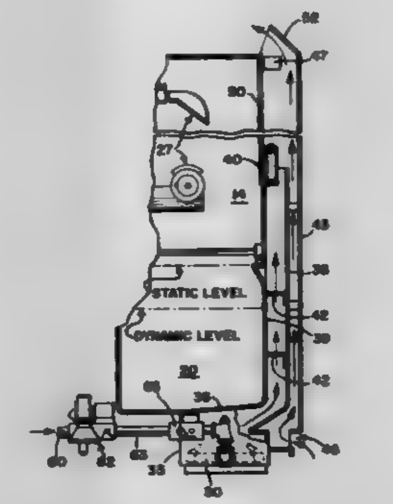


1. In a false fingernail kit, the improvement comprising:
a unitary structure including
a plurality of false fingernail blanks; and
a frame unitary with each of the false fingernail blanks, said frame including basal surfaces for resting the frame upon a support surface;
each false fingernail blank being interconnected with the frame at a limited portion of the blank, said limited portion being small enough to enable the blank to be torn manually from the frame without mutilation of the blanks;
the frame including a pair of longitudinally extending rails spaced laterally from one another and joined together by an interconnecting web;
the blanks extending laterally from each rail toward the other rail and being spaced altitudinally from the web;
said basal surfaces being spaced from said blanks in opposite altitudinal directions therefrom such that the frame is capable of resting upon the support surface in either of two positions, one of which positions is inverted relative to the other.

3,982,552
THERMAL PROTECTION FOR DISHWASHING MACHINE

Louis F. Fraula, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed June 26, 1975, Ser. No. 590,431
Int. Cl.² B08B *3/02*
U.S. Cl. 134—57 D 3 Claims



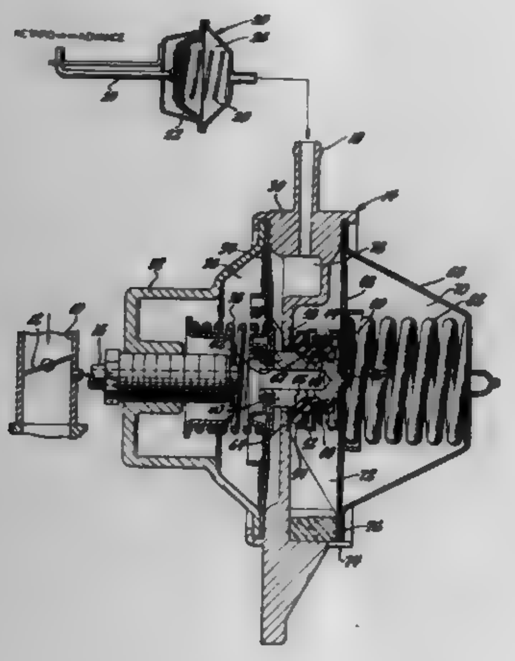
1. In a dishwashing machine having a housing defining a washing chamber including a tank for holding a quantity of washing liquid, means for supporting soiled articles in said chamber above said tank, a spray device for expelling the liquid over the articles,
a motor driven pump connected to force the liquid from said tank through said spray device to cleanse the articles and to carry soil from the articles with liquid falling back into said tank,
a control circuit connected for selective operation of said motor driven pump,
a gas-fired heater arranged in direct heat exchange with said tank to heat the washing liquid,
a flue extending from said heater upwardly along said tank and chamber, said flue, tank and chamber having common wall portions in heat exchange relation with flue gases on one side and washing liquid on the inner side of said chamber, the upper parts of said common wall portions being wetted by the liquid when said pump is in operation;
the improvement comprising gas flow control means incorporated in said gas supply and operative to meter gas flow between at least a higher normal heating rate and a substantially lower standby rate,
and said control circuit having a connection to control said gas flow control means operative to reduce the gas supply

automatically to the standby rate at the same time said pump is not operated by said control circuit.

3,982,553
VACUUM REDUCER VALVE ASSEMBLY

Daniel U. Johnston, and Robert L. Larson, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1975, Ser. No. 635,862
Int. Cl.² F02P *5/14*
U.S. Cl. 137—81 **3 Claims**

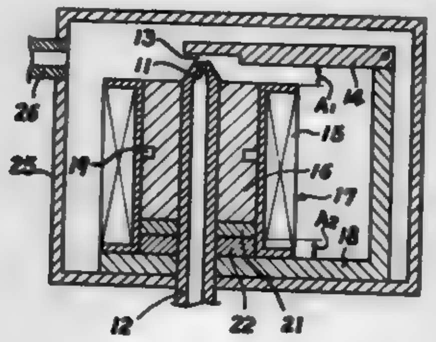


2. A vacuum reducer valve assembly comprising a housing, a cover, a diaphragm secured between said housing and said cover to define a source vacuum chamber between said cover and one side of said diaphragm and to define a reduced vacuum chamber between the opposite side of said diaphragm and one side of said housing, said source vacuum chamber having an opening adapted for connection to a source of vacuum, said reduced vacuum chamber having an opening adapted for connection to a vacuum motor, a closure member, a pressure responsive member secured between said closure member and said housing to define an atmospheric pressure chamber between the opposite side of said housing and one side of said pressure responsive member and an evacuated chamber between the opposite side of said pressure responsive member and said closure member, said housing having an aperture leading to said reduced vacuum chamber from said atmospheric pressure chamber, the opposite side of said housing defining a valve seat surrounding said aperture, a plunger extending through said aperture and having one end secured to said diaphragm and the opposite end engaging said pressure responsive member, a cylindrical axially-flexible seal disposed about said plunger and having one end secured to the opposite end of said plunger, said plunger having a valve seat formed thereabout intermediate its ends and further having a port intermediate said plunger valve seat and the opposite end of said plunger and a passage extending from said port to said source vacuum chamber, the other end of said seal having inner and outer valve surfaces biased toward engagement with said plunger valve seat and said housing valve seat respectively, said diaphragm being biased toward said housing to thereby maintain the pressure in said reduced vacuum chamber at a predetermined differential greater than the pressure in said source vacuum chamber, whereby when the pressure in said reduced vacuum chamber exceeds the pressure in said source vacuum chamber by an amount greater than said differential said operating diaphragm moves said plunger to engage said outer valve surface with said housing valve seat and disengage said inner valve surface from said plunger valve seat to thereby connect said reduced vacuum chamber through said aperture, said port and said passage to said source vacuum chamber and thus reduce the pressure in said reduced vacuum chamber, whereby when the pressure in said reduced vacuum chamber is less than the pressure in said source vacuum chamber plus said differential said operating diaphragm moves said plunger to disengage said outer valve surface from said housing valve seat and engage said inner valve surface with said plunger valve seat to thereby connect said reduced vacuum chamber through said aperture to said atmospheric pressure chamber and thus increase the pressure in said reduced vacuum chamber, and whereby said pressure responsive member controls the bias of said diaphragm toward said housing in accordance with the pressure in said atmospheric pressure chamber and thus varies said differential in accordance with atmospheric pressure.

3,982,554
ELECTROMAGNETIC FLAPPER VALVE

Shinji Saito, Yokohama, and Masao Suzuki, Kawasaki, both of Japan, assignors to Tokyo Keiki Company Limited, Tokyo, Japan

Filed Apr. 17, 1975, Ser. No. 569,085
Claims priority, application Japan, Apr. 25, 1974, 49-46491[U]
Int. Cl.² F16K *31/06*
U.S. Cl. 137—82 **9 Claims**



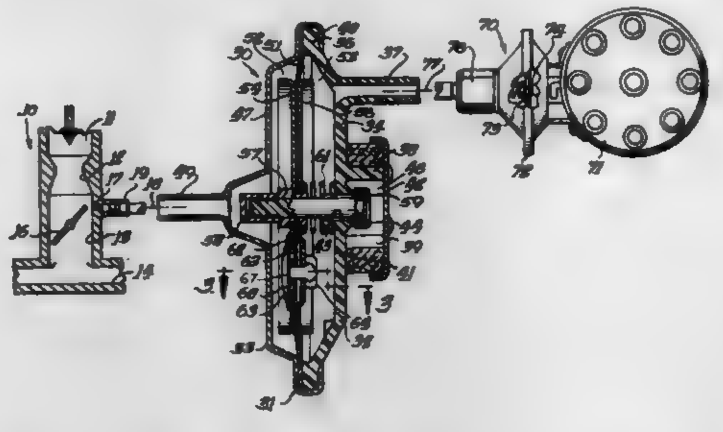
1. An electromagnetic flapper valve having a fluid discharge orifice, a ferromagnetic valve element for movably controlling fluid flow through the orifice, an electromagnet arranged to controllably move said valve element and comprising a core and an electric coil wound around said core, and a ferromagnetic support member supporting said valve element and said electromagnet so that said valve element, said support member and said core of the electromagnet are arranged in a substantially closed magnetic circuit, a ferromagnetic spacer and a paramagnetic spacer, said spacers being mounted in series between the core and the support member in substantially said closed magnetic circuit, the combined thickness of said spacers having a predetermined value and the thickness of the paramagnetic spacer comprising a predetermined gap between the core and the valve element substantially in said closed magnetic circuit.

3,982,555
VACUUM RELAY VALVE

John A. Aubel, and Ronald E. Reinke, both of Decatur, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed July 14, 1975, Ser. No. 595,907
Int. Cl.² F02P *5/10*
U.S. Cl. 137—103 **3 Claims**

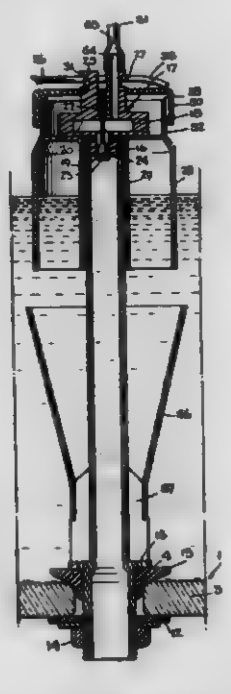
1. A vacuum relay valve having a shell-like body, a flexible diaphragm disposed therein, said diaphragm and interior portions of said body defining an inlet chamber and an outlet chamber, said inlet chamber communicating with an inlet port adapted for connection to a vacuum signal source, said outlet chamber communicating with an outlet port adapted for connection to a vacuum operated device, wherein the improvement comprises one-way check valve means arranged to control flow between said outlet chamber and said inlet chamber, said check valve means closing in response to a positive-going pressure change in said inlet chamber and opening in response to a negative-going pressure change in said inlet chamber to permit flow from said outlet chamber toward said inlet chamber, an atmospheric bleed valve operably connected to said diaphragm arranged to control flow from atmosphere toward said outlet chamber, said bleed valve closing in response to a negative-going pressure change in said inlet chamber and opening in response to a positive-going pressure change in said inlet chamber providing infusion of atmosphere into said outlet chamber in response to said positive-going pressure change in said inlet chamber, and a flow restrictor arranged in series circuit between said check valve means and said outlet chamber, said flow restrictor being protected from contaminating communication with said inlet chamber by said check valve means and being purged by flow from said outlet chamber in response to negative-going pressure change in said inlet chamber.



3,982,556
TANK FLUSHING MEANS

Vernon D. Roosa, 184 Wood Pond Road, West Hartford, Conn. 06107

Filed Sept. 26, 1974, Ser. No. 509,648
Int. Cl.² F16K *31/18*
U.S. Cl. 137—432 **8 Claims**

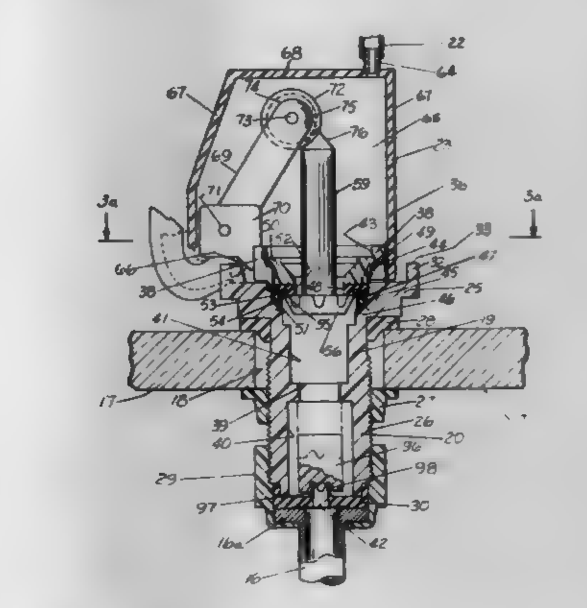


1. An improved valve means for the top of an inlet pipe for a flushing tank comprising the combination of a valve body mounted on the pipe top, a liquid flow cavity in said body including a valve seat at the pipe top, a valve stem including a sealing portion for engaging said seat, means for movably mounting said stem in the valve body for motion in a downward direction to an open position against the force of liquid flowing through said pipe past said seat and for motion in an upward direction to a sealed position on said seat, a floatable stem moving member movably positioned on said valve body at the top of said inlet pipe for engaging and for moving said stem to its open position in said downward direction only, and a second member pivotally mounted on said valve body for engaging the top of said stem moving member for moving it downwardly against said stem.

3,982,557
FLUID VALVE WITH FLOAT ACTUATOR

Ignacio Acevedo, 4066 Fenwick Road, Columbus, Ohio 43220

Continuation-in-part of Ser. No. 471,436, May 20, 1974, abandoned. This application Apr. 16, 1975, Ser. No. 567,253
Int. Cl.² E03D *1/33*; F16K *31/18*
U.S. Cl. 137—441 **10 Claims**



1. A fluid control valve for maintaining a predetermined fluid level in a reservoir comprising,

a valve body having a valve chamber with a fluid inlet and an upwardly opening fluid outlet, a valve sealing device disposed in circumscribing relationship to said outlet,

a valve closure element positioned in said valve chamber and normally held in closed relationship to said sealing device solely by fluid pressure in said valve chamber, said element movable into and out of fluid sealing engagement with said valve sealing device and having an elongated actuating stem rigidly secured thereto, said stem extending vertically upward through the outlet and projecting a distance outwardly from said valve body with the outer end portion convergently tapered, and

float actuating means including a lever arm pivotably mounted on said valve body for swinging movement relative thereto in a plane parallel to the longitudinal axis of said valve element, said lever arm having a cam follower contactingly engageable with said actuating stem in opening said valve and mounted to move onto the tapered end portion of said stem for increasing rate of movement in closing of said valve element, and a float attached thereto in spaced relationship to said cam follower and positionable within the fluid reservoir to respond to the fluid level therein for actuation of said valve closure element.

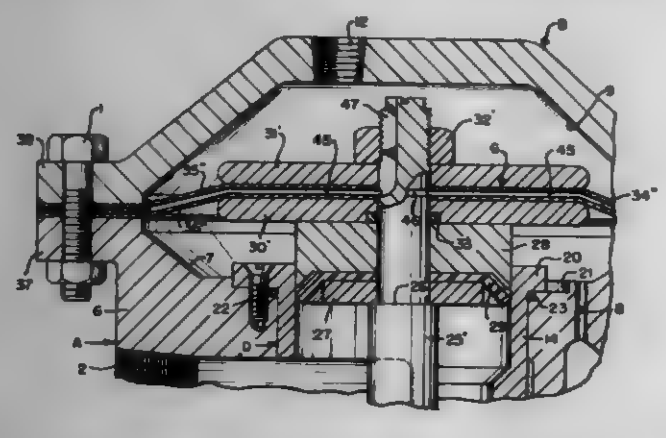
3,982,558
FLUID PRESSURE CONTROL VALVE

Paul Ochs, 2 Druid Hill Drive, Parsippany, N.J. 07054

Filed Apr. 18, 1969, Ser. No. 817,455
Int. Cl.² F16K *31/12*
U.S. Cl. 137—455 **1 Claim**

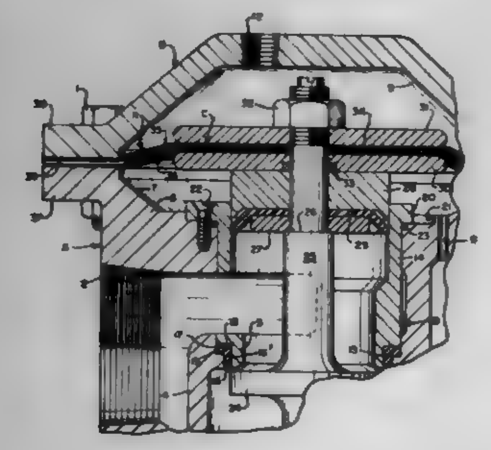
1. A fluid pressure operated control apparatus of the type having a casing with an inlet and an outlet for the flow of a first fluid under pressure, said casing having first and second flanged members, a diaphragm mounted in said casing, the peripheral edges of said diaphragm being clamped between said first and second flanged members, said diaphragm having

a first side and a second side, means placing a portion of said first diaphragm side in communication with fluid pressure in said inlet or outlet, means applying a regulating pressure on said second diaphragm side, and means actuated by said diaphragm in response to variations in differences of pressure on said first and second diaphragm sides for regulating said inlet or outlet fluid pressure, wherein the improvement comprises said diaphragm being flexible and having a main layer, and a protective layer permeable to said first fluid at high temperature, said main layer being incompatible with said first fluid at high temperature in pure form, said protective layer being at least coextensive with said first diaphragm side, said protective layer being separable from said main layer at said portion of said first diaphragm side in communication with said inlet or outlet fluid preessure, and means for permitting a second fluid to enter between said protective layer and said main layer in order to contaminate said first fluid at high temperature which permeates through said protective layer, said means actuated by said diaphragm including a valve stem passing centrally through said diaphragm, said main layer slot extending outwardly from said valve stem and said stem having a passage for conducting a second fluid into said slot.



3,982,559
HIGH TEMPERATURE FLUID PRESSURE CONTROL VALVE

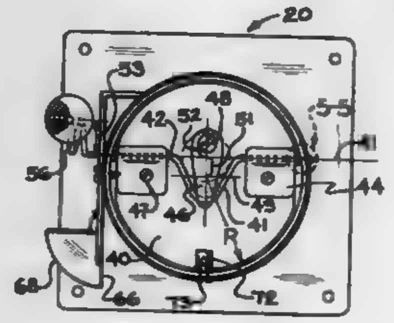
Paul Ochs, 2 Druid Hill Drive, Parsippany, N.J. 07054
Continuation of Ser. No. 817,455, April 18, 1969. This application Aug. 10, 1973, Ser. No. 387,324
Int. Cl.² F16K *31/12*
U.S. Cl. 137—455 15 Claims



1. A high temperature fluid pressure operated control apparatus for handling fluids in excess of 350°F. in temperature of the type having a casing with an inlet and an outlet for the flow of a first fluid under pressure and having a temperature in excess of 350°F., a diaphragm mounted in said casing, said diaphragm having a first side and a second side, means placing a portion of said first diaphragm side in communication with said first fluid in said inlet or outlet, means applying a regulating pressure on said second diaphragm side, and means actuated by said diaphragm in response to variations in differences of pressure on said first and second diaphragm sides for regulating said inlet or outlet fluid pressure, said regulating means including a valve stem, said diaphragm being flexible and having a main layer comprising an elastomeric material, and a protective layer permeable to and compatible with said first fluid at high temperature in excess of 350°F. in pure form, said main layer being incompatible with said first fluid at high temperatures in excess of 350°F. in pure form, said protective layer being at least coextensive with said first diaphragm side, said protective layer being separable from said main layer at said portion of said first diaphragm side in communication with said first fluid, a centrally located opening being formed in said diaphragm through said main layer and said protective layer, said valve stem extending through said diaphragm opening, means on said valve stem for securing said diaphragm to said valve stem, said casing further comprising first and second flanged members, the peripheral edge of said diaphragm being clamped between said first and second members, and means for introducing a second fluid between said protective layer and said main layer in order to mix with and contaminate said first fluid at high temperatures in excess of 350°F. and in pure form which permeates through said protective layer, whereby to protect said main layer, said first fluid being steam, and said protective layer being Teflon.

3,982,560
VENTILATING APPARATUS FOR HEAT TRANSFER SYSTEMS

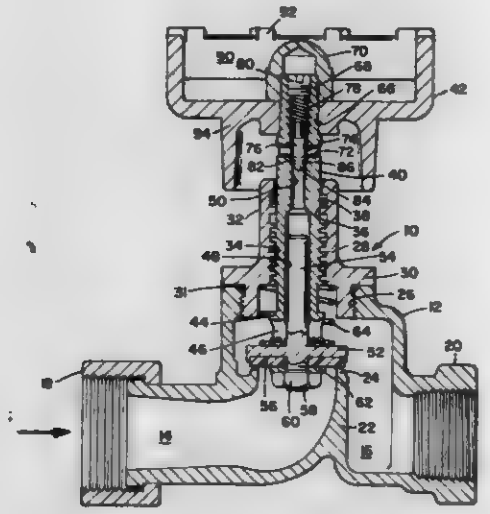
Fred Dibert, 2617 Prospect St., Flint, Mich. 48504
Filed May 13, 1974, Ser. No. 469,072
Int. Cl.² F16K *15/00*
U.S. Cl. 137—527.8 7 Claims



1. Apparatus for introducing fresh air to a forced air heating system comprising a fresh air conduit having a longitudinal axis, said conduit being open at both of its ends and adapted to occupy any one of a number of selected positions between vertical and horizontal; damper means; eccentric means mounting said damper means in said conduit for rocking movements about a rotary axis between conduit closed and conduit open positions, the eccentricity of said mounting means causing said damper means normally to seek a vertical position due to the force of gravity regardless of whether said conduit occupies a horizontal or vertical position; adjustable counterweight means of such mass as to be capable of overcoming the force of gravity acting on said damper means; means mounting said counterweight means on said damper means for movements of said counterweight means relative to said rotary axis to a selected one of a number of positions on opposite sides of said rotary axis and in any selected one of which positions said counterweight means exerts a force on said damper means to urge the latter in a direction toward its conduit closed position; and stop means responsive to movement of said damper means to its conduit closed position to prevent further movement of said damper means in said direction.

3,982,561
COMBINATION SURGE RELIEF AND BACK FLOW PREVENTION VALVE

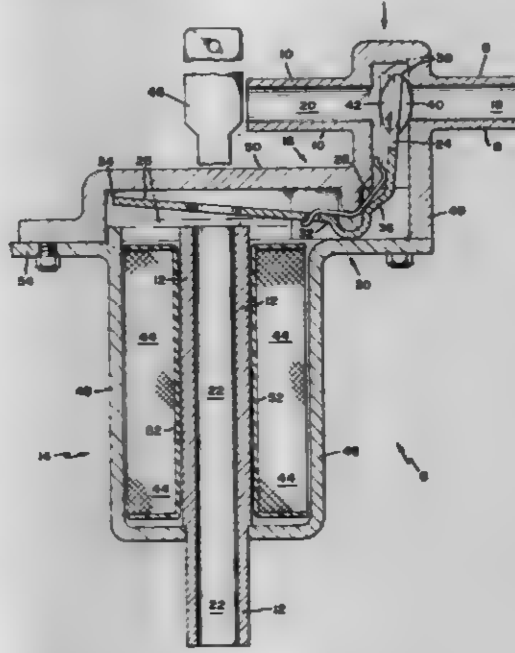
Norman Edward Harthun, San Carlos, Calif., assignor to Telford Smith, Inc., San Carlos, Calif.
Filed July 17, 1975, Ser. No. 596,630
Int. Cl.² F16K *11/10*
U.S. Cl. 137—596.2 6 Claims



1. In a valve the combination of:
a hollow valve body divided by a wall into in-flow and out-flow chambers, there being a valve seat surrounding an opening in said wall communicating between said chambers;
internally threaded aperture means on said body concentric with said seat and communicating with said out-flow chamber;
a nipple means having an outer threaded portion which is screwed into said aperture means and an upwardly extending boss portion with an inner threaded portion;
a manually rotatable valve stem extending into said boss portion and having a threaded portion screwed into said inner threaded portion of said boss portion;
a valve head between said stem and said seat and movable by said stem against said seat to shut off said valve;
means extending from said valve head for guiding and maintaining said valve head in co-axial alignment with said stem and said seat, and permitting said head freedom to move toward and away from said seat when said stem is retracted from the valve closing position;
light spring means biasing said valve head towards said seat, said biasing action effectively closing said valve to prevent a reverse flow from said outflow chamber to said in-flow chamber but being ineffective to retard flow from said in-flow chamber to said out-flow chamber of water delivered to said in-flow chamber under normal domestic pressures;
said stem having a smooth cylindrical exterior portion extending upwardly from its said threaded stem portion and having a transverse relief passage;
a bore in said stem extending above said guiding means and communicating with said transverse passage;
a piston within said smooth bore of said stem;
a relatively heavy coil spring biasing said piston downward against the bottom of said bore and normally blocking said transverse passage;
a screw plug means making threaded engagement with said body to adjustably compress said spring against said piston;
whereby a surge of fluid pressure building up in said outflow chamber will be applied to the inner end of said piston until the pressure of said piston against said piston biasing spring will compress the latter and lift the piston until said relief passage is opened allowing escape of fluid therethrough until said pressure surge subsides.

3,982,562
PRESSURE CONTROL APPARATUS

David A. Pickett, Warren, Mich., assignor to Allied Chemical Corporation, Morris Township, N.J.
Filed Oct. 4, 1974, Ser. No. 512,801
Int. Cl.² F16K *31/10*
U.S. Cl. 137—625.4 22 Claims



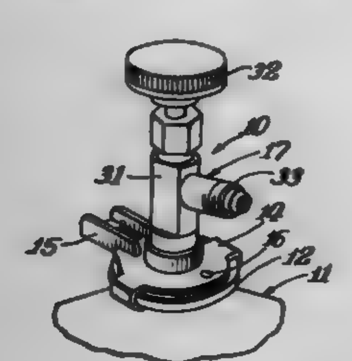
5. An electrically-operated, pressure control apparatus adapted to perform switching and actuating functions, said apparatus comprising:
a first pressure conduit having a first passageway extending between a point exterior of said apparatus and a point in the interior of said apparatus;
a second pressure conduit having a second passageway extending between a point exterior of said apparatus and a point in the interior of said apparatus;
a third pressure conduit having a third passageway extending between a point exterior of said apparatus and a point in the interior of said apparatus;
a coil assembly adapted to be energized electrically and exert a magnetic force, said coil assembly disposed within said apparatus; and an armature assembly having an actuated position and a non-actuated position and adapted to be operated electromagnetically when said coil assembly is energized, said armature assembly disposed adjacent to said coil assembly and acted upon directly by said coil assembly, said armature assembly having a sealing means disposed immediately adjacent to at least two of said passageways for directly contacting a portion of said at least two passageways to open said and close said at least two passageways.

3,982,563
CLAMP-ON VALVE STRUCTURE

Leonard J. Kowal, Prospect Heights, and Robert C. Gibson, Chicago, both of Ill., assignors to Imperial-Eastman Corporation, Chicago, Ill.
Filed Jan. 2, 1974, Ser. No. 430,172
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976
Int. Cl.² B67B *7/24*
U.S. Cl. 137—798 21 Claims

1. A clamp-on valve structure for use with a can of pressurized fluid having an annular, projecting lip encircling a connecting portion of the can, said valve structure comprising: a mounting plate having a central opening defined by an internally threaded, annular valve mounting portion, lug means defining first and second lip engagement portions equiangularly spaced from a diametric centerline bisecting said annular portion to extend rearwardly of a diameter of said annular portion perpendicular to said centerline, and means defining a stop; a lever defining a pivot portion, a manipulating portion, a third lip engagement lug means, and means defining a shoulder; means pivotally connecting said pivot portion to said

mounting plate rearwardly of said perpendicular diameter; and a valve having a threaded mounting means removably mounted to said threaded annular portion of the mounting plate and including a portion extending into the path of pivotal movement of said lever, said lever being arranged to urge said pivot forwardly to force said first and second lug means clampingly against the container lip as an incident of said lever being swung to a clamping position wherein said third lug means is forced against said lip adjacent the forward end of said centerline, said lever shoulder abutting said mounting plate stop to positively prevent pivotal movement beyond said clamping position, said lever extending between said mounting plate stop and said valve portion to positively prevent pivotal movement of the lever forwardly from said clamping position when said lever is swung to said clamping position and said valve is threadedly mounted to said mounting plate.



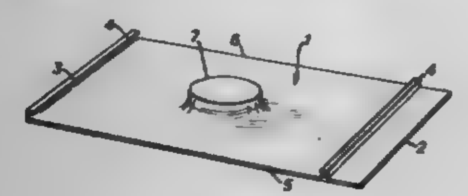
3,982,564
HEAT RECOVERABLE ARTICLE

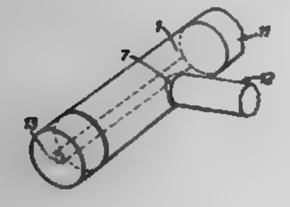
Robin James T. Clabburn, Highworth, England; Maurice Raymond Pettit, Pellenberg, and Guido De Keermaecker, Leuven, both of Belgium, assignors to Raychem Corporation, Menlo Park, Calif.

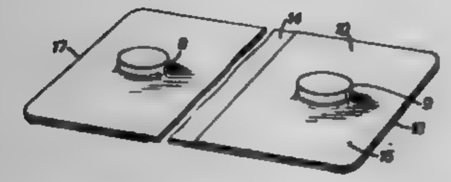
Filed Dec. 10, 1973, Ser. No. 423,191

Int. Cl.² F16L *55/16, 57/00*

U.S. Cl. 138—110 **7 Claims**







1. A heat-recoverable article adapted to cover a conduit junction having at least three arms comprising, a sheet member, said sheet member having opposite edge regions capable of being brought and held together to form a radially heat shrinkable tubular member, said sheet member having a heat shrinkable wall portion therein, said wall portion defining an aperture said wall portion being an upstanding peripheral wall extending outwardly from a surface of the sheet member and surrounding said aperture, said upstanding peripheral wall having a height and periphery, which height and periphery, upon heating, reduce to form a further upstanding peripheral wall.

3. A heat recoverable article adapted to cover a conduit junction having at least three arms comprising, a heat shrinkable sheet member having a first surface and a second surface, said first and second surfaces each having opposite first and second end regions, said first surface including at least two heat shrinkable wall portions therein, each of said wall portions defining an aperture each said wall portion being an upstanding wall extending outwardly from said first surface of the sheet member and surrounding said aperture, each said peripheral upstanding wall having a height and periphery, which height and periphery, upon heating, reduce to form a further upstanding peripheral wall, said first end region of said second surface capable of being brought and attached to said second end region of said first surface thereby forming a tubular radially heat shrinkable member.

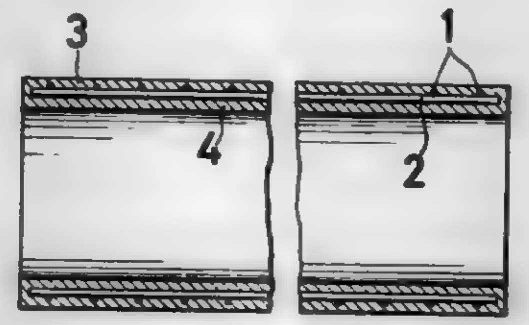
3,982,565
PRESTRESSED CONCRETE PIPE

Hideo Iida, Sagamihara, Japan, assignor to Nippon Hume Pipe Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 393,188, Aug. 30, 1973, abandoned, which is a continuation of Ser. No. 174,787, Aug. 24, 1971, abandoned. This application Apr. 24, 1974, Ser. No. 463,764

Int. Cl.² F16L *9/08*

U.S. Cl. 138—176 **2 Claims**



1. Prestressed concrete pipe comprising a reinforcing cage, said reinforcing cage consisting of longitudinally extending reinforcing members spaced laterally apart and arranged in a circle, and circumferentially extending reinforcement wrapped about the exterior of said longitudinally extending reinforcing members, said longitudinally extending reinforcing members being in an effective reinforcement ratio in the range of 0.16 to 0.25%, said circumferentially wrapped reinforcement being in an effective reinforcement ratio in the range of 1.0 to 1.6%, said effective reinforcement ratios being based on the cross-sectional area of the respective reinforcement component divided by the cross-sectional area of the concrete inwardly of the center axis of the circumferentially wrapped reinforcement, and the effective reinforcement ratios based on the effective reinforcement ratio of the longitudinally extending reinforcing ratio divided by the effective reinforcement ratio of the circumferentially extending reinforcement ratio being in the range of 0.1 to 0.25%, and expansive concrete embedding said reinforcing cage and forming the wall of the pipe.

3,982,566
METHOD AND APPARATUS OF MAKING A WOVEN ZIPPER

Friedrich Glindmeyer, Stolberg; Wilhelm Friedrich Hennenberg, Alsdorf, and Karl Limpens, Stolberg, all of Germany, assignors to William Prym-Werke KG, Stolberg, Germany

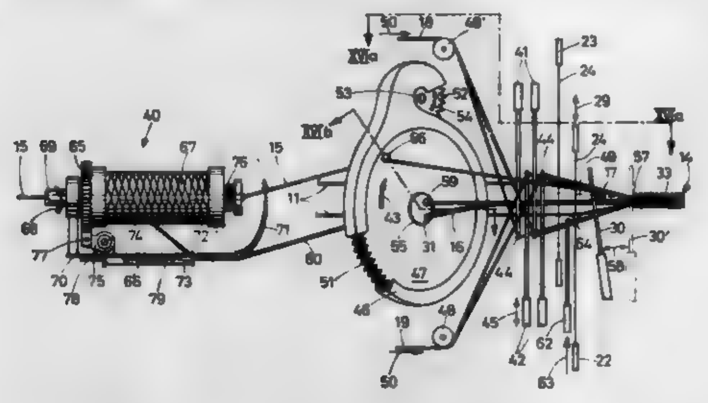
Division of Ser. No. 484,031, June 28, 1974. This application Jan. 8, 1975, Ser. No. 539,613

Claims priority, application Germany, June 29, 1973, 2333152

Int. Cl.² D03D *1/00*

U.S. Cl. 139—35 **6 Claims**

1. Apparatus for making a woven zipper, comprising first means for forming a warp shed; second means for inserting a weft thread into said warp shed so as to weave a zipper tape; third means for laying onto a longitudinal margin of said zipper tape a plurality of coils formed from a continuous filament; fourth means for weaving said coils to said tape by means of cover threads which are interwoven with said coils and said tape; a rotor having a side facing towards said third means; harneses which are longitudinally shiftable between end positions and are located at said side and have end portions provided with openings through which respective ones of said cover threads extend, means for shifting said harnesses so that said openings travel in a triangular area determined by the points of intersection of a plane of movement of said second means with said openings when said harnesses are in the respective end positions, and the point where said filament first contacts said margin when laid upon the same by said third means; and said third means comprising a bifurcated member having two branches which between themselves include said triangular area, said branches having free end portions which converge towards said point where said filament first contacts said margin and forming there with one another a gap.



3,982,567
SHUTTLE RETURN APPARATUS

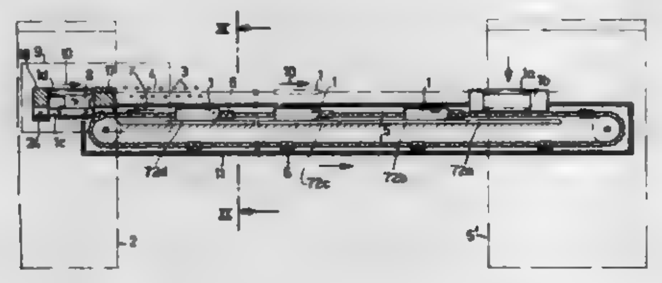
Erwin Pfarrwaller, Winterthur, and Kurt Nick, Ettenhausen, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Continuation of Ser. No. 395,564, Sept. 10, 1973, abandoned. This application Mar. 14, 1975, Ser. No. 558,290

Claims priority, application Switzerland, Sept. 8, 1972, 13196/72

Int. Cl.² D03D *47/24*

U.S. Cl. 139—439 **6 Claims**



1. A gripper shuttle loom comprising a plurality of gripper shuttles presenting in cross section a plurality of obliquely inclined faces, shuttle picking means, shuttle catching means, shed-forming means, and means to return said shuttles from the catching to the picking side of the loom outside the shed, said return means comprising:

- a. a rail extending across the loom between said picking and catching means, said rail having a groove in the upper surface thereof which is open upwardly and which is bounded at least in part by mutually inclined faces inclined to each other at substantially the same inclination as and engageable against the said faces of the shuttles;
- b. an endless loop;
- c. two wheels supported on opposite sides of the loom to carry said loop with one run thereof parallel to and adjacent said rail; and
- d. a plurality of carrier elements affixed to said loop, each of said elements having a portion extending laterally from the loop whereby upon passage of each such element along said run of the loop said element extends above said rail to a position above said groove to propel one of said shuttles therealong.

3,982,568
DEVICE FOR GRIPPING AND FORMING A SUPPLY OF WEFT THREAD BEFORE WEFT INSERTION

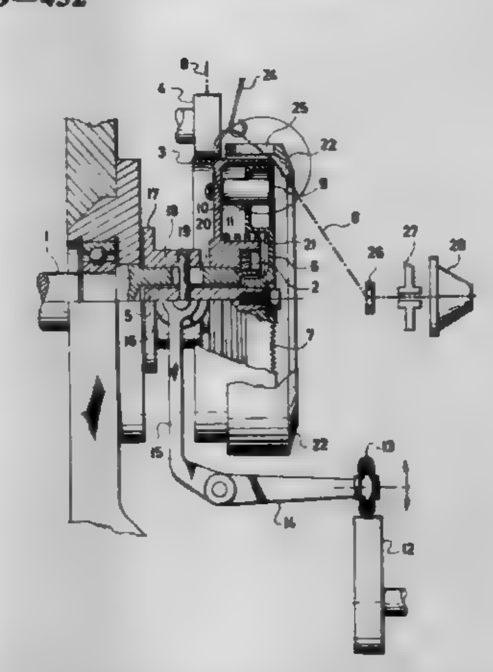
Miloslav Riha; Josef Martinec, and Jiri Cernocky, all of Vsetin, Czechoslovakia, assignors to Zbrojovka Vsetin, narodni podnik, Vsetin, Czechoslovakia

Filed Apr. 9, 1975, Ser. No. 566,412

Claims priority, application Czechoslovakia, Apr. 12, 1974, 2638-74

Int. Cl.² D03D *47/36*

U.S. Cl. 139—452 **4 Claims**



1. In a device for gripping and forming a supply of measured weft threads before weft insertion having a rotary measuring drum with a nip disc, the measuring drum having a forwardly open space therewithin and being mounted on a driving shaft, the improvement which comprises an axially displaceable gripping disc mounted on the driving shaft, the gripping disc being provided with a circumferential rim provided with axially projecting teeth spaced thereabout at its forward end, an annular housing coaxial of and surrounding the forward end of the measuring drum and the gripping disc therewithin, the housing and measuring drum presenting an annular groove therebetween through which the measured weft passes to the weft inserting means, the position and axial depth of the annular groove corresponding substantially to the axial length of the teeth on the rim of the gripping disc, and means for cyclically displacing the gripping disc from an axially advanced forward position in which a weft thread is gripped by the teeth on the gripping disc to an axially retracted position in which the weft thread is released from the teeth on the gripping disc.

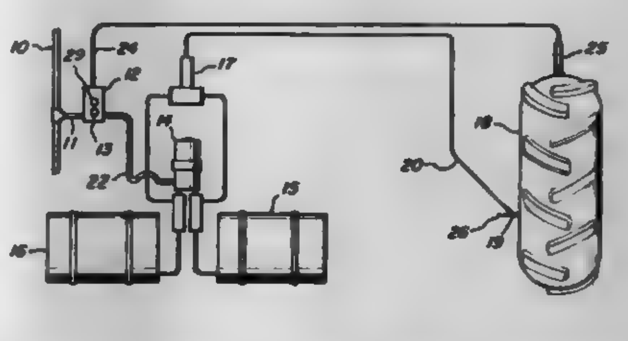
3,982,569
TIRE FILLING APPARATUS AND METHOD

Paul W. Gleason, Minneapolis, and Kenneth E. Lehrke, Osseo, both of Minn., assignors to Graco Inc., Minneapolis, Minn.

Filed June 26, 1975, Ser. No. 590,596

Int. Cl.² B65B *3/04*

U.S. Cl. 141—5 **13 Claims**



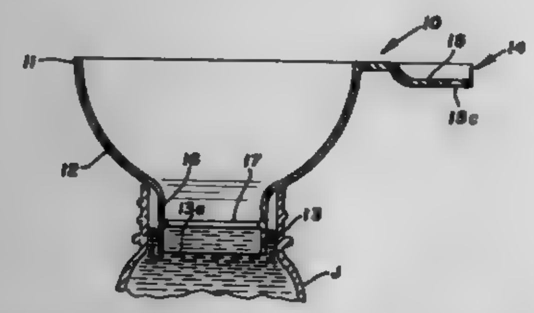
8. A method of filling a tire with a fluid by introducing the fluid under pressure through the tire air valve stem, comprising the steps of:

- a. positioning the tire substantially vertically with the air valve stem near the bottom;
- b. inserting a hollow needle into the tire diametrically opposite the air valve stem;
- c. pumping fluid into the tire;
- d. relieving the air entrapped in the tire and monitoring the flow thereof through the hollow needle; and
- e. stopping the further pumping of fluid into the tire due to the flow of entrapped air ceasing.

3,982,570
JAR FILLING FUNNEL WITH LEVEL INDICIA

Donald R. Devoe, Edina, Minn., assignor to Leisure Technology, Inc., Savage, Minn.

Filed July 2, 1975, Ser. No. 592,549
Int. Cl.² B65B *1/30*
U.S. Cl. 141—95 **2 Claims**

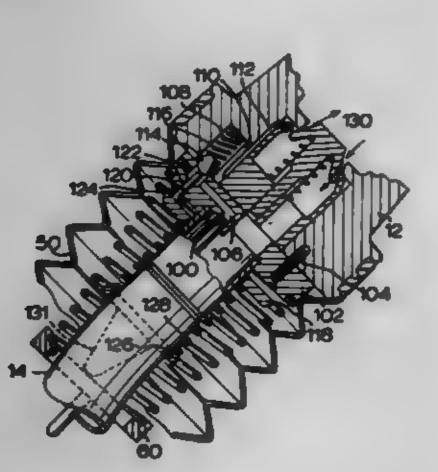


1. A funnel for filling of jars, said funnel including:
- a. a generally tapered body portion having an enlarged receiving end and a delivery end of smaller dimension than the dimension of said receiving end;
- b. said body providing a stop on the exterior of said enlarged receiving end to abut with the mouth of the jar;
- c. said delivery end extending longitudinally from said receiving end, beyond said stop and the end thereof providing the sole means for introducing matter into the jar;
- d. marking indicia being provided interiorally of said delivery end, being positioned between the end thereof and said stop and including at least one inwardly directed element visable from said receiving end whereby the filled level of the jar may be visually determined.

3,982,571
VAPOR RECOVERY NOZZLE WITH MECHANICAL FLOW INTERLOCK

David T. Fenton, Madison, Ohio, and Leonard W. Swain, London, Canada, assignors to Emco Wheaton Inc., Conneaut, Ohio

Filed May 16, 1975, Ser. No. 578,044
Int. Cl.² B65B *39/04*
U.S. Cl. 141—225 **1 Claim**

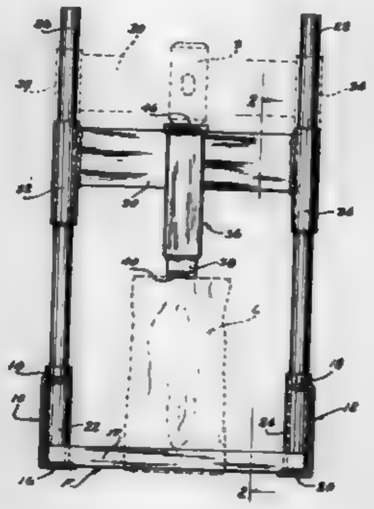


1. In a dispenser nozzle having, a main body portion, a filling tube projecting from one end of said main body portion, and a liquid flow passage extending through said main body and said filling tube, the filling tube being adapted to be located within the open end of a neck of a fuel storage tank of a vehicle or the like, a control valve mechanism for controlling the flow of liquid through said liquid flow passage, said mechanism including a valve operating mechanism and latching means for releasably engaging said valve operating mechanism to render said valve operating mechanism operative when engaged by said latching mechanism and inoperative when released by said latching mechanism, a vacuum chamber in said main body, a pressure sensitive diaphragm in the vacuum chamber, means connecting the diaphragm to the latching means for moving the latching means between its operative and inoperative positions, vacuum passage means communicating between the vacuum chamber and a vacuum generating source within the body which is operative in response to the flow of fluid therethrough and a vent passage having one end opening into the vacuum chamber, the other end of the vent passage opening adjacent the end of the filling tube whereby the vacuum chamber may be vented by way of the vent passage to permit the latching means to be retained in a position in which the valve operating mechanism is operative, vapour recovery passage means formed in said main body, an extensible vapour recovery shroud mounted on said main body and having one end communicating with the vapour recovery passage means of said main body and the other end urged towards the discharge end of the filling tube, the shroud extending substantially coaxially with respect to the filling tube and having a tight seal collar at said other end thereof for engagement with the end of the filling pipe of the gas tank in use to direct vapour expelled from the tank during filling to the vapour recovery passage by way of the shroud, the improvement of;
- i. a normally closed check valve mounted in the main body and having a valve member in said vent passage for opening and closing said vent passage to release said latching means when the vent passage is closed thereby,
- ii. resilient valve operating is disposed between said shroud and said filling tube and extending from said valve member to said tight seal collar for moving said valve member to said open position when said tight seal collar is moved a predetermined distance towards said body to form a seal with the end of the filling pipe of the gas tank or the like.

3,982,572
MANUAL LOG SPLITTER

Russell D. Kortendick, 4230 Woodview Lane, Racine, Wis. 53405

Filed Oct. 31, 1975, Ser. No. 627,758
Int. Cl.² A47J *49/02;* **B66F** *1/00*
U.S. Cl. 144—193 D **2 Claims**

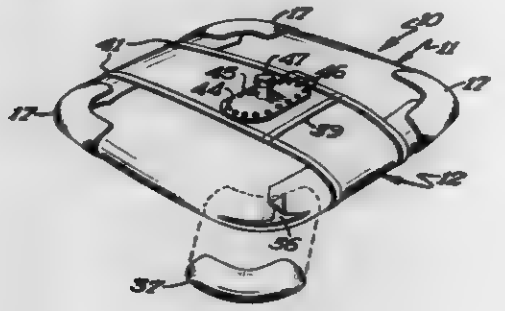


1. A means of splitting a log, said log positioned in a substantially upright position, said means comprising a frame surrounding said log, a substantially-upright guide means supported by said frame, a wedge-support beam freely slidable vertically on said guide means, a vertically-directed wedge integral with said support beam, said wedge terminating upwardly in an anvil portion, said wedge to be positioned in contact with said log, said log being split by striking said anvil portion with a sledge.

3,982,573
ELASTIC STORAGE TANK AND METHOD FOR MAKING THE SAME

Walter C. Jones, Armstrong, Iowa, assigner to Rubber Dynamics Corporation, Armstrong, Iowa

Division of Ser. No. 478,738, June 12, 1974, Pat. No. 3,919,030. This application July 10, 1975, Ser. No. 594,692
Int. Cl.² A45C *11/00*
U.S. Cl. 150—.5 **1 Claim**



1. An elastic storage tank for fluid or fluid-like material comprising;

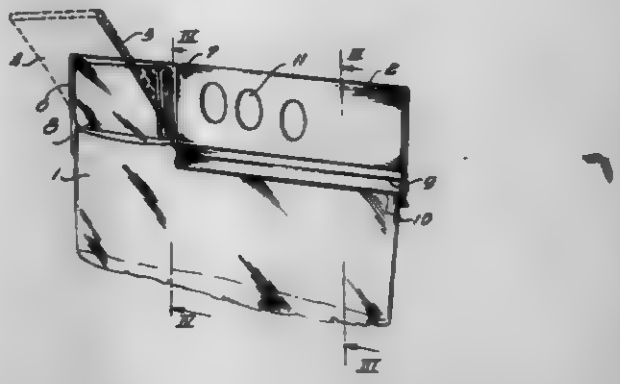
a pair of substantially identical end tank sections, each being formed from a single blank of a fiber-reinforced elastomer, each end tank section including upper and lower wall portions, each being defined by a pair of panels formed by folding the blank along a longitudinal fold line, each end tank section including side wall portions extending between and being joined with said upper and lower wall portions, said side wall portions being defined by elongate end panels which are formed by folding one of the upper or lower wall-defining panels along transverse fold lines adjacent opposite ends of said last-mentioned wall-defining panel, each side wall portion having a triangular flap, and the other of said upper and lower wall portions having a pair of generally triangular shaped flaps, each projecting therefrom and overlapping and being sealingly secured to one of said flaps on a side wall portion, said one upper or lower wall portions having arcuate edge portions, each located between a flap on a side wall portion and a flap on the other upper or lower wall portion, a pair of formed arcuate attachment members, each being sealingly secured to the lapped flaps on a side wall portion and on the other of said upper or lower wall portions, and to an arcuate edge portion of said one of the upper or lower wall portions, and means sealingly securing the end tank sections together.

3,982,574
FLEXIBLE PORTABLE DISPENSING CONTAINER

Rodolfo Edmundo Bianchi, and Olga Beatriz Ueltschi De Bianchi, both of 233 Sobremonte Street, San Rafael (Mendoza), Argentina

Filed May 7, 1975, Ser. No. 575,235
Int. Cl.² B65D *31/14*
U.S. Cl. 150—9 **1 Claim**

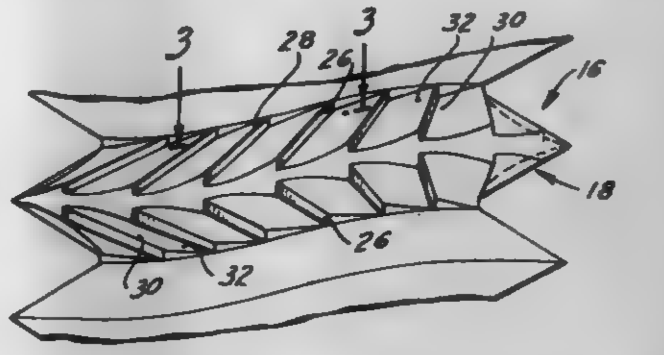
1. Flexible portable dispensing container having a resealable closure, said container comprising an L-shaped bag made from tubular extruded thermoplastic material having transverse heat seal weldings defining the bottom of the bag and the upper portion of the horizontal leg of the L while the sides of the bag are defined by the folds defining the sides of the tubular material and a vertical heat seal welding on the inner side of the vertical leg at the L to form a tube defined by the vertical leg of the L and an insert, said insert comprising a folded foil of a thermoplastic film to form two plies being heat sealed at lower edges to the back of said bag below the upper portion of the horizontal leg of the L to provide an extension in the direction of the tube length, said insert having a cut out of the front ply of a width substantially equal to the width of said tube, said insert having vertical seal weldings on either side of the vertical leg of the L so that a pocket is formed by said two weldings parallel to the tube edges, the back ply of said insert being welded to the back of the tube.



3,982,575
THREAD FORMING SELF-LOCKING SCREW

Raymond Ollis, Jr., Oakville, Canada, and William J. Thomas, Glenside, Pa., assignors to Standard Pressed Steel Co., Jenkintown, Pa.

Filed Dec. 23, 1974, Ser. No. 535,393
Int. Cl.² F16B *39/30*
U.S. Cl. 151—22 **19 Claims**



1. A thread forming fastener for forming generally complementary threads in a workpiece comprising a shank having at least a portion of its length provided with an external thread defined by a pair of thread flanks, at least a portion of said external thread having an irregular surface configuration formed on both of its flanks, said irregular surface configuration comprising a plurality of serrations in the form of teeth when viewed along a cylinder concentric with the longitudinal axis of said fastener, said teeth extending inwardly from adjacent the crest of said thread portion, between the flanks thereof, to a termination inwardly of the pitch diameter thereof, each of said teeth comprising a ramp inclined downwardly in the direction of rotation for engaging the fastener in the workpiece extending from a root portion at the forward end of said ramp with respect to said direction of rotation to a crest portion at the rearward end thereof with an abrupt wall defining a buttress extending from said crest portion to the root portion of an adjacent tooth, and wherein said thread portion has an irregular peripheral configuration comprising extension portions of each of said teeth extending radially beyond the original diameter of the unserrated thread portion crest, each of said extension portions having a maximum diameter adjacent said root portion of their associated teeth; whereby an interrupted contact is provided between said crest

portion of each of said teeth and the workpiece as the fastener is turned into the workpiece to produce a complementary thread therein with a minimum of drag torque.

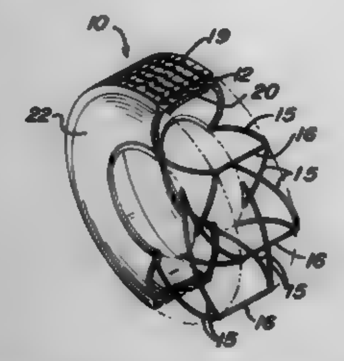
3,982,576
TIRE STRUCTURE AND METHOD

Henry Replin, Denver, Colo., assignor to Vector Wheel Corporation, Denver, Colo.

Filed Aug. 9, 1974, Ser. No. 495,936

Int. Cl.^{2} B60C *9/02*

U.S. Cl. 152—155 **7 Claims**



1. A pneumatic tire structure, comprising: a tread, sidewalls extending from the tread and defining an inner annular opening, an inner annular member, an outer annular member positioned radially outwardly of and symmetrically with the inner annular member, and a plurality of elongated connecting members extending through and within the sidewalls but movable independently thereof to connect the inner annular member to the outer annular member for transfer of forces through tension of the elongated connecting members and, accordingly, between the inner annular member and the outer annular member.

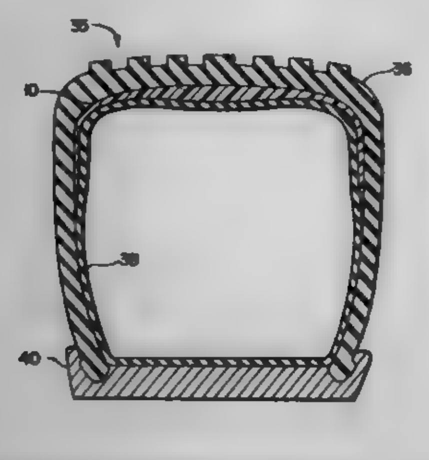
3,982,577
TUBE GUARD

Frank M. Scimeca, Brick Town, N.J., assignor to Mr. Tuffy Co., Point Pleasant Beach, N.J.

Continuation of Ser. No. 351,547, April 16, 1973, abandoned. This application Apr. 28, 1975, Ser. No. 571,939

Int. Cl.^{2} B60C *21/04*

U.S. Cl. 152—204 **6 Claims**



1. A tube guard for protecting air filled inner tubes of relatively narrow tires of a bicycle, said tube guard being located when in use between the inner tube and an outer rubber tire casing and comprising a singular annular guard member made entirely from a non-compressible, flexible solid plastic material having a high resistance to penetration, said guard member having a generally U-shaped arcuate cross-section and including a central section integral with two spaced apart, generally parallel peripheral sections which extend radially inward from said central section, the cross-sectional thickness of said central section being greatest at the midportion thereof and being least at the end portions thereof, the cross-sectional thickness of said guard member being less than the cross-sectional thickness of the tire casing, and wherein the cross-sectional thickness of said peripheral sections gradually tapers from the junction with said central section to the end thereof such that said peripheral sections have the smallest cross-section at the end portions thereof, said guard member further including an outer surface which, when in use, abuts the inner wall of the tire casing and a smooth inner surface which, when in use, abuts the outer surface of the inner tube.

3,982,578
PNEUMATIC TIRES

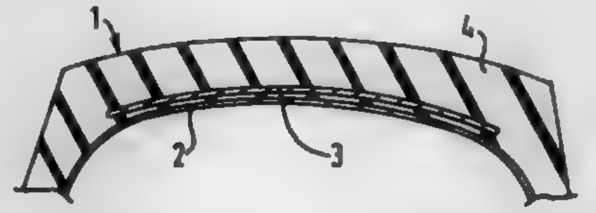
Hiram Leslie Wild, Sutton Coldfield, England, assignor to Dunlop Limited, London, England

Filed June 18, 1974, Ser. No. 480,387

Claims priority, application United Kingdom, June 26, 1973, 30256/73

Int. Cl.^{2} B60C *9/18*

U.S. Cl. 152—358 **26 Claims**



1. A pneumatic tire having a tread portion and sidewall portions and comprising a reinforcing layer in at least one of the tread portion and the sidewall portions, said reinforcing layer including at least one metal wire felt, the felt comprising a mat of interpenetrated substantially aligned crimped continuous untensioned metal wires intermingled in three dimensions.

3,982,579
PNEUMATIC TIRE

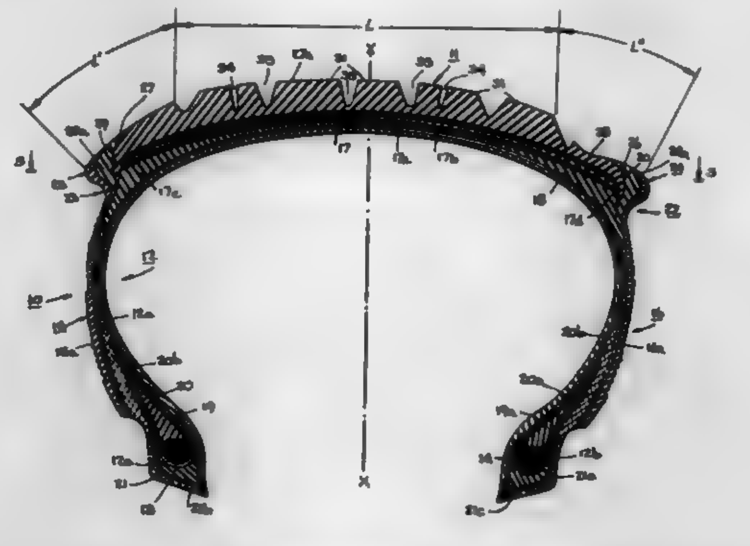
Henri J. Mirtain, Compiegne, France, assignor to Uniroyal S.A., France

Filed July 18, 1974, Ser. No. 489,686

Claims priority, application France, July 27, 1973, 73.27733

Int. Cl.^{2} B60C *9/18, 11/04*

U.S. Cl. 152—361 R **19 Claims**



1. A pneumatic tire comprising a cord reinforced carcass; a tread overlying the crown region of said carcass; a reinforcing breaker disposed beneath said tread in the crown region of said carcass; and first and second axially directed annular protuberances formed at corresponding first and second shoulders of said tire, one of said protuberances having a radially outer surface which is radially recessed from the profile of the tread, the radius of the cross-sectional arc of curvature of said reinforcing breaker being greater than the radius of the cross-sectional arc of curvature, collectively, of

said tread and said first and second protuberances when the tire is in the inflated unloaded condition, and the lateral side edges of said reinforcing breaker extending into and terminating adjacent the outer edges of said protuberances.

3,982,580
PNEUMATIC TIRE FOR CONSTRUCTION VEHICLES

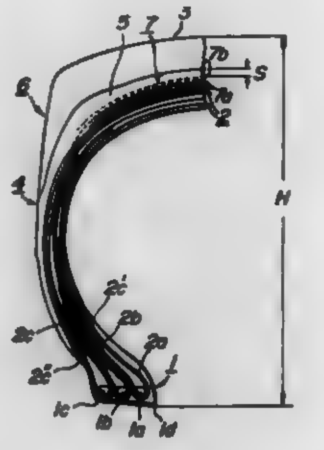
Osamu Inoue; Masaru Abe, both of Sayama, and Toshiro Tezuka, Higashi-Murayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Oct. 18, 1974, Ser. No. 515,953

Claims priority, application Japan, Oct. 23, 1973, 48-118466; Oct. 23, 1973, 48-122310[U]

Int. Cl.^{2} B60C *9/18, 9/04*

U.S. Cl. 152—361 R **10 Claims**



1. A pneumatic tire for construction vehicles comprising:
- a plurality of carcass ply layers having a bias construction of textile cords, said textile cords being turned around a bead bundle located at one of a pair of beads,
- a breaker having at least one rubberized steel cord layer superimposed over said plurality of carcass ply layers and extending symmetrically with respect to the peripheral center line of the tire, and
- a tread rubber layer superimposed over said breaker,
- said breaker rubberized steel cords having a gap ratio δ defined by the equation:

$$\delta = \frac{D-d}{D} = 0.67 \text{ to } 0.83$$

where D is a distance between centers of two adjacent cords and *d* is a diameter of the cord.

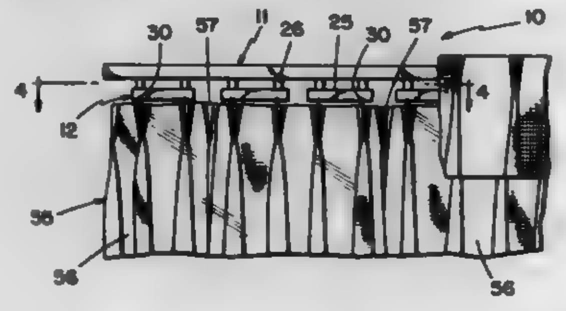
3,982,581
DRAPERY HANGER AND MANIPULATOR

Harold L. Madsen, 14615 S. Clark St., Dolton, Ill. 60419

Filed Dec. 18, 1974, Ser. No. 533,872

Int. Cl.^{2} A47H *5/00, 13/14*

U.S. Cl. 160—340 **6 Claims**



1. A drapery hanger and manipulator for supportably hanging and manipulating one or more drapery curtain panels comprising a frame adapted to be positioned above an area to be covered by a drapery panel, a drapery curtain holder means movably mounted on said frame and adapted to hold a drapery curtain panel in a vertically suspended fashion at an angle and in a horizontally adjacent position with respect to said area to be covered by the drapery curtain, said holder means having a drapery curtain holder extending from said frame and having drapery curtain retaining means on two adjacent angularly disposed sides thereof to hold corresponding adjacent portions of the drapery curtain panels at an angle therebetween, and a holder manipulating means interconnecting said frame and said holder means and adapted to move said holder means on said frame for selectively adjusting said angle of said drapery curtain and said position of said drapery curtain panel with respect to said frame, whereby the drapery curtain panel and the angularly disposed portions thereof are independently angularly and horizontally positionable with respect to the area to be covered thereby.

3,982,582
METHOD AND APPARATUS FOR CASTING METALS INTO A CONTINUOUS CASTING MOLD

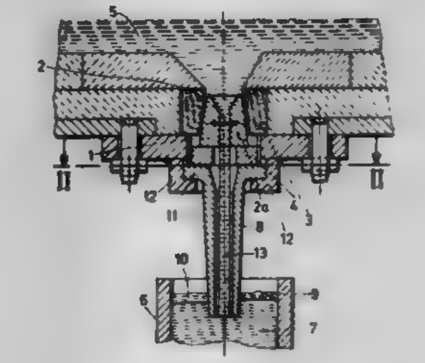
Eberhard Knorr, Amberg; Thomas Ludwig Grünwald, Sulzbach-Rosenberg, and Arno Oswald, Prinzing, Cham, all of Germany, assignors to Concast AG, Zurich, Switzerland

Filed Dec. 2, 1974, Ser. No. 528,721

Claims priority, application Germany, Dec. 8, 1973, 2361344

Int. Cl.^{2} B22D *11/10*

U.S. Cl. 164—136 **14 Claims**



1. A method of pouring metal into a continuous casting mold, comprising the steps of: casting metal from a ladle into a tundish having at least one non-regulatable bottom outlet and then into at least one mold by means of a pouring tube, after the start of casting controlling the casting jet emanating from the bottom outlet, and when necessary correcting the formation of the casting jet to a desired casting jet formation, and thereafter bringing the pouring tube through the casting jet into the casting position.

3,982,583
OPTIMIZED AIR CONDITIONING SYSTEM

Gideon Shavit, Highland Park, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

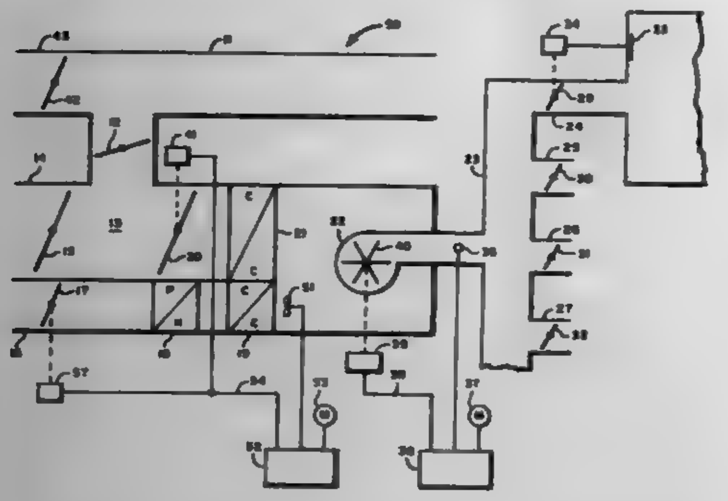
Filed Dec. 30, 1974, Ser. No. 537,287

Int. Cl.^{2} F24F *11/02*

U.S. Cl. 165—16 **22 Claims**

1. An air flow control apparatus for use in an air conditioning system having a source of minimum outdoor air, a source of variable outdoor air, a source of return air, and discharge means for discharging a combination of said outdoor air, variable outdoor air and/or return air to at least one zone, said control apparatus comprising:
- damper means for regulating the minimum amount of outdoor air admitted to said system;
- air property sensing means for providing an output signal dependent upon the air property in said system; and,
- control means responsive to said output signal and connected to said damper means for operating said damper

means for insuring that said minimum outdoor air is maintained at a substantially predetermined level regardless of the amount of air discharged by said discharge means.



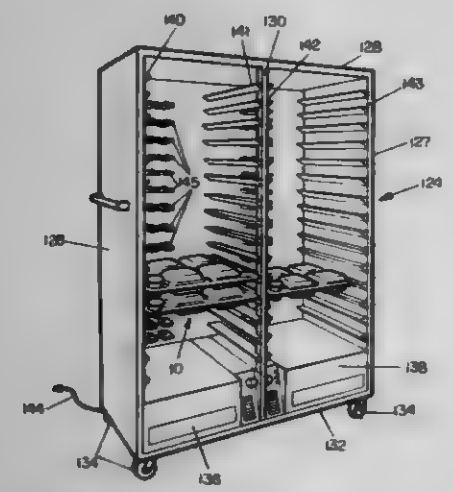
3,982,584
GAS TEMPERATURE AND FLOW CONTROL SYSTEM

Louis Spanoudis, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 23, 1975, Ser. No. 571,037

Int. Cl.^{2} F25B *29/00*

U.S. Cl. 165—42 11 Claims



1. A temperature control system for the contents of the compartments of a two-compartment tray which comprises, in combination:

means for supporting said trays in a uniform vertical array;

an enclosure for said array of trays;

refrigeration means for cooling a flow of gas passing therethrough to present a flow of refrigerated gas;

heating means for heating a flow of gas passing therethrough to present a flow of heated gas;

a flow distributor, mounted in said enclosure, having a first inlet manifold and a first outlet manifold connected to said refrigeration means and a second inlet manifold and a second outlet manifold;

a plurality of nozzles, in communication with said first and second inlet manifolds and said first and second outlet manifolds, for engagement with the compartments of said trays, said nozzles being positioned to allow one nozzle in communication with said first inlet manifold, and one nozzle in communication with said first outlet manifold to engage one compartment of each of said trays and one nozzle in communication with said second inlet manifold and one nozzle in communication with said second outlet manifold to engage the second compartment of each of said trays; and

flow control means, connected to said flow distributor, for selectively connecting either said refrigeration means or said heating means to said second inlet and outlet manifolds.

3,982,585
HEAT EXCHANGE APPARATUS

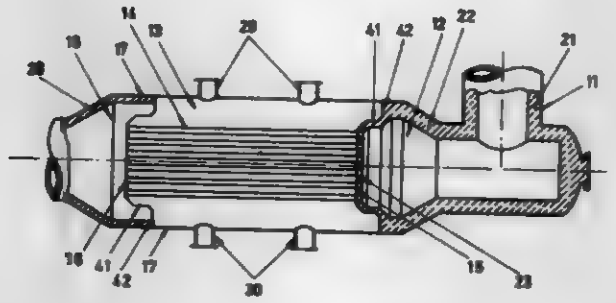
Jorgen Gribsvad, Espergaerde, Denmark, assignor to Haldor Topsoe A/S, Soborg, Denmark

Filed Dec. 2, 1974, Ser. No. 528,972

Claims priority, application United Kingdom, Nov. 19, 1974, 56843/73

Int. Cl.^{2} F28F *5/00, 9/12*

U.S. Cl. 165—83 2 Claims



1. An improved apparatus for indirect exchange of heat between two fluid streams, said apparatus comprising a cylindrical pressure shell enclosing a bundle of straight and parallel exchange tubes through which one of said fluid stream is circulated, an inlet tube sheet to which a first end of each exchange tube is permanently attached, and an outlet tube sheet to which a remaining end of each exchange tube is permanently attached; said inlet and outlet tube sheets defining inlet and outlet chambers at opposed ends of said pressure shell, wherein the improvement comprises a flexible joint for carrying the load of said bundle of tubes and for securing said inlet tube sheet to said pressure shell, said flexible joint comprising a flexible cylindrical skirt element having opposed first and second peripheral edges, said first edge continuously and gradually merging with said inlet tube sheet to form a continuous and integral flexible joint therebetween, said cylindrical skirt element being in spaced relationship with the inner surface of said pressure shell; and

a flexible annular sheet extending between an interior surface of said pressure shell and said second edge of said skirt element furthest from said inlet tube sheet, a radially outermost periphery of said annular sheet continuously attached to said interior surface of said pressure shell, a radially innermost periphery of said annular sheet gradually merging with said skirt element second edge to form another continuous and integral flexible joint;

whereby at least one of said skirt element and said annular sheet joints flex upon thermal expansion of said exchange tubes.

3,982,586
METHOD AND APPARATUS FOR CONTROLLING SURFACE TEMPERATURE

Theodore A. Ruble, Fort Worth, Tex., assignor to Sid Richardson Carbon & Gasoline Co., Fort Worth, Tex.

Filed June 5, 1975, Ser. No. 584,190

Int. Cl.^{2} F28F *27/00*

U.S. Cl. 165—107 7 Claims

1. An apparatus for automatically controlling the temperature of a body while removing heat therefrom comprising:

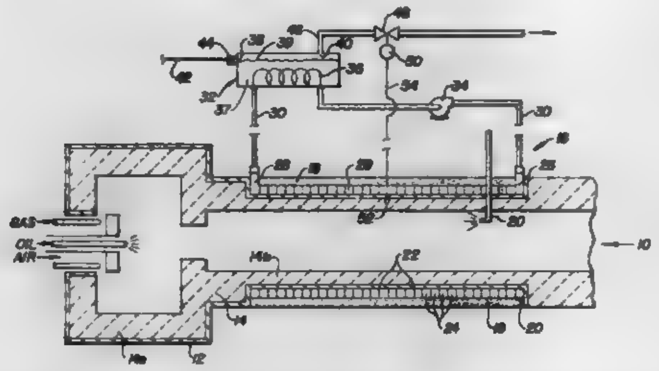
a first heat exchanger in contact with the body being cooled;

a second heat exchanger spaced from said first heat exchanger;

conduit means interconnecting said first and second heat exchangers for circulating therebetween a first heat exchange liquid for removing heat from said body;

a second heat exchange liquid in said second heat exchanger;

said second heat exchange liquid having a lower boiling point than said first heat exchange liquid whereby the heat transferred from said first heat exchange liquid to said second heat exchange liquid will cause said second heat exchange liquid to boil in said second heat exchanger to produce vapor of said second heat exchange liquid;



pressure control means for controlling the pressure of said vapor in said second heat exchanger;

temperature sensing means for sensing the temperature of said body being cooled;

operator means in operative connection with said pressure control means and said temperature sensing means for adjusting said pressure control means to decrease the pressure of said vapor in said second heat exchanger in response to an increase in the temperature of said body being cooled.

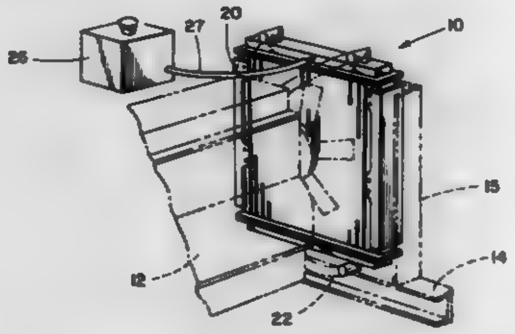
3,982,587
VEHICULAR RADIATOR ASSEMBLY

Vernon N. Tramontini, Indianapolis, Ind., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Nov. 20, 1974, Ser. No. 525,355

Int. Cl.^{2} F28F *9/00*

U.S. Cl. 165—149 2 Claims



1. A radiator assembly, comprising; a core assembly including a plurality of rows of fluid carrying tubes, a plurality of rows of fins separating said fluid carrying tubes and including outer fin rows at each side of the core assembly, said outer fin rows having generally vertical mounting surfaces, side frame channel members engaging and connected to the mounting surfaces at each side of the core assembly frame elements connected to and supporting said frame channel members, header plates fixed to the upper and lower ends of the fluid carrying tubes, said header plates being completely unconnected to, out of contact with, and vertically spaced from said side channel frame members to permit free relative expansion and contraction movement therebetween, an upper tank fixed to said upper header plate, said upper tank being unconnected to the side frame members so that the upper tank is supported by said core assembly, an inlet fitting communicating with said upper tank, a lower tank fixed to said lower header plate, said lower tank being unconnected to said side frame members so that the lower tank is supported by said core assembly, and an outlet fitting communicating with said lower tank.

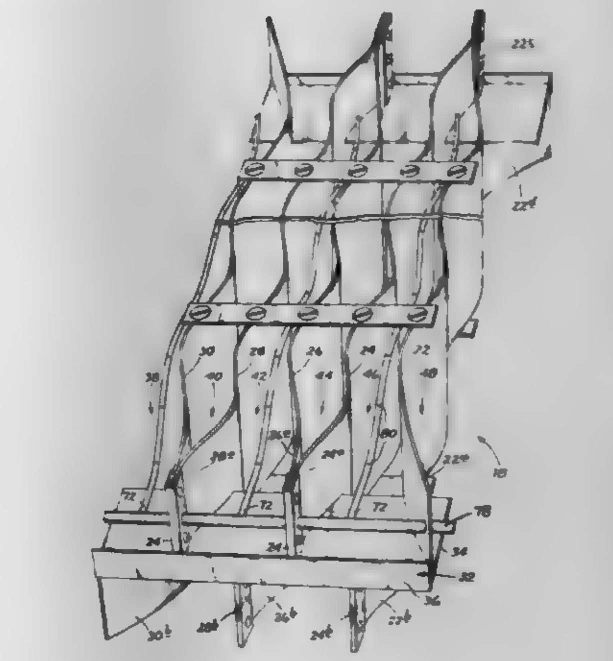
3,982,588
GREASE-COLLECTING HEAT EXCHANGER INSTALLATION

William J. Darm, 5815 SW. Tucker, Beaverton, Oreg. 97005

Division of Ser. No. 252,909, May 12, 1972, Pat. No. 3,827,343, and a continuation-in-part of Ser. No. 468,659, May 10, 1974. This application May 28, 1974, Ser. No. 473,512

Int. Cl.^{2} F28D *9/02;* F28F *3/00;* F28G *1/16*

U.S. Cl. 165—165 11 Claims



1. A heat exchanger apparatus comprising:

a heat exchanger having first passage means and second passage means within said exchanger which are disposed in heat-exchanging relationship on opposite sides of heat exchanger plates, said plates having their ends split into two end portions which are joined to different exchanger plates on opposite sides thereof to form said first and second passage means;

means for transmitting air streams of different temperatures through said first and second passage means to cause a heat exchange between said air streams; and

liquid dispensing means for dispensing liquid into one of said first and second passage means.

3,982,589
CLEANING AND PUMPING APPARATUS FOR OIL WELL PRODUCTION

Phillip M. Wilson, Downey; John W. Erickson, Huntington Beach; Charles C. Nelson, Long Beach, and Vitolis Budrys, La Mirada, all of Calif., assignors to Kobe, Inc., Huntington Park, Calif.

Filed May 16, 1975, Ser. No. 578,358

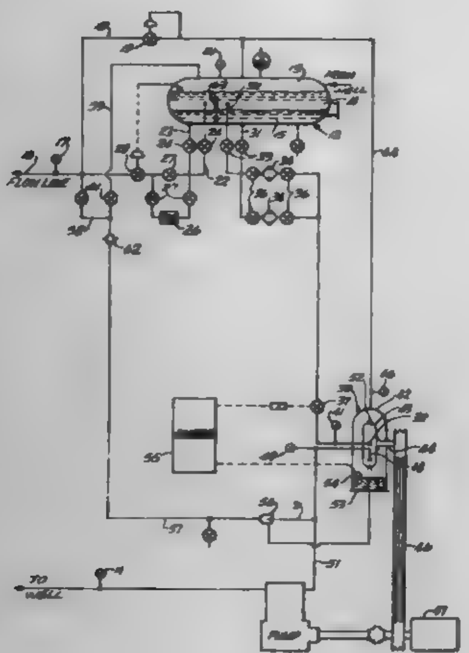
Int. Cl.^{2} E21B *43/00*

U.S. Cl. 166—53 15 Claims

8. In a power fluid pumping and cleaning system for hydraulic pumping of an oil well including a high pressure pump connectable to a well head for delivering high pressure power liquid thereto; and a phase separation vessel for receiving exhausted power liquid and produced well fluid, separating water, oil and gas and delivering fluids to a production flow line; an improved cleaning and pumping system for withdrawing power liquid from the phase separation vessel removing particles from the power liquid and delivering cleaned power liquid under pressure to the suction inlet of the high pressure pump, wherein the improvement comprises:

a combined centrifugal cleaner and pitot pump having a stationary housing, a rotatable cleaning and pumping chamber in the housing, a liquid inlet to the chamber, a stationary pitot tube outlet in the chamber for withdrawing pressurized clean power liquid, and means for discharging dirty liquid from the periphery of the chamber into the housing;

means for connecting the liquid inlet to the phase separation vessel;



means for delivering power fluid from the pitot tube outlet to the suction inlet of the high pressure pump; and

means for pumping dirty liquid from the housing to a production flow line.

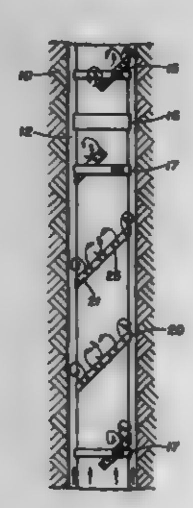
3,982,590
WELL BORE CLEANING DEVICE

Donald W. Harriman, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Aug. 4, 1975, Ser. No. 601,819

Int. Cl.² E21B *33/14, 37/00*

U.S. Cl. 166—173 10 Claims



1. An apparatus for use in an oil well for creating turbulence in a slurry flowing in an annulus between an oil well casing and the wall of the well bore, comprising:

a strap for being helically wound around and attached to the exterior of said well casing; and,

a plurality of cylindrical means fastened to said strap for extending radially outwardly and sized to extend partially into the annulus without making contact with the wall of the well bore when the casing is centered therein,

said plurality of cylindrical means being spaced on said strap to provide a random pattern of said cylindrical means on the exterior of said well casing whereby cleaning of the wall of the well bore is effected by vortex trails induced in said slurry by said randomly positioned cylindrical means.

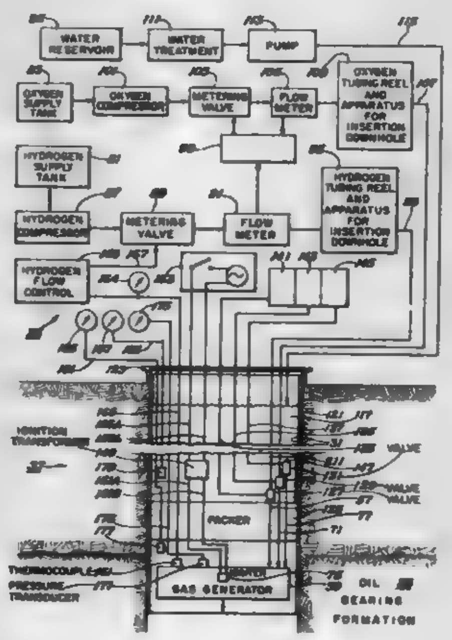
3,982,591
DOWNHOLE RECOVERY SYSTEM

Joseph T. Hamrick, Roanoke, and Leslie C. Rose, Rocky Mount, both of Va., assignors to World Energy Systems, Fort Worth, Tex.

Filed Dec. 20, 1974, Ser. No. 534,778

Int. Cl.² E21B *43/24*

U.S. Cl. 166—302 52 Claims



1. A system for use for recovering hydrocarbons or other materials from undergound formations penetrated by a borehole comprising:

a gas generator located in the borehole at or near the level of said formations,

said gas generator comprising:

a housing forming a chamber and having an upper inlet end for receiving fuel and an oxidizing fluid,

said chamber defining a combustion zone,

an igniter for igniting combustible gases in said combustion zone,

a restricted lower outlet for passage of heated gases, and

a cooling fluid annulus surrounding said chamber, said annulus being in fluid communication with said chamber,

means, including conduit means extending from the surface, for supplying fuel from the surface to said inlet end of said gas generator located in said borehole,

means, including conduit means extending from the surface, for supplying an oxidizing fluid from the surface to said inlet end of said gas generator located in said borehole, and

valve means remotely controllable from the surface and located in said borehole near said gas generator for separately controlling the flow of fuel and oxidizing fluid to said gas generator,

said valve means when located in the borehole near said gas generator being inaccessible without withdrawing said gas generator from the borehole.

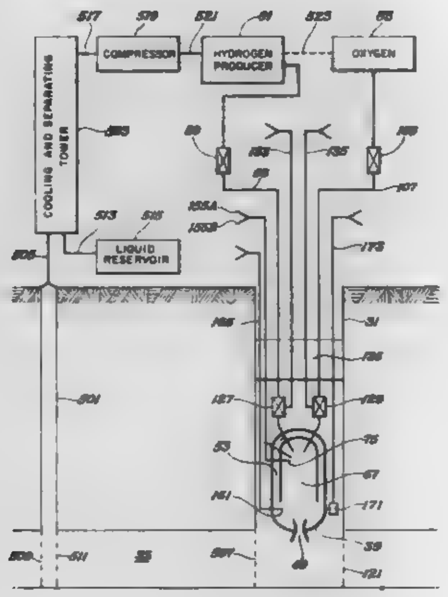
3,982,592
IN SITU HYDROGENATION OF HYDROCARBONS IN UNDERGROUND FORMATIONS

Joseph T. Hamrick, Roanoke, and Leslie C. Rose, Rocky Mount, both of Va., assignors to World Energy Systems, Fort Worth, Tex.

Continuation-in-part of Ser. No. 534,778, Dec. 20, 1974, abandoned. This application Sept. 8, 1975, Ser. No. 611,138

Int. Cl.² E21B *43/24*

U.S. Cl. 166—302 6 Claims



1. A process of hydrogenating hydrocarbons in underground formations penetrated by a borehole and wherein a gas generator is located in the borehole at or near the level of said formations, said gas generator comprising:

a housing forming a chamber and having an upper inlet end for receiving fuel and an oxidizing fluid,

said chamber defining a combustion zone,

an igniter for igniting combustible gases in said combustion zone,

a restricted lower outlet for the passage of heated gases, and

an annulus surrounding said chamber and having passages leading to said chamber,

said process comprising the steps of:

flowing through said borehole from the surface to said gas generator, by way of separate passages, hydrogen and oxygen to form a hydrogen-rich combustible mixture in said combustion zone,

igniting and burning the combustible mixture in said combustion zone, and

controlling the flow of hydrogen and oxygen to said gas generator to maintain the temperature of the gases and fluids flowing through said outlet at a level sufficient to cause hydrogenation of the hydrocarbons in said formations.

6. A system for use for hydrogenating hydrocarbons in underground formations penetrated by a borehole, comprising:

a gas generator located in the borehole at or near the level of said formations,

said gas generator comprising:

a housing forming a chamber and having an upper inlet end for receiving fuel and an oxidizing fluid,

said chamber defining a combustion zone,

an igniter for igniting combustible gases in said combustion zone,

a restricted lower outlet for passage of heated gases, and

a cooling fluid annulus surrounding said chamber and having passages leading to said chamber,

a source of hydrogen located at the surface,

hydrogen conduit means coupled to said source of hydrogen and extending from the surface to said gas generator for supplying hydrogen from the surface to said inlet end of said gas generator located in said borehole,

a source of oxygen located at the surface,

oxygen conduit means coupled to said source of oxygen and extending from the surface to said gas generator for supplying oxygen from the surface to said inlet end of said gas generator located in said borehole,

means coupled to said gas generator for diverting a portion of said hydrogen from said hydrogen conduit means into said annulus for cooling said gas generator and gases of combustion and for providing hot hydrogen, and

means for controlling the flow of hydrogen and oxygen to said gas generator to form a hydrogen-rich combustible mixture in said combustion zone and to maintain the temperature of the gases and fluids flowing through said outlet at a level sufficient to cause hydrogenation of the hydrocarbons in said formations.

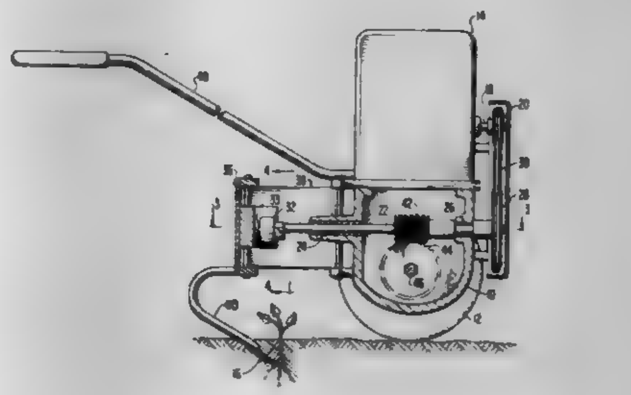
3,982,593
POWER CULTIVATOR WITH RECIPROCATING BLADE

Paul A. Grobey, R.F.D. 1, Box 586, Springfield, Vt. 05156

Continuation-in-part of Ser. No. 461,085, April 15, 1974, abandoned. This application Oct. 16, 1974, Ser. No. 515,379

Int. Cl.² A01B *39/10*

U.S. Cl. 172—40 28 Claims



8. A power cultivator comprising:

a. a body;

b. a wheel supporting said body during normal use;

c. a motor mounted on said body;

d. a blade the contour and all the edges of which are well rounded;

e. a shaft driven rotationally by said motor during normal use;

f. an eccentric roll mounted on said shaft;

g. a follower in contact with and responsive to said eccentric roll;

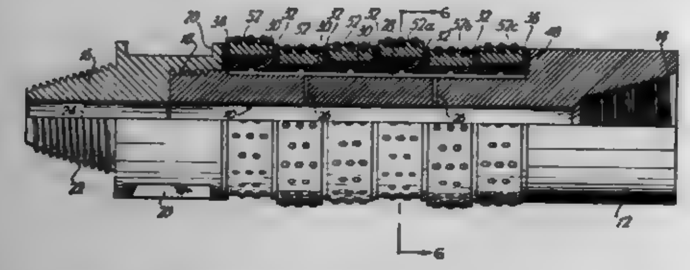
h. means for connecting said follower to said blade such that, when the cultivator is being moved over a ground surface during normal use, the working surface of said blade is located beneath the surface of the ground in a plane generally parallel to the surface of the ground and generally perpendicular to the motion of the cultivator; and

i. a parallelogram linkage connecting said body to said follower,

whereby, when said motor is functioning and the cultivator is being moved over a ground surface during normal use, the working surface of said blade will reciprocate in a direction generally perpendicular to the motion of the cultivator and in a plane generally parallel to the surface of the ground, thereby loosening the soil and pulling out weeds without cutting off their roots.

3,982,594
ECCENTRIC STABILIZER

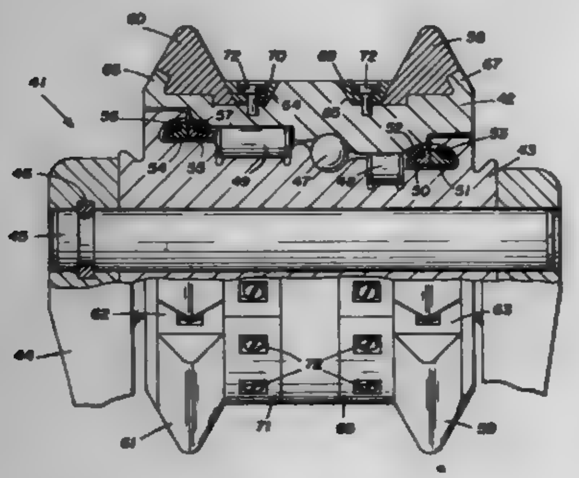
Derek B. Berthiaume, Calgary, Canada, assignor to Bralorne Resources Limited, Calgary, Canada
Filed Sept. 10, 1975, Ser. No. 612,162
Claims priority, application Canada, June 15, 1975, 231,514
Int. Cl.^{2} E21B *17/10*
U.S. Cl. 75—337 **2 Claims**



1. A roller stabilizer comprising:
a cylindrical shaft;
means at each end of said shaft for connecting the stabilizer to a drill string;
an axial air passageway in said shaft;
a plurality of axially spaced bushings mounted in axially spaced relation on said shaft;
a plurality of thrust washers, each washer separating a bushing from the adjacent bushing;
a plurality of annular roller reamers, each being mounted for rotation on an outer peripheral surface of an associated bushing and having an axial length corresponding to the distance between the adjacent thrust washers; and
a plurality of interconnected bores and grooves in said shaft and in said bushings to carry air from said axial air passageway to the outer peripheral surface of each bushing;
each bushing having an inner circular bore for receiving said shaft, said inner bore being eccentrically positioned relative to said outer peripheral surface, and each bushing being positioned on said shaft so that its major eccentricity is angularly offset from that of others of said bushings.

3,982,595
ROCK BORING CUTTER WITH REPLACEABLE CUTTING ELEMENTS

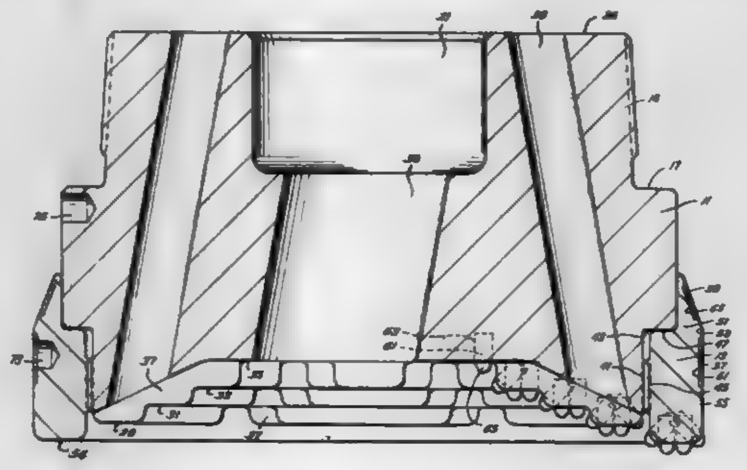
Eugene Gray Ott, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed July 24, 1972, Ser. No. 274,532
Int. Cl. E21b *9/14;* **E21c** *13/01*
U.S. Cl. 175—373 **4 Claims**



1. A cutter for an earth boring system that has a rotary unit which bores into earth formations to form a hole therein, said rotary unit functioning to form circular kerfs in the formation being bored to fracture rock between a proximate pair of said kerfs in a manner that causes fragments of the formation to be separated from the formation being bored, comprising:
a cutting wheel mounted upon said rotary unit for rotary motion to roll along the kerfs being cut;
replaceable cutting means substantially encircling said cutting wheel for contacting said formations and forming a kerf therein, said cutting means consisting of a plurality of cutting elements, each of which partially encircle said cutting wheel;
means for removably affixing said cutting means to said cutting wheel;
said means for removably affixing said cutting means to said cutting wheel including a plurality of locking elements adapted to contact said cutting means and retainer means for affixing said locking elements to said cutting wheel, said locking elements include tapered surfaces that overlap said cutting elements; and
means projecting from said cutting wheel between cutting elements for preventing relative movement between said cutting wheel and cutting elements.

3,982,596
DRILL BIT

Vincent Hugo Vetter, Midland, Tex., assignor to Smith International, Inc., Midland, Tex.
Filed Dec. 30, 1974, Ser. No. 537,438
Int. Cl.^{2} E21C *13/00*
U.S. Cl. 175—410 **14 Claims**

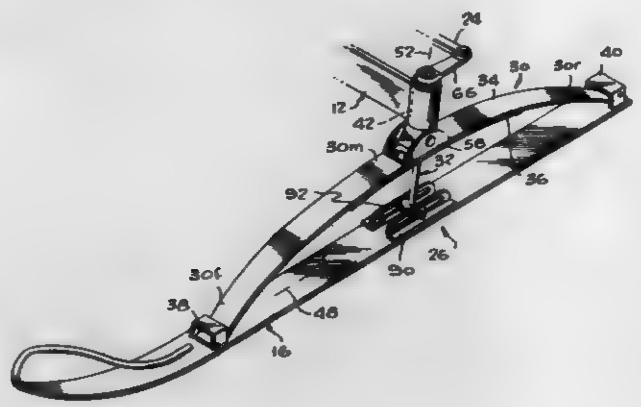


1. A drill bit comprising
a body having boring elements at its lower part and having first releasable connection means for making connection with a drill stem and second releasable connection means for making connection with a gage ring,
a gage ring detachably connected to said body, said ring having boring elements at its lower part and including third releasable connection means for making connection with said bit body via said second connection means,
said boring elements of the gage ring being disposed radially outwardly from said boring elements of the bit body,
the lower part of the bit body whereat the boring elements are disposed being concave and annularly stepped and the lower part of the gage ring whereat the boring elements are disposed providing an outermost annular step axially lower than the other steps, and
flow channels across the steps of the bit body, the gage ring extending transversely across the outer ends of said flow channels.

3,982,597
SNOWMOBILE SKI DAMPENER ARRANGEMENT

Mel Callaway, Riverside, Calif., assignor to Yamaha International Corporation, Buena Park, Calif.
Filed Jan. 10, 1975, Ser. No. 540,094
Int. Cl.^{2} B62M *27/02*
U.S. Cl. 180—5 R **9 Claims**

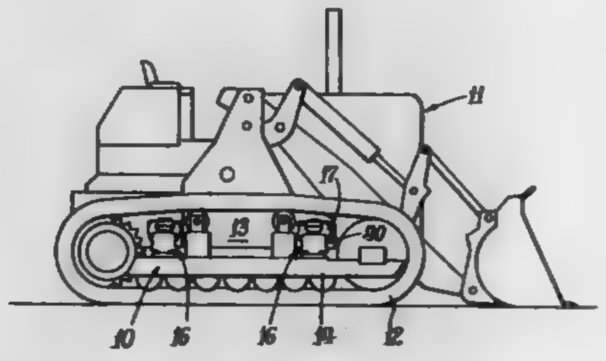
1. In a snowmobile having a frame with a front portion, the improvement comprising:
a horizontally-extending ski;
a leaf spring having forward and rearward ends coupled to locations spaced along the length of said ski, and having a middle portion vertically spaced from said ski;
a shock dampener including a cylinder member and a piston member slidable in said cylinder member, a first of said members coupled to the middle portion of said leaf spring and the second of said members extending downwardly from said first member to a location lying below the level of the middle of said leaf spring and being coupled to said ski;



said shock dampener extending in a primarily vertical direction, with the lower end of said second member lying approximately halfway between said opposite ends of said leaf spring.

3,982,598
MULTIDIRECTIONAL RESILIENT SUSPENSION FOR VEHICLES

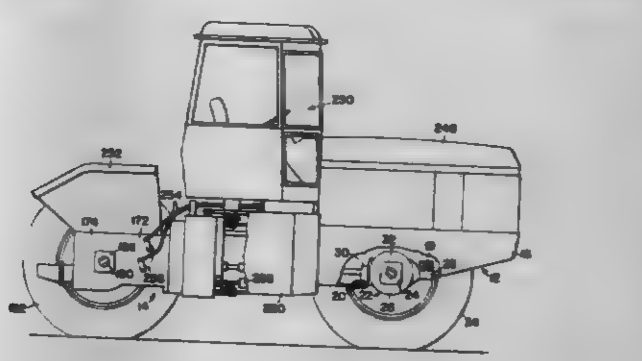
Robert J. Purcell, Washington; David J. Balzer, East Peoria, and Rollin P. Van Zandt, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Division of Ser. No. 438,665, Feb. 1, 1974, Pat. No. 3,923,111. This application Aug. 25, 1975, Ser. No. 607,415
Int. Cl.^{2} B62D *55/00*
U.S. Cl. 180—9.54 **2 Claims**



1. A resilient suspension system for a track-type vehicle having a main frame and a track roller frame including; first plate means secured to said main frame and laterally extending therefrom, second plate means secured to said roller frame, a plurality of plates attached to said first plate means and extending toward said second plate means, a plurality of pedestal means attached to said second plate means and extending toward said first plate means, a plurality of resilient pad means mounted on said pedestal means for engaging said plurality of plates and for cushioning both axial and lateral movements between said pedestal means and said plurality of plates and wherein said resilient pad means include at least one resilient pad member bonded to a metallic plate member and wherein said at least one pad member and metallic plate member are secured to said pedestal means at an angle oblique relative to said second plate means.

3,982,599
TRACTOR HAVING TRANSMISSION-DRIVEN POWER TAKE-OFF

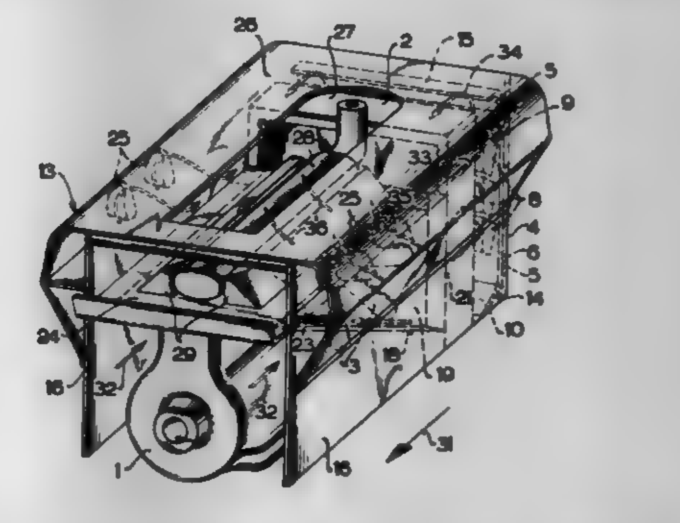
Saul Herscovici, Waterloo, and Lawrence Vernon Anderson, Cedar Falls, both of Iowa, assignors to Deere & Company, Moline, Ill.
Filed Feb. 21, 1975, Ser. No. 551,527
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976
Int. Cl.^{2} B60K *17/28*
U.S. Cl. 180—53 R **8 Claims**



1. A tractor including a wheel supported chassis, an engine supported on the chassis, variable ratio transmission means supported on the chassis and coupling the engine to at least a pair of wheels, operator control means for varying the ratio of the transmission means, a PTO shaft supported on the chassis, and means including clutch means coupling the PTO shaft to the engine, characterized in that the variable ratio transmission means includes a first section having first and second ratio conditions and a second section having a plurality of ratio conditions, the means coupling the PTO shaft to the engine is coupled to the transmission means between the first and second sections, and the tractor further includes means responsive to engagement of the clutch means to override the operator control means and shift the first section to and/or hold the first section in its first ratio condition.

3,982,600
VEHICLE ENGINE HOOD

Jost Gerresheim, Dusseldorf; Alfons Drennhaus, Hulzbuttgen; Hans Breidenbach, Nievenheim-Delrath; Rodolf Mansour, and Christian Pfeil, both of Neuss (Rhine), all of Germany, assignors to International Harvester Company, Chicago, Ill.
Filed July 31, 1975, Ser. No. 600,659
Claims priority, application Germany, Aug. 7, 1974, 2437995
Int. Cl.^{2} B62D *25/10*
U.S. Cl. 180—69 C **10 Claims**



1. In a tractor loader type of vehicle having a chassis, an engine carried on the chassis, an engine cooling system including a fan creating an air flow longitudinally across the engine and blowing it through a heat exchanger carried on the chassis, an exhaust gas muffler connected to the engine, and a hood encasing the engine and cooling system including a grille

mounted to the hood downwind of the heat exchanger, wherein the improvement comprises:

a plate means between the heat exchanger and the grille for sealing the grille;

air guide means on the plate means downwind of the heat exchanger for dividing the air flow from the heat exchanger into a plurality of air streams some flowing upwardly and some flowing laterally and then in a reverse direction to the air flow, the air guide means including an additional air guide means for directing the upwardly directed air streams in a reverse direction towards the top center of the engine;

coffer-type duct means on the inner walls of the hood for receiving the reversed lateral air streams and directing said air streams upwardly towards the top center of the engine;

the hood having an open section above the top center of the engine for discharging the streams of air collected at said top center of the engine;

a second plate means between the open section in the hood and the top of the engine for sealing top center of the engine from the air flow longitudinally across the engine; and

hinge means for tilting the hood away from the engine for gaining access thereto.

3,982,601

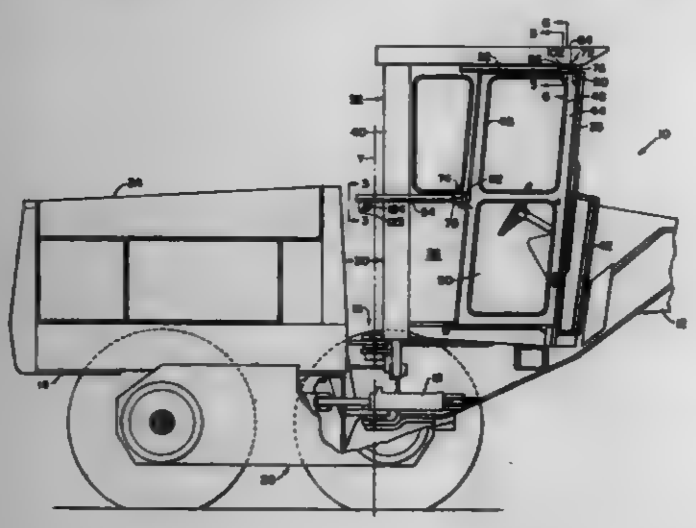
GUIDE SUPPORT FOR SLIDABLE DOOR OF GRADER HAVING AN ARTICULATED FRAME

Lary Lynn Williams, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 1, 1975, Ser. No. 573,674

Int. Cl.² B60J *5/06*

U.S. Cl. 180—89 R **8 Claims**



1. In a motor grader including front and rear frame sections respectively supported on front and rear wheel means and connected together for relative articulation about a vertical axis, steering means connected between the front and rear frame sections for moving the front frame section between right and left fully angled positions respectively located equidistant from a central position wherein the front frame section is longitudinally aligned with the rear frame section, a cab and an engine enclosure respectively mounted on the front and rear frame sections adjacent the vertical axis, the cab including a door opening, and a door, the inprovement comprising: a framework for slidably mounting said door on said cab, for movement between open and closed positions relative to said door opening, said framework including a substantially horizontal guide track means including a first guide track located above the door opening and extending rearwardly a slight distance therebeyond and a second guide track located approximately midway between upper and lower bounds of and rearwardly of the door opening; track follower means supporting said door on said first and second tracks for movement between a forward closed position and a rearward open position; and said second guide track including a rearward projection so disposed relative to the engine enclosure and said vertical pivot that when the front frame section is fully angled in the direction of said one side of the cab the projection will extend alongside a forward end portion of the engine enclosure.

3,982,602

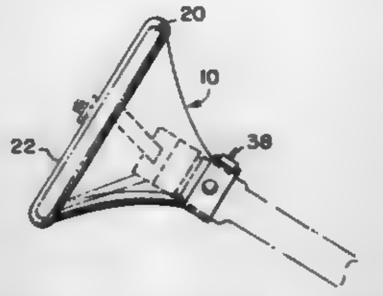
AUTOMOBILE ANTI-THEFT DEVICE

Jonas Gorman, Bayside, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Feb. 12, 1975, Ser. No. 549,344

Int. Cl.² B60R *25/02*

U.S. Cl. 180—114 **3 Claims**



1. A housing device for enclosing the steering wheel of an automotive vehicle to prevent access to said steering wheel, said housing comprising: a truncated generally conical shell defining relatively large and relatively small diameter opposite ends, said large diameter end being configured for encompassing the rim of said steering wheel, said small diameter end terminating in a collar configured for snug fitting engagement about the steering column of said vehicle, said housing being formed in two halves with a parting line disposed in a plane extending through the axis of said shell, hinge means disposed on one side of said shell along said parting line for coupling said halves for relative swinging movement to enable placement of said shell about said steering wheel, and first and second locking means respectively carried by said large diameter end and said collar for selectively securing said halves together to form said shell.

3,982,603

STEERING SYSTEMS FOR GUIDED VEHICLES

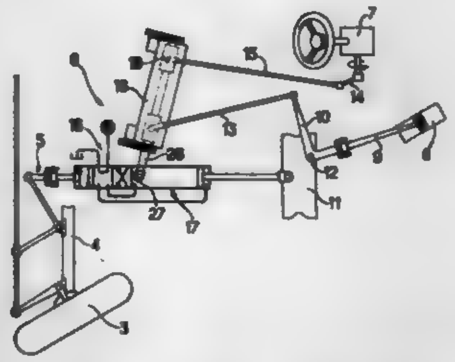
Robert Michael, Paris, France, assignor to Transports-Recherches-Etudes et Groupement d'Interet Economique (TREGIE), Rueil-Malmaison, France

Filed Sept. 8, 1975, Ser. No. 611,579

Claims priority, application France, Sept. 13, 1974, 74.31111

Int. Cl.² B62D *5/06*

U.S. Cl. 180—131 **4 Claims**



1. In a vehicle having a detector for guiding the vehicle along a guidance reference member mounted on a track and further having a steering gear and an actuating linkage for guiding a steering axle in accordance with operation of the steering gear, the improvement comprising a coupling device for coupling the steering gear and the detector to the actuating linkage, the coupling device comprising:

a member mounted for rotation about a first axis and connected to the actuating linkage to move the actuating linkage in accordance with its rotation about the said first axis;

first and second guide bars each connected to the said member and each mounted transversely with respect to said first axis and with its axis passing through the said first axis;

and first and second elements mounted for movement along the first and second guide bars and mechanically linked to the steering gear and the detector, respectively, the steering gear and detector constituting input devices for the said coupling device, each of the elements being movable along its guide bar between a first position remote from the said first axis, in which position displacement of the said element transversely to the direction of the guide bars by its input device is effective to rotate the said member about the said first axis, and a second position on the said first axis, in which position the said element is ineffective to rotate the member about said first axis.

3,982,604

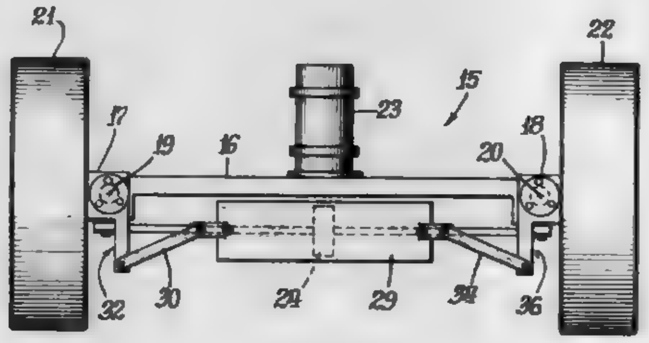
STEERING AXLE

John T. Crawford, Lyndhurst, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed May 7, 1975, Ser. No. 575,099

Int. Cl.² B62D *5/10*

U.S. Cl. 180—158 **9 Claims**



1. A steering axle assembly for a vehicle, said assembly comprising:

an elongated main frame;

a spindle for rotatably supporting a wheel secured to each end of said main frame for pivotal movement about a vertical axis;

a steering arm connected to each of said spindles;

a steering motor and linkage assembly mounted between said steering arms;

said steering motor comprising a stationary double-acting piston having an elongated piston rod extending from each end thereof, each of said piston rods secured at its outer end to said main frame, and a cylinder reciprocably mounted on said piston and said rods; and

link means pivotally connecting each end of said cylinder to one of said steering arms, and wherein said link means are less than one-fourth the length of said main frame.

3,982,605

NOZZLE NOISE SILENCER

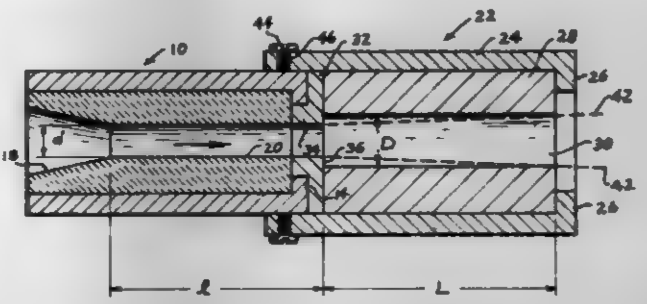
John E. Sneckenberger, Morgantown, W. Va., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed May 5, 1975, Ser. No. 574,475

Int. Cl.² F01N *1/00*

U.S. Cl. 181—47 B **5 Claims**

1. A nozzle noise silencer device for reducing noise created by a flow of fluid from a nozzle which includes a nozzle bore having a length *l* and a nozzle exit diameter *d*; said silencer device comprising a body member having a silencer bore extending therethrough and having a silencer bore length L and a silencer bore diameter D, the improvement comprising said silencer bore diameter D being substantially constant throughout its entire length and being larger than said nozle exit diameter *d* within a range between 110 percent and 350 percent.



3,982,606

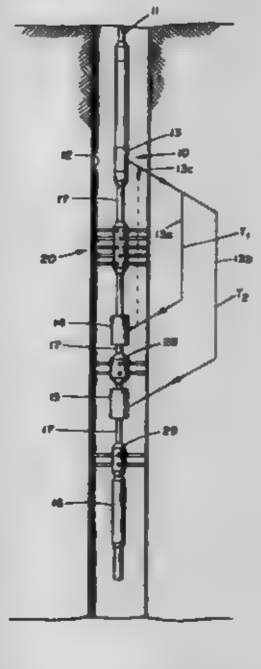
ACOUSTICAL LOGGING APPARATUS HAVING SIGNAL DELAY MEANS

James E. Berry, Forney, and Andrew J. D. Straus, Dallas, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 22, 1975, Ser. No. 543,000

Int. Cl.² G01V *1/40*

U.S. Cl. 181—102 **5 Claims**



1. An apparatus for carrying out an acoustical logging operation within the borehole of a well, said apparatus comprising:

a transmitter;

at least one receiver;

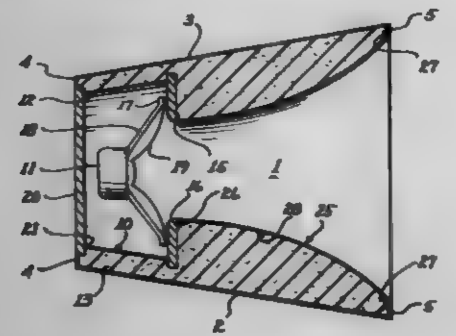
a support member for spacing said at least one receiver for said transmitter;

means mounted on said support member between said transmitter and said at least one receiver for interfering with those signals which inherently travel from said transmitter to said at least one receiver in the fluid normally present in the borehole during said logging operation, said signal interference means comprising:

means for rotatably mounting said signal interference means to said support member; and

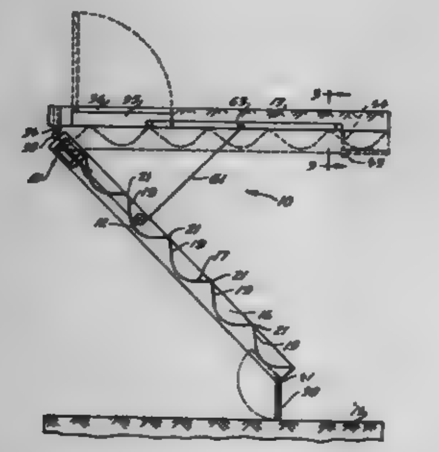
attenuation elements attached to said mounting means and adapted to extend outward to the wall of said borehole when said apparatus is within the borehole, said attenuation elements positioned on said mounting means so as to present an obstructed path to said signals but so as to present only nominal resistance to displacement of borehole fluid when said apparatus moves within said borehole, said attenuation elements comprising a plurality of fingers attached to said sleeve, said fingers being vertically spaced on said sleeve so that they radially overlap, thereby providing an obstructed path for said signal in said fluid.

3,982,607
LOUDSPEAKER CABINET HAVING AN INTEGRALLY CONSTRUCTED HORN
Arnold D. Evans, 17500 Wolcott Lane, Marana, Ariz. 85238
Filed Jan. 28, 1975, Ser. No. 544,763
Int. Cl.² H05K *5/00*; G10K *11/00*
U.S. Cl. 181—152 **11 Claims**



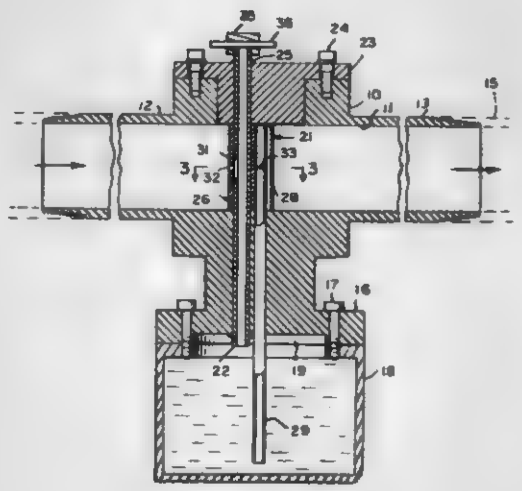
1. A loudspeaker cabinet having lateral sides and front and rear ends and including at least one loudspeaker disposed therein, said cabinet comprising in combination:
- a. a recess disposed within said enclosure for circumscribing and supporting a loudspeaker;
- b. a horn for transmitting the acoustic energy generated by the loudspeaker external to said cabinet and dispersing the acoustic energy within predetermined angles in the vertical and horizontal planes;
- c. means for providing an air seal intermediate said recess and said horn within said cabinet; and
- d. means disposed adjacent said recess and said horn for supporting said recess and said horn in fixed spatial relationship to the lateral sides and front and rear ends of said cabinet and for damping acoustically generated vibration of said recess and said horn.

3,982,608
FIRE ESCAPE
Frederick Booth, New Westminster, Canada, assignor to Booth Fire Escape Ltd., New Westminster, Canada
Filed June 9, 1975, Ser. No. 585,311
Int. Cl.² E06C *9/10*
U.S. Cl. 182—49 **4 Claims**



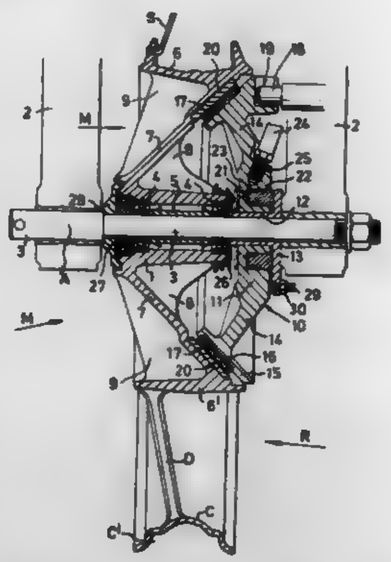
1. A fire escape apparatus for buildings having balconies arranged one above the other comprising:
- a. a frame having a pair of parallel spaced side supports,
- b. means swingably mounting the frame at one end to an upper balcony for swinging movement between a horizontal position against the underside of the upper balcony and an inclined position resting on a lower balcony therebeneath,
- c. a strip of smooth material extending between and secured in the side edges to the side supports, said strip presenting a longitudinally extending series of sweeping upwardly concave portions and intervening crest portions, the curved portions being arranged so that with the frame in the inclined position the strip presents a set of stairs having downwardly and outwardly curved risers and inwardly and downwardly sloping treads,
- d. counter-balance means for yieldably resisting movement of the frame from its horizontal position to its inclined position.

3,982,609
AIR LINE LUBRICATOR
Edward J. Bouplon, Cochranton, Pa., assignor to Chicago Pneumatic Tool Company, New York, N.Y.
Filed July 7, 1975, Ser. No. 593,640
Int. Cl.² F16N *7/34*
U.S. Cl. 184—56 A **8 Claims**



1. A lubricator, for feeding oil into a live air stream passing through a supply line to a pneumatic tool, comprising a body havin, a base mounted atop an oil reservoir and having side inlet and outlet ends connectible in a live air supply line, a linear passage of uniform diameter extending through the body from the inlet to the outlet end, a first tube in the body extending radially through the passage having an open bottom end projecting from the base of the body into an upper area of the reservoir proximate the surface of the oil therein and having a closed top end projecting externally of the body, a port opening out of a side area of the tube into the passage facing in the direction of the inlet end of the passage, a second tube in the body extending radially through the passage in parallel relation to the first tube but to the outlet side of the passage, the second tube having an open upper end disposed in close proximity to the wall of the passage and having an open bottom end projecting from the base of the body beyond the first tube into the oil within the reservoir, ports opening out of side areas of the second tube within the passage in opposed spaced relation to the wall of the passage, and air flow interference means disposed within the passage in surrounding relation to both tubes for causing impingement in part of an inlet air stream in the passage substantially directly into the port of the first tube and for causing the air stream in part to flow over the ports of the second tube toward the outlet end of the passage.

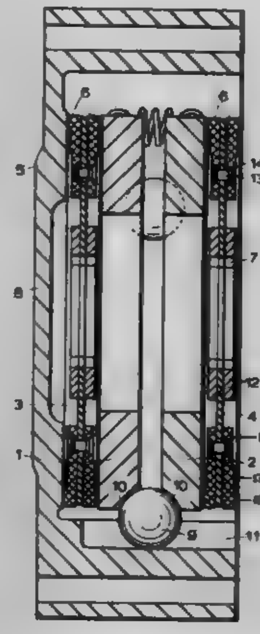
3,982,610
CONICAL SHAPED DISC BRAKE FOR A VEHICLE
Tullio Campagnolo, Corso Padova, 168, 36100 Vicenza, Italy
Filed Feb. 5, 1975, Ser. No. 547,251
Claims priority, application Italy, Feb. 5, 1974, 20177/74; June 7, 1974, 23719/74
Int. Cl.² B60T *1/06*
U.S. Cl. 188—18 A **13 Claims**



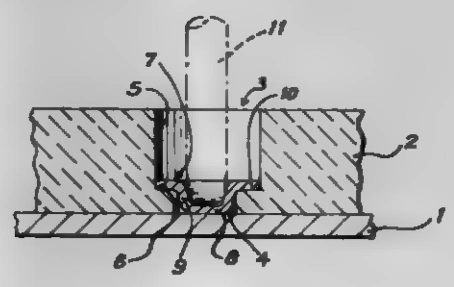
1. A disc brake for a wheel of a vehicle, said vehicle wheel having a hub, said hub including an annular flange surrounding said hub, an annular rim surrounding said flange for carrying a tire, and a plurality of spokes interconnecting said flange and said rim, an annular brake disc on said hub radially inwardly of said flange, a non-rotating brake plate disposed on one side of said brake disc, means mounting said brake plate on said wheel for sliding movement parallel to the wheel axis toward and away from said brake disc, said brake plate having at least one friction pad thereon that engages with said brake disc when said brake plate is in its position nearest said brake disc, said brake disc having a braking surface which engages an adjacent surface of said at least one friction pad, said surfaces lying on a common cone coaxial with said wheel, the apex of said cone being directed away from said brake plate, fluid pressure means for urging said at least one friction pad and said braking surface of the disc into engagement with each other, said fluid pressure means comprising a cylinder-piston unit, coaxial with the wheel axis, comprising a circular recess on the side of a central flat part of the plate which is opposite the disc, an annular piston housed in said recess, and means for feeding brake fluid under pressure to the bottom of said recess, between said bottom and the piston, as well as a contrast element opposing the thrust of said piston, said piston bearing freely against said contrast element on the side of said piston which is opposite the disc, and spring means urging said braking surface and said at least one friction pad apart.

3,982,611
DISC BRAKE TORQUE REGULATING STRUCTURE
Jack Edward Gannon, Coventry, England, assignor to Girling Limited, Birmingham, England
Continuation-in-part of Ser. No. 343,979, March 22, 1973, abandoned. This application Oct. 10, 1974, Ser. No. 513,848
Claims priority, application United Kingdom, Mar. 23, 1972, 13562/72
Int. Cl.² F16D *55/00*
U.S. Cl. 188—71.1 **14 Claims**

1. In a disc brake for a vehicle comprising first and second brake members, one of said members being a disc rotatable relative to the other member, a body of friction material attached to said first brake member, said first and second brake members and said friction material being sufficiently rigid that the operation of the brake does not depend on resilient deformation of said brake members and of said friction material, a friction surface on said second brake member, and actuating means for bringing said friction material into engagement with said friction surface of said second brake member to apply the brake, said friction material being substantially rigid and non-deformable irrespective of the magnitude of a brake applying load applied by said actuating means, said friction material being of a material whose coefficient of friction changes relative to said second brake member during bedding of said friction material including an initial friction surface having an area less than said friction surface of said second brake member, said initial surface being positioned so as to be engageable with a corresponding portion of said friction surface of said second brake member and be worn away thereby during bedding of said friction material before the whole friction surface of said second brake member is engaged by said friction material after bedding, said initial friction surface having an effective radius larger than the effective radius of said whole friction surface if the coefficient of friction increases during bedding but smaller if the coefficient of friction decreases during bedding.



3,982,612
BRAKE LINING DEVICE
Morris Krupka, 45 St. Jude St., Laval, Canada
Continuation-in-part of Ser. No. 511,050, Oct. 1, 1974, abandoned. This application Aug. 19, 1975, Ser. No. 605,952
Int. Cl.² F16D *69/04*
U.S. Cl. 188—73.1 **1 Claim**



1. A brake lining device comprising a rigid metal support, a lining plate of friction material positioned against one face of said rigid metal support, said lining plate having a plurality of circular apertures spaced from one another, each aperture having a larger diameter portion and a smaller portion defining a flat shoulder at their junction, said shoulder facing away from said support and a cap of metal, positioned in each aperture, each cap including a generally tubular body having an integral flat bottom wall closing one end of said tubular body, and a flat annular flange integral with the free edge of said tubular body, and radially outwardly extending therefrom, said flange having a flat top face and a flat underface,

said tubular body being circular in cross-section and flaring from said bottom wall toward said flange, the thicknesses of said flange, of the wall of said tubular body and of said bottom wall, being substantially equal the distance between the outer face of said bottom wall and the underface of said annular flange being slightly less than the axial length of said reduced diameter aperture portion in the non-stressed condition of said cap, said cap bottom wall being spot welded to said metal support in face-to-face contact, said flange engaging said shoulder with a predetermined pressure due to elastic elongation of said tubular body and also elastic flexing of said flange mainly in the region of its junction with the free edge of said body, the pressure exerted by said cap on said lining plate being sufficient to hold said lining plate in firm contact with said support in normal use of the device but insufficient to cause plastic flowing of the material of the lining plate out of the region between the annular flange and the metal support and consequent tendency of the contact face of the lining plate to come out of contact with the support in the zones between the apertures and caps.

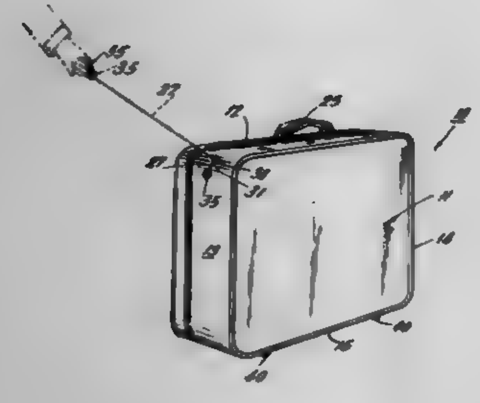
3,982,613
RETRACTABLE PULL STRAP ON WHEELED LUGGAGE

Robert H. Wood, Dover, Del., assignor to Leeds Travelwear, a division of Rapid-American Corporation, Clayton, Del.

Filed Aug. 7, 1975, Ser. No. 602,553

Int. Cl.² A45C *13/00*

U.S. Cl. 190—58 B **7 Claims**



1. In luggage having top, bottom side and end walls, a flexible elongated pull member for luggage,

a support for said flexible elongated pull member, a spool carried by said support;

one end of said flexible elongated pull member being attached to said spool;

said support being secured within said luggage at a portion of said luggage remote from said bottom wall;

an opening in said luggage adjacent said support;

said flexible elongated pull member extending through said opening to the exterior of said luggage;

said spool being biased to retract and wind up said flexible elongated pull member;

said flexible elongated pull member being extendable through sid luggage opening to pull the luggage and being retractable by said spool when released;

said support comprising a casing; said casing having an opening through which said flexible elongated pull member is drawn; said casing opening and said luggage opening being aligned;

said casing being mounted on the interior of the top wall of the luggage and the said opening in the luggage is at an area thereof adjacent a junction between the said top wall and an end wall.

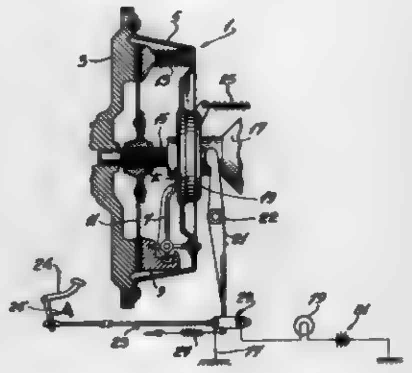
3,982,614
CLUTCH RELEASE BEARING MONITORING DEVICE

Jean-Pierre Bisaillon, 280 Guillerm, Longueuil, Quebec, Canada

Filed Dec. 11, 1974, Ser. No. 531,711

Int. Cl.² F16D *66/00*

U.S. Cl. 192—30 W **4 Claims**



1. A monitoring device for use in a clutch system, the system having a clutch including a clutch lever, and a clutch pedal having a clutch rod connected therewith, said monitoring device serving both to monitor clutch wear and to operably connect said clutch rod with said clutch lever, and comprising:

a. a first member carried by said clutch rod, and including a projecting portion;

b. a second member including an end wall and side wall means, said first member being received within said second member and being movable relative thereto, said end wall having an opening therethrough sized to receive said projecting portion of said first member, and the end of said side wall means of said second member located opposite said end wall having means thereon for operably engaging said clutch lever;

c. resilient means effective to bias said first member away from said end wall and toward the end of said second member disposed opposite said end wall, said first member being urged toward said end wall against the force of said resilient means when said clutch pedal is depressed to operate said clutch rod, and when said clutch lever pulls on said second member against said clutch rod;

d. wear signaling means; and

e. actuating means connected with said wear signaling means, said actuating means being mounted on the outer side of said end wall of said second member, and being operable by said projecting portion of said first member extending through said opening in said end wall when said first member has been moved beyond a predetermined distance toward said end wall against the force of said resilient means.

3,982,615
CONSTANT SPEED DRIVE

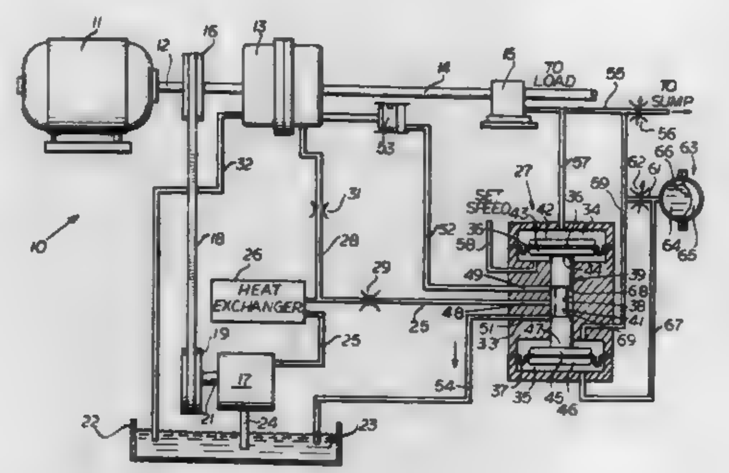
David F. Reed, Kansas City, Mo., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 7, 1975, Ser. No. 547,840

Int. Cl.² F16D *25/02*

U.S. Cl. 192—103 F **9 Claims**

1. A constant speed drive for a shaft driving a load, comprising a source of energy to drive the shaft, a clutch assembly interposed between the energy source and the shaft, an actuator for the clutch assembly, and a control circuit for the clutch assembly responsive to the speed of rotation of the shaft, said control circuit including means driven by said shaft to provide a fluid pressure proportional to shaft speed, means providing a source of fluid pressure for said actuator, a spool valve actuated by said fluid pressure means to control said actuator pressure and having a valve stem operatively connected to at least one diaphragm at an end thereof, said fluid pressure means driven by the shaft communicating with one side of the diaphragm and a reference pressure source communicating with the opposite side of the diaphragm, and means for damping any pressure change from said first mentioned means to said spool valve.



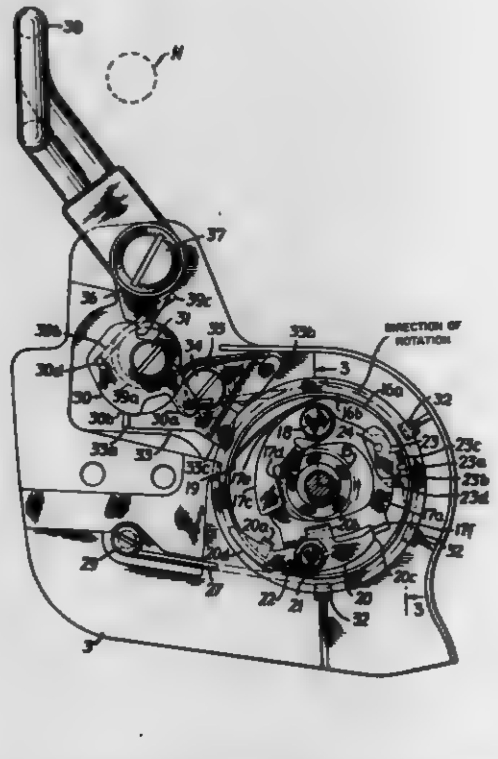
3,982,616
LATCH OPERATED CENTRIFUGALLY RELEASED SAFETY CLUTCH FOR SAWS

Edward J. Bidanset, Amawalk, N.Y., assignor to Textron, Inc., Providence, R.I.

Filed July 25, 1975, Ser. No. 599,059

Int. Cl.² F16D *21/08, 67/02*

U.S. Cl. 192—104 C **14 Claims**



1. A safety coupling comprising a first rotatable member having at least one abutment, a second rotatable member adjacent said first rotatable member and coaxial therewith, pawl means pivotally mounted eccentrically on said second rotatable member for movement between a position in which it engages said abutment to provide a driving connection between said first and second rotatable members and a position in which it is disengaged from said abutment, first latch means for releasably holding said pawl means in engaged position, means for releasing said first latch means for movement of said pawl means to disengaged position and second latch means for thereupon preventing reengagement of said pawl means with said abutment.

3,982,617
CLUTCH DISC FOR MAIN CLUTCHES OF MOTOR VEHICLES

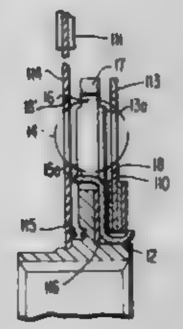
Gunter Worner, Rommelshausen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Apr. 15, 1974, Ser. No. 460,999

Claims priority, application Germany, Apr. 14, 1973, 2318907

Int. Cl.² F16D *3/14*

U.S. Cl. 192—106.2 **17 Claims**



1. In a clutch disc arrangement for main clutches which includes a hub means, a flange on said hub means, a disc means operatively connected with the flange of the hub means so as to permit a predetermined rotation of said disc means relative to said hub means, side plate means, means for rigidly connecting said side plate means with said disc means, friction linings provided on said disc means, a first set of window means provided in said hub flange, a second set of window means provided in said disc means in alignment with said first set of window means, a third set of window means provided in said side plate means in alignment with said first and second set of window means, at least two spring means each of which is respectively arranged in the window means of said flange, said disc means, and said side plate means, and at least two friction means for the damping of the clutch disc arrangement, the improvement comprising: a control plate means for determining the starting point of operation of at least one of said friction means, said control plate means being mounted on said hub means so as to permit limited relative rotation therebetween, said control plate means including two radially extending arms provided on said control plate means at approximately mutually opposite sides thereof, each of said radially extending arms respectively abutting only one end of said at least two spring means, the respective ends of the spring means abutting the radially extending arms being oppositely disposed with respect to each other in relation to a direction of rotation of said hub means relative to said disc means, and a further means is provided on said control plate means extending into one of said window means of said first set of window means provided at the flange for limiting the relative rotation between said hub means and said control plate means.

3,982,618
BRAKE PROVIDED WITH GRAVITY-FEED AUTOMATIC SUPPLEMENTARY-COOLING CONTROL

Joachim Horsch, Lombard, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Oct. 24, 1975, Ser. No. 625,450

Int. Cl.² F16D *67/04, 13/72*

U.S. Cl. 192—113 B **14 Claims**

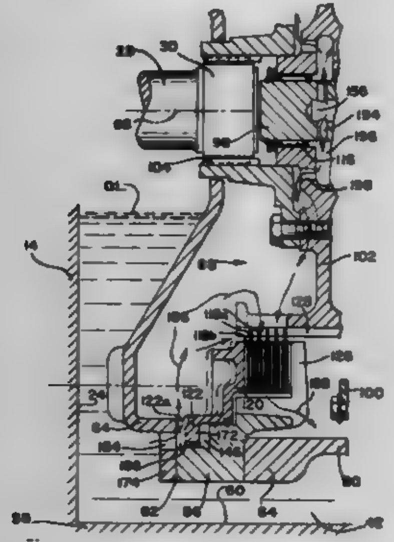
1. In a vehicle having a frame defining a wet sump and rotatably mounting therein a connected-together output shaft and output member, said shaft being slightly above the designed lubricant level in the wet sump:

an improved fixed drive-housing;

said drive-housing adapted to operate partly immersed in the wet sump and operatively surround the output member in a manner to provide a rotatable mounting for the output member and output shaft;

said drive-housing including therein constantly stationary and constantly rotatable members, selectively actuated clutch-brake friction engaging means which when engaged brake or clutch the output member selectively to the stationary or rotatable member to be set at rest or in motion thereby, and hydraulic pistons including a brake piston for the brake friction engaging means, and effective by selective engagement to actuate the clutch-brake friction engaging means to set the output member at rest or in motion as described;

first induced-flow passage means penetrating through the wall of said housing, and in open communication with the interior of the latter, and effective on the dry sump principle to conduct any accumulated lubricant therefrom for induced discharge into the surrounding wet sump; and



second gravity-flow passage means penetrating through the wall of said housing at a submerged point so as to be maintained always below said designed lubricant level, and in controlled communication at said second passage point with the interior of the housing for affording controlled gravity flow of wet sump lubricant in-feed for cooling, and effective to conduct the in-fed flow of lubricant into the driving housing interior to at least said brake friction engaging means for gravity lubrication and cooling of same.

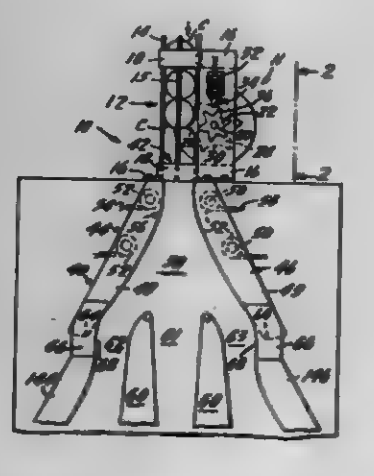
3,982,619
FLOW CONTROL APPARATUS AND METHOD

Walter Joseph Sieverin, Buffalo Grove, and Donald Henry Ruge, Crystal Lake, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Oct. 1, 1975, Ser. No. 618,424

Int. Cl.² B65G *11/20*

U.S. Cl. 193—31 R **7 Claims**



1. A flow control apparatus for controlling the flow of gravity fed substantially cylindrical objects through the path of a gravity runway, which comprises:

an assembly mountable onto the gravity runway; the assembly including

engaging means communicating with the gravity runway path for successively engaging and releasing each respective gravity fed substantially cylindrical object that necessively flows through the gravity runway,

sensing means for sensing each engagement of the engaging means with each of the objects,

signal generating means cooperative with the sensing means for generating an electrical pulse signal whose amplitude signifies the duration of each engagement of the engaging means with an object,

means connected to the signal generating means for pre-setting a threshold pulse signal amplitude level, for detecting the amplitude level of the generated pulse signal and the threshold level, and for comparing them and thereby controlling the duration of the pulse signal when the generated level exceeds the threshold level, and

means connected to the threshold setting and controlling means, and to the engaging means, for utilizing the controlled pulse signal for controlling the duration of the engaging means,

sending means connected to the threshold setting and controlling means, and to the utilizing means, for sending the controlled pulse signal to the engaging means for controlling the duration of the engaging of the engaging means, each of said means operating in synchronism for preselectedly controlling the flow of gravity fed objects through, and the output flow of objects from, the gravity runway.

3,982,620
COIN COMPUTING APPARATUS

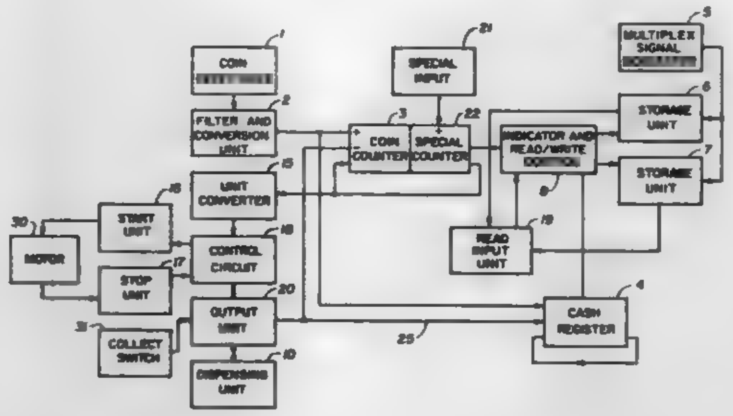
Dieter Kortenhaus, Bingen, Germany, assignor to NSM Apparatebau GmbH Kommanditgesellschaft, Bingen Germany

Continuation-in-part of Ser. No. 325,675, Jan. 22, 1973. This application Sept. 9, 1974, Ser. No. 504,128

Claims priority, application Germany, Jan. 25, 1972, 2203392

Int. Cl.² G07F *9/08*

U.S. Cl. 194—1 N **11 Claims**



1. An apparatus for computing coin related data comprising means for receiving coins, shift register means to act as temporary storing means, means responsive to the receipt of coins for producing and storing data corresponding to coin units in said temporary storing shift register means, magnetic core storage means to act as permanent storing means, and control means for continually updating data stored in said permanent storing magnetic core storage means from said temporary storing shift register means, said control means comprising means for reading data from said permanent storing magnetic core storage means and writing it in said temporary storing shift register means in response to cessation of a condition interfering with storage in said temporary storing shift register means, said reading means comprising means for subsequently storing the read-out data again in said permanent storing means, said control means further comprising means for erasing data stored in said permanent storing magnetic core storage means in response to the reading thereof by said reading means and also simultaneously with the updating of data therein by said means for updating data.

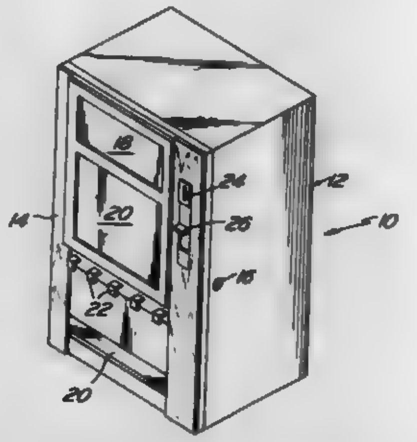
3,982,621
VENDING MACHINE

Harry E. Galin, Willow Grove, Pa., assignor to Universal Vendors, Inc., Fort Washington, Pa.

Filed Mar. 13, 1975, Ser. No. 558,196

Int. Cl.² G07F *11/00*

U.S. Cl. 194—1 G **8 Claims**



1. A vending machine having a plurality of merchandise columns, a manually operable member for dispensing said merchandise associated with each column, lockmeans preventing dispensing operation of all of the manually operable members until a predetermined amount of coins has been deposited in said vending machine, first sensing means responsive to a first amount of coins deposited in the vending machine and second sensing means responsive to a second amount of coins deposited in the vending machine, each of said sensing means being adapted to contact said deposited coins, a slidable bar common to all of said operable members, each of said operable members being selectively adapted to slide said bar when said operable member is pulled, said slidable bar being adapted to cause said first sensing means to contact said deposited coins, and each of said sensing means being adapted to open said lock means, whereby one of said operable members can dispense the commodity associated therewith only when a predetermined amount of coins has been deposited in said vending machine.

3,982,622
ACTUATOR MECHANISMS FOR WIRE MATRIX PRINTERS

Joseph A. Bellino, Arlington Heights; David G. Geis, Chicago; Ingard B. Hodne, Northbrook, and Arthur F. Lindberg, Chicago, all of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Oct. 4, 1974, Ser. No. 512,264

Int. Cl.² B41J *3/04*

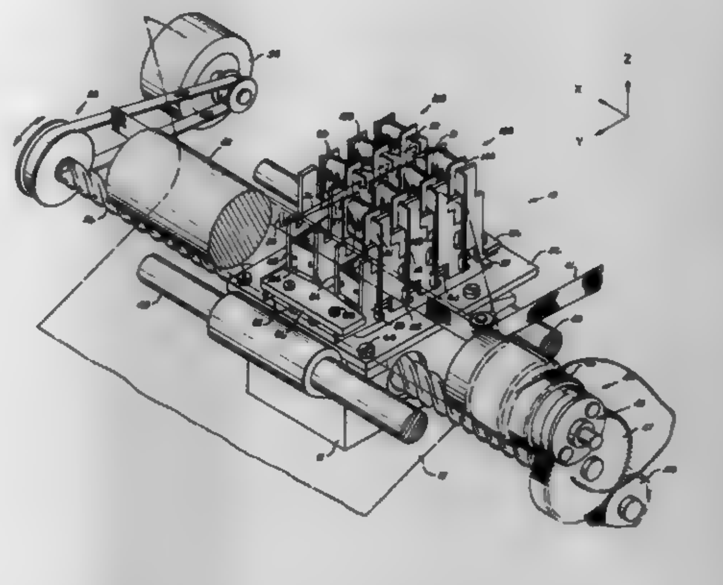
U.S. Cl. 197—1 R **41 Claims**

1. In a wire matrix printer, an actuator for selectively impacting an end of a print wire on a recording medium, comprising:

a. an armature of ferromagnetic material having an elongated body to which the print wire is mounted at a first end thereof, the armature being rotatable in a circular arc about an axis of rotation adjacent to a second end thereof and perpendicular to the body, for moving the print wire end toward and away from the recording medium;

b. a rotatable torsion rod attached to the second end of the armature and extending parallel to the axis of rotation of the armature, the armature assuming a neutral position when the torsion rod is free of torsional stress;

c. means for normally magnetically attracting the armature to a rest position by rotating the armature on the axis away from the neutral position to move the wire end away from the recording medium and to twist the torsion rod to torsionally stress the torsion rod; and



d. means for neutralizing the magnetic attraction so that the torsionally stressed rod rotates the armature toward the neutral position to drive the print wire end toward the recording medium for impacting the wire end thereon.

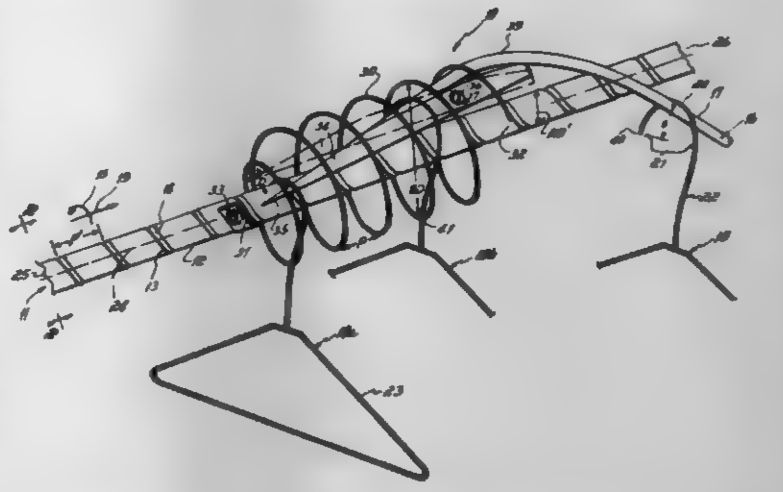
3,982,623
PICK OFF DEVICE

Laddie DePas, and Stanley T. Wheeler, both of Louisville, Ky., assignors to W. M. Cissell Manufacturing Company, Louisville, Ky.

Filed Dec. 11, 1975, Ser. No. 639,715

Int. Cl.² B65G *47/36*

U.S. Cl. 198—362 **6 Claims**



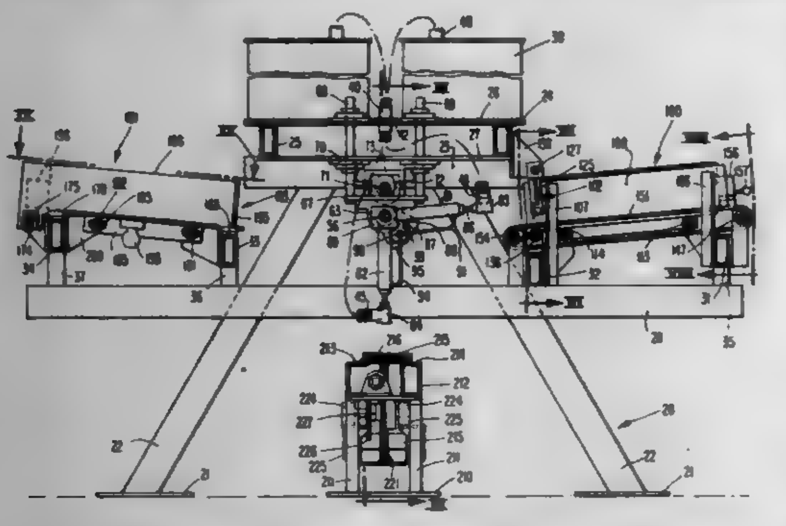
1. An improved pick off device adapted to transfer open mouth hook type work supports from an extended length screw conveyor onto a branch support member, said support member branching off from said screw conveyor at an angle relative thereto, said device comprising:

a helix surrounding and spaced from said screw conveyor's threaded rod, said helix being fixed in place on said threaded rod for rotation therewith, and

a pick off finger positioned generally longitudinally of said screw conveyor between said helix and said threaded rod, said pick off finger being connected at one end to said branch support member and said finger's tip being closely adjacent the surface of said threaded rod at the other end, said work supports being driven in a positive manner by said helix up onto said pick off finger for transferring same from said screw conveyor onto said branch support member upon rotation of said screw conveyor.

3,982,624
APPARATUS AND METHOD FOR HANDLING AND STACKING BATTERY PLATES AND THE LIKE

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.
Filed Oct. 1, 1974, Ser. No. 511,054
Int. Cl.^{2} B65G *57/04;* **H01M** *10/14;* **B65H** *1/02, 3/08*
U.S. Cl. 198—486 **7 Claims**

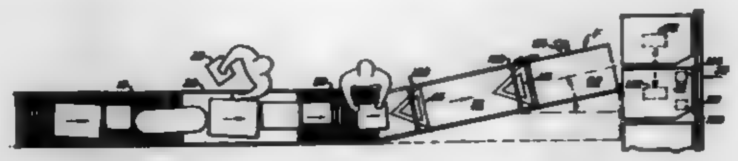


1. In the battery art, apparatus for continuously manufacturing sandwiches of a first predetermined number of battery plate elements and a second predetermined number of battery separator elements with the plate elements and separator elements being in alternately adjacent relation, comprising:
- a. a plurality of sources of plate elements disposed at stations along a conveyor means;
- b. a plurality of sources of separator elements disposed at stations along said conveyor means;
- c. means for simultaneously adjusting the sizes of said element source stations for accomodating elements of different sizes;
- d. element pickup means for alternately:
  - i. substantially simultaneously withdrawing the first predetermined number of said plate elements from a corresponding number of their said sources and depositing them onto said conveyor means, and
  - ii. substantially simultaneously withdrawing the second predetermined number of said separator elements from a corresponding number of their said sources and depositing them onto said previously deposited elements on said conveyor means;
- e. means for simultaneously adjusting the positions of said pickup means relative to said stations for accomodating the picking-up of elements of different sizes; and
- f. means for moving said conveyor means relative to said sources sequentially between stations to traverse the source stations of plate elements and separator elements for bringing elements previously deposited onto said conveyor means at stations, into positions for receiving additional elements thereon to form stacks of elements at said stations.

3,982,625
SORTER INDUCTION SYSTEM

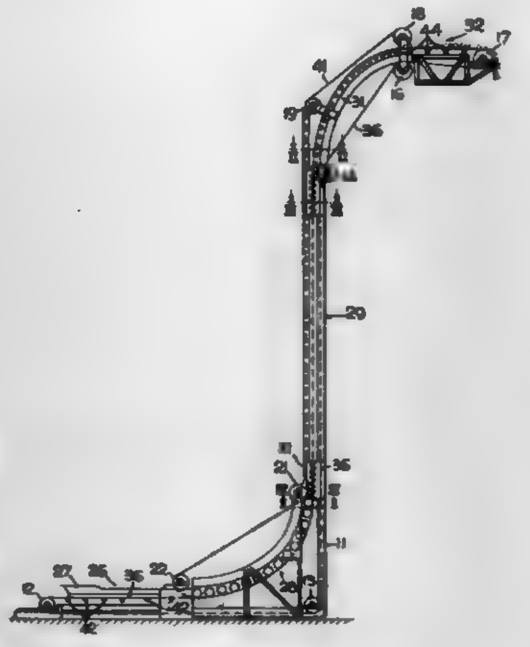
Edward A. Wentz, Gaithersburg, and Wayne Douglas Pyles, Frederick, both of Md., assignors to American Chain & Cable Company, Inc., Bridgeport, Conn.
Continuation of Ser. No. 69,404, Sept. 3, 1971, abandoned. This application Jan. 30, 1973, Ser. No. 328,020
Int. Cl. B65g *37/00*
U.S. Cl. 198—572 **16 Claims**

1. A conveyor system comprising the combination of main conveyor and an induction conveyor for discharging articles to said main conveyor; said induction conveyor comprising a discharge end whereat articles are discharged on to said main conveyor; pivotal support means for said induction conveyor whereby said induction conveyor is free to oscillate; said induction conveyor being disposed realtive to said main conveyor so that in the course of oscillation said discharge end moves through an arc adjacent to said main conveyor to transfer articles on to said main conveyor during arcuate traverse; actuating means for effecting oscillation wherein said discharge end moves through said arc at a speed approximating the main conveyor speed so that articles discharged have an effective speed aproximating that of said main conveyor in the direction of movement thereof during transfer; said induction conveyor comprising a loading belt and a spitter belt in tandem wherein articles are loaded on said loading belt to pass to said spitter belt to be transferred to said main conveyor; said discharge end of said induction conveyor being the downstream end of said spitter belt; and means for operating said loading belt at a rate synchronized with the speed of said main conveyor, including demarcated loading areas on said loading belt for placing individual articles thereon, said areas being equal in size, including signal means carried by said loading belt demarcating said loading means; a first sensor means operative in response to passage of said signal means; said main conveyor comprising a plurality of spaced load receiving means for receiving individual articles; a second sensor means operative to signal passage of individual load receiving means; control means responsive to a time difference in the signals of said two sensor means to synchronize the position of said loading belt with the position of a load receiving means whereby articles are certain of transfer on to a load receiving means during arcuate traverse of said downstream end of said spitter belt.



3,982,626
BELT ELEVATOR FOR BULK MATERIAL

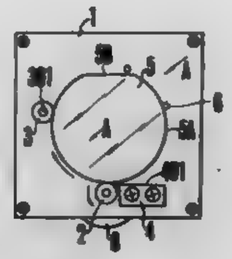
Bharat C. Mehta, Belleville, Canada, assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed June 5, 1975, Ser. No. 584,135
Int. Cl.^{2} B65G *15/14*
U.S. Cl. 198—626 **8 Claims**



1. In a belt elevator for bulk material of the type having a frame, a receiving zone and a discharge zone, the combination comprising:
- belt pulleys mounted on said frame,
- a pair of normally flat flexible belts of substantially uniform thickness cooperatively engaging said pulleys and disposed in cooperative confronting engagement with one another in an elevation zone, and in upper and lower curved transition zones, said belts being laterally flexible to accommodate changes in volume of material conveyed thereby,
- sets of opposed edge rollers rotatably mounted on said frame disposed on parallel transverse axes having radially outward facing cylindrical surfaces urging the confronting faces of the edges of said belts into sealing engagement in said elevation zone,
- two laterally spaced series of edge rolls rotatably mounted on said frame in said lower transition zone circumferentially spaced from one another all on parallel transverse axes to define a first gradual curve, said edge rolls having radially outer cylindrical surfaces engaging the laterally opposite edges of the belt on the inside of said first curve,
- a series of thrust rollers rotatably mounted on said frame disposed in circumferentially spaced relation to one another and bearing against the central portion of the belt on the inside of said first curve,
- two laterally spaced series of edge rolls rotatably mounted on said frame in said upper transition zone circumferentially spaced from one another all on parallel transverse axes to define a second gradual curve, said edge rolls having radially outer cylindrical surfaces engaging the laterally opposite edges of the belt on the inside of said second curve, and
- a series of thrust rollers rotatably mounted on said frame disposed in circumferentially spaced relation to one another and bearing against the central portion of said first belt,
- said edge rolls and said edge rollers having parallel axes and providing a smooth face-to-face transfer of said belt edges between said edge rolls of said transition zones and said edge rollers of said elevation zone.

3,982,627
AUTOMATIC WAFER ORIENTING APPARATUS

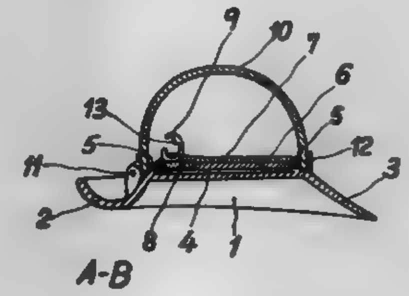
Junji Isohata, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 11, 1975, Ser. No. 557,294
Claims priority, application Japan, Mar. 13, 1974, 49-28843
Int. Cl.^{2} B65G *47/24*
U.S. Cl. 214—1 Q **21 Claims**



1. An apparatus for automatically orienting a wafer to a desired position, said wafer having an orientation reference peripheral portion distinctively formed with respect to the other peripheral portion and having a pair of resultant edges formed in the periphery at the intersecting points between said orientation reference portion and the other portion, said apparatus comprising;
- a. a support plate for receiving and holding said wafer,
- b. a rotary head positioned on said support plate upon engagement with the periphery of said wafer to apply a rotative movement to said wafer,
- c. an idler arranged on said support plate in spaced apart relation to said rotary head to define an area of movement of said wafer as the wafer is rotated by said rotary head,
- d. a guide abutment having a flat guide surface for guiding one of said the pair of edges in a linear direction positioned adjacent said rotary head on the opposite side of said rotary head to said idler to interact with said edge in such a manner that as the wafer is rotated by said rotary head, said edge strikes said flat guide surface at a point from which it is slidingly moved along said flat guide surface to a certain point where said rotary head imparts no more substantial rotative movement to said wafer.

3,982,628
ETUI FOR JEWELRY

Manuel Garcia Rodenas, Salvador Lluch, 21, Valencia, Spain
Filed Mar. 26, 1975, Ser. No. 562,129
Claims priority, application Spain, Nov. 26, 1974, 207,851
Int. Cl.^{2} B65D *43/16, 25/10*
U.S. Cl. 206—45.14 **4 Claims**



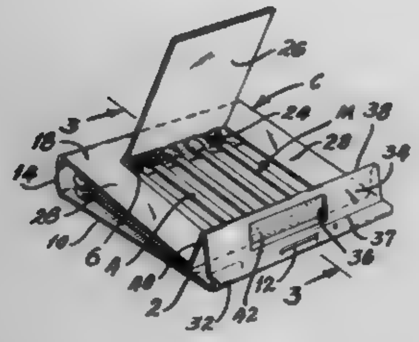
1. A jewelry case in the form of a woman's hat of the pamela type, in miniature, for containing and displaying rings, bracelets and other articles of jewelry comprising:
- a round base having a substantially flat horizontal wall surrounded by a peripheral flange half of which is curved upwardly and half of which is curved downwardly in the shape of a hat brim, a substantially vertical lip extending upwardly from the periphery of said horizontal wall, a plate supported on said horizontal wall within said vertical lip on said base, a hook fixedly attached to said plate, said hook having a rib protruding from the concave side of said hook for engaging and supporting an article of jewelry in a position for display, said plate being covered with a lining material with the hook extending exteriorly through said lining material, and a half hinge on said upwardly curved half of said flange adjacent said vertical lip; and
- a hollow, rounded cover in the form of the crown of the hat, a hat band disposed around said cover and extending below the edge thereof, and a half hinge on said cover adjacent said edge, said half hinge of said cover cooperating with said half hinge of said base whereupon said cover may be articulated between a closed position at which said cover rests on said flange with said hat band concealing the line of contact between said cover and said base to present the apearance of a woman's hat of the pamela type, and an open position at which said cover is swung back to expose said lined plate and the article of jewelry supported thereon.

3,982,629
MATCH BOOK

Milton J. Duenke, 14796 Sugarwood Trails, Chesterfield, Mo. 63017
Filed July 9, 1975, Ser. No. 594,369
Int. Cl.^{2} A24F *27/12, 27/00*
U.S. Cl. 206—106 **10 Claims**

1. A match book comprising: a cover formed from a plurality of connected panels which move to a closed position, said plurality of panels including a front panel and an intermediate panel which is connected to one end of the front panel along a first fold line such that movement of the front panel in one direction will change the inclination of the intermediate panel relative to the front panel; a plurality of match sticks within the cover such that the cover surrounds and protects the

match sticks, the match sticks being arranged in at least one row over which the front panel lies with the sticks extending generally parallel to said one direction of movement for the front panel, the match sticks having heads formed from a combustible material; and a scratch surface on the intermediate panel and formed from a material which will cause a match head to ignite when moved over the material, the scratch surface being exposed and accessible when the cover is in its closed condition, but not when the cover is moved out of its closed position.



3,982,630

PACKAGE FOR DENTAL ROOT CANAL AND THE LIKE INSTRUMENTS

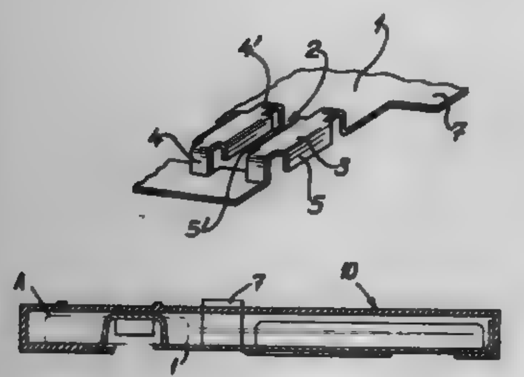
Marcel Garnier, Besancon, France, assignor to Micro-Mega S.A., France

Filed Dec. 6, 1974, Ser. No. 530,375

Claims priority, application France, Dec. 14, 1973, 73.44932

Int. Cl.² B65D *85/20, 1/36*

U.S. Cl. 206—369 5 Claims



4. A package for dental instruments, comprising: a base plate comprised of a main part, a marginal edge part adjacent thereto, and a plurality of protuberances integral with said main part and said marginal edge part of said base plate and spaced apart along the general direction of said marginal edge part; said protuberances being formed by generally parallel protruding bridges each including respective narrow end portions attached to said main part and said marginal edge part, and a widened central part having edges folded down toward said base plate to form resilient side walls, adjacent pairs of said protuberances disposed with their respective resilient side walls facing one another to define means for gripping an instrument handle therebetween; and a cover movable from a position mounted on and covering the base plate to a position uncovering the base plate.

3,982,631

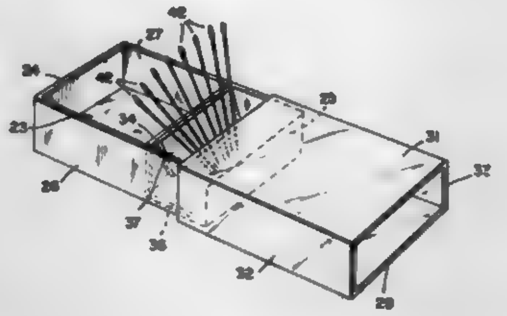
DISPENSING CASE FOR NEEDLES OR THE LIKE

I. Jordan Kunik, and Maurice Goodman, Jr., both of New York, N.Y., assignors to I. Jordan Kunik and Maurice Goodman, Jr., both of New York, N.Y., part interest to each

Filed Oct. 17, 1974, Ser. No. 515,497

Int. Cl.² A41H *31/00;* B65D *85/24*

U.S. Cl. 206—380 8 Claims



1. A dispenser container for magnetizable elements such as needles, tools, and the like, comprising an open top rectangular box having spaced side walls and spaced end walls, a vertical partition in said box and disposed transversely relative thereto intermediate said end walls, a magnet element, a strip of fabric forming a flexible hinge between said partition and said magnet for pivotal action of the latter relative to the former, one portion of said strip being bonded to the rear surface of said partition and the other portion of said strip being bonded to the lower surface of said magnet that pivotally opposes said rear surface of said partition, said magnetizable elements making unobstructed operational contact with the free upper surface of said magnet.

3,982,632

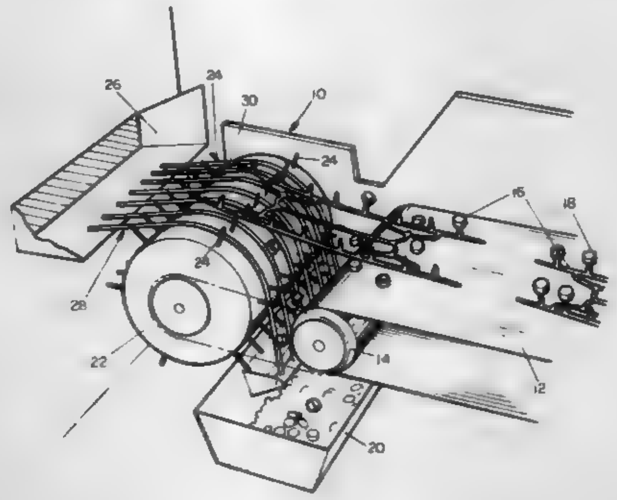
THERMOPLASTIC INJECTION RUNNER TRANSFER SYSTEM

Israel M. DeLeon, West Chicago, and Edward D. Thompson, South Elgin, both of Ill., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed June 23, 1975, Ser. No. 589,215

Int. Cl.² B07C *9/00*

U.S. Cl. 209—75 1 Claim



1. A transfer system for guiding a thermoplastic injection runner from a conveyor into a collection hopper comprising, in combination:

a transfer drum rotatably mounted between said conveyor and said collection hopper;

a plurality of spike members attached to and extending outwardly from said transfer drum for engaging said runner as it leaves said conveyor and moving said runner into said collection hopper; and

a separation grid means, including a plurality of rod members spaced from and overlying said rotating transfer drum and extending from a location adjacent said conveyor to a location adjacent said collection hopper, to provide a guide path for said runner as it is moved by said spike members on said rotating transfer drum toward said collection hopper, said rod members being spaced from each other to allow said spike members on said rotating transfer drum to pass therebetween.

3,982,633

DISPLAY DEVICE

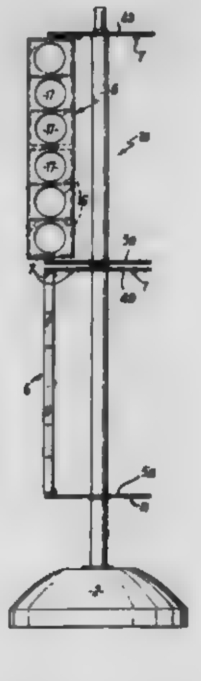
John James Pennington, Dalefords Cottage, Dalefords Lane, Whitegate, near Northwich, Cheshire, England

Filed Jan. 2, 1975, Ser. No. 537,855

Claims priority, application United Kingdom, Jan. 4, 1974, 406/74

Int. Cl.² B65D *85/62;* E05B *73/00*

U.S. Cl. 211—4 3 Claims



1. A display device for displaying a plurality of articles comprising a lockable compartmentalised container formed from two container parts mounted on a support means:

each container part being in the form of an elongated box structure having: front and back elongated walls each having short top and bottom edges and long side edges; a top wall extending between adjacent said top edges of the front and back walls, a bottom wall extending between adjacent said bottom edges of the front and back walls; a side wall extending between one pair of adjacent side edges of the front and back walls, an article receiving side opening opposite said side wall and between the other pair of adjacent side edges, and at least one intermediate wall extending between the front and back walls and parallel to the top and bottom walls so as to divide the box structure into a plurality of open sided compartments for receiving said articles to be displayed, the width of each said side wall, and of each said side wall opening, being less than the width of each said front wall and back wall whereby said compartments are each of generally flat rectangular form and the front and back walls being formed so as to permit inspection of articles in the compartments through the front and back walls,

the two container parts being connected with each other by connection means for movement from an open position with both said other pairs of adjacent side edges spaced apart from each other to enable an article to be received in the side openings thereof to a closed position with both said other pairs of adjacent side edges abutting each other to enable each said part to form a closure for the opening, locking means being provided for locking the container parts in said closed position.

3,982,634

METHOD AND APPARATUS FOR ERECTING A VERTICAL STRUCTURE

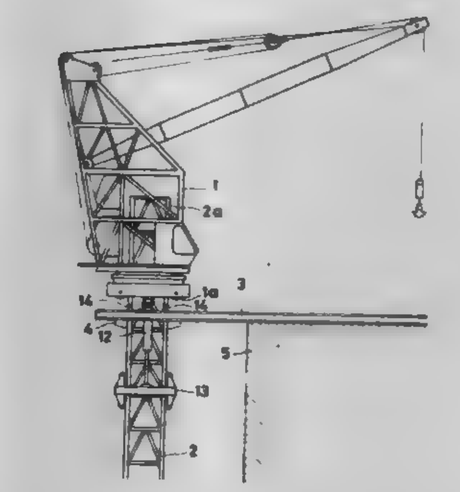
Moritugu Miyazaki, Tokyo, Japan, assignor to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 417,912, Nov. 21, 1973, abandoned. This application July 16, 1975, Ser. No. 596,573

Claims priority, application Japan, Nov. 29, 1972, 47-120138

Int. Cl.² B66C *15/06*

U.S. Cl. 212—1 2 Claims



1. Apparatus for use in completing the erection of a structure partially-erected to a level, comprising:

a temporary tower projecting upwardly alongside the partially-erected portion of the structure to a location above said level, said tower having an upper section above said level, a lower section below said level, and means releasably connecting said upper and lower sections to afford lateral disengagement of one from the other;

a superstructure assembly transferable onto said partially-erected structure for use thereon, said superstructure assembly including:

a jib crane, tower climbing means carried by said jib crane for engaging the tower to advance said crane vertically therealong, and traveling means supporting said crane for movement horizontally along a surface; said tower climbing means including upper tower locking means, lower tower locking means below said upper tower locking means, extensible linkage means projecting upwardly toward said superstructure assembly from said lower tower locking means; and means releasably securing said extensible linkage means to said superstructure assembly; and

horizontally-disposed rail means supported by said lower section of said tower and by said partially-erected structure for providing a temporary bridge across said tower and said structure at said level and providing said support surface for said crane traveling means;

whereby the upper section of the tower can be separated from the lower section thereof and moved laterally with the superstructure assembly on the rail means onto the partially-erected structure to enable the jib crane to be used to complete the erection of the structure.

3,982,635

FEEDING AND DISCHARGING APPARATUS FOR BLOW MOLDING OPERATION

Charles L. D. Chin, Avon; William R. Wiggins, Forestville, and Jon D. Yonke, Vernon, all of Conn., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 27, 1975, Ser. No. 544,052

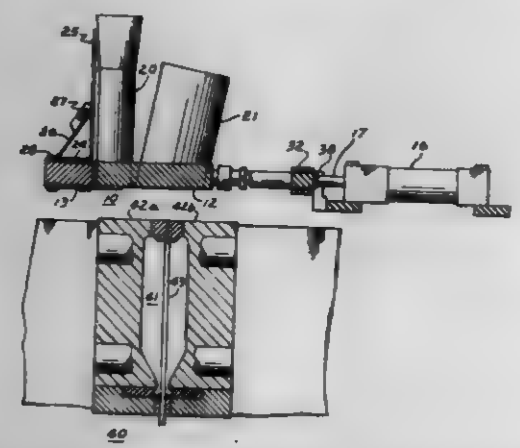
Int. Cl.² B65B *39/00;* B29D *23/03*

U.S. Cl. 214—1 BB 14 Claims

1. Apparatus for feeding workpieces to and discharging articles from a blow mold comprising:

a. base means above a blow mold having at least one pair of adjacent feed and discharge openings and including stop means associated with said feed opening for temporarily obstructing passage of a workpiece through said feed opening;

b. means connected to said base means for reciprocating said base means laterally with respect to said mold to position the center of said feed opening over the center of said mold when feeding a workpiece and in position to receive a new workpiece when the center of said discharge opening is positioned over the center of said mold for receiving a discharged article;



c. means in the path of said base means for delimiting reciprocating movement of said stop means; and

d. resilient means associated with said base means to allow sufficient continued movement of the portion of said base means containing said opening after said stop means has stopped to remove the obstruction at said feed opening provided by said stop means and thereby allow said workpiece to continue through said feed opening.

3,982,636
CAR LIFTING APPARATUS

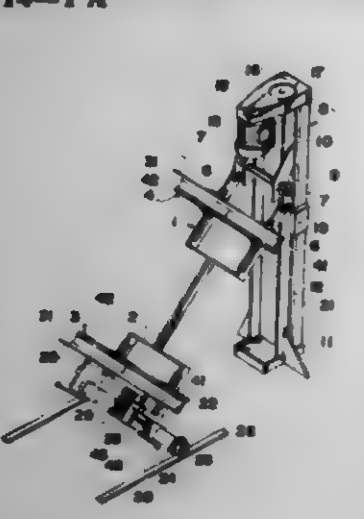
Seiji Furuto, 865, Suzukicho 2-chome, Kodaira, Tokyo, Japan

Filed July 17, 1975, Ser. No. 596,659

Claims priority, application Japan, July 26, 1974, 49-85692; Apr. 2, 1975, 50-40139

Int. Cl.² B23Q *3/18*; **B66F** *3/08*

U.S. Cl. 214—1 A **8 Claims**



1. A car lifting apparatus comprising means for carrying a car thereon and having a support member which engages the car, means for lifting one end of said carrier means upward, means for connecting said one end of said carrier with said lifting means, means for guiding the other end of said carrier means in the direction of said lifting means as the latter operates, and means for connecting said other end of said carrier means with said guide means, said latter connecting means including auxiliary lifting means lifting said other end of said carrier means upward.

3,982,637
DEVICE FOR DIRECTED DISCHARGE OF CONICAL ARTICLES

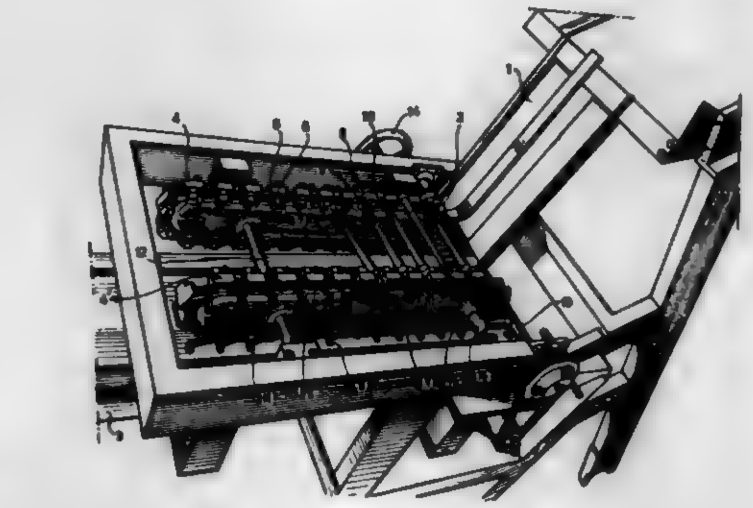
Johannes Antonius Roetgerink, Hengelo, Netherlands, assignor to Machinefabriek M. Brouwer & Co. B.V., Hengelo, Netherlands

Filed Nov. 8, 1974, Ser. No. 522,090

Claims priority, application Netherlands, Nov. 15, 1973, 7315703

Int. Cl.² B65G *57/08*

U.S. Cl. 214—6 D **21 Claims**



1. Apparatus for directed discharge of conical articles comprising feeding means for feeding the articles in a direction perpendicular to the longitudinal direction of said articles to directing means, said directing means comprising a plurality of opposed pairs of supporting units arranged in juxtaposition and separated from each other by a distance corresponding to the length of said articles, each said unit comprising at least two supporting members, one of which is operatively movable with respect to the other to change their mutual spacing, and guide means for progressively increasing the mutual spacing from a first to a second value, and back to its first value whereby, first one end of the article is released thus orienting the article about the supported other end of the article and then releasing the said other end of the article.

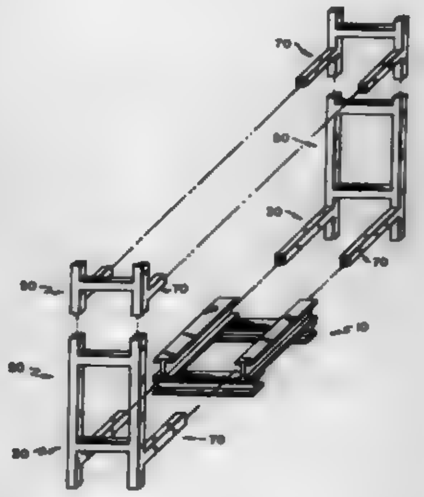
3,982,638
DEVICE FOR CONVERTING PALLETS INTO A STORAGE RACK

Frederick W. Lamson, 725 S. Glenhurst Drive, Birmingham, Mich. 48009

Filed May 17, 1974, Ser. No. 470,817

Int. Cl.² B65G *1/14*

U.S. Cl. 214—10.5 R **7 Claims**



1. For use in stacking pallets formed by fixing the lower flange faces of a first array of parallel, horizontal I-bars to the

upper flange faces of a second array of parallel, horizontal I-bars transverse to the first, a device comprising:

a pair of upright I-bars rigidly secured in parallel spaced relationship with their webs face-to-face;

a first pair off parallel, horizontal members rigidly fixed at one end to one of said upright I-bars proximate its lower end, said first pair of horizontal members being spaced to receive the web of one of the pallet first array I-bars therebetween with the lower faces of the upper flange of said first array I-bar resting on the upper faces of said first pair of horizontal members;

a second pair of parallel, horizontal members rigidly fixed at one end to the other of said upright I-bars proximate its lower end, said second pair of horizontal members being spaced to receive the web of another of the pallet first array I-bars therebetween with the lower faces of the upper flance of said other first array I-bar resting on the upper faces of said second pair of horizontal members;

means on said upright I-bars for securing a similar pair or upright I-bars mounted in tandem thereon against relative lateral motion with respect to said upright I-bars; and

means on at least one of said horizontal members for detachably coupling said one of said horizontal members to the pallet.

3,982,639
SHELF STORAGE SYSTEM

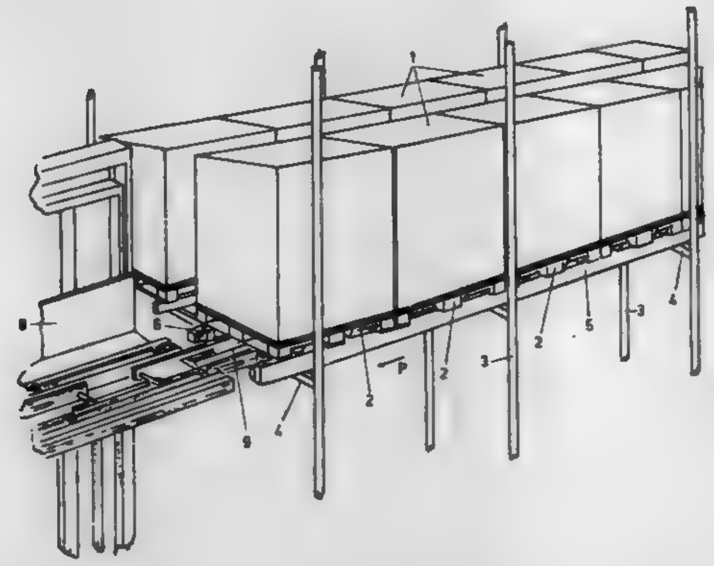
Hans Rudolf Haldimann, Zurich; Max Buehler, Thalwil, and Patrick R. Brown, Zumikon, all of Switzerland, assignors to Weelpal, A.G., Zug, Switzerland

Filed Sept. 3, 1974, Ser. No. 502,841

Claims priority, application Switzerland, Sept. 6, 1973, 13042/73

Int. Cl.² B65G *1/06*

U.S. Cl. 214—16.4 C **6 Claims**



1. In a shelf storage and transportation system for goods on pallets having rollers on a base for the pallets which are supported on a plurality of shelves in a stand and having a stop means at the end of a shelf to act only on the conveyer vehicle, that improvement consisting of:

a rectangular frame formed of vertical members connected to each other by horizontally extending transverse members to form shelves;

a pair of longitudinal trackway members, one on each side of said frame, and supported on said transverse members;

one end of each said trackway members being higher than the other end to form a gradient in the direction of the receiving end of the shelf;

a stop and positioning mechanism at the receiving end of said shelf on said trackway members to stop and position pallets on said trackway;

braking means mounted on said trackway members to regulate the speed of pallets rolling on said trackway member;

a mobile conveyer vehicle fitted with a transfer mechanism for loading and unloading said shelves, said conveyer vehicle fitted with four wheels within opposite sides of a four sided frame for supporting said pallet as a unit on a slip resistant supporting part of said frame;

wheel casings at said opposite sides of said frame to rotatably support said wheel at a small distance of about 1 to 2 centimeters above the lower contacting surface of said wheels whereby the bottom of the pallet is close to said trackway members;

means for changing the position of the mobile conveyer vehicle and pallet unit within the system comprising two sets of supports disposed at opposite sides respectively of the frame, both parts having their axes of rotation disposed above the frame the first part being said four sided frame; and,

the second part of said means being adapted to be interchangeably supported on said first part and formed to receive the goods to be transported or stored.

3,982,640
SILO OR RESERVOIR FOR FREE FLOWING SOLID MATERIAL

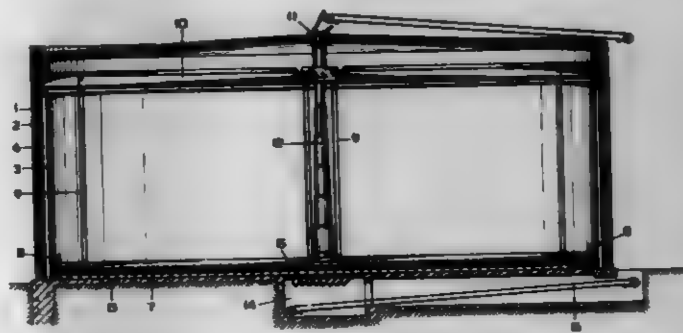
Drewes Jan Nauta, Wormerveer, Netherlands, assignor to Machinefabriek en Constructiewerkplaats Gebr. Klinkenberg B.V., Wormerveer, Netherlands

Filed Feb. 6, 1975, Ser. No. 547,571

Claims priority, application Netherlands, Feb. 8, 1974, 7401790

Int. Cl.² B65G *65/32*

U.S. Cl. 214—17 CB **4 Claims**



1. A silo or reservoir for free flowing solid material, consisting of at least one vertical side wall which is preferably circle symmetrical and connected with a number of upstanding supporting columns of a supporting framework, a floor and a roof structure, a filling means and a discharge means in the roof and in the floor respectively and a horizontal distributor arrangement provided inside the silo for a rotational and up and down movement characterized in that the side wall (3) is firmly connected with a number of continuously extending ring-like annular elements (4) arranged in spaced relationship one above the other and so shaped as to resist outward radial pressure, said annular elements (4) being freely supported by brackets (5) which are connected to the inside of the supporting columns (2) of the supporting framework and means for preventing said annular elements from sliding off said brackets.

3,982,641
HOPPER CAR DOOR ACTUATING MECHANISM

Roy W. Miller, Highland, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Mar. 6, 1975, Ser. No. 555,772

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² B65G *67/24*

U.S. Cl. 214—58 **8 Claims**

1. For a railway hopper car having a body structure and a

hopper, bottom door dump means for discharging material from said hopper in an open position,

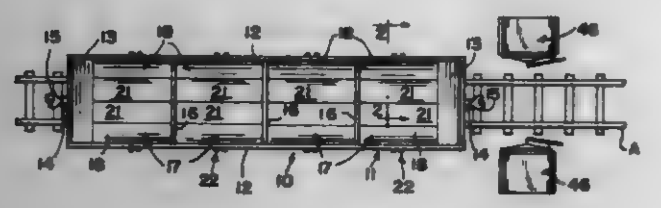
door actuating mechanism for moving said door between open and closed positions including a bell shaped crank arm pivotally mounted on said structure and having an arm position pivotally connected to said door, cam follower means on said arm, the improvement comprising;

a cam structure positioned adjacent a railway track on which said car is travelling, said structure including a base having an upright pedestal,

a horizontal cam member supported on said pedestal and including a vertical cam surface,

said cam follower means during movement of said car engaging said vertical cam surface whereby said arm is pivotally moved and said door is opened,

a second auxiliary cam supported on said pedestal, and including a second vertical cam surface and second follower means on said arm engaging said second cam during engagement between said first cam follower and said first cam whereby an additional force is initiated to pivot said arm to said open position of said door means.



3,982,642
METHOD AND ARRANGEMENT FOR STORING AND TRANSPORTING PAPER SHEETS

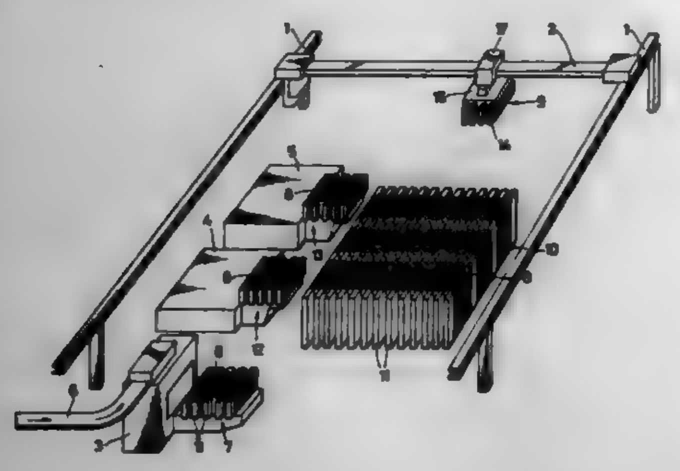
Hans Müller, Barenhubel, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed Nov. 21, 1975, Ser. No. 634,173

Claims priority, application Switzerland, Nov. 27, 1974, 15821/74

Int. Cl.² B66C *17/00*

U.S. Cl. 214—301 7 Claims



1. A method of storing and transporting individual paper sheets which abut with faces thereof against each other to form an elongated staple of sheets, comprising the steps of placing a staple of sheets compressed in longitudinal direction to a predetermined length onto a planar substantial horizontal support surface of a first magazine between upright stationary support members thereon spaced from each other a distance slightly greater than said predetermined length so that said support members will engage endmost sheets of the staple; gripping the endmost sheets of the staple with clamping jaws arranged to pass by said support members and further compressing the staple in longitudinal direction by the clamping jaws to form a self-supporting body from said sheets; removing said body by means of said clamping jaws from between said support members of said first magazine; transporting said body held by the clamping jaws between support members of another magazine spaced from each other the same distance as in said first magazine and placing the body onto the planar support surface of the second magazine; and moving the clamping jaws away from each other and from said endmost sheets of the staple to relax the latter until the endmost sheets of the staple engage the support members of the second magazine to thereby hold the staple in slightly compressed condition between the support members of said second magazine.

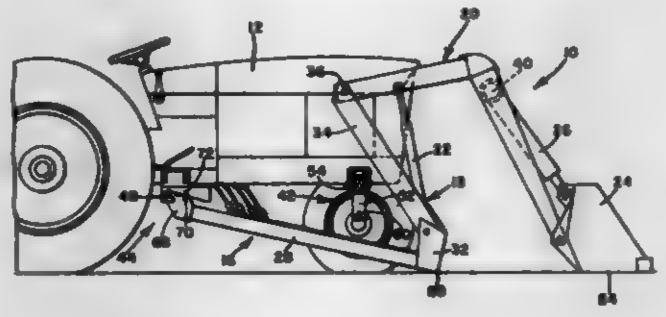
3,982,643
POWER LOADER

William Roderick MacGregor, and Dalton Harold Spicer, both of Welland, Canada, assignors to Deere & Company, Moline, Ill.

Filed June 30, 1975, Ser. No. 591,353

Int. Cl.² E02F *3/72*

U.S. Cl. 214—131 A 8 Claims



1. A detachable power loader for use on a tractor having a main frame structure including front and rear wheel support, said loader having a fore-and-aft elongated frame including a rectangularly-shaped base having front and rear ends and adapted to rest level with and on the ground when said loader is in a self-supported parked position, and be secured in underslung relation to the tractor main frame structure when in a tractor-mounted position, said frame further having upstanding side members projecting upwardly and rearwardly from the front end of the base and to be on opposite sides of said tractor when said loader is in a tractor-mounted position; a forwardly extending lift boom pivotally connected with the upper portion of each side member; power means between said boom and frame for swingably moving said boom relative to said frame; a working tool on the outer end of said boom; first bracket means attached to the tractor main frame structure adjacent the front wheel support and including a downwardly opening portion for receiving a portion of said loader base spacedly rearwardly of its front end; means for releasably fastening said loader base with said first bracket means; trunnion means secured to the rear end of said base; second bracket means attached to the tractor main frame structure rearward of the first bracket means, the second bracket means having a forward downwardly opening portion for receiving the trunnion means and a rear trunnion means supporting portion that receives the trunnion means from the front portion; means for releasably fastening the rear end of said loader base when the trunnion means are in the rear trunnion means supporting portion; said loader having a center of mass located forwardly of said frame base member.

3,982,644
SIDE SHIFT AND SKEWING DEVICE FOR VAN CARRIER

Bobbylee Pease, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

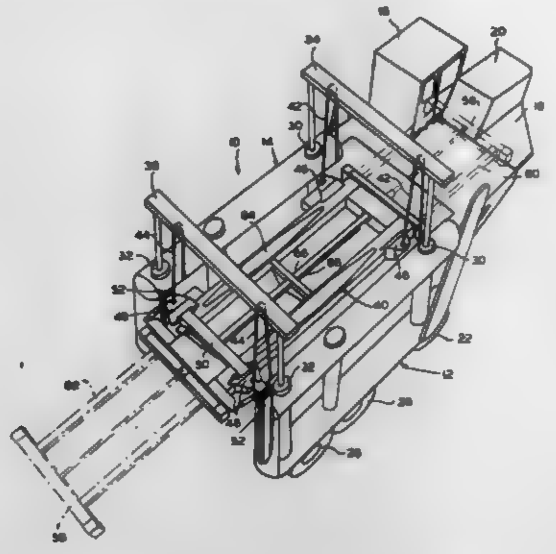
Filed May 19, 1975, Ser. No. 578,458

Int. Cl.² B60P *1/02*; B66C *1/00*

U.S. Cl. 214—394 4 Claims

1. In a van carrier vehicle having a horizontally extending U-shaped frame forming an open bay for embracing the load to be transported by the vehicle, a pair of transversely spaced motors mounted upon opposite legs of the U-shaped frame in each end portion thereof, lifting arch means connecting the

motors of each such pair of hoist motors above the U-shaped frame for elevation therewith, a spreader frame embraced by the U-shaped frame and connected by flexible chain or cable means to the lifting arch means for elevation therewith and with said pairs of hoist motors and load lifting means depending from opposite end portions of the spreader frame, said spreader frame being movable downwardly with the lifting arch into a position atop a container to be engaged wherein said lifting means are registrable in locking relation with upper portions of the container so that the container may be elevated within the U-shaped frame, a guide beam extending transversely through one end portion only of the spreader frame having opposite ends thereof engaging a pair of transversely spaced upright channel sections secured in opposed facing relation in one end portion of the U-shaped frame and elevatable therein, a pair of hydraulic actuator cylinders connected between opposite end portions of said guide beam and opposite sides of the spreader frame for causing said spreader frame to skew in one direction or the other in the bay of the U-shaped frame and on said guide beam, and a side shift cylinder connected to said guide beam and to the spreader frame for actuating the latter transversely of the bay of the U-shaped frame and on said guide beam, the end of said spreader frame opposite from said guide beam being freely suspended from said chain or cable means without other connection to the U-shaped frame.



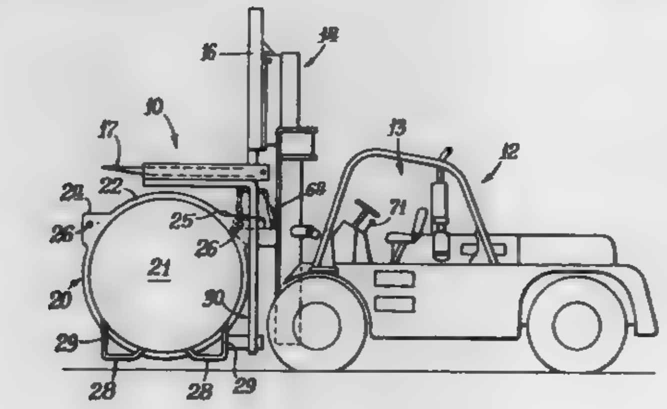
3,982,645
CONTAINER HANDLING ATTACHMENT

Thomas E. Brink; Charles R. Chelin, and Norman D. Thompson, all of Dallas, Oreg., assignors to Towmotor Corporation, Mentor, Ohio

Filed Mar. 27, 1975, Ser. No. 562,610

Int. Cl.² B66F *9/18*

U.S. Cl. 214—620 10 Claims



1. A container handling attachment, for a lift truck having a pair of forwardly extending, vertically movable lift forks, which attachment enables such truck to handle a relatively large, horizontally disposed cylindrical object having a pair of longitudinally spaced lifting bars disposed in offsetting relation to one side of the periphery of such object, said container handling attachment comprising:

a frame having a pair of laterally spaced side frame assemblies;

means for individually mounting each of said side frame members to respective ones of said lift forks of the truck;

a pair of lifting lugs, each carried on a respective one of said side frame members and positioned for lifting engagement with a respective one of said lifting bars of the object;

latching means mounted to said lifting lugs for selectively retaining said lifting bars on said lugs, said latching means being movable from an open, nonretaining position to a closed position in which said latching means is disposed in retaining engagement with said lifting lugs about said lifting bars so as to prevent the disengagement of said bars when the latching means is in its closed position;

actuator means;

over-center linkage means interconnected between said actuator means and said latching means for moving said latching means between said open and closed positions in response to said actuator means, said linkage means having a bell crank pivotally movable in one direction upon an opening response from said actuator means and in the opposite direction upon an opening force exerted thereon through said latching means; and

stop means secured adjacent said bell crank for engagement therewith to limit the pivotal movement of said bell crank in said opposite direction so as to prevent said opening force from opening said latching means.

3,982,646
REACH TRUCKS

Graham Edward Gaskin, Ipswich, England, assignor to Ransomes Sims & Jefferies Limited, Suffolk, England

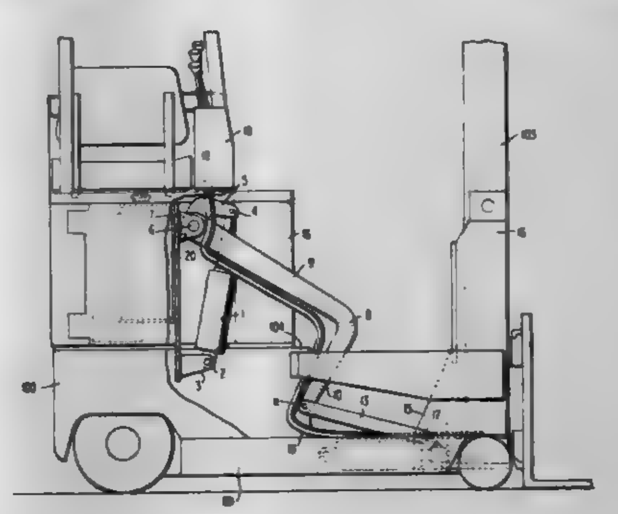
Continuation of Ser. No. 400,545, Sept. 25, 1973, abandoned.

This application Aug. 14, 1975, Ser. No. 604,813

Claims priority, application United Kingdom, Oct. 3, 1972, 45568/72

Int. Cl.² B66F *9/10*

U.S. Cl. 214—670 4 Claims



1. A reach truck comprising:

a frame;

a pair of parallel guides forming a lower part of said frame and mutually spaced transversely of the truck, said guides defining a first plane;

a mast supported on and reciprocably movable along said guides; and

mechanism for moving said mast along said guides between an extended and a retracted position, said mechanism including a cranked lever having a first, upright part pendantly mounted on an upper part of said frame and alongside the front thereof for rotation about a pivotal axis parallel with said first plane, and a second part extending from said first part at a location remote from said pivotal axis of said lever in the direction away from said mast, means for rotating said lever about its pivotal axis, and a link having a first pivotal connection with said mast in the vicinity of said first plane and a second pivotal connection with said second part of said lever, said second pivotal connection being in the retracted position of said mast located on the side remote from said mast of a second plane normal to said first plane and containing both said first part of said lever and said pivotal axis of said lever, the attitude of said link relative to said first plane ensuring that throughout the entire movement of said mast on extension or retraction thereof the force transmitted through said link has a major component parallel with said guides.

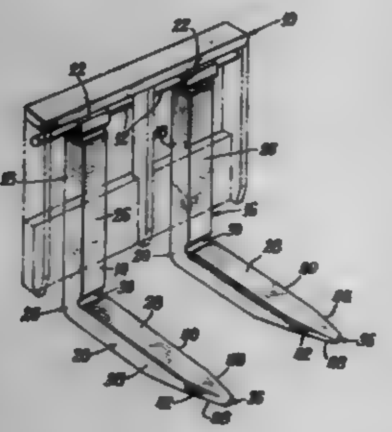
3,982,647
LIFT TRUCK FOR CONCRETE BLOCKS

Edward G. Teutsch, Willoughby, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Apr. 28, 1975, Ser. No. 572,245

Int. Cl.^{2} B66F *9/14*

U.S. Cl. 214—750 8 Claims



1. A carriage assembly for use on a lift truck, comprising a carriage including a transverse mounting bar means, and at least one load supporting fork, the fork being L-shaped and including a vertical leg having means for attachment to the transverse mounting bar means of the carriage and a horizontal leg extending forwardly from the carriage for engagement with a load, the horizontal leg having a flat upper surface arranged for supporting engagement with the load, the vertical leg having a forwardly facing surface also engagable with the load,

the L-shaped fork including an angular portion arranged at an intersection between the surfaces, the intersecting portion of the fork being undercut to a depth including the right angle intersection of the surfaces so that a rectangularly shaped load may be engaged and supported in simultaneous abutting relation with both of the surfaces,

the fork also including a forwardly projecting tip, the forwardly projecting tip having a spherical configuration to facilitate engagement of the fork with the load.

3,982,648
LIFT ARM SAFETY BAR

Ronald E. Luedtke, Elmhurst, and Clarence A. Ardelt, Wheaton, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Nov. 10, 1975, Ser. No. 630,106

Int. Cl.^{2} E02F *3/80*

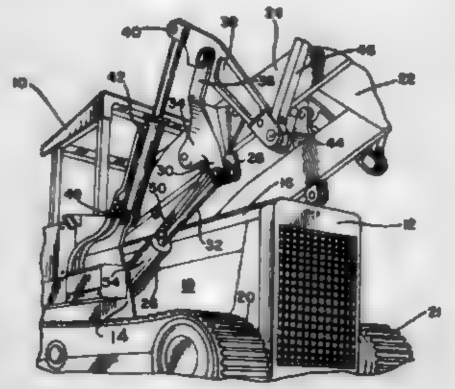
U.S. Cl. 214—776 8 Claims

1. In a generally longitudinally disposed linkage in a loader, the combination including:

a generally upright loader carrier frame;

boom structure and lift rod-and-cylinder structure projecting at the end forwardly from the frame;

said boom and cylinder structures at the projecting end being secured together by a pivotal connection therebetween at a point on the boom structure offset downwardly by an arm crook thereon and at a point on the end of the rod, and at the rear end being swingably connected to said frame in an upper portion and in a lower portion, respectively, to swing up and down substantially parallel to one another in a longitudinal vertical plane, the cylinder to said cylinder structure and the extended portion of the rod relative thereto forming an engageable notch at their external juncture; and



a rigid, elongated prop between the boom and cylinder structures to hold the rod in an extended position relative to its cylinder, said prop at a free end thereof projecting rearwardly, and at a restrained end being swingably connected to the boom structure to swing from an inoperative upper position, to an operatve lower position with the restrained end retained by the swing connection projecting toward seated registry in the crook of the arm and the free end projecting toward seated registry in said notch.

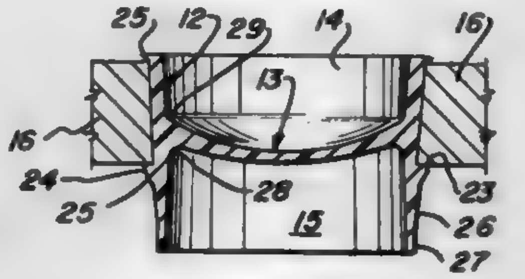
3,982,649
BUNG FOR A BARREL

Herbert J. Wanderer, Wheatridge, Colo., assignor to Denver Plastics, Inc., Denver, Colo.

Filed Jan. 30, 1975, Ser. No. 545,498

Int. Cl.^{2} B65D *39/04*

U.S. Cl. 217—108 23 Claims



1. A bung for a container having a wall with a bung orifice comprising:

a resiliently yieldable outer shell with an inner cavity, an inner end and an outer end, said outer shell having a main body section substantially conforming in length to the thickness of the container wall defining said bung orifice and having an external wall surface adapted for sealing engagement with the wall of the container defining said bung orifice, said external wall surface of said main body section being greater in size than the internal dimension of the bung orifice for the radially inwardly directed compression of said main body section upon the forcible insertion of said outer shell into a bung orifice; and

a resiliently yieldable closure head within the outer shell having an outer annular marginal edge attached at the inside of the outer shell, the center point of said attachment along said outer shell being spaced from and between the inner and outer ends of said main body section, said closure head extending generally transverse to said outer shell and arranged along a continuous line from the attachment to the outer shell and meeting at the center of said closure head, said closure head being yieldable to an inwardly bowed position under compression in response to the radially inwardly directed compression on said main body section with the resiliency of said closure head under compression applying radially outwardly directed forces via the closure head that are substantially uniformly applied to the circumference of the outer shell tending to increase the sealing effect of the bung in the bung orifice.

3,982,650
COLLAPSIBLE CONTAINER

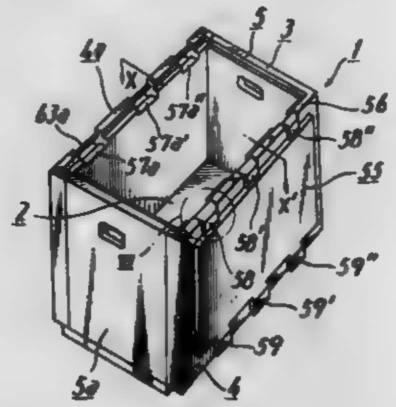
Shigeo Ichihara, Matsudo, Japan, assignor to Dainippon Plastics Co., Ltd., Osaka, Japan

Filed Oct. 14, 1975, Ser. No. 622,329

Claims priority, application Japan, Dec. 20, 1974, 49-147145; Oct. 19, 1974, 49-126370[U]; Oct. 22, 1974, 49-128182[U]; Dec. 20, 1974, 49-155333[U]; Dec. 20, 1974, 49-155334[U]

Int. Cl.^{2} B65D *7/00, 9/12*

U.S. Cl. 220—4 F 9 Claims



1. A collapsible container comprising a substantially rectangular bottom plate and side plates surrounding the bottom plate, at least one of the side plates being formed in its inner surface with a plurality of recessed portions aligned along one end thereof and each having a vertical pin supported by opposed walls defining the recessed portion, another one of the side plates being adjacent to the side plate and provided with a plurality of hinge projections positions in corresponding relation to an engaged in the recessed portions respectively, each of the hinge projections including grooved bearing portions open substantially toward a direction A in which the grooved bearing portions are open when said plates are assembled to comprise said container in its uncollapsed state and an elastic piece for rotatably retaining the vertical pin, each of the hinge projections releasably abutting against an outer wall defining each of the recessed portions.

3,982,651
CONTAINER AND CLOSURE CAP THEREFOR

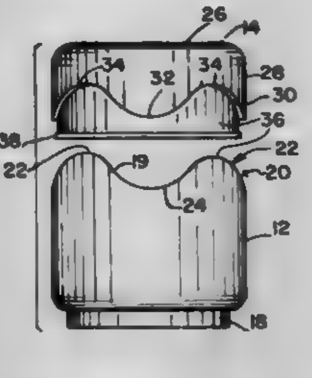
Morris Braun; John M. Gerty, Jr., both of Chicago, Ill., and George B. Spransy, Oconomowoc, Wis., assignors to W. Braun Company, Chicago, Ill.

Filed Nov. 18, 1974, Ser. No. 524,650

Int. Cl.^{2} B65D *11/02, 43/10*

U.S. Cl. 220—4 B 3 Claims

1. A container and closure cap therefor, said container having an open top, a continuous sinuous surface adjacent said open top, said sinuous surface including alternately equally spaced rounded projections merging into adjacent alternately equally spaced rounded recesses, with all parts of said sinuous surface normal to the longitudinal axis of said container, a closure cap for said container, said container having a depth greater than the depth of said closure cap, said closure cap having a skirt and an open bottom, a continuous sinuous surface on said skirt, said continuous sinuous surface on said skirt including alternately equally spaced rounded projections merging into alternately equally spaced adjacent rounded recesses, said last mentioned sinuous surface shaped complementary to said container sinuous surface, with all parts of said last mentioned sinuous surface normal to the longitudinal axis of said closure cap, said closure cap sinuous surface adapted to engage said container sinuous surface with the rounded projections of one positioned in the rounded recesses of the other when the closure cap is in closing position, said closure cap having a short annular wall portion offset inwardly of its respective sinuous surface, with said short annular offset wall portion having an annular bead at the bottom edge thereof and said container having an annular groove to be engaged by said bead when said closure cap is secured to said container, said short annular offset wall portion of said closure cap having an annular free edge which is in close proximity to its respective sinuous surface, said short annular offset wall of said closure cap adapted to interfit within the said container adjacent its sinuous surface to secure said closure cap to said container, said sinuous surfaces of said closure cap and container when in abutting engagement presenting a uniform exterior surface for said closure cap and container at said abutting engagement, rotation of said closure cap with respect to said container causing the projections of the sinuous surface of the closure cap to move out of the recesses of the container to dislodge the closure cap from the container.



3,982,652
FASTENING DEVICE IN COLLAPSIBLE CONTAINERS

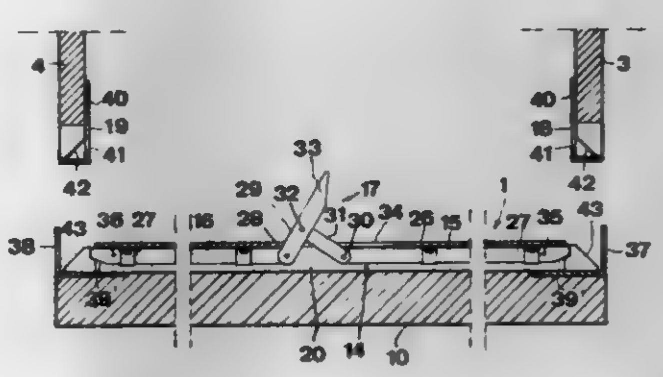
Hans-Elov Nordgren, Pl. 4322, S-828 00 Edsbyn, Sweden

Filed Dec. 21, 1973, Ser. No. 427,143

Claims priority, application Sweden, Jan. 10, 1973, 7300279

Int. Cl.^{2} B65D 7/24

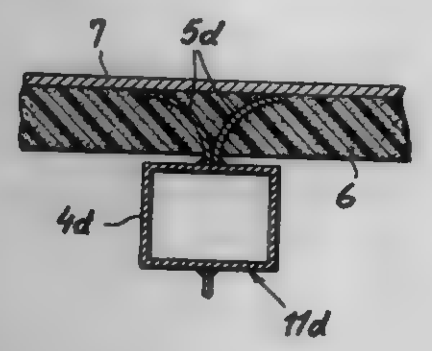
U.S. Cl. 220—7 19 Claims



1. A collapsible container comprising a plurality of interconnected walls defining an enclosure, said walls including two spaced opposing walls having at least one end edge facing in generally the same direction, a third wall having a face opposing said two walls end edges, and a locking mechanism releasably connecting said third wall to said two walls, said locking mechanism including a pair of oppositely facing locking members carried by said third wall, openings in said two walls for receiving said locking members and cooperating with said locking members for urging said end edges against said third wall, and a common actuator for said locking members.

3,982,653
PARTITION WALL FOR TANKER CARRYING CRYOGENIC-TEMPERATURE LIQUID

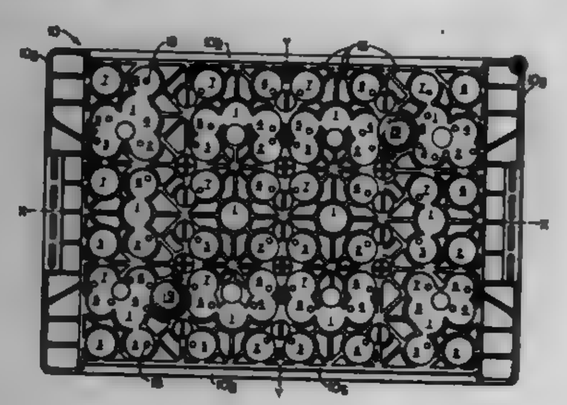
Rudolf Becker, Munich, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany
Filed May 12, 1975, Ser. No. 576,310
Claims priority, application Germany, May 14, 1974, 2423187
Int. Cl.² B65D *25/18, 25/00, 85/00*
U.S. Cl. 220—9 LG **13 Claims**



1. A container for transporting liquid at cryogenic temperatures, comprising:
wall means including at least one vertical side wall and and a horizontal bottom wall defining a receptacle for said liquid;
a partition upstanding in said receptacle and subdividing same into separate liquid-containing compartments;
means yieldably connecting said partition to said side wall;
means securing said partition to said bottom wall; and
a layer of thermal insulation along said side wall, said partition being formed of cold-resistant metal and being maintained at substantially the same temperature as the cryogenic liquid in said compartment, said partition comprising a series of spaced apart parallel vertical tubes and pairs of back-to-back strips concave outwardly from one another bridging successive tubes and formed nonplanar webs between them.

3,982,654
PLASTIC CASE SYSTEM

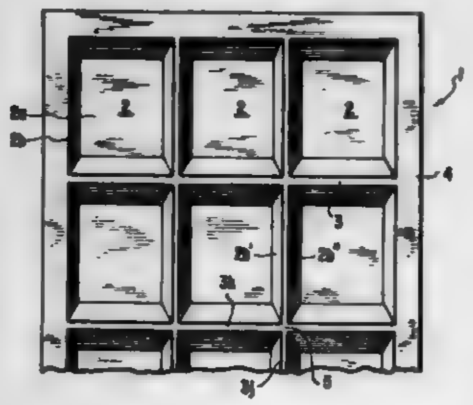
Robert S. Gottsegen, 10 Harwood Terrace, Leominster, Mass. 01453
Filed Aug. 21, 1974, Ser. No. 499,373
Int. Cl.² B65D *21/02*
U.S. Cl. 220—21 **7 Claims**



1. A system of cases comprising one layer of identical generally rectangular plastic cases arranged next to each other, each case holding an array of twelve upstanding containers which extend above the case, said containers being arranged in three columns with four containers in each column, another similar layer of cases resting on the crowns of the containers in said one layer, each of said cases including means defining a bottom wall and an array of recesses in the underside of the bottom wall for receiving the crowns of the underlying containers, said other layer being oriented 90° relative to said one layer so that recesses in the cases in said other layer receive the crowns of containers in at least two different cases in said one layer, said array of recesses being symmetric about both the X and Y axes of the bottom wall so that the array is composed of mirror image repeats of the arrangement of recesses in a single quadrant of the bottom wall and wherein the array of recesses is composed of a plurality of different sets of recesses, a first of said sets being symmetric about both the X and Y axes of the bottom wall, a second and third of said sets being symmetric about only one of said axes, and a plurality of sets and said sets being symmetric about neither of said axes.

3,982,655
NESTABLE COMPARTMENTALIZED TRAYS

Günther Kaupert, Thuringer Str. 1, D-5927 Erndtebruck, Westphalia, Germany
Division of Ser. No. 385,240, Aug. 3, 1973, Pat. No. 3,884,381. This application Apr. 4, 1975, Ser. No. 565,215
Claims priority, application Germany, Aug. 4, 1972, 2238393
Int. Cl.² B65D *21/02, 1/34*
U.S. Cl. 220—23.6 **2 Claims**



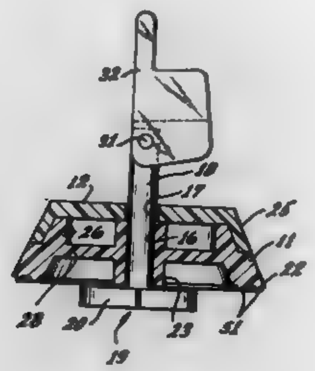
1. A stack constituted by a plurality of nested compartmentalized trays each having a plurality of cup-shaped depressions; each depression having a base and side walls sloping inwardly towards the base; two side-by-side extending side walls of two adjoining depressions in the same tray being convergent in a direction away from the bases and terminating in a common, straight connecting edge, whereby each tray has a plurality of straight connecting edges; the improvement wherein at least one straight connecting edge in each tray of the stack has a height distance from the base of the associated depressions that is different from the height distance of the remaining straight connecting edges in the same tray; said at least one straight connecting edge in each tray abutting a straight connecting edge of an immediately adjoining nested tray, the abutting straight connecting edges of the two immediately adjoining nested trays being at different heights from the base of their respective depressions, whereby the side walls of mutually nesting depressions are urged to be maintained spaced from one another.

3,982,656
CAN SEALER

Edward C. Kusmierski, 9323 Hasty Ave., Downey, Calif. 90241; John R. Lopez, 345 N. 6th St., Montebello, Calif. 90640, and Phillip Silverman, 8535 W. Knoll St. No. 210, West Hollywood, Calif. 90069
Filed Oct. 10, 1975, Ser. No. 621,493
Int. Cl.² B65D *53/00, 45/00*
U.S. Cl. 220—238 **6 Claims**

1. A can sealer for resealing an oval opening in a flat can cover, said sealer comprising:
a resilient member of a size to cover said opening;
said resilient member having a central aperture;

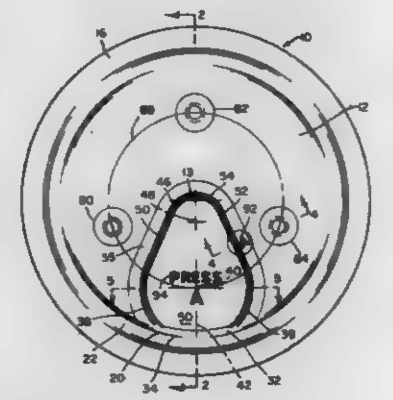
first means extending through said aperture and said opening in said can cover, and adopted to engage said cover;
second means in cooperation with said first means to cause said first means to bear against said cover to compress said resilient member between said cover and said second means;
said resilient member being in the shape of a cup having a base and a skirt attached to the periphery thereof;



a resilient boss disposed around said central aperture and within said skirt;
said first means including a T-shaped member having a stem and a head attached perpendicular thereto; and
said stem being disposed through the central aperture with said head disposed on the same side of said base as said skirt.

3,982,657
ONE PIECE CONTAINER END MEMBER WITH AN INTEGRAL HINGED OPENING TAB PORTION

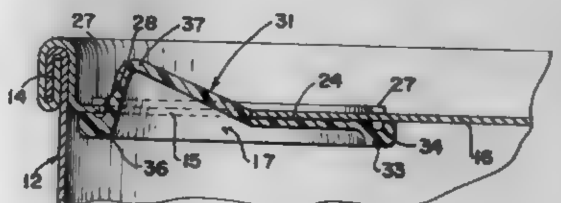
Jerome Edmund Keller, Lakewood; Ronald Lynn Moore, and Harold Cook, Jr., both of Golden, all of Colo., assignors to Coors Container Company, Golden, Colo.
Filed July 28, 1975, Ser. No. 599,812
Int. Cl.² B65D *41/32*
U.S. Cl. 220—268 **31 Claims**



1. A container end member, for sealed association with a container body member to provide a sealed container, comprising:
a generally annular one piece sheet of material having a central axis;
an outer annular rim portion for sealed association with the container body member;
a central end wall portion integrally connected to said rim portion and extending generally transversely relative to said central axis; and
a severable and displaceable tab portion in and integrally connected to said central end wall portion having:
an integral hinge portion having circumferentially spaced opposite ends and being located adjacent said outer annular rim portion and extending in generally circumferentially parallel closely spaced relationship relative thereto; and
severable score groove means defining a severable wall portion for (separating) severing said tab portion from said central wall portion by axially inwardly directed forces, said score groove means and said severable wall portion extending from said opposite ends of said hinge portion generally radially inwardly relative to said outer annular rim portion toward said central axis and being located in part closely adjacent said central axis and defining a radially elongated and circumferentially extending tab portion area axially inwardly displaceable relative to said central end wall portion by pivotal movement about said hinge portion to provide an opening for the container having a vent portion adjacent said central axis and a pouring portion adjacent said rim portion.

3,982,658
EASY OPENING CONTAINER WITH RETAINED CLOSURE

John S. Bozek, Chicago, and Harry A. Peyser, Olympia Fields, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Continuation of Ser. No. 513,433, Oct. 9, 1974, abandoned, which is a continuation of Ser. No. 365,003, May 29, 1973, abandoned. This application May 19, 1975, Ser. No. 578,447
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 20, 1976
Int. Cl.² B65D *43/14, 51/04*
U.S. Cl. 220—337 **11 Claims**



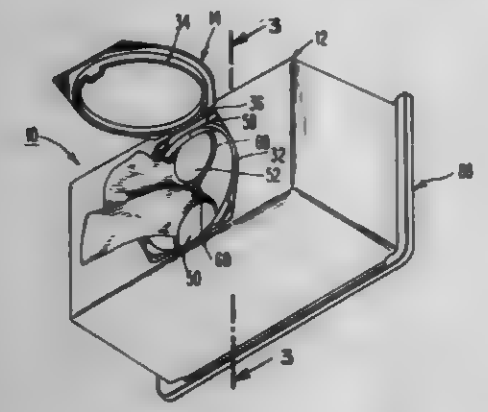
1. An easy opening end closure for a container comprising a metal panel, an opening formed in said panel, a closure made from plastic material underlying said opening and having a closure flap, an attachment band hingedly attached to said flap and permanently bonded to the underside of said panel, marginal edge portions about said flap releasably bonded to the underside of said opening, and a tongue integral with said panel extending into said opening from the edge along which said attachment panel is permanently bonded, said tongue being permanently secured to said flap.

3,982,659
BULK PACKAGE FOR SUBSTANTIALLY WET SHEETS AND DISPENSING DEVICE THEREFOR

Richard T. Ross, Aston, Pa., assignor to Scott Paper Company, Philadelphia, Pa.
Filed Dec. 24, 1975, Ser. No. 644,022
Int. Cl.² B65H *1/00*
U.S. Cl. 221—63 **13 Claims**

1. A dispensing device employed in a bulk package of substantially wet sheets which are successively and temporarily interconnected for permitting individual pop-up dispensing of the wet sheets, said dispensing device including:
A. a substantially flat section having an opening therethrough which is adapted to communicate with the sheets, and through which successive sheets are adapted to be individually dispensed, said opening including curved surfaces which are substantially free of sharp angles and bends providing spaced lobes; and
B. hingedly connected flexible flaps normally disposed within said lobes in substantially the same plane as the flat section, said flaps having substantially curved outer margins which are substantially free of sharp angles and bends, the outer margins of said flaps being closely positioned to curved surfaces providing the lobes to form

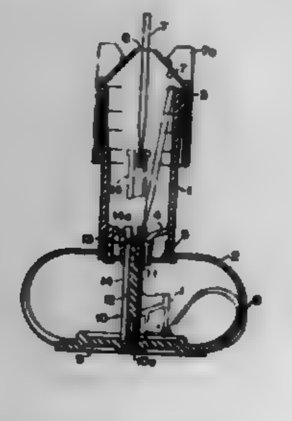
restricting channel means into which successive sheets are directed during sheet dispensing, successive sheets encountering frictional resistance by surfaces of restricting channel means during dispensing of immediately preceding sheets to separate a successive sheet from its



immediately preceding sheet after said immediately preceding sheet has been withdrawn from the package with a portion of the successive sheet extending through the opening to thereby provide for the easy dispensing of the successive sheet.

3,982,660
TOOTH PICK HOLDER

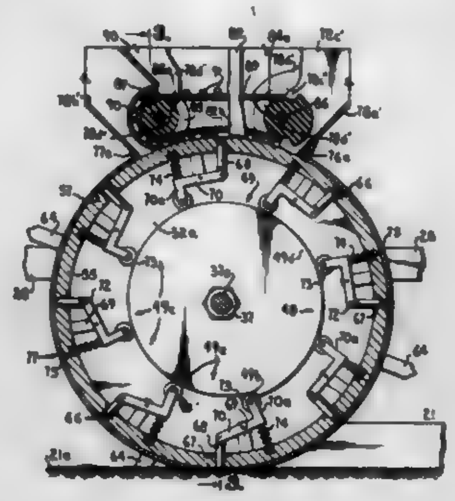
Kimio Hashimoto, 2-3-22, Takeoka, Kiyose, Tokyo, Japan
Filed Nov. 6, 1975, Ser. No. 629,655
Claims priority, application Japan, Nov. 18, 1974, 49-130640
Int. Cl.² B65D *83/02*
U.S. Cl. 221—190 **6 Claims**



1. A toothpick holder comprising:
a substantially cylindrical container capable of containing a multiplicity of toothpicks therein, said container having a funnel-shaped bottom formed as an integral element of the lower part thereof and also having an annular skirt extending downward from the lower peripheral wall thereof;
a cover member removably mounted on the upper part of said container, said cover member having a frusto-conical guide wall terminating in a toothpick dispensing opening in the upper part thereof for guiding one toothpick after another toward said dispensing opening during dispensing;
a toothpick ejecting unit fixed upright to the center of a support base, said toothpick ejecting unit including a rod having at the upper end thereof a recess for receiving and supporting one end of the toothpick to be dispensed, and a plurality of guide vanes fixed vertically to the outer peripheral surface of said rod in equally angular relationship and freely slidably received in associated guideways formed in said bottom of said container, each said guide vane protruding beyond the upper end of said rod and being formed on the inner wall surface thereof with a tapered rib which extends from a point adjacent to the top of said guide vane to the peripheral edge of said supporting recess formed at the upper end of said rod; and
resilient means for restoring said container and said cover member to the original non-operative position after dispensing of the toothpick by forcing said container and said cover member downward along said ejecting unit to the toothpick dispensing position.

3,982,661
SEED PLANTER FOR INDIVIDUAL SEEDS

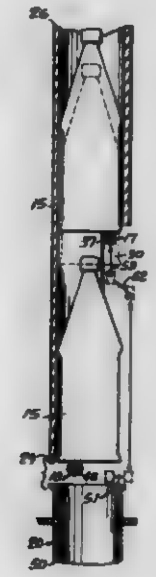
Floyd L. Feltrop, 203 E. Shawnee St., Paola, Kans. 66061
Filed Dec. 18, 1974, Ser. No. 533,991
Int. Cl.² A01C *7/18;* **B65H** *5/00*
U.S. Cl. 221—235 **3 Claims**



1. Means for mechanically planting seeds, comprising, in combination:
a frame adapted for connection to a trailer hitch,
a non-rotating shaft fixedly mounted on said frame and extending at substantial right angles to the direction of forward movement thereof,
a wheel rotatably mounted on one end of said shaft,
said wheel hollow-centered and made up of a cylindrical rim member and inboard (with respect to the frame) and outboard circular plates removably fixed to said rim,
the rotatable mounting of the wheel on the shaft comprising a bearing carried centrally on the inboard plate, the latter penetrated by the shaft, whereby the outboard shaft end is received inside of said wheel,
a cam carried on the outboard end of the shaft within said wheel,
means operatively associated with said wheel for ensuring rotation of the wheel on said shaft when the frame is pulled over the ground,
a plurality of spaced openings provided through said rim around the periphery thereof,
a plurality of plungers mounted on the inside of said wheel, one received in each said opening and adapted to reciprocate therewithin,
means positioned within said wheel and cooperating with said cam for controlling the reciprocation of the several plungers with respect to one another, whereby each plunger is retracted radially inwardly except at the downward position and shortly following same, when each plunger is moved radially outwardly,
forward (in the forward direction of motion of the frame) and rearward shield means each closely enclosing the wheel rim from closely adjacent the top center portion thereof to closely adjacent the bottom portion thereof, whereby to leave an upper center and a lower center portion of the wheel periphery free,
a source of seeds to be planted by said wheel comprising a seed-carrying hopper mounted above the open upper center portion of the wheel, and
means positioned within the lower portion of said hopper which operate to continuously produce a continuous, aligned stream of seeds which is continuously fed, as said aligned stream, onto the peripheral surface of the rim of said wheel in line with the openings therein,
said last mentioned means continuously moving said aligned stream of seeds in the direction of rotation of the planting wheel as the seeds come into contact with the periphery of the rim thereof,
said last mentioned means maintaining said aligned stream in moving contact with the moving rim peripheral surface substantially across the distance between the forward and rearward shield means at the top thereof,
thereby ensuring sure and positive charging of the said wheel rim peripheral openings with seeds.

3,982,662
ARTICLE ESCAPEMENT MECHANISM FOR CASE PACKING MACHINES

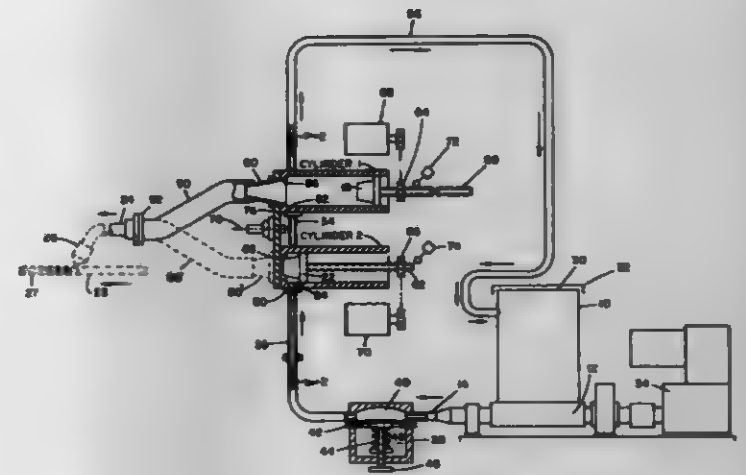
Robert H. Graham, Spokane, Wash., assignor to R. A. Pearson Company, Spokane, Wash.
Filed Nov. 17, 1975, Ser. No. 632,501
Int. Cl.² G07F *11/16*
U.S. Cl. 221—296 **8 Claims**



1. An escapement mechanism for handling articles in successive groups wherein the articles each include a reduces upper end and an enlarged lower end and are initially stacked vertically one against the other with the reduced upper end of one article engaged against the enlarged lower end of an adjacent article to form a plurality of upright columns, the effective heights of said articles being equal, and said columns being arranged parallel to each other and in a rectangular array to form rectangular groups of articles within a hopper with the article groups being urged downward toward a hopper discharge end; said escapement mechanism comprising:
a supportive framework;
stop means adjacent the hopper discharge for alternatively engaging and supporting a group of articles at a first elevation and releasing the articles at a downwardly spaced second elevation;
wherein the stop means includes (a) a laterally movable framework movably mounted to the supportive framework, (b) a number of stop bars equal to the number of article files mounted to the movable framework and extending along the length of the files, and (c) means for laterally moving the stop bars between positions intersecting the article columns and positions laterally clear of the article columns;
lift means for vertically moving the stop means between the first and second elevations; and
retractable support means for intersecting the columns of articles at one of the elevations to provide support therefore while the stop means is moved clear of the article columns and for moving clear of the columns to release a group of articles at the one elevation as the stop means is moved to intersect the columns and provide support therefore.

3,982,663
METHOD AND APPARATUS FOR METERING THIXOTROPIC BATTERY PASTE

Terrance M. Larkin, Littleton, Colo., assignor to The Gates Rubber Company, Denver, Colo.
Filed Feb. 7, 1975, Ser. No. 547,833
Int. Cl.² G01F *11/44*
U.S. Cl. 222—1 **13 Claims**



1. Apparatus for metering thixotropic battery paste at a predetermined volumetric flow rate to a discharge conduit for application to a battery grid substrate comprising:
a reservoir for reception of make-up thixotropic paste;
pump means in fluid flow connection with the reservoir for pumping the paste through a forward conduit;
metering means having an inlet and an outlet and whose outlet is adaptable to be connectible to a discharge conduit and whose inlet is connected to said forward conduit, the metering means comprising:
a first elongated chamber having forward and rearward portions and port means connectible to the inlett for reception of paste, and having a ram mechanically movable within the rearward portion of the chamber for displacing paste at said predetermined volumetric flow rate through said forward portion toward said discharge conduit;
a second elongated chamber having forward and rearward portions and port means connectible to the inlet for reception of paste, and having a ram mechanically movable within the rearward portion of the chamber for displacing paste at said predetermined volumetric flow rate through said forward portion toward said discharge conduit;
means for reciprocally and synchronously moving the rams within the chambers adapted and arranged so that while one of the rams within its associated chamber is displacing paste toward the discharge conduit the other ram is either reversing to enable filling of its associated chamber with paste or is stationary;
valve means for alternately connecting the port means of the first and second chambers to the inlet of the metering means;
means for alternately connecting the forward portions of the first and second chambers to the metering means outlet; and
return conduit means, in fluid communication with said metering means inlet, connected to said reservoir for circulating paste back through said pump means to form a closed loop paste circulation system.

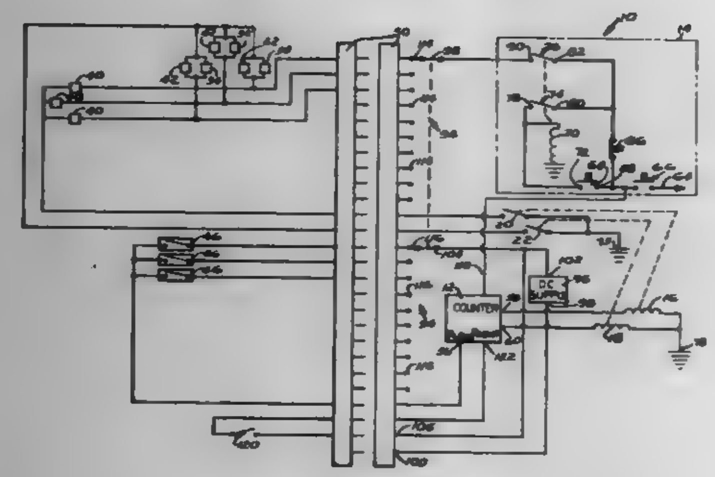
3,982,664
BATCH CONTROLLER FOR GASOLINE HAVING DRIBBLE FEED

Elmer A. Robbins, and William D. Key, both of Fort Wayne, Ind., assignors to Tokheim Corporation, Fort Wayne, Ind.

Filed Sept. 4, 1975, Ser. No. 610,103

Int. Cl.^{2} G07F *13/02*

U.S. Cl. 222—21 **5 Claims**



1. In a batch controller for controlling a plurality of material dispensers, the combination comprising starting circuit means connected to a source of operating potential and including a switch for generating an operating signal in response to operation of said switch, reset circuit means including a reset switch for generating a reset signal in response to operation of said reset switch, presettable counter means for generating a fast-flow control signal and a slow-flow control signal in response to said operating signal, said presettable counter means including a pulse input circuit for receiving electrical pulse signals, means for terminating said fast-flow signal in response to a first selected number of said pulse signals and means for terminating said slow-flow signal in response to a second selected number of said pulse signals, a plurality of flow generating means operable between on and off states in response to said operating signal and said slow-flow signal for generating a flow of material, a pulse generating means coupled to the output of each of said flow generating means for generating an electrical pulse signal in response to each incremental quantity of flow therefrom, a plurality of fast-flow control valve means each being operable between open and closed conditions in response to said operating signal and said fast-flow control signal and to the absence thereof, respectively, for controlling the flow of said material at a first flow rate, a plurality of slow-flow control valve means each being operable between open and closed conditions in response to said operating signal and said slow-flow control signal and to the absence thereof, respectively, for controlling the flow of said material at a second flow rate, said second flow rate being substantially smaller than said first flow rate, there being one said fast-flow control valve means, one of said slow-flow control valve means and one of said incremental pulse generating means associated with each said flow generating means, respectively, and multiple position switch means for individually coupling associated ones of said flow generating means, fast-flow control valve means, slow-flow control valve means, and electrical pulse generating means to said presettable counter means.

3,982,665
OUT-FLOW METERING DEVICE

Hans Frenken; Georg Schindler, both of Leverkusen, and Josef Friedsam, Langenfeld, all of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

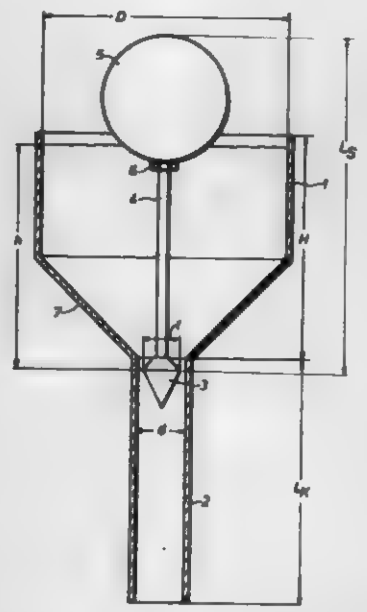
Filed Nov. 6, 1974, Ser. No. 521,480

Claims priority, application Germany, Nov. 9, 1973, 2356010

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.^{2} B67D *5/08*

U.S. Cl. 222—67 **11 Claims**



1. An outflow-metering device for a storage vessel for dispensing a constant stream of liquid per unit of time, comprising an outflow tube connected to the bottom of the storage vessel, a float and a metering element rigidly connected thereto which has a smaller diameter than the internal diameter of the outflow tube, the float being disposed in the storage vessel with the metering element disposed in the outflow tube, whereby the vertical position of the metering element in the outflow tube changes with the liquid level in the storage vessel and remains at a constant distance from the float to provide a substantially constant volume of flow of liquid from the outflow tube while sufficient liquid remains in the storage vessel to support the float.

3,982,666
FINE TIMING APPARATUS FOR ELECTRONIC DETERGENT DISPENSING SYSTEM

David L. Kleimola; Marcus I. Nystuen, both of St. Paul, and David L. Nystuen, Bloomington, all of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Division of Ser. No. 335,136, Feb. 23, 1973, Pat. No. 3,881,328, which is a division of Ser. No. 210,669, Dec. 22, 1971, abandoned. This application Mar. 24, 1975, Ser. No. 561,373

Int. Cl.^{2} D06F *39/02*

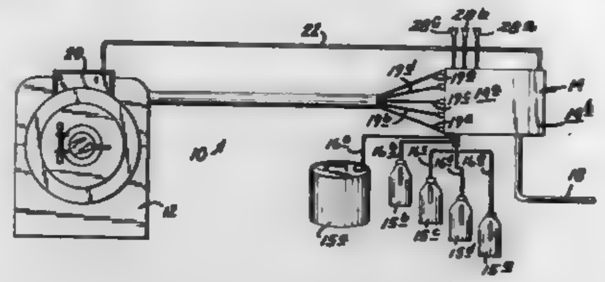
U.S. Cl. 222—70 **4 Claims**

1. In laundry apparatus, a fine timer adapted to be intercalated between a primary coarse timer, which gives an electrical control signal, and a laundry additive injection means energized thereby, to render the injection interval terminable independently of the continuation of the control signal, comprising, in combination:

switching means normally conducting the control signal from said coarse timer to said injection means to initiate operation thereof;

electronic timing means connected to receive said control signal for giving a second signal at a predetermined interval after the reception of said control signal, said second signal thereafter continuing as long as said control signal;

and means connecting said electronic timing means to said switching means to cause and continue interruption of the supply of said control signal to said additive injection means,



so that injection of additive is initiated by the initiation of said control signals, and is terminated by the initiation of said second signal even though said control signal is continuing.

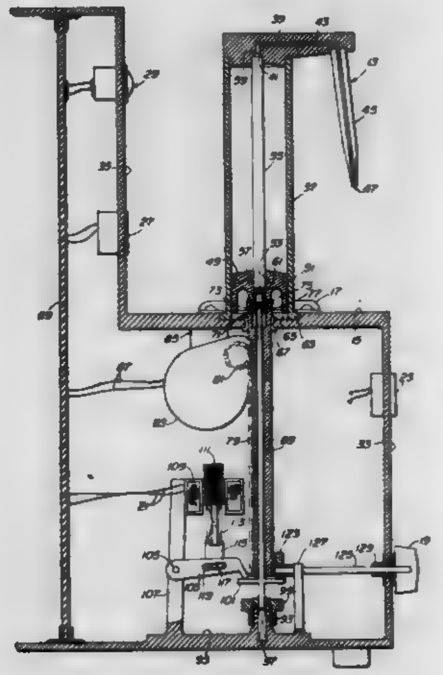
3,982,667
DILUTING LIQUID SAMPLES

Bu Shing Chen, Miami, Fla., assignor to Hyperion Incorporated, Miami, Fla.

Filed Nov. 24, 1975, Ser. No. 634,457

Int. Cl.^{2} B67D *5/14*

U.S. Cl. 222—70 **20 Claims**



1. Apparatus for diluting a sample of liquid with a diluent comprising

a diluent cylinder having an outlet at one end thereof,

a conduit communicating with said cylinder outlet,

a diluent dispensing piston within said cylinder of substantially the same cross section as said cylinder and having a bore therethrough, and a second piston of relatively smaller cross section than said diluent dispensing piston supported in said bore for movement with respect to said diluent dispensing piston,

piston drive means comprising first means for moving said diluent dispensing piston toward said cylinder outlet substantially the full length of said cylinder to dispense a large fraction of diluent contained in said cylinder, and second means for moving said second piston relative to said diluent dispensing piston in a direction away from said cylinder outlet for a distance must less than the full length of said cylinder;

whereby movement of said second, smaller piston enables aspiration of relatively small sample of liquid into said conduit and subsequent movement of said diluent dispensing piston toward said outlet enables ejection from said conduit of said relatively small sample along with a relatively large quantity of diluent.

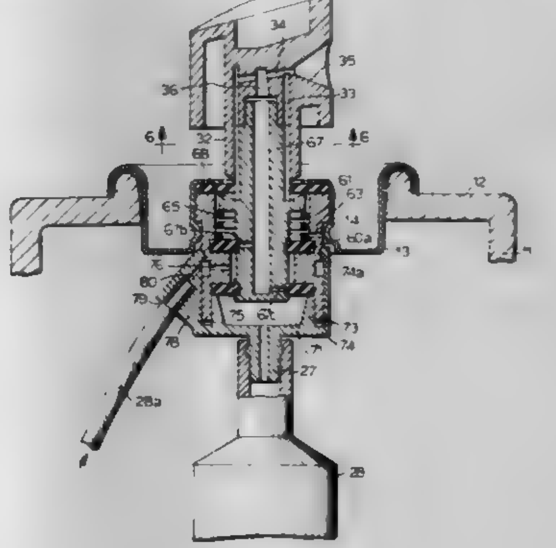
3,982,668
AEROSOL DISPENSER FOR PLURALITY OF FLUENT MATERIALS

Pasquale R. Riccio, Salem, N.H., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 4, 1974, Ser. No. 512,321

Int. Cl.^{2} B65D *83/14*

U.S. Cl. 222—95 **4 Claims**



1. An aerosol type dispenser comprising: a plurality of sources of fluent material to be dispensed and a source of propellant gas under pressure and exerting pressure on the fluent materials of said sources of fluent material, valve means on said dispenser comprising a support, a stem movably mounted on said support, said support having a hollow interior into which said stem is movable, said stem having pressurized fluent material passage means therein and having a first lateral opening opening into said passage means and a second lateral opening opening into said passage means, gasket means in said support through which said stem is slidable in sealing engagement for closing and opening said lateral openings, one of said sources of fluent material opening into the space around the lower end of said stem to which said first lateral opening is exposed, the other of said sources opening into the hollow interior of said support to which said second lateral opening is exposed, a further gasket on said support and a flange on said stem in said hollow interior of said support engaging said further gasket when the stem is in a raised condition, said support having a bore therein communicating with said source of propellant gas and opening into said hollow interior, and a dispensing nozzle means on the end of said stem outside said support, said stem having propellant passage defining means along the outer surface thereof from said support to said dispensing nozzle means, the bore in the support, the hollow interior and the propellant passage defining means constituting a pressurized gas flow path to said nozzle means.

3,982,669
HOT MELT DISPENSING APPARATUS AND METHOD

Leo M. Moore, Ashland, Va., assignor to Industrial Machine Service Company, Richmond, Va.

Filed Nov. 20, 1975, Ser. No. 633,649

Int. Cl.^{2} B67D *5/62;* **G01F** *11/00*

U.S. Cl. 222—146 HE **35 Claims**

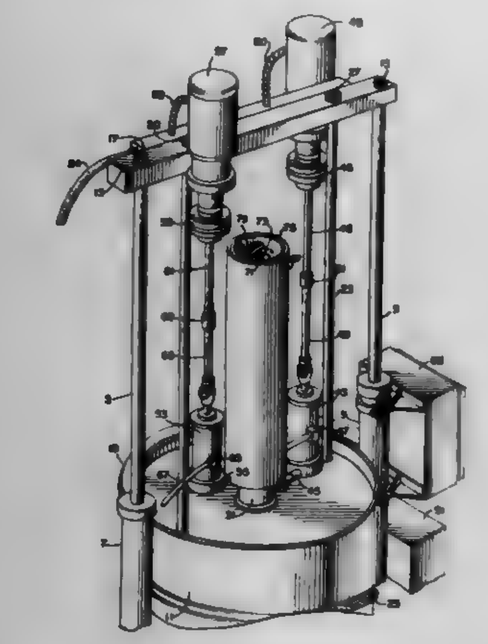
1. A system for dispensing material from a container comprising:

a plate having a top surface and a bottom surface and having an aperture therethrough, said plate being shaped to fit inside a container which contains a material that is to be dispensed;

resilient wiper means surrounding said plate, said wiper means being adapted to slidably engage the inside surface of said container;

a coupler having at least a first chamber and a second chamber, said coupler being secured to said top surface of said plate such that said first chamber communicates with said aperture in said plate;

a pump having an inlet secured to said coupler in such a manner that said inlet communicates with said first chamber of said coupler and having an outlet secured to said coupler such that said outlet communicates with said second chamber of said coupler;



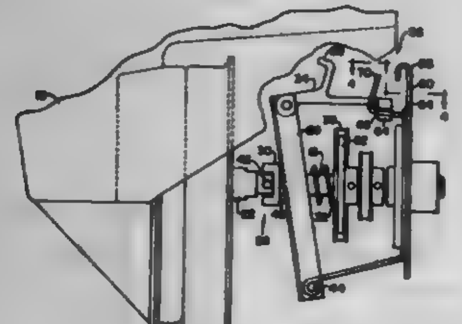
a hollow standpipe having a first end secured to said coupler in such a manner that said hollow stand-pipe communicates with said second chamber of said coupler; and

a de-aerator cap detachably coupled to said second end of said hollow standpipe, whereby said pump when operating pumps said material out of said container through said aperture in said plate, through said hollow standpipe and through said de-aerator cap to thereby remove any entrapped air from said material.

3,982,670
DISENGAGEABLE PLANTER SEED METER DRIVE

Ronald William Brass, Bettendorf, Iowa, assignor to Deere & Company, Moline, Ill.

Filed July 10, 1975, Ser. No. 594,775
Int. Cl.² A01C *7/18, 7/20*
U.S. Cl. 222—177 **8 Claims**

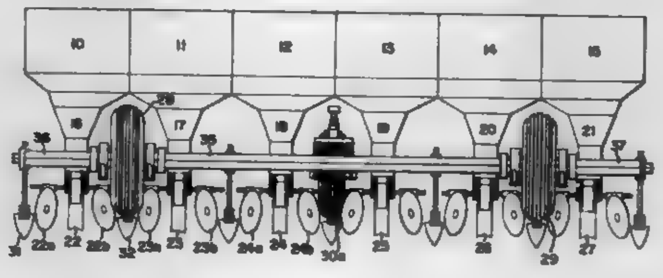


1. On a planter assembly, a mobile frame having groundengaging drive wheels; a power shaft; a drive train extending between the wheels and power shaft for driving the latter; a seed hopper supported on the frame; a seed selecting and dispensing means, including a seed delivery means for transferring said seed from the selected means to a furrow, and including a seed meter drive shaft therefore axially aligned with the power shaft, the improvement comprising: a sliding coupler means between the power shaft and seed meter drive shaft for engagably coupling said shafts; biasing means for biasing the coupler means towards an engaged position; a control lever connected to and shiftable with the coupler means and pivotally mounted at one end on the frame; a wall supported on the frame in offset but facing relation to the lever and having a first opening therein; structure offset from the wall and rigid therewith and having a second opening therein; an arm pivotally carried on the lever and shiftable through the first and second openings and having a lug thereon for selectively engaging the edges of the respective openings for locking said coupler means in its disengaged or engaged positions respectively.

3,982,671
MULTIPLE FEED POTATO PLANTER

Robert B. Curl, 1960 Floral Ave., P.O. Box 562, Twin Falls, Idaho 83301

Filed Aug. 28, 1975, Ser. No. 608,559
Int. Cl.² A01C *15/00*
U.S. Cl. 222—178 **7 Claims**



1. A potato planter having a plurality of feed tubes each associated with a plurality of hoppers, comprising:

a. at least a pair of central feed tubes associated with at least one central hopper having a transverse bar attached thereto and tractor attachment means supported by said transverse bar, each said feed tube having associated therewith a conveyor chain to convey potato seed from a main feed hopper to a discharge end of said feed tube;

b. a pair of forward support wheels in close alignment with the lower extremities of said feed tube immediately outboard of said central hopper and near the front of said hopper;

c. at least one pair of trailing wheels located to the rear of said hoppers and secured to support means above said trailing wheels to permit travel in any direction;

d. a pair of outboard hoppers, one each attached to the outermost hoppers of the central hoppers and outboard of said forward support wheels, and

e. attachment means adapted to attach to the hydraulic lift mechanism of a tractor to lift said forward support wheels off the ground.

3,982,672
APPLICATORS OF GRANULAR MATERIALS

Horstine Farmery, North Newbald, York, England

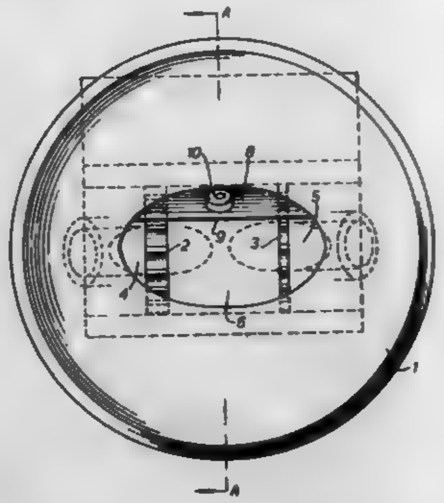
Filed June 11, 1975, Ser. No. 585,746

Claims priority, application United Kingdom, June 14, 1974, 26431/74

Int. Cl.² G01F *11/00*
U.S. Cl. 222—274 **6 Claims**

1. In a machine, for delivery of metered quantities of granular material, comprising a hopper, a discharge outlet, and a metering device in the lower regions of the hopper for conveying measured quantities of granular material between said hopper and said discharge outlet, said metering device comprising a cylindrical rotary member with peripheral flutes defining peripheral recesses in said member which recesses are, when the member is rotated, successively charged with

granular contents from said hopper, peripherally closed by an internal surface of said hopper, and open at the discharge outlet to permit discharge of the conveyed material, the improvement comprising: non rotatable cylindrical members at the ends of said rotary member and closing the ends of said recesses, a wear member in the form of a cylindrically arcuate plate overlying a portion of the periphery of said rotary member at one side of and extending to said hopper and overlying adjacent portions of said non rotatable members, and means releasably securing said wear member to at least one of said non rotatable members.



3. A machine as claimed in claim 1 in which the metering device comprises a plurality of rotary bodies, each having granular material conveying recesses therein, arranged for rotation about a common axis, a non rotatable member therebetween, and wherein a single wear member extends parallel to said common axis to effectively close each recess in each rotary member before that recess is closed by the associated internal hopper surface.

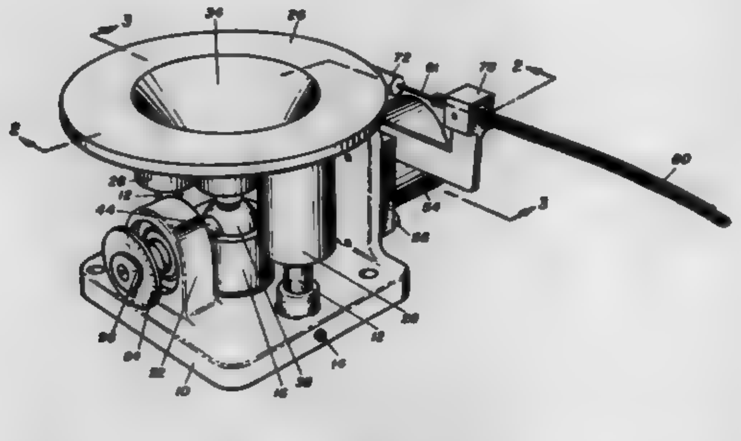
3,982,673
DISPENSER FOR EXPLOSIVES HAVING ADJUSTABLE TRAP CHAMBER

William R. Van Brussel, Mount Pleasant; Joseph C. Lestage, and Wayne J. Hartman, both of Burlington, all of Iowa, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 19, 1975, Ser. No. 559,954

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976

Int. Cl.² G01F *11/00, 11/10*
U.S. Cl. 222—306 **3 Claims**



1. A ball dispenser for initiating explosives which comprises:

a base casting having integral bearing housing sections positioned thereon;

a pair of vertically positioned guide rods fixedly attached to said base casting;

hopper means slidably supported on said guide rods for holding a reserve supply of an explosive powder therein which includes;

a circularly shaped flanged hopper casting having guide bosses vertically positioned thereon, said bosses having bushing bores axially positioned therein and a hyperbolically shaped feeder section having an axially positioned insert counterbore therein;

ball bushings fixedly held in said bushing bores for slidably moving on said guide rods; and

a seal insert fixedly positioned in said insert counterbore, said insert having a spherically shaped end which contacts said transport means and prevents powder leakage therefrom during loading, transport and unloading positions of said dispenser;

variable volume transport means comprising a ball housing rotatably supported in said bearing housing sections for receiving a charge of explosive powder from said hopper means and for unloading said powder therefrom;

means for funneling said powder from said transport means;

actuator means for sequentially rotating said transport means from a loading position to an unloading position; and

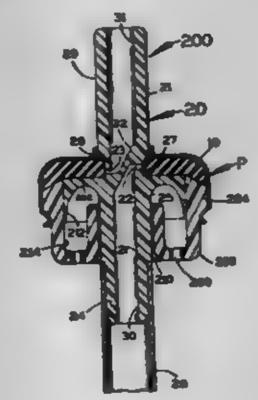
means for voiding said initiating explosive powders from said hopper means, said voiding means being remotely actuated.

3,982,674
VALVE

William D. Mildern, 11799 NW. 26 St., Coral Springs, Fla. 33065

Continuation-in-part of Ser. No. 420,229, Nov. 29, 1973, Pat. No. 3,841,602. This application Sept. 9, 1974, Ser. No. 504,200

Int. Cl.² B65D *83/14*
U.S. Cl. 222—402.21 **10 Claims**



1. In a valve for use with a pressurized aerosol dispensing container containing pressurized product which valve comprises:

hollow annular mounting means for sealed attachment to the mouth of the container and having an inside cylindrical surface;

an axially movable, tubular valve body spaced inward from said cylindrical surface, which valve body includes a longitudinal bore therethrough with a wall having vertically offset portions and separating the bore into an eduction passageway below said wall and a discharge passageway above said wall, an inlet orifice below said wall and formed in said valve body in communication with said eduction passageway, an outlet orifice above said wall and formed in said valve body in communication with said discharge passageway, and said orifices having bottoms with the bottom of said outlet orifice below the bottom of said inlet orifice; and

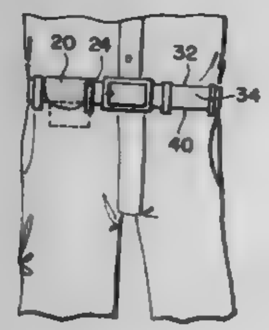
an annular elastomeric sealing gasket encompassing said valve body with its inner margin normally sealingly occluding both of said orifices to close said valve and overlying said annular mounting means, said gasket having an underside;

the separation between the bottoms of said inlet and outlet orifices providing occlusion of the inlet orifice before the outlet orifice by said gasket as the valve moves toward closure;
the improvement wherein:
said valve body has a circular, yieldable piston affixed thereto normally engaging the underside of said gasket and slidably and sealingly engaging the inside cylindrical surface of said annular mounting means so that when said valve body is depressed, said gasket flexes downward to open said orifices and said piston slides down along said inside cylindrical surface of said annular mounting means to form an annular chamber which communicates said inlet orifice with said outlet orifice.

3,982,675

QUICK CHANGE PORTABLE POCKET

Dallas D. Claypool, Zanesville, Ohio, assignor to The Raymond Lee Organization, Inc., a part interest
Filed July 21, 1975, Ser. No. 597,656
Int. Cl.² A45C *1/04*
U.S. Cl. 224—26 R **3 Claims**



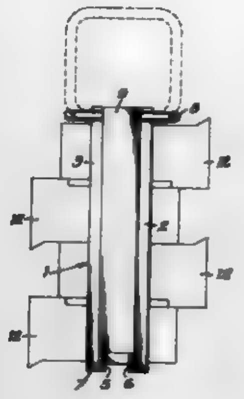
1. A portable device detachably securable to a belt, said device comprising:
first and second elongated flexible flaps disposed in spaced apart position along a common line of elongation, one end of the first flap being disposed adjacent one end of the second flap, said flaps each having an outer surface and an inner surface;
a plate secured to each of said one ends on the inner surfaces of both flaps and spanning the space between said adjacent ends;
manually operable clip means secured to said plate and adapted to engage the top edge of said belt when the device is in use;
belt engaing means secured to the inner surface of the first flap and spaced from said plate, said belt means extending in a direction perpendicular to said line of elongation and adapted to engage the bottom edge of said belt when the device is in use; and
pocket forming means secured to the outer surface of the second flap and spaced from said plate, the pocket forming means having an opening disposed adjacent said plate.

3,982,676

DEVICE FOR HANDLING CARTRIDGE MAGAZINES AND SUCHLIKE

Maurice V. Bourlet, Liege, Belgium, assignor to Fabrique Nationale Herstal S.A., Herstal-lez-Liege, Belgium
Filed Aug. 13, 1974, Ser. No. 497,073
Claims priority, application Belgium, Sept. 28, 1973, [illegible]
Int. Cl.² F42B *39/00*
U.S. Cl. 224—45 R **6 Claims**

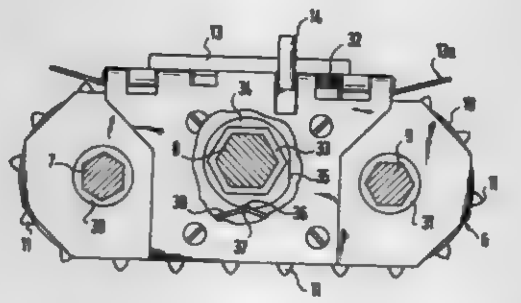
1. A. device for supporting a stack of a plurality of magazines, such as cartridge magazines having a back face and two longitudinal edges, said device comprising: a generally planar back plate having two longitudinal, parallel edges; a U-shaped channel member rigid with and extending along the length of each longitudinal edge of said back plate, the open side of said channels being in opposed relation for receiving the longitudinal edges of said magazine; flap means pivoted to one end of said back plate, said flap means being disposed between said U-shaped channel members and said back plate; spring means continuously urging said flap means to a first closed position providing a wall at said one end of said back plate extending normal thereto wherein it is adapted to support magazines attached to said device, said flap means being pivotable to a second position wherein it permits said magazines to pass it and be removed from said one end of said device; stop means disposed between said flap means and said back plate limiting downward pivotal movement of said flap means to said first position and a handle hingedly mounted at the other end of said back plate.



3,982,677

DEVICE FOR LOCKING A MOVABLE FORM FEED

Güenter Holland-Letz, Paderborn-Wewer, Germany, assignor to Nixdorf Computer AG, Paderborn, Germany
Filed Apr. 23, 1975, Ser. No. 570,772
Claims priority, application Germany, Apr. 24, 1974, 2419849
Int. Cl.² G03B *1/30*
U.S. Cl. 226—75 **12 Claims**



1. A form feed device for feeding forms in a feed direction comprising:
a frame having a slide shaft disposed generally transversely to the feed direction,
a form feed slidably disposed along said slide shaft,
means for rotating said slide shaft to a predetermined rotational locking position, and
means for locking said form feed at any axial position along said shaft upon the rotation of said slide shaft to said predetermined rotational position.

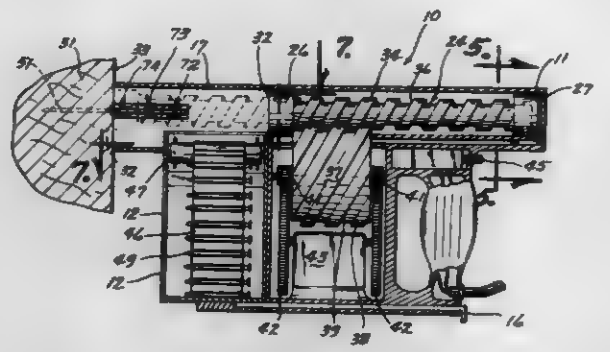
3,982,678

NAIL DRIVING APPARATUS

Jerome A. Olsen, 135 Gray Ave., Waukee, Iowa 50263
Filed Feb. 14, 1975, Ser. No. 549,905
Int. Cl.² B25C *11/00, 1/06*
U.S. Cl. 227—63 **23 Claims**

1. A device for driving nails comprising:

a housing;
a barrel attached to said housing;
an elongated driven member attached to said housing and positioned for movement along a longitudinal axis thereof at least partially within said barrel and having a nail engaging portion;
a driving means for selectively moving said driven member in a direction along the longitudinal axis thereof, said driven member having a driving stroke in one direction for driving a nail and a return stroke in an opposite direction along said longitudinal axis;

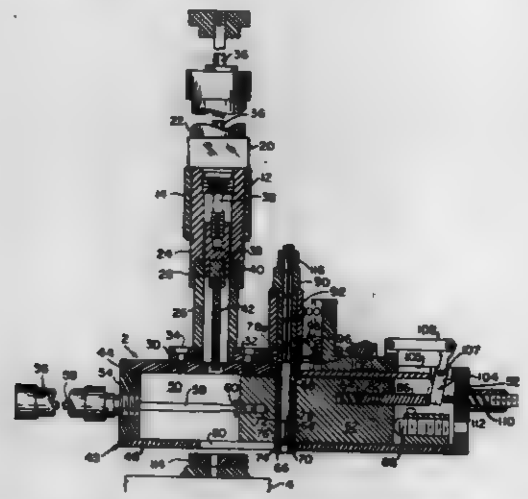


gear means for mechanically interlocking said driven member to said driving means during said driving stroke;
nail holding means attached to said barrel for holding said nail in position to be engaged by the nail engaging portion of said elongated driven member; and
means for controlling the movement of the driving means and thereby controlling the movement of said driven member.

3,982,679

MACHINE FOR DRIVING SPRING PINS

William P. White, Jr., c/o Mechanical Application, Inc., Airport Road, Wiscasset, Maine 04578
Filed Aug. 11, 1975, Ser. No. 603,667
Int. Cl.² B27F *7/02*
U.S. Cl. 227—116 **9 Claims**

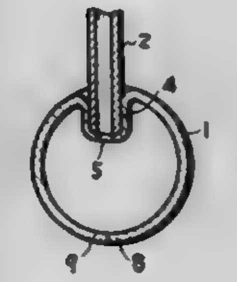


1. A machine for inserting a spring pin in a work piece comprising a supporting structure having at least upper and end members in the form of rigid plates,
a punch mounted vertically on said upper plate,
a shuttle carried by said plates and moveable horizontally,
a spring pin feed tube mounted on said upper plate,
means for supplying independent gravity moved spring pins in sequence to said feed tube,
a punch pilot tube extending vertically through said shuttle,
the length of said pilot tube being greater than the length of said spring pins,
means for moving said shuttle in one direction to place said pilot tube in loading position in alignment with said feed tube,
means permitting one spring pin to fall from said feed tube into said pilot tube when said tubes are aligned while restraining the descent of all spring pins in said feed tube thereabove,
means in said pilot tube for releaseably holding said one spring pin from falling therethrough,
means for moving said shuttle in the opposite direction to a position in which said pilot tube is aligned with said punch,
means operable while said shuttle is moving toward said punch for removing the restraining means on the spring pins in said feed tube so that spring pins in said feed tube will fall a distance of one pin and the leading pin in said feed tube will engage and be stopped by said shuttle,
means for actuating said punch when said punch and pilot tube are aligned to drive said spring pin then in said pilot tube downward into a work piece located therebelow,
means for withdrawing said punch from said pilot tube,
means for again moving said shuttle to the original loading position in which said pilot tube is again in alignment with said feed tube,
and means actuated by and during movement of said shuttle from punch position to loading position for applying said restraining means to the spring pin next above the spring pin then resting on said shuttle prior to said pilot tube and feed tube coming into alignment, whereby when said pilot and feed tubes come into alignment, only a single spring pin will fall into said pilot tube.

3,982,680

SOLDERING METHOD

Kanichi Ishikawa, Aichi, and Kazumi Iijima, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Jan. 9, 1975, Ser. No. 539,741
Claims priority, application Japan, Feb. 14, 1974, 49-18315
Int. Cl.² B23K *31/02*
U.S. Cl. 228—174 **5 Claims**

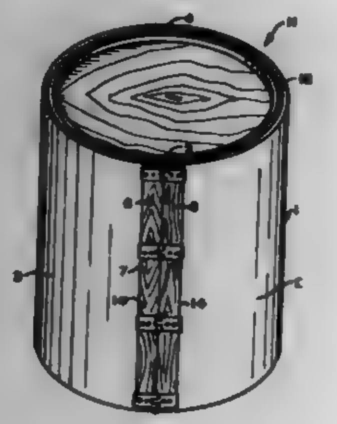


1. A method for soldering a pipe to a member comprising the steps of:
making a pipe from a flat metal sheet with solder coated uniformly over its whole surface,
forming a concave portion on an outer surface of said pipe with an aperture at the bottom thereof,
inserting a member into said concave portion,
heating said pipe and member together to melt said solder to infiltrate into the clearance between an inner surface of said concave portion and outer surface of said member and thereby place the member in sealed communication with the aperture; and
forming a flange portion at two opposite margins of the sheet, so that when the sheet is made into a pipe the two flanges lie face to face at the opposite side of the pipe from said concave portion and become connected by said solder upon said heating of the pipe.

3,982,681
PAPERBOARD HOGSHEAD

Charles Berger Graves, Alton; Paul J. Richnak, Godfrey, both of Ill.; Robert M. Wilkinson, Florissant, Mo., and Robert G. Wright, Statesville, N.C., assignors to Alton Box Board Company, Alton, Ill.

Filed Mar. 10, 1975, Ser. No. 556,791
Int. Cl.² B65D *3/00, 25/14, 25/34*
U.S. Cl. 229—4.5 **19 Claims**



1. A hogshead formed from a wound paper tube and of the type designed for holding a quantity of prized tobacco during its transit and storage, and being collapsible to facilitate its component return for reuse, said paper tube being formed of convolutely wound paper and to a thickness to provide for its strucutral integrity even when encountering the forces of tobacco prizing, the paper tube of each hogshead being cut into complemental half portions, a series of reinforcing staves, each stave having a length approximating the heighth of tube half portions with one of said staves being adhered to each outer marginal cut edge of a tube half portion, means fastening each stave to the contiguous portion, a series of hinge means fastening to the staves and cooperating with pin means for retaining the tube halves together, a pair of retaining liners, one of each liner adhering to the upper and lower marginal edges of each tube half portion, said liners also being cut to correspond the dimensions of each tube half portion, upper and lower end closures having dimensions corresponding to the inner dimensions of the assembled tube halves and being retained inwardly of the respective retaining liners to secure the hogshead into closure, each hinge means including a pair of hinge parts, said parts being held together by means of said pin means with one of each part being secured to one of the adjacent reinforcing staves, and each hinge means part having a turned end for holding against the remote edge of its proximate stave for insuring the retention of the hogshead into closure during tobacco compression.

3,982,682
CORNER POST

Edwin A. Fremion, West Alexandria, Ohio, assignor to Westvaco Corporation, New York, N.Y.

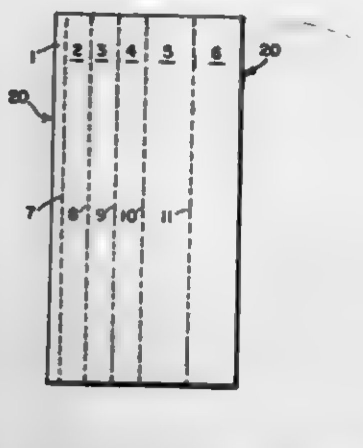
Filed Mar. 4, 1976, Ser. No. 663,996
Int. Cl.² B65D *25/16*
U.S. Cl. 229—14 C **12 Claims**

1. A corner post construction for use between the vertical corners of containers and products packaged therein consisting essentially of a corner post structure that is normally stored and shipped in a flat condition but when erected assumes a cross-sectional configuration substantially in the form of an integral rectangular tube and attached leg comprising:

a. a substantially rectangular blank of paperboard material or the like, scored along parallel fold lines to form a plurality of discrete panels of unequal width;

b. said blank being folded flat about at least two of said fold lines to bring at least two of said panels into overlapping engagement for the purpose of adhering said two panels together;

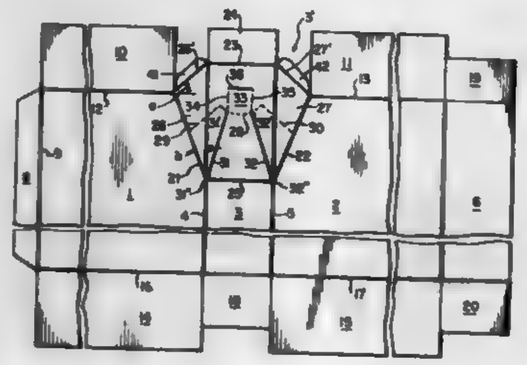
c. said flat folded blank being adapted to be erected into useable condition as a corner post by manipulating the folded blank to orient at least three contiguous panels into the tube portion of the corner post.



3,982,683
CARTON WITH POURING SPOUT

Lloyd H. Fortean, Brooklyn, N.Y., assignor to Standard Folding Cartons, Inc., Jackson Heights, N.Y.

Filed June 4, 1975, Ser. No. 583,759
Int. Cl.² B65D *5/72*
U.S. Cl. 229—17 R **13 Claims**



3. In a unitary carton blank adapted to be erected into a carton having a reclosable pouring spout, said blank having a pair of spaced main panels, a first end disposed between said main panels and separated therefrom by a pair of first fold lines defining the opposite edges of the end panel and one edge of each of the main panels, a second end panel hingedly connected along the other edge of one of said main panels, a top end closure panel disposed along the top edge of each of said main panels and separated therefrom by a second fold line, a bottom end closure panel hingedly connected along the bottom edge of each of said main panels, a diagonal fold line on each main panel extending between the first fold line and the second fold in the upper corner adjacent the first end panel, each of said top end closure panels terminating at the intersection of the adjacent diagonal fold line with the second fold line, and the first end panel extending higher than the top edges of the main panels and defining an upper section above the intersection of the diagonal fold lines with the first pair of fold lines whereby said blank when erected forms a carton with a diagonally angled upper corner panel recessed between the main panels and under the top closure panels for opening into a pouring spout, the improvement comprising:

a. a central score line formed in the upper section of the end side panel between the opposite edges thereof;

b. a pair of spout forming score lines extending from the opposite ends of the central score line to the diagonal fold lines intermediate their ends;

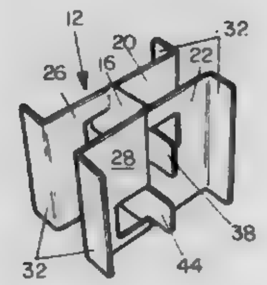
c. a pair of tab forming score lines, each of which extends from adjacent one end of the central score line and in a direction toward but spaced from the top edge of the upper section of the first end panel; and

d. a tab forming fold line extending between the uppermost ends of the tab forming score lines.

3,982,684
CARTON DIVIDER PAD

Frank A. David, Collinsville, Ill., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 28, 1975, Ser. No. 572,107
Int. Cl.² B65D *5/48, 3/24*
U.S. Cl. 229—28 R **4 Claims**



1. A self-positioning, one-piece, H-shaped divider pad insertable into a carton to divide the carton into six equal-sized compartments, said divider pad comprising, in combination:

a first center panel;

a second center panel hingedly attached along one edge thereof to said first center panel and foldable into overlying, face-to-face relationship relative to said first center panel;

a first pair of leg panels hingedly attached to the opposite edges of said first center panel and foldable out of the material of said first center panel to a position substantially perpendicular to said first center panel;

a second pair of leg panels hingedly attached to the opposite edges of said second center panel and foldable out of the material of said second center panel to a position substantially perpendicular to said second center panel and substantially parallel to said first pair of leg panels;

a first projection tab formed integral and coextensive with said first center panel and defined by slit lines in one of said first pair of leg panels to be severable from said leg panel and extend outwardly from said leg panel in the plane of said first center panel into contact with said carton to divide the space exterior of said divider pad on one side of said divider pad within said carton and to position the divider pad within the carton when said leg panel is folded to a position substantially perpendicular to said first center panel; and

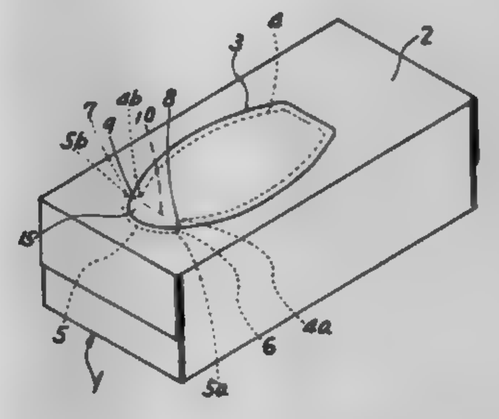
a second projection tab formed integral and coextensive with said second center panel and defined by slit lines in one of said first pair of leg panels to be severable from said leg panel and extend outwardly from said leg panel in the plane of said second center panel into contact with said carton to divide the space exterior of said divider pad on the other side of said divider pad within said carton and to position the divider pad within said carton when said leg panel is folded to a position substantially perpendicular to said second center panel.

3,982,685
METHOD AND DEVICE FOR SEPARATING CARTON LAYERS TO OPEN A CLOSED TYPE CARTON CONTAINER

Yoshiji Shimada, Kobe, Japan, assignor to Kinki Printing Company Limited, Osaka, Japan

Filed Sept. 2, 1975, Ser. No. 609,330
Int. Cl.² B65D *5/54, 5/72*
U.S. Cl. 229—51 TS **5 Claims**

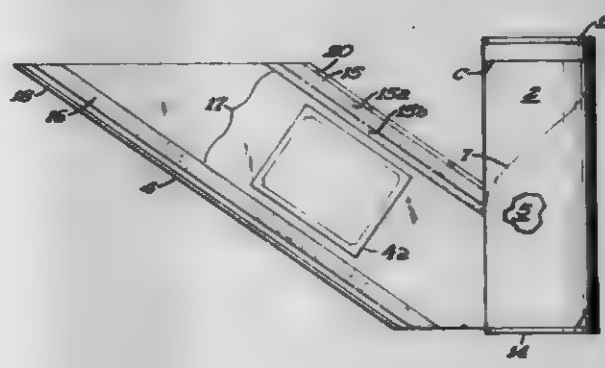
1. A dispensing carton having walls defining a hollow enclosure, one of said walls being paperboard and having a first cut line cut from the outside and extending partially through the paperboard, said first cut line extending as a closed loop, a second cut line cut from the inside and extending partially through the paperboard, said second cut line having an open generally loop-like configuration with opposed terminating ends, said second cut line being spaced radially inwardly of a portion of said first cut line, a third cut line cut from the inside and extending partially through the paperboard, said third cut line having an open generally loop-like configuration with opposed terminating ends, said third cut line being spaced radially outwardly of another portion of said first cut line, a pair of generally linear cut lines cut from the inside and partially extending through the paperboard, each of said pair of generally linear cut lines connecting said terminating ends of said second and third cut lines respectively, and a fold line connecting the points where said first cut line overlaps said linear cut lines.



3,982,686
SPIRAL WOUND CAN WITH PROVISION FOR PRINTING LOWER SIDE OF LABEL

A. Kenneth Parlour, Fridley; James R. Leezer, and Charles H. Turpin, both of Minneapolis, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation of Ser. No. 502,328, Sept. 3, 1974, abandoned. This application Jan. 14, 1976, Ser. No. 648,989
Int. Cl.² B65D *5/54, 17/00*
U.S. Cl. 229—51 BP **10 Claims**



1. An easily opened fiber can for food products, said can comprising,

a. a helically wound body stock layer formed from an elongated strip of flexible sheet material having its side edges abutted against one another to form a helically extending butt joint defining a separation line adapted to part when the can is opened,

b. a moisture resistant helically wound inner liner aginst the inside surface of the body stock layer, the liner being bonded to the inner surface of the body stock layer,

c. a label strip wound helically over the body stock layer and being bonded thereto by two relatively narrow adhesive strips, one strip extending along substantially each side edge of the label strip,

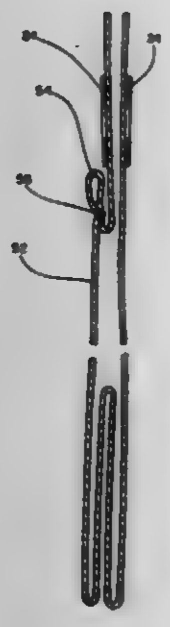
d. a relatively wide adhesive free area extending helically on the inner surface of the label strip between the relatively

narrower adhesive strips and the adhesive strips and the adhesive free area being of a width of over half of the label strip width,
e. printed indicia applied to the adhesive free area on the inner surface of the label,
f. one of said two adhesive strips on the edge of the label being bonded over the separation line and having a width less than about one forth the width of the label but sufficiently wide to hold the separation line together prior to removal of the label,
g. the separation line being located between about 10 percent and 20 percent of the way from one edge of the label strip to the opposite edge of the label strip,
h. means to facilitate lifting a portion of the label so that it can be peeled back and removed,
i. the removal of the label causing the separation line to be weakened sufficiently to allow the can to be opened along the separation line, and
j. at least one end closure member affixed to one end of the can.

3,982,687
CLOSE AND CARRY BAG

Mary L. Auer, Neenah, and Richard L. Roeder, Appleton, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed July 9, 1975, Ser. No. 594,451
Int. Cl.² B65D *33/24, 33/28*
U.S. Cl. 229—62 **7 Claims**

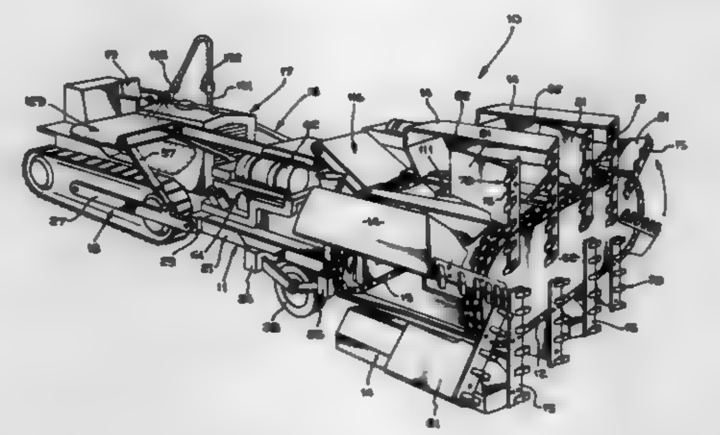


1. A reclosable bag comprising a bottom end, sidewalls, and a top end, formed from heat-sealable material,
the improvement comprising a detachable strap, wherein said strap is a looped portion of one sidewall spaced from both ends and tacked to itself along a perforated heat seal line extending laterally substantially across one full side dimension of said sidewall at a location close to said top end, and means are provided in said sidewalls adjacent the middle of said strap for projecting the strap through said sidewalls to close the top of said bag and provide a carrying handle.

3,982,688
EARTH-MOVING APPARATUS

Charles G. Taylor, 4252 Fair Ave., Apt. 15, North Hollywood, Calif. 91602

Filed Nov. 25, 1974, Ser. No. 526,525
Int. Cl.² E21L *27/20*
U.S. Cl. 299—64 **9 Claims**

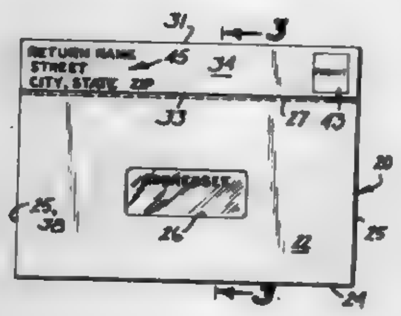


1. An excavator for use with a vehicle and comprising a frame, means for securing the frame to the vehicle, means for supporting the frame, a first conveyor wheel pair mounted to the frame to rotate in a plane perpendicular to the line of advance of the vehicle, a second conveyor wheel pair spaced from the first pair and mounted to the frame in a plane perpendicular to the line of advance of the vehicle; a digger conveyor on the wheel pairs, cutting means fixed to the digger conveyor, a portion of said cutting means extending outwardly from the conveyor in the direction of forward travel of the vehicle; drive means on the frame for rotating the conveyor wheel pairs, movable belts adapted to receive cuttings from the digger conveyor and delivering such cuttings outboard of the excavator, and control means for the wheel pairs drive means extending between the vehicle and the excavator frame.

3,982,689
RETURNABLE MAILING ENVELOPE

Fergus Retrum, 8708 - 14th Ave. South, Bloomington, Minn. 55420

Filed July 14, 1975, Ser. No. 595,571
Int. Cl.² B65D *27/04, 27/06, 27/34*
U.S. Cl. 229—71 **4 Claims**

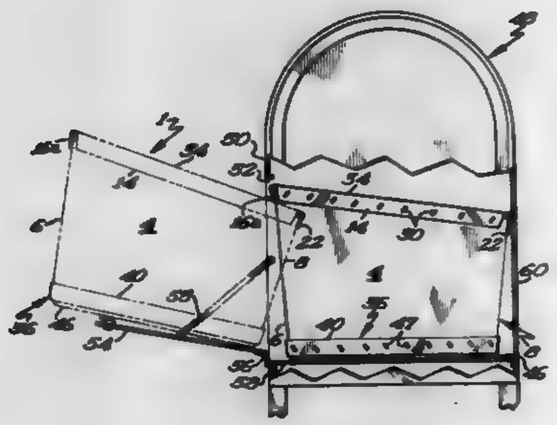


1. In combination:
an envelope for two-way use and an enclosure for transmittal therein;
said envelope having a front panel with a transparent window spaced above a bottom edge thereof, and said enclosure having (a) a bottom edge, (b) a tear line spaced above said bottom edge by less than the spacing of said window above the bottom edge of said panel (c) a first address area spaced above said bottom edge of said enclosure by the spacing of said window above the bottom of said panel and (d) a second address area spaced above said tear line by the spacing of said window above the bottom edge of said panel.

3,982,690
MAIL BOX CONTAINER

Bradford J. Krizan, Plymouth, and James L. Pfaffendorf, Maple Grove, both of Minn., assignors to Liberty Carton Co., Minneapolis, Minn.

Filed Sept. 27, 1974, Ser. No. 509,922
Int. Cl.² B65D *91/00*
U.S. Cl. 232—17 **9 Claims**

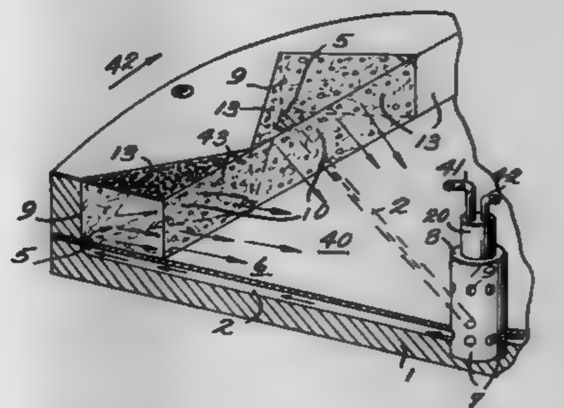


1. A material handling container comprising:
an upright portion formed from a single piece of fiberboard which is cut, scored and folded to form a pair of opposed, upright side walls and a pair of opposed, upright end walls extending therebetween, the upper and bottom edges of said side and end walls defining an open top and open bottom of the container, and said upright fiberboard portion being held in a generally rectangular shape by a substantially vertical joint formed between the free ends of said fiberboard piece between the end extremities of one of said upright walls;
a bottom portion in the form of a semi-rigid, moisture impervious, shallow base tray comprised in its entirety of a bottom panel extending between said upright side and end walls, and upstanding side and end panels overlapping only the bottom ends of said upright side and end walls and attached thereto, said base tray being formed as a unitary structure from a single piece of material, and the bottom edges of said upright, figerboard side and end walls abutting flush against the top face of said tray bottom panel;
a hinged flap on each of said side and end walls defined by score lines extending lengthwise of said side and end walls below the top extremities thereof, said flaps being folded downwardly along said hinge lines in overlapping relation to said side and end walls and attached thereto to define pockets on the upper ends of said side and end walls;
a completely cutaway segment at the top of each of said container end walls defining hand grip openings completely open across the top thereof and bounded by said overlapping flaps and pockets on each side thereof;
a rigid reinforcing rim of rectangular shape contained within said pockets and extending around the top of said container; and
a pair of hand grips on opposite ends of said container formed by intermediate gripping portions of said reinforcing rim along opposite ends thereof disposed across the top of said hand grip openings, and the free ends of said single piece of fiberboard forming said side and end walls overlapping and being secured together along a substantially vertically extending joint formed in one of said end walls between the upright and extremities thereof, the upper end of said joint terminating at the bottom of the hand grip opening of said end wall spaced below one of said gripping portions of said reinforcing rim where there is no downwardly folded flap and thus only a single wall thickness of said free ends of overlap and secure together.

3,982,691
CENTRIFUGE SEPARATION AND WASHING DEVICE AND METHOD

Charles A. Schlutz, 7081 NW. 10th Place, Plantation, Fla. 33313

Filed Oct. 9, 1974, Ser. No. 513,509
Int. Cl.² B04B *7/16, 11/06, 15/12*
U.S. Cl. 233—2 **26 Claims**



1. A centrifuge apparatus for separating and washing blood cells comprising:
1. enclosure means for enclosing a quantity of liquid suspended blood cells,
2. rotation means for rotating the enclosure means about the longitudinal axis thereof;
3. injector means for moving suspended blood cells and liquids into and out of said enclosure;
4. seal means for sealing the injector means to the enclosure means in a liquid-tight relationship;
5. a plurality of angularly shaped blood cell receiving means in fluid communication with each other and evenly spaced about the longitudinal periphery of the enclosure means and forming a part of the enclosure means, wherein at least one pair of opposite wall portions of each of the said receiving means converge towards the longitudinal periphery of the enclosure means and thereby forming a locus of maximum centrifugal force in the rotating enclosure at the apexes formed by the juncture of the converging wall portions;
6. a plurality of independent conduit means in fluid communication with each other, each with one end thereof in fluid communication with the said injector means and the other end thereof connected to the said locus of maximum centrifugal force;
7. power means for rotating the rotation means and enclosure means to a speed of angular rotation sufficient to separate the blood cells from the suspending liquid and compact the blood cells in the blood cell receiving means; and
8. control means for controlling liquid flows through the said injector means, conduit means, blood cell receiving means and enclosure means for flowing suspended blood cells into each of the blood cell receiving means, for flowing a wash liquid through each of the said conduit means and then through the compacted blood cells in each of the blood cell receiving means whereby the wash liquid passes through essentially all of the compacted blood cells, for flowing a resuspending liquid into the enclosure means and into the blood cell receiving means and for flowing resuspended blood cells from each of the said receiving means through each, respective, conduit means, through the injector means and out of the centrifuge apparatus.

3,982,692

CLAMPING MEANS FOR ELEVATOR GUIDE RAILS AND THE LIKE

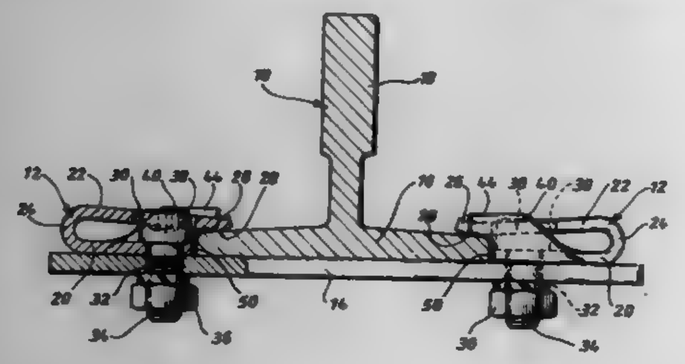
Klaus Feyrer, Esslingen, and Wolfgang P. Müeller, Lahr, both of Germany, assignors to R. Stahl Aufzuege GmbH, Stuttgart, Germany

Filed July 11, 1975, Ser. No. 594,957

Claims priority, application Germany, July 19, 1974, 2434806

Int. Cl.² E01B *9/34*

U.S. Cl. 238—349 **10 Claims**



10. A rail assembly, including
- a. a rail (10) having a generally T-shaped cross-sectional configuration, thereby defining rail foot (16) and rail head (18) portions;
- b. a support (14) having a flat surface upon which the bottom of the foot portion of said rail is supported; and
- c. a plurality of clamping means (12) connecting the foot portions of said rail with said support, each of said clamping means consisting solely of a unitary resilient metal blank having a generally U-shaped cross-sectional configuration and including
  1. a flat fastening portion (20) connected with said support, said flat fastening portion including lateral stabilizing means (48, 50) in engagement with the corresponding lateral edge of the rail foot portion to prevent lateral movement of said rail relative to said support;
  2. a spring blade portion (22) resiliently connected with said flat fastening portion and extending above said flat fastening portion and partially above said rail foot portion for biasing said rail into engagement with said support, thereby to permit limited displacement of said rail against the biasing force of said spring blade portion away from said support; and
  3. at least one stop portion (44, 46) connected with said flat fastening portion and extending in spaced relation partially above said rail foot portion for limiting the extent of displacement of said rail away from said support.

3,982,693

ORIFICE PLUNGER VALVE FUEL INJECTOR

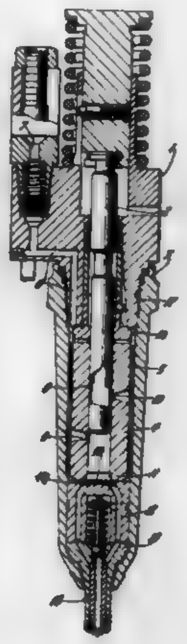
Kenneth L. Hulsing, Plymouth, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 16, 1976, Ser. No. 649,790

Int. Cl.² B05B *1/32;* **F02M** *47/00*

U.S. Cl. 239—88 **7 Claims**

1. In a fuel injection device, an injector body means having a stepped bore extending from one end thereof to define in sequence at least an annular sleeve wall and an enlarged spring chamber means closed at one end opposite said sleeve wall, said injector body means having a valve controlled fuel passage means therein connectable at one end to a source of high pressure fuel and having its other end in fluid communication with the portion of said stepped bore providing said sleeve wall a predetermined axial distance from said one end of said injector body means, a plunger valve having a first stem means slidably fitting a portion of said stepped bore forming said sleeve wall and having a second stem means loosely extending into said spring chamber means, said plunger valve having an internal passage means in fluid communication at one end with said fuel passage means and having its other end terminating adjacent to the end of said first stem means opposite said second stem means, spray orifices extending through said first stem means adjacent said one end to said internal passage means and defining with said one end a discharge end of said first stem means, said plunger valve being movable in said stepped bore between a first position in which said discharge end is retracted within said sleeve wall to close off said spray orifices and a second position in which said discharge end is extended axially outward of said sleeve wall with said spray orifices then uncovered and, resilient means positioned within said spring chamber means to normally bias said plunger valve to said first position.



3,982,694

ACCUMULATOR TYPE FUEL INJECTION ASSEMBLY

John M. Bailey, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

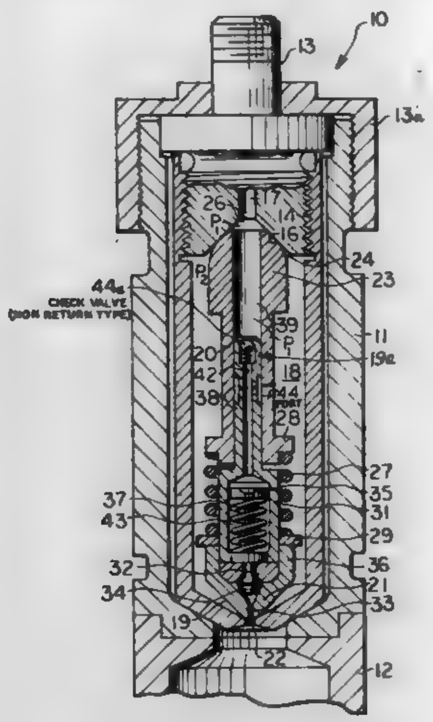
Filed Dec. 29, 1975, Ser. No. 645,054

Int. Cl.² F02M *41/16;* **B05B** *1/32*

U.S. Cl. 239—96 **19 Claims**

1. A two phase fluid injector means for supplying primary injection of fluid to a user device followed by a secondary injection of fluid to said device, said injector means comprising:
- inlet means for receiving fluid under pressure from a source;
- first chamber means for receiving fluid from said inlet means;
- first outlet means for communicating fluid from said injector means to said device;
- first valve means disposed between said first chamber means and said first outlet means for controlling the flow of fluid from said first chamber means to said first outlet means;
- second outlet means for communicating fluid from said fluid injector means to said device;
- accumulator chamber means disposed between said first chamber means and said second outlet means;
- second valve means between said first chamber means and said accumulator chamber means for controlling the flow of fluid therebetween;
- first biasing means for normally urging said first valve means to block the flow of fluid to said first outlet means, said second valve means including means for normally allowing flow of fluid from first chamber means to accumulator means and for normally blocking flow of fluid from accumulator chamber means to first chamber means;

- third valve means disposed between said accumulator chamber means and said second outlet means; and



- biasing means normally urging said third valve means to close off communication between said accumulator chamber means and said second outlet means.

3,982,695

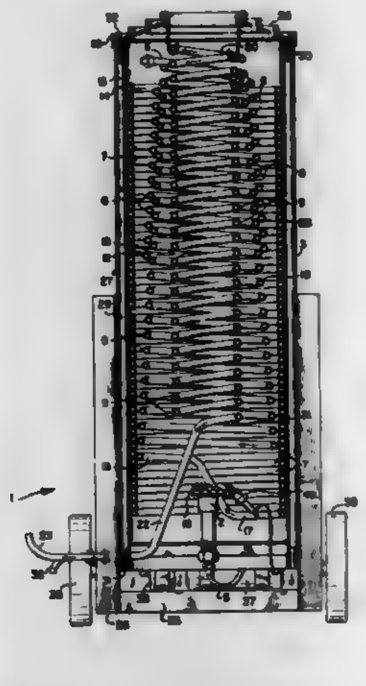
STEAM PRODUCING DEVICE

Lawrence Burchett, Leawood, and Vernon Adams, Shawnee Mission, both of Kans., assignors to Brute, Inc., Lenexa, Kans.

Filed June 23, 1975, Ser. No. 589,123

Int. Cl.² B05B *1/24*

U.S. Cl. 239—136 **2 Claims**



1. A steam producing device comprising:
- a. a hollow housing having a side wall with an inner surface;
- b. a pump operative to discharge water under pressure;
- c. a coil arrangement within said housing and receiving water under pressure from said pump and including an intermediate coil spiraling downwardly in turns adjacent said inner surface and each other;
- d. said coil arrangement including a warming coil spaced inwardly from said inner surface and intermediate coil and upstream from said intermediate coil, said warming coil receiving the lowest temperature water in said coil arrangement;
- e. a burner within said housing and positioned generally axially within said intermediate coil whereby said intermediate coil substantially protects said inner surface from direct burner heat, said warming coil being positioned to absorb heat from said burner and heat water therein prior to entry of the water into said intermediate coil, whereby said intermediate coil does not promote sweating on said said wall; and
- f. at least one additional coil downstream from said intermediate coil and connected to steam discharge means.

3,982,696

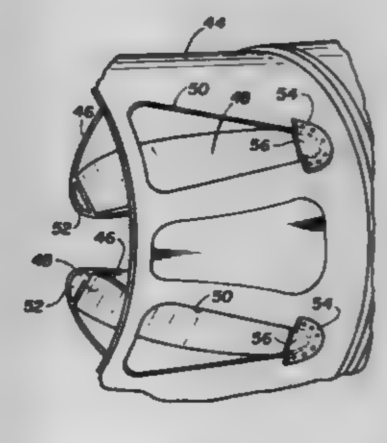
JET NOISE SUPPRESSOR NOZZLE

Walter R. Gordon, Savannah, Ga., assignor to Grumman American Aviation Corporation, Savannah, Ga.

Filed July 1, 1975, Ser. No. 592,218

Int. Cl.² B64D *33/06*

U.S. Cl. 239—265.17 **10 Claims**



1. In a jet engine exhaust nozzle through which thrust gas of an engine is discharged and about which flows a boundary layer stream which nozzle has at least one flush inlet for at least one chute extending inwardly through the wall thereof, a means to direct said stream into and through said chute, said means comprising:
- a ramp at a leading edge of the flush inlet, said ramp extending aft over a portion of the chute and terminating in an edge above the chute and within the chute aft of the inlet; and,
- means to direct a portion of the thrust gases of the engine under the ramp to emerge under the edge thereof within the chute aft of the inlet.

3,982,697

SPRAYING APPARATUS

H. Eugene Maples, 280 Pee Dee Road, Southern Pines, N.C. 28387

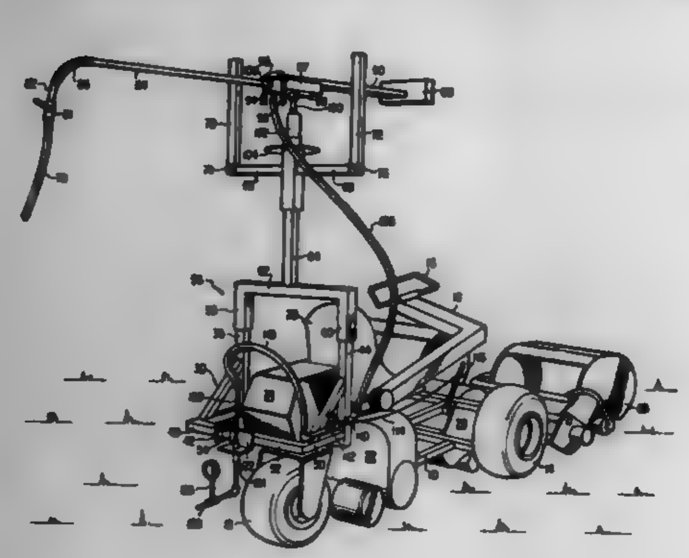
Filed June 18, 1975, Ser. No. 588,048

Int. Cl.² A01D *43/00;* **B05B** *15/04, 17/00*

U.S. Cl. 239—289 **7 Claims**

1. A liquid spraying apparatus for use in combination with a self propelled mower having a cutting swath of a given width comprising:
- a. a frame adapted to be attached to said mower, said frame including a vertically extending section which extends above the top of said mower when said frame is attached to said mower;
- b. a remote liquid supply source;
- c. a liquid intake mounted on said vertically extending section at a position above the top of said mower for receiving liquid from said remote liquid supply source, said liquid intake including,
  - i. an intake conduit extending toward the rear of said mower, said conduit having an intake end adapted for communication with said remote liquid supply source

and a discharge end communicating with a liquid discharge,
ii. a pivotal connector supporting said intake conduit permitting free rotation of said intake conduit during mowing by said mower, and
iii. means for preventing said intake conduit from pivoting on said connector to an orientation wherein said



intake conduit is disposed in front of said mower above the path of said cutting swath; and
c. a liquid discharge mounted on said frame in communication with said liquid intake, said liquid discharge having a pattern of spray on a surface being mowed by said mower which is substantially equal to the width of said cutting swath.

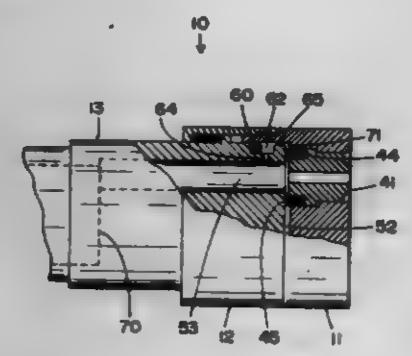
3,982,698
NOZZLE SELECTOR VALVE

Arthur A. Anderson, St. Paul, Minn., assignor to Specialty Manufacturing Company, St. Paul, Minn.

Filed Jan. 29, 1976, Ser. No. 653,448

Int. Cl.² B05B *1/12, 1/16*

U.S. Cl. 239—394 **7 Claims**



1. A high pressure sprayer operable for indexing to a particular nozzle while a source of high pressure fluid is in fluid communication with the sprayer comprising:
a body for connecting to a high pressure source, said body having a chamber therein for receiving the high pressure fluid and a face for engaging a sliding seal;
a head rotatably mounted to said body, said body and said head coacting to define a second chamber;
a sealing member located between said body and said head to prevent leakage of high pressure fluid therebetween;
a nozzle insert located in said head, said nozzle insert operable for directing high pressure fluid therethrough;
sealing means located around said nozzle insert for preventing leakage of high pressure fluid between said nozzle insert and said head;
a passageway located in said body and connecting said first chamber to said second chamber so that high pressure fluid is located on the outside of said seal means and the inside of said sealing means to thereby enable an operator to rotate said nozzle insert with respect to said body without damaging said seal.

3,982,699
METHOD AND PLANT FOR PRODUCING CEMENT OR OTHER MATERIAL OF GIVEN FINENESS AND GRANULAR STRUCTURE

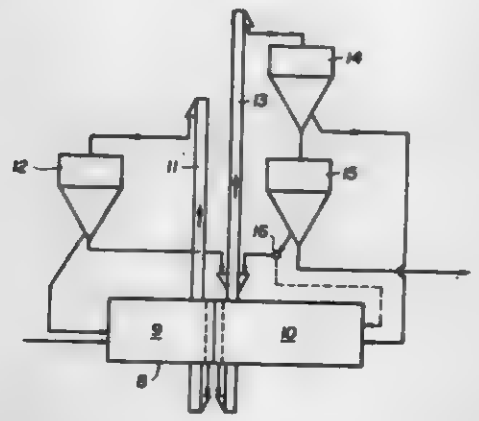
Heinz Jäger, Nevelstr. 40, Bochum, Germany 4630

Filed Dec. 23, 1974, Ser. No. 535,690

Claims priority, application Germany, Dec. 22, 1973, 2364277

Int. Cl.² B02C *23/12*

U.S. Cl. 241—14 **8 Claims**



1. Method of producing cement or other material of given fineness and granular structure which comprises delivering material to be reduced into a first individual chamber of a tube mill having two adjacent grinding chambers, said chambers having no direct connection with each other, delivering the ground material from each of the chambers to coarse-grain separator means associated with the chambers, separating a fines-free coarse-grain component in the coarse-grain separator means and returning the coarse-grain component to one of the adjacent chambers, feeding the fines component of the coarse-grain separator means to a fine-grain separator, separating a fine-grain component from a coarse-grain component in the fine-grain separator, withdrawing the fine-grain component from the fine-grain separator as end product, and returning the coarse-grain component of the fine-grain separator to the coarse separator means.

3,982,700
MIXING DEVICES

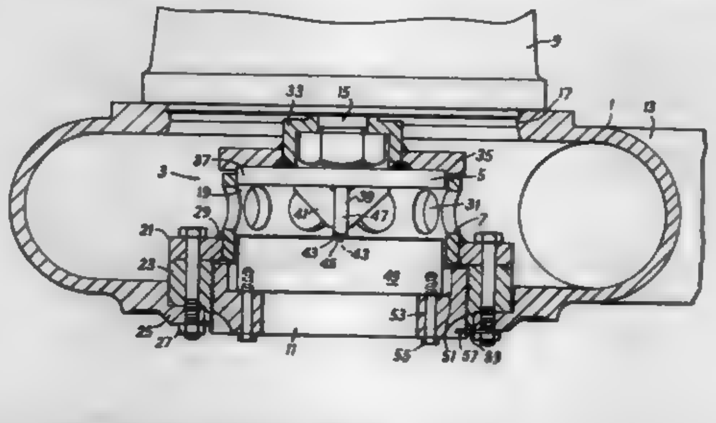
Gordon David Love, Waterside, Chesham, Buckinghamshire, England

Filed Apr. 3, 1975, Ser. No. 564,802

Claims priority, application United Kingdom, Apr. 3, 1974, 14812/74

Int. Cl.² B02C *23/36*

U.S. Cl. 241—46.11 **7 Claims**



1. A mixing device, comprising:
a rotor element which comprises an elongated shaft, a rotor plate mounted on said shaft, and a plurality of rotor blades outstanding from one side of said rotor plate; and

a stator element which comprises a generally cylindrical side wall having an inlet at one end of said cylinder, and outlet means formed in said side wall;
wherein said rotor element is arranged with said rotor blades within said stator element and on the side of said rotor plate facing said inlet;
wherein said stator element further includes a stator blade which extends diametrically across said inlet and is arranged for cooperation with an axially outer end of at least one of said blades;
whereby, in use, fibrous material entering said stator element is shredded by the action of the cooperating rotor and stator blades and is then subjected to high shearing forces in moving radially outwardly between a radially outer edge of at least one of said rotor blades and said side wall of said stator element.

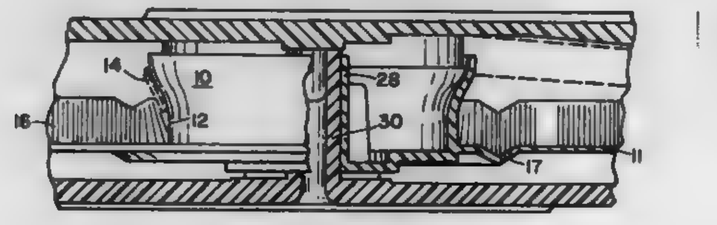
3,982,701
ONE PIECE CORE AND PLATFORM FOR ENDLESS TAPE CARTRIDGES

David O. Courtney, and Richard E. Coats, both of Excelsior Springs, Mo., assignors to The Gates Rubber Company, Denver, Colo.

Filed May 27, 1975, Ser. No. 581,308

Int. Cl.² B65H *17/48*

U.S. Cl. 242—55.19 A **8 Claims**



1. An integrally molded platform and core for carrying an endless array of magnetic tape for use in a cartridge comprising:
a disc-shaped platform for holding the lower edge of the array of tape;
a core integrally molded centrally to the platform, said core having:
  a minimum outer diameter at its lower end connected to the platform,
  a maximum outer diameter at its upper free end,
    said core defined at its outer surface by:
      an outward convex upper free end portion, and
      an outward concave lower portion connected to the platform,
        said portions connected at a common tangent point at generally the mid-height of said core to form a smooth, continuous outer surface.

3,982,702
SAND LUMP GRINDER

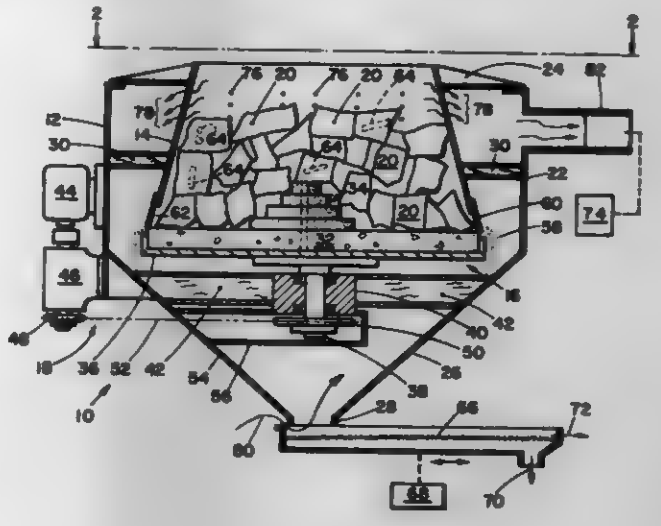
Donald M. Barnhart, Martinsburgh, W. Va., and James H. Carpenter, Jr., Hagerstown, Md., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Mar. 6, 1975, Ser. No. 556,021

Int. Cl.² B02C *7/11*

U.S. Cl. 241—58 **20 Claims**

1. Apparatus for reducing lumps of material to particles, said apparatus comprising a tub including an annular wall, an upper opening in said tub for receiving lumps of material and a lower opening for discharging particles from said tub; abrasive means located adjacent said lower opening for coming into rubbing contact with lumps of material, drive means for driving said abrasive means for abrading said lumps of material into particles, said abrasive means being spaced from said annular wall for providing an exit space for allowing particles to exit from said tub, said apparatus further including an outer housing substantially enclosing said tub except for said upper



opening, and means for creating a flow of air into said upper opening and into said outer housing for ventilating said tub.

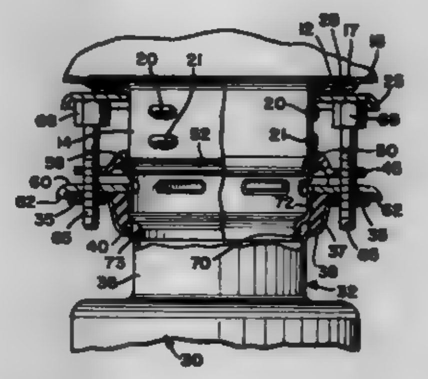
3,982,703
MOUNTING ASSEMBLY FOR FOOD WASTE DISPOSER

Theodore F. Meyers, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed June 26, 1974, Ser. No. 483,456

Int. Cl.² B02B *7/02*

U.S. Cl. 241—100.5 **22 Claims**



1. A mounting assembly for attaching a food waste disposer to a sink, comprising a sink flange which is adapted to be inserted into the drain opening in the sink with a flared top overlying the drain opening and an enlongated neck extending through said opening below the sink, an annular pressure plate received on the said neck in underlying relation to said sink, cooperating interlocking means on said plate and neck engageable by rotation of said plate on said neck temporarily retaining said flange in assembled relation on the sink while providing for unrestricted movement of said plate upwardly against the bottom of the sink, annular groove means formed in said neck in spaced relation to said interlocking means, said disposer having an inlet adapted to be received telescopically over said flange neck, a ring retainer assembly on said disposer at said inlet having an annular snap ring engageable with said groove means upon lifting said disposer over said neck and providing for the self-holding of said disposer in suspended relation on said flange when released, said disposer being free to be rotated with respect to said flange while so suspended to provide for the making of electrical and drain connections, and jack screw means extending between said disposer and said pressure plate for lifting said pressure plate from said neck interlocking means against the bottom of the sink and securing said disposer and flange against rotational movement.

3,982,704

GRINDING DISK FOR DISK MILLS

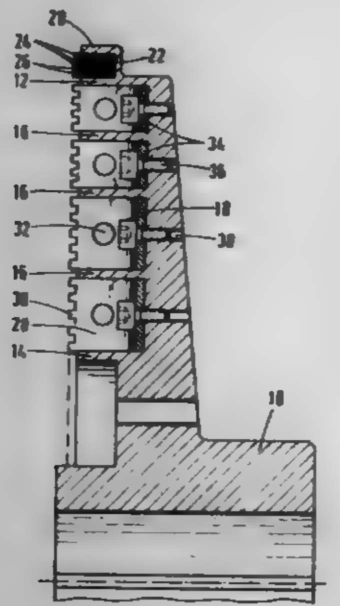
Leslie Palyi, Don Mills, Canada, assignor to Palyi-Hansen International APS, Copenhagen, Denmark

Filed Mar. 21, 1975, Ser. No. 560,985

Claims priority, application Germany, Apr. 5, 1974, 2416654

Int. Cl.² B02C *7/04, 7/12*

U.S. Cl. 241—298 **12 Claims**



1. A grinding disk for a disk mill, said disk comprising:

a radially inner mounting flange;

a radially outer mounting flange spaced radially outwardly from said inner flange; toothed grinding blade means carried in said outer flange and having teeth facing out of a surface of said disk;

at least one web positioned between and spaced from said inner and said outer flanges, thereby defining a plurality of chambers comprising a radaially inner chamber between said inner flange and a said web and a radially outer chamber between said outer flange and a said web;

a plurality of cutting tools arranged in mutually spaced relationship around and affixed to said disk in each said chamber; each said tool comprising a row of teeth and all said teeth face out of said surface of said disk; each said tool row of teeth extending generally radially of said disk; each said row of teeth in one said chamber being near, in an annular direction around said disk, at least one said row of teeth in the annular adjacent said chamber, at least some of said rows of teeth in each said chamber being annularly offset from the said near row of teeth in the radially adjacent said chamber.

3,982,705

SLIDERLESS SHUTTLE AND WIRE GUIDE ASSEMBLY

Raymond A. Peck, New Fairfield, and Leon J. Yarrish, Danbury, both of Conn., assignors to Park Lane Research Corporation, Danbury, Conn.

Filed Apr. 23, 1975, Ser. No. 570,860

Int. Cl.² H01F *41/08*

U.S. Cl. 242—4 B **11 Claims**

1. An improved toroidal coil winding shuttle assembly incorporating:

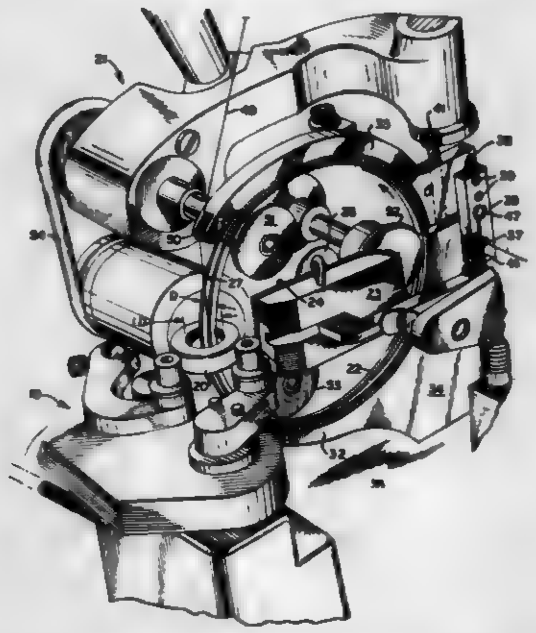
A. a scarf-jointed ring-shaped sliderless shuttle adapted to be interlinked in relative rotatable engagement with a toroidal core and having a wire or tape storage groove facing radially outward formed around its periphery,

B. supporting means positioning the shuttle for relative rotational interlinked movement through the central aperture of the toroidal core,

C. shuttle-engaging drive means providing driving torque causing said shuttle to rotate about its axis, and

D. a core-supporting and driving core holder positioning a toroidal core interlinked with said shuttle and causing said core to rotate about its own axis,

E. wherein the improvement comprises a concave wire guide embracing a substantial portion of the outer peripheral rim of said shuttle and incorporating depressible friction material protruding inwardly therefrom into brushing engagement with the shuttle's rim and with turns of wire or tape would in the wire or tape storage groove of said shuttle.



3,982,706

WINDING MACHINES HAVING INDEPENDENT SPINDLES

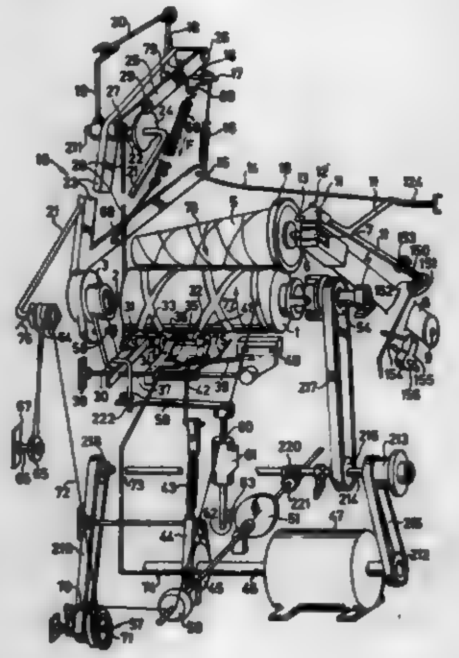
Dominique Delerue, 43, rue de la Briqueterie, 59240 Mouvaux, France

Filed Nov. 10, 1975, Ser. No. 630,215

Claims priority, application France, Nov. 12, 1974, 74.40649; Nov. 12, 1974, 74.40650; Jan. 30, 1975, 75.03634

Int. Cl.² B65H *54/38*

U.S. Cl. 242—18.1 **27 Claims**



1. In a winding machine having independent spindles with a control motor, and cooperative actuating members driving a grooved yarn-guide, the latter in turn driving bobbins preventing winding irregularities of yarn which is supplied and then fed to the bobbins winding at high speeds from hanks, cops, cakes or the like, namely winding machines having a conical bobbin which rests on a cylindrical yarn-guide having helical grooves generally with two opposing pitches which distributes the yarn uniformly on the bobbin, the latter resting under its own weight above the yarn-guide which drives the bobbin by frictional resistance, the yarn-guide and the bobbin, respectively, being mounted on a shaft having ends, and defining two axes, respectively, the axis of the bobbin moving progressively away from the axis of the yarn-guide as the yarn is being wound while forming normally in a plane common to the two axes a small or zero angle with the axis of the cylindrical yarn-guide, including a device for preventing the yarn from collecting at certain preferential points of the bobbin at certain winding speeds, and including a yarn break detector, the improvement comprising

means for oscillating at least one of th ends of the shaft of the yarn-guide and of the bobbin with an alternating relative oscillatory movement substantially perpendicular to an operative plane defined by the two axes of the yarn-guide and of the bobbin, respectively, without causing any substantial vertical oscillation of the bobbin,

modulated action means operatively cooperating with the oscillation of the yarn-guide and of the bobbin, respectively, for retaining the yarn in a groove of the yarn-guide for any operative positon of the axis of the yarn-guide with respect to the axis of the bobbin,

second means, in operative combination with said modulated action means, for preventing a faulty movement of the yarn with respect to the axis of the bobbin both at a time of starting and at a time of braking, comprising

torque converter means for providing a uniform and moderate torque on the yarn-guide at the time of starting,

automatic braking means for intensive simultaneous stopping of said control motor, of said bobbin, and of said yarn-guide and said cooperative actuating members as soon as a predetermined exaggerated traction is exerted by the yarn which is supplied, said automatic braking means for braking the bobbin abruptly and with priority, and

means for tensioning the yarn which is fed for preventing slipping thereof.

3,982,707

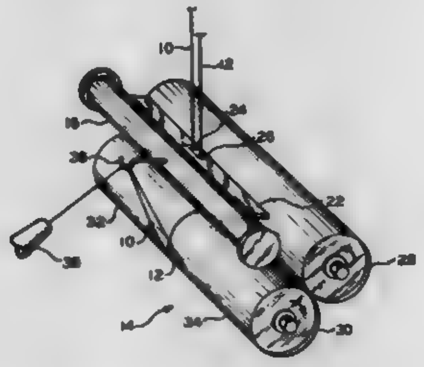
METHOD AND APPARATUS FOR THE PRODUCTION OF TWO PACKAGES OF YARN WITH TRANSFER TAILS

Ralph Saleeby, Wilson, N.C., assignor to Phillips Fibers Corporation, Greenville, S.C.

Filed Feb. 10, 1975, Ser. No. 548,583

Int. Cl.² B65H *54/02, 65/00*

U.S. Cl. 242—18 PW **8 Claims**



1. A method for producing two packages of yarn with yarn transfer tails on a winder simultaneously, wherein the winder has a friction roll, a dual traversing means with two traverse guides and two bobbins on a chuck and wherein the chuck is positioned adjacent the traversing means and the friction roll is positioned adjacent the traverse guides of the traversing means and against the chuck, said method comprising:

passing two yarns between the traversing means and the friction roll and then between the chuck and the friction roll while holding the yarns approximately in the center of the traversing means and out of the traverse guides;

passing said yarns partially around the bobbins on the chuck, and then while holding the yarns partially off the surface of the bobbins, passing the yarns between the traversing means and the chuck and again between the chuck and the friction roll;

then while holding the ends of the yarns approximately in the center of the chuck, releasing that portion of the yarns held off the surface of the bobbins thereby winding the transfer tails; and

after the transfer tails are wound, releasing the yarns held in the center of the traversing means thereby permitting the traverse guides to pick up the yarns to wind the packages.

3,982,708

APPARATUS AND METHOD FOR PROCESSING YARN

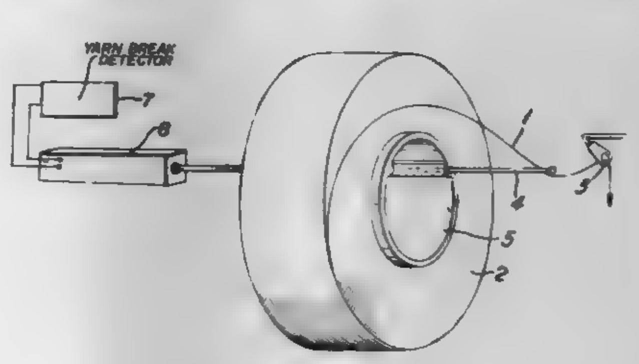
Reginald Ronald Hancock, and Peter James Reuben Maw, both of Gloucester, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 294,081, Oct. 2, 1972, abandoned. This application Mar. 10, 1975, Ser. No. 556,952

Claims priority, application United Kingdom, Oct. 4, 1971, 46043/71

Int. Cl.² B65H *63/00*

U.S. Cl. 242—36 **5 Claims**



1. In apparatus for interrupting a running yarn unwound overend from a wound package wherein a yarn balloon is formed by the running yarn, breaking the yarn and holding the upstream end thereof in response to an unwinding malfunction: an elongate member located within said yarn balloon and normally out of contact with said running yarn and means responsive to an unwinding malfunction for introducing said elongate member into the path of the running yarn such that the yarn wraps itslf around the member in a number of helical turns until held sufficiently tightly that the yarn breaks and unwinding ceases.

3,982,709

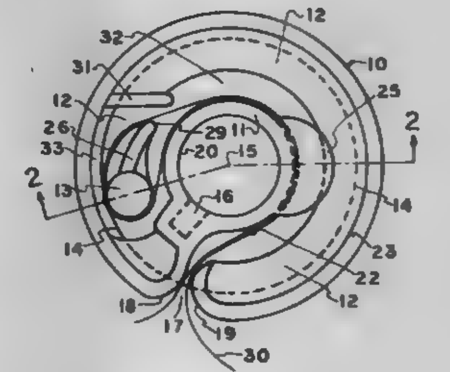
FILM CORE WITH RESTRAINER

Heinz E. Hertel, Mount Prospect, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Aug. 18, 1975, Ser. No. 605,487

Int. Cl.² B65H *75/28*

U.S. Cl. 242—74 **11 Claims**



1. A core for holding web material comprising:

a first cylinder having an axis of rotation and an axially extending slot for receiving the web material;

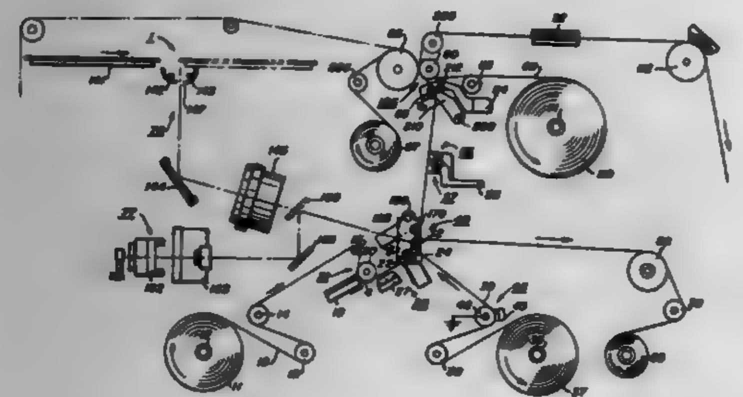
a second cylinder within said first cylinder and substantially concentric with said first cylinder about said axis of rotation to thereby form an annular channel between the outer peripheral surface of said second cylinder and the inner surface of said first cylinder, said annular channel communicating with said axial slot;
spacing means between said first and second cylinders to thereby maintain said first and second cylinders in fixed substantially concentric relation; and
a post within said annular chanel and angularly spaced from said axial slot beyond the point of tangency between said slot and the outer peripheral surface of said second cylinder; whereby;
with the end of the web material threaded through said slot into said annular channel, along the outer peripheral surface of said second cylinder, around said post, back through said channel, and out said slot, the conjoint action of the restraining effect of said post on the web material and the frictional contact between the resulting two layers of web material about the outer peripheral surface of said second cylinder securely holds the web not withstanding pulling forces applied to the web.

3,982,710

PHOTOELECTROPHORETIC WEB TENSION SYSTEM

Roger G. Teumer, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 24, 1975, Ser. No. 571,325
Int. Cl.² B65H *25/22*
U.S. Cl. 242—75.5 16 Claims



1. A web tension system for controlling web tension comprising in combination:

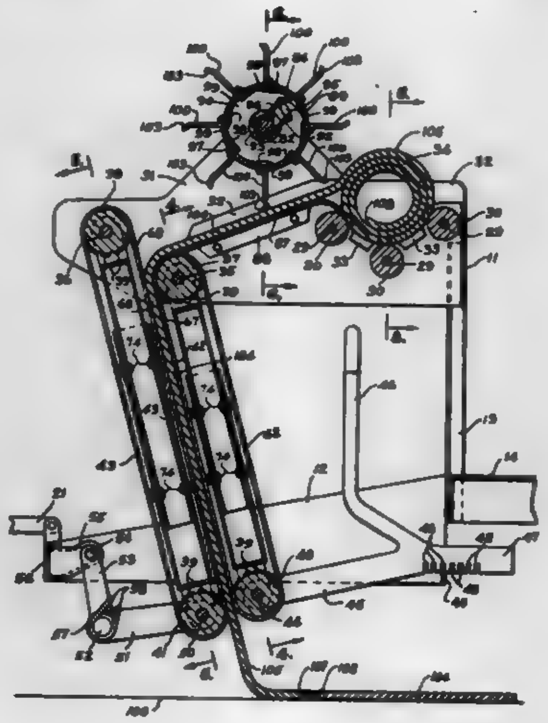
a. a web supply roll mounted to support a web for travel, said web supply roll provided with tension means for controlling tension of a supported web unwinding from said web supply roll;
b. a web drive capstan roller for driving a supported web through friction contact therewith from said web supply roll at constant velocity;
c. a web friction capstan roller mounted in the direction of web travel after said web supply roll, said web friction capstan roller provided with tension means for controlling web tension unwinding from said web supply roll in cooperation with said web supply roll tension means in (a) above;
d. a web rewind roll mounted to rewind a supported web driven by said web drive capstan roller from said web supply roll, said web rewind roll provided with tension means for controlling tension of a supported web rewinding onto said web rewind roll;
e. a first web takeup capstan roller mounted in the direction of web travel before said web rewind roll, said web takeup capstan roller provided with tension means for controlling web tension rewinding onto said web rewind roll in cooperation with said web rewind roll tension means in (d) above;
f. takeup drive means for driving said web rewind roll and said web takeup capstan roller at the desired speeds; and
g. main drive means for driving said web drive capstan roller at the desired speed.

3,982,711

SOD LAYING MACHINE

Frank M. Bradley, Box 255, Rte. 1, Diamond, Mo. 64840, and Larry D. Markle, R.R. 1, Aurora, Mo. 65605

Filed Apr. 9, 1975, Ser. No. 566,377
Int. Cl.² B65H *17/46;* A01B *45/00*
U.S. Cl. 242—86.52 35 Claims



1. A sod laying machine having a body portion, rotatable ground engaging body portion supporting means thereon, means for moving said body portion over the ground in a predetermined direction to rotate said ground engaging supporting means in a predetermined direction, means on said body portion rotatably supporting a plurality of rolls of lengths of sod, said supporting means supporting said rolls in end to end adjacency, conveying means on said body portion, means engaging said rolls to transfer said lengths of sod from said rolls lengthwise of themselves in extended postion onto said conveying means, and driving means for said conveying means and said roll engaging means connected with said ground engaging means to operate said roll engaging means and said conveying means upon rotation of said ground engaging means in said direction, said conveying means having the discharge end thereof adjacent the ground to lay the lengths of sod onto the ground progressively as said body portion is moved thereon in said predetermined direction.

3,982,712

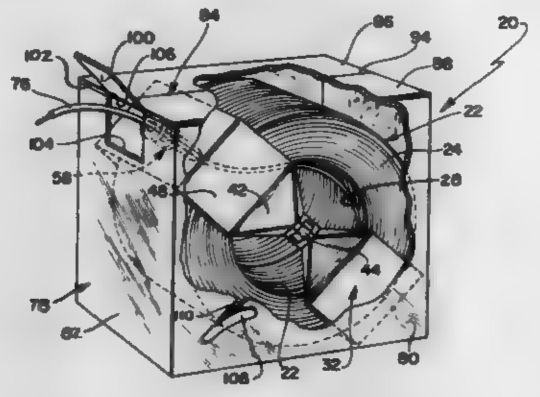
COIL DISPENSER

Eugene E. Bassett, Box 298-R.F.D. No. 2, Lisbon, Conn. 06351

Filed Nov. 28, 1975, Ser. No. 632,289
Int. Cl.² B65H *49/18, 49/00;* B65D *85/66*
U.S. Cl. 242—129 15 Claims

9. An assembly for packaging strand material in the form of a coil having a top and a bottom and an axial passage extending therethrough between the top and the bottom comprising:
at least one elongated strip conformed to embrace the outer surface of the coil generally diametrically and across its projected surface in a continuous loop, said strip having one end with a slot therein and another end having a tab compatible for reception within the slot to thereby maintain said strip in a contiguous relationship with the coil, and a pair of separated pyramid-shaped members intermediate said ends which project into the axial passage of the coil, respectively, from opposite directions;

a hollow feed tube extending radially through the windings of the coil between an inner end at the axial passage, and an outer end at the outer surface of the coil and positioned intermediate its top and the bottom of the coil, said tube lying within a plane containing all elements of said strip and including a pair of spaced flanges extending radially outwardly from the outer surface thereof adjacent the outer surface of the coil, said flanges defining an annulus therebetween adapted for the snug reception therewithin of said slotted end thereby cooperating with said tab and the slot to maintain said strip in a contiguous relationship with the coil, said tube further having a bore extending therethrough for receiving and guiding an end of the strand material from the passage as it is being unwound; and



a regular slotted carton for supporting the coil and said strip therein, said carton having a pair of opposed major side walls, a pair of opposed minor side walls, and a pair of opposed end walls, the top and bottom of the coil being generally contiguous with a respective one of said major side walls, one of said minor side walls having a flap associated with the outer end of said tube adjacent a corner of said carton defined by the intersection of said minor side wall with one of said end walls, said flap being defined by tearable perforations and including a hinge portion such that when said perforations are fully torn, said flap is movable about said hinge portion between a closed position and an open position to accomodate selective withdrawal of the strand material from the coil, said major side walls including a removable tab defining a slot extending from one corner of said carton to a location in the central regions of said one major side wall for viewing the amount of strand material remaining on the coil when said tab has been removed.

3,982,713

BALLISTIC MISSILE DEFENSE SYSTEM

John J. Martin, South Bend, Ind., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

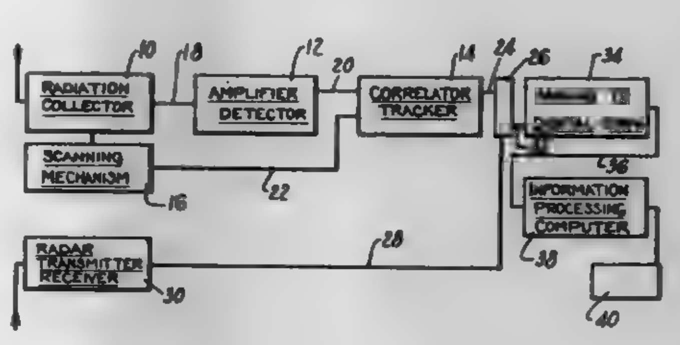
Filed July 22, 1959, Ser. No. 829,188
Int. Cl.² F41G *9/00*
U.S. Cl. 244—3.1 8 Claims

1. The method of determining the trajectory of a ballistic missile having a trajectory substantially defined by the formula:

$$\ddot{y} = -g + \rho_{\infty} g(\dot{y})^2 /2\, \beta \sin \gamma$$

$$\ddot{x} = \rho_{\infty} g\, (\dot{x})^2/ 2\beta \cos \gamma 2$$

comprising the steps of measuring the velocity and flight path angle of the missile at a reference altitude, measuring the radiation emitted by the gases in the proximate environment of the missile, measuring the time required for the missile to travel from the reference altitude to the occurrence of maximum radiation, measuring the altitude at which maximum radiation occurs, computing the value of "*a*" from the following formula:



$$V_E \sin \gamma\, t_{I_{max}} = \int_{y_o}^{(\ln p\, a)/c} e^{a e^{-cy}} dy$$

computing the value of "β" from the formula:

$$a = \rho_o g/2c\, \beta \sin \gamma$$

where
V = velocity at altitude y
V_E = velocity at altitude y_o
γ = flight path angle
e = base of natural logarithms
c = constant
$a = 92_o g/2c\beta \sin \gamma$
$\tilde{\rho}_o$ = density of the atmosphere at sea level
ρ_{∞} = density of the atmosphere at altitude "y"
g = acceleration due to gravity
β = ballistic coefficient
p = constant
$t_{I_{max}}$ = time required for missile to travel from altitude y_o to y
y = altitude at which maximum radiation occurs = $(\ln p\, a)/c$
y_o = reference altitude
y = first derivative of altitude with respect to time
$\ddot{y}$ = second derivative of altitude with respect to time
$\dot{x}$ = first derivative of distance in the horizontal plane with respect to time
$\ddot{x}$ = second derivative of distance in the horizontal plane with respect to time

substituting the value of "β" from the solution of the last mentioned formula in the first mentioned formulas and computing the values of "$\ddot{y}$" and "$\ddot{x}$"

3,982,714

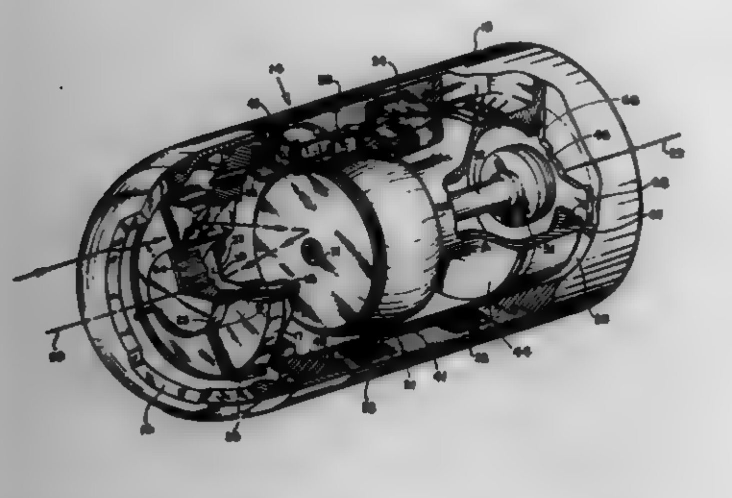
PROPORTIONAL LEAD GUIDANCE

Harland L. Kuhn, 4611 Raymar Drive, Orlando, Fla. 32809

Continuation-in-part of Ser. No. 828,804, May 26, 1969, abandoned. This application July 24, 1972, Ser. No. 274,683
Int. Cl.² F41G *7/00*
U.S. Cl. 244—3.16 26 Claims

1. An inertially stabilized seeker comprising a housing, a stabilized seeker element operatively disposed in said housing, and passive coupling means in said seeker functioning to cause

said seeker element to move to orient itself with said housing, such movements taking place at a rate proportional to any



displacement angle between the seeker element axis and the housing axis.

3,982,715
ADJUSTABLE TOOL POSITIONING STRUCTURE

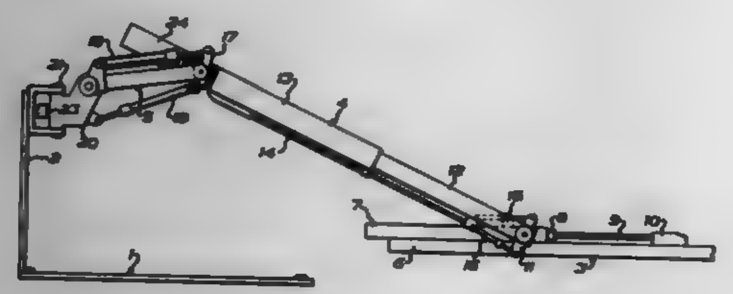
Kenneth Lindgren, and Sten Erlandsson, both of Borlange, Sweden, assignors to Verkstadsproduktion I Borlange AB, Sweden

Filed Dec. 16, 1975, Ser. No. 641,209

Claims priority, application Sweden, Dec. 17, 1974, 7415823

Int. Cl.² E21C *9/00*, *5/08*

U.S. Cl. 248—2 3 Claims



1. Adjustable tool positioning structure comprising:— a base; a member which is mounted on the base and pivotable in a first plane; a link which at one of its ends is hingedly connected to said member and is pivotable in a plane generally perpendicular to said first plane; an arm which is at one end hingedly connected by means of a joint to the other end of the link and includes, for the adjustment of the arm length, a first element connected with the joint and a second element which is movable relative to said first element; said link and said arm being interconnected such that the arm is pivotable about a pivot axis which is fixed relative to the link; and a tool support whicih is hingedly connected to the other end of the arm and which includes, for the adjustment of the support length, a first element hingedly connected to the movable element of the arm and a second element movable relative to the last-mentioned first element; said tool support being designed to support a tool so that the longitudinal axis of the tool is generally parallel to the longitudinal axis of the support; wherein the arm is mounted in the joint and rotatable about its own longitudinal axis such that its axis of rotation and its axis of pivoting intersect in the joint, and wherein the arm and the tool support are so arranged that in any of the positions of rotation of the arm they will lie in a generally common plane which is independent of the relative pivoting position of the arm and the tool support.

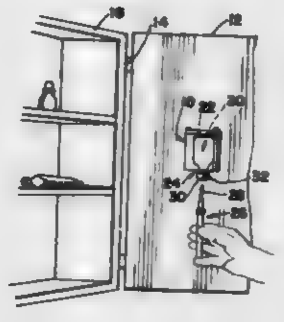
3,982,716
MEDICAL BOTTLE HOLDER

Alonzo Trees, 300 Carrington Road, Waterloo, Iowa 50701

Filed Sept. 24, 1975, Ser. No. 616,124

Int. Cl.² A61B *19/00;* A47G *29/02;* B65D *23/10*

U.S. Cl. 248—206 A 2 Claims



1. A holder for supporting a medicine container having hypodermically injected medication therein and including a sealed mouth section, a shoulder section and a neck connecting the mouth and shoulder sections, the holder comprising:

a hollow cylindrical body made of non-brittle, insulating material and having first and second ends joined by a side wall and a chamber defined therein for accommodating the medicine container;

an end cover including a plug mounted on said body first end having a neck receiving passage for permitting the medicine container mouth section and neck to project through said end cover with the mouth section exterior of the housing when the container is accommodated in said chamber, said cover defining a shoulder interiorly of the housing for abutting the medicine container shoulder to support the medicine container in a stationary manner in said chamber with the mouth section projecting through said end cover, said plug including a plug end positioned inside said chamber with said shoulder being a frustoconically shaped surface connecting said plug end and said neck receiving passage;

a circular closure cap pivotally connected at a side edge thereof to said body second end for pivotal movement in a plane parallel to a plane containing said second end so that said cap slidably engages said second end to selectively cover and uncover said body second end to enable a medicine container to be placed in and removed from said chamber and to hold the container in place in said chamber when a piercing needle is being forced through the sealed mouth section;

a pivot pin comprised of a screw-like element penetrating through said cap and into said container side wall to form a pivot axis for said cap which is essentially parallel to the longitudinal axis of said cylindrical body for pivotally connecting said cap to said body;

means for pivoting said closure cap;

an elongated magnet on one side of said body detachably securing said body to a supporting means; and

means fixing said magnet to said body so that said magnet is longitudinally aligned with said body, attaching means being fixed to said magnet for essentially the entire length thereof and engaged against said body for essentially the entire length thereof so that said body and said magnet are fixed together for essentially the entire lengths thereof and are essentially immovable with respect to each other thereby adapting said holder to be fixed to said supporting means over essentially the entire length of said holder so that the medicine container will be rigidly and fixedly held in place when it is accommodated in said chamber with said closure cap closed.

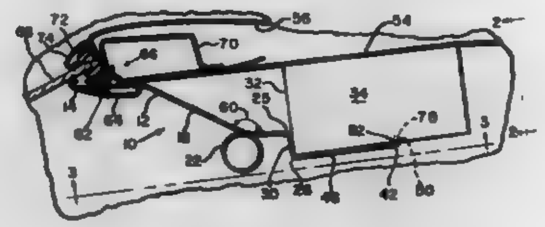
3,982,717
HOLDER FOR TISSUE BOXES

Richard Pavelle, 3 Fieldstone Drive, and Leon A. Ferber, 48 Lake Ave., both of Woburn, Mass. 01801

Filed Aug. 12, 1974, Ser. No. 496,804

Int. Cl.² F16M *13/02*

U.S. Cl. 248—313 1 Claim



1. In a spring wire device for holding a box of tissue in place against a reference surface, the tissue box being of the type having a tissue access opening on the bottom face of said box between two opposed ends and opposed sides of said box wherein said tissue box has a length dimension between said opposed ends substantially greater than its width dimension between said opposed sides and said tissue access opening on said bottom face has a length dimension between said opposed ends greater than its width dimension between said opposed sides, the combination of an anchoring formation comprised of a substantially 360° bend in a single spring wire forming a bifurcation with an opening sufficient to receive a fastening member therethrough for anchoring said holding device in place, said wire extending from said 360° anchoring formation bend in the form of two spring legs with each leg having a spring loop distal from the anchoring formation, a spring leg extension from each spring loop followed by a pair of substantially right angle bends in the spring wire of each of said legs to form a stop formation in each of said leg extensions for engagement with one of said box ends, a further leg extension extending from each of said stop formations for supplying lift support at said tissue box face, a further stop formation in each of said further leg extensions being comprised of a substanitally right angle bend in each of said further leg extensions for engaging the other said box ends, and a transvers member fixed to said further leg extensions to firmly hold said further leg extensions a fixed distance from each other on respective sides of said tissue access opening and having upwardly directed end extensions with each end extension at a substantially right angle to said transverse member for engaging said box sides to provide with the other stop formations resistance to lateral movement of said box.

3,982,718
OPERATORY CHAIR OPERATING MECHANISM

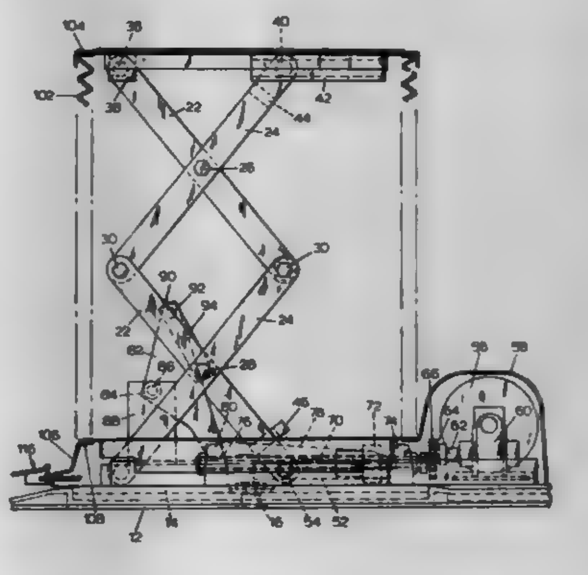
Richard P. Folkenroth; William G. Mader, both of York, and Ralph J. Williams, New Oxford, all of Pa., assignors to Dentsply Research & Development Corporation, Milford, Del.

Filed July 31, 1975, Ser. No. 600,703

Int. Cl.² F16M *13/00;* B66B *11/04*

U.S. Cl. 248—421 5 Claims

1. An operatory chair base comprising in combination, a support member adapted to have a seat for an operatory chair attached thereto for positioning said seat at desired vertical positions within predetermined limits above a supporting surface, base means adapted to be positioned upon said supporting surface, a pair of parallel lazy tong assemblies each comprising pairs of crossed links pivotally connected to each other and said assemblies being operable within vertical planes spaced transversely apart a limited distance and positioned for operation between said support member and base means, means pivotally connecting one end of certain of said links respectively to said base means and said support member and the corresponding ends of certain other of said links respectively being slidably connected to said base means and support member, said assemblies being operable in unison when extended and retracted respectively to raise and lower said support member relative to said base means, pivot means connecting at least one pair of said links of each assembly intermediately of the ends thereof, a linkage system supported by said base means and interconnected respectively to said pivot means for said one pair of links of each assembly thereof and operable when moved in opposite directions to move said pairs of links of said lazy tong assembly in corresponding contracting and expanding vertical directions to move said support member in similar vertical directions, said linkage system comprising stationary pivot means fixed to said base, a pair of similar bell cranks spaced transversely and mounted between said lazy tong assemblies, pivot means connecting said bell cranks to said stationary pivot means, a transverse yoke operable adjacent said base, a pair of connecting rods connected at opposite ends respectively to said yoke and similar ends of said bell cranks, a pair of connecting links connected at opposite ends respectively to the other similar ends of said bell cranks and said pivot means of said one pair of links of each assembly, and power means connected to said linkage system to operate the same in at least one direction to move said lazy tong assembly in expanding direction, said power means comprising a reversible electric motor supported by said base, a drive screw extending along said base and connected at one end to said motor for operation of said screw selectively in opposite directions, bearing blocks fixed to said base and respectively supporting said screw adjacent opposite ends thereof, and said transverse yoke having a threaded bore receiving said screw and being movable by said screw in opposite selected directions to actuate said linkage system to raise and lower said support member relative to said base.



3,982,719
PICTURE HANGER

George B. Kilborne, 216 Bermuda Lane, Palm Beach, Fla. 33480

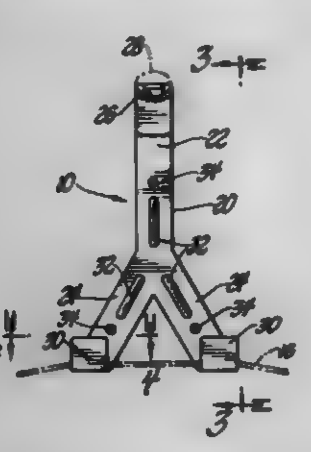
Filed Nov. 28, 1975, Ser. No. 636,344

Int. Cl.² A47G *1/16*

U.S. Cl. 248—489 3 Claims

1. A hanger for pictures or the like, the hanger comprising: a metallic body of a stamped construction that includes an upper leg and a pair of lower legs arranged in an inverted Y shape; the upper leg including an aperture for receiving a nail that is adaptable to suspend the hanger on a wall, the force of gravity pivotally positioning the hanger about the nail in a downwardly depending orientation; the lower legs including a pair of laterally spaced wire receiving hooks located on opposite sides of the aperture the same lateral distance; the wire receiving hooks being leveled with each other by gravity during suspension of the hanger and the hooks being adaptable to receive a laterally extending wire or the like on a picture to be hung so that laterally spaced support of the wire prevents pivoting of the picture about the hanger; each leg including a

projection that extends rearwardly to engage the wall; each hook including an inclined ramp that extends outwardly and downwardly from the associated leg so that the picture wire is positioned outwardly from the wall to bias the leg projections against the wall; and each hook including a notch that opens horizontally away from the other hook at the outer end of the adjacent inclined ramp so as to bite into the wire.



3,982,720
CANDLE CASTING APPARATUS AND METHOD

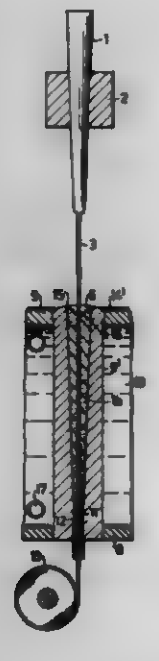
Herbert Inderbiethen, Nettetal, Germany, assignor to Spezial-Maschinenfabrik Hans Kurschner, Kaldenkirchen, Germany

Filed Mar. 4, 1974, Ser. No. 447,516

Claims priority, application Germany, Mar. 9, 1973, 2311699; Mar. 9, 1973, 2311700

Int. Cl.² G11C *5/00*

U.S. Cl. 249—81 9 Claims



1. A candle casting apparatus comprising:
- a. a plurality of tubular candle casting molds, each mold having an axis and an axial bore;
- b. a housing defining an enclosure and having a top plate and a bottom plate spaced from said top plate,
  1. said plates being formed with respective aligned openings,
  2. an exposed surface portion of said top plate extending in a closed loop about each opening in said top plate and separating the associated opening from the other openings in said top plate,
  3. each of said molds being received in a respective opening of said top plate and an aligned opening of said bottom plate and projecting axially beyond the exposed surface portion associated with the opening in said top plate receiving said mold; and
- c. means communicating with the interior of said enclosure for maintaining a cooling fluid in said housing in thermal contact with the outer surface of said molds which is within said enclosure.

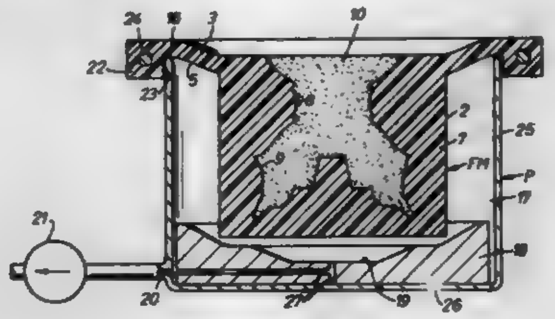
3,982,721
MOLDING APPARATUS INCLUDING A ONE-PIECE FLEXIBLE MOLD DEFORMABLE BY FLUID PRESSURE DIFFERENTIAL

William J. Maurino, and Raymond M. Putzer, both of Racine, Wis., assignors to Precision Flexmold, Inc., Racine, Wis.

Filed Jan. 20, 1975, Ser. No. 542,178

Int. Cl.² B29C *1/16, 1/12;* B28B *7/06*

U.S. Cl. 249—139 11 Claims



1. Apparatus for molding seamless articles comprising, a generally hollow one-piece distensible mold of elastomeric material and having a self-supporting, radially extending annular flange, a vacuum pot having a side wall with an upper edge and being of such size so as to receive said mold therein with said flange resting on said pot edge to form a seal therewith, said mold and pot thus forming an annular chamber therebetween, means for drawing a vacuum on said chamber whereby said mold distends and expands into said chamber to release the molded article from the mold and said flange cooperates with said pot edge to maintain said seal as said mold is retracted from an article therein, said flange having a downwardly extending projection around its periphery freely slidable over said pot wall whereby said flange may be easily set on and removed from the pot and whereby said downwardly extending projection also radially centers said mold in said pot, said flange including a restraining ring member imbedded in its periphery to restrict inwardly radial movement of said periphery, and when vacuum is applied, said projection prevents said flange from being drawn completely into said pot.

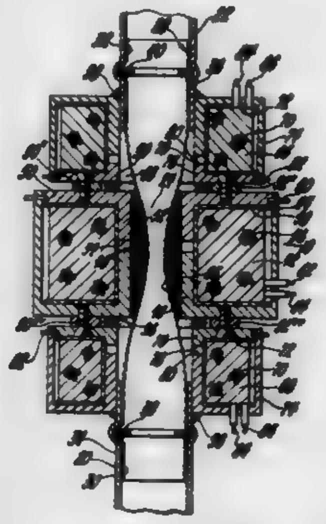
3,982,722
MAGNETIC CONTROL VALVE

James A. Bernard, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 21, 1975, Ser. No. 634,160

Int. Cl.² F16K *7/04*

U.S. Cl. 251—4 3 Claims



1. A valve for controlling fluid flow comprising: means forming an inlet and an outlet to direct fluid through the valve; a radially flexible member having end portions attached to said inlet and outlet means, respectively, in a fluid-tight manner to cause fluid to flow through an intermediate portion of the tubular member; means having a substantially annular configuration encircling said intermediate portion of said flexible member and attached to said inlet and outlet means to limit outward expansion of said flexible member, thus forming a variable volume annular space therebetween; a plurality of relatively small particles partially filling said annular space capable of movement to end portions thereof to permit maximum outward expansion of said intermediate portion when the valve is in an open operative condition and alternately of movement to a central portion of said annular space encircling said intermediate portion of said flexible member when the valve is in a closed operative condition; means which may be selectively energized to cause movement of said particles, thereby producing an accumulation of particles encircling said intermediate portion and against the encircling housing means, thereby causing radial contraction of said flexible intermediate portion to decrease the flow area of the valve.

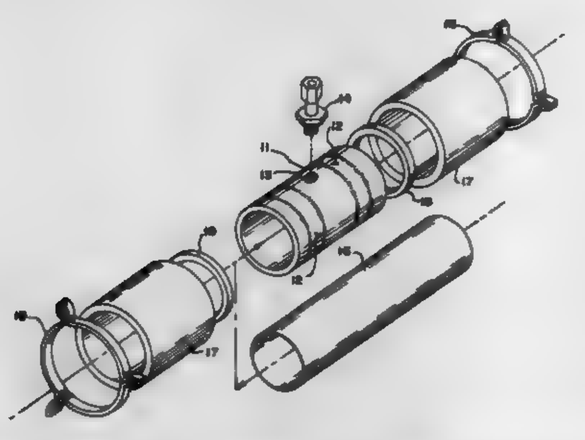
3,982,723
PINCH VALVE AND METHOD FOR FABRICATION

Freeman A. Ford, Atherton, and Richard O. Rhodes, San Francisco, both of Calif., assignors to Fafco Incorporated, Menlo Park, Calif.

Filed Mar. 28, 1974, Ser. No. 455,869

Int. Cl.² F16K *7/07;* F16L *21/06*

U.S. Cl. 251—5 3 Claims



1. A valve assembly for placement between the ends of inlet and outlet conduit sections for controlling flow of a fluid therethrough, comprising a valve body having an inner and an outer surface defining a cylindrical wall, a flexible tube extending axially through and having a length longer than said valve body so that said flexible tube may be folded back over the ends of said valve body to overlie the outer surface of said cylindrical wall at the ends thereof, a valve end tube for surrounding said flexible tube where it overlies the outer surface on each end of said valve body, and an expansion clamp surrounding said valve end tube at each end of said valve body for applying inwardly directed radial pressure on said valve end tube when tightened, said valve end tube being deformable and adapted to surround the ends of the inlet and outlet conduit sections so that when radial pressure is applied inwardly on said valve end tube a seal is formed between said valve body and said flexible tube, and the axial spacing of the clamps relative to the ends of the inlet and outlet conduit sections surrounded by said valve end tube being such that upon said expansion clamps being further tightened, the ends of the conduit sections are secured therein spaced apart by at least the length of said valve body, said flexible tube and the inner surface of said valve body cooperating to form a sealed valve chamber therebetween, said valve body having an opening through said cylindrical wall for admitting pressure into said sealed valve chamber, whereby pressure directed through said opening meters the fluid flow from full flow to substantially zero flow as pressure rises and said flexible tube distends into and blocks flow through said valve body.

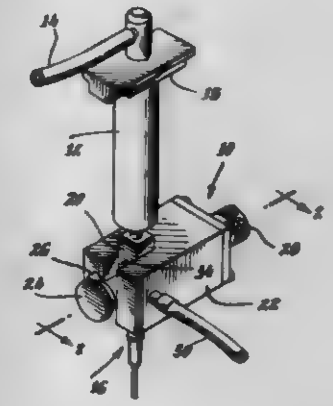
3,982,724
DEFORMABLE TUBE MATERIAL DISPENSER

Paul S. Citrin, Danbury, Conn., assignor to Indicon Inc., Danbury, Conn.

Filed Apr. 14, 1975, Ser. No. 568,123

Int. Cl.² F16K *7/06*

U.S. Cl. 251—7 11 Claims



1. A material dispenser for dispensing flowable materials comprising
- a valve housing having a movable pressure element for control of the flow of material;
- a deformable tube valve assembly mounted to the valve housing, said deformable tube valve assembly having a deformable tube made of a material selected to enable repetetive tube constriction for control of the flow of material through the tube, said assembly further being provided with an opening sized to receive the pressure element and located to expose a pinch region of the deformable tube for constriction thereof, the valve assembly being selectively shaped to support the deformable tube in the vicinity of the pinch region to enable precise control of constriction of the tube by the pressure element active on the exposed pinch region of the tube;
- means for internally supporting the tube on the downstream side of the opening to render said tube effectively nondeformable on the downstream side of the pinch region; and
- a micrometer operatively located on the valve housing to contact the pressure element to limit movement thereof for control of the size of the opening of the tube at the exposed tube pinch region for corresponding control of the flow of material.

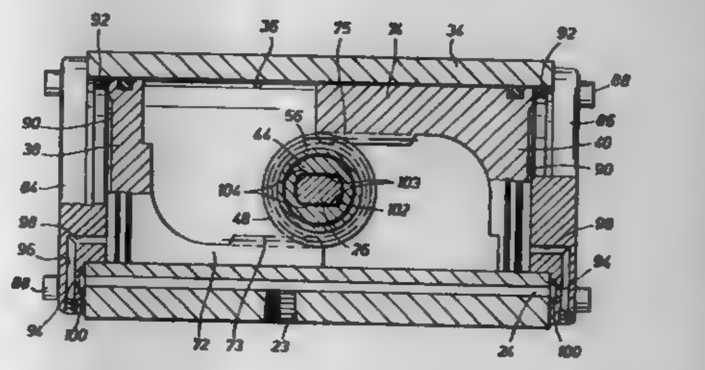
3,982,725
VALVE ACTUATOR

Malcolm D. Clark, Glascow, Scotland, assignor to Keystone International, Inc., Houston, Tex.

Filed June 27, 1974, Ser. No. 483,667

Int. Cl.² F01B *9/04;* F16K *31/163*

U.S. Cl. 251—14 14 Claims



13. A fluid powered actuator comprising:
- a housing having a cylindrical piston passageway therethrough and a shaft bore therein, said shaft bore being transverse to and intersecting said piston passageway;

- a shaft rotatably mounted in said shaft bore and extending through said piston passageway, said shaft having a longitudinal rod receiving bore extending into at least one end of said shaft, and said rod receiving bore having wrench surfaces therein;
- a pinion fixedly attached to said shaft within said piston passageway;
- a pair of pistons tightly disposed in said piston passageway on axially opposite sides of said pinion and movable in said piston passageway toward and away from said pinion, each of said pistons having an integral piston skirt extending axially from said piston along said piston passageway toward said pinion, said piston skirts being radially opposite each other in said piston passageway, each having a gear rack operatively engaging said pinion;

first means for providing fluid communication from the exterior of said housing to the interior of said piston passageway between said pistons;

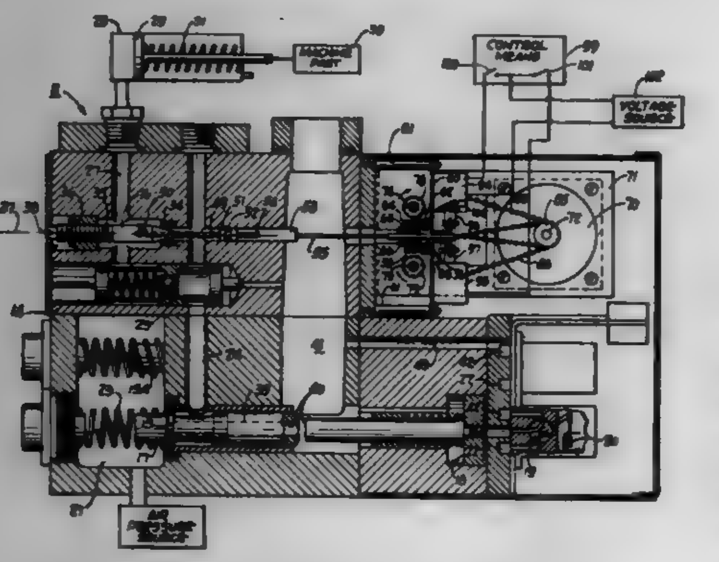
second means for providing fluid communication from the exterior of said housing to the ends of said piston passageway axially outwardly of said pistons;

and manual override means operatively connected to said shaft for manually rotating said shaft, said manual override means including a rod slidably disposed in said rod receiving bore and having wrench surfaces engageable with the wrench surfaces of said bore to prevent relative rotation between said shaft and said rod, said manual override means further including withdrawing means for withdrawing said rod at least partially out of said bore whereby said rod can be gripped and rotated thereby rotating said shaft.

3,982,726
ADJUSTABLE VALVE ASSEMBLY

Arthur T. Bublitz, Saline, Mich., and Eugene F. Holben, Haddonfield, N.J., assignors to Reliance Electric Company, Cleveland, Ohio

Filed Aug. 6, 1975, Ser. No. 602,245
Int. Cl.² F16K *31/04*
U.S. Cl. 251—133 **12 Claims**



1. An adjustable valve assembly including a valve body,
- a valve seat in said body,
- a valve member in said valve body movable along a first axis in two directions relative to said valve seat to establish a variable orifice therewith,

movable shaft means in said body movable in a first plane containing said first axis,

means interconnecting said movable shaft means and said valve member for concurrent movement,

a motor

line shaft means connected to be driven by said motor and journalled for rotation about a second axis in a second plane substantially normal to said first axis,

first and second drive trains from said line shaft means to said movable shaft means,

first and second clutch means in said first and second drive trains, respectively,

actuator means having a neutral position intermediate first and second actuated positions along first and second different paths, respectively, and connected to actuate said first and second clutch means, respectively,

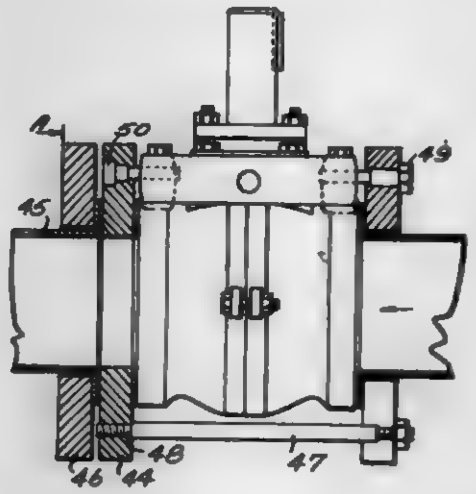
control means connected to control said actuator means and having first and second conditions and a third neutral condition of non-actuation of said actuator means,

and said first and second conditions of said control means connected to control said actuator means for movement along said first and second paths, respectively, to actuate said first and second clutch means, respectively, for opening and closing movements, respectively, of said valve member.

3,982,727
FLANGELESS VALVE

Juha Antti E. Nelimarkka, Helsinki, Finland, assignor to Neles Oy, Finland

Continuation of Ser. No. 350,490, April 12, 1973, abandoned. This application Dec. 27, 1974, Ser. No. 536,990
Claims priority, application Finland, Apr. 12, 1972, 1036/72
Int. Cl.² F16L *29/00*
U.S. Cl. 251—152 **2 Claims**



1. For securement betwen two, axially spaced pipe flanges, each of which has a ring of a plurality of angularly spaced bolt holes proceeding axially therethrough, with these bolt holes on one flange being in axial alignment with corresponding ones of these bolt holes on the other flange so that respective long bolts could be installed and secured between each respective pair of axially aligned bolt holes on the two flanges and tightened to draw the two flanges axially towards one another, the spaced occupied by such bolts between the flanges thus defining a plurality of mutually parallel long bolt paths:
- a flangeless rotary valve having a body with an inlet and outlet at axially opposite ends thereof on respective upstream and downstream sealed together, halves of said body and with a valve actuator shaft projecting radially outwardly from the body intermediate these ends;

the body having an exterior size and shape of such small diameter that, upon being axially aligned and centered between said flanges, all but a minority of said long bolt paths will remain unoccupied by the valve and that said minority which is obstructed is located angularly adjacent where the valve actuator shaft projects from the body;

the body further including: means defining a radially outwardly facing support surface on said body halves, ringing said shaft; a ring shaped frame supported upon the support surface; fastener means removably securing said frame in place upon said support surface;

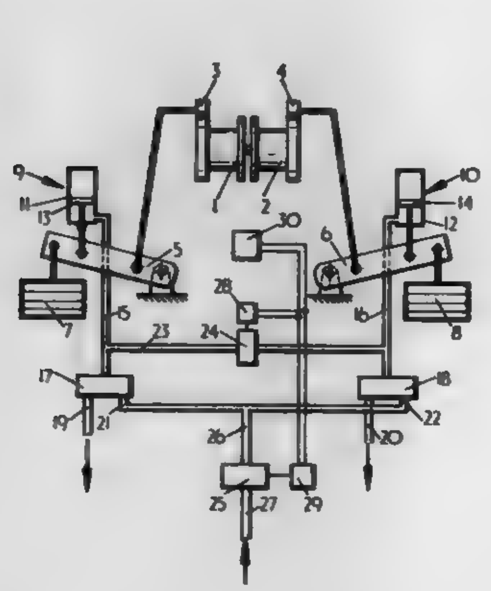
for at least one said obstructed long bolt path, a pair of openings through said frame, each such pair of openings being in axial alignment with one another on a respective one said obstructed long bolt path,

whereby, when the valve is installed between said pipe flanges, long bolts may be installed and tightened between said pipe flanges along the unobstructed long bolt paths, and short bolts may be installed and tightened between the respective frame openings and flange openings on said at least one obstructed long bolt path.

3,982,728
BRAKING APPARATUS FOR HOISTS

Bernard Elliott Shaw, Paisley, Scotland, assignor to Fullerton, Hodgart & Barclay Limited, Scotland

Filed June 10, 1974, Ser. No. 478,103
Int. Cl.² B66D *1/26*
U.S. Cl. 254—184 **4 Claims**

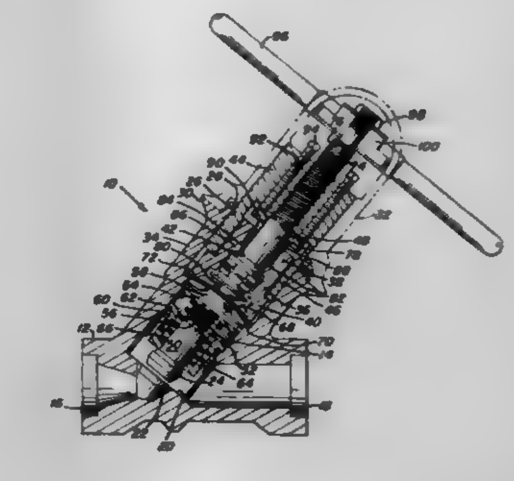


1. In a braking mechanism for a hoist incorporating two interconnected drums, two hoisting cables wound around said drums, a brake system incorporating a brake for each drum and biasing means urging the brakes to move to the brakes applied states and fluid pressure thruster means operable in opposition to the biasing means to move the brakes to the off state, first and second two-way brake control valves for respective thruster means each of said valves having a fluid receiving branch and two alternately selectable outlet branches, and a fluid supply line for each thruster means connected between the associated thruster means and outlet branch of the associated two-way brake control valve, said valve being operable to connect the associated fluid supply line alternatively to the other outlet branch which constitutes an exhaust branch or to the fluid-receiving branch, the improvement comprising a bridge pipe interconnecting the fluid supply lines leading to the two fluid pressure thruster means at points in said fluid supply lines between said two-way valves and said thruster means, a stop valve located in the bridge pipe and isolator stop valve means the outlet of which is connected to the fluid-receiving branches of the two-way brake control valves and the inlet of which is connectible to a source of supply of operating fluid under pressure.

3,982,729
BACK-UP SEAL FOR DIAPHRAGM VALVE

John D. Tricini, Greensburg, Pa., assignor to Kerotest Manufacturing Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 451,143, March 14, 1974, which is a continuation of Ser. No. 349,768, April 10, 1973, abandoned. This application Nov. 18, 1974, Ser. No. 524,821
Int. Cl.² F16K *31/44*
U.S. Cl. 251—214 **9 Claims**



1. A diaphragm valve comprising,
- a valve body having a chamber therein with an upper portion and a lower portion, said lower portion having inlet and outlet openings communicating with said chamber lower portion,
- a valve seat in said chamber lower portion between said inlet and outlet openings,
- a valve member positioned in said chamber lower portion in overlying relation with said valve seat and arranged to control the flow of fluid through said chamber lower portion,
- a flexible diaphragm positioned in said chamber in overlying relation with said valve member and arranged to seal said chamber lower portion from said chamber upper portion,
- a bonnet positioned in said chamber upper portion in overlying abutting relation with said diaphragm, said bonnet having a passageway therethrough,
- a valve stem positioned in said bonnet passageway with a lower end abutting the top surface of said diaphragm,

sealing means positioned in said bonnet passageway and surrounding said valve stem extending through said bonnet passageway,

said sealing means operable to permit axial movement of said valve stem in said bonnet passageway and seal said bonnet passageway to prevent the flow of fluid upwardly therethrough,

means to move said valve stem in said bonnet passageway to thereby transmit movement through said diaphragm to said valve member, a yoke member including a lower annular end portion,

said bonnet includes an outer annular shoulder portion abutting said yoke member lower annular end portion,

said bonnet including an annular bottom portion positioned in overlying relation with said diaphragm,

said yoke member annular end portion threadably engaged to said valve body and arranged to urge said bonnet into abutting relation with said diaphragm.

3,982,730
STRUT SPRING COMPRESSOR

Misao Otsuka, No. 8146-2 Oaza-Ishioka, Ishioka, Ibaragi, Japan

Filed June 10, 1975, Ser. No. 585,752
Claims priority, application Japan, June 11, 1974, 49-67821
Int. Cl.² B23P *19/04*
U.S. Cl. 254—10.5 **1 Claim**

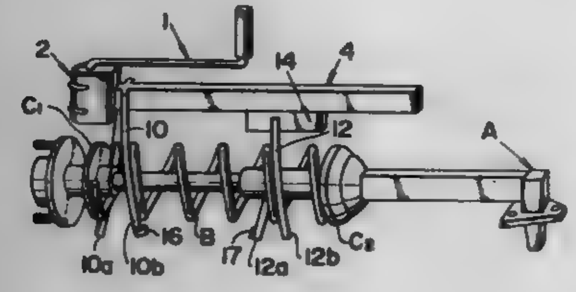
1. A strut spring compressor for compressing a spring in a strut assembly which spring comprises an elongated straight

element having first and second spring seats (C_1, C_2) separated from each other with the spring coiled around straight element and held between said seats, said strut spring compressor comprising:

a. an elongated hollow straight rod receiving member (4) with an elongated slot (5) therein with a base housing body (2) supporting a crank (1) with a gear drive (3) in said base housing body (2);

b. a threaded turning rod (6) in said receiving member (4) with a driver gear (9) engaging said drive gear (3);

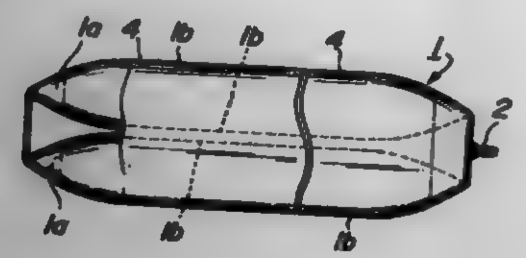
c. a moveable protuberant piece (14) coupled to said turning rod (6) through said elongated slot (5) so that the turning of said crank (1) will turn said threaded turning rod (6) and move said protuberant piece; and,



d. fixed and moveable spring compression plates (10, 12), said fixed plate (10) extending from the region of said base housing body (2) outwards from said slot (5), said moveable plate (12) extending from said moveable protuberant piece (14), said plates being substantially the same size each having a central open portion (11, 15) to encircle a spring to be compressed, said open section being defined by threadlike claws (10*a*, 10*b*, 12*a*, 12*b*), the pitch of said claws corresponding approximately to the coil of the spring with engaging pieces to engage the spring to be compressed at the tips of opposing surfaces of said claws.

3,982,731
FLUID PRESSURE ROLLER JACK

Toshiyata Tezuka, Yokohama, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan
Continuation of Ser. No. 381,198, July 20, 1973, abandoned. This application Mar. 31, 1975, Ser. No. 563,899
Claims priority, application Japan, July 24, 1972, 47-73931
Int. Cl.^{2} B66F *3/24*
U.S. Cl. 254—93 HP **2 Claims**



1. A fluid pressure roller jack comprising a fluid-tight wall, said roller jack being:

a. inflatable for use into a state in which said wall is generally circular in cross-section perpendicular to a principal, or cylinder, axis and the radius of the circular cross-section is approximately constant over substantially the entire length of said roller jack and

b. collapsible for storage into a layered but generally planar state, said roller jack when collapsed for storage comprising:

c. a first layer

i. which is hollow,

ii. which is generally rectangular in planar view, but has rounded corners,

iii. which is generally rectangular in cross-section, and

iv. the hollow interior of which communicates with the hollow interior of an axial neck to be recited along the axial length of one side thereof;

d. a second layer

i. which is hollow,

ii. which is generally rectangular in planar view, but has rounded corners,

iii. which is generally rectangular in cross-section,

iv. which is substantially the same size as said first layer, and

v. the hollow interior of which communicates with the hollow interior of said axial neck along the axial length of one side thereof; and

e. an axial neck comprising two portions of said wall

i. which are generally perpendicular to said first and second layers,

ii. which are generally parallel to said principal axis,

iii. the height of which perpendicular to said first and second layers is very small relative to the width of said first and second layers, and

iv. which together define a hollow interior which communicates with the hollow interiors of said first and second layers,

said wall having inherent fold lines along which it invariably folds in a predetermined manner perpendicular to said principal axis when being collapsed, said inherent fold lines defining portions of said wall which are folded inwardly when said roller jack is in its planar state, said inherent fold lines comprising:

f. a first inherent fold line which defines the left-hand edge of said first layer,

g. a second inherent fold line which defines the right-hand edge of said first layer,

h. a third inherent fold line which defines the left-hand edge of said second layer,

i. a fourth inherent fold line which defines the right-hand edge of said second layer,

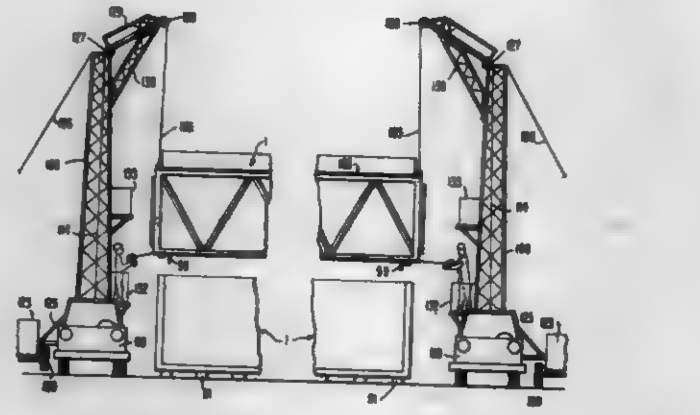
j. a fifth inherent fold line which defines the left-hand edge of said neck, and

k. a sixth inherent fold line which defines the right-hand edge of said neck,

said first through sixth inherent fold lines all being of substantially the same length.

3,982,732
APPARATUS FOR TRANSPORTING AND ERECTING MODULAR HOUSING SYSTEM

David R. Pender, 1018 Marion St., Columbia, S.C. 29201
Division of Ser. No. 395,517, Sept. 10, 1973, Pat. No. 3,881,283. This application Oct. 9, 1974, Ser. No. 513,215
Int. Cl.^{2} B66C *23/00*
U.S. Cl. 254—139.1 **7 Claims**

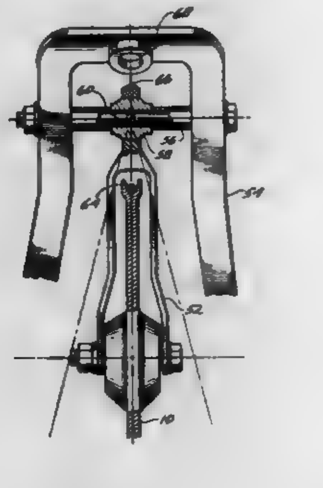


1. Apparatus for use in constructing plural level dwellings formed from a plurality of prefabricated basically L-shaped modules each having a single vertical wall and a bottom horizontal wall, said apparatus comprising twin wheel mounted construction cranes having relatively short fixed angle booms

projecting from corresponding sides of the cranes, wheeled counterweighting means detachably coupled with the sides of the frames remote from their booms, winch operated lifting cables for said cranes trained over the outward ends of said booms, said twin cranes arranged for parallel traversing near opposite ends of a housing module, and a lifting truss connected with said cables of the crane and adapted to be temporarily attached to a housing module at the side thereof remote from the module vertical wall and thereby forming with that module a rigid structure capable of withstanding stresses caused by lifting, transporting and placement of the module by said twin cranes, said lifting truss comprising a main longitudinal truss section which is substantially coextensive lengthwise with the module being lifted and a pair of hinged end transverse truss sections on the longitudinal truss section adapted to span opposite ends of the housing module and be coupled thereto.

3,982,733
GIMBALED SHEAVE WITH CABLE ANGLE SENSORS

Myrl E. Orme, Canoga Park, Calif., assignor to The Bendix Corporation, North Hollywood, Calif.
Division of Ser. No. 400,478, Sept. 24, 1973, Pat. No. 3,902,701. This application Jan. 8, 1975, Ser. No. 539,556
Int. Cl.^{2} B66D *1/36*
U.S. Cl. 254—173 R **3 Claims**



1. In combination a cable-directing sheave and support therefor comprising:

a frame and a first support member in said frame including means permitting said sheave to rotate in its own plane,

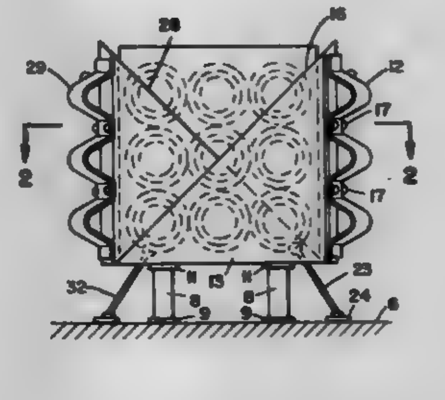
a second support means carried on said first support member including means permitting said sheave to rotate in a second plane perpendicular to said first named plane and a third plane perpendicular to both said first named and second planes, said second support means comprising a fork member carrying said sheave, a monoball on said first support member and a mating surface on said second support means for receiving said monoball, said sheave being positioned in said fork member such that the axes of rotation of said means permitting rotation in said second or third planes are in substantial alignment with a cable on said sleeve, and

photoelectric means installed on said frame and on said mating surface of said second support means for generating electrical signals representative of the departure of said sheave from a null position.

3,982,734
IMPACT BARRIER AND RESTRAINT

Grant W. Walker, Sacramento, Calif., assignor to Dynamics Research and Manufacturing, Inc., Sacramento, Calif.
Filed June 30, 1975, Ser. No. 591,277
Int. Cl.^{2} A01K *3/00*
U.S. Cl. 256—13.1 **7 Claims**

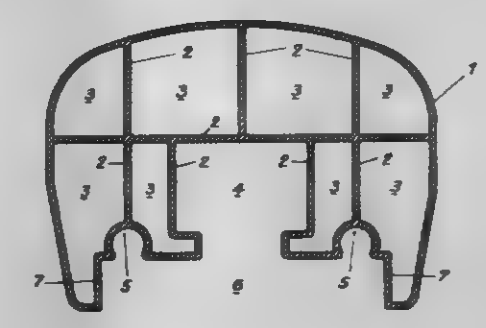
1. An impact barrier and restraint for use on a longitudinally extending roadway comprising means forming a plurality of pairs of bases, each pair being disposed transversely of said roadway and one pair being disposed behind the other, a first pair of transversely extending longitudinally spaced support plates, each support plate upstanding from a transverse pair of said base forming means, a first lateral buffer beam extending longitudinally of said roadway, means for stationarily fastening said first buffer beam to longitudinally spaced successive ones of said support plates, a second lateral buffer beam



extending longitudinally of said roadway, means for stationarily fastening said second buffer beam to a second pair of longitudinally spaced successive ones of said support plates, means secured to said roadway for restraining transverse movement of said support plates on said base forming means, and energy absorbing means resting on said base forming means and disposed adjacent to said buffer beams and between successive support plates.

3,982,735
DISMANTABLE AND DIRECTABLE RAIL OR BALUSTRADE

Gilbert P. Fornells, 38 rue Stendhal, 75020 Paris, France
Filed Nov. 21, 1973, Ser. No. 418,013
Claims priority, application France, Nov. 23, 1972, 72.41593
Int. Cl.^{2} E04H *17/14*
U.S. Cl. 256—59 **10 Claims**



1. A dismantable elongated rail assembly comprising a rail for attachment to a series of supporting elements spaced from each other,

mounting means secured to each of said elements,

a rail extending between said elements each having first and second ends,

interengaging means on said mounting means and said rail for securing successive rails to said mounting means, said interengaging means comprising at least a pair of spaced projections on said mounting means, spaced grooves in said rail for mating with said projections and said projections being snapfitted into said grooves.

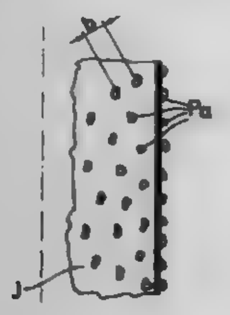
3,982,736
INTENSIFICATION OF FLUID-FLUID TRANSPORT PROCESSES

Lajos Mészaros, Szeged; József Grega, Miskolc; Lajos Lako, Miskolc; László Marko, Miskolc; Zoltán Salamon; István Szatmari, both of Sajobabony, and Laszlo Tasi, Miskolc, all of Hungary, assignors to Eszakmagyarorszagi Vegyimuvek, Sajobabony, Hungary

Filed May 20, 1974, Ser. No. 471,821

Int. Cl.² B01F *7/20*

U.S. Cl. 259—107 **3 Claims**



1. An agitator for the intensification of fluid-fluid transport processes, comprising a rotor having thereon a multiplicity of filamentary elements, the elements having a thickness-to-length ratio of 1:5 to 1:5000 and a thickness of 10–5000 μm, there being several thousand said elements on the rotor.

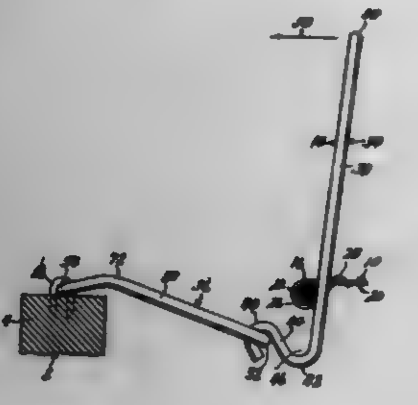
3,982,737
SPRING ASSEMBLY FOR UPHOLSTERED SEATS

John G. Platt; Harmon W. Arnold; Lloyd E. Tieman, all of Carthage, and Robert O. Isaacs, Joplin, all of Mo., assignors to Flex-O-Lators, Inc., Carthage, Mo.

Filed Apr. 9, 1975, Ser. No. 566,214

Int. Cl.² F16F *3/00*

U.S. Cl. 267—102 **17 Claims**



1. A spring assembly for a rigid seat frame having generally parallel front and rear rails, said spring assembly comprising:

a. a deck sheet of flexible material adapted to overlie said frame with its forward edge spaced rearwardly from the front rail of said frame,

b. rearward attaching means operable to secure the rearward edge of said deck sheet to the rear rail of said frame,

c. a series of vertically angled, substantially rigid levers spaced across the forward edge of said deck sheet, each being pivoted vertically, at its angle, to the forward edge of said deck sheet, and including an upwardly and forwardly inclined upper leg extending to a point spaced upwardly from said front frame rail, and a lower leg extending forwardly and downwardly from the pivot of said lever, said upper legs forming a bolster support portion of the assembly, said legs both being vertically inclined relative to the normal plane of said deck sheet,

d. a link pivoted vertically to the free end of each of said lower lever legs, and extending forwardly therefrom,

e. forward attaching means operable to connect the forward end of each of said links to said front frame rail for vertical pivotal movement relative thereto, whereby said forward attaching means, said links, said lower lever legs, said deck sheet and said rearward attaching means form a continuous connection between said front and rear frame rails, and

f. resilient tensioning means yieldable forwardly and rearwardly of said frame and interposed in said continuous connection as above defined, whereby said deck sheet is resiliently tensioned in its own plane, and whereby said levers are tensioned to cause upward pivoting thereof, whereby the bolster support formed by said upper lever legs is resiliently supported against downward deflection.

3,982,738
DASH-POT ARRANGEMENT FOR BALANCE

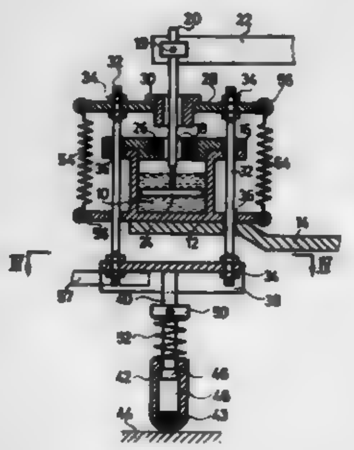
Eugen Meier, Meilen, and Milan Ellner, Uster, both of Switzerland, assignors to Mettler Instrumente AG, Griefensee-Zurich, Switzerland

Filed Apr. 14, 1975, Ser. No. 567,988

Claims priority, application Switzerland, Aug. 30, 1974, 11831/74

Int. Cl.² G01G *23/02, 21/10*

U.S. Cl. 267—121 **9 Claims**



1. A dash-pot arrangement for a balance beam comprising:

a. a vessel enclosing a cavity and formed with an access opening to said cavity;

b. a body of liquid in said cavity;

c. a rod member received in said opening with sufficient clearance to permit free movement of the rod member in a direction inward and outward of said cavity;

d. a piston mounted on said rod member in said cavity, said piston dividing said cavity into two compartments and bounding a restricted throttling passage connecting said compartments;

e. an annular sealing member of resilient material mounted on said vessel adjacent said opening;

f. an annular engagement member of a material more rigid than said resilient material,

I. said rod member passing freely through said annular members in the relaxed condition of the member;

g. operating means for moving said engagement member toward and away from a position of engagement with said sealing member,

I. said engagement member when in said position of engagement resiliently deforming said sealing member sufficiently so that said sealing member seals said opening against flow of said liquid from said cavity; and

h. securing means for securing said rod member to said balance beam.

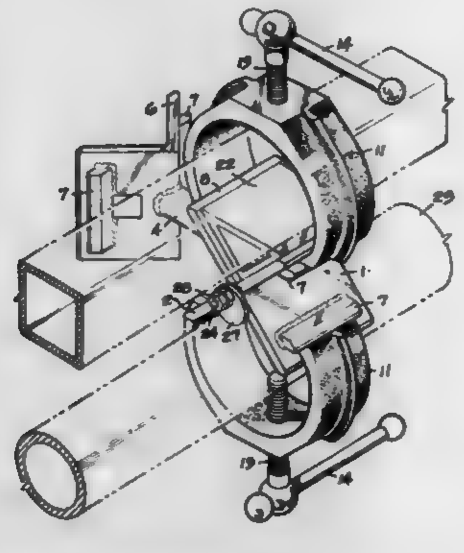
3,982,739
PORTABLE VISE

Roger V. Maes, 1223 S. Hutchins St., Lodi, Calif. 95240

Filed Aug. 1, 1975, Ser. No. 601,031

Int. Cl.² B25B *1/20*

U.S. Cl. 269—37 **11 Claims**



1. A portable vise comprising

a pair of open wells each well being formed by inwardly converging, longitudinal walls and said open wells being united back to back along the inner ends of the converging walls and each well being open at both ends thereof to receive an object lengthwise therein,

a single open well formed by inwardly converging longitudinal walls and being open at both ends thereof,

means to connect said pair of wells with the single well so as to hold the single well at right angles to and opening away from the pair of united wells whereby said pair of wells form a horizontal support and said single well forms a vertical support of the vise,

clamping means engageable with a selected well for clamping the work in said well,

and clamping means engageable with another well for clamping said well to a support.

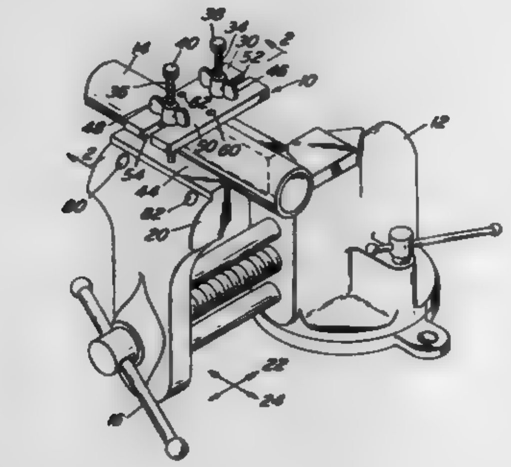
3,982,740
CLAMPING DEVICE

David Gutman, 503 Reed St., Philadelphia, Pa. 19147

Continuation of Ser. No. 347,053, April 2, 1973, abandoned. This application June 20, 1975, Ser. No. 588,982

Int. Cl.² B25B *5/16*

U.S. Cl. 269—110 **6 Claims**



1. A clamping device for gripping a longitudinally disposed work piece comprising:

a. a vise having a pair of transversely displaceable vise jaws, each of said vise jaws having longitudinally extending upper and side surfaces, said upper and side surfaces being orthogonal each to the other for contacting said workpiece along an interface line of said upper and side surfaces;

b. means for contacting said work piece in a downward direction between said vise jaws in transverse contact with said work piece, said contacting means being singularly planar in contour for contacting said work piece along only one line of contact, said vise jaws and said contacting means having load contact with said work piece along three lines of contact, said three lines of load contact forming three load point contacts in a plane normal to said longitudinally disposed work piece, said point load contacts between each of said displaceable vise jaws and said contacting means having an angular displacement greater than a right angle, said contacting means being removeably secured to each of said vise jaws, the portion of the work piece between said vise jaws being unsupported, said vise jaws being displaced each from the other in said transverse direction to provide a work area on said work piece opposing said contacting means; and,

c. transverse adjustment means formed through said contacting means for allowing transverse displacement of said vise jaws and removal of said contacting means from cooperative relation with said vise jaws.

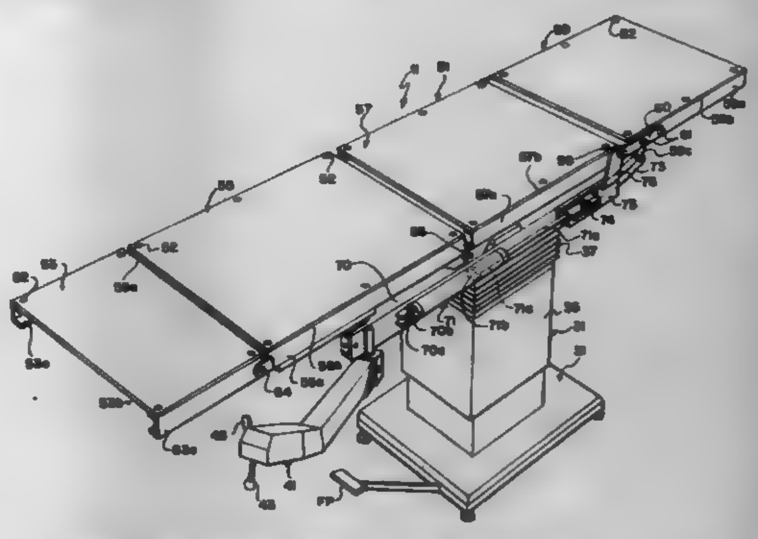
3,982,741
OPERATING TABLE OR THE LIKE WITH GEOMETRICALLY COMPENSATED DIFFERENTIALLY MOVABLE LOAD SHARING MULTIPLE HYDRAULIC CYLINDER AND PISTON ARRANGEMENT

Larry D. Mitchell, Ballwin, and Murray Q. Tanner, III, Florissant, both of Mo., assignors to Affiliated Hospital Products, Inc., St. Louis, Mo.

Filed Mar. 25, 1975, Ser. No. 561,888

Int. Cl.² A61G *13/00*

U.S. Cl. 269—325 **13 Claims**



1. A patient supporting table or bed comprising,

a table top with at least one pivotally articulatable section, support means for said top,

and movement means for imparting articulated movement to said one section,

said movement means comprising a pair of tandem tension-to-compression closed-fluid-interconnected laterally spaced parallel hydraulic actuating cylinders interconnected through a closed tension-to-compression fluid interconnection between the compression or piston end of one cylinder and the tension or rod end of the other said cylinder,

the ratio of the interconnecting cylinder cross-section area of the piston-end-interconnected one of said cylinders relative to the (cylinder area minus rod cross section) area of the other rod-end-interconnected said cylinder at the closed tension-to-compression fluid interconnection between the compression or piston end of said one cylinder and the tension or rod end of the other said cylinder being other than unity,

said cylinders being mounted and connected in pivotal-movement-imparting relation between said support and said one table top section through compensating geometrically sized linkage means in compensating differential geometrical size relation proportional to said ratio.

3,982,742

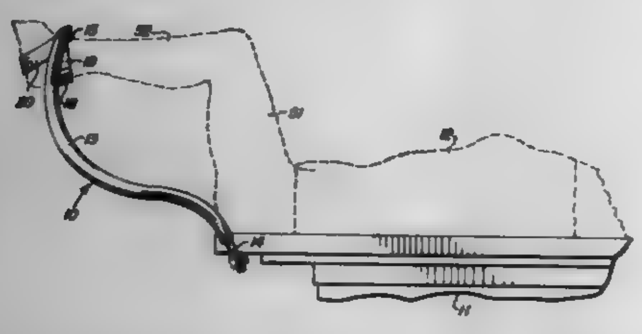
MEDICAL STIRRUPS

John L. Ford, 4651 E. Palomino Road, Phoenix, Ariz. 85018

Filed Nov. 17, 1975, Ser. No. 632,480

Int. Cl.² A61G *13/00*

U.S. Cl. 269—328 **5 Claims**



1. A stirrup for use in combination with a medical table for engaging the foot of a patient and supporting the leg of the patient during certain medical procedures, said stirrup comprising:

a. an elongate shaft including,
   i. a first end adapted to be secured to said medical table,
   ii. a second end having connection receiving means; and
b. foot receiving means including,
   i. a first elongate flexible strap having first and second ends,
   ii. a second elongate flexible strap having first and second ends secured to said first strap and having a centerline generally arcuate relative the centerline of said first strap, and
   iii. connection means proximate said first and second ends of said first strap and engageable with said connection receiving means of said shaft,

whereby the heel of said foot is received and suspended between said first and said second straps when one of said connection means is engaged with said connection receiving means.

3,982,743

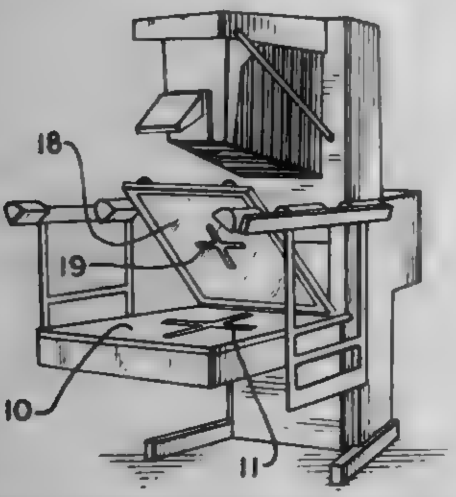
METHOD OF MANUFACTURING BOOKS

Paul W. DeRoo, Sr., 1540 N. State Parkway, Chicago, Ill. [illegible]10

Filed Dec. 9, 1974, Ser. No. 530,517

Int. Cl.² B41F *13/54*

U.S. Cl. 270—1 **6 Claims**



1. A method of manufacturing bound books, comprising the steps of:

a. selecting a sequence of eight pages of a book or page proofs thereof,
b. taking the first, fourth, fifth and eighth of said pages and placing them in a work holder on the bed surface of a direct-image, positive plate-making machine wherein said work holder includes raised positioning means disposed perpendicular to and intersecting each other, said positioning means being effective to locate these four pages in a rectangle with the upper left corners of the first and fifth pages adjacent the center of the positioning means and the upper right corners of the fourth and eighth pages adjacent the center of said positioning means and also with the head and gutter margins of each page correctly spaced and aligned,
c. making a direct image, positive plate (A) of said first, fourth, fifth and eighth pages,
d. repeating the aforedescribed steps (b) and (c) with the seventh, sixth, third and second pages arranged in corresponding fashion to the first, fourth, fifth and eighth pages to make another direct-image, positive plate (B),
e. positioning plate (A) on one of two drums of a perfecting press and plate (B) on the other of said two drums with the plates in alignment with each other on a vertical center line and with that vertical centerline in registration with a vertical alignment mark on said press,
f. operating the press to produce a predetermined number of sheets S having four pages of the aforedescribed eight pages on each side thereof,
g. repeating the aforedescribed plate-making and printing process with each additional sequence of eight pages making up a book,
h. folding each sheet along one center line and then along the other perpendicular center line,
i. collating the folded sheets and assembling a book from sheets containing all of the pages of each book, and
j. binding and trimming the assembled book.

3,982,744

PERSONALIZED COMPUTER PRINTED HARD COVERED BOOK

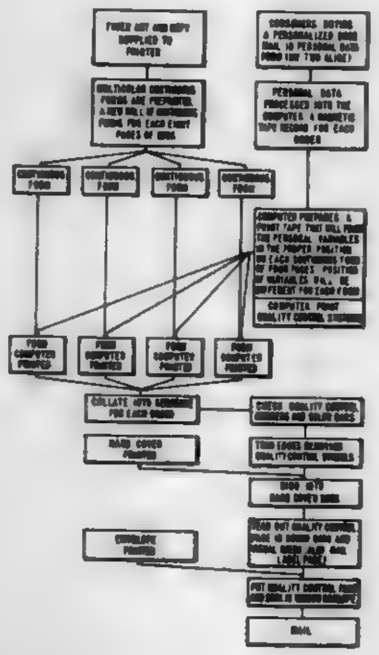
Joseph Stephen Kraynak, Van Nuys, Calif., and Arthur Blumenfield, Eastchester, N.Y., assignors to Me-Books Publishing Company, Burbank, Calif.

Continuation-in-part of Ser. No. 317,016, Dec. 20, 1972, Pat. No. 3,892,427. This application Mar. 10, 1975, Ser. No. 557,133

The portion of the term of this patent subsequent to July 1, 1992, has been disclaimed.

Int. Cl.² B41F *13/54*

U.S. Cl. 270—12 **1 Claim**



1. The method of preparing a personalized hard cover story book having variable printed data of a personal nature and non-variable printed copy which utilizes a computer to print at least the personalized portions of the text comprising the steps of:

a. preprinting the pages of a book with non-variable copy and art materials on continuous form computer printing sheet material to produce a preprinted continuous form computer printing sheet material;
b. inputting to a computer variable data for each personalized copy of the book;
c. introducing said preprinted continuous form sheet material into a computer printed in a manner such that a complete printed text will be produced for each set of variable data;
d. printing said variable data including quality control indicia on said preprinted continuous form sheet material, said pre-printing step and said printing step producing a printed continuous form sheet material with only odd numbered pages on one side and only even numbered pages on the other side;
e. cutting said continuous form printout materials to a size to form pages;
f. collating the pages from the printer into the proper sequence for each individual personalized book;
g. inspecting the quality control indicia on each of said collated pages to determine that the book is properly collated;
h. trimming away portions of said pages to remove quality control marks therefrom; and,
i. binding said pages into a hard cover book.

3,982,745

FABRIC SUPPLYING AND CUTTING SYSTEM

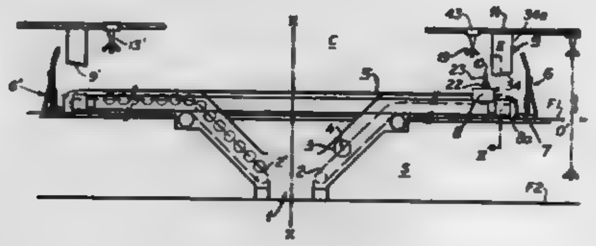
Bernard H. Weil, 13, Av. Foch, and Didier R. Weil, 3, Rue Jean de Bry, both of 25000 Besancon, France

Continuation-in-part of Ser. No. 513,854, Oct. 10, 1974, abandoned. This application Apr. 11, 1975, Ser. No. 567,105

Claims priority, application France, Oct. 11, 1973, 73.36352

Int. Cl.² B65H *29/46*

U.S. Cl. 270—31 **12 Claims**



1. A system for supplying fabric and laying it in superposed layers on a cutting table in a cutting room of an industrial fabricating plant which comprises winding said fabric on rigid tubes to form a roll, said tubes projecting from opposite ends of the rolls and being strong enough to support the rolls when said tubes are supported by their projecting ends, storing said rolls in a storage room below said cutting room, placing said rolls successively on an upwardly inclined chain conveyor comprising two belts spaced apart a distance approximately equal to the length of said rolls and having teeth for supporting said rolls by the projecting ends of said tubes, transporting said rolls by said conveyor up to said cutting room at a location at one end of said cutting table, transferring said rolls successively to an elevator having means for supporting said rolls by the projecting ends of said tubes, lifting one roll at a time by said elevator to a height above said cutting table, transferring said elevated roll to a carriage spanning said cutting table and running on rails at opposite sides of said cutting table, said carriage having bearing means for rotatably supporting said roll by the projecting ends of said tube, and moving said carriage along the cutting table while unwinding said roll to lay said fabric on the cutting table.

3,982,746

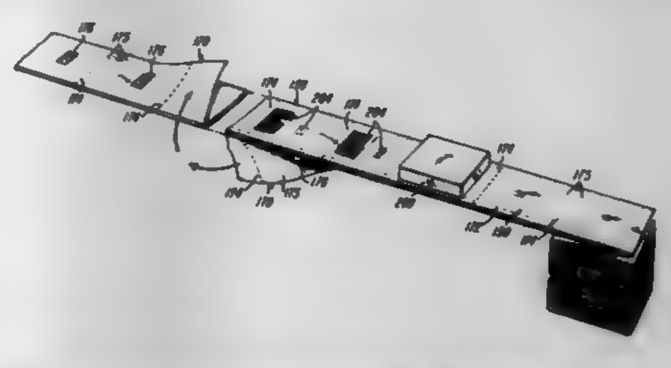
DIRECT MAIL ADVERTISING BOOKLET AND METHOD OF PRODUCTION

William J. O'Brien, Plandome Heights, N.Y., and John Sakal, Dayton, Ohio, assignors to The Standard Register Company, Dayton, Ohio

Division of Ser. No. 330,214, Feb. 7, 1973, Pat. No. 3,899,381. This application June 23, 1975, Ser. No. 589,713

Int. Cl.² B41L *43/12*

U.S. Cl. 270—37 **2 Claims**



1. The high speed method of producing personalized booklets for bulk mailing comprising:

superposing a plurality of individual continuous strips of paper-like material, there being a lowermost continuous strip and an uppermost continuous strip, each of the continuous strips having opposed longitudinal edges, the lowermost continuous strip having spaced-apart openings therein, at least one of the continuous strips having repetitive printed material thereupon,

attaching the continuous strips together along one longitudinal edge thereof to form a multiple ply web,

printing personalized name and address information upon the uppermost continuous strip at spaced-apart portions along the length thereof, the personalized name and address information printed upon one portion being different from the name and address information printed upon any of the other spaced-apart portions,

longitudinally folding substantially the entire lowermost continuous strip over the uppermost continuous strip along said longitudinally attached edge to expose the personalized name and address information through the openings in the lowermost continuous strip,

severing the multiple ply web along spaced-apart transverse lines.

3,982,747

SKI POLE

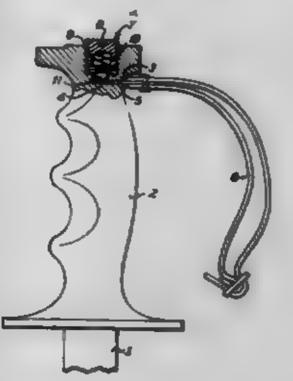
Hubert Schweinsberg, Bergneustadt, Germany, assignor to Joseph Stamm KG, Rebbelroth, Germany

Filed Apr. 11, 1975, Ser. No. 567,362

Claims priority, application Germany, Apr. 11, 1974, 2417959

Int. Cl.² A63C *11/22*

U.S. Cl. 280—11.37 H **7 Claims**



1. A ski pole comprising a handle and a hand strap releasably attached to said handle, said handle comprising longitudinal threaded bore means in the upper part thereof, threaded

element means adapted to be screwed and for adjustment in said bore means and comprising longitudinal recess means disposed in its underside adapted to receive and contain longitudinal, biasing resilient element means, ball means disposed at the end of said resilient means, slot means in said handle disposed laterally to and communicating with said bore means, said handstrap comprising release means adapted to engage said slot means, said release means comprising recess means adapted to have said ball means engaged therein at a predetermined biasing pressure to retain said release means in said slot means, whereby said release means and handstrap are releasable from said handle when said biasing pressure is exceeded.

3,982,748
FOLDABLE TOBOGGAN

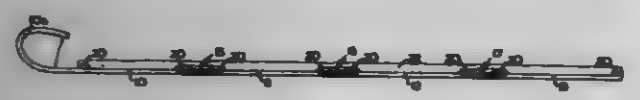
Burrell Francis Hooper, and Ronald Francis Hooper, both of R.R. 1, Hyde Park, Ontario, Canada

Filed Feb. 21, 1975, Ser. No. 551,950

Claims priority, application Canada, Mar. 18, 1974, 195223

Int. Cl.² B62B *15/00*

U.S. Cl. 280—18 **9 Claims**



1. A foldable toboggan comprising adjacent forward and rearward sections connected together by duplex hinge means, said hinge means including a central plate having its front and rear edges each hinged to a respective front and rear hinge plate, each hinge plate holding one of said adjacent sections, said hinge plates being movable through at least 90° relative to the central plate whereby said sections can be folded into parallel relationship with the upper surfaces of said sections facing each other and with said central plate providing spacing between said folded sections, said hinge means including movement limiting means which prevent the forward edge of the base of said rearward section moving substantially below the plane of the base of the forward section, said movement limiting means including an extension of the forward hinge plate extending into a recess in said central plate and forming a stop member, which member cooperates with a downwardly facing surface movable with said central plate to prevent movement of the lower surface of said central plate below the plane of the base of said forward section, said duplex hinge means being arranged with hinge knuckles projecting upwards in the operative condition of the toboggan, and wherein, with the bases of the said adjacent sections coplanar, the lower surfaces of the central and hinge plates of the hinge means lie in the same plane as said bases to provide a substantially smooth undersurface joining the bases of the adjacent sections.

3,982,749
SIGNATURE FEEDER

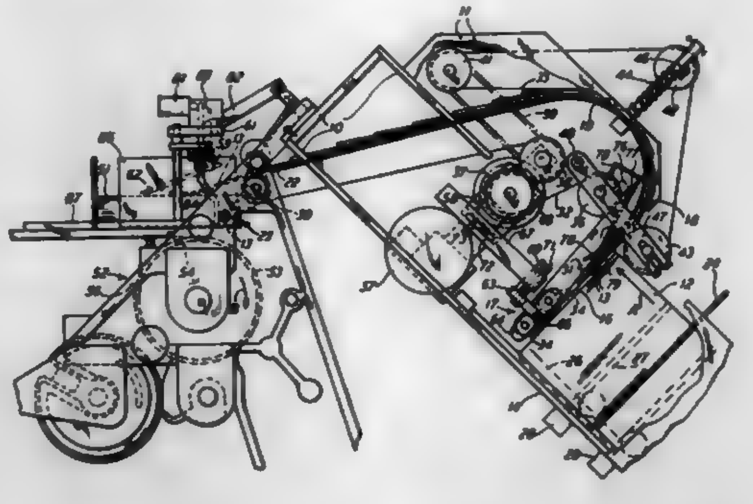
Anton R. Stobb, Pittstown, N.J., assignor to Stobb, Inc., Clinton, N.J.

Filed July 7, 1975, Ser. No. 593,848

Int. Cl.² B65H *3/04, 5/02, 29/16*

U.S. Cl. 271—4 **7 Claims**

1. A signature feeder comprising a support frame, a stack-supporting conveyor movably disposed on said frame in an uprightly inclined orientation for supporting said stack in an uprightly inclined orientation for transporting a stack of signatures in the direction of the longitudinal axis of the stack and to a dispensing location, a signature pick-up conveyor movably supported on said frame and extending to said dispensing location and having a portion disposed in contact with the face of the stack at the forward end of the stack, said portion including a conveyor belt movable across the forward face of said stack for disposing the signatures in an imbricated stream of signatures, a guide member fixedly disposed on said frame adjacent said conveyor belt for receiving the imbricated stream of signatures and extending to a deposit location location where the signatures are passed beyond the control of said guide member, and an adjustable support disposed adjacent the forward face of the stack and with said conveyor belt being trained on said support, said support including adjustable members adjustably positionable along the forward face of the stack to adjustably position said conveyor belt for engaging said sheets at a selected position on said sheet for establishing the amount of imbrication between consecutive ones of said sheets.



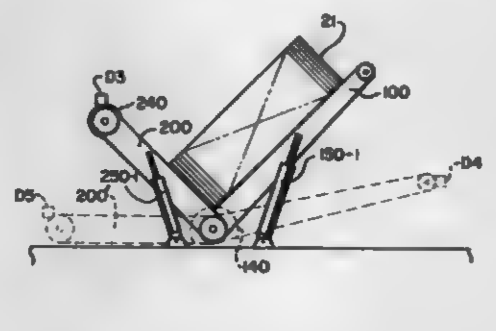
3,982,750
METHOD FOR TRANSPORTING AND REORIENTING A STACK OF MATERIALS

William F. Pulda, Piscataway, N.J., assignor to Vanguard Machinery Corporation, Edison, N.J.

Filed Jan. 29, 1975, Ser. No. 545,038

Int. Cl.² B65H *1/22*

U.S. Cl. 271—151 **12 Claims**



1. The method of transporting and reorienting a stack of materials, which comprises the steps of:

a. conveying the stack to a prescribed position on one driven feed conveyor;
b. pivoting another driven feed conveyor to a prescribed angular position relative to the one conveyor;
c. pivoting said one conveyor and upsetting said stack against the other conveyor; and
d. returning one of the conveyors to a prescribed position for the feed of the upset stack therefrom.

3,982,751
PARALLEL ACTION JOGGER

David Noel Obenshain, Swanton, Md., assignor to Westvaco Corporation, New York, N.Y.

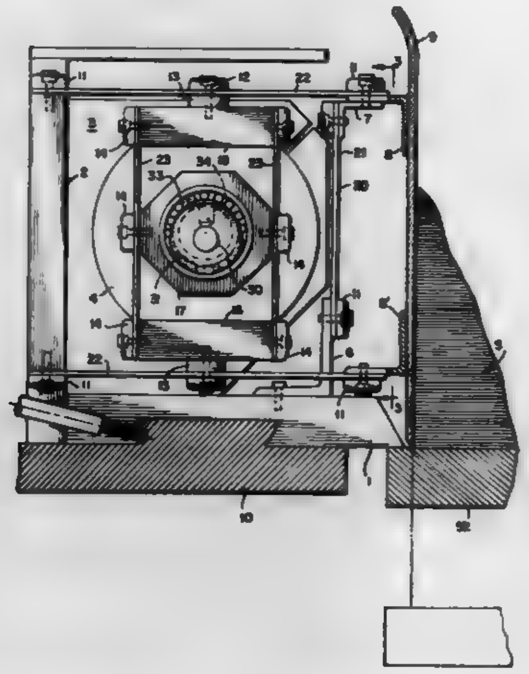
Filed Sept. 16, 1975, Ser. No. 611,813

Int. Cl.² B65H *31/38*

U.S. Cl. 271—221 **11 Claims**

1. A sheet jogging device for precisely aligning cut sheets of material in a stack comprising:

a. a supporting means for a jogger device comprising a base member and back plate connected to one another;
b. a jogger paddle element attached to said supporting means by a first flexible spring device connected between said jogger paddle and said back plate and a second flexible spring device connected between said jogger paddle and said base member; and,
c. a drive means mounted on said supporting means and connected to said first flexible spring device for actuating said jogger paddle element.



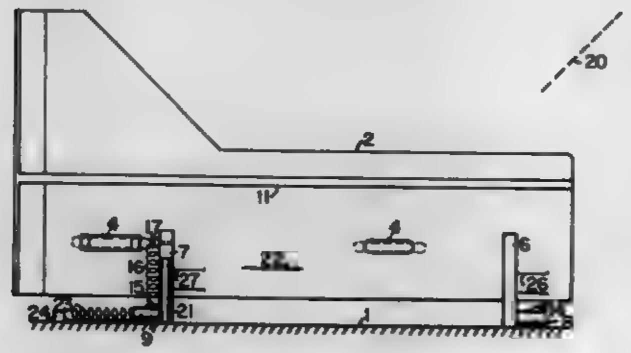
3,982,752
DOCUMENT GUIDE

Forrest L. Langford, Northridge, Calif., assignor to Terminal Data Corporation, Woodland Hills, Calif.

Filed Dec. 12, 1975, Ser. No. 640,320

Int. Cl.² B65H *9/16*

U.S. Cl. 271—248 **9 Claims**



1. A document guide, comprising:

a. a plate (2) forming a surface of a guide for the transport of documents,
b. a support (7) attached to said plate and extending away from the surface of said plate,
c. a foot member (9) upon said support,
d. a base (1),
e. a first member (15) upon said base to allow rotation of said foot member, support, and plate with respect to said base,
f. first resilient means (16) attached to said support and to said base to urge a fixed rotational relation between said plate and said base, and
g. second resilient means (23) orthogonally attached to said support and to said base to urge a fixed translational relation between said plate and said base.

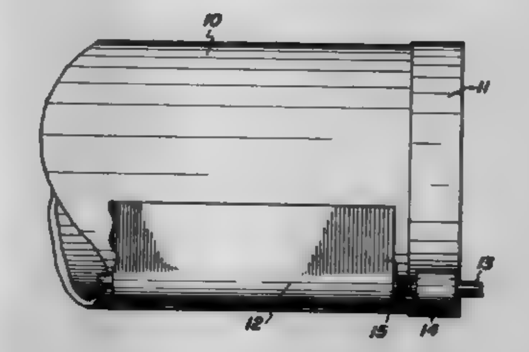
3,982,753
COMBINED BACKSTOP AND BRAKE

John F. Coleman, Rochester; Donald P. Miller, Webster, and John F. Hatzmann, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 12, 1973, Ser. No. 340,155

Int. Cl.² B65H *5/02*

U.S. Cl. 271—275 **1 Claim**



1. In a facsimile transceiver including a rotating drum for conveying sheet material past a scanning station, said drum including a thumbwheel of resilient material mounted around said drum at one end thereof, said transceiver further including a wiper mounted on a shaft parallel to the axis of rotation of said drum, said wiper being disposed relative to said drum so as to maintain said sheet material in close proximity to said drum, an improved backstop and brake comprising

- a tapered arm pivotably mounted on said shaft opposite said thumbwheel, and
- a torsion spring mounted on said shaft between said wiper and said arm, said spring having a first tang in contact with said wiper and a second tang in contact with said arm so as to pivot said arm into contact with said thumbwheel,
- said arm being arranged on said shaft and cooperating with said spring so as to apply a braking force on said drum when said drum rotates in a first direction and to depress said resilient thumbwheel when said drum rotates in a second direction to prevent rotation in said second direction.

3,982,754
APPARATUS FOR CONSTRUCTING STRUCTURES, PARTICULARLY FOR CHILDREN'S PLAYGROUNDS AND GARDENS

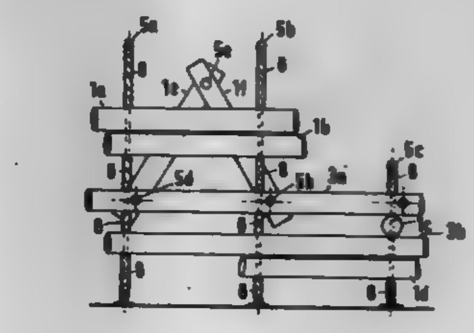
Guy de Moreau, Vuurgatstraat 46, 1900 Overijse, Belgium

Filed May 23, 1975, Ser. No. 580,358

Claims priority, application Belgium, May 27, 1974, 815567

Int. Cl.² A63B *17/00*

U.S. Cl. 272—113 **7 Claims**



1. For use in assemblying structure for children's playgrounds, gardens and the like, the combination comprising,

a. a plurality of first elements of substantially equal cross section, each first element consisting of a log of undressed timber each having a pair of transverse bores disposed in a common plane passing longitudinally of the respective log, said bores being spaced on each first element a same predetermined modular distance and each having a same predetermined modular diameter,

b. a plurality of second elements each consisting of a bar having threaded opposite ends and each having a diameter less than the diameter of the bores of the first elements for being received in use in a corresponding bore of the first elements extending therethrough,

c. a plurality of tubular third elements of various equal lengths each having an axial through bore having a diameter greater than the diameter of said second elements for receiving in use the second elements extending axially therethrough, each third element having an outer diameter greater than the diameter of each transverse bore of the first elements,

d. a plurality of fourth elements having a threaded bore for threading on to a respective threaded end of said second element and having an outer diameter greater than that of the transverse bores of the first elements, said fourth elements, when in use, bearing against third elements to limit movements of third and first elements on the second elements,

e. whereby the first and second elements may be assembled in use in an assemblage with second elements upstanding extending through transverse bores of first elements so that said first elements span the distance between the second elements, said third elements are assembled in use axially spaced on the second elements intermediate at least some next adjacent first elements for spacing first elements axially on the second elements, and the fourth elements may be assembled threaded on outermost ends of the second elements, said first elements on said second elements being positionable to extend in radial directions from the second elements, and at least one of the second elements being positionable to extend axially through aligned transverse bores of all the first elements.

6. A structure for children's playgrounds, gardens and the like comprising, in combination, a plurality of first elements of substantially equal cross section and equal length, each first element consisting of a log of undressed timber each having a pair of parallel transverse bores extending through the longitudinal axis of said first element and spaced axially equally in each of the first elements, a plurality of spaced apart upstanding rod-like second elements extending axially through aligned transverse bores of the first elements, third elements maintaining spaces between the first elements on the second elements, said second elements each having opposite threaded ends, some of the first elements extending radially from the second elements in corresponding directions, others of said first elements being disposed and displaced vertically from said some of said first elements and generally extending in other radial directions, at least one of the second elements extending axially through aligned transverse bores of all of the first element, and threaded stop elements on said threaded ends of said second elements to limit movements of first and third elements axially on said second elements.

3,982,755

WEIGHT TYPE EXERCISING DEVICE

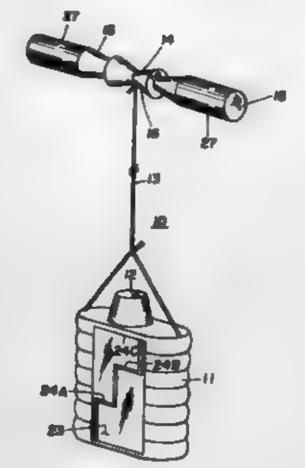
John I. Sarich, Edmonton, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Apr. 28, 1975, Ser. No. 571,965

Int. Cl.² A63B *21/06*

U.S. Cl. 272—117 1 Claim

1. A device for exercising purposes comprising a cylindrical rod, two inverted tapered generally cone shaped sections joined together at their narrowest sections generally in the middle of the rod, a hollow transparent container having weight indicated indicia, said container being fixed to a flexible cord, the end of which is fastened to the narrowest section of the cylindrical rod, said container being adaptable to filling with an amount of water to achieve a desired weight, said device employed by rotation of the rod, when grasped in the hands of a user, so as to raise or lower the container as the cord is wound or unwound about the rod, the middle portion of the rod being of lesser diameter than the end sections of the rod so as to direct a wound cord to the narrowest section of the rod, and each end of the rod formed of a uniform circular cross-section, to serve as handles.



3,982,756

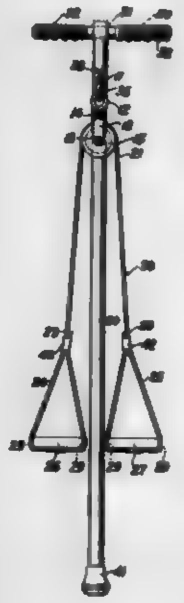
SIT-N-CYCLE

Carl Hersey, 4333-49th Ave. South St. Petersburg, Fla. 33711, and W. Paul Resop, 8041 Blind Pass Road, St. Petersburg Beach, Fla. 33706

Filed Apr. 28, 1975, Ser. No. 572,678

Int. Cl.² A63B *21/00*

U.S. Cl. 272—126 1 Claim



1. An exercising device comprising,
a staff made of rigid elongated material and a handle fixed to said staff,
a first eye fixed to said staff member and extending therefrom,
a second eye interlinked with the first eye, the second eye interconnected with said first eye having an elongated portion attached to a U-shaped member,
the U-shaped member having an intermediate part and spaced legs,
a wheel having an outer peripheral groove received between said legs,
an axle passing through said wheel and said legs,
a cord having a bite portion passing around said wheel,
two end portions, said end portions of said cord being folded back on themselves and attached thereto forming loops,

foot rest members supported in said loops,
said first eye member fixed to said staff member adjacent said handle and said first eye member has an elongated threaded part passing through a hole in said staff member and a nut on each side of staff member clamping said first eye member to said staff,
said U-shaped member has a nylon member received therein and said second eye member passes through said nylon member and has a head thereon received in a counter bore in said eye member,
whereby said U-shaped member is swiveled to said second eye member,
a yoke is supported on the side of said U-shaped member, a threaded member threadably engages said yoke and extends through said U-shaped member to produce a drag on the wheel when the wheel is rotating.

3,982,757

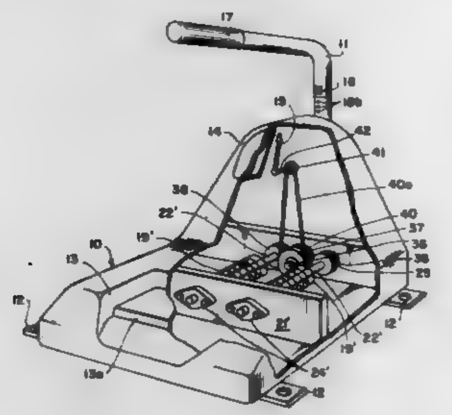
TORSION TYPE ARM EXERCISING APPARATUS

Richard J. McDonnell, 1004 Hillcrest Drive, DeSoto, Tex. 75115

Filed Apr. 17, 1975, Ser. No. 569,187

Int. Cl.² A63B *21/00, 23/00*

U.S. Cl. 272—134 10 Claims



1. An arm exercising apparatus including:

a. a housing, said housing being adapted to receive the elbow of the user;

b. torsion means for resisting the pivotal movement of a force applying lever arm, said torsion means including a force applying lever arm pivotally connected to the housing, a shaft positioned within said housing and connected to the pivotal connection of the lever arm for rotation therewith, and a resilient force resistance means rigidly affixed to the housing at one end to the shaft at the other end so that either clockwise or counterclockwise pivotal movement of the lever arm will cause rotation of the shaft and twisting of the resistance means and development of a resistance in the force resistance means to a force being applied to the lever arm by a user; and

c. a hand receiving means affixed to the end of said lever extending vertically away from said housing.

3,982,758

DUAL-USE TENNIS COURT PARKING LOT CONSTRUCTION METHODS AND APPARATUS

Charles L. Howes, Jr., 19 Covenant Lane, Georgetown, Conn. 06829

Filed Nov. 6, 1974, Ser. No. 521,516

Int. Cl.² A63B *61/00*

U.S. Cl. 273—29 R 11 Claims

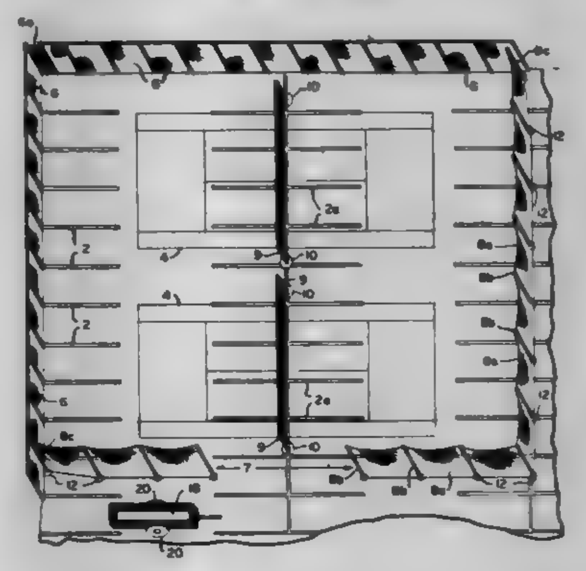
1. A dual-purpose paved parking lot-playing court assembly convertible between primary use as a parking lot and alternative primary playing court use as tennis courts, badminton courts, volleyball courts or the like comprising:

a. means forming a substantially level pavement graded for drainage and marked in a first color with parking indicia designating a plurality of side-by-side vehicle parking locations;

b. playing court border indicia positioned on the pavement and applied in a second color contrasting with the parking indicia's first color and with the pavement surface color for high visibility;

c. temporary fencing removably mountable on the pavement in an extended configuration forming a border around at least a portion of the playing court border indicia;

d. at least two post anchoring sockets embedded in the substantially level pavement at points centrally located between opposed, facing end lines forming a portion of said border indicia; and



e. net means incorporating
   1. a net, and
   2. a pair of net posts, the lower ends of which are securely mountable within the anchoring sockets, providing rigid, upstanding supports for maintaining the net extending therebetween taut and secure,

whereby a paved parking lot is easily convertible to function alternatively as either a pre-marked vehicle parking area or a pre-marked playing area complete with peripheral fencing and rigid, tautly held netting in the playing court.

3,982,759

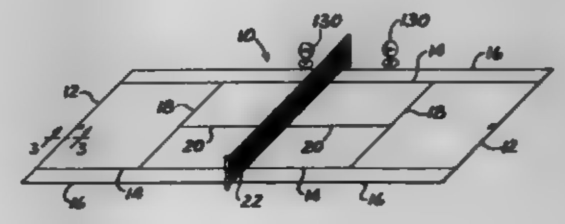
TENNIS COURT LINE MONITORING APPARATUS

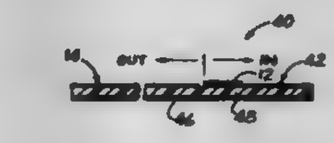
Geoffrey F. Grant, 7422 Fay Ave., La Jolla, Calif. 92037

Filed Mar. 25, 1974, Ser. No. 454,136

Int. Cl.² A63C *19/06*

U.S. Cl. 273—31 13 Claims





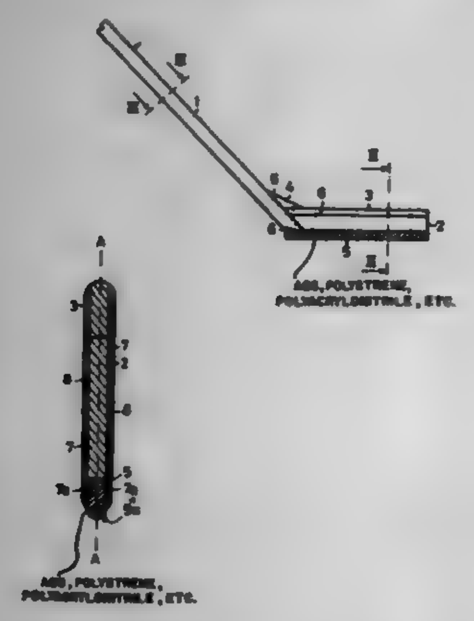
1. Apparatus adapted to detect a tennis ball landing on either a first or second side of a tennis court boundary line and providing an indication in response to the ball being detected only on said second side thereof, said apparatus comprising:

first and second switching means respectively monitoring said first and second sides of said tennis court boundary line and producing respective electrical signals in response to activation thereof;
means associated with said second switching means for measuring the time duration of said electrical signal produced thereby and for providing said indication in the event said signal is less than a predetermined time duration;
means associated with said first switching means for inhibiting said indication in response to said first switching means being activated prior to said second switching means being activated;
means for detecting the sound of a tennis ball being struck and for providing a third electrical signal in response to the detection thereof;
control means adapted to receive said electrical signal from said first switching means and to receive said third signal from said sound detecting means, said control means producing an indication in response to receiving said third signal when said first signal is being received.

3,982,760
STICK FOR HOCKEY OR THE LIKE

Antti-Jussi Tiitola, Tampere, Finland, assignor to Karhu-Titan Oy, Finland

Filed Nov. 26, 1974, Ser. No. 527,448
Claims priority, application Finland, Dec. 13, 1973, 3837/73
Int. Cl.² A63B *59/14*
U.S. Cl. 273—67 A **12 Claims**

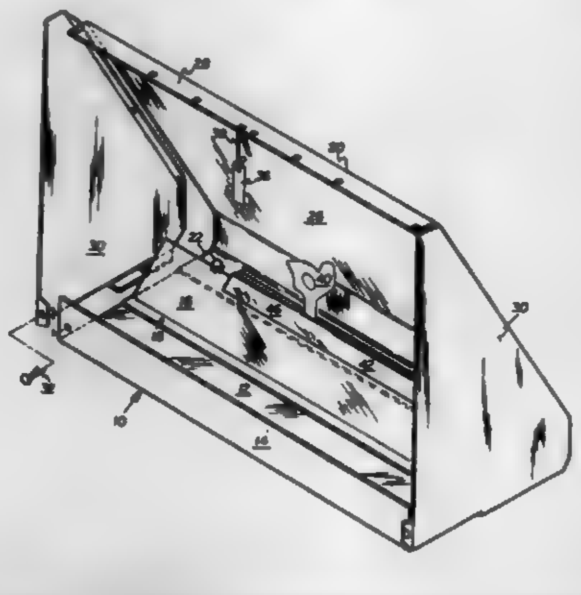


1. A stick for use in ice hockey or equivalent games, comprising an inner core and outer layers of reinforced plastic laminated with said core, said core including a plurality of core pieces which together with said layers form an elongated handle and a blade situated at the bottom end of said handle, and said core pieces including an elongated core piece of hard-wearing material extending along the bottom of the blade for directly engaging ice or the like, said hard-wearing core piece extending downwardly beyond layers laminated thereto so that the latter core piece is exposed at the bottom edge region of the blade, whereby upon wearing of said hard-wearing core piece the layers laminated thereto will not be affected, the layers laminated to said hard-wearing core piece extending upwardly beyond the latter to form therewith a bracing structure of substantially U-shaped cross section, and said blade including a blade core piece extending along and engaging an upper edge of said hard-wearing core piece and situated between and being laminated with said layers which are laminated to and extend upwardly beyond said hard-wearing core piece, so that the latter layers are laminated to and overlap both said hard-wearing core piece and said blade core piece while extending across said upper edge of said hard-wearing core piece where the latter engages said blade core piece, said hard-wearing core piece extending along the entire length of the lower edge of the blade.

3,982,761
CANTILEVERED PELLET BACKSTOP

George E. DeVogelaere, 594 Landing Road North, Rochester, N.Y. 14625

Filed Mar. 17, 1975, Ser. No. 559,324
Int. Cl.² F41J *1/12*
U.S. Cl. 273—102.4 **6 Claims**

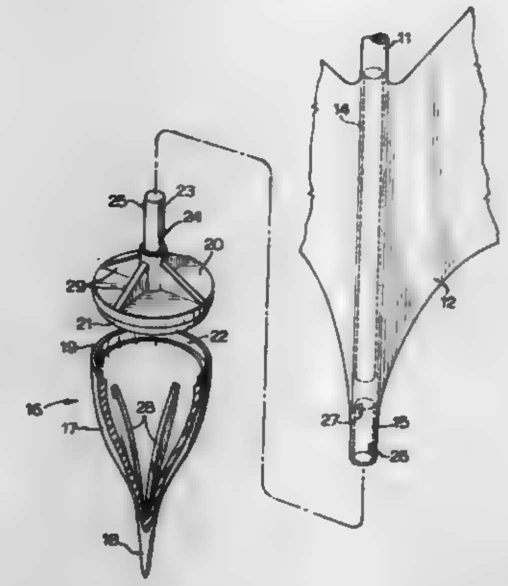


1. A range for receiving lead bullets from gas, spring and air powered guns at up to 800 feet per second, weighing up to 16 grains and of up to 0.22 calibre, comprising:
a base;
a resilient steel backstop extending from said base for receiving said pellets fired into said range;
means for mounting the bottom of said backstop in cantilevered fashion to the base;
said backstop being sufficiently thin to be damaged by said pellets if rigidly held; and
said mounting means and the thickness of the backstop combining to dissipate essentially all of the kinetic energy of fired pellets by allowing the backstop to vibrate relative to the base.

3,982,762
OUTDOOR GAME DART

Tony Milicic, Don Mills, Canada, assignor to Irwin Toy Limited, Toronto, Canada

Filed June 5, 1975, Ser. No. 583,925
Int. Cl.² A63B *65/02*
U.S. Cl. 273—106.5 B **6 Claims**

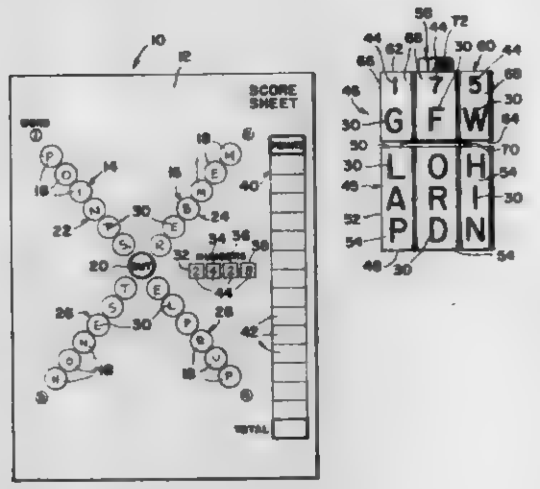


1. In a field game dart having an elongated shaft including a plurality of vanes provided thereon and a weighted head member mounted at the front end of said shaft, said head member comprising a substantially conical hollow shell having an elongated pointed front tip and a rear opening, said shell being filled with a weighting material, a cover member securely mounted over said rear opening, said cover having a central mounting pin extending outwardly from its outer surface, said mounting pin being engageable with a sleeve portion provided at the front end of said shaft for mounting said head member thereon.

3,982,763
CHANCE CONTROLLED CROSS-OUT APPARATUS

Ludwig Schlurenauer, Montrose, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed July 16, 1975, Ser. No. 596,388
Int. Cl.² A63F *3/00*
U.S. Cl. 273—135 D **5 Claims**



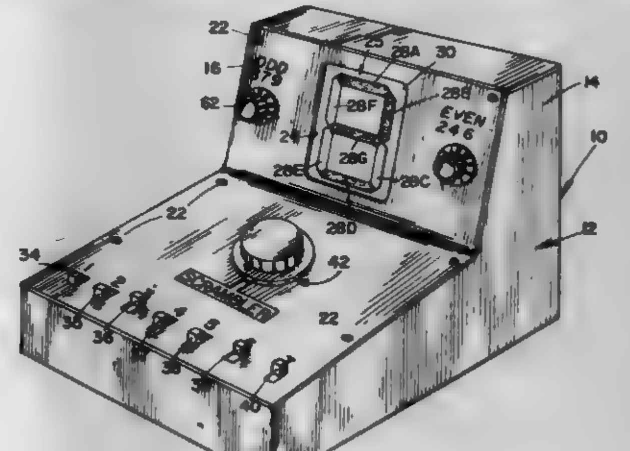
1. A word game which comprises:
a. a score card having four squares and two rows of circles thereon, each row having at least nine circles, said rows of circles crossing in an X-shape, each of said circles adapted to receive one indicia corresponding to an alphabetic letter therein, and each of said squares adapted to receive indicia corresponding to one number therein; and
b. means for rolling indicia identically corresponding to said alphabetic letter indicia and said numerical indicia simultaneously, said means comprising a bottom cylindrically shaped section having a top, a base, and a circumferential periphery, said periphery divided into eight longitudinal faces, each face extending from said top to said base; a top cylindrically shaped section having a top, a base, and a circumferential periphery, said periphery divided into eight longitudinal faces, each face extending from said top to said base; three of said alphabetic letter indicia on each face of said bottom section; one of said alphabetic letter indicia and one of said numerical indicia contained on each face of said top section; and means for rotatably joining said top of said bottom section to said base of said top section whereby the member is rolled and one of the face-up alphabetic letter indicia and one of the number indicia may be crossed off the score card.

3,982,764
ELECTRICAL GAME APPARATUS

Walter L. Dieball, 17621 Irvine Blvd., Suite 101, Tustin, Calif. 92680

Filed Apr. 30, 1975, Ser. No. 572,883
Int. Cl.² A63F *9/00*
U.S. Cl. 273—135 A **6 Claims**

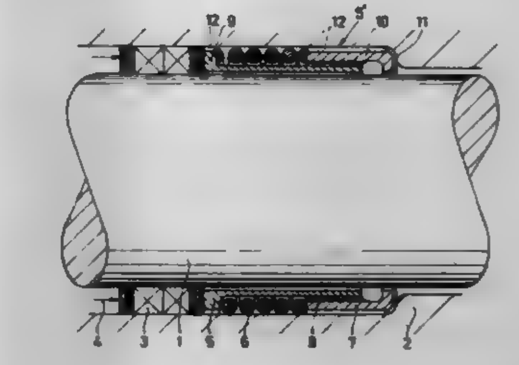
1. An electrical game apparatus comprising:
a housing having a display panel and a switch panel;
a plurality of light fixtures mounted for display in said display panel, wherein each of said light fixtures comprises:
an elongated window member; and
a light bulb positioned adjacent thereto, whereby said window is illuminated when said bulb is activated;
a plurality of master switches, equal to the number of said light fixtures, electrically connected thereto and mounted to said switch panel;
means for randomly changing the electrical connection between said light fixtures and said master switches, said means being mounted to said switch panel thereof, and comprises a rotary mixer switch having a plurality of stationary contacts and an equal number of rotatable contacts for random engagement therebetween; and
wherein each window is arranged to form a peripheral outline of a substantially rectangular configuration, said windows being disposed in an ene-to-end relationship, and having at least one window centrally positioned horizontally within said peripheral outline thereof, whereby numeral and alphabetical letters can be formed thereby when proper lighting fixtures are illuminated during the playing of said game apparatus.



3,982,765
PISTON PUMP

Kurt Gerhard Fickelscher, and Christian Michael Anders, Frankenthal, Germany, assignors to Balcke-Durr Aktiengesellschaft, Ratingen, Germany

Filed Mar. 28, 1975, Ser. No. 562,822
Claims priority, application Germany, Apr. 2, 1974, 2415845
Int. Cl.² F16J *15/44, 15/18*
U.S. Cl. 277—53 **7 Claims**

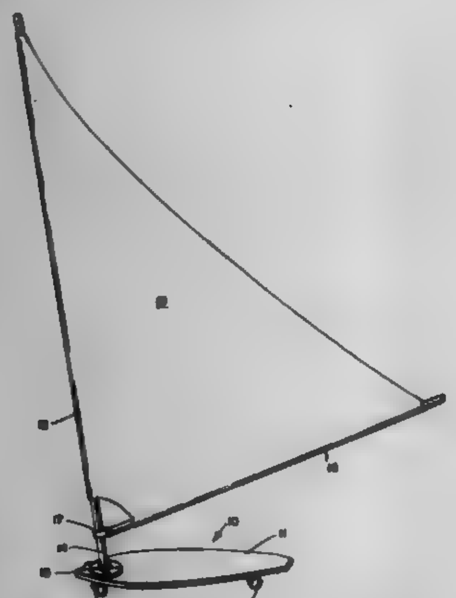


1. A stuffing box assembly for a piston pump for displacing a fluid comprising:
an adjustable stuffing box;
at least one packing ring disposed adjacent to said stuffing box, said fluid exerting pressure on, and said stuffing box abutting against said packing ring;
a stuffing-box housing for holding said stuffing box;
a plunger disposed within said stuffing box and in contact with said packing ring;
a throttle ring;
a compression spring coaxial with said plunger and disposed between said stuffing box and said throttle ring, said

stuffing box and said throttle ring movable telescopically with respect to one another, with a throttling gap remaining therebetween;
an axial recess formed in at least one of said stuffing box and said throttle ring; and
a limit stop for making contact with said throttle ring disposed on said stuffing box housing.

3,982,766
WIND-PROPELLED SKATEBOARD

James D. Budge, 2028 Euclid St., Santa Monica, Calif. 90405
Filed Sept. 29, 1975, Ser. No. 617,298
Int. Cl.² B62B *3/00*
U.S. Cl. 280—1 **10 Claims**

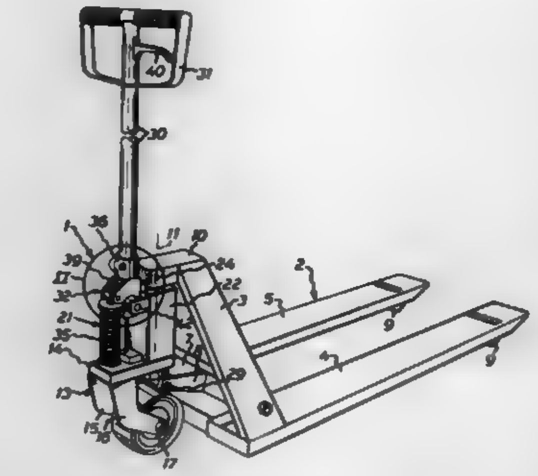


1. A wind propelled apparatus, comprising:
a. a body member adapted to transport a user in a standing or crouching position over a solid surface and a surface contacting means coupled to said body member so that said body member is adapted to move over a solid surface;
b. a mast which the user holds in one of his hands;
c. means for detachably coupling said mast to said body member in such a manner that said mast is substantially free from pivotal restraint about a plane parallel to the horizontal plane of said body member and is also able to articulated throughout all transverse and longitudinal vertical planes about said coupling means;
d. a boom which is held in positon by the user with his other hand;
e. hinging means for coupling said boom to said mast so that said boom has 90° of unrestricted, pivotal motion in a vertical plane about said hinging means; and
f. a sail coupled to said mast and to said boom.

3,982,767
HAND-OPERATED PALLET TRUCK

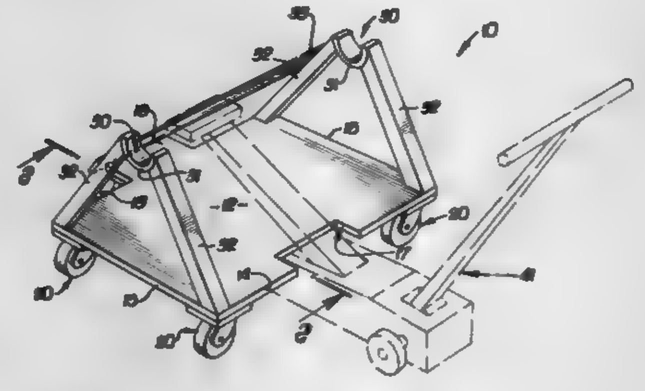
Hans Gustav Ingvar Larsson, and Sven Gunnar Harald Stjärnovist, both of Angelholm, Sweden, assignors to Marco Materialhantering AB, Sweden
Filed June 13, 1975, Ser. No. 586,816
Claims priority, application Sweden, July 1, 1974, 7408636
Int. Cl.² B66F *5/04*
U.S. Cl. 280—43.12 **8 Claims**

1. A hand-operated truck having a combined wheel and jack assembly rotatable about a vertical axis and movable on a steerable wheel, a lift fork associated with and raisable and lowerable relative to said assembly by means of a hydraulic jack, support wheels raisable and lowerable in said lift fork, said wheel and jack assembly carrying a bar for pulling the truck, said bar comprising pumping means for raising the jack, said bar being pivotally mounted on the wheel and jack assembly, said bar having operating means for lowering the jack, said jack being mounted on a plate, said steerable wheel being mounted on a wheel fork which is connected to said plate the prongs of said wheel fork extending substantially obliquely downwardly and rearwardly, the axis of the steerable wheel substantially intersecting the vertical axis about which said wheel and jack assembly is rotatable.



3,982,768
DOLLY

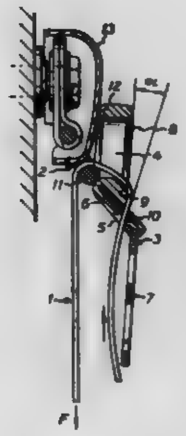
Alvin Dean Getman, 3710 Stewart Ave., Los Angeles, Calif. 90066
Filed Oct. 10, 1972, Ser. No. 295,878
Int. Cl.² B62B *1/04*
U.S. Cl. 280—79.1 **10 Claims**



1. A dolly for moving an automobile, comprising:
a planar rigid substantially rectangular platform member, said platform member having a forward edge, a rear edge and two end edges, said platform member having a longitudinal axis extending through the midpoints of said end edges, said platform having an upper and lower surface;
a caster mounted on the lower surface of said platform member in each of its four corners to project vertically downward therefrom, said two casters mounted along the forward edge of said platform member being of the same size, said two casters mounted along the rear edge of said platform member being of the same size;
first and second cradle members, each of said cradle members defining a channel along an axis, said channel being open at its ends and along its length for receiving a structural member on the underside of an automobile;
first and second brace structure mounted on the upper surface of said platform member adjacent one and the other end edges thereof, said first and second brace structure extending upwardly in a substantially vertical plane;
means mounting said first and second cradle members on said first and second brace structures, respectively, in laterally spaced apart positions vertically above the longitudinal axis of said platform member with their channels opening upwardly and their axes aligned along a horizontally extending line substantially parallel with the longitudinal axis of said platform member; and
a cutout defined centrally in the rear edge of said platform member for fitting around an automobile jack so as to permit the positioning of said dolly below the lateral frame member or axle of an automobile when the frame member or axle is jacked up by an automobile jack engaging the center portion of the axle or frame member.

3,982,769
SAFETY BELTS

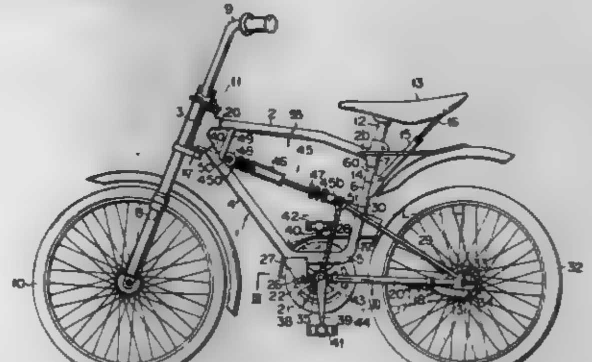
Stig Axel Göran Färlind, Monsteras, Sweden, assignor to Stece - AB Industrifjadrar, Monsteras, Sweden
Filed Jan. 31, 1975, Ser. No. 545,913
Claims priority, application Sweden, Feb. 13, 1974, 7401886
Int. Cl.² A62B *35/00;* **B60R** *21/10*
U.S. Cl. 280—744 **6 Claims**



1. A safety belt, of the three-point type, the lap and diagonal straps of which in the position of the belt as fastened extend in V configuration transversely of the vehicle, said diagonal belt strap on one side of the seat of the vehicle being movably passed through a deflection fitting fixed to said one side, from where said strap runs into a belt retracting means which exerts a yielding pull on the belt, said lap belt strap being attached on said side to the seat or to the vehicle, the belt at the apex of the V configuration being movably passed in such a way through two spaced openings in a buckle member that the portion of the buckle member between the openings therein forms a bar located at the V apex and extending transversely of the belt, said buckle member being detachably connectable with a coupling means disposed on the other side of the vehicle seat, wherein the buckle member is so configured that the portions thereof formed with said spaced openings, make an angle with one another, said bar of the buckle member being located at the angle apex, the belt being passed in such a way through said openings that it will be situated on the side of the bar facing away from the angle apex whereby the buckle member is easily moved along the belt at least when said buckle member, upon retraction of the diagonal belt strap, reaches the deflection fitting, wherein the opening which is closest to the deflection fitting has a large extension in the longitudinal direction of the belt, said opening constituting the opening in a handle portion associated with the buckle member.

3,982,770
BICYCLE SUSPENSION

Takao Satoh, Mori, and Kazutaka Horino, Hamamatsu, both of Japan, assignors to Yamaha, Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Apr. 9, 1975, Ser. No. 566,210
Claims priority, application Japan, Sept. 12, 1974, 49-105363
Int. Cl.² B62K *25/20*
U.S. Cl. 280—284 **3 Claims**



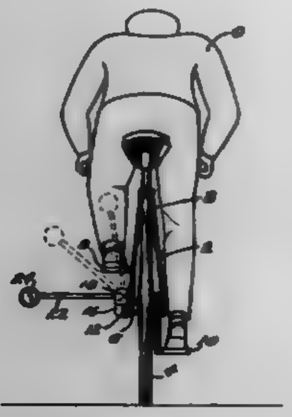
1. A bicycle suspension for a bicycle having a steering head and a main frame comprising a substantially horizontal top tube extending rearward from the steering head, a down tube extending rearward and downward from the steering head, and a substantially vertical seat tube having the upper end thereof fixed to the rear end of the top tube and the lower end thereof connected to the rear end of the down tube, said bicycle suspension comprising:
- a suspension frame unit comprising:
  - a horizontal rear fork carrying a pedal shaft and a rear wheel at the forward and rear ends thereof, respectively;
  - an extension forwardly extending from the forward end of the rear fork and rotatably connected to the rear end of the down tube;
  - a pair of first stays inclined downwardly toward the backside of the bicycle with the seat tube disposed therebetween and having the lower ends thereof fixed to the rear end of the corresponding rear fork;
  - a pair of second stays inclined upwardly and having the lower ends thereof fixed to the forward end of the corresponding rear fork; and
  - a pair of joints disposed in a space of the main frame defined by the top, down and seat tubes of the main frame so as to join the upper ends of the first stays to the upper ends of the corresponding second stays in the space of the main frame; and
- a shock absorber having one end thereof pivotally connected to said pair of joints and the other end thereof pivotally connected to a portion of the main frame a little rearward of the steering head so as to be disposed in the space of the main frame.

3,982,771
SAFETY GUARD ATTACHMENT FOR BICYCLES AND OTHER TWO-WHEEL VEHICLES

Thomas F. Tropeano, 12 Revere St., Lexington, Mass. 02173
Filed Feb. 18, 1975, Ser. No. 550,533
Int. Cl.² B62J *5/20*
U.S. Cl. 280—289 R **2 Claims**

1. Guard attachment for bicycles and the like comprising a guard arm and mounting means for supporting the arm in normally retracted positions at one side of a bicycle from which positions the arm may be swung outwardly into laterally projecting positions, said mounting means including a bracket holder engageable with the bicycle and a bracket device supported on the holder for releasably retaining the guard arm in the said position of adjustment, said bracket holder being

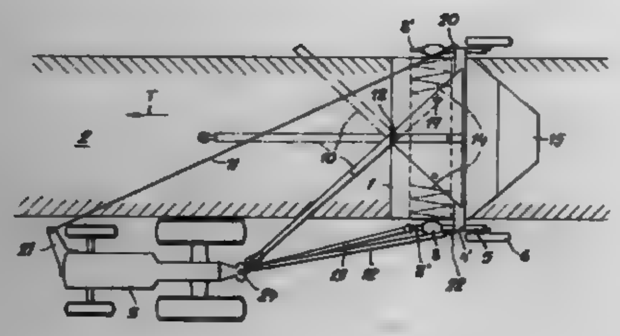
formed with a shaft aperture for receiving a bicycle wheel shaft therethrough in secured relationship, said bracket device being constructed with spaced side walls having a pivot element located transversely therethrough for pivotally supporting the guard arm, a stop element transversely received through the side walls of the bracket device for rigidly holding the guard arm in a horizontally disposed position, and one of said side walls being formed with detent means for releasably supporting the guard arm in the said laterally projecting positions.



3,982,772
APPARATUS FOR TURNING COMPOST SILO

Werner Scherer, Gottmadingen, Germany, assignor to Maschinenfabrik Fahr Aktiengesellschaft, Gottmadingen, Germany

Filed Sept. 22, 1975, Ser. No. 615,724
Int. Cl.² B60D *1/14*
U.S. Cl. 280—462 **10 Claims**

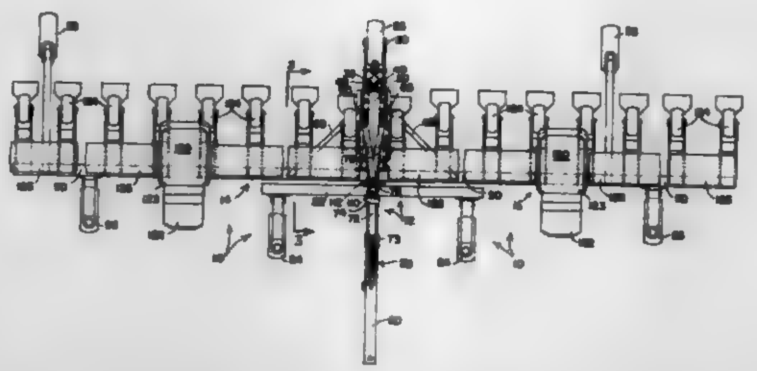


1. An apparatus for turning a compost silo, said apparatus comprising:
- a portal frame adapted to travel along the ground in a predetermined direction and having a pair of side portions spaced sufficiently apart transversely to said direction to straddle said silo,
- a turning element extending transversely between said side portions,
- drive means for rotating said element and including an angle drive on each of said side portions having an output connected to said element and a forwardly directed input,
- a tow bar having a rear end pivoted on said frame midway between said side portions and a front end connectable to the hitch of a tractor in front of and to either side of said frame relative to said direction, and
- a connecting member having a front end couplable to the power takeof of said tractor and a rear end couplable to the input of the angle drive on the same side of said frame as said tractor.

3,982,773
FOLDING FRAME STRUCTURE FOR AGRICULTURAL IMPLEMENTS

John F. Stufflebeam, Romeoville, and Charles Boetto, Naperville, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Dec. 4, 1975, Ser. No. 637,785
Int. Cl.² B62B *11/00*
U.S. Cl. 280—656 **16 Claims**



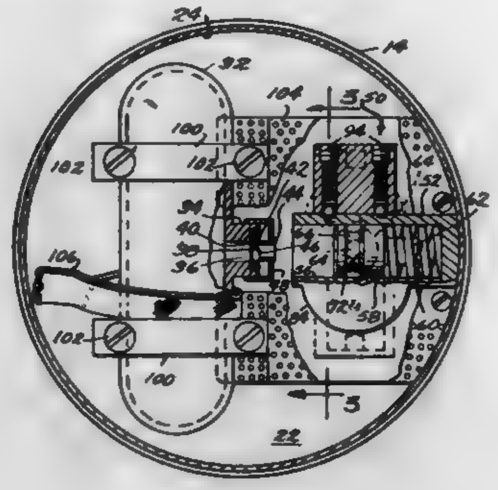
1. In a tractor-drawn agricultural implement, in combination, a folding frame structure including a central frame providing a drawbar adapted for connection to a tractor in trailing relationship, right and left toolbar frames each of which is generally of L-shaped configuration and includes a toolbar proper and a lateral frame member extending at a right angle thereto, the free ends of said lateral frame member being pivotally connected to the central frame at closely spaced points for swinging movement of the toolbar frames between extended operative positions wherein the toolbars extend transversely of the central frame and in end-to-end contiguity and the lateral frame members extend substantially parallel to the central frame, and trailing positions wherein said toolbars extend parallel to the central frame with said lateral frame members extending transversely of the central frame and in substantial end-to-end contiguity, at least one ground-engaging caster wheel operatively supporting each toolbar frame, lift means effective to raise and lower each toolbar frame relative to its associated caster wheel, means pivotally connecting each toolbar and its associated lateral frame member and effective to permit limited rocking movement of the former relative to the latter incident to undulatory travel of the caster wheel in any position of the associated toolbar frame, a hydraulic cylinder and plunger assembly effective between said central frame and toolbar frames for moving the latter between their extended and trailing positions, and releasable latch means normally maintaining said toolbar frames in their extended positions.

3,982,774
VEHICLE CRASH BAG

Michael Ivashuk, and Marvin Lee McDaniel, both of 1800 SW. Seventh Ave., Pompano Beach, Fla. 33060

Continuation-in-part of Ser. No. 292,279, Sept. 26, 1972, abandoned. This application Dec. 17, 1974, Ser. No. 533,712
Int. Cl.² B60R *21/08*
U.S. Cl. 280—737 **4 Claims**

1. In a vehicle crash cushion of the type including an inflatable bag and a source of pressurized fluid, an improved actuator for releasing fluid from the source into the bag to inflate the latter comprising:
- a spring-loaded member movable between a cocked position and an activated position;
- a housing having a main bore in which said spring-loaded member is disposed;
- a piercing member for piercing the fluid source upon movement of the spring-loaded member to its activated position;
- a sear pin disposed within another bore in said housing and having one end projecting into the main bore in engagement with said spring-loaded member and normally holding the latter in its cocked position, said sear pin being retained in position by frictional engagement with said spring-loaded member, the engagement being such that said member exerts a force on said sear pin in a direction tending to move said sear pin out of contact with said member;

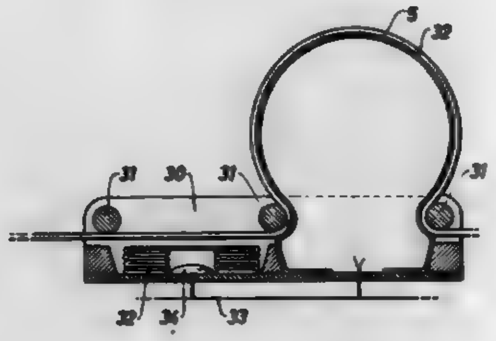


- an inertia member movable between a normal position and a position in which it engages another end of said sear pin and partially withdraws the latter from its bore; and
- at least one resilient means releasably restraining said inertia member in its normal position.

3,982,775
DEVICE FOR TIGHTENING OF A BELT FORMING PART OF A SAFETY HARNESS ASSEMBLY FOR VEHICLES

Oskar Lennart Lindblad, Hedasgatan 16, 77020 Vargarda, Sweden

Division of Ser. No. 326,135, Jan. 23, 1973, Pat. No. 3,879,054. This application Jan. 24, 1975, Ser. No. 544,000
Claims priority, application Sweden, Jan. 28, 1972, 958/72
Int. Cl.² B60R *21/10*
U.S. Cl. 280—744 **9 Claims**

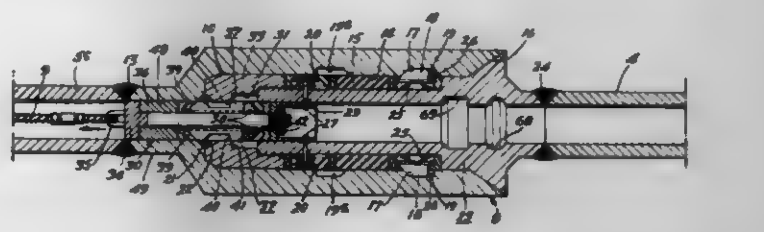


1. A device for the tightening of a belt forming part of a safety harness assembly of a safety belt for vehicles in case of abnormal changes of speed of the vehicle, as for example during a collision, comprising a safety belt part, a sensor means capable of sensing said abnormal speed changes and giving off a gaseous pressure pulse in its activated condition, a power means capable of being driven by said gaseous pressure pulse and in its activated condition capable of giving at least one portion of said belt part a movement in a sidewards direction relative to the normal extension of said belt part thus forming at least one sidewards directed loop, said power means comprises a number of gas charges which can expand and said belt part having inner spaces along the longitudinal direction of said belt to be tightened, said charges being arranged in said belt inner spaces with at least one of the sides of said charges being adjacent said belt in such a way that said belt is deflected sidewise thereby contracting in the pulling direction when any of said charges are activated.

3,982,776
APPARATUS FOR CONNECTING SUBMARINE PIPELINES TO OFFSHORE STRUCTURES

William P. Payne, Houston, Tex., assignor to Sun Oil Company (Delaware), Dallas, Tex.

Filed Sept. 12, 1974, Ser. No. 505,406
Int. Cl.² F16L *35/00*
U.S. Cl. 285—24 **10 Claims**

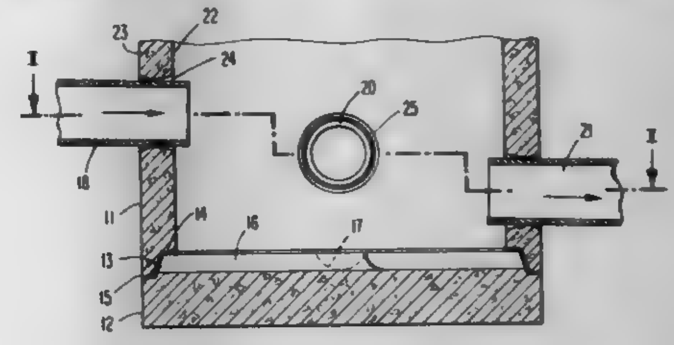


1. In apparatus for connecting together at a submerged location two pipelines: a receiver fitting attached to the end of one of said lines, a connector fitting attached to the end of the other line; said receiver including means for accommodating therein said connector and being provided with a locking element which cooperates with a locking means carried by the connector to preliminarily lock the latter in said receiver; means operable from the surface for causing said connector to enter said receiver and to move to a position wherein it becomes preliminarily locked in said receiver by said locking element and said locking means; said receiver also being provided with an additional locking element which cooperates with additional locking means carried by the connector to complete the locking of the connector in the receiver; and means operable from the surface for causing said connector to move to a position wherein it becomes completely locked in said receiver by said additional locking element and said additional locking means.

3,982,777
PIPE CONNECTION TO MANHOLES AND THE LIKE

Adam Eugene Martin, P.O. Box 399 R.D. 1, Narvon, Pa. 17555

Filed Mar. 14, 1975, Ser. No. 558,315
Int. Cl.² F16L *41/00*
U.S. Cl. 285—192 **7 Claims**



1. In a connection of a pipe through a generally round hole in the wall of a manhole or like structure, the improvement residing in a sealing structure and comprising a pair of outwardly opening tapered openings in the wall structure, one on each side of the wall where it is intersected by the hole, and a pair of resiliently compressible ring members, each ring member being arranged in wedged and resiliently compressed engagement between a portion of the wall structure that defines a said tapered opening and an adjacent longitudinally disposed portion of pipe that extends through the hole in said wall structure, said ring members and tapered openings defining means (a) clamping said pipe portion under longitudinally directed tension forces in said pipe between compressed said ring members and (b) clamping said wall structure under corresponding longitudinally directed compressive forces between compressed said ring members.

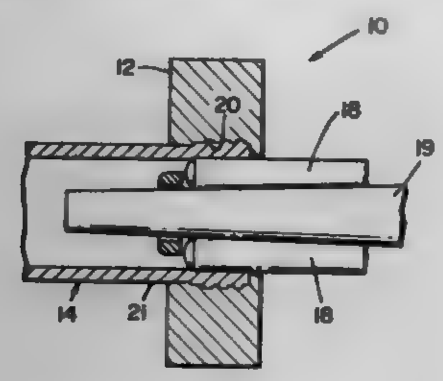
3,982,778
JOINT AND PROCESS FOR FORMING SAME

Blaine G. Spencer, Peoria; Kenneth E. Starr, Manito, and Carl Theodore Kunze, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 13, 1975, Ser. No. 558,198

Int. Cl.² F16L *41/00*

U.S. Cl. 285—222 **13 Claims**



1. An improved flange-tube joint comprising a flange formulated by placing a mixture of powdered metal and a lubricant in a flange shaped mold, compressing the mixture at a pressure of at least about 4 × 10^7Kg. per sq. meter in said mold, removing the resulting flange from the mold, initially heating the flange in a non-oxidizing gas atmosphere at a temperature which falls within the range from about 500°C to about 1200°C to remove the lubricant, further heating the flange at a temperature which falls within the range from about 800°C to about 1500°C, cooling the flange to a temperature of no more than about 100°C and dry machining an annular channel into said flange; and a tube having an external diameter nearly equal to the diameter of said hole, one end of said tube being within said hole, said tube being formulated of a less hard metal than said flange, the external surface of said tube being expanded into said channel to thereby form said joint.

3,982,779
CLAMPS FOR JOINING TUBES OR TUBULAR STRUCTURAL MEMBERS

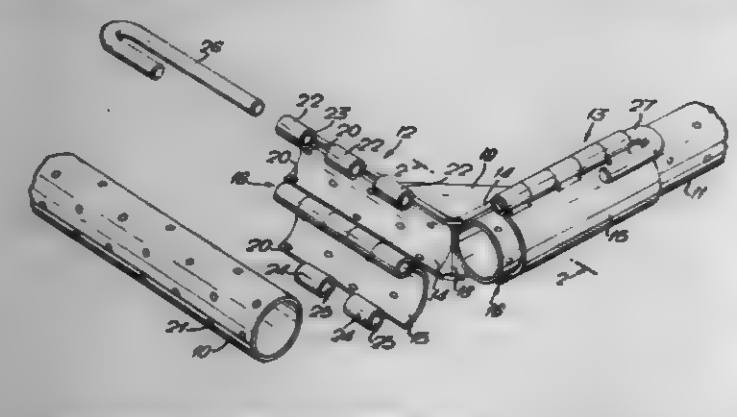
Christopher Daniel Dowling Hickey, Esher, England, assignor to Airflex Containers Limited, Ashford, England

Filed Jan. 20, 1975, Ser. No. 542,424

Claims priority, application United Kingdom, Jan. 24, 1974, 2649/74

Int. Cl.² F16L *25/00*

U.S. Cl. 285—328 **12 Claims**



1. A clamped assembly comprising at least two tubes and a clamp for joining said tubes, the clamp comprising at least one pair of elongate co-operating semi-cylindrical clamping parts the pair of clamping parts being shaped to fit over part of the surface of at least one tube and bearing a regular array of spaced-apart surface singularities, the tube engaged by said clamping parts having complementary singularities in a similar spaced array, a hinge connecting the two clamping parts of the pair along a lengthwise extending edge of each part, the parts each having protruding portions with bores parallel to but spaced from the hinge axes and arranged to be aligned when the two parts are closed together, and a key of substantially elliptical cross-section for insertion in the aligned bores so that the pair of clamping parts, after being put around at least one tube engage the array of surface singularities on each of the clamping parts with the array of complementary singularities on the tube, the parts being tightenable onto the tube by rotation of the key.

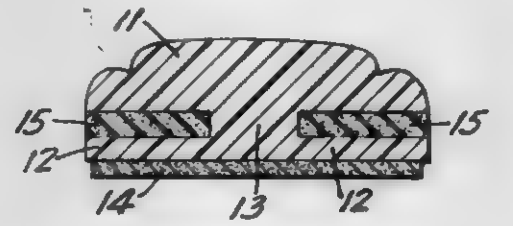
3,982,780
CONFORMABLE PLASTIC BODY SIDE MOLDING

Roger H. Keith, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 21, 1975, Ser. No. 570,084

Int. Cl.² B60R *13/04*

U.S. Cl. 293—1 **12 Claims**



1. Body side molding of essentially uniform cross-section comprising a tough, resilient plastic body and having at least two relatively flat surfaces for receiving an adhesive to attach the molding to the side of a vehicle, which adhesive-receiving surfaces extend across most of the width of the molding substantially to each of its sidewise extremities, other surfaces of the molding providing a tough, durable scuff- and weather-resistant, impact-absorbing and esthetically pleasing exterior, characterized by the features that

a. the plastic body is formed to have a trunk and two ankles, each defining one sidewise extremity of the molding and terminating in a foot which supports at least part of one of said adhesive-receiving surfaces,
b. the total ankle thickness is less than 50% of the overall width of the plastic body,
c. there is a channel at the underside of the trunk and at least one groove formed in the trunk adjacent the channel such that the thickness of the trunk at the groove is less than one-half the average thickness of the trunk at said channel, and
d. the average thickness of each foot portion of the plastic body which protrudes laterally beyond an ankle is less than ⅛ of the overall height of the molding,

which features enable the adhesive-receiving surfaces to conform to curved substrates without distorting the top of the molding.

3,982,781
GOLF BALL RETRIEVER

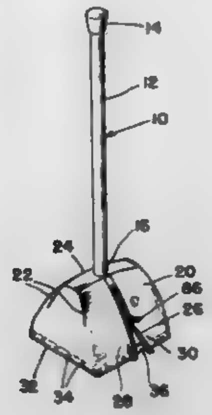
Walter J. Tucker, Marion, Ind.; Melvin R. Edwards, and Richard J. Tucker, both of Eden, N.C., assignors to Walter J. Tucker, Marion, Ind.; Melvin R. Edwards and Richard J. Tucker, both of Eden, N.C.

Filed Dec. 9, 1974, Ser. Nc. 530,869

Int. Cl.² A63B *57/00*

U.S. Cl. 294—19 A **1 Claim**

1. A manually operable, portable, golf ball retriever comprising a handle, said handle being of such length to permit the user to remain in an upright position while retrieving golf balls, an inverted u-shaped yoke mounted at one end of said handle, said yoke having vertically depending spaced-apart legs, an open frame having a pair of upwardly converging members mounted opposite each other and secured to said yoke, a plurality of spaced-apart springs extending transversely across the open frame, said springs being spaced-apart from each other a distance less than the diameter of a golf ball, a flexible cover member, said cover being a water impervious fabric having a releasable means for opening and closing said cover member, secured to said frame enveloping said yoke and said converging members to form a ball-receiving tent closure for retaining a plurality of retreived golf balls urged into said enclosure between said springs.



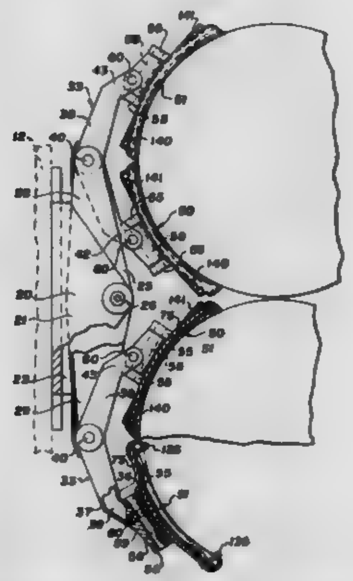
3,982,782
VACUUM LIFTING APPARATUS FOR CYLINDRICAL ARTICLES

Arie Bos, North Vancouver, Canada, assignor to MacMillan Bloedel Limited, Vancouver, Canada

Filed Apr. 21, 1975, Ser. No. 570,219

Int. Cl.² B66C *1/02;* **B66F** *9/18*

U.S. Cl. 294—64 R **16 Claims**



1. Vacuum lifting apparatus for generally cylindrical articles, comprising:

a support,
a rigid backing plate mounted on said support for limited swinging movement, said plate having an inner surface in cross section in a generally shallow curve from one edge to an opposite edge of the plate in order to extend over the curved surface of a cylindrical article,
a seal on the inner surface of the backing plate in the form of a continuous pneumatic tube with side sections extending along the plate near said opposite edges and spaced apart end sections extending between adjacent ends of said side sections, said seal projecting outwardly from the inner surface of the backing plate to form a cushion for a cylindrical article and a seal against said article and forming a suction space over said inner surface,
means for retaining the seal on the backing plate,
means at the backing plate through which suction can be applied to said suction space, and
a pair of spaced-apart vertical friction plates mounted on the backing plate and each located near a side section of the pneumatic tube, each of said friction plates having a horizontally convexed outer surface to be engaged by the surface of a cylindrical article bearing against said tube,

whereby when the backing plate is moved to press the seal against the cylindrical article said suction retains the article against the friction plates and the seal, said swinging movement of the plate ensuring contact of the entire pneumatic tube and the friction plates with the cylindrical article and said tube ensuring good sealing contact with articles of different diameters.

3,982,783
SLIDING ROOF ASSEMBLY FOR VEHICLES AND METHOD OF MOUNTING SAME

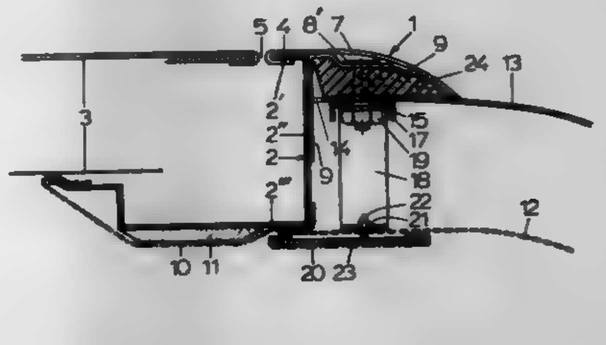
Theodorus Hendricus Vermeulen, Richard Holplein 8, Heemstede, Netherlands

Filed Dec. 24, 1974, Ser. No. 536,308

Claims priority, application Netherlands, Jan. 2, 1974, 7400008

Int. Cl.² B60J *7/04*

U.S. Cl. 296—137 E **21 Claims**



1. A sliding roof assembly for vehicles comprising a frame, a roof member slidably mounted in said frame, a covering panel mounted on said frame and having a substantially rectangular aperture in its front portion of substantially the same size as the roof member, said covering panel having a rear portion covering the roof member when the latter is moved rearwardly to uncover said aperture, said panel having a peripheral supporting rim projecting outwardly from the frame and adapted to rest on the vehicle roof, a lining attached to the underside of an inwardly directed, generally horizontal bottom flange of the frame, said bottom flange being bent upwardly at its inner edge and then extends inwards horizontally to form a step, the outer edge of said lining being secured to an external surface of a vertical frame portion, the inner edge of said lining being secured to the upper surface of the inwardly extending inner edge of the bottom flange.

3,982,784
MULTI-FUNCTIONAL FURNITURE

Hans-Helmut Esser, Weichselstr. 28, 65-Mainz, Germany

Filed Sept. 10, 1975, Ser. No. 612,224

Claims priority, application Germany, Oct. 9, 1974, 2448188

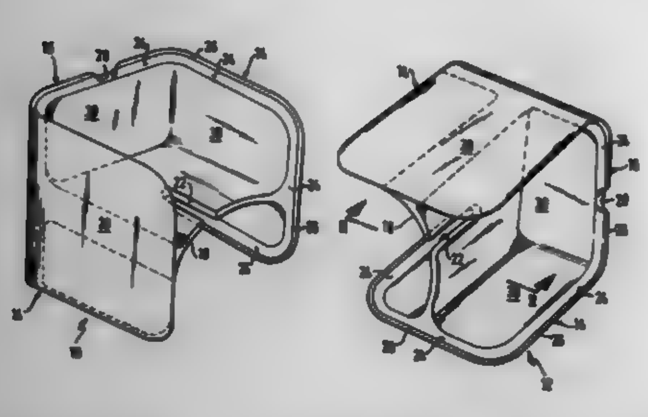
Int. Cl.² A47C *13/00*

U.S. Cl. 297—1 **10 Claims**

1. A piece of furniture comprising:

a. a back wall having two spaced edges extending in a common direction;
b. two side walls respectively joined to said edges,
    1. said walls jointly defining a channel open in said common direction and having an open side remote from said back wall and bounded by said side walls; and
c. a partition transverse to said back wall and to said side walls and fixedly fastened to said back wall and to said side walls in said channel, said partition having a free

edge remote from said back wall and extending between said side walls, said partition being formed with a recess extending inward of said partition from said free edge toward said back wall.



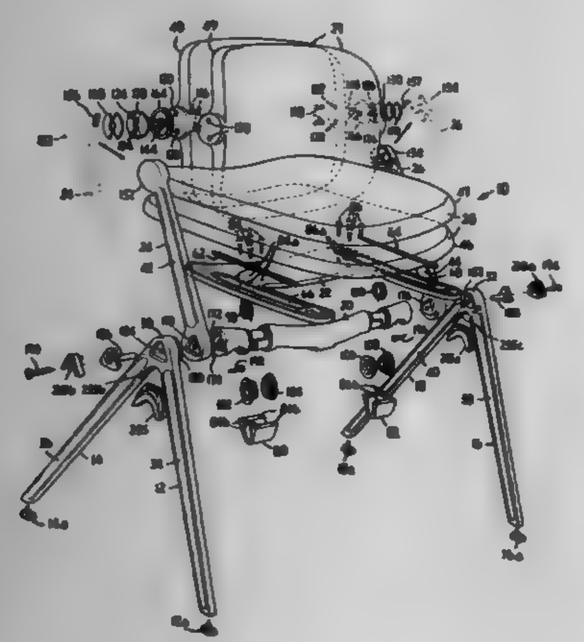
3,982,785
CHAIR

Emilio Ambasz, New York, N.Y., assignor to Center for Design Research and Development, Willemstad, Netherlands Antilles

Filed July 29, 1974, Ser. No. 492,693

Int. Cl.² A47B *39/00*; A47C *7/00*

U.S. Cl. 297—160 **26 Claims**



1. A chair comprising as the sole transverse structure of a frame of the chair a beam-like member, legs attached to and dependent from the beam-like member and supporting the beam-like member at a height essentially equal to that of a chair seat, a seat, a seat support mounted on the beam-like member and including a pair of laterally spaced-apart portions extending forwardly from regions adjacent the respective ends of the beam-like member thereby to be in cantilevered relation to the beam-like member, each said portion of the seat support having an upwardly facing concave bearing surface, and the seat being supported on said portions of the seat for movement to any position between a rearward position and a forward position, and for variation of the rake of the seat in response to said movement so that the elevation of the front end of the seat as compared to the elevation of the rear end of the seat is relatively greater when the seat is in the forward position than when it is in the rearward position, by virtue of the curvatures of the bearing surfaces of said portions, a back, and means mounting the back for limited pivotal movement independently of the seat to any position between a substantially upright position and an inclined position.

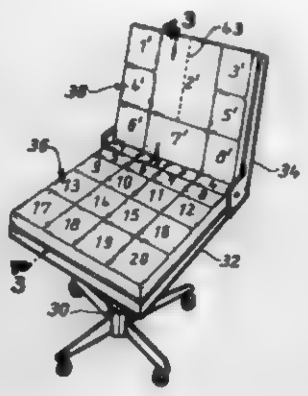
3,982,786
CHAIR OR ARMCHAIR

Gérard Burgin, 6, Rue de la Thur, Kingersheim, France, and Adolf Klingler, Hubertusstrasse 45, 757 Baden-Baden, Germany

Filed Sept. 23, 1974, Ser. No. 508,157

Int. Cl.² A47C *3/00*

U.S. Cl. 297—284 **10 Claims**



1. A fluid cushion including in combination a first and a second fluid impervious cell, the cells being disposed in a generally planar array to provide a load supporting surface, the first and second cells containing normally constant masses of fluid independent of the loading on said support surface, the first cell comprising a first and a second cushion element, the second cell being disposed intermediate the first and second elements, and means responsive to the loading on said support surface for permitting reversible fluid flow between the first and second elements upon predetermined positive and negative differences in the fluid pressures therebetween.

3,982,787
SEAT ARRANGEMENT FOR A PASSENGER CAR

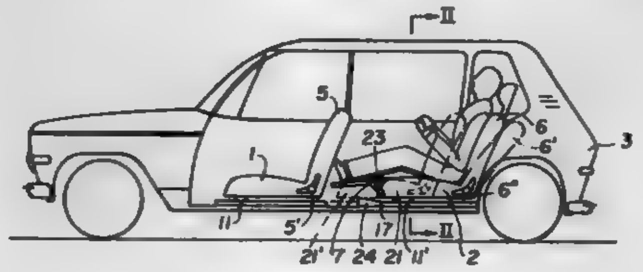
Hans Moll, Augsburg, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg AG, Munich, Germany

Filed Jan. 6, 1975, Ser. No. 538,949

Claims priority, application Germany, Jan. 11, 1974, 2401241; Jan. 15, 1974, 2401741

Int. Cl.² A47C *1/02*

U.S. Cl. 297—317 **4 Claims**



1. A seat arrangement for a multi-purpose passenger car comprising front seat means and rear seat means, first adjusting means connected to said front seat means for adjusting the position of said front seat means relative to the length of the car, second adjusting means connected to said rear seat means for adjusting the position of the rear seat means also relative to the length of the car but independently of any adjustment of the front seat means, said rear seat means comprising back rest means having upper corners and a rear seat proper having forward and rear edges, hinge means connecting said back rest means to the rear edge of the back seat proper, whereby said back rest means is angularly adjustable relative to the vertical, substantially vertically extending cam track means located adjacent to said back rest means, connecting means at the upper corners of said back rest means arranged to ride along said vertically extending cam track means, horizontal cam track means for said rear seat proper, said horizontal cam track means having a forward section which slopes down rearwardly relative to the length of the car and a rearward section extending substantially horizontally and merging into said forward cam track section, said substantially horizontally extending rearward section having a length sufficient to permit a horizontal adjustment of the rear seat proper when the latter is in its rearward positions, said forward edge of said rear seat proper riding on said rearwardly sloping forward section of said horizontal cam track when said rear seat proper is moved forward so that said rear edge of said rear seat proper is riding on said horizontal rearward section of the horizontal cam track, whereby said rear seat proper is automatically adjustable in its angular position relative to the horizontal in response to the longitudinal adjustment of said rear seat proper in its forward adjustment.

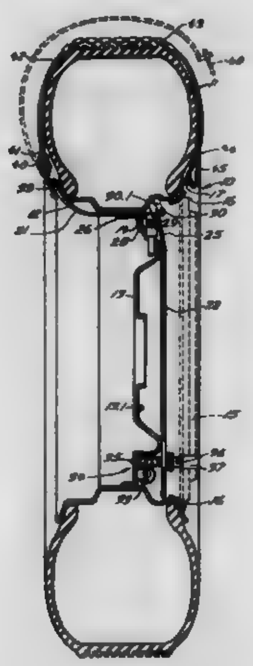
3,982,788
TIRE CHAIN APPLICATOR

Donald Brian Arney, 12287 Fulton St., Maple Ridge, British Columbia, Canada (V2X 6L4)

Filed Mar. 13, 1975, Ser. No. 558,311

Int. Cl.² B60B *15/00*

U.S. Cl. 301—44 T **3 Claims**



1. An applicator for applying flexible transverse traction members to an automobile tire mounted on a wheel assembly, the assembly having a hub and a rim, the hub having openings therethrough adjacent the rim, the applicator comprising:

a. a cog having teeth mounted on the wheel assembly adjacent each opening therein,

b. a manually operated worm-gear driving unit mounted on the wheel assembly in driving engagement with each cog for rotating the latter and being adapted to lock the cog against rotation,

c. a plurality of steel ribbons, one for each opening, and each ribbon being in meshing engagement with the cog at each opening for movement through each opening,

d. the ribbons being constructed so that when each is moved by its respective cog through the opening each curls radially outwardly around the side wall and across the tread of the tire,

e. means for connecting one end of a transverse traction member to the outside of the rim at each opening,

f. means for connecting an opposite end of each transverse traction member to an associated ribbon so as to enable the traction members to be drawn transversely across the tire tread when the steel ribbons are retracted by operation of the cog.

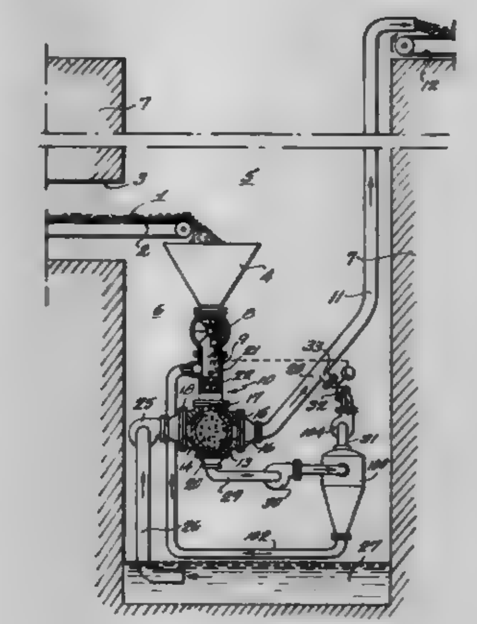
3,982,789
PROCESS AND APPARATUS FOR CONVEYING LARGE PARTICLE MINED COAL, OIL SHALE, ORE, ETC. FROM UNDERGROUND MINES OR FROM STRIP MINES VIA A PIPELINE

Erwin D. Funk, Glens Falls, N.Y., assignor to Kamyr, Inc., Glens Falls, N.Y.

Filed July 16, 1974, Ser. No. 489,038

Int. Cl.² B65G *53/30*

U.S. Cl. 302—14 **4 Claims**



1. A process of continuously conveying mined material such as particles of coal, ore, or the like, from a mine site to a remote point, said process comprising the steps of:

maintaining a flow of liquid along a first flow path from a particles entrainment position through a transfer position to a first pumping position by pumping the liquid at said first pumping position,

substantially continuously entraining mined particles from a supply of mined particles in said flow of liquid along said first flow path at said particles entrainment position,

maintaining a continuous flow of liquid along a second flow path from a second pumping position through said transfer position to said remote point by pumping said liquid at said second pumping position along said second flow path,

substantially continuously removing from communication with said first flow path at said transfer position successive volumes of mined particles larger than a predetermined size entrained in liquid while permitting liquid with mined particles smaller than said predetermined size to flow with liquid along said first flow path downstream of said transfer position to said first pumping position,

substantially continuously communicating said successive removed volumes of mined particles and entrained liquid with liquid flowing in said second path at said transfer position, and

substantially continuously directing the liquid with mined particles smaller than said predetermined size flowing from said first pumping position into said second flow path.

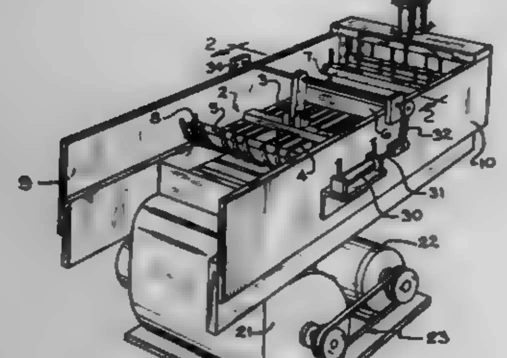
3,982,790
AERODYNAMIC PRODUCT UNSCRAMBLING SYSTEM AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Donald William Storm, 5758 Upper Straits Blvd., Orchard Lake, Mich. 48033, and Carl Curtis Garland, 15700 Kentfield, Detroit, Mich. 48223

Filed Apr. 4, 1975, Ser. No. 565,247

Int. Cl.² B65G *53/04*

U.S. Cl. 302—31 10 Claims



1. An apparatus for automatically and selectively controllably transporting articles into a predetermined arrangement of said articles, comprising, in combination:
- main guide means;
- entrance guide means operably connected to and communicating with said main guide means;
- first means for transporting said articles into said entrance guide means;
- second means for selectively supplying and directing at least one fluid to said main guide means at a selectively adjustable and predetermined pressure and quantity, and at a selectively adjustable and predetermined direction;
- article separating means operably connected to and disposed within said main guide means;
- said articles being transported through said entrance guide means and into said main guide means wherein said articles are selectively adjustably and controllably transported along by said fluid; and
- said article separating means separating said articles into a selectively adjustable and predetermined arrangement of said articles as said articles are simultaneously transported along by said fluid.

3,982,791
BRAKE APPARATUS TO PROVIDE POWER CUT OFF AND A SERVICE BRAKE APPLICATION UPON TRAIN SEPARATION

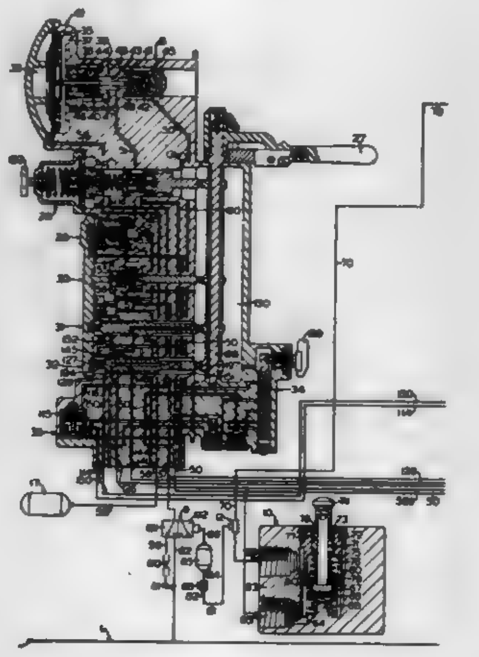
Esmet Walley, McKeesport, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Oct. 16, 1975, Ser. No. 622,880

Int. Cl.² B60T *13/70*

U.S. Cl. 303—3 12 Claims

1. In a locomotive brake control apparatus, the combination of:
- a. a brake pipe extending from end to end of the locomotive and connected to a corresponding brake pipe extending through the cars in a train hauled by said locomotive,
- b. a multi-position brake valve device operable to vary the pressure in said brake pipe,
- c. a brake cylinder operable to effect a brake application and a subsequent brake release on the locomotive
- d. a control valve device connected to and operable in response to variations of pressure in said brake pipe to control the supply of fluid under pressure to and the release of fluid under pressure from said brake cylinder,
- e. a fluid pressure operated locomotive power supply cutoff device, wherein the improvement comprises:
- f. a brake application valve device operable upon the release of fluid under pressure therefrom to effect the supply of fluid under pressure to said power supply cut-off device to cause operation thereof to cut off the supply of power to the locomotive,
- g. an electro-responsive valve means operable upon deenergization thereof to release fluid under pressure from said brake application valve device, and
- h. circuit means for controlling energization and deenergization of said electro-responsive valve means, said circuit means comprising:
  - (i) two parallel-arranged circuits,



  - (ii) a first fluid-pressure-operated switch device having a contact for effecting closing one of said two parallel-arranged circuits in response to an increase in the pressure in said brake pipe to a first chosen value, and opening said one circuit in response to a reduction of the pressure in said brake pipe to a second chosen value that is less than said first chosen value, and
  - (iii) a second fluid-pressure-operated switch device having a contact for effecting opening of the other of said two parallel-arranged circuits by a first pressure that is in excess of said first chosen pressure in response to movement of said multiposition brake valve device to one of its positions, and closing said other circuit by a second pressure that is less than said first chosen pressure but in excess of said first chosen value in response to movement of of said multi-position brake valve device to another of its positions.

3,982,792
EMERGENCY BRAKE SYSTEM FOR A VEHICLE

Norio Nakajima, Sagamihara, Japan, assignor to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Nov. 17, 1975, Ser. No. 632,329

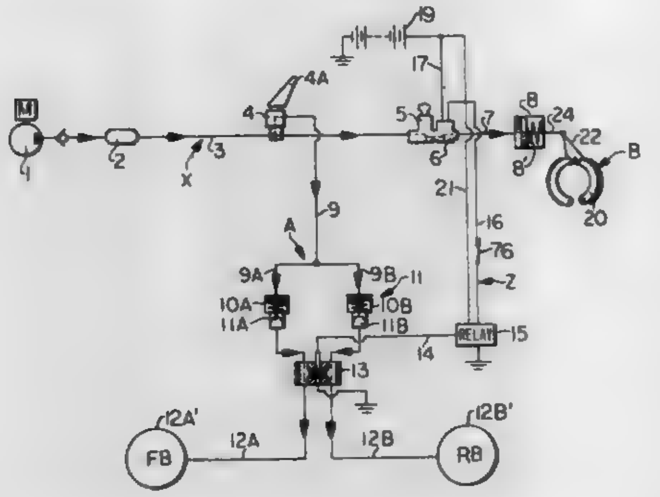
Claims priority, application Japan, Nov. 29, 1974, 49-136219

Int. Cl.² B60T *13/22, 17/18*

U.S. Cl. 303—6 A 6 Claims

1. An emergency brake system for a vehicle of the type including separate fluid operated front and rear wheel service brakes and a control system having separate front and rear fluid conduits for individually conducting pressurized fluid to such brakes to effect their application, comprising:
- an emergency brake;
- pressure differential detecting means connected to each of the fluid conduits for detecting a difference in the fluid pressures of the conduits;

- means connected to said detecting means and to said emergency brake for automatically applying said emergency brake when the service brakes are applied and the difference in the pressures of the conduits is beyond a predetermined value;
- a source of pressurized air;
- an air releasing motor connected to said emergency brake and including spring means to effect application of said emergency brake, said motor being responsive to a predetermined air pressure to effect the release of the emergency brake; and



- said means for automatically applying said emergency brake includes a solenoid operated air bleed valve for normally communicating pressurized air from said source to said second air releasing motor, and electric circuit means operative in response to said pressure detecting means to open said solenoid operated air bleed valve so as to exhaust the air from said air releasing motor, thereby effecting the application of the emergency brake.

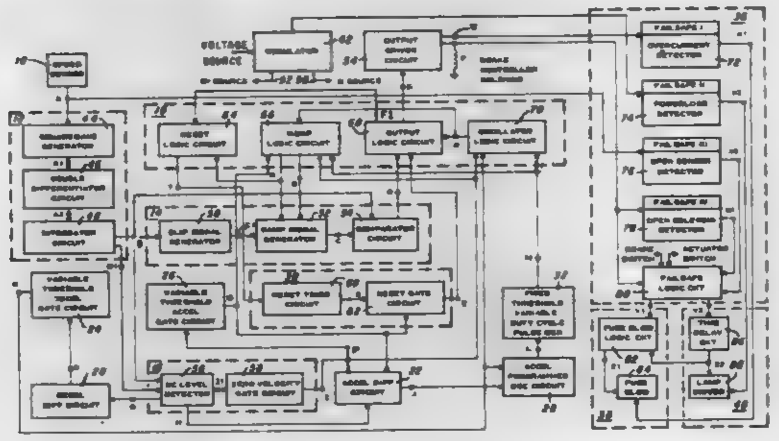
3,982,793
VEHICLE SKID CONTROL SYSTEM

James J. Jones, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed June 27, 1972, Ser. No. 266,798

Int. Cl.² B60T *8/08*

U.S. Cl. 303—21 P 28 Claims



1. A vehicle brake control system for selectively controlling the engagement and disengagement of the brake system of the vehicle in accordance with selected braking conditions, comprising in combination:
- a. first signal means for generating a first control signal when the relationship between signals representing vehicle speed and vehicle wheel speed is at a predetermined condition;
- b. second signal means for generating a second control signal when the vehicle wheel speed rate of change is at a first value and a third control signal when the vehicle wheel speed rate of change is at a second value;
- c. third signal means for generating a fourth control signal proportional to selected condition of said vehicle wheel speed after said first and second values are reached; and
- d. logic means selectively responsive to said first, second, third and fourth control signals for:
  - i. disengaging the vehicle brake system when said predetermined condition and said first value are reached, and
  - ii. sequentially engaging and disengaging the vehicle brake system when said predetermined condition and said second value are reached.

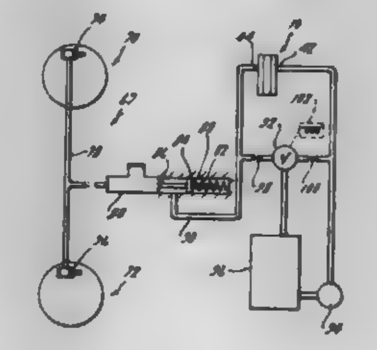
3,982,794
VELOCITY RATE CHANGE SENSITIVE FLUID VALVE

Denny D. Colovas; John S. Logan, and Roland L. Maiece, all of Dearborn, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1976, Ser. No. 644,244

Int. Cl.² B60T *8/093*

U.S. Cl. 303—24 A 3 Claims



1. A fluid control valve comprising in combination:
- housing means defining a fluid cavity;
- a shaft member fixedly received by said housing within said fluid cavity;
- first and second fluid passage means extending through at least a portion of said shaft member and arranged to communicate said fluid cavity to the exterior of said housing;
- said first and second fluid passage means having a plurality of passage openings arranged at the surface of said shaft member exposed to the fluid cavity;
- a pendulum member supported within said fluid cavity for pendulous movement about said shaft member;
- means defining a fluid passage extending through at least a portion of said pendulum means;
- said pendulum fluid passage means arranged to cooperate with said plurality of first and second fluid passage means passage openings and operative upon pendulous movement to inter-communicate selected ones of said passage openings whereby fluid communication may be established through the valve.

3,982,795
MULTI-CIRCUIT AIR-BRAKE SYSTEM, IN PARTICULAR FOR MOTOR VEHICLES

Hans Grüner, Edingen, Germany, assignor to Graubremse GmbH, Heidelberg, Germany

Continuation of Ser. No. 470,168, May 15, 1974, abandoned.

This application Dec. 22, 1975, Ser. No. 643,087

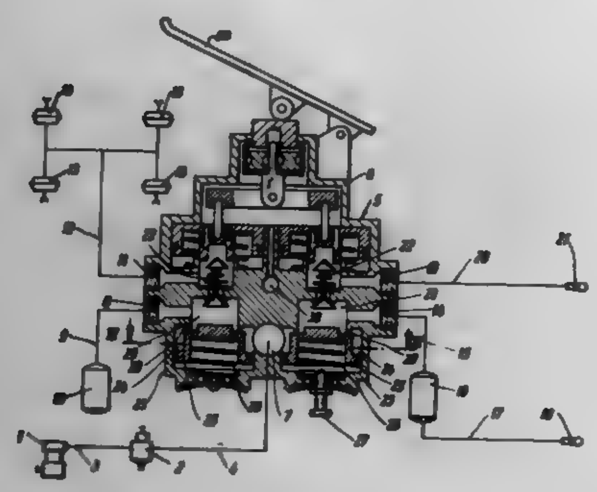
Claims priority, application Germany, May 17, 1973, 2324873

Int. Cl.² B60T *15/08*

U.S. Cl. 303—52 11 Claims

1. A multi-circuit brake system comprising a plurality of tanks for holding a fluid; a plurality of brake lines for applying fluid to braking apparatus of at least one vehicle; a brake valve including a housing defining a plurality of circuits each connected to an associated different one of the tanks and an associated different one of the brake lines, said brake valve further including valve means disposed in said circuits for

controlling the flow of fluid from the tanks to the brake lines; supply means for supplying compressed fluid; and a plurality of safety valves each connected to an associated different one of the tanks via a portion of an associated different one of the circuits of the brake valve, said safety valves being directly connected in common to the supply means for controlling the flow of fluid from the supply means to the tanks; each of said safety valves including a piston and a spring mounted on one side of the piston for spring-biasing the piston against a projecting rim of the housing to close a fluid passage passing from the supply means along the opposite side of the piston and via a portion of the associated circuit of the brake valve to the associated tank, said projecting rim of the housing dividing the surface area of said opposite side of the piston into a first surface area under pressure of the fluid in the associated tank and a second surface area under pressure of the compressed fluid from the supply means whereby one or both of those pressures may bias the piston against the spring and away from the projecting rim of the housing to open said fluid passage.



3,982,796
THRUST BEARINGS

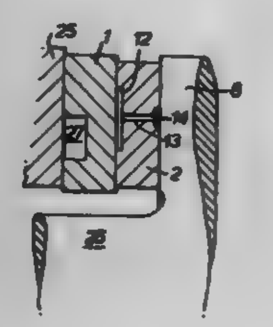
Alfred Hill, Abbots Langley, England, assignor to The Glacier Metal Company Limited, Wembley, England

Filed Feb. 22, 1974, Ser. No. 444,698

Claims priority, application United Kingdom, Feb. 28, 1973, 9702/73

Int. Cl.² F16C *17/06*

U.S. Cl. 308—122 **7 Claims**



1. A thrust bearing comprising
an annular series of thrust pads
each having a bearing surface for carrying thrust from a relatively rotating load surface and an opposed rear surface supported from the surface of a pad carrier,
there being a first passage through the pad for supplying oil to the bearing surface of each pad;
a pocket in the bearing surface of each pad;
a recess at the center of the rear surface of each pad between the rear surface and the carrier surface; and
a second passage leading through the pad from the pocket to the recess for leading oil pressurized hydrodynamically by rotation between the bearing surface and the load surface to act to support the pad from the carrier non-positively.

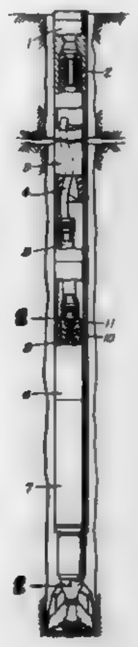
3,982,797
SPRING-LOADED BEARINGS FOR IN-HOLE MOTORS

John E. Tschirky, Long Beach, and Bela A. Geczy, Glendale, both of Calif., assignors to Smith International Corporation, Inc., Newport Beach, Calif.

Filed July 11, 1975, Ser. No. 595,162

Int. Cl.² F16C *17/04, 19/04*

U.S. Cl. 308—139 **18 Claims**



1. A spring-loaded thrust bearing system comprising a load-applying member, a load-receiving member, said members movable longitudinally relative to each other from an unload position to a load-applying position to said load-receiving member for application of a load, a thrust bearing between said members in thrust-bearing relation between said members, a plurality of springs arranged in series between one of said members and said thrust bearing, said springs positioned to transmit said thrust through said springs to said bearing, said plurality of springs including a first of said springs, a first stop associated with said first springs, said first stop interrupting the deflection of the first spring upon application of a fraction of the load but less than the total load to be applied by said load-applying member and at a portion of the available deflection of said spring of said first spring, a second spring, a second stop for said second spring, said stop interrupting the deflection of said second spring at an applied load greater than said fraction, said second spring deflecting through a portion of but less than the total of the available deflection of said second spring, the deflection of each spring being a fraction of the total movement of said load-applying member to said load-receiving member and the modulus of said first and second spring being substantially different.

3,982,798
STORAGE APPARATUS

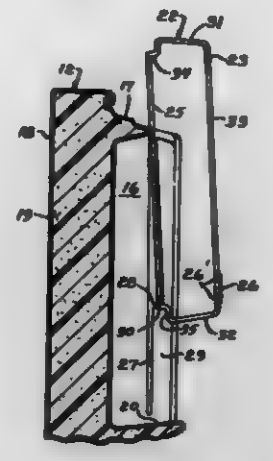
Charles G. Fellwock, Evansville, Ind., and Charles R. Russell, Southfield, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Feb. 18, 1975, Ser. No. 550,546

Int. Cl.² A47B *51/00*

U.S. Cl. 312—138 A **4 Claims**

1. Storage apparatus, comprising: a vertical door having storage space for articles comprising an inwardly facing recess; a transverse article supporting shelf means in said recess; a generally vertically movable article retaining rack extending across said recess in the vicinity of said shelf means to retain articles within said recess and on said shelf means; and cooperating sliding guide and track means on said door and said rack for sliding movement of said movable rack in a generally vertical path to an elevated position exposing said shelf means for access thereto, said storage apparatus comprising refrigeration apparatus and said door comprising an inner liner shaped to provide said inwardly facing recess, said liner including substantially vertical track grooves at the laterally opposite sides of said recess engaged by side members on said rack for providing said sliding movement of said rack.



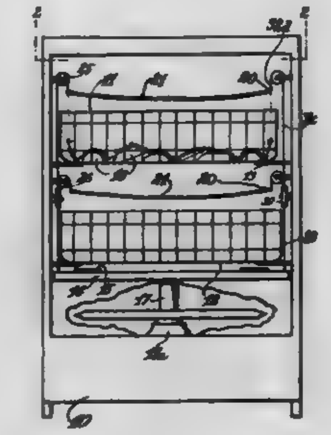
3,982,799
DISH STABILIZING MECHANISMS FOR DISH-WASHING MACHINES

James M. Murray, 9129 S. Crescent Court, Oak Lawn, Ill. 60453

Filed May 27, 1975, Ser. No. 581,145

Int. Cl.² B08B *3/02, 9/08*

U.S. Cl. 312—270 **2 Claims**



1. In a dish washing machine having a door and at least one work-basket for dishes to be washed, a mesh-unit located above the space into which the work-basket is insertible when the door is open, and means between the door and the mesh-unit causing the latter to descend into the work-basket as the door is closed, the mesh then draping over and between the dishes to hold them apart and against turning during the dish washing operation, the mesh-unit having supporting bars opposite the sides of the machine, and said mechanism comprising horizontal rollers journaled near such sides, and cords leading from the door and trained over the rollers to connect with the supporting bars and suspend the mesh-unit from the cords.

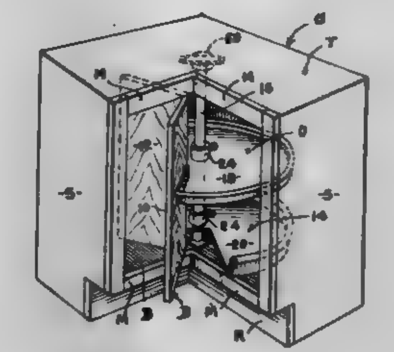
3,982,800
ROTARY-POSITION CATCH FOR ROTATABLE CORNER SHELF UNITS

Howard Bryon Gorton, San Gabriel, and Warren Hall Miller, Claremont, both of Calif., assignors to Ajax Hardware Corporation, City of Industry, Calif.

Filed Feb. 23, 1976, Ser. No. 660,372

Int. Cl.² A47B *81/00*

U.S. Cl. 312—305 **7 Claims**



1. A rotary-position catch for rotatable storage units comprising an integral plastic mounting plate having a central pivot bearing for the unit and an oblong resilient ring surrounding the bearing and joined to the plate at diametrically opposite points on a major diameter, the ring having recess means at diametrically opposite points on a minor diameter; and a sleeve having outward catch-engaging lug means, the sleeve being adapted to be secured to the storage unit on the axis of rotation thereof, said lug means extending outward from the sleeve to a point slightly farther from the axis than the ring at the minor diameter whereby the lug means forcibly engages the ring when adjacent the recess means and snaps into the recess means to effect the catching action.

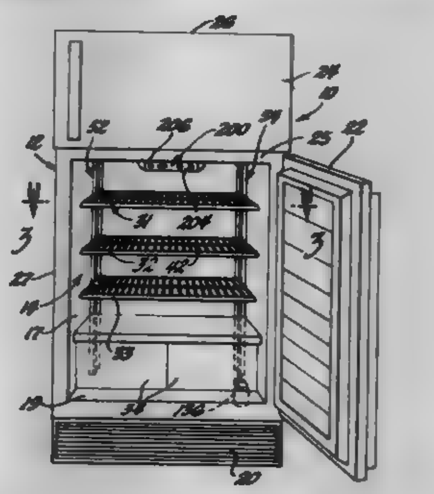
3,982,801
POWER-OPERATING VERTICALLY ADJUSTABLE CANTILEVER SHELVES FOR APPLIANCE CABINETS

John H. Heidorn, and James A. Bernard, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 17, 1975, Ser. No. 632,293

Int. Cl.² F25B *49/00;* F16M *1/00*

U.S. Cl. 312—306 **4 Claims**

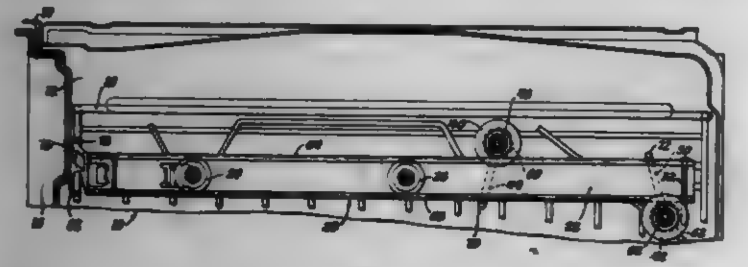


1. In a refrigerator cabinet or the like having a plurality of walls including a rear wall defining a storage compartment and an access opening thereto, a shelf adjustor mechanism for vertically moving a shelf within said compartment, said mechanism comprising a pair of vertical stringers secured to said rear wall, each said stringer having a vertically extending series of ratchet teeth formed on a rearwardly facing surface thereof, driven shaft means disposed transversely on said shelf adjacent the rearward portion thereof having a pair of driven gears thereon, each driven gear in meshed engagement with one of said stringer ratchet teeth, a pair of shelf roller means pivotally supported on a common transverse axis offset rear-

wardly and below said shelf driven shaft means whereby each said roller means tracks on a forwardly facing stringer surface, drive means for said mechanism including a drive shaft coupled to a reversible drive motor extending vertically adjacent the rear wall, gear means associated with said shelf through which said shelf driven shaft means is rotated, clutch means for connecting said drive shaft with said shelf gear means operable to rotate said shelf driven shaft means in either direction, manually operable selectable switch means enabling the user to energize said motor to rotate said drive shaft in one or another direction, and user operating means on said shelf for actuating said clutch means into engagement; whereby upon the user first actuating said switch means to a selected position, depending upon whether it is desired to raise or lower said shelf, and thereafter the user actuating said shelf operating means to engage said clutch means said shelf is moved vertically to the desired location.

3,982,802
DISHWASHER RACK HAVING RETENTION MEANS
Paul D. Bailey, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 3, 1975, Ser. No. 628,375
Int. Cl.² A47B *88/04*
U.S. Cl. 312—348 **5 Claims**



1. In a dishwasher of the front loading type having a washing chamber and an access opening thereto, a dish supporting rack slidably mounted in the chamber for movement between a loading position wherein the rack extends at least partially out through the access opening and a washing position wherein the rack is fully within the chamber, the improvement comprising a supporting rail at each side of said rack affixed to a side wall of the washer chamber, a pair of rollers affixed on said rack at the rear thereof, said rollers being both laterally and vertically offset from each other and each having a grooved rim astride opposite sides of said rail adapted for keeping the rack astride the rail and preventing the front of the rack from tipping downwardly during movement between loading and washing positions, said rack including a pair of retention pins laterally and vertically offset from each other extending into the vertical plane of said rail and spaced from said rail, the spacing of said retention pins from said rail being sufficiently close in conjunction with the depth of said grooved rims so that the upper one of said pins engages said rail as the front of said rack is tipped upwardly about the upper one of said rollers and the lower one of said pins engages said rail as the front of said rack is tipped further upwardly about the upper one of said pins thereby to keep the rack astride the rail by preventing the rack front from tipping sufficiently upwardly to release the grooved rim of each roller from the opposite sides of said rail, and means between the front of said rail and the lower one of said pins for releasably latching said rack against removal from said rail when the rack is in its loading position.

3,982,803
CABLE AND CONVERTER SECURITY DEVICE
Harry A. Bennett, 17513 Lorne St., Northridge, Calif. 91324

Filed Mar. 17, 1975, Ser. No. 558,791
Int. Cl.² H01R *13/62*
U.S. Cl. 339—37 **1 Claim**

1. In a system wherein it is desired to prevent unauthorized connection of a coaxial coupling device to a coaxial cable by requiring the use of a special tool means for affording coupling to the central conductor of said coaxial cable, said coaxial coupling device comprising

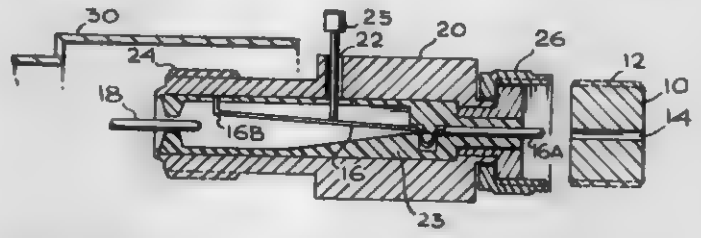
a conductive cylindrical body having a central cylindrical opening extending therethrough,

insulating wall means closing one end of said conductive cylindrical body, said wall means having a central opening for enabling the insertion of said coaxial cable central conductor therethrough into said central cylindrical opening,

a coupling conductor within said central cylindrical opening,

insulating means supporting said coupling conductor between its ends within said central opening of said conductive cylindrical body,

one end of said coupling conductor extending towards said insulating wall means for contacting said coaxial cable central conductor, said one end of said central conductor having resilient properties and being yieldably biased to a first position which is out of contact with an inserted coaxial cable central conductor, and being movable to a second position for affording contact with a coaxial cable central conductor which is inserted through said insulating wall means after said central conductor one end is moved to said second position,



means for affording access to said resilient one end of said central conductor consisting of

an opening in said cylindrical body positioned for enabling removable insertion therethrough of said tool means for moving said resilient one end of said central conductor from its first to its second position,

means forming a bushing at the end of said conductive cylindrical body opposite to the end toward which said one end of said central conductor extends,

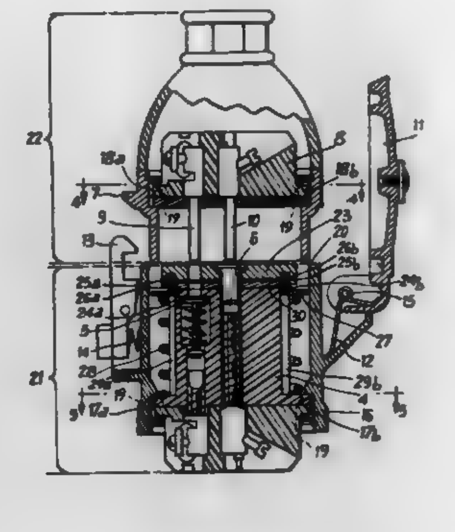
a threaded nut pressed upon said bushing and having a threaded end extending away from the end of said cylindrical body for engaging a threaded plug, and

a hollow cylinder for insertion over said conductive cylindrical body for covering said opening therein and said threaded nut.

3,982,804
SELECTIVE ELECTRICAL CONNECTION DEVICE
Gilles Marechal, Paris, France, assignor to Societe d'Exploitation des Procedes Marechal S.E.P.M., Paris, France

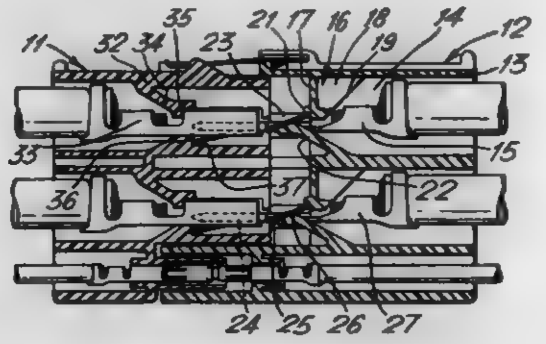
Filed Mar. 7, 1975, Ser. No. 556,480
Claims priority, application France, Mar. 14, 1974, 74.08636
Int. Cl.² H01R *13/44*
U.S. Cl. 339—41 **6 Claims**

1. A selective electrical connection device comprising a housing arranged to support a centrally perforated insulating socket member having an end wall, said socket member having a plurality of means defining openings therein arranged in predetermined spaced relation around said central perforation and adapted to slidably support electrical contact means, plural juxtaposed disc members associated with said end wall of said socket member, resilient means encompassing said socket member and adapted to support a washer means, said washer means including means cooperating with said juxtaposed disc members to prevent inadvertent rotary movement thereof, plug means arranged for assembly with said insulating support member, said plug means having a collar element arranged to be interposed between the socket member and the housing upon electrical connection being established, a central ground contact element for cooperation with said perforation in said socket member and a further electrical contact element laterally spaced therefrom supported on said plug means arranged to be associated with at least one of said electrical contact means spaced around said central perforation in said socket member when said collar element is inserted into said housing to depress said resilient means thereby disengaging said washer from said juxtaposed disc members to permit relative rotation thereof and engagement of said electrical contact element with at least one of said electrical contact means carried by said socket member.



3,982,805
ELECTRICAL CONNECTOR AND HOUSING THEREFOR
Norimitsu Irie, Kawasaki, Japan, assignor to AMP Incorporated, Harrisburg, Pa.

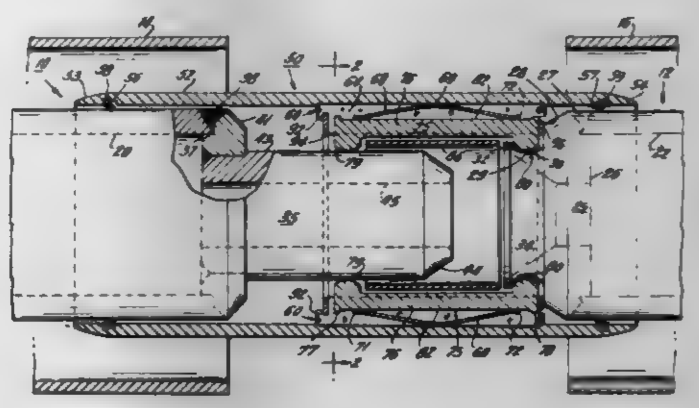
Filed Nov. 21, 1975, Ser. No. 634,109
Claims priority, application Japan, Nov. 29, 1974, 49-143849[U]
Int. Cl.² H01R *13/40*
U.S. Cl. 339—59 R **5 Claims**



1. A housing for an electrical terminal of the type having a resilient locking tongue with a rearwardly directed free end, which housing is molded from plastics material with a terminal-receiving passageway open to a rear of the housing and a locking abutment having a forward face engageable by the free end of the locking tongue in a snap fit on insertion of the terminal front first into the passageway from the housing rear, and a resilient tongue pusher extending across the passageway forward of the abutment face and engageable behind the tongue to retain the free end of the tongue in alignment with the abutment face.

3,982,806
PLUG-IN ELECTRIC CONTACT WITH IMPROVED CONTACT FINGER SUPPORT AND SHIELDING
Walter M. Wilson, and John W. Katzbeck, Jr., both of Greensburg, Pa., assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed Apr. 3, 1975, Ser. No. 564,695
Int. Cl.² H01R *13/62*
U.S. Cl. 339—64 R **14 Claims**



13. A plug type connector assembly, comprising:

first and second annular conductors of substantially equal diameter, surrounded by an annular conductive housing; each of said conductors having an end adjacently spaced from the end of the outer said conductor;

each said adjacent end of said first and said second conductors having an axial, conductive plug element of diameter reduced from that of the external diameter of said first and said second conductors to a slight extent;

an annular, hollow shield of conductive material having a substantially constant internal diameter that is slightly greater than the external diameters of said first and said second conductors, said shield extending completely across both said plug elements and extending a short distance over both said conductors; retaining means for holding said shield in place over said first and second conductors and across said plug elements;

a plurality of axially extending, elongated contact fingers which are annularly arrayed at spaced intervals about the interior of said shield; said contact fingers each having a radially inwardly directed contact lobe at one end of each said finger; the inward end of each of said contact lobes of each of said contact fingers engaging the external surface of one of said plug elements, the ends of each of said fingers opposite to said end containing said contact lobe being fixed to the other said plug element;

said inwardly directed contact lobes extending from each of said contact fingers making sliding engagement with said one of said plug elements to maintain good electrical engagement between said plug elements while enabling relative movement between said first and said second conductors;

respective spring biasing means provided along the interior of said shield for each of said contact fingers and engaging said shield and said respective contact fingers; said spring biasing means urging each of said fingers inwardly and away from the interior surface of said shield, whereby said plug elements may have relatively large diameter because the space between them and said shield contains said fingers and said biasing means for urging said fingers.

3,982,807

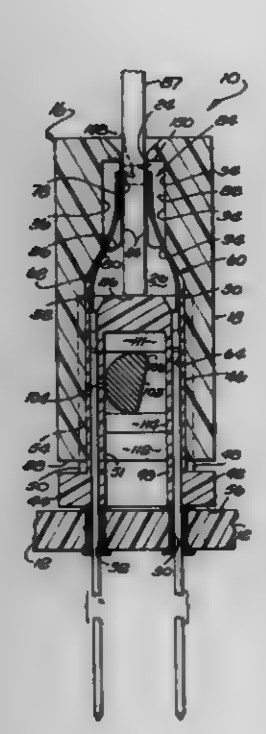
ZERO FORCE PRINTED CIRCUIT BOARD CONNECTOR

John W. Anhalt, Orange, and James H. Curley, Costa Mesa, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 27, 1975, Ser. No. 562,552

Int. Cl.² H01R *13/54*

U.S. Cl. 339—75 MP **5 Claims**



1. A printed circuit board connector comprising:

an elongated mounting member having a generally flat lower surface adapted to be mounted on a planar substrate having holes therein;

two rows of resilient contacts, each contact having a lower mounting portion, an upper contacting portion and an inclined intermediate region between said upper and lower portions, the mounting portions of said contacts in each row being mounted in said mounting member, the intermediate regions of said two rows of contacts being inclined toward each other;

each said contact having a lower end below said mounting portion thereof, said lower ends of said contacts extending below said lower surface of said mounting member and being adapted to extend into said holes;

an elongated hollow insulative housing movably mounted over said contacts and having sidewalls slidably engaging the sides of said mounting member, said housing having a printed circuit board receiving slot therein overlying the area between said two rows of contacts;

said housing having cam surface means thereon engaging said intermediate regions of said contacts, said cam surface means shifting said upper portions of said contacts transversely toward a vertical plane passing through said slot upon relative movement of said housing toward said mounting member; and

elongated rotatable cam means in said mounting member extending lengthwise between said two rows of contacts and above said lower surface, said cam means cooperating with said housing so that upon rotation of said cam means said housing and mounting member are slidably moved toward each other to shift said contacts, said cam means having actuation means adjacent to one end of said housing.

3,982,808

SINGLE WIRE ELECTRICAL CONNECTOR

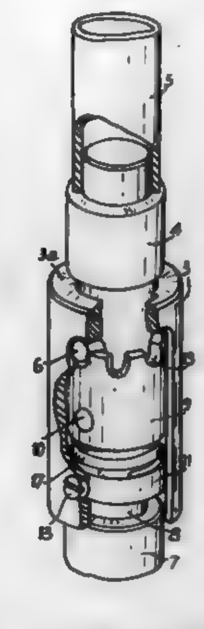
Gilles Marechal, Paris, France, assignor to Societe d'Exploitation des Procedes Marechal S.E.P.M. (Societe Anonyme), Paris, France

Filed May 7, 1975, Ser. No. 575,367

Claims priority, application France, May 9, 1974, 74.16068

Int. Cl.² H01R *7/32, 13/54*

U.S. Cl. 339—88 R **8 Claims**



1. A connector for joining two lengths of electrical high current cables together including a male terminal on the end of one cable and a female terminal on the end of the other cable,

said male terminal including a front face for engagement with a front face on said female terminal to provide electrical contact between said two cables, and matching means for engaging complementary matching means on said female terminal for preventing relative rotation between said terminals,

said female terminal comprising a socket with a front face for engaging said front face on said male terminal upon insertion of the male terminal into the female terminal and incorporating matching means for engaging the matching means on said male terminal,

a sleeve freely rotatably mounted upon said female terminal and incorporating means tending to cause longitudinal relative movement of said cables toward one another upon rotation of said sleeve, thus causing longitudinal displacement of said sleeve toward said male terminal, and

resilient means opposing said longitudinal displacement of said sleeve thereby supplementing the function of said matching means to prevent relative rotation of said cables.

3,982,809

CORD ADAPTER

Ronald C. Ward, and Richard B. Kosten, both of Huntsville, Ala., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

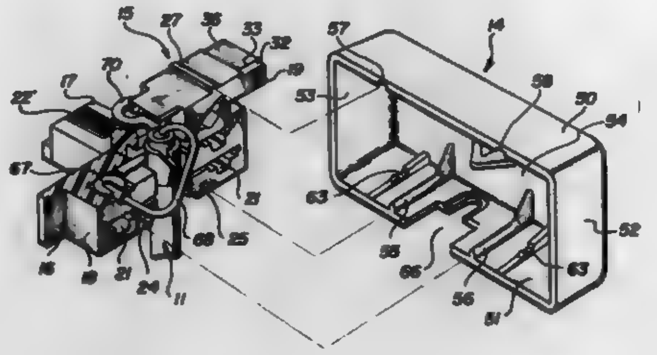
Filed Dec. 29, 1975, Ser. No. 644,981

Int. Cl.² H01R *7/28, 13/10*

U.S. Cl. 339—91 R **11 Claims**

1. A cord adapter for use with a telephone line cord including a plurality of conductors for making electrical connections between the conductors of the line cord and electrically conductive contacts of the cord adapter, the line cord having a cord holder on the end thereof and each of the conductors having a spade terminal on the end thereof, said cord adapter comprising: a plug molded of a non-conductive material, a removable snap-on cover for said plug molded of a non-conductive material, said plug comprising: a miniature terminal plug and terminal block which are integrally formed, said

terminal block having formed therein a plurality of terminal cavities, each of which is proportioned to receive therein at least one of said spade terminals on the ends of said conductors of said line cord, an electrical contact disposed within the respective ones of said terminal cavities and extended into said miniature terminal plug such that other electrical connections can be established with said electrical contacts, cooperative locking means integrally formed on said plug, said cover comprising: a bottom wall and four side walls all proportioned to receive therein said plug with only said miniature terminal plug extending therefrom, cooperative locking means formed on ones of said side walls for mating engagement with said locking means on said plug, said locking means on said side walls and on said plug being releasably lockingly engaged to secure said cover with said plug when said cover is forcibly urged over said plug, whereby said spade terminals can be disposed within said terminal cavities in said terminal block in said plug and said cover affixed to said plug without the need of any tools.



3,982,810

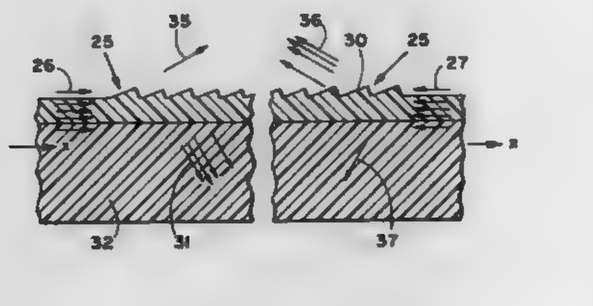
DIRECTIONAL RADIATION BY ASYMMETRICAL DIELECTRIC GRATINGS

Theodor Tamir, Teaneck, N.J., and Song-Tsuen Peng, Brooklyn, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 9, 1975, Ser. No. 594,416

Int. Cl.² G02B *5/14*

U.S. Cl. 350—96 C **10 Claims**



2. A method of concentrating the power in a thin film optical device from an incident surface wave into a beam that appears selectively either above or below the dielectric grating of the device comprising:

discriminating between the regions above and below the grating by introducing an asymmetric profile in the grating;

said asymmetric profile selected so as to concentrate energy incident from one direction in said film in a beam leaked into the region above the grating and from the opposite direction in a beam leaked into the region below the grating.

3,982,811

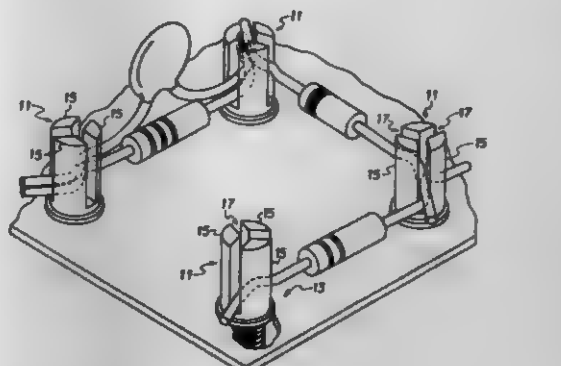
ELECTRICAL TERMINAL

Bernard K. Siu, and Richard D. Allemang, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sept. 22, 1975, Ser. No. 615,277

Int. Cl.² H01R *13/58*

U.S. Cl. 339—105 **12 Claims**



1. A conductive terminal comprising:

a. a body portion having an axis of symmetry,

b. three substantially equal length legs unitary with said body portion and protruding therefrom substantially parallel to said axis, and

c. three substantially straight slots, each defined by two different ones of said three legs, said three slots joining near said axis and radiating outward to the side of said terminal.

3,982,812

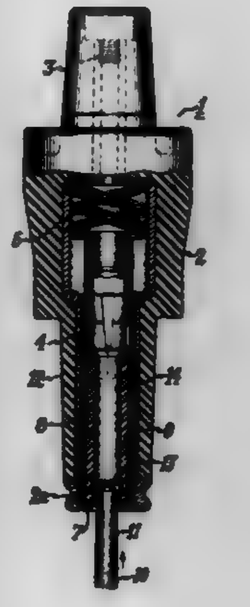
POWER CABLE SEPARABLE CONNECTOR HAVING GASKET MEANS FOR RESTRICTING THE FLOW OF ARC-GENERATED GASES THEREFROM

Vincent J. Boliver, Pittsfield, Mass., assignor to General Electric Company

Filed Oct. 1, 1973, Ser. No. 402,596

Int. Cl.² H01R *15/02*

U.S. Cl. 339—111 **10 Claims**



1. A separable connector module for connecting electrical power distribution cable, the module being of the type including:

an insulating housing having an open contact-receiving passageway therein extending from a first end of said housing a predetermined distance into said housing and terminating in a gas expansion chamber;

a hollow, cylindrical, bore sleeve telescopingly fit inside said passageway of said housing;

an electrical contact member inside said passageway and rigidly fixed to said bore sleeve, and a gas activated piston for moving said bore sleeve along said passageway, said piston being disposed in said chamber and having an opening through which gases generated in said passageway by arcing from said contact member can pass from said passageway into said chamber,

wherein the improvement comprises a resilient gasket in the space between the bore sleeve and the inside wall of said passageway for preventing escape of arc-generated gases to the outside through that space.

3,982,813

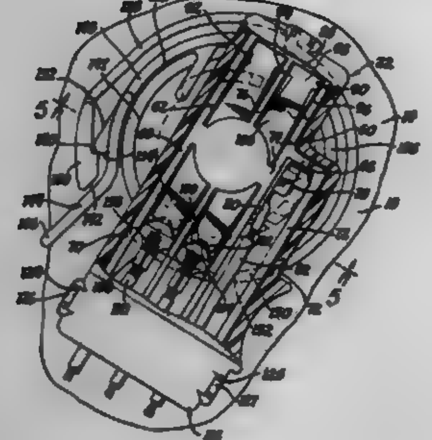
WEATHER SEALED LAMP SOCKET ASSEMBLY

Kenneth P. Cope, Warren, and Robert G. Plyler, Vienna, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 19, 1975, Ser. No. 633,424

Int. Cl.² H01R *13/52*, *13/54*

U.S. Cl. 339—127 R **3 Claims**



1. A lamp socket and panel assembly for sealing a lamp housing having a panel exposed to ambient weather conditions comprising: a rear panel with inner and outer surfaces thereon including a lamp socket access opening therethrough having radially outwardly directed slots formed circumferentially therearound, a deflector ring on said rear panel outer surface formed circumferentially around said opening to shield said opening against water flow across the outer surface, a lamp socket including retention ears thereon at circumferential points therearound axially insertable through said ring and slots and rotatable with respect to said panel to secure said socket thereon, said ring having a catch thereon with a lead ramp and notch at a point circumferentially spaced from said retention slots, said socket having a flexible manually releasable lock arm thereon positioned in axial alignment with said ring when the socket is in place and having a surface thereon that rides circumferentially across said lead ramp upon rotation of said socket within said opening, said lock arm being spring biased into said notch to produce an audible signal to indicate positioning of said socket in a rotatably locked position on said panel.

3,982,814

DAMPENED CHOKE COIL

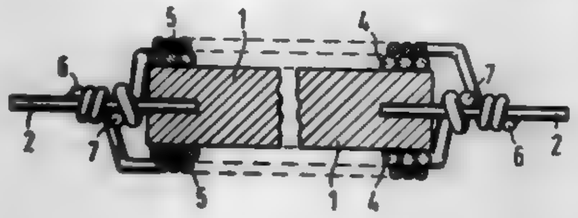
Hans-Peter Kaiserswerth, Regensburg; Josef Wimmer, Wenzenbach, and Rudolf Schaller, Regensburg, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 9, 1973, Ser. No. 339,739

Claims priority, application Germany, Mar. 17, 1972, 2213118; Mar. 17, 1972, 2213186

Int. Cl.² G05F *3/00*

U.S. Cl. 323—78 **6 Claims**



1. A damped coil structure comprising a cylindrical core, a first winding of relatively low resistance wire wound directly on the core, a second winding of relatively high resistance material being directly wound against the first winding, the ferromagnetic core having outer connection parts embedded therein at opposite ends, the second winding being dc isolated from the first winding and having more than 25% more turns than the low resistance winding.

3,982,815

CONNECTOR FOR LIGHT-TRANSMITTING CABLES

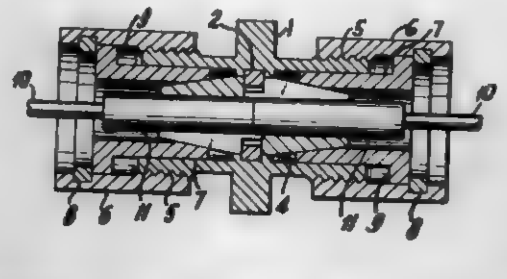
Osamu Nakayama, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed June 3, 1975, Ser. No. 583,163

Claims priority, application Japan, June 5, 1974, 49-63782

Int. Cl.² G02B *5/16*

U.S. Cl. 350—96 C **2 Claims**



1. A connector adapted to optically connect a pair of light-transmitting cables, each of which is respectively secured to tubular terminal members of substantially the same predetermined outer diameter, in a manner such that the optical axes of the two cables are aligned with each other; said connector comprising a cylindrical body member having axially and externally threaded opposite end portions, a flexible sleeve member secured in said body member coaxially with the cylindrical inner wall surface thereof and having a cylindrical inner wall surface of a diameter slightly larger than the outer diameter of the tubular terminal members, a tapered outer wall surface increasing in diameter from the opposite ends of said sleeve member toward the central portion thereof, and at least one slit formed in said sleeve member and extending axially over a distance smaller than the axial length thereof to allow said sleeve member to radially expand and contract, a pair of tubular members each having an outer diameter substantially equal to the inner diameter of said body member and an inner diameter larger than the outer diameter of said sleeve member at the opposite ends thereof and slidable axially of said body member to impart radially inward deformation to said sleeve member in cooperation with the tapered outer wall surface of said sleeve member, and clamping means cooperaive with the respective externally threaded end portions of said body member to urge the tubular terminal members axially inwardly against said sleeve member for pressure engagement therewith.

3,982,816

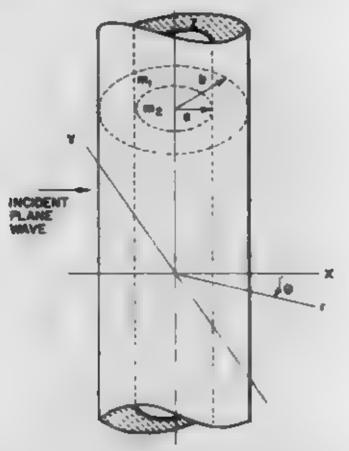
METHOD FOR MEASURING THE PARAMETERS OF OPTICAL FIBERS

Laurence Shrapnell Watkins, Hopewell Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed June 21, 1974, Ser. No. 482,707

Int. Cl.² G01N *21/00*; G01B *9/02*, *11/04*

U.S. Cl. 356—103 **19 Claims**



1. A method of measuring the outer diameter of an optical fiber having an inner core and an outer cladding, given the refractive index of the outer cladding, which comprises:

directing a beam of coherent, monochromatic radiation at the fiber to generate a far-field scattering pattern, a portion of the scattering pattern resulting from interference between radiation reflected from the outer surface of the fiber and radiation predominated by light passing through and being refracted by the outer cladding;

counting the number, N, of fringes between a lower scattering angle θ_1 and upper scattering angle θ_2 in said portion of the scattering pattern; and

calculating the outer diameter, d, of the fiber from the relation

$$d = N\lambda/[E(\theta_2) - E(\theta_1)]$$

wherein

$$E(\theta_1) = \sin(\theta_1/2) + \sqrt{m_1^2 + 1 - 2m_1\cos(\theta_1/2)}$$
$$E(\theta_2) = \sin(\theta_2/2) + \sqrt{m_1^2 + 1 - 2m_1\cos(\theta_2/2)}$$

m_1 = the refractive index of the cladding, and
λ = the wavelength of the radiation.

3,982,817

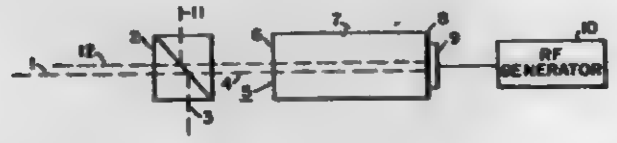
COLLINEAR ACOUSTO-OPTICAL TUNABLE FILTER AND ACOUSTO-OPTICALLY TUNABLE LASER

John D. Feichtner, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 445,526, Feb. 25, 1974. This application Sept. 30, 1975, Ser. No. 618,100

Int. Cl.² G02F *1/20*

U.S. Cl. 350—149 **16 Claims**



1. An acousto-optical filter comprising:

A. a crystal of Tl_3AsSe_3 at least 1 mm wide and at least 1 mm long having at least one optical face and an optical path passing through said crystal and entering said crystal through said optical face; and

B. means for generating a longitudinal sound wave in said crystal which moves collinear with at least part of said path.

3,982,818

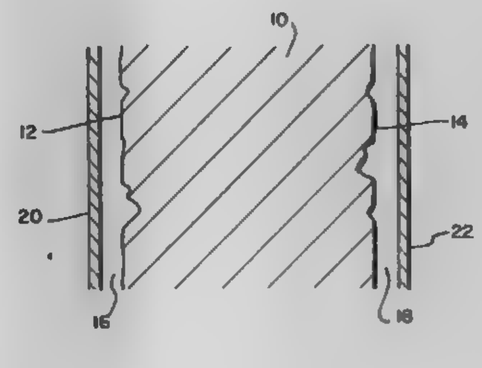
OPTICAL DEVICE WITH LIQUID COATING

Peter E. Oettinger, Acton, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Dec. 30, 1974, Ser. No. 537,483

Int. Cl.² G02B *1/02*

U.S. Cl. 350—157 **10 Claims**



1. An optical device comprising, in combination:

A. a passive crystal having an entrance face through which incident radiation propagates to the interior region of said crystal, an exit face through which light incident thereon from said interior region propagates to region exterior to said crystal, and an interior region characterized by at least two different principal indices of refraction, each of said principal indices of refraction differing from the index of refraction of the medium exterior to said crystal, and

B. means for reducing the electric field near at least one of said faces induced by radiation incident on said face, said means including an optical flat adjacent to said face and a liquid coating between said optical flat and said face, said liquid coating being characterized by an index of refraction such that the magnitude of the difference between said index of refraction of said liquid coating and at least one of said principal indices of refraction is less than the magnitude of the difference between said index of refraction of said medium and any one of said principal indices of refraction.

3,982,819

FLUID GAP GLAN-LASER PRISM

Jules P. Letellier, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 22, 1975, Ser. No. 580,130

Int. Cl.² G02B *1/02*, *5/04*

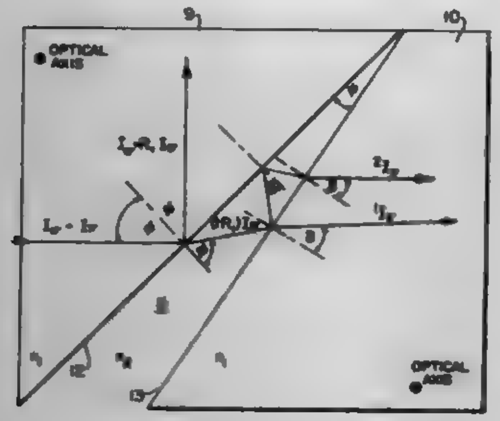
U.S. Cl. 350—157 **3 Claims**

1. A Glan-laser prism polarizer which comprises:

first and second prisms made of a biregringent material positioned with end faces parallel with each other and with sloping faces adjacent each other with their optical axes parallel

said sloping faces having a different slope and meeting at one edge to form an angular gap between said prisms with the apex of said angular gap at the point at which said faces meet,

said first and second prisms being immersed in a fluorinated liquid with said liquid filling said angular gap therebetween, and



said liquid having an index of refraction which is less than that of said prisms.

3,982,820

LIQUID CRYSTAL DISPLAY DEVICE

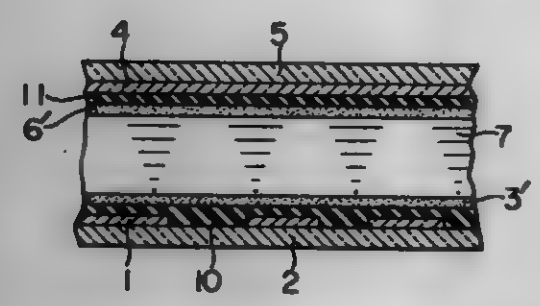
Katsuji Hattori, Uji; Masakazu Fukai, Nishinomiya; Akio Moriyama, Katano, and Yasuhiro Nishizawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 26, 1975, Ser. No. 607,940

Claims priority, application Japan, Aug. 29, 1974, 49-99662

Int. Cl.² G02F *1/13*

U.S. Cl. 350—160 LC 4 Claims



1. A liquid crystal display device comprising a pair of transparent substrates, transparent conductive films formed on inner surfaces of the substrates, coating layers of boron nitride with hexagonal crystal structure, formed on inner surfaces of said substrates and said conductive films, and a liquid crystal material interposed between said coating layers.

3,982,821

MICROSCOPE OBJECTIVES

Arthur H. Shoemaker, East Aurora, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Apr. 26, 1974, Ser. No. 464,385

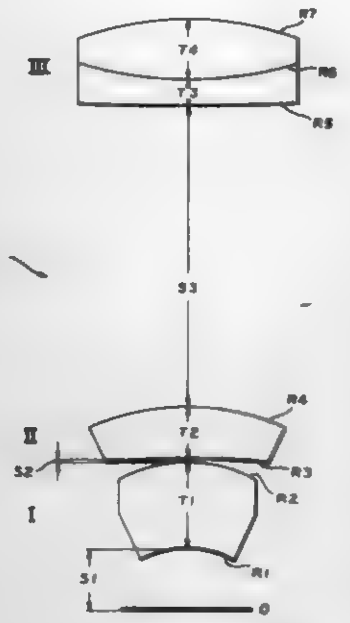
Int. Cl.² G02B *9/34, 21/02*

U.S. Cl. 350—175 ML 12 Claims

1. A microscope objective having a numerical aperture of about 0.25 which comprises, in alignment from an object plane along an optical axis,

a concavo-convex positive singlet as a first element,

a concavo-convex positive singlet as a second element, and a positive doublet as another element, said positive doublet



being the sole doublet of said objective and having as the second component thereof a double convex lens.

3,982,822

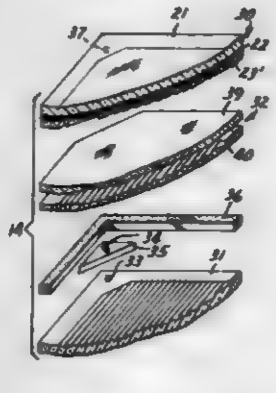
COMPOSITE FRESNEL LENS ASSEMBLY

Terrence M. Conder, Stillwater, and Donald J. Newman, White Bear Lake Township, Ramsey County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 3, 1975, Ser. No. 554,417

Int. Cl.² G02B *3/08*; G03B *21/14*; B32B *17/00*

U.S. Cl. 350—211 10 Claims



1. A large area optical element comprising a plastic lens element having an incremental lens surface and bonded over the opposite surface to a glass plate through an intervening bonding film of plasticized polyvinyl butyral, and wherein said glass plate, bonding film and plastic panel have relative thicknesses respectively of about 10:1.5–2.5:2.0–3.0.

3,982,823

RETROFOCUS WIDE-ANGLE OBJECTIVE LENS SYSTEM OF LARGE RELATIVE APERTURE

Kikuo Momiyama, Chofu, and Yujiro Agari, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 387,038, Aug. 9, 1973, abandoned.

This application June 13, 1975, Ser. No. 586,550

Claims priority, application Japan, Aug. 23, 1972, 47-84315

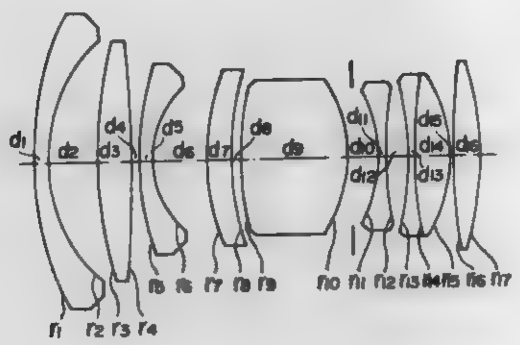
Int. Cl.² G02B *9/64*

U.S. Cl. 350—214 3 Claims

1. A retrofocus wide-angle objective lens system with large relative aperture comprising eight optically aligned lens components of which the first component is a concave meniscus lens of rearward concavity, the second component is a convex lens, the third component is a concave meniscus lens of rearward concavity, the fourth component is a convex lens of

strong forward convexity, the fifth component is a convex lens of strong rearward convexity, the sixth component is a bi-concave lens, the seventh component is a convex meniscus doublet consisting of a concave lens and a convex lens cemented together and the eighth component is a bi-convex lens, and having a diaphragm interposed between the fifth and sixth components, and said objective lens system being characterized by the following relationships in combination:

$$0.4f<d_7+d_8+d_9<0.75f \qquad (1)$$



$$0.68 < \frac{r_{12}}{r_{13}} < 1.75,\ r_{13} < 0 \qquad (2)$$

$$0.05f<d_{12}<0.105f \qquad (3)$$

$$1.73<(N_8+N_9)/2 \qquad (4)$$

$$\nu_4<35 \qquad (5)$$

$$2.5<\nu_6-\nu_7<17 \qquad (6)$$

wherein f is the equivalent focal length of the entire lens system, d_7 is the axial thickness of the fourth component, d_8 is the axial air separation between the fourth and fifth components, d_9 is the axial thickness of the fifth component, r_{12} is the radius of curvature of the rear refracting surface of the sixth component, r_{13} is the radius of curvature of the front refracting surface of the seventh component, d_{12} is the axial air separation between the sixth and seventh components, N_8 is the refractive index of the convex lens of the seventh doublet lens component for the sodium *d*-line of the spectrum, N_9 is the refractive index of the eighth convex lens component for the sodium *d*-line of the spectrum, ν_4 is the Abbe number of the fourth convex lens component, ν_6 is the Abbe number of the sixth bi-concave lens component, and ν_7 is the Abbe number of the concave lens of the seventh doublet lens component.

3,982,824

CATOPTRIC LENS ARRANGEMENT

Werner R. Rambauske, Carlisle, Mass., assignor to Raytheon Company, Lexinton, Mass.

Continuation-in-part of Ser. No. 203,684, Dec. 1, 1971, abandoned. This application Apr. 17, 1972, Ser. No. 244,393

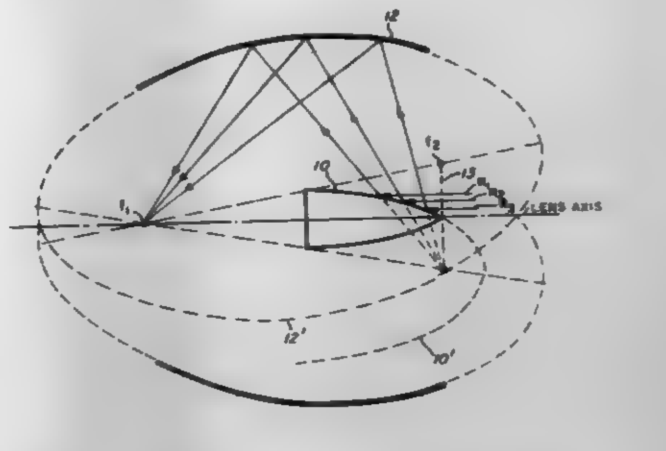
Int. Cl.² G02B *5/10*

U.S. Cl. 350—294 17 Claims

1. A catoptric lens arrangement for converting a diverging beam of wave-propagated energy from a source thereof into a collimated beam, the axes of both such beams being coincident with a lens axis, such arrangement comprising:

a. an entrance mirror having a convex reflecting surface, such surface corresponding to the surface generated by a section of one branch of a first hyperbola nutated around the lens axis, one focal point of such hyperbola being coincident with the source and the other focal point describing a first circle about the lens axis;

b. a secondary mirror having a convex reflecting surface, such surface corresponding to the surface generated by a section of one branch of a second hyperbola nutated around the lens axis, one focal point of such hyperbola describing a circle coincident with the first circle and the other focal point describing a second circle about the lens axis; and,



c. an exit mirror having a concave reflecting surface, such surface corresponding to the surface generated by a section of a parabola rotated about the lens axis, the focal point of such parabola describing a circle coincident with the second circle and the principal axis being parallel to the lens axis.

3,982,825

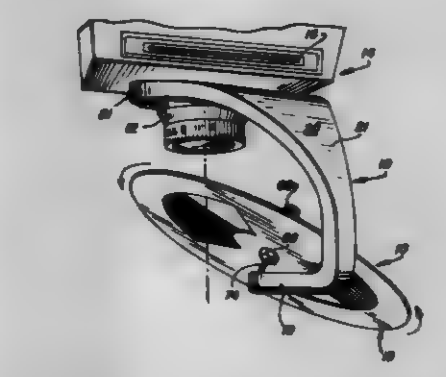
COLOR FILTER HEAD FOR PHOTOGRAPHIC ENLARGERS

Robert W. Mitchell, St. Joseph, Mich., assignor to Photo Systems, Inc., Dexter, Mich.

Filed Oct. 15, 1974, Ser. No. 514,632

Int. Cl.² G03B *27/76*; G02B *5/20*

U.S. Cl. 350—313 20 Claims



1. A filter assembly for modifying generally collimated light from a light source, said assembly comprising:

generally planar base means having a central hub portion defining a rotational base bearing and apertured portions radially spaced from said hub portion and extending circumferentially relative to said hub portion,

yoke support means comprising a first leg having a support bearing cooperating with said base bearing to rotatably support said base means and a second leg having mounting means to secure said assembly to said light source with the axis of said collimated light transversely intersecting said base radially outward from said hub,

light filter means overlying at least some of said apertured portions, said apertured portions lying on a circumference of said base which intersects said axis,

said filter means and said axis of collimated light intersecting at an acute angle,

carrier means rotatably mounted on said base for rotation about said hub, said filter means being mounted on said carrier means,

said base, said carrier and said filter means always being balanced about said rotational base bearing, and

manually engageable means for rotating said base, said carrier and said filter means on said bearings with said apertured portions of said base and said filter means passing through said axis to provide a predetermined integrated effective filtered light output from said light source.

3,982,826
CINE CAMERA

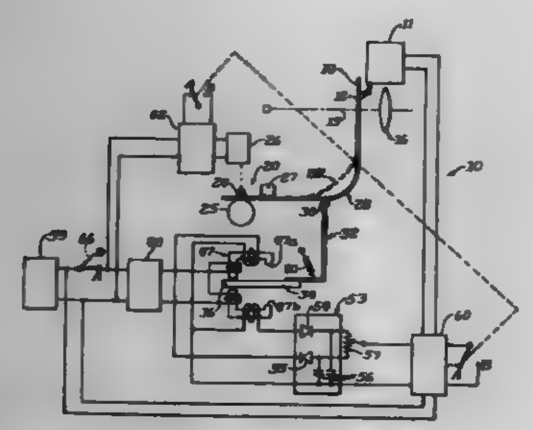
Fumio Saito, Kawaguchi, Japan, assignor to Nihon Beru-Haueru Kabushiki Kaisha (Bell & Howell Japan, Ltd.), Higashimurayama, Japan

Filed Dec. 16, 1974, Ser. No. 533,373

Claims priority, application Japan, Dec. 17, 1973, 48-142184

Int. Cl.² G03B *31/00*

U.S. Cl. 352—14 **3 Claims**



1. A motion picture camera for exposing silent film and sound film having a track on which sound can be recorded, the silent film and the sound film being enclosed in distinguishable cassettes, the camera having an intermittent film transporting device for moving film through a sound station, the camera including means for controlling the rate of film transport to maintain a standard speed for film being transported through said camera comprising:

a power source for energizing said transporting devices;

a differential transformer connected in circuit with said power source to provide an output voltage;

film loop sensor means arranged between said transport devices to detect the size of a film loop therebetween, and including actuator means movable relative to said differential transformer to vary same responsive to the film loop size so as to vary the output voltage from said transformer;

a rectifier circuit connected to said differential transformer for rectifying the output voltage from said differential transformer as said voltage varies from zero when said actuator means is displaced from a position corresponding to an orientation with the film loop being a standard sized loop, said actuator means being displaceable from said position by variations in loop size thereby causing the output voltage of said rectifier circuit through said differential transformer to be modified proportionally;

a control circuit connected to said intermittent film transporting device for varying said device responsive to variations in said rectified output voltage from said rectifier whereby the rate of operation of said intermittent film transporting device is modified to feed film at a rate to re-establish said film loop at said standard size, said differential transformer increasing the rate of operation of said intermittent film transporting device when said sensor detects a decreasing film loop size, and decreasing the rate of operation of said device when an increasing film loop size is detected;

a high frequency oscillator connected in circuit between said power supply and said differential transformer providing an input voltage for exciting said differential transformer; and

switch means actuated by said respective cassettes when said cassette is in said camera, said switch means deactivating electrically said high frequency oscillator and said constant film transporting device when the film cassette in the camera is detected as containing silent film.

3,982,827
OPTHALMIC INSTRUMENT

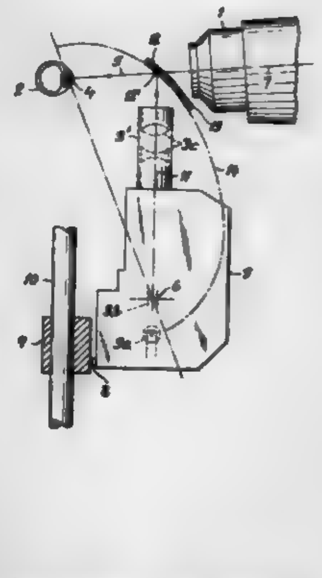
Paul Frédéric Marie Gambs, Chemin du Petit Bois, Ecully (Rhone), France

Filed Mar. 18, 1975, Ser. No. 559,419

Claims priority, application France, Mar. 20, 1974, 74.10418

Int. Cl.² A61B *3/10;* G02B *5/08*

U.S. Cl. 351—14 **6 Claims**



1. An ophthalmic instrument comprising:

a biomicroscope having an optical axis trainable upon a selected zone of a patient's eye;

a light source forming a narrow beam for illuminating said zone, said source being swingable about a pivotal axis skew to said optical axis; and

a plurality of flat mirror sections closely juxtaposed with one another and including different angles with said optical axis in a swing plane transverse to said pivotal axis for reflecting said beam from different directions upon a predetermined observation point in line with said optical axis, each of said sections being tangent to an ellipse in said swing plane having a first focus on said pivotal axis and a second focus coinciding with said observation point.

3,982,828
EYE TESTING APPARATUS

Bernard Nathan Woolf, Muizenberg, South Africa, assignor to South African Inventions Development Corporation, Pretoria, South Africa

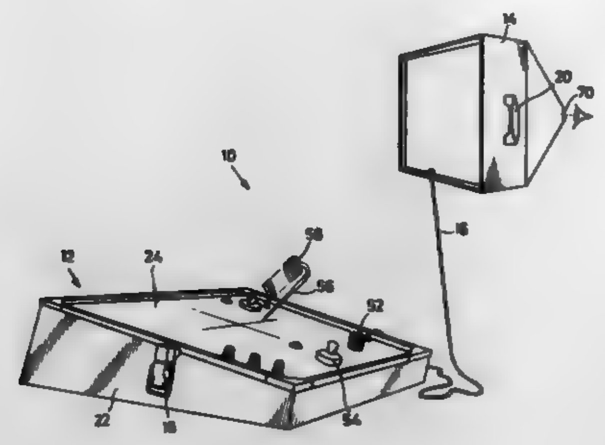
Filed Aug. 7, 1975, Ser. No. 602,675

Claims priority, application South Africa, Aug. 8, 1974, 74/5063

Int. Cl.² A61B *3/02*

U.S. Cl. 351—23 **12 Claims**

1. An eye testing apparatus including a control unit having a control display panel having a number of distributed electrical lights adapted to be illuminated; an electrical connection means for connecting the control unit to a source of electrical energy; a remote scanner unit adapted to be electrically connected to the control unit, and including a scanner display panel provided with electrical lights, positioned corresponding to the lights on the control display panel, and which are adapted to be illuminated corresponding to the illumination of the lights on the control display panel, the scanner display panel also having a fixing light; and operation means for causing any one or more lights on the control display panel and the corresponding light or lights on the scanner display panel to be illuminated for observation by a person viewing the scanner display panel.



3,982,829
EXPOSURE MEANS FOR PHOTOCOPYING APPARATUS

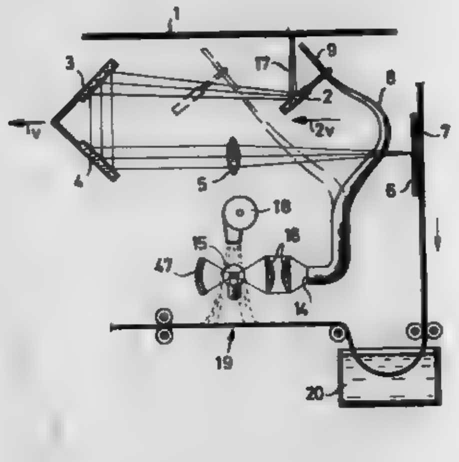
Heimo Hirth, Frankfurt am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 18, 1974, Ser. No. 524,894

Claims priority, application Germany, Nov. 19, 1973, 2357721

Int. Cl.² G03B *27/00*

U.S. Cl. 355—1 **10 Claims**



1. In a photocopying apparatus including means for progressively optically scanning an object in a strip-like manner in synchronism with the travel of a light-sensitive medium and for projecting on said medium an image of the scanned portion of said object; the improvement which comprises exposure means for illuminating the scanned strip portion of said object, comprising

a. at least one flexible bundle of light conducting rods the light outlet ends of which terminate adjacent the object in at least one narrow zone which extends normal to the direction of scanning of said scanned object, the length of said zone corresponding with the width of the object, the light inlet ends of said rods being combined in the form of a bundle having a circular cross-sectional configuration terminating in an inlet end surface; and

b. means including a light source for illuminating the light input ends of said rods, said light source being adjacent said bundle inlet end surface and the illuminating surface of said light source corresponding with said bundle cross-section, whereby uniform illumination of said object is achieved.

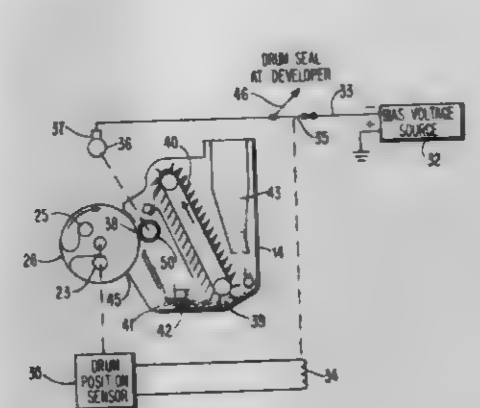
3,982,830
MAGNETIC BEAD CARRYOUT REDUCTION BY ALTERING THE DEVELOPER'S BIAS VOLTAGE

Raymond A. Daniels, and Arthur H. Knight, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1974, Ser. No. 530,468

Int. Cl.² G03G *15/09*

U.S. Cl. 355—3 DD **10 Claims**



1. An electrophotographic machine, comprising:

a rotatable drum having at least one axial slot in the surface thereof,

an incrementing photoconductor contained within said drum, having a portion thereof emanating from a drum slot to encircle a portion of said drum, and returning to the interior of said drum through a drum slot,

means operable during drum rotation to charge said photoconductor portion to one polarity,

illumination means thereafter operable during drum rotation to selectively discharge said photoconductor portion to provide a latent electrostatic image thereon, and

an electrophotographic development unit, including:

a developer mix comprising carrier charged to said one polarity and toner charged to an opposite polarity,

development electrode means,

bias voltage applying means for applying a voltage of said one polarity to said development electrode means to create a development electrode effect between said development electrode and said photoconductor portion; and

switching means responsive to the drum position operable to change the voltage on said development electrode to reduce the force with which said carrier is presented to a drum slot as it passes said development electrode.

3,982,831
ELECTROSTATOGRAPHIC REPRODUCTION APPARATUS AND DRIVE THEREFOR

William Kingsley, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 30, 1975, Ser. No. 592,004

Int. Cl.² G03G *15/04*

U.S. Cl. 355—5 **24 Claims**

14. Automatic electrostatographic reproduction apparatus of the kind in which, during operation, a photoconductive member is moved past a series of processing stations and during imaging a carrier for the image sought to be reproduced is moved in synchronism with the member, the improvement comprising a scanning drive for the image carrier comprising

a carriage for the image carrier supported for reciprocating movement,

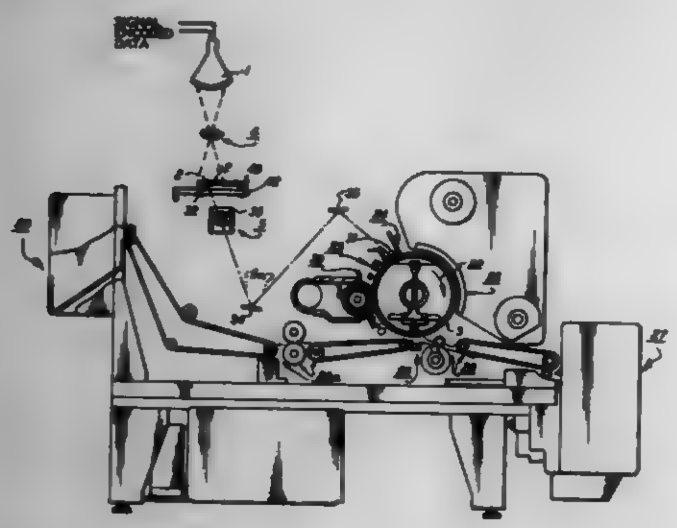
cam means,

means for moving said cam synchronously with said photoconductive member,

a cam follower drivingly connected to said carriage for controlling movement thereof in response to movement of the cam means, whereby movement of the carriage in at least one direction is synchronized with the movement of the photoconductive member,

first biasing means urging said cam follower against said cam means,

second biasing means of lesser strength than said first biasing means urging said cam follower out of engagement with said cam means,



and means for deactivating said first biasing means to permit said second biasing means to disengage said cam follower from the cam means whereby the carriage may be rendered stationary without interrupting the movement of the photoconductive member.

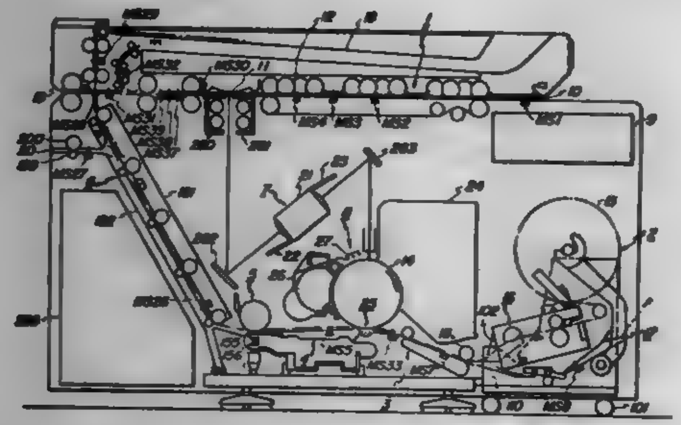
3,982,832
ELECTROSTATOGRAPHIC COPYING MACHINES
Dennis M. Bendall, Coleford, and Peter M. Thorp, Lydbrook, both of England, assignors to Rank Xerox Ltd., London, England

Continuation of Ser. No. 371,455, June 19, 1973, abandoned. This application Nov. 7, 1974, Ser. No. 521,701

Claims priority, application United Kingdom, June 23, 1972, 29648/72

Int. Cl.² G03G *15/30*

U.S. Cl. 355—8 **2 Claims**



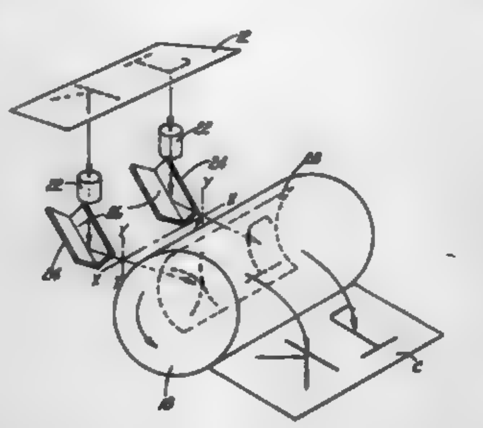
2. In a electrostatographic copying machine comprising means for continuously advancing a reusable photoconductive member past processing stations including corotron means for charging the surface thereof, means for feeding a document in a forward direction over an exposure slit in order to produce a first copy of said document, means for reversing and refeeding the document over the exposure slit in order to produce second and subsequent copies of the document, means for projecting an image of the document at the slit onto the surface of the continuously moving reusable photoconductive member which is adapted to be driven at a speed related to the speed of said document as it is fed over the exposure slit to enable a latent electrostatic image to be formed thereon during forward feeding of the document, means for developing and transferring the developed image to copy sheet, and means for cleaning the residual photoconductive surface the improvement comprising means for switching off said charging means during reversal of said document over the exposure slit and projection of a backwards image thereof to prevent development of the image and avoid cleaning of the reusable photoconductive surface and means for switching on said charging means during the refeeding of the document in the forward direction to produce multiple copies thereof.

3,982,833
COMPRESSED OPTICAL SYSTEM
James A. Kolibas, Broadview Heights, Ohio, assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Aug. 15, 1975, Ser. No. 605,030

Int. Cl.² G03G *15/00*

U.S. Cl. 355—11 **4 Claims**



1. In an electrostatic copier of the type having an illuminated object plane at which a moving document is scanned, and light reflected from the object plane is transmitted to a moving photoconductive transfer surface to produce an image of the document thereon and the transfer surface then transfers the image to a copy sheet, the improvement comprising a plurality of lenses of short focal length for receiving reflected light from respective portions of the object plane in parallel and for transmitting the reflected light along parallel light paths, a roof mirror associated with each of said lenses for altering the direction of the light path from the respective lens and for transmitting the reflected light to the photoconductive transfer surface in an integrated wrong reading orientation as cast upon the transfer surface.

3,982,834
DEVICE FOR ATOMIZATION OF A SAMPLE
Rolf Günther Arnold Tamm, Salem, Germany, assignor to Bodenseewerk Perkin-Elmer & Co. GmbH, Uberlingen, Germany

Continuation of Ser. No. 561,285, March 24, 1975, abandoned. This application Aug. 28, 1975, Ser. No. 608,514

Claims priority, application Germany, Mar. 22, 1974, 2413781

Int. Cl.² G01J *3/30*; G01N *21/16*

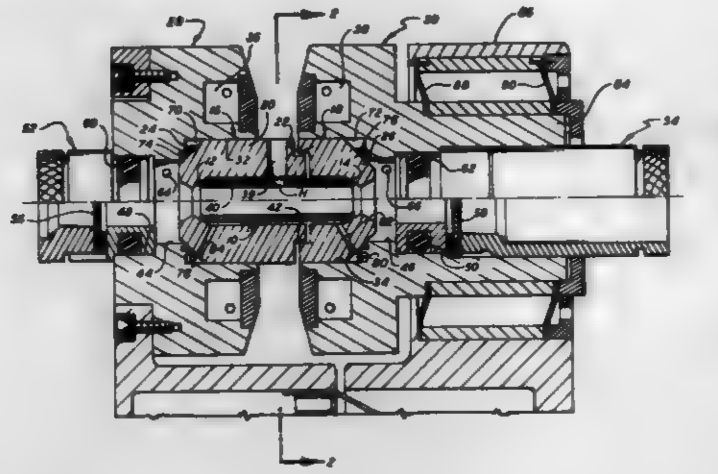
U.S. Cl. 356—85 **6 Claims**

1. A device for flameless atomization of a sample for atomic absorption analysis, comprising:

a. a hollow body of electrically conductive material defining a sample chamber having a radiation-transmissive passage therethrough;

b. electrode means in electrical contact with said body at spaced locations for passing an electrical current through the body to cause heating thereof, at least a portion of said electrode means having an external surface the cross-section of which is of constant configuration and dimension; and

c. cooling jacket means for said electrode means including an internal surface having a cross-section complementary to the cross-section of the external surface of said electrode means, the cross-sectional dimension of said internal surface being such, in relation to the dimension of the cross-section of the external surface of said electrode means, as to enable insertion of the electrode means into said cooling jacket means at room temperature and to cause an increase in contact pressure between the internal surface of said cooling jacket means and external surface of said electrode means due to differing thermal expansion of the electrode and cooling jacket means during operation of the device.



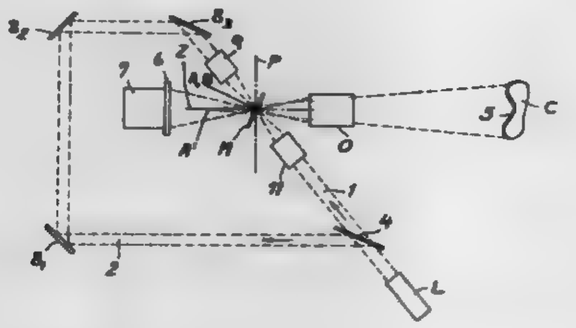
3,982,835
INTERFEROMETRIC SYSTEM
Otto Schwomma, Schwechat, Austria, assignor to Karl Vockenhuber and Raimund Hauser, both of Vienna, Austria

Filed Sept. 3, 1974, Ser. No. 502,750

Claims priority, application Austria, Sept. 4, 1973, 7655/73; Sept. 14, 1973, 7953/73; Sept. 4, 1973, 7656/73

Int. Cl.² G01B *9/02*

U.S. Cl. 356—106 R **13 Claims**



1. A holographic-interferometric system for analyzing changes in the condition of an object having a diffusely reflecting surface, comprising:

evaluating means provided with a receiving surface;

a source of coherent light forming an illuminating beam and a reference beam;

first optical means in the path of said illuminating beam defining a point of divergence between said source and said object;

reflecting means arranged at a first location substantially coinciding with said point of divergence for directing said illuminating beam onto said object, said reflecting means having a highly reflective region;

second optical means in the path of light rays reflected by said object for forming an image of said object on said receiving surface, said second optical means having an aperture stop with an opening and imaging said point of divergence and said highly reflective region at a second location substantially coinciding with the center of said opening, the image of said highly reflective region being smaller than said opening; and

third optical means in the path of said reference beam for directing said reference beam onto said receiving surface for forming a field of interference between said reflected rays and said reference beam;

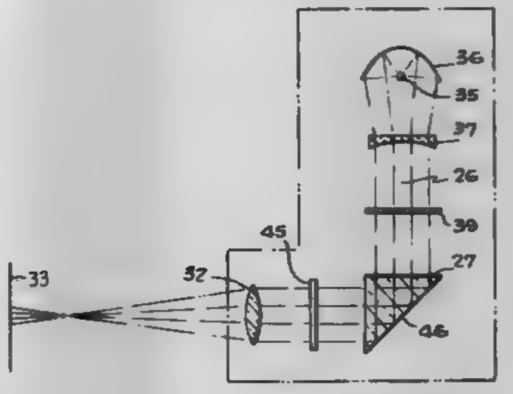
said evaluating means including means for storing and superposing holograms corresponding to different conditions of said object.

3,982,836
METHOD AND MEANS FOR ENHANCING PRINTS FOR DIRECT COMPARISON
Harold Green, Los Angeles, and Stephen J. Halasz, Claremont, both of Calif., assignors to Harold Green, Los Angeles, Calif.

Continuation-in-part of Ser. No. 468,425, May 9, 1974, Pat. No. 3,928,842. This application Dec. 30, 1974, Ser. No. 537,112

Int. Cl.² G01J *4/00*

U.S. Cl. 356—119 **12 Claims**



1. A method for enhancing fingerprints comprising the steps of:

impressing the features of a fingerprint in the surface of a transparent pressure sensitive gel;

passing a collimated beam of polarized light through said gel;

directing the portion of said light beam emitted by said gel through a polarized light filter; and

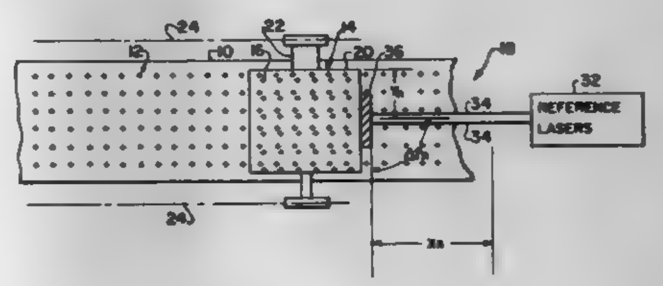
projecting the portion of said light beam emitted by said filter to produce an illuminated image of said fingerprint in an image plane.

3,982,837
METHOD AND APPARATUS FOR CALIBRATING RESEAU GRIDS
James B. Cummins, Silver Spring, Md., assignor to Controlled Environment Systems, Inc., Rockville, Md.

Filed Jan. 24, 1975, Ser. No. 543,957

Int. Cl.² G01B *11/14*

U.S. Cl. 356—168 **10 Claims**



1. A method for calibrating elongate large grids having a plurality of points in a repeating grid pattern wherein the points have errors in their location in the grid pattern, said method comprising the steps of:

superimposing on the large grid a smaller calibrated grid having the same grid pattern as the large grid wherein the points on the calibrated grid are precisely located, and the actual location of the points is accurately known, and orienting the calibrated grid pattern in the same orientation as the large grid pattern;

- comparing the location of the points on said superimposed calibrated grid with the location of the points on the large grid;
- translating said calibrated grid a known distance and superimposing said grid pattern of said calibrated grid on a different part of the grid pattern of the large grid;
- determining the exact amount of translation and rotation of said translated calibrated grid;
- comparing the location of said points on the superimposed calibrated grid in the translated position with the location of the points on the large grid for obtaining error displacement differentials of the points on the large grid; and
- repeating the translating, determining and comparing steps until all of the points on the large grid have been calibrated.

3,982,838
COMPACT FAST ANALYZER OF ROTARY CUVETTE TYPE

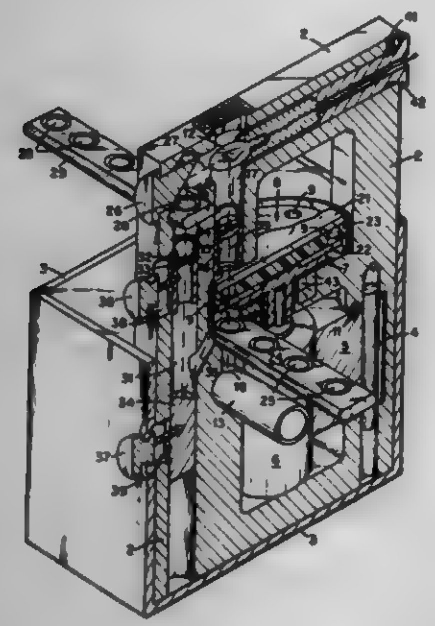
Louis H. Thacker, Knoxville, Tenn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Mar. 12, 1974, Ser. No. 450,521

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.^{2} G01N *21/24*

U.S. Cl. 356—201 **5 Claims**



1. A compact fast analyzer of the rotary cuvette type suitable for selectively making both absorbance and fluorescence analyses of a multiplicity of samples comprising:

a. an upstanding, rigid, rectangular frame defining first and second optical passageways;
b. a light source disposed within said frame in optical communication with said first and second optical passageways;
c. a photodetector disposed within said frame in optical communication with said first and second optical passageways;
d. a motor-driven rotor mount pivotally attached to said frame, said rotor mount being selectively movable to an operating position intermediate said light source and photodetector and in optical communication with said first and second optical passageways and to a rotor loading position displaced from said operating position;
e. a cuvette rotor defining a circular array of sample analysis cuvettes removably disposed on said rotor mount and rotatable therewith; and
f. means for selectively blocking light passage through said first and second optical passageways.

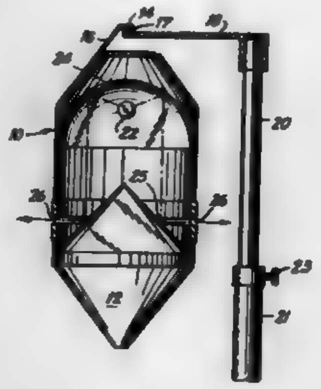
3,982,839
APPARATUS FOR POSITIONING AN ARTICLE ON A WALL

Morton Schwartz, 54 Shirley Lane, White Plains, N.Y. 10607

Filed Mar. 21, 1975, Ser. No. 560,725

Int. Cl.^{2} G01C *9/12, 9/16*

U.S. Cl. 356—250 **4 Claims**



1. An apparatus for projecting a directionally oriented light beam onto the walls of a room, said light beam providing a reference line for positioning an article on one of said walls, said apparatus comprising:

a. a vertically adjustable support member;
b. a weighted enclosure vertically suspended from said support member;
c. a light source mounted within said enclosure;
d. means defining a slit in the wall of said enclosure, said slit extending in a horizontal plane and extending substantially entirely around said enclosure; and
e. means for reflecting light from said light source outwardly through said slit whereby, when said enclosure is suspended from said support member and is positioned within a room and said light source is activated, a horizontal light beam is projected onto the walls of said room and may be utilized when positioning an article on a wall.

3,982,840
UNIVERSAL JOINT WITH ASSEMBLY FEATURE

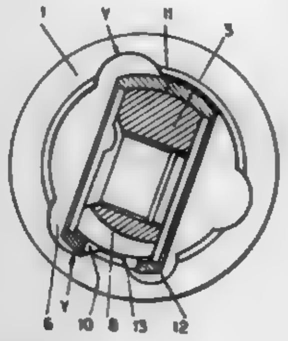
Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Berliet, Panhard, France

Filed Dec. 15, 1975, Ser. No. 640,779

Claims priority, application France, Dec. 19, 1974, 74.43210

Int. Cl.^{2} B25G *3/00;* **F16B** *1/00;* **F16D** *1/00;* **F16G** *11/00*

U.S. Cl. 403—14 **2 Claims**



1. In a universal joint,
- an external cup-like element,
- an internal element located within the external element,
- means defining three pairs of opposed grooves formed respectively, in the external and internal elements, said grooves being generally or toroidal form,
- a spheroidal guide cage having slots,
- three balls each located in a respective one of the slots and engaged in a respective one of the pairs of grooves, and
- means defining a further groove in the external element, said further groove being spaced from one of said opposed grooves to define therebetween a bearing surface, the width of which is less than that of one of said slots whereby the bearing surface can be introduced into a said slot by a sufficient distance to permit introduction of the cage into the external element.

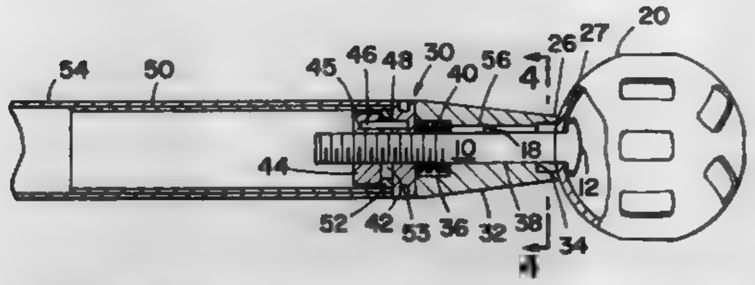
3,982,841
CONNECTING APPARATUS FOR FRAME MEMBERS

Abraham Endzweig, 2822 Clement St., San Francisco, Calif. 94121

Filed Dec. 8, 1975, Ser. No. 638,395

Int. Cl.^{2} F16B *17/18*

U.S. Cl. 403—19 **12 Claims**



1. An improved frame connector adapted to removably join an elongate frame section to a second member comprising:
- sleeve means adapted to be disengageably connected to an end of the frame section and having internally threaded means rotatably held captive therein;
- a collar having a through bore axially disposed therein;
- threaded bolt means in the through bore and threaded in the internally threaded means, said bolt means including an enlarged head member;
- said second member having an aperture adapted to removably receive the head member in engaging relation; and
- biasing means axially intermediate the collar and one end of the sleeve means for biasing the collar towards the head member to hold the head member in engaging relation with the aperture.

3,982,842
COUPLING SOCKET WITH RELEASABLE TOOL RETAINER

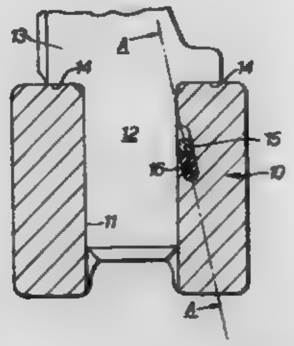
Dennis Denman, Sutton, England, assignor to Matthias Spencer & Sons Limited, Sheffield, England

Filed Nov. 27, 1974, Ser. No. 527,859

Claims priority, application United Kingdom, Nov. 27, 1973, 55058/73

Int. Cl.^{2} B25G *3/00;* **E21B** *19/16;* **F16D** *1/00*

U.S. Cl. 403—20 **6 Claims**



1. The combination of a male member and a female member wherein the female member has a bore within which the male member can be held and in which a wall of the bore of the female member is so formed that, when the male member is fitted in the bore, at least a portion of the wall of the bore of the female member is inclined at an acute angle relative to a cooperative surface of the male member, a rolling location element being located between said wall of the female member and said surface of the male member with resilient biasing means engaging the rolling location element and wedging it into an operative position in which, if any attempt is made to remove the male member from the bore of the female member, the wedging action obtained between the wall of the female member, the surface of the male member and the rolling location element will be increased to prevent removal of the male member from the bore of the female member, manually operable release means being provided for effecting displacement of the rolling location element against the action of the resilient biasing means to permit uncoupling of the male and female members, said rolling location element comprising a sphere and the manually operable release means comprising a pin movable within a passage which extends transversely of the bore of the female member, which pin is formed with a recessed portion to receive the rolling location element when said location element is in its operative position and the pin being movable to displace the recess thereof relative to the rolling location element and hence move the location element out of its operative position.

3,982,843
PISTON-SLEEVE COUPLING ARRANGEMENTS FOR A RADIAL PISTON PUMP

Thomas Sirek, Metzingen, Germany, assignor to Firma Wepuko-Hydraulik GmbH, Metzingen, Germany

Filed Feb. 20, 1975, Ser. No. 551,155

Int. Cl.^{2} F16B *7/10;* **F16C** *11/00;* **F16D** *1/12;* **F16J** *1/14*

U.S. Cl. 403—53 **4 Claims**

1. In a radial pump sub-assembly comprising an elongated, piston rod having a main rod portion fixedly coupled to a spherical end portion coaxial therewith and disposed rearwardly of a rear end of the main rod portion, the spherical piston being received within a fixed mating spherical recess of a piston having an integral sleeve member mounted for rotational movement and oscillation with respect to the spherical section, the improvement wherein (a) the spherical portion is smaller than a hemisphere and terminates forwardly in a front boundary surface whose diameter is larger than the diameter of the main portion of the piston rod, and wherein (b) the sleeve member includes a peripheral region surrounding and extending forwardly of the spherical recess and having a pair of preformed, diametrically opposed portions projecting inwardly from the remainder of the peripheral region to define a plane of oscillation of the sleeve member with respect to the spherical end portion, the inwardly projecting portions confronting and forwardly overlapping the front boundary surface of the spherical portion to removably capture the spherical section.

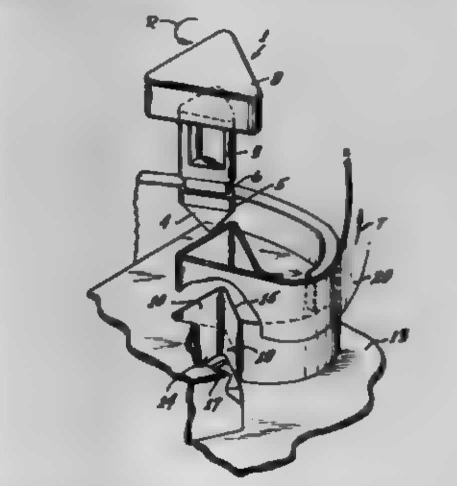
3,982,844
TAPE FASTENING SYSTEM

Nicholas De Anda, Redondo Beach, and Robert Ford Dyer, Rancho Palos Verdes, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 3, 1976, Ser. No. 655,022

Int. Cl.^{2} F16B *11/00;* **B65H** *75/28*

U.S. Cl. 403—211 **6 Claims**



1. Apparatus for attaching flexible tape to a part comprising:

a trilaterally symmetric retainer having an axis of symmetry and having disposed from one end of said axis to the other:
  a first portion defining a tapered lead;
  a second portion of constant cross-section;
  a third portion of constant cross-section having a smaller cross-section than that of said second portion;
  a fourth portion of constant cross-section having essentially the same cross-section as said second portion; and
  a fifth portion defining a head having a cross-section larger than said first portion;
a flexible tape; and
an aperture for receiving said retainer defined on said part and having an upper plane and an opening having a first portion of substantially constant cross-section extending downward from said upper plane with a cutaway portion extending downward from said plane along a relatively small portion of the circumference of said opening for the introduction of said tape.

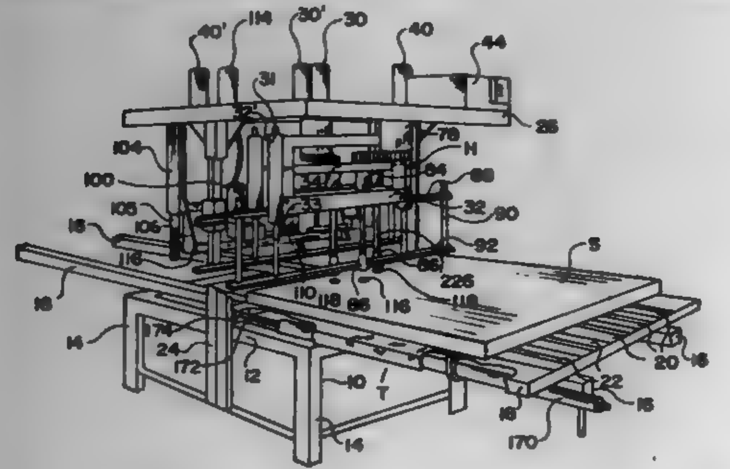
3,982,845
APPARATUS FOR PREPARING FURNITURE BACKS AND CUSHIONS FOR TUFTING

Benjamin F. Dockery, P.O. Box 452, High Point, N.C. 27261, and Jack H. Mason, 1822 Pershing St., High Point, N.C. 27260

Division of Ser. No. 259,196, June 2, 1972, Pat. No. 3,832,083. This application June 28, 1974, Ser. No. 484,074

Int. Cl.^{2} B23B *35/00*

U.S. Cl. 408—1 R 4 Claims



1. A method for automatically forming holes entirely through and slots partially through the thickness of foam rubber slabs for subsequent use in upholstered cushions for furniture seats and backs according to a prescribed pattern, comprising the steps of:
  a. positioning a slab to be formed on a horizontally reciprocal table;
  b. indexing said table past a vertically reciprocal operating head;
  c. moving selected rotary cutting tools and side slot sawing tools into operative engagement with said slab at the end of selected indexing strokes according to a prescribed sequence;
  d. repeating step (c) until the pattern is formed; and
  e. returning said table to its initial position.

3,982,846
TOOL DEVICE

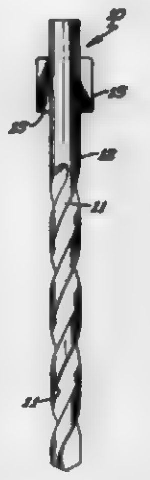
Ralph L. Steinbach, 2347 Gaston Ave., White Bear Lake, Minn. 55110

Continuation of Ser. No. 421,922, Dec. 5, 1973, abandoned. This application Jan. 31, 1975, Ser. No. 545,981

Int. Cl.^{2} B23B *51/02*

U.S. Cl. 408—226 2 Claims

1. A tool device comprising a rotary chuck, said chuck having three similar pointed clamping jaws symmetrically disposed about the longitudinal axis of said chuck and clamping means for moving said jaws together towards said longitudinal axis, the walls of each jaw being disposed at an angle of 120° with respect to each other so that when said jaws are brought together they collectively form a solid cylinder, and a torsion tool secured in said chuck and having a tool portion at one end and a cylindrical shank portion at its other end, said cylindrical shank portion being disposed in said chuck coaxially therewith between said jaws and clamped thereby, said shank portion having a basically uniform circular cylindrical cross-section and two flanges projecting outwardly therefrom opposite to each other, the effective width of the flanges between the cylindrical shank and the portions of the flange engaged by the adjacent jaw being



$$(\sqrt{3}-1)R \approx \sqrt{\frac{3}{2}}\, t$$

where R is the radius of the cylindrical portion of the shank and t is the thickness of the flange at the jaw engaging portion most widely spaced from the shank so that upon normal hand tightening of said clamping means two of the jaws firmly engage the two flanges while all three jaws tend to engage the cylindrical shank portion.

3,982,847
APPARATUS FOR LOCKING GUIDE VANES OF WATER WHEEL TURBINES OR PUMPS

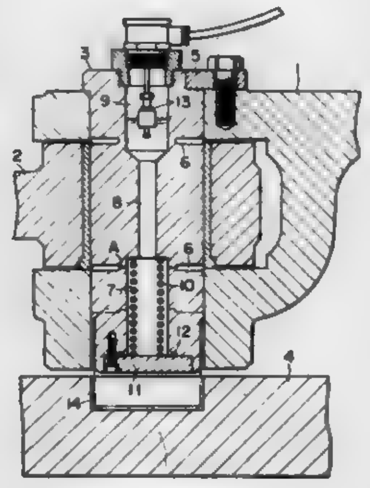
Yozo Kawase, Machida, and Yoshiyasu Mitsuhashi, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha (also known as Tokyo Shibaura Elec. Co., Ltd.), Japan

Filed Mar. 4, 1975, Ser. No. 555,096

Claims priority, application Japan, Mar. 8, 1974, 49-26252

Int. Cl.^{2} F01B *25/26*

U.S. Cl. 415—9 9 Claims



1. Apparatus for locking a guide vane to a cover of a hydraulic turbine or pump, comprising:

a guide vane;
a guide vane arm coupled to said guide vane for controlling movement of said vane;
linkage means coupled to a guide ring;
a fracturable member coupling said guide vane arm to said linkage means; and
a hydraulic turbine or pump cover having at least one recess in vertical alignment with said fracturable member for receiving a portion of said fracturable member upon fracture thereof to lock said guide vane arm to said cover to thereby prevent relative movement between said arm and said cover.

3,982,848
SIDE CHANNEL RING COMPRESSOR INCLUDING A CHANNEL BREAK DECOMPRESSION NOZZLE

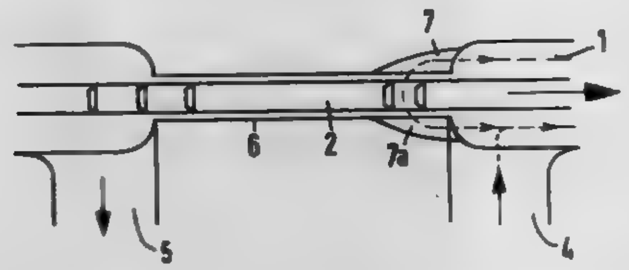
Siegfried Schonwald, Bad Neustadt, and Peter Obert, Ulm, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 25, 1975, Ser. No. 552,938

Claims priority, application Germany, Feb. 26, 1974, 2409183

Int. Cl.^{2} F04D *5/00*

U.S. Cl. 415—53 T 3 Claims



1. In a side-channel ring compressor including an impeller having radially outwardly extending blades, compressor medium inlet and outlet openings communicative with the side channel of said compressor, and a channel break disposed between said inlet and outlet openings, the improvement comprising at least one pocket-like decompression nozzle disposed in said side channel break between said compressor medium inlet and outlet openings and opening directly into said side channel on one of the sides thereof near said compressor medium inlet opening for exhausting compressed compressor medium from between said impeller blades in said channel break and directing said exhausted medium into said side channel adjacent said impeller.

3,982,849
LOW PRESSURE STEAM TURBINE CONSTRUCTION

Felix Bernasconi, Zollikerberg, Switzerland; Heinz Brünner, Walshut, Germany, and Pierre Meylan, Neuenhof, Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

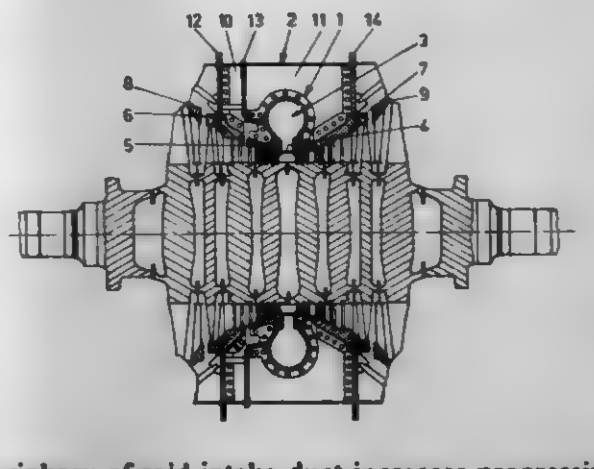
Filed Apr. 23, 1975, Ser. No. 570,629

Claims priority, application Switzerland, Dec. 16, 1974, 16791/74

Int. Cl.^{2} F01D *3/02*

U.S. Cl. 415—101 4 Claims

1. A low pressure multi-stage axial flow steam turbine comprising an outer housing, an inner housing structure constituting a carrier for the rows of guide blading of the turbine stages, a rotor having rows of blading for receiving steam from the rows of guide blading, an inflow housing comprising at least two separable parts which form the boundaries of a crescent-shaped intake duct surrounding and admitting steam to the first stage guide blading and which flows through the duct in the same direction as the direction of rotor rotation, the cross sectional profile of said crescent-shaped intake duct being constituted by a radially inner portion of rectangular configuration opening in the direction of the first stage guide blading and which merges into a second portion having a circular configuration which progressively decreases in diameter in the direction of steam flow therethrough such that the tangential components of the steam velocity conform to a first predetermined function and wherein the value of the curvature at the inner periphery of said intake duct increases progressively in the direction of the steam flow therethrough such that the radial components of the steam velocity conform to a second predetermined function.



3,982,850
MATCHING DIFFERENTIAL THERMAL EXPANSIONS OF COMPONENTS IN HEAT ENGINES

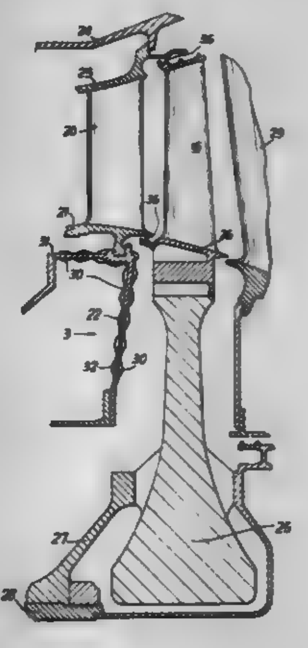
John Jenkinson, Bristol, England, assignor to Rolls-Royce (1971) Limited, Great Britain

Filed June 16, 1975, Ser. No. 587,168

Claims priority, application United Kingdom, June 29, 1974, 28997/74

Int. Cl.^{2} F01D *5/00*

U.S. Cl. 415—178 7 Claims

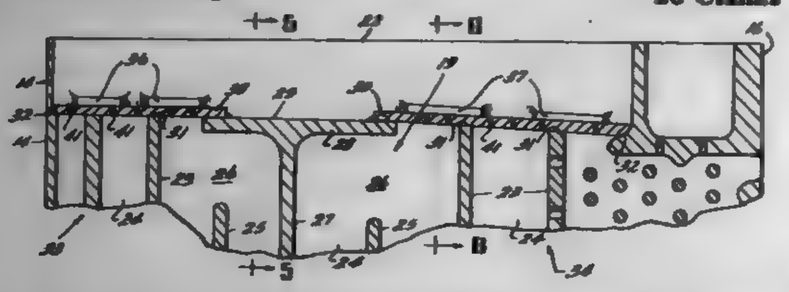


1. A heat engine having two components of differing thermal masses disposed in the same environment and which expand at different rates, wherein there is provided insulation over an area of at least one surface of the component of lower thermal mass, the size of said area being such in relation to the thermal conductivity of the insulation, the temperature in the environment, and the rate of thermal expansion of the other component, as to allow only sufficient heat conduction between the insulation and said component as is necessary to reduce the rate of thermal expansion and contraction of said component to substantially match that of the other component, the insulation being in the form of a sheet spaced from said component of lower thermal mass but connected to it at its edges to define an enclosed space and being further connected to said component at a plurality of discrete areas dis-

tributed over said insulated area, the number and sizes of the discrete areas being such as to define the required heat conducting paths between the insulation and the component.

3,982,851
TIP CAP APPARATUS

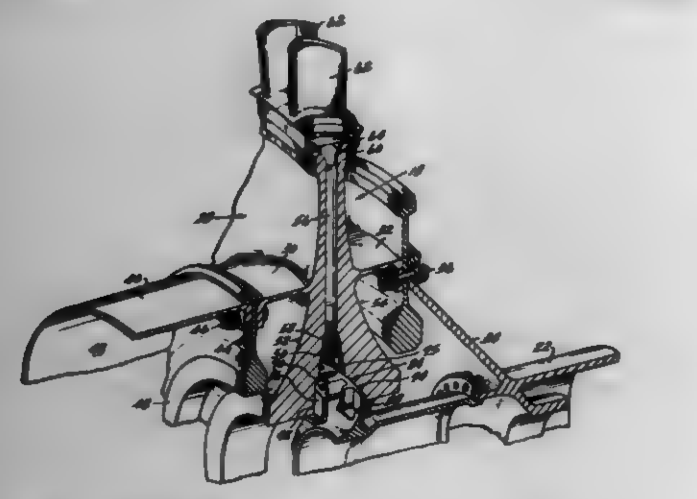
Richard H. Andersen; William A. Litzinger, and Robert J. Corsmeier, all of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio
Filed Sept. 2, 1975, Ser. No. 609,346
Int. Cl.² F01D *5/18*
U.S. Cl. 416—92 **26 Claims**



1. An improved turbomachine blade structure of the type having convex and concave side walls defining a cavity with a radially outer open end and a tip cap which forms the closure for the open end, the cavity having both platform means and retaining means for preventing the cap movement in the radially inward and outward directions, respectively, wherein the improvement comprises:
- a. closure means disposed in the cavity at a location radially inward from said retaining means to close a portion of the open end; and
- b. a tip cap disposed in the cavity for closing another portion of the open end, the size and shape of said tip cap being such as to allow its insertion between the platform and retaining means by initially placing a portion thereof contiguous with the outer surface of said closure means and then sliding it into the desired position.

3,982,852
BORE VANE ASSEMBLY FOR USE WITH TURBINE DISCS HAVING BORE ENTRY COOLING

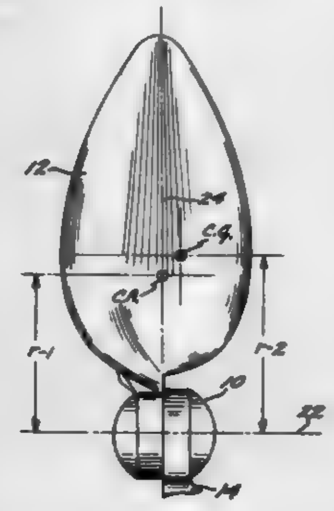
Richard H. Andersen; Carl R. Dins, both of Cincinnati, and Frederick C. Herzner, Fairfield, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio
Filed Nov. 29, 1974, Ser. No. 528,023
Int. Cl.² F01D *5/18*
U.S. Cl. 416—95 **2 Claims**



1. A rotor comprising:
- two generally parallel annular discs for rotation about a common axis, the inner peripheries of said discs being substantially thicker than the outer peripheries thereof and axially displaced relative to each other;
- a plurality of aerodynamically contoured ribs connected between said discs for pumping a cooling fluid radially outwardly, said ribs extending from a point intermediate the inner and outer peripheries, and each rib terminating in a bulbous tenon, adjacent pairs of which each cooperate to retain the root portion of a turbomachinery blade therebetween; and
- nonintegral, aerodynamically contoured bore vanes inserted between said discs, each vane having its longitudinal axis generally parallel to the disc rotational axis and its chord extending from the disc inner periphery to a location radially inwardly of said ribs thereby partially defining a cavity between said vanes and said ribs, said vanes further contoured to receive the cooling air from the generally radial direction and turn the cooling fluid tangentially into the cavity in substantial alignment with said ribs; the number of bore vanes being less than the number of ribs and sized to provide axial columnar structural support between said discs to substantially reduce compressive stresses in said ribs due to centrifugal forces tending to rotate the thick disc inner peripheries toward each other.

3,982,853
FOLDING BOAT PROPELLER

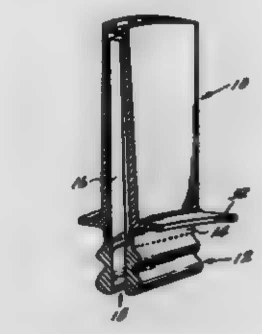
David Walter Beck, 2257 Gaylord, Long Beach, Calif. 90813
Filed July 23, 1975, Ser. No. 598,370
Int. Cl.² B63H *1/24*
U.S. Cl. 416—142 **6 Claims**



1. A reversible folding boat propeller assembly having enhanced capability to open with reverse thrust when the boat is still moving forward through the water, comprising:
- a hub that is rotated about a rotational axis in one direction to drive a boat in a forward direction and in a reverse direction to drive a boat in a backward direction, said hub being formed with a blade recess;
- a pair of blades;
- a pivot pin pivotally connecting the radially inner ends of said blades to said hub within said recess for movement about a pivot axis that intersects and is normal to said rotational axis;
- each of said blades pivoting about said pivot axis and automatically moving outwardly and forwardly from a closed folded-together position to an open, driving position when said hub is power-rotated in one direction to drive the boat forward, and said blades automatically moving inwardly and rearwardly to said closed position solely under the influence of water pressure when rotation of said hub is stopped and a boat to which said hub is mounted is moving forward through the water, and when said hub is power-rotated in a reverse direction to either stop a boat's forward movement or to back a boat, each of said blades will readily pivot about said pivot axis and automatically move outwardly and forwardly from a closed folded-together position to an open, driving-position;
- each of said blades being so configured and weighted that they offer a minimum drag through the water when in the closed position, but will readily move to an open position, even when a boat is still moving forward through the water with the water pressure biasing said blades to a closed position, when said hub is power-rotated in a reverse direction because the centrifugal force opening said blade is greater than the hydrodynamic force closing said blades as the center of hydrodynamic force of each blade is positioned radially inwardly of the center of gravity of said blades and closer to the pivot axis than to the outward end of said blades, and with each of said blades having its outer ends narrowed over a significant distance, its outer end thinned and its maximum chord a substantial distance in from the outer ends.

3,982,854
FRICTION WELDED METALLIC TURBOMACHINERY BLADE ELEMENT

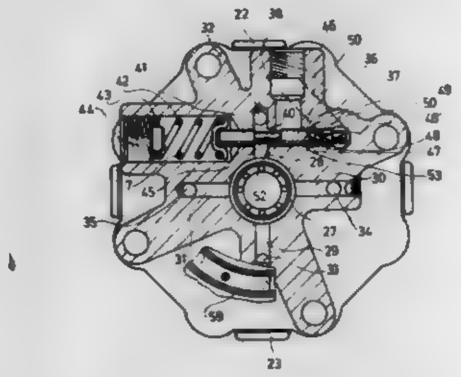
Thomas F. Berry, Greenhills; Ronald G. Rajala, Loveland, both of Ohio, and Harold L. Mullins, Hebron, Ky., assignors to General Electric Company, Cincinnati, Ohio
Division of Ser. No. 209,596, Dec. 20, 1971, Pat. No. 3,768,147. This application June 18, 1973, Ser. No. 370,702
Int. Cl. F01d *5/28*
U.S. Cl. 416—213 R **6 Claims**



1. A metallic fluid directing element for turbomachinery apparatus comprising:
- an airfoil having a cast alloy structure; and
- a base having a wrought alloy structure;
- the airfoil and base being joined at a friction welded joint characterized by a solid state, forged structure with a narrow heat affected zone.

3,982,855
RADIAL PISTON PUMP

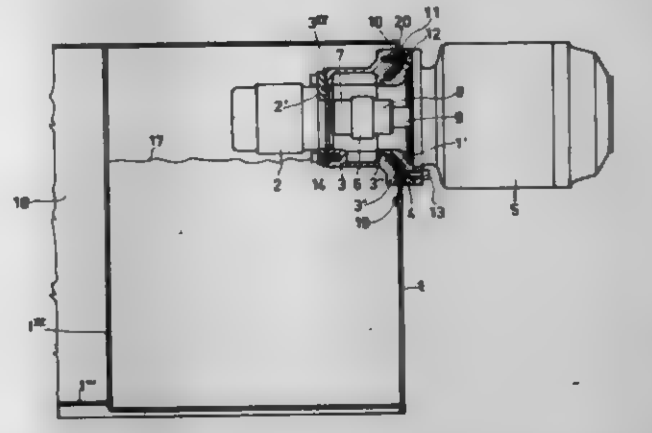
Ulrich Aldinger, deceased, late of Stuttgart, Germany; by Ruth Aldinger, heir, and by Karl Aldinger, heir, both of Stuttgart, Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed May 22, 1975, Ser. No. 579,818
Claims priority, application Germany, May 24, 1974, 2425022
Int. Cl.² F04B *1/04, 49/00*
U.S. Cl. 417—270 **12 Claims**



1. In a pump, particularly in a radial pump, a combination comprising a housing having one cylinder and at least one additional cylinder, a fluid-admitting first port, a first passage connecting said cylinder with said first port and a second port arranged to discharge pressurized fluid and communicatively connected with said cylinders, a piston movable in said one cylinder to thereby draw fluid from said first port via said first passage and to force pressurized fluid into said second port, said housing further having a third passage adapted to connect said first port with said additional cylinder by way of said first passage, said third passage including a distributor space adapted to surround a bearing means and also including a first bore connecting said additional cylinder with said distributor space, said first passage having a second bore for said valve means and a third bore connecting said second bore with said distributor space to supply to said space fluid from said first port in said first position of said valve means, and an additional piston movable in said additional cylinder to force pressurized fluid from said additional cylinder into said second port; means for moving said pistons, comprising a rotary drive member; bearing means for said drive member, said bearing means being disposed in said distributor space; and valve means movably installed in said first passage, said housing having a second passage connecting said second port with said first passage so that the pressurized fluid in said second port and said second passage can move said valve means from a first position in which said valve means permits fluid to flow from said first port into said cylinder and said first port communicates with said additional cylinder by way of said first passage, while the pressure of fluid in said second port is within a first range, to a second position in which said valve means seals said first port from said cylinder while the pressure of fluid in said second port is within a higher second range, and to a third position in which said valve means allows fluid to circulate from said second port to said first port while the pressure of fluid in said second port exceeds said second range.

3,982,856
BASE AND POWER UNIT FOR INJECTION MOLDING MACHINE

Karl Hehl, Siedlung 183, 7291 Lassburg, Wurttemberg, Germany
Continuation of Ser. No. 322,683, Jan. 11, 1973, abandoned. This application Apr. 14, 1975, Ser. No. 567,833
Claims priority, application Germany, Jan. 11, 1972, 2201078
Int. Cl.² F04B *17/00;* **F16F** *15/00*
U.S. Cl. 417—360 **12 Claims**



1. A device for elastically mounting a power unit in a machine base, the power unit being a hydraulic pump and a coaxially coupled electric motor, or a similar vibration-generating unit, and the machine base being, for example, the base of an injection molding machine, the device comprising in combination:
- a generally flat wall which forms a part of the machine base and extends substantially perpendicularly to the rotational center axis of the power unit, the wall having a center opening for the accommodation of the power unit in such a way that the power unit is positioned partially on one side of the wall and partially on the other side of the wall;
- a pair of cooperating mounting flanges defined by the power unit and arranged on opposite sides of the wall, the mounting flanges having oppositely facing planar clamp-

ing faces aligned in parallel with the wall and larger in size than said center opening, so as to define therewith bilateral areas of radial clamping overlap;

two resiliently compressible discs interposed between the clamping faces of said power unit mounting flanges and the wall in said areas of radial clamping overlap;

means for clamping said mounting flanges axially against one another, with the result of compressing the interposed resilient discs and creating a clamping engagement between the power unit flanges and the wall; and

matching centering formations defined by the mounting flanges, by the wall, and by the interposed resilient discs, respectively, within said areas of clamping overlap, the centering formations taking the form of recesses in the mounting flanges, in the wall, and in the resilient discs, in one axial direction and of matching protrusions in said members in the other axial direction, thereby radially centering the power unit in relation to the wall in a position which is independent of the exact location of the center opening and of any other opening in said wall.

3,982,857
SUPPORT MEANS FOR MOVABLE CONNECTOR IN CONCRETE PUMP ARRANGEMENT

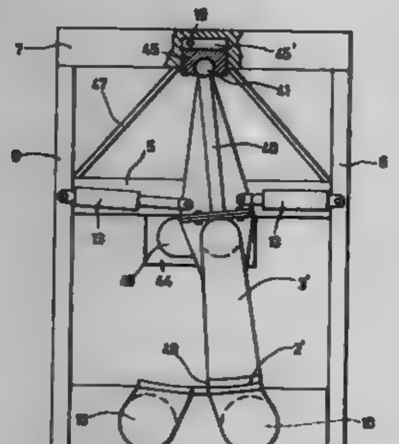
Karl Schlecht, Echterdinger Str. 91, D-7024 Bernhausen, Germany

Filed Oct. 15, 1974, Ser. No. 514,387

Claims priority, application Switzerland, Oct. 17, 1973, 14673/73

Int. Cl.² F04B *15/02*

U.S. Cl. 417—519 13 Claims



1. A slurry pump arrangement comprising, in combination:

a. a container bounding a cavity adapted to hold a fluid concrete mixture, said container having a bottom wall downwardly bounding said cavity and formed with two spaced openings;

b. two pump means including respective pump cylinders communicating with said openings respectively for pumping said mixture through said openings;

c. a tubular connector having two terminal orifices respectively adjacent said openings in said cavity and upwardly spaced from said openings in the operative condition of said arrangement;

d. a rigid support fixedly fastened to said container and including a frame having two upright column members and at least two transverse beam members connecting said column members and vertically spaced from each other, one of said beam members being vertically spaced from said cavity and from another beam member in an upward direction, said connector being movably supported by said one beam member;

e. a discharge conduit connected to said upwardly spaced orifice; and

f. operating means for shifting said connector on said one beam member between two positions in which said adjacent orifice substantially sealingly engages said bottom wall about said openings respectively and thereby connects one of said pump cylinders to said discharge conduit, while the other pump cylinder communicates with said cavity.

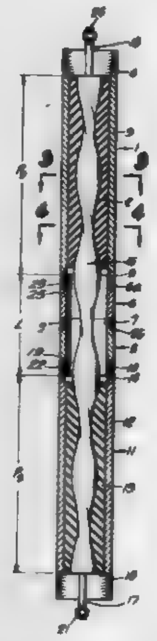
3,982,858
SEGMENTED STATOR FOR PROGRESSIVE CAVITY TRANSDUCER

John E. Tschirky, Long Beach, Calif., assignor to Smith International Corporation, Inc., Newport Beach, Calif.

Continuation-in-part of Ser. No. 415,754, Nov. 14, 1973, abandoned, and a continuation-in-part of Ser. No. 433,540, Jan. 15, 1974, Pat. No. 3,912,426. This application July 11, 1975, Ser. No. 595,053

Int. Cl.² F04C *1/06*

U.S. Cl. 418—48 6 Claims



1. A series stator array for a progressive cavity transducer comprising a plurality of stator segments having a uniform pitch P_s, one end of a first stator segment connected to an end of a second stator segment by a hollow tubular connection, one end of said tubular connection connected to the first stator segment and the other end of said tubular connection connected to an end of said second stator segment, the separation of the said ends being related to the angular displacement of the major axis of the stator openings of the adjacent stator segments by

$$a = \frac{L}{P_s} \times 360^\circ$$

where (a) is the angular displacement and L is the separation between the said ends and P_s is the pitch of the stator in the first and second stator segments.

3,982,859
FLOATING FLOW RESTRICTORS FOR FLUID MOTORS

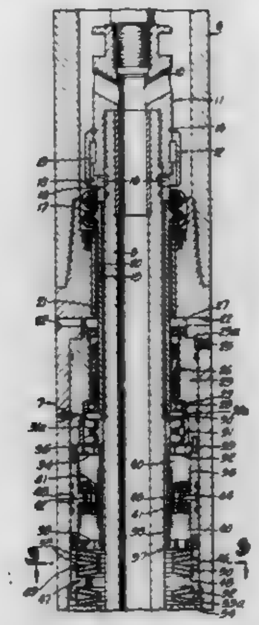
John E. Tschirky, Long Beach, and Bela A. Geczy, Glendale, both of Calif., assignors to Smith International Corporation, Inc., Newport Beach, Calif.

Filed July 11, 1975, Ser. No. 595,054

Int. Cl.² F01C *1/10, 21/00;* E21B *3/12, 17/00*

U.S. Cl. 418—48 7 Claims

1. A hydraulic motor including a stator in a housing and a rotor in said stator, a shaft connected to said rotor, a fluid inlet to said stator, and a fluid outlet from said stator, a thrust bearing mounted on said shaft and housing, a fluid passageway connected to the fluid outlet from said stator through the housing, a flow restrictor positioned in said passageway between the stator outlet and said thrust bearing, said flow restrictor comprising a first sleeve flexibly mounted at one end of said sleeve on said shaft and spaced radially from said shaft and forming an annular space between said shaft and said first sleeve, a radial bearing mounted at the other end of said first sleeve and between said first sleeve and said housing, a second sleeve mounted on said housing adjacent to but spaced radially from said first sleeve.



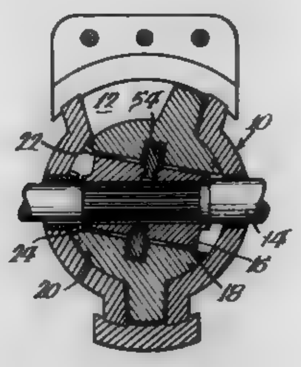
3,982,860
THRUST BEARINGS FOR SLANT AXIS ROTARY MECHANISMS

Paul J. Staebler, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 8, 1975, Ser. No. 638,779

Int. Cl.² F01C *1/02*

U.S. Cl. 418—53 6 Claims



1. In a slant axis rotary mechanism, the combination comprising:

a housing defining an operating chamber;

a shaft journalled in said housing and including an angularly offset portion within said chamber, said angularly offset portion including a generally radially extending shoulder;

a unitary rotor journalled on said angularly offset portion and within said chamber, said rotor including a central bore receiving said angularly offset portion, said bore including a radially inwardly opening groove;

a plurality of thrust collar segments in said groove and extending partially out of the same into embracing relation with said shoulder;

a positioning collar on said shaft sandwiching said segments against said shoulder, said positioning collar defining a continuation of said angularly offset portion and journalling said rotor; and

means holding said positioning collar against axial and rotational movement on said shaft.

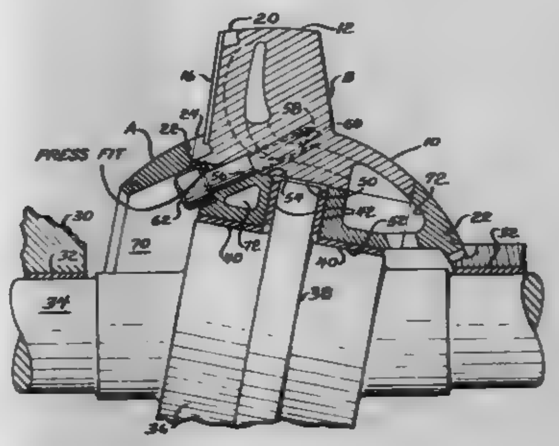
3,982,861
ROTOR CONSTRUCTION FOR SLANT AXIS ROTARY MECHANISMS

Myron R. Gibson, Edelstein, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 12, 1975, Ser. No. 640,083

Int. Cl.² F04C *17/02*

U.S. Cl. 418—53 4 Claims



1. In a slant axis rotary mechanism including a housing, a shaft journalled in the housing, an angularly offset portion on said shaft and including a peripheral thrust collar, and a two-piece rotor journalled on said angularly offset portion and sandwiching said thrust collar, said rotor having a spherical hub with a peripheral flange, the improvement wherein one of said rotor pieces includes a central cavity spaced from said angularly offset portion, and a plurality of angularly spaced bolts within said cavity and extending through said pieces to secure said pieces together.

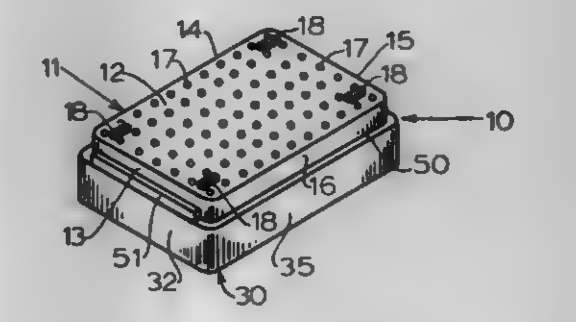
3,982,862
TWO-PART COMPOSITE DEVICE FOR HISTOLOGIC TISSUE PROCESSING AND EMBEDDING

John E. P. Pickett, 3323 Pinafore Drive; Thomas D. Kinney, 3120 Devon Road, and Gene M. Winders, 5332 N. Willowhaven Drive, all of Durham, N.C. 27705

Continuation-in-part of Ser. No. 564,595, April 3, 1975, abandoned. This application Jan. 22, 1976, Ser. No. 651,505

Int. Cl.² B29C *1/00, 1/14*

U.S. Cl. 425—117 12 Claims



1. A composite histologic tissue structure useful for holding and transporting a tissue specimen during the processing and embedding of such specimen, for holding the embedded tissue specimen in a selected plane during microtome cutting and for storing the remaining unsliced embedded specimen, comprising in combination:

a. a box-like top member having one end open and the opposite end closed by a central rectangular perforate wall and having interconnecting sidewalls extending from the edges of said perforated wall, said sidewalls having exterior surface means for being held between the opposing jaws of a microtome clamp during slicing of the embedded tissue specimen;

b. a box-like base pan member having one end open and the opposite end closed by a thin, substantially flat bottom wall and having interconnecting sidewalls extending from the edges of said base wall, said base pan sidewalls having inner dimensions smaller than the outer peripheral dimensions of said top sidewalls so as to allow the top and base pan to be joined in either a processing mode wherein the open end of said top member resides within said base pan or in an embedding mode wherein the closed end of said top resides within said base pan, said base pan having ledge means formed integrally with the inner surfaces of said base pan sidewalls for supporting the edge portions of said top sidewalls remote from said perforate wall in said processing mode and for supporting the marginal edge portions of said perforate wall in said embedding mode and for locating said top member at some predetermined and precise distance from said base pan bottom wall in both said processing and embedding modes, and the inner surfaces of said base pan sidewalls between said ledge means and said bottom wall interconnecting said bottom wall at an angle greater than 90°; and

c. cooperative means between said top and base pan for detachably securing said top to said base pan in said processing mode;

in said processing mode the composite structure providing an integral, perforate enclosure for holding and transporting the tissue specimen through the various processing fluids, and in said embedding mode the composite structure providing a mold in which said perforate wall serves to retain a hardened molded body containing the tissue specimen and formed within said base pan member.

3,982,863
QUENCHING OF POLYMERIC FILM

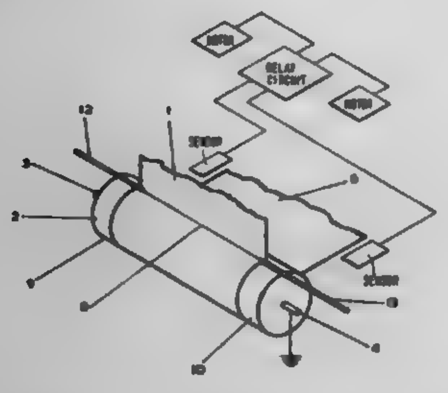
Raymond John Latham, Stoke-on-Trent, and Arthur John Holloway, Hertford, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 358,346, May 8, 1973, abandoned. This application Aug. 19, 1974, Ser. No. 498,852

Claims priority, application United Kingdom, May 12, 1972, 22341/72

Int. Cl.² B29D *7/22*

U.S. Cl. 425—135 **5 Claims**



1. In an apparatus for electrostatically pinning a molten polymeric film to an electrically earthed casting surface which comprises a pinning wire electrode extending transversely across the casting surface and connected to a high voltage electrical source, the pinning wire electrode being supported in spaced relation from the molten film for the deposition of electrostatic charges upon the film in the proximity of or prior to the region of first contact of the film and the casting surface, and being electrically insulated by dielectric insulators located beyond the film edges, the improvement wherein the dielectric insulators are movable along the wire electrode by an amount corresponding to any transverse fluctuations that may occur in the film edges by means which are activated by a sensor of the transverse fluctuations of the film edges whereby sparking between the wire electrode and the margins of the casting surface is impeded.

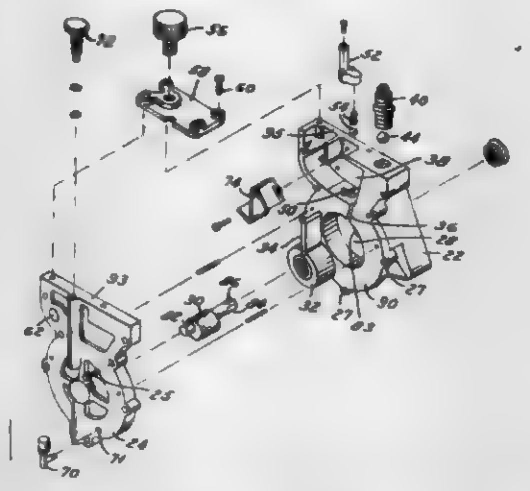
3,982,864
VACUUM PUMP

Robert L. Cain, Montpelier, Ohio, assignor to Robinair Manufacturing Corporation, Montpelier, Ohio

Filed Sept. 15, 1975, Ser. No. 613,361

Int. Cl.² F04C *27/00*

U.S. Cl. 418—149 **9 Claims**



1. The method of sealing the interface between a pair of members against atmospheric leakage in the presence of a vacuum, at least one of which members is aluminum, comprising: machining the faces to a flush and lapped or mated condition, hard anodizing the machined face of the aluminum member, coating the anodized face with a high vacuum grease, and clamping the faces tightly together.

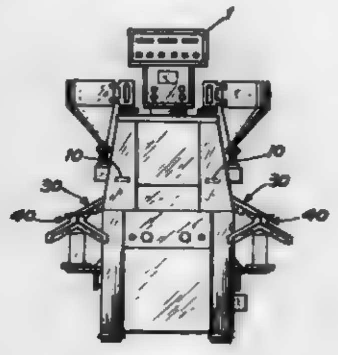
3,982,865
APPARATUS FOR HIGH-SPEED ACCURATE COUNTING AND HANDLING OF DISCRETE OBJECTS SUCH AS TABLETS

Jim Mills Adams, West Caldwell, and Edward Francis de Zabala, Pequannock, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 453,238, March 21, 1974. This application Sept. 15, 1975, Ser. No. 613,681

Int. Cl.² B30B *11/02, 15/22, 15/32*

U.S. Cl. 425—149 **6 Claims**



1. Improved tablet making apparatus, in which via at least two separate but identical operations a predetermined amount of powder substance is introduced into successive ones of a multiplicity of dies contained in a moving member and pressed into tablets, the tablets then being successively ejected from their respective dies at a pre-established station for subsequent collection into containers, there being a respective one of said stations corresponding to each said operation, the apparatus further having means for adjustably controlling the pressing force giving rise to the formation of a tablet from the predetermined amount of powder, wherein the improvement comprises:

a. sensing means including a strain detecting sensor arrangement, associated with each of the separate operations, in operative arrangement with the means for adjustably controlling the tablet pressing force and adapted to be prestressed by the adjustments of the latter, the arrangement of said strain detecting sensing arrangement in conjunction with the means for controlling the tablet pressing force being such as to enable a sensing of a relaxation of said prestressing which is derived from a proper formation of a tablet; and

b. control counter means responsive to said sensing means for providing a continuous count of the tablets sensed by each sensor arrangement.

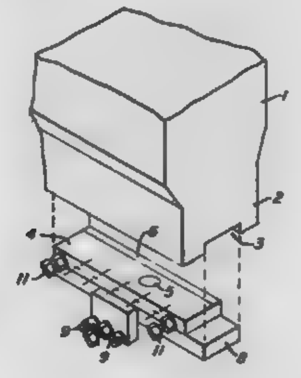
3,982,866
DEVICE FOR ALIGNMENT OF BRIQUETTE ROLLS

William L. Lauterbach, Upper St. Clair Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 442,293, Feb. 13, 1974, Pat. No. 3,909,079. This application Apr. 4, 1975, Ser. No. 565,317

Int. Cl.² F16C *25/00*

U.S. Cl. 425—168 **4 Claims**



1. An adjustable guide device for a roll-type briquetting machine comprising:

a. a substantially horizontal mounting plate having means for horizontal adjustment,

b. a guide block on said mounting plate, having a substantially horizontal surface and a guide edge for alignment substantially perpendicular to the axis of a mold roll,

c. a vertical pin having threads for engagement with and through said mounting plate and an unthreaded extension for passing through said guide block,

d. a gib substantially parallel to said guide block and situated substantially adjacent to the guide edge thereof, and

e. means for adjusting the position of said gib with respect to the guide edge of guide block.

3,982,867
CONSTRUCTION DECK ELEVATION GAUGE AND EASY-OUT BOLT ASSEMBLY

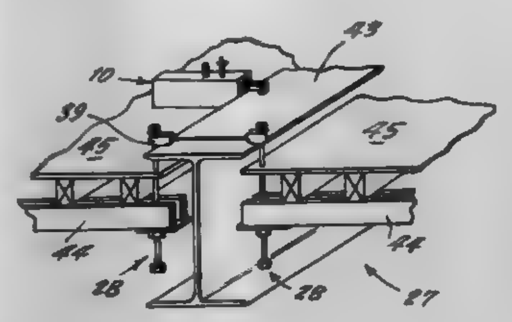
Vernon E. Pruett, Rte. No. 2, Box 1, Worthington, Ind. 47471

Division of Ser. No. 530,063, Dec. 6, 1974, which is a continuation-in-part of Ser. No. 403,282, Oct. 3, 1973, abandoned. This application May 29, 1975, Ser. No. 581,875

Int. Cl.² G08B *21/00;* **B29C** *1/00*

U.S. Cl. 425—171 **6 Claims**

1. In combination, a bridge structure and an elevation gauge, said bridge structure having an adjustably movable deck member and a relatively stationary support member, said gauge for use in establishing the prescribed elevation difference between said adjustably movable deck member and said relatively stationary support member, the improvement in which said elevation gauge comprises a case, a first contact carrier disposed in said case, means for guiding said first contact carrier for vertical movement in said case, selectively adjustable means for moving said first contact carrier vertically in said case, means for indicating the selected vertical position of said first contact carrier relative to said case, said indicating means including scale means and indicator means cooperatively connected to said case and said first contact carrier, a second contact carrier, means for guiding said second contact carrier for vertical movement on said case, and means for providing an output signal when said second contact carrier is in a pre-selected elevational position relative to said first contact carrier, plunger means for cooperating between said carriers to actuate said signal means, said plunger means being coupled to said signal means, and said case resting on one of said members and said second contact carrier resting on the other of said members.



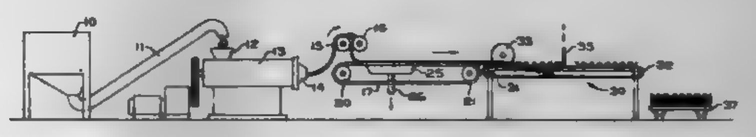
3,982,868
CONTINUOUS MOLD THERMO FORMING

William Richard Rinker, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Oct. 14, 1975, Ser. No. 621,948

Int. Cl.² B29C *13/00, 15/00*

U.S. Cl. 425—223 **5 Claims**



1. An apparatus for the continuous molding of sheet material comprising an endless flexible belt mold having a three dimensional irregular pattern with valleys formed therein, said flexible belt mold having laterally spaced side members defining the lateral limits of the belt mold, said belt mold having a plurality of spaced openings in said belt mold located in said valleys, means for moving said belt mold through an endless path having a conveying run and a return run, roller die means mounted adjacent to said belt mold operative to form and deposit a film layer onto said conveying run that extends laterally onto said spaced side members, means at one end of said conveying run for pulling a vacuum to the underside of a portion of conveying run and communicating with the openings in said belt mold, an extruder mounted adjacent to said roller dies for forming an extrudate for deposit to said roller dies, and a pair of laterally spaced knives at the other end of said conveying run operative to trim the respective side portions of the formed thin layer of material that has been vacuum formed.

3,982,869
INJECTION MOLDING APPARATUS WITH ALTERNATIVELY SHUTTLED MOLD SECTIONS

James W. Eggers, 1018 Bridal Wreath, Shreveport, La. 71108

Filed July 22, 1974, Ser. No. 490,722

Int. Cl.² B29F *1/00*

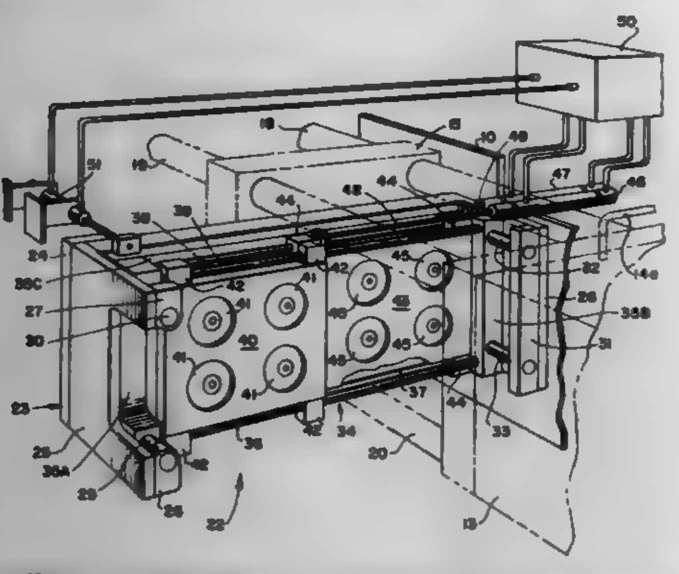
U.S. Cl. 425—246 **13 Claims**

1. A shuttle mold assembly for a horizontal injection molding apparatus including a fixed and movable platen, comprising:

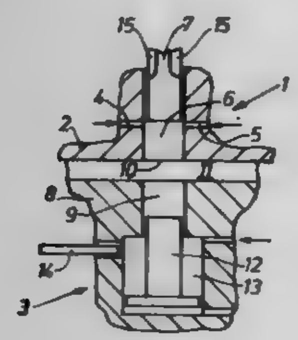
means on the shuttle assembly for mounting said assembly between said fixed and movable platens;

a first shuttle mold mounted for movement on said assembly and including at least one molding cavity;

a second shuttle mold mounted for movement on said assembly and including at least one molding cavity; and
means connected to the molds for alternatively moving said first and second shuttle molds between a position on said assembly where one of said molds is between said fixed and movable platens for a molding operation and the other of said molds is to the side of said fixed and movable platen and said one of said molds so that loading or unloading operations may be performed on said other of said molds during said molding operation, and a position where said other of said molds is between said fixed and movable platens for another molding operation and said one of said molds is to the side of said fixed and movable platens and said other of said molds so that loading or unloading operations may be performed on said one of said molds during said another molding operation.

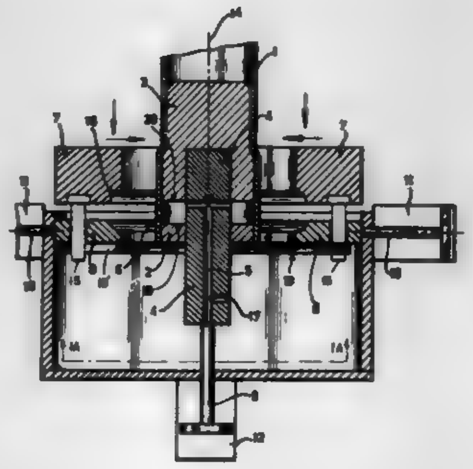


3,982,870
APPARATUS FOR PRODUCING MOLDED FOAM ARTICLES WITHOUT DEFECTS
Heinrich Boden, Opladen, and Ulrich Knipp, Schildgen-Nittum, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 14, 1975, Ser. No. 558,516
Claims priority, application Germany, Mar. 20, 1974, 2413337
Int. Cl.² B29D *27/00*
U.S. Cl. 425—252 **2 Claims**



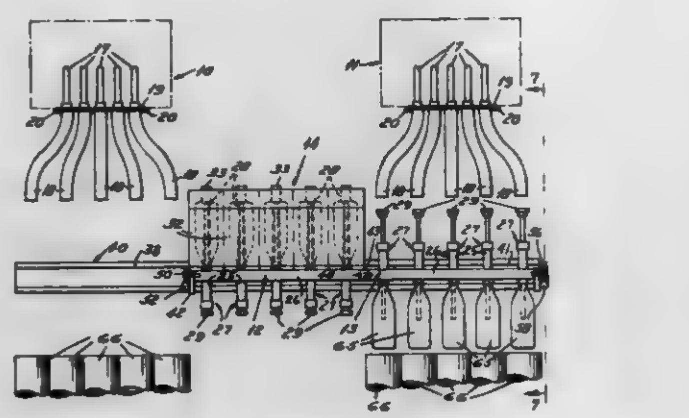
1. In an apparatus for supplying mixed foamable reactants to a mold comprising a mixing chamber bounded by a side wall portion containing injection apertures, a first ejector piston displaceable in the bore of the mixing chamber from a position behind the injection apertures to a position wherein its end surface forms a planar surface with a wall of the mold and an outlet aperture which communicates with the mold cavity, the improvement wherein a second ejector piston is provided in the mold wall opposite said outlet aperture and directly opposite said first piston, said second piston being retractable in a direction away from the mold cavity from a position wherein the end surface of said second piston forms a planar surface with said mold wall to a position wherein a receiving chamber is formed in said mold wall to catch any unmixed reactants.

3,982,871
METHOD AND DEVICE FOR FORMING A SOCKET ON A PLASTIC TUBE
Adolf Möddel, Bernhard Lohmann Strasse 29, Darme, Germany
Division of Ser. No. 863,612, Oct. 3, 1969, abandoned. This application Feb. 20, 1974, Ser. No. 444,244
Claims priority, application Germany, Oct. 3, 1968, 6800552[U]
Int. Cl.² B29C *17/00*
U.S. Cl. 425—393 **9 Claims**



1. Apparatus for forming a socket with an annular external bead on a length of tubular pipe of thermoplastic material, said apparatus comprising a mandril constituted by two spaced parts which are movable axially relative to one another, said mandril having an outer surface which is shaped to form a socket on the pipe when the mandril is inserted into the pipe to deform the same, a mold positioned around said pipe in opposition to said parts of the mandril, said mold including two pairs of axially spaced jaws each associated with a respective part of said mandril and including two jaw members radially movable towards the pipe, said pairs of jaws also being movable axially relative to one another, means connected to at least one of said pairs of jaws for moving said two pairs of jaws radially inwards to clamp the pipe against said parts of the mandril at axially spaced locations, means connected to one of said mandrel parts for axially moving one pair of said jaws and associated mandril part with respect to the other pair of said jaws and mandril part to cause said pairs jaws to abut against one another and move the parts of the pipe, at the locations where they are clamped by the jaws and mandril parts, towards one another to upset the pipe between said locations, said jaws being provided with grooves defining an annular cavity when the jaws abut one another, said annular cavity defining the shape of the bead for the pipe when the jaws are clamped against the pipe and have been axially moved into contact with one another, and means between said mandrel parts for applying internal pressure against said pipe in the region between said locations to urge the upset portion of the pipe outwardly into conformance with said annular cavity in the jaws.

3,982,872
LATERAL TRANSFER LOADING APPARATUS FOR STRETCH BLOW MACHINES
Ivan L. Kauffman, Commerce Township, Oakland County, and Robert C. Kellogg, Hartland Township, Livingston County, both of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.
Filed June 16, 1975, Ser. No. 587,949
Int. Cl.² B29C *17/02*
U.S. Cl. 425—397 **18 Claims**

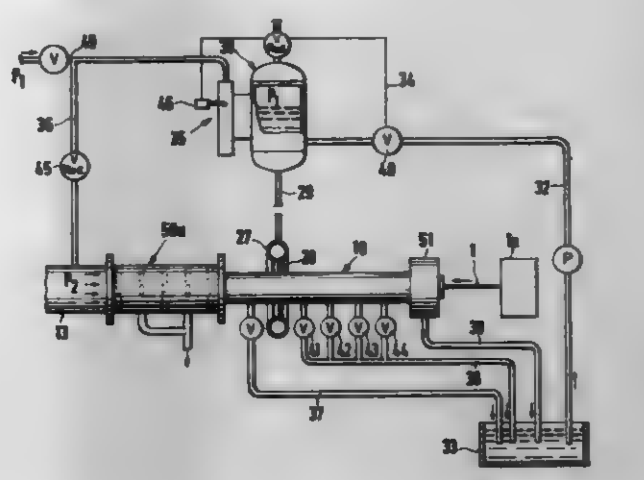


1. In a stretch blow molding apparatus, including a mold assembly having at least one mold, the combination comprising:

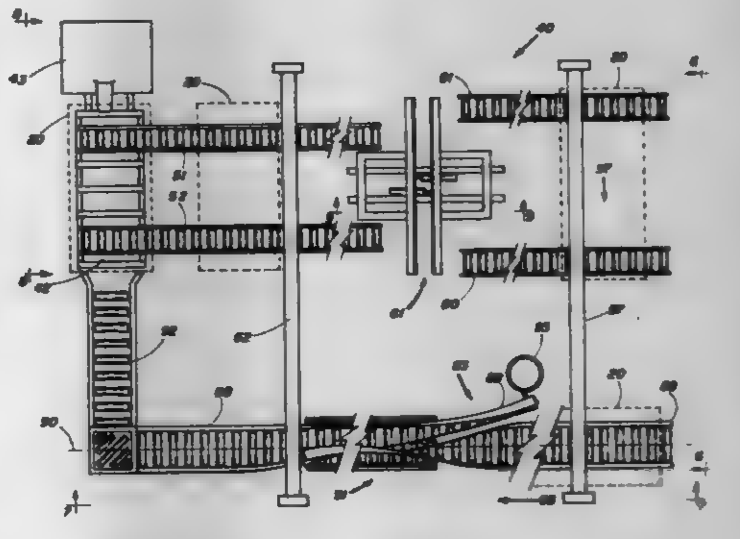
a. a first movably mounted carrier means, and a second movably mounted carrier means;
b. each of said first and second carrier means having operatively mounted thereon at least one stretch pin assembly;
c. a first loading station for unloading a finished product from the stretch pin assembly on said first carrier means and for loading a preform thereon;
d. a second loading station for unloading a finished product from the stretch pin assembly on said second carrier means and for loading a preform thereon; and,
e. means for moving alternately, said first carrier means between said first loading station and a position in operative relationship with said mold assembly, and said second carrier means between said second loading station and a position in operative relationship with said mold assembly, whereby when said first carrier means is at said first loading station the second carrier means is in said position in operative relationship with said mold assembly for forming a finished product from the preform carrier thereon, and when said second carrier means is at said second loading station said first carrier means is in said position in operative relationship with said mold assembly for forming a finished product from the preform carried thereon.

3,982,873
SEALING DEVICE
August Graeber; Friedrich Fleischer, and Gerhard Werner, all of Coesfeld, Germany, assignors to Maschinenbau Scholz GmbH & Co. KG, Corsfeld, Germany
Filed Nov. 19, 1975, Ser. No. 633,555
Claims priority, application Germany, Nov. 29, 1974, 2456502; July 30, 1975, 2534004
Int. Cl.² B29D *7/20;* **B29C** *25/00;* **B29H** *5/28*
U.S. Cl. 425—404 **19 Claims**

1. A vulcanizing device in which a member is enclosed in an extruder device and the enclosed member is vulcanized at a predetermined pressure in a vulcanizing tube connected to the extruder device wherein said vulcanizing tube is placed at a distance from said extrusion device, a sealing device is positioned directly before and coaxially to said vulcanizing tube, the length of the sealing device being less than the said distance, a sealing housing is contained in said sealing device, spaced radial guiding elements are provided in the interior of said sealing housing having coaxial openings for the passage of said enclosed member and dividing the interior of said sealing housing into individual chambers lying axially behind each other, an inlet opening is provided between the ends of said sealing housing, which opening is connected to a source of a locking medium, the pressure of which is arranged to be somewhat higher than the pressure in said vulcanizing tube, and said chambers are connected to outlet openings in said sealing housing, which are connected to throttled discharge conduits.



3,982,874
PRODUCTION LINE APPARATUS FOR PRODUCING CONCRETE FLOORS
Paul J. Nobbe, R.R. 2, Brookville, Ind. 47012
Filed Mar. 27, 1975, Ser. No. 562,652
The portion of the term of this patent subsequent to Oct. 28, 1992, has been disclaimed.
Int. Cl.² B28B *5/04*
U.S. Cl. 425—424 **11 Claims**



1. An apparatus for producing concrete floors comprising:
a main frame;
a mold for producing a concrete floor with a smooth top surface, said mold includes a bottom part with a smooth finish top surface extending thereacross to form said

smooth top surface of said floor, said bottom part including a plurality of longitudinally extending ridges extending upwardly from said top surface, said bottom part includes a separate recess formed in said top surface between each of said ridges, each recess is concave and includes opposite longitudinally extending edge portions adjacent said ridges, said mold further includes a top part mounted atop said bottom part, said top part includes a pair of side walls and end walls connected together forming an enclosure for holding poured concrete, said mold includes spaced apart slab separators having an elongated configuration extending in the direction of said side walls, said separators are spaced from said end walls allowing concrete to extend completely around each separator forming integrally joined concrete slabs, each separator has a bottom end contacting said ridges of said bottom part and opposite side surfaces diverging from said bottom end allowing said separators to be withdrawn upon solidification of concrete within said mold and surrounding said separators, said mold further includes locating means on said mold to align said ridges with said separators;

a table movably mounted on said frame and adapted to receive and support said mold;

a source a flowable concrete positioned adjacent said table and having an outlet positioned over said mold directing concrete to flow from said source into said open top of said mold;

shaking means connected to and between said frame and said table and operable to shake said table and mold settling concrete within said mold;

first conveying means extending away from said table being sized to supportingly receive said mold and operable to convey said mold from said table to a first location;

mold turning over means located at said first location being sized to supportingly receive said mold from said first conveying means and operable to turn said mold upside-down with said open top facing downwardly; and,

second conveying extending toward said table, said second conveying means being sized and positioned to supportingly receive said mold when said mold is upside-down and operable to turn said mold right-side-up with said open top facing upwardly.

11. A mold for producing a floor with a smooth top surface and having integrally joined concrete slabs for supporting animals comprising:

a bottom part with a smooth finish top surface extending thereacross to form said smooth top surface of said floor, said bottom part including a plurality of longitudinally extending ridges extending upwardly from said top surface, said bottom part includes a separate recess formed in said top surface between each of said ridges, each recess is concave and includes opposite longitudinally extending edge portions adjacent said ridges;

a top part mounted atop said bottom part, said top part includes a pair of side walls and end walls connected together forming an enclosure for holding poured concrete, said mold includes spaced apart slab separators having an elongated configuration extending in the direction of said side walls, said separators are spaced from said end walls allowing concrete to extend completely around each separator forming integrally joined concrete slabs, each separator has a bottom end positioned adjacent said ridges of said bottom part and opposite side surfaces diverging from said bottom end allowing said separators to be withdrawn upon solidification of concrete within said mold and surrounding said separators;

locating means on said mold to align said ridges with said separators, said locating means includes a plurality of clips positioned between said separators and said ridges, said clips being engaged with said separators and said ridges with said locating means being operable to allow release of said concrete to facilitate removal of said separators from said ridges.

3,982,875

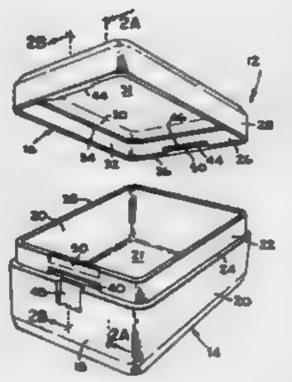
APPARATUS FOR MAKING MOLDED ARTICLES OF EXPANDED CELLULAR MATERIAL AND PRODUCT THEREOF

John A. Abey, Salinas, Calif., assignor to Bud Antle, Inc., Salinas, Calif.

Continuation of Ser. No. 510,289, Sept. 30, 1974, abandoned. This application Jan. 12, 1976, Ser. No. 648,243

Int. Cl.² B29C *7/00;* **B28B** *7/10*

U.S. Cl. 425—444 **10 Claims**



1. In apparatus for molding a part wherein the apparatus is of the class having a male mold section, a female mold section shaped complementary to the male mold section, and means for supporting said mold sections in a first position defining therebetween a cavity having a shape corresponding to the part to be formed, said supporting means including means for separating said sections from one another along a path to a second position, and wherein said part has diametrically opposite wall portions extending in a direction generally parallel to the path, the improvement comprising first and second ejector heads, portions of said male mold section adjacent respective said wall portions defining first and second recesses complementally shaped to receive respective said ejector heads, said ejector heads each having a surface portion flush with and bounding a portion of said cavity when the ejector head is received in a respective said recess, said surface portions being oriented perpendicular to said path so that upon movement of said ejector heads out of said recesses said surface portions bear on and slide transversely along corresponding surfaces of the part to eject the part from the male mold, said ejector heads each being operable to eject a part from said male mold section and having an elongate surface discontinuity shaped to form a corresponding mirror image discontinuity in respective said wall portions of said part, said surface discontinuities being less extensive than and spaced from said surface portions to avoid overstressing the portions of the part adjacent the corresponding mirror image therein, and means including first and second rigid rod pairs operable in the second position for moving respective said ejector heads away from said male mold section to eject said part therefrom, the rods in said pairs being fixed at spaced apart points to respective said ejector heads remote from said surface portions and surface discontinuities, said ejector moving means being simultaneously operable to move said ejector heads outwardly away from said male mold section and in respective straight line directions acutely oblique of said path so as to retract laterally respective said ejector discontinuities from corresponding mirror image discontinuities in said wall portions of said part, the individual rods in said pairs moving in unison to avoid relative angular movement between the surface discontinuities on said ejector heads and the corresponding mirror image discontinuities on said part.

3,982,876

APPARATUS FOR MAKING PLATE ELEMENTS

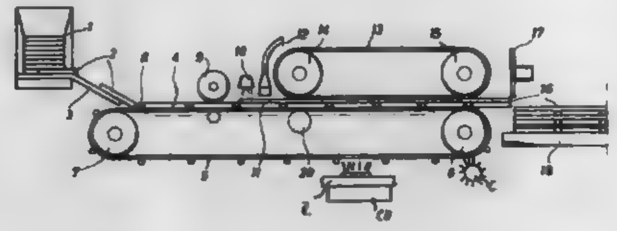
Kurt Eisenbach, Bonn-Bad Godesberg, Germany, assignor to Rheinische Chamotte und Dinas-Werke, Bonn-Bad Godesberg, Germany

Division of Ser. No. 472,897, May 23, 1974. This application Jan. 9, 1975, Ser. No. 539,737

Claims priority, application Germany, May 25, 1973, 2326762

Int. Cl.² B29C *3/02, 3/04*

U.S. Cl. 425—501 **10 Claims**



1. Apparatus for making plate elements composed of tiles partially embedded in a synthetic plastic material backing, comprising a travelling conveyor belt having a plurality of depressions each bounded by a sealing lip and adapted to accommodate a tile having a front and a rear major surface and a circumferential surface; a source of tiles; means for feeding tiles from said souce into said depressions so that the rear major surfaces of the tiles face away from said conveyor belt and said sealing lips sealingly contact the circumferential surfaces of the tiles and space the latter from one another; means for depositing a layer of hardenable synthetic plastic material over the rear major surfaces of the tiles accommodated in said depressions of said conveyor belt so as to partially penetrate between the tiles and thus partially embed the same and unite them into a unitary structure upon hardening of said synthetic plastic material to form said backing, said sealing lips preventing penetration of the synthetic plastic material to the front major surfaces of the tiles; and means for subdividing said unitary structure into plate elements of desired size, each incorporating a plurality of the tiles partially embedded in the hardened synthetic plastic material backing so that the front major surfaces of the tiles are exposed.

3,982,877

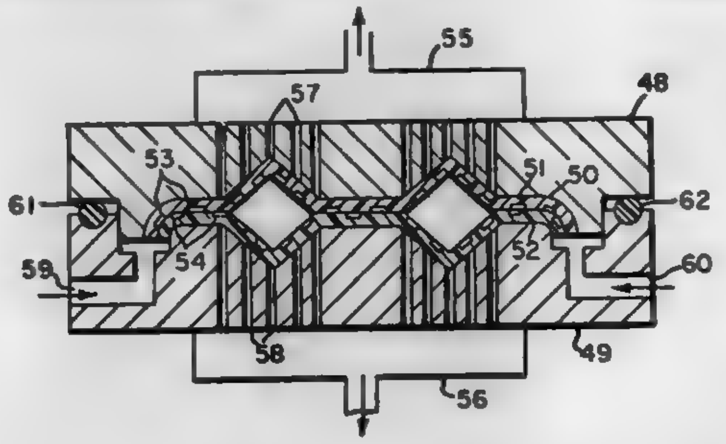
APPARATUS FOR EXPANDING SEALING A LAMINATED PLASTIC PREFORM

Nathaniel Convers Wyeth, Mendenhall, Pa., and Frank William Arnoth, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 443,199, Feb. 15, 1974, Pat. No. 3,935,358, which is a continuation-in-part of Ser. No. 346,164, March 29, 1973, abandoned. This application Jan. 6, 1975, Ser. No. 538,759

Int. Cl.² B29C *17/04*

U.S. Cl. 425—503 **11 Claims**



1. Apparatus for preparing a hollow, rib-reinforced, laminated article from a composite preform comprising at least two sheets in interfacial contact, at least one sheet being a thermoplastic material and at least one sheet provided with grooves or integral projections on the surface which contacts the other sheet, which grooves or integral projections form fluid passageways in the preform, said apparatus comprising:

a. means for heating the composite preform to the thermoforming temperature of the thermoplastic sheet;

b. opposing mold platens operatively associated with said heating means, at least one of the mold platens having a rib-forming mold cavity, said mold platens having a thermoforming position in which the platens are spaced apart a distance equivalent to about the thickness of the composite preform and a sealing position in which the platens are further closed an incremental amount;

c. means operatively associated with said platens for placing the heated composite preform including the edges thereof, between the mold platens with the thermoplastic sheet facing the mold cavity;

d. means operatively associated with said platens for closing and holding the mold platens in contact with the composite preform in said thermoforming position;

e. means located within a mold platen for supplying a fluid to a marginal edge of the composite preform while the mold platens are in said thermoforming position, thereby distending the thermoplastic sheet into the mold cavity while the mold platens maintain contact between the sheets in nondistended areas; and

f. means operatively associated with said platens for further closing the mold platens an incremental amount to said sealing position to pressure seal at least a portion of the nondistended areas of the composite preform.

3,982,878

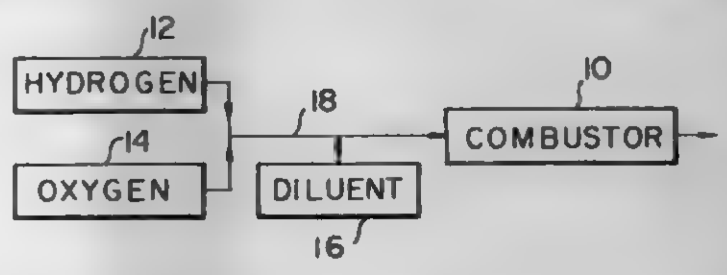
BURNING RATE CONTROL IN HYDROGEN FUEL COMBUSTOR

Kimitaka Yamane; Zene Ueno; Akira Morita, all of Tokyo; Tadahiko Nagaoka, Tokorozawa, and Shigeo Iwaki, Akishima, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 9, 1975, Ser. No. 621,242

Int. Cl.² F23K *5/00*

U.S. Cl. 431—2 **11 Claims**



1. A method of burning hydrogen contained in a gaseous mixture of hydrogen and oxygen or air at a controlled and relatively low burning rate in a combustor, comprising the steps of: regulating the quantitative ratio of oxygen to hydrogen in said gaseous mixture to the stoichiometric ratio; adding a gaseous diluent to said gaseous mixture outside said combustor, said diluent having a heat conductivity not higher than the heat conductivity of nitrogen gas; and feeding the diluted mixture to said combustor.

3,982,879

FURNACE APPARATUS AND METHOD

William C. Pfefferle, Middletown, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

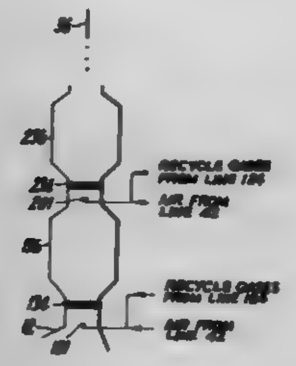
Continuation-in-part of Ser. No. 142,939, May 13, 1971, abandoned, and a continuation-in-part of Ser. No. 164,718, July 21, 1971, abandoned, and a continuation-in-part of Ser. No. 358,411, May 8, 1973, Pat. No. 3,928,961. This application Jan. 2, 1975, Ser. No. 538,211

Int. Cl.² F23L *9/00*

U.S. Cl. 431—10 **34 Claims**

1. The method of combusting carbonaceous fuel to produce energy in the form of heat comprising the steps of:

thermally combusting a first mixture, formed of carbonaceous fuel and an amount of air substantially less than that needed for complete combustion to carbon dioxide and water of all the combustible components in said fuel, to produce a gaseous first effluent containing a substantial proportion of carbon monoxide;
withdrawing heat from the gaseous first effluent;
mixing at least a portion of the gaseous first effluent with an additional amount of air to form a second mixture having an adiabatic flame temperature above the instantaneous auto-ignition temperature of said second mixture;



combusting a portion of said second mixture in the presence of a solid oxidation catalyst operating at a temperature substantially above said instantaneous auto-ignition temperature of said second mixture but below a temperature that would result in any substantial formation of oxides of nitrogen to oxidize at least a portion of the carbon monoxide in said second mixture to carbon dioxide; and
combusting the remainder of said second mixture downstream of the catalyst, said combustion downstream of the catalyst being induced and maintained by the temperature levels resulting from the combustion taking place in the presence of said catalyst.

3,982,880
LIQUID FUEL BURNER

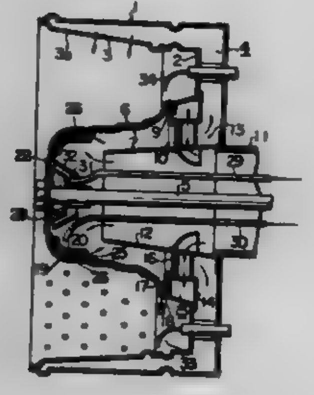
Kingo Miyahara, Tokyo, Japan, assignor to Dowa Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1975, Ser. No. 566,225

Claims priority, application Japan, Apr. 24, 1974, 49-46343; Apr. 24, 1974, 49-46344; Oct. 15, 1974, 49-124303[U]

Int. Cl.² F23D *11/04*

U.S. Cl. 431—168 **3 Claims**



1. A liquid fuel burner for burning liquid fuel in gasified form by converting the liquid fuel and water into a mixture of gasified fuel and water vapor comprising:
a main body of the burner;
a rotary shaft inserted in said main body of the burner;
a fuel gasifying member directly supported by said rotary shaft for converting the liquid fuel supplied thereto into gasified form while the liquid fuel is caused to diffuse and move in thin film form on an inner wall surface thereof;
water supply means attached to the central portion of the inner surface of the top of said fuel gasifying member;
an air blast supply duct inserted in said fuel gasifying member for supplying an air blast under pressure into the interior of said fuel gasifying member;
a water evaporation chamber of the annular shape arranged at the corner of a top portion of said fuel gasifying member and disposed along inner periphery thereof, said water evaporation chamber being filled with a water evaporation promoting material for quickly converting the water supplied thereto into water vapor; and
a multitude of steam ejection apertures formed in said water evaporation chamber for ejecting the water vapor produced in said water evaporation chamber into the interior of said fuel gasifying member where the water vapor is mixed with the gasified fuel produced by vaporization and gasification of the liquid fuel, said mixture of gasified fuel and water vapor being further mixed with air supplied under pressure through said air blast supply duct, whereby a mixture of gasified fuel, water vapor and air can be ejected into the main body of the burner to sustain combustion of the liquid fuel in gasified form.

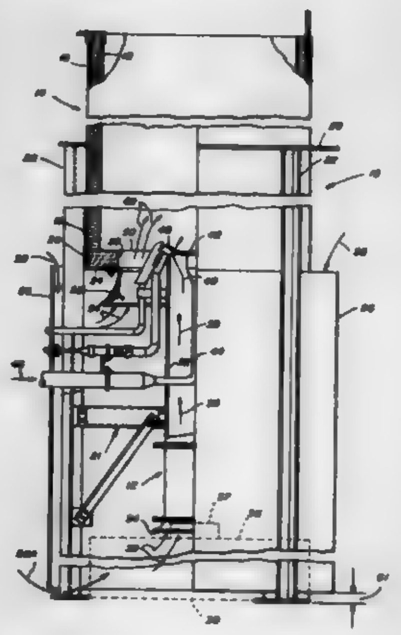
3,982,881
INVISIBLE FLARE BURNER

Robert E. Schwartz, and Roger K. Noble, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Feb. 3, 1975, Ser. No. 546,210

Int. Cl.² F23D *13/20*

U.S. Cl. 431—202 **8 Claims**



1. A low pollution invisible flame flare burner comprising:
a. a flare stack having a cylindrical steel wall of substantial height and a ceramic lining, said stack supported on legs above the ground;
b. a cylindrical windscreen for shielding the space below said stack from the wind, the screen diameter larger than the diameter of said stack, said screen having its bottom edge spaced above said ground and its top edge at least as high as the base of said stack;
c. primary air conduit means below and coaxial with said stack, the top of said conduit extending through an opening in the floor of said stack to the level of said floor of said stack;
d. burner means inside said primary air conduit supported at the top of said conduit;
e. blower means to induce primary air flow in said conduit at high velocity; and

f. means to supply secondary air through the annular space between said conduit and the wall of said opening in the floor of said stack.

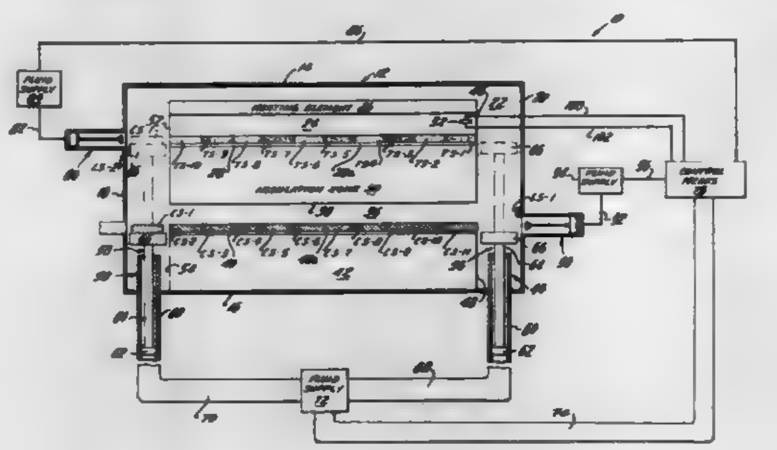
3,982,882
METHOD AND APPARATUS FOR PREPARING TEST SPECIMENS SUBJECTED TO DIFFERENT HEAT TREATMENTS

Saul Weingrad, Hillsdale, N.J., assignor to Commercial Decal, Inc., Mount Vernon, N.Y.

Filed May 19, 1975, Ser. No. 578,814

Int. Cl.² F27D *5/00*; F27B *9/40*

U.S. Cl. 432—5 **17 Claims**



1. A method of preparing test specimens subjected to heating for different time periods, which comprises feeding at least first and second test specimens to be prepared into a heating zone; heating said test specimens at a predetermined temperature for a predetermined period of time; removing said first test specimen from said heating zone, said first test specimen representing a specimen heated to said predetermined temperature for said predetermined time period; substantially simultaneously feeding a first control specimen into said heating zone to replace said first test specimen, thereby maintaining constant the total number and/or mass of specimens present in said heating zone; heating said second test specimen and said first control specimen at said predetermined temperature for an additional predetermined period of time; and thereafter removing said second test specimen from said heating zone, said second test specimen representing a test specimen heated at said predetermined temperature, under the same conditions as was said first test specimen for said predetermined period of time, as well as for said additional predetermined period of time.

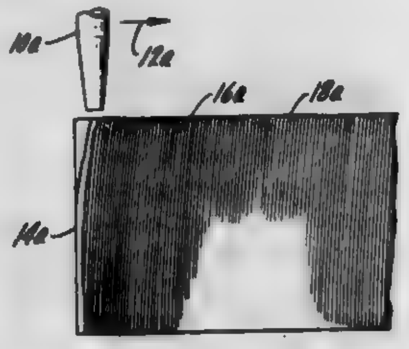
3,982,883
METHOD OF FLAME CUTTING

Berwyn E. Etter, 10355 Paradise Blvd., Treasure Island, Fla. 33706

Continuation-in-part of Ser. Nos. 418,271, Nov. 23, 1973, abandoned, and Ser. No. 499,533, Aug. 22, 1974. This application Mar. 18, 1975, Ser. No. 559,486

Int. Cl.² F27B *9/28*

U.S. Cl. 432—13 **3 Claims**



1. In a method of cutting or brazing workpieces consisting of solid state ceramic materials, including metals, by heat energy transfer, including radiant energy absorption, the steps of
compounding a fuel gas mixture by mixing a gaseous base fuel selected from the group consisting of methane, propane, acetylene, and mixtures thereof, with a supplemental organic heat additive, and oxygen,
said supplemental organic heat additive consisting of a series of combustible hydrocarbons which, when combusted, emit radiation energy waves within the range of greatest absorbability of the materials to be cut or brazed, and which are non-corrosive with respect to the material being cut or brazed,
said supplemental organic heat additive being added to the gaseous base fuel in an amount of from ½% to 20% by weight of the gaseous base fuel,
preparing the workpiece material for cutting or brazing by increasing the temperature of a localized area of the workpiece material to be cut or brazed to a temperature suitable for cutting or brazing, and
combusting said fuel gas mixture containing said supplemental organic heat additive in such juxtaposition to said workpiece material whose temperature has been increased as aforesaid as to transfer radiant heat energy within the range of wave lengths of greatest absorbability of the workpiece material, and convective heat energy, to said workpiece material in an amount sufficient to cause a change of state of said work piece material.

3,982,884
FLUIDIZED BED SYSTEM

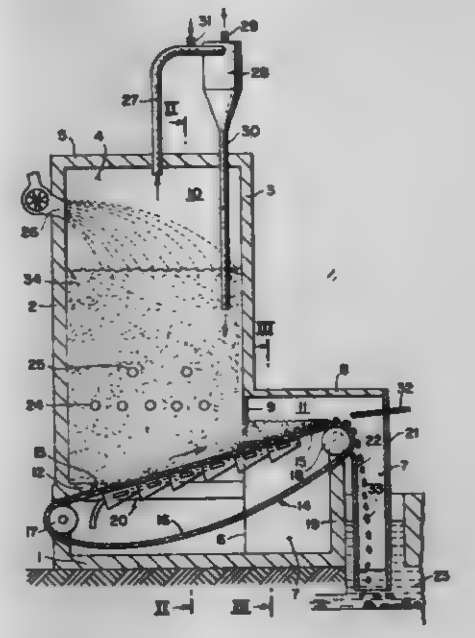
Albert Godel, deceased, late of Paris, France, by Yves Aubron, administrator, assignor to Fives-Cail Babcock, Paris, France

Filed Feb. 13, 1975, Ser. No. 549,697

Claims priority, application France, Feb. 14, 1974, 74.04956

Int. Cl.² F27B *15/00*

U.S. Cl. 432—14 **5 Claims**



1. Apparatus for treating a granular solid material comprising:
a. a main chamber;
b. an auxiliary chamber;
c. a conduit having a first orifice open toward said main chamber and a second orifice open toward said auxiliary chamber;
d. feeding means for feeding said material to said main chamber at a rate sufficient to maintain in said main chamber a first bed of said material extending upwardly beyond said first orifice to a first level and to maintain in said auxiliary chamber, via said conduit, a second bed of said material covering said second orifice;

e. conveying means for conveying agglomerates of said material from said main chamber through said conduit into said auxiliary chamber,
  1. said conveying means including means for lifting conveyed agglomerates of said material in said auxiliary chamber to a second level, and for discharging the lifted material outward of said auxiliary chamber at said second level,
  2. said second level being lower than said first level;

f. fluidizing means for keeping said first and second beds in fluidized condition and including means for admitting a gas under pressure to said main and auxiliary chambers beneath said beds, whereby a predetermined gas pressure is maintained in said main chamber above said first level; and

g. sealing means for maintaining above said second bed in said auxiliary chamber a gas pressure greater than said predetermined pressure.

3,982,885
METHOD AND ARRANGEMENT FOR INHOMOGENEOUS ANNEALING OF SMALL PARTS

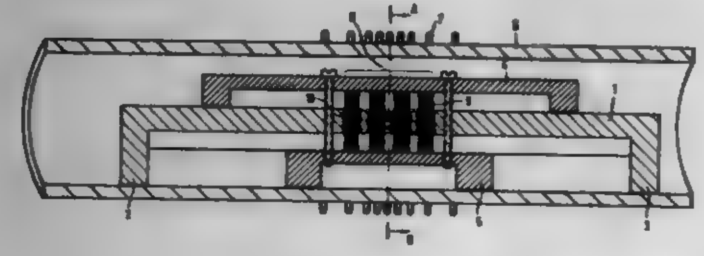
Karl Hoger, Kornwestheim, and Wolfgang Grobe, Ludwigsburg, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 2, 1974, Ser. No. 528,605

Claims priority, application Germany, Dec. 7, 1973, [illegible]

Int. Cl.² F27D *7/00, 11/06*

U.S. Cl. 432—24 **10 Claims**



10. A method of providing a differential coercive force distribution to reversible hard magnetic reed contact armatures comprising the steps of:
  inserting the armature within a thermal shielding unit to surround a part of said armature by said shielding; and
  placing said armature and said shielding within an annealing furnace so that the part of said armature within said thermal shielding unit anneals at a lower temperature than parts of said armature which are not surrounded thereby said shielding.

3,982,886
CEMENT MANUFACTURE

Soren Bent Christiansen, Copenhagen Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

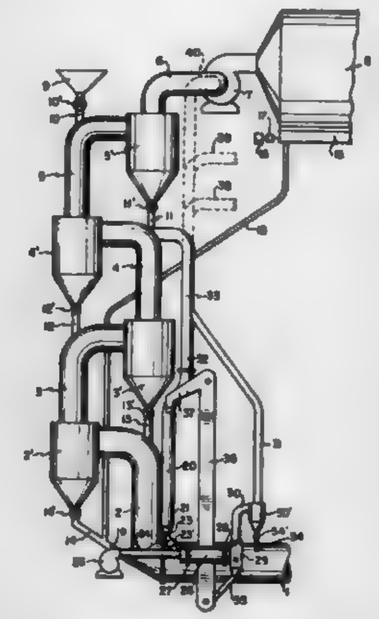
Division of Ser. No. 375,372, July 2, 1973, Pat. No. 3,887,388. This application Jan. 16, 1975, Ser. No. 541,530

Claims priority, application United Kingdom, July 10, 1972, 32232/72

Int. Cl.² F27B *7/02*

U.S. Cl. 432—106 **25 Claims**

1. A plant for the production of cement clinker wherein at least a portion of gaseous compounds containing at least one of alkali, chlorine and sulphur are removed from the exit gas of a rotary kiln comprising: a rotary kiln in which cement raw meal is burned to cement clinker; a suspension preheater for preheating the raw meal with exit gases from the rotary kiln prior to introducing the raw meal into the rotary kiln; a gas exit pipe from the rotary kiln divided into a main flow pipe connected to said preheater, and a divisional flow pipe having a shaft in communication with said main flow pipe such that a portion of the exit gases flow through said shaft; means for directing a supply of relatively cool, non-aqueous, solid, shaped condensation bodies such as spherical, cylindrical, spirally shaped bodies and the like through at least one opening in said shaft in a manner which permits said bodies to fall under the action of gravity in a substantially continuous stream through said divisional gas flow such that gaseous compounds containing at least one of alkali, chlorine and sulphur are condensed to form a coating on at least a portion of the surface of said bodies as the gases pass through the shaft; means to intercept said coated condensation bodies at or near the end of their fall; and means to pass said bodies out of the shaft through at least one opening in said shaft.



3,982,887
FLUX-FREE SOLDERING OF ALUMINUM-CONTAINING WORKPIECES IN A CONTROLLED ATMOSPHERE

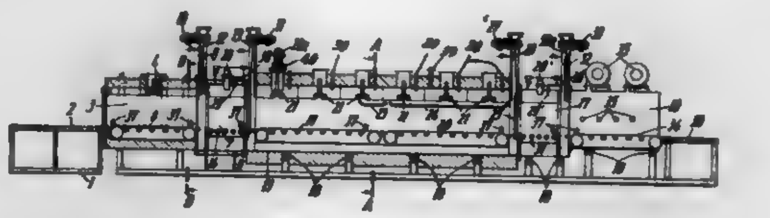
Heinz Kendziora, Bonn; Johannes Nenner, Bornheim-Merten; Heinz Schoer, Alfter, and Werner Schultze, Bonn, all of Germany, assignors to Vereinigte Aluminium-Werke Aktiengesellschaft, Bonn, Germany

Filed Oct. 31, 1973, Ser. No. 411,383

Claims priority, application Germany, Nov. 9, 1972, 2254769

Int. Cl.² F27B *9/02*

U.S. Cl. 432—128 **12 Claims**



1. In a furnace for flux-free soldering of aluminum-containing workpieces in a controlled atmosphere, a combination comprising wall means defining a furnace chamber through which workpieces to be soldered are to travel, said furnace chamber being constituted by a gas-tight thermally insulated metallic muffle and adapted to contain such workpieces in a controlled atmosphere, said muffle having an inlet and an outlet for the entry and exit of workpieces, respectively; a first lock chamber connected to said inlet, and a second lock chamber connected to said outlet; means connected to each lock chamber for creating a vacuum therein; admitting means for admitting a protective gas into said lock chambers and said muffle; first heating means for heating the interior of said first lock chamber; and second heating means for heating the protective gas atmosphere in said muffle.

3,982,888
HEAT TREATMENT TUNNEL KILN FOR PRODUCTS HAVING A CIRCULAR CROSS-SECTION

Jean Mousson, Pouzac, and Robert Calvet, Tarbes, both of France, assignors to Ceraver, Paris, France

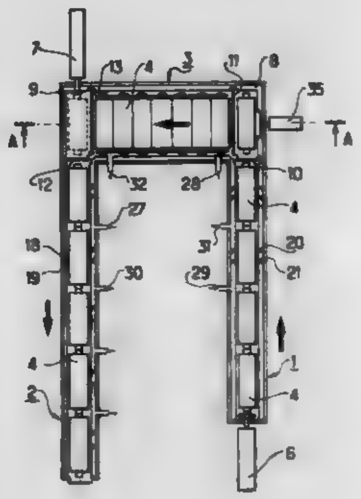
Continuation of Ser. No. 486,256, July 5, 1974, Pat. No. 3,905,758. This application July 21, 1975, Ser. No. 597,788

Claims priority, application France, July 13, 1973, 73.25851

The portion of the term of this patent subsequent to Sept. 16, 1992, has been disclaimed.

Int. Cl.² F27B *9/02;* **B65H** *51/00*

U.S. Cl. 432—128 **11 Claims**



1. A tunnel kiln comprising:

a. a plurality of cylindrical supports, each of which contains at least one cavity shaped to receive an object to be heat treated;

b. means defining a main treating zone;

c. means in said main treating zone for moving said cylindrical supports in a direction perpendicular to their longitudinal axes;

d. means in said main treating zone for rotating said cylindrical support about their longitudinal axes during their translational movement in said main treating zone;

e. means defining a second treating zone;

f. means in said second treating zone for moving said cylindrical support in a direction parallel to their longitudinal axes;

g. a first chamber connecting said main treating zone to said second treating zone, said first chamber being adapted to receive at least one of said cylindrical supports at a time; and

h. means for isolating said first chamber in a gas-tight manner from either said main treating zone or said second treating zone.

3,982,889
PREHEATING SYSTEM FOR ALUMINUM REMELT FURNACE

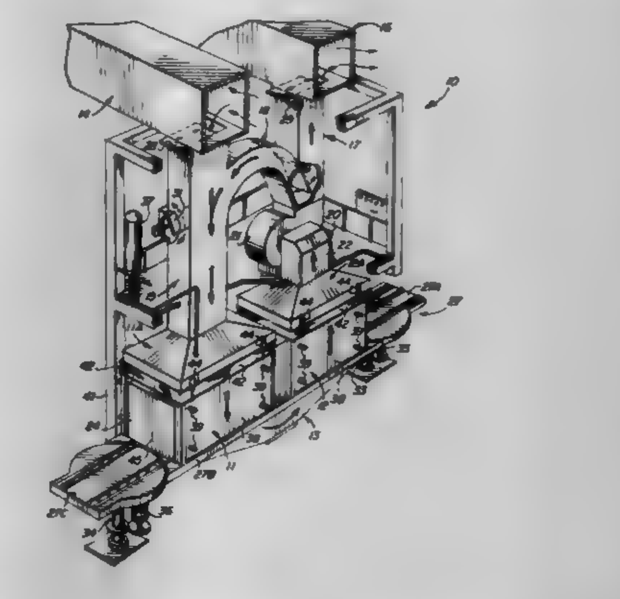
Benjamin F. Olson, 819 W. 22nd St., Suite 2, Tempe, Ariz. 85282

Filed July 14, 1975, Ser. No. 595,784

Int. Cl.² F27B *9/02;* **F27D** *15/00, 13/00*

U.S. Cl. 432—128 **8 Claims**

1. A preheating apparatus for a metal remelt furnace comprising:
  first and second juxtapositioned chambers,
  a conveyor system for moving metal containing cartridges sequentially through said chambers,
  a duct system for conveying exhaust gases from a source of heat sequentially through said first and second chambers,
  duct means for recirculating a part of the exhaust gases passed through said second chamber back to a portion of said duct system leading into said first chamber,
  fan means within said duct system downstream of said second chambers for drawing the gases through said first and second chambers, and
  damping means within said duct system for controlling the amount of hot gases recirculating through the apparatus and cooling air drawn into the apparatus from the atmosphere,



  said chambers being open ended so that when a pair of cartridges are moved into the chambers opposite ends of the cartridges close opposite ends of the chambers with juxtapositioned ends of the chambers being interconnected with a part of said duct system.

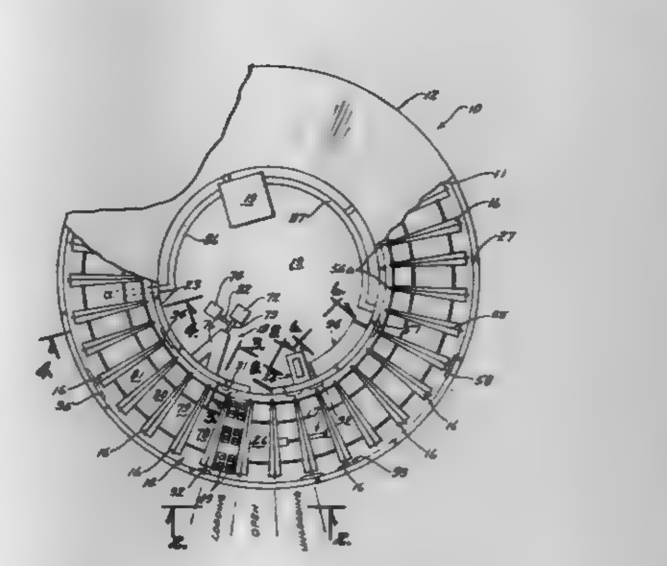
3,982,890
METHOD AND APPARATUS FOR CURING CONCRETE PRODUCTS

Paul L. Lovell, Logan, Iowa, assignor to Cyclamatic, Inc., Cedar Rapids, Iowa

Continuation of Ser. No. 125,661, March 18, 1971, abandoned. This application June 12, 1975, Ser. No. 586,425

Int. Cl.² F27B *9/16;* **F26B** *19/00*

U.S. Cl. 432—138 **4 Claims**



1. Apparatus for curing concrete products which comprises:
  means forming an endless circular tunnel having a floor, walls, and a ceiling, said tunnel substantially airtight except for a product loading station at one portion thereof;
  means forming a track on the floor of said tunnel;
  a plurality of upstanding, interconnected racks movably mounted on said track, each rack including a solid upright wall panel extended transversely across said tunnel

and including further vertically spaced shelves capable of cooperating with identical shelves of an adjacent rack to support pallets for carrying products to be cured;

first sealing means secured about the periphery of each said rack;

second sealing means secured at predetermined arcuately spaced locations on the inside of said tunnel and cooperable with said first sealing means to form a substantially airtight seal therewith, such that with a rack panel located momentarily at a said location a substantially complete airtight seal is provided completely across the said tunnel;

means for moving said interconnected racks about said tunnel;

said first and second sealing means coacting to form four separate arcuately arranged stations within said tunnel between said product loading station and a product unloading station;

means connected to said tunnel means for introducing steam into a first of said stations and for maintaining said steam in a turbulent manner therein, said first station being maintained at a certain temperature;

means connected to said tunnel means for introducing steam into a second of said stations adjacent said first station and for circulating said steam therein, said second station being maintained at a temperature higher than the temperature of said first station;

means forming separate openings in said tunnel means for the entrance of air of ambient temperature into a third of said stations adjacent said second station, and for the egress of said air from said third station to the atmosphere; and

means connected to said tunnel means for forcing air of ambient temperature into a fourth of said stations adjacent said third station, and said tunnel means having formed therein an opening at said fourth station for the egress of said forced air therefrom.

CHEMICAL

3,982,891

BLEACHING AND DETERGENT COMPOSITIONS HAVING IMIDE ACTIVATOR AND PEROXYGEN BLEACH

Leo Thomas Murray, East Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 314,100, Dec. 11, 1972, Pat. No. 3,928,223, which is a continuation-in-part of Ser. No. 134,451, April 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 677,747, Oct. 24, 1967, abandoned. This application Sept. 18, 1975, Ser. No. 614,571

Int. Cl.² D06L *3/02;* **C11D** *3/395*

U.S. Cl. 8—111 **15 Claims**

1. A bleaching composition consisting essentially of a water soluble peroxygen bleaching compound selected from the group consisting of perborates, percarbonates, persulfates, persilicates, perphosphates, hydrogen peroxide and sodium peroxide; and a water soluble imide having the formula R_1—COOR wherein R represents a C_1 to C_4 alkyl or phenyl and R_1 represents an acyclic imide radical, an imide nitrogen atom of which is bonded directly to the depicted —COOR moiety, the mol ratio of imide to peroxygen compound ranging from 0.01 to 2.0.

3,982,892

ACTIVATED PEROXY BLEACH COMPOSITION

Frederick W. Gray, Summit, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed July 12, 1974, Ser. No. 487,889

Int. Cl.² D06L *3/02, 3/06;* **C11D** *7/54*

U.S. Cl. 8—111 **35 Claims**

1. An activated peroxy compound bleaching composition comprising a peroxy bleaching compound and a mixture of activators for such compound, at least one of which is (a) an activator selected from the group consisting of di-lower alkanoyl di-lower alkyl glyoxime, tetra-lower alkanoyl glycoluril and mixtures thereof and at least another of which is (b) an activator selected from the group consisting of 2-[di(2-hydroxy-lower alkyl)amino]-4,6-dihalo-s-triazine, 2,4-di-lower alkoxy-6-halo-s-triazine and mixtures thereof, the ratio of active oxygen available from said peroxy bleaching compound to said mixture of activators for such compound being in the range of about 1:12 to 5:1, and the ratio of activator (a) to activator (b) being in the range of about 1:5 to 5:1.

3,982,893

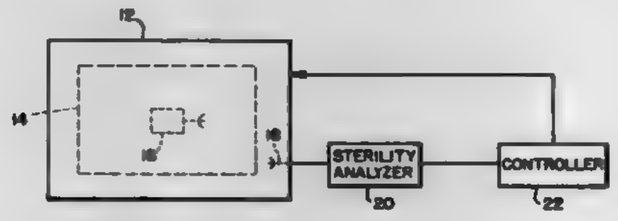
STERILIZER CONTROL METHOD AND APPARATUS

Larry James Joslyn, Walworth, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Sept. 8, 1975, Ser. No. 611,397

Int. Cl.² A61L *3/02;* **G01N** *25/56*

U.S. Cl. 21—2 **8 Claims**



8. A method for controlling the operation of a sterilizer comprising the steps of:

a. placing RF radiating means within a load to be sterilized and then placing the load into a sterilizing chamber;

b. continuously monitoring a plurality of sterilizing affecting environmental conditions within the sterilizing chamber including at least humidity and temperature by sensor means located within the load, the sensor means being capable of issuing a continuous sensor signal which is representative of each of the sensed conditions;

c. modulating the RF signal of said radiating means in response to said sensor signal;

d. conveying said modulated RF signal outside of said sterilizing chamber; and

e. operating a sterilizer control means responsive to the modulated RF signal conveyed to the outside of said sterilizing chamber.

3,982,894

METHOD OF INHIBITING ACIDIC CORROSION OF FERROUS METALS WITH POLYQUATERNARY AMINO POLYMERS

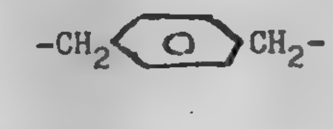
Robert R. Annand, St. Louis, and Aldred E. Woodson, Festus, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Dec. 22, 1971, Ser. No. 211,049

Int. Cl.² C23F *11/00, 11/04, 11/14*

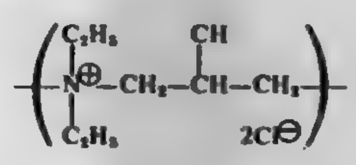
U.S. Cl. 21—2.7 R **7 Claims**

1. A process of inhibiting corrosion of metals including ferrous metals and alloys thereof in an acidic corrosive medium which comprises contacting said metals including ferrous metals and alloys thereof in said corrosive medium with a polyquaternary amino polymer prepared by reacting a monoamine with an organic dichloride, with or without final alkylation by a quaternizing agent, said polyquaternary amino polymer having at least about 10% of the polymer units with quaternary amino units, said organic dichloride having the general formula Cl—R—Cl and R is $—CH_2)_n$ where n is 2–10, $—CH_2CH=CHCH_2—$, $—CH_2C\quad CCH_2—$,



or $—CH_2CH_2—O—CH_2CH_2—$.

6. A process of inhibiting corrosion of metals including ferrous metals and alloys thereof in an acidic corrosive medium which comprises contacting said metals including ferrous metals and alloys thereof in said corrosive medium with a polyquaternary amino polymer prepared by reacting diethylamine with epichlorohydrin, with or without final alkylation by a quaternizing agent, said polyquaternary amino polymer having at least about 10 percent of the polymer units with quaternary amino units and having recurring units of the idealized formula



$$-\left(\begin{array}{c}C_2H_5\\|\\N^{\oplus}\\|\\C_2H_5\end{array}-CH_2-\begin{array}{c}CH\\|\\CH\end{array}-CH_2-\right)- \quad 2Cl^{\ominus}$$

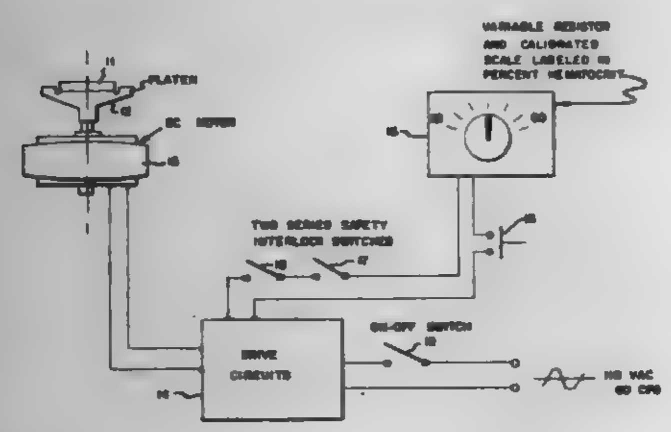
7. A process of inhibiting corrosion of metals including ferrous metals and alloys thereof in an acidic corrosive medium which comprises contacting said metals including ferrous metals and alloys thereof in said corrosive medium with a polyquaternary amino polymer prepared by reacting still-bottom polyethylene polyamines containing primary, secondary, tertiary amino groups and heterocyclic amines with 1,4-dichlorobutene, with or without final alkylation by a quaternizing agent, said polyquaternary amino polymer having at least about 10 percent of the polymer units with quaternary amino units.

3,982,895
BLOOD SMEARED SLIDE CENTRIFUGE
Lynn G. Amos, Raleigh, N.C.; James W. Bacus, Hinsdale, Ill.; Robert C. Beaty, and Charles H. Rogers, both of Raleigh, N.C., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 363,432, May 24, 1973, Pat. No. 3,906,890. This application June 18, 1974, Ser. No. 480,506

Int. Cl.² G01N *33/16*

U.S. Cl. 23—230 B 4 Claims


PLATEN
DC MOTOR
VARIABLE RESISTOR AND CALIBRATED SCALE LABELED IN PERCENT HEMATOCRIT
TWO SERIES SAFETY INTERLOCK SWITCHES
DRIVE CIRCUITS
ON-OFF SWITCH
115 VAC 60 CPS

1. A method of preparing blood films for microscopic examination comprising

determining the red blood cell concentration of a quantity of blood,

placing a said quantity of blood on one flat surface of a microscope slide,

providing a centrifuge,

providing a manually-adjustable variable control,

spinning said slide in said centrifuge with said one surface of said microscope slide perpendicular to the spin axis of said centrifuge, and

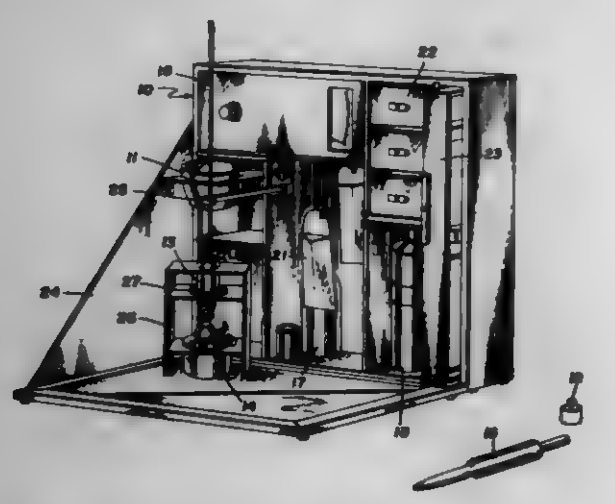
controlling the time integral of the centrifugal force applied to said microscope slide by said centrifuge by adjusting with said variable control said time integral as a function of said red blood cell concentration of said blood.

3,982,896
TEST METHOD FOR DETERMINING ZEOLITE
Charles A. Keisling, Boylston, and Leonard B. Sand, Holden, both of Mass., assignors to Zeochem Corporation, Worcester, Mass.

Filed Nov. 4, 1974, Ser. No. 520,296

Int. Cl.² G01N *25/00, 25/20;* G01G *3/08*

U.S. Cl. 23—230 R 2 Claims



1. A test method for determining the amount of zeolite material in a sample, comprising the sequential steps of

a. separating a specific mass of the sample,

b. heating the mass to a temperature sufficient to desorb adsorbed water,

c. isolating the heated mass from the atmosphere,

d. cooling the isolated and heated mass,

e. adding a specific quantity of adsorbable liquid to the mass,

f. noting the rise in temperature of the mass and liquid mixture, and

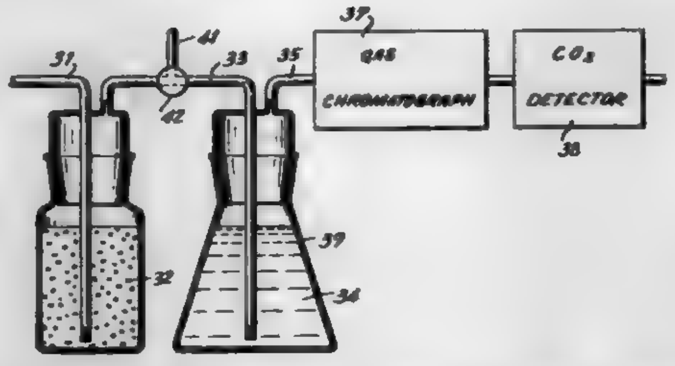
g. correlating the rise in temperature to the amount of zeolite material in the sample.

3,982,897
FILTER AND DETECTOR AND METHODS OF USING SAME IN THE REMOVAL AND DETECTION OF CARBON MONOXIDE FROM, AND IN, A GAS STREAM
Israel Herbert Scheinberg, 5447 Palisade Ave., Bronx, N.Y. 10471

Continuation-in-part of Ser. No. 292,011, Sept. 25, 1972, which is a continuation-in-part of Ser. No. 151,153, June 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 102,869, Dec. 30, 1970, Pat. No. 3,693,327, which is a continuation-in-part of Ser. No. 85,057, Oct. 29, 1970, abandoned. This application Feb. 19, 1976, Ser. No. 659,199

Int. Cl.² A24B *15/02;* B01D *39/04;* G01N *31/14, 33/16*

U.S. Cl. 23—232 R 41 Claims



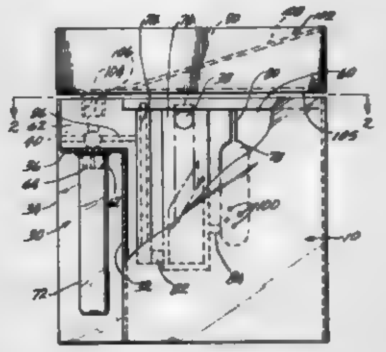
32. A method of absorbing CO from a gas stream, comprising the step of passing said gas stream through a container containing a composition including packed red blood cells therein.

3,982,898
APPARATUS FOR COLLECTING URINE SAMPLE
Bernard McDonald, 7700 Seville Ave., Huntington Park, Calif. 90255

Filed Jan. 8, 1976, Ser. No. 647,606

Int. Cl.² A61B *5/00, 10/00;* G01N *1/00, 33/16*

U.S. Cl. 23—259 12 Claims



1. Urine testing device comprising:

a housing having an open planar top,

a funnel member mounted on the top of the housing,

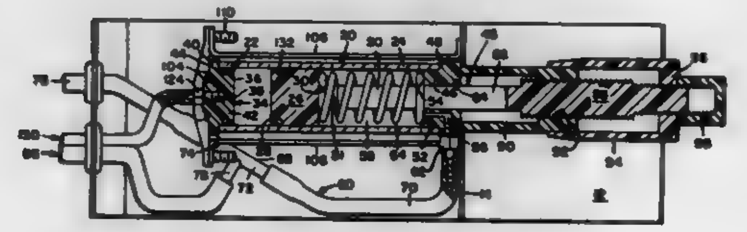
means removably securing the funnel member to the housing, the funnel having a bottom surface overlying the open top of the housing and forming a cover for the housing, the funnel member having a passage extending into the housing for directing fluid from the funnel member into the housing, a plurality of sample compartments in the housing, and means directing fluid to said sample compartments from said passage.

3,982,899
FLUID HANDLING APPARATUS
Everett F. Kelm, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 22, 1975, Ser. No. 579,961

Int. Cl.² B01L *3/02;* G01N *1/10, 1/14*

U.S. Cl. 23—259 7 Claims



1. An apparatus for aspirating a selected quantity of liquid into a pipetting vessel having an open top end and an open bottom tip and for discharging said quantity of liquid from said vessel comprising, a vessel for transferring a selected quantity of liquid having an open top end and an open bottom tip for admitting and discharging said liquid; socket means for removably engaging said open top end of said vessel; a tube, having one end connected to said socket means, for supplying suction and thereafter pressure to said vessel top end; a cylinder having a dispensing end and a driving end; plug means for sealing said cylinder dispensing end, said plug means having a passageway formed therethrough connected to said tube; a piston member within said cylinder in a sliding fluid-tight relationship with said cylinder, said piston member having a dispensing face opposing said plug means within said cylinder dispensing end and a driving face opposing said cylinder driving end, with a portion of the cylinder between said piston driving face and said cylinder driving end forming a driving chamber; spring means within said driving chamber abutting said piston driving face for urging said piston toward said cylinder dispensing end; means for supplying subatmospheric pressure to said driving chamber to withdraw said piston against said spring means and toward said cylinder driving end, thereby aspirating liquid into said vessel through the bottom tip thereof; means for stopping the withdrawal of said piston at a predetermined distance from said cylinder dispensing end, said distance being predetermined to cause said vessel to be partially filled with said selected quantity of liquid; means for selectively venting the subatmospheric pressure supplied to said driving chamber to permit said spring means to urge said piston toward said cylinder dispensing end, thereby discharging said selected quantity of liquid from said vessel; and, said venting means including flow restrictive means for metering the rate at which said subatmospheric pressure is vented from said driving chamber, whereby said liquid is discharged from said vessel at a metered rate.

3,982,900
PLATE FOR FLUID-BED REACTORS
Giansilvio Malgarini, and Edoardo Pasero, both of Rome, Italy, assignors to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

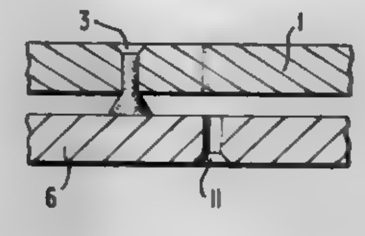
Filed June 16, 1975, Ser. No. 587,236

Claims priority, application Italy, June 17, 1974, 51565/74

Int. Cl.² F26B *25/10;* B01J *8/44*

U.S. Cl. 23—284 7 Claims

1. A plate for fluid bed reactors, comprising spaced upper and lower plates having holes therethrough, the holes in the upper plate being staggered relative to the holes in the lower plate, said holes having frusto-conical enlargements at one end thereof, the frusto-conical enlargements of the holes in the upper plate being at the upper ends of the holes of the upper plate and the frusto-conical enlargements of the holes



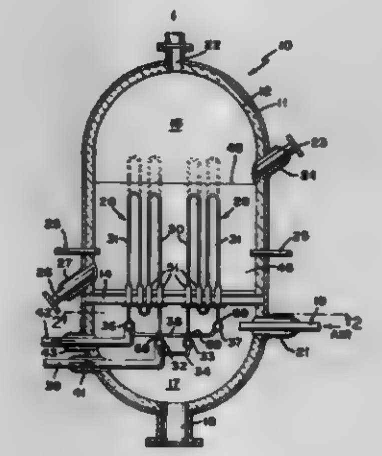
of the lower plate being at the lower ends of the holes of the lower plate.

3,982,901
HEAT TRANSFER ELEMENT AND TUYERE FOR FLUIDIZED BED REACTOR
Andrew Beaumont Steever, Old Greenwich, and Walfred Wilhelm Jukkola, Westport, both of Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed June 25, 1975, Ser. No. 590,141

Int. Cl.² F28D *13/00*

U.S. Cl. 23—284 12 Claims



1. A fluid bed reactor comprising a reaction chamber, a windbox separated from said reaction chamber by a constriction plate, a body of particulate solids subject to fluidization on said constriction plate, a plurality of heat exchanger coils comprising vertically oriented runs of tubing serially joined by upper and lower return bends, said vertical runs of tubing passing through said constriction plate and located in contact with said body of particulate solids for heat exchange with said solids in the fluidized state, said lower return bends located below said constriction plate, a plurality of elongated tuyere means in said constriction plate and extending into said reaction chamber having the combined functions of admitting fluidizing gas through said constriction plate into said reaction chamber, providing access through said constriction plate for said vertical runs of heat exchange tubing, supporting said vertical runs of tubing and providing thermal sleeves to accommodate differential thermal expansion between said constriction plate and said vertical runs of tubing, said tuyeres each having therein an outer annular gas passageway for fluidizing gas, said vertically oriented tubing runs each having a segment thereof within and traversing said tuyeres, an insulating lining on each of said segments constituting the inner surface of said annular gas passageway, said tuyeres being fixed and bonded at the lower ends thereof to said constriction plate, and secured at the upper ends thereof in a bonded joint to said vertical runs of tubing for support thereof.

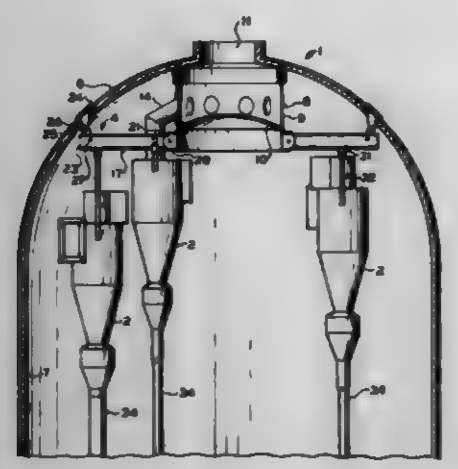
3,982,902
IMPLEMENT SUPPORT APPARATUS

Russell W. Lortz, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 19, 1974, Ser. No. 534,284

Int. Cl.^{2} B01J *8/24;* **F16M** *11/00, 13/00*

U.S. Cl. 23—288 R **5 Claims**



1. Apparatus comprising:

- **a. a vessel having an opening in the top thereof;**
- **b. a plenum attached to the top of said vessel and depending therefrom, said plenum being in communication with said opening;**
- **c. a bracket secured to said vessel at a point spaced from said plenum;**
- **d. a beam pivotally secured at one end to said plenum at a point spaced downwardly from the top of said vessel;**
- **e. a link pivotally secured at one end of said bracket and at the other end to the second end of said beam so that said beam is disposed in a generally horizontal plane;**
- **f. a cyclone separator;**
- **g. a support member attached to said beam between the two ends thereof and depending therefrom to support said cyclone separator within said vessel; and**
- **h. fluid communication means connecting an outlet of said cyclone to said plenum.**

3,982,903
ALKYLATION REACTION CHAMBER

Robert F. Anderson, La Grange Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 462,071, April 18, 1974, Pat. No. 3,914,111. This application July 14, 1975, Ser. No. 595,839

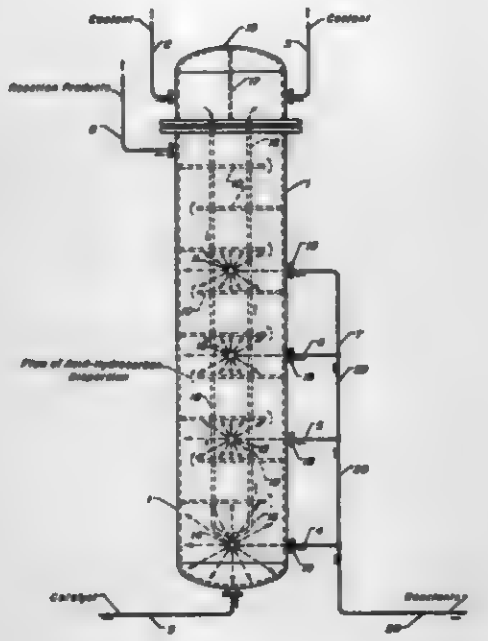
The portion of the term of this patent subsequent to Oct. 21, 1992, has been disclaimed.

Int. Cl.^{2} B01J *1/00, 8/08;* **C07C** *3/54*

U.S. Cl. 23—288 E **3 Claims**

1. An acid-catalyzed alkylation reaction chamber which comprises, in combination:

- **a. a vertically-disposed, elongated cylindrical vessel having internal heat removal means;**
- **b. an acid inlet port at the lower end of said vessel and a reaction product outlet port at the upper end of said vessel;**
- **c. a plurality of vertically spaced reactant stream inlet ports disposed along said vessel between said acid inlet port and said reaction product outlet port;**
- **d. a plurality of vertically spaced baffles within said vessel perpendicular to the longitudinal axis thereof, said baffles dividing the inner volume of said vessel into compartments, and said baffles having circular segment-shaped openings at alternate sides of said vessel to provide a serpentine flow of liquid upwardly through the vessel; and**
- **e. a plurality of reactant injection assemblies within said vessel, each disposed between a pair of adjacent baffles, within a compartment, and communicating with one of said reactant stream inlet ports, said injection assemblies comprising spray nozzles oriented to direct spray into substantially all portions of said compartment in which said injection assembly is situated.**



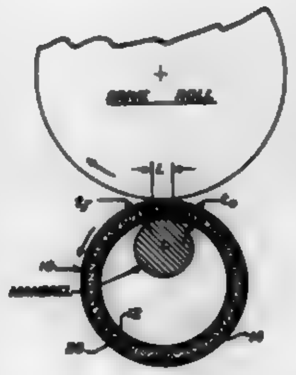
3,982,904
METAL RINGS MADE BY THE METHOD OF PARTICLE RING-ROLLING

Harbhajan S. Nayar, Plainfield, N.J., assignor to Viking Metallurgical Corporation, Verdi, Nev.

Division of Ser. No. 374,184, June 27, 1973, Pat. No. 3,834,003, which is a continuation-in-part of Ser. No. 303,160, Nov. 2, 1972, abandoned. This application Apr. 23, 1974, Ser. No. 463,231

Int. Cl.^{2} B22F *3/00, 5/00*

U.S. Cl. 29—182 **17 Claims**



1. A metal-worked product of essentially seamless annular configuration comprising a coherent mass of metallurgically bonded particles which has been hot ring rolled to achieve complete densification between a drive roll and a mandrel wherein the drive roll has a larger diameter than the mandrel, and wherein the outer diameter of said annular configuration at least exceeds the thickness as measured in the direction of its principal axis.

3,982,905
POROUS VALVE SEAT MATERIALS FOR INTERNAL COMBUSTION ENGINES

Makoto Osawa, Tokyo; Yoshitoshi Hagiwara, Niiza; Takao Kawakita, Itami; Kenya Motoyoshi, Itami, and Nobuhito Kuroishi, Itami, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Sumitomo Electric Industries, Ltd., Osaka, both of, Japan

Filed Dec. 28, 1973, Ser. No. 429,300

Claims priority, application Japan, Jan. 11, 1973, 48-6185

Int. Cl.^{2} C22C *1/08, 1/05, 1/04*

U.S. Cl. 29—182.5 **7 Claims**

1. A valve seat material for an internal combustion engine, which comprises a sintered ferrous alloy having the composition:

	percent by weight
chromium	5–15
cobalt	5–20
nickel	2–8
tungsten	2–10
molybdenum	0.2–12
carbon	0.2–2

the remainder being iron except for usual impurities and trace elements,

and having a porosity of 5–25 %.

3,982,906
PRODUCTION OF ALUMINUM-ALUMINUM OXIDE DISPERSION COMPOSITE CONDUCTIVE MATERIAL AND PRODUCT THEREOF

Masataka Hirai; Toshio Takahashi; Kishio Arita; Goro Yamauchi, and Shugo Kubo, all of Tokai, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Japan

Filed Nov. 14, 1973, Ser. No. 415,801

Int. Cl.^{2} B22F *3/00;* **C22C** *21/00*

U.S. Cl. 29—182.5 **9 Claims**

1. A method of manufacturing an aluminum-aluminum oxide dispersion composite conductive material comprising the steps of:

compacting aluminum powder with an average grain size ranging from 44 to 100 microns with a compacting pressure ranging from 0.5 ton/cm^2 to 3 tons/cm^2, the particles of said aluminum powder having a superficial aluminum oxide film; and

heat treating the resultant compacted material in an atmosphere under a reduced pressure ranging from 10^{-4} to 10^{-3} Torr at a temperature ranging from 660° to 700°C for a period ranging from 0.5 hour to 1.5 hours, with the compacted material maintaining its shape and size during the heat treatment.

5. A method of manufacturing an aluminum-aluminum oxide dispersion composite conductive material comprising the step of:

compacting a dilute aluminum alloy in the form of powder with an average grain size ranging from 44 to 100 microns with a compacting pressure ranging from 0.5 to 3 tons/cm^2, said dilute aluminum alloy containing at least one metal element in a group consisting of silicon, zirconium, titanium and manganese, the content of the metal element being 1.6 weight percent in case of silicon, 0.28 weight percent in case of zirconium, 1.0 weight percent in case of titanium and 1.8 weight percent in case of manganese, said dilute aluminum alloy powder being prepared by the atomization method with its particles having a superficial aluminum oxide film; and

heat treating the resultant compacting material under a reduced pressure ranging from 10^{-4} to 10^{-3} Torr at a temperature ranging from 660° to 700°C for a period ranging from 0.5 to 1.5 hours, with the compacted material maintaining its shape and size during the heat treatment.

8. Al-Al_2O_3 dispersion composite conductive material manufactured by the method defined in claim **1**, the composite material consisting of aluminum and containing 0.01 to 0.2 weight percent of Al_2O_3, the electrical conductivity of said material being in a range from 58.0 to 64.0 percent IACS, the tensile strength of said material being in a range from 18 to 30 kg/mm^2, and the elongation of said material being in a range from 2.5 to 3 percent.

9. Al-dilute alloy-Al_2O_3 dispersion composite conductive material manufactured by the method defined in claim **5**, the composite material consisting of an alloy composed of aluminum containing 0.01 to 0.2 weight percent of Al_2O_3 with respect to aluminum and a slight quantity of at least one element in a group consisting of silicon, zirconium, titanium and manganese, the electrical conductivity of said material being in a range from 57.0 to 64.0 percent IACS, the tensile strength of said material being in a range from 20 to 40 kg/mm^2, and the elongation of said material being 3 percent.

3,982,907
HEAT AND WEAR RESISTANT SINTERED ALLOY

Uichi Honma, Kawagoe, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Division of Ser. No. 343,991, March 22, 1973, abandoned. This application Oct. 31, 1974, Ser. No. 519,709

Claims priority, application Japan, Mar. 30, 1972, 47-31141

Int. Cl.^{2} C22C *1/05, 29/00*

U.S. Cl. 29—182.7 **1 Claim**

1. A valve seat formed of a sintered alloy comprising, in percent by weight, 0.2–2.0% carbon, 2.0–9.9% chromium, 0.3–1.5% molybdenum, 3.0–10.0% cobalt, 0.5–5.0% tungsten with the balance, totalling 100 weight percent, being substantially Fe, said carbon being present as carbides of other elements in said alloy and said chromium forming carbide with carbon and tungsten in said alloy.

3,982,908
NICKEL-GOLD-COBALT CONTACT FOR SILICON DEVICES

Anthony Francis Arnold, Ringoes, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 20, 1975, Ser. No. 633,690

Int. Cl.^{2} B32B *15/04;* **H01L** *29/46*

U.S. Cl. 29—195 **7 Claims**

1. A contact for a silicon device comprising
a layer of sintered nickel directly on said silicon device;
a layer of gold directly on said layer of sintered nickel; and
a layer of cobalt directly on said layer of gold.

3,982,909
NITROGEN-CONTAINING COLD FLOW IMPROVERS FOR MIDDLE DISTILLATES

William C. Hollyday, Jr., Watchung, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

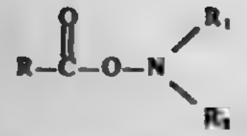
Filed Feb. 13, 1975, Ser. No. 549,753

Int. Cl.^{2} C10L *1/22*

U.S. Cl. 44—66 **14 Claims**

1. A fuel oil composition comprising a major amount of a middle distillate fuel oil, and a cold flow improving synergistic mixture of:

- A. in the range of about 0.005 to 0.5 weight percent of a nitrogen compound selected from the group consisting of:
  - a. N,N-dialkyl n-alkane amides of the formula

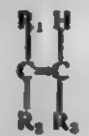


$R-C(=O)-O-N(R_1)(R_2)$

wherein R is C_1 to C_{30} alkyl group, and R_1 and R_2 are each C_8 to C_{24} straight chain alkyl groups; and

b. C_4 to C_{10} hydrocarbyl aliphatic dicarboxylic acid wherein one of said carboxylic acid groups is reacted with either C_{14} to C_{30} aliphatic hydrocarbyl alcohol or a secondary alkyl monoamine having C_{10} to C_{24} straight chain alkyl groups, to thereby form a monoester or a monoamide, and the other of said carboxylic acid groups is reacted to form an amide or salt with a secondary alkyl monoamine having C_{10} to C_{24} straight chain alkyl groups; and at least one other additive selected from the group consisting of:

B. in the range of 0.002 to 0.2 weight percent of an ethylene backbone pour point depressant which is a copolymer of 4 to 20 molar proportions of ethylene and a molar proportion of unsaturated ester of the general formula:



$R_1(R_2)C=C(H)(R_3)$

wherein R_1 is hydrogen or methyl, and R_2 is a $-OOCR_4$ or $-COOR_4$ group wherein R_3 is hydrogen or $-COOR_4$ and R_4 is hydrogen or a C_1 to C_{16} alkyl group, said copolymer having a number average molecular weight in the range of about 1,000 to 50,000; and/or

C. in the range of about 0.005 to 0.30 weight percent of waxy material selected from the group consisting of:

a. amorphous hydrocarbon fraction having a number average molecular weight of about 600 to 3000, a melting point in the range of about 25° to 60°C., and having no more than about 5 weight percent of normal paraffins;

b. akylated aromatic formed by reacting paraffins of about 12 to about 50 carbon atoms, chlorinated to about 5 to 25 weight percent chlorine, with an aromatic hydrocarbon selected from the group consisting of phenol and naphthalene; and

c. microcrystalline wax.

3,982,910

HYDROGEN-RICH GAS GENERATOR

John Houseman, Pasadena, and Donald J. Cerini, Flintridge, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed July 10, 1974, Ser. No. 487,156

Int. Cl.² B01J *7/00*

U.S. Cl. 48—61 **17 Claims**

1. A hydrogen generator comprising

means for defining a source of liquid hydrocarbon,

means for defining a source of air,

means establishing a partial oxidation region,

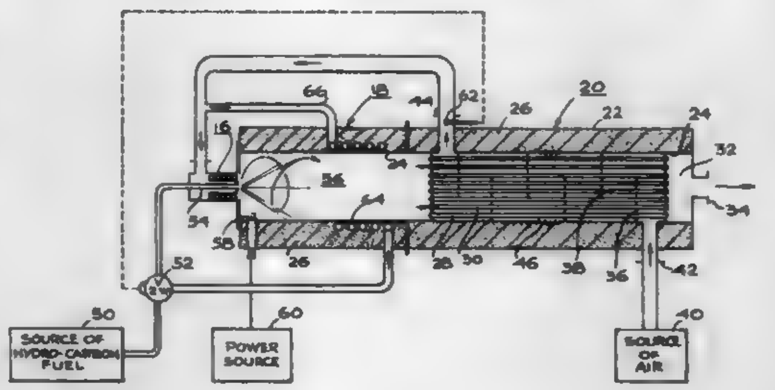
means to which said means defining a source of liquid carbon is connected for producing a spray of droplets from said liquid hydrocarbon source and injecting said spray into said partial oxidation region,

means for injecting air from said means defining a source of air into said partial oxidation region to be mixed with said spray,

means to which said partial oxidation region is connected for igniting said air-spray mixture to permit production of hot hydrogen-rich product gases,

means to which said means defining a source of air is connected for preheating air from said source prior to its injection into said partial oxidation region with said hot hydrogen-rich product gases,

means coupled to said means for preheating air for determining when the temperature of said preheated air exceeds a predetermined value and producing a signal,



means coupled to said means defining a source of liquid hydrocarbon for vaporizing said liquid hydrocarbon,

valve means responsive to said signal for terminating the application of liquid hydrocarbon from said source to said means for producing a spray of droplets and for directing it instead to said means for vaporizing liquid hydrocarbon to produce vaporized hydrocarbon,

means for directing said vaporized hydrocarbon to said means for injecting air to be mixed with said preheated air and injected therewith into said partial oxidation regions, and

means for removing hydrogen-rich product gases from said partial oxidation region.

3,982,911

PROCESS FOR THE PREPARATION OF A COMPOSITE CUBIC BORON NITRIDE LAYER ABRASIVE BODY

Minyoung Lee, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 302,809, Nov. 1, 1972, abandoned. This application Oct. 18, 1974, Ser. No. 515,867

Int. Cl.² B24D *3/06, 3/14;* C04B *31/16*

U.S. Cl. 51—307 **18 Claims**

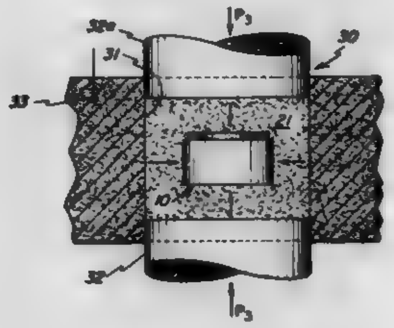
1. A process for the preparation of a composite abrasive body comprising the steps of:

a. placing within a protective metal container (1) a layer of a mass of clean cubic boron nitride crystals, (2) a layer of bonding alloy or metal for providing said bonding alloy for infusing and wetting the clean surfaces of capillary-size voids in said mass of cubic boron nitride crystals, said bonding alloy being a metal alloy having a critical wetting temperature of less than about 1500°C, being capable of reducing B_2O_3 and exhibiting a limited finite reactivity with cubic boron nitride, the amount of said bonding alloy ranging from about 30 to 60% by volume of said mass of cubic boron nitride crystals, and (3) a layer of substrate material different from said bonding alloy, said substrate material being selected from the group consisting of (a) metal carbide powder selected from the group consisting of tungsten carbide, titanium carbide, tantalum carbide and mixtures thereof containing sintering metal bonding agent therefor selected from the group consisting of cobalt, nickel, iron and mixtures thereof sinterable at operating temperature and pressure, (b) sintered metal carbide selected from the group consisting of tungsten carbide, titanium carbide, tantalum carbide and mixtures thereof, and (c) metal having a linear thermal expansion coefficient of less than about 10×10^{-6} inch per inch degree Centigrade and having a melting point at the operating pressure greater than the operating temperature and being selected from the group consisting of molybdenum, niobium, platinum, chromium, vanadium, tungsten, tantalum, titanium, silicon, rhodium, ruthenium, zirconium and alloys thereof, said substrate being disposed with one side facing said other two layers,

b. disposing said metal container and the contents thereof within a finely-divided particulate pressure-transmitting medium that remains unsintered under the operating conditions of temperature and pressure and that transmits applied pressure substantially undiminished,

c. applying substantially isostatic pressure to said container and said contents via said pressure transmitting medium, said pressure being greater than about 20,000 psi and significantly less than the pressure at which cubic boron nitride is stable at the operating temperature selected for this step, the application of pressure being maintained at least long enough to substantially stabilize the dimensions of said container and said contents at least in planes through said container parallel to the interface between the layers of bonding alloy or bonding alloy-providing metal and the cubic boron nitride crystals,

d. simultaneously applying substantially isostatic pressure to and heating said container and said contents as substantially dimensionally stabilized in step (c), said heating being to a temperature and for a period of time in excess of about one minute to liquefy said bonding alloy or said bonding alloy-providing metal, exceed the critical wetting temperature of said bonding alloy and permit infusion thereof into capillary-size voids in said mass of cubic boron nitride crystals, said pressure being applied via said pressure-transmitting medium and reaching a value between at least about 500psi and a value significantly less than the pressure at which cubic boron nitride is stable at said critical wetting temperature,



e. maintaining substantially isostatic pressure on said container and said contents during cooling thereof and

f. recovering the resultant composite abrasive body in which a layer of bonding alloy-bonded cubic boron nitride crystals is directly bonded to a substrate.

15. A composite abrasive body consisting of a layer of bonding alloy-bonded cubic boron nitride crystals directly bonded to a metal substrate having a linear thermal expansion coefficient less than about 10×10^{-6} inch/inch °C, said metal substrate being selected from the group consisting of molybdenum, niobium, platinum, chromium, vanadium, tungsten, tantalum, titanium, silicon, rhodium, ruthenium, zirconium and alloys thereof, and the bonding alloy component of said layer of bonding alloy-bonded cubic boron niitride crystals being characterized as a metal alloy having a critical wetting temperature of less than about 1500°C, exhibiting a limited finite reactivity with cubic boron nitride and being capable of reducing B_2O_3, said bonding alloy component ranging from about 30 to 60% by volume of the cubic boron nitride crystals.

3,982,912

METHOD FOR PREPARATION OF AN IMPROVED K-A TYPE ZEOLITE AND FOR SEPARATION BY ADSORPTION POLAR AND NON-POLAR MOLECULES

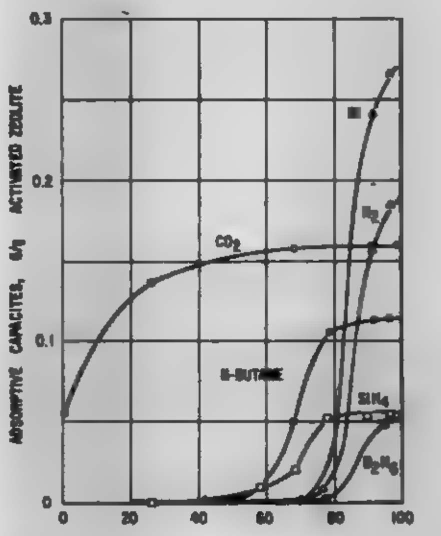
Yoshifumi Yatsurugi, 6-507, 7-ban, 2-chome, Tsujido-Nishikaigan, Fujisawa, Kanagawa; Tatsuo Kuratomi, 2-18, 4-chome, Hamatake, Chigasaki, Kanagawa, and Tetsuo Takaishi, 1461-251, Nagae, Hayamacho, Miuragun, Kanagawa, all of Japan

Continuation-in-part of Ser. No. 221,469, Jan. 27, 1972, abandoned, and a continuation-in-part of Ser. No. 368,966, June 11, 1973. This application May 6, 1974, Ser. No. 467,123

Claims priority, application Japan, Mar. 31, 1971, 46-18697; Oct. 2, 1971, 46-76817

Int. Cl.² B01D *15/00*

U.S. Cl. 55—35 **4 Claims**



1. A process for removal of phosphine from a mixture of monosilane and phosphine which comprises contacting said mixture with an improved K–A type zeolite in which approximately 33.3 to 83.3% and approximately 16.7 to 66.7% of potassium ion and zinc ion, respectively, are ion exchanged.

3,982,913

METHOD AND APPARATUS FOR DEGASSING METALLIC MELTS

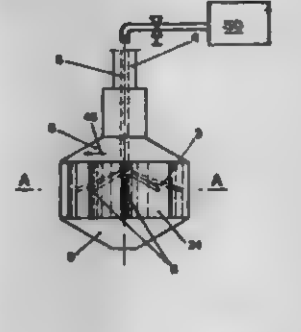
Heinrich Feichtinger, Schaffhausen, Switzerland, assignor to Leybold-Heraeus-Verwaltung G.m.b.H., Cologne, Germany

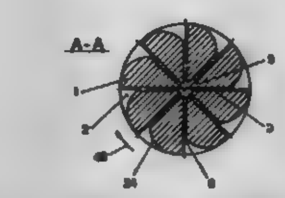
Filed Dec. 5, 1973, Ser. No. 421,755

Claims priority, application Switzerland, Dec. 7, 1972, 17872/72

Int. Cl.² B01D *19/00*

U.S. Cl. 55—55 **12 Claims**





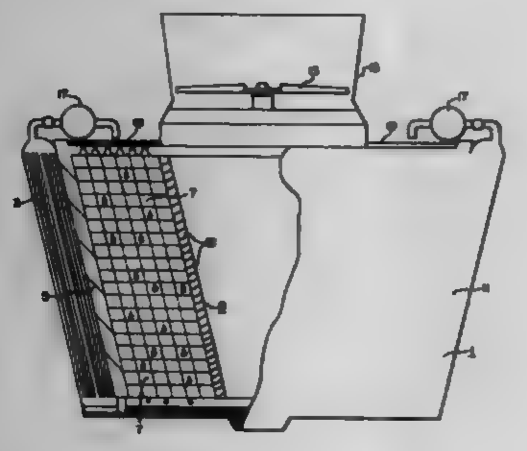
1. A method for degassing metallic melt comprising the steps: immersing a rotating member in the melt, said member having step-shaped portions in the form of a back tooth with a rising inclined surface; rotating said member in such a direction of rotation that the rising inclined surface runs ahead;

forming vacuum spaces in recesses of said step-shaped portions during rotation of said member, said vacuum spaces being free of melt; admitting a processing gas into said vacuum spaces for carrying away gases extracted from said melt and passed into said vacuum spaces, said processing gas flowing through said vacuum spaces and carrying away said extracted gases in the flow of said processing gas; and removing the diluted extracted gas from said melt, said processing gas being conducted to said vacuum spaces through channels and openings in said rotating member, said processing gas being throttled for maintaining a vacuum of 0.1 to 500 torr in said vacuum spaces, said rotational member having channels for admitting auxiliary processing gas to said vacuum spaces.

3,982,914
DRIFT ELIMINATORS FOR EVAPORATIVE COOLING TOWERS

Ralph E. Grimble, Finleyville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 7, 1974, Ser. No. 448,860
Int. Cl.² B01D *45/08*; F28C *1/00*
U.S. Cl. 55—257 QV **5 Claims**

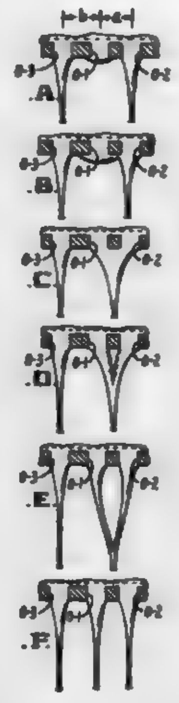


1. A cooling tower which brings water in direct contact with cooling air, said cooling tower having a pair of generally imperforate end walls, a louvered wall extending between said end walls at one side of said cooling tower; fill disposed inwardly of said louvered wall and generally extending between said end walls, said fill being disposed to break up influent water to increase its surface area and bring it into intimate contact with influent cooling air, whereby some of the moisture is entrained in the air to produce moisture laden air; a pan disposed above said fill to distribute water over said fill; a venturi shaped stack disposed above and connected to said cooling tower; a fan disposed in said stack so as to draw cooling air through said louvered wall and fill and exhaust said air through said stack; and a drift eliminator disposed inwardly of said fill, said drift eliminator comprising a plurality of elongated curved vanes which generally extend longitudinally between said end walls, said vanes being disposed in a single row and having longitudinal margins form leading and trailing edges which are joined by generally smooth curved surfaces having an arc length between 3 and 12 inches, said leading edges of said vanes being disposed inwardly of said fill in a plane forming an acute angle generally less than 20° with a vertical plane, siad vanes being disposed in a generally parallel relationship, each vane comprising an upper and lower surface of different radii, the radius of curvature of the lower surface being smaller than the radius of curvature of the upper surface, and the upper and lower surface having an included angle greater than 45° but less than 90° to define a continuous smooth curved flow path which changes direction between 45° and 90° and said vanes having their leading and trailing edges and the curved surfaces contiguous therewith generally tangent to the moisture laden air leaving the fill and flowing toward the stack, whereby a large portion of the moisture in the air is collected on the vanes and the pressure drop across the vane is minimal.

3,982,915
APPARATUS AND METHOD FOR CONTROLLING FLOODING IN THE DRAWING OF GLASS FIBERS

Charles H. Coggin, Jr., 1330 E. Foothill, Apt. 56, Glendora, Calif. 91740

Filed Dec. 8, 1975, Ser. No. 638,526
Int. Cl.² C03B *37/02*, *37/08*
U.S. Cl. 65—1 **16 Claims**

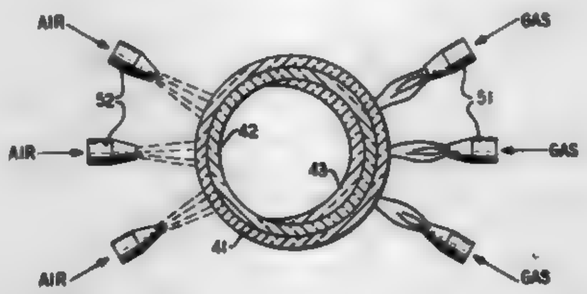


12. A method of controlling flooding from a first orifice of a glass fiber drawing apparatus of the type having a non-tip plate with a flat undersurface through which the orifice extends and against which bulk gas is directed to cool fiber being drawn from the orifice, said method comprising extending a second orifice through said plate in paired relationship to the first orifice and so positioned relative thereto that in the event of breakage of a glass fiber being drawn from the first orifice the glass therefrom will flood to and join glass being drawn from the second orifice prior to flooding to any other orifices within the plate or cooling sufficiently to prevent the continued drawing of the glass from the first orifice.

3,982,916
METHOD FOR FORMING OPTICAL FIBER PREFORM

Stewart Edward Miller, Locust, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 24, 1975, Ser. No. 644,136
Int. Cl.² C03B *23/04*, *37/02*
U.S. Cl. 65—3 A **12 Claims**



1. In a method of manufacturing a preform which is intended to be subsequently drawn into an optical fiber, said method being of the type that includes the steps of:

flowing a vapor mixture including at least one compound, glass-forming, precursor together with an oxidizing medium through a hollow, cylindrical substrate; and

heating said substrate and contained vapor mixture with a moving heat source, external to the substrate, such that a suspension of particulate, oxidic reaction product material is produced within the substrate, said particulate material traveling downstream and coming to rest on the inner surface of said substrate and thereat being fused to form a continuous glassy deposit on said inner surface, the improvement which comprises:

adding a dopant to said glass-forming precursor thereby to alter the refractive index of said particulate material;

asymmetrically heating said substrate to preferentially deposit said doped particulate material as a continuous glassy deposit on at least one first region of said inner surface;

removing the dopant from said glass-forming precursor;

inverting the asymmetry of said asymmetrical heating to preferentially deposit said undoped particulate material as a continuous glassy deposit on at least one second region of said inner surface, said second region being substantially diametrically opposed from said first region; and then,

terminating the process when said glassy deposit has attained a predetermined thickness.

3,982,917
METHOD OF INCREASING THE STRENGTH OF SILICATE GLASS LASER RODS

Lee O. Upton, Sturbridge, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 4, 1975, Ser. No. 546,971
Int. Cl.² C03C *15/00*, *19/00*
U.S. Cl. 65—31 **2 Claims**

1. A method of increasing the strength of silicate glass laser rod that has been manufactured from a silicate host glass doped with a laser active material, cut to a rod shape, and subsequently ground and polished with an abrasive material to remove the larger cutting marks and imperfections, said method which produces a hardened surface that protects the silicate glass laser rod from physical abrasions, prevents failure due to thermal shock, and removes flaws while not interfering with light pumping through the sides of the silicate glass laser rod comprising;

i. providing silicate glass laser rod that has been prepared by cutting said rod to a predetermined dimension having a predetermined length to diameter ratio range about 4.0 to about 5.3.

ii. preparing said silicate glass laser rod for an acid polishing procedure by first subjecting said provided rod to an abrasive grinding and polishing procedure employing an abrasive with grit of about 180 mesh size that removes all incipient fractures that result from or include cutting tool marks, embedded surface inclusions, shatter marks, and uneven strain distribution;

iii. washing said prepared rod with soap and water and rinsing rod with water; and then,

iv. completing a predetermined number of immersing and rinsing cycles that includes plunging said washed and rinsed rod into an acid polishing solution and sloshing said rod up and down for a period of time of about one minute, removing said rod from said acid polishing solution and water rinsing said rod of reaction products, said acid polishing solution comprised of 50 percent concentrated hydrofluoric acid containing about 48 percent HF and 50 percent concentrated nitric acid containing about 70 percent HNO_3.

3,982,918
PROCESS FOR PREPARING A COPPER CONTAINING SEALING GLASS

Rudolf G. Frieser, Poughkeepsie; Jimmie L. Powell, and Rao R. Tummala, both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 28, 1975, Ser. No. 572,036
Int. Cl.² C03B *9/00*, *23/20*, *5/16*; C03C *3/00*
U.S. Cl. 65—66 **5 Claims**

1. A process for forming a copper oxide containing sealing glass composition comprising the steps of:

forming a first portion of said glass, including the relatively high melting point oxides, said portion consisting essentially of, by weight based on the total weight of said composition; PbO 32.15 to 32.9%, Al_2O_3 1 to 2%, ZnO 10.5 to 12.5%, SiO_2 2 to 3%, Bi_2O_3 0 to .75%, B_2O_3 6.5 to 7.5%, in the absence of CuO by heating said first portion until homogeneous melt is formed at a melt temperature of about 1,100°C for at least about 1 hour and no more than about 1¼ hour;

forming a second portion of said glass, including the relatively low melting point oxides, said portion consisting essentially of, by weight based on the total weight of said composition; PbO 32.15 to 32.9 percent, Bi_2O_3 0 to 0.75%, B_2O_3 6.5 to 7.5%, and CuO 3.5 to 5% by heating said second portion, except said CuO, until a homogeneous melt is formed at a melt temperature of about 1050°C for at least about ¾ hour and not more than about 1 hour, reducing the temperature of said melt to from about 750° to about 800°C, adding the CuO to the melt and maintaining the melt at temperatures from about 750° to about 800°C until the melt is homogeneous;

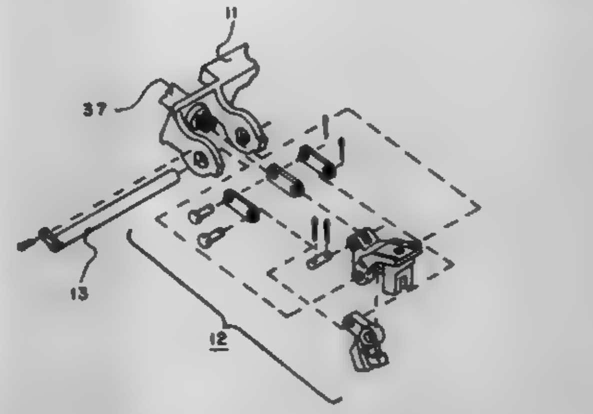
combining said first and second portions at a temperature of from about 750° to about 800°C and maintaining the resulting combined melt of said first and second portions at a temperature of from about 750° to about 800°C until said melt is homogeneous, and

cooling said melt to produce a glass composition in which the conversion of CuO to Cu_2O is below about 10% by weight.

3,982,919
RETROFIT IMPROVEMENTS IN TONG HEAD ASSEMBLIES

William Wenz, 427 Carlton Ave., Millville, N.J. 08332

Filed Sept. 30, 1975, Ser. No. 618,234
Int. Cl.² C03B *9/44*
U.S. Cl. 65—172 **2 Claims**



1. In glass molding equipment employing a pneumatically operated take-out tong head assembly of the type utilizing a centrally disposed cylinder with included piston and piston rod assembly operating a cross head which, in turn, simultaneously operates at least two spring biased plunger assemblies each interconnected for operation of a scissors tong assembly mounted in a tong holder guide bracket, the improvements for repair and alteration of the assembly comprising:

a pneumatic cylinder assembly including a cylinder, piston and piston rod adapted for direct mounting of the cylinder upon the tong holder guide bracket and direct interconnection of the piston rod to the scissors tong assembly following removal of the original cross head and plunger assemblies; and

means pneumatically interconnecting the pneumatic cylinder with the original centrally disposed cylinder whereby the original pneumatic control to the tong head assembly will be transmitted to the pneumatic cylinders for independent for independent operation of the scissor tong assemblies.

3,982,920
STABILIZED DISPERSIONS OF MICRONUTRIENTS IN SPRAY OILS

Edward A. Cross, Houston, Tex., and John Douglas Downer, Pointe-a-Pierre, Trinidad, West Indies, assignors to Texaco Inc., New York, N.Y.

Filed Dec. 2, 1974, Ser. No. 528,967

Int. Cl.^{2} C05F *11/00*

U.S. Cl. 71—1 **4 Claims**

1. A composition self-emulsifiable with a horticultural spray oil and efffective for supplying micronutrients to the leaves of plants, comprising in combination a non-phytotoxic hydrocarbon mineral oil having a gravity API of 27–35, a viscosity at 100°F of 70 to 104 Saybolt Universalt Seconds and a boiling point between about 600° and 775°F.; an emulsifying agent serving also as a stabilizer and consisting of an alkylarylpolyether alcohol and a water-soluble inorganic salt of the group of calcium, copper, molydenum, magnesium, zinc, manganese and iron.

3,982,921
ORGANO PHOSPHORUS HERBICIDES

Takeo Satomi, Takarazuka; Kunio Mukai, Nishinomiya; Akihiko Mine; Naganori Hino, both of Toyonaka; Kohshi Tateishi, and Masachika Hirano, both of Minoo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

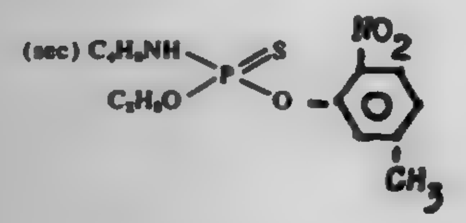
Division of Ser. No. 474,444, May 29, 1974, Pat. No. 3,936,433, and a continuation-in-part of Ser. No. 182,523, Sept. 21, 1971, abandoned. This application Dec. 24, 1974, Ser. No. 536,220

Claims priority, application Japan, Sept. 25, 1970, 45-84432

Int. Cl.^{2} A01N *9/36*

U.S. Cl. 71—87 **4 Claims**

1. A method for controlling weeds, which comprises applying an effective amount of a compound of the formula:



3,982,922
HERBICIDAL COMPOSITIONS CONTAINING FURANCARBOXAMIDES

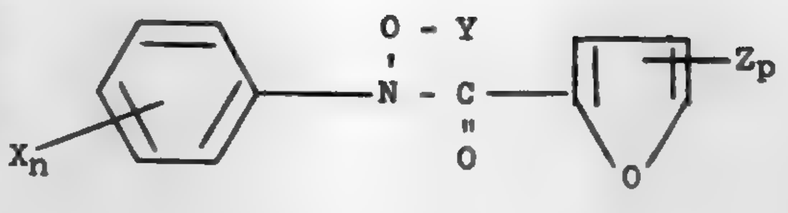
John Kreuzer, Oak Park, and Sidney B. Richter, Chicago, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 694,075, Dec. 28, 1967, abandoned. This application Feb. 12, 1971, Ser. No. 115,077

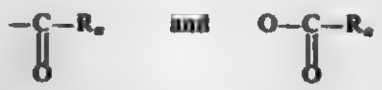
Int. Cl.^{2} A01N *9/00*

U.S. Cl. 71—88 **1 Claim**

1. A herbicidal composition comprising an inert carrier and, in a herbicidally toxic amount, at least one compound of the formula

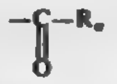


wherein *n* is an integer of from 1 to 3; X is selected from the group consisting of halogen, alkyl or alkenyl of from 1 to 5 carbon atoms, nitro, hydroxy, alkoxy of from 1 to 5 carbon atoms,



$$-\underset{\underset{O}{\|}}{C}-R_a \quad \text{and} \quad O-\underset{\underset{O}{\|}}{C}-R_a$$

where R_a is an alkyl group of from 1 to 5 carbon atoms and cyano; Y is selected from the group consisting of alkyl of from 1 to 5 carbon atoms,



$$-\underset{\underset{O}{\|}}{C}-R_a$$

where R_a is an alkyl group of from 1 to 5 carbon atoms, alkoxycarbonyl, wherein the alkoxy group is from 1 to 5 carbon atoms, alkylthiocarbonyl wherein the alkyl group is from 1 to 5 carbon atoms, alkoxycarbonylalkylene, wherein the alkoxy and alkylene groups are from 1 to 5 carbon atoms, and carbamoyl; Z is selected from the group consisting of halogen, alkyl of from 1 to 5 carbon atoms, alkoxy of from 1 to 5 carbon atoms and nitro; and *p* is an integer of from 0 to 3.

3,982,923
GEM-BIS AMIDE HERBICIDE ANTIDOTE COMPOSITIONS AND METHODS OF USE

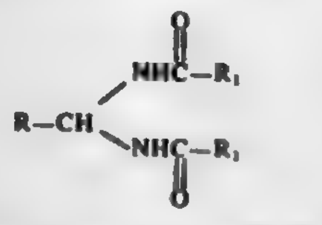
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 363,464, May 24, 1973, Pat. No. 3,923,494. This application May 22, 1975, Ser. No. 580,126

Int. Cl.^{2} A01N *9/12*

U.S. Cl. 71—100 **15 Claims**

1. An herbicide composition comprising a mixture of a herbicidally effective amount of a thiocarbamate herbicide and an antidote compound corresponding to the formula



in which R is selected from the group alkyl, containing from 1 to 6 carbon atoms, inclusive; alkenyl, containing from 2 to 6 carbon atoms, inclusive; phenalkenyl, in which the alkenyl contains from 2 to 4 carbon atoms, inclusive; and cyanoalkyl, containing from 2 to 6 carbon atoms, inclusive; and R_1 is lower chloroalkyl containing from 1 to 4 carbon atoms, inclusive; from about 0.01 to about 15 parts by weight of antidote compound for each part by weight of the thiocarbamate herbicide.

3,982,924
PROCESS FOR PRODUCING CARBIDE ADDITION AGENTS

Frederick H. Perfect, Wyomissing, Pa., assignor to Reading Alloys, Inc., Robesonia, Pa.

Division of Ser. No. 147,018, May 26, 1971. This application Aug. 6, 1973, Ser. No. 385,631

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.^{2} B22F *9/00;* C21C *7/00;* C22B *47/00;* C22C *1/04*

U.S. Cl. 75—.5 BA **6 Claims**

1. A process for preparing carbide addition agents comprising combining in a finely-divided state

- a. carbon
- b. an oxide of at least one metal selected from the group consisting of vanadium and columbium, and
- c. an oxide of at least one metal selected from the group consisting of iron and manganese into a uniform mixture, compacting said mixture, sintering and reducing said compact mixture at a temperature of from about 1200° to about 1400° C. under a reducing atmosphere, and about atmospheric pressure to form said carbide addition agent the proportional relationship between *a*, *b*, and *c* being such that a point representing the composition of said carbide addition agent, expressed in atomic percent, lies substantially within the area PQRS of FIG. 1.

3,982,925
METHOD OF DECARBURIZATION IN ESR-PROCESSING OF SUPERALLOYS

Wilfredo V. Venal; H. Joseph Klein; Richard R. Daniel, all of Kokomo, Ind., and Rodney T. Gross, Lockport, N.Y., assignors to Cabot Corporation, Kokomo, Ind.

Filed Apr. 9, 1975, Ser. No. 566,314

Int. Cl.^{2} C22B *4/00, 9/10*

U.S. Cl. 75—10 R **10 Claims**

1. The method of electroslag remelting of nickel and cobalt base alloy materials to prevent weld heat affected zone corrosion resulting from precipitation of grain boundry carbides in such alloys comprising the step of decarburizing the ESR starting slag by adding a sufficient amount of NiO to the molten slag to react with sufficient carbon to evolve volatile oxides of carbon and reduce the carbon in the slag to the desired level prior to starting the remelting of the alloy material.

3,982,926
METHOD FOR MELTING CHARGES

Gunther Geck, Hagen, and Hans Jurgen Langhammer, Bremen-Platjgenwerbe, both of Germany, assignors to Klockner-Werke AG, Duisburg, Germany

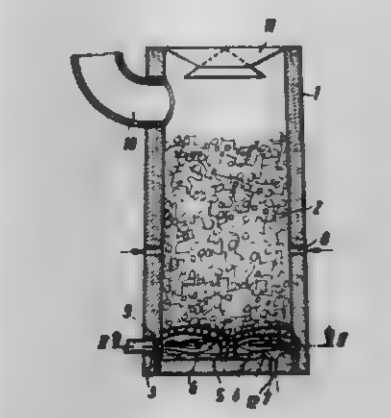
Filed May 28, 1974, Ser. No. 473,900

Claims priority, application Germany, May 26, 1973, 2327072

Int. Cl.^{2} C21C *7/00*

U.S. Cl. 75—48 **9 Claims**

1. A melting method, comprising the steps of introducing a charge of iron scrap or iron sponge into an upright melting chamber having a bottom so as to form in said chamber a column of said charge having a leading end portion abutting said bottom and supporting the remaining portion of said column in said chamber; melting said column with an annular flame located in the region of said leading end portion and arranged intermediate said bottom and said remaining portion, said melting being performed in such a manner that said leading end portion has the form of a central projection which extends downwardly from said remaining portion to said bottom and has a cross-sectional area at substantially all locations intermediate said bottom and said remaining portion which is considerably smaller than that of said remaining portion; temporarily collecting the molten material produced by said melting at said bottom so as to form a pool of molten material which contacts said leading end portion, the heat transfer from said pool to said column being restricted due to the relatively small cross-sectional area of said leading end portion; superheating the molten material of said pool with said flame so as to prevent immediate freezing of the molten material discharged from said chamber, said superheating being beneficially influenced by the restricted heat transfer from said pool to said column; and continuously evacuating the superheated molten material from said chamber.



3,982,927
METHOD OF BLOWING TO OBTAIN A VERY LOW AMOUNT OF CARBON IN CHROME STEELS

Jean Saleil, Imphy, France, assignor to Creusot-Loire, Paris, France

Filed Jan. 23, 1975, Ser. No. 543,351

Claims priority, application France, Nov. 13, 1974, 74.37356

Int. Cl.^{2} C21C *5/34*

U.S. Cl. 75—60 **4 Claims**

1. A method of refining a chromium-containing steel which comprises the steps of separately and simultaneously blowing into the steel, below its surface, controlled amounts of water vapour and a non-oxidizing gas to reduce loss of chromium, to reduce the carbon content of the steel to less than 0.015%, and to control the temperature of the bath, the water vapour and non-oxidizing gas each being blown into the steel through one of the two inner tubes of a nozzle comprising three concentric tubes, and a fluid for protecting the nozzle against wear is blown into the steel through the outer concentric tube.

3,982,928
SEPARATION OF URANIUM FROM (TH,U)O_2 SOLID SOLUTIONS

Premo Chiotti, Ames, Iowa, and Mahesh Chandra Jha, Arvada, Colo., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 3, 1975, Ser. No. 538,491

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.^{2} C22B *60/02*

U.S. Cl. 75—84.1 R **7 Claims**

1. A method for separating uranium values from a mixture of thorium oxide and uranium oxide comprising:

- a. mixing the metal oxides with a molten chloride salt additionally containing thorium tetrachloride and thorium metal, said salt being selected from the group consisting of the salts of the alkali metals, alkaline earth metals and mixtures thereof, whereby the uranium oxide is selectively reduced to uranium metal, and
- b. recovering the uranium metal.

3,982,929

COMPOSITION FOR A FLUIDIZING FLUX IN THE PRODUCTION OF IRON AND STEEL

Willis A. Heck, Brackenridge, and Roy E. Ferre, Valencia, both of Pa., assignors to ESM, Inc., Valencia, Pa.

Filed Feb. 9, 1973, Ser. No. 330,961

Int. Cl.² C22B *9/10*

U.S. Cl. 75—94 **4 Claims**

1. An acid fluidizing flux composition for the production of iron and steel consisting essentially of an admixture of particulate constituents selected from a sodium salt selected from the group consisting of sodium silicate and sodium carbonate in an amount from about 5–50 percent by weight, silica in an amount from about 20–80 percent by weight and aluminum selected from the group consisting of aluminum oxides and powdered metallic aluminum in an amount from about 2–60 percent by weight, said admixture being further characterized by constituting discrete composite particles formed from said particulate constituents.

3,982,930

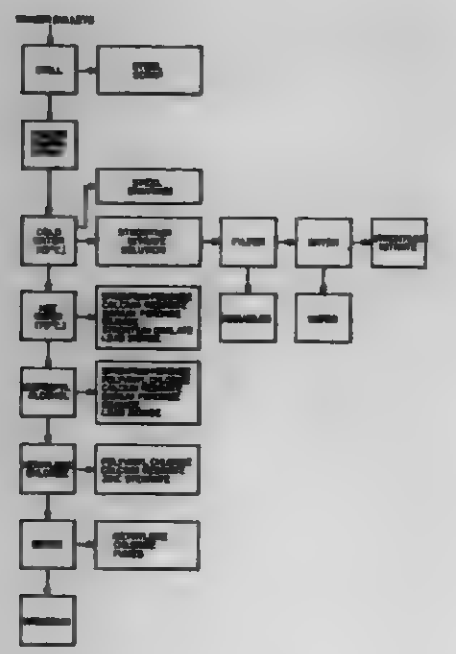
METHOD FOR DISPOSAL OF TRACER BULLETS

William E. Deedes, Otwell; James E. Short, Jr., Switz City, and Karen S. Wherrall, Shoals, all of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 25, 1975, Ser. No. 616,698

Int. Cl.² C22B *26/22*

U.S. Cl. 75—101 R **4 Claims**



1. A method for disposing of tracer bullets having a steel casing filled with pyrotechnic material containing strontium nitrate, magnesium, strontium peroxide, polyvinyl chloride, calcium resinate and other pyrotechnic materials, with the combined percentages of strontium nitrate and magnesium comprising at least sixty percent of the total percentage of said pyrotechnic material, comprising the steps of

first rotating said steel casing filled with pyrotechnic material against a stationarily mounted twist drill whereby said pyrotechnic material is drilled from said steel casing and falls onto a collecting tray,

then immersing the collected pyrotechnic material in water sufficiently cold to dissolve only strontium nitrate,

then decanting the water solution of strontium nitrate and evaporating the water to reclaim strontium nitrate,

then removing all materials of said tracer ammunition pyrotechnic material other than magnesium by successive washes of hot water and solvents, and

then drying the remaining magnesium for reuse as a pyrotechnic material.

3,982,931

N,N-DI-SEC.BUTYL-BENZAMIDE HERBICIDES

Emilio Arsura, Milan; Agostino Baruffini; Franco Gialdi, both of Pavia; Giovanni Pellegrini, Milan; Riccardo Ponci, Pavia, and Pietro Scrivani, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Division of Ser. No. 774,475, Nov. 8, 1968, Pat. No. 3,835,189. This application Apr. 9, 1974, Ser. No. 459,263

Claims priority, application Italy, Nov. 9, 1967, 22494/67; Oct. 8, 1968, 222207/68

Int. Cl.² A01N *9/20*

U.S. Cl. 71—118 **7 Claims**

1. A composition for selectively inhibiting the growth of undesirable plants infesting soil planted with agrarian cultures, said composition containing an effective amount of a mixture of dichloro-:N,N-di-sec.butylbenzamide, containing 70% of 2,5-dichloro, 23% of 2,3-dichloro and 7% 3,4-dichloro and an inert carrier.

3,982,932

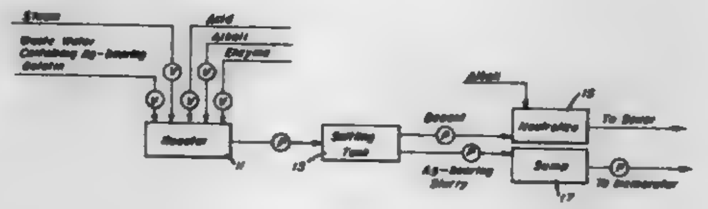
RECOVERY OF SILVER FROM GELATINOUS PHOTOGRAPHIC WASTES

Matyas Korosi, Montmorency, Victoria, Australia, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 22, 1972, Ser. No. 282,819

Int. Cl. C22b *11/00*

U.S. Cl. 75—118P **9 Claims**



1. A process for recovering silver in the form of silver metal or compounds from waste wash waters of emulsion manufacture comprising:

mixing with said wash waters a proteolytic enzyme endopeptidase which is a bacterial enzyme prepared from *Bacillus subtillis* and which is further characterized by the ability to react with gelatin to produce a peptide,

maintaining said wash waters at an alkaline pH during reaction of said enzyme therewith;

introducing acid into said wash waters in sufficient amount to develop an acid pH corresponding to the isoelectric point thereby to effect the precipitation of silver metal or compounds and forming a supernatant liquid, and

separating a concentrate of silver metal or compounds and said supernatant liquid from one another.

3,982,933

BRASS ALLOY

Günther Rudolph, Neuberg; Erhard Schelzke, Neu-Isenburg, and Antonio Leogrande, Werdohl, all of Germany, assignors to Vereinigte Deutsche Metallwerke AG, Frankfurt am Main, Germany

Filed Oct. 31, 1973, Ser. No. 411,471

Claims priority, application Germany, Nov. 2, 1972, 2253690

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.² C22C *9/04*

U.S. Cl. 75—156.5 **5 Claims**

1. A brass alloy with improved machinability consisting essentially of 57 to 62% by weight copper, 1 to 4% by weight lead, 0.15 to 0.20% by weight magnesium, 0.15 to 0.20% by weight tin and the balance zinc.

3,982,934

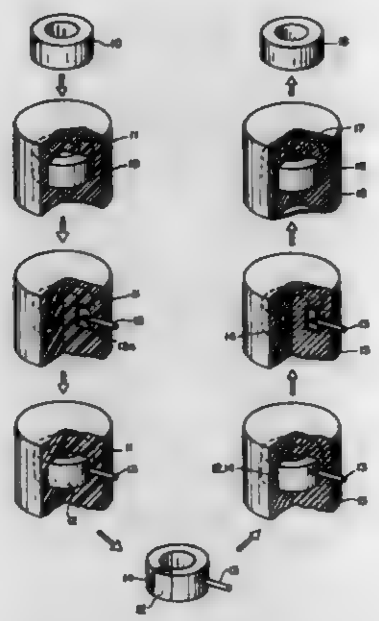
METHOD OF FORMING UNIFORM DENSITY ARTICLES FROM POWDER METALS

Joseph M. Wentzell, Remsen, N.Y., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 31, 1974, Ser. No. 474,878

Int. Cl.² B22F *3/00, 3/12, 3/14, 3/16*

U.S. Cl. 75—208 R **16 Claims**



1. A method for forming a powder metal article of uniform density comprising the steps of:

a. forming a metallic shell on form having the appropriate prepress size of the desired article, the form being made of a selectively removable material;
b. surrounding the form having the metallic shell thereon with a support media;
c. selectively removing the form from the metallic shell, the shell remaining surrounded by the support media and defining a cavity having the appropriate prepress size of the desired article;
d. filling the cavity defined by the shell with powder metal;
e. pressing the support media and filled shell to compact the powder metal into the desired article; and
f. removing the support media from the compacted article, the article having the metallic shell thereon.

3. The method of claim 1 wherein the form is provided in the appropriate prepress size of the desired article by:

a. providing a pattern having the dimensions of the desired article multiplied by the reciprocal of the cube root of the tap density of the powder metal to be formed;
b. forming a female mold around the pattern;
c. removing the female mold from the pattern, the mold having developed the desired strength and having a cavity in the shape of the pattern;
d. filling the mold cavity with casting material;
e. solidifying the casting material in the mold cavity; and
f. removing the formed casting from the mold, the casting having the shape of the pattern.

3,982,935

ELECTROPHOTOGRAPHIC COPYING PROCESS

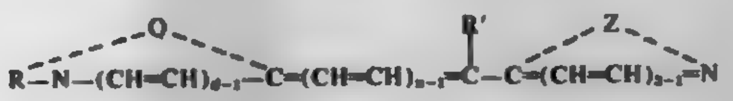
Richard F. Bartlett, Burlington, and Laura K. Case, Winchester, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Division of Ser. No. 855,026, Sept. 3, 1969, Pat. No. 3,879,197. This application Aug. 1, 1974, Ser. No. 494,013

Int. Cl.² G03G *13/22, 5/06*

U.S. Cl. 96—1 R **1 Claim**

1. In a process for producing a visible image on an electrophotographic medium including the steps of exposing the electrophotographic medium to an image pattern of activating radiation, charging said electrophotographic medium to provide a latent electrostatic image pattern, and developing the electrostatic image pattern, the improvement wherein said electrophotographic medium comprises a conductive support having thereon a photoconductive coating formed from a photosensitive material dispersed in an organic binder having a specific resistivity of greater than 10^9 ohm-cm and wherein said photosensitive material consists essentially of a cyanine dye base and an organic halogen derivative capable of formation of hydrohalide acid upon illumination with light, said cyanine dye base corresponding to the formula



$$R-N-(CH=CH)_{d-1}-C=(CH=CH)_{n-1}=\overset{R'}{C}-C=(CH=CH)_{e-1}=N$$

wherein *d* and *e* each represent a positive integer of from 1 to 2; *n* represents a positive integer of from 1 to 4; R represents an organic radical selected from the group consisting of alkyl, aralkyl and aryl groups; R′ represents hydrogen or a cyano group; and Q and Z each represent the nonmetallic atoms necessary to complete a heterocyclic organic nucleus containing from 5 to 6 atoms in the ring.

3,982,936

DEFORMATION IMAGING SYSTEM

William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 695,074, Jan. 2, 1968, Pat. No. 3,542,545, which is a continuation-in-part of Ser. No. 520,423, Jan. 13, 1966, abandoned. This application June 15, 1970, Ser. No. 46,070

Int. Cl.² G03G *13/22*

U.S. Cl. 96—1.1 **61 Claims**

1. An imaging method comprising the steps of:

a. providing an imaging member comprising a fracturable, laterally relocatable layer overlying a softenable, electrostatically deformable layer; and
b. imagewise electrostatically deforming said deformable layer, prior to and without any substantial migration of fracturable, laterally relocatable layer material in depth in said softenable, electrostatically deformable layer, to disrupt and fracture said fracturable layer whereby portions of said fracturable layer laterally relocate with respect to said deformable layer to move from the peaks of the deformations to agglomerate in the pockets of the deformations.

3,982,937

ELECTROPHOTOGRAPHIC RECORDING MATERIAL

Wolfgang Wiedemann, Geisenheim-Johannisberg, Germany, assignor to Hoechst Aktiengesellschaft, Germany

Filed July 12, 1974, Ser. No. 488,212

Claims priority, application Germany, July 16, 1973, 2336093

Int. Cl.² G03G *5/04*

U.S. Cl. 96—1.5 **19 Claims**

1. An article which comprises an electrically conductive carrier layer, a layer comprising a material selected from the group consisting of selenium or selenium-tellurium, and, on the side of the selenium or selenium-tellurium layer remote from the carrier layer, a layer comprising an oligomeric condensation product of 3-bromopyrene and formaldehyde having a degree of polycondensation of 6 to 10.

3,982,938

PHOTOCONDUCTIVE TONERS WHICH INCLUDE PHOTOCONDUCTIVE PIGMENT PARTICLES IN A CHARGE-TRANSPORTING INSULATING BINDER

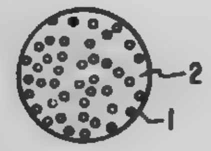
Satoru Honjo; Hajime Miyatuka, and Seiji Matsumoto, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 12, 1974, Ser. No. 441,861

Claims priority, application Japan, Feb. 13, 1973, 48-17715

Int. Cl.^{2} G03G *5/04*

U.S. Cl. 96—1.5 14 Claims



1. Photoconductive toner particles, each particle consisting of a mixture of photoconductive pigment particles and a charge-transporting insulating binder within which is dispersed said photoconductive pigment particles, said insulating binder being capable of transporting charge carriers when the charge carriers are injected therein from said pigment and being selected from the group consisting of (a) resins sensitized by a Lewis acid, (b) resins having organic photoconductive material dissolved therein and (c) organic photoconductive polymers, the volume of said pigment in said toner being 2 to 30 volume percent of said toner and said charge-transporting binder being substantially transparent to light in the spectrally-sensitive region of said pigment.

3,982,939

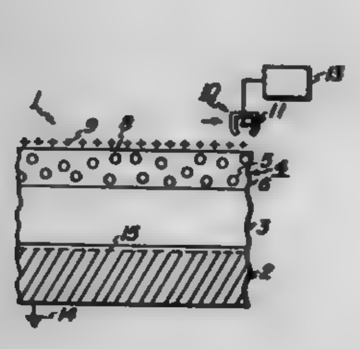
MULTIPLE LAYER MIGRATION IMAGING SYSTEM

Lloyd F. Bean, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 309,546, Nov. 24, 1972, which is a continuation-in-part of Ser. No. 76,891, Sept. 30, 1970, abandoned. This application Mar. 31, 1975, Ser. No. 563,892

Int. Cl.^{2} G03G *5/04*

U.S. Cl. 96—1.5 32 Claims



1. An imaging member, comprising:

a. a first layer of softenable material;

b. a second layer having softenable material and migration material; and

c. at least a third layer having softenable material and migration material; said second layer being sandwiched between said first and third layers, and said softenable materials in said first, second and third layers capable of having their resistance to migration of migration material decreased sufficiently to allow migration in depth in said first, second and third layers of said migration materials in said second and third layers.

9. The imaging member of claim 1 wherein at least one of said second and third layers has its respective migration material dispersed as particles throughout the bulk of its respective softenable material.

13. An imaged member, comprising:

a. a layer of softenable material; and

b. and image within said softenable material layer comprising migrated first and second migration materials the relative positioning of which, one to the other, is inverted with respect to their relative positioning prior to imaging.

3,982,940

PROCESS FOR THE FORMATION OF IMAGES

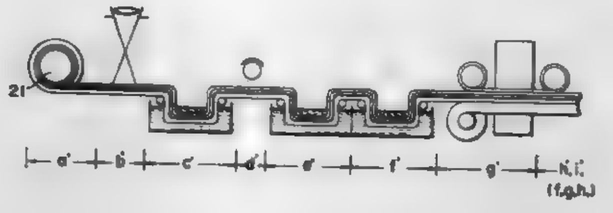
Kikuo Kinjo; Hiroshi Matsuno, both of Tokyo; Tetsuo Hasegawa, Hino, and Hideo Kato, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1974, Ser. No. 511,756

Claims priority, application Japan, Oct. 5, 1973, 48-112141; Jan. 31, 1974, 49-13022; Feb. 8, 1974, 49-15964

Int. Cl.^{2} G03C *5/04*.

U.S. Cl. 96—27 R 14 Claims



1. A photographic transfer process for transferring an image comprising the steps of:

1. forming a developed positive image of an original on a film-forming photosensitive layer provided on a support which is at least semi-transparent, said photosensitive layer being separated from and adhered to said support by a first adhesive high polymeric protecting layer which is at least semi-transparent and which is releasably adhered to said support;
2. disposing the resulting photosensitive layer bearing said positive image in a face-to-face relationship with and at a distance from a substrate composed of a hydrophobic polymer;
3. introducing a dye transferring solvent into the space between the image-bearing photosensitive layer and the surface of said substrate, said solvent being capable of dissolving the coloring matter forming said image; and
4. heating the solvent in said space by dielectric heating to dissolve said image and transfer it onto the surface of said substrate.

3,982,941

PHOTOPOLYMERIZABLE PASTE COMPOSITIONS AND THEIR USE

Harold Kirkwood Inskip, Newark, Del., assignor to E. I. Du Pont De Nemours & Company, Wilmington, Del.

Division of Ser. No. 357,525, May 7, 1973. This application Feb. 7, 1975, Ser. No. 547,958

Int. Cl.^{2} G03C *7/00, 5/00, 1/94, 1/68*

U.S. Cl. 96—34 6 Claims

1. A process for preparing sintered or fused films of inorganic materials on substrates comprising the steps of:

a. screen printing a paste composition comprising:
   1. about 20 to about 80 weight percent of finely divided inorganic material;
   2. about 0.5 to about 5 weight percent of at least one photopolymerizable monomer;
   3. about 0.01 to about 2 weight percent of organic sensitizer;
   4. about 1 to about 15 weight percent of polymeric binder, and,
   5. from 10 to about 75 weight percent of a substantially saturated hydrogenated solvent containing 10 to about 40 carbon atoms formed by the hydrogenation of a terpenoid solvent to form a film,

b. imagewise exposing said film through a mask or transparency to actinic radiation to photopolymerize the monomers in the paste composition and cause hardening of the composition in the exposed areas,

c. removing the unexposed and unhardened areas of said film from said substrate, and

d. firing said film to decompose or burn the polymeric binder and photopolymerized monomers and sinter or fuse the inorganic particulate material to form functional electronic circuit elements.

3,982,942

PHOTOPOLYMERIZATION OF ETHYLENICALLY-UNSATURATED ORGANIC COMPOUNDS

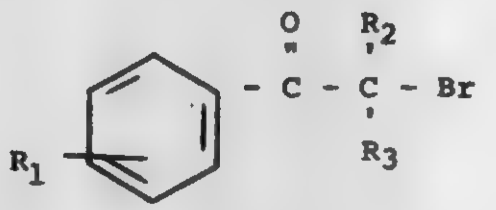
Robert T. Lu, Wilmington, Del., assignor to ICI United States Inc., Wilmington, Del.

Filed Mar. 16, 1973, Ser. No. 341,992

Int. Cl.^{2} G03C *5/00, 1/68;* C08F *8/00, 2/46*

U.S. Cl. 96—35.1 8 Claims

1. A process for the photopolymerization of ethylenically unsaturated organic compounds which comprises irradiating a photopolymerizable composition comprising an ethylenically unsaturated compound and a photosensitizing composition comprising a blend of from 0.05 to 5% by weight, based on the weight of ethylenically unsaturated compound, of $Mn_2(CO)_{10}$ and from 0.1 to 5% by weight, based on the weight of ethylenically unsaturated compound, of a co-catalyst selected from the group consisting of a compound characterized by the formula



wherein R_1 is —H, —Br, or —CH_3, R_2 is —H or —CH_3, and R_3 is —H or —CH_3; cumene; diisopropyl benzene; alkyl mercaptans containing from 10 to 16 carbon atoms; thiourea; and mixtures thereof, wherein the weight ratio of co-catalyst to $Mn_2(CO)_{10}$ is from 0.2 to 10, with light having a wavelength from 4,000 to 7,000 angstroms.

3,982,943

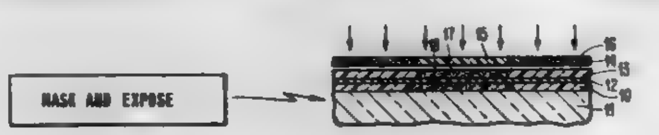
LIFT-OFF METHOD OF FABRICATING THIN FILMS AND A STRUCTURE UTILIZABLE AS A LIFT-OFF MASK

Bai C. Feng, Wappingers Falls, N.Y.; Richard H. Flachbart, Brookfield Center, Conn.; Leonard J. Fried, and Harold A. Levine, both of Poughkeepsi, N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Mar. 5, 1974, Ser. No. 448,327

Int. Cl.^{2} G03C *5/00, 3/00*

U.S. Cl. 96—38.4 16 Claims



1. A method of depositing patterned thin films on an inorganic substrate comprising:

forming on said substrate, a bottom layer of positive photoresist material,

forming over said bottom layer, a discrete light-transparent top layer of positive photoresist material which is less solubilized in developer by exposure to light than is the material in said bottom layer,

simultaneously exposing said layers to the same selected pattern of light,

applying developer for said photoresist materials to said top and bottom layers to thereby form an aperture pattern through said top layer corresponding to said light pattern and a corresponding aperture pattern through said bottom layer coincident with and laterally wider than said top layer apertures, and

depositing said thin films onto said substrate through said coincident aperture patterns using said photoresist layers as a deposition mask.

3,982,944

ANTIFOGGANT DISPERSION FOR COLOR PHOTOGRAPHIC MATERIALS

Reiichi Ohi; Takeo Shimada, and Yasushi Oishi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 6, 1975, Ser. No. 547,681

Claims priority, application Japan, Feb. 6, 1974, 49-15106

Int. Cl.^{2} G03C *7/00*

U.S. Cl. 96—56 9 Claims

1. An antifoggant dispersion for silver halide photographic materials comprising a hydrophilic colloid medium dispersion of a solution of a mixture of 2,5-bis(1′,1′-dimethylbutyl)hydroquinone and at least one other aliphatic hydrocarbon group-substituted hydroquinone in a high-boiling organic solvent.

3,982,945

DEVELOPMENT OF SILVER HALIDE EMULSIONS

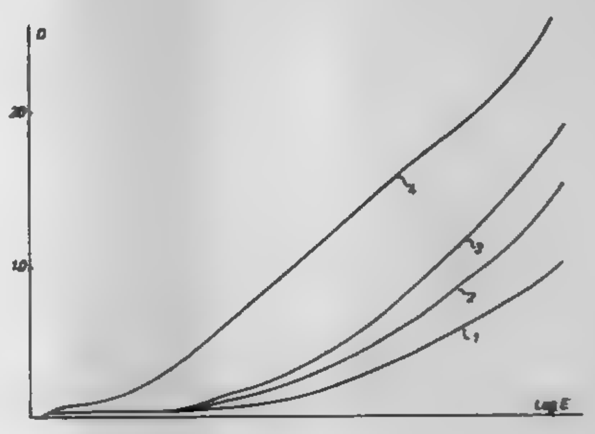
Jozef Frans Willems, Wilrijk, Belgium, assignor to AGFA-GEVAERT, N.V., Mortsel, Belgium

Filed Mar. 24, 1975, Ser. No. 561,659

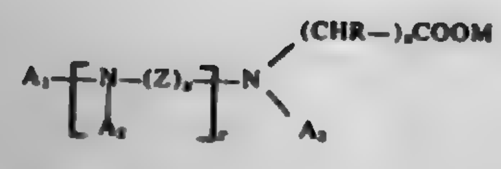
Claims priority, application United Kingdom, Apr. 3, 1974, 14802/74

Int. Cl.^{2} G03G *5/30*

U.S. Cl. 96—66 R 14 Claims



1. Method of producing photographic silver images by development of a photographic element having a layer containing developable silver halide wherein the developer at the time of development includes an organometallic complex of a metal capable of changing its valency and an aliphatic aminocarboxylic acid, or a water-soluble salt thereof; said aliphatic aminocarboxylic acid corresponds to the formula:



$$A_1-\left[\underset{A_2}{N}-(Z)_y-\right]_x-N\begin{cases}(CHR-)_nCOOM\\A_3\end{cases}$$

wherein:

M represents a cation,

R represents hydrogen, alkyl, substituted alkyl, aryl, substituted aryl, aralkyl or substituted aralkyl,

y is 0 or 1,

n is a positive integer,

x represents 0 or provided y is 1 may be a positive integer, each of A_1, A_2 and A_3 (the same or different) represents hydrogen, alkyl or substituted alkyl, and

Z represents alkylene or alkylene-phenylene-alkylene, the amino group(s) in the molecule being secondary or teritiary amino groups and the molecule containing at least one hydroxyl group in one or more of A_1, A_2, A_3, R and Z.

3,982,946

BIS-AZO PYRAZOLONE TYPE DYE DEVELOPER AND LIGHT-SENSITIVE MATERIAL

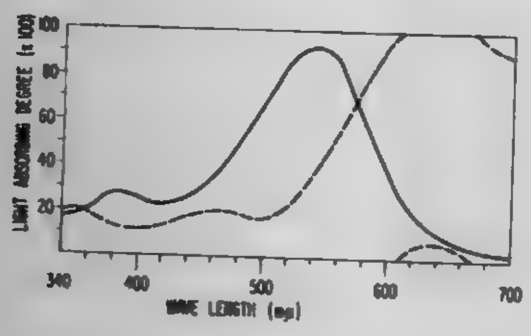
Yukio Maekawa, and Seiki Sakanoue, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 10, 1975, Ser. No. 548,838

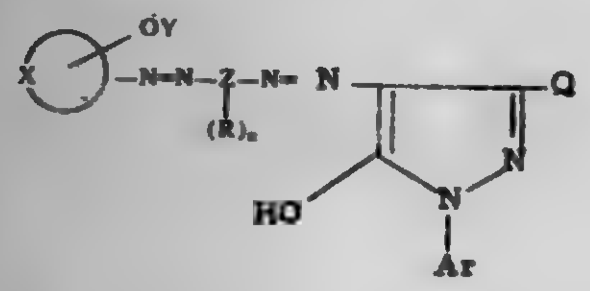
Claims priority, application Japan, Feb. 8, 1974, 49-16026

Int. Cl.² G03C *1/76, 1/40, 7/00, 1/10*

U.S. Cl. 96—73 **14 Claims**

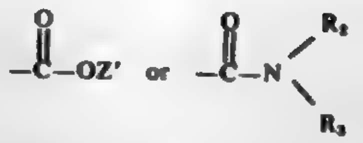


1. In a light-sensitive material comprising a support having thereon a blue-sensitive silver halide emulsion layer and a yellow dye developer associated therewith, a green-sensitive silver halide emulsion layer and a magenta dye developer associated therewith, and a red-sensitive silver halide emulsion layer and a cyan dye developer associated therewith, the improvement characterized in that said cyan dye developer comprises a compound represented by the following general formula (I):



(I)

wherein X represents the atoms necessary for completing a monocyclic or polycyclic aromatic group; Y represents an acyl group having 1 to 4 carbon atoms; Ar and Z each represents a phenyl nucleus or a naphthalene nucleus, with Ar being connected either directly or through a divalent atom or group to a polyhydric phenol moiety having a silver halide developing action; R represents an alkyl group or an alkoxy group; *n* represents an integer of 0 to 4; and Q represents



$$-\overset{\overset{O}{\|}}{C}-OZ' \quad \text{or} \quad -\overset{\overset{O}{\|}}{C}-N\begin{cases}R_2\\R_3\end{cases}$$

wherein Z′ represents a hydrogen atom or an alkyl group, R_2 and R_3 each represents a hydrogen atom or an aliphatic group, or R_2 and R_3 can combine to form a divalent aliphatic group.

3,982,947

FOG-INHIBITORS FOR SILVER HALIDE PHOTOGRAPHY SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING AN IODO BENZENE COMPOUND AS ANTIFOGGANT

Robert Joseph Pollet, Vremde, and Antoon Leon Vandenberghe, Hove, both of Belgium, assignors to AGFA-GEVAERT, N.V., Mortsel, Belgium

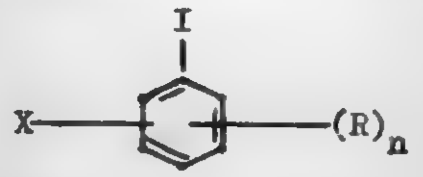
Filed Feb. 27, 1975, Ser. No. 553,622

Claims priority, application United Kingdom, Mar. 14, 1974, 11462/74

Int. Cl.² G03C *1/34*

U.S. Cl. 96—109 **4 Claims**

1. A photographic material comprising a support and at least one light-sensitive silver halide emulsion layer wherein the material comprises per mole of silver halide from about 0.1 to 10 millimoles of a fog-inhibitor corresponding to the following general formula:



wherein:

X is a silver salt forming hydroxy or carboxy group or a hydroxy or carboxy precursor group or a silver salt or silver complex forming substituent azole heterocycle,

n is 1 to 4, and

R stands for hydrogen or a member selected from the group consisting of alkyl, alkoxy, fused-on benzene, aryl, halogen, alkoxycarbonyl, sulpho in acid or salt form, or a group as represented by X.

3,982,948

PROCESS FOR PREPARING SILVER HALIDE EMULSION CONTAINING A RHODIUM SALT AND A DECOMPOSITION PRODUCT OF NUCLEIC ACID

Haruhiko Sato; Hidehiko Ishikawa, and Katsuo Mogaki, all of Odawara, Japan, assignors to Konishiroku Photo Co. Ltd., Japan

Filed June 24, 1974, Ser. No. 481,982

Claims priority, application Japan, July 2, 1973, 48-73607

Int. Cl.² G03C *1/34*

U.S. Cl. 96—109 **6 Claims**

1. A process for the preparation of silver halide photographic emulsions, characterized in that a water-soluble rhodium salt and an effective stabilizing amount of at least 20 mg per mole of silver halide of a compound taken from the class consisting of adenine, guanine, uracil, cytosine and thymine is added to a silver halide photographic emulsion prior to completion of the physical ripening thereof.

3,982,949

HALF-TONE SCREEN MAKING BY DECAPITATION OF SUBSTRATE PROJECTIONS

Edgard Reymond, Le Manoir, 1441 Montagny, Switzerland

Filed Aug. 6, 1975, Ser. No. 602,444

Claims priority, application Switzerland, Aug. 30, 1974, 11827/74

Int. Cl.² G03F *5/00*

U.S. Cl. 96—116 **19 Claims**

1. A method of producing a screen with selected half-tone effects comprising providing a sheet of first material having an uneven face which in cross-section has a multitude of projections placed close to one another, each projection having an apex and being of progressively decreasing width up to the apex, said uneven face being covered at least partially with a second material having different light-absorbtion properties to the first material, and removing the first and second materials by decapitation of said projections to a greater depth at some areas than at other areas to selectively uncover the first material for the provision of said selected half-tone effects.

3,982,950

SILVER HALIDE PHOTOGRAPHIC EMULSION FOR USE IN FLASH EXPOSURE

Keisuke Shiba; Haruo Takei; Akira Sato, and Akira Ogawa, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

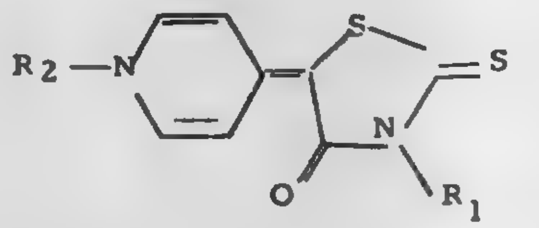
Continuation-in-part of Ser. No. 319,810, Dec. 29, 1972, abandoned. This application Feb. 4, 1975, Ser. No. 546,974

Claims priority, application Japan, Dec. 28, 1971, 46-3038

Int. Cl.² G03C *1/10*

U.S. Cl. 96—139 **4 Claims**

1. A silver halide photographic emulsion having high sensitivity to flash exposure, consisting essentially of grains of silver halide selected from the group consisting of silver chlorobromide and chlorobromoiodide, the grain size ranging from about 0.04 to about 1 micron, said grains being chemically sensitized with a combination of a gold salt and at least one of the group VIII metal salts or a combination of a gold salt and at least one of the group II metal salts, a protective colloid, and a sensitizing amount of a simple merocyanine dye having the following formula (II),



(II)

wherein R_1 and R_2 represent an unsubstituted alkyl group, allyl group, sulfoalkyl group or carboxyalkyl group, said sensitizing dye being the only sensitizing dye present in the emulsion.

3,982,951

ALUMINUM CHROMATE PROTECTIVE COATINGS FOR ALUMINUM

Miguel Coll Palagos, Rye, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 181,207, Sept. 16, 1971, abandoned. This application Apr. 20, 1973, Ser. No. 353,159

Int. Cl.² C09D *5/08*

U.S. Cl. 106—14 **5 Claims**

1. A composition for use in aqueous solution to impart a colorless corrosion resistant coating to aluminum and alloys thereof in which said composition consists essentially of hexavalent chromium, a fluosilicate ion, a nitrate ion, and a source of soluble barium in such amounts that when added to one liter of water there is provided about 2.5 to about 3.75 grams per liter hexavalent chromium, from about 0.75 to about 1.5 grams per liter fluosilicate ion, from about 0.71 to about 1.19 grams per liter nitrate ion, and from about 0.79 to about 1.3 grams per liter barium ion.

3,982,952

INFRARED DETECTION SYSTEM AND WINDOWS USED THEREIN

William H. Dumbaugh, Jr., Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 137,855, April 27, 1971, Pat. No. 3,911,275. This application Oct. 7, 1974, Ser. No. 512,241

Int. Cl.² C03C *3/00*

U.S. Cl. 106—47 Q **5 Claims**

1. A glass exhibiting substantial transmission to infrared radiation in the wavelength range of five to six microns and having a coefficient of thermal expansion of less than 80 × 10^{-7}/°C. consisting essentially in percent by weight as calculated on an oxide basis from the glass batch, of 25–50% GeO_2, 10–50% La_2O_3, 5–50% Ta_2O_5 and 2–20% ZnO, and wherein B_2O_3, SiO_2, and P_2O_5 are absent except as in impurity levels up to about 1% and divalent metal oxides other than ZnO, if present, are present in amounts less than 10%.

3,982,953

REFRACTORY CASTING, RAMMING OR STAMPING MASS

Paul Lennart Ivarsson, Hoganas, and Ingvar Gustav Axel Blom, Viken, both of Sweden, assignors to Hoganas Aktiebolag, Hoganas, Sweden

Filed Nov. 7, 1974, Ser. No. 521,874

Claims priority, application Sweden, Nov. 26, 1973, 7315942

Int. Cl.² C04B *35/02, 35/10*

U.S. Cl. 106—55 **7 Claims**

1. In a refractory mass of the type used for casting, ramming or stamping refractory linings and for metallurgical ladles or tapping channels and composed of 60 to 95 % by weight of refractory grog and 40 to 5 % by weight of binder, the improvement which comprises said mass further containing 0.05 to 0.35 % by weight, based on the solids content of the mass without any additive, of straw-shaped, channel-forming elements equally distributed throughout the mass, whereby rapid drying of the mass is made possible.

3,982,954

POZZOLAN AND CONCRETE PRODUCT THEREOF

Carl C. Jeskey, Susanville, Calif., assignor to Mt. Lassen Cinder Company, Susanville, Calif.

Continuation of Ser. No. 236,519, March 20, 1972, abandoned, which is a division of Ser. No. 54,025, July 10, 1970, abandoned. This application Apr. 12, 1974, Ser. No. 460,311

Int. Cl.² C04B *7/02*

U.S. Cl. 106—97 **5 Claims**

1. A concrete mixture comprising coarse aggregate, fine aggregate, and a mixture of cement and sufficient ground scoria cinder of an average particle size in the range between 2,000 to 10,000 Blaine to provide a rapid cure cement of increased tensile strength, wherein said scoria cinder is substantially of the following composition:

SiO_2	48.2
Fe_2O_3	5.0
Al_2O_3	14.8
CaO	17.4
MgO	7.0
SO_3	0.2

in parts by weight.

3,982,955
ALUMINUM OXIDE FIBERS AND THEIR PRODUCTION
Manfred Mansmann, and Ludwig Schmidt, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 316,311, Dec. 18, 1972, Pat. No. 3,865,599. This application Oct. 21, 1974, Ser. No. 516,831

Claims priority, application Germany, Dec. 22, 1971, 2163678

Int. Cl.² C01B *33/26*

U.S. Cl. 106—307 6 Claims

1. An aluminum oxide fiber of about the following percent composition by weight:

Al_2O_3	61–98
SiO_2	1–20
P_2O_5	0–10
B_2O_3	0–10
MgO	0–5
C	0.1–4

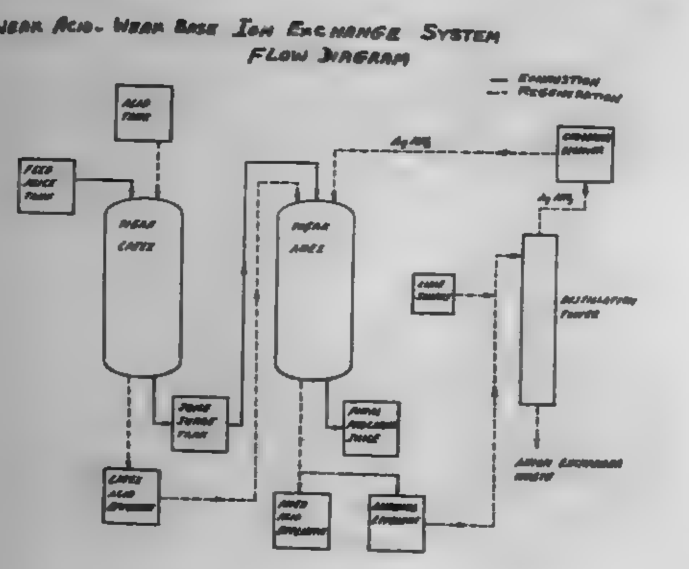
the carbon being present in amorphous form.

3,982,956
PROCESS FOR THE PURIFICATION OF IMPURE SUGAR JUICE
Karlheinz W. R. Schoenrock; Avinash Gupta, and Hugh G. Rounds, all of Ogden, Utah, assignors to The Amalgamated Sugar Company, Ogden, Utah

Filed Sept. 26, 1975, Ser. No. 617,079

Int. Cl.² C13D *3/14*

U.S. Cl. 127—46 A 3 Claims



1. Process which comprises the steps of treating sugarbeet juice, after second carbonation, with the hydrogen form of a resinous carboxylic-type cation exchanger arranged in a column for the reduction of calcium ion in the juice, and thereupon passing the so-treated juice through a mass of particles of a weakly basic anion exchanger having a tertiary amine functionality and operated over the hydroxyl form.

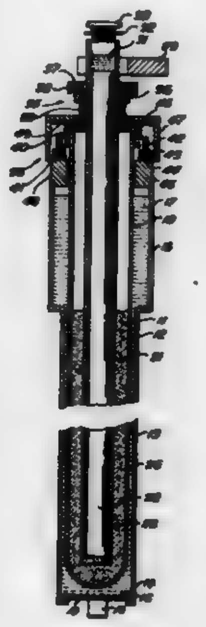
3,982,957
SODIUM SULPHUR CELLS
Ivor Wynn Jones; Graham Robinson, and Thomas Lewis Bird, all of Chester, England, assignors to The Electricity Council, London, England

Filed Feb. 14, 1975, Ser. No. 550,072

Claims priority, application United Kingdom, Feb. 15, 1974, 4884/74

Int. Cl.² H01M *10/00*

U.S. Cl. 429—163 18 Claims



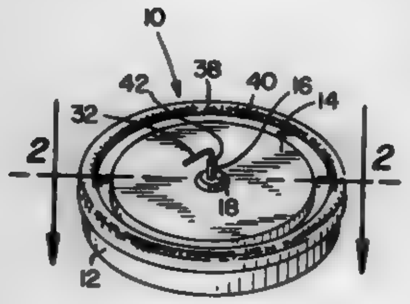
1. In a sodium sulphur cell and a tubular solid electrolyte; the improvement comprising a current collector in contact with the cathodic reactant, which current collector is formed of an impermeable carbon or graphite tube containing a deformable metallic conductor extending over and in contact with the internal surface of the tube.

3,982,958
NON-AQUEOUS BATTERY SYSTEM
Gerald Henry Newman, Strongsville, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

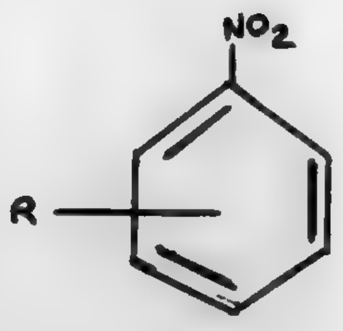
Continuation of Ser. No. 211,305, Dec. 23, 1971, abandoned. This application May 9, 1974, Ser. No. 468,265

Int. Cl.² H01M *6/16*

U.S. Cl. 429—57 12 Claims



1. A hermetically sealed non-aqueous battery system comprising a highly active anode selected from the group consisting of the alkali metals, alkaline earth metals and alloys of alkali metals and alkaline earth metals with one another or other metals, a cathode selected from the group consisting of metal halides, metal sulfides and metal oxides, and an electrolyte of a solute comprising a complex of at least one Lewis acid and an inorganic ionizable salt selected from the group consisting of lithium fluoride, lithium chloride, lithium bromide, sodium fluoride, sodium chloride, sodium bromide, potassium fluoride, potassium chloride, and potassium bromide, dissolved in a solvent conforming to the general formula:



wherein R is selected from the group consisting of hydrogen, a halogen, an alkyl group of one to five carbon atoms, an alkoxy group of one to five carbon atoms, sulfur, an N-alkyl substituted amino group and a nitro group; said solvent being selected from the group consisting of nitrobenzene and substituted nitrobenzene compounds which exist in liquid form at ambient temperature and solid derivatives of nitrobenzene dissolved in an aromatic solvent.

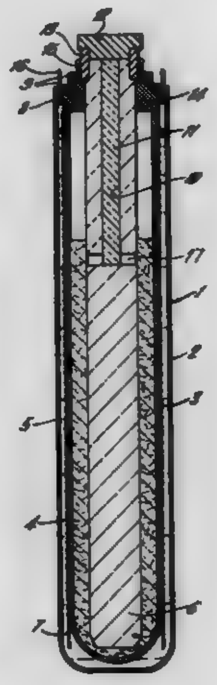
3,982,959
SODIUM-SULPHUR BATTERY CELLS
Bernard Austin Partridge, Cothill, near Abingdon; Thomas Rhys Jenkins, East Hendred, and Michael McGuire, Sinfin, all of England, assignors to The Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 7, 1975, Ser. No. 556,500

Claims priority, application United Kingdom, Mar. 11, 1974, 10835/74

Int. Cl.² H01M *10/00*

U.S. Cl. 429—163 4 Claims



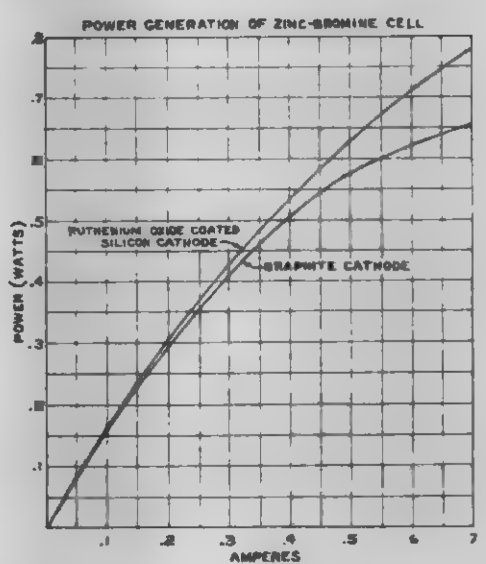
1. A sodium-sulphur battery cell comprising a metal casing of blind-ended tubular form, a solid electrolyte of blind-ended tubular form disposed within the casing so as to define an inner compartment having sulphur as one of the cell reactants and an outer compartment having sodium as the other reactant, a carbon current collecting means of rod-like form disposed lengthwise within the inner compartment for collecting current from electro-chemical reaction between the sodium and sulphur, a packing of carbon felt disposed in the space between the current collector and the solid electrolyte and impregnated with said sulphur, means in the outer compartment adjacent to the surface of the solid electrolyte for drawing up sodium to wet those parts of the solid electrolyte above the level of sodium, a ceramic end cap supporting the solid electrolyte and joined by sealing means with the casing so as to close the sodium compartment, one end of the current collector extending through a fitting hole in the end cap so as to close the sulphur compartment, a metal connector to which said one end of the current collector is electrically connected, and sealing means joining the connector with a portion of the end cap electrically insulated from the casing.

3,982,960
SECONDARY ELECTROCHEMICAL CELL HAVING NON-CONSUMABLE SILICON CATHODE
Howard H. Hoekje, and Paul L. Dietz, both of Akron, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 398,746, Sept. 19, 1973, abandoned. This application Mar. 31, 1975, Ser. No. 563,939

Int. Cl.² H01M *4/38*

U.S. Cl. 429—199 11 Claims



1. In an electrochemical cell having an anode comprising a metal chosen from the group consisting of zinc, lithium, tin, iron, and magnesium, a non-consumable cathode, an electrolyte, and means for recovering an electrical current generated therein, the improvement wherein said cathode comprises:

a silicon metal substrate having an electroconductivity greater than 100 $(\text{ohm-cm})^{-1}$; and

an electroconductive surface other than said silicon metal on said substrate.

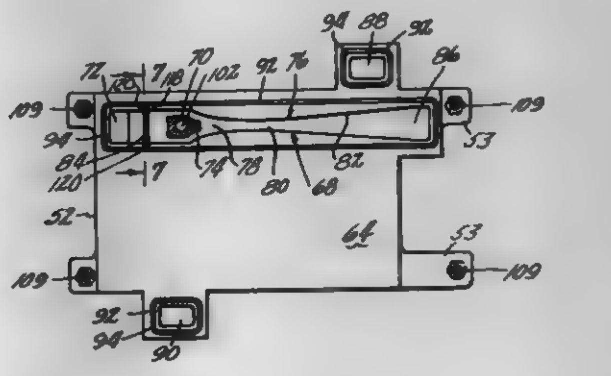
3,982,961
FUEL CELL STACK WITH AN INTEGRAL EJECTOR FOR REACTANT GAS RECIRCULATION
Albert P. Grasso, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 2, 1975, Ser. No. 574,128

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.² H01M *8/06*

U.S. Cl. 429—34 12 Claims



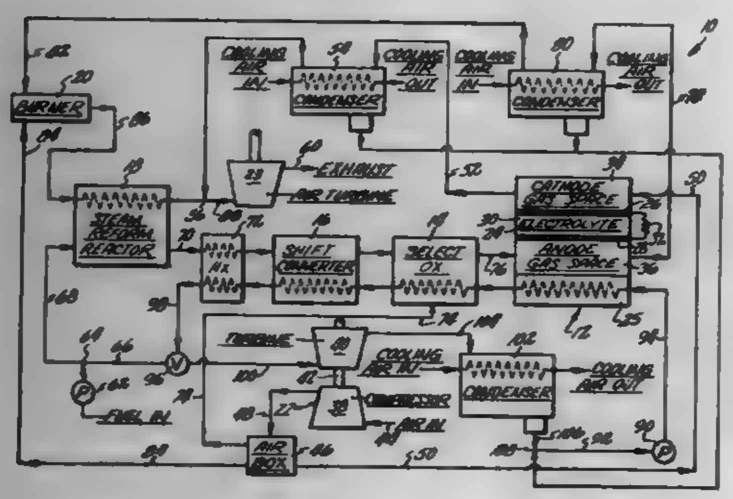
1. In a fuel cell stack comprising a plurality of fuel cells each including a fuel electrode and an oxidant electrode spaced

apart defining an electrolyte compartment therebetween, means constructed and arranged with said cells to define a reactant gas space on the nonelectrolyte side of each electrode, said reactant gas spaces including a fuel gas space on the nonelectrolyte side of each fuel electrode and an oxidant gas space on the nonelectrolyte side of each oxidant electrode, each of said gas spaces having an inlet and an outlet, the improvement to said stack comprising:

- an ejector for delivering and recirculating one of said reactant gases through said cells, said ejector constructed and arranged to be integral with and in heat exchange relationship with the cells of said stack, said ejector including primary inlet means, secondary inlet means, and outlet means;
- first conduit means connected to said ejector primary inlet means for delivering preheated reactant gas into said ejector primary inlet means;
- second conduit means connecting said ejector outlet means to said inlets of said recirculating reactant gas spaces; and
- third conduit means connecting said recirculating reactant gas space outlets with said ejector secondary inlet means, said secondary inlet means including means for establishing the recirculation rate of reactant gas through said ejector.

3,982,962
PRESSURIZED FUEL CELL POWER PLANT WITH STEAM POWERED COMPRESSOR

David P. Bloomfield, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Feb. 12, 1975, Ser. No. 549,599
Int. Cl.² H01M ***8/06***
U.S. Cl. 429—19 **12 Claims**

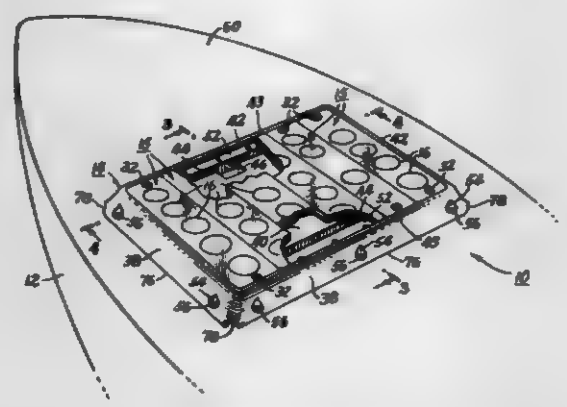


1. A power plant for generating electricity comprising:

- a fuel cell stack including a plurality of fuel cells connected electrically in series through a load, each cell comprising a cathode electrode, an anode electrode, an electrolyte disposed therebetween, a cathode gas space on the nonelectrolyte side of said cathode electrode and an anode gas space on the nonelectrolyte side of said anode electrode;
- a compressor;
- turbine means for expanding a hot pressurized gaseous medium, said turbine means being operably connected to said compressor for driving said compressor to compress air to greater than 2 atmospheres pressure;
- means for delivering air at a pressure of at least two atmospheres from said compressor into said cathode gas space;
- fuel conditioning apparatus including reactor means for producing hydrogen from a hydrogen containing fuel;
- burner means for providing heat to said reactor means;
- means for delivering anode effluent gases into said burner means for providing fuel to said burner means;
- means for delivering pressurized hydrogen containing fuel into said reactor means;
- means for delivering pressurized hydrogen from said fuel conditioning apparatus into said anode gas space;
- back pressure means operably associated with said stack for maintaining the pressure of said gases within said stack;
- a working fluid;
- means for transferring heat produced by said stack to said working fluid for converting said fluid into a hot, pressurized gaseous state;
- means for delivering said working fluid in its hot, pressurized gaseous state into said turbine means for driving said compressor;
- condenser means;
- means for delivering the working fluid exhausted from said turbine means into said condenser means for converting said fluid to the liquid state; and
- means for returning said working fluid from said condenser means to said means for transferring heat thereto.

3,982,963
SOLAR BATTERY MAINTAINER

Edmund J. Mahoney, Billerica, and Paul S. Natanson, Lexington, both of Mass., assignors to Solar Power Corporation, Braintree, Mass.
Filed Aug. 5, 1974, Ser. No. 495,105
Int. Cl.² H01L ***31/04***
U.S. Cl. 136—89 **20 Claims**

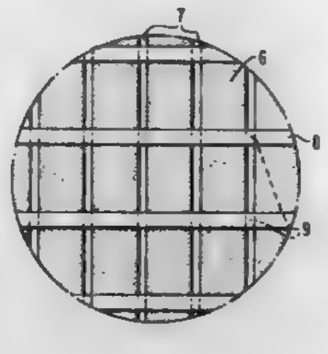


1. A device for use in converting sunlight into electrical energy comprising at least one translucent panel having a plurality of individual electrically connected solar cells mounted therein and an electrical cable connected to said solar cells for conducting electric current therefrom, and means for supporting said panel on a mounting surface including a frame having a peripheral support wall and a panel support surface extending therebetween, said support wall having an upper edge and said support surface being located below said upper edge to support said panel within the confines of said peripheral wall; said frame including means for draining water entering below said support surface and between said support wall from the confines of the frame.

3,982,964
DOTTED CONTACT FINE GEOMETRY SOLAR CELL

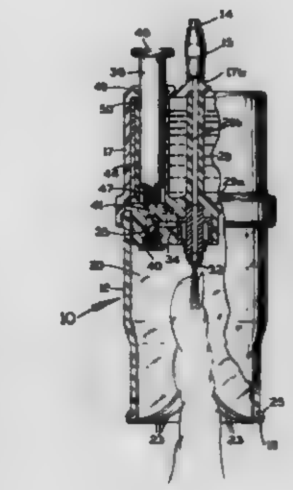
Joseph Lindmayer, Bethesda, and James Frederick Allison, Silver Spring, both of Md., assignors to Communications Satellite Corporation (Comsat), Washington, D.C.
Filed Jan. 17, 1975, Ser. No. 541,827
Int. Cl.² H01L ***31/02, 31/04***
U.S. Cl. 136—89 **10 Claims**

1. A solar cell comprising a semi-conductor material having top and bottom surfaces and having a p-n junction at a distance of between 500 A and 2,000 A from the top semi-conductor surface thereof, said top surface having a metal oxide anti-reflective coating and being adapted to receive incident light radiation, said metal oxide coating having a fine line pattern etched therein to expose said top surface, an electrode on said bottom semi-conductor surface, and a patterned electrode deposited over said etched metal oxide coating such that the patterned electrode is generally transverse to said fine line pattern to produce a plurality of point contact areas between said patterned electrode and said top semi-conductor surface.



3,982,965
WATER JET CLEANING APPLIANCE

Donald R. Spotz, 6261 SW. 5th Court, Plantation, Fla. 33317
Filed Mar. 10, 1975, Ser. No. 556,946
Int. Cl.² B08B ***3/02***
U.S. Cl. 134—100 **15 Claims**



1. In a personal cleaning appliance for using pressurized water to clean the extremities of a person's hand or foot, said appliance having:

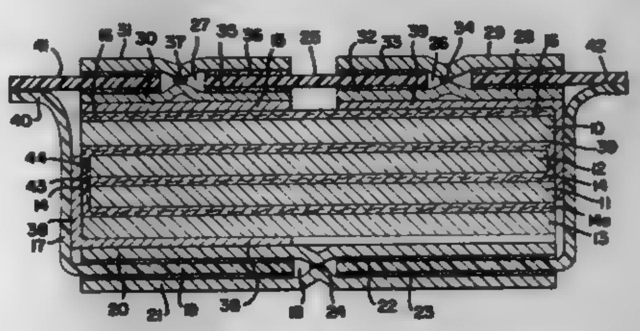
- a receptacle defining a cleaning chamber for receiving the extremity to be cleaned;
- means on said receptacle at one end of said cleaning chamber for the insertion of the extremity to be cleaned;
- jet nozzle means for discharging pressurized water into said cleaning chamber; and
- means for connection to a water source having a water passage therethrough leading to said jet nozzle means for passing pressurized water thereto;

the improvement which comprises:

- means for selectively dispensing a predetermined quantity of liquid cleaning solution into the pressurized water discharge from said jet nozzle means;
- said dispensing means comprising a reservoir in said receptacle for the cleaning solution;
- a normally-closed spring-biased check valve connected between said reservoir and said jet nozzle means to control the flow of the cleaning solution from said reservoir into the pressurized water discharge from said jet nozzle means; and
- a manually operable plunger for effecting the opening of the check valve to enable the cleaning solution flow into the pressurized water discharge from said jet nozzle means.

3,982,966
ALKALINE CELL WITH DOUBLE COLLECTOR POSITIVE, NEGATIVE AND THIRD TERMINAL CONNECTIONS

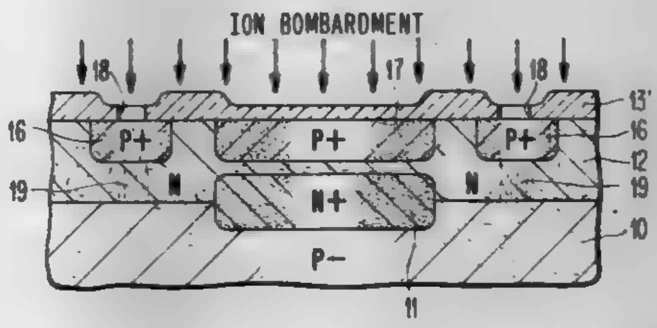
Theodore R. Beatty, Bay Village, and Harry Vourlis, Lakewood, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 456,838, April 1, 1974, Pat. No. 3,871,921. This application Mar. 17, 1975, Ser. No. 559,076
Int. Cl.² H01M ***6/06***
U.S. Cl. 429—136 **15 Claims**



1. An alkaline cell comprising, in combination: an electrode assembly including at least one pair of flat electrode elements of opposite polarity and a porous separator containing an alkaline electrolyte; an auxiliary electrode; a liquid impervious plastic film envelop having a plurality of walls enclosing both said electrode assembly and said auxiliary electrode and having at least three openings spaced apart from one another at predetermined locations in at least one wall thereof; and a plurality of terminal connections communicating individually through said openings with said pair of electrode elements and said auxiliary electrode, with each terminal connection comprising: an internal and an external current collector overlaying said plastic film on opposite sides of an opening thereof, a thin layer of adhesive sealant, which is non-wettable by said alkaline electrolyte, for securing said internal and external current collector to said plastic film, and means for making electrical connection between the internal and external current collector through such opening.

3,982,967
METHOD OF PROTON-ENHANCED DIFFUSION FOR SIMULTANEOUSLY FORMING INTEGRATED CIRCUIT REGIONS OF VARYING DEPTHS

San-Mei Ku, Poughkeepsie; Charles A. Pillus, Wappingers Falls; Michael R. Poponiak, Newburgh, and Robert O. Schwenker, Hopewell Junction, all of N.Y., assignors to IBM Corporation, Armonk, N.Y.
Filed Mar. 26, 1975, Ser. No. 562,370
Int. Cl.² H01L ***21/263***
U.S. Cl. 148—1.5 **29 Claims**



1. A method for forming regions of a selected conductivity-type in a semiconductor substrate comprising

- introducing dopant ions of said conductivity-type into selected regions of a surface of said substrate, and additionally bombarding at least portions of said regions with non-dopant ions having a maximum atomic number of 2, said bombardment being carried out at a temperature below 300° C, and

heating said substrate at a temperature in the range of from 600° to 900° C sufficient to diffuse dopant ions from said regions further into said substrate and to anneal.

3,982,968

METHOD FOR THE MANUFACTURE OF A COLD-ROLLED STEEL STRIP IN THIN AND SUPER-THIN METAL PLATE THICKNESS FOR PRODUCING STRETCH-FORMED CANS OR OTHER DEEP-DRAWN PARTS

Joseph Billigmann; Christoph Schneider; Johannes Siewert, all of Andernach, and Manfred Sodeik, Neuwied, all of Germany, assignors to Rasselstein Aktiengesellschaft, Neuwied (Rhine), Germany

Filed Apr. 12, 1974, Ser. No. 460,609

Claims priority, application Germany, Mar. 7, 1974, [illegible]

Int. Cl.² C23F *7/08*

U.S. Cl. 148—6.15 R 3 Claims

1. A method for treating cold-rolled steel strip to form a phosphate-coating layer on said strip and to apply a lubricant layer thereon, comprising the steps of: annealing the strip in a continuous furnace and then cooling the strip from the annealing temperature to a temperature in the range of from 50° to 120°C; applying to the strip having a temperature in said range a thin liquid coating film consisting essentially of a phosphatizing composition and an oil lubricant, said liquid coating film being capable of remaining liquid during the following coiling step; coiling the strip having said thin liquid coating film thereon to form a coil; and while the steel strip is in the coil form, cooling the coil further while utilizing the heat remaining in the coil to effect a phosphatizing reaction of said composition with said steel strip to form the phosphate coating layer on the strip.

3,982,969

LOW SILICON HIGH STRENGTH LOW ALLOY STEEL

Peter J. Koros, Pittsburgh, and John David Grozier, Bethel Park, both of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Oct. 2, 1975, Ser. No. 619,099

Int. Cl.² C21D *7/14;* C22C *38/06, 38/12*

U.S. Cl. 148—12 F 9 Claims

1. A killed high strength low alloy steel product having been hot-rolled to a thickness, spray cooled, and collected immediately thereafter at temperature of from 950° to 1300°F.; having a composition consisting essentially of from 0.09% to 0.22% carbon, 1.65% maximum manganese, 0.05% maximum silicon, 0.25% maximum sulfur, from 0.015% to 0.031% nitrogen, from 0.10% to 0.14% vanadium, from 0.01% to 0.10% rare earth or rare earth mixture, 0.01% to 0.09% aluminum, balance iron; said steel composition, thickness and collection temperature also satisfying the following relationship;

$$YS \leqq 98{,}430+182{,}310\ (V)+80{,}662\ (C)+433{,}220\ (N)-36.7\ (CT)-26{,}184(T)-92{,}543\ (Al),$$

wherein,

YS = Yield Strength and is 88,776 p.s.i.;
V = % Vanadium;
C = % Carbon;
N = % Nitrogen;
CT = Collection Temperature, °F;
T = Hot-Rolled Thickness, inches; and
Al = % Aluminum; and

said steel product having an ultimate tensile strength of 95,000 p.s.i. minimum, a yield strength of 80,000 p.s.i. minimum and ductility as measured by percent elongation (2 inches) 18% minimum; and being substantially free of macroscopic rare earth oxy-sulfide inclusions.

3,982,970

DUCTILITY OF MOLYBDENUM AND ITS ALLOYS

Thomas Hutchinson Webster, Wantage, and Brian Leonard Eyre, Abingdon, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 324,223, Jan. 16, 1973, abandoned. This application Aug. 27, 1974, Ser. No. 501,193

Claims priority, application United Kingdom, Jan. 24, 1972, 3331/72

Int. Cl.² C22F *1/18;* C23C *11/10*

U.S. Cl. 148—20.3 3 Claims

1. A method for improving the workability of molybdenum or a base alloy thereof which comprises the steps of

i. gas carburising the molybdenum or base alloy thereof at a temperature within the range from 1800°C to 2050°C to produce a carbide therein; and
ii. cooling the gas carburised molybdenum or base alloy thereof, wherein the rate of cooling immediately following the carburisation and down to 800°C is at at least 100°C/minute, thereby to produce carbide particles.

3,982,971

RARE EARTH-CONTAINING PERMANENT MAGNETS

Yoshio Yamanaka; Kazuyoshi Watanabe; Masakatsu Honshima, and Hideaki Kikuchi, all of Takefu, Japan, assignors to Shin-Etsu Chemical Co., Ltd, Tokyo, Japan

Filed Feb. 20, 1975, Ser. No. 551,157

Claims priority, application Japan, Feb. 21, 1974, 49-20720; Feb. 25, 1974, 49-22139

Int. Cl.² H01F *1/04*

U.S. Cl. 148—31.57 5 Claims

1. A process for the preparation of a permanent magnet which comprises the steps of shaping the powder of an alloy expressed by the formula $Sm_{1-u}Ce_u(Co_{1-v-w-x}Cu_vFe_wMn_x)_z$ where $0 < u \leqq 0.20$, $0.08 \leqq v \leqq 0.20$, $0 \leqq w \leqq 0.08$, $0.01 \leqq x \leqq 0.15$, and $7.2 \leqq z \leqq 7.8$, into a block by compression molding in a magnetic field, subjecting said block to sintering at a temperature in the range of from 1,170° to 1,270°C, and cooling the thus sintered block at a cooling velocity between 1°C/second and 30°C/second to a temperature of about 800°C, with subsequent cooling to room temperature without any intermediate aging step.

3,982,972

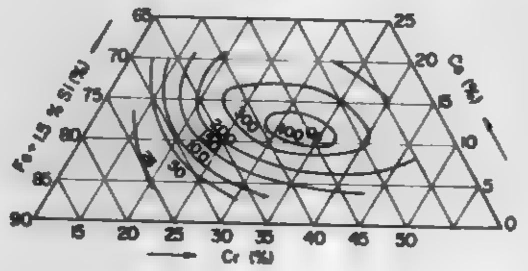
SEMIHARD MAGNETIC ALLOY AND A PROCESS FOR THE PRODUCTION THEREOF

Masao Iwata, Chichibu; Yoichi Ishijima, Konosu, and Osamu Fujita, Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Japan

Filed Mar. 21, 1975, Ser. No. 560,941

Int. Cl.² C04B *35/00;* H01F *1/00*

U.S. Cl. 148—31.55 13 Claims



1. A heat-treated magnetic alloy having a residual magnetic flux density of 7,000 Gauss or more and a coersive force of 100 to 600 Oersted and consisting essentially of 17 to 45% by weight of chromium, 3 to 14% by weight of cobalt, 0.2 to 5% by weight of silicon and a balance of substantially iron.

3,982,973

CUBE TEXTURED NICKEL

Dale Thompson Peters, Mahwah; Gary Dale Sandrock, Ringwood, both of N.J., and Ernest Lee Huston, Suffern, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Dec. 11, 1975, Ser. No. 639,812

Int. Cl.² C22C *19/03, 19/08;* C21D *9/46*

U.S. Cl. 148—32 10 Claims

1. A process comprising providing a billet of metal having the fine-grain condition characterized by an average grain size up to 0.08 millimeter and having a composition consisting essentially of 0.0002% to about 0.003% sulfur, up to about 6% cobalt, up to 0.10% carbon, at least one ingredient from the group consisting of 0.1% to 0.5% iron, 0.1% to 0.5% manganese, 0.01% to 0.1% in total of the rare earth metals lanthanum and neodymium, 0.001% to 0.1% calcium and combinations thereof, with balance essentially nickel, provided that when the billet metal contains at least 0.0008% sulfur the billet metal also contain at least one of the rare earth metals and calcium ingredients, cold working the billet metal unidirectionally to reduce the thickness at least 95% and form the metal to strip having a thickness of up to about 0.25 millimeter, heating the cold worked strip in a nonoxidizing atmosphere in the temperature range of about 800°C to about 1260°C, provided that the heating be in the range of 900°C to 1100°C when the rare earth ingredient is present and the iron, manganese and calcium ingredients are absent, for a time sufficient to anneal and recrystallize the metal to the primary recrystallized cube texture condition and then cooling the recrystallized metal sufficiently to maintain the primary recrystallized cube texture condition and prevent secondary recrystallization.

3,982,974

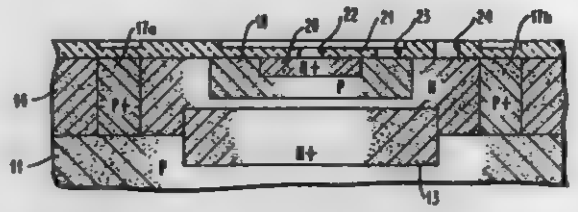
COMPENSATION OF AUTODOPING IN THE MANUFACTURE OF INTEGRATED CIRCUITS

William A. Edel, Poughkeepsie, and Joseph Regh, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 201,024, Nov. 22, 1971, abandoned. This application Dec. 24, 1974, Ser. No. 536,050

Int. Cl.² H01L *21/205, 21/22*

U.S. Cl. 148—175 21 Claims



1. In a method of making an integrated circuit including the steps of:

diffusing a principal impurity of a predetermined conductivity type into a region of a semiconductor substrate, and
depositing an epitaxial layer on said substrate,
the improvement comprising the step of:
diffusing an autodoping compensating impurity of an opposite conductivity type solely into said substrate region prior to said epitaxial deposition step,
whereby the compensating impurity autodoping effect substantially compensates for and counteracts the principal impurity autodoping effect.

3,982,975

PROPELLANTS HAVING IMPROVED RESISTANCE TO OXIDATIVE HARDENING

Donald E. Elrick, Rawlings, and Harry Gilbert, Cumberland, both of Md., assignors to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 667,623, Sept. 6, 1967. This application June 4, 1968, Ser. No. 736,929

Int. Cl.² C06D *5/06*

U.S. Cl. 149—19.9 10 Claims

1. A solid propellant composition comprising a solid oxidizer and a polymeric binder formed by curing an uncured carboxy terminated rubber containing an average of about 2 free carboxyl groups per polymer molecule with, as curing agent, a mixture of difunctional epoxides and trifunctional epoxides wherein the diepoxide:triepoxide mole ratio in said mixture is 15:1 to 1:1 and the ratio of epoxy groups in said mixture to carboxy groups in said rubber being within the range of from 0.9:1 to 2:1, in the presence of a phenylenediamine antioxidant selected from the group consisting of N,N′-dialkylphenylenediamines containing at least 4 carbon atoms in each alkyl group and N,N′-diarylphenylenediamines, said phenylenediamine being chemically locked in the binder network during cure.

3,982,976

METHOD OF EVALUATING THE CLEANLINESS OF SILICON WAFERS

Edmund T. Marciniec, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Dec. 9, 1974, Ser. No. 530,637

Int. Cl.² H01L *7/50*

U.S. Cl. 156—7 11 Claims

1. A method of texturing the surface of a silicon wafer with a pattern replicative of a pattern of undesirable contaminants thereon comprising the steps of:

a. placing the wafer in a mild vacuum; and then
b. subjecting the wafer to a reactive, RF plasma which includes a mixture of a halocarbon gas and oxygen until a raised pattern replicative of the contaminant pattern is visible on the surface.

3,982,977

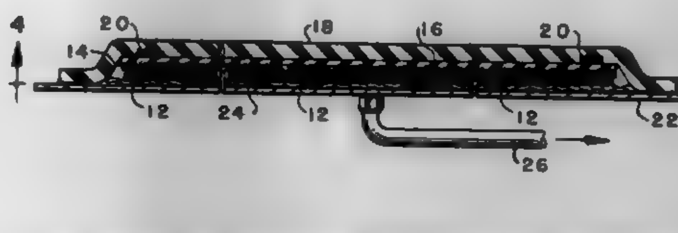
DUST COLLECTION MATS

David Edward Gordon, LaGrange, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 503,069, Sept. 4, 1974. This application Feb. 24, 1975, Ser. No. 552,713

Int. Cl.² A46D *1/00;* D05C *15/00*

U.S. Cl. 156—72 3 Claims



1. The method of producing individual dust control mats in a vacuum mold comprising the steps of: placing a tufted pile substrate having a latex tie-coat into the vacuum mold, placing an uncured calendered rubber sheet of greater length and width on said substrate, placing a narrow elongated reinforcing strip between the substrate and the uncured calendered rubber sheet in a direction substantially perpendicular to the grain of the rubber sheet, placing a negative pressure on the vacuum mold to seal the edges of the calendered rubber sheet to the mold, curing the calendered rubber sheet and laminating same to the substrate, releasing the negative pressure and trimming the edges of the cured rubber sheet to provide a dust control mat.

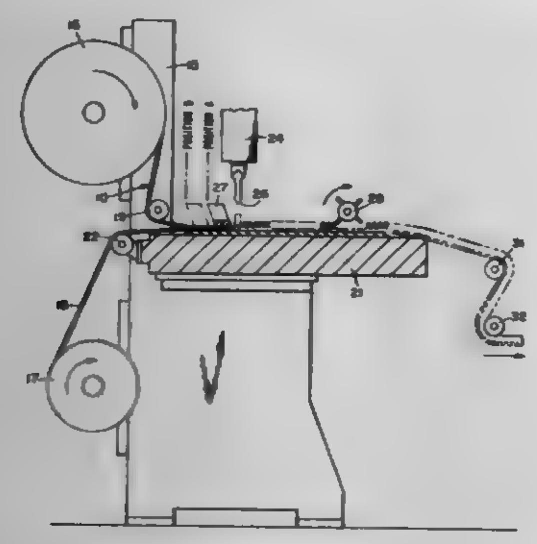
3,982,978
METHOD AND APPARATUS FOR MAKING PILE FABRIC

Charles W. Carpenter, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed June 24, 1975, Ser. No. 589,982

Int. Cl.² B32B *5/00*

U.S. Cl. 156—72 **8 Claims**



1. A method of making pile fabric comprising:
advancing a continuous film of longitudinally striated and oriented thermoplastic material having longitudinal ribs interconnected by webs or reduced thickness;
advancing a continuous thermoplastic backing member;
forming upstanding transverse loops in said striated film having a portion thereof in contact with said backing member;
sonically fusion bonding said contacting portion of said striated film to said backing member; and
fibrillating said striated film after bonding to break the webs and separate the longitudinal ribs into individual filaments.

5. Apparatus for making pile fabric comprising:
means for advancing a continuous striated film having longitudinal ribs interconnected by webs of reduced thickness;
means for advancing a continuous thermoplastic backing member;
means for forming upstanding transverse loops in said film with the bottoms of said loops in contact with said backing member;
means for sonically fusion bonding said striated film to said backing member; and
means for fibrillating said bonded film to break said webs and separate said ribs into individual filaments.

3,982,979
METHODS FOR MOUNTING AN ARTICLE ON AN ADHERENT SITE ON A SUBSTRATE

Lyle J. Hentz, Whitehall, and Willard G. Otto, Schnecksville, both of Pa., assignors to Western Electric Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 374,436, June 28, 1973, abandoned. This application Nov. 9, 1973, Ser. No. 414,481

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 20, 1976

Int. Cl.² B32B *7/14, 31/20;* **H01L** *27/12;* **H05K** *3/30*

U.S. Cl. 156—73.6 **9 Claims**

1. A method of mounting an article on a site, having an adherent coating, on a substrate, which comprises the steps of:
a. placing the article on a member associated with a locating and orienting cavity;
b. engaging the article intermittently with the walls of the cavity while lowering the member and the article into the cavity to locate and orient the article without the use of a liquid for supporting the article;
c. aligning the site on the substrate in relation to the cavity; and
d. raising the member with the article thereon to engage the article with the site and thereby mount the article on the site.

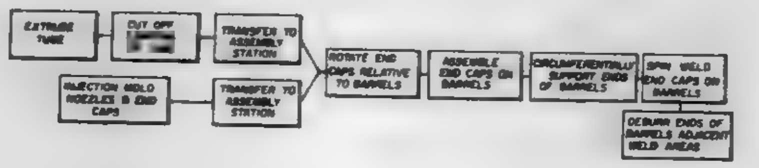
3,982,980
CARTRIDGE MAKING METHOD

Dick T. van Manen, Canandaigua, N.Y., assignor to Voplex Corporation, Pittsford, N.Y.

Continuation-in-part of Ser. No. 441,971, Feb. 13, 1974, abandoned. This application June 23, 1975, Ser. No. 589,698

Int. Cl.² B32B *31/20*

U.S. Cl. 156—73.5 **4 Claims**


EXTRUDE TUBE
CUT OFF
TRANSFER TO ASSEMBLY STATION
INJECTION MOLD NOZZLES & END CAPS
TRANSFER TO ASSEMBLY STATION
ROTATE END CAPS RELATIVE TO BARRELS
ASSEMBLE END CAPS ON BARRELS
CIRCUMFERENTIALLY SUPPORT ENDS OF BARRELS
SPIN WELD END CAPS ON BARRELS
DEBURR ENDS OF BARRELS ADJACENT WELD AREAS

1. A method of making relatively rigid-walled dispenser cartridges, said method comprising:
a. extruding a generally cylindrical resin tube having a relatively rigid wall with constant inside and outside diameters;
b. cutting off equal lengths of said tube to provide cylinders for forming the barrels of said cartridges, said cylinders having ends evenly severed in planes approximately perpendicular to the longitudinal axes of said cylinders;
c. injection molding a quantity of single-piece resin end caps and nozzles each having a cylindrical surface interference fitting the inside surface of said barrel cylinders and each having a flange extending radially outward from said cylindrical surface by approximately the thickness of said wall of said barrel cylinders;
d. successively feeding said barrel cylinders and said end caps and nozzles to an assembly station;
e. successively holding said barrel cylinders in place at said assembly station;
successively holding said end caps and nozzles in a rotatable tool at said assembly station, said rotatable tool having a generally cylindrical surface sized to fit over and encircle the outside surface of said wall of said barrel cylinders;
g. rotating said rotatable tool and one of said end caps and nozzles relative to one of said barrel cylinders;
h. moving said rotating tool axially relative to said barrel cylinder to insert said cylindrical surface of said end cap and nozzle into an end region of said barrel cylinder by a sufficient amount to press said flange against said severed end of said barrel cylinder, said movement bringing said cylindrical surface of said tool over said outside surface of said wall of said barrel cylinder for supporting said wall of said barrel cylinder against radial expansion from said interference fit with said end cap and nozzle, and said movement cooperating with said tool rotation to spin weld said cylindrical surface and said flange of said end cap and nozzle respectively to said inside surface and said severed end of said barrel cylinder; and
i. using said cylindrical surface of said tool for preventing burring of said spin weld.

3,982,981
UNITARY HONEYCOMB STRUCTURE AND METHOD OF MAKING IT

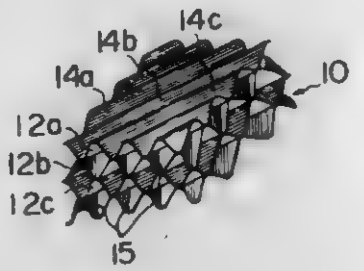
Hiroshi Takao, Yokosuka; Kinmochi Togawa, Tokyo, and Kazuo Matoba, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokahama, Japan

Filed Dec. 6, 1973, Ser. No. 422,155

Claims priority, application Japan, Dec. 7, 1972, 47-122810

Int. Cl.² B31F *1/20;* **B32B** *3/12;* **C04B** *37/00;* **F28D** *17/02*

U.S. Cl. 156—89 **9 Claims**



1. A method of forming a unitary honeycomb structure composed of plurality of corrugated sheets fixedly superimposed one on another so that the axis of the corrugations of one sheet are oriented at a predetermined angle to the axes of the corrugations of each adjacent sheet, comprising the steps of:
preparing a plurality of flexible corrugated sheets formed of ceramic material and plurality of burnable support sheets of organic material;
superimposing alternately each of said flexible corrugated sheets and each of said burnable support sheets in succession so that the axes of the corrugations of one corrugated sheet are oriented at the predetermined angle to the axes of the corrugations of each adjacent corrugated sheet for thereby forming a flexible assembled structure; and
heating said flexible assembled structure at a temperature that will disintegrate said plurality of support sheets and sinter and fuse said plurality of corrugated sheets together to form a unitary honeycomb structure.

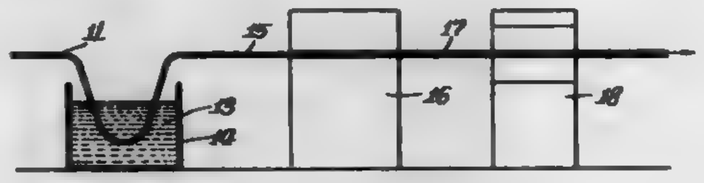
3,982,982
HOSE CONSTRUCTION

Anil H. Chudgar, Manitowoc, Wis., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Division of Ser. No. 269,499, July 6, 1972, Pat. No. 3,866,631. This application Oct. 7, 1974, Ser. No. 512,894

Int. Cl.² B31C *5/00;* **B29C** *27/28*

U.S. Cl. 156—143 **12 Claims**



1. The method of reinforcing a hose core tube wherein reinforcing fibers are interlocked to the surface of the core tube by softening the surface of the core tube, said core tube being formed of a polycondensation product made by condensing at least one of the group of dicarboxylic acids and dicarboxylic acid ester having a molecular weight below 300 with a polyalkylene ether glycol having a molecular weight in the range of 400 to 6000 and at least one diol having a molecular weight below 250, hereinafter defined as polyester A, applying the reinforcing fibers, and setting the softened surface, said core tube surface being softened by passing the tube through a bath of polyester plasticizing means, said fibers being formed of a material unaffected by said plasticizing means, and subsequently removing the plasticizing means after the fibers are applied to effect a mechanical interlock of the fibers to said core tube.

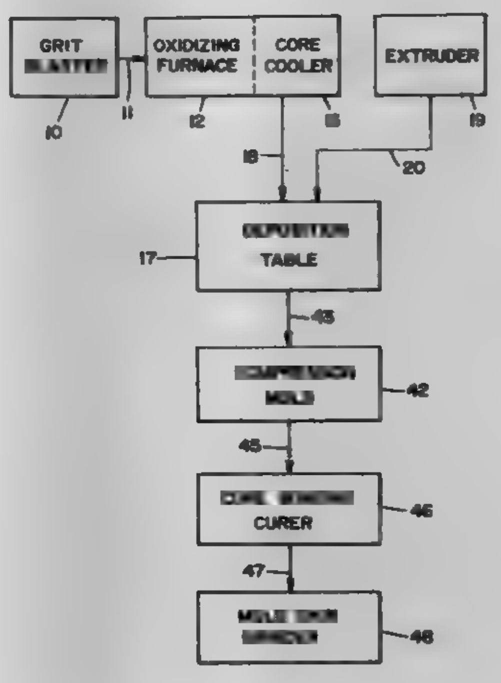
3,982,983
CONTROLLED BONDING OF FLUOROELASTOMERS TO METAL SUBSTRATES

John C. Abraham, Metamora; Gary L. Grebner, East Peoria; William D. Brandon, Peoria, and John Jero, Washington, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 22, 1975, Ser. No. 570,322

Int. Cl.² B32B *31/00;* **C09J** *5/00, 7/00*

U.S. Cl. 156—154 **13 Claims**



1. A process for forming in a controlled manner a uniform fluoroelastomer layer directly bonded to a metal substrate, comprising:
forming a first roughened surface on one side of a metal substrate;
controllably oxidizing said substrate at a temperature sufficient to cause formation of an oxide layer on said first roughened surface and below the tempering temperature of the substrate, said oxidizing temperature being at least about 300°C;
adjusting the temperature of said substrate to a temperature above the curing temperature of the thermal setting fluoroelastomer, said fluoroelastomer comprising a copolymer of hexafluoropropylene and vinylidene fluoride, said temperature being adjusted to fall within a range from about 215° to about 175°C and being sufficient to cause relatively fast curing of said fluoroelastomer;
adhering said thermal setting fluoroelastomer in substantially uncured form and which includes a minor amount of calcium oxide homogeniously dispersed therethroughout and which is at a temperature sufficient to initiate slow curing thereof, directly onto said first surface without bonding said fluoroelastomer thereto, said fluoroelastomer being at a temperature prior to its adherence to said first surface which falls within a range from about 85° to about 115°C; and
compressing said fluoroelastomer between said first surface and a first mold face maintained at a temperature within about 10°C of the temperature to which said substrate is adjusted to cure said fluoroelastomer and concurrently bond it to said first surface, said compressing being carried out at a pressure which falls within a range from about 7 × 10²kN per square meter to about 20 × 10²kN per square meter.

3,982,984

PROCESS OF MAKING A POLYVINYL BUTYRAL COMPOSITE INTERLAYER FOR LAMINATED SAFETY GLASS

Donald B. Baldridge, Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 355,364, April 27, 1973, Pat. No. 3,922,456. This application June 4, 1975, Ser. No. 583,713

Int. Cl.² B32B *27/06, 31/12, 31/30;* **C03C** *27/04*

U.S. Cl. 156—244 **1 Claim**

1. A process for preparing a composite polyvinyl butyral interlayer having a gradient color band for use in the preparation of laminated safety glass which process comprises extruding a layer of molten polyvinyl butyral onto the surface of a moving web of polyvinyl butyral which has been previously printed with a gradient color band wherein the molten polyvinyl butyral is extruded on the printed surface of the moving web of polyvinyl butyral to form a composite.

3,982,985

METHOD OF FORMING PANELS

James Ernest Ryan, Knebworth, and Rodney Smale, Hatfield, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 368,200, June 8, 1973, abandoned. This application May 5, 1975, Ser. No. 574,623

Claims priority, application United Kingdom, June 14, 1972, 27448/72

Int. Cl.² B29D *3/00;* **B32B** *31/00*

U.S. Cl. 156—303.1 **9 Claims**

1. A method of forming a panel having a surface pattern, comprising:

a. placing a superstrate lamina shaped in outline to define the desired pattern onto a substrate, the substrate and superstrate both consisting of cellular thermoplastic materials which are mutually discernible;

b. applying a die face against the surface of the superstrate lamina and against at least that portion of substrate adjacent the superstrate, said die face having a temperature above the softening temperature of both the superstrate and substrate thermoplastic materials;

c. pressing the die against the superstrate and the substrate with sufficient pressure to form a smooth glazed surface on the substrate where contacted by the die and to collapse the cellular structure of the superstrate and form a smooth glazed surface thereon thereby resulting in a panel having a single unitary non-cellular surface layer containing the pattern as an integral part thereof;

d. cooling the die face to harden said non-cellular surface layer; and

e. removing the die.

3,982,986

LAMINATES AND METHOD OF MAKING THEM

Edward Stone, Morris Plains; Joseph Zamer, Paramus, and Matthew Guagliardo, Bloomfield, all of N.J., assignors to Inmont Corporation, New York, N.Y.

Continuation of Ser. No. 466,292, May 2, 1974, abandoned, which is a division of Ser. No. 364,817, May 29, 1973, Pat. No. 3,887,757. This application May 1, 1975, Ser. No. 573,537

Int. Cl.² C09J *5/02*

U.S. Cl. 156—308 **7 Claims**

1. A method of laminating a saran surface to another saran surface, a saran surface to a treated polyethylene surface, or a treated polyethylene surface to a treated polyethylene surface, said method comprising:

A. applying a thin film of an adhesive composition to at least one of the surfaces to be laminated, said adhesive composition comprising an aqueous solution of a water soluble salt of a substantially linear thermoplastic polyurethane containing 0.5 to 2.5% by weight of nitrogen derived from tertiary amine groups and from 2 to 8% of nitrogen derived from isocyanate groups, said polyurethane being prepared by (a) reacting an excess of an isocyanate with a mixture of diols consisting of polyether diols having a molecular weight of from 425 to 4,000 and tertiary amine diols selected from the group consisting of N-phenyl dialkanol amine and N-lower alkyl dialkanol amines to obtain a reaction product having free isocyanate groups greater than 0.1 milliequivalents of NCO per gram of solution at 50% solids; (b) chain extending the reaction product with a chain extender selected from the group consisting of alkanol amines and alkylene diamines to obtain a chain extended polyurethane polymer containing from 0.07 to 0.1 milliequivalents of NCO per gram of solution at 50% solids; (c) reacting the free isocyanate groups with a material selected from the group consisting of water miscible alcohols, acids and water, and adding an amount of water miscible acid being added sufficient to form the acid salts with the tertiary amine groups present on the polyurethane;

B. evaporating solvent from the film of adhesive and

C. laminating the adhesive coated surface to the other surface to be laminated to obtain a bond strength of at least 350 grams.

3,982,987

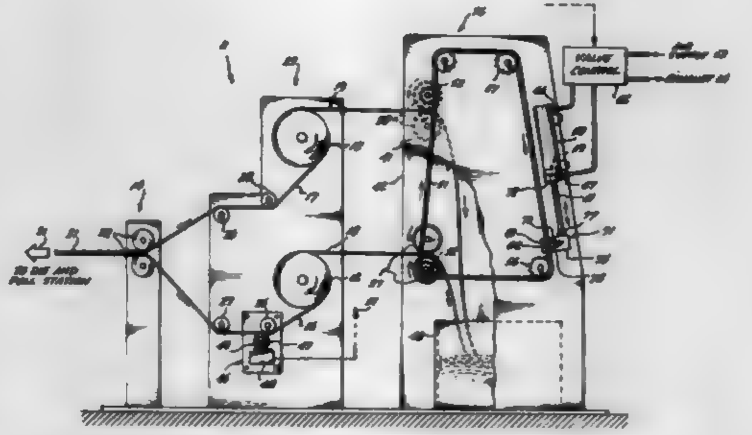
METHOD AND APPARATUS FOR DEREELING INTERLEAVED TAPES

Riley Kuehn, Jr., Auburn, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 19, 1975, Ser. No. 578,878

Int. Cl.² B32B *31/00*

U.S. Cl. 156—361 **15 Claims**



1. An apparatus for dereeling release tapes from a plurality of rotatably mounted resin ply supply reels, each wound with an elongate resin ply interleaved with one of said elongate release tapes, in which the resin plies are unwound and longitudinally advanced to a laminating station, comprising:

rotatably driven pull roller means engaging said release tapes and, upon rotation, pulling them from said reels;

resolver means coupled to one of said resin plies and including signal output means issuing successive trigger signals, each in response to a predetermined longitudinal advancement of such resin ply; and

drive means connected to and for rotatably driving said pull roller means and including incrementing means connected to said resolver means for rotatably driving said roller means by a predetermined amount of rotation selected to pull said release tapes by a distance equal to said predetermined longitudinal advancement of said resin ply in response to each of said successive trigger signals issued by said output means of said resolver means, whereby said release tapes may be stripped off of each of said reels in successive increments which equal, on the average, the longitudinal rate at which said resin plies are withdrawn from said reels toward said laminating station.

3,982,988

APPARATUS FOR MAKING SLIDE-FASTENER STRINGERS

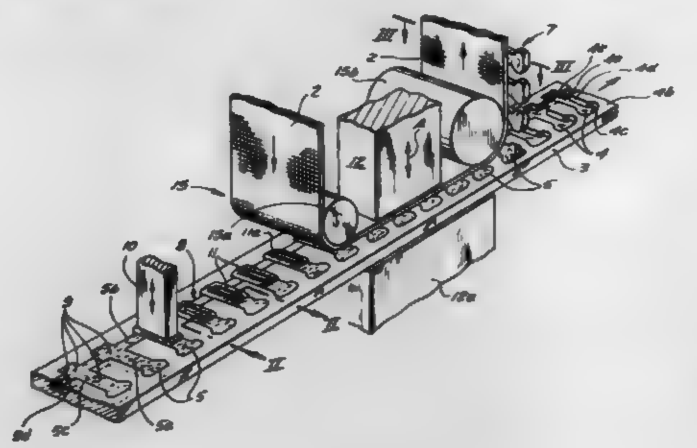
Helmut Heimberger, Grenzach, Germany, assignor to Opti-Holding AG, Glarus, Switzerland

Filed Jan. 25, 1974, Ser. No. 436,629

Claims priority, application Germany, Jan. 26, 1973, 2303796

Int. Cl.² B29D *5/00*

U.S. Cl. 156—380 **6 Claims**



1. An apparatus for making a slide-fastener stringer half comprising an endless mold carrier provided with successive cavities for molding a succession of thermoplastic synthetic resin coupling members together forming a coupling element, the cavities being open to one side and defining for each such member a coupling head, a fastening portion for mounting the member on a tape, and a connecting portion for linking each member with an adjacent member; means for embossing the synthetic resin in each cavity at said fastening portion for displacing the synthetic resin to form an array of welding humps at said fastening portion while forcing the synthetic resin into contact with all of the surfaces defining the respective cavity; and means for welding said coupling element to a support tape under heat and pressure at said welding humps, said embossing means including an embossing wheel having a plurality of projections successively insertable into said cavities from said open side, said welding means including an ultrasonic tool juxtaposed with said wheel, said wheel forming an anvil for said ultrasonic tool.

3,982,989

APPARATUS FOR FEEDING AND SETTING BEADS ONTO THE ASSEMBLY DRUM OF A MACHINE FOR ASSEMBLING PNEUMATIC TIRES

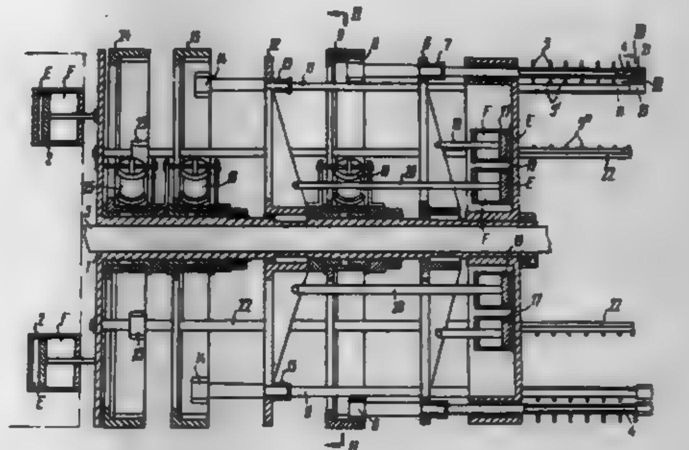
Petr Fedorovich Badenkov, prospekt Mira, 112, kv. 234; Gennady Lazarevich Portny, 2 Kabelnaya, 10, kv. 64; Igor Mikhailovich Muslaev, ulitsa Junykh Lenintsev, 66, kv. 38; Regina Lazarevna Pukhova, 15 Parkovaya, 53, korpus 2, kv. 72; Isaak Shlemovich Roitburd, Scherbakovskaya ulitsa, 20/24, kv. 85; Natalya Vasilievna Ljubartovich, Shosse Entuziastov, 156, kv. 99; Valery Donovich Rossin, Studgorod MIFI, 8, kv. 21; Leonid Venediktovich Petrokas, 9 ulitsa Sokolinoi gory, 3, kv. 248, and Nikolai Sergeevich Tsaplin, 2 Schipovsky pereulok, 8, kv. 55, all of Moscow, U.S.S.R.

Filed Oct. 25, 1974, Ser. No. 518,145

Int. Cl.² B29H *17/12*

U.S. Cl. 156—403 **9 Claims**

1. An apparatus for feeding and setting beads onto an assembly drum of a machine for assembling pneumatic tires, comprising: at least one first group of rods which extend substantially parallel to one another and are arranged in a single circle for supporting thereon a supply of the beads; at least one first group of vanes mounted on said first group of rods, uniformly spaced longitudinally of said rods, for separating said beads from one another; at least one first drive to effect the rotation of each individual rod about its own longitudinal axis, between a first position whereat said first vanes are projected beyond said circle to separate the beads from one another, and a second position whereat said first vanes are retracted into said circle, providing for forwarding of the beads longitudinally of said first group of rods; and a bead separating mechanism effecting incremental advancement of the bead rings along said first group of rods from the latter to the assembly drum.



3,982,990

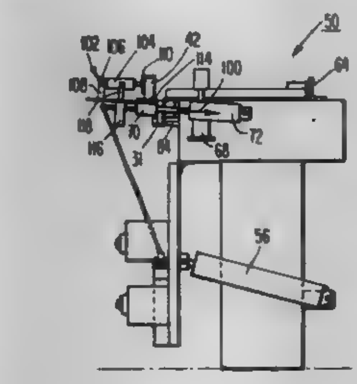
FORMING APPARATUS

Ronald C. Goebel, Box 205A, R.D. 1, Pheasant Lane, Glen Mills, Pa. 19342

Filed Feb. 18, 1975, Ser. No. 550,230

Int. Cl.² B30B *7/04, 9/38*

U.S. Cl. 156—443 **11 Claims**



1. An apparatus for forming countertops and the like from a laminated blank having a thermoplastic sheet adhered to a support base, said apparatus including:

A. a work-supporting bed for supporting the laminated blank with a side section of said blank extending outwardly beyond a front side margin of said bed;

B. a bend bar movably mounted with respect to the work-supporting bed to force the side section of the laminated blank over the front side margin of said bed to form said side section into a back splash; and

C. a cove stick inserting assembly connected to, and movable with said bend bar, said assembly including support means for supporting a cove stick adjacent a cove formed at the bend junction of the laminated blank after the bend bar has been moved to form the back splash, force transmitting means overlying a rear and upper surface of the cove stick when said cove stick is positioned on the support means of said assembly, a first set of fluid-actuated cylinders for moving said force transmitting means to apply a forward force to the rear surface of the cove stick, a second set of fluid-actuated cylinders for moving said force transmitting means to apply a downward force to the upper surface of the cove stick and valve means for actuating said first and second sets of cylinders to apply both a forward force and a downward force to the cove stick for inserting the cove stick into the cove and pressing surfaces of said cove stick into engagement with cove-defining surfaces of the support base disposed on opposite sides of the bend junction.

3,982,991
DEVICE FOR WELDING AND PARTING THERMOPLASTIC FOILS

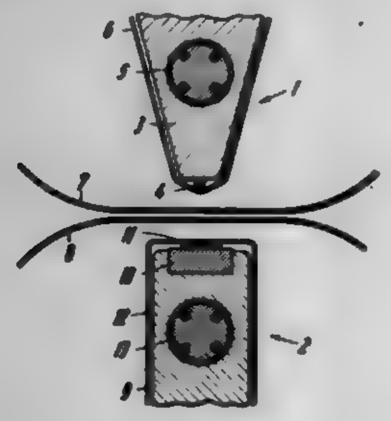
Klaus Hamm, Stuttgart-Ost, and Otto Beck, Stuttgart-Heumaden, both of Germany, assignors to Fr. Hesser Maschinenfabrik AG, Stuttgart-Bad Cannstatt, Germany

Continuation-in-part of Ser. No. 305,949, Nov. 13, 1972, abandoned. This application Sept. 26, 1974, Ser. No. 509,426

Claims priority, application Germany, Nov. 13, 1971, 2156485

Int. Cl.² B32B *31/18;* H05B *1/00*

U.S. Cl. 156—515 **5 Claims**



1. A device for seam welding and parting layer of webs of thermoplastic foils, comprising:

a first tool comprising a jaw member provided with an end face, an electrically responsive heating element in contact with said jaw member, a structurally rigid web parting and welding edge on said end face, and a protective layer extending at least partly around said edge;

a second tool comprising an opposing jaw member placed in juxtaposition to said first tool and having an end face located opposite the jaw end face of said first tool, a pressure pad of resilient elastomeric material secured on the said face of said second tool, a rigid metal pressure equalizing plate on said pad facing said edge, said plate being effective to translate localized pressure derived from said web welding and parting edge into substantially uniform pressure distributed across the abutting surface of said pad;

and a protective layer extending over both the pad and the plate of said second tool;

each of said protective layers being composed of a material having properties preventing the adherence of said foils thereto;

whereby upon heat and pressure contact between said first and second tool said edge is effective to weld together a plurality of web layers to create a seam and simultaneously part or separate such layers from the web to establish a container.

3,982,992
PRODUCTION OF HEAT SEALS IN THERMOPLASTIC MATERIAL WITH PRESS HEAD HAVING A TEMPERATURE GRADIENT

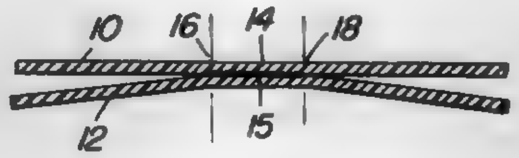
Myron L. Moffitt, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 330,350, Feb. 7, 1973, abandoned. This application Jan. 15, 1975, Ser. No. 541,296

Int. Cl.² B32B *7/06, 7/10, 31/20;* B65B *51/26*

U.S. Cl. 156—583 **1 Claim**

1. Heat sealing apparatus comprising a substantially heat sink substrate, two conductive legs extending from said substrate, heat insulation between said legs adjacent said substrate, heating means operatively associated with at least one of said legs and seal bar means joining said legs remote from said substrate, wherein said seal bar means is less heat conductive than said legs such that a temperature differential is established between the side thereof adjacent said heated leg and the opposite side thereof, said seal bar being further characterized as comprising multiple alternating layers of conductive and non-conductive material.



3,982,993
PREPARATION OF A WAX CONTAINING PAPER SHEET

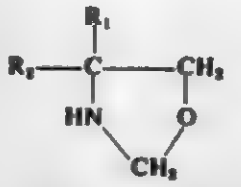
Rodger L. Fife, Cupertino, Calif., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed Sept. 8, 1975, Ser. No. 610,937

Int. Cl.² D21D *3/00*

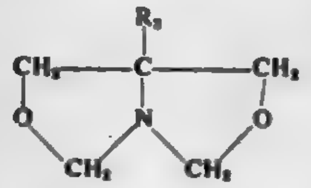
U.S. Cl. 162—158 **12 Claims**

1. In a process for the preparation of a paper sheet by dewatering a slurry of cellulosic fibers, the improvement which comprises treating the cellulosic fibers in the slurry with from 0.1 to 5 pounds per ton of the cellulosic fibers on a dry basis with a thermosetting, cationic polyamine or polyamide wet-strength resin, subsequently adding to the slurry of from 0.5 to 10 pounds per ton of dry cellulosic fiber in the slurry of a stabilizer comprising a mixture of an aqueous wax emulsion containing from 25 to 60 weight percent wax and, based upon the weight of the wax, of from 10 to 60 weight percent of a water-soluble, thermosetting urea-formaldehyde resin and from 20 to 90 weight percent of an aldehyde donor selected from the group consisting essentially of tris (hydroxymethyl) nitromethane, mono- and bicyclic oxazolidines and mixtures thereof, said mono- and bicyclic oxazolidines having formulas of:



(1)

where R_1 and R_2 represent alkyl radicals of from 1 to 2 carbon atoms, and



(2)

where R_3 represents an alkyl or hydroxyalkyl radical of from 1 to 2 carbon atoms,

dewatering the paper sheet, and drying the paper sheet.

3,982,994
GRID LATTICE WITH HORIZONTALLY-MOVABLE BAR

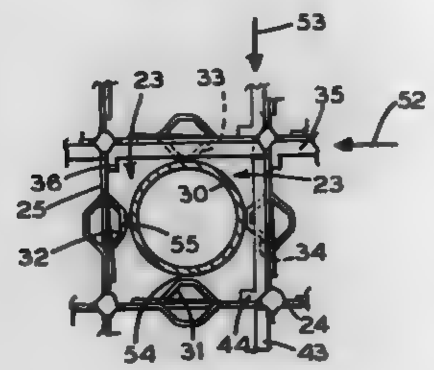
Felix Stanley Jabsen, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Feb. 24, 1975, Ser. No. 552,014

Int. Cl.² G21C *3/34*

U.S. Cl. 176—78 **2 Claims**

1. A cellular fuel element grid structure comprising, a first plurality of generally parallel apertured fuel elememt grid plates having protruding bosses formed thereon, a further plurality of apertured fuel element grid plates having protruding bosses formed thereon, said further plurality of plates interlocking with and being generally perpendicular to said first plate plurality to form common corners at said respective apertures in order to establish rows of aligned slits, a plurality of bars lodged within said slits, stubs formed on said bars, said stubs and said adjoining bar portions each having combined lengths that are greater than the widths of said respective slits to enable said stubs selectively to bridge across said slits and engage an adjoining portion of said grid plates and thereby to temporarily deflect said plates.



3,982,995
METHOD OF CONVERTING OIL SHALE INTO A FUEL

Teh Fu Yen, Altadena; Milo Don Appleman, Los Angeles, and John Eugene Findley, San Gabriel, all of Calif., assignors to The University of Southern California, Los Angeles, Calif.

Filed May 7, 1975, Ser. No. 575,448

Int. Cl.² C12B *1/00*

U.S. Cl. 195—3 H **29 Claims**

1. A method for the manufacture of bioleached oil shale from oil shale containing kerogen and bitumen bound by an inorganic matrix having a substantial acid soluble portion, the steps comprising:

a. providing an aqueous bioleaching medium comprised of a bacteria or mixture of bacteria compatible with oil shale and capable of producing an acid that will neutralize and dissolve a substantial portion of the inorganic matrix of said oil shale, and providing a nutrient to promote the growth of said bacteria;

b. incubating said bioleaching medium to promote the growth of said bacteria and thereby produce a continuous supply of acid; and

c. contacting the oil shale with said incubated medium to dissolve only the acid soluble portion of the inorganic matrix and to convert said matrix into a porous sponge-like structure which exposes the kerogen and bitumen therein for combustion or for conversion into other fuels.

3,982,996
PROCESS FOR PREPARING AMINOCYCLITOL ANTIBIOTICS

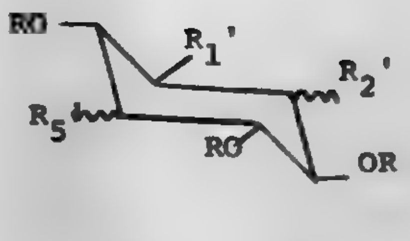
Sol J. Daum, Albany, and Robert L. Clarke, Bethlehem, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Sept. 22, 1975, Ser. No. 615,593

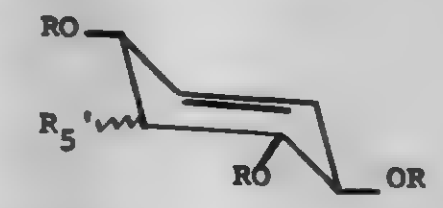
Int. Cl.² C12D *9/20*

U.S. Cl. 195—29 **12 Claims**

1. The process for preparing aminocyclitol antibiotics of the streptamine, deoxystreptamine or dideoxystreptamine-type which comprises culturing a nutrient medium containing carbohydrates, a source of assimilable nitrogen, essential salts and a cyclitol of the 2-R_2'-5-R_5'-3,4,6-trihydroxycyclohexanone or 2-R_2'-5-R_5'-1,3,4,6-tetrahydroxycyclohexane class represented by the formula:



or of the 5-R_5'-3,4,6-trihydroxycyclohexene class represented by the formula:



where, in either case, R is hydrogen or acetyl; R_1' is oxo or hydroxy; and R_2' and R_5' each are hydrogen, hydroxy or OR, in the presence of microorganism mutants which are only capable of biosynthesizing antibiotics of the streptamine, deoxystreptamine or dideoxystreptamine type in the presence of the said cyclitols, and recovering said aminocyclitol antibiotics from the culture broth.

3,982,997
IMMOBILIZED GLUCOSE ISOMERASE

David L. Eaton, and Ralph A. Messing, both of Horseheads, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Sept. 18, 1974, Ser. No. 507,209

Int. Cl.² C07G *7/02;* C12D *13/00*

U.S. Cl. 195—31 F **13 Claims**

1. An immobilized enzyme composite comprising glucose isomerase adsorbed to the internal surfaces of a high surface area porous inorganic support material having an average pore diameter between about 100 A and 1000 A and consisting of between 0.84 and 12.0% MgO and 99.16% and 88.0% Al_2O_3 by weight.

3,982,998
METHANOL FOAM FERMENTATION TO SINGLE CELL PROTEIN BY MICROORGANISMS

Donald O. Hitzman, and Eugene H. Wegner, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 6, 1974, Ser. No. 530,422

Int. Cl.² C12C *11/14, 11/10;* C12B *1/08*

U.S. Cl. 195—49 **16 Claims**

1. A process for the production of microbial cells, said process including the steps of:

a. placing a microorganism into a fermenter containing a nutrient medium and aerobically culturing said microorganism, said microorganism being capable of assimilating alcohol as a main source of carbon;

b. introducing an alcohol having from 1–16 carbon atoms into said fermenter as the main carbon source for said microorganism to assimilate and produce microbial cells;

c. maintaining said alcohol and medium in a foamed condition in said fermenter so that said fermenter is essentially foam-filled; and

d. separating and recovering the microbial cells produced in said fermenter.

12. A process for the production of microbial cells, said process including the steps of:

a. placing a microorganism in a fermenter, said microorganism being capable of assimilating a straight chain alcohol having 1 to 16 carbon atoms per molecule as a main source of carbon;

b. continuously introducing a nutrient medium into said fermenter at a controlled rate;
c. introducing oxygen into said fermenter continuously at a controlled rate for aerobically fermenting said alcohol;
d. continuously introducing said alcohol into said fermenter at a controlled rate for said microorganism to assimilate as the carbon source and produce microbial cells;
e. maintaining said fermenter during operation at a pressure of at least approximately 1 atmosphere;
f. maintaining said alcohol and medium in a foamed condition in said fermenter so that said fermenter is essentially foam-filled; and
g. continuously separating and recovering the microbial cells produced in said fermenter.

3,982,999

COMPLEXING CRESOLASE WITH COPPER CHELATING AGENTS

Jerome A. Kharasch, 6300 W. Touhy Ave., Niles, Ill. 60648
Filed July 26, 1974, Ser. No. 492,198
Int. Cl.^{2} C07G *7/02*
U.S. Cl. 195—63 8 Claims

1. A complex of cresolase and a copper chelating agent selected from the compounds consisting of 8-hydroxyquinoline, 8-mercaptoquinoline, 7-chloro-8-hydroxyquinoline, 2-methyl-oxine, 4-azo-oxine, 4-hydroxyacridine, 6-hydroxy-m-phenantholine, 3,6-benzo-oxine, 8-methoxyquinoline, 8-hydroxyquinoline-5-sulfonic acid and *α,α* dipyridyl.

3,983,000

BONDING PROTEINS TO INORGANIC SUPPORTS

Ralph A. Messing, and Gerald Odstrchel, both of Horseheads, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Apr. 1, 1976, Ser. No. 672,633
Int. Cl.^{2} C07G *7/02*
U.S. Cl. 195—63 12 Claims

1. A method of bonding a biologically active protein to an inorganic support material to prepare an immobilized protein-support composite, the method comprising the steps of
a. reacting a high surface area, water insoluble inorganic material having available surface oxide or hydroxyl groups with a solution of o-dianisidine to form residues of o-dianisidine on the surface; and
b. reacting the reaction product of step (a) with an aqueous solution of the protein.

3,983,001

ISOLATION OF BIOLOGICALLY ACTIVE COMPOUNDS BY AFFINITY CHROMATOGRAPHY

Jiri Cöupek, Prague; Jaroslavá Truková, Cesky Brod; Olga Hubálková, Prague; Miroslava Kriváková, Prague, and Viktor Mansfeld, Prague, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia
Continuation-in-part of Ser. No. 357,814, May 7, 1973, abandoned. This application Feb. 12, 1976, Ser. No. 657,601
Claims priority, application Czechoslovakia, May 10, 1972, 3136-72
Int. Cl.^{2} C07G *7/02*
U.S. Cl. 195—66 R 23 Claims

1. A method for the isolation of biologically active compounds by affinity chromatography comprising forming a sorption complex between a solvent soluble biologically active compound to be isolated and a biologically active compound linked to a hydrogel carrier by a covalent bond, said hydrogel carrier being a hydrophilic macroporous copolymer formed by copolymerizing at least one hydrophilic monomer selected from the group consisting of:
A. hydroxyl alkyl acrylates or methacrylates; poly glycol acrylates or methacrylates; amino alkyl acrylates or methacrylates; acrylonitrile or methacrylonitrile;
acrylic or methacrylic acid of methylolacrylamide copolymerized with another member of said group, or a member selected from the group of cross-linking agents consisting of:
B. glycol polyacrylates or methacrylates;
alkylene di acrylates or methyacrylates;
alkylene bis acrylamide or methacrylamides;
di vinyl benzene; or a member selected from the group consisting of:
C. acrylic and methacrylic acid derivatives, or combinations thereof.

3,983,002

PROCESS FOR PREPARATION OF CELLULASE

Takaichi Ohya; Nobumasa Yokoi, and Tamio Mase, all of Aichi, Japan, assignors to Amano Pharmaceutical Co., Ltd., Nagoya, Japan
Filed Nov. 8, 1974, Ser. No. 522,262
Claims priority, application Japan, Nov. 10, 1973, 48-125934
Int. Cl.^{2} C12D *13/10;* C07G *7/02*
U.S. Cl. 195—66 R 6 Claims

1. A process for preparing cellulase 212 comprising:
aerobically culturing Aeromonas sp. No. 212, FERM-P No. 2306, ATCC No. 31085, in a culture medium containing a nitrogen source, a carbon source and a nutrient while maintaining the pH of the culture medium at 6–10 until cellulase is produced and accumulated therein; and
separating and recovering the cellulase produced and accumulated in the culture medium during the culturing step.

3,983,003

MYCOBACTERIA CULTURE MEDIUM AND METHOD FOR IN VITRO CULTIVATION OF LEPROSY MYCOBACTERIA EMPLOYING SAME

Olaf K. Skinsnes, 438 Portlock Road, Honolulu, Hawaii 96825, and Eiichi Matsuo, 3112 Brokaw St., Honolulu, Hawaii 96815
Filed Jan. 20, 1976, Ser. No. 650,703
Int. Cl.^{2} C12B *3/14, 1/00*
U.S. Cl. 195—96 20 Claims

1. A culture medium for the in vitro cultivation of mycobacteria comprising a hyaluronic acid-enriched culture medium whose base is selected from the group consisting of (a) a physiological mixture comprising fresh yeast extract in an amount of at least about 10% by weight in a phosphate buffer of pH 5.5 to 7 and (b) Dubos oleic acid-albumin liquid medium, the amount of hyaluronic acid present in said culture medium being at least about 0.1% by weight.

10. A method for the in vitro cultivation of a mycobacterium selected from the group consisting of *Mycobacterium leprae* and *Mycobacterium lepraemurium*, comprising the steps of inoculating a viable specimen of said mycobacterium into a hyaluronic acid-enriched culture medium whose base is selected from the group consisting of (a) a physiological mixture comprising fresh yeast extract in an amount of at least about 10% by weight in a phosphate buffer of pH 5.5 to 7 and (b) Dubos oleic acid-albumin liquid medium, the amount of hyaluronic acid present in said culture medium being sufficient to promote growth of said mycobacterium; and maintaining said mycobacterium-inoculated culture medium at a temperature within the range of from about 25° to about 37.5°C for a period of time sufficient to grow a culture of said mycobacterium.

3,983,004

PREPARATION OF A DIAGNOSTIC AGENT FOR MEASURING THE COAGULABILITY OF BLOOD

Heiner Trobisch, Marburg an der Lahn, and Horst Schwinn, Marbach-Michelbach, both of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Germany
Filed Nov. 11, 1974, Ser. No. 522,759
Claims priority, application Germany, Nov. 13, 1973, 2356493
Int. Cl.^{2} G01N *31/00, 33/16;* A61K *35/48*
U.S. Cl. 195—99 15 Claims

1. A method for making a diagnostic agent for measuring the coagulability of blood, which method comprises washing a thrombogenic tissue until it is free from blood, preparing an aqueous suspension of the washed tissue containing sufficient lye to provide the suspension with a pH of from 10 to 12, extracting the tissue in the suspension at said pH for 15 minutes to 48 hours at a temperature from 30°C. to 1°C., whereby the shortest extraction time is correlated with the highest temperature, the longest extraction time with the lowest temperature, and values between these are correlated analogously, acidifying the aqueous suspension to impart a slightly acid pH, separating the extract from the tissue, and adding a water-soluble calcium salt to the extract.

3,983,005

INTEGRAL ELEMENT FOR THE ANALYSIS OF CHOLESTEROL

Charles T. Goodhue; Hugh A. Risley; Roy E. Snoke, and Gary M. Underwood, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 454,621, March 25, 1974, abandoned. This application Apr. 7, 1975, Ser. No. 565,897
Int. Cl.^{2} C12K *1/04*
U.S. Cl. 195—103.5 R 67 Claims

1. An integral element for analysis of total cholesterol in a liquid, the element I comprising a spreading layer in fluid contact with a reagent layer and II containing
a. a cholesterol ester hydrolyzing composition comprising lipase having cholesterol esterase activity and protease; and
b. cholesterol oxidase;
the cholesterol ester hydrolyzing composition and cholesterol oxidase being disposed within the element such that, in liquid applied to the element, cholesterol esters are saponified and cholesterol is depomposed producing a detectable change related to the total cholesterol content of the liquid.

3,983,006

METHOD FOR DETERMINING MINIMUM INHIBITORY CONCENTRATION OF ANTIBIOTIC

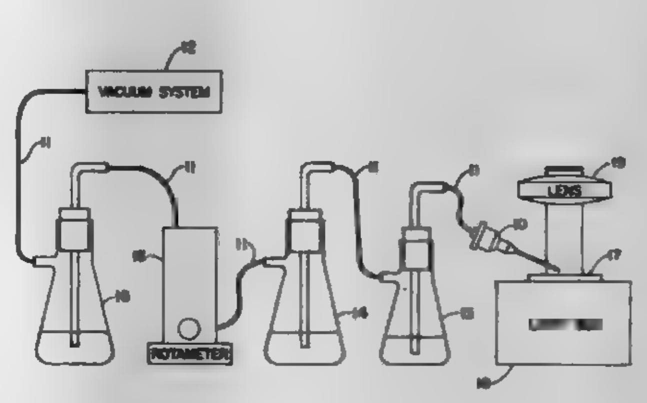
Jesse L. Acker, Rockaway, N.J., and Peter M. Meserol, E. Northport, N.Y., assignors to Akro-Medic Engineering, Inc., Denville, N.J.
Division of Ser. No. 290,654, Sept. 20, 1972, Pat. No. 3,837,745. This application Aug. 23, 1974, Ser. No. 500,125
Int. Cl.^{2} C12K *1/04*
U.S. Cl. 195—103.5 R 8 Claims

1. A method of evaluating a biological fluid which comprises:
a. placing the biological fluid into a chamber,
b. placing an array of biological challenge materials into at least a portion of a plurality of cuvettes disposed below said chamber,
c. monitoring the change in optical properties of said fluid in said chamber until the desired conditions of optical properties has been achieved,
d. passing a finite portion of said fluid from said chamber into at least a portion of said cuvettes, at least one of which contains no biological challenge material, thereby producing an array of substantially identical fluid samples of known concentrations, and
e. continually evaluating the change in rate of the optical properties of the fluid in the cuvette which does not contain biological challenge material and the optical properties of the fluid in at least one other cuvette which contains said biological challenge material, and thereby quantitatively determining the inhibitory concentration of said biological challenge material.

3,983,007

SYSTEM FOR SAMPLING AND MONITORING MICROSCOPIC ORGANISMS AND SUBSTANCES

Frederick H. F. Au, and Werner F. Beckert, both of Las Vegas, Nev., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.
Filed Sept. 23, 1975, Ser. No. 615,962
Int. Cl.^{2} C12K *1/00*
U.S. Cl. 195—103.7 4 Claims



1. A method for determining the uptake of contaminants from soils by selected soil microorganisms comprising the steps of: mixing the soil sample to be tested which has been moistened to 10–80% of its moisture holding capacity with a measured quantity of uncontaminated spores of a mold featuring aerial spores, maintaining this mixture of soil and mold spores at specified temperature conditions for a specified time period, applying an agar layer to the top of the thus treated soil sample, allowing a time period for the mold growing in the sample to form aerial spores, collecting the thus formed aerial spores, and drying and analyzing the spores for the contaminants.

3,983,008

METHOD OF EXTRACTING USEFUL COMPONENTS FROM MICROBIAL CELLS

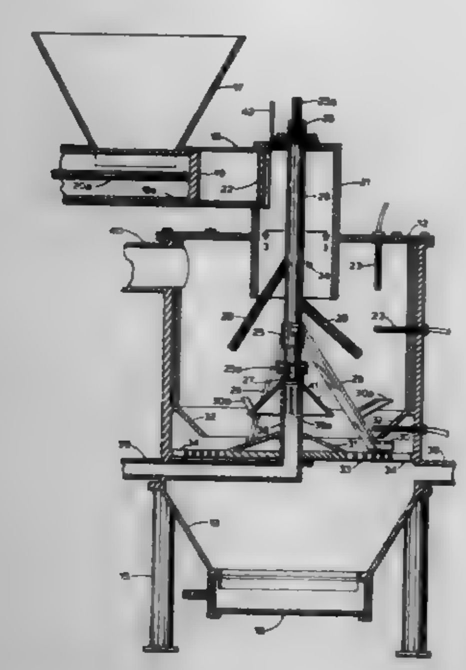
Tatsuo Shinozaki; Nobuyuki Kikkawa; Fumiaki Fujitani, and Kenjiro Tanaka, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan
Filed May 20, 1975, Ser. No. 579,228
Claims priority, application Japan, May 27, 1974, 49-58860
Int. Cl.^{2} C12B *1/00*
U.S. Cl. 195—104 9 Claims

1. A method of extracting a component from microbial cells containing the same, which comprises disrupting microbial cells in a first stage in a high-pressure multi-stage homogenizer in the absence of a solvent for extracting said component from the cells, and contacting said disrupted cells with a solvent in a directly succeeding stage of said homogenizer to extract said component from the cells.

3,983,009
METHOD AND APPARATUS FOR DESTRUCTIVE DISTILLATION OF SOLID WASTES AND RECOVERY OF DISTILLED PRODUCTS

David A. Neal, 11424 Freeway Pl., NE., Albuquerque, N. Mex. 87123, and Patrick L. Stone, 501 N. Mississippi, Ada, Okla. 74820

Filed Mar. 25, 1974, Ser. No. 454,138
Int. Cl.^{2} C10B *9/00*
U.S. Cl. 202—93 5 Claims

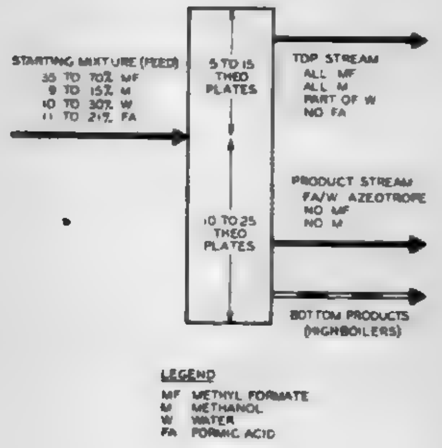


1. A pyrolytic unit for processing waste material in a closed system comprising a retort, waste material insertion means, and char collecting means, said retort being a cylindrical chamber supported with its axis vertical, said cylindrical chamber having (a) an elongated cylindrical wall, a top transverse closure plate, a bottom transverse grate plate, an elongated vertical waste inlet duct closed at the upper end by a closure plate hermetically affixed to and centrally located in such top transverse closure plate with its direction of elongation perpendicular to the plane of the transverse closure plate, a rotatable stirring assembly rotatably supported along the vertical axis of the retort, a horizontal waste inlet duct connected to and communicating with a side wall of the elongated vertical waste inlet duct outside the retort, one-way valve means in said horizontal waste inlet duct to isolate the interior of the retort from the atmosphere, means for forcing waste material through the waste inlet duct valve into the retort, said grate plate being supported within said retort cylindrical wall proximate the lower end thereof, a fresh air inlet duct diametrically supported in the cylindrical wall adjacent the lower surface of the grate plate, a vertical fresh air duct located along the vertical axis of the retort and having a closed upper end located in the central part proximate the retort combustion zone, said vertical fresh air duct having its lower end connected to and supported on the inner end of the fresh air inlet duct, a stirring assembly journal centrally located and passing through the (top wall) waste inlet duct closure plate, said stirring assembly comprising an elongated vertical rotatable shaft, rotatably supported by (the) lower and upper journals, said vertical rotatable shaft having an elongated extension passing upwardly through the upper journal for connection to rotating means, elongated waste stirring members affixed to the rotatable shaft with vertical spacing therebetween and declined downwardly from said shaft into the waste preheating zone, combustible material and char stirring arms affixed to the rotatable shaft at a common level thereon, said combustible waste and char stirring arms comprising outwardly and downwardly inclined arms and a foot member affixed to the lower end of each of said arms parallel to and closely proximate the upper surface of the grate plate, a downwardly inclined annular conical shield affixed to the cylindrical wall of the retort at the bottom of the combustion zone, at least one enlarged char exit port supported at the outer periphery of the grate plate under the annular conical shield, said enlarged char exit port being thus vertically shielded from contract with burning waste, said stirring foot members extending under the conical shield and adapted to pass over the said at least one enlarged char exit port, a recycled gas inlet duct supported in the cylindrical wall and porting within said retort below and adjacent the bottom surface of the grate plate, closed char collecting means connected to the bottom of the retort cylindrical wall, and unidirectional gate means in the char collecting means for intermittant removal of solid combustion residue without communicating the interior of the retort to the atmosphere.

3,983,010
RECOVERY OF THE FORMIC ACID/WATER AZEOTROPE BY DISTILLATION

Konrad Rauch, Limburgerhof; Hans Kiefer, Wachenheim; Dieter Hesse, Frankenthal; Max Strohmeyer, Limburgerhof, and Heinz Hohenschutz, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Feb. 6, 1975, Ser. No. 547,642
Claims priority, application Germany, Feb. 15, 1974, 2407157
Int. Cl.^{2} C07C *51/44*
U.S. Cl. 203—15 3 Claims



1. A process for the recovery of aqeuous solutions of about 75 weight percent formic acid and about 25 weight percent water from a starting mixture containing 35 to 70 weight percent of methyl formate, 9 to 15 weight percent of methanol, 10 to 30 weight percent of water and 11 to 21 weight percent of formic acid by fractional distillation in a column maintained at a temperature range of from 80° to 90°C at the top of the column to 105° to 115°C at the bottom, which comprises feeding said starting mixture into the upper half of the column, maintaining a zone of 5 to 15 theoretical plates, in which the formic acid concentration decreases relative to its concentration in said starting mixture, above the feed point of the starting mixture, withdrawing a mixture of water, methanol and methyl formate at the top of the column, maintaining below said feed point a zone of 10 to 25 theoretical plates, in which the formic acid concentration increases relative to its concentration in said starting mixture until the formic acid/water mixture reaches the composition of its azeotrope, which consists of about 75 weight percent formic acid and about 25 weight percent water, and withdrawing the formic acid/water azeotrope from the bottom portion of the column.

3,983,011
REMOVAL OF CHLORIDE IMPURITIES FROM AN ADIPONITRILE FEED BY DISTILLATION IN THE PRESENCE OF A HIGH BOILING AMINE

John Bentley Wiggill, Hagerstown, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed July 11, 1974, Ser. No. 487,813
Int. Cl.^{2} B01D *3/34*
U.S. Cl. 203—59 5 Claims

1. In a process of purifying crude adiponitrile containing chloride impurities by distillation, the improvement comprising reducing the chloride impurities by mixing the crude adiponitrile with 100–10,000 ppm of at least one amine having an atmospheric boiling point greater than 295°C. based on the crude adiponitrile feed stream to thereby form a mixture, then distilling the crude adiponitrile mixture at a temperature of about 60° to 295°C and a pressure about 0.1 mm HG to atmospheric, and recovering adiponitrile from the resultant distillate with lower amounts of chloride impurities relative to said crude adiponitrile.

3,983,012
EPITAXIAL GROWTH OF SILICON OR GERMANIUM BY ELECTRODEPOSITION FROM MOLTEN SALTS

Uri Cohen, Stanford, Calif., assignor to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Oct. 8, 1975, Ser. No. 620,554
Int. Cl.^{2} C25B *1/00*; C25D *3/66*, *5/02*; C25C *3/00*
U.S. Cl. 204—15 14 Claims

1. A method for electrodepositing an epitaxial crystal layer of a group IV*b* element plating ion selected from the group consisting of silicon and germanium onto a lattice matching substrate selected from said group IV*b* elements at least as noble as said plating ion, said substrate comprising the cathode of an electrolytic cell, said method comprising:

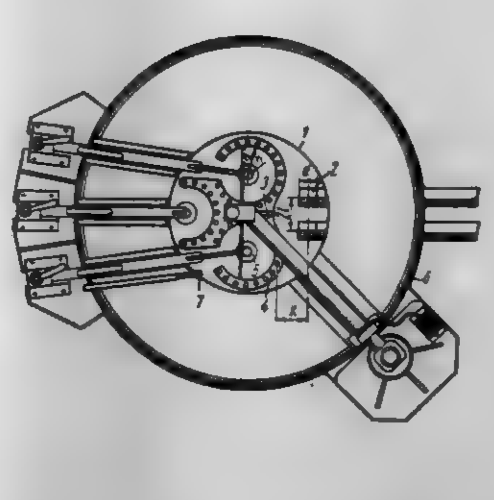
a. forming an electrolytic salt bath for said electrolytic cell including a salt source of said plating ion and a solvent comprising at least one alkali metal fluoride, said salt source of plating ion comprising at least 0.1 mole percent of said bath composition,
b. removing essentially all oxides from the electrolytic bath by the following steps:
  1. applying a vacuum to the bath,
  2. supplying in the bath a source of reagent chemically reactive with oxide ions in sufficient quantity to react with any oxide ion in the bath,
  3. reacting said oxygen reactive reagent with oxygen in the bath at a molten bath temperature, and
  4. removing the reaction product from the bath, and
c. passing a current between an anode in the bath and said cathode at a sufficient current density to electrodeposit silicon as an epitaxial crystal layer onto said cathode, said bath being maintained under an inert gas atmosphere at a temperature sufficient for said bath to be in a totally molten state.

10. The method of claim 1 in which an electrically insulative layer including at least one open window is disposed on the surface of said cathode prior to contacting the same with said electrolytic bath, whereby said epitaxial crystal selectively grows only in the window.

3,983,013
METHOD OF ELECTROLYTIC BORATING OF ARTICLES

Mark Borisovich Gutman, 4 Grazhdanskaya ulitsa, 43, korpus 2, kv. 5; Vsevolod Grigorievich Kaufman, Petroverigsky pereulok, 3, kv. 24; Mikhail Savelievich Gorodinsky, Snezhnaya ulitsa, 4, kv. 24; Jury Alexandrovich Shakhnes, Zarevsky proezd, 5, kv. 32; Larisa Sergeevna Mezhueva, Novoslobodskaya ulitsa, 52, kv. 11; Irina Stepanovna Altukhova, prospekt Vernadskogo, 33, kv. 188, all of Moscow, U.S.S.R.; Jury Grigorievich Kaloshin, deceased, late of Moscow, U.S.S.R., and by Albina Adolfovna Kaloshina, administratrix, Chertanovskaya ulitsa, 24, korpus 2, kv. 138, Moscow, U.S.S.R.

Continuation of Ser. No. 382,846, July 26, 1973, abandoned. This application Sept. 23, 1974, Ser. No. 508,216
Int. Cl.^{2} C25D *9/08*, *11/00*, *3/66*
U.S. Cl. 204—39 1 Claim



1. A method of electrolytic borating articles comprising the steps of: filling a crucible with a melt of a boron-bearing medium; immersing electrodes connected to a source of alternating current, a holder enclosing articles and connected to the negative terminal of a source of direct current, and anodes connected to the positive terminal of the source of direct current in the melt; energizing the electrodes to heat the melt; energizing the anodes and the holder to form a diffuse boron-plated layer on the surface of the articles; and maintaining the distances between the electrodes, the anodes and the articles so that the density of the direct current on the surface of the articles is greater than the density of the alternating current, as determined by the following formulas:

$$R_{a.c.} = \frac{\rho \cdot \ln \left[\frac{2l}{d} + \sqrt{2\left(\frac{l}{d}\right)^{2} - 1}\right]}{2\frac{x}{d}\; H \cdot \text{arc tg} \sqrt{2\left(\frac{l}{d}\right)^{2} - 1}}$$

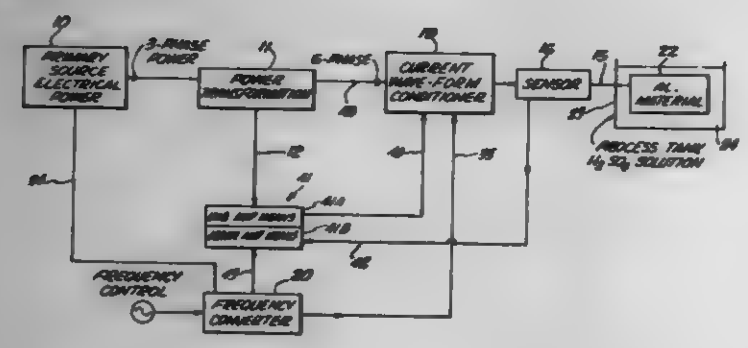
$$R_{d.c.} = \frac{\rho}{2\pi h} \cdot \ln \frac{r_2}{r_1}$$

where

$R_{a.c.}$ = resistance in the circuit of A.C. electrodes, ohm;
$R_{d.c.}$ = resistance in the electrolytic circuit, ohm;
ρ = resistivity of the boron-bearing medium, ohm.cm;
H = effective length of A.C. electrodes, *m;*
d = diameter (side of a square) of A.C. electrodes, *m;*
l = spacing of A.C. electrodes, *m;*
h = length of articles, *m;*
X = current coordinate making allowance for the position of the articles in the working space of the crucible, *m;*
r_1 = radius of a D.C. anode, *m;* and

r_3 = inside radius of the cathode which is essentially the holder with the articles, *m*.

3,983,014
ANODIZING MEANS AND TECHNIQUES
Frederick S. Newman, Sepulveda; John T. Hartman, Reseda, and Francis A. Dedona, Sherman Oaks, all of Calif., assignors to The Scionics Corporation, Culver City, Calif.
Filed Dec. 16, 1974, Ser. No. 533,333
Int. Cl.² C25D *11/04, 11/08*
U.S. Cl. 204—58 **10 Claims**



1. In a multi-phase anodizing system in which it is desired to produce an oxide coating on aluminum or the like in an anodizing bath using energy derived from a multi-phase source, wherein the improvement comprises modifying a multiphase current derived from said source to supply positive and negative current pulses alternately through said bath with the ratio of average negative current to average positive current being greater than approximately three percent but less than twenty percent and with the frequency of such positive and negative pulses in each phase being one or more pulses per second and with the frequency of such positive and negative pulses in each phase being less than the frequency of said multi-phase source from which said multiphase current is derived.

3,983,015
ELECTROCHEMICAL FLUORINATION USING EXCESS CURRENT
William V. Childs, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed June 23, 1975, Ser. No. 589,632
Int. Cl.² C25B *3/08*
U.S. Cl. 204—59 F **8 Claims**

1. In a process for the electrochemical fluorination of a fluorinatable feedstock comprising:

passing an electric current through a current-conducting essentially anhydrous liquid hydrogen fluoride electrolyte contained in an electrolysis cell provided with a cathode and porous carbon anode;

contacting said feedstock with said electrolyte within pores of said anode to thus at least partially fluorinate at least a portion of said feedstock;

and recovering fluorinated product and unreacted feedstock from said anode;

the improvement comprising introducing said feedstock at a rate within the range of 0.2 to 0.75 feedstock hydrogen equivalents per hour per 53.6 amperes of current.

3,983,016
METHOD OF PREPARING CHROMIUM
Arthur C. Ellsworth, Corpus Christi, and William W. Carlin, Portland, both of Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Continuation of Ser. No. 490,152, July 19, 1974, abandoned. This application Oct. 1, 1975, Ser. No. 618,585
Int. Cl.² C25C *1/10;* C25B *1/14, 1/22*
U.S. Cl. 204—89 **20 Claims**

1. A process for the electrolytic production of chromium metal comprising the steps of:

a. electrolyzing an electrolyte comprising an alkali metal chromate, chromic acid, and from 0.4 to 1.5 weight percent sulfate ion, basis total chromic acid in the feed in a first electrolytic cell;

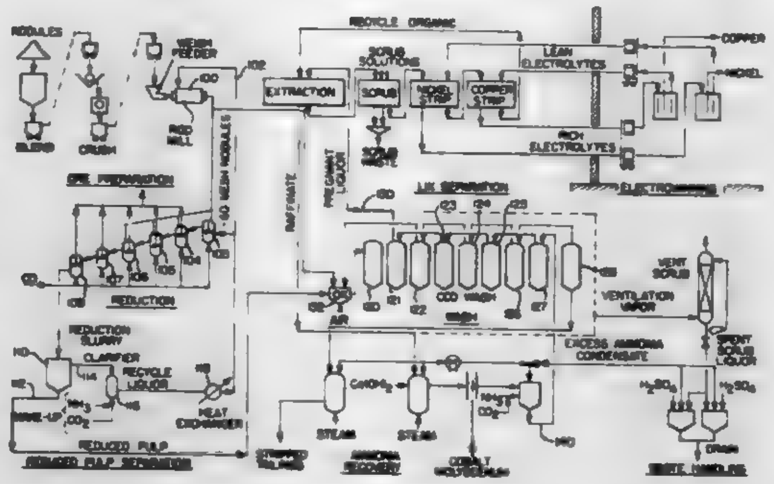
b. forming chromium metal at a cathode of said first electrolytic cell;

c. removing an effluent steam depleted in chromic acid content from said first electrolytic cell and introducing a portion of said effluent stream into an anolyte chamber of a second electrolytic cell;

d. introducing an aqueous liquid composition containing an alkali metal chromate and an alkali metal dichromate into the anolyte chamber of said second electrolytic cell; and

e. passing an electrolyzing current through said second electrolytic cell, removing an effluent comprising an alkali metal chromate and chromic acid from the anolyte chamber of said second electrolytic cell, and introducing the effluent from the anolyte chamber of the second electrolytic cell into the first electrolytic cell.

3,983,017
RECOVERY OF METAL VALUES FROM MANGANESE DEEP SEA NODULES USING AMMONIACAL CUPROUS LEACH SOLUTIONS
Lester J. Szabo, Charlottetown, Canada, assignor to Kennecott Copper Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 311,063, Dec. 1, 1972, abandoned. This application Feb. 10, 1975, Ser. No. 548,430
Int. Cl.² C25C *1/12, 1/06;* C01G *3/14, 53/12*
U.S. Cl. 204—106 **40 Claims**



22. A continuous process for treating manganese nodules to enable copper, nickel, cobalt and molybdenum values contained therein to be recovered therefrom comprising the steps of:

a. contacting a copper containing ammoniacal leach solution with a reducing gas in a vessel to reduce the copper and produce an ammoniacal leach solution containing cuprous ions;

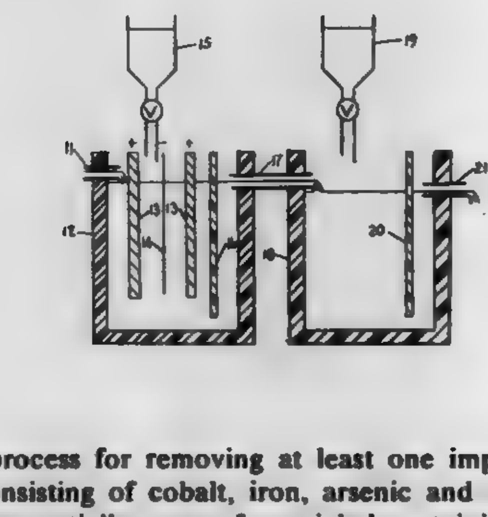
b. contacting the ammoniacal leach solution containing cuprous ions prepared in step (a) with ground manganese nodules to form a slurry and reduce the manganese oxides in the nodules;

c. separating the reduced nodules in the slurry from the leach solution to leave a pregnant leach solution containing copper, nickel, cobalt and molybdenum metal values;

d. washing the nodule residue with an ammoniacal-ammonium carbonate wash solution to remove entrained metal values from the nodule residue and yield a wash effluent containing copper, nickel, cobalt and molybdenum values; and

e. recovering metal values from the wash effluent.

3,983,018
PURIFICATION OF NICKEL ELECTROLYTE BY ELECTROLYTIC OXIDATION
Gyula John Borbely, Copper Cliff; Alexander Illis, Mississauga, and Bernardus Jacobus Brandt, Port Colborne, all of Canada, assignors to The International Nickel Company, Inc., New York, N.Y.
Filed Sept. 10, 1975, Ser. No. 612,011
Claims priority, application Canada, Feb. 12, 1975, 219948
Int. Cl.² C25F *7/02;* C25D *21/16*
U.S. Cl. 204—130 **14 Claims**

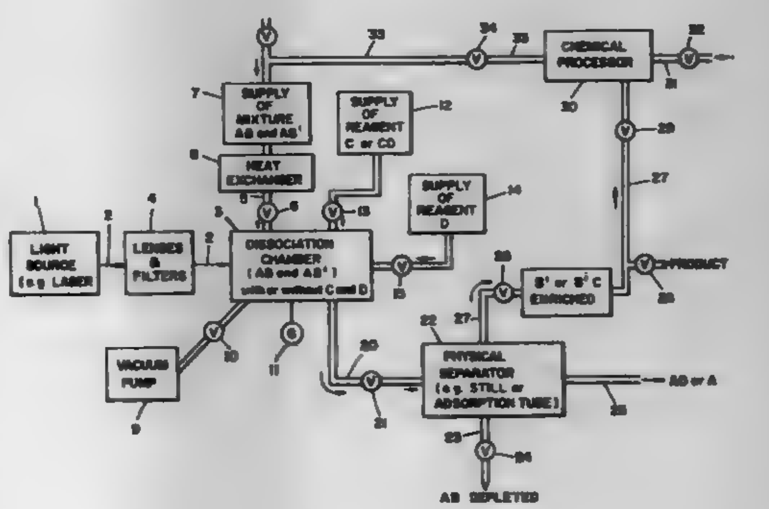


1. A process for removing at least one impurity from a group consisting of cobalt, iron, arsenic and lead from an aqueous, essentially copper-free, nickel-containing electrolyte which comprises: immersing at least one anode and at least one cathode into said electrolyte, said electrolyte containing a chloride salt of an alkali metal; applying current between said anode and said cathode for a time period sufficient to generate in said electrolyte an equivalent chlorine content of at least about 0.05 gram per liter while maintaining the current density at said cathode at a level sufficient to prevent substantial deposition of metal at said cathode but sufficient to generate a metal hydroxide in the vicinity of said cathode; increasing the pH of said electrolyte whereby said equivalent chlorine produced reacts with at least one impurity present in said electrolyte to provide a precipitate containing said at least one impurity; and separating said precipitate from said electrolyte.

3,983,019
SEPARATION OF THE MERCURY ISOTOPES BY THE INDIRECT PHOTOCHEMICAL METHOD
Fernande Botter nee Bergheaud, Gif-sur-Yvette; Monique Scaringella nee Desnoyer, Versailles, and Michel Wacongne, Epinay-sur-Orge, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France
Filed Oct. 1, 1973, Ser. No. 402,356
Claims priority, application France, Oct. 26, 1972, 72.36633
Int. Cl.² B01J *1/10*
U.S. Cl. 204—157.1 R **11 Claims**

1. A method of photochemical separation of the mercury isotopes comprising the steps of passing through at least one vessel mounted in series, a gas stream of oxygen and butadiene containing a mixture of mercury isotopes, irradiating said gas stream by a lamp containing mercury depleted in at least one of the desired isotopes and then recovering said desired isotopes in a trap placed downstream of the vessels.

3,983,020
ISOTOPIC SEPARATION BY PHOTOPREDISSOCIATION
C. Bradley Moore, Berkeley, Calif., and Edward S. Yeung, Ames, Iowa, assignors to The Regents of the University of California, Berkeley, Calif.
Filed Jan. 26, 1973, Ser. No. 326,833
Int. Cl.² B01J *1/10*
U.S. Cl. 204—157.1 R **17 Claims**


LIGHT SOURCE (e.g. LASER)
LENSES & FILTERS
DISSOCIATION CHAMBER (AB and AB') with or without C and D
SUPPLY OF MIXTURE AB and AB'
HEAT EXCHANGER
SUPPLY OF REAGENT C or CD
SUPPLY OF REAGENT D
CHEMICAL PROCESSOR
B' or B'C ENRICHED
PRODUCT
PHYSICAL SEPARATOR (e.g. STILL or ABSORPTION TUBE)
AB or A
VACUUM PUMP
AB DEPLETED
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1. A method for producing isotopically enriched material by photoexcitation of dissociable molecules in which at least one element is present as a plurality of isotopes, those said molecules which contain a first said isotope having a significantly greater tendency to absorb a given spectrum range of light and to be raised to an excited electronic state and to be dissociated thereby, than do those said molecules which contain a second said isotope, comprising the steps of:

submitting said dissociable molecules to light in said given spectrum range, to cause said molecules to be raised to said excited electronic state, thereby dissociating said molecules containing said first isotope, said first isotope entering into a different stable chemical state, and

physically separating the matter constituting said first isotope in its different chemical state from the remainder of said matter.

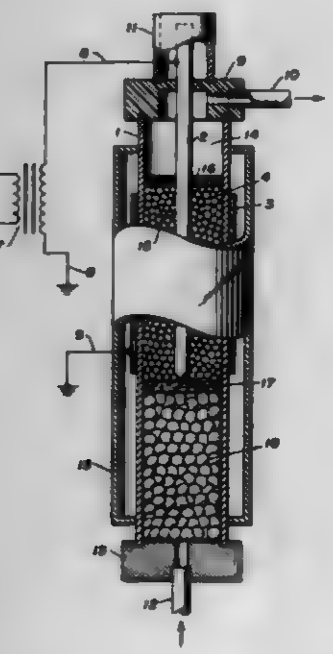
3,983,021
NITROGEN OXIDE DECOMPOSITION PROCESS

Jay M. Henis, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed June 9, 1971, Ser. No. 151,396

Int. Cl.² B01K *1/00*

U.S. Cl. 204—164 **26 Claims**



1. The process of decomposing nitrogen oxides which comprises forming a dilute plasma containing same in contact with a large area of heterogeneous catalyst support solids which do not undergo irreversible reactions with the components of the plasma.

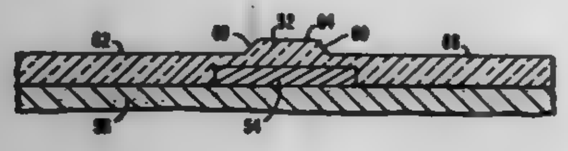
3,983,022
PROCESS FOR PLANARIZING A SURFACE

Raymond P. Auyang, Poughkeepsie, N.Y., and Harold R. Koenig, Derry, N.H., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 103,250, Dec. 31, 1970, abandoned. This application Oct. 7, 1974, Ser. No. 512,781

Int. Cl.² C23C *15/00*

U.S. Cl. 204—192 **3 Claims**



1. A method of providing a planar surface on an insulating film of a thin film device, wherein said insulating film overlies a metal stripe which is on a substrate, the portion of said film over said stripe forming an upper first substantially flat surface in a first plane, the portion of said film on said substrate forming lower second substantially flat surfaces in a second plane, the portions of said insulating film between said first and second surfaces being sloped, comprising:

sputter etching said sloped portions while not affecting said metal stripe until the total surface of said insulating film substantially lies in said second plane.

2. A method of providing a planar surface on an insulating film of a thin film device, wherein said insulating film is being sputter deposited on a metal stripe lying on a substrate, the portion of said film over said stripe forming an upper first substantially flat surface in a first plane, the portion of said film on said substrate forming lower second substantially flat surfaces in a second plane, the portions of said film between said first and said second surfaces being sloped, comprising:

resputtering said insulating film while not affecting said metal stripe, said resputtering being adjusted to produce substantially zero deposition on said flat surfaces whereby said sloped surfaces are sputter etched, said resputtering being carried on until the surface of said insulating film lies in said second plane.

3. A method of providing a planar surface on the insulating film of a thin film device, wherein said insulating film has been sputter deposited on a metal stripe lying on a substrate, the portion of said film over said stripe forming an upper first substantially flat surface in a first plane, the portion of said film on said substrate forming lower second substantially flat surfaces in a second plane, the portions of said film between said first and said second surfaces being sloped, comprising:

chemically etching a part of said portion of said film over said stripe and within said sloped surfaces to a depth substantially co-planar with said second plane while not affecting said metal stripe; and

sputter etching said sloped surfaces until the total surface of said insulating film substantially lies in said second plane while not affecting said metal stripe.

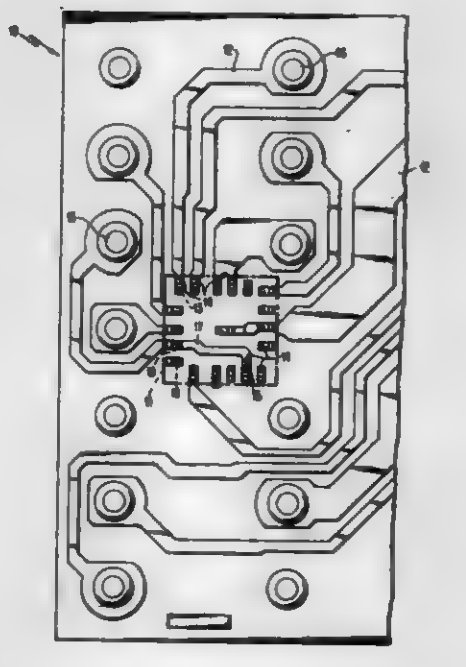
3,983,023
INTEGRATED SEMICONDUCTOR CIRCUIT MASTER-SLICE STRUCTURE IN WHICH THE INSULATION LAYER BENEATH UNUSED CONTACT TERMINALS IS FREE OF SHORT-CIRCUITS

Theodore H. Baker; Majid Ghafghaichi, both of Poughkeepsie, and Daniel Tuman, Beacon, all of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Mar. 30, 1971, Ser. No. 129,430

Int. Cl.² C23C *15/00*

U.S. Cl. 204—192 **4 Claims**



1. In the method of reverse cathodic sputtering to remove materials from the planar surface of a planar integrated circuit masterslice structure including the active and passive components formed from a plurality of regions of different conductivity types extending from said planar surface into said substrate, the improvement comprising:

protecting the portion of said insulative layer beneath at least one of said excess terminals not selectively connected into said circuit configuration against dielectric breakdown resulting from high electrostatic charge accumulations by connecting said one excess terminal to one of said excess electrically isolated components not selectively connected into said circuit configuration.

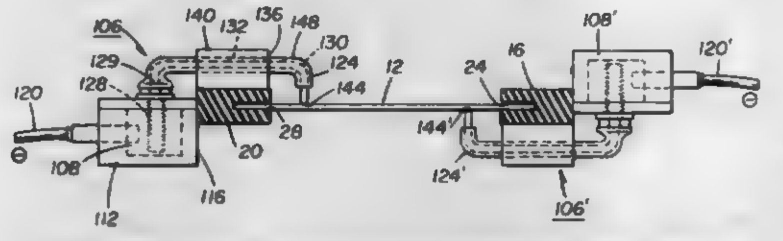
3,983,024
IN-LINE APPARATUS FOR ELECTROPLATING A METAL ONTO AN ARTICLE

Robert J. Boggio, Woodridge, Ill., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Feb. 24, 1975, Ser. No. 552,680

Int. Cl.² C25B *9/00;* B01K *1/00*

U.S. Cl. 204—198 **14 Claims**



1. In an apparatus for electroplating a metal onto an electrically conductive surface of an article moving through an electrolyte plating bath containing in solution a salt of the metal to be plated onto the article, by passing an electric current through the electrolyte and the article with the article functioning as a cathode:

a pair of spaced tracks extending through the plating bath, for supporting and for guiding the moving article therealong and through the plating bath, and

means for electrically contacting the conductive surface of the article within the plating bath and for applying a voltage thereto to supply the electric current to the article to plate the metal onto the article.

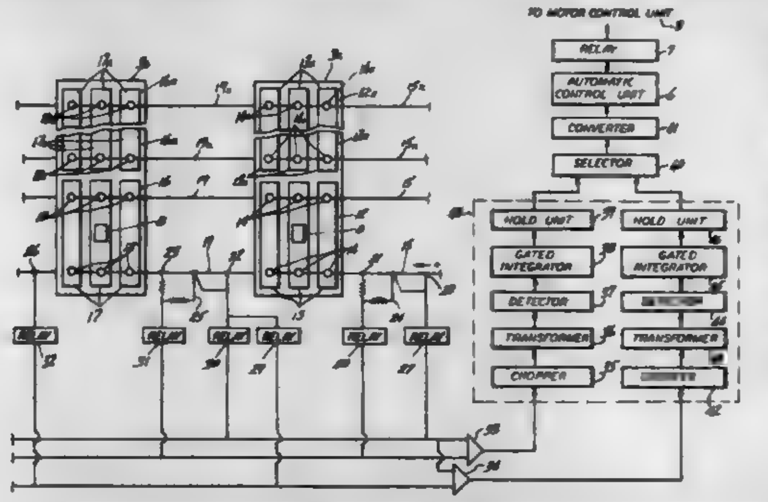
3,983,025
APPARATUS FOR REGULATING ANODE-CATHODE SPACING IN AN ELECTROLYTIC CELL

Richard W. Ralston, Jr., Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 272,240, July 17, 1972, abandoned. This application July 18, 1974, Ser. No. 489,648

Int. Cl.² C25D *17/00, 21/12;* C25B *1/40*

U.S. Cl. 204—225 **9 Claims**



1. In an electrolytic cell having at least one adjustable anode set, at least one conductor conveying electric current to said at least one anode set, and a liquid cathode in spaced relation to said at least one anode set, the improvement which comprises employing, with said electrolytic cell, apparatus for adjusting the space between said at least one anode set and said liquid cathode, which comprises:

a. digital computer means programmed with a standard voltage coefficient and a permissible range of deviation for each anode set,

b. means for detecting voltage signals and current signals to each of said anode sets,

c. means for selecting from said detected signals a set of signals generated from a selected anode set,

d. means for supplying said selected signals in digital form to said digital computer means,

e. said digital computer being programmed for calculating the voltage coefficient from said detected signals in digital form for said selected anode set and comparing said voltage coefficient with said permissible range,

f. said digital computer being programmed for generating activating electric signals when said calculated voltage coefficient is outside of said permissible range, and

g. motor means operative to raise and lower said selected anode set, said motor means being energized by said activating electric signals when said calculated voltage coefficient is outside of said permissible range.

3,983,026
ELECTROLYTIC CELLS WITH VERTICAL ELECTRODES

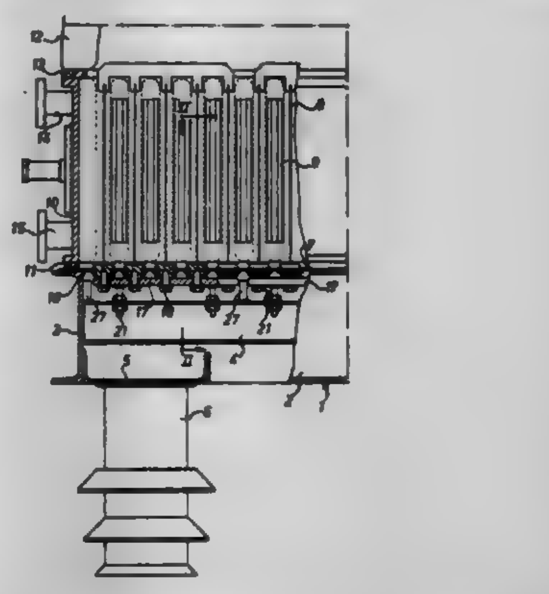
Emile Cabaraux, and Robert Schoberle, both of Brussels, Belgium, assignors to Solvay & Cie, Belgium

Filed Oct. 7, 1974, Ser. No. 512,912

Claims priority, application Belgium, Oct. 19, 1973, 136867

Int. Cl.² C25B *1/26, 9/02*

U.S. Cl. 204—258 **13 Claims**



1. A unipolar electrolytic cell comprising a baseplate, substantially vertical and parallel anode plates each of which is mounted on at least one anode support fixed in leakproof manner to the baseplate and connected to at least one current lead placed beneath the baseplate, cathodes alternating with the anode plates, a casing above the baseplate surrounding the anode plates and cathodes, a cover above the casing the conduits for admission of a solution to be electrolysed and for removal of the products of electrolysis, characterised in that the current lead rests on at least one fixed prop and supports and said anode support and that the said anode support passes through the baseplate and supports at least a part of the baseplate above the current lead.

3,983,027
PROCESS FOR RECOVERING UPGRADED PRODUCTS FROM COAL

John D. McCollum, Munster, Ind., and Leonard M. Quick, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed July 1, 1974, Ser. No. 484,594

Int. Cl.² C10G *1/04*

U.S. Cl. 208—8 **17 Claims**

1. A process for recovering upgraded products from coal solids, comprising contacting the coal solids with a water-containing fluid to thereby produce gases, liquids, and upgraded solids from the coal solids, under supr-atmospheric pressure, at a temperature in the range of from about 600°F. to about 900°F. in the absence of an externally supplied catalyst and hydrogen or other reducing gas, wherein sufficient water is present in the water-containing fluid and said pressure is sufficiently high so that the water in the water-containing fluid has a density of at least 0.10 gram per milliliter and serves as an effective solvent for the liquids and gases produced from

the coal solids; and lowering said temperature or pressure or both, to thereby make the water in the water-containing fluid a less effective solvent for such liquids and gases and to thereby form separate phases.

3,983,028
PROCESS FOR RECOVERING UPGRADED PRODUCTS FROM COAL

John D. McCollum, Munster, Ind., and Leonard M. Quick, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed July 1, 1974, Ser. No. 484,592

Int. Cl.² C10G *1/04*

U.S. Cl. 208—9 **25 Claims**

1. A process for recovering upgraded products from coal solids, comprising contacting the coal solids with a water-containing fluid, to thereby produce gases, liquids, and upgraded solids from the coal solids, under super-atmospheric pressure, at a temperature in the range of from about 600°F. to about 900°F. in the absence of externally supplied hydrogen or other reducing gas, and in the presence of an externally supplied catalyst system containing a sulfur- and nitrogen-resistant catalyst, selected from the group consisting of at least one soluble or insoluble transition metal compound, a transition metal deposited on a support, and combinations thereof, wherein said catalyst is present in a catalytically effective amount, wherein said transition metal in said catalyst is selected from the group consisting of ruthenium, rhodium, iridium, osmium, and combinations thereof, and wherein sufficient water is present in the water-containing fluid and said pressure is sufficiently high so that the water in the water-containing fluid has a density of at least 0.10 gram per milliliter and serves as an effective solvent for the liquids and gases produced from the coal solids; and lowering said temperature or pressure or both, to thereby make the water in the water-containing fluid a less effective solvent for such liquids and gases and to thereby form separate phases.

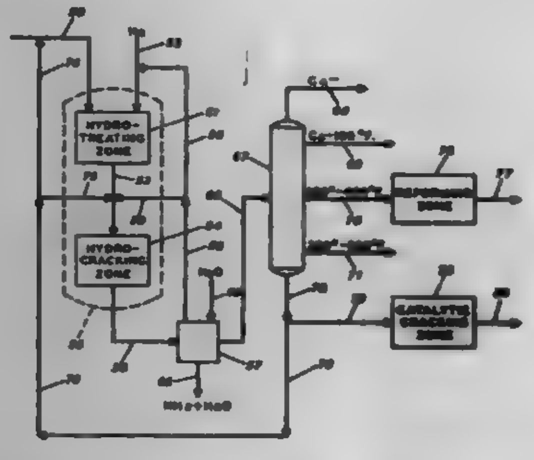
3,983,029
HYDROTREATING CATALYST AND PROCESS

Robert J. White, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 337,518, March 2, 1973, Pat. No. 3,954,671, and a continuation-in-part of Ser. No. 27,068, April 9, 1970, abandoned. This application Nov. 24, 1975, Ser. No. 634,993

Int. Cl.² C10G *13/02, 23/02;* **B01J** *27/04*

U.S. Cl. 208—59 **8 Claims**



1. A hydrotreating process which comprises contacting a hydrocarbon feed containing substantial amounts of materials boiling above 200°F. and selected from the group consisting of petroleum distillates, solvent-deasphalted petroleum residua, shale oils and coal tar distillates, in a reaction zone with hydrogen and a catalyst, at hydrotreating conditions including a temperature in the range 400°to 950°F., a pressure in the range 800 to 3500 psig, a liquid hourly space velocity in the range 0.1 to 5.0, and a total hydrogen supply rate of 200 to 20,000 SCF of hydrogen per barrel of feedstock, and recovering hydrotreated products from said reaction zone, said catalyst being a composite comprising

A. A gel matrix comprising based on the entire content of said gel matrix:
a. less than 15 weight percent silica,
b. alumina, in an amount providing an alumina-to-silica weight ratio of 50/50 to 100/0,
c. nickel or cobalt, or the combination thereof, in the form of metal, oxide, sulfide or any combination thereof, in an amount of 1 to 10 weight percent of said matrix, calculated as metal,
d. molybdenum or tungsten, or the combination thereof, in the form of metal oxide, sulfide or any combination thereof, in an amount of 5 to 30 weight percent of said matrix, calculated as metal;
B. A crystalline zeolitic molecular sieve containing less than 5 weight percent sodium and containing ions selected from Mn, rare earths of atomic numbers 58–71, and alkaline earths Mg, Ca, Sr and Ba, said sieve further being in the form of particles, said particles being dispersed through said gel matrix;

said catalyst having an average pore diameter below 100 Angstroms and a surface area above 200 square meters per gram.

3,983,030
COMBINATION PROCESS FOR RESIDUA DEMETALATION, DESULFURIZATION AND RESULTING COKE GASIFICATION

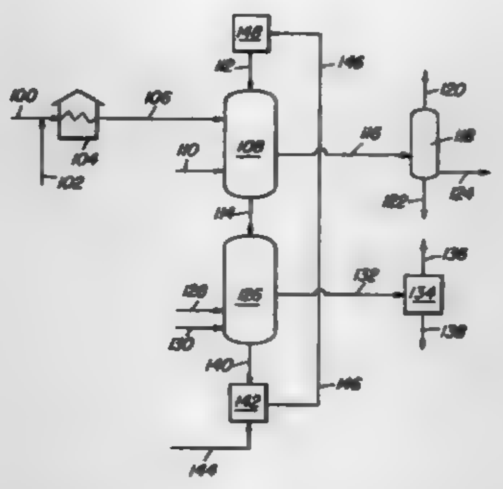
Michael P. Rosynek, Bryan, Tex.; George F. Shipman, and Tsoung-Yuan Yan, both of Trenton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 1, 1974, Ser. No. 438,916

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² C10J *3/00;* **C10G** *9/30;* **C10B** *55/00;* **B01D** *15/06*

U.S. Cl. 208—253 **13 Claims**



1. A process for residual oil demetalation and desulfurization and resulting coke gasification which comprises contacting said residual oil with a porous refractory oxide in the absence of added hydrogen, at a temperature of from greater than 700°F to about 1100°F and a porous refractory oxide to oil weight ratio of from about 0.1 to about 5, recovering from said residual oil contacting step upgraded residual oil of cracking feed quality and coke-deposited refractory oxide, contacting said coke-deposited refractory oxide with steam and a free oxygen containing gas at a temperature of from about 1000°F to about 1500°F and a mole ratio of steam to oxygen of from about 3 to about 5, and recovering from said coke-deposited refractory oxide contacting step producer gas and regenerated coke-free refractory oxide.

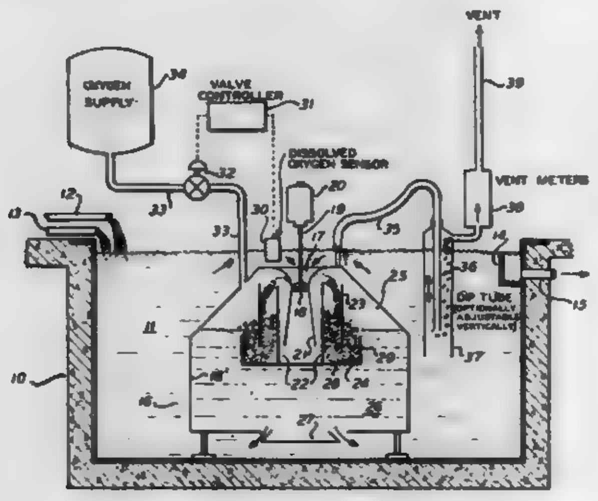
3,983,031
METHODS AND APPARATUS FOR CONTROLLING THE SUPPLY OF A FEED GAS TO DISSOLUTION DEVICES

Bradley S. Kirk, North Plainfield, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed Apr. 2, 1975, Ser. No. 564,528

Int. Cl.² C02C *5/04;* **C02B** *3/08*

U.S. Cl. 210—15 **7 Claims**



1. A method of dissolving a gas in a liquid in a generally enclosed chamber emplaceable in a body of said liquid, comprising the steps of: introducing said gas into said chamber thereby depressing liquid therein to a level corresponding to the pressure of said gas; pumping a stream of liquid into said chamber and establishing a gravitational fall of said liquid stream over a weir through said gas space whereby the resulting liquid-gas turbulence effects a mass transfer of said gas into said liquid; discharging said liquid with said gas dissolved therein through a nozzle into said body of liquid; limiting the height of said gravitational fall of said liquid by placing a tube having a lower end in said body of liquid and disposed in communication with said gas space with the lower end of said tube defining the lowest level within said chamber to which said liquid therein is depressed and thereby defining the maximum height of said gravitational fall; establishing a desired level of said gas dissolved in said liquid; sensing the actual level of gas dissolved in said liquid; and, in response to sensing an actual level of gas dissolved in said liquid above said desired level, reducing the flow of said gas to said chamber to thereby also reduce the power consumed as a consequence of pumping said liquid into said chamber against a lower head pressure resulting from reducing said gas flow into said chamber.

4. Apparatus for dissolving a gas in a liquid comprising a generally enclosed chamber emplaceable in a body of said liquid and having a liquid inlet and outlet with a nozzle at said outlet; means for supplying said gas to said chamber such 'hat the pressure of supplied gas is effective to depress liquid in said enclosure to a level which varies in accordance with said gas pressure; gravitational fall means including a weir and a baffle spaced from said weir to define a gravitational fall zone intermediate said inlet and outlet; pump means for pumping said liquid through said inlet and subjecting said pumped liquid to a gravitational fall over said weir into said fall zone through said gas space to effect a mass transfer of said gas into said liquid; means for discharging said liquid with gas dissolved therein through said nozzle; dip tube means at least partially disposed in said body of liquid and in communication with said gas space for limiting the maximum gas pressure in said space thereby defining a maximum height of said gravitational fall; means for sensing the concentration of gas dissolved in said body of liquid and means responsive to said sensing means for controlling the flow of said gas to said chamber in accordance with said sensed concentrations such that upon sensing a dissolved gas concentration in said body of liquid above a desired level said control means is effective to reduce said gas flow to thereby reduce the power consumed by said pump means as a consequence of pumping said liquid against a lower pressure head resulting from the reduced gas flow into said chamber.

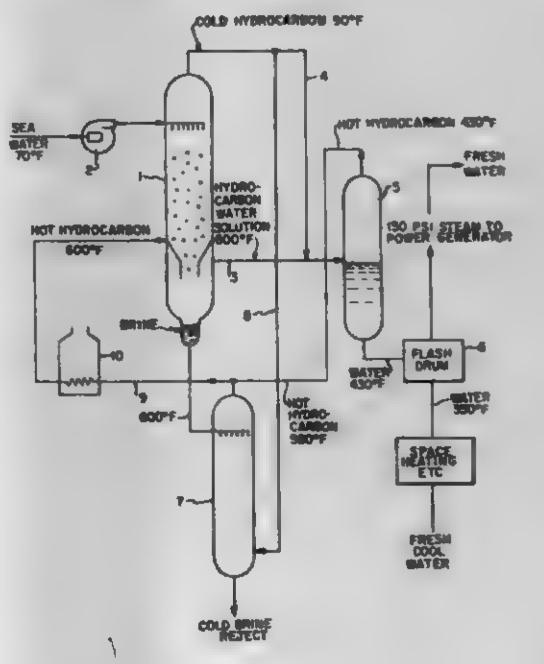
3,983,032
BRINE DESALINATION PROCESS WITH PHASE-BREAKING BY COLD HYDROCARBON INJECTION

Howard V. Hess, Glenham, and William F. Franz, Gardiner, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Jan. 30, 1975, Ser. No. 545,269

Int. Cl.² B01D *11/00*

U.S. Cl. 210—22 R **5 Claims**



1. In a process for extracting fresh water from brine by passing said brine into countercurrent contact with hot hydrocarbon under pressure of 700 to 2500 psig at temperature of 500° to 650°F in a first contacting zone whereby a hydrocarbon-water solution is formed as well as concentrated brine and a cooled recycle hydrocarbon at a temperature of 70° to 200°F the improvement which consists in injecting said solution directly with substantially all of said cooled hydrocarbon to cause said solution to separate into water and hydrocarbon and separating said water from said hydrocarbon.

3,983,033
PROCESS FOR REMOVING DISSOLVED PHOSPHORUS FROM WATER MAGNETICALLY

Christopher de Latour, Arlington, Va., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

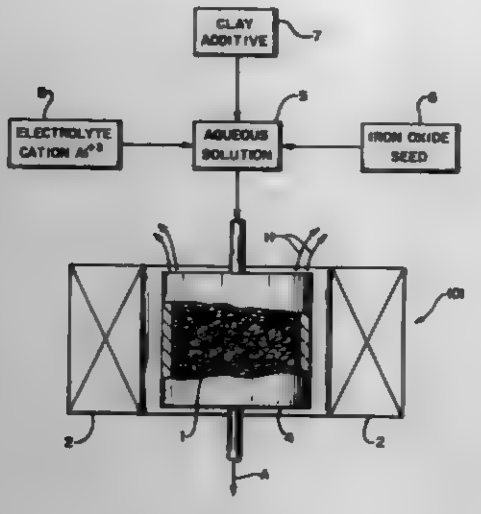
Continuation-in-part of Ser. No. 344,808, March 26, 1973, abandoned. This application Mar. 12, 1975, Ser. No. 557,841

Int. Cl.² C02B *1/20*

U.S. Cl. 210—49 **10 Claims**

1. A process for removing orthophosphate ions from an aqueous solution containing suspended solids, comprising, introducing iron oxide seed material particles at about 100–1000 parts per million in the size range >0.1 microns into said aqueous solution, introducing an electrolyte cation selected from the group consisting essentially of the metal ions Al^{+3}, Fe^{+3}, Ca^{+2} and Fe^{+2} at about 3–10 parts per million into said aqueous solution, said electrolyte cation acting first to associate with itself said orthophosphate ions and, second, to associate through metal ion hydroxo bridges said iron oxide, said bridges having also complexed some of said orthophosphate ions, agitating the solution, allowing a retention time of the order of one to three minutes for a coagulum containing said orthophosphate ions to form, said solution containing sufficient suspended solids to permit said coagulum to form, and then magnetically filtering said aqueous solution to separate the coagulum from the liquid portion of the aqueous

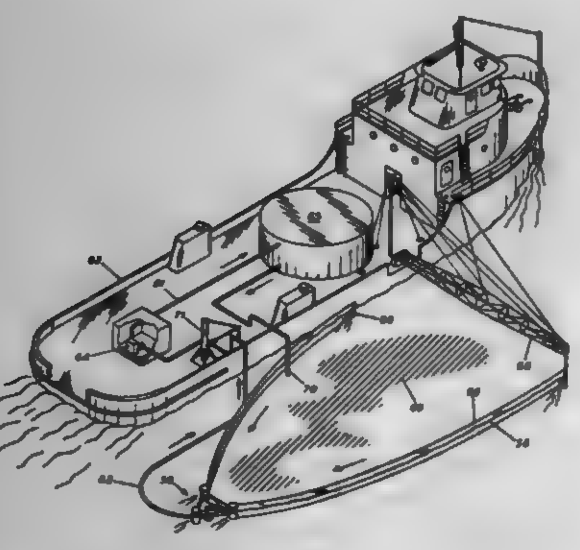
solution by passing said aqueous solution at a high flow rate through magnetic filtering means comprising a magnetized



filamentary matrix, said high flow rate allowing filter contact time for coagulum removal substantially less than said retention time.

3,983,034
APPARATUS AND METHOD OF REMOVING DEBRIS FLOATING ON A BODY OF WATER

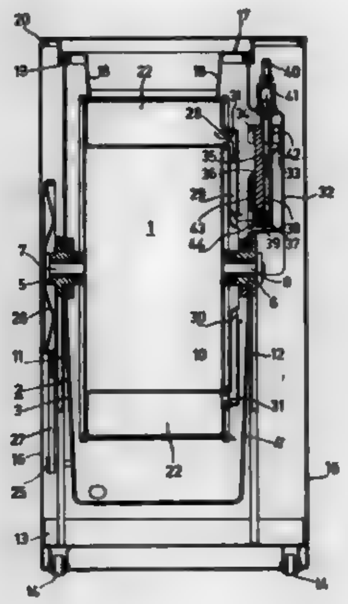
Donald E. Wilson, Dhahran, Saudi Arabia, assignor to Chevron Research Company, San Francisco, Calif.
Continuation of Ser. No. 410,122, Nov. 26, 1973, abandoned.
This application Jan. 3, 1975, Ser. No. 538,494
Int. Cl.² E02B *15/04*
U.S. Cl. 210—73 W 9 Claims



1. Apparatus for collecting liquid and separating debris floating on a body of water comprising:
- a plurality of adjustably buoyant pontoons;
- a means for interconnecting said pontoons;
- a sloping plate for directing the flow of the liquid, debris and water a predetermined way, said plate connected between two of said pontoons;
- a plurality of vertical screens for separating said debris floating on said water from said liquid and said water, said screens secured at the upper terminus of said sloping plate;
- a quieting area plate contiguous with said sloped plate and connected to said interconnecting pontoon means;
- a container having a closed lower bottom end and an open upper top end, said container's perimeter secured to said quieting area plate;
- a flexible liquid impregnable open ended conic section operatively connected to the upper top end of said container;
- a guided float within said container, said float operatively connected to said conic section; and
- means for transporting said liquid away from said apparatus.

3,983,035
BALANCING DEVICE FOR A ROTATABLE DRUM WHICH MAY BE ECCENTRICALLY LOADED

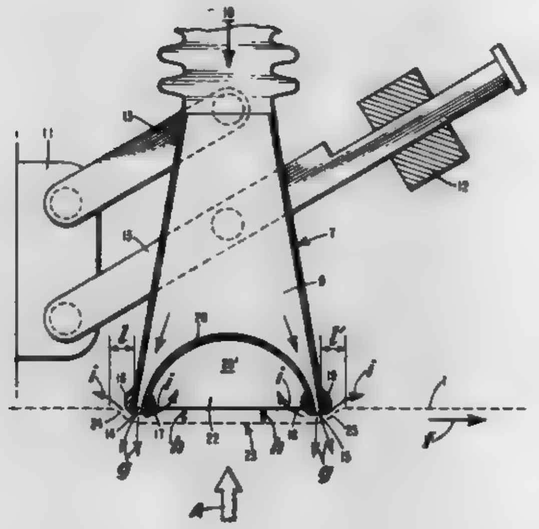
Robert Josef Arkeveld, and Hendrik Karel Moraal, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 458,551, April 8, 1974, abandoned.
This application May 8, 1975, Ser. No. 575,455
Claims priority, application Netherlands, June 24, 1971, 7108702
Int. Cl.² B01D *33/02*
U.S. Cl. 210—138 13 Claims



1. In a balancing device for balancing an eccentrically loaded rotatable drum of the type comprising a drum, a plurality of containers carried on said drum for receiving and holding balancing material, each container having inlet and outlet openings, means for supplying balancing material to at least one of said containers, means for mounting said drum to permit rotation of said drum with respect to the mounting means and to permit eccentric movement of the drum, said mounting means undergoing similar eccentric movement in response to eccentric movement of the drum, and a control mechanism for controlling the amount and timing of balancing material supplied to said containers in response to eccentric movement of said mounting means, the improvement wherein
- said supplying means comprises means for intermittently supplying a flow of balancing material along a path to an inlet region, said means for intermittently supplying comprising a first movable member, and means for conducting said flow of material from said inlet region to successive ones of said inlet openings in sequence as said drum rotates,
- said control mechanism comprises means for coupling said first movable member to said mounting means for freely oscillatory movement in response to said eccentric movement and for developing a restoring force biasing said movable member toward a central position when said movable member is displaced from the central position, said restoring force being approximately proportional to the instantaneous distance by which said movable member is displaced from said central position along one rectangular coordinate direction, said central position being fixed in position with respect to said mounting means,
- said first movable member being so arranged with respect to said inlet region as to divert all of said flow from said path to the inlet region while in said central position, and permit substantially all of said flow to pass to the region while in a given position, over a range of movement from the central toward the given positions an increasing proportion of said flow passing to said inlet region.

3,983,036
METHOD AND DEVICE FOR UNCLOGGING FILTER CLOTHS

Jean Lauzeral, and Christian Laville, both of Gaillac, France, assignors to European Atomic Energy Community (Euratom), Luxemburg, Luxemburg
Filed Nov. 19, 1973, Ser. No. 417,206
Claims priority, application France, Nov. 21, 1972, 72.41328
Int. Cl.² B01D *35/20*
U.S. Cl. 210—356 8 Claims

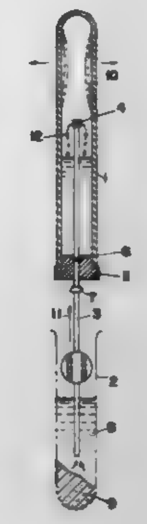


1. Apparatus for cleaning a filter cloth, comprising: a nozzle having a head with a slot for ejecting a jet of cleaning gas, a part of which passes through the cloth; means for moving the cloth across said head; means for locating said nozzle at a minimal distance from the cloth, said locating means being responsive to a reaction of a jet of gas against the cloth, wherein said head has an internal profile such that gas is ejected from said slot at a speed which is within 20% of the speed of sound in air and in which the slot opens substantially perpendicular to the direction of movement of the cloth across said head, and wherein said means for locating includes, on the exterior of said head at opposite sides of said slot, outer lips of semi-cylindrical profile, said lips forming with the cloth when the cloth is moved across said head a bifurcated restricted path having branches about said lips for the part of the gas which does not pass through the cloth.

3,983,037
APPARATUS FOR TRANSFER, STORAGE, AND DISTRIBUTION OF LIQUID

Jae Yoon Lee, and Kuem Ja Lee, both of 1122 Sunny Hill Drive, Columbus, Ohio 43221
Filed Nov. 5, 1973, Ser. No. 413,025
Int. Cl.² A61M *1/00*
U.S. Cl. 210—416 R 1 Claim

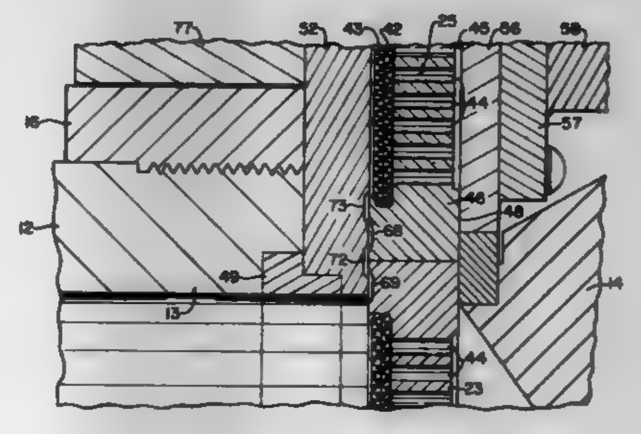
1. Apparatus for medical liquid analysis comprising a flexible liquid tube having an open end, a stopper sealing said open end having an aperture therethrough, a capillary tube passing through said aperture in said stopper and into said flexible tube, a hole in said capillary tube extending in said flexible tube and a projection on said capillary tube on the outside of said stopper, said capillary tube being constructed and arranged to shift between a first position wherein said hole is closed by said stopper and a second position wherein said projection abuts said stopper and said hole is in communication with the interior of said flexible tube, said flexible tube when flexed causes liquid to be sucked up when said capillary tube is in said first position when flexed causes liquid to be expelled when said capillary tube is in said second position;



and a filter positioned on said capillary tube extending in said flexible tube.

3,983,038
SELF-PURGING SCREEN CHANGER AND STRAINER PLATE

Eugene E. Heston, 548 Parkside Drive, Akron, Ohio 44313
Filed Nov. 3, 1975, Ser. No. 628,536
Int. Cl.² B01D *35/00*; B29F *3/01*
U.S. Cl. 210—447 14 Claims



1. In combination, a strainer plate for a screen changer having a slot through which said strainer plate is moved from a storage position to an operating position in an opening for straining extruded material, said strainer having a leading edge, a trailing edge, a central strainer portion, a supporting portion surrounding said strainer portion, said supporting portion having a surface in sealing engagement with a sealing plate on said screen changer, a groove in said surface extending in a direction from said leading edge to said central strainer portion, said groove being closed by said sealing plate when said strainer is in said storage position and said groove being open and in communication with said central strainer portion and said opening in a preliminary change position of said strainer with said strainer moved a predetermined distance from said storage position towards said operating position for prefilling said central strainer portion in the storage position and venting air out of said central strainer portion prior to movement of the strainer from said preliminary change position to said operating position.

3,983,039

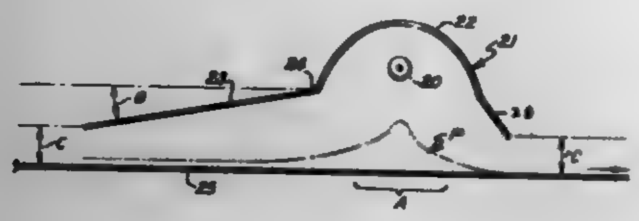
NON-SYMMETRICAL REFLECTOR FOR ULTRAVIOLET CURING

Bernard J. Eastland, Olney, Md., assignor to Fusion Systems Corporation, Rockville, Md.

Filed Mar. 3, 1975, Ser. No. 555,335

Int. Cl.² H01J *37/20*

U.S. Cl. 250—492 R **14 Claims**



1. A lamp unit for use in curing photosensitive inks and coatings comprising a single elongated tubular ultraviolet lamp mounted in a reflector, said reflector being comprised of a first reflecting means partially surrounding said lamp for providing a region of peaked relatively high intensity illumination and a second reflecting means for providing a region of tapered relatively lower intensity illumination, said first reflecting means comprising a continuous curved surface having an axis of revolution, said second reflecting means comprising a plane surface extending outwardly from said curved surface and joining said curved surface at an obtuse angle so that said tapering increases in the outward direction of said plane surface, said lamp being mounted so that its longitudinal dimension is parallel to said axis of revolution.

3,983,040

FIRE-RETARDANT COMPOSITION AND PROCESS OF PRODUCING SAME

Samuel M. Draganov, 17966 Orange Tree Lane, Tustin, Calif. 92680

Filed Aug. 7, 1975, Ser. No. 602,554

Int. Cl.² C09K *3/28*

U.S. Cl. 252—8.1 **10 Claims**

1. A fire-retardant compositon of matter, comprising a particulate reaction product of a borate ore and sulfuric acid, said one having been selected from the group consisting of calcium, sodium, magnesium, and potassium borates, and mixtures thereof and said composition containing boric acid as a constituent of said reaction product, and a significant quantity of one or more sulfates selected from the group consisting of calcium, sodium, magnesium, and potassium sulfates, as a constituent of said reaction product.

3,983,041

RUST INHIBITOR FOR MONO- OR POLYUREA GREASES

Andrew D. Abbott, Greenbrae, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 560,277, March 19, 1975, abandoned. This application Jan. 22, 1976, Ser. No. 651,664

Int. Cl.² C10M *3/18, 5/14, 7/20, 7/24*

U.S. Cl. 252—17 **12 Claims**

1. A grease composition comprising: (1) a major portion of an oil of lubricating viscosity; (2) from 0.5 to 20 weight percent of a water- and oil-insoluble mono- or polyurea thickening agent having a molecular weight between about 350 and 2500; (3) from 3 to 30 weight percent of an alkaline earth metal carbonate or aliphatic monocarboxylate having from 1 to 3 carbons; and (4) from 0.1 to 10 weight percent of a Mannich base prepared by reacting alkylphenol having from 1 to 4 carbon atoms in the alkyl groups with formaldehyde and an amine selected from the class consisting of dialkanolamine, N,N-dialkanolalkylenediamine and dialkylamine.

3,983,042

WATER-BASED FORGING LUBRICANT

Sulekh C. Jain, Shrewsbury, and Charles A. Morris, Grafton, both of Mass., assignors to Wyman-Gordon Company, Worcester, Mass.

Filed Oct. 24, 1975, Ser. No. 625,592

Int. Cl.² C10M *3/18, 5/14, 7/20;* **B21B** *45/02*

U.S. Cl. 252—18 **9 Claims**

1. A forging lubricant comprised of
  a. water base, and minor effective amounts of
  b. organic thickener selected from the group consisting of sodium carboxymethylcellulose and hydroxypropylcellulose,
  c. graphite,
  d. sodium molybdate, and
  e. sodium pentaborate.

3,983,043

MIXTURES OF METHYLOLALKYL UREAS AND THEIR BUTYL ETHERS

Johann Brandeis, Limburgerhof, and Joachim Kurze, Leutershausen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Apr. 17, 1974, Ser. No. 461,502

Claims priority, application Germany, Apr. 21, 1973, 2320302

Int. Cl.² D06M *13/18*

U.S. Cl. 252—8.8 **3 Claims**

1. A composition of matter consisting essentially of a mixture of
  a. at least one mono- and/or di-methylolalkyl urea having from 12 to 22 carbon atoms in the alkyl radical and
  b. at least one butyl ether of a mono- and/or di-methylolalkyl urea having from 12 to 22 carbon atoms in the alkyl radical,

the ratio of (a) to (b) in said mixture being from 2:1 to 1:2 by weight.

3,983,044

LOW SMOKING LUBRICATING COMPOSITION FOR COLD HEADING OPERATIONS

George F. Felton, Jr., Chadds Ford, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 457,040, April 1, 1974, abandoned. This application June 16, 1975, Ser. No. 587,511

Int. Cl.² C10M *1/54, 1/38*

U.S. Cl. 252—33.6 **7 Claims**

1. A normally liquid composition useful as a cold forming, metal working lubricant comprising:
  a. 45 to 200 parts by weight of water;
  b. 30 to 35 parts by weight of a block copolymer of ethylene oxide grafted on a polypropylene oxide which copolymer has both a molecular weight range and ethylene oxide content sufficient to cause the composition to remain homogeneous between ambient temperature and the boiling temperature of the composition;
  c. 1 to 15 parts by weight of a potassium soap of a sulfurized naturally occurring triglyceride containing from 5 to 25 weight percent sulfur;
  d. 1 to 10 parts by weight of a potassium soap of a chlorinated naturally occurring triglyceride containing from 25 to 50 weight percent chlorine; and
  e. 0.5 to 10 parts by weight of potassium nitrite.

3,983,045

THREE COMPONENT DEVELOPER COMPOSITION

Don B. Jugle, Penfield, and Charles J. Levine, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 188,570, Oct. 12, 1971, abandoned. This application Feb. 19, 1974, Ser. No. 443,659

Int. Cl.² G03G *9/02*

U.S. Cl. 252—62.1 P **4 Claims**

1. A composition for development of electrostatographic images comprising discrete particles and carrier, said particles including discrete, finely divided electroscopic toner materials having an average particle size of less than about 30 microns; from about 0.01 to about 10 percent by weight based on the weight of said toner of a discrete, finely divided, solid, friction-reducing material having a hardness less than said toner material and having greater friction-reducing characteristics than said toner material, said friction-reducing material having a greater tendency than said toner material of forming a thin, adherent film deposit on a surface when applied from a mixture of said materials with a shearing force; and from about 0.01 to about 10 percent by weight based upon the weight of said toner of a discrete, finely divided, nonsmearable abrasive material having an average particle size between about 1 and about 500 millimicrons and having a hardness greater than said friction-reducing and toner materials.

3,983,046

FUNCTIONAL FLUID COMPOSITIONS CONTAINING EPOXY ADDITIVES

Martin B. Sheratte, Reseda, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

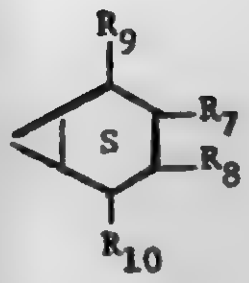
Continuation-in-part of Ser. Nos. 400,122, Sept. 24, 1973, Pat. No. 3,957,837, and Ser. No. 449,623, March 11, 1974, Pat. No. 3,935,116. This application May 20, 1974, Ser. No. 471,464

The portion of the term of this patent subsequent to Jan. 27, 1993, has been disclaimed.

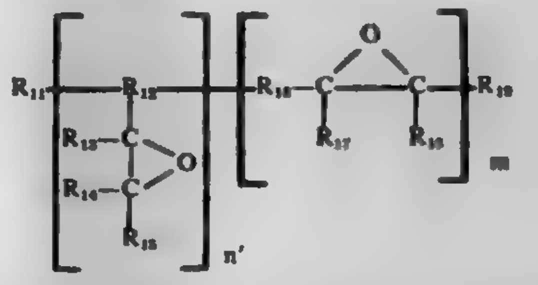
Int. Cl.² C10M *3/40*

U.S. Cl. 252—78.5 **33 Claims**

1. A functional fluid composition consisting essentially of (1) a combination of at least two phosphate esters, one of said phosphate esters containing at least two groups selected from the class consisting of alkyl and alkoxyalkyl, and mixtures thereof, and a second of said phosphate esters containing at least two aromatic groups selected from the class consisting of aryl and alkaryl groups, and mixtures thereof, (2) a combination of at least two polyalkylene glycol materials having terminal groups selected from the class consisting of free hydroxyl and ether groups, said ether groups being oxyalkyl groups wherein the alkyl radicals contain from about 1 to about 8 carbon atoms, said alkylene groups being selected from the class consisting of ethylene and propylene radicals, one of said polyalkylene glycol materials having a molecular weight ranging from about 500 to about 2,000, and a second of said polyalkylene glycol materials having a molecular weight ranging from about 2,000 up to about 25,000, said phosphate esters and said polyalkylene glycol ethers being present in amounts such that said composition has a viscosity at −65°F of not greater than about 6,000 centistokes, and a viscosity at 210°F of not less than 2.25 centistokes, and (3) a small amount of an epoxy compound sufficient to function as an acid scavenger and to prevent precipitation of deposits in said fluid in the presence of said glycol materials, said epoxy compound selected from the group consisting of (A) a compound having the formula



wherein R_7 is $-(CH_2)_{0-3}$ $-C(O)OR$, $-C(O)R$, $-OR$, or $-CH_2OR$, where R is an alkyl radical having from 1 to about 12 carbon atoms, R_8 is R_7, hydrogen, or an alkyl radical having from 1 to about 9 carbon atoms, and R_9 and R_{10} are individually hydrogen or an alkyl radical having from 1 to about 4 carbon atoms, and (B) a polyepoxide having the general formula



wherein R_{11}, R_{13}, R_{14}, R_{15}, R_{17}, R_{18} and R_{19} can be a member selected from the group consisting of hydrogen, alkyl having from 1 to about 8 carbon atoms, aryl of from about 6 to about 8 carbon atoms, and wherein R_{13} and R_{14}, R_{17} and R_{18}, together, respectively, can be the carbon atoms necessary to complete a cycloalkyl group of from about 5 to about 6 carbon atoms, R_{12} and R_{16} are trivalent and divalent organic radicals, respectively, containing from 1 to about 20 carbon atoms, selected from the group consisting of alkyl, aryl, amino alkyl, amino aryl, ether, polyether, carboxylic acid ester and dicarboxylic acid radicals, and wherein *n′* and *m* can range from 0 to 100, but wherein *n′* plus m equals at least 2.

3,983,047

DECAL REMOVAL COMPOSITION

James H. Vinson, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 528,114, Nov. 29, 1974, Pat. No. 3,920,472. This application Aug. 22, 1975, Ser. No. 606,917

Int. Cl.² C11D *9/30*

U.S. Cl. 252—119 **3 Claims**

1. A composition comprising, on a volume basis:

xylene	54–58%
mineral spirits	10.5–11.5%
methyl isobutyl ketone	32–34%.

3,983,048

COMPOSITION FOR ACCELERATING OXYGEN REMOVAL COMPRISED OF A MIXTURE OF AQUEOUS HYDRAZINE AND AN ARYL AMINE COMPOUND

Henry W. Schiessl, Northford; John D. Kaufman, Prospect, and David A. Csejka, Orange, all of Conn., assignors to Olin Corporation, New Haven, Conn.

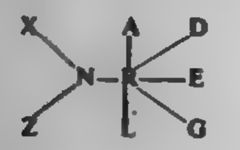
Continuation-in-part of Ser. No. 318,286, Dec. 26, 1972, abandoned. This application Dec. 10, 1973, Ser. No. 423,042

The portion of the term of this patent subsequent to Oct. 22, 1991, has been disclaimed.

Int. Cl.² C02B *1/18*

U.S. Cl. 252—178 **9 Claims**

1. A composition for the removal of dissolved oxygen from liquids or gases comprised of a mixture of an aqueous solution of hydrazine and a catalytic proportion of an aryl amine compound having the formula



- a. wherein R is an aryl group containing from about 6 to about 14 carbon atoms;
- b. wherein A, D, E, G, and L are individually selected from the group consisting of
  1. amine
  2. hydrogen
  3. sulfonic acid
  4. alkali metal salts of sulfonic acid
  5. carboxylic acid
  6. alkali metal salts of carboxylic acid
  7. sulfuric acid
  8. alkali metal salts of sulfuric acid
  9. alkyl having from 1 to 4 carbon atoms, and
  10. haloalkyl having from 1 to 4 carbon atoms

wherein at least one of said substituents is other than hydrogen;

- c. wherein X and Z are individually selected from the group consisting of hydrogen and alkyl having from 1 to 4 carbon atoms, and
- d. wherein N is nitrogen.

3,983,049

LIQUID CRYSTAL COMPOSITIONS WITH POSITIVE DIELECTRIC ANISOTROPY

Siegfried Aftergut, Schenectady, and Herbert S. Cole, Jr., Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 2, 1974, Ser. No. 466,384

Int. Cl.² C09K *3/34;* **G02F** *1/13*

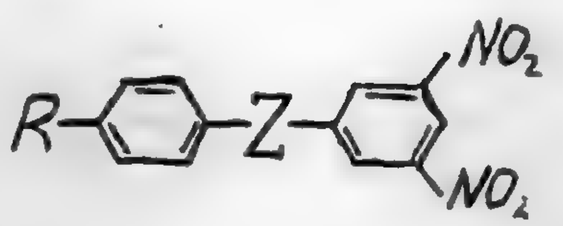
U.S. Cl. 252—299 **9 Claims**

1. A liquid crystal composition having positive dielectric anisotropy comprising:

a negative dielectric anisotropy liquid crystal material; and
a non-liquid crystal material comprising N-[p-(n-octyloxy) benzylidene]-p-nitroaniline, said non-liquid crystal material having no mesophase at any temperature and comprising more than zero percent and less than 15% of said composition.

7. A liquid crystal composition having positive dielectric anisotropy comprising:

a negative dielectric anisotropy liquid crystal material; and
a non-liquid crystal aromatic material, having no mesophase at any temperature, comprising more than zero percent and less than 15% of said composition, having a general formula:



where substituent R is selected from the group consisting of alkyl, dialkylamino, alkyloxy and hydrogen; and Z is selected from the group consisting of Schiff Base, ether, ester and direct bonds.

3,983,050

METHOD FOR STORAGE OF SOLID WASTE

William J. Mecham, La Grange, Ill., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Feb. 7, 1975, Ser. No. 548,058

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.² G21F *5/00*

U.S. Cl. 252—301.1 W **7 Claims**

1. In the method of storing high-level radioactive liquid wastes by calcining the waste to remove the liquid, thereby forming a high-level radioactive calcine, placing the calcine in a metal canister, sealing the metal canister and placing the sealed metal canister in a moisture-containing environment for cooling and long-term storage, the improvement comprising: adding powdered portland cement to the canister containing the calcined wastes so that the cement is in contact with the inner surface of the wall of the canister before the canister is sealed, whereby, should the canister wall fail and develop an opening to the environment, moisture from the environment will enter the canister, mix with the portland cement, forming concrete which will harden, seal the opening and prevent the escape of any radioactivity from the canister to the environment.

3,983,051

DOPED BERYLLIUM LANTHANATE CRYSTALS

Carl F. Cline, Mendham, and Robert C. Morris, Flanders, both of N.J., assignors to Allied Chemical Corporation, Morris Township, N.J.

Division of Ser. No. 422,450, Dec. 6, 1973, Pat. No. 3,866,142. This application Aug. 22, 1974, Ser. No. 499,720

Int. Cl.² C09K *11/46*

U.S. Cl. 252—301.4 R **3 Claims**

1. A single crystal of doped beryllium lanthanate having the formula $Be_2La_{2-2x}Z_{2x}O_5$ wherein Z is a dopant selected from the group consisting of praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium and mixtures thereof and wherein x is a positive value of about 0.001 to 0.2.

3,983,052

PROCESS FOR REJUVENATING AUTOMOBILE EMISSION CONTROL CATALYSTS

Dennis P. McArthur, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Apr. 7, 1975, Ser. No. 565,633

Int. Cl.² B01D *15/06*

U.S. Cl. 252—412 **24 Claims**

1. A process for the rejuvenation of an auto exhaust gas conversion catalyst comprising a Group VIII metal dispersed on a refractory oxide support, said catalyst having been previously utilized for the conversion of air pollutants in auto exhaust gases containing lead and phosphorus compounds with resultant deposition thereon of deactivating solids comprising lead and phosphorus compounds, which process comprises:

- a. contacting said catalyst with an aqueous ammonium salt solution of at least about 0.1 M concentration at a temperature between about 20°C and the boiling temperature for at least about 10 minutes;
- b. contacting the catalyst from step (a) with a sulfating gas for at least about 10 minutes at a temperature between about 200°C and about 800°C, said sulfating gas comprising sulfur dioxide as its essential active component;
- c. contacting the sulfated catalyst from step (b) with an ammonium salt solution as defined in step (a) and under the same conditions as defined in step (a); and
- d. recovering said catalyst with at least some of said lead and phosphorus deactivating solids removed therefrom, said catalyst being recovered in a substantially more active condition.

14. A process for the rejuvenation of an auto exhaust gas conversion catalyst comprising a Group VIII metal dispersed on a refractory oxide support, said catalyst having been previously utilized for the conversion of air pollutants in auto exhaust gases containing lead and phosphorus compounds with resultant deposition thereon of deactivating solids comprising inorganic compounds of lead and phosphorus which process comprises:

- a. contacting said catalyst with a sulfating gas for at least about 10 minutes at a temperature between about 200° and about 800°C, said sulfating gas comprising sulfur dioxide as its essential active component;
- b. contacting the sulfated catalyst from step (a) with an aqueous ammonium salt solution of at least about 0.1 M concentration at a temperature between about 20°C and the boiling temperature for at least about 10 minutes; and
- c. recovering said catalyst from said contacting with at least some of said lead and phosphorus deactivating solids removed therefrom, said catalyst being recovered in a substantially more active condition.

3,983,053

COATED ADSORBENT MATERIALS

James McNiven Courtney, Lenzie; Thomas Gilchrist, Ayr, both of Scotland, and Eric Hutton Dunlop, Sidcup, England, assignors to The University of Strathclyde, Glasgow, Scotland

Filed July 2, 1974, Ser. No. 485,150

Claims priority, application United Kingdom, July 5, 1973, 32059/73

Int. Cl.² B01D *13/00*

U.S. Cl. 252—430 **8 Claims**

1. A solute-adsorptive material composed of granules of an adsorbent capable of binding the solute and on the adsorbent granules of polymeric membraneous coating which is semipermeable to selected solute or solutes, the polymeric coating being a copolymer of a first comonomer, and a second comonomer, the first comonomer being selected from the group consisting of acrylic acid, methacylic acid, itaconic acid, acrylamide, hydroxyacrylamide, vinyl pyrrolidone, dimethylaminoethyl acrylate, diethylaminoethyl acrylate, dimethylaminoethyl methacrylate, diethylaminoethyl methacrylate and hydroxyethyl methacrylate and the second comonomer being selected from the group consisting of acrylonitrile, methacrylonitrile, 2-vinylpyridine, 2-methyl-5-vinylpyridne, styrene and the C_1 to C_8 alkyl esters and the tert-butylaminoethyl and hydroxypropyl esters of acrylic, methacrylic and itaconic acids.

3,983,054

CATALYTIC COMPOSITION AND ITS APPLICATIONS TO THE PRODUCTION OF UNSATURATED NITRILES AND TO THE OXIDATION OF OLEFINES

Vittorio Fattore, and Bruno Notari, both of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Division of Ser. No. 133,886, April 14, 1971, Pat. No. 3,850,975. This application July 26, 1974, Ser. No. 492,222

Claims priority, application Italy, Apr. 14, 1970, 23270/70

Int. Cl.² B01J *27/02;* **C07C** *120/14;* **C01B** *19/00*

U.S. Cl. 252—439 **5 Claims**

1. A catalyst composition consisting of a mixture of uranium oxide and tellurium oxide wherein the Te/U atomic ratio is in the range from 2 to 5.

3,983,055

SYNTHETIC AMORPHOUS SILICAS OF PREDETERMINED PORE DISTRIBUTION METHOD OF PRODUCING SAME

Thomas O. Mitchell, West Trenton, and Darrell Duayne Whitehurst, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 14, 1974, Ser. No. 450,967

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² B01J *29/00, 29/06;* **C01B** *33/12*

U.S. Cl. 252—454 **22 Claims**

1. A synthetic amorphous solid having shape selective properties prepared by the steps of (1) hydrolyzing and (2) polymerizing at up to 200°C. in the presence of water a silane having the formula $R[Si]X_3$ wherein X is a hydrolyzable group R is a nonhydrolyzable group and [Si] is selected from the group consisting of $-Si\equiv$ and $-Si(R)_2-O-Si\equiv$ and (3) calcining the polymerized product wherein there is also present in the final calcined product in addition to silicon at least one member selected from the group consisting of groups IIIA, IVA, IVB, VA, VB, VIB VIIB and VIII of the Periodic Table the source of said member being present in the initial hydrolyzing step.

3,983,056

AQUEOUS EPOXY RESIN PAINT COMPOSITION

Minoru Hosoda, Yokohama; Eiichi Kasiwagi, Fujisawa; Fumio Murayama, Yokohama, and Kohei Isayama, Kamakura, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan

Filed Sept. 25, 1974, Ser. No. 509,315

Claims priority, application Japan, Sept. 27, 1973, 48-108808; Sept. 27, 1973, 48-108809; Oct. 1, 1973, 48-110393; Dec. 24, 1973, 49-3633

Int. Cl.² C08J *3/00;* **C08L** *63/00*

U.S. Cl. 260—29.2 EP **7 Claims**

1. An aqueous epoxy resin paint composition comprising an epoxy resin emulsion formed by emulsifying in water (A) 98 to 50% by weight of a bisphenol type epoxy resin and (B) 2 to 50% by weight of methyl-substituted bisphenol epoxy resins, with a non-ionic surface active agent, and a curing agent incorporated in said epoxy resin emulsion.

3,983,057

PROCESS FOR THE MANUFACTURE OF WATER-CLEAR COPOLYMER DISPERSIONS

Günther Illmann, and Norbert Mayer, both of Augsburg, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 30, 1974, Ser. No. 519,240

Claims priority, application Germany, Nov. 2, 1973, 2354680

Int. Cl.² C08L *31/02*

U.S. Cl. 260—29.6 TA **2 Claims**

1. A process for the manufacture of an odorless and colorless aqueous copolymer dispersion which can be rendered

water-clear by the addition of ammonia and does not discolor by polymerizing acrylates, methacrylates, unsaturated acids and optionally a small amount of styrene in the presence of a mercapto compound as regulator, which comprises

- a. polymerizing the monomers in the presence of from 0.1 to 5.0 % by weight, calculated on the weight of the monomers, of a mercapto compound having at least 2 SH groups in the molecule as regulator and
- b. incorporating into the copolymer dispersion of from 0.1 to 5.0 % of hydrogen peroxide, calculated as H_2O_2 of 100 % strength on the weight of the monomers, at a temperature of from 60° to 95°C after completion of the polymerization.

3,983,058

PROCESS FOR PREPARING POLYURETHANE EMULSIONS

Masaaki Hirooka, and Shigeru Takeo, both of Tokyo, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1974, Ser. No. 518,074

Int. Cl.² C08L *75/06*

U.S. Cl. 260—29.2 TN **9 Claims**

1. A process for preparing a polyurethane emulsion which comprises:

reacting a semi-ester containing at least one OH group and at least one COOH group, which is produced by addition reaction of a poly-OH compound having two or more OH groups with a dicarboxylic acid anhydride, with a polyisocyanate compound having at least two NCO groups or an isocyanate prepolymer having at least two NCO groups produced by a reaction of said polyisocyanate compound with a polyoxy-alkylenepolyol or polyesterpolyol, wherein the ratio of the number of NCO groups in the polyisocyanate compound to the number of OH groups in the semi-ester compound is ⩾ 2.0, whereby there is obtained an isocyanate compound containing a COOH group and at least two terminal NCO groups.

3,983,059

EMULSIFIER-FREE AQUEOUS DISPERSION USEFUL IN COATING COMPRISING AMINOPLAST RESIN AND POLYMER OF MONOETHYLENIC CARBOXYLIC ACID PREPARED BY POLYMERIZATION IN THE PRESENCE OF LOW MOLECULAR WEIGHT POLYHYDRIC ALCOHOL

Kazys Sekmakas, Chicago, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Division of Ser. No. 484,636, July 1, 1974, Pat. No. 3,947,399, which is a division of Ser. No. 258,890, June 1, 1972, Pat. No. 3,862,075. This application Mar. 27, 1975, Ser. No. 562,952

The portion of the term of this patent subsequent to Jan. 21, 1992, has been disclaimed.

Int. Cl.² C08L *61/20, 61/32*

U.S. Cl. 260—29.4 UA **8 Claims**

8. An aqueous dispersion of copolymer particles in water having molecular weight in the range of from 10,000–50,000 and which is stable in the absence of emulsifying agent, and which is produced by forming a liquid mixture consisting of monoethylenic monomers and from 2% up to about 20%, based on the weight of said monomers, of trihydric or tetrahydric aliphatic polyhydric alcohol having a molecular weight in the range of from 300 to 5000, said monomers providing a T_g of at least about 30°F. and including from 3 to 20% by weight of monoethylenic carboxylic acid, dispersing said mixture in water to form a dispersion, said dispersion including a free radical polymerization catalyst, subjecting the dispersed liquid mixture in said dispersion containing the said catalyst to agitation at an elevated polymerization temperature, with said monomers being in solution in a liquid mixture containing said polyhydric alcohol, until polymerization of said monomers has been completed, and then at least partially neutralizing the acid content of the copolymer particles which are formed with a base, and then adding to said dispersion from 2–40%, based on the total weight of resin, of a water dispersible aminoplast resin.

3,983,060

LOW TEMPERATURE GLAZING COMPOSITION

Douglas W. Dill, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed July 24, 1974, Ser. No. 491,589

Int. Cl.² C08L *33/12*

U.S. Cl. 260—29.6 RW **6 Claims**

1. A low temperature ceramic glazing composition consisting essentially of 25–75% by weight of an aqueous dispersion of a first acrylic resin having a monomer composition of 40–85% by weight methyl methacrylate, 45–15% by weight butyl acrylate and 0–15% by weight methacrylic acid, said dispersion having 15–25% non-volatiles and a pH of 8.5–10.5, and 75–25% by weight of a powdered resin composition having a particle size of about 100 to about 400 mesh consisting essentially of 96–80% by weight of a second acrylic resin having a monomer composition of 60–85% by weight methyl methacrylate and 40–15% by weight butyl acrylate having a weight average molecular weight of 10,000–20,000 and a Tg of greater than 45°C and 4–20% by weight of a pigment.

3,983,061

PROCESS FOR THE PERMANENT FINISHING OF FIBER MATERIALS

Josef Oxé, Arlesheim, and Rudolf Keller, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

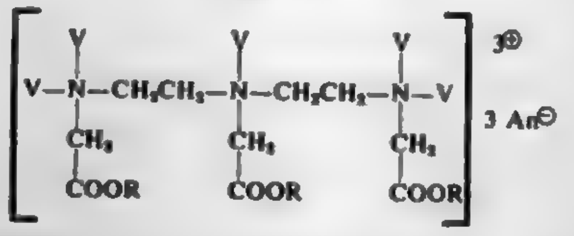
Division of Ser. No. 226,511, Feb. 15, 1972, Pat. No. 3,835,148. This application June 4, 1974, Ser. No. 476,167

Int. Cl.² C08F *45/44*

U.S. Cl. 260—29.6 MN **9 Claims**

1. A preparation for use in giving fiber materials a permanent antistatic and dirt-repellent finish, consisting essentially of an aqueous dispersion of

a. 10 to 20% by weight of an antistatic agent comprising a compound of the formula



$$\left[V-\underset{\underset{COOR}{|}}{\underset{CH_2}{\overset{V}{N}}}-CH_2CH_2-\underset{\underset{COOR}{|}}{\underset{CH_2}{\overset{V}{N}}}-CH_2CH_2-\underset{\underset{COOR}{|}}{\underset{CH_2}{\overset{V}{N}}}-V \right]^{3\oplus} 3\,An^{\ominus}$$

wherein

V represents a lower alkyl radical,

R represents an alkyl radical having 8 to 22 carbon atoms, and An^- represents an anion,

b. 3 to 35% by weight of an aqueous non-film-forming dispersion of polystyrene,

c. 1 to 6% by weight of an inorganic or organic monobasic or polybasic acid and

d. 0 to 5% by weight of an antimicrobic agent.

3,983,062

LATEX FROM CONJUGATED DIENE BUTYL RUBBER

Francis P. Baldwin, Summit, N.J.; Alberto Malatesta, Brussels, Belgium, and Charles P. O'Farrell, Clark, N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 9, 1974, Ser. No. 496,199

Int. Cl.² C08L *47/00*

U.S. Cl. 260—29.7 H **23 Claims**

1. A process for preparing latex from a copolymer of an isoolefin containing from 4 to 7 carbon atoms and a conjugated multi-olefin containing from 4 to 14 carbon atoms wherein said copolymer has been modified to have incorporated therein conjugated unsaturation, which comprises: (a) forming a cement by dissolving said copolymer in a hydrocarbon solvent; (b) forming an adduct of said copolymer by reacting the copolymer with an equimolar amount of an acid

anhydride dienophile, the concentration of the polymer adduct in said cement being 2 to 50 weight %; (c) forming an emulsion from said cement in water by contacting the cement with 50 to 200 vol. % **water based on the volume of the cement, the water containing an anionic or nonionic emulsifier, the quantity of emulisifier being** 3 to 20 parts per hundred parts of polymer; (d) neutralizing said emulsion with an inorganic or organic base to form a substantially homogeneous raw emulsion in ionomeric form; and (e) removing solvent and excess water to form a finished ionomeric latex, said latex consisting essentially of water and 5 to 70% by weight solids, said solids having a particle size of 0.1 to 3 microns.

3,983,063

SOLID, RAPID-SETTING, RIGID POLYURETHANES

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 405,244, Oct. 10, 1973, which is a continuation-in-part of Ser. No. 327,630, Jan. 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 221,784, Jan. 28, 1972, abandoned. This application May 2, 1975, Ser. No. 574,157

Int. Cl.² C08K *5/45*

U.S. Cl. 260—30.2 **11 Claims**

1. A process for producing solid, rigid, polyurethane articles having a density of at least 1 g/cc, a percent elongation of less than 100, and which can be demolded within a period of about 5 minutes without the addition of an external source of heat, which process comprises

1. admixing, in the absence of a catalytic quantity of a catalyst for urethane formation, the components of a composition comprising
   - A. an amine initiated polyol having an OH equivalent weight of from about 50 to less than about 250;
   - B. an organic aromatic polyisocyanate;
   - C. a liquid modifier having a boiling point above about 150°C selected from cyclic sulfones and mixtures thereof;

   wherein components (A) and (B) are present in quantities such that the NCO:OH ratio is from about 0.8:1 to about 1.5:1 and component (C) is employed in quantities of from about 5% to about 60% by weight of the combined weights of components (A), (B) and (C);
2. placing the admixed composition into a suitable mold wherein said composition solidifies within less than about 5 minutes to a solid having a density of at least 1 g/cc and a percent elongation of less than 100; and
3. subsequently demolding the resultant article from the mold.

3,983,064

SOLID, RAPID-SETTING, RIGID POLYURETHANES

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 405,244, Oct. 10, 1973, which is a continuation-in-part of Ser. No. 327,630, Jan. 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 221,784, Jan. 28, 1972, abandoned. This application May 5, 1975, Ser. No. 574,497

Int. Cl.² C08K *5/15, 5/45*

U.S. Cl. 260—30.2 **13 Claims**

1. A process for producing solid, rigid, polyurethane articles having a density of at least 1 g/cc, a percent elongation of less than 100, and which can be demolded within a period of about 5 minutes without the addition of an external source of heat, which process comprises

1. admixing, in the absence of a catalytic quantity of a catalyst for urethane formation, the components of a composition comprising
   - A. an amine initiated polyol having an OH equivalent weight of from about 50 to less than about 250;
   - B. an organic aromatic polyisocyanate;
   - C. a liquid modifier having a boiling point above about 150°C, said modifier consisting of a mixture, in any proportion, of at least two members selected, in any combination, from the group consisting of
     1. organic phosphates, phosphites, or phosphonates,
     2. cyclic ethers,
     3. aromatic compounds or partially hydrogenated aromatic compounds, such compounds being free of ester groups and groups reactive with NCO groups,
     4. chlorinated aliphatic compounds,
     5. cyclic sulfones,
     6. organic carbonates,
     7. esters of carboxylic acids,
     8. non-hydroxyl-containing polyoxyalkylene compounds,
     9. ester-modified polyoxyalkylene compounds having an average hydroxyl equivalent weight above about 700 when such compounds contain 2 hydroxyl groups, an average hydroxyl equivalent weight, above about 500 when such compounds contain 3 or more hydroxyl groups and an average molecular weight above about 700 when such compounds contain zero or 1 hydroxyl group; and
     10. hydroxyl-containing polyoxyalkylene compounds selected from the group consisting of
         - a. such compounds having one or two hydroxyl groups per molecule and an average hydroxyl equivalent weight of at least about 700;
         - b. such compounds having from about 3 to about 8 hydroxyl groups per molecule and an average hydroxyl equivalent weight of at least about 500; **wherein components (A) and (B) are present in quantities such that the NCO:OH ratio is from about** 0.8:1 to about 1.5:1 and component (C) is employed in quantities of from about 5% to about 60% by weight of the combined weight of components (A), (B) and (C);
2. placing the admixed composition into a suitable mold wherein said composition solidifies within less than about 5 minutes to a solid having a density of at least 1 g/cc and a percent elongation of less than 100; and
3. subsequently demolding the resultant article from the mold.

3,983,065

SOLID, RAPID-SETTING, RIGID POLYURETHANES

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 405,244, Oct. 10, 1973, which is a continuation-in-part of Ser. No. 327,630, Jan. 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 221,784, Jan. 28, 1972, abandoned. This application May 1, 1975, Ser. No. 573,704

Int. Cl.² C08K *5/15*

U.S. Cl. 260—30.4 N **14 Claims**

1. A process for producing solid, rigid, polyurethane articles having a density of at least 1 g/cc, a percent elongation of less than 100, and which can be demolded within a period of about 5 minutes without the addition of an external source of heat, which process comprises

1. admixing, in the absence of a catalytic quantity of a catalyst for urethane formation, the components of a composition comprising
   - A. an amine initiated polyol having an OH equivalent weight of from about 50 to less than about 250;
   - B. an organic aromatic polyisocyanate;
   - C. a liquid modifier having a boiling point above about 150°C selected from cyclic ethers and mixtures thereof;

   wherein components (A) and (B) are present in quantities such that the NCO:OH ratio is from about 0.8:1 to about 1.5:1 and component (C) is employed in quantities of from about 5% to about 60% by weight of the combined weights of components (A), (B), and (C);

2. placing the admixed composition into a suitable mold wherein said composition solidifies within less than about 5 minutes to a solid having a density of at least 1 g/cc and a percent elongation of less than 100; and
3. subsequently demolding the resultant article from the mold.

3,983,066

SOLID, RAPID SETTING, RIGID POLYURETHANES

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 405,244, Oct. 10, 1973, which is a continuation-in-part of Ser. No. 327,630, Jan. 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 221,784, Jan. 28, 1972, abandoned. This application May 2, 1975, Ser. No. 574,158

Int. Cl.² C08K *5/15*

U.S. Cl. 260—30.4 N **14 Claims**

1. A process for producing solid, rigid, polyurethane articles having a density of at least 1 g/cc, a percent elongation of less than 100, and which can be demolded within a period of about 5 minutes without the addition of an external source of heat, which process comprises

1. admixing, in the absence of a catalytic quantity of a catalyst for urethane formation, the components of a composition comprising
   - A. an amine initiated polyol having an OH equivalent weight of from about 50 to less than about 250;
   - B. an organic aromatic polyisocyanate;
   - C. a liquid modifier having a boiling point above about 150°C selected from organic carbonates and mixtures thereof;

   wherein components (A) and (B) are present in quantities such that the NCO:OH ratio is from about 0.8:1 to about 1.5:1 and component (C) is employed in quantities of from about 5% to about 60% by weight of the combined weight of components (A), (B) and (C);
2. placing the admixed composition into a suitable mold wherein said composition soldifies within less than about 5 minutes to a solid having a density of at least 1 g/cc and a percent elongation of less than 100; and
3. subsequently demolding the resultant article from the mold.

3,983,067

DIACETAL DERIVATIVES OF POLYUNSATURATED FATTY ESTERS AS PRIMARY PLASTICIZERS FOR POLYVINYLCHLORIDE

Richard A. Awl, East Peoria, and Everett H. Pryde, Peoria, both of Ill., assignors to The United Sates of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed July 1, 1974, Ser. No. 485,060

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.² C08K *5/10*

U.S. Cl. 260—30.4 R **10 Claims**

4. In a plasticized poly(vinyl chloride) composition an improvement comprising a plasticizing amount of a primary plasticizer selected from the group consisting of methyl di(-dimethyl acetal) stearate, methyl tri(dimethyl acetal) stearate, and mixtures of the same.

3,983,068

SOLID, RAPID-SETTING, RIGID POLYURETHANES

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

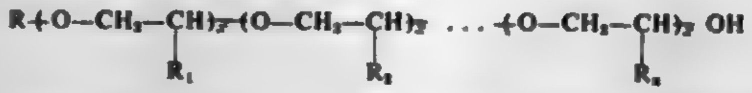
Division of Ser. No. 405,244, Oct. 10, 1973, which is a continuation-in-part of Ser. No. 327,630, Jan. 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 221,784, Jan. 28, 1972, abandoned. This application May 2, 1975, Ser. No. 574,156

Int. Cl.² C08K *5/06*

U.S. Cl. 260—33.2 R **13 Claims**

1. A process for producing solid, rigid, polyurethane articles having a density of at least 1 g/cc, a percent elongation of less than 100, and which can be demolded within a period of about 5 minutes without the addition of an external source of heat, which process comprises

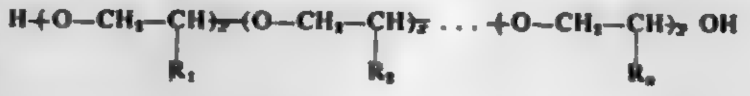
1. admixing, in the absence of a catalytic quantity of a catalyst for urethane formation, the components of a composition comprising
   - A. an amine initiated polyol having an OH equivalent weight of from about 50 to less than about 250;
   - B. an organic aromatic polyisocyanate;
   - C. a liquid modifier compound having a boiling point above about 150°C selected from the group consisting of
     1. a liquid partially capped, block or randomly formed polyoxyalkylene compound represented by the general formula



$$R-(O-CH_2-\underset{R_1}{CH})_{x_1}-(O-CH_2-\underset{R_2}{CH})_{x_2}\cdots-(O-CH_2-\underset{R_n}{CH})_{x_n}OH$$

wherein each R is independently selected from saturated and unsaturated hydrocarbon groups having from about 1 to about 6, carbon atoms; R_1, R_2, ... and R_n are independently hydrogen, an aryl group, an alkyl group or haloalkyl group, said alkyl or haloalkyl group having from about 1 to about 2 carbon atoms with the proviso that when R_1, R_2, ... R_n is a haloalkyl group, it is present in a ratio of from about 0 to about 10 percent of the total R_1, R_2, ... R_n groups, and x_1, x_2, ... x_n are integers, the sum of which provides the partially capped polyoxyalkylene compound with a molecular weight of at least about 700;

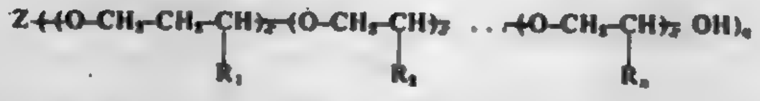
2. a liquid, block or randomly formed polyoxyalkylene glycol represented by the general formula



$$H-(O-CH_2-\underset{R_1}{CH})_{x_1}-(O-CH_2-\underset{R_2}{CH})_{x_2}\cdots-(O-CH_2-\underset{R_n}{CH})_{x_n}OH$$

wherein R_1, R_2, ... R_n are as defined in formula I above and x_1, x_2, ... x_n are integers, the sum of which provides the polyoxyalkylene glycol with an equivalent weight of at least about 700;

3. a liquid, random or block polyoxyalkylene polyol having a hydroxyl functionality of from 3 to about 8 represented by the general formula



$$Z-[(O-CH_2-CH_2-\underset{R_1}{CH})_{x_1}-(O-CH_2-\underset{R_2}{CH})_{x_2}\cdots-(O-CH_2-\underset{R_n}{CH})_{x_n}OH]_q$$

wherein R_1, R_2, ... R_n are as defined in formula I above, Z is the residue of an initiator compound having from 3 to about 8 hydroxyl groups, x_1, x_2 ... x_n are integers, the sum of which provides the polyoxyalkylene polyol with a hydroxyl equivalent weight of at least about 500 and q is an integer having a value of from 3 to about 8; and

4. mixtures thereof; and wherein components (A) and (B) are present in quantities such that the NCO:OH ratio is from about 0.8:1 to about 1.5:1 and component (C) is employed in quantities of from about 5% to about 60% by weight of the combined weight of components (A), (B) and (C);

2. placing the admixed composition into a suitable mold wherein said composition solidifies within less than about 5 minutes to a solid having a density of at least 1 g/cc and a percent elongation of less than 100; and
3. subsequently demolding the resultant article from the mold.

3,983,069

SOLID, RAPID-SETTING, RIGID POLYURETHANES

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 405,244, Oct. 10, 1973, which is a continuation-in-part of Ser. No. 327,630, Jan. 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 221,784, Jan. 28, 1972, abandoned. This application May 1, 1975, Ser. No. 573,679

Int. Cl.² C08K *5/02*

U.S. Cl. 260—33.8 UB **13 Claims**

1. A process for producing solid, rigid, polyurethane articles having a density of at least 1 g/cc, a percent elongation of less than 100, and which can be demolded within a period of about 5 minutes without the addition of an external source of heat, which process comprises

1. admixing, in the absence of a catalytic quantity of a catalyst for urethane formation, the components of a composition comprising
   - A. an amine initiated polyol having an OH equivalent weight of from about 50 to less than about 250;
   - B. an organic aromatic polyisocyanate;
   - C. a liquid modifier having a boiling point above about 150°C selected from chlorinated aliphatic compounds and mixtures thereof; wherein components (A) and (B) are present in quantities such that the NCO:OH ratio is from about 0.8:1 to about 1.5:1 and component (C) is employed in quantities of from about 5% to about 60% by weight of the combined weights of components (A), (B) and (C);
2. placing the admixed composition into a suitable mold wherein said composition solidifies within less than about 5 minutes to a solid having a density of at least 1 g/cc and a percent elongation of less than 100; and
3. subsequently demolding the resultant article from the mold.

3,983,070

POLYMERIC ADHESIVE

Richard John Penneck, Lechlade, England, assignor to Raychem Corporation, Menlo Park, Calif.

No Drawing. Continuation-in-part of Ser. No. 273,991, July 21, 1972, abandoned. This application Apr. 24, 1973, Ser. No. 354,128

Claims priority, application United Kingdom, Apr. 28, 1972, 19780/72

Int. Cl.² C08K *9/06*

U.S. Cl. 260—38 **18 Claims**

1. An adhesive comprising:

- a. a polar copolymer of an α-olefin, and
- b. a filler in an amount of up to about 20% by weight based on the total weight of the adhesive, said filler comprising an inorganic silicon compound containing the Si-O-Si group which has been treated with trimethylchlorosilane.

3,983,071

PROCESS OF PREPARING SAND CORES BY USING OXAZOLINE CONDENSATES

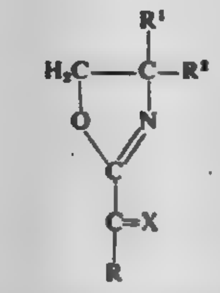
Louis A. Jurisch, Marengo, Ill., assignor to IMC Chemical Group, Inc., Terre Haute, Ind.

Division of Ser. No. 378,366, July 11, 1973, Pat. No. 3,919,135. This application Jan. 2, 1975, Ser. No. 537,869

Int. Cl.² C08F *4/28, 26/02*

U.S. Cl. 260—42 **14 Claims**

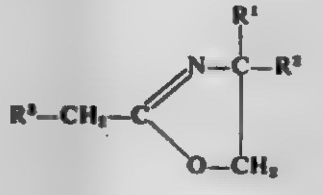
1. A process for preparing a non-polluting sand core for production of metal castings comprising the steps of mixing said sand with an oxazoline in a proportion of about 0.5–5.0% by weight of the sand and a mixture of 3–7% or up to 10% by weight of peroxide alone or in combination with metal driers based on the weight of said oxazoline, and placing the mixture thereby obtained in a mold to harden at ambient temperatures wherein said oxazoline is (a) a mono-oxazoline corresponding to the formula



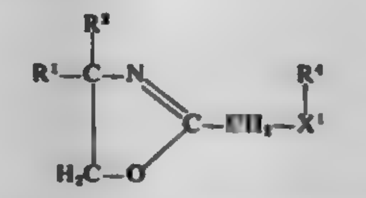
wherein R^1 and R^2 are methyl, ethyl, hydroxymethyl or acyloxymethyl corresponding to the formula

$$-CH_2O\underset{\underset{O}{\|}}{C}CH_2R$$

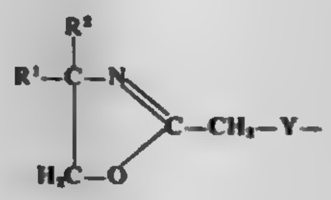
and are the same or different, R is an alkenyl group of from 1 to 18 carbon atoms, and X is H_2, or (b) a bis- or tris-oxazoline corresponding to the formula



where R^3 is the group



wherein X^1 is any divalent or trivalent unsaturated aliphatic hydrocarbon group of from 0 to 32 carbon atoms, and when X^1 is divalent, R^4 is hydrogen and when X^1 is trivalent, R^4 is the group



wherein Y is an unsaturated hydrocarbon of 16 carbon atoms or (c) mixtures thereof.

3,983,072

EXHAUST CATALYST

Ruth E. Stephens, Royal Oak, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 16, 1973, Ser. No. 351,187

Int. Cl.^{2} B01J *29/12, 29/22, 23/62, 23/82*

U.S. Cl. 252—460 **8 Claims**

1. A catalyst especially adapted for use over an extended period in lowering the hydrocarbon and carbon monoxide content of exhaust gas emitted by an internal combustion engine operating on gasoline containing a tetraalkyl lead antiknock agent, said catalyst consisting essentially of about 0.1–20 weight per cent manganese in an oxide form and 0.005–0.3 weight per cent palladium on a catalyst support.

3,983,073

PROCESS FOR PREPARING A CATALYST FOR THE OXIDATION OF METHANOL TO FORMALDEHYDE

Ferruccio Trifiro'; Pierluigi Villa, both of Milan, and Luciano Cairati, Cassano d'Adda (Milan), all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed July 10, 1975, Ser. No. 594,891

Claims priority, application Italy, July 25, 1974, 25545/74

Int. Cl.^{2} B01J *23/88*

U.S. Cl. 252—470 **14 Claims**

1. A method for the preparation of a catalyst active in the oxidation of methanol to formaldehyde, which comprises:

a. slowly mixing an aqueous solution of a soluble molybdate having a pH value of from 1.5 to 5.5 with an aqueous solution of a soluble ferric salt at a temperature of from 20° to 80°C in such proportions as to ensure in the resulting mixture an atomic ratio of molybdenum to iron of at least 1.5:1, thereby to obtain a suspension of an amorphous precipitate;

b. heating said suspension for at least 30 minutes at a temmperature of from 70°C to its boiling point, thereby to transform the amorphous precipitate into iron molybdate having a degree of crystallinity of at least 90%;

c. washing the resulting precipitate with water at a temperature from ambient temperature to its boiling point to remove the soluble salts produced and at least a part of the excess of said soluble molybdate, not transformed into iron molybdate, in order to ensure in the resulting washed solid an atomic ratio of molybdenum to iron ranging from 1.5:1 to 1.7:1;

d. drying said washed solid at a temperature not exceeding 120°C for a period of at least 30 minutes.

3,983,074

CERAMIC BINDER FOR POLYCONDUCTOR POWDERS

David Kahn, and Raymond James Geckle, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 14, 1974, Ser. No. 479,242

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.^{2} H01B *1/08*

U.S. Cl. 252—500 **3 Claims**

1. As an article of manufacture, a vanadium dioxide or doped vanadium dioxide in a ratio of 5 to 50 percent, and as a binder therewith, vanadium pentoxide and phosphorus pentoxide in admixture from 85% to about 50 percent of vanadium pentoxide on a mole basis, reminder phosphorus pentoxide, said binder intimately and strongly adhering to vanadium dioxide and said binder having voltage threshold for switching which extrapolated to 0 voltage is at approximately 68°C.

3,983,075

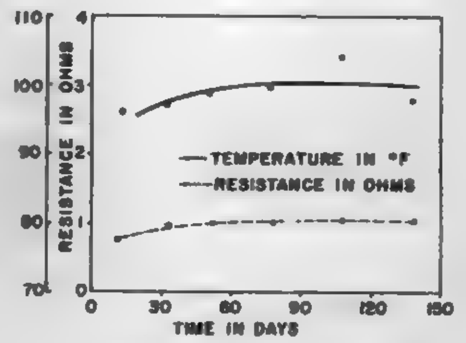
COPPER FILLED CONDUCTIVE EPOXY

David W. Marshall, North Reading, and Jagdish Chandra Agarwal, Concord, both of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed June 21, 1974, Ser. No. 481,527

Int. Cl.^{2} H01B *1/02, 1/06*

U.S. Cl. 252—511 **7 Claims**



STABILITY OF A 28% COPPER—
7% CARBON FILLED HEATING PANEL

1. An electrically conductive resinous composition consisting essentially of a copper flake the surface of which has been cleaned by removing therefrom impurities and/or oxides, a resinous binder of epoxy resin, an amount of copper flake in said resinous composition being from 25 to 70 percent, the total impurities in said copper flake being less than 7000 ppm, said resinous composition being cured with a curative comprising a polyamide or an anhydride, or mixtures thereof in an amount of about 20 parts to 50 parts of curative to about 80 parts to 50 parts of resin, respectively.

3,983,076

N-TYPE AMORPHOUS SEMICONDUCTOR MATERIALS

Howard K. Rockstad, Troy, and Richard A. Flasck, Pontiac Township, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed July 2, 1973, Ser. No. 375,794

Int. Cl.^{2} H01B *1/06;* **C03C** *3/12, 3/30*

U.S. Cl. 252—518 **10 Claims**

1. An n-type chalcogenide amorphous material as measured by the Seebeck coefficient, said n-type material being that obtained by subjecting a normally p-type amorphous chalcogenide composition to a temperature below its crystallization temperature and which is located at a point on its room temperature versus annealing temperature curve which is sufficiently in excess of the temperature at which its conductivity at room temperature decreases sharply from a relatively high constant value that its Seebeck coefficient has a negative value, and then cooling the same to room temperature.

3,983,077

PROCESS FOR MAKING CERAMIC RESISTOR MATERIALS

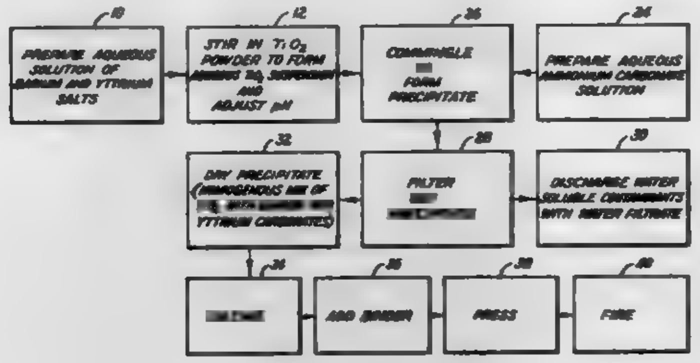
Peter G. Fuller, Lakeville, Mass., and Hans A. Stoeckler, Woonsocket, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 2, 1975, Ser. No. 574,768

Int. Cl.^{2} H01B *1/08*

U.S. Cl. 252—520 **14 Claims**

1. A method for producing a mixed metal oxide material incorporating at least one element selected from the group consisting of barium, strontium, calcium and lead and at least one metal selected from the group consisting of titanium, tin and zirconium, said method comprising the steps of combining an aqueous solution of a water soluble compound of at least said one element with an oxide of at least said one metal suspended in an aqueous medium and regulating the pH of said combined solution-suspension to obtain desired stability thereof, thereby to place any water soluble contaminants of said compound in metal oxide in solution in said aqueous medium, removing said aqueous medium with said contaminants to leave a homogeneous mixture of a material incorporating said one element and said metal oxide, and pyrolyzing said mixture for forming said mixed metal oxide material.


10
PREPARE AQUEOUS SOLUTION OF BARIUM AND YTTRIUM SALTS
12
STIR IN TiO_2 POWDER TO FORM AQUEOUS SUSPENSION AND ADJUST pH
26
COMMINGLE FORM PRECIPITATE
24
PREPARE AQUEOUS AMMONIUM CARBONATE SOLUTION
32
DRY PRECIPITATE (HOMOGENEOUS MIX OF YTTRIUM CARBONATES)
28
FILTER
30
DISCHARGE WATER SOLUBLE CONTAMINANTS WITH WATER FILTRATE
34
36
ADD BINDER
38
PRESS
40
FIRE

3,983,078

OIL REMOVAL DETERGENT COMPOSITIONS

Jerome H. Collins, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 406,413, Oct. 15, 1973, abandoned. This application June 23, 1975, Ser. No. 589,117

Claims priority, application Canada, Oct. 7, 1974, 210835

Int. Cl.^{2} C11D *1/72, 1/83, 3/075, 3/12*

U.S. Cl. 252—540 **1 Claim**

1. A spray dried granular detergent composition containing:

(1) About 20% of a sodium alkyl benzene sulfonate wherein said alkyl group contains an average of 12 carbon atoms; (2) About 5% of a mixture of (a) an ethoxylated primary oxo alcohol having an average molecular weight of 160 and a range of chain lengths between 9 and 11 carbon atoms with a major proportion containing 10 carbon atoms, said alcohol being ethoxylated with about four moles of ethylene oxide per mole of alcohol and (b) an ethoxylated secondary alcohol containing from 11 to 13 carbon atoms with an average chain length of 12 carbon atoms, said alcohol being ethoxylated with 9 moles of ethylene oxide per mole of alcohol; (3) About 33% sodium tripolyphosphate; (4) about 2% sodium toluene sulfonate; (5) About 0.6% sodium carboxymethyl cellulose; (6) About 21.9% sodium sulfate; (7) about 2.5% bentonite clay; (8) About 5.4% of sodium silicate having an SiO_2 :Na_2O ratio of 2, and (9) the balance water.

3,983,079

DISHWASHING COMPOSITION

Gianfranco Luigi Spadini, Strombeek-Bever, and Emiel Mathilde Anna Alfons Demessemaekers, Heverlee, both of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 29, 1974, Ser. No. 501,531

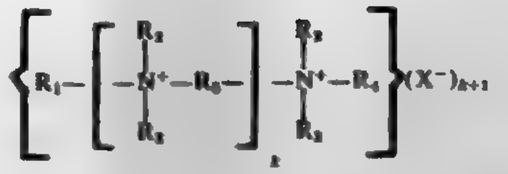
Claims priority, application Luxemburg, Sept. 4, 1973, 68355

Int. Cl.^{2} C11D *1/62, 1/65*

U.S. Cl. 252—545 **8 Claims**

1. A dishwashing detergent composition especially adapted for washing and imparting shine to glassware, china and articles with vitreous surfaces, comprising:

A. from about 1 to about 5 percent by weight of the total composition of a water-soluble quaternary ammonium compounds of the general formula:



$$\left[\left\{R_1-\left[-\overset{R_2}{\underset{R_3}{N^+}}-R_5-\right]_k-\overset{R_2}{\underset{R_3}{N^+}}-R_4\right\}\right](X^-)_{k+1}$$

wherein R_1 and R_4 are each alkyl radicals having from 12 to 16 carbon atoms;

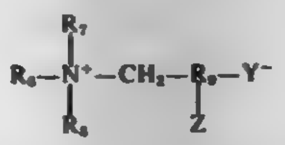
R_2 and R_3 are each radicals selected from the group consisting of methyl, ethyl, and hydroxyethyl;

R_5 is a radical selected from the group consisting of ethylene, propylene and hydroxypropylene;

X^- is an anion selected from the group consisting of chloride and bromide or mixtures thereof; and k is 0;

B. from about 4 to about 20 percent by weight of a nonionic surface-active polypropylene oxide-polyethylene oxide condensation product having a molecular weight of from 500 to about 10,000, wherein the ethylene oxide content is from about 10 to about 30 percent by weight of said condensation product; and

C. from about 5 to about 20 percent by weight of a water-soluble compound of the general formula:



$$R_6-\overset{R_7}{\underset{R_8}{N^+}}-CH_2-\underset{Z}{R_9}-Y^-$$

wherein R_6 is a radical selected from the group consisting of alkyl radicals having from 12 to 16 carbon atoms;

R_7 and R_8 are each radicals selected from the group consisting of methyl, ethyl, and hydroxyethyl;

Y^- is $-SO_3$; and R_9-Z is a $-CH(OH)-CH_2-$ radical,

whereby the weight ratio of (A)/(B) is from about 1:4 to about 1:10, and the weight ratio of (A)/(C) is from about 1:5 to about 1:20.

3,983,080

EXTRUSION FOAMING OF NORMALLY CRYSTALLINE VINYLIDENE CHLORIDE POLYMERS

Kyung W. Suh; Richard E. Skochdopole, and Malcolm E. Leduc, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sept. 20, 1974, Ser. No. 508,024

Int. Cl.^{2} C08J *9/18*

U.S. Cl. 260—2.5 B **4 Claims**

1. A process for forming stable low density extruded foam from normally crystalline vinylidene chloride polymer such process comprising (1) admixing a normally crystalline vinylidene chloride polymer in comminuted form with from about 5 to about 25 percent based on polymer weight of a blowing agent composed of a compound or compound mixture having a boiling point of less than about 40°C, a vapor pressure at the foaming temperature used of greater than atmospheric pressure but less than about 1000 p.s.i. and a solubility parameter of greater than about 6.6 and less than about 8.7, then (2) extrusion foaming the admixture using an extrusion temperature of from about 120°C to about 150°C.

3,983,081

INORGANIC-ORGANIC COMPOSITION

Dieter Dieterich, and Peter Markusch, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 27, 1974, Ser. No. 446,577

Claims priority, application Germany, Feb. 2, 1973, 2310559

Int. Cl.^{2} C08G *18/14;* **C08K** *3/34, 5/51*

U.S. Cl. 260—2.5 AJ **28 Claims**

1. An inorganic-organic composition obtained by reacting a mixture of:

A. from 5-98% by weight of an organic polyisocyanate,
B. from 95-2% by weight of an aqueous alkali metal silicate solution containing about 20-70% by weight of said alkali metal silicate,
C. from 0-93% by weight of an inorganic water-binding component, said water-binding component being capable of absorbing water to form a solid or a gel, and based on the total weight of components (A), (B) and (C),
D. from 1-30% by weight of a halogen or phosphorus containing compound,

with the proviso that when component (C), is from 0-20% by weight, component (A) contains 2-200 milliequivalents of ionic groups or groups capable of forming ionic groups in the presence of alkali metal silicates per 100 grams of said organic isocyanate, and wherein said composition is a solid/solid xerosol.

6. The composition of claim 1, wherein an inert liquid boiling at temperatures of −25°C to +50°C is included in the reaction mixture as a blowing agent in a quantity of up to 50% by weight, and the reaction mixture is allowed to react to completion while foaming.

3,983,082
INTUMESCENT FIRE RETARDANT MATERIAL AND ARTICLE

Richard D. Pratt, Cincinnati; Paul F. Proffitt, Reading, and George Webb, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Feb. 19, 1975, Ser. No. 550,933
Int. Cl.² C08K *3/04, 3/10*
U.S. Cl. 260—2.5 S **3 Claims**

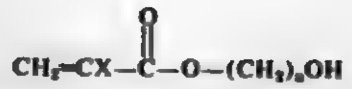
1. An improved silicone base intumescent fire retardant material comprising a mixture of:
35 – 75 parts by weight of a silicone resin; and
22 – 112 parts by weight of the mixture of ingredients comprising, by weight:
1 – 10 parts of an oxide of iron;
17 – 52 parts of a phosphate of potassium;
2 – 30 parts of a charring material; and
2 – 20 parts of a blowing agent.

3,983,083
SOFT CONTACT LENSES AND PROCESS FOR PREPARATION THEREOF

Isao Kaetsu; Minoru Kumakura; Akihiko Ito, all of Takasaki, and Yuji Maeda, Tokyo, all of Japan, assignors to Japan Atomic Energy Research Institute and Tokyo Optical Company Ltd. (Kabushiki Kaisha Tokyo Megane), both of Tokyo, Japan

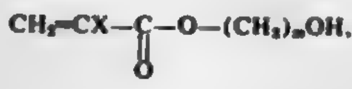
Filed Dec. 6, 1974, Ser. No. 530,119
Claims priority, application Japan, Dec. 11, 1973, 48-137380
Int. Cl.² B29D *11/00;* **C08G** *2/00;* **C08F** *218/00, 216/02*
U.S. Cl. 526—240 **6 Claims**

1. Soft contact lenses consisting essentially of copolymer derived from a monomer mixture of at least one polymerizable monomer of the general formula,



$$CH_2=CX-\overset{\overset{\displaystyle O}{\|}}{C}-O-(CH_2)_nOH$$

wherein X is a member selected from a group consisting of H and CH_3 and *n* is either of 2 or 3 and at least one polymerizable monomer of the general formula



$$CH_2=CX-\underset{\underset{\displaystyle O}{\|}}{C}-O-(CH_2)_mOH,$$

wherein X is a member selected from a group consisting of H and CH_3 and *m* is an integer of 4 to 13, whereby the mixing ratio of the monomer or monomers of the first group and the monomer or monomers of the second group is 1:6 to 4:1 by weight.

5. A process for making soft contact lenses comprising cast polymerizing a monomer mixture as defined in claim 1, cooling the resulting copolymer body to a temperature not higher than 0°C, at which it stands in a rigid state, and shaping said body into the lens form in the cooled rigid state.

3,983,084
ART OF MANUFACTURING COMPRESSION MOLDED PARTICLE BOARD WITH NITROGENOUS MODIFIED AMYLACEOUS BINDER

Richard J. Alexander, Wauwatosa, and Robert K. Krueger, Sheboygan, both of Wis., assignors to Krause Milling Company, Milwaukee, Wis.

Filed Oct. 18, 1974, Ser. No. 516,055
Int. Cl.² C08L *3/00*
U.S. Cl. 260—17.2 **18 Claims**

1. A method of manufacturing particle board comprising the following steps:
a. Preparing an amylaceous binder by combining a nitrogen compound with a gelatinized cereal grain or an amylaceous fraction thereof using water in an amount less than 20 percent of the total mix, and heating the mixture to bring the temperature to between 75° C and 180° C while the gelatinized material and nitrogen compound are both present, the nitrogen compound being in the amount of 3–20 percent based on the weight of the cereal grain and being of the family containing the chemical grouping

$>N(R_1R_2N)C:X$

where X is O, S or NH and where R_1 is H or CH_3 and where R_2 is H or CH_3;
b. intimately mixing a resin selected from the group of urea-formaldehyde, melamine-formaldehyde and phenol-formaldehyde resins or mixture thereof with the amylaceous binder to produce a resin-binder mixture which is composed of from 5–50 percent of the amylaceous binder and of 50–95 percent of the resin;
c. blending a quantity of the resin-binder mixture with wood particles, with said quantity being 5–20 percent of the weight of the wood particles;
d. subjecting the blend of resin-binder mixture and wood particles to heat and pressure.

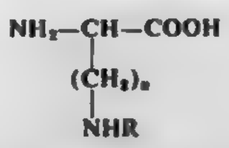
3,983,085
STABILIZED HALOGEN-CONTAINING RESIN COMPOSITIONS

Ryonosuke Yoshida, Kamakura, and Kazutami Sakamoto, Kawasaki, both of Japan, assignors to Ajinomoto Co., Inc., Kyobe, Japan

Filed July 15, 1975, Ser. No. 596,153
Claims priority, application Japan, July 24, 1974, 49-84726; Apr. 21, 1975, 50-48387
Int. Cl.² C08J *3/20*
U.S. Cl. 260—23 XA **7 Claims**

1. A halogen-containing resin composition comprising a halogen containing resin selected from the group consisting of

polyvinyl chloride, polyvinylidene chloride, a copolymer of vinyl chloride and vinylidene chloride with copolymerizable unsaturated monomers, chlorinated polyethylene and chlorinated polypropylene and one or more of stabilizers selected from the group consisting of
1. a chelate compound of (A) an N_{ω} -substituted basic amino acid having the general formula



$$\begin{array}{l} NH_2-CH-COOH \\ \quad\quad\ | \\ \quad\ (CH_2)_n \\ \quad\quad\ | \\ \quad\ \ NHR \end{array}$$

wherein R is selected from the group consisting of an alkyl hydrocarbon radical having 8 to 22 carbon atoms and an acyl radical of a saturated or unsaturated fatty acid having 8 to 22 carbon atoms, and *n* is an integer of 1 to 4 with (B) divalent metal selected from the group consisting of alkaline earth metals and zinc, and
2. a mixture of (A) a basic amino acid derivative selected from the group consisting of a salt of a basic amino acid selected from the group consisting of α,β diaminopropionic acid, α,γ-diaminobutyric acid, ornithine and lysine with a saturated or unsaturated fatty acid having 8 to 22 carbon atoms and an N_{ω} -substituted basic amino acid defined by the above general formula and (B) a divalent metal compound selected from the group consisting of alkaline earth metal compounds and zinc compounds, said divalent compound being an oxide, hydroxide, or carbonate and the proportion of (A) to (B) being substantially stoichimetrical; wherein the amount of stabilizer is 0.5 to 5 parts by weight per 100 parts by weight of said halogen-containing resin.

3,983,086
SMOKE RETARDANT VINYL CHLORIDE AND VINYLIDENE CHLORIDE POLYMER COMPOSITIONS

Elmer D. Dickens, Jr., Richfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 30, 1974, Ser. No. 537,434
Int. Cl.² C08L *91/00*
U.S. Cl. 260—23 XA **18 Claims**

1. A smoke retardant composition comprising a vinyl chloride or vinylidene chloride polymer together with (A) at least one nickel compound selected from the group consisting of $NiCO_3$, $NiCrO_4$, NiI_2, NiO, NiS, $NiSO_4$, nickel acetylacetonate, nickel citrate and nickel formate and (B) at least one iron compound selected from the group consisting of Fe_3C, $Fe_2(MoO_4)_3$, Fe_2O_3, Fe_3O_4, FeS, cyclopentadienyl iron dicarbonyl, ferric acetylacetonate, ferric hydroxy distearate and dicyclopentadienyl iron, said compounds (A) and (B) being present in a total amount from about 0.25 to about 20 weight parts per 100 weight parts of polymer.

3,983,087
NOVEL PROCESS OF RECLAIMING POLYURETHANE FOAM

Benjamin Tucker, Bethany, and Henri Ulrich, Northford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 464,856, April 29, 1974, abandoned. This application July 25, 1975, Ser. No. 598,751
Int. Cl.² C08J *11/04*
U.S. Cl. 260—2.3 **4 Claims**

1. A process for converting scrap flexible polyurethane foam, which foam has been derived from a polyether polyol, to a homogeneous mixture of polyols, which process comprises heating, at a temperature in the range of 180°C to 250°C, a mixture of (a) said scrap flexible foam and (b) 1,2-propylene glycol said glycol being present in an amount by weight which does not exceed the total weight of said scrap foam.

3,983,088
COATING FOR LOCAL PROTECTION OF PARTS

Viktor Timofeevich Pozdneev, ulitsa Textilschikov, 4, kv. 87; Mikhail Lvovich Khina, Malaya Kalitnikovskaya, ul., 5, kv. 48; Dmitry Vasilievich Bashkirov, ul. Tatyany Makarovoi, 10, kv. 5; Nikolai Fedorovich Judin, Sevastopolsky prospekt, 14, kv. 223, and Nikolai Sergeevich Kobzev, Volzhsky bulvar, 20, kv. 90, all of Moscow, U.S.S.R.

Filed June 22, 1972, Ser. No. 265,182
Claims priority, application U.S.S.R., June 22, 1971, 1672186
Int. Cl.² C08L *93/00*
U.S. Cl. 260—24 **2 Claims**

1. A coating for local protection of parts against saturation with carbon and nitrogen during chemical heat treatment of said parts, containing (in weight per cent):

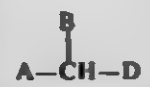
boric anhydride	15–30,
silicon carbide	15–35,
epoxy resin	1–10,
rosin	25–50,
benzene	the rest.

3,983,089
NOVEL 1-ARYL-2-ARYLALKYL-3-OR-4-[4′-(SUBSTITUTED-ALKYL)-PIPERAZINO-1′]-BUTANOLS-2 OR-BUTENES-1, AND METHODS OF MANUFACTURE THEREOF

Wolf-Dieter Vigelius, Denzlingen, and Spyridon Marinis, Emmendingen, both of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

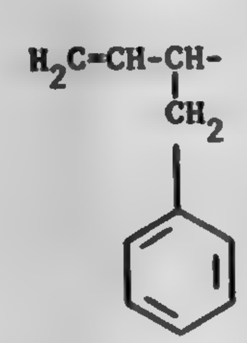
Division of Ser. No. 398,513, Sept. 18, 1973, Pat. No. 3,947,411. This application Aug. 25, 1975, Ser. No. 607,846
Claims priority, application Germany, Sept. 21, 1972, 2246279
Int. Cl.² C07D *403/06*
U.S. Cl. 260—240 K **3 Claims**

1. A compound of the formula:

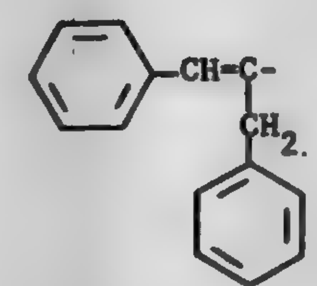


$$\begin{array}{c} B \\ | \\ A-CH-D \end{array}$$

wherein A is selected from the group consisting of:

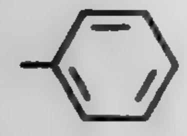


, and

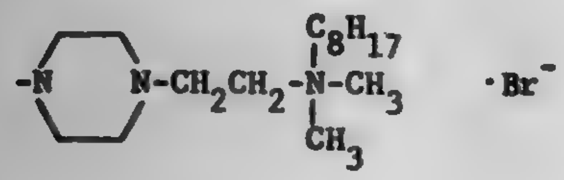


wherein B is selected from the group consisting of:

$-CH_3$, and



wherein D is selected from the group consisting of:



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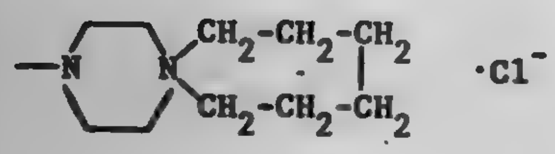


3,983,090
COMPOSITION OF A POLYPHENYLENE ETHER AND STYRENE RESIN AND AN ACRYLIC RESIN IN COMBINATION WITH A DIENE RUBBER-CONTAINER RESIN

Visvaldis Abolins, Delmar, and Donald L. Reinhard, Albany, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 189,393, Oct. 14, 1971, Pat. No. 3,833,688. This application May 17, 1974, Ser. No. 471,159
Int. Cl.² C08K *7/14;* C08L *51/04*
U.S. Cl. 260—42.18 32 Claims

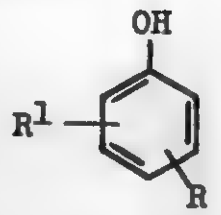
1. A normally rigid thermoplastic composition comprising
a. a composition comprising a polyphenylene ether resin and a styrene resin and
b. a resinous composition comprising a polymerized acrylic monomer and a polymerized diene rubber.

3,983,091
PHENOLIC ANTIOXIDANTS PREPARED FROM TRICYCLOPENTADIENE AND STABILIZED COMPOSITIONS

Richard H. Gloth, Copley, and James J. Tazuma, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 25, 1975, Ser. No. 599,212
Int. Cl.² C08K *5/13;* C07C *37/12, 37/00, 39/18*
U.S. Cl. 260—45.95 H 5 Claims

1. A reaction product prepared by reacting a mixture comprising (A) at least one phenolic reactant conforming to the following structural formula



wherein R is selected from the group consisting of hydrogen, alkyl radicals having from 1 to 12 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms, aralkyl radicals having from 7 to 12 carbon atoms, substituted and unsubstituted aryl radicals having 6 to 12 carbon atoms, alkoxy radicals having from 1 to 12 carbon atoms, cycloalkoxy radicals having from 5 to 12 carbon atoms and aralkoxy radicals having from 7 to 12 carbon atoms and R^1 is selected from the group consisting of hydrogen and tertiary alkyl radicals having from 4 to 12 carbon atoms and (B) tricyclopentadiene, in the presence of a Friedel-Crafts catalyst, at a temperature of from 25° C. to 160° C. the molar ratio of the tricyclopentadiene compound to the phenolic reactant being from 1:1 to 1:10.

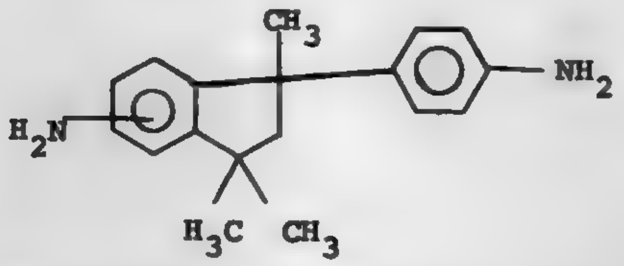
4. A polymer subject to oxidation having incorporated therein the reaction product of claim 1.

3,983,092
PHENYLINDANE DIAMINE MIXTURE AND EPOXY RESIN THEREWITH

John Bateman, Bardonia, and David A. Gordon, Scarsdale, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 20, 1975, Ser. No. 542,144
Int. Cl.² B01J *31/02;* C08G *39/12;* C07C *87/64*
U.S. Cl. 260—47 EN 3 Claims

1. A phenylindane diamine mixture having the formula



said mixture comprising 15 to 50% 5-amino-1-(4′-aminophenyl)-1,3,3-trimethylindane and 85 to 50% 6-amino-1-(4′-aminophenyl)-1,3,3-trimethylindane.

3. A composition of matter which is comprised of (a) an epoxy resin and (b) the phenylindane diamine mixture of claim 1.

3,983,093
NOVEL POLYETHERIMIDES

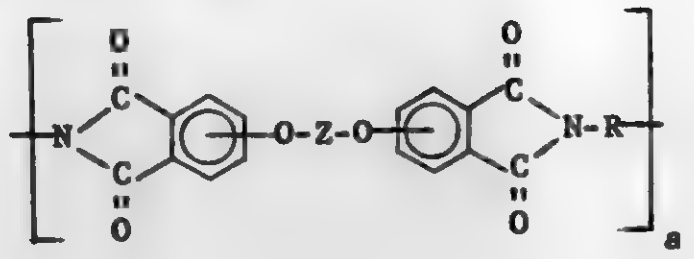
Frank J. Williams, III, Scotia, and Paul E. Donahue, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 19, 1975, Ser. No. 578,601
Int. Cl.² C08G *73/10*
U.S. Cl. 260—47 CP 12 Claims

1. A polyetherimide of the formula

$$[A]_m\ [B]_{1-m},$$

where the *m* is a number greater than 0 and smaller than 1, where A units are of the formula:



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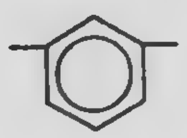
where —O—Z—O— is in the 3 or 3′- and 4 or 4′-positions and Z is a member of the class consisting of (1)



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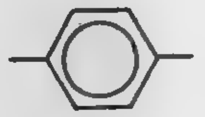

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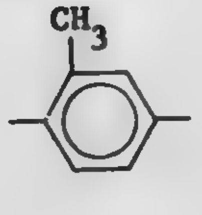

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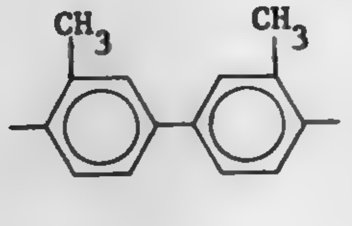

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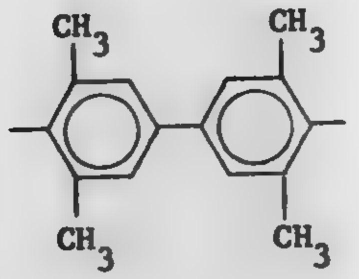

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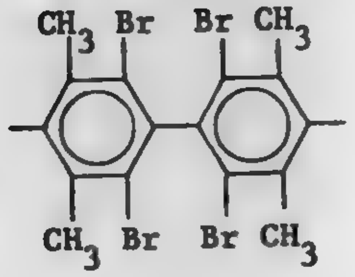
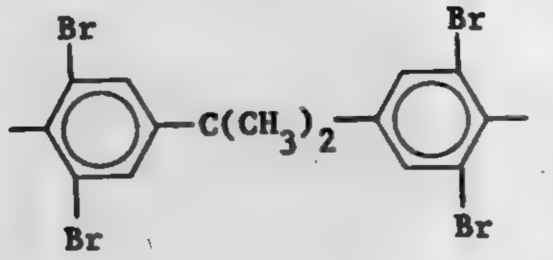
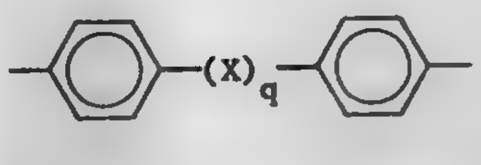


and

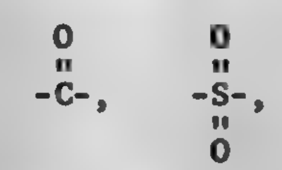


,

and (2) divalent organic radicals of the general formula:

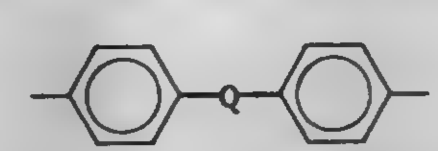


where X is a member selected from the class consisting of divalent radicals of the formulas, $—C_yH_{2y}—$,

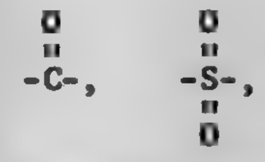


$$-\overset{O}{\overset{\|}{C}}-,\qquad -\underset{\underset{O}{\|}}{\overset{\overset{O}{\|}}{S}}-,$$

—O— and —S—, where *q* is 0 or 1, *y* is a whole number from 1 to 5, R is a divalent organic radical selected from the class consisting of (a) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals and cycloalkylene radicals having from 2–20 carbon atoms, $C_{(2-8)}$ alkylene terminated polydiorganosiloxane, and (c) divalent radicals included by the formula

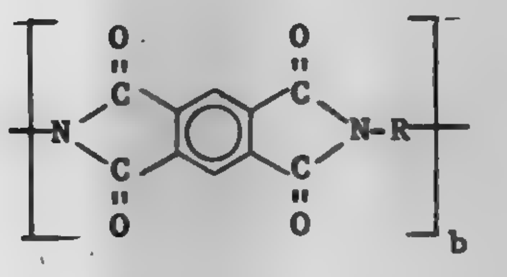


where Q is a member selected from the class consisting of —O—,

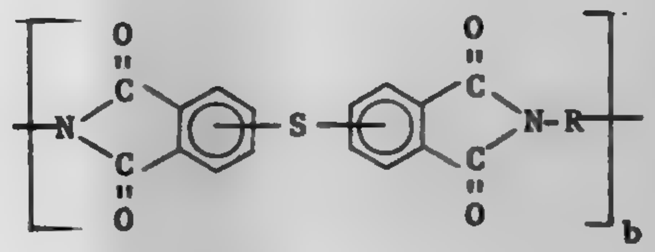


$$-\overset{O}{\overset{\|}{C}}-,\qquad -\underset{\underset{O}{\|}}{\overset{\overset{O}{\|}}{S}}-,$$

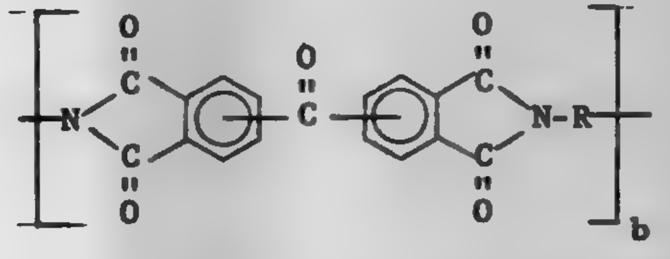
—S—, and $—C_xH_{2x}—$, and *x* is a whole number from 1 to 5 inclusive, and where the B units are of the formulas:



,



, or



,

or mixtures thereof, where R is a divalent organic radical as previously defined, and independently *a* and *b* represent a whole number in excess of 1.

3,983,094

THERMALLY STABLE POLYURETHANE ELASTOMERS PRODUCED FROM POLY(OXYPROPYLENE)-POLY(OXYETHYLENE)-GLYCOLS OF HIGH OXYETHYLENE GROUP CONTENT

Francis X. O'Shea, Naugatuck, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Sept. 11, 1975, Ser. No. 612,420

Int. Cl.² B62D *29/04*; C08G *18/32*

U.S. Cl. 260—77.5 AM **3 Claims**

1. A thermally stable polyurethane elastomer which is a reaction product of: (a) a poly(oxypropylene)-poly(oxyethylene) glycol of molecular weight from about 1750 to about 4000 and containing 15 to 50% by weight oxyethylene groups; (b) methylenebis(4-phenylisocyanate); and (c) 1,4-butanediol; the NCO/OH equivalents ratio being from 0.95 to 1.2 and the molar ratio of (c) to (a) being from 3/1 to 12/1, said elastomer having a hardness of about 40 to 55 Shore D, an elongation of greater than 270%, an ultimate tensile strength of at least 2700 psi and a Die C tear strength of at least 500 pli, said elastomer displaying improved thermal stability as evidenced by its ability to retain at least twice as much of its original tensile strength, after exposure to a temperature of 415°F. for 20 minutes, as an otherwise similar elastomer in which (a) contains 10% or less oxyethylene groups.

3,983,095

ABSORBENT FIBERS AND PROCESS FOR THEIR PREPARATION

Robert Niles Bashaw, and Bobby Leroy Atkins, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 12, 1973, Ser. No. 331,849

Int. Cl.² C08F *8/44*

U.S. Cl. 526—15 **19 Claims**

1. A method for the preparation of water-insoluble, water-swellable polymer products which comprises the steps of

1. forming a solution, in an organic solvent, of a copolymer of maleic anhydride with a vinyl monomer copolymerizable therewith,
2. adding to said solution from about 0.25 to 2.5 percent by weight, based on the weight of copolymer present, of a cross-linking agent consisting of a polyfunctional organic compound in which the functional groups are adapted to react with carboxylic acid anhydrides,
3. extruding the solution of copolymer and cross-linking agent into a shaped form,
4. drying and curing the resulting shaped form of copolymer at an elevated temperature of at least about 50°C. for a period of time sufficient to effectuate cross-linking of the copolymer, and
5. reacting the resulting cured product with ammonia or an alkali metal hydroxide.

3,983,096

POLYMERIZATION PROCESS UNDER PRESSURE IN AN ANNULAR EQUIPMENT

Angelo Segalini, S. Maria Maggiore (Novara), Italy, assignor to Montedison S.p.A., Milan, Italy

Filed Oct. 15, 1974, Ser. No. 514,405

Claims priority, application Italy, Oct. 17, 1973, 30210/73

Int. Cl.² C08F *2/22, 14/06, 18/08*

U.S. Cl. 526—64 **6 Claims**

1. In a process for polymerizing under pressure fluid vinyl monomers which are gradually admixed to an initial reaction medium containing a portion of monomer, wherein the improvement comprises conducting the polymerization in an annular reactor including bottom and top legs joined by two vertical legs and having a height to width ratio greater than 1, a circulating pump in said bottom leg, the vertical leg into which said pump discharges having a volume of between about 5 and 30 percent of the reactor total volume.

3,983,097

METHOD OF PRODUCING HIGH MOLECULAR DERIVATIVES

Tsunee Okubo, Nishide, Fushimi, Kyoto, and Norio Ise, Nakanosaka, Kita, Kyoto, both of Japan

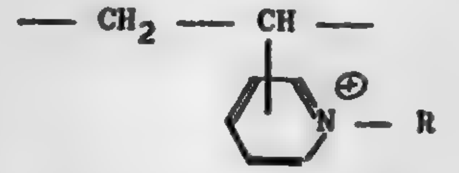
Filed Feb. 21, 1975, Ser. No. 551,909

Claims priority, application Japan, Mar. 6, 1974, 49-26605

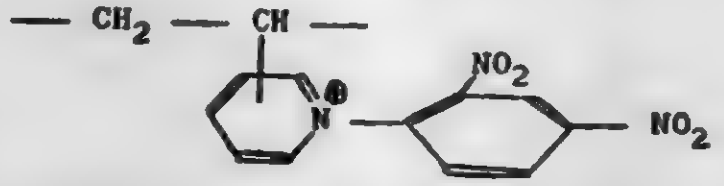
Int. Cl.² C08C *19/22*; C08F *8/30*

U.S. Cl. 526—49 **3 Claims**

1. A method for producing high molecular weight derivatives containing at least a recurring unit of the formula:



wherein R means an organic residue except for 2,4-dinitrophenyl radical which comprises reacting homopolymers or copolymers of vinyl pyridine including at least a structural unit



in its backbone or side chain with an amino-containing organic compounds represented by the general formula: RNH_2 wherein R has the meaning defined above in the presence of a liquid reaction medium under neutral to alkaline conditions.

3,983,098

ORTHOPHOSPHORIC ESTERS AND PROCESS FOR PRODUCING SAME

Giancarlo Bussi, and Pierpaolo Baradel, both of Trieste, Italy, assignors to Aquila S.p.A., Trieste, Italy

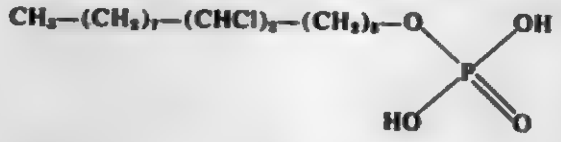
Filed Oct. 18, 1974, Ser. No. 516,029

Claims priority, application Italy, Oct. 18, 1973, 30279/73

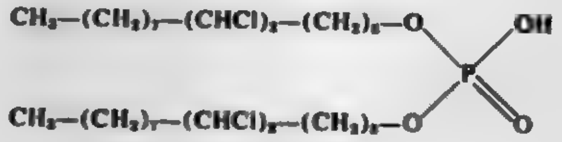
Int. Cl.² C07F *9/09*; C10M *1/44*

U.S. Cl. 260—963 **4 Claims**

1. A water soluble salt selected from the group consisting of



and



3,983,099

THYROXINE-AND TRIIODOTHYRONINE-TYROSINE DIPEPTIDE DERIVATIVES

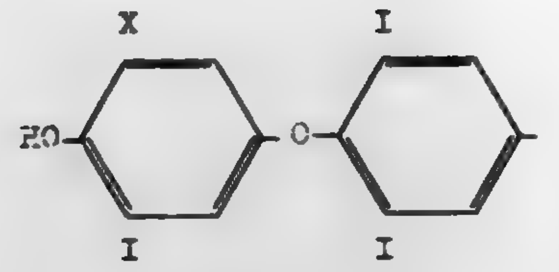
Gordon Dean Niswender, Fort Collins, Colo., assignor to Micromedic Diagonistics, Inc., Horsham, Pa.

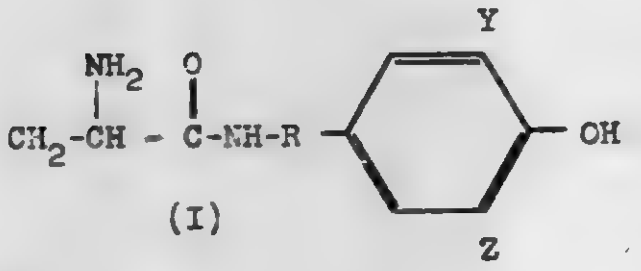
Filed Mar. 19, 1975, Ser. No. 559,862

Int. Cl.² C07G *103/52, 7/00*

U.S. Cl. 260—112.5 R **9 Claims**

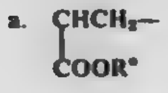
1. A compound of the formula





(I)

wherein
X is H, I, ^{125}I, or ^{131}I,
R is a group selected from the group consisting of

a. 

$\underset{COOR^{\circ}}{CHCH_2—}$

wherein R° is an alkyl group, and
b. an alkylene group,
Y is H; ^{125}I, or ^{131}I, and
Z is H; ^{125}I, or ^{131}I.

3,983,100

PREPARATION OF SUSPENSIONS OF MALEAMIC ACIDS

Maurice Balme, Sainte-Foy-les-Lyon, and Max Gruffaz, La Mulatiere, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Feb. 4, 1975, Ser. No. 546,925

Claims priority, application France, Feb. 7, 1974, 74.04128

Int. Cl.² C07C *103/64, 105/00*

U.S. Cl. 260—143 **11 Claims**

1. In a process for the preparation of a suspension of a bis-maleamic acid which comprises reacting maleic anhydride with a diprimary diamine in the presence of an organic diluent the improvement wherein the reaction is carried out in the presence also of a tertiary amine.

3,983,101

WATER-SOLUBLE POLYAZO COMPOUND DERIVED FROM 4-4-DIAMINOBENZANILIDE

Sisto Sergio Papa; Antonino Condé, both of Milan, and Renzo Ferrario, Ceriano Laghetto (Milan), all of Italy, assignors to Aziende Colori Nazionali Affini ACNA S.p.A., Milan, Italy

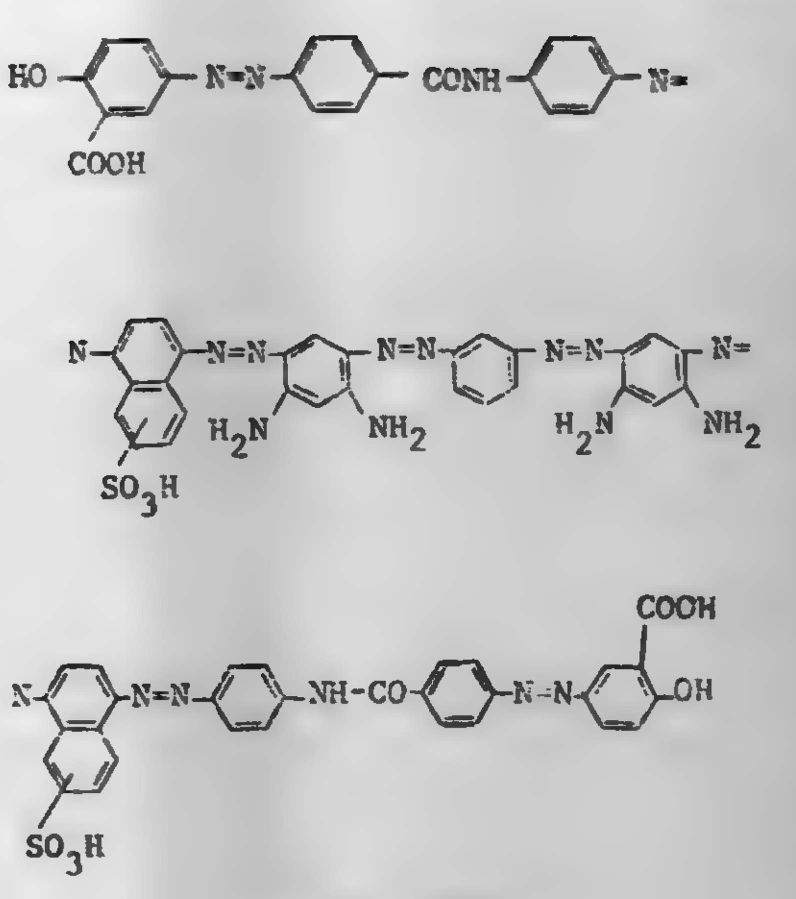
Division of Ser. No. 547,171, Feb. 5, 1975. This application Oct. 28, 1975, Ser. No. 625,908

Claims priority, application Italy, Feb. 11, 1974, 20381/74

Int. Cl.² C09B *35/50*

U.S. Cl. 260—144 **1 Claim**

1. A sulphonated azoic dyestuff of the formula:



3,983,102

PROCESS FOR PREPARING 5''-AMINO-4',5''-DIDEOXYBUTIROSIN A

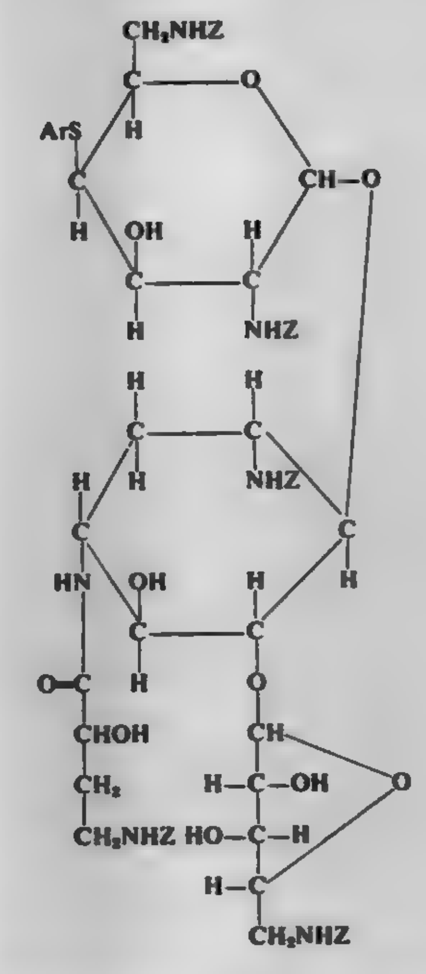
Peter Wing Kee Woo, and Theodore Herbert Haskell, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Filed Apr. 17, 1975, Ser. No. 569,128

Int. Cl.² C07H *15/22*

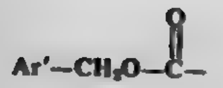
U.S. Cl. 536—17 **4 Claims**

1. Process for the production of 5''-amino-4',5''-dideoxybutirosin A which comprises reducing a compound of the formula



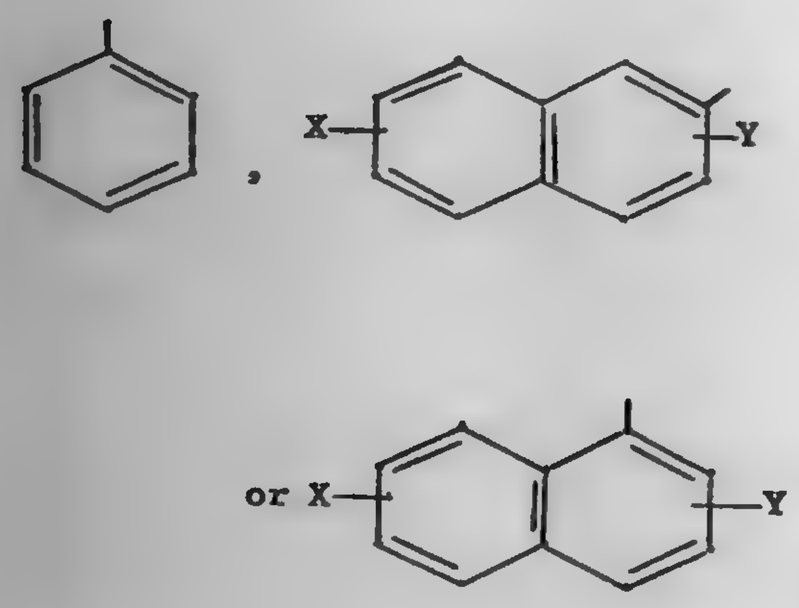
II

with a reducing agent which is either molecular hydrogen in the presence of a noble metal catalyst or sodium in liquid ammonia, wherein Z is a protective group of the formula



$$Ar'{-}CH_2O{-}\overset{O}{\overset{\|}{C}}{-}$$

and each of Ar and Ar′ is an aryl group of the formula



wherein each of X and Y is hydrogen, halogen, nitro, lower alkyl of from one to four carbon atoms or lower alkoxy of one to four carbon atoms; and isolating the product as the free base or after treatment of the product with an acid as an acid-addition salt thereof.

3,983,103
N-(BENZENESULFONYL)-ERYTHROMYCYLAMINE DERIVATIVES

Gabrijela Kobrehel; Zrinka Tamburašev, and Slobodan Djokić, all of Zagreb, Yugoslavia, assignors to PLIVA Pharmaceutical and Chemical Works, Zagreb, Yugoslavia

Continuation-in-part of Ser. No. 434,243, Jan. 17, 1974, abandoned. This application July 14, 1975, Ser. No. 595,593

Claims priority, application Yugoslavia, Jan. 19, 1973, 151/73

Int. Cl.^{2} C07H *15/20*

U.S. Cl. 536—9 **7 Claims**

1. The compound N-(4-R-benzenesulfonyl)-erythromycylamine, wherein R is a lower alkyl group having 1–5 carbon atoms, an acylamino group wherein the acyl has 2–4 carbon atoms, or a halo group.

3,983,104
N^6-SUBSTITUTED ADENOSINES

Helmut Vorbruggen, Berlin, Germany, assignor to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

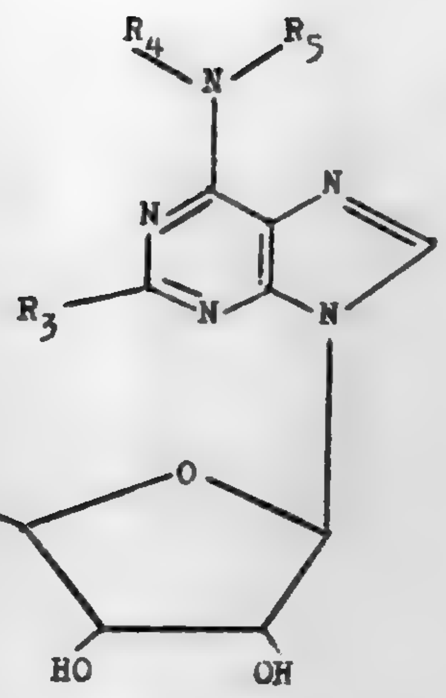
Filed Oct. 6, 1972, Ser. No. 295,719

Claims priority, application Germany, Oct. 8, 1971, 2151013

Int. Cl.^{2} C07H *19/16*

U.S. Cl. 536—24 **10 Claims**

6. A compound of the formula



wherein

R$_3$ represents hydrogen or amino, and

R$_4$ and R$_5$, together with the N-atom, collectively represent a heteromonocyclic ring of 5–7 members containing a further oxygen- or nitrogen atom, the nitrogen atom being unsubstituted or substituted by a methyl group.

3,983,105
PENICILLINS

Hans-Bodo Konig; Wilfried Schrock, and Karl Georg Metzger, all of Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Germany

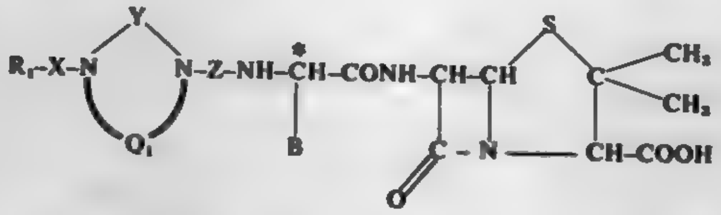
Continuation-in-part of Ser. No. 299,246, Oct. 20, 1972, abandoned, and a continuation-in-part of Ser. No. 300,776, Oct. 20, 1972, abandoned. This application Sept. 3, 1974, Ser. No. 502,662

Claims priority, application Germany, Oct. 23, 1971, 2152967; Oct. 23, 1971, 2152968

Int. Cl.^{2} C07D *499/46*

U.S. Cl. 260—239.1 **33 Claims**

1. A compound selected from the group consisting of a penicillin of the formula



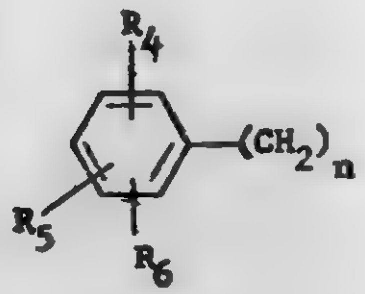
wherein the carbon atom designated by * constitutes a center of chirality;

X is —CO—, —CS— or —SO$_2$—;

each of Y and Z, independently of the other, is —CO— or —CS—;

B is thienyl, cyclohexenyl, cyclohexa-1,4-dien-1-yl, phenyl or phenyl substituted by one or two members selected from the group consisting of halo nitro, hydroxy, methoxy, methylthio and alkyl of 1 to 5 carbon atoms;

Q$_1$ is ethylene or trimethylene unsubstituted or substituted by one or two methyl groups; R$_1$ is phenylamino; the group



in which n is 0, 1 or 2 and each of R$_4$, R$_5$ and R$_6$, independently of the others, is hydrogen, nitro, cyano, halo, trifluoromethyl, R, (R)$_2$N, (R)$_2$NCO—, RCONH—, ROCO, RCOO or RO where R is alkyl of 1 to 5 carbon atoms; or when X is other than —SO$_2$—, phenoxy; and the pharmaceutically acceptable salts thereof.

3,983,106
5-HETEROCYCLICALKYL-2-ARYL-3-HALO 1,5-BENZOTHIAZEPIN-4(5H)-ONES

John Krapcho, Somerset, and Chester F. Turk, Kendall Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

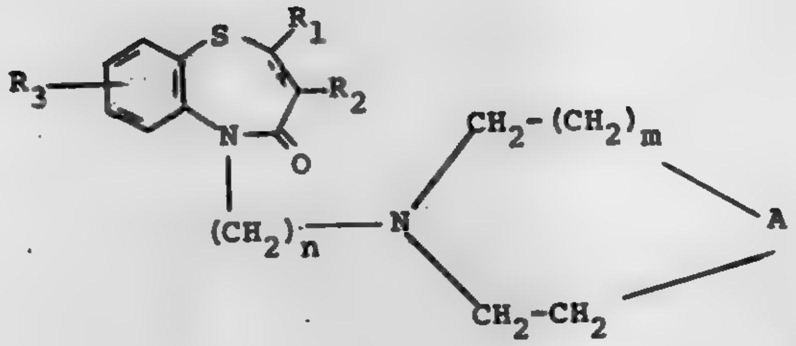
Filed July 3, 1975, Ser. No. 592,966

The portion of the term of this patent subsequent to July 15, 1992, has been disclaimed.

Int. Cl.^{2} C07D *281/02*

U.S. Cl. 260—239.3 B **10 Claims**

1. A compound having the formula



or a pharmaceutically acceptable salt thereof, or a quaternary ammonium salt thereof formed with an alkyl halide, a benzyl halide, or a dialkyl sulfate, or a 1-oxide or 1,1-dioxide derivative thereof; wherein R$_1$ is phenyl or substituted phenyl; R$_2$ is chlorine or bromine; R$_3$ is hydrogen, alkyl, alkoxy, halogen, or trifluoromethyl; *n* is 2, 3, or 4; and *m* is 0, 1 or 2, A is CH-R$_4$, N-R$_5$ or oxygen, R$_4$ is hydrogen or alkyl, and R$_5$ is hydrogen, alkyl, monohydroxyalkyl, phenyl or substituted phenyl, provided that when *m* is 0 or 2, A is CH-R$_4$; and wherein substituted phenyl refers to phenyl monosubstituted with alkyl, alkoxy, halogen or trifluoromethyl, and alkyl and alkoxy, whether used alone or as part of another term, in each and all instances employed, refer to groups having 1 to 6 carbon atoms.

3,983,107
HYPOLIPIDEMIC ALKENESULFONAMIDES

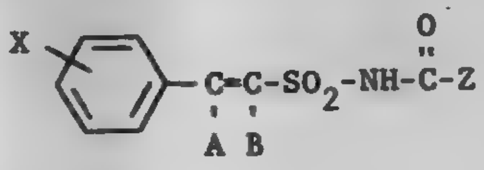
Gerald F. Holland, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 422,088, Dec. 5, 1973, abandoned. This application Nov. 6, 1974, Ser. No. 521,445

Int. Cl.^{2} C07D *211/06*

U.S. Cl. 260—240 J **6 Claims**

1. A compound selected from the group consisting of



and the salts thereof;

wherein

X is selected from the group consisting of hydrogen, chloro and methyl;

A and B are each selected from the group consisting of hydrogen, methyl and ethyl;

and Z is selected from the group consisting of 4-methoxypiperidino, 4-carboxypiperidino, 4-phenylpiperidino, alkylpiperidino having from one to three carbon atoms in said alkyl group, (phenylalkyl)piperidino having from one to five carbon atoms in said alkyl group and ([substituted phenyl]-alkyl)piperidino having from one to five carbon atoms in said alkyl group, said substituted phenyl being substituted by a moiety selected from the group consisting of hydroxy, alkyl having from one to four carbon atoms and alkoxy having from one to four carbon atoms.

3,983,108
ANTIBIOTIC PURIFICATION PROCESS

Seemon Pines, Murray Hill, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 10, 1975, Ser. No. 548,466

Int. Cl.^{2} C07D *501/24, 501/60*

U.S. Cl. 260—243 C **10 Claims**

1. A process for separating Cephamycin C from fermentation broth impurities which comprises filtering a fermentation broth containing Cephamycin C at a pH of from about 2.5 to about 4.5, adsorbing the filtrate on activated carbon, removing the adsorbed Cephamycin C from the carbon by contacting the carbon with a mixture of water and a polar organic solvent, contacting the desorbed filtrate with an anion exchange resin, and eluting the resin with a salt solution at a pH of from about 5.5 to about 10.

3,983,109

PROCESS FOR RECOVERING CEPHALOSPORIN C FROM A FERMENTATION BROTH AS THE N-(p-NITROBENZOYL) DERIVATIVE

Ernesto Oppici, and Anacleto Giannantonio, both of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Filed Dec. 30, 1974, Ser. No. 537,487

Claims priority, application United Kingdom, Jan. 3, 1974, 207/74

Int. Cl.² C07D *501/12*

U.S. Cl. 260—243 C **6 Claims**

1. A process for the high recovery yield of cephalosporin C from a fermentation broth thereof characterized in that cephalosporin C is

a. transformed into its N-(p-nitrobenzoyl) derivative by mixing its fermentation broth diluted with ca. 5 to 15 percent by volume of a water-miscible or partially water-miscible organic solvent with about 1.5 to about 10 molecular proportions of p-nitrobenzoyl chloride per molecular proportion of cephalosporin C in the presence of a hydrochloric acid acceptor and at a pH of about 6.5 to about 8 and a temperature of about 5° to 10°C, then adjusting the pH to 4.5 to 5,

b. extracting said derivative from the reaction mixture with a water-immiscible organic solvent to eliminate impurities and recovering it as a high purity crystalline product by concentration and filtration of the resultant precipitates or by precipitation as a salt of an alkali metal or of an organic amine and filtration of said precipitate.

3,983,110

SUBSTITUTED BENZOPYRANOPYRIDINE

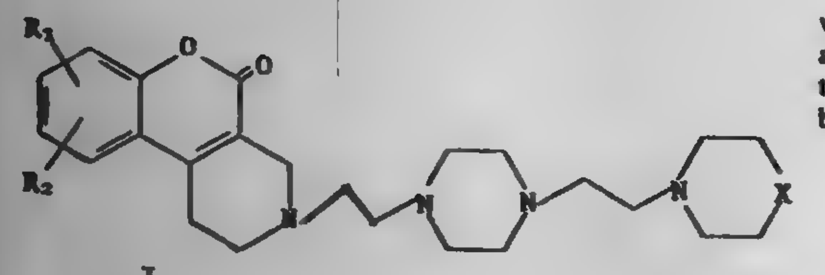
Richard E. Brown, East Hanover; Chester Puchalski, Dover, and John Shavel, Jr., Mendham, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 534,502, Dec. 19, 1974, Pat. No. 3,946,008, which is a continuation-in-part of Ser. No. 343,613, March 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 122,498, March 9, 1972, abandoned. This application July 25, 1975, Ser. No. 599,290

Int. Cl.² C07D *491/04*

U.S. Cl. 260—247.2 B **4 Claims**

1. A benzopyranopyridine of the general formula:



I

wherein R_1 and R_2 may be hydrogen, hydroxy, lower alkoxy or lower alkyl of 1 to 6 carbon atoms or may be taken together to form a methylenedioxy group; X may be oxygen, sulfur, CH_2CH_2, a bond connecting the adjacent carbon atoms, CH—R_3 or N—R_3 wherein R_3 may be hydrogen or lower alkyl of 1 to 6 carbon atoms; or the hydrochloride salts thereof.

3,983,111

STEROIDAL ANAESTHETICS OF THE PREGNANE AND 19-NORPREGNANE SERIES

Gordon Hanley Phillipps, Wembley; Robin Lawrence, Stoke Poges, and Christopher Earle Newall, Acton, all of England, assignors to Glaxo Laboratories Limited, Greenford, England

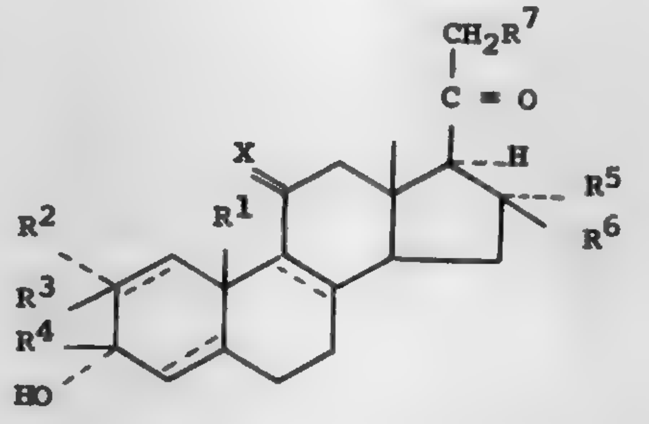
Continuation of Ser. No. 356,115, May 1, 1973, abandoned. This application Sept. 23, 1974, Ser. No. 508,650

Claims priority, application United Kingdom, May 5, 1972, 21214/72

Int. Cl.² C07J *41/00*

U.S. Cl. 260—239.5 **28 Claims**

1. A steroid compound of the formula



or a pharmaceutically acceptable salt thereof wherein R^1 is —H or —CH_3;

R^2 is H, C_1–C_6 alkyl or a halogen atom;

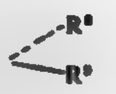
R^3 is H, acyloxy or acylthio of 1–9 C atoms, an ether or thioeter group of 1–9 C atoms, an alkyl or cycloalkyl group of up to 9 C atoms, phenyl, benzyl, hydroxy, thiocyanato, nitrooxy, a halogen atom, azido, amino, monoalkylamino, dialkylamino or morpholino;

R^4 is H or C_1–C_6 alkyl;

R^5 and R^6 are each H, C_1–C_6 alkyl, C_1–C_6 alkoxy or a halogen atom, only one of R^5 and R^6 being a halogen atom;

R^7 is cyano, azido or substituted or unsubstituted morpholino, thiamorpholino, pyrrolino, pyrrolidino, piperidino or thiazolidino; and

X is oxo, an epoxy group linked also to the 9-position or a grouping



wherein R^8 is H, hydroxy or alkyl or alkenyl of up to 6 C atoms and R^9 is H or hydroxy, only one of R^8 and R^9 being hydroxy, the lines — — — indicating the presence of a single or double bond at the Δ^1, Δ^4 and $\Delta^{9(11)}$ positions.

3,983,112

17β-ETHYNYL-3,17α-ESTRADIOL AND DERIVATIVES THEREOF

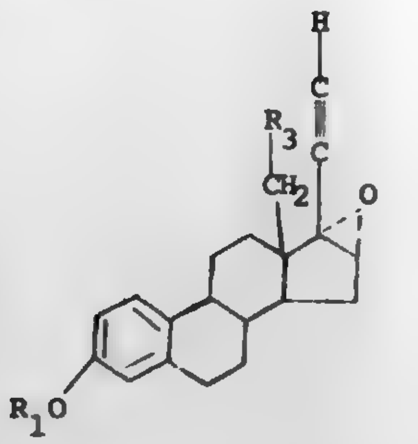
Ramesh Maganlal Kanojia, Somerville, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Sept. 4, 1973, Ser. No. 393,873

Int. Cl.² C07J *1/00*

U.S. Cl. 260—239.55 R **7 Claims**

1. A compound of the formula:



wherein R_1 is hydrogen, lower alkyl, cycloalkyl or lower acyl having 2–6 carbon atoms; R_3 is hydrogen.

3,983,113

CEPHALOSPORIN TYPE ANTIBACTERIALS

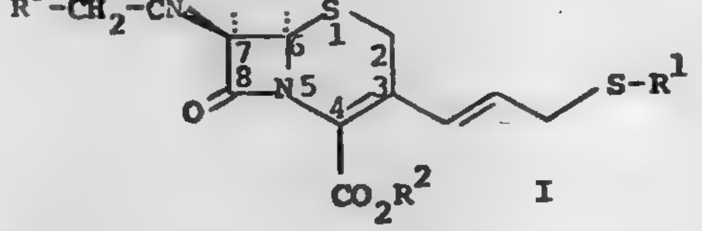
Philip J. Beeby, Mountain View, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 605,109, Aug. 15, 1975. This application Oct. 14, 1975, Ser. No. 621,717

Int. Cl.² C07D *501/14*

U.S. Cl. 260—240 R **52 Claims**

1. A compound selected from the group having the formula:



I

wherein

the propenyl double bond is trans;

R^1 is 1-methyltetrazol-5-yl; or 1,2,4-triazol-5-yl;

R^2 is hydrogen, diphenylmethyl, p-methoxybenzyl, p-nitrobenzyl, o-nitrobenzyl, benzyl, t-butyl, 2,2,2-trichloroethyl, phenacyl or pivaloyloxymethyl;

R^3 is thiophen-2-yl; trifluormethylthio, phenoxy, phenylthio, (1H)-tetrazol-1-yl or sydnon-3-yl;

and pharmaceutically acceptable salts thereof.

3,983,114

METHOD OF PREPARATION OF 6-AZA URACILE AND ITS O-DISILYL DERIVATIVE

Yani Christidis, Paris, and Jean-Claude Vallejos, La Ciotat, both of France, assignors to Nobel Hoechst Chimie, Puteaux, France

Filed Oct. 24, 1975, Ser. No. 625,839

Claims priority, application France, Nov. 5, 1974, 74.36754

Int. Cl.² C07D *253/06*

U.S. Cl. 260—248 AS **9 Claims**

1. A method of preparation of 6-aza uracile, comprising the steps of:

a. Cyclization of semi-carbazone of glyoxylic acid by heating this latter with an excess of a trialkyl-silylation agent taken as a solvent and isolating the resulting product, namely the O-disilylated derivative of 6-aza uracile (or di-3,5 (trialkylsiloxy)1,2,4 triazine) and

b. subjection of the product resulting from step a) to an acid hydrolysis.

3,983,115

BIS-DIHALOGENO-S-TRIAZINYL UREAS

Karl Seitz, Oberwil; Rainer Begrich, Basel; Henri Rist, Arlesheim, and Fritz Oesterlein, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

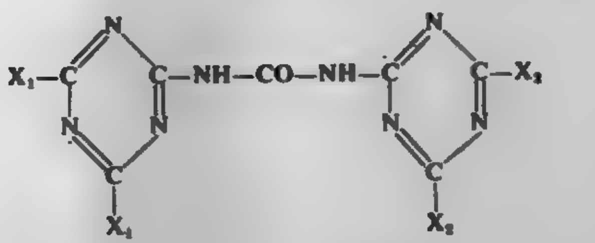
Filed Dec. 24, 1974, Ser. No. 536,131

Claims priority, application Switzerland, Jan. 9, 1974, 239/74

Int. Cl.² C07D *251/44*

U.S. Cl. 260—249.5 **5 Claims**

1. Bis-dihalogeno-s-triazinyl-urea of the formula



(1)

wherein each of X_1 and X_2 is halogen.

3,983,116

HERBICIDAL TRIAZINES

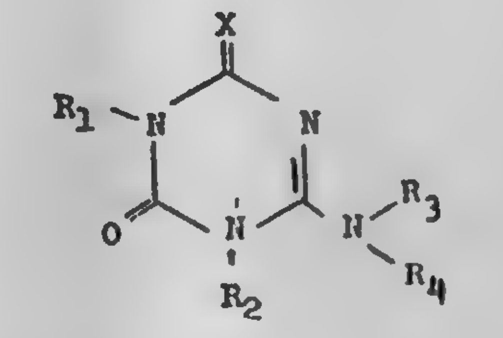
Kang Lin, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 348,321, April 5, 1973, abandoned, which is a continuation-in-part of Ser. No. 256,249, May 24, 1972, abandoned. This application June 5, 1974, Ser. No. 476,553

Int. Cl.² C07D *251/46*

U.S. Cl. 260—249.5 **11 Claims**

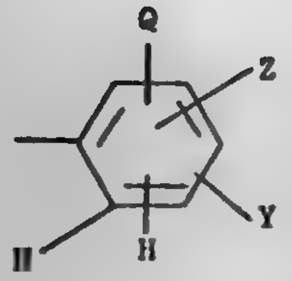
1. A compound of the formula:



wherein

R_1 is selected from alkyl of 2 through 8 carbon atoms, alkenyl of 3 through 6 carbon atoms, alkynyl of 3 through through 6 carbon atoms, cycloalkyl of 4 through 8 carbon atoms, cycloalkenyl of 5 through 8 carbon atoms, cycloalkylmethyl of 4 through 9 carbon atoms, cycloalkenylmethyl of 6 through 9 carbon atoms, bicycloalkyl or bicycloalkenyl of 7 through 10 carbon atoms and bicycloalkylmethyl or bicycloalkenylmethyl of 8 through 11 carbon atoms, trimethylcyclohexyl and tetramethylcyclohexyl; the above alkyl groups substituted with one methoxy, ethoxy, methylthio or ethylthio group; the above cycloalkyl groups substituted with one alkyl of 2 through 4 carbon atoms, 1 through 2 methyl groups, 1 through 2 chlorines or bromines, one methoxy or one ethoxy group;

and



wherein

- Q is hydrogen, fluorine, chlorine, bromine, alkyl of 1 through 4 carbon atoms, alkoxy or alkylthio of 1 through 2 carbon atoms, nitro or a trifluoromethyl group;
- Y is hydrogen, chlorine, or methyl; and
- Z is hydrogen or chlorine;
- R_2 is hydrogen, alkyl of 1 through 3 carbon atoms or a cation selected from Na^+, Li^+, K^+, $(Ca/2)^+$, ammonium and dimethylammonium;
- R_3 is hydrogen, methyl or ethyl;
- R_4 is alkyl of 1 through 4 carbon atoms, alkenyl of 3 through 4 carbon atoms, alkynyl of 3 through 4 carbon atoms, or methoxy; and
- X is oxygen or sulfur;

provided that when X is sulfur, neither R_2 nor R_3 is hydrogen.

3,983,117

6-TRIAZINYLAMINOBENZOFURANS

Horst Scheuermann, Ludwigshafen, and Wolfgang Mach, Heckenheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

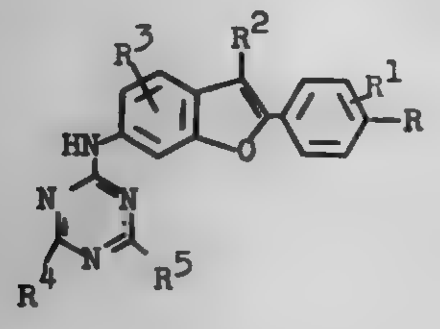
Filed June 24, 1974, Ser. No. 482,252

Claims priority, application Germany, June 27, 1973, 2332597

Int. Cl.^{2} C07D *251/52*

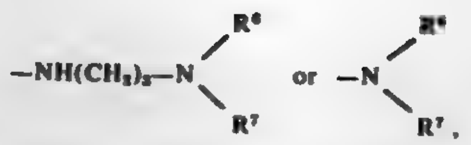
U.S. Cl. 260—249.8 5 Claims

1. A 6-N-triazinylamino-benzofuran of the formula



wherein:

- R, R^1 and R^2 are independently of one another hydrogen, chlorine, bromine, cyano, carboxyl, hydroxysulfonyl, phenylsulfony, methyl, ethyl, methoxy, ethoxy, alkoxycarbonyl or alkoxyethoxycarbonyl of 1 to 4 carbon atoms in the alkoxy, methylsulfonyl, ethylsulfonyl, alkoxysulfonyl of 1 to 4 carbon atoms in the alkoxy, carbamoyl or sulfamoyl substituted on nitrogen once or twice by alkyl of 1 to 4 carbon atoms, hydroxyalkyl of 2 or 3 carbon atoms, cyclohexyl, benzyl, phenylethyl or phenyl; carbo-pyrrolidide, carbo-piperidide, carbo-piperazide, carbo-N-methyl-piperazide, carbo-N-β-hydroxyethylpiperazide, sulfo-pyrrolidide, sulfopiperidide, sulfo-piperazide, sulfo-N-methyl-piperazide or sulfo-N-β-hydroxyethylpiperazide;
- R^3 is hydrogen, methyl, ethyl or phenyl;
- R^4 and R^5 are independently of one another hydrogen, alkyl of 1 to 4 carbon atoms, cyclohexyl, benzyl, phenylethyl, phenylpropyl, phenyl, chlorine, bromine, hydroxy, alkoxy of 1 to 8 carbon atoms, phenoxy, methylmercapto, ethylmercapto, phenylmercapto,



$$-NH(CH_2)_2-N\begin{matrix}R^6\\ \\R^7\end{matrix} \quad \text{or} \quad -N\begin{matrix}R^6\\ \\R^7\end{matrix},$$

- R^6 and R^7 are independently of one another hydrogen, alkyl of 1 to 8 carbon atoms, hydroxyalkyl of 2 to 8 carbon atoms, alkoxyalkyl of 1 to 4 carbon atoms in the alkoxy and 2 or 3 carbon atoms in the alkyl, aminoethyl, aminohexyl, cyclohexyl, norbornyl, benzyl, phenylethyl, phenylpropyl or phenyl and
- R^6 and R^7 together with the nitrogen are pyrrolidino, piperidino, piperazino, N-methyl-piperazino or N-β-hydroxyethylpiperazino.

3,983,118

PRODUCTION OF N^5-METHYLTETRAHYDROHOMOFOLIC ACID AND RELATED REDUCED DERIVATIVES OF HOMOFOLIC ACID

Roger L. Knott; Alison Taunton-Rigby, both of Waltham, Mass., and John A. R. Mead, Bethesda, Md., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Continuation-in-part of Ser. No. 263,559, June 16, 1976, Pat. No. 3,870,719. This application Aug. 16, 1974, Ser. No. 498,187

Int. Cl.^{2} C07D *475/04*

U.S. Cl. 260—251.5 1 Claim

1. In the preparation of N^5-methyltetrahydrohomofolic acid from homofolic acid, the steps consisting of reducing homofolic acid to tetrahydrohomofolic acid in the dark with a slight overpressure of hydrogen in the presence of reduced platinum oxide, immediately reacting tetrahydrohomofolic acid with formaldehyde to product the intermediate 5,11-methylenetetrahydrohomofolic acid and reducing without isolation the formed 5,11-methylene intermediate with sodium borohydride to give the desired 5-methyltetrahydrohomofolic acid (5-MeTHHF) and removing by precipitation at a pH of about 3.8 with acetic acid the side products, refrigerating the product filtrate containing 5-MeTHHF overnight and separating and recovering 5-MeTHHF.

3,983,119

PROCESS FOR THE PREPARATION OF OPTIONALLY SUBSTITUTED 1,2,3,5-TETRAHYDROIMIDAZO[2,1-b]QUINAZOLIN-2-ONES

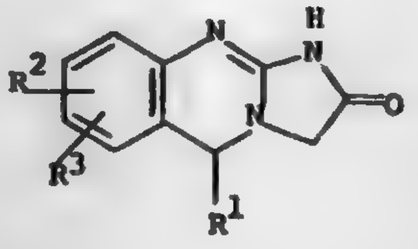
Warren Neil Beverung, Jr., Minoa; Richard Anthony Partyka, and Thomas Andrew Jenks, both of Liverpool, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Nov. 6, 1974, Ser. No. 521,304

Int. Cl.^{2} C07D *187/04*

U.S. Cl. 260—256.4 F 4 Claims

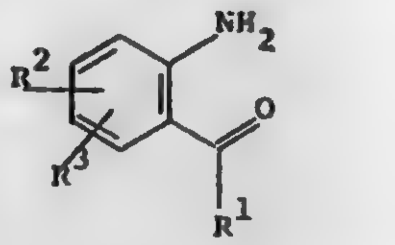
1. The process for the preparation of the compound having the formula



I

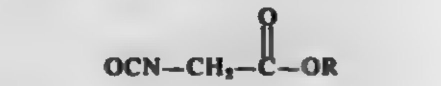
in which R^1 is (lower)alkyl, R^2 and R^3 are alike or different and each is hydrogen, chloro, bromo, fluoro, SO_3H, (lower)alkyl, hydroxy, nitro, amino, (lower)alkoxy or phenyl, or when taken together R^2 and R^3 are methylenedioxy or the moiety —CH=CH—CH=CH—; which process comprises the consecutive steps of

A. mixing a 2-aminoacetophenone having the formula



XI

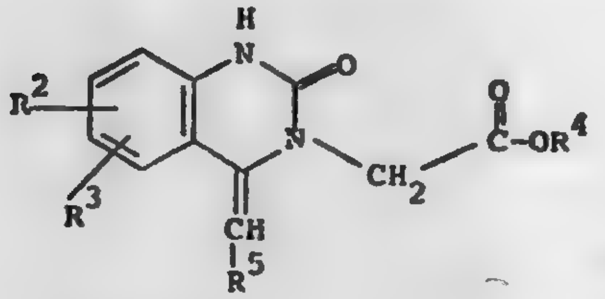
in which R^1, R^2 and R^3 are as described above, with a (lower)alkyl isocyanatoacetate having the formula



$$OCN-CH_2-\overset{\overset{\displaystyle O}{\|}}{C}-OR$$

XII

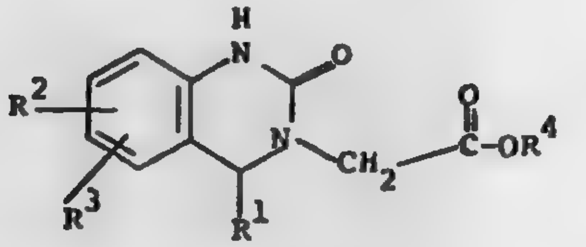
in which R^4 is (lower)alkyl of 1 to 6 carbon atoms, in a molar ratio of at least one mole of compound XII per mole of compound XI, with the aid of heat in the presence of a reaction inert organic solvent, to produce the compound having the formula



XIII

in which R^2, R^3 and R^4 are as above and R^5 is H or (lower)alkyl of 1 to 5 carbon atoms;

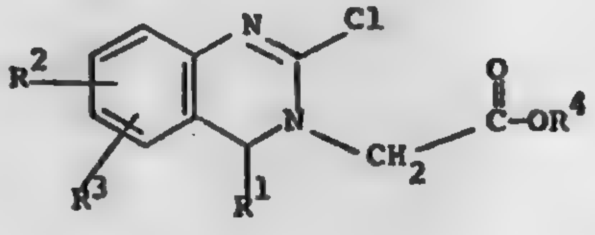
B. hydrogenating compound XIII with hydrogen in the presence of a metal catalyst selected from the group consisting of palladium, platinum, Raney nickel, rhodium, ruthenium, nickel and palladium on charcoal, in a (lower)alkanol or water-(lower)alkanol solvent system to produce the compound having the formula



XIV

in which R^1, R^2, R^3 and R^4 are as above;

C. halogenating compound XIV with a halogenating agent selected from the group consisting of phosphorous oxychloride, $POBr_3$, phosphorous pentachloride and thionyl chloride, in a ratio of at least one mole of halogenating agent per mole of compound XIV, in the presence of a reaction inert organic solvent if needed, to produce the compound having the formula



XV

in which R^1, R^2, R^3 and R^4 are as above; and

D. treating compound XV with a large excess of ammonia, with the aid of heat, to produce the compound of formula I.

3,983,120

PROCESS FOR THE PREPARATION OF OPTIONALLY SUBSTITUTED 1,2,3,5-TETRAHYDROIMIDAZO[2,1-b] QUINAZOLIN-2-ONES

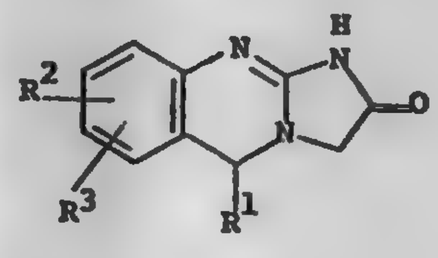
Warren Neil Beverung, Minoa, and Richard Anthony Partyka, Liverpool, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Nov. 6, 1974, Ser. No. 521,305

Int. Cl.^{2} C07D *487/04*

U.S. Cl. 260—256.4 F 4 Claims

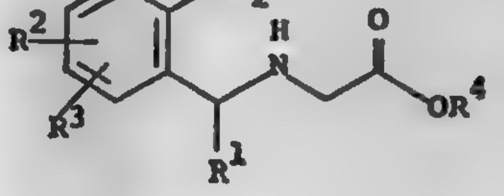
1. The process for the preparation of a compound having the formula



I

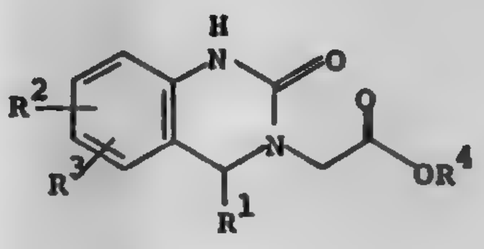
in which R^1 is H or (lower)alkyl, R^2 and R^3 are alike or different and are hydrogen, chloro, bromo, fluoro, (lower)alkyl, hydroxy, nitro, SO_3H, amino, (lower)alkoxy or phenyl, or when taken together R^2 and R^3 are methylenedioxy or the moiety —CH=CH—CH=CH— ; which process comprises the consecutive steps of

A. mixing a compound having the formula



II

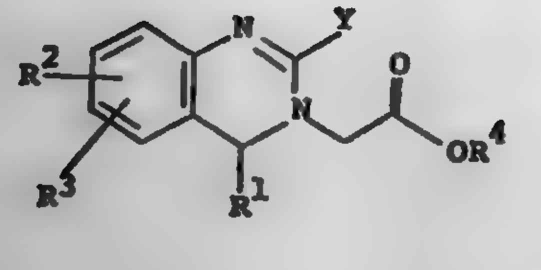
in which R^1, R^2 and R^3 are as described above and R^4 is (lower)alkyl of 1 to 6 carbon atoms, with a condensation agent selected from phosgene and 1,1′-carbonyl diimidazole, in a ratio of at least one mole of condensation agent per mole of compound II, in the presence of a reaction inert organic solvent, with the aid of heat, to produce the compound having the formula



III

in which R^1, R^2, R^3 and R^4 are as above,

B. treating compound III with at least one mole of $POCl_3$, $SOCl_2$, $POBr_3$ or tri(lower)alkoxonium tetrafluoroborate to produce the compound having the formula



IVa

in R^1, R^2, R^3 and R^4 are as above and Y is Cl, Br, or (lower)alkoxy; and

C. treating compound IV*a* with a large excess of ammonia dissolved in a (lower)alkanol selected from the group consisting of methanol, ethanol, n-propanol and isopropanol with the aid of heat, to produce compound I.

3,983,121
1-SUBSTITUTED 4-(β-2-QUINOLYLETHYL)PIPERAZINES AND 1,2,3,4-TETRAHYDROQUINOLYL-ETHYL ANALOGUES THEREOF

Varanasi Aruna Murthi; Padam Chand Jain; Jitendra Nath Sharma; Rikhab Chand Srimal; Bhola Nath Dhawan, and Nitya Anand, all of Lucknow, India, assignors to Council of Scientific and Industrial Research, New Delhi, India

Filed July 1, 1974, Ser. No. 484,527

Int. Cl.² C07D *295/04*

U.S. Cl. 260—268 BQ **28 Claims**

1. A compound which is a member of the group consisting of:

1-(m-tolyl)-4-(β-2-quinolylethyl)piperazine, 1-(m-tolyl)-4-(β-2-quinolylethyl)piperazine hydrochloride, 1-(m-tolyl)-4-[β-2-(1,2,3,4-tetrahydroquinolyl)ethyl]piperazine, 1-(m-tolyl)-4-[β-2-(1,2,3,4-tetrahydroquinolyl)-ethyl]piperazine hydrochloride, 1-(o-tolyl)-4-(β-2-quinolylethyl)piperazine, 1-(p-tolyl)-4-(β-2-quinolylethyl)piperazine, 1-phenyl-4-(β-2-quinolylethyl)piperazine, 1-(p-methoxyphenyl)-4-(β-2-quinolylethyl)piperazine, 1-(o-methoxyphenyl)-4-(β-2-quinolylethyl)piperazine, 1-(2,5-xylyl)-4-(β-2-quinolylethyl)piperazine, 1-(p-chlorophenyl)-4-(β-2-quinolylethyl)piperazine, 1-methyl-4-(β-2-quinolylethyl)piperazine, 1-(o-chlorophenyl)-4-(β-2-quinolylethyl)piperazine, 1-(m-chlorophenyl)-4-(β-2-quinolylethyl)piperazine, 1-(m-trifluoromethylphenyl)-4-(β-2-quinolylethyl)piperazine, 1-(3,4-dichlorophenyl)-4-(β-2-quinolylethyl)piperazine, 1-(2,4-xylyl)-4-(β-2-quinolylethyl)piperazine, 1-(3,4-xylyl)-4-(β-2-quinolylethyl)piperazine, 1-(β-phenethyl)-4-(β-2-quinolylethyl)piperazine, 1-(o-fluorophenyl)-4-(β-2-quinolylethyl)piperazine, 1-(m-fluorophenyl)-4-(β-2-quinolylethyl)piperazine, 1-(p-fluorophenyl)-4-(β-2-quinolylethyl)piperazine, 1-benzyl-4-(β-2-quinolylethyl)-piperazine, 1-(m-tolyl)-4-[β-2-(1,2,3,4-tetrahydroquinolylethyl)]piperazine, 1-(o-tolyl)-4-[β-2-(1,2,3,4-tetrahydroquinolylethyl)]piperazine, 1-(p-tolyl)-4-[β-2-(1,2,3,4-tetrahydroquinolylethyl)]piperazine and 1-(p-methoxyphenyl)-4-[β-2-(1,2,3,4-tetrahydroquinolylethyl)]piperazine.

3,983,122
PROCESS FOR THE PREPARATION OF QUINOLIZINONE DERIVATIVES

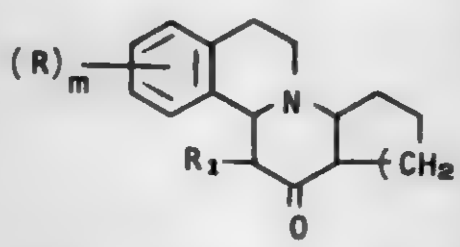
Charles Andrew Lundberg, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Continuation-in-part of Ser. No. 350,384, Dec. 23, 1974, abandoned. This application May 2, 1975, Ser. No. 574,100

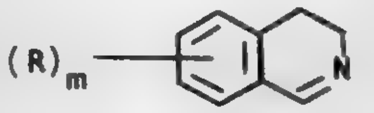
Int. Cl.² C07D *487/04*

U.S. Cl. 260—289 AZ **10 Claims**

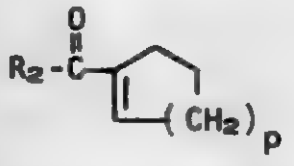
1. A process for the preparation of a compound of the formula



wherein R is selected from hydrogen, hydroxy, halogen, trifluoromethyl, a straight or branched lower alkyl group of from 1 to 6 carbon atoms, and a straight or branched lower alkoxy group of from 1 to 6 carbon atoms; R_1 is selected from hydrogen, a lower alkyl group of from 1 to 6 carbon atoms, phenyl, and benzyl; *m* is an integer of 1 or 2; *n* is an integer of from 1 to 3; and pharmaceutically acceptable salts, which comprises the steps of reacting a 3,4-dihydroisoquinoline of the formula



wherein R and *m* have the meanings described hereinabove, with a cycloalk-1-enyl ketone of the formula:



wherein R_2 is selected from a lower alkyl group of from 1 to 7 carbon atoms, benzyl or phenethyl; and *p* is an integer of from 1 to 3, in the presence of a solvent selected from a lower alcohol, dimethyl formamide, dimethylsulfoxide, an aromatic solvent, and a halogenated hydrocarbon solvent.

3,983,123
TRANS-OCTAHYDROPYRIDOINDOLOBENZAZEPINES

Charles De Witt Adams, Wilmington, Del., assignor to Endo Laboratories, Inc., Garden City, N.Y.

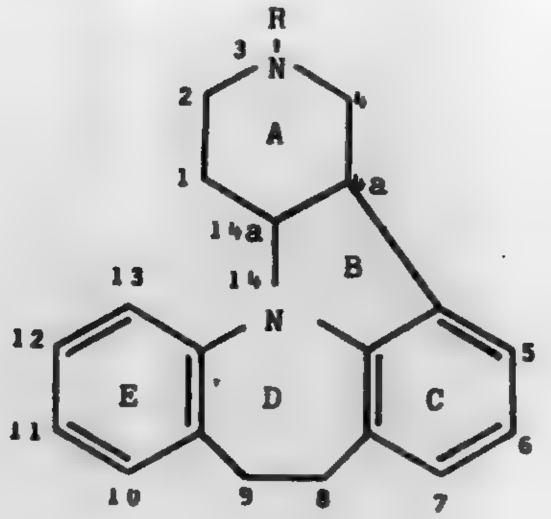
Division of Ser. No. 422,616, Dec. 6, 1973, Pat. No. 3,932,650, which is a continuation-in-part of Ser. No. 325,352, Jan. 22, 1973, abandoned. This application Aug. 7, 1975, Ser. No. 602,754

Int. Cl.² C07D *471/14*

U.S. Cl. 260—293.55 **7 Claims**

1. A compound selected from

A. free amines having the following formula



,

wherein

R is benzyl; benzyl ring-substituted with methyl, methoxy or chloro; phenethyl; 3-phenylpropyl; 3-phenylpropyl ring substituted with chloro, bromo or methoxy; furfuryl; 2-thenyl; C_1–C_8 alkyl; cyclopropyl; C_4–C_8 cycloalkylmethyl; (methylcyclopropyl)methyl; exo-7-norcarylmethyl; (4-methylbicyclo[2.2.2]oct-1-yl)methyl; (bicyclo[2.2.1]hept-2-yl)methyl; 1-adamantylmethyl or 2-adamantylmethyl; and the hydrogens in the 4a and 14a positions are in trans relationship to each other; and

B. addition salts of the free amines of A, above, with pharmaceutically acceptable acids.

3,983,124
FLUORENE COMPOUNDS

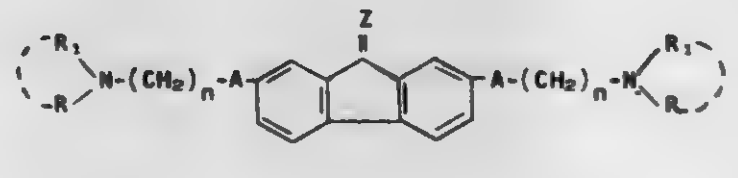
William L. Albrecht; Stephen W. Horgan; Arthur D. Sill, all of Cincinnati, Ohio, and Robert W. Fleming, Ann Arbor, Mich., assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Dec. 21, 1972, Ser. No. 317,238

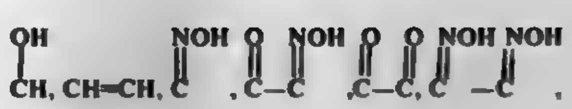
Int. Cl.² C07D *295/12*

U.S. Cl. 260—293.62 **7 Claims**

1. A 2,7-bis-basic fluorene having the formula:

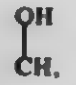


wherein A is selected from the group consisting of CH_2,



$$\overset{OH}{\overset{|}{C}H},\ CH{=}CH,\ \overset{NOH}{\overset{\|}{C}},\ \overset{O}{\overset{\|}{C}}-\overset{NOH}{\overset{\|}{C}},\ \overset{O}{\overset{\|}{C}}-\overset{O}{\overset{\|}{C}},\ \overset{NOH}{\overset{\|}{C}}-\overset{NOH}{\overset{\|}{C}},$$

and a sigma bond; *n* is an integer of from 1 to 4; R and R_1 are each selected from the group consisting of lower alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, alkenyl having from 3 to 6 carbon atoms in which the unsaturation is in a position other than the 1-position of the alkenyl group, and when R and R_1 are taken together with the nitrogen atom to which they are attached they represent the pyrrolidinyl, piperidino or the morpholino radical; Z is selected from the group consisting of H_2, O, and H(OH) with the proviso that when Z is H(OH), the symbol A can only represent CH_2,



$$\overset{OH}{\overset{|}{C}H},$$

CH=CH or a sigma bond; and the pharmaceutically acceptable acid addition salts thereof.

3,983,125
THIENO-PYRIDINE DERIVATIVES, PROCESS FOR THEIR PREPARATION AND THEIR APPLICATIONS

Armand Amselem, Toulouse, France, assignor to Parcor, Paris, France

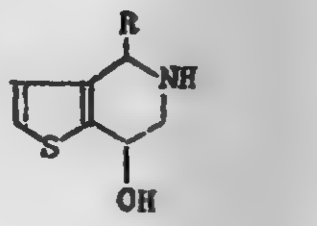
Filed July 3, 1975, Ser. No. 593,051

Claims priority, application France, July 16, 1974, 74.24631; June 5, 1975, 75.17552

Int. Cl.² C07D *213/28*

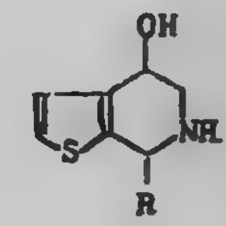
U.S. Cl. 260—294.8 C **10 Claims**

1. Compound selected from the compounds of the formula



(I)

and



(II)

in which R is selected from the group consisting of hydrogen and the alkyl groups having 1–6 carbon atoms, and their therapeutically administrable acid addition salts.

3,983,126
ARYLOXY PYRIDINE CARBOXYLIC-4-ACIDS

Claude Dufour, 4, Rond-Point Saint James, 92-Neuilly, France

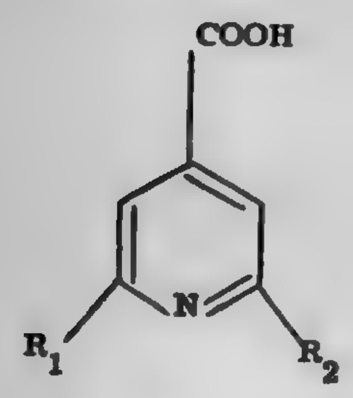
Division of Ser. No. 318,651, Dec. 26, 1972, Pat. No. 3,822,278, which is a continuation-in-part of Ser. No. 238,963, March 28, 1972, Pat. No. 3,822,277, which is a continuation of Ser. No. 807,395, March 14, 1969, abandoned. This application Apr. 23, 1974, Ser. No. 463,419

Claims priority, application France, Dec. 24, 1971, 71.44688

Int. Cl.² C07D *213/02*

U.S. Cl. 260—295 R 3 Claims

1. A compound of the formula:



wherein R_1 is a chloro, bromo, or fluoro and R_2 is an aryloxy group of 6 nuclear carbon atoms which may be substituted with at least one lower alkyl group or halogen group.

3,983,127
PYRROLO[3,4-b]PYRIDINES

Giorgio Tarzia, Rome, and Gianbattista Panzone, Cornaredo (Milan), both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

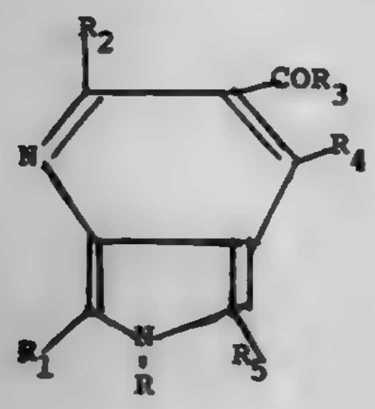
Filed Mar. 17, 1975, Ser. No. 559,092

Claims priority, application United Kingdom, Mar. 20, 1974, 12386/74

Int. Cl.² C07D *471/04*

U.S. Cl. 260—295.5 B 2 Claims

1. A compound of the formula



wherein

R represents hydrogen, (C_{1-4})alkyl, benzyl or chloro-substituted benzyl;

R_1 represents hydrogen, (C_{1-4})alkyl, phenyl or methyl-substituted phenyl;

R_2 and R_4 independently represent (C_{1-4})alkyl, phenyl or hydroxy;

R_3 represents (C_{1-4})alkyl or (C_{1-4})alkoxy;

R_5 represents (C_{1-4})alkyl; and a salt thereof with a pharmaceutically-acceptable acid.

3,983,128
ALCOHOL DERIVATIVES OF PYRAZOLO[3,4-b]PYRIDINES

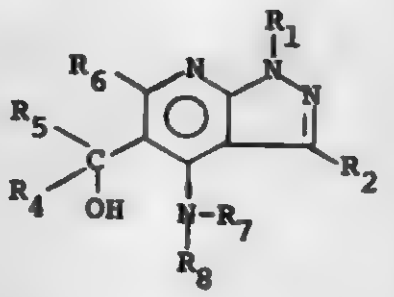
Hans Hoehn, Tegernheim, and Theodor Denzel, Nurnberg, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 423,960, Dec. 12, 1973, Pat. No. 3,928,368. This application Oct. 2, 1975, Ser. No. 618,871

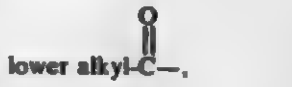
Int. Cl.² C07D *221/00*

U.S. Cl. 260—296 H 11 Claims

1. A compound of the formula:

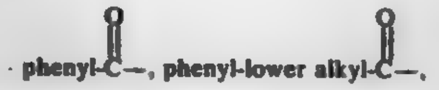


wherein R_1 is selected from the group consisting of hydrogen, lower alkyl, phenyl, phenyl-lower alkyl, and cycloalkyl of 3 to 7 carbon atoms; and R_2 is selected from the group consisting of hydrogen, lower alkyl, and phenyl; R_7 and R_8 are each independently selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, cycloalkyl of 3 to 7 carbon atoms,



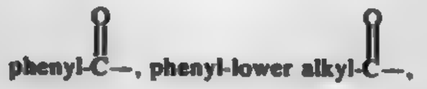
$$\text{lower alkyl-}\overset{O}{\overset{\|}{C}}\text{—},$$

phenyl, phenyl-lower alkyl



$$\text{phenyl-}\overset{O}{\overset{\|}{C}}\text{—, phenyl-lower alkyl-}\overset{O}{\overset{\|}{C}}\text{—},$$

di-lower alkylamino-lower alkyl, lower alkyl-sulfonyl, phenylsulfonyl, and mono and disubstituted phenyl, phenyl-lower alkyl,



$$\text{phenyl-}\overset{O}{\overset{\|}{C}}\text{—, phenyl-lower alkyl-}\overset{O}{\overset{\|}{C}}\text{—},$$

and phenyl-sulfonyl wherein said phenyl substituents are selected from the group consisting of halogen, lower alkyl, trifluoromethyl, amino and carboxy; and R_4 and R_5 are independently selected from the group consisting of hydrogen, lower alkyl, phenyl, mono and disubstituted phenyl wherein said phenyl substituents are as set forth above, phenyl-lower alkyl, and cycloalkyl of 3 to 7 carbon atoms; and R_6 is selected from the group consisting of hydrogen, lower alkyl, and phenyl; and their pharmaceutically acceptable salts.

3,983,129
CERTAIN ISOTHIAZOLOL ESTERS OF PHOSPHORUS ACIDS

Jacques Perronnet, Paris; Laurent Taliani, Les Pavillons-sous-Bois; Pierre Girault, Paris, and André Poittevin, Vaires-sur-Marne, all of France, assignors to Roussel-UCLAF, Paris, France

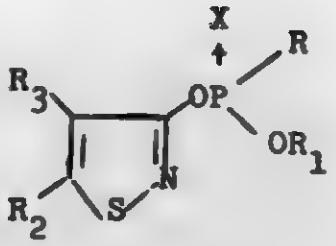
Continuation-in-part of Ser. No. 357,820, May 7, 1973, abandoned. This application Jan. 13, 1975, Ser. No. 540,381

Claims priority, application France, Oct. 11, 1974, 74.34267; May 17, 1972, 72.17578

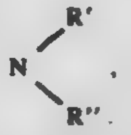
Int. Cl.² C07D *261/12*

U.S. Cl. 260—302 E 13 Claims

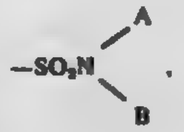
1. A compound of the formula



wherein R is selected from the group consisting of alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms and



R′ and R″ being individually selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, R_1 is alkyl of 1 to 3 carbon atoms, R_2 is selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms, aryl of 6 to 10 carbon atoms, aralkyl of 7 to 12 carbon atoms, cyano, carbalkoxy of 2 to 4 carbon atoms and NHR‴, R‴ is selected from the group consisting of hydrogen and aryl of 6 to 10 carbon atoms, R_3 is selected from the group consisting of cyano, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, carbamoyl, carbalkoxy of 2 to 4 carbon atoms and



A and B are individually selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms and X is selected from the group consisting of oxygen and sulfur.

3,983,130
ANTHELMINTIC ISOTHIOCYANOBENZOXAZOLES

Venkatachala Lakshmi Narayanan, Hightstown, and Rudiger D. Haugwitz, Titusville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

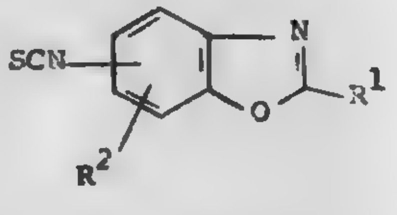
Continuation of Ser. No. 259,057, June 2, 1972, abandoned. This application July 8, 1974, Ser. No. 486,280

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976

Int. Cl.² C07D *263/56*

U.S. Cl. 260—307 D 10 Claims

1. A compound of the structure



wherein R^1 is furyl, thienyl, or furyl or thienyl substituted with alkyl, halogen, acetoxyalkyl, or dialkylaminoalkyl, and R^2 is selected from the group consisting of hydrogen, alkyl, halogen, and alkoxy; wherein the terms alkyl and alkoxy refer to groups having up to 7 carbon atoms; and a physiologically acceptable acid-addition salt thereof.

3,983,131
PROCESS FOR THE PRODUCTION OF 1,1′-PEROXYDICYCLOHEXYLAMINE

Jürgen Tröger, Grossauheim; Otto Weiberg, Neu-Isenburg, and Wolfgang Weigert, Offenbach (Main), all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

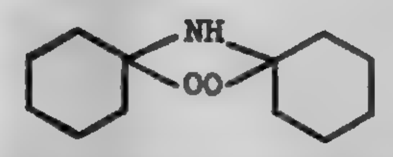
Filed Jan. 20, 1971, Ser. No. 108,195

Claims priority, application Germany, Jan. 26, 1970, 2003269; Jan. 31, 1970, 2004440

Int. Cl.² C07D *273/00*

U.S. Cl. 260—307 FB 5 Claims

1. In a process for the production of 1,1′-peroxydicyclohexylamine having the formula



by reacting cyclohexanone, hydrogen peroxide and ammonia, the improvement consisting essentially of carrying out the reaction in the absence of catalyst with a 1 to 20 weight % solution of hydrogen peroxide in cyclohexanone and ammonia as gaseous or liquid ammonia, the only water present during the reaction being that formed in the reaction at a temperature of 20° to 80°C.

3,983,132
BRANCHED CHAIN DODECYL ISOMERIC MIXTURES OF 2-(5-DODECYL-2-HYDROXY PHENYL) BENZOTRIAZOLE AS STABILIZERS FOR HEAT AND LIGHT SENSITIVE MATERIALS

Albert F. Strobel, Delmar, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed Aug. 23, 1974, Ser. No. 500,083

Int. Cl.² C07D *249/20*

U.S. Cl. 260—308 B 13 Claims

1. A normally liquid composition for stabilizing heat and light sensitive materials consisting essentially of a mixture of branched-chain dodecyl isomers of 2-(5′-dodecyl-2′-hydroxyphenyl) benzotriazole said mixture having a melting point below 0°C.

3,983,133
2-SUBSTITUTED IMIDAZOLINES

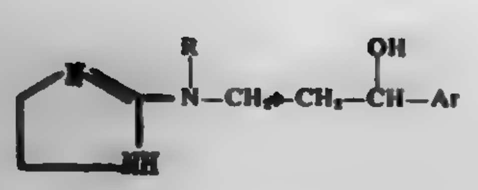
Josephus Ludovicus Hubertus Van Gelder; Alfons Herman Margaretha Raeymaekers, both of Beerse; Leopold Frans Corneel Roevens, Rijkevorsel, and Willy Joannes Van Laerhoven, Ravels, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 499,744, Aug. 13, 1974, Pat. No. 3,923,808, which is a division of Ser. No. 313,285, Dec. 8, 1972, Pat. No. 3,865,836. This application Apr. 16, 1975, Ser. No. 568,751

Int. Cl.² C07D *233/48*

U.S. Cl. 260—309.6 2 Claims

1. A chemical compound having the formula:



wherein:

R is a member selected from the group consisting of hydrogen and benzyl;

Ar is a member selected from the group consisting of phenyl, loweralkylphenyl, halophenyl and dihalophenyl.

3,983,134

UREYLENETHIOPHANES AND THEIR RELATED COMPOUNDS, AND PRODUCTION THEREOF

Masanao Matsui, Tokyo; Kenji Mori, Kawasaki; Takeshi Kitahara, Tokyo; Seiichi Kitamura, Ibaraki, and Kazumasa Ohba, Itami, all of Japan, assignors to Teikoku Chemical Industry Co., Ltd., Osaka, Japan

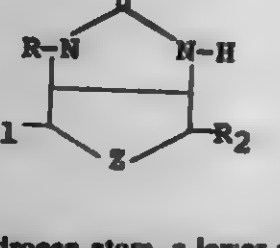
Filed Aug. 5, 1975, Ser. No. 602,178

Claims priority, application Japan, Aug. 5, 1974, 49-90112; Aug. 6, 1974, 49-90613; Aug. 8, 1974, 49-91685

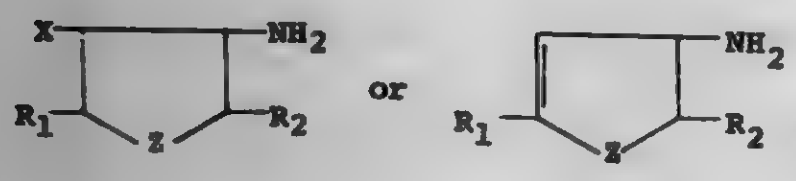
Int. Cl.² C07D *49/34*

U.S. Cl. 260—309.7 7 Claims

1. A process for preparing compounds of the formula



wherein R is a hydrogen atom, a lower alkyl group, a phenyl lower alkyl group or a naphthyl lower alkyl group, R_1 and R_2 are each a hydrogen atom or an aliphatic hydrocarbon group having not more than 10 carbon atoms or an aliphatic hydrocarbon group having not more than 10 carbon atoms bearing, at the terminal position, a carboxyl group or a lower alkoxycarbonyl group, a phenyl(lower)-alkoxycarbonyl group, a naphthyl(lower)alkoxycarbonyl group, a cyano group, a carboxyl group or a formyl group convertible to a carboxyl group, y is an oxygen atom or a sulfur atom and Z is an oxygen atom, a sulfur atom, a sulfinyl atom or a sulfonyl group, said compounds having a cis-configuration on the ureylene or thioureylene juncture, which process compises reacting a compound of the formula:



wherein X is a halogen atom, and R_1, R_2 and Z are each as defined above, with an isocyanate or isothiocyanate of the formula

R—NCY

wherein R and Y are each as defined above, or the ammonium, alkali metal or alkaline earth metal salt of isocyanic acid or isothiocyanic acid.

3,983,135

4-OXO-2-IMIDAZOLIDINYLIDENE UREAS

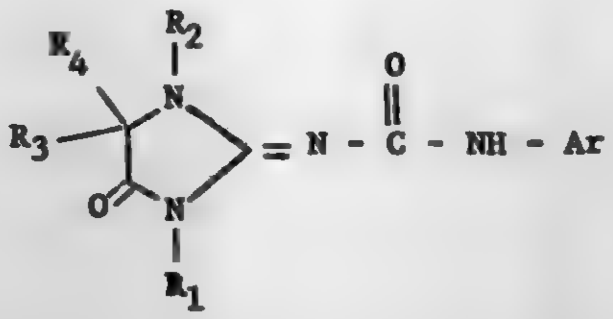
Chris Royce Rasmussen, Ambler, Pa., assignor to McNeil Laboratories, Incorporated, Fort Washington, Pa.

Continuation-in-part of Ser. No. 508,795, Sept. 23, 1974, abandoned, which is a continuation-in-part of Ser. No. 408,022, Oct. 19, 1973, abandoned. This application June 23, 1975, Ser. No. 589,494

Int. Cl.² C07D *233/32*

U.S. Cl. 260—309.7 17 Claims

1. A 4-oxo-2-imidazolidinylidene urea having the formula:



wherein

R_1 is a member selected from the group consisting of hydrogen and loweralkyl;

R_2 is a member selected from the group consisting of hydrogen and loweralkyl;

R_3 is a member selected from the group consisting of hydrogen, phenyl, nitrophenyl, trifluoromethylphenyl, diloweralkylaminophenyl, and phenyl substituted with from one to three members each selected from the group consisting of halo, loweralkyl, and loweralkoxy;

R_4 is a member selected from the group consisting of hydrogen, phenyl, nitrophenyl, trifluoromethylphenyl, diloweralkylaminophenyl, phenyl substituted with from one to three members each selected from the group consisting of halo, loweralkyl, and loweralkoxy, and phenylalkyl; and

Ar is a member selected from the group consisting of phenyl, nitrophenyl, trifluoromethylphenyl, diloweralkylaminophenyl, and phenyl substituted with from one to three members each selected from the group consisting of halo, loweralkyl, and loweralkoxy;

provided that said R_3 and said R_4 are other than 2,6-disubstituted phenyl.

3,983,136

INTERMEDIATES FOR PRODUCING PROSTAGLANDINS

George E. Just, Westmount, Canada, and Chaim Simonovitch, Rishon-Le-Zion, Israel, assignors to George E. Just, Westmount, Canada

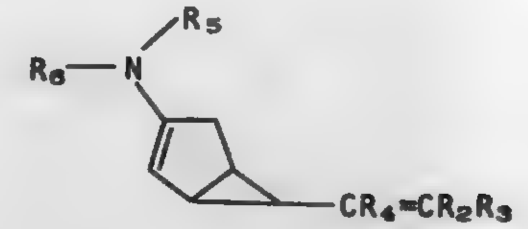
Division of Ser. No. 281,341, Aug. 17, 1972, Pat. No. 3,920,643, which is a continuation of Ser. No. 103,334, Dec. 31, 1970, abandoned, which is a continuation-in-part of Ser. No. 657,085, July 31, 1967, abandoned. This application July 21, 1975, Ser. No. 597,592

Claims priority, application United Kingdom, Aug. 9, 1966, 35550/66; Jan. 24, 1967, 3588/67

Int. Cl.² C07D *207/06*

U.S. Cl. 260—326.8 2 Claims

1. A compound of the formula



wherein R_2 is alkyl of 4 to 8 carbon atoms, inclusive, wherein R_3 and R_4 are hydrogen or methyl, and wherein R_5 and R_6 together with the nitrogen form pyrrolidino.

3,983,137

PROCESS FOR PREPARING 3-(INDOL-3-yl)-DEHYDRONAPHTHALIDE HYDROCHLORIDES

Yunn H. Chiang, Woburn, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 420,931, Dec. 3, 1973, Pat. No. 3,933,854. This application Sept. 4, 1975, Ser. No. 610,249

Int. Cl.² C07D *209/18*, *209/20*

U.S. Cl. 260—326.12 R 12 Claims

1. A process which comprises reacting 1.0 mole of a 3-(indol-3-yl)naphthalide and 1.5 to 2.5 mole of o-chloranil in a hydrocarbon solvent at a temperature between 100° and 200°C. in the presence of glacial acetic acid to yield the corresponding 3-(indol-3-yl)dehydronaphthalide hydrochloride, said acid and solvent being used in a ratio of between about 1:12 and 1:50 gram/mls.

6. a process as defined in claim 1 which includes the additional step of reacting 1.0 mole of said 3-(indol-3-yl)dehydronaphthalide hydrochloride and 1.0 to 1.5 moles of an indole at a temperature between 80° and 150°C. in a hydrocarbon solvent in the presence of glacial acetic acid, said acid and solvent being used in a ratio of between about 4:75 and 6:75 grams/mls.

3,983,138

AMINO ACID ESTERS

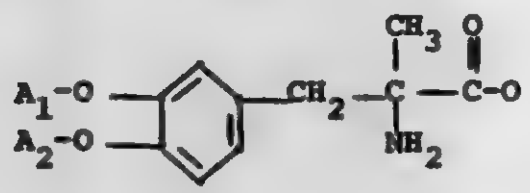
Walfred S. Saari, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

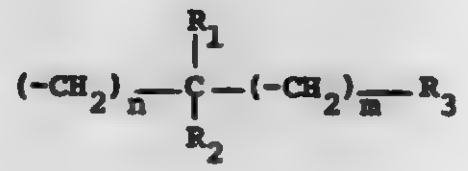
Continuation-in-part of Ser. No. 400,609, Sept. 25, 1973, abandoned. This application June 25, 1974, Ser. No. 482,102

Int. Cl.² C07D *207/40*

U.S. Cl. 260—326.43 17 Claims

1. A compound of the formula:





$$(-CH_2)_n - \underset{R_2}{\overset{R_1}{\underset{|}{\overset{|}{C}}}} - (-CH_2)_m - R_3$$

wherein

n is 0, 1, 2 or 3;

m is 0, 1, 2 or 3;

A_1 and A_2 are individually H or a lower alkanoyl group

R_1 and R_2 are individually H or alkyl of 1 to 3 carbon atoms and;

R_3 is succinimido; or a pharmaceutically acceptable acid addition salt thereof.

3,983,139

3-(HYDROXYHYDROCARBYLSECONDARYAMINO)THIOPHENE 1,1-DIOXIDES AND POLYURETHANES CHAIN EXTENDED THEREWITH

Chung-Ling Mao, Sandy Hook, Conn., assignor to Uniroyal Inc., New York, N.Y.

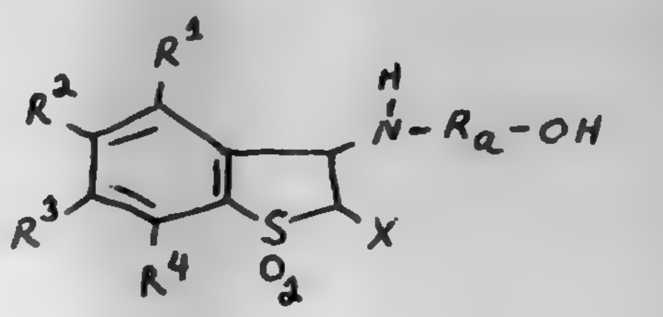
Division of Ser. No. 434,470, Jan. 18, 1974, Pat. No. 3,887,503. This application Feb. 24, 1975, Ser. No. 552,498

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² C07D *333/66*

U.S. Cl. 260—330.5 7 Claims

1. A 3-(hydroxyhydrocarbylsecondary-amino)-2,3-dihydrobenzo(b) thiophene 1, 1-dioxide of the following formula



wherein

X may be hydrogen, an alkyl group having 1 to 5 carbon atoms or a halogen atom,

R_a may be (1) an open chain alkylene group having 2 to 10 carbon atoms (2) an open chain alkylene group having 2 to 10 carbon atoms substituted with one or more phenyl groups, or (3) a cycloalkylene group having 4 to 8 carbon atoms,

the hydroxyl group being attached to a carbon atom of R_a that is separated from the secondary amino nitrogen atom by at least one carbon atom, and

R^1, R^2, R^3 and R^4 are the same or different and are hydrogen, an alkyl group having 1 to 5 carbon atoms, or halogen.

3,983,140

PHYSIOLOGICALLY ACTIVE SUBSTANCES

Akira Endo; Masao Kuroda; Akira Terahara; Yoshio Tsujita, and Chihiro Tamura, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

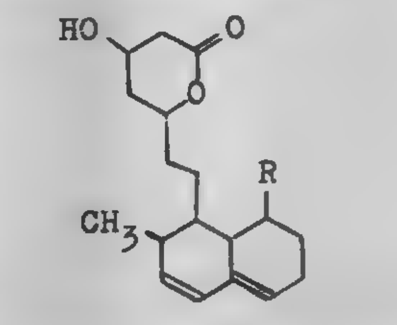
Filed May 12, 1975, Ser. No. 576,651

Claims priority, application Japan, June 7, 1974, 49-64823

Int. Cl.² C07D *309/30*

U.S. Cl. 260—343.5 4 Claims

1. A compound having the formula



wherein R is hydrogen atom, hydroxy group or 2-methylbutyryloxy group.

3,983,141

DERIVATIVES OF 5-HYDROXY-6-DILOWERALKYLAMINOMETHYL-BENZOFURANS

Alexei Nikolaevich Grinev, ulitsa Volgina, 15, korpus 2, kv. 57, Moscow; Alexandr Alexandrovich Stolyarchuk, ulitsa R. Ljuxemburg, 1, kv. 12, Vinnitsa; Pavel Alexandrovich Galenko-Yaroshevsky, ulitsa Kosmonavtov, 52, kv. 14, Vinnitsa; Vladimir Spiridonovich Tantajura, ulitsa Litvinenko, 2, kv. 5, Vinnitsa, and Natalya Vitalievna Arkhangelskaya, Krasnoprudnaya ulitsa, 26, kv. 36, Moscow, all of U.S.S.R.

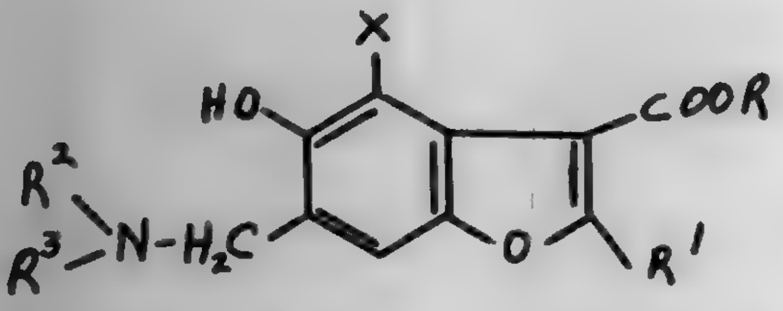
Filed May 13, 1974, Ser. No. 469,528

Claims priority, application U.S.S.R., May 18, 1973, 1924401

Int. Cl.^{2} C07D *307/84*

U.S. Cl. 260—346.2 R 4 Claims

1. A compound of the formula:



wherein R is lower alkyl, R′ is selected from the group consisting of lower alkyl and phenyl, R^2 is lower alkyl, R^3 is lower alkyl, and X is halogen, and pharmaceutically acceptable salts thereof.

3,983,142

PEROXY COMPOUNDS AND PROCESSES FOR THEIR PREPARATION

Edwin George Edward Hawkins, Lower Kingswood, England, assignor to BP Chemicals International Limited, Great Britain

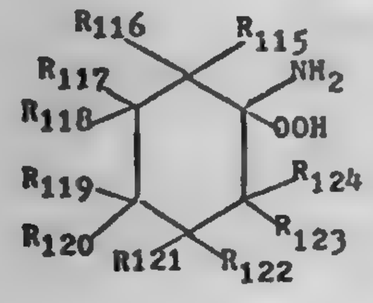
Division of Ser. No. 651,969, July 10, 1967. This application Dec. 13, 1974, Ser. No. 532,587

Claims priority, application United Kingdom, July 13, 1966, 31380/66; Mar. 2, 1967, 9963/67; Mar. 2, 1967, 9973/67; May 20, 1967, 23546/67; May 20, 1967, 23547/67

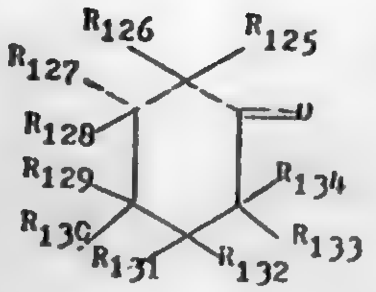
Int. Cl.^{2} C07D *303/04*; C07C *179/08*

U.S. Cl. 260—348 C 10 Claims

1. A process for the production of a compound of the formula



wherein at least one of R_{117} to R_{122} is the same substituent selected from the group consisting of methyl, ethyl and propyl and the rest are each hydrogen; and R_{115}, R_{116}, R_{123} and R_{124} are each hydrogen; which comprises reacting a compound of the formula



wherein at least one of R_{127} to R_{132} is the same substituent selected from the group consisting of methyl, ethyl and propyl and the rest are each hydrogen; and R_{125}, R_{126}, R_{133} and R_{134} are each hydrogen; with hydrogen peroxide and ammonia.

3,983,143

EPOXIDATION OF OLEFINS WITH LESS STABLE ORGANIC HYDROPEROXIDES BY USING AN ALCOHOL STABILIZING AGENT

Ming N. Sheng, Cherry Hill, N.J.; John G. Zajacek, Devon, Pa., and Thomas N. Baker, III, Sudbury, Mass., assignors to Atlantic Richfield Company, Los Angeles, Calif.

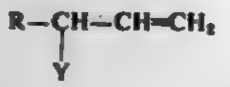
Division of Ser. No. 290,592, Sept. 20, 1972, Pat. No. 3,862,961, which is a continuation-in-part of Ser. No. 95,375, Dec. 4, 1970, abandoned. This application Nov. 6, 1974, Ser. No. 521,324

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.^{2} C07D *301/20*

U.S. Cl. 260—348.5 L 6 Claims

1. A method for the epoxidation of olefins characterized by having the formula



$$\underset{\displaystyle Y}{\overset{}{R-\underset{|}{C}H-CH=CH_2}}$$

wherein R is hydrogen or an alkyl group having from 1 to 17 carbon atoms and Y is hydrogen, employing as the oxidizing agent a less stable organic hydroperoxide selected from the group consisting of cyclohexyl hydroperoxide and amylene hydroperoxide which compirses contacting said olefin with said hydroperoxide in the presence of a molybdenum-containing catalyst and as a stablilizing compound cyclohexanol at a temperature ranging between 50°C. to 140°C. under a pressure of at least the autogenous pressure of the reaction at the temperature employed, and with the mole ratio of said stabilizing compound to said hydroperoxide being in the range of from about 1:1 to 3:1.

3,983,144

NOVEL 11β-ALKYL STEROIDS OF THE ESTRANE SERIES

Johannes Antonius Joseph Leemhuis, Oss, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Dec. 4, 1974, Ser. No. 529,666

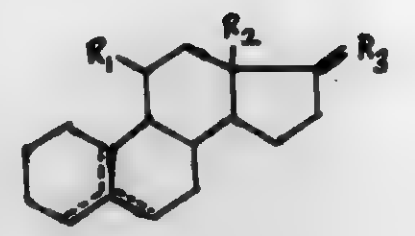
Claims priority, application Netherlands, Dec. 19, 1973, 7317358

Int. Cl.^{2} C07J *1/00*

U.S. Cl. 260—397.3 6 Claims

1. Novel steroids of the estrane series having the general formula I:

I



,

wherein

R_1 and R_2 = an alkyl group having 1–4 carbon atoms,

R_3 = O or (α P) (β Q), wherein

P = H or a saturated or an unsaturated alkyl group having 1–4 carbon atoms, and

Q = hydroxy, acyloxy derived from an organic carboxylic acid having 1–18 carbon atoms, or an ether group selected from the group consisting of saturated or unsaturated alkoxy having 1–4 carbon atoms, cycloalkoxy having 5 or 6 carbon atoms and tetrahydropyranyloxy and

a double bond is present departing from carbon atom 5.

3,983,145

USE OF ALPHA-DI(LOWER ALKOXY) ANTHRAQUINONES IN THE SYNTHESIS OF ALIZARIN SAPHIROLS

David L. White, and Joseph W. Fitzpatrick, both of Toms River, N.J., assignors to Toms River Chemical Corporation, Toms River, N.J.

Filed Nov. 1, 1973, Ser. No. 411,625

Int. Cl.^{2} C07C *143/665*

U.S. Cl. 260—373 6 Claims

1. A process for making 1,5-dihydroxy-4,8-diaminoanthraquinone-2,6-disulfonic acid, 1,8-dihydroxy-4,5-diaminoanthraquinone-2,7-disulfonic acid and mixtures thereof, comprising the steps of:

1. nitrating anthraquinone to give a mixture of dinitroanthraquinones which is about 50-60% 1,5-dinitroanthraquinone, about 30–40% 1,8-dinitroanthraquinone and up to about 20% 1,6- and 1,7-dinitrianthraquinone;
2. treating the mixture of dinitroanthraquinones with lower alkanolic caustic to convert the nitro groups to lower alkoxy groups and yield a mixture of diloweralkoxy anthraquinones which is predominantly 1,5- and 1,8-diloweralkoxyanthraquinone;
3. treating the mixture of diloweralkoxy anthraquinones with oleum to yield a mixture of dihydroxyanthraquinone-disulfonic acids which is predominantly 1,5-dihydroxyanthraquinone-2,6-disulfonic acid and 1,8-dihydroxyanthraquinone-2,7-disulfonic acid;
4. nitrating at least one of the dihydroxyanthraquinonedisulfonic acids to give a dihydroxy-dinitroanthraquinonedisulfonic acid; and
5. reducing the nitro groups of the dihydroxy-dinitroanthraquinone-disulfonic acid to give a dihydroxy-diaminoanthraquinonedisulfonic acid.

3,983,146

PROCESS FOR THE PRODUCTION OF α, α, α, α′, α′, α′, -HEXAKISARYL-1,3-AND-1,4-DIMETHYL BENZENES

Erhard Tresper; Dieter Freitag, both of Krefeld, and Dieter Neuray, Rumeln-Kaldenhausen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

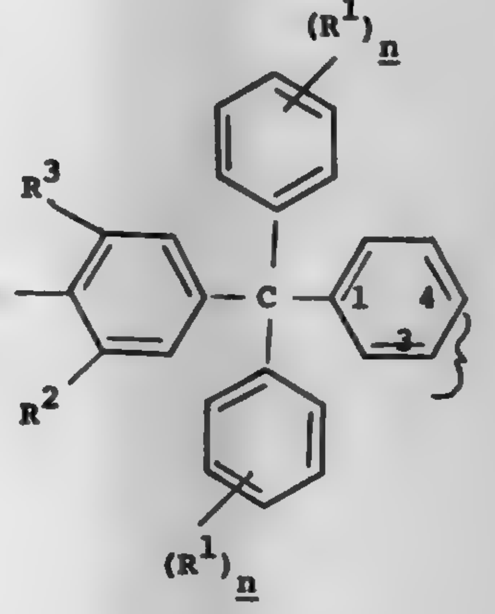
Filed May 21, 1975, Ser. No. 579,533

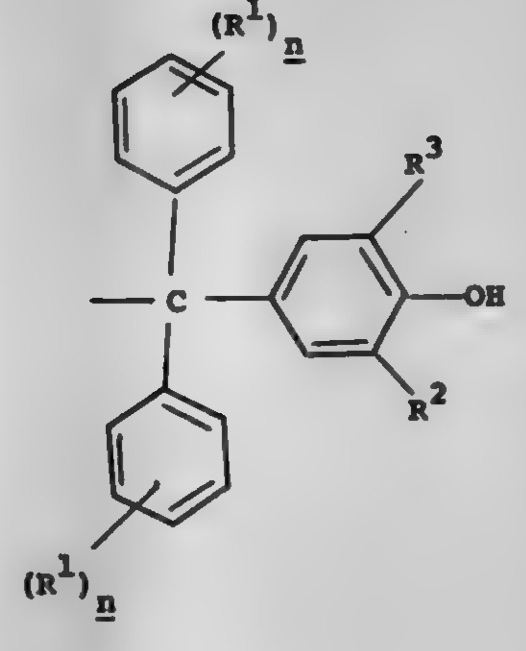
Claims priority, application Germany, May 24, 1974, 2425193

Int. Cl.^{2} C09B *11/06*

U.S. Cl. 260—395 4 Claims

1. A process for the production of α,α,α,α′,α′,α′-hexakisaryl-1,3- and -1,4-dimethyl benzenes corresponding to the formula





I

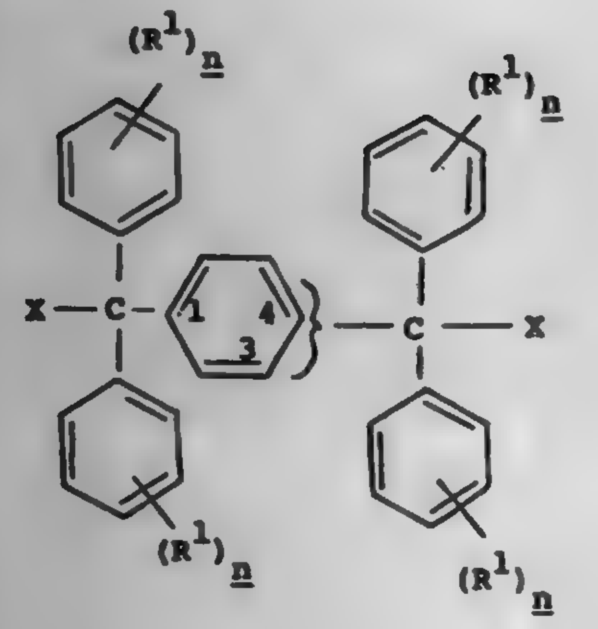
in which

R^1 represents C_1-C_4 alkyl, halogen or H,

n = 1, 2 or 3, and

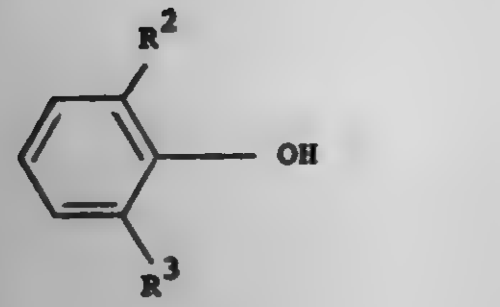
R^2 and R^3 independently of one another represent C_1-C_3 alkyl, halogen or H,

wherein α,α,α′,α′-tetrakisaryl-1,3- or 1,4-bis-(chloromethyl) or -bis-(hydroxymethyl)-benzenes corresponding to the formula



II

in which X represents chlorine or OH, while R^1 and *n* are defined as in formula I, are reacted with about 2 to 30 times the molar quantity of a phenol corresponding to the formula



III

in which R^2 and R^3 are defined as in formula I, at temperatures in the range from about 30°C to 300°C.

3,983,147
SEPARATION OF WOOL FATTY ACID

Hisakazu Sendo; Toshiaki Yamamoto; Hiroshi Ueno, and Kazuo Nakano, all of Kyoto, Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed May 31, 1974, Ser. No. 475,110

Claims priority, application Japan, June 12, 1973, 48-66542; Aug. 7, 1973, 48-88974; May 4, 1974, 49-50103

Int. Cl.² C11B *1/10;* C11B *3/06;* C11C *1/04;* C07J *4/00*

U.S. Cl. 260—412.8 8 Claims

1. In a method for separating wool fatty acid from wool alcohol by treating a saponified wool wax containing a soap of said wool fatty acid with a heterogeneous solvent system consisting essentially of an aqueous phase and a water-immiscible solvent for said wool alcohol to extract said wool alcohol into said water-immiscible solvent, phase separating the resultant admixture into a supernatant consisting essentially of wool alcohol dissolved in said water-immiscible solvent and said aqueous phase containing said soap of wool fatty acid and recovering respective phases therefrom, the improvement which comprises:

treating a saponified wool wax containing said wool alcohol and a binary metal soap of said wool fatty acid with said heterogeneous solvent system, said binary metal soap being formed with an alkali metal and a multivalent metal present in said saponified wool wax, the equivalent ratio of said multivalent metal being less than 0.9 relative to said alkali metal and greater than 0.5 relative to said wool wax.

8. A method for removing free wool fatty acid from crude wool wax containing at least 5% by weight of said wool fatty acid therein which comprises

a. neutralizing said free fatty acid present in said crude wax with an alkali metal hydroxide, carbonate or lower alkoxide and a multivalent metal hydroxide, oxide or water-soluble salt to produce a binary metal soap of said wool fatty acid, the amount of said multivalent compound being greater than 0.3 equivalent relative to said free wool fatty acid present in said crude wax but less than 0.9 equivalent relative to said alkali metal compound;

b. treating the resultant mixture with a heterogeneous solvent system consisting essentially of an aqueous phase and a water-immiscible solvent for pure wool wax to extract said pure wool wax into said water-immiscible solvent; and

c. separating the resultant aqueous phase containing said binary metal soap from the supernatant consisting essentially of purified wool wax dissolved in said water-immiscible solvent.

3,983,148
PROCESS FOR PRODUCING CYCLIC SILOXANES

James Dale Reedy, Williamstown, and Harold D. Furbee, Sistersville, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 29, 1975, Ser. No. 608,986

Int. Cl.² C07F *7/08*

U.S. Cl. 260—448.2 E 13 Claims

1. In a process for preparing cyclic siloxane compounds, said process consisting essentially of the hydrolysis and condensation of a hydrolyzable organosilicon compound, the improvement comprising increasing the yield of said cyclic siloxane compounds by hydrolyzing and condensing said organosilicon compound in the presence of a cationic surface active agent, said agent being essentially soluble only in the aqueous phase of said process, wherein the concentration of the cationic surface active agent in said aqueous phase is from about 0.01 to about 10 weight percent, wherein said cationic surface active agent is selected from the class consisting of a salt of a protonated amine, a quaternary ammonium salt, a salt of a protonated carboxylic acid, a salt of a protonated alcohol, a salt of a protonated nitrile, a salt of a protonated sulfoxide, a salt of a protonated mercaptan, a quaternary phosphonium salt, and a salt of a protonated phosphine, wherein the cation of each salt contains from 5 to 30 carbon atoms, and wherein the anion of each salt is selected from the group consisting of halide, sulfate, and phosphate anions.

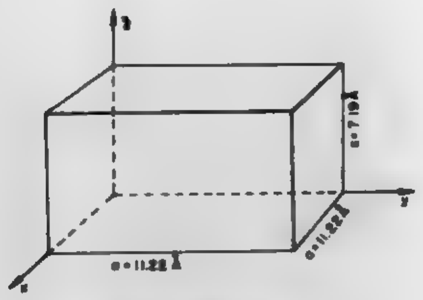
3,983,149
AMMUNITION PRIMING MIXTURES AND METHOD OF FORMING SAME

Joseph F. Kenney, Bridgeport, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Continuation-in-part of Ser. No. 489,704, July 18, 1974, abandoned. This application Apr. 29, 1975, Ser. No. 572,829

Int. Cl.² C07F *7/24;* C06B *41/02*

U.S. Cl. 260—435 A 6 Claims



TETRAGONAL UNIT CELL OF NEW FORM OF LEAD STYPHNATE

a = 11.22 Å
c = 7.19 Å
a/c = 1.56
V = a^2c = 905 (Å)^3 = 9.05 x 10^{-22} cm^3
5 Pb – Styphnate Molecules per cell

1. The method of making a new form of normal lead styphnate which consists of reacting styphnic acid free from the impurities usually present in commercial styphnic acid in the presence of water with a non-explosive compound of lead selected from the group of lead compounds consisting of lead oxide, basic lead carbonate, lead carbonate, and lead hydroxide to produce a workable, granular, wet mass of the new form of normal lead styphnate and no by products of the reaction except water or water and carbon dioxide, said new form of normal lead styphnate in the wet state being insensitive to heat, shock, friction, or electrostatic discharge.

3,983,150
METHOD OF MANUFACTURE OF N-ALKYLIMINOALANES

Bohuslav Casensky, Prague; Jiri Machacek, Rozreky, and Tomas Hanslik, Prague, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

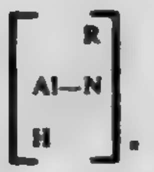
Filed Mar. 26, 1975, Ser. No. 562,359

Claims priority, application Czechoslovakia, Mar. 28, 1974, 2250-74

Int. Cl.² C07F *5/06*

U.S. Cl. 260—448 R 8 Claims

1. Method for the preparation of N-alkyliminoalanes of the general formula:



$$\left[\begin{array}{l} \quad\;\; R \\ Al-N \\ H \end{array}\right]_n .$$

wherein R is an alkyl group having from 2–6 carbon atoms and *n* is an integer from 4 to 8 which comprises reacting a primary amine of the general formula R—NH$_2$ wherein R is as denoted above, in an organic solvent, with aluminum and hydrogen at a temperature within the range of 70°–240°C at a pressure ranging from 20–500 atmospheres in the presence of an initiator.

3,983,151
PROCESS FOR THE PREPARATION OF 4-HYDROXY-3-METHOXY-PHENYLACETONITRILE

Horst Meyer, Wuppertal, Germany, assignor to Bayer Aktiengesellschaft, Germany

Filed Nov. 21, 1975, Ser. No. 634,126

Claims priority, application Germany, Dec. 3, 1974, 2457079

Int. Cl.² C07C *121/75*

U.S. Cl. 260—465 F 10 Claims

1. The process for the preparation of 3-methoxy-4-hydroxyphenylacetonitrile which comprises allowing an N-(lower alkyl)-3-methoxy-4-hydroxybenzylamine to react with hydrogen cyanide in a diluent at temperatures of from about 100°C to about 190°C.

3,983,152
9-OXO-11α-HYDROXYMETHYL-15ξ-HYDROXYPROST-13(TRANS)-ENOIC ACID DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Osamu Oda; Kiyoshi Sakai; Takashi Yusa, and Hamako Katano, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

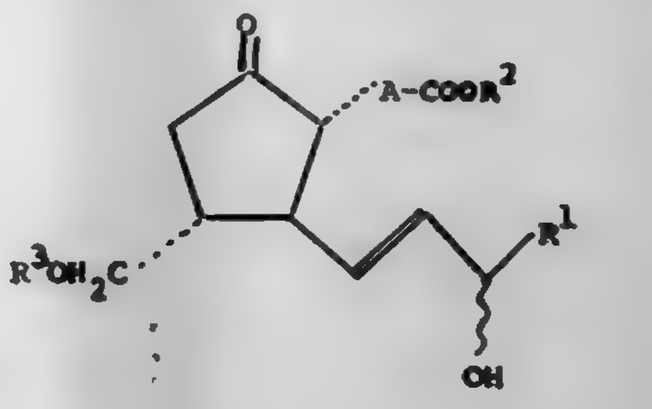
Filed Aug. 6, 1973, Ser. No. 385,868

Claims priority, application Japan, Sept. 1, 1972, 47-88172

Int. Cl.² C07C *177/00*

U.S. Cl. 260—468 D 6 Claims

1. Compounds having the formula



wherein A represents an alkylene group having from 4 to 8 carbon atoms, R^1 represents an alkyl group having from 4 to 10 carbon atoms, R^2 represents hydrogen atom or an alkyl group having from one to 6 carbon atoms and R^3 represents hydrogen atom or an alkoxycarbonyl group having from one to 6 carbon atoms in the alkyl moiety and pharmaceutically acceptable salts thereof.

3,983,153
RACEMIC FLUORO-SUBSTITUTED PGE$_2$ ANALOGS

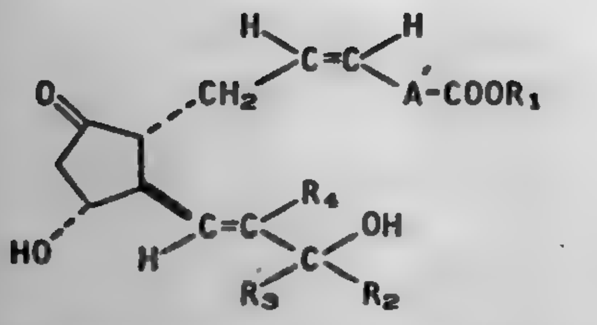
William P. Schneider, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 807,405, March 14, 1969, abandoned. This application Dec. 6, 1974, Ser. No. 530,430

Int. Cl.² C07C *177/00*

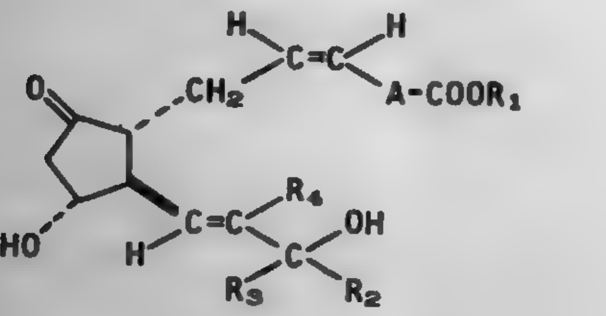
U.S. Cl. 260—468 D 17 Claims

1. A racemic compound of the combination of the formula:



wherein the side-chain hydroxy is in S configuration, and the mirror image of that formula; wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one to 3 chloro or alkyl of one to 4 carbon atoms, inclusive; wherein R_2 is $-(CH_2)_e-CH_3$ wherein e is 2, 3, 4, 5, or 6, or $-(CH_2)_d-X$ wherein d is zero, one, 2, 3, or 4 and X is isobutyl, tert-butyl, 3,3-difluorobutyl, 4,4-difluorobutyl, or 4,4,4-trifluorobutyl; wherein R_3 and R_4 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein A is $-CH_2-Z-$ wherein Z is ethylene substituted with one or 2 fluoro; and pharmacologically acceptable salts thereof when R_1 is hydrogen.

11. A racemic compound of the combination of the formula:



wherein the side-chain hydroxy is in S configuration, and the mirror image of that formula; wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one to 3 chloro or alkyl of one to 4 carbon atoms, inclusive; wherein R_2 is $-(CH_2)_d-X$ wherein d is zero, one, 2, 3, or 4 and X is 3,3-difluorobutyl, 4,4-difluorobutyl, or 4,4,4-trifluorobutyl; wherein R_3 and R_4 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein A is trimethylene or $-CH_2-Z-$ wherein Z is ethylene substituted with one or 2 fluoro, methyl, or ethyl; and pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,983,154
RACEMIC PROSTAGLANDINS OF THE 2-SERIES AND ANALOGS THEREOF

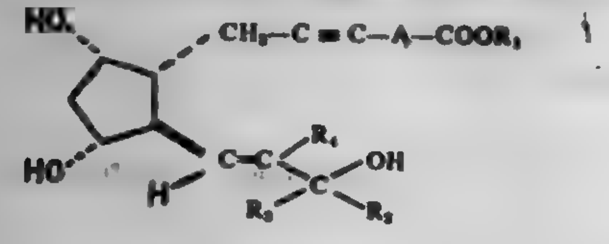
William P. Schneider, Kalamazoo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 807,405, March 14, 1969, abandoned. This application Dec. 6, 1974, Ser. No. 530,433

Int. Cl.^{2} C07C *177/00*

U.S. Cl. 260—468 D **12 Claims**

1. A racemic compound of the combination of the formula:



wherein the side-chain hydroxy is in S configuration, and the mirror image of that formula; wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one to 3 chloro or alkyl of one to 4 carbon atoms, inclusive; wherein R_2 is $-(CH_2)_e-CH_3$ wherein e is 2, 3, 4, 5, or 6, or $-(CH_2)_d-X$ wherein d is zero, one, 2, 3, or 4 and X is isobutyl, tert-butyl, 3,3-difluorobutyl, 4,4-difluorobutyl, or 4,4,4-trifluorobutyl; wherein R_3 and R_4 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein A is trimethylene or $-CH_2-Z-$ wherein Z is ethylene substituted with one or 2 fluoro, methyl, or ethyl; and pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,983,155
RACEMIC PROSTAGLANDINS OF THE 2-SERIES AND ANALOGS THEREOF

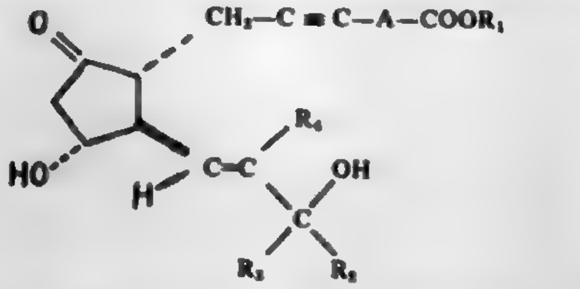
William P. Schneider, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 807,405, March 14, 1969, abandoned. This application Dec. 6, 1974, Ser. No. 530,432

Int. Cl.^{2} C07C *177/00*

U.S. Cl. 260—468 D **12 Claims**

1. A racemic compound of the combination of the formula:



wherein the side-chain hydroxy is in S configuration, and the mirror image of that formula; wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one to 3 chloro or alkyl of one to 4 carbon atoms, inclusive; wherein R_2 is $-(CH_2)_e-CH_3$ wherein a is 2, 3, 4, 5, or 6, or $-(CH_2)_d-X$ wherein d is zero, one, 2, 3, or 4 and X is isobutyl, tert-butyl, 3,3-difluorobutyl, 4,4-difluorobutyl, or 4,4,4-trifluorobutyl; wherein R_3 and R_4 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein A is trimethylene or $-CH_2-Z-$ wherein Z is ethylene substituted with one or 2 fluoro, methyl, or ethyl; and pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,983,156
SUBSTITUTED ω-NITROACETOPHENONES

Derek Richard Buckle, Redhill; Harry Smith, Maplehurst, near Horsham, and Barrie Christian Charles Cantello, Horsham, all of England, assignors to Beecham Group Limited, Middlesex, England

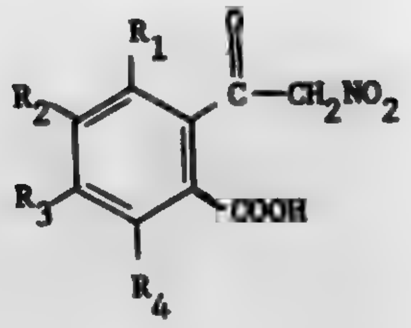
Filed Mar. 26, 1974, Ser. No. 454,922

Claims priority, application United Kingdom, Apr. 3, 1973, 15882/73

Int. Cl.^{2} C07C *79/46*

U.S. Cl. 260—471 R **7 Claims**

1. A compound of formula (I) or a pharmaceutically acceptable salt or ester thereof:



(I)

wherein R_1 and R_4 are hydrogen and R_2 and R_3 are methyl, ethyl, n-propyl or n-butyl groups.

3,983,157
4-OXA PHENYL-SUBSTITUTED PGF COMPOUNDS

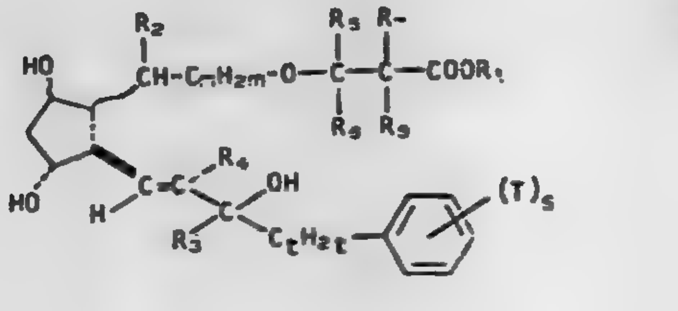
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 459,759, April 11, 1974, Pat. No. 3,931,289, which is a continuation of Ser. No. 185,448, Sept. 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 103,338, Dec. 31, 1970, abandoned. This application Oct. 23, 1975, Ser. No. 625,180

Int. Cl.^{2} C07C *69/76*

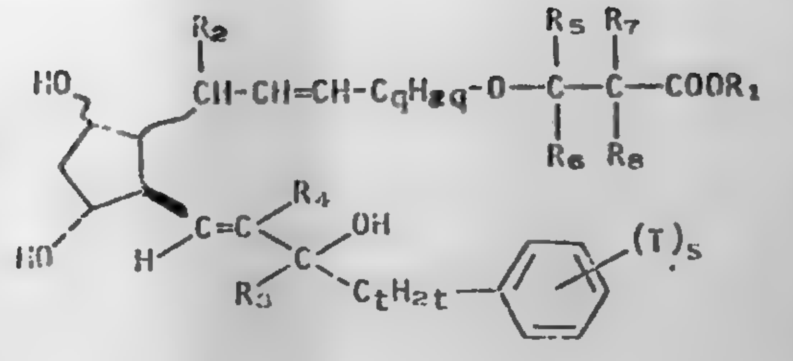
U.S. Cl. 260—473 A **32 Claims**

1. A compound of the formula:



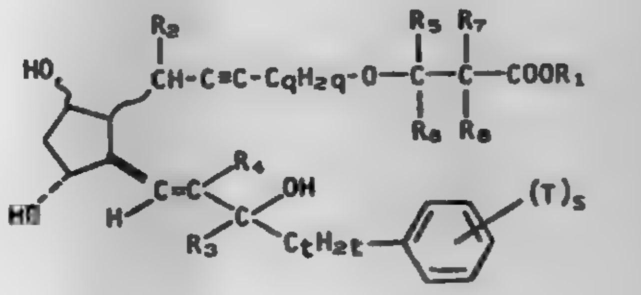
wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the 3-position with 3 -chloro, 2 or 3 bromo, or 1, 2, or 3 iodo; wherein R_2, R_3, R_4, R_5, R_6, R_7, and R_8 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein C_mH_{2m} is alkylene of one to 9 carbon atoms, inclusive, with one to 4 carbon atoms, inclusive, between $-CHR_2-$ and -O-; wherein C_tH_2t represents (1) a valence bond or (2) alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between $-CR_3OH-$ and the ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_9$, wherein R_9 is hydrogen, alkyl of one to 4 carbon atoms, inclusive or tetrahydropyranyl, and s is zero, one, 2, or 3, with the proviso that no more than two T are other than alkyl; and wherein ~ indicates attachment of the group to the ring in alpha or beta configuration; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

27. A compound of the formula:



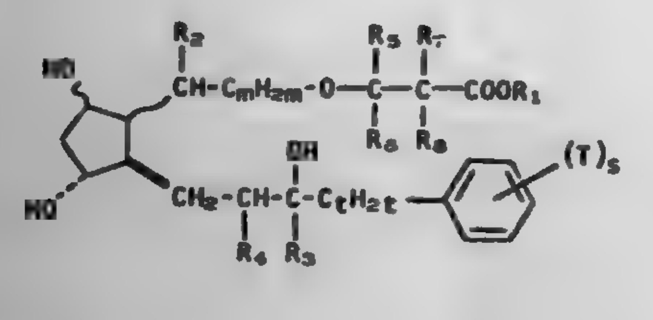
wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 tó 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive phenyl, phenyl substituted with one, 2, or 3chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3-chloro, 2 or 3 bromo, or 1, 2, or 3 iodo; wherein R_2, R_3, R_4, Rl_5, R_6, R_7, and R_8 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein C_qH_{2q} is alkylene of one to 7 carbon atoms, inclusive, with one or 2 carbon atoms between —CH=CH— and —O—; wherein C_tH_{2t} represents a valence bond or alkylene of one to 10 carbon atoms, inclusivve, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between $-CR_3OH-$ and the ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_9$, wherein R_9 is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or tetrahydropyranyl, and s is zero, one, 2, or 3, with the proviso that no more than two I are other than alkyl; and wherein ~ indicates attachment of the group to the ring in alpha or beta configuration; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

29. A compound of the formula:



wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl or one to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3 chloro, 2 or 3bromo, or 1, 2, or 3 iodo; wherein R_2, R_3, R_4, R_5, Rl_6, R_7, and R_8 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein C_qH_{2q} is alkylene of one to 7 carbon atoms, inclusive, with one or 2 carbon atoms between —C ≡ C— and —O—; wherein CtH_{2t} represents (1) a valence bond or (2) alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between $-CR_3OH-$ and the ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_9$, wherein R_9 is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or tetrahydropyranyl, and s is zero, one, 2, or 3, with the proviso that no more than two T are other than alkyl; and wherein ~ indicates attachment of the group to the ring in alpha or beta configuration; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

31. A compound of the formula:



wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of b 7 to 12carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3 chloro, 2 or 3 bromo, or 1, 2, or 3 iodo; wherein R_2, R_3, R_4, R_5, R_6, R_7, and R_8 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein C_mH_{2m} is alkylene of one to 9 carbon atoms, inclusive, with one to 4 carbon atoms, inclusive, between —CHR_2— and —O—; wherein $C_t\ H_{2t}$ represents (1) a valence bond or (2) alkylene of one to 10 carbon atoms, inclusive, substitued with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between —CR_3OH— and the ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_9, wherein R_9 is hydrogen, alkyl or one to 4 carbon atoms, inclusive, or tetrahydropyranyl, and s is zero, one, 2, or 3, with the proviso that no more than two T are other than alkyl; and wherein ~ indicates attachment of the group to the ring in alpha or beta configuration; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,983,158
3-OXA PHENYL-SUBSTITUTED PGA COMPOUNDS

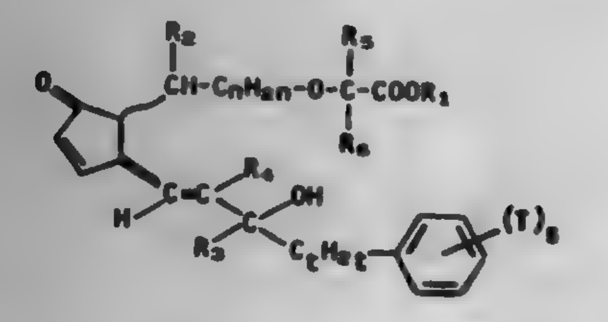
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 459,759, April 11, 1974, Pat. No. 3,931,289, which is a continuation of Ser. No. 185,448, Sept. 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 103,338, Dec. 31, 1970, abandoned. This application Oct. 23, 1975, Ser. No. 625,179

Int. Cl.² C07C *69/76*

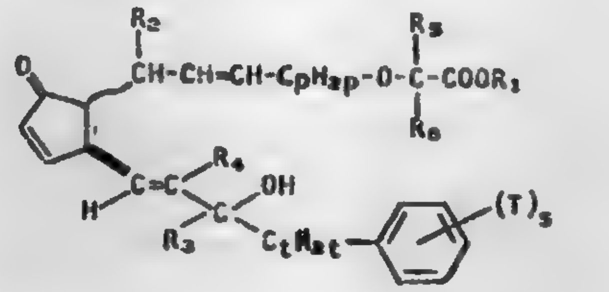
U.S. Cl. 260—473 A **28 Claims**

1. A compound of the formula:



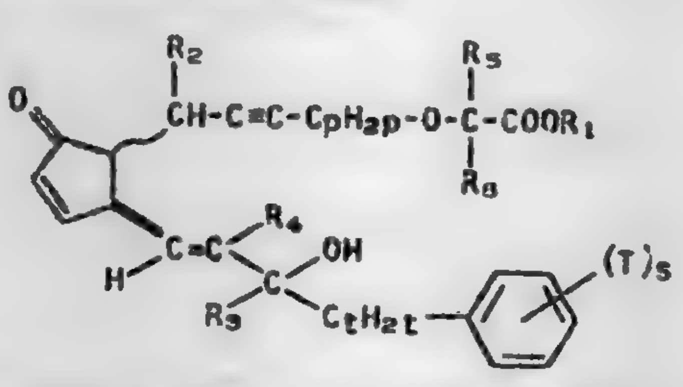
wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive aralkyl 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3 -chloro, 2 or 3 bromo, or 1, 2, or 3 iodo; wherein R_2, R_3, R_4, R_5, and R_6 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein C_nH_{2n} is alkylene of one to 10 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, between —CH-R_2— and —O—; wherein C_tH_{2t} represents (1) a valence bond or (2) alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one or 2 fluoro, with one to 7 carbon atoms, inclusive, between —CR_3OH— and the ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_9, wherein R_9 is hydrogen, alkyl of one to 4 carbon atoms, inclusive or tetrahydropyranyl, and *s* is zero, one, 2, or 3, with the proviso that no more than two T are other than alkyl; and wherein ~ indicates attachment of the group to the ring in alpha or beta configuration; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

23. A compound of the formula:



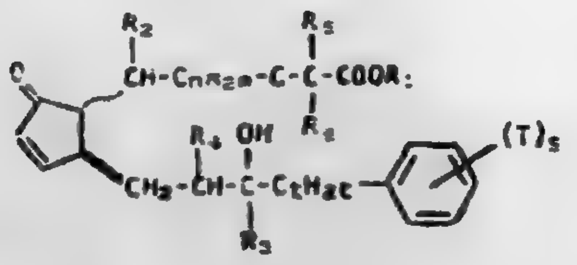
wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive phenyl, phenyl substituted with one, 2, or 3chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3-chloro, 2 or 3 bromo, or 1, 2, or 3 iodo; wherein R_2, R_3, R_4, R_5 and R_6 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein C_pH_{2p} is alkylene of one to 8 carbon atoms, inclusive, with 1 or 2 carbon atoms between —CH=CH— and —O—; wherein C_tH_{2t} represents (1) a valence bond or (2) alkylene of one to 10 carbon atoms, inclusivve, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between —CR $_3$OH— and the ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or -OR_9, wherein R_9 is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or tetrahydropyranyl, and *s* is zero, one, 2, or 3, with the proviso that no more than two T are other than alkyl; and wherein ~indicates attachment of the group to the ring in alpha or beta configuration; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

25. A compound of the formula:



wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with 1, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3 chloro, 2 or 3bromo, or 1, 2, or 3 iodo; wherein R_2, R_3, R_4, R_5, and R_6, are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein C_pH_{2p} is alkylene of one to 8 carbon atoms, inclusive, with 1, 2, or 3 carbon atoms between —C C— and —O—; wherein C_tH_{2t} represents (1) a valence bond or (2) alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between —CR_3OH— and the ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_9, wherein R_9 is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or tetrahydropyranyl, and *s* is zero, one, 2, or 3, with the proviso that no more than two T are other than alkyl; and wherein ~ indicates attachment of the group to the ring in alpha or beta configuration; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

27. A compound of the formula:



wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3 chloro, 2 or 3 bromo, or 1, 2, or 3 iodo; wherein R_2, R_3, R_4, R_5, and R_6 are hydrogen or alkyl of one to 4 carbon atoms, inclusive; wherein C_nH_{2n} is alkylene of one to 10 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, between —CH-R_2— and —O—; wherein C_tH_{2t} represents (1) a valence bond or (2) alkylene of one to 10 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 7 carbon atoms, inclusive, between —CR_3OH— and the ring; wherein T is alkyl of one to 2 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_9, wherein R_9 is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or tetrahydropyranyl, and *s* is zero, 1, 2, or 3, with the proviso that no more than two T are other than alkyl; and wherein ~ indicates attachment of the group to the ring in alpha or beta configuration; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,983,159
PROCESS FOR PRODUCING BIPHENYLPOLYCARBOXYLIC ACID ESTER

Yataro Ichikawa, Iwakuni, Japan, and Teizo Yamaji, Potsdam, N.Y., assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 56,966, July 21, 1970, Pat. No. 3,857,874. This application Aug. 16, 1974, Ser. No. 498,182

Int. Cl.² C07C *67/00*

U.S. Cl. 260—473 R **8 Claims**

1. A process for producing biphenylpolycarboxylic acid esters which comprises contacting a benzenecarboxylic acid ester having 1 or 2 carboxylic acid ester groups having at least one hydrogen atom bonded to the nuclear carbon atom with molecular oxygen or a molecular oxygen-containing gas in liquid phase at a temperature of 110°– 250°C., under a partial pressure of molecular oxygen of 0.2 – 300 atmospheres and in the presence of a catalyst consisting essentially of at least one compound selected from at least one of the group consisting of salts of palladium which are aliphatic mono-carboxylates having 1 to 20 carbon atoms, alicyclic carboxylates, benzenecarboxylates, or naphthalenecarboxylates, and said catalyst being at least partially soluble in the reaction system.

3,983,160
PROCESS FOR THE PREPARATION OF HYDROXYPHENYLACETONITRILES

Horst Meyer, Wuppertal, Germany, assignor to Bayer Aktiengesellschaft, Germany

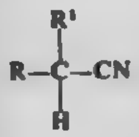
Filed Nov. 20, 1975, Ser. No. 633,683

Claims priority, application Germany, Dec. 3, 1974, 2457080

Int. Cl.² C07C *121/75*

U.S. Cl. 260—465 F **13 Claims**

1. Process for the preparation of an ortho or parahydroxyphenylacetonitrile of the formula:

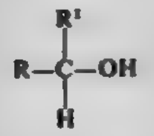


$$R-\overset{R^1}{\underset{H}{C}}-CN$$

wherein

R is ortho or parahydroxyphenyl, further unsubstituted or further substituted by one or two substituents independently selected from the group consisting of lower alkyl or lower alkoxy and

R¹ is hydrogen, lower alkyl, phenyl or carbon (lower alkoxy), which comprises allowing the corresponding ortho or parahydroxybenzyl alcohol of the formula:



$$R-\overset{R^1}{\underset{H}{C}}-OH$$

to react with hydrogen cyanide in the presence of a diluent at a temperature of from about 80° to about 190°C.

3,983,161
OXIDATION OF UNSATURATED AMINES

John S. McConaghy, Jr., St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

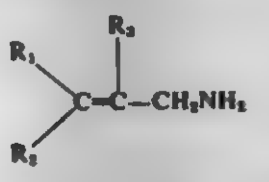
Filed Dec. 9, 1974, Ser. No. 530,925

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 24, 1976

Int. Cl.² C07C *120/00*

U.S. Cl. 260—465.9 **12 Claims**

1. A process for the oxidation of an unsaturated amine having the formula



$$\begin{matrix}R_1 & & R_3 & \\ & C= & C & -CH_2NH_2 \\ R_2 & & & \end{matrix} \quad \text{or phenyl—}CH_2\text{—}NH_2$$

wherein R_1, R_2 and R_3 represent hydrogen or a C_1 to C_4 alkyl group, to the corresponding unsaturated nitrile which comprises reacting the amine with molecular oxygen in the presence of a solution in a nitrogen base which is not oxidized under the reaction conditions of;

a. a cuprous halide and

b. an alcoholic compound having the formula R—OH wherein R is an alkyl, aryl, alkaryl or aralkyl radical, in a halide to alcohol compound ratio of from 10:1 to 1:100, the reaction taking place at atmospheric or superatmospheric pressures and at a temperature of 0° to 200°C.

3,983,162
OPTICAL RESOLUTION OF ALKYL ESTERS OF DL-PHENYLALANINE

James M. Schlatter, Glenview, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Jan. 2, 1975, Ser. No. 538,091

Int. Cl.^{2} C07C *99/12*

U.S. Cl. 260—471 A **4 Claims**

1. In a process for the production of L-phenylalanine alkyl ester from the corresponding DL-phenylalanine alkyl ester by resolving with an N-acyl-D-phenylalanine, the improvement which comprises recrystallizing in an inert solvent the crude salt of N-acyl-D-phenylalanine and L-phenylalanine alkyl ester in the presence of the corresponding DL-phenylalanine alkyl ester of L-phenylalanine alkyl ester.

3,983,163
5-OXA PHENYL- AND PHENOXY-SUBSTITUTED PROSTAGLANDIN β, ANALOGS

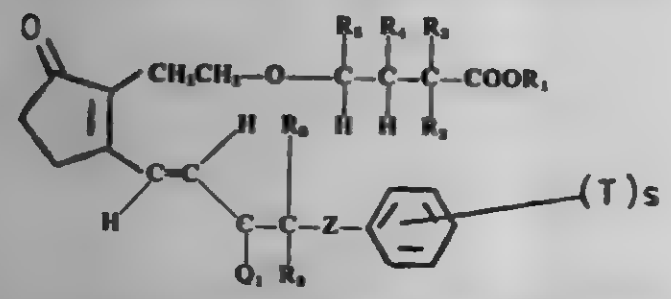
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 361,990, May 21, 1973, Pat. No. 3,864,387. This application Nov. 18, 1974, Ser. No. 524,413

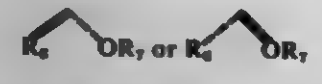
Int. Cl.^{2} C07C *69/76*

U.S. Cl. 260—473 A **10 Claims**

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of 1 to 9 carbon atoms, inclusive, substituted with 0, 1, or 2 fluoro, with one to 6 carbon atoms, inclusive, between $—CR_8R_9—$ and the ring; wherein T is alkyl of 1 to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $—OR_{10}$, wherein R_{10} is hydrogen or alkyl of 1 to 4 carbon atoms, inclusive, and *s* is 0, 1, 2, or 3, with the proviso that not more than two T's are other than alkyl and when *s* is 2 or 3 the T's are either the same or different; wherein Q_1 is



wherein R_6 and R_7 are hydrogen or alkyl of 1 to 4 carbon atoms, inclusive, being the same or different; wherein R_1 is hydrogen, alkyl) of 1 to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with 1, 2, or 3 chloro or alkyl or one to 4 carbon atoms, inclusive; wherein when Z is oxa (—O—), R_8 and R_9 are hydrogen or alkyl or one to 4 carbon atoms, being the same or different, and, when Z is CjH_{2j}, R_8 and R_9 are hydrogen, alkyl of 1 to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that R_9 is fluoro only when R_8 is hydrogen or fluoro; wherein R_3 is hydrogen, alkyl of 1 to 4 carbon atoms, inclusive, or fluoro; wherein R_2 is hydrogen or fluoro, with the proviso that R_2 is fluoro only when R_3 is hydrogen or fluoro; and wherein R_4 and R_5 are hydrogen or alkyl of 1 to 4 carbon atoms, inclusive, being the same or different, with the proviso that no more than one of R_3, R_4, and R_5 is alkyl; including the lower alkanoates thereof, and the pharmacologically acceptables salts thereof when R_1 is hydrogen.

3,983,164
PHENYL ALKYLENEOXY PHENYL ALKANOIC ACID ESTERS

David Edward Thorne, Cranleigh; Keith Howard Baggaley, Redhill, and Brian Morgan, Reigate, all of England, assignors to Beecham Group Limited, Great Britain

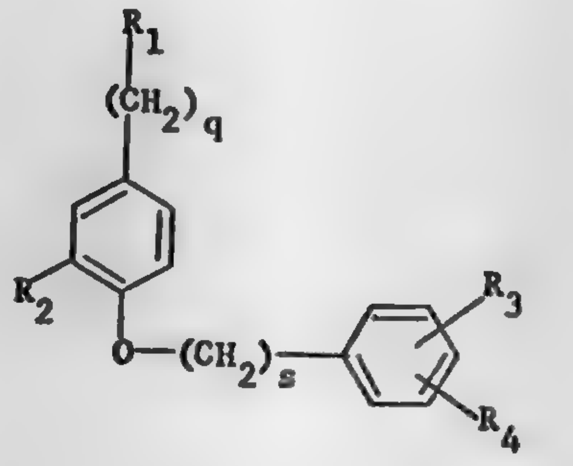
Filed Aug. 5, 1974, Ser. No. 495,119

Claims priority, application United Kingdom, Aug. 23, 1973, 39902/73; Sept. 11, 1973, 42654/73; Mar. 26, 1974, 13911/74

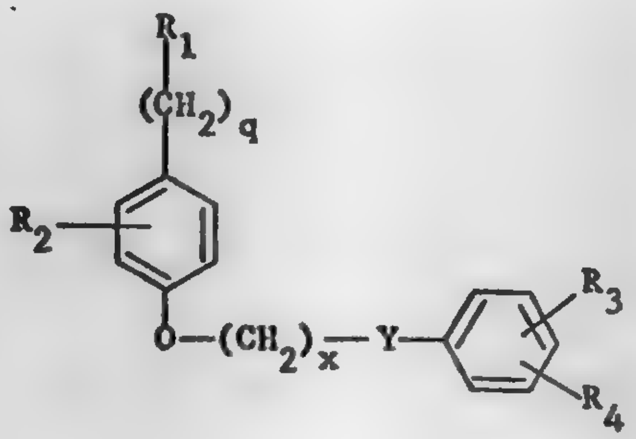
Int. Cl.^{2} C07C *69/88, 69/78*

U.S. Cl. 260—473 R **22 Claims**

1. A compound selected from the group consisting of a compound of the formula:



wherein:
- R_1 is carboxylic acid ester converted in the human body to a carboxylic acid group;
- R_2 is hydrogen, lower alkyl or lower alkoxyl;
- R_3 is hydrogen, halogen, lower alkyl or lower alkoxyl; p1 R_4 is hydrogen, halogen, phenyl, lower alkyl, lower alkoxyl, halo-lower alkyl, nitro, or a carboxylic ester group; or R_3 and R_4 together form the residue of a benzene ring;
- q is zero or an integer from 1 to 12; and
- s is an integer from 2 to 6; and a compound of the formula:



wherein:
- R_1 is a carboxylic acid ester converted in the human body to a carboxylic acid group;
- R_2 is hydrogen, lower alkyl or lower alkoxyl;
- R_3 is hydrogen, halogen, lower alkyl or lower alkoxyl; and
- R_4 is halogen, phenyl, lower alkyl, lower alkoxy, halo-lower alkyl, nitro or a carboxylic ester group; or R_3 is halogen, lower alkyl or lower alkoxyl; and R_4 is hydrogen, halogen, phenyl, lower alkyl, lower alkoxyl, halo-lower alkyl, nitro or a carboxylic ester group; or R_3 and R_4 together form the residue of a benzene ring;
- q is zero or an integer from 1 to 12;
- x is an integer from 1 to 6; and
- Y is oxygen.

3,983,165
8β,12α,15β-17-PHENYL-18,19,20-TRINOR-PGF$_{2\alpha}$ COMPOUNDS

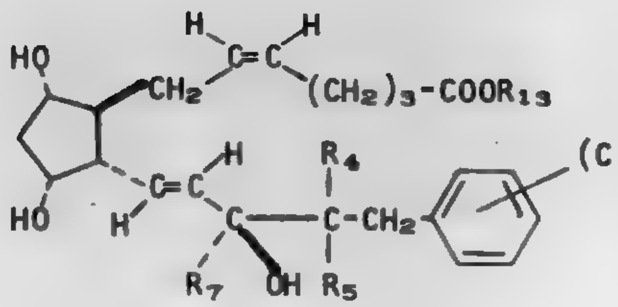
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 374,405, June 28, 1973, which is a continuation-in-part of Ser. No. 289,317, Sept. 15, 1972, abandoned. This application Oct. 29, 1974, Ser. No. 518,693

Int. Cl.^{2} C07C *65/13, 69/76*

U.S. Cl. 260—473 A **6 Claims**

1. An optically active compound of the formula



wherein
- R_4, R_5, and R_7 are hydrogen or methyl, being the same or different;
- wherein R_{13} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; and
- wherein s is zero, one 2, or 3; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_{13} is hydrogen.

3,983,166
MONOMERIC EMULSION STABILIZERS

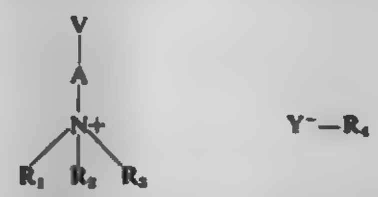
Carlos M. Samour, Wellesley Hills, Mass., assignor to The Kendall Company, Walpole, Mass.

Division of Ser. No. 452,073, March 18, 1974, Pat. No. 3,925,442, which is a continuation of Ser. No. 110,588, Jan. 28, 1971, which is a continuation-in-part of Ser. No. 769,355, Oct. 21, 1968, abandoned. This application Apr. 21, 1975, Ser. No. 569,781

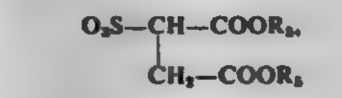
Int. Cl.^{2} C07C *67/16*

U.S. Cl. 260—481 R **3 Claims**

1. A monomeric emulsion stabilizer capable of stabilizing the polymerization of ethylenically-unsaturated monomers in a copolymerization reaction, corresponding to the formula:



wherein V is selected from the group consisting of 4-hydroxymaleoyloxy and;
- 4-hydroxycitraconoyloxy radicals;
- A is an alkylene group selected from the class consisting of ethylene and propylene;
- R_1, R_2 are methyl groups and R_3 is an acetamido group;
- and Y^- R_4 is an acidic group selected from the class consisting of esters of sulfosuccinic acid,



$$\begin{array}{l} O_3S—CH—COOR_5, \\ \qquad\;\; | \\ \qquad\;\; CH_2—COOR_5 \end{array}$$

wherein R_5 is an alkyl group of from 8 to 28 carbon atoms, and phenyl sulfonates wherein the phenyl group is substituted by an alkyl group of from 8 to 28 carbon atoms.

3,983,167
ACRYLATE AND METHACRYLATE MONOMERS

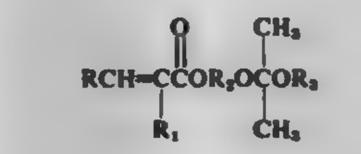
Daniel J. Najvar, and Jerry M. Hawkins, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 9, 1975, Ser. No. 576,071

Int. Cl.^{2} C07C *9/54*

U.S. Cl. 260—486 R **10 Claims**

1. A compound having the formula



$$RCH{=}\underset{\underset{R_1}{|}}{C}\overset{O}{\overset{\|}{C}}OR_2O\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}OR_3$$

where
- R is hydrogen, methyl or phenyl,
- R_1 is hydrogen or methyl,
- R_2 is an alkylene radical of 2 to about 4 carbons, and
- R_3 is an alkyl of 1 to about 6 carbon atoms or cycloalkyl radical of 3 to about 6 carbons.

3,983,168
HALOPHENOXY BENZOIC ACID SALTS

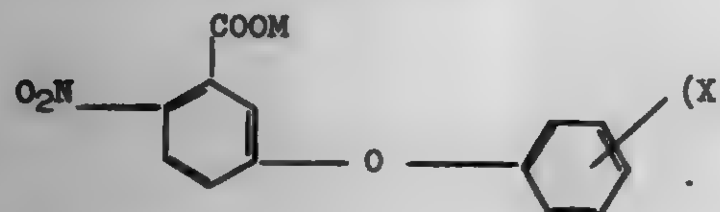
Robert J. Theissen, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 387,829, Aug. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 334,527, Feb. 22, 1973, abandoned, which is a continuation-in-part of Ser. No. 194,480, Nov. 1, 1971, abandoned, which is a division of Ser. No. 819,412, April 25, 1969, Pat. No. 3,652,645. This application Sept. 4, 1975, Ser. No. 610,209

Int. Cl.² C07C *63/33*

U.S. Cl. 260—501.16 **6 Claims**

1. A compound having the formula:



wherein X is halogen, *n* is 1 to 5, and M is alkali metal (Li, Na, K), alkylammonium (C_1–C_4), or alkanolammonium (C_1–C_3).

3,983,169
PHENOXYPROPYLAMINE DERIVATIVES

Gerhard Zölss, Linz; Heribert Pittner, Gmund; Heimo Stormann-Menninger-Lerchenthal, and Irmgard Lindner, both of Linz, all of Austria, assignors to Chemie Linz Aktiengesellschaft, Austria

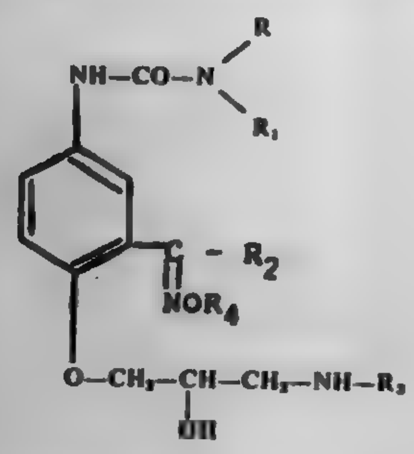
Filed Dec. 17, 1974, Ser. No. 533,689

Claims priority, application Austria, Dec. 21, 1973, 10718/73

Int. Cl.² C07C *87/52, 111/00*

U.S. Cl. 260—501.17 **7 Claims**

1. A phenoxypropylamine derivatives selected from the group consisting of compounds of the formula:



wherein one or both of R and R_1 are hydrogen or lower alkyl R_2 is hydrogen or lower alkyl, R_3 is tertiary butyl or isopropyl and R_4 is hydrogen, alkyl containing from 1 to 6 carbon atoms or benzyl,

and pharmaceutically acceptable salts thereof.

6. A compound according to claim 1, N-[3-(1'-Hydroxyimino)-methyl-4-(3'-tert.-butylamino-2'-hydroxy)-propoxy]-phenyl-N'-dimethylurea.

3,983,170
PROCESS FOR THE PURIFICATION OF MALIC ACID

Shozo Sumikawa, Hofu; Rikichi Maida, and Yuriaki Kageyama, both of Ube, all of Japan, assignors to International Organics, Inc., Duluth, Minn. and Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan, part interest to each

Filed Dec. 6, 1974, Ser. No. 530,194

Int. Cl.² C07C *59/12*

U.S. Cl. 260—535 P **5 Claims**

1. A process for the purification of D,L-malic acid which comprises a step of passing an aqueous malic acid solution containing maleic acid, fumaric acid or a mixture thereof as impurities through a column of a strongly basic anion exchange resin.

3,983,171
ANIONIC SURFACE ACTIVE COMPOSITIONS

Guy Vanlerberghe, Montjay-la-Tour, and Henri Sebag, Paris, both of France, assignors to L'Oreal, Paris, France

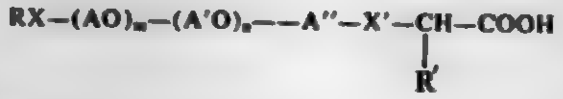
Division of Ser. No. 246,864, April 21, 1972, Pat. No. 3,822,346, which is a continuation of Ser. No. 749,580, Aug. 2, 1968, abandoned. This application Apr. 2, 1974, Ser. No. 457,354

Claims priority, application Luxemburg, Aug. 7, 1967, 54263

Int. Cl.² C07C *59/22*

U.S. Cl. 260—535 R **1 Claim**

1. An anionic compound having surface-active properties and having the formula



$$RX—(AO)_m—(A'O)_n——A''—X'—\underset{\displaystyle R'}{\underset{|}{C}}H—COOH$$

wherein

R is alkyl or alkenyl having 8–22 carbon atoms;
X is oxygen;
X' is oxygen, sulfur or sulfoxide;
A is ethylene, propylene or butylene;
A' is $—C_2H_3(CH_2OH)—$ or $—CH_2—CHOH—CH_2—$;
A'' is $—CH_2CHOH—CH_2—$, $—CH_2CH_2CH_2—$ or $—CH_2CH(CH_3)—$ wherein at least one of A' and A'' is $—CH_2CHOH—CH_2—$ or $—C_2H_3(CH_2OH)—$;
m and *n* represent numbers having a statistical average value between 0 and 10 inclusive;
R' is hydrogen or lower alkyl having 1 to 2 carbon atoms; and wherein when *m* and *n* are both equal to zero, X' is sulfoxide.

3,983,172
BIS-HALOGEN CARBONYL ANILINES AND PROCESS FOR THE PRODUCTION

Gerhard Blittner, Cologne; Erich Klauke, Odenthal-Hahnenberg, and Klaus Sasse, Schildgen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

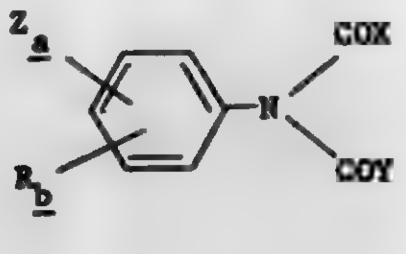
Filed Mar. 1, 1974, Ser. No. 447,438

Claims priority, application Germany, Mar. 9, 1973, 2311662

Int. Cl.² C07C *125/00, 125/03*

U.S. Cl. 260—544 C **8 Claims**

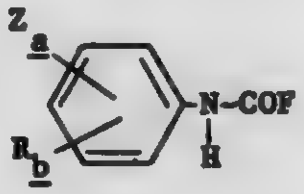
1. Process for preparing bis-halogen carbonyl anilines having the formula



wherein

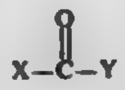
X is fluorine or chlorine,
Y is fluorine, chlorine, fluorocarbonyl, or chlorocarbonyl,
Z is halogen, nitro, cyano, lower alkyl sulfonyl or carbalkoxy
R is lower alkyl, alkoxy, thioalkyl, phenyl, naphthyl, lower perhalogen alkyl, perhalogen alkoxy or perhalogen alkylthio,
a and *b* represent a number from 0 to 5, with the proviso that *a* plus *b* is at the most 5,

which comprises reacting an aryl carbamic acid fluoride having the formula



wherein

Z, R, *a*, *b* are as defined above with an acylating agent having the formula



$$X—\overset{\displaystyle O}{\overset{\|}{C}}—Y$$

wherein

X and Y are as defined above in the presence of a tertiary amine at a temperature in the range of from −20 to +40°C.

3,983,173
2-CARBOXAMIDO-SUBSTITUTED TETRACYCLINES AND PROCESS FOR THEIR MANUFACTURE

Herbert Hartung, Kriftel, Taunus; Walter Durckheimer, Hattersheim am Main; Elmar Schrinner, Wiesbaden, and Hermann Gerhards, Hofheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

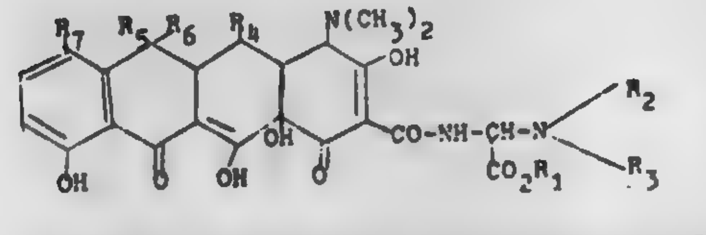
Filed Oct. 31, 1974, Ser. No. 519,843

Claims priority, application Germany, Nov. 3, 1973, 2355118

Int. Cl.² C07C *103/19*

U.S. Cl. 260—559 AT **25 Claims**

1. A 2-carboxamido-substituted tetracycline of the general formula I



(I)

in which R_1 is lower, optionally branched alkyl; R_2 and R_3 may be identical or different and each is hydrogen, optionally branched alkyl of 1 to 6 carbon atoms which may carry one or more identical or different substituents selected from the group consisting of hydroxy, lower dialkylamino, lower dialkylcarbamoyl, lower alkoxycarbonyl, phenyl, a heterocyclic group, especially a 5- or 6-membered ring which may include oxygen and/or nitrogen, and carboxyl, in this latter case the alkyl moiety may also carry amino; or cycloalkyl of 5 to 7 carbon atoms, and in which R_2 and R_3 may also be closed to form a saturated or unsaturated 5- or 6-membered ring which may include nitrogen or oxygen and may carry one or more substituents selected from the group consisting of lower alkyl, lower hydroxyalkyl, lower carboxyalkyl, hydroxyl or carboxyl, R_4 and R_5 may be identical or different and each is hydrogen or hydroxy, R_6 is hydrogen or methyl, R_5 and R_6 together are methylene, and R_7 is hydrogen, chlorine, bromine, dimethylamino or diethylamino.

25. A pharmaceutical composition having antibacterial activity which comprises an effective amount of a compound of formula I as the active substance.

3,983,174
DIALKYL ACETALS OF N-α-HALOCETYLANILINO ALDEHYDES

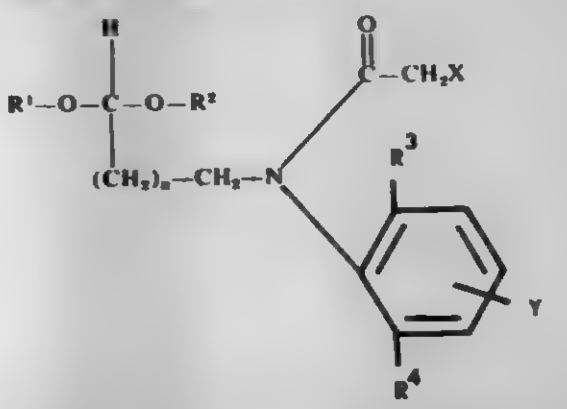
Sidney B. Richter, Chicago, and John Krenzer, Oak Park, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed May 28, 1974, Ser. No. 473,649

Int. Cl.² C07C *103/34*

U.S. Cl. 260—562 B **6 Claims**

1. A compound of the formula



wherein R^1, R^2 and R^3 are each lower alkyl; R^4 is selected from the group consisting of hydrogen, lower alkyl and lower alkoxy; Y is selected from the group consisting of hydrogen, lower alkyl and halogen; X is selected from the group consisting of chlorine and bromine and *n* is an integer from 0 to 1.

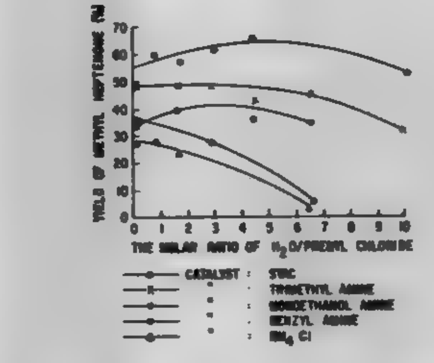
3,983,175
PROCESS FOR THE PRODUCTION OF A SUBSTITUTED KETONE

Yoshin Tamai; Takashi Nishida; Fumio Mori, all of Kurashiki; Yoshiaki Omura, Mitsu; Masahisa Tanomura, Kurashiki; Takeo Hosogai, Kiyone; Yoichi Ninagawa, and Kazuo Itoi, both of Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Continuation-in-part of Ser. No. 417,201, Nov. 19, 1973, abandoned. This application May 29, 1975, Ser. No. 581,841

Int. Cl.² C07C *45/00*

U.S. Cl. 260—586 R **23 Claims**



1. In a catalytic process for producing a substituted ketone by reacting an organic halide selected from the group consisting of alkyl halides, alkenyl halides, allyl halides, propargyl halides, cyclo alkyl halides and benzyl halides and a ketone having a replaceable hydrogen atom on the carbon atom

which is in the α-position to the carbonyl group thereof and selected from the group consisting of alkyl ketones, alkenyl ketones, cyclo alkenyl ketones, alicyclic ketones and aryl ketones, in the presence of a catalyst and an alkali metal hydroxide, the improvement which comprises said reaction being conducted in water, wherein the catalyst is selected from the group consisting of

1. Primary amines having the general formula:

$$R_1NH_2$$

wherein said R_1 is an unsubstituted or substituted alkyl group having at least 4 carbon atoms and the acid salts thereof;

2. primary amines having the general formula:

$$Z-(CH_2)_n-NH_2$$

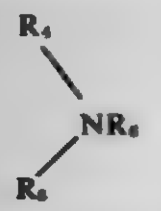
wherein Z is a hydroxyl group or an amino group and *n* represents the integer 2 or 3, and the acid salts thereof;

(3) secondary amines having the general formula:

$$R_2R_3NH$$

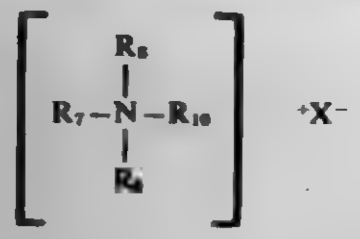
wherein said R_2 and R_3 each represents an unsubstituted or substituted alkyl group, a cycloalkyl group having at least 6 carbon atoms, or an aralkyl group having at least 7 carbon atoms, with the proviso that said R_2 and R_3 may not simultaneously be methyl, and the acid salts thereof;

(4) tertiary amines having the general formula:



wherein said R_4, R_5 and R_6 each represents an unsubstituted or substituted alkyl group, a cycloalkyl group having at least 7 carbon atoms, with the proviso that said R_4, R_5 and R_6 may not simultaneously be methyl, and the acid salts thereof;

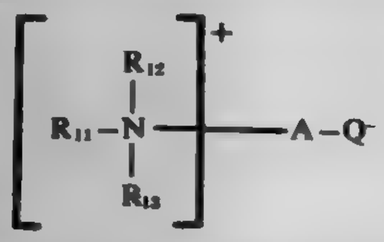
(5) quaternary ammonium salts having the general formula:



$$\left[R_7-\underset{R_9}{\overset{R_8}{N}}-R_{10}\right]{}^+X^-$$

wherein said R_7, R_8, R_9 and R_{10} each represents a substituted or unsubstituted alkyl group, a cycloalkyl group having at least 6 carbon atoms, or an aralkyl group having at least 7 carbon atoms, with the proviso that said R_7, R_8, R_9 and R_{10} may not simultaneously be methyl, and the acid salts thereof, and wherein X^- is an inorganic or organic anion;

(6) betaine-type quaternary ammonium salts having the general formula:



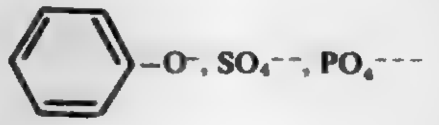
$$\left[R_{11}-\underset{R_{13}}{\overset{R_{12}}{N}}\right]^+-A-Q^-$$

wherein said R_{11}, R_{12} and R_{13} each represents a substituted or unsubstituted alkyl group, with the proviso that said R_{11}, R_{12} and R_{13} may not simultaneously be methyl, —A— is an alkylene group and Q^- is $—SO_3^-$ or $—COO^-$; and

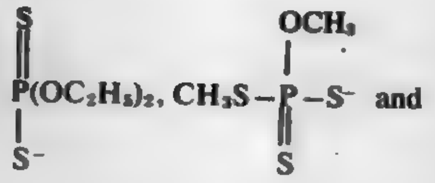
(7) mixtures thereof;

(i) wherein each substituent of R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8, R_9 and R_{10} is hydroxy, amino, alkoxy or acyl and each substituent of R_{11}, R_{12} and R_{13} is hydroxy, amine, alkoxy, acyl or acyloxy; and

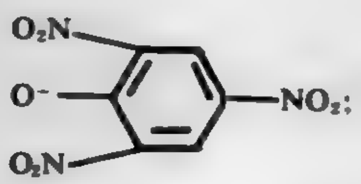
(ii) wherein the salts of said primary amines (1 and 2), said secondary amine (3), and said tertiary amine (4) are hydrochloride, nitrate, sulfate, phosphate and acetate thereof and the anion of said quaternary ammonium salts is selected from the group consisting of Cl^-, Br^-, I^-, OH^-, NO_3^-, ClO_4^-, SCN^-, CH_3COO^-,



$—O^-$, SO_4^{--}, PO_4^{---}



$$\underset{S^-}{\overset{S}{P}}(OC_2H_5)_2,\ CH_3S-\underset{S}{\overset{OCH_3}{P}}-S^-\ \text{and}$$



$—NO_2$; and

(iii) wherein the molar ratio of water/organic halide is at least 2,5; and

(iv) wherein the molar ratio of alkali metal hydroxide/water is at least 0.3; and

(v) wherein the molar ratio of alkali metal hydroxide/organic halide is at least 2,0.

3,983,176

BENZOPHENONES PLANT AS GROWTH REGULANTS

Osamu Yamada; Akira Kurozumi; Shuichi Ishida; Fumio Futatsuya; Kensaku Ito, and Hiroshi Yamamoto, all of Ageo, Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

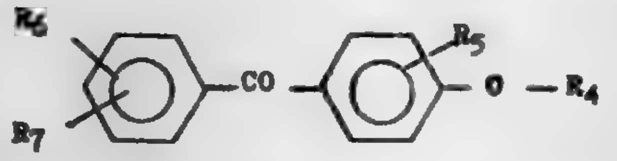
Division of Ser. No. 282,270, Aug. 21, 1972, Pat. No. 3,873,304. This application Nov. 14, 1974, Ser. No. 523,722

Claims priority, application Japan, Aug. 24, 1971, 46-64658

Int. Cl.^{2} C07C *49/84*

U.S. Cl. 260—591 **2 Claims**

1. A compound of the general formula:



(III)

wherein R_4 is a lower alkyl group or allyl group. R_5 and R_6 each stand for lower alkyl groups and R_7 is a hydrogen atom or a lower alkyl group.

3,983,177

PROCESS FOR THE PREPARATION OF UNSATURATED KETONES

Charles Grard, Chaponost, France, assignor to Rhone-Poulenc S.A., Paris, France

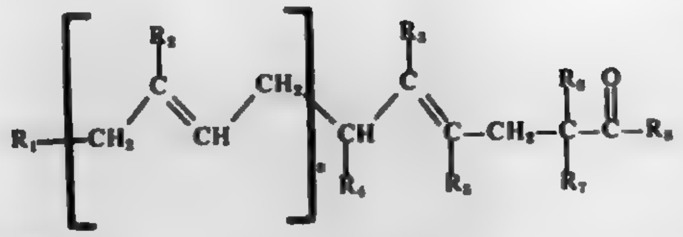
Filed June 23, 1972, Ser. No. 265,601

Claims priority, application France, June 24, 1971, 71.23063

Int. Cl.^{2} C07C *49/20*

U.S. Cl. 260—593 R **14 Claims**

1. Process for the preparation of a ketone of the formula:



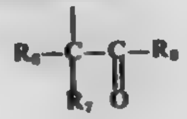
in which:

R_1 represents a hydrogen atom or a hydrocarbon group containing up to 10 carbon atoms each of R_2 and R_3, independently represents a hydrogen atom or an alkyl group of 1 to 4 carbon atoms,

R_4 and R_5 represent hydrogen atoms or, together they form a divalent hydrocarbon group of the formula

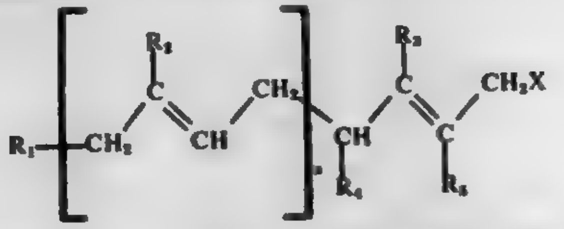
$$—CH_2—CH_2—C(CH_3)_2—$$

each of R_6 and R_7, independently represents a hydrogen atom or a hydrocarbon group containing up to 10 carbon atoms, or R_6 and R_7 together with the carbon atom, to which they are attached, form a hydrocarbon ring of up to 10 carbon atoms, or the group



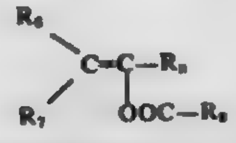
$$R_6-\underset{R_7}{\overset{|}{C}}-\underset{O}{\overset{}{\underset{\|}{C}}}-R_8$$

forms a hydrocarbon ring of up to 10 carbon atoms joined through R_8 and R_6, or R_7 and R_8, R_8 represents a hydrocarbon group containing up to 10 carbon atoms, and n is 0 or an integer of 1 to 6, wherein an unsaturated halide of the general formula:



(II)

in which X represents a bromine, chlorine or iodine atom and each of R_1, R_2, R_3, R_4 and R_5 is as defined above, is reacted at a reaction inducing temperature of −50° to +200°C with an ester of the enol form of a ketone, the ester being of the formula:



(III)

in which each of R_6, R_7 and R_8 is as defined above and R_9 represents a hydrocarbon group containing up to 20 carbon atoms, the hydrocarbon group being an alkyl, cycloalkyl or aryl group in the presence of a catalytically effective amount of a catalyst containing a metal from group 1b, 2b, 3b, including the actinide group, 4a, 4b, 5a, 6b, 7b or 8 of the Periodic classification.

3,983,178

IMMONIUM SALTS AND DERIVATIVES THEREOF

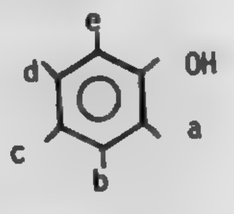
Victor A. Pattison, Tonawanda, and Russell L. K. Carr, Grand Island, both of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed July 21, 1975, Ser. No. 597,619

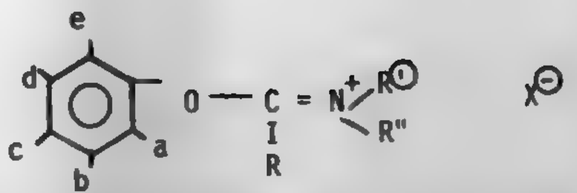
Int. Cl.^{2} C07C *39/06*, *39/26*, *79/26*

U.S. Cl. 260—621 R **9 Claims**

1. A process for preparing



which comprises reacting



wherein at least one of the group a, b, c, d and e is α-haloalkyl and a, b, c, d and e are independently selected from the group consisting of hydrogen, hydrocarbyl, alkyl, α-haloalkyl, halogen and nitro; R is selected from the group consisting of hydrogen, alkyl and aryl; R′ and R″ are independently selected from the group consisting of hydrogen and alkyl, and X is selected from the group consisting of bromine, chlorine and fluorine; the alkyl, hydrocarbyl and α-haloalkyl groups being from one to thirty carbon atoms, and aryl is selected from the group phenyl and napthyl, with 0.1 to 100 times the stoichiometric proportion of GOH wherein G is alkyl of 1 to 6 carbon atoms at a temperature from ambient to reflux.

3,983,179

1,2,3,4 TETRAKIS-(PERFLUOROALKYL)-1,3-BUTADIENES

Jean Riess; Georges Santini, and Maurice Le Blanc, all of Nice, France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

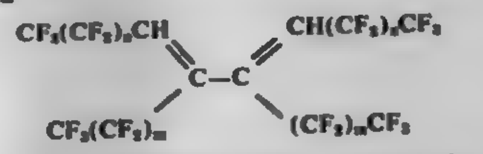
Filed Jan. 28, 1975, Ser. No. 544,817

Claims priority, application France, Feb. 12, 1974, 74.04599

Int. Cl.^{2} C07C *21/20*

U.S. Cl. 260—653.3 **7 Claims**

1. A 1,2,3,4-tetrakis(perfluoroalkyl)-1,3-butadiene having the formula



wherein *n* and *m* are integers from 1 to 10 and *n* = *m* or *n* ≠ *m*.

3,983,180

PROCESS FOR PREPARING METHYL CHLORIDE

Kiichi Habata, Annaka; Shozo Tanaka, Osaka, and Hitoyuki Araki, Annaka, all of Japan, assignors to Shinetsu Chemical Company, Tokyo, Japan

Filed Oct. 2, 1974, Ser. No. 511,208

Claims priority, application Japan, Oct. 6, 1973, 48-112723

Int. Cl.^{2} C07C *17/00*

U.S. Cl. 260—657 **3 Claims**

1. In a process for preparing methyl chloride by reacting a reaction mixture of hydrogen chloride with methanol in the absence of any catalysts in liquid phase, the improvement which consist essentially of:

a. reacting the reaction mixture in a reactor maintained at a pressure in the range from 1 to 3 kg/cm^{2}G;

b. withdrawing a part of the reaction mixture from the reactor;

c. introducing a first portion of said withdrawn part of the reaction mixture to a first separate distillation column which is maintained at a pressure which is at least 0.1 kg/cm^{2}G higher than the pressure of the reactor;

d. collecting from the top of the first distillation column a vapor which is richer in hydrogen chloride and methanol than the reaction mixture;

e. recycling the collected vapor from step (d) to the reactor;

f. withdrawing from the bottom of the first distillation column a mixture which is lower in hydrogen chloride and methanol concentration than the reaction mixture and introducing a part of mixture to a second separate distillation column which is maintained at a pressure from 10 to 500 mmHg absolute;

g. discharging from the top of the second distillation column water contained in the hydrogen chloride and methanol and water generated during the reaction;

h. withdrawing from the bottom of the second distillation column a mixture richer in hydrogen chloride than the mixture in the bottom of the first distillation column;
i. recycling the mixture thus withdrawn to the first distillation column or to the reactor;
j. passing a second and remaining portion of the withdrawn part from step (b) through an absorber and into the reactor while concurrently withdrawing methyl chloride formed in the reactor from its top and passing the methyl chloride through said absorber in counter current flow to said remaining portion to absorb the hydrogen chloride and methanol from the methyl chloride, and then collecting the methyl chloride.

3,983,181
PROCESS FOR THE CHLORINATION OF CHLORINATED ETHYLENE DERIVATIVES IN THE PRESENCE OF CHLORINATED ETHANE DERIVATIVES

Jean-Claude Strini, and Yves Correia, both of Saint-Auban, France, assignors to Produits Chimiques Pechiney-Saint Gobain, Neuilly-sur-Seine, France

Filed Dec. 23, 1969, Ser. No. 887,777

Claims priority, application France, Dec. 27, 1968, 68.101112

Int. Cl.² C07C *17/00*

U.S. Cl. 260—658 R **9 Claims**

1. A continuous process for chlorination of one or more dichloroethylenes and/or vinyl chloride in admixture with 1 to 80 mole% of one or more chloroethanes containing 1 to 5 chlorine atoms based on the total of the dichloroethylenes and/or vinyl chloride and the chloroethanes in liquid phase comprising passing the mixture with molecular chlorine through at least two homogeneous reaction zones in series at a temperature within the range of 20°–90°C in the absence of catalyst and in the absence of light radiations, wherein the molecular chlorine is present in an amount in each reaction zone to provide chlorine dissolved in the reaction medium within the range of 0.5 to 20 grams per liter.

3,983,182
ALKALI METAL ORGANIC COMPOUNDS AND THEIR METHOD OF PREPARATION

Richard J. Lagow, Manchester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 286,261, Sept. 5, 1972, abandoned. This application Aug. 23, 1973, Ser. No. 391,035

Int. Cl.² C07F *1/02, 1/04, 1/00*

U.S. Cl. 260—665 R **33 Claims**

1. A process for forming an alkali metal organic compound which comprises contacting an organic reactant selected from the group consisting of carbon vapor and an organic compound having a carbon to hydrogen bond or a carbon to halogen bond with a vaporous alkali metal under dry conditions and in the substantial absence of a gas that reacts with the alkali metal other than the organic reactant, said alkali metal having sufficient energy to react with the carbon vapor or to break at least one of said bonds.

3,983,183
PRODUCTION OF HIGH-VINYL GROUP LOW-MOLECULAR WEIGHT UNSATURATED HYDROCARBON POLYMERS

Wolfgang Kampf, Haltern, Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Dec. 9, 1974, Ser. No. 530,549

Claims priority, application Germany, Dec. 12, 1973, 2361702

Int. Cl.² C08F *4/70, 36/06*

U.S. Cl. 260—680 B **10 Claims**

1. A process for the production of low molecular weight butadiene polymers having a molecular weight distribution of between 1 and 1.5 and whose double bonds are 10–70% vinyl, 30—90% 1,4-cis and 0–10% 1,4-trans, by the polymerization of butadiene, in bulk or in the presence of a solvent, which comprises employing as the catalyst system:

a. 0.01 to 0.5 millimole per mole of monomer to be catalyzed of one or both of cobalt octoate and cobalt acetylacetonate;
b. a dialkyl aluminum halide in an amount such that the molar ratio of the cobalt in (a) to the aluminum in (b) is from 1:1 to 1:2,000;
c. triphenyl phosphite, in a molar ratio to (a) of from 0.3:1 to 10:1; and
d. an H-acidic compound in a molar ratio to the aluminum in (b) of up to 1.5:1.

3,983,184
UNSATURATED POLYESTER RESIN COMPOSITION

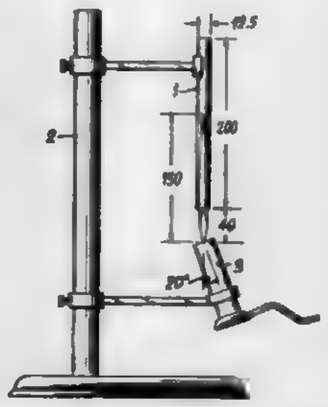
Kenji Kikuzawa, Ooimachi; Kiichiro Sasaguri, Tokyo; Yasuyoshi Oda, Iwaki; Hiroshi Sano, Iwaki, and Katsumi Okina, Iwaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 368,020, June 8, 1973, abandoned. This application Dec. 30, 1974, Ser. No. 537,406

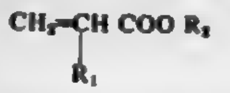
Claims priority, application Japan, June 14, 1972, 47-58545

Int. Cl.² C08L *63/10, 67/06*

U.S. Cl. 260—837 R **14 Claims**



1. Fire retardant unsaturated polyester resin composition comprising:
1. 100 parts by weight of unsaturated polyester resin which is the reaction product of a mixture containing
   a. 80% – 30% by weight of unsaturated polyester prepolymer prepared by condensation of at least one dicarboxylic acid, at least one glycol and at least one unsaturated dicarboxylic acid; or the reaction product of an epoxy compound having at least two 1,2 epoxy groups and a compound of the formula:



$$CH_2{=}\underset{\displaystyle R_1}{\underset{|}{C}}H\ COO\ R_2$$

wherein R_1 is hydrogen or lower alkyl and R_2 is hydrogen or lower alkyl;
   b. 20% – 70% by weight of at least one vinyl compound; and
2. 100 – 900 parts by weight of hydrated magnesium carbonate represented by a general formula $MgCO_3$, $nH_2O(n=3$ or 5).

3,983,185
HALOGEN CONTAINING POLYESTER RESINS HAVING IMPROVED SMOKE-RESISTANCE

Edwin Dorfman, Grand Island; Raymond R. Hindersinn, Lewiston, and Willis T. Schwartz, Jr., Grand Island, all of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. Nos. 383,749, July 30, 1973, and Ser. No. 490,423, July 22, 1974. This application Oct. 15, 1974, Ser. No. 514,984

Int. Cl.² C08J *3/20*

U.S. Cl. 260—863 **46 Claims**

1. A fire retardant polyester polymer composition comprising
1. a mixture copolymerizable to an infusible resin consisting essentially of

   a. from about 50 to 80 wt. % of an α, β - ethylenically unsaturated halogen-containing polyester of a polycarboxylic compound and a polyhydric alcohol, the polyester containing halogen in a proportion of greater than about 4 weight percent; and
   b. from about 20 to about 50 weight percent of a mixture of unsaturated monomers comprising a vinyl benzene compound and an acrylic compound selected from the group consisting of acrylic acid, methacrylic acid and esters thereof, the weight ratio of vinyl benzene compound to acrylic compound being about 1:4 to 4:1; and
2. an effective fire retardant proportion of about 0.5 to about 10 weight percent of a smoke inhibiting additive consisting essentially of at least 0.5 weight percent of a compound of iron or a mixture of said iron compound with a compound of copper and/or a compound of antimony with the proviso that when said additive is a compound of iron that is soluble in said polyester, the compound of iron is free of iron-to-carbon bonds, said composition being substantially phosphorous-free and said proportions and weight percents being based on the weight of the copolymerizable mixture.

3,983,186
PROCESS FOR PREPARING RIGID PVC FORMULATIONS

Kenneth L. Ellers, Irvington, N.Y., and Adam F. Kopacki, Westwood, N.J., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 4, 1971, Ser. No. 169,049

Int. Cl.² C08L *51/00*

U.S. Cl. 260—876 R **24 Claims**

1. In the process of forming shaped objects from a formulation comprising an intimate admixture of a vinyl chloride resin and a plurality of particles of a polyacrylate-modified polyvinyl chloride process aid, the improvement which comprises intimately admixing said process aid particles with said vinyl chloride resin at a temperature in the range of from about 70° to 150°F. after first raising the temperature of said vinyl chloride resin to within the range of from about 180° to 250°F. by subjecting it to mechanical agitation; the particles of said polyacrylate-modified polyvinyl chloride process aid comprising particles of polyvinyl chloride having polyacrylate ester moieties polymerized in and/or on said particles, said polyacrylate ester moieties being selected from the group consisting of polymethyl methacrylate and copolymers of methyl methacrylate with up to about 20%, by weight, of at least one ethylenically unsaturated comonomer; said polyacrylate ester moieties being present in a concentration of from about 10 to 60% as based on the weight of the polyvinyl chloride moieties of said particles.

3,983,187
IODINE MOLECULAR WEIGHT REGULATORS IN SUSPENSION POLYMERIZATION SYSTEMS

George A. Moczygemba; W. Delmar Johnson, and Earl Clark, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 303,330, Nov. 3, 1972, abandoned. This application Sept. 27, 1974, Ser. No. 510,040

Int. Cl.² C08L *9/00, 9/02, 9/06*

U.S. Cl. 260—880 R **13 Claims**

1. In an aqueous suspension graft co-polymerization system wherein at least one polymerizable monomer selected from the group consisting of monovinyl-substituted aromatic compounds, alpha, beta-unsaturated nitriles, esters of acrylic acid, esters of alkacrylic acid, and vinyl esters, is graft polymerized with at least one elastomeric polymer of a conjugated diene under aqueous suspension polymerization conditions in the presence of a molecular weight modifier, the improvement which comprises the step of employing elemental iodine as said molecular weight modifier.

3,983,188
METHOXY-SUBSTITUTED CYANOPHENYL ESTER DERIVATIVES OF PHOSPHORUS ACIDS

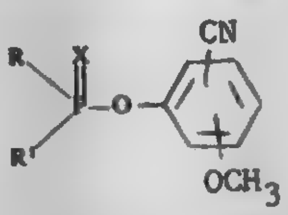
Edward N. Walsh, New City, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 328,463, Dec. 6, 1963, abandoned. This application Apr. 21, 1967, Ser. No. 632,523

Int. Cl.² C07F *9/12, 9/18, 9/32, 9/40*

U.S. Cl. 260—940 **17 Claims**

1. A compound having the formula:



where R and R^1 are members independently selected from the group consisting of lower alkyl, chloro-substituted lower alkyl, lower alkoxy, phenyl, and phenoxy; and X is a member selected from the group consisting of oxygen and sulfur.

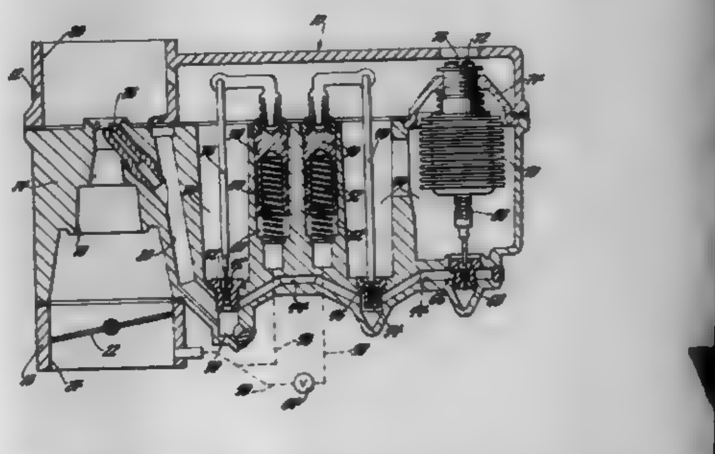
3,983,189
CARBURETOR

Roland S. Taylor, Fairport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 21, 1974, Ser. No. 499,332

Int. Cl.² F02M *7/16*

U.S. Cl. 261—23 A **4 Claims**



1. A carburetor comprising a fuel bowl, first and second air induction passages disposed on opposite sides of said bowl, each of said passages having a venturi disposed therein, throttle means disposed in said induction passages for controlling air flow therethrough, first and second fuel passages extending to said venturis respectively whereby fuel may be delivered thereto and mixed with air therein, first and second main metering orifices opening from opposite sides of said bowl to said first and second passages respectively, first and second main metering rods controlling fuel flow through said first and second orifices respectively, a main piston disposed between said orifices and connected to said metering rods, an auxiliary fuel passage extending beneath said piston, auxiliary and supplementary metering orifices opening from said bowl to said auxiliary passage, auxiliary and supplementary metering rods disposed in and controlling fuel flow through said auxiliary and supplementary orifices respectively, an auxiliary piston disposed adjacent said main piston and connected to said auxiliary rod, passage means for subjecting said pistons to the pressure in at least one of said induction passages downstream of said throttle means whereby said main piston may cause said main rods to restrict fuel flow through said main orifices and said auxiliary piston may cause said auxiliary rod to restrict fuel flow through said auxiliary orifice in response to decreases in said pressure below selected values, springs biasing said main and auxiliary pistons and rods to permit increased flow through said main and auxiliary orifices, a bellows connected to said supplementary rod and exposed to the ambient pressure whereby said bellows may cause said

supplementary rod to restrict fuel flow through said supplementary orifice upon a decrease in ambient pressure and to permit increased fuel flow through said supplementary orifice upon an increase in ambient pressure, and first and second transfer passages extending from said auxiliary passage beneath said main piston to said first and second fuel passages beneath said first and second orifices respectively whereby fuel flow through said auxiliary and supplementary orifices may be appropriately divided between and delivered to said venturis.

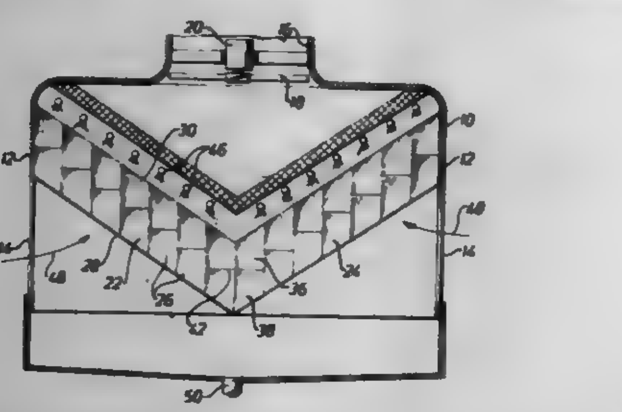
3,983,190
LIQUID-GAS CONTACT APPARATUS AND METHOD FOR MAKING THE SAME
Per Gunnar Norbäck, Lidingo, Sweden, assignor to Aktiebolaget Carl Munters, Sollentuna, Sweden

Filed Apr. 24, 1974, Ser. No. 463,828

Claims priority, application Sweden, Feb. 22, 1974, 7402409

Int. Cl.² B01F *3/04*; B32B *31/18*

U.S. Cl. 261—111 **9 Claims**



1. A liquid-gas contact apparatus comprising a hollow casing including a generally vertically extending sidewall and an air inlet opening formed therein; a contact bed mounted in said casing and having upper and lower spaced and generally parallely extending surfaces inclined from positions above the air inlet opening in a downward angular direction toward the interior of the casing; said contact bed composed of a plurality of liquid-gas contact units located in predetermined positions with respect to each other to form said bed; each of said units being formed from a plurality of interconnected layers of sheet material, at least some of which are formed of corrugated sheet material to define a plurality of liquid gas passageways between adjacent layers; said units being positioned in said casing with said layers of sheet material and the passageways between adjacent layers lying in vertical planes extending parallel to the plane of said inlet opening and vertical sidewall; said units each having upper and lower spaced parallely extending surfaces inclined in a downward angular direction from the casing sidewall toward the interior of the casing across said sheets, and being displaced downwardly relative to one another towards the interior of the casing with their upper and lower surfaces substantially in alignment to provide the upper and lower surfaces of said contact bed; and said contact units having a generally rhomboid peripheral configuration when viewed in section transversely of the layers thereof with said rectangular sides forming a pair of vertical parallel sides of the rhomboid.

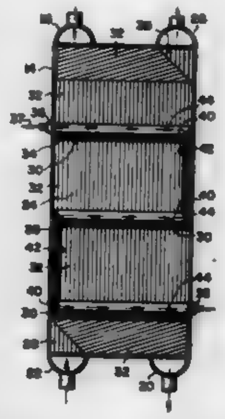
3,983,191
BRAZED PLATE-TYPE HEAT EXCHANGER FOR NONADIABATIC RECTIFICATION
James J. Schaala, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Nov. 10, 1975, Ser. No. 630,284

Int. Cl.² B01F *3/04*

U.S. Cl. 261—114 R **12 Claims**

1. A plate-type heat exchanger comprising: a plurality of elongated vertically extending sheet-like metallic plates of generally similar configuration in side-by-side, spaced, face-to-face parallel relationship; metallic sealing means for sealingly connecting adjacent plates along their margins whereby a vertical passageway is defined between each pair of said adjacent plates, certain first passageways for a first heat exchange fluid being interleaved with other second passageways for a second gaseous heat exchange fluid for heat transfer therebetween by heat conduction through said plates; each of said first and second passageways containing a metallic corrugated fin packing braze bonded on opposite sides to and extending between the faces of said adjacent plates whereby said adjacent plates are structurally connected by said fin packing and whereby said fin packing conducts heat between said passageways and said plates; flow director means associated with each of said second passageways for directing a liquid in a descending serpentine flow path having a plurality of substantially horizontal legs disposed at progressively descending levels and each crossing horizontally at least a portion of said associated second passageway; said horizontal legs of said serpentine flow path being in substantially open fluid communication with said associated second passageway; said horizontal legs being in fluid communication with each other by downcomers and at least one of said horizontal legs being in fluid communication at one end to a substantially horizontal leg above and at the other end to a substantially horizontal leg below said one leg by said downcomers whereby liquid passing in said serpentine flow path may traverse said associated second passageway several times to become in part contacted with the gas flowing in said associated second passageway and that liquid flowing in said second associated passageway in a direction opposite to the gas flow therein may be removed by passing into said serpentine flow path at one elevation and recontacted with the gas flowing in said second associated passageway at a lower elevation to thereby establish a stable reflux of the fluids within said second associated passageway.

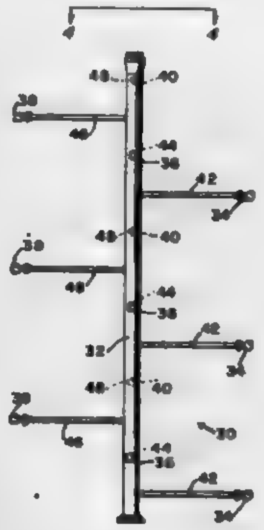


3,983,192
WATER COOLING ARRANGEMENT
Robert J. Stoker, Phillipsburg, N.J., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Apr. 9, 1975, Ser. No. 566,267

Int. Cl.² B01F *3/04*

U.S. Cl. 261—115 **4 Claims**



1. In an arrangement for cooling large quantities of water, a vertical water pipe; a plurality of vertically spaced water nozzles mounted on the water pipe with each water nozzle being circumferentially spaced from each adjacent water nozzle, by an approximate 90° angle in a manner such that a line interconnecting the nozzles would be a spiral, the water exits of all of the nozzles being unobstructed and facing the same general direction to direct the flow of water in the same general translational direction.

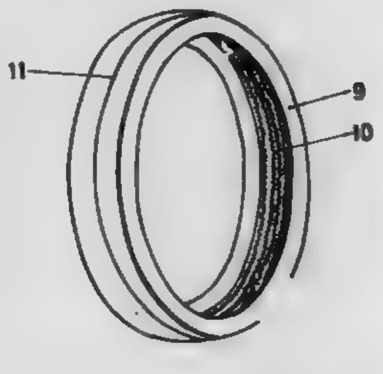
3,983,193
METHOD OF RETREADING PNEUMATIC TIRES
Jan-Eric Lennart Wulker, Traslovslage, and Gote Bertil Sivert Bohman, Varberg, both of Sweden, assignors to DACAPO AB, Varberg, Sweden

Filed May 1, 1974, Ser. No. 465,878

Claims priority, application Sweden, Apr. 10, 1974, 7448356; Nov. 12, 1973, 73152639

Int. Cl.² B29H *5/04*

U.S. Cl. 264—36 **13 Claims**



1. A method of treading tires in which a vulcanizable camelback tread band is placed on the tread receiving surface of a tire body, said band being made of a material which has a predetermined vulcanizing temperature and which becomes plastic during vulcanization thereof, and in which a peripherally continuous, stretchable, matrix ring mold having an internal, embossing, negative tread pattern is contacted with said band to form said tread pattern thereon, said tread pattern, when said mold is unstretched, having a predetermined normal inner diameter and said mold being made of an elastic material which substantially maintains its elasticity and physical form at least at temperatures up to said vulcanizing temperature, said method comprising the steps of:

a. placing said camelback tread band on and in contact with the tread receiving surface of a tire body, said tread band having a radial thickness such that the outer diameter thereof when placed on said tire body is greater than said normal inner diameter of said tread pattern;

b. increasing said inner diameter of said tread pattern to a size at least equal to said outer diameter of said band by stretching and expanding said mold and placing said mold over said tread band on said tire body, the elasticity of said elastic material being sufficient to permit said stretching of said mold without exceeding the elastic limit thereof, whereby said tread pattern is urged by elastic tension to contract until it reassumes said normal inner diameter after the stretching force thereon is terminated;

c. allowing the expanded matrix ring mold to contract responsive to said elastic tension, at least until said pattern contacts the exterior surface of said tread band on the tire body; and

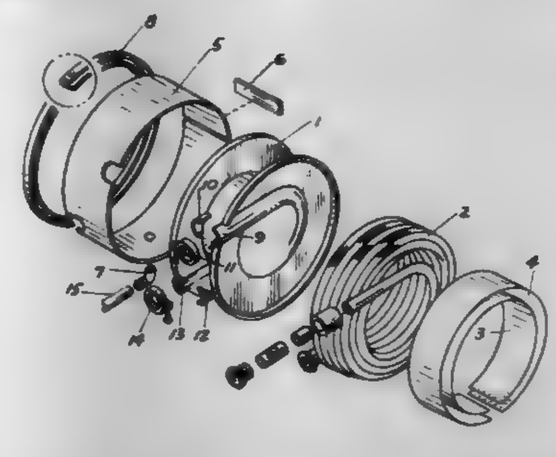
d. heating the matrix ring mold, tire body and tread band to a temperature which converts the tread band into a plastic form and thereby permits said mold to further contract and emboss the tread pattern of the matrix ring mold onto the tread band, and which vulcanizes the tread band onto the tire body.

3,983,194
PROCESS FOR MANUFACTURING A HELICAL REVERSE OSMOSIS SEGMENT
John L. Richardson, Birmingham, Mich.; Gilbert Segovia, Santa Ana, and Clarke H. Lewis, Fountain Valley, both of Calif., assignors to Oxy Metal Industries Corporation, Warren, Mich.

Filed July 13, 1971, Ser. No. 162,247

Int. Cl.² B01D *31/00, 13/00*

U.S. Cl. 264—41 **4 Claims**



1. The process of producing a rugged, compact and readily portable reverse osmosis module comprising producing an unsupported reverse osmosis tubular member, applying to the exterior of such tubular reverse osmosis member a fibrous supporting member to enable the tubular reverse osmosis member to withstand internal reverse osmosis pressures, pressurizing said supported tubular reverse osmosis member with a liquid which is non-injurious to the reverse osmosis qualities of the supported tubular reverse osmosis member, said liquid being maintained at a sufficiently elevated temperature and pressure to enable the supported tubular reverse osmosis member to be bent around a comparatively small radius without injury, said temperature being below a value which is capable of heat treating the reverse osmosis membrane to reduce the flow characteristics of the reverse osmosis membrane, winding the heated and pressurized supported tubular reverse osmosis member onto a spool having a radius sufficiently small to render impossible such a winding operation in the absence of the heated pressurizing liquid, removing the heated pressuring liquid without creating within the supported tubular reverse osmosis member any negative pressure, and replacing the pressurized heated liquid with a liquid which is non-injurious to the reverse osmosis qualities of the spooled supported tubular reverse osmosis member, said liquid being under substantial pressure of at least about 90 psig to improve the contact between the exterior of the tubular reverse osmosis member and the supporting fibrous member and being heated to a temperature sufficient to establish the desired reverse osmosis qualities in the spooled supported tubular reverse osmosis member.

3,983,195
PENCIL SHEATH COMPOSITIONS, METHOD FOR MAKING PENCILS
Irving J. Arons, Peabody; Robert Eller, Boston, and Richard E. Merrill, Wakefield, all of Mass., assignors to Hasbro Industries, Inc., Pawtucket, R.I.

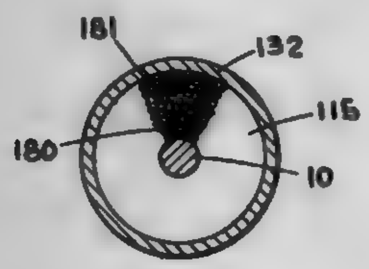
Division of Ser. No. 348,664, April 6, 1973, Pat. No. 3,875,088, which is a continuation-in-part of Ser. No. 163,303, July 16, 1971, abandoned. This application Oct. 29, 1974, Ser. No. 518,879

Int. Cl.² B29D *27/00*; B29F *3/10*; B43K *19/14*

U.S. Cl. 264—45.3 **7 Claims**

1. A method of making a sheathed marking core wherein the sheath is cellular comprising providing a composition consisting essentially of, by weight, approximately 50 to 75% of an extrusion grade thermoplastic resin binder having a Vicat softening point above about 180°F, approximately 20 to

40% of a fibrous filler selected from the group consisting of cellulose and leather, the binder/filler ratio being approximately 1.5 to 3.0, and approximately 0.5 to 15% of a metallic soap, the composition having a moisture content of approximately 0.3 to 2%, extruding a sheath of said composition around a marking core, and cooling the resulting extrudate.



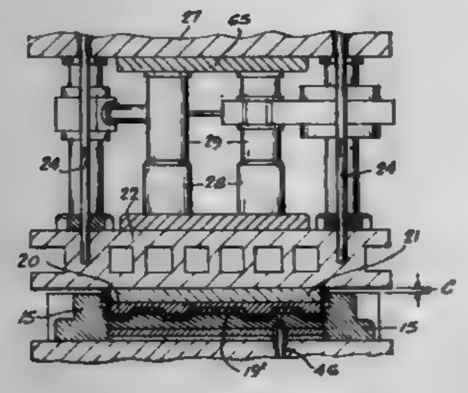
3,983,196
METHOD OF INJECTION MOLDING STRUCTURAL FOAM HAVING ACCURATE MOLD SURFACE REPRODUCTIONS

Charles H. Gray, Port Lambton, Canada, assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 234,028, March 13, 1972, abandoned. This application July 18, 1974, Ser. No. 489,676

Int. Cl.² B29D *27/00;* **B29F** *1/06*

U.S. Cl. 264—45.5 **6 Claims**



1. A method for manufacturing a foam plastic product by injection molding of a heat plastified synthetic resinous thermoplastic material employing a mold, the mold having members being supported on platens, the platens are movably positioned relative to each other and the mold members are closable to define a mold cavity by selectively positioning the platens, the mold cavity being adjustable by movement of the platens supporting the mold members to define a cavity of lesser volume or a cavity of greater volume, the steps of the method comprising

closing the mold to form the cavity of greater volume,

injecting into said cavity having a volume at least adjustable to define said cavity of greater volume from a means to supply a heat plastified synthetic resinous composition which foams under atmospheric pressure, a heat plastified synthetic resinous composition to fill said sufficient quantity of said mold cavity of greater volume upon foaming with said foamed synthetic resinous composition,

positioning at least one of the platens to form the mold cavity of lesser volume while the synthetic resinous composition is still in thermoplastic deformable state to compress the composition, cooling the composition within the mold and subsequently removing a cooled rigid composition from the mold to thereby provide a molded foam plastic article that more accurately reproduces the mold surface than is possible without compressing during molding.

3,983,197
PREPARATION OF ALUMINA EXTRUDATES

Roy T. Mitsche, Island Lake; Hillard L. Kuntz, Mount Prospect, and John C. Hayes, Palatine, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 24, 1973, Ser. No. 400,292

Int. Cl.² C04B *33/32;* **B28B** *3/20*

U.S. Cl. 264—56 **4 Claims**

1. A method of preparing alumina extrudate particles which comprises:

a. forming a mixture consisting essentially of a finely divided alumina and from about 2 to about 10 wt. % alumina hydrosol, and adding sufficient water thereto to produce a dough extrudable at less than about 150 psig.;

b. extruding the resulting dough; and

c. drying and calcining the extrudate.

3,983,198
METHOD OF INCREASING THE OXIDATION RESISTANCE OF SILICON NITRIDE

John A. Mangels, Allen Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 12, 1975, Ser. No. 549,415

Int. Cl.² F27B *9/04, 9/10*

U.S. Cl. 264—65 **5 Claims**

1. A method of increasing the oxidation resistance of a silicon nitride article which comprises the steps of:

preheating a furnace containing an oxidizing atmosphere to a temperature in a range from 2500°F to 2750°F;

inserting the silicon nitride article into the preheated furnace; and

maintaining the silicon nitride article in the furnace for a period of time sufficient to develop an oxidation resistant surface on the article.

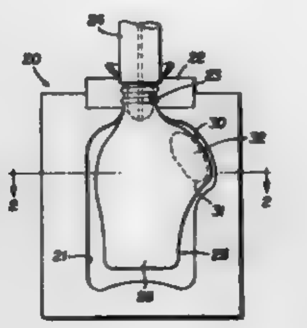
3,983,199
METHOD FOR MAKING PLASTIC ARTICLES HAVING BLOWN AND NON-BLOWN PORTIONS

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 15, 1974, Ser. No. 514,830

Int. Cl.² B29C *17/07, 17/12*

U.S. Cl. 264—89 **8 Claims**



1. In a method of making a blown plastic article having contiguous non-blown and blown portions, the non-blown portion being surrounded by the blown portion, the steps of (1) forming a blowable shape including an indentation, (2) positioning the blowable shape between the open sections of a closable blow mold, (3) closing the blow mold sections on said blowable shape, (a) initial closing movmement of said mold sections locally engaging the indentation in the blowable shape with pinching projections on the mold sections, chilling the engaged portion to secure that portion to the pinching projections, and deflecting the indentation and (b) further joint closing movement of said mold sections and said blowable shape engaging and pinching shut the remainder of the blowable shape portion which will become the non-blown portion, and (4) blowing the blowable shape to the blown portions of the article interiorly of said mold in contiguous relation to the pinched-shut, non-blown portion.

3,983,200
METHOD FOR THE PRODUCTION OF POLYTETRAFLUOROETHYLENE MOULDING POWDERS

Howard Edmund Browning, Welwyn, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 205,657, Dec. 7, 1971, abandoned. This application May 28, 1974, Ser. No. 473,913

Claims priority, application United Kingdom, Dec. 11, 1970, 59016/70; July 26, 1971, 34950/71

Int. Cl.² B01J *2/10*

U.S. Cl. 264—117 **9 Claims**

1. A process for the preparation of a free-flowing product selected from the group consisting of filled and unfilled agglomerated products,

from a composition selected from the group consisting of granular polytetrafluoroethylene powders and mixtures of granular polytetrafluoroethylene powder with filler powder, the polytetrafluoroethylene particles in said composition having an air sedimentation size of less than 100 μm,

said method comprising the steps of:

i. wetting said composition with an aqueous solution of a protective colloid, the solution containing the protective colloid in an amount of 10 to 10,000 parts by weight of the protective colloid per million parts by weight of water, the solution being used in an amount from $21.5/\alpha$ to $215/\alpha$ ml. per 100 gms. of said composition, where α is the true density in gms. cm^{-3} of said composition;

ii. mechanically agitating the wetted composition to form it into agglomerates; and

iii. drying the agglomerates to produce an agglomerated product which, when dry, has a compacted flow rating of at least 16 and a compaction ratio of less than 433.

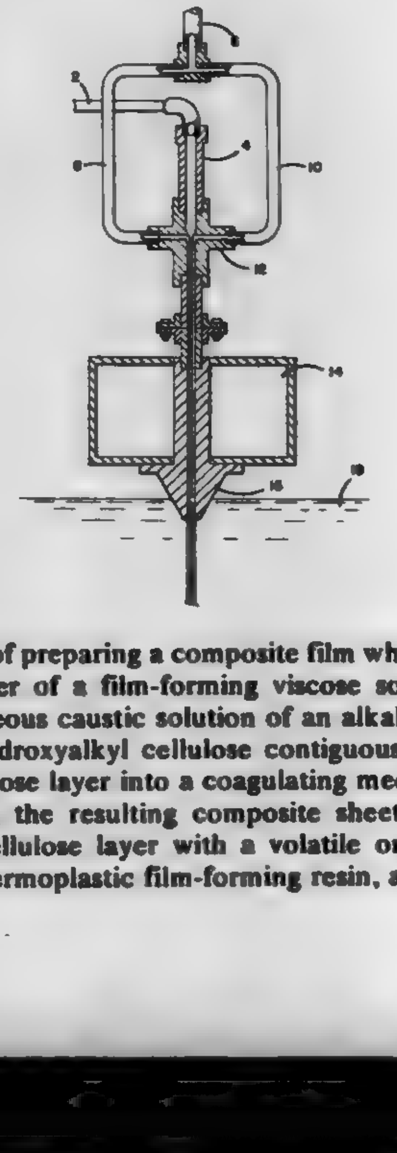
3,983,201
METHOD OF PREPARING A LACQUER COATED REGENERATED CELLULOSE FILM WITH AN INTERMEDIATE LAYER OF HYDROXYALKYL CELLULOSE

John S. Taylor, Newark, Del., assignor to FMC Corporation, Philadelphia, Pa.

Filed June 9, 1972, Ser. No. 261,490

Int. Cl.² B29D *7/04, 7/20*

U.S. Cl. 264—129 **10 Claims**



1. A method of preparing a composite film which comprises extruding a layer of a film-forming viscose solution with a layer of an aqueous caustic solution of an alkali-soluble, water-insoluble hydroxyalkyl cellulose contiguous to each surface of said viscose layer into a coagulating medium for each solution, drying the resulting composite sheet, coating the hydroxyalkyl cellulose layer with a volatile organic solvent solution of a thermoplastic film-forming resin, and drying the coating.

3,983,202
MANUFACTURE OF SYNTHETIC FIBERS AND YARNS

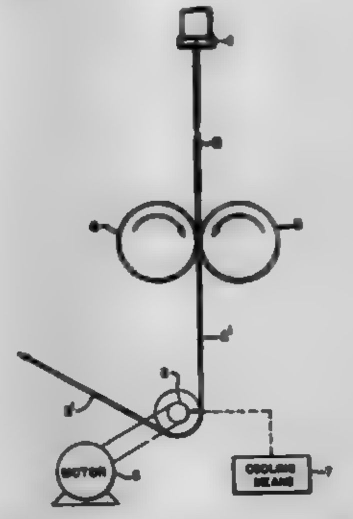
Wladyslaw H. Skoroszewski, Manchester, England, assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 48,231, June 22, 1970, abandoned. This application Nov. 10, 1972, Ser. No. 305,625

Claims priority, application United Kingdom, June 26, 1969, 32365/69

Int. Cl.² B29H *7/18*

U.S. Cl. 264—147 **3 Claims**



1. In the process for the manufacture of synthetic fibers of regular dimension and substantially free from whiskers which comprises bringing a sheet-like mass of a molecularly-orientable thermoplastic material at a temperature above its crystalline melting point into pressure contact with a profiling element to form a profiled polymer web having a plurality of longitudinal grooves disposed in close but spaced apart relationship in at least one surface thereof, said profiling element having a plurality of closely spaced, parallel, surface ridges each having inwardly directed sides leading to a peak, chilling the profiled web and stretching to effect orientation thereof, and subjecting the profiled molecularly oriented web to a controlled fibrillation to form said synthetic fibers, the improvement which comprises contacting the ungrooved surface of the profiled web while above its crystalline melting point with a chill roller which is drivably mounted in a position below the profiling element such that the profiled web travels substantially vertically downwards to impinge tangentially on the roller surface, thereby chilling the profiled web to a temperature below the melting point of the polymer, while at the same time imparting a drawing movement to the web parallel with the direction of extrusion between the profiling element and the chill roller, thereby subjecting the web to a melt draw-down parallel to the direction of extrusion and reducing the cross-sectional area of the profile web.

3,983,203
METHOD OF MAKING A CATHETER WITH AN INTEGRAL LUER LOCK MEANS

Joseph H. Corbett, Glens Falls, N.Y., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

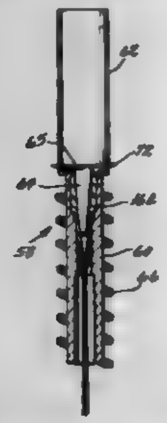
Filed Nov. 16, 1973, Ser. No. 416,722

Int. Cl.² B29C *17/14;* **B29D** *23/04;* **B29F** *3/00, 5/00*

U.S. Cl. 264—150 **6 Claims**

1. A method of making a single piece plastic catheter having, at one end of the catheter, an integrally formed Luer lock connector having radially outwardly extending lug means thereon, and a tapered bore with walls tapering radially inwardly toward the opposite end of the catheter, for connection with complementary Luer lock connecting means of another member comprising the steps of extruding thermoplastic tubing having a first portion and a second portion integral with said first portion and axially disposed therefrom, said second portion having a smaller outer diameter than said first portion and a wall thickness less than that of said first portion, whereby said second portion is more flexible than said first portion; cutting said tubing to provide a tube of

selected length which includes at least a part of each of said first and second portions with a part of said first portion at one end of the tube; inserting an end portion of said tube having a part of said first portion in a mold having an axially extending cavity and a radially extending cavity at one end of said axially extending cavity, heating said end portion of said tube and inserting a tapered mandrel into said end portion, reshaping said end portion to conform to said tapered mandrel, and causing some of the thermoplastic material to move into said radially extending cavity to form said lug means on said end portion.



3,983,204

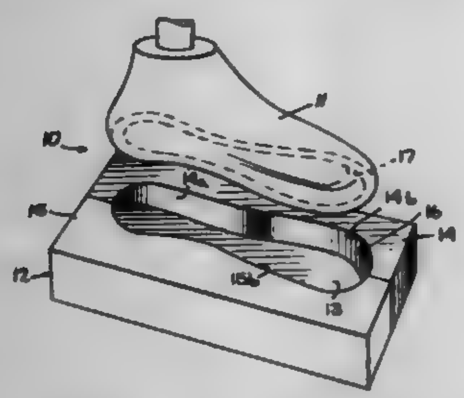
RECESSED LAST AND METHOD OF LASTING AND MOLDING A SHOE SOLE TO UPPER INCLUDING POSITIONING INSOLE IN RECESSED LAST

Jerome L. Opinsky, Joppatowne, Md., and Ralph D. Stewart, Naugatuck, Conn., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 812,832, April 2, 1969, abandoned. This application July 14, 1971, Ser. No. 162,508

Int. Cl. B29f *1/00*

U.S. Cl. 264—244 **11 Claims**



1. A process of making an article of footwear comprising:

positioning a last with its sole-surface facing upwardly;

placing an insole into a correspondingly contoured and dimensioned recess provided at the sole-surface of the last, said recess defining a wall surrounding the peripheral edge of the insole for peripherally engaging the insole so as to prevent lateral movement of said insole with respect to said last;

positioning an upper on said last with the sole-engaging margin of the lasted upper extending inwardly beyond the walls of said recess into overlying relation with the margin of said insole;

inverting the lasted upper so that its sole-surface faces downwardly, said insole being retained in said recess solely by said sole-engaging margin of said upper and accurately located with respect to said upper by the peripheral engagement with the wall of said recess;

placing the lasted upper and retained insole into a mold cavity with the insole facing downwardly, and

forming in said mold cavity an outsole adhering both to said insole and to the bottom of said lasted upper, said step of forming the outsole comprising molding an outsole to said upper and to said insole in said mold cavity while peripherally engaging and positively locating the insole relative to the lasted upper during the molding operation without the need for additional fastening means.

3,983,205

METHOD OF MOLDING REINFORCED ARTICLES

Joseph Edward Barrett, Twickenham, England, assignor to The British Petroleum Company Limited, England

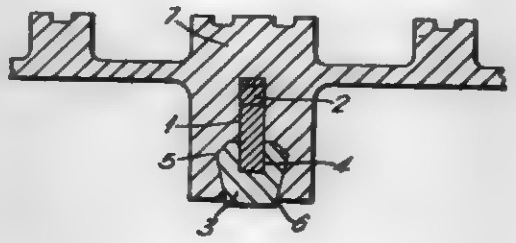
Continuation of Ser. No. 274,315, July 24, 1972, abandoned. This application May 16, 1974, Ser. No. 470,375

Claims priority, application United Kingdom, July 30, 1971, 35912/71

Int. Cl.² B29D *3/02*

U.S. Cl. 264—254 **6 Claims**

1. A process for the production of a metal reinforced polyester resin article which comprises locating a metal reinforcing member longitudinally within the mould cavity of a longitudinally extending pressure mould by means of at least one plastics support, said mould cavity having a channel in the bottom surface thereof, each plastics support having a base resting in the channel of the mould cavity of the mould, sides spaced from the longitudinal walls of the mould cavity, said sides providing a waisted profile, and an upper surface containing a recess into which part of the metal reinforcing member fits, whereby the metal reinforcing member is spaced from said bottom surface, and curing a fibre-reinforced polyester resin composition containing mineral filler in said mould cavity around the metal reinforcing member to surround said metal reinforcing member with plastics material, whereby any path formed between the plastics support and the cured polyester resin composition is relatively long, thereby minimizing ingress of water to the reinforcing member along said path.



3,983,206

SEALANT SYSTEM FOR BURIAL VAULT AND METHOD OF APPLICATION

Bernard T. Juba, White Bear Lake, and James A. Collins, North Oaks, both of Minn., assignors to H. B. Fuller Company, St. Paul, Minn.

Filed Apr. 28, 1975, Ser. No. 572,113

Int. Cl.² B32B *13/12;* **E04H** *13/00*

U.S. Cl. 264—255 **12 Claims**

10. The method comprising the following steps:

I. Casting a concrete closure means for a burial vault and providing said closure means with a peripheral recess means around the underside thereof;

II. Inverting said closure means whereby said recess means faces upwardly;

III. Pouring into said recess means a first thermoplastic layer of essentially a first molten hot-melt composition consisting essentially of:
  a. 55–65% by weight of substantially amorphous polypropylene with a molecular weight in the range of 2,000–5,000 and a ball and ring softening point in the range of about 90°–115°C.,
  b. 15–25% by weight of a synthetic terpene resin which melts within the range of about 85°C. to about 105°C.; and
  c. 15–25% by weight of a paraffinic oil; said first hot-melt composition having a glass transition temperature within the range of −5° to −15°C., being substantially solid and resistant to flow under the influence of gravity at temperatures below 65°C., being pourable and capable of seeking its own level with the temperature range of 90° to about 110°C., and upon solidification, having a penetration value less than 300 mm. in 5 seconds at 25°C. in ASTM test D-217-T60, using a D-5 needle, and 200 grams of weight;

IV. Permitting said first thermoplastic layer to cool to a temperature below 60°C. and to solidify to form a solid, gel-like layer with a generally planar upper surface;

V. Pouring into said recess, on top of said generally planar surface, a second thermoplastic layer of essentially a second hot-melt composition consisting essentially of:
  a. about 35–40% by weight of said substantially amorphous polypropylene,
  b. 27–28% by weight of said synthetic terpene resin, and
  c. 37–38% by weight of said paraffin oil; said second hot-melt composition having a glass transition temperature within the range of about −43°C. to about −40°C. and a penetration value greater than 400 mm. in 5 seconds at 25°C. in ASTM test D-217-T60, using a D-5 needle and 200 grams of weight; and

VI. Permitting said second thermoplastic layer to cool to room temperature, whereby said closure means is provided with a heterogeneous sealing element, formed in place within said recess, which sealing element is capable of providing a seal which can resist at least a 275 cm. hydrostatic head at 24°C.

3,983,207

METHOD FOR MANUFACTURING MOLDED PRODUCTS

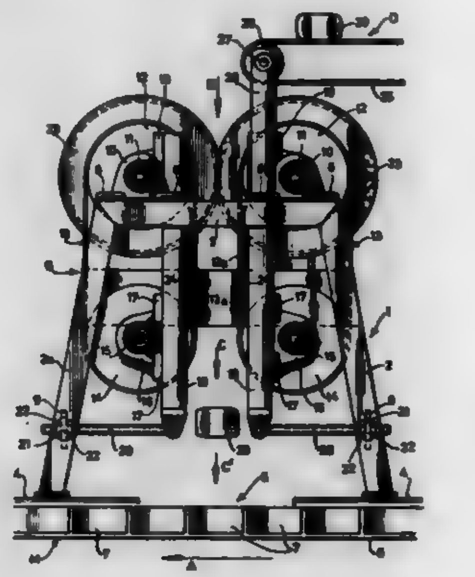
Hendrik Sinnema, Bordine 74, Sneek, Netherlands

Division of Ser. No. 258,359, May 31, 1972, Pat. No. 3,834,851. This application July 9, 1974, Ser. No. 486,905

Claims priority, application Netherlands, June 1, 1971, 7107479

Int. Cl.² B28B *1/32*

U.S. Cl. 264—297 **4 Claims**



1. A method for the manufacture of molded bricks by depositing pre-formed distinct clods of kneadable material at a controlled velocity into molds, said method comprising transporting distinct pre-formed clods of materials one after another on a transport device to a molding station, advancing a succession of molds to the molding station at a location spaced below the transport device, releasing each clod in succession from the transport device for free deposit between two vertical lengths of adjacent endless belts disposed above the molds and traveling at a pre-determined velocity, transporting each clod in succession by said belts and guiding the clods for individual free discharge at said predetermined velocity of the belts at a predetermined height above a waiting mold where the clod is freely dropped and deposited into the mold without contacting the walls thereof whereafter the clod substantially fills the mold of its own accord, said lengths of the belts being positioned to receive each clod and transport the same vertically and discharge the clod at the speed of travel of the belts for free fall into the respective waiting mold.

3,983,208

RECOVERY OF VANADIUM AND COPPER CATALYST METALS USING KETONES

Jorge A. Blay, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Jan. 27, 1975, Ser. No. 544,158

Int. Cl.² C01G *3/00, 31/00;* **C07C** *55/14*

U.S. Cl. 423—27 **7 Claims**

1. A process for the separation of copper and vanadium catalyst metal values from an aqueous nitric acid solution containing said catalyst metal values as well as C_4 to C_6 alkyl dicarboxylic acids, said aqueous nitric acid solution being derived from the crystallization zone of a process wherein cyclohexanol and/or cyclohexanone are oxidized in the liquid phase by nitric acid oxidation in the presence of catalyst metals corresponding to said catalyst metal values to produce a reaction product comprising adipic acid, and the adipic acid product recovered by crystallization in said crystallization zone, comprising:
  a. treating said aqueous nitric acid solution to remove substantially all of the nitric acid and water therefrom and obtain a substantially dry, molten-type residue comprising said dicarboxylic acids and said catalyst metal values;
  b. intimately mixing said residue with an amount of a liquid dialkyl ketone solvent sufficient to dissolve the said dicarboxylic acids in said residue so as to form a liquid-solid suspension, each alkyl group of said dialkyl ketone being of from one to four carbon atoms, the liquid phase of said liquid-solid suspension comprising a solution of said dicarboxylic acids in the said ketone solvent and the solid phase of said liquid-solid suspension comprising said catalyst metal values;
  c. adding to said liquid-solid suspension an amount of ammonia or ammonium hydroxide sufficient to neutralize from about 0.5 to 3% of the dicarboxylic acids contained therein; and
  d. separating said solid phase comprising said catalyst metal values from said liquid-solid suspension.

3,983,209

METHOD FOR TREATING BURNS

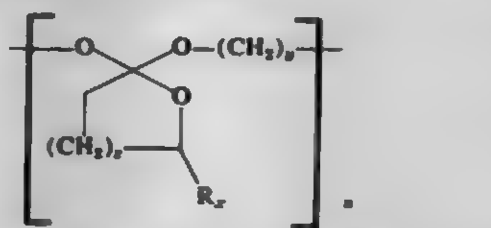
Edward Emil Schmitt, Palo Alto, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Jan. 28, 1975, Ser. No. 544,807

Int. Cl.² A61K *31/74, 31/80*

U.S. Cl. 424—78 **12 Claims**

1. A method of treating burns in animals which comprises applying to the burned surface an agent selected from the group consisting of an antibacterial, antibiotic, antifungal and proteolytic enzyme and mixtures thereof in a hydrophobic, bioerodible polymer of the formula:



wherein R is a lower alkyl of 1 to 7 carbons, *x* is 0 or 1, *y* is 4 to 10, *z* is 1 to 3 and *n* is 10 to 1000, which polymer on bioerosion, releases an effective amount of the agent to the thermally produced wound for the treatment of said burn.

3,983,210

PROCESS FOR SEPARATION OF IRON FROM METAL SULPHATE SOLUTIONS IN HYDROMETALLURGIC PROCESSES

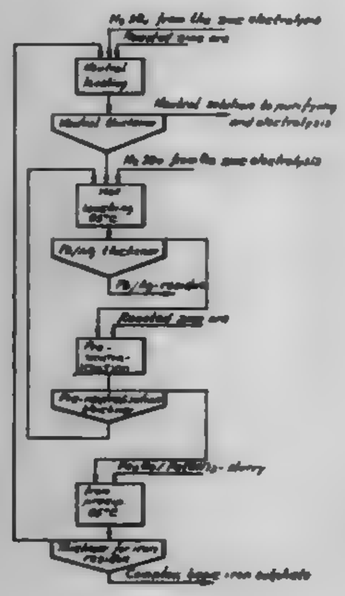
Georg Steintveit, Odda, Norway, assignor to Det Norske Zinkkompani A/S, Odda, Norway

Continuation-in-part of Ser. No. 181,821, Sept. 20, 1971, abandoned. This application Apr. 23, 1974, Ser. No. 463,265

Claims priority, application Norway, Sept. 30, 1970, 3703/70; Germany, Apr. 10, 1971, 2117584; Netherlands, Apr. 16, 1971, 7105172

Int. Cl.^{3} C01G *9/06*

U.S. Cl. 423—106 **6 Claims**



1. A process for the separation of iron from and the recovery of zinc from zinc sulphate solutions acidified with sulphuric acid and in which said solutions have a content of iron comprising the steps of adding a precipitating agent to such a solution and reacting it therewith at atmospheric pressure and at a temperature of from 85° to 95°C. thereby converting the iron content of the solution to a complex basic iron sulphate residue, said precipitating agent containing Fe_2O_3, $Fe(OH)_3$, or both, adjusting the acid strength of the solution during the reaction to a pH of from 1.4 to 1.7 by controlling the additions of precipitating agent added to the solution, and separating the resulting iron sulphate residue from the solution containing the zinc.

3,983,211

METHOD OF PRODUCING ALUMINA AND POTASSIUM SULPHATE FORM ALUNITE

Gakif Zakirovich Nasyrov, prospekt Nauki, 12, kv. 49; Nikolai Andreevich Kaluzhsky, Sredny prospekt, 6/13, kv. 123, both of Leningrad, and Vladimir Nikolaevich Kostin, Saviskaya naberezhnaya, 3, kv. 82, Moscow, all of U.S.S.R.

Continuation of Ser. No. 515,664, Oct. 17, 1974, abandoned, which is a continuation of Ser. No. 398,555, Sept. 18, 1973, abandoned. This application Aug. 25, 1975, Ser. No. 607,498

Claims priority, application U.S.S.R., Dec. 8, 1972, 1852006

Int. Cl.^{2} C01F *7/06*

U.S. Cl. 423—128 **8 Claims**

1. A method of producing alumina and potassium sulphate from alunite comprising contacting alunite with a solution of caustic alkalies at a temperature of from 70° to 90°C to thereby transfer sulphates and aluminates of sodium and potassium into solution, said solution being denoted the process solution; maintaining a percentage concentration in the process solution of sodium ions with respect to the sum of potassium and sodium ions in the same solution of not less than 70 per cent at all times; precipitating a mixture of sodium and potassium sulphates from the process solution; separating the precipitate from the remaining process solution; treating said precipitate with potassium hydroxide to obtain potassium sulphate; and recovering alumina from said remaining process solution.

3,983,212

ALUMINA PRODUCTION

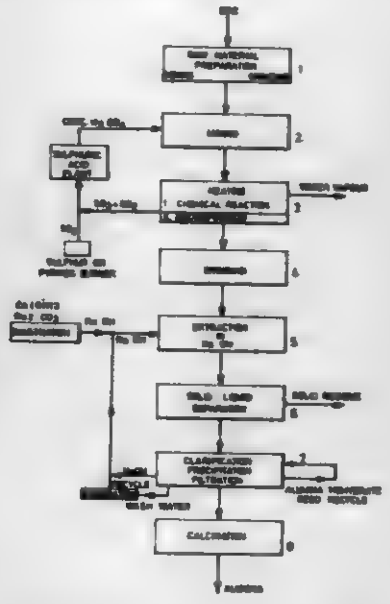
Hyman Moses Lowenstein, and Arthur Michael Lowenstein, both of 1 Hearn Drive, Northcliff, Johannesburg, Transvaal, South Africa

Filed Aug. 29, 1974, Ser. No. 501,788

Claims priority, application South Africa, Aug. 31, 1973, 73/5996

Int. Cl.^{3} C01F 7/26

U.S. Cl. 423—137 **6 Claims**



1. A method of producing a product containing alkali soluble alumina consisting essentially of the steps of contacting an aluminum silicate material selected from the group consisting of clay minerals, coal ash and aluminum silicate ores with concentrated sulphuric acid containing 80 to 100 weight percent sulphuric acid, heating the aluminum silicate material and the acid to a temperature above 190°C and below the boiling point of the acid to produce a substantially anhydrous hard product containing aluminum sulfate and silica and decomposing the hard product by heat treatment at a decomposing temperature below 800°C. in the presence of a reducing agent to produce a product containing alkali soluble alumina.

6. A method according to claim 1 wherein the reducing agent is a carbonaceous reducing agent.

3,983,213

USE OF EMULSIONS IN CROWD CONTROL

Kenneth J. Lissant, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Feb. 26, 1973, Ser. No. 335,517

Int. Cl.^{2} A01N *9/04*, *17/10*

U.S. Cl. 424—170 **12 Claims**

1. A process of restricting access of persons or animals to an area which is characterized by exerting a force on a thixotropic high internal phase ratio non-oil-in-oil emulsion comprising (1) non-oil, (2) an emulsifiable oil and (3) an emulsifying agent, said non-oil being present in said emulsion in an amount of at least 60% by volume of said emulsion, said emulsion having the characteristics of a solid when at rest and the characteristics of a liquid when a force is exerted on it, and propelling said emulsion at said area to which access is to be restricted.

3,983,214

FUNGICIDAL COMPOSITIONS AND METHOD FOR PROTECTING PLANTS BY THE USE THEREOF

Tomomasa Misato, Tokyo; Keng Tang Huang, Wako; Yasuo Homma, Kamifukuoka; Toshiro Shido, Kawasaki, and Hachiro Wakamatsu, Musashino, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Division of Ser. No. 419,067, Nov. 26, 1973, abandoned. This application Feb. 12, 1975, Ser. No. 549,493

Claims priority, application Japan, Dec. 8, 1972, 47-123654; Dec. 8, 1972, 47-123655; Feb. 28, 1973, 48-23251

Int. Cl.^{2} A01N *9/00*

U.S. Cl. 424—180 **22 Claims**

1. A fungicidal composition containing as an active ingredient, sucrose fatty acid ester whose ester group is derived from a fatty acid having 8 to 18 carbon atoms in an amount of about 0.1–90% by weight, based on the weight of the composition, and at least on adjuvant selected from the group consisting of solid carrier, liquid carrier, emulsifying agent, dispersing agent and surface active agent.

3,983,215

PROCESS FOR PREPARING NAOH.3.5 H_2O CRYSTALS

Chuji Hirata, Yokohama; Yasunori Yokogawa, and Tsutomu Tabira, both of Kawasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed July 19, 1974, Ser. No. 489,927

Claims priority, application Japan, July 19, 1973, 48-81172

Int. Cl.^{2} C01D *1/32*

U.S. Cl. 423—198 **9 Claims**

5. A process for preparing NaOH.3.5 H_2O crystals, which comprises;

adding a member selected from the group consisting of NaOH, H_2O, aqueous NaOH and mixtures thereof to an NaOH solution containing NaOH.3.5 H_2O seed crystals at a temperature of from 10° to 0°C, so as to adjust the concentration of NaOH in the liquid phase of said NaOH solution to from 32 to 34% NaOH

$$\left(\frac{NaOH}{NaOH+H_2O} \times 100\right)$$

by weight;

precipitating NaOH.3.5 H_2O crystals from said 32 to 34% NaOH solution; and

separating said precipitated NaOH.3.5 H_2O crystals from said solution.

3,983,216

PROCESS FOR THE REMOVAL OF VINYL CHLORIDE FROM GAS STREAMS

Jerome R. Sudduth, Pasadena, and Donald A. Keyworth, Houston, both of Tex., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed June 3, 1975, Ser. No. 583,491

Int. Cl.^{2} B01D *53/34*

U.S. Cl. 423—240 **7 Claims**

1. The process for the removal of vinyl chloride from a gas stream that contains from 10 parts to 1000 parts by weight of vinyl chloride per million parts by weight of gas that comprises contacting the vinyl chloride in said gas with ozone in the presence of activated carbon.

3,983,217

METHOD FOR REMOVING SULFUR DIOXIDE FROM WASTE GASES

Ryoji Muraki; Masao Endo, both of Nishinomiya; Nobuaki Aoki, Hirakata; Kazuo Mizutani, Takatsuki, and Norio Fukui, Nishinomiya, all of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Japan

Filed Sept. 16, 1974, Ser. No. 506,048

Claims priority, application Japan, Sept. 26, 1973, 48-108176

Int. Cl.^{2} C01B *17/00*

U.S. Cl. 423—242 **9 Claims**

1. A method for removing sulfur dioxide from waste gases by a wet-oxidation-absorption method, which comprises absorbing SO_2 contained in the waste gases with an absorbent consisting essentially of an aqueous solution of ammonium sulfate acidified with sulfuric acid to a pH of 3–4 in an adsorption tower, the concentration of said aqueous solution of ammonium sulfate being 0.1 to 3.0 moles/liter; oxidizing the absorbed SO_2 and dissociated HSO_3^- with air or oxygen in an oxidation tower at a temperature of 50° to 80°C to SO_4^{--} and HSO_4^-, the SO_2 absorbing capacity of the aqueous solution of ammonium sulfate thereby being restored; and circulating the recovered aqueous solution of ammonium sulfate to the absorption tower.

3,983,218

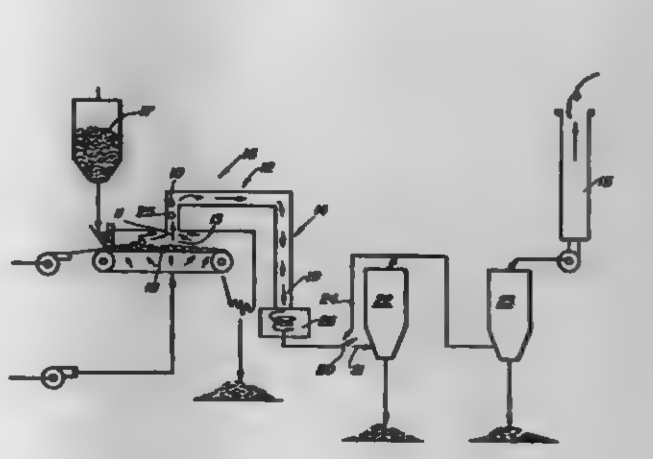
METHOD FOR DRY REMOVAL OF SULFUR DIOXIDE FROM FURNACE FLUE, COAL AND OTHER GASES

Sidney M. Heins, 6033 N. Sheridan Road, Chicago, Ill. 60660

Continuation-in-part of Ser. No. 90,618, Nov. 18, 1970, abandoned. This application Sept. 11, 1972, Ser. No. 287,781

Int. Cl.^{2} B01J *8/00*

U.S. Cl. 423—244 **4 Claims**



1. A method for the dry removal of sulfur dioxide from flue gas of a furnace having a chemical reaction chamber to which the flue gas at a temperature in the range of 800 to 1800°F. flows from a fuel combustion zone, using as a chemical reactant run-of-the-mill flue dust from open hearth and basic oxygen steel-making process, comprising the combination steps of:

a. injecting an amount of the dry flue dust into the flue gas in the chemical reaction chamber at least sufficient for the substantial absorption of the sulfur dioxide therein, and

b. cleaning the resulting chemical reaction products from the flue gas.

3,983,219

HIGH PURITY POLONIUM RECOVERY

Clyde H. H. Cheng, Miamisburg; Calvin M. Love, Dayton; Martin D. Price, Bellbrook, all of Ohio, and Alexander J. Russo, Milpitas, Calif., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Oct. 1, 1973, Ser. No. 402,553

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.^{2} C01F *13/00*

U.S. Cl. 423—249 **4 Claims**

1. A method for providing a radioactive heat source element comprising contacting polonium containing polonium-210 with from about 4 to about 8 normal nitric acid to form a nitric acid solution containing from about 4 to about 7 curies of polonium-210 per milliliter of solution, adding a base to said solution to adjust the pH of said solution to from about 8 to about 9pH thereby precipitating polonium hydroxide having the formula $Po(OH)_4 \cdot xH_2O$, immediately cooling said solution and said precipitate, filtering said cooled precipitate within from about 2 to about 3 minutes in from about 10 to about 20 micron filter element, passing a heated inert gas through said filter element thereby drying said precipitate, heating said filter element to about 900°C in a vacuum of less than about 10^{-4} Torr to vaporize said polonium, and thereafter condensing said vaporized polonium in a heat source element.

3,983,220

RECOVERY OF BORIC ACID FROM ION EXCHANGERS

Charles W. Pollock, Richland, Wash., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Nov. 7, 1974, Ser. No. 521,984

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.² C01B *35/10*

U.S. Cl. 423—283 **10 Claims**

1. In the method for recovering boric acid from an aqueous solution by passing the solution through a strongbase anion exchange resin whereby the boric acid is adsorbed on the resin, the improvement comprising passing an aqueous ammonium bicarbonate eluent through the resin, thereby eluting the boric acid from the resin in the eluate, and heating the eluate to a temperature sufficient to volatilize and drive off the ammonium bicarbonate whereby only the boric acid remains in the solution.

3,983,221

PRODUCTION OF BASIC ALUMINIUM NITRATE SOLUTION

Jakob Rademachers; Peter Woditsch; Henning Erfurth; Bernd Holle, all of Krefeld, and Wilhelm Schnell, Mettmann, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 31, 1975, Ser. No. 563,761

Claims priority, application Germany, Apr. 23, 1974, 2419453

Int. Cl.² C01F *7/66*

U.S. Cl. 423—395 **8 Claims**

1. A process for the production of basic aluminum nitrate solutions by reacting metallic aluminum with nitric acid, comprising establishing a body of metallic aluminum, supplying additional aluminum to said body, supplying to said body countercurrent to the supply of the additional aluminum nitric acid of a concentration of about 5 to 30% by weight having basic aluminum nitrate dissolved therein and a pH of about 1 to 4, maintaining said body at a temperature of from about 30°C up to the boiling point of the nitric acid, whereby the aluminum reacts with the nitric acid, and removing solution containing reaction product adjacent the point of supply of the additional aluminum and remote from the point of supply of the nitric acid.

3,983,222

REMOVING NITRATES WITH AN ORGANIC AMINE SALT AND ION EXCHANGE

Timo Kalevi Lehto, Oulu, Finland, assignor to Kemira Oy, Finland

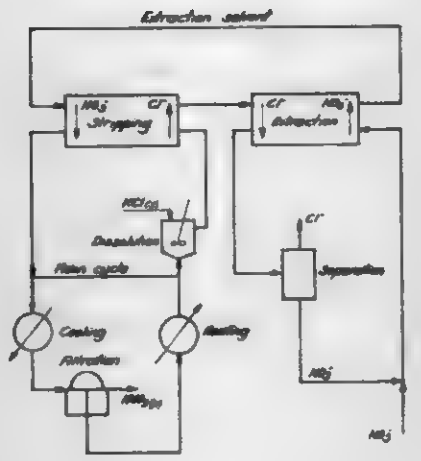
Filed Nov. 18, 1974, Ser. No. 524,926

Claims priority, application Finland, Nov. 22, 1973, 3604/73

Int. Cl.² C01B *21/48;* **C01D** *9/16*

U.S. Cl. 423—395 **11 Claims**

1. A continuous process for removing nitrates from nitrate containing aqueous solutions having a pH of about 0–7, which comprises: (1) extracting the nitrate containing aqueous solution with an organic amine salt dissolved in an organic solvent phase whereby the nitrate ion goes into the organic solvent, (2) separating the organic phase, (3) stripping the organic extraction solvent phase from the extraction with a stripping salt solution of pH at least 0.5, said salt being capable of ion exchange with the nitrate ion and containing the anion of the amine salt in step (1) to strip and convert the amine for the next extraction cycle into the same amine salt as used for the extraction; and the stripping solution contains the nitrate ion and the cation of the stripping solution; (4) maintaining the concentration of the salt formed by the cation of the stripping salt and the nitrate anion in the stripping solution so high that this salt is crystallized from the stripping solution substantially continuously, but still so low that the nitrate anion extracted into the organic extraction solvent phase passes during the stripping continuously into the stripping solution while the anion of the stripping salt passes from the stripping solution into the organic extraction solvent phase; and recovering crystallized nitrate salt from the stripping solution.



3,983,223

PROCESS FOR THE PRODUCTION OF ALKALI PERCARBONATES

Karlheinz Janzon; Heinz Haschke, both of Hanau, and Rudolf Müller, Freigericht, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

Filed Dec. 12, 1974, Ser. No. 532,295

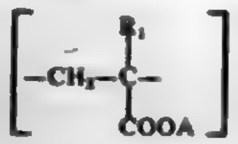
Claims priority, application Germany, Dec. 24, 1973, 2364634

Int. Cl.² C01B *15/10*

U.S. Cl. 423—415 P **15 Claims**

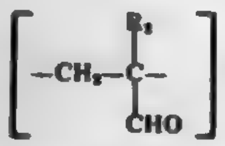
1. In the process of preparing an alkali metal percarbonate from aqueous alkali carbonate and hydrogen peroxide solution and crystalizing the percarbonate thus formed, the improvement comprising carrying out the reaction of the components in the presence of a polymeric carboxylate which is built of the following units:

Y + W/2 basic-mole percent units of the general formula:



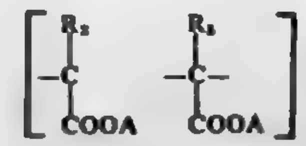
$$\left[-\mathrm{CH_2}-\overset{\mathrm{R_1}}{\underset{\mathrm{COOA}}{\mathrm{C}}}-\right]\ \mathrm{(I)},$$

U-W basic-mole percent units of the general formula:



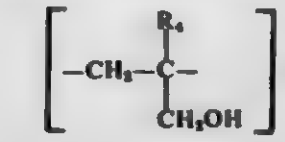
$$\left[-\mathrm{CH_2}-\overset{\mathrm{R_2}}{\underset{\mathrm{CHO}}{\mathrm{C}}}-\right]\ \mathrm{(II)},$$

Z basic-mole percent units of the general formula:



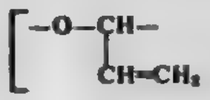
$$\left[-\overset{\mathrm{R_3}}{\underset{\mathrm{COOA}}{\mathrm{C}}}\quad-\overset{\mathrm{R_5}}{\underset{\mathrm{COOA}}{\mathrm{C}}}-\right]\ \mathrm{(III)},$$

W/2 basic-mole percent units of the general formula:



$$\left[-\mathrm{CH_2}-\overset{\mathrm{R_4}}{\underset{\mathrm{CH_2OH}}{\mathrm{C}}}-\right]\ \mathrm{(IV)},$$

V basic-mole percent units of the general formula:



$$\left[-\mathrm{O}-\underset{\mathrm{CH{=}CH_2}}{\mathrm{CH}}-\right]\ \mathrm{(V)},$$

wherein:

U is 12 to 47,
V is 1 to 25,
W is 0.6U to U,
Y is 100 - (U + V + Z) and
Z is 0 to 20,
A is Mg/2, an alkali metal, hydrogen or ammonium ion,
R_1 is hydrogen, methyl, hydroxymethyl, ethyl, chlorine or bromine,
R_2 and R_4 are hydrogen or hydroxymethyl, and
R_3 and R_5 are hydrogen, methyl or ethyl.

3,983,224

ANHYDROUS MAGNESIUM CHLORIDE PROCESS

Ronald J. Allain, and David G. Braithwaite, both of Brookhaven, Miss., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Apr. 26, 1976, Ser. No. 680,403

Int. Cl.² C01F *5/34*

U.S. Cl. 423—498 **7 Claims**

1. A method of preparing anhydrous magnesium chloride from magnesium chloride hydrates which comprises the steps of:

A. mixing together a magnesium chloride hydrate said hydrate containing minor amounts of water soluble sulfate and boron compounds as impurities with diethyl ether of tetraethylene glycol to prepare 0.1–6.0% by weight slurry of $MgCl_2$ in the diethyl ether of tetraethylene glycol and an azeotropic agent having a boiling point less than the diethyl ether of tetraethylene glycol in a quantity sufficient to remove water from said slurry;
B distilling water from said slurry wherein an anhydrous solution of $MgCl_2$ in diethyl ether of tetraethylene glycol containing the water soluble sulfate and boron compounds as insoluble impurities is formed;
C separating said $MgCl_2$ solution from the insoluble impurities;
D. adding to the $MgCl_2$ solution about 3.0 moles of ethylene glycol per mole of $MgCl_2$ present so as to prepare a $MgCl_2 \cdot 3$ moles ethylene glycol complex precipitate;
E. separating said precipitate from the diethyl ether of tetraethylene glycol and recovering the precipitate;
F. dissolving said precipitate in ethylene glycol to prepare a solution of the precipitate in ethylene glycol said ethylene glycol being used in a quantity so as to prepare an ethylene glycol solution containing from 1 to 20% by weight $MgCl_2$;
G. treating the ethylene glycol magnesium chloride solution with ammonia to form a magnesium chloride-ammonia complex which is insoluble in the ethylene glycol with the temperature of the ethylene glycol magnesium chloride solution being within the range of between −15° to 50°C;
H. separating the magnesium chloride-ammonia complex from the ethylene glycol;
I. washing the magnesium chloride-ammonia complex with a polar solvent having a lower boiling point than ethylene glycol to remove any ethylene glycol entrained in the magnesium chloride-ammonia complex;
J. heating the magnesium chloride-ammonia complex to a temperature sufficient to drive off the ammonia for a sufficient period of time to remove the ammonia, thereby forming anhydrous magnesium chloride; and then,
K. recovering anhydrous magnesium chloride which has a magnesium oxide content of less than 0.8% by weight and which is substantially free of impurities.

3,983,225

RECOVERY OF SULFUR FROM SULFUR DIOXIDE RICH AQUEOUS ABSORBENTS

Lester Van Brocklin, Thiells; George E. Hansen, Yonkers, both of N.Y., and Mark A. Kuck, Upper Montclair, N.J., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 24, 1974, Ser. No. 463,701

Int. Cl.² C01B *17/04*

U.S. Cl. 423—574 R **4 Claims**

1. In a process for recovering sulfur in which sulfur dioxide containing gas is contacted with an aqueous absorbent to form an aqueous absorbent containing sulfur dioxide with a pH in the range of about 2.5 to about 5.0, and the aqueous absorbent containing sulfur dioxide is contacted with hydrogen sulfide to form sulfur and sulfur is separated from the aqueous absorbent, the improvement which comprises; providing a reaction-separation zone containing aqueous absorbent in the lower portion thereof and void space in the upper portion, forming a mixture of gas bubbles in the aqueous absorbent by passing a gaseous mixture containing hydrogen sulfide into a circulating zone of aqueous absorbent thereby forming a gas-liquid mixture, and passing the mixture through a zone of stationary apertures wherein the size of the gas bubbles in the mixture is reduced and whereby hydrogen sulfide in the gas is contacted with the aqueous absorbent containing sulfur dioxide to form sulfur, said gas mixture containing hydrogen sulfide is provided in an amount sufficient to react with the sulfur dioxide to form sulfur and to float the sulfur formed to the surface of the body of absorbent by the rising gas bubbles whereby the sulfur is separated from the aqueous absorbent.

3,983,226

GAS STRIPPING AND RECIRCULATION PROCESS IN HEAVY WATER SEPARATION PLANT

Don Barkley Nazzer, Port Hawkesbury, Canada, and Victor R. Thayer, Newark, Del., assignors to Atomic Energy of Canada Limited, Ottawa, Canada

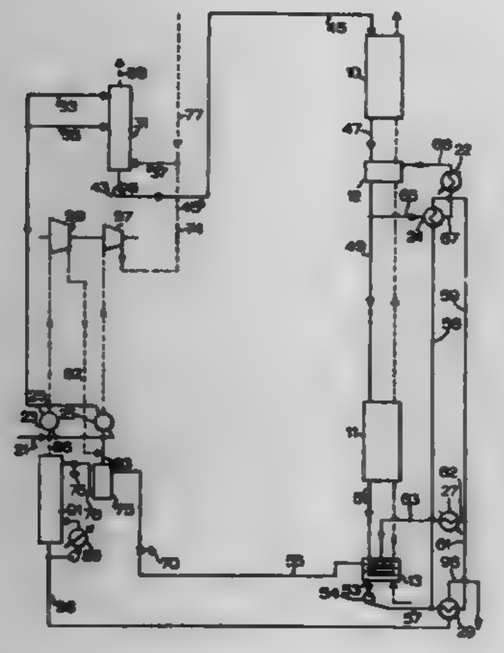
Continuation-in-part of Ser. No. 846,159, July 30, 1969, abandoned. This application Apr. 21, 1971, Ser. No. 135,874

Int. Cl.² B01D *19/00;* **C01B** *5/02*

U.S. Cl. 423—580 **6 Claims**

1. The method of gas recovery and recirculation in a gas/liquid counterflow process for isotopic separation in which hydrogen sulphide is at least partially soluble in the liquid, namely water, there being a pressurized hot isotope exchange zone and a pressurized cold isotope exchange zone for effecting isotope exchange between water and the gas at a predetermined process pressure, including the steps of: extracting at least a portion of liquid effluent having said gas in solution therein; producing a substantial drop in pressure in said liquid portion to strip hydrogen sulphide gas therefrom at a pressure substantially less than that of a said exchange zone; re-compressing said gas to a pressure less than that of said exchange

zone; absorbing the stripped gas into feed water entering the process as a source of deuterium, and pressurizing by pumping



the feed water with gas absorbed therein to a said isotope exchange zone to return said stripped gas to said zone.

3,983,227

DRY MIXTURE CONTAINING DIPHOSPHONATES AND A STANNOUS SALT USEFUL IN THE PREPARATION OF TC^99m CONTAINING BONE SCANNING AGENTS

Andrew John Tofe, and Marion David Francis, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 363,286, May 23, 1973, abandoned. This application Apr. 19, 1974, Ser. No. 462,477

Int. Cl.² A61K *43/00;* G21H *5/02;* C07F *9/32*

U.S. Cl. 424—1 7 Claims

1. A composition for the preparation of an improved bone scanning agent comprising a dry mixture of:

A. a phoshonate which is a member selected from the group consisting of (i) disodium-ethane-1-hydroxy-1,1-diphosphonate, (ii) a mixture of disodium- and trisodium-ethane-1-hydroxy-1,1-diphosphonate salts, the mole ratio of the disodium to trisodium salt being from about 4:1 to 1:1, (iii) dichloromethane diphosphonic acid, or the pharmaceutically acceptable salts thereof, and (iv) methane diphosphonic acid, or the pharmaceutically acceptable salts thereof;

B. an amount of an anhydrous reducing metal salt which is a member selected from the group consisting of stannous chloride and stannous sulfate sufficient to provide a molar ratio of stannous:phosphonate of from about 1:15 to 1:80.

3,983,228

WATER-IN-OIL ADJUVANT COMPOSITION

Allen F. Woodhour, Horsham, and Maurice R. Hilleman, Lafayette Hill, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 392,402, Aug. 28, 1973, abandoned, which is a continuation of Ser. No. 233,815, March 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 141,401, May 7, 1971, abandoned. This application Nov. 19, 1974, Ser. No. 525,149

Int. Cl.² A61K *39/02, 39/12, 39/18, 47/00*

U.S. Cl. 424—89 27 Claims

1. An adjuvant composition comprising an oil and from about 0.5 – 10% by volume of pure isomannide monooleate.

16. An adjuvant composition comprising an oil, an antigen, from about 0.5 – 10% by volume of pure isomannide monooleate and from about 0.5 – 10% by volume of pure aluminum monostearate.

23. A parenteral vaccine preparation in the form of an emulsion comprising:

a. a disperse aqueous phase containing at least one antigenic substance;
b. a continuous oil phase;
c. from about 0.5 – 10% by volume of pure isomannide monooleate and
d. from about 0.5 – 10% by volume of pure aluminum monostearate.

3,983,229

VACCINES, THE PROCESS FOR PREPARING THE SAME AND THE APPLICATIONS THEREOF

Edgar Hans Relyveld, Paris, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed Apr. 30, 1974, Ser. No. 465,712

Claims priority, application France, May 4, 1973, 73.16131

Int. Cl.² A61K *39/02, 39/12, 39/38, 39/40*

U.S. Cl. 424—92 27 Claims

1. A process for preparing a bacterial toxin comprising the steps of:

a. reacting a bacterial toxin with glutaraldehyde of a concentration ranging from about 0.00131 M to about 0.0526 M and for a duration just sufficient for almost complete detoxification within 1 hour with complete detoxification within 3 hours, said detoxification being equivalent to formaldehyde detoxification requiring a period of not less than 2 weeks, to detoxify and inactivate said toxin,
b. stopping the reaction as soon as said inactivation stage is reached, whereby an inactivated product is obtained which is usable as a bacterial toxin while remaining antigenic and retaining its immunizing power.

3,983,230

ANTIBIOTIC SIOMYCIN A DERIVATIVES AND PRODUCTION THEREOF

Kei Okabe, Yao; Mikao Mayama, Ikeda, and Shinzo Matsuura, Itami, all of Japan, assignors to Shionogi & Co., Ltd., Japan

Continuation-in-part of Ser. No. 461,432, April 15, 1974, abandoned. This application Mar. 7, 1975, Ser. No. 556,411

Claims priority, application Japan, Apr. 18, 1973, 48-43900

Int. Cl.² H61K *35/74*

U.S. Cl. 424—117 10 Claims

1. Half ester -I of siomycin A with butanedioic acid, yellowish powder, melting at 265° to 280°C with decomposition, containing the elements carbon, hydrogen, oxygen, nitrogen and sulfur in substantially the following proportions by weight: in the form of anhydrous compound; C, 50.42 %; H, 5.10 %; N, 14.57 %; S, 7.93 %, in the form of hydrate of the compound; C, 45.77 %; H, 5.45 %; N, 12.21 %; S, 7.62 %; H_2O, 10.68 %, having Rf of zero on thin-layer chromatography on silica gel GF (made by Merck company) {chloroform-methanol (8 : 2 by volume) solvent} having a specific rotation of $[\alpha]_D^{25}$ $-63.2\pm2.0°$ (c = 0.525, in methanol), having a neutralization equivalent of 500, and showing an infrared absorption spectrum defined in FIG. 1 and an ultraviolet absorption spectrum defined in FIG. 2, and pharmaceutically acceptable salts thereof.

3,983,231

ANTIBIOTIC SUBSTANCES AND PREPARATION

Surendra N. Sehgal, Dollard des Ormeaux; Kartar Singh, Beaconsfield, and Claude Vezina, Deux-Montagnes, all of Canada, assignors to Ayerst McKenna and Harrison Ltd., Montreal, Canada

Division of Ser. No. 467,167, May 6, 1974, Pat. No. 3,911,112, which is a continuation-in-part of Ser. No. 377,985, June 10, 1973, abandoned. This application June 26, 1975, Ser. No. 590,542

Int. Cl.² A61K *35/74*

U.S. Cl. 424—118 4 Claims

1. A pharmaceutical composition for inhibiting the growth of pathogenic bacteria in a mammal which comprises a pharmaceutical carrier and an effective antibacterial amount of the antibiotic component 484A, which antibiotic component 484A

a. is soluble in water and methanol and substantially insoluble in acetone, ether, benzene, ethyl acetate and chloroform,
b. is convertible to acid addition salts,
c. gives one main zone of antimicrobial activity at 23 – 25 cm from origin on descending paper chromatography at 24°C for 48 hours on Whatman No. 1 paper using a solvent system consisting of n-propanol, pyridine, acetic acid and water (30:20:6:20) and two main spots 13 – 15 cm and 23 – 25 cm from origin in the same system as revealed by ninhydrin spray,
d. is convertible to a sulfate salt giving two main spots, Rf 0.15 – 0.16 and Rf 0.22 – 0.24 on ascending paper chromatography at 24°C for 16 hours on Whatman No. 1 paper using a solvent system consisting of n-propanol, pyridine, acetic acid and water (30:20:6:24) as detected by ninhydrin,
e. is convertible to a sulfate salt giving two zones, as detected by ninhydrin spray, Rf 0.30 – 0.32 and Rf 0.40 – 0.42 on circular paper chromatography using Whatman No. 1 paper and a solvent system consisting of n-propanol, pyridine, acetic acid and water (30:20:6:24) and in the same system gives one zone of antimicrobial activity at Rf 0.40 – 0.42,
f. has a representative infrared absorption spectrum in KBr pellet as shown in accompanying FIG. 2, showing bonds at 3300, 3080 (sh), 2940 (sh), 1710 (sh), 1660, 1550, 1390, 1310, 1105, 955, 920, and 850 cm^{-1},
g. inhibits growth of *Staphylococcus pyrogenes* (penicillin-sensitive), *Staphylococcus pyogenes* (penicillin-resistant), *Streptococcus faecalis*, *Escherichia coli*, *Aerobacter aerogenes*, *Salmonella pullorum*, *Pseudomonas aeruginosa*, *Proteus mirabilis*, *Proteus vulgaris*, *Klebsiella pneumoniae* and *Serratia marcescens*,
h. exhibits a LD_{50} (i.p., mice) mice) of 1.0 g/kg,
i. has about a 1 to 1 ratio of streptolidine and L-β-lysine moieties as indicated by amino acid analysis,
j. has a specific rotation, $[\alpha]_D^{25} = -25° \pm 3°$ (H_2O),
k. gives positive reaction with ninhydrin and silver nitrate and negative reactions with Elson-Morgan and Sakaguchi reagents, and
l. has an empirical formula $C_{18\text{-}19}H_{34\text{-}36}N_{7\text{-}8}O_{7\text{-}8} \times 1\text{–}3\ H_2O$.

2. A pharmaceutical composition for inhibiting the growth of pathogenic bacteria in a mammal which comprises a pharmaceutical carrier and an effective antibacterial amount of the antibiotic component 484B, which antibiotic component 484B

a. is soluble in water and methanol and substantially insoluble in acetone, ether, benzene, ethyl acetate and chloroform,
b. is convertible to acid addition salts,
c. gives a main area of antimicrobial activity at 17 cm and minor areas at 24 and 8 cm from the origin on descending paper chromatography at 24°C for 48 hours on Whatman No. 1 paper using a solvent system consisting of n-propanol, pyridine, acetic acid and water (6:4:1.5:4),
d. gives three zones, as detected by ninhydrin spray, Rf 0.16, 0.29 and 0.42, on circular paper chromatography using Whatman No. 1 paper and a solvent system consisting of n-propanol, pyridine, acetic acid and water (30:20:6:24),
e. has a representative infrared absorption spectrum in KBr pellet as shown in accompanying FIG. 3, showing bands at 3280, 3070, 2930, 1710, 1655, 1550, 1395, 1075 and 920 cm^{-1},
f. inhibits the growth of *Staphylococcus pyogenes* (penicillin-sensitive), *Staphylococcus pyogenes* (penicillin-resistant), *Streptococcus faecalis*, *Escherichia coli*, *Aerobacter aerogenes*, *Salmonella pullorum*, *Pseudomonas aeruginosa*, *Proteus mirabilis*, *Proteus vulgaris*, *Klebsiella pneumoniae* and *Serratia marcescens*,
g. exhibits a LD_{50} (i.p., mice) of about 100 mg/kg,
h. has about a 1 to 2 ratio of streptolidine and L-β-lysine moieties as indicated by amino acid analysis,
i. has a specific rotation, $[\alpha]_D^{24} = -12° \pm 2°$ (H_2O), and
j. has as an empirical formula $C_{23\text{-}25}H_{44\text{-}46}N_{9\text{-}10}O_{8\text{-}9} \times 1\text{–}5\ H_2O$.

3,983,232

NOVEL AGENT FOR TREATMENT OF DEHYDRATIONS IN VETERINARY MEDICINE, PROCESS FOR PREPARATION AND NEW USE THEREOF

Branislav Pekić; Vladislav Mladenović, and Dragan Cvetković, all of Leskovac, Yugoslavia, assignors to Zdravlje fabrika farmaceutskih i hemijskih proizvoda, Leskovac, Yugoslavia

Filed Feb. 18, 1975, Ser. No. 550,491

Claims priority, application Yugoslavia, Mar. 20, 1974, 761/74

Int. Cl.² A61K *31/70*

U.S. Cl. 424—180 21 Claims

1. Method for the treatment of dehydrations in an animal which comprises interperitoneally injecting affected animal with solutions of dextran or of hydroxyalkyl derivative of dextran.

3,983,233

COMPOSITIONS AND METHOD OF TREATING WITH STEREOISOMERIC MIXTURES OF 2'-UNSYMMETRICAL 16,17-METHYLENEDIOXY STEROIDS

Ralph Lennart Brattsand, Lund; Bo Thuresson af Ekenstam, Molndal; Karl Goran Claeson, Sare, and Bror Arne Thalen, Lund, all of Sweden, assignors to AB Bofors, Bofors, Sweden

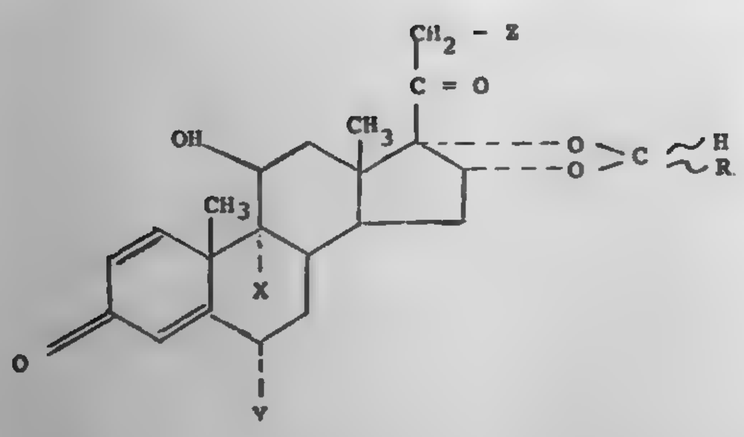
Continuation-in-part of Ser. No. 360,051, May 14, 1973, Pat. No. 3,929,768. This application Nov. 6, 1975, Ser. No. 629,389

Claims priority, application Sweden, May 19, 1972, 6644/72

Int. Cl.² C07J *17/00*

U.S. Cl. 424—241 48 Claims

1. A pharmaceutically-active composition, suitable for use in the treatment of inflammation, containing as active ingredient an effective antiinflammatory amount of a steroid compound, in combination with a pharmaceutically-acceptable carrier, said steroid compound being a stereoisomeric mixture of a 2'-unsymmetrical 16,17-methylenedioxy steroid having the general formula



(I)

wherein X and Y are independently selected from hydrogen and fluorine, X being selected from hydrogen and fluorine when Y is hydrogen and X being fluorine when Y is fluorine, Z is selected from hydroxyl and esterified hydroxyl wherein the hydroxyl group is esterified with a member of the group consisting of phosphoric and sulphuric acids, dicarboxylic acids having 2 to 12 carbon atoms, inclusive, pyridine-3-carboxylic acid, pyridine-4-carboxylic acid, benzofurane-2-carboxylic acid, and menthoxymethylcarboxylic acid, and lower-alkanoic acids having up to a maximum of 8 carbon atoms, and R is selected from straight and branched hydrocarbon chains having 2 to 10 carbon aoms, inclusive.

3,983,234

TREATMENT OF DYSKINESIAS

Anthony Campbell Sayers, Koniz, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed June 25, 1975, Ser. No. 590,146

Claims priority, application Switzerland, July 4, 1974, 9202/74

Int. Cl.² A61K *31/495, 31/495*

U.S. Cl. 424—250 5 Claims

5. A method according to claim 3, wherein clozapine is orally administered at a unit dose of 6 to 100 milligrams.

3,983,235

VETERINARY FEEDSTUFFS

Florin Seng, Cologne-Buchheim; Kurt Ley, Odenthal-Globusch, and Karl Georg Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

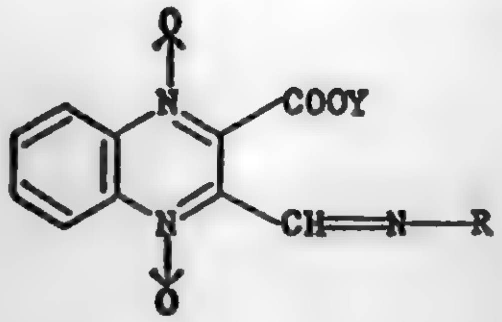
Division of Ser. No. 399,098, Sept. 20, 1973, which is a division of Ser. No. 323,953, Jan. 15, 1973, Pat. No. 3,856,957, which is a division of Ser. No. 130,007, March 31, 1971, Pat. No. 3,819,616. This application Mar. 27, 1975, Ser. No. 562,403

Claims priority, application Germany, July 21, 1971, 2015676

Int. Cl.² A61K *31/495*

U.S. Cl. 424—250 12 Claims

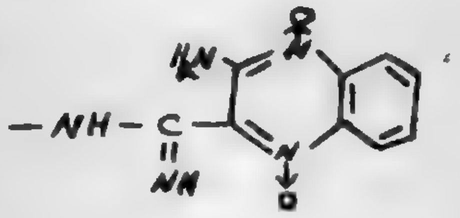
1. A veterinary feedstuff which comprises a growth promoting amount of a compound of the formula



or a pharmaceutically acceptable non-toxic salt thereof wherein

Y is hydrogen, an alkali metal cation or the cation R^5—N^+H_3; and

each of R and R^5 is



in combination with a nutritious material.

3,983,236

VETERINARY FEEDSTUFFS

Florin Seng, Cologne-Buchheim; Kurt Ley, Odenthal-Globusch, and Karl Georg Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

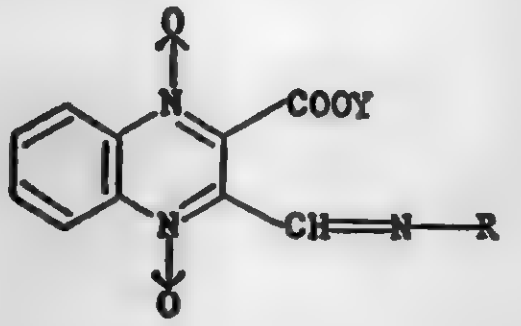
Division of Ser. No. 399,098, Sept. 20, 1974, which is a division of Ser. No. 323,953, Jan. 15, 1973, Pat. No. 3,856,957, which is a division of Ser. No. 130,007, March 31, 1971, Pat. No. 3,819,616. This application Mar. 28, 1975, Ser. No. 562,878

Claims priority, application Germany, July 21, 1971, 2015676

Int. Cl.² A61K *31/495*

U.S. Cl. 424—250 20 Claims

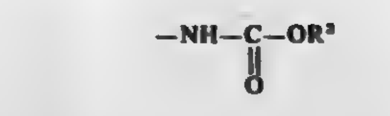
1. A veterinary feedstuff which comprises a growth promoting amount of a compound of the formula



or a pharmaceutically acceptable non-toxic salt thereof wherein

Y is hydrogen, an alkali metal cation or the cation R^5—NH_3^+; and

each of R and R^5 is identical to or different from the other and is



$$-\mathrm{NH}-\underset{\underset{\displaystyle \mathrm{O}}{\|}}{\mathrm{C}}-\mathrm{OR}^3$$

in which R^3 is alkyl of 1 to 4 carbon atoms or hydroxyalkyl of 1 to 4 carbon atoms in combination with a nutritious material.

3,983,237

2-ARYL SUBSTITUTED ISOXAZOLO[2,3-a]PYRIDINYL HALIDES

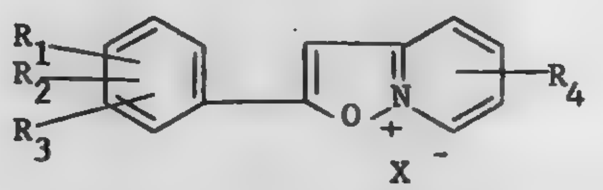
David T. Connor, Parsippany; Patricia A. Young, Madison, and Maximilian von Strandtmann, Rockaway Township, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Sept. 8, 1975, Ser. No. 611,281

Int. Cl.² A61K *31/44*

U.S. Cl. 424—263 20 Claims

1. A compound of the formula I:



I

wherein R_1, R_2 and R_3 are each hydrogen, halogen, hydroxy, lower alkyl, lower alkoxy or lower alkanoyl; R_4 is hydrogen or lower alkyl; X is a bromide, chloride or iodide salt.

3,983,238

SUBSTITUTED PYRIDINOL-CONTAINING COMPOSITIONS AND METHODS FOR THE TREATMENT OF COCCIDIOSIS

Yasuhiro Morisawa; Mitsuru Kataoka; Taiichiro Watanabe; Noritoshi Kitano, and Toshiaki Matsuzawa, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

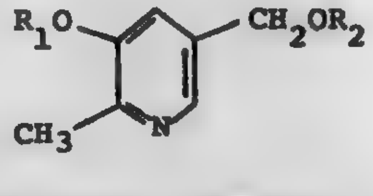
Continuation-in-part of Ser. No. 509,721, Sept. 26, 1974, abandoned, which is a division of Ser. No. 404,641, Oct. 9, 1973, Pat. No. 3,897,556. This application Mar. 12, 1975, Ser. No. 557,522

Claims priority, application Japan, Oct. 20, 1972, 47-105090; Apr. 11, 1973, 48-41111

Int. Cl.² A61K *31/44*

U.S. Cl. 424—266 66 Claims

1. An anticoccidial composition containing a minor amount, sufficient for the treatment of coccidiosis, which comprises a compound of the formula



intimately dispersed in an inert edible carrier, wherein R_1 and R_2 are each hydrogen, an aliphatic acyl group, an aromatic acyl group or a heterocyclic acyl group selected from the group consisting of a furoyl group, a thenoyl group, a nicotinoyl group and an isonicotinoyl group, and at least R_1 or R_2 is said heterocyclic acyl group; or a salt thereof.

3,983,239

HEXAHYDRO-γ-CARBOLINE DERIVATIVES AND THEIR SALTS

Yasutaka Nagai, Mukou; Hitoshi Uno, Takatsuki; Masanao Shimizu, Kobe, and Tadahiko Karasawa, Toyonaka, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

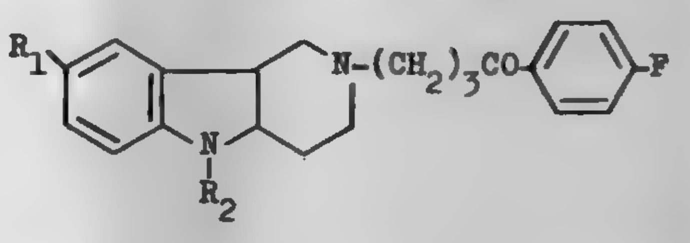
Filed Mar. 12, 1975, Ser. No. 557,642

Claims priority, application Japan, Mar. 20, 1974, 49-31966

Int. Cl.² C07D *471/04*

U.S. Cl. 424—267 16 Claims

1. A hexahydro-γ-carboline derivative of the formula:



wherein R_1 is methyl or ethyl, and R_2 is hydrogen, methyl or ethyl, with proviso that when R_1 is ethyl, R_2 is hydrogen, and its phramaceutically acceptable acid addition salt.

3,983,240

COMPOSITIONS AND METHOD FOR TREATING MYCOSES

Karl Heinz Buchel; Manfred Plempel, and Wolfgang Kramer, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Germany

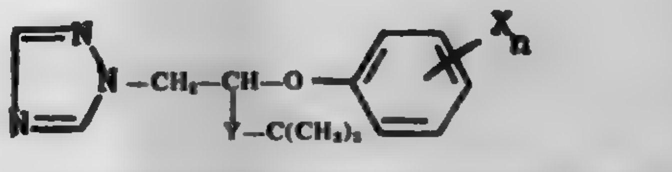
Filed Sept. 9, 1974, Ser. No. 504,429

Claims priority, application Germany, Sept. 19, 1973, 2347057

Int. Cl.² A61K *31/41*

U.S. Cl. 424—269 43 Claims

21. A method for treating mycotic infections in humans and animals which comprises administering to a human or animal in need thereof an antimycotically effective amount of an antimycotic composition comprising an antimycotically effective amount of a compound of the formula:



or a pharmaceutically acceptable non-toxic salt thereof wherein

X is halo;

n is 0 or an integer having a value of 1 to 5; and

Y is carbonyl or a ketal of the formula —C(OR)₂— wherein R is hydrogen or lower alkyl;

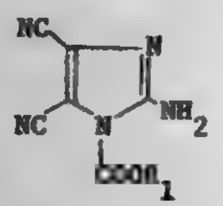
in combination with a pharmaceutically acceptable non-toxic inert diluent or carrier.

3,983,241
IMIDAZOLE DERIVATIVES

Sho Hashimoto, Odawara; Akira Nakada, Hiratsuka; Saburo Kano, and Susumu Takahashi, both of Odawara, all of Japan, assignors to Nippon Soda Company Limited, Tokyo, Japan

Filed July 28, 1975, Ser. No. 599,664
Claims priority, application Japan, Aug. 9, 1974, 49-90775
Int. Cl.² C07D *233/90*
U.S. Cl. 424—273 15 Claims

1. A compound of the formula



wherein R_1 is selected from the group consisting of straight or branched chain alkyl of 1 to 12 carbon atoms, alkenyl of 3 to 4 carbon atoms, propargyl, methoxyethyl, alkyl of 2 to 4 carbon atoms substituted with one or two chlorine or bromine atoms and cyclohexyl.

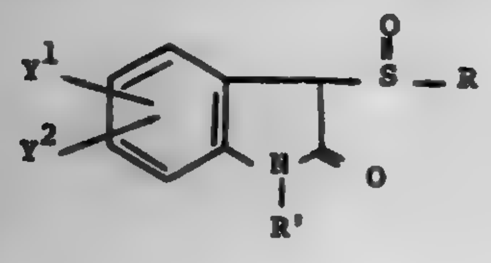
11. A method of preventing injury to plants due to fungi comprising applying to the locus to be protected an effective amount of the compound of claim 1.

3,983,242
3-ALKYLSULFINYL-2-INDOLINONES AND THEIR PHARMACEUTICAL COMPOSITIONS AND USE

Goetz E. Hardtmann, Morristown, and Thomas E. Jackson, Madison, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Filed Sept. 8, 1975, Ser. No. 611,174
Int. Cl.² A61K *31/40;* C07D *209/34*
U.S. Cl. 424—274 12 Claims

1. A compound which is an indolinone of the formula:



wherein

R is alkyl having from 1 to 4 carbon atoms,

R′ is a hydrogen atom or alkyl having from 1 to 4carbon atoms,

Y^1 is a hydrogen atom, trifluoromethyl, halo having an atomic weight of from about 19 to 80, alkyl having from 1 to 3 carbon atoms, or alkoxy having from 1 to 3 carbon atoms; and

Y^2 is a hydrogen atom, halo having an atomic weight of from about 19 to 80 or alkyl having from 1 to 3 carbon atoms; or a

non-toxic pharmaceutically acceptable salt thereof.

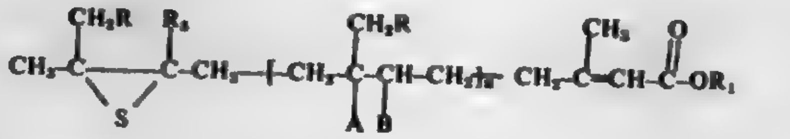
9. A pharmaceutical composition which is useful in sedating or relieving anxiety or muscular tension in a mammal comprising an effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

3,983,243
EPITHIO COMPOUNDS

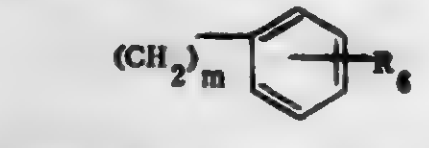
Albert Pfiffner, Pfaffhausen, and Ulrich Schwieter, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 68,504, Aug. 31, 1970, Pat. No. 3,883,514, which is a continuation-in-part of Ser. No. 858,534, Sept. 16, 1969, Pat. No. 3,697,543. This application Dec. 11, 1974, Ser. No. 531,495
Claims priority, application Switzerland, Sept. 27, 1968, 14522/68; Aug. 29, 1969, 13141/69; Mar. 25, 1970, 4619/70
Int. Cl.² C07D *331/02*
U.S. Cl. 424—275 6 Claims

1. A method for controlling insects comprising applying to materials to be protected a composition containing a compound of the formula



wherein A and B are hydrogen or taken together form a carbon to carbon bond or a sulfur bridge; R is hydrogen or lower alkyl; R_1 is selected form the group consisting of hydrogen, lower alkyl and



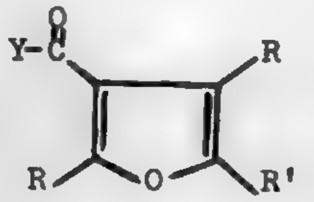
R_5 is methyl or hydrogen, R_6 is hydrogen, lower alkyl, hydroxy, lower alkoxy or halogen, *m* is an integer of from 0 to 1; and *n* is an integer from 0 to 1; and an inert carrier, said compound being present in said composition in an insecticidally effective amount sufficient to provide 0.01 percent to 1.0 percent of said compound on said material to be protected.

3,983,244
METHOD OF CONTROLLING PESTS USING CERTAIN KETONES OF FURAN

Zaven Stephen Ariyan, Woodbury; Robert Edward Grahame, Jr., Waterbury, and Winchester Loomis Hubbard, Woodbridge, all of Conn., assignors to Uniroyal Inc., New York, N.Y.

Division of Ser. No. 306,044, Nov. 13, 1972, Pat. No. 3,904,760. This application May 9, 1975, Ser. No. 575,910
Int. Cl.² A01N *9/00, 9/12*
U.S. Cl. 424—275 14 Claims

1. A method of controlling acarids, insects or nematodes comprising applying to a locus, subject to attack by acarids, insects or nematodes, an acaricidally, insecticidally or nematocidally effective amount of a substituted furan having the formula



wherein:

Y is selected from the group consisting of alkenyl having from 2 to 8 carbon atoms, furyl, furyl substituted with chlorine, bromine or lower alkyl, thienyl, thienyl substituted with chlorine, bromine or lower alkyl, phenyl, and phenyl substituted with chlorine, bromine or lower alkyl;

R is selected from the group consisting of hydrogen, chlorine, bromine and C_1–C_8 alkyl;

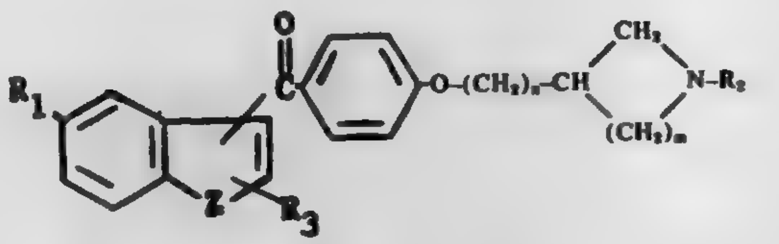
R′ and R″ are the same or different and are selected from the group consisting of chlorine, bromine and C_1–C_8 alkyl.

3,983,245
CERTAIN 4-(3-AZACYCLOALKOXY OR AZACYCLOALKYLMETHOXY)BENZOYLBENZOFURANS OR BENZOTHIOPHENES

David L. Ladd, Penllyn, and Stephen T. Ross, Berwyn, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Feb. 6, 1975, Ser. No. 547,528
Int. Cl.² A61K *31/34;* C07D *405/12, 409/12*
U.S. Cl. 424—285 11 Claims

1. A compound of the formula:



or a pharmaceutically acceptable acid addition salt thereof, in which:

R_1 is hydrogen, chloro, bromo, trifluoromethyl or lower alkyl;

R_2 is straight or branched chain alkyl of from one to six carbon atoms;

R_3 is lower alkyl or phenyl$(CH_2)_p$ where *p* is 0 or 1 and the phenyl moiety is unsubstituted or substituted in the para-position with lower alkyl, lower alkoxy, halogen or trifluoromethyl;

m is 1 to 4;

n is 0 or 1; and

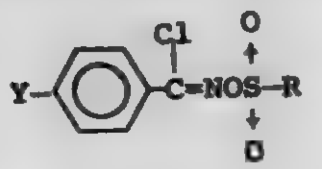
Z is oxygen or sulfur.

3,983,246
N-(SULFONYLOXY) BENZIMIDOYL HALIDES AS BACTERICIDAL OR FUNGICIDAL AGENTS

Loren Kenneth Gibbons; Clinton Joseph Peake, and Wayne Nelson Harnish, all of Medina, N.Y., assignors to FMC Corporation, Philadelphia, Pa.

Filed Apr. 4, 1974, Ser. No. 457,989
Int. Cl.² A01N *9/14, 9/18*
U.S. Cl. 424—303 8 Claims

1. A method of combatting plant-infesting pathogenic fungi and bacteria which comprises applying to the plants a fungicidally or bactericidally effective amount of a substituted N-(sulfonyloxy)benzimidoyl chloride of the formula:



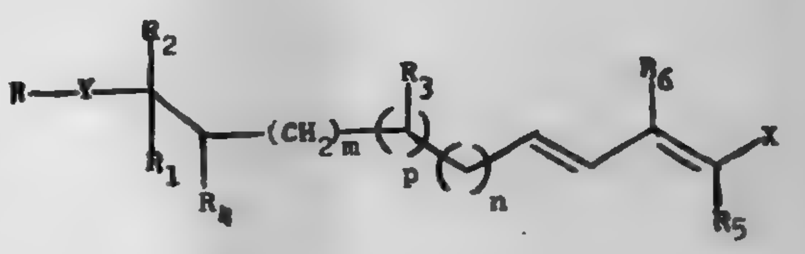
wherein Y is methoxy and R is methyl, ethyl, or propyl.

3,983,247
2,4-DODECADIENOIC ACID ESTERS AND USE FOR INSECTICIDES

Madhukar Subraya Chodnekar, Seltisberg; Ulrich Schwieter, Reinach; Peter Loeliger, Pfaffhausen; Albert Pfiffner, Bulach; Milos Suchy, and Rene Zurflüh, both of Pfaffhausen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 18, 1975, Ser. No. 559,619
Claims priority, application Switzerland, Mar. 22, 1974, 4037/74
Int. Cl.² C11C *3/02;* A01N *9/24;* A61K *31/23*
U.S. Cl. 424—312 16 Claims

9. An insecticidal composition containing as an essential active ingredient a metamorphosis inhibiting amount of a polyene compound of the formula:



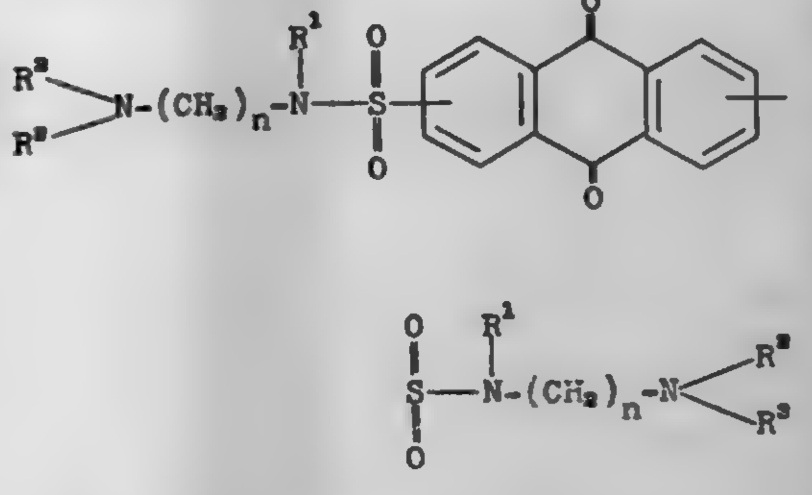
wherein R is lower alkenyl, lower alkynyl or a cyclopropylmethyl group, R_1, R_2, R_3 and R_6 are each hydrogen or a lower alkyl group, R_4 and R_5 are each hydrogen or methyl, Y is oxygen; X is —$COOR_7$, wherein R_7 is lower alkyl; *n* and *p* may be zero or 1 and *m* is an integer from zero to 2 inclusive; in association with a compatible carrier material.

3,983,248
BIS(AMINOALKYLSULFAMOYL)ANTHRAQUINONE ANTIVIRAL AGENTS

Johann M. Grisar; Arthur D. Sill, and Robert W. Fleming, all of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Division of Ser. No. 777,885, Nov. 21, 1968, Pat. No. 3,627,791. This application Aug. 6, 1971, Ser. No. 169,861
Int. Cl.² H61K *31/18*
U.S. Cl. 424—321 10 Claims

1. A pharmaceutical composition, in unit dosage form, comprising from about 0.1 to 250 milligrams of a bis-(aminoalkylsulfamoyl)anthraquinone and a significant quantity of a pharmaceutical carrier, said anthraquinone selected from a base of the formula:



wherein each R^1 is hydrogen or methyl; each n is an integer of 2 to 4; each of R^2 and R^3 is alkyl of 3 to 5 carbon atoms or alkenyl of 3 to 5 carbon atoms; or a pharmaceutically acceptable acid addition salt of said base.

3,983,249
METHOD FOR TREATING ANGINA PECTORIS WITH CERTAIN N-ARYLSULFONYL-N'(AZA-3-BICYCLOALKYL) UREAS

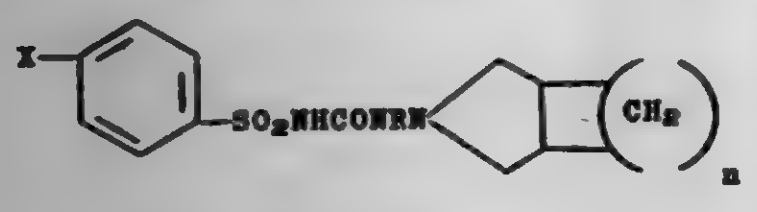
Stewart J. Ehrreich, Suffern, N.Y., and Lester Zitowitz, West Orange, N.J., assignors to Science Union et Cie Societe Francaise de Recherche Medical, France

Continuation of Ser. No. 381,958, July 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 347,245, March 30, 1973, abandoned. This application Dec. 26, 1974, Ser. No. 536,669

Int. Cl.² A61K *31/18*

U.S. Cl. 424—321 **5 Claims**

1. A method for the prevention and reversal of the symptoms of angina pectoris which comprises administering to a host suffering from angina pectoris a therapeutically effective quantity of a compound of the formula



or a pharmaceutically acceptable salt thereof, wherein X is hydrogen, chloro, bromo and methyl, R is methyl or hydrogen and n is an integer from 1 – 3.

3,983,250
HALOPHENYL ACETAMIDINES AS ANXIOLYTIC ANTIDEPRESSANTS

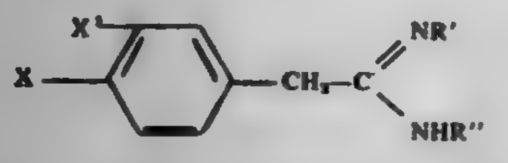
Abdulmuniem H. Abdallah, and Philip J. Shea, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 510,958, Oct. 2, 1974, Pat. No. 3,934,020. This application Oct. 9, 1975, Ser. No. 621,181

Int. Cl.² A61K *31/155*

U.S. Cl. 424—326 **3 Claims**

1. A composition useful for alleviating symptoms of central nervous system depression and anxiety in an animal comprising from about 0.001 to about 95 percent by weight of a compound selected from the group consisting of a substituted amidine and a pharmacologically-acceptable salt thereof, the substituted amidine corresponding to the formula:



wherein X and X' each independently represent halo or hydrogen, with the proviso that at least one of X and X' is halo and R' and R'' each independently represent loweralkyl.

3,983,251
SOLID ANTIFOAM CRYSTALS FOR DRY BEVERAGE MIXES

Gyanendra Singh, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 570,333, April 21, 1975, abandoned. This application Dec. 12, 1975, Ser. No. 640,295

Int. Cl.² A23L *2/40, 2/26*

U.S. Cl. 426—329 **15 Claims**

1. A rapidly dissolvable and substantially dry antifoam additive for dry beverage compositions comprising a uniform crystalline matrix of crystalline sugar, flavorant and silicone antifoam agent.

3,983,252
STABLE DIALDEHYDE-CONTAINING DISINFECTANT COMPOSITIONS AND METHODS

Gilbert Buchalter, 555 Mount Prospect Ave., Newark, N.J.

Continuation of Ser. No. 410,044, Oct. 26, 1973, abandoned, which is a continuation of Ser. No. 316,388, Dec. 18, 1972, abandoned. This application Mar. 18, 1975, Ser. No. 559,513

Int. Cl.² A61L *13/00*

U.S. Cl. 424—333 **18 Claims**

1. A disinfectant composition comprising a saturated dialdehyde containing from 2 to about 6 carbon atoms; an alkali metal salt of a carboxylic acid containing from 2 to 25 carbon atoms and selected from the group consisting of sodium, potassium or lithium salts of alkanoic acids, sodium, potassium, or lithium salts of alkenoic acids, and sodium, potassium or lithium salts of aromatic acids; and a member selected from the group consisting of lower alkanols containing up to and including 7 carbon atoms, alkanediols containing from 2 to 4 carbon atoms, glycerol and mixtures thereof, said alkali metal salt of a carboxylic acid being present in a weight ratio to said dialdehyde within the range of from about 0.05:1 to about 2:1, said lower alkanol, alkanediol or glycerol being present in a weight ratio to said alkali metal salt of a carboxylic acid within the range of from about 1:0.1 to about 1:3, said composition when dissolved in water providing a solution having a pH of within the range of from about 6 to about 7.4.

3,983,253
ETHYNYLINDENYL COMPOUNDS AND DERIVATIVES THEREOF USED IN THE TREATMENT OF PAIN, FEVER AND INFLAMMATION

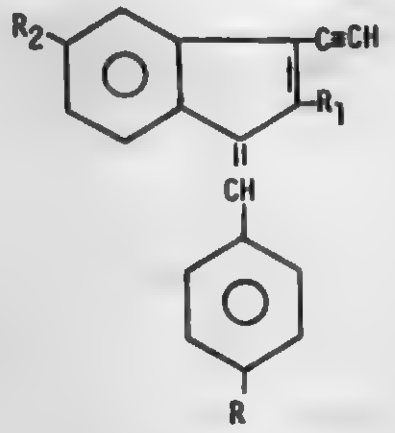
Julius Diamond, Lafayette Hill, and George H. Douglas, Paoli, both of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 306,702, Nov. 15, 1972, Pat. No. 3,810,944. This application Jan. 16, 1974, Ser. No. 433,677

Int. Cl.² A61K *31/085*

U.S. Cl. 424—340 **21 Claims**

1. A method for the relief of inflammation in a patient which comprises the administration thereto of a therapeutically effective amount between 0.5 to 100 milligrams per kilogram of body weight per day of a compound of the formula



where

R_1 is hydrogen or loweralkyl;

R is halo, nitro or haloloweralkyl; and

R_2 is loweralkoxy.

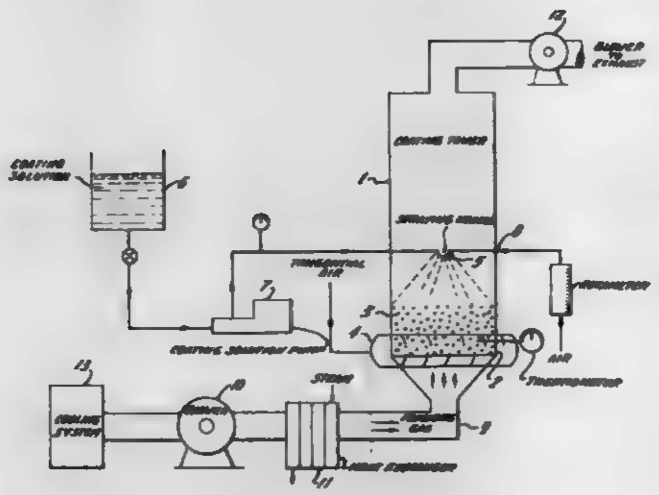
3,983,254
ENCAPSULATION PARTICLES

David S. Alterman, Parsippany, and Kil Whan Chun, Ridgefield Park, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 422,813, Dec. 7, 1973, Pat. No. 3,908,045. This application Apr. 14, 1975, Ser. No. 567,677

Int. Cl.² B32B *5/16;* **C11D** *9/28*

U.S. Cl. 428—403 **3 Claims**



3. Encapsulated particles of an oxidizing material having at least one reactive chlorine atom in its molecular structure and being selected from the group consisting of potassium dichloroisocyanurate, sodium dichloroisocyanurate, pentaisocyanurate and trichlorocyanuric acid, said particles having thereon a complete and continuous inner and outer coating, the inner coating comprising a saturated fatty acid having from 12 to 20 carbon atoms or mixtures thereof, and the outer coating comprising a sodium salt of said acid or mixtures thereof; said inner coating being completely encapsulated by said sodium salt.

3,983,255
PREPARATION OF FERTILIZER AND ANIMAL FEED FROM MOLASSES FERMENTATION RESIDUE

Henry Herschel Bass, Potts Point, Australia, assignor to Unisearch Limited, Kensington, Australia

Filed Sept. 20, 1974, Ser. No. 507,703

Claims priority, application Australia, Oct. 2, 1973, 5063/73

Int. Cl.² C05F *11/00;* **A23K** *1/02*

U.S. Cl. 426—54 **7 Claims**

1. A process for converting a molasses fermentation residue into a coagulation product comprising:

a. concentrating said molasses fermentation residue to a solids level of from about 60 to about 80 weight percent thereof;

b. heating the concentrated residue to about its boiling point to induce thickening thereof;

c. cooling the concentrated residue to about 80°C.;

d. admixing up to about 15 percent by weight, based upon the concentrated residue, of a soluble phosphate to form a resultant mixture;

e. heating said resultant mixture to a temperature of from about 105° to 120°C until coagulation thereof is obtained; and,

f. recovering the coagulation product.

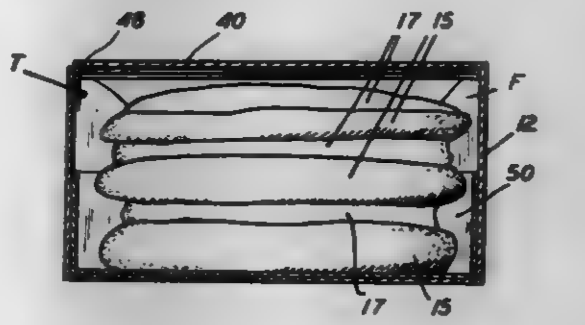
3,983,256
PRECOOKED FARINACEOUS FOODS ADAPTED FOR MICROWAVE HEATING AND A SYRUP TOPPING THEREFOR

Helen R. Norris; Carolyn M. Niemand, and David W. Andreas, all of Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Feb. 10, 1975, Ser. No. 548,320

Int. Cl.² A21D *13/00*

U.S. Cl. 426—94 **16 Claims**



1. A packaged food product adapted to be heated in a microwave oven comprising a stack of cooked breakfast griddle food units selected from the group consisting of pancakes, waffles and french toast having a soft porous crumb structure, a layer of syrup topping at least on top of the top food unit in the stack, the topping comprising sugar in the amount of from 35 to 65 percent by weight from about 8 to 45 percent by weight of water, and 10 to 40 percent fat by weight, said topping being in a nonfluid condition and being meltable to the fluid condition by the application of the heat from a microwave oven and a semi-rigid combination shipping and heating container enclosing the stack.

3,983,257
PRODUCTION OF MILK WITH PREDETERMINED FAT CONTENT

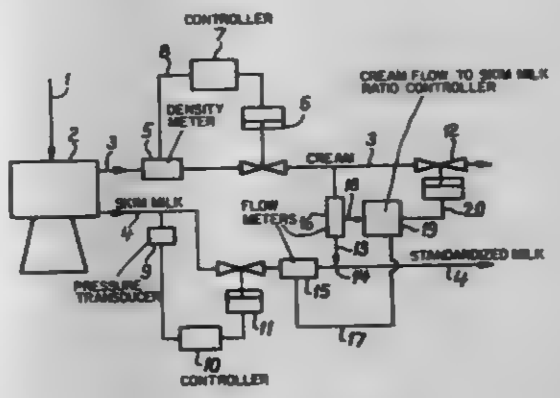
Rolf Malmberg, Lund, and Lars Gustav Olenfalk, Jarfalla, both of Sweden, assignors to Alfa-Laval AB, Tumba, Sweden

Filed May 17, 1974, Ser. No. 470,864

Claims priority, application Sweden, May 29, 1973, 7307559

Int. Cl.² A01K *43/00*

U.S. Cl. 426—231 **2 Claims**



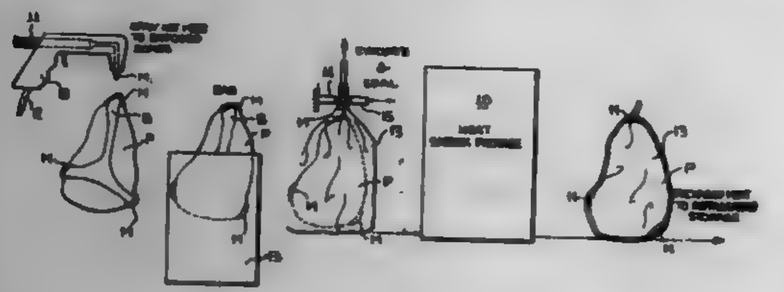
1. A method for continuous production of milk with a predetermined fat content, which comprises subjecting milk to a centrifugal separating step, discharging separate flows of skim milk and cream from said separating step, continuously measuring the density of said discharging cream to provide measurement impulses, maintaining the density of the discharging cream substantially constant by causing said measurement impulses to control one of said separate flows, separately and continuously measuring flows of said skim milk and cream to provide respective flow measurement values, maintaining the quotient of said flow measurement values substantially con-

stant whereby changes in one of said flows are caused to change the other flow in a corresponding manner, and re-mixing said measured flows of skim milk and cream.

3,983,258
PROCESS OF PACKAGING EDIBLE PRODUCTS CONTAINING EXPOSED BONES

Norman D. Weaver, Bartlett, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Feb. 7, 1975, Ser. No. 548,030
Int. Cl.² B65B *25/00, 31/02, 53/04, 53/06*
U.S. Cl. 426—307 **5 Claims**

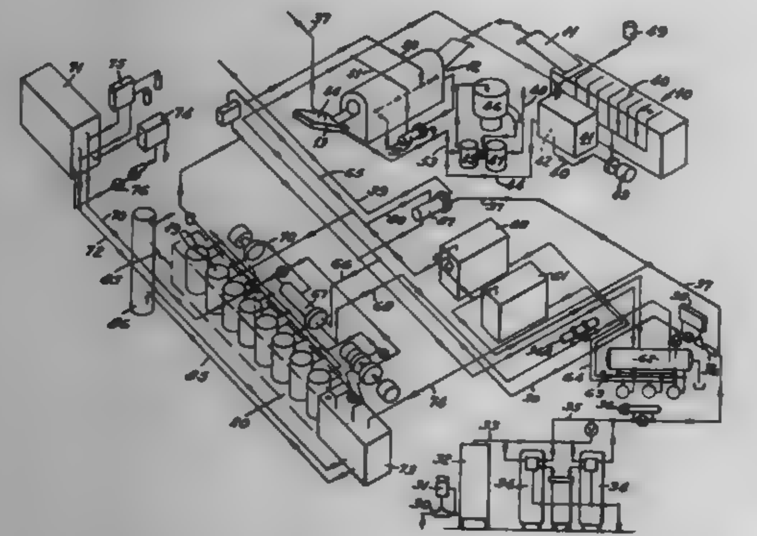


1. A process of packaging an edible product having an exposed bone comprising the steps of applying liquid hot melt material to coat substantially only the exposed bone, encasing the thus coated product in a flexible package, said liquid hot melt material having a penetration value and being applied in an amount and to a location on the bone sufficient to provide cushioning protection for the flexible package from the bone, thereby preventing rupture of the flexible package, and thereafter adhering the hot melt material to the flexible package with a bond strength greater than that between the hot melt material and the bone whereby upon the removal of the edible product from the flexible package the hot melt material peels from the bone and remains adhered to the flexible package.

3,983,259
FOOD PROCESSING SYSTEM

David G. Maier, Detroit, Mich., assignor to Campbell Research Corporation, Detroit, Mich.

Filed June 17, 1974, Ser. No. 479,758
Int. Cl.² A23B *7/06*
U.S. Cl. 426—401 **10 Claims**



1. In the method of processing food products and the like utilizing water and steam wherein the product is first washed, then blanched with steam in a blancher, sprayed after removal from the blancher in a washer, canned in containers in a can filling area, the cans are then retorted under steam pressure in a retort area, and finally the cans are cooled with water in the retort area, the steps comprising

drawing water from a source,

passing the water thereafter through a water softener,

thereafter passing the water through an electrostatic device to inactivate components such as calcium, magnesium, salts and carbonates and prevent them from precipitating,

and thereafter utilizing a portion of said water from said electrostatic device for the retort area, the can filling area, and the spraying of the product after removal from blanching,

heating said water and passing to said can filling area by heat exchange relation with steam,

treating another portion of the water from the electrostatic device with chlorine sufficient to substantially reduce the undesirable bacteria to a predetermined level and passing said chlorinated portion to the blancher and the washer,

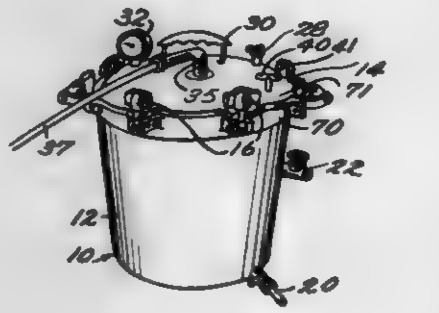
continuously circulating said water in said retort area through a cooling tower spaced from said retort area,

and maintaining the ph of said water in the retort area at a predetermined level sufficient to prevent contamination and insufficient to cause discoloration of the containers.

3,983,260
QUICK COOLING PRESSURE COOKER SYSTEM

Karl L. Ford, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Sept. 20, 1974, Ser. No. 567,994
Int. Cl.² B65B *55/02*
U.S. Cl. 426—403 **4 Claims**



1. A method of processing food comprising the steps of sequentially

a. subjecting food packed into separate relatively loosely sealed glass containers and in a confined volume to steam under pressure for a predetermined period of time, each of said containers being relatively loosely sealed with a lid of metal,

b. terminating application of steam under pressure to said containers in said confined volume after said predetermined period of time, and

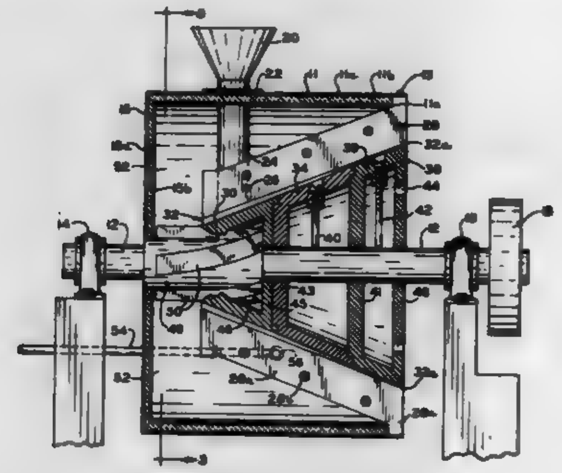
c. directing a stream of cooling water directly on at least selected ones of said metal lids of containers within said confined volume, while preventing said stream of water from being directed squarely on said glass containers, to facilitate quick, safe removal of said containers from said confined volume.

3,983,261
METHOD FOR MILLING GRAIN WHILE SIMULTANEOUSLY COOKING THE GRAIN

Fausto Celorio Mendoza, Lomas de Chapultepec, Mexico 10, D.F., Mexico

Division of Ser. No. 503,488, Sept. 5, 1974, Pat. No. 3,935,808. This application June 25, 1975, Ser. No. 590,329
Int. Cl.² B02B *17/00;* **A23P** *1/00*
U.S. Cl. 426—473 **3 Claims**

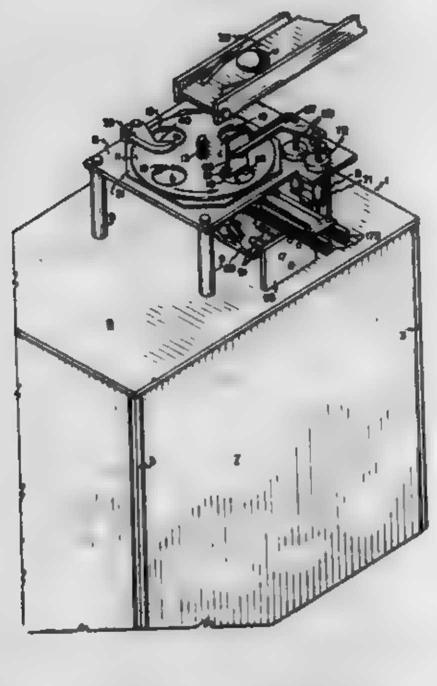
1. The method of milling grains while simultaneously cooking the grain which comprises; introducing the grain in unground form between a pair of concentric conical grinding members near the smaller end thereof, relatively rotating said grinding members while advancing the grain toward the larger end of the members, reducing the size of the grain with the simultaneous development of heat during the movement of the grain along said members, and supplying heated gas to the surface of the outer grinding member not in contact with the grain and to the surface of the inner grinding member not in contact with the grain, the heat developed during the movement of the grain along said members and the heat supplied by said heated gas being sufficient to result in the cooking of the grain.



3,983,262
AUTOMATIC FORTUNE COOKIE FOLDING METHOD

Ronald H. M. Brunner, Salt Lake City; Billy M. Jensen, Sandy, and Lang S. Wong, Salt Lake City, all of Utah, assignors to China Bazaar, Inc., Salt Lake City, Utah

Division of Ser. No. 469,617, May 13, 1974, Pat. No. 3,894,829. This application July 14, 1975, Ser. No. 595,873
Int. Cl.² A21D *6/00*
U.S. Cl. 426—502 **5 Claims**



1. A method for folding flat circular wafers into the shape characteristic of fortune cookies comprising the steps of:

a. folding a wafer once along a diameter by urging the wafer through a slot-like opening by means of a reciprocating plunger so that a semicircularly-shaped article is formed;

b. then grasping the once-folded wafer at opposite ends of the first fold line with the jaws of two pairs of pincers; and

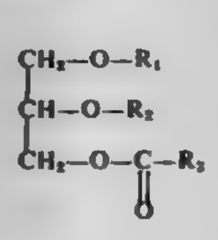
c. then moving said pincers towards one another and towards and edge that is arranged to extend perpendicular to the plane of the once-folded wafer so that the midpoint of the first fold line is forced against said edge and, followingly, a second fold is made about said edge so that the twice-folded wafer has the shape characteristic of a fortune cookie.

3,983,263
POWDERED ACRYLIC PAINT COMPOSITION AND METHOD

Philip Weiss, Birmingham, and Gordon D. Cheever, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

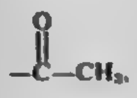
Filed June 27, 1974, Ser. No. 483,689
Int. Cl.² B05D *7/00*
U.S. Cl. 427—27 **7 Claims**

1. In an acrylic powder coating formulation containing an acrylic resin binder, the improvement comprising including in said formulation uniformly mixed with said acrylic resin an amount of from 5% to 30% by weight, based on the amount of said resin and any other nonpigment constituents in said formulation, of a flow promoting composition characterized by the following formula:



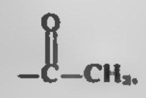
$$\begin{array}{l} CH_2-O-R_1 \\ | \\ CH-O-R_2 \\ | \\ CH_2-O-\underset{\overset{\|}{O}}{C}-R_3 \end{array}$$

where R_1 may be -H or



$$-\overset{\overset{O}{\|}}{C}-CH_3,$$

R_2 may be -H or



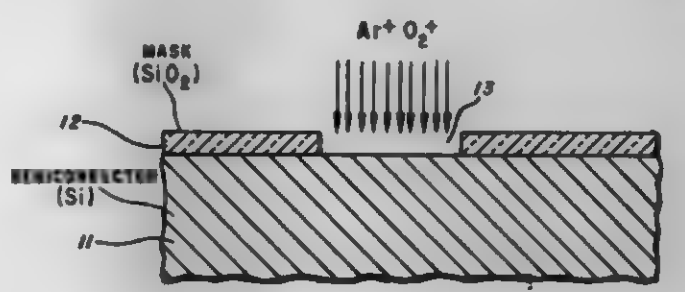
$$-\overset{\overset{O}{\|}}{C}-CH_3,$$

and R_3 is a hydrocarbon chain from 12 to 20 carbon atoms.

3,983,264
METAL-SEMICONDUCTOR OHMIC CONTACTS AND METHODS OF FABRICATION

Walter H. Schroen; Francois A. Padovani, both of Dallas, Tex., and Hanspeter P. K. Hentzschel, Reutlingen, Germany, assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 273,553, July 20, 1972, abandoned. This application Jan. 18, 1974, Ser. No. 434,464
Int. Cl.² B01D *3/06*
U.S. Cl. 427—39 **15 Claims**



1. A process for the fabrication of a semiconductor ohmic contact structure comprising the steps of:

a. exposing a selected portion of a semiconductor body to a glow discharge in the presence of an inert gas;

b. then exposing said selected portion to a glow discharge in oxygen or nitrogen, at conditions selected to form an adherent uniform film of nonconductor 10–100 Angstroms thick on said selected portion of the semiconductor body; and then

c. forming an adherent film of conductor on said nonconductor film, to complete a contact structure having linear I–V characteristics.

9. A process as defined by claim 1 wherein said semiconductor body is first subjected to a chemical cleaning treatment, and wherein the nonconducting film is formed by ambient oxidation.

3,983,265

METHOD OF COATING A SUBSTRATE WITH CURABLE ORGANOPOLYSILOXANE COMPOSITIONS

Michel Letoffe, Ste-Foy-les-Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Division of Ser. No. 468,871, May 10, 1974, Pat. No. 3,933,729. This application May 14, 1975, Ser. No. 577,152

Claims priority, application France, May 11, 1973, 73.17157

Int. Cl.² H01B *3/46;* **B32B** *27/28*

U.S. Cl. 427—58 **5 Claims**

1. A method of forming a coating on a substrate which comprises coating a substrate with an organopolysiloxane composition vulcanisable at ambient temperature and above, comprising in parts by weight:

A. 100 parts of an α,ω-dihydroxydiorganopolysiloxane polymer, of viscosity 500 cPo at 25°C to 1 million cPo at 25°C, in which each organic radical bonded to each silicon atom, independently is an alkyl radical with 1 to 3 carbon atoms, a halogenoalkyl radical with 3 or 4 carbon atoms, a vinyl radical, an aryl radical with 6 to 8 carbon atoms, a halogenoaryl radical with 6 or 7 carbon atoms or a cyanoalkyl radical with 3 or 4 carbon atoms; at least 60% of these organic radicals being methyl radicals;

B. 10 to 50 parts of a methylpolysiloxane resin consisting of units of the formula $R(CH_3)_2SiO_{0.5}$ and units of formula SiO_2, wherein R represents an alkyl radical with 1 to 3 carbon atoms or a vinyl radical, and the value of the ratio of the number of $R(CH_3)_2SiO_{0.5}$ units to the number of SiO_2 units is 0.4:1 to 1.2:1, these polymers containing at least 0.5% but not more than 3.5% by weight of hydroxyl groups bonded to the silicon atoms;

C. 10 to 70 parts of a filler;

D. 0.5 to 15 parts of an aminoorganosilicon compound which is an aminoorganosilane of the general formula (i)

$$(R''O)_{3-p}R'_pSi[(CH_2)_nO]_m(CH_2)_tNHQ$$

in which R′ represents an alkyl group with 1 to 4 carbon atoms, a vinyl group or a phenyl group, R″ represents a methyl, ethyl or methoxyethyl radical, Q represents a hydrogen atom or the radical $-(CH_2)_2NH_2$, *p* and *m* represent 0 or 1, *n* represents 1, 2, 3 or 4, and t represents 2 or 3; or an aminoorganopolysiloxane produced by reacting the aminoorganosilane (i) above, in which *p* is 0, with a hydroxylic methylpolysiloxane polymer (ii) containing at least 2% by weight of hydroxyl groups bonded to the silicon atoms, of viscosity 1 cPo at 25°C to 1,000 cPo at 25°C, of the average general formula $(CH_3)_a(HO)_b-SiO_{(4-a-b/2)}$ in which *a* represents any number from 1.6 to 2.3 and *b* represents any number ranging from 0.1 to 1; the amounts of aminoorganosilane (i) and hydroxylic methylpolysiloxane polymer (ii) being such that there are 0.4 to 1.2 mols of (i) per gram(hydroxyl group) of (ii); and

E. 0 to 10 parts of at least one compound selected from the group consisting of alkyl silicates and alkyl polysilicates in which the alkyl radical has 1–3 carbon atoms;

and then curing the coating of the composition on the substrate at ambient temperature or above.

3,983,266

METHOD FOR APPLYING METALLIC SILVER TO A SUBSTRATE

Harry Bahls, Wayne, Pa., assignor to Peacock Laboratories, Inc., Philadelphia, Pa.

Filed Oct. 9, 1974, Ser. No. 513,417

Int. Cl.² C23C *3/02*

U.S. Cl. 427—164 **15 Claims**

1. In a method of applying a coating of metallic silver to the surface of a substrate, wherein a silver solution containing reducible dissolved silver in the presence of an alkali metal hydroxide and ammonia is applied to the surface of said substrate, the improvement which comprises concurrently applying to the surface of said substrate and mixing in situ with said silver solution a separate aqueous solution of a moderating reducer comprising about 5 to 35%, by weight of the water, of a polyhydric alcohol of the formula $CH_2OH(CHOH)_nCH_2OH$ where *n* is an integer from 1 to 6.

3,983,267

TREATMENT OF THE SURFACES OF POLYPHENYLENE OXIDE MATERIALS

Philip John Norris, Burton-on-Trent, England, assignor to W. Canning & Company Limited, Birmingham, England

Filed Sept. 23, 1974, Ser. No. 508,356

Claims priority, application United Kingdom, Sept. 25, 1973, 44863/73

Int. Cl.² B05D *3/10;* **C25D** *5/56*

U.S. Cl. 427—307 **6 Claims**

1. A process for preparing the surface of a polyphenylene oxide material for electroless deposit of metal prior to activation of the surface thereof, comprising:

etching the surface of the material with an etch containing chromic acid, and treating the etched surface with an aqueous solution containing at least one strongly reducing acid selected from the group consisting of phosphorous acid, hypophosphorous acid and hypophosphoric aicd.

3,983,268

PROCESS FOR SURFACE SIZING PAPER

Emil Scharf, Ludwigshafen; Herbert Naarmann, Wattenheim, and Fritz Reichel, Eppelheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Nov. 11, 1974, Ser. No. 522,631

Claims priority, application Germany, Nov. 1973, 2357064

Int. Cl.² B05D *3/02*

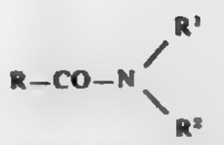
U.S. Cl. 427—341 **7 Claims**

1. A process for the manufacture of surface-sized paper by impregnating paper with an aqueous solution containing 0.1 to 5% by weight of salts of random copolymers obtained by copolymerization of

a. from 50 to 90% by weight of α-olefins of from 2 to 12 carbon atoms and

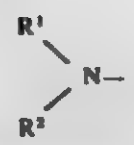
b. from 50 to 10% by weight of acrylic acid, methacrylic acid or mixtures thereof

and neutralization thereof to give copolymers having K values of from 20 to 40, and from 0.1 to 20% by weight of a compound of the formula:



$$R-CO-N\begin{matrix}R^1\\R^2\end{matrix}$$

where R is a group selected from alkyl, aryl and radicals of the formula:



$$\begin{matrix}R^1\\R^2\end{matrix}N-$$

and R^1 and R^2 each independently denotes H, R or a radical of the formula:

$$R-O-CH_2-$$

and drving the impregnated paper.

3,983,269

DURABLE PRESS COMPOSITION AND PROCESS

Glenn A. Pearson, 1311 Delaware Ave., S.W., Washington, D.C. 20024

Continuation-in-part of Ser. Nos. 324,156, Jan. 16, 1973, Pat. No. 3,883,462, Ser. No. 324,157, Jan. 16, 1973, abandoned, Ser. No. 324,158, Jan. 16, 1973, abandoned, and Ser. No. 224,250, Feb. 7, 1972, abandoned, which is a continuation of Ser. No. 109,035, Jan. 22, 1971, abandoned, which is a continuation of Ser. No. 763,981, Sept. 30, 1968, abandoned. This application Sept. 30, 1974, Ser. No. 510,758

The portion of the term of this patent subsequent to May 13, 1992, has been disclaimed.

Int. Cl.² B05D *3/12;* **C08L** *61/20;* **D06M** *15/12*

U.S. Cl. 427—370 **9 Claims**

1. A method for treating textiles to impart permanent press characteristics thereto which comprises treating the textile with an acidic resinous solution prepared by forming the reaction product of (a) a condensation product prepared by reacting 40–60 parts by weight of an aldehyde, 2–8 parts by weight of a polyalkylol amine and 3–7 parts by weight of a strong inorganic acid, then adding to the condensation product 15–35 parts by weight of a urea, the resinous solution being a stable solution having an acid pH, and thereafter, drying and curing the treated textile.

3,983,270

COMPOSITION FOR BOUNDARY LUBRICANT AND METHOD

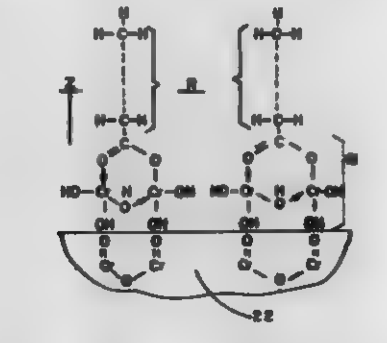
James J. Licari, Whittier, and Robert Willing, Anaheim, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 26, 1973, Ser. No. 409,848

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² C23C *1/10*

U.S. Cl. 427—372 **9 Claims**



1. A method of boundary lubricating a wear surface, said method compirising:

forming a chlorine-free metallic coordination complex of a long chain fatty acid, wherein said fatty acid is selected from an homologous carboxylic series and wherein the metallic constituent is a transition metal capable of forming coordination complexes selected from Cr, Mn, Fe, Co, Ni, and Al, by;

reducing an oxide of said transition metal to an acetate of said transition metal,

hydrating said acetate of said transition metal, olating the product of said hydrating step,

forming a coating of said chlorine-free metallic coordination complex on said wear surface; and

heating the coated wear surface to polymerize said metallic coordination complex and to anchor said complex to said wear surface.

3,983,271

YARN SIZES, SIZING TREATMENTS AND RESULTING SIZED YARNS

James C. Pangle, Jr., Danville, Va., and Alton D. Hicks, Mauldin, S.C., assignors to Dan River Inc., Danville, Va.

Division of Ser. No. 177,827, Sept. 3, 1971, which is a division of Ser. No. 744,292, July 12, 1968, Pat. No. 3,630,983, which is a continuation-in-part of Ser. Nos. 407,551, Oct. 29, 1964, abandoned, Ser. No. 491,399, Sept. 29, 1965, and Ser. No. 670,787, Sept. 26, 1967. This application Aug. 29, 1975, Ser. No. 609,800

Int. Cl.² D06M *13/20*

U.S. Cl. 427—390 **10 Claims**

1. A method for preparing and finishing textile materials which comprises:

A. treating a textile material with an aqueous solution of a mixed salt of a copolymer, said copolymer comprising 0.67 to 1.0 molar proportion of maleic anhydride, and one molar proportion of at least one monovinyl aromatic monomer containing 8 to 12 carbon atoms, and wherein

a. from 20 to 80% of the free carboxyl groups of said interpolymer are combined with at least one fixed base selected from the group consisting of alkali metal bases, and

b. from 20 to 80% of the free carboxyl groups of said interpolymer are combined with at least one fugitive base selected from the group consisting of ammonia, ammonium hydroxide and volatile amines,

such that a total of from 40 to 100% of said free carboxyl groups are so combined, and

B. heating the treated textile material at a temperature high enough to volatilize the fugitive base.

3,983,272

METHOD FOR IMPROVING THE LUBRICATING PROPERTIES AND IMPARTING ANTISTATIC PROPERTIES TO ORGANIC FIBERS

Peter Huber; Ewald Pirson, and Helga Lampelzammer, all of Burghausen, Germany, assigners to Wacker-Chemie GmbH, Munich, Germany

Filed Jan. 24, 1975, Ser. No. 543,850

Claims priority, application Germany, Feb. 6, 1974, 2405717

Int. Cl.² D06M *13/28, 15/66*

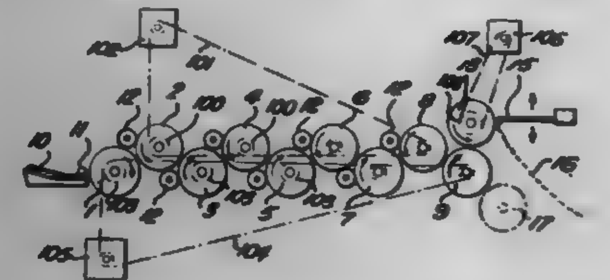
U.S. Cl. 427—407 R **8 Claims**

1. A method for improving the lubricating properties and imparting antistatic properties to organic fibers which comprises coating twisted organic fibers with a composition consisting essentially of a diorganopolysiloxane having a viscosity of from 500 to 10,000 cSt at 25°C. in which the organo groups contain from 1 to 5 carbon atoms, from 0.1 to 30 parts by weight for each 50 to 100 parts by weight of the diorganopolysiloxane, of a phosphorous compound having the general formula

$$(O)P(OH)_xY_{3-x}$$

in which Y represents a group selected from the class consisting of hydrocarbon and hydrocarbonoxy radicals, and when Y is a hydrocarbon radical x is 0 and when Y is a hydrocarbonoxy radical x is a number of from 0 to 2, and up to 50 parts by weight of a paraffin wax for each 50 to 100 parts by weight of the diorganopolysiloxane, said phosphorous compound being soluble in the diorganopolysiloxane and paraffin wax.

3,983,273
CARDING MACHINES
Gordon Henry Elliott, Bridgwater, England, assignor to Bonded Fibre Fabric Limited, Bridgewater, England
Filed May 2, 1974, Ser. No. 466,453
Claims priority, application United Kingdom, May 9, 1973, 22241/73; Oct. 4, 1973, 46445/73; Dec. 17, 1973, 58421/73
Int. Cl.² B05D *3/00*
U.S. Cl. 427—430 **8 Claims**

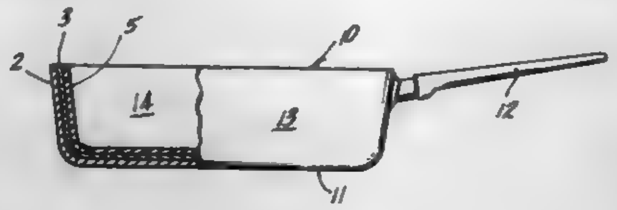


1. A carding machine for forming a fibrous web from textile fibres comprising at least three carding cylinders arranged in succession, worker means associated with the carding cylinders for working fibres progressively from cylinder to cylinder, means for rotating the cylinders at successively increasing peripheral speeds in the direction of travel of the fibres and for rotating each successive cylinder in an opposite direction to the preceding cylinder, a doffer in working relationship with the last cylinder for receiving the fibres, means for rotating the doffer at a peripheral speed less than the peripheral speed of the last carding cylinder, and means for removing the fibres from the doffer in the form of a,fibrous web, the doffer being mounted with its peripheral surface spaced from the peripheral surface of the penultimate carding cylinder by a distance between 0.017 and 0.50 inches to receive fibres projected from the last carding cylinder to the doffer through a confined space defined between the doffer, the pneultimate carding cylinder and the last carding cylinder.

3,983,274
ALUMINUM-COPPER-NICKEL ALLOY FOR THE PRODUCTION OF HEAT RESISTANT PANS AND UTENSILS COATED WITH ENAMELS AND/OR OTHER NON-METALLIC MATERIALS AND CORRESPONDING ALUMINOUS METAL ARTICLES
Heinrich Zoller, Benken, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland
Filed June 8, 1971, Ser. No. 150,914
Claims priority, application Switzerland, June 9, 1970, 8615/70
Int. Cl.² C22C *21/12*
U.S. Cl. 428—35 **1 Claim**

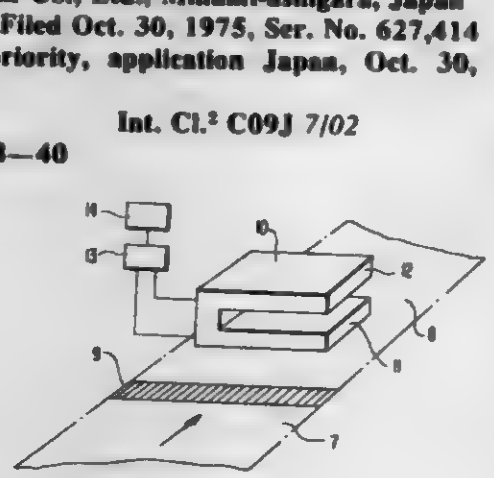
1. A coated aluminous metal article, such as for example a cooking utensil for instance a pan, with good heat resistance, comprising in combination,
- a shaped metal article composed of an AlCu-Ni alloy with a content of percentages by weight of from 1.2 to 2.3 Cu, from 0.3 to 1.2 Ni, from 0.15 to 1.2 Fe, up to 1.0 Mg, up to 0.6 Si, up to 0.4 Zn, wherein the content of Cr, Mn, V and W is less than 0.1, the content of Ag and Nb is below 0.3, the maximum content of Ce is 0.01, and the remainder is aluminum, and
- a protective coating of heat resistant inorganic enamel composed of boric acid, potassium hydroxide, potassium silicate, titanium oxide and a commercial frit and of a heat resistant synthetic material disposed directly adjacent the external surface of said shaped article, wherein said synthetic material is polytetrafluoroethylene.

3,983,275
COOKWARE PREPARED FROM HIGH TEMPERATURE ALUMINUM BASE ALLOYS
Joseph Winter, New Haven, Conn.; William C. Setzer, Creve Coeur; Douglas L. Graham, Ballwin, both of Mo., and Michael J. Pryor, Woodbridge, Conn., assignors to Swiss Aluminium Ltd., Chippis, Switzerland
Continuation-in-part of Ser. No. 492,444, July 29, 1974, abandoned, which is a division of Ser. No. 351,640, April 16, 1973, abandoned. This application May 2, 1975, Ser. No. 573,954
Int. Cl.² A47J *36/02;* **B32B** *15/04, 15/20*
U.S. Cl. 428—35 **7 Claims**



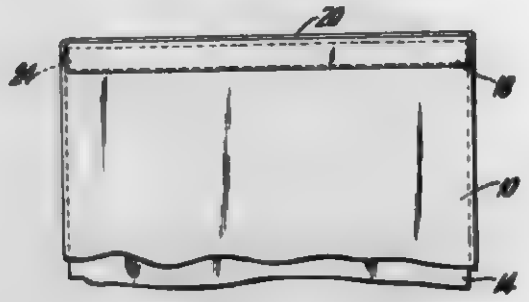
1. A cooking utensil shaped by a process involving metal deformation from a composite, said composite comprising a high-temperature, substantially magnesium-free aluminum base alloy component exhibiting improved formability, said aluminum base alloy component comprising from about 0.1–0.7% zirconium, 0.1–0.4% chromium, 0.3–1.5% manganese and the balance essentially aluminum and having at least a first and second major surface, said second major surface being in opposing relationship to said first major surface; an oxide layer formed over substantially all of said first major surface, said oxide layer comprised of alumina and having a thickness of at least 50 Angstroms; a glass or ceramic component comprising a coating of a glass or ceramic frit covering from about 40 to 100% of the surface area of said first major surface, said glass or ceramic component being bonded to said aluminum base alloy component in a glass or ceramic-to-metal bond involving said oxide layer; and a heat resistant organic resin coating over said glass or ceramic component and said first major surface of said aluminum base alloy component, said heat resistant organic resin component comprising a cooking surface.

3,983,276
ADHESIVE TAPE
Yasuo Matsumoto, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Filed Oct. 30, 1975, Ser. No. 627,414
Claims priority, application Japan, Oct. 30, 1974, 49-125634
Int. Cl.² C09J *7/02*
U.S. Cl. 428—40 **15 Claims**



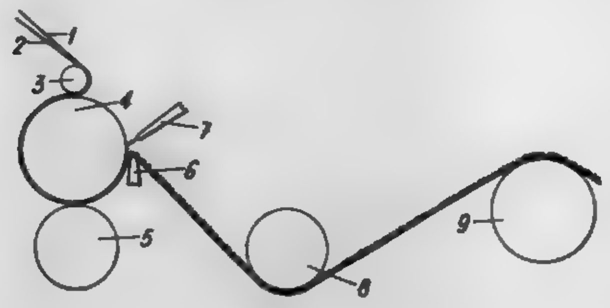
1. An adhesive tape for use in joining photographic supports which are dried using high frequency radiation, said adhesive tape comprising a support, a magnetic layer on one side of said support, the other side of said support showing adhesion to a photographic emulsion layer, and an adhesive layer on said magnetic layer.

3,983,277
DECORATING PLACEMAT CONSTRUCTION WITH A GRAPHIC PATTERN
Don Ackerman, Scotch Plains, N.J., and Robert Ira Schwartztol, Miami, Fla., assignors to PerCare, Inc., Roselle, N.J.
Continuation-in-part of Ser. No. 434,694, Jan. 18, 1974, Pat. No. 3,920,870. This application July 9, 1975, Ser. No. 594,537 The portion of the term of this patent subsequent to Nov. 18, 1992, has been disclaimed.
Int. Cl.² B32B *3/02, 3/04;* **B65D** *27/14, 65/18*
U.S. Cl. 428—46 **7 Claims**



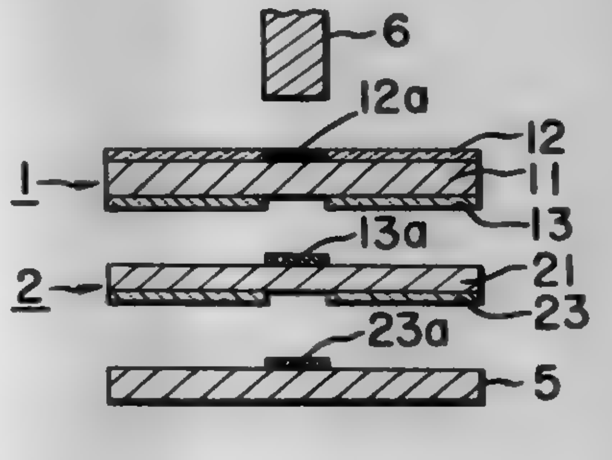
1. In combination in a placemat, a compliant backer sheet, a clear overlay sheet, means securing said overlay sheet and said backer sheet about less than all the periphery thereof, graphic bearing sheet means disposed between said backer and overlay sheet with said graphics disposed toward said overlay sheet, flap member means secured to said clear overlay sheet about the portion of the periphery thereof where said overlay sheet and said backer are not secured, and double sided adhesive strip means secured to the surface of one of said compliant backer sheet remote from said clear overlay sheet and said flap member, and disposed in proximate relation to said flap member.

3,983,278
METHOD OF MAKING A THERMOPLASTIC PILE SHEET
Glynn Arthur Wardle, Ramsbottom, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Sept. 16, 1974, Ser. No. 506,541
Claims priority, application United Kingdom, Sept. 27, 1973, 45226/73
Int. Cl.² B29C *17/00*
U.S. Cl. 428—92 **10 Claims**



1. In a method of making a pile-surfaced product having a pile of a thermoplastic polymer integrally attached to a layer of the same thermoplastic polymer, which method includes feeding a thermoplastic sheet and a backing substrate between two cooperating surfaces one of which is heated with the thermoplastic sheet facing the heated surface, the heated surface having a temperature sufficient to melt the thermoplastic sheet to bond said sheet and said backing substrate and to cause adhesion between the thermoplastic sheet and the heated surface, withdrawing said backing substrate and said thermoplastic sheet from said heated surface to form a pile of fibrils or tufts, on said sheet separating said pile from said heated surface and cooling said backing substrate, said pile and said thermoplastic layer, the improvement comprising: heating said thermoplastic layer from the side thereof having said backing substrate bonded thereto, said heating being for a time and to a temperature sufficient to improve abrasion resistance of the pile as measured by a standard abrasion test and as compared with a pile surfaced product made by a process the same as claimed herein but lacking only the step of heating a pile sheet from the substrate side, and said heating leaving the pile uncollapsed, said substrate being of a material adapted to bond to said thermoplastic sheet with heat and pressure and being otherwise unaffected by temperature of the process.

3,983,279
MULTIPLE HEAT-SENSITIVE COPYING MEDIUM
Hiromu Matsushita, Habikino; Takashi Yamahata, Koriyama, and Hiroshi Kakimoto, Kyoto, all of Japan, assignors to General Company, Ltd., Osaka, Japan
Filed July 15, 1974, Ser. No. 488,456
Int. Cl.² B41M *5/10*
U.S. Cl. 428—101 **8 Claims**



4. A multiple heat-sensitive copying medium comprising a double-sided heat-sensitive member comprising a substrate of good thermal conductivity having on one side thereof a heat-sensitive color forming layer selected from the group consisting of a combination of an iron salt of a fatty acid having a long chain and a phenol, a combination of a metal salt of a fatty acid having a long chain and a metal chelating agent, a combination of a phenol and a photochromic benzoindolinospiropyran compound, a combination of a leuco dye and a phenol; and on the other side thereof a heat-sensitive transferring layer containing a heat-sensitive color forming material and a binder of resinous material comprising a wax or wax-like material and an oil, at least one intermediate member comprising a substrate of good thermal conductivity having on one side thereof a transferred image-receiving agent layer and on the other side thereof a heat-sensitive transferring layer containing a heat-sensitive color forming material and a transferred image-receiving member comprising a substrate having on one side a transferred image-receiving agent layer, said intermediate member being disposed between said double-sided heat-sensitive member and said transferred image-receiving member so that said transferred image-receiving agent layer of said intermediate member and said heat-sensitive transferring layer of said double-sided heat-sensitive member, and said heat-sensitive transferring layer of said intermediate member and said transferred image-receiving agent layer of said transferred image-receiving member are maintained in face to face relationship, respectively.

3,983,280
NETTING

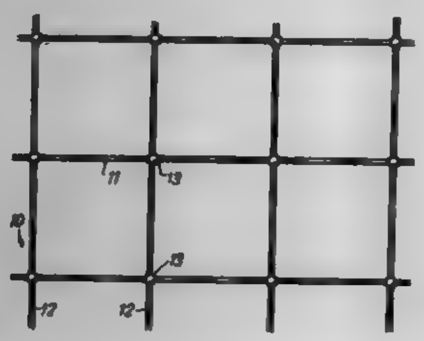
Anthony Bramley, Gosford House, Gosford, Kidlington, Oxfordshire, and Robin J. T. Clabburn, 1, Stonefield Drive, Highworth, Wiltshire, both of England

Continuation of Ser. No. 374,619, June 28, 1973, abandoned. This application Mar. 25, 1975, Ser. No. 561,690

Claims priority, application United Kingdom, July 7, 1972, 32024/72

Int. Cl.² B32B *5/12*

U.S. Cl. 428—107 11 Claims



1. Netting comprising longitudinal threads of thermoplastic material and transverse threads of thermoplastic material joined together at the thread crossings by individually molded masses of plastic material, in which the material of the threads has been irradiated to cross-link such material prior to molding of the masses at the thread crossings and molding of such masses was carried out at a molding temperature above that at which softening or heat damage occurs in the same material not treated by irradiation but below a temperature damaging to the irradiated thread material.

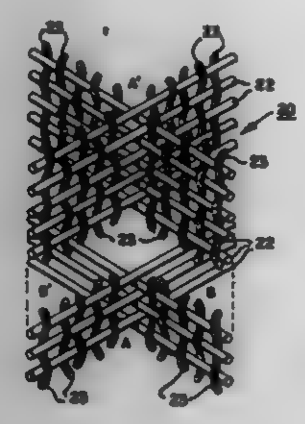
3,983,281
TAPE STRUCTURES

Alfred W. Wakeman, Madison Road, Durham, Conn. 06422

Continuation-in-part of Ser. No. 379,264, July 16, 1973, abandoned, which is a division of Ser. No. 159,796, July 6, 1971, Pat. No. 3,751,760, which is a continuation-in-part of Ser. No. 859,619, Sept. 22, 1969, abandoned, which is a division of Ser. No. 379,265, July 16, 1973, Pat. No. 3,851,353. This application Apr. 9, 1975, Ser. No. 566,295

Int. Cl.² B32B *5/12*

U.S. Cl. 428—112 7 Claims



1. A flexible tape for joining mating edges of adjacent panel members, said tape comprising:

two sets of flexible, spaced connector strands running crosswise of the longitudinal axis of the tape, the strands in one set intersecting and crossing those of the other set in alternation to form a longitudinally extended X-like configuration having four legs projecting respectively outwardly from the axis of intersection and having free outer ends to define four open-sided pockets running lengthwise of the tape in quadrantial arrangement about the tape axis;

means integrating adjacent connector strands along each leg to form therein a porous matted portion extending marginally along but spaced outwardly from said axis of intersection to leave an open center in which the two sets of connector strands in crossing said axis are free to shift relative to each other within the limits defined by said porous matted portions of said legs.

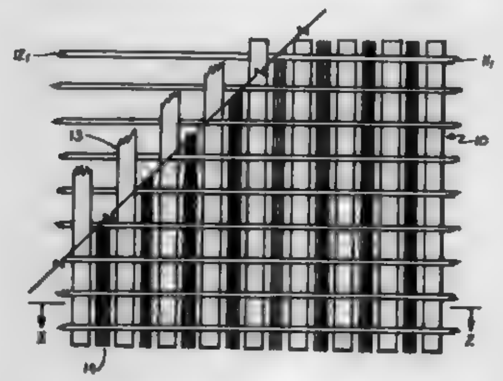
3,983,282
FABRIC CONSTRUCTIONS USEFUL AS BUILDING BASES IN FORMING COMPOUND-CURVED STRUCTURES

William H. Seemann, III, 1002 Third St., New Orleans, La.

Continuation-in-part of Ser. No. 353,340, May 15, 1972, Pat. No. 3,895,160, which is a continuation-in-part of Ser. No. 829,067, May 29, 1969, Pat. No. 3,668,051. This application Aug. 26, 1974, Ser. No. 500,538

Int. Cl.² D03D *17/00*

U.S. Cl. 428—114 10 Claims



1. In a fabric construction, constituting an article of manufacture useful for covering and assuming a compound-curved shape wherein is included the combination of at least two plies, characterized as outer plies of flexible material between which is sandwiched a series of spaced-apart, parallel aligned, springy plastic elements of elongate shape, each element constructed with fibers impregnated with resin, cured, and thereby reinforced to form a semi-rigid or rigid material, the outer plies and the springy plastic elements being bonded one to the other to form the sandwich structure, the voids between adjacent springy plastic elements containing fibers in the form of yarns or rovings,

the improvement wherein

said plies consist of parallel aligned continuous pliable filaments bonded to said springy plastic elements, each filament being laterally aligned with respect to said springy plastic elements,

whereby the springy elements can be directionally displaced one toward another, and longitudinally displaced so that the fabric construction can cover and assume the shape of a compound-curved structure.

3,983,283
HONEYCOMBED STRUCTURES HAVING OPEN-ENDED CELLS FORMED BY INTERCONNECTED WALLS WITH LONGITUDINALLY EXTENDING DISCONTINUITIES

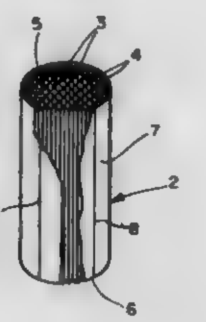
Rodney D. Bagley, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 18, 1974, Ser. No. 452,362

Int. Cl.² B32B *3/12*

U.S. Cl. 428—116 24 Claims

1. A monolithic honeycombed structure of sintered material comprising a plurality of interconnected walls forming open-ended cells extending longitudinally through the structure, said walls including a plurality of discontinuities extending longitudinally through the entire length of the structure and transversely through said walls, said discontinuities having a width substantially less than the distance between junctions of said interconnected walls.



3,983,284
FLAT CONNECTION FOR A SEMICONDUCTOR MULTILAYER STRUCTURE

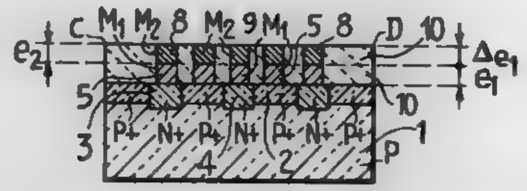
Michel Croset, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation of Ser. No. 365,519, May 31, 1973, abandoned. This application Mar. 21, 1975, Ser. No. 560,591

Claims priority, application France, June 6, 1972, 72.19940

Int. Cl.² B32B *3/00;* **C23B** *1/08;* **H01L** *27/10*

U.S. Cl. 428—195 2 Claims



1. A multilayer interconnection pattern, for interconnecting at least a first element to a second element, said first and second element being integrated over the same substrate, said interconnection comprising at least a flat combination including at least a first layer of tantalum which is oxidizable by a thermal treatment deposited upon said first and second elements, and a second conductive layer of aluminum which is non-oxidizable by said thermal treatment and deposited between said first and second elements and having a first thickness and at least a third layer of a dielectric oxide provided from oxidation of said first layer of tantalum by said thermal treatment and having said first thickness; said third and second layers forming a flat structure suitable for making said interconnection.

3,983,285
COMPOSITE POLYESTER FILMS AND PROCESS FOR PRODUCING THE SAME

Robert Riboulet, Crepieux, and Eugene Charvet, Saint Maurice de Beynost, both of France, assignors to La Cellophane, Paris, France

Continuation-in-part of Ser. No. 332,183, Feb. 3, 1973, Pat. No. 3,900,653. This application June 4, 1974, Ser. No. 476,284

Claims priority, application France, Feb. 16, 1972, 72.05115; June 8, 1973, 73.20883

The portion of the term of this patent subsequent to Aug. 19, 1992, has been disclaimed.

Int. Cl.² B32B *33/00, 27/18, 27/36*

U.S. Cl. 428—212 10 Claims

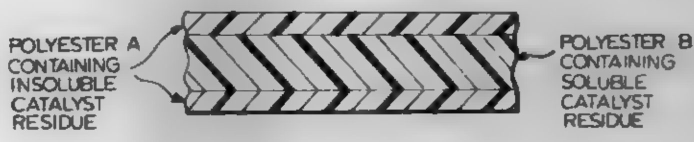
1. A magnetic recording tape comprising a film support and a layer of a magnetic material deposited on a surface thereof wherein said film support is a composite polyester laminate consisting essentially of:

a. a first polyester film layer formed from the polycondensation of dimethyl terephthalate with ethylene glycol in the presence of an ester interchange and polycondensation catalyst system the residue of which is at least substantially insoluble in the polyester melt, and

b. a second polyester film layer formed from the polycondensation of dimethyl terephthalate with ethylene glycol in the presence of an ester interchange and polycondensation catalyst system the residue of which is at least substantially soluble in the polyester melt wherein said layer (a) containing the insoluble catalyst residue comprises from 5 to 25 percent by weight of the composite polyester laminate support and layer (b) containing the soluble catalyst residue comprises from 95 to 75 percent by weight of the composite polyester laminate;

said second polyester film layer (b) having a coefficient of rugosity of less than 0.5μ and the coefficient of friction between said first layer (a) and said second layer (b) being less than 0.7 and wherein said magnetic material is deposited on the second polyester film layer.

8. In a process for preparing a magnetic recording tape having a film support having a layer of magnetic material deposited on one surface thereof, the improvement comprising forming the film support from a co-extruded polyester laminate consisting essentially of:


POLYESTER A CONTAINING INSOLUBLE CATALYST RESIDUE
POLYESTER B CONTAINING SOLUBLE CATALYST RESIDUE

a. a first polyester film layer formed from the polycondensation of dimethyl terephthalate with ethylene glycol in the presence of an ester interchange and polycondensation catalyst system the residue of which is at least substantially insoluble in the polyester melt, and

b. a second polyester film layer formed from the polycondensation of dimethyl terephthalate with ethylene glycol in the presence of an ester interchange and polycondensation catalyst system the residue of which is at least substantially soluble in the polyester melt wherein said layer (a) containing the insoluble catalyst residue comprises from 5 to 25 percent by weight of the composite polyester laminate support and layer (b) containing the soluble catalyst residue comprises from 95 to 75 percent by weight of the composite polyester laminate;

said second polyester film layer having a coefficient of rugosity of less than 0.5μ and the coefficient of friction between said first layer and said second layer being less than 0.7 and depositing said layer of magnetic material on said second polyester film layer.

3,983,286
METHOD OF FIXING COPPER SALTS TO ARTICLES OF SYNTHETIC POLYMERS

Andre Arsac, Millery, Vernaison, France, assignor to Rhone-Poulenc-Textile, France

Continuation-in-part of Ser. No. 353,730, April 20, 1973, Pat. No. 3,940,533. This application Mar. 4, 1975, Ser. No. 555,253

Claims priority, application France, Mar. 18, 1974, 74.09384

Int. Cl.² D04B *1/00;* **B05D** *5/12*

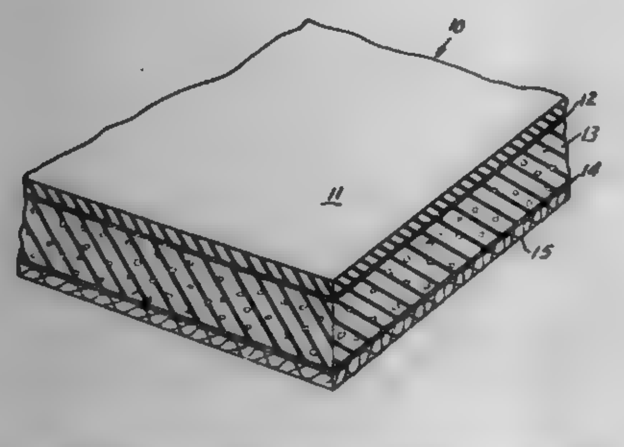
U.S. Cl. 428—225 11 Claims

1. In a process of fixing a copper salt on an article of synthetic polymers wherein the said article is subjected to the action of hydrogen sulfide under a positive gage pressure and then to the action of a copper salt, the method of improving the adhesion of the salt to the article which comprises treating the article with the salt in the presence of at least 0.1 percent by weight of a polyphenol.

3,983,287
COMPRESSIBLE PRINTING BLANKET

Charles G. Goessen, Hudson, Wis., and Stanley G. Peterson, Minneapolis, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 22, 1971, Ser. No. 200,729
Int. Cl.^{2} B41N *9/00*
U.S. Cl. 428—241 3 Claims



1. A thin strong printing blanket especially suited for use in offset llighography comprising in laminated combination:

an intermediate compressible layer of about —40 mils thick comprised of polyurethane elastomer having up to about 40 percent uniformly distributed voids and at least 5×10^{-3} cubic inches of void per square inch of blanket surface, said polyurethane elastomer having a Shore A-2 hardnes of 75–90 when void free, said voids characterized by having diameters in the range of 40 to 100 microns, a shape corresponding to minute spherical rigid-walled frangible glass bubbles, and containing the broken walls of said bubbles; and having permanently bonded to either major surface of said compressible layer;

an ink transfer layer about 5 mils thick comprised of acrylonitrile/butadiene copolymer; and

a foundation sheet about 20 mils thick comprised of at least one thickness of a strong woven fabric that has been integrated with an adhesive resin.

3,983,288
FIBERS AND FABRICS CONTAINING OPTICAL BRIGHTENING AGENTS

Derek D. Chapman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 4, 1974, Ser. No. 520,330
Int. Cl.^{2} B32B *7/00;* **D02G** *3/00*
U.S. Cl. 428—260 24 Claims

1. A nonmetallic synthetic fiber having incorporated therein or thereon from 0.01% to 1% by weight of an optical brightener comprising a quaternary salt having a pyrido [1,2-a] indolium salt nucleus.

3,983,289
ELECTRICALLY INSULATING PREPREG

Syunichiro Nishizaki; Hiroshi Teratani; Osamu Fujisawa; Jiro Fukushima, all of Amagasaki; Makoto Tokizawa, Kawasaki; Nobukatsu Wakabayashi, Kawasaki, and Takashi Saito, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries Ltd. and Mitsubishi Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Apr. 9, 1974, Ser. No. 459,316
Claims priority, application Japan, Apr. 9, 1973, 48-40185; May 25, 1973, 48-58397; Aug. 2, 1973, 48-86974
Int. Cl.^{2} B32B *7/00, 17/02*
U.S. Cl. 428—268 10 Claims

1. An electrically insulating prepreg, which comprises:

a resin composition of an alicyclic epoxy compound prepared by the epoxidation of an alkadiene alcohol ester of an alicyclic polybasic carboxylic acid, wherein said alkadiene alcohol is 2,7-octadienol-1 or 1,7-octadienol-3, a latent curing agent of a Lewis acid amine complex, and a fibrous solid substrate or sheet like solid substrate, wherein said resin composition once it has been applied to said substrate is in the B-stage cured condition and is thereby acetone soluble, thermoplastic and non-tacky.

3,983,290
FIRE RETARDANT POLYVINYL CHLORIDE CONTAINING COMPOSITIONS

Robert G. Elcik, Mount Holly, N.J., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Sept. 3, 1974, Ser. No. 502,590
Int. Cl.^{2} B32B *15/00, 17/00*
U.S. Cl. 428—285 8 Claims

1. A vapor barrier construction comprising a self-supporting film which is adhesively laminated to a fiberglass batting, said self-supporting film comprising an intimate admixture of: (1) a vinyl chloride polymer; (2) a chlorinated polyethylene having a chlorine content of from about 35% to about 45%; (3) a phosphate ester plasticizer; (4) an antimony trioxide flame retardant having a particle size of below about 5 microns; (5) a magnesium hydroxide filler having a particle size such that at least 99% of the particles have a diameter of less than 45 microns; and, (6) zinc borate.

3,983,291
SILANOL-CONTAINING URETHANE DISPERSIONS

Joe H-S Chang, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 538,153, Jan. 2, 1975, Pat. No. 3,941,733. This application Dec. 4, 1975, Ser. No. 637,813
Int. Cl.^{2} C08J *3/10*
U.S. Cl. 428—290 10 Claims

1. In combination, a substrate and a coating thereon of poly(urethane-urea) said poly(urethane-urea) being characterized in having a poly(urethane-urea) backbone containing interspersed bound water-solubilizing ionic groups pendent from said backbone and in being at least partially siloxane cross-linked by mutually interreacted silyl groups.

3,983,292
PRESSURE SENSITIVE RECORDING PAPERS

Toranosuke Saito, Kobe, and Daiichiro Tanaka, Arao, both of Japan, assignors to Sanko Chemical Company Ltd., Japan

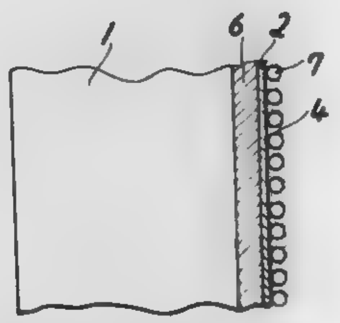
Continuation of Ser. No. 265,484, June 23, 1972, abandoned. This application Aug. 1, 1974, Ser. No. 493,834
Claims priority, application Japan, Aug. 27, 1971, 46-65129; Sept. 23, 1971, 46-73791; Mar. 29, 1972, 47-30665
Int. Cl.^{2} B41M *5/12*
U.S. Cl. 428—306 3 Claims

1. Pressure sensitive recording paper which comprises a two-component system in which one component is paper coated with a color developer composition and the other component is a recording paper having an encapsulated dyestuff layer, said dyestuff consisting essentially of a proton sensitive dyestuff of the crystal violet lactone type, and said developer composition contains a salicylic acid derivative selected from the group consisting of: aluminum 3-phenyl-5-(α, α-dimethyl-benzyl) salicylate, zinc 3-phenyl-5-(α, α-dimethyl-benzyl), salicylate, zinc 3-tert-butyl-5 methyl-salicylate, zinc 3-phenylsalicylate, zinc 3-cyclohexylsalicylate, zinc 3-(α, α-dimethylbenzyl)-5-methylsalicylate, zinc 3, 5-di-tert-butylsalicylate zinc 3, 5-dicyclohexyl-salicylate, zinc 3-cyclohexyl-5-(α, α-dimethyl-benzyl) salicylate, zinc 3,5-di (α-methylbenzyl) salicylate, zinc 3-(α-methylbenzyl)-5-(α, α-dimethylbenzyl) salicylate, zinc 3,5-di(α, α-dimethylbenzyl) salicylate, a mixture of zinc 3-cyclohexyl-5-(α, α-dimethylbenzyl) salicylate and zinc 3,5-di (α, α-dimethylbenzyl) salicylate.

3,983,293
MOLD FOR FORMING GLASS ARTICLES

Keishi Ohuchi, Sagamihara; Kenzo Matsui, and Keizo Tamai, both of Yokohama, all of Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1975, Ser. No. 602,309
Int. Cl.^{2} B32B *5/30*
U.S. Cl. 428—306 6 Claims



1. A mold for use is molding glass articles which comprises a porous layer lining on the inner surface of a metal mold, said porous layer being composed of a glass or ceramic material having a melting point higher than 400°C. and said porous layer having a heat conductivity not higher than 0.005 Joul/cm.sec.°K as measured at room temperature, a thickness of 40 to 3,000 microns and a porosity of 30 to 70 percent.

3,983,294
METHOD OF MAKING PLASTIC FOAM LAMINATES AND PRODUCT FORMED THEREBY

Jagadish C. Goswami, New City, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 496,228, Aug. 9, 1974. This application June 23, 1975, Ser. No. 588,103
Int. Cl.^{2} B32B *3/26*
U.S. Cl. 428—310 29 Claims

13. A plastic film laminate which comprises:

a. a base; and

b. a plastic film attached to said base, said film comprising a suspension copolymer of vinyl chloride, vinyl acetate and bis (hydrocarbyl) vinylphosphonate and a blowing agent.

3,983,295
RIGID OR SEMIRIGID FOAMS AND PROCESS OF MAKING THEM

Angelo Murer, Brussels, and Mario Borsatti, Overijse, both of Belgium, assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 298,454, Oct. 17, 1972, abandoned. This application Nov. 7, 1974, Ser. No. 521,926
Int. Cl.^{2} B29D *27/04*
U.S. Cl. 428—315 29 Claims

1. A method for preparing a heat recoverable thermoelastic self-skinned cellular plastic structure consisting essentially of:

A. preparing a vinyl chloride composition, wherein said composition is a plastisol or a pregelified dry-blend of:

  1 . a dispersion type vinyl chloride polymer;

  2. a non-volatile polymerizable polyfunctional monomer selected from the group consisting of allyl and vinyl monomers;

  3. a peroxide catalyst; and

B. depositing said composition in an open mold cavity;

C. heating said vinyl chloride composition at a rate of about 10°C. to about 30°C./minute to at least the temperature at which said monomer rapidly cures and expansion of the reaction mass commences in said mold cavity wherein the vinyl chloride composition is free to expand in at least one direction.

17. The product of claim 1.

3,983,296
MODIFIERS FOR PVC FOAM, PROCESS FOR EXTRUDING MODIFIED PVC FOAM AND MODIFIED PVC FOAM COMPOSITIONS

Marshall T. Purvis, and R. Peter Grant, both of Newtown, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 22, 1974, Ser. No. 453,627
Int. Cl.^{2} B29D *27/00*
U.S. Cl. 428—315 2 Claims

1. A process for extruding a foamed product at high efficiency and with smoother surfaces at a given throughput and concentration of modifier comprising introducing a composition comprising 100 parts by weight of polyvinyl chloride or copolymers of vinyl chloride containing up to 20% by weight of other monovinylidine compounds, a blowing agent and about 1 to 25 parts by weight of a modifier system comprising:

a first core-shell polymer having a hard shell polymerized from a shell-forming monomer system comprised of, in major part, at least one C_1 to C_4 alkyl methacrylate, having a molecular weight (M_v) above 1.5 million, polymerized in the presence of, but substantially ungrafted to, a crosslinked core polymerized from a core-forming monomer system comprised of, in major part, C_2 to C_8 alkyl acrylate, and about 0.1 to 5 weight percent, based on C_2 to C_8 alkyl acrylate, of a glycol dimethacrylate crosslinking agent, the weight ratio of shell to core being about 40:60 to 75:25; and

a second core-shell polymer having a shell polymerized from a shell-forming monomer system comprised of, in major part, at least one C_1 to C_4 alkyl methacrylate, polymerized in the presence of, but substantially ungrafted to, a core polymerized from a monomer or monomer mixture comprising, in major part, at least one C_1 to C_8 alkyl acrylate;

into a plasticating extruder and extruding said composition at a temperature of about 250°–400°F. through a die to foam said smoother surfaced product.

3,983,297
PRESSURE-SENSITIVE ADHESIVE TAPE OR DRAPE

Tomoyoshi Ono, Hino, and Yoshihiko Matsuguma, Hachioji, both of Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 367,474, June 6, 1973. This application Oct. 24, 1974, Ser. No. 517,644
Claims priority, application Japan, June 14, 1972, 47-58582; July 26, 1972, 47-74089
Int. Cl.^{2} C08F *218/18, 220/02, 222/14;* **C09J** *7/02*
U.S. Cl. 428—355 11 Claims

1. An adhesive tape or drape comprising a base sheet and formed thereon, a layer of a pressure-sensitive adhesive comprising as a main constituent a copolymer comprising

1. 94 to 98 mol% based on the total of components (1) and (2) of at least one alkyl acrylate monomer with the alkyl group containing 1 to 14 carbon atoms, the average number of the carbon atoms being 4 to 12, or a mixture of said alkyl acrylate with another monomer selected from the group consisting of methyl methacrylate, vinyl acetate and mixtures thereof in a mol ratio of said alkyl acrylate to said other monomer of at least 5 to 1,

2. 2 to 6 mol% based on the total of components (1) and (2) of a monomer selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof, and

3. 0.002 to 0.05 mol% based on the total of components (1) and (2) of a polyfunctional compound copolymerizable with the monomers (1) and (2) and having at least two non-conjugated carbon-to-carbon double bonds per molecule with the proviso that the amounts of component (1) and component (2) totals 100 mol%; said copolymer prepared by copolymerizing components (1), (2), and (3) by solution polymerization or emulsion polymerization.

3,983,298

POLYORGANOSILOXANE PRESSURE SENSITIVE ADHESIVES AND ARTICLES THEREFROM

James R. Hahn, Midland, and James A. Vallender, Freeland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Apr. 18, 1975, Ser. No. 569,256

Int. Cl.² B32B *9/04;* **C08L** *83/04*

U.S. Cl. 428—355 **14 Claims**

1. A composition suitable for use as a pressure sensitive adhesive, obtained by mixing components consisting essentially of

a. from 50 to 60 parts by weight of a solid, benzene soluble resin copolymer consisting essentially of

$R_3SiO_{1/2}$ units and $SiO_{4/2}$ units

where R is a monovalent hydrocarbon radical containing no more than six carbon atoms, there being from 0.6 to 0.9 inclusive

$R_3SiO_{1/2}$ units for every $SiO_{4/2}$ units,

at least 95 percent of all R radicals in (a) being methyl and the total number of R radicals in (a) that have olefinic unsaturation being no more than 0.5 percent, preferably zero percent, of all R radicals in (a),

b. from 40 to 50 parts by weight of an essentially cyclic free polydiorganosiloxane of the average formula

$CH_2{=}CHR''_2SiO(R'_2SiO)_nSiR''_2CH{=}CH_2$

where R' is selected from the group consisting of methyl, ethyl, propyl, and phenyl, at least 95 percent of all R' radicals being methyl, R'' is any R' as defined above and *n* has an average value such that the viscosity of the polydiorganosiloxane (b) has a value of from 20,000 to 100,000 centipoise at 25°C., the total of (a) and (b) being 100 parts by weight,

c. an amount of an organopolysiloxane compatible with the mixture of (a) and (b) and having an average unit formula

$R'''_aH_bSiO_{\frac{4-a-b}{2}}$

where R''' is any R' radical as defined above, *a* has a value of from 1.00 to less than 2.00, *b* has a value of from 0.05 to 1.00, the sum of *a* plus *b* being from 1.10 to less than 3.00, there being an average of greater than two silicon bonded hydrogen atoms per molecule of (c), no silicon atom bearing more than one silicon bonded hydrogen atom and the amount of (c) present being sufficient to provide from 1.0 to 20.0 silicon bonded hydrogen atoms for every olefinically unsaturated radical in the total of (a) plus (b) and,

d. a platinum containing catalyst in sufficient quantity to provide at least 0.1 part by weight of platinum for every one million parts by weight of the combined weight of (a), (b), and (c).

3,983,299

BONDED CARBOHYDRATE STATIONARY PHASES FOR CHROMATOGRAPHY

Frederick E. Regnier, West Lafayette, Ind., assignor to Purdue Research Foundation, W. Lafayette, Ind.

Continuation-in-part of Ser. No. 447,640, March 4, 1974, abandoned. This application Dec. 30, 1974, Ser. No. 537,197

Int. Cl.² B32B *17/02*

U.S. Cl. 428—405 **21 Claims**

1. A process for producing a bonded support for a chromatographic system, said process comprising:

providing a porous inorganic support structure having available surface hydroxyl groups, said support structure having dimensions suitable for use as a support in a chromatographic system;

bonding an organo silane onto said inorganic support structure; and

covalently bonding a thin layer of carbohydrate material of less than about 30 A onto said organo silane whereby the formed support is mechanically stable with carbohydrate separation characteristics and is hydrophilic.

17. A process for producing a bonded support for a chromatographic system, said process comprising:

providing a porous inorganic support structure having available surface hydroxyl groups, said support structure having dimensions suitable for use as a support in a chromatographic system; and

covalently bonding a thin layer of glycidoxyl-propyl silane of less than about 30 A onto said inorganic support structure whereby the formed support is mechanically stable with good separation characteristics and is hydrophilic.

3,983,300

ARTICLE COMPRISING AN ADHEREND WITH A THERMOPLASTIC POLYMER INCLUDING —ARSO₂— REPEATING UNITS ADHERING THERETO

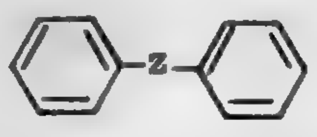
Michael Edward Benet Jones, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 39,880, May 22, 1970, abandoned, which is a division of Ser. No. 320,508, Oct. 31, 1963. This application Dec. 18, 1972, Ser. No. 315,904

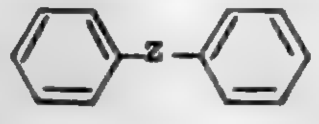
Int. Cl.² B32B *15/08, 17/10, 27/28*

U.S. Cl. 428—411 **11 Claims**

1. An article comprising an adherend with a thermoplastic polymer adhering thereto, said polymer consisting essentially of (1) repeating units having the structure $-Ar-SO_2-$ or (2) repeating units having the structure $-Ar-SO_2-$ and repeating units having the structure $-Ar-CO-$, where Ar is selected from (a) a divalent aromatic radical obtained by removal of two aromatically bound hydrogen atoms from a compound selected from the group consisting of benzene, condensed polynuclear aromatic hydrocarbons containing not more than two aromatic rings, diphenyl, and compounds having the structure



where Z is —O— or —S—, and where said compound contains two aromatic rings one of said hydrogen atoms being removed from each ring and (b) substituted derivatives of said divalent aromatic radicals in which at least one of the remaining aromatically bound hydrogen atoms of said divalent radical is substituted by a monovalent radical selected from the group consisting of halogen atoms, alkyl groups containing from 1 to 4 carbon atoms and alkoxy groups containing from 1 to 4 carbon atoms, there being not more than two such monovalent radical substituents on any one aromatic ring of said divalent aromatic radical, at least some of the Ar units being a radical derived from a compound of said structure



or said substituted derivatives thereof.

3,983,301

FILM BASE MATERIAL

Robert Stanley Cook; Keith Reid Tatchell, and Kenneth Archibald Cockerton, all of Ilford, England, assignors to Ilford Limited, England

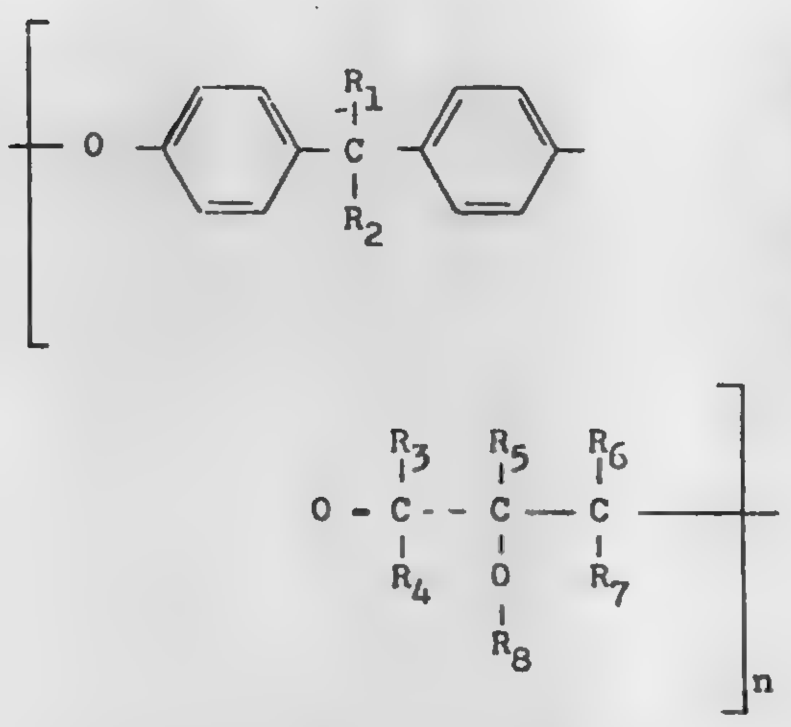
Filed May 16, 1974, Ser. No. 470,676

Claims priority, application United Kingdom, May 16, 1973, 23402/73

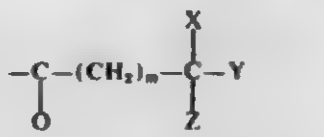
Int. Cl.² G03C *1/80;* **B32B** *27/36*

U.S. Cl. 428—413 **6 Claims**

1. Film base material comprising a film of synthetic linear polyester of hydrophobic character having superimposed thereon adherent to at least one entire side of said film a layer which comprises a phenoxy resin of the formula



wherein each of R_1 through R_7 is hydrogen, lower alkyl or cyclohexyl, from 50 to 100% of the R_8 groups in the phenoxy resin represent the acyl radical of the formula



$$-\underset{\underset{O}{|}}{C}-(CH_2)_m-\overset{\overset{X}{|}}{\underset{\underset{Z}{|}}{C}}-Y$$

wherein *m* is 0 or an integer from 1 to 6, at least one of X, Y and Z is chlorine, bromine or cyano, and the other of X, Y and Z are each hydrogen, bromine or chlorine, any balance of the R_8 groups in the phenoxy resin being hydrogen, and *n* is at least 50.

3,983,302

MAGNETIC RECORDING MEDIUM

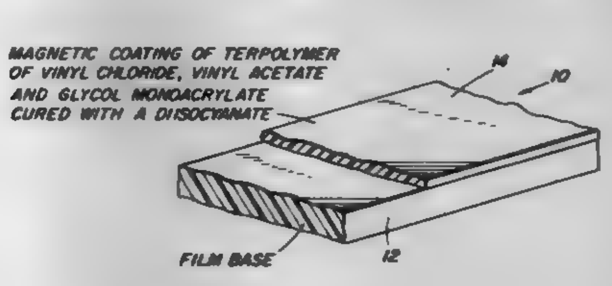
Richard S. Zucker, Newtown, Conn., assignor to CBS Inc., New York, N.Y.

Continuation-in-part of Ser. No. 249,436, May 1, 1972, abandoned, which is a continuation of Ser. No. 73,428, Sept. 18, 1970, abandoned. This application Aug. 20, 1973, Ser. No. 389,834

Int. Cl.² H01F *10/02*

U.S. Cl. 428—425 **11 Claims**

1. A magnetic recording medium comprising a backing material and an adherent coating thereon, said coating comprising magnetic particles dispersed in a resinous binder, said binder containing a polyurethane derived from a terpolymer and a diisocyanate, said terpolymer containing vinyl chloride, vinyl acetate, and a third monomer selected from the group consisting of glycol monoacrylate and glycol monomethacrylate, said terpolymer containing 51 to 94% by weight of vinyl chloride, 16 to 2% by weight of vinyl acetate, and 33 to 4% by weight of said third monomer.


MAGNETIC COATING OF TERPOLYMER OF VINYL CHLORIDE, VINYL ACETATE AND GLYCOL MONOACRYLATE CURED WITH A DIISOCYANATE
14
10
FILM BASE
12

3,983,303

METHOD OF MANUFACTURING ARTICLES FROM METAL COATED WITH A ZIRCONIUM NITRIDE LAYER

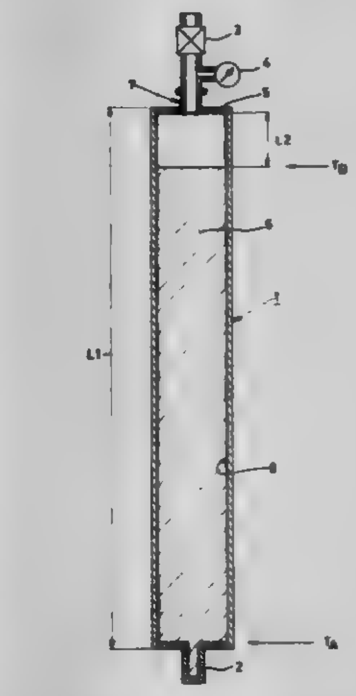
Udo Klaus Paul Biermann; Brian Lynch, and Willibrordus Maria van de Wijgert, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 27, 1975, Ser. No. 562,495

Claims priority, application Netherlands, Apr. 16, 1974, 7405069

Int. Cl.² C23C *1/06;* **C23F** *7/00*

U.S. Cl. 428—457 **4 Claims**



1. A method of manufacturing a metal article having parts which are subject to the influence of a metal melt containing lead which attacks constituents of the metal parts comprising the steps subjecting an austenitic alloy containing at least 5% by weight of nickel and having at least on the surface thereof nitrogen to the action of a metal melt containing zirconium in molten lead at a temperature of at least 800°C to form a layer of zirconium nitride on said alloy which resists the corrosive action of lead.

3,983,304

FASTENER WITH PROTECTIVE METAL-ORGANIC BASE COATING

Jagdish S. Sekhon, Fountain Valley, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.

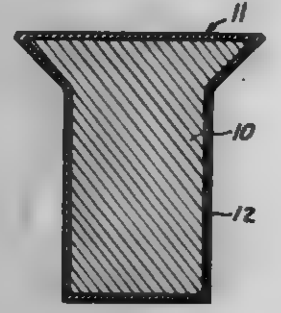
Division of Ser. No. 398,652, Sept. 19, 1973, and a continuation-in-part of Ser. No. 327,069, Jan. 26, 1973, abandoned. This application Jan. 26, 1976, Ser. No. 652,620

Int. Cl.² B32B *15/08*

U.S. Cl. 428—460 **11 Claims**

1. A fastener having an exterior coating of material comprising a mixture of: powdered metallic substance from the group consisting of aluminum and molybdenum disulfide,

phenol-formaldehyde resin and metallic chromate in a carrier selected from the group consisting of lower alkyl alcohols, methy ethyl ketone and petroleum distillate from the group consisting of xylene and toluene, and mixtures thereof, said material, upon application to a metal surface, drying to form a coating which is tough, adherent, smooth and corrosion resistant.



3,983,305
METHOD OF INCREASING THE CORROSION RESISTANCE AND IMPROVING THE ORGANIC COATING CHARACTERISTICS OF COLD ROLLED STEEL AND THE PRODUCTS THUS PREPARED

Gordon L. Peters, and William T. Saunders, both of Weirton, W. Va., assignors to National Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 398,308, Sept. 18, 1973, abandoned. This application Mar. 10, 1975, Ser. No. 557,171

Int. Cl.² C23F *7/04;* **B32B** *15/04;* **B05D** *3/02*

U.S. Cl. 428—467 26 Claims

1. A method of increasing the corrosion resistance of cold rolled flat steel and improving the organic coating characteristics of the surface thereof comprising

heat treating as rolled cold rolled flat steel having iron oxide and thermally degradable rolling oil on the surface thereof at a temperature of 400°–800°F. to thermally degrade the rolling oil,

the surface of the cold rolled flat steel having relatively low corrosion resistance and relatively poor organic coating characteristics initially and the heat treatment being continued for not more than 10 seconds until the corrosion resistance and the organic coating characteristics of the resulting heat treated steel are improved, and

immediately cooling the said heat treated steel to a temperature not greater thaan 200°F. to prevent further thermal degradation of the rolling oil, the surface of the resulting cooled heat treated steel having a residual film thereon containing iron oxide and thermally degraded rolling oil which imparts corrosion resistance and improved organic coating characteristics thereto.

3,983,306
COMPOSITE SHEET STRUCTURES

Werner Nielinger; Rolf Dhein; Ulrich Haberland; Dietrich Michael, and Karl-Heinz Hermann, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 22, 1974, Ser. No. 445,295

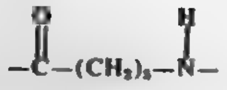
Claims priority, application Germany, Feb. 24, 1973, 2309420

Int. Cl.² B32B *27/32, 27/34*

U.S. Cl. 428—474 5 Claims

1. Transparent composite sheet structures consisting essentially of at least one sheet of polyethylene directly bonded to at least one sheet of a copolyamide consisting essentially of

A. 85–98% by weight of units of the formula (I)

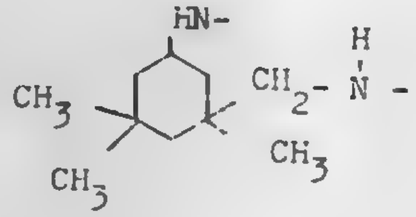


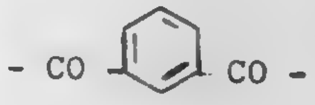
$$-\overset{O}{\overset{\|}{C}}-(CH_2)_5-\overset{H}{\overset{|}{N}}- \quad (I)$$

and of

B. 15–2% by weight of equimolar quantities of units of formulae II and III

(II)





(III)

3,983,307
THIN, TOUGH, STABLE LAMINATE

George Edward Power, and Dudley Wulfekotter, both of Cincinnati, Ohio, assignors to Formica Corporation, Cincinnati, Ohio

Filed Sept. 29, 1975, Ser. No. 617,929

Int. Cl.² B32B *21/06, 27/04*

U.S. Cl. 428—503 13 Claims

1. A unitary heat and pressure consolidated laminated article comprising, in superinposed relationship,

A. at least one paper sheet impregnated witn a substantially completely cured resinous composition, which, in its uncured state, comprises a mixture of (a) and (b), said (a) comprising a polymer of

1. from about 75% to about 98%, by weight, based on the total weight of polymer (a), of a polymerizable acrylic monomer and

2. from about 2% to about 25%, by weight, based on the total weight of polymer (a), of an acrylic monomer which is different from and copolymerizable with (1) and contains a functional group comprising carboxyl, amide or hydroxyl groups,

and said (b) comprising

3. a thermosetting melamine/formaldehyde resin having a ratio of melamine to formaldehyde ranging from about 1 : 1.6 to about 1 : 2.5, respectively,

the ratio of melamine in said (b) to polymer (a) ranging from about 4 : 1 to about 0.5 : 1, respectively,

B. a decorative sheet, with its decorative side facing upwardly, impregnated with a substantially completely cured resinous composition which, in its uncured state, comprises a mixture of (c) and (d), said (c) comprising a polymer of

4. from about 75% to about 98%, by weight, based on the total weight of polymer (c), of a polymerizable acrylic monomer and

5. from about 2% to about 25%, by weight, based on the total weight of polymer (c), of a acrylic monomer which is different from and copolymerizable with (4) and contains a functional group comprising carboxyl, amide or hydroxyl groups,

and said (d) comprising

6. a thermosetting melamine/formaldehyde resin having a ratio of melamine to formaldehyde ranging from about 1 : 1.6 to about 1 : 2.5, respectively,

the ratio of melamine in said (d) to polymer (c) ranging from about 4 : 1 to about 1 : 1, respectively, and

C. a clear, thermoset cross-linked resinous coating, directly applied to the upward face of said decorative sheet, comprising a composition, which, in its thermosetting, non-cross-linked state, comprises a mixture of (e) and (f), said (e) comprising a polymer of,

7. from about 75% to about 98%, by weight, based on the total weight of polymer (e), of a polymerizable acrylic monomer and

8. from about 2% to about 25%, by weight, based on the total weight of polymer (e), of an acrylic monomer which is different from and copolymerizable with (7) and contains a functional group comprising carboxyl, amide or hydroxyl groups,

and said (f) comprising

9. from about 10% to about 100%, by weight, based on the total weight of said (8), of a highly alkoxymethylated melamine.

3,983,308
PROCESS FOR MAKING DEGRADABLE POLYMERS AND DEGRADABLE POLYMERS OBTAINED THEREBY

Nicola Palladino, Monterotondo; Marcello Mazzei, Milan, and Walter Marconi, San Donato Milanese, all of Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

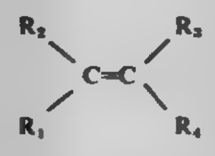
Filed Oct. 24, 1974, Ser. No. 517,754

Claims priority, application Italy, Oct. 24, 1974, 30484/74

Int. Cl.² C08F *110/02*

U.S. Cl. 526—1 7 Claims

1. Process for making polyethylene degradable by the direct action of the sun light said process consisting of adding to polyethylene an effective amount of a compound containing an ethylenic unsaturation having the formula

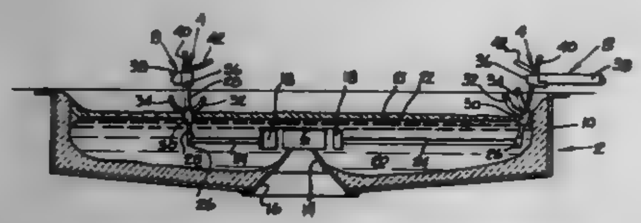


in which R_1 R_2 R_3 and R_4 are the same or different and are aromatic radicals, with the proviso that one or two of R_1 R_2 R_3 or R_4 may be selected from the group consisting of hydrogen, alkyl, cycloalkyl and arylalkyl.

3,983,309
PRIMARY ELECTRODE ARRANGEMENT FOR HIGH TEMPERATURE MELTING FURNACE

Duane Harold Faulkner, Cambridge City; Steven Douglas Sanford, Richmond, both of Ind., and Vaughn Charles Chenoweth, Hollansburg, Ohio, assignors to Johns-Manville Corporation, Denver, Colo.

Filed May 16, 1975, Ser. No. 578,439
Int. Cl.² C03B *5/02*
U.S. Cl. 13—6 10 Claims

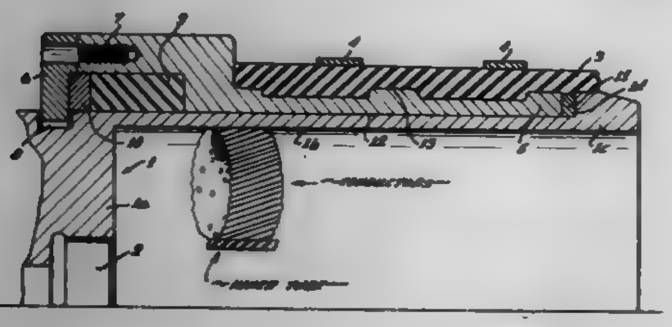


1. In a melting furnace comprising:
a. a vessel for containing molten material and unmelted batch on the surface of the molten material forming an interface,
b. an electrically conducting member located within said vessel, and
c. at least two electrically conducting primary electrodes made from a refractory metal highly susceptible to oxidation at elevated temperatures in an oxidizing atmosphere inside said vessel having their tips spaced radially about said electrically conducting member, the improvement comprising:
d. each primary electrode having a portion thereof exposed through the top surface of the molten material to the unmelted batch and other environment adjacent to the top surface of the molten material, and
e. each primary electrode having means around its exterior surface located where said electrode passes through said interface for cooling the electrodes in this vicinity to a temperature below that at which the material used to form said electrodes would rapidly oxidize in an oxidizing atmosphere.

3,983,310
CONNECTION BETWEEN A SOCKET AND A LIQUID COOLED CABLE

Horst Fischer, Osnabruck, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed Apr. 21, 1975, Ser. No. 569,929
Int. Cl.² H02G *15/22*; H01B *7/34*
U.S. Cl. 174—19 9 Claims

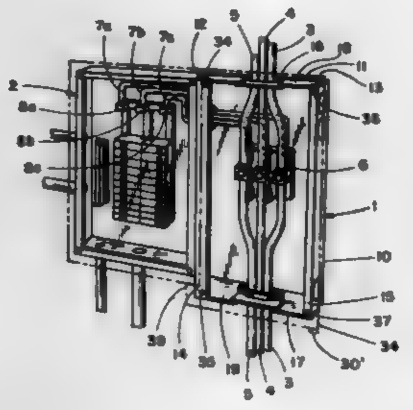


1. A connection between (a) a liquid cooled heavy current cable having an inner tube for the coolant, conductors thereon and an outer tube or hose; and (b) a socket member having a sleeve in which are inserted the conductors, and being provided for a connection to the inner tube, the connection between the cable and the socket member comprising an annular member for rotation on the sleeve of the socket member;
means for rotatably mounting the annular member on the sleeve for obtaining relative turning between the sleeve and the annular member; and
means for fastening the outer tube or hose to said annular member.

3,983,311
AUXILIARY GUTTER WITH LAY-IN END WALLS AND UNIVERSAL COVER

Walter T. Brumfield, Nicholasville; Robert C. Baker, and Theodore L. Brann, both of Lexington, all of Ky., assignors to Square D Company, Park Ridge, Ill.

Filed Dec. 18, 1974, Ser. No. 534,005
Int. Cl.² H02G *3/14*
U.S. Cl. 174—50 5 Claims

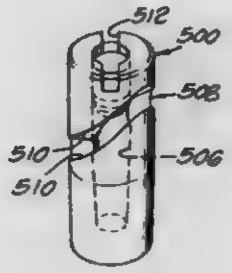


1. An auxiliary gutter assembly securing and housing a section of a continuous length of electrical cable, said gutter being connected along one side to a load center, said gutter including a housing having an open front wall and oppositely spaced apart peripheral wall portions, lay-in channel means formed in said oppositely spaced apart peripheral wall portions including channel entrance means therein open to said front wall, a section of a continuous length of cable received within said housing, and universal cover means detachably secured to said housing to close said front wall, said universal cover means comprising a flat cover plate, a first straight longitudinal edge along one side thereof, a second straight longitudinal edge spaced apart from said first edge along the opposite side of said cover plate, said first and second longitudinal edges being parallel, a first side margin of said cover plate bordering said first longitudinal edge, a second side margin of said cover plate bordering said second longitudinal edge, said housing of said gutter including spaced apart parallel first and second longitudinal side walls, a first side wall flange extending laterally from the forward edge of said first longitudinal side wall, a second side wall flange extending laterally from the forward edge of said second longitudinal side wall, mounting aperture means positioned in said first and second side margins of said cover plate, said aperture means in said first side margin being located closer to its corresponding longitudinal side edge than said aperture means in said second side margin is to its corresponding longitudinal side edge, and corresponding mounting bolt means positioned through said side wall flanges in attaching association with said mounting aperture means in said cover plate, said mounting bolt means through said first side wall flange being spaced farther from said first longitudinal side wall than said mounting bolt means through said second side wall flange are spaced from said second longitudinal side wall, the dimension across said front wall cover plate between said first and second longitudinal edges is sufficient in relation to the corresponding dimension across said housing for said second longitudinal edge of said cover plate to overhang said second longitudinal wall of said housing when said cover plate is mounted in position for a flush mounted installation, whereby said aperture means in said first side margin of said cover plate are in registration with said mounting bolt means through said first side wall flange of said housing and the aperture means in said second side margin of said cover plate are in registration with said mounting bolt means through said second side wall flange, said first longitudinal edge of said cover plate lying inwardly from said first longitudinal side wall of said housing and said second longitudinal edge of said cover plate overhangs said second longitudinal wall of said housing when said aperture means in said cover plate and respective mounting bolt means through said flanges of said housing are in registration for a flush mounted installation, said cover plate including a break-away extension tab integrally formed to extend longitudinally a pre-determined length along said first longitudinal edge of said cover plate beginning from one end thereof, said extension tab extending laterally a pre-determined width from said first longitudinal edge of said cover plate, and a weakened region along a junction line between said extension tab and said cover plate to enable breaking said extension tab away from said cover plate along said junction line, said junction line being a continuation of said first longitudinal edge.

3,983,312
ELECTRICAL WIRE CONNECTOR

Harry A. Faulconer, 8323 Center Drive, La Mesa, Calif. 92041

Continuation-in-part of Ser. No. 74,907, Sept. 23, 1970, Pat. No. 3,668,301, which is a continuation-in-part of Ser. No. 316, Jan. 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 676,002, Sept. 28, 1967, abandoned, which is a continuation-in-part of Ser. No. 594,785, Nov. 16, 1966, abandoned. This application Apr. 13, 1972, Ser. No. 243,600
Int. Cl.² H01R *5/10*, *9/08*
U.S. Cl. 174—84 R 3 Claims



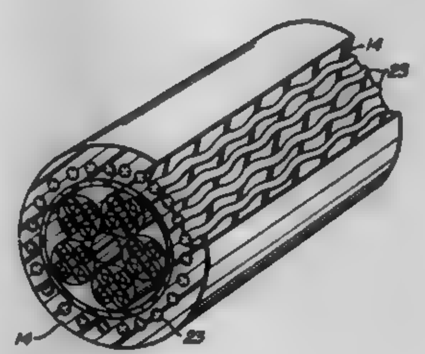
3. In an electrical wire connector comprising an insulating body member having a passage extending at least partially through said body member, said passage having a longitudinal axis, a radial slot in said body member, said radial slot being defined by a pair of slot-defining surfaces, said slot communicating with said passage, and said slot dividing said passage into an upper section and a lower section, and a force transfer member stored in said upper section of said passage; the improvement comprising: said slot being disposed at an acute angle relative to said longitudinal axis of said passage, and said slot-defining surfaces being inclined toward said passage to facilitate inserting and maintaining a wire portion in said passage.

3,983,313
ELECTRIC CABLES

Robert Ney, Langerwehe, and Hans-Christoph Rhiem, Eschweiler, both of Germany, assignors to Lynenwerk KG, Eschweiler, Germany

Division of Ser. No. 393,753, Sept. 4, 1973, Pat. No. 3,879,518. This application Feb. 4, 1975, Ser. No. 546,872
Claims priority, application United Kingdom, Sept. 5, 1972, 41209/72
Int. Cl.² H01B *7/18*
U.S. Cl. 174—121 SR 13 Claims

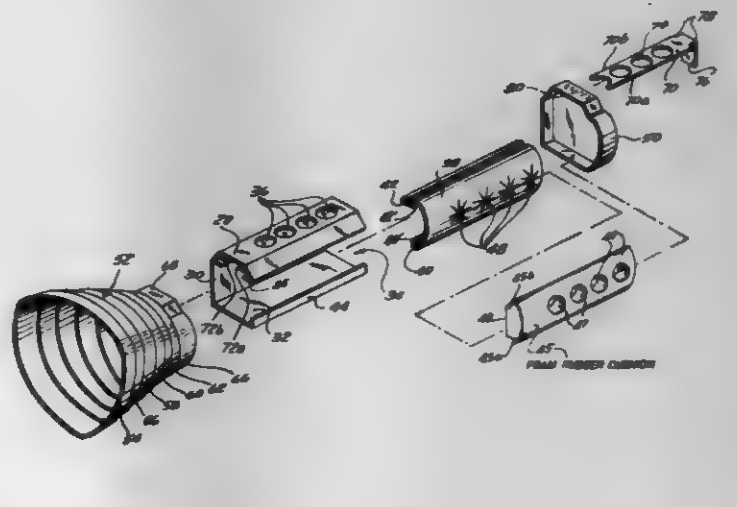
1. An electric cable which includes: an electric cable core comprising at least one insulated electric conductor, a polyethylene cable sheath surrounding said cable core, and bundles of unimpregnated glass fibers free from a bonding agent embedded in said polyethylene cable sheath and relatively spaced concentrically about said cable core, each of said bundles being enveloped by said sheath material sufficient to establish a mechanical bond between the enveloping polyethylene and said bundles of glass fibers, said bundles forming undulations in a direction longitudinally of said cable core.



3,983,314
DEAD FRONT MULTI-TAP TERMINAL CONNECTOR CASING

Ilmar J. Filhaber, Poughkeepsie, N.Y., assignor to Fargo Mfg. Company, Inc., Poughkeepsie, N.Y.

Filed Aug. 1, 1975, Ser. No. 601,159
Int. Cl.² H01R *13/44*
U.S. Cl. 174—138 F 3 Claims



1. A terminal connector casing including in combination an elongated body, an open side formed in said body through its length, a plurality of through holes provided in said body disposed in alignment longitudinally thereof, an elongated panel attached to said body in the zone of said open side to provide with said body a hollow tubular member, means attaching said panel to said body at the longitudinal edges thereof, a plurality of openings provided in said panel disposed in alignment longitudinally thereof with each opening in the respective transverse plane of one of said through holes, front and rear covers attached to said tubular member at either end thereof and a lid slidably attached thereto, said lid being constructed and arranged in one position thereof to simultaneously cover each of said through holes and a resilient non-conducting cushion within said casing with through openings formed in said cushion which are respectively aligned with said openings in said panel and said cushion being contoured to conform to the inner surface of said panel.

3,983,315

ELECTROMAGNETIC COUNTER CIRCUIT

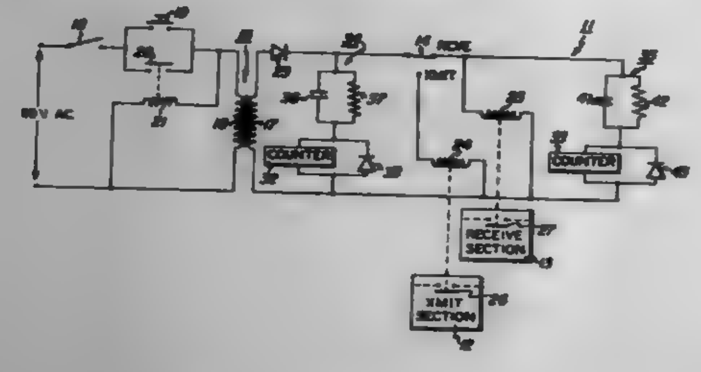
Yuji Watai, Tokyo, Japan, assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 5, 1975, Ser. No. 610,607

Claims priority, application Japan, Nov. 27, 1974, 49-142753

Int. Cl.² H04N *1/32*

U.S. Cl. 178—6 **6 Claims**



1. A data collection device for automatically gathering quantitative and qualitative usage information from a facsimile transceiver; said transceiver including a first control circuit, a second control circuit, means for supplying a DC control current when said transceiver is activated, and a mode selector switch for selectively applying said control current to said first control circuit for conditioning said transceiver to operate in a transmit mode or to said second control circuit for conditioning said transceiver to operate in a receive mode; said data collecting device comprising a pair of counters, a first capacitive-type pulse generator connected in series with one of said counters for supplying a pulse of predetermined amplitude and duration in response to said control current to increment said counter upon the occurrence of a first event, and a second capacitive-type pulse generator connected in series with the other of said counters for supplying another pulse of predetermined amplitude and duration in response to said control current upon the occurrence of a second event; said first and second events being respective ones of actuation of said transceiver, operation of said transceiver in a transmit mode, and operation of said transceiver in a receive mode, whereby said counters register running counts permitting the usage of said transceiver to be quantitatively and qualitatively tracked.

3,983,316

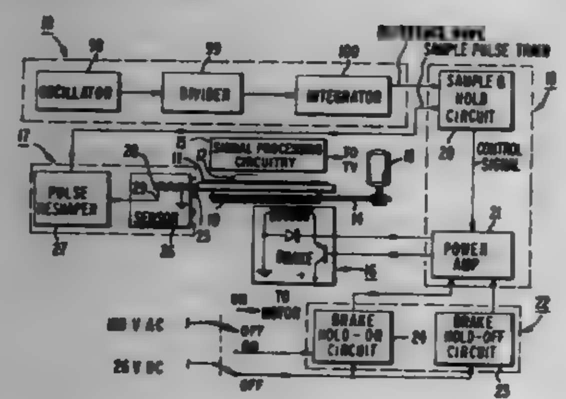
TURNTABLE SPEED CONTROL SYSTEM

James Conrad Schopp, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 17, 1975, Ser. No. 559,098

Int. Cl.² H04N *5/76;* G11B *19/28*

U.S. Cl. 178—6.6 P **9 Claims**



1. In a system for playing back prerecorded information by a signal pickup from a disc record when relative motion is established therebetween; the playback system including a turntable for rotatably supporting the disc record; wherein for accurate reproduction of the prerecorded signals, a predetermined speed of rotation of the turntable is desired; the playback system including drive means for driving the turntable to rotate at a free running speed above the predetermined speed; adjusting means coupled to the drive means and responsive to a speed error correction signal for maintaining the speed of rotation of the turntable at the predetermined speed during playback; the system further including a signal processing circuit responsive to signals developed at the output of the signal pickup; the signal processing circuit including means for effecting frequency stabilization of components of the developed signals; a turntable speed control system comprising:

1. means responsive to the rotation of the turntable for generating a train of speed indicating pulses having a frequency which is a multiple, including one, of the actual speed of rotation of the turntable; the speed indicating pulses occurring at a predetermined frequency when the speed of rotation of the turntable is at the predetermined speed;
2. means for generating generally sawtooth-shaped reference waves having a frequency which is a greater-than-one multiple of the predetermined frequency of the speed indicating pulses; the reference wave generating means comprising an oscillator, a frequency divider responsive to the output of the oscillator, and an integrator circuit responsive to the output of the frequency divider for developing the sawtooth-shaped reference waves; the output of the oscillator being additionally supplied to the frequency stabilization effecting means;
3. means coupled to the speed indicating pulse generating means and the reference wave generating means, and responsive to the magnitude of the reference wave during the occurrence of each of the speed indicating pulses, for developing a speed error correction signal; the magnitude of the speed error correction signal being a function of the phase deviation between the speed indicating pulse train and the reference wave; and
4. means for supplying the speed error correction signal to the adjusting means for adjusting the speed of rotation of the turntable to the predetermined speed.

3,983,317

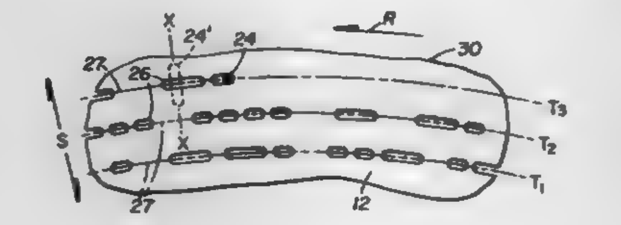
ASTIGMATIZER FOR LASER RECORDING AND REPRODUCING SYSTEM

Charles A. Glorioso, San Francisco, Calif., assignor to Teletype Corporation, Skokie, Ill.

Filed Dec. 9, 1974, Ser. No. 530,887

Int. Cl.² G11B *7/18;* H04N *5/76*

U.S. Cl. 178—6.6 R **13 Claims**



1. In combination with a recording and reproducing system of the type having a recording surface being recorded thereon in a pattern of grooves arranged along a track, means for moving the track, a beam source, means for directing a source beam from the beam source continuously along the track on the surface, and means for detecting a reflected beam of energy from the surface to produce an output indicative of the groove pattern on the track, the improvement wherein:

the directing means includes an astigmatizer means, mounted to be removably positioned in the beam path between the beam source and the surface, for elongating the cross-section of the source beam on the surface so that its dimension in a direction transverse to the track is greater than its dimension in the direction of the track, only when said astigmatizer is positioned in the beam path.

3,983,318

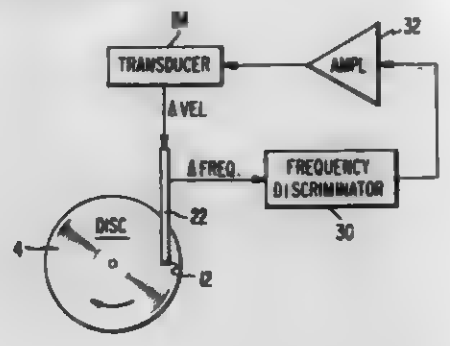
VELOCITY CORRECTION SYSTEM WITH DAMPING MEANS

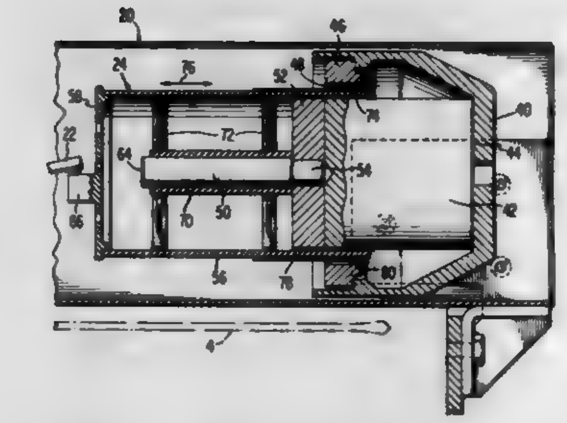
Michael Evans Miller, and John Gordon Amery, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 351,598, April 16, 1973, abandoned. This application Sept. 2, 1975, Ser. No. 609,826

Int. Cl.² G11B *3/10, 25/04*

U.S. Cl. 178—6.6 DD **15 Claims**





1. In a velocity adjusting system for opposing undesired variations in the relative velocity between a moving record medium and a pickup means which is positioned adjacent to said record medium for detecting signals recorded on said record medium, said system including means for developing a correction signal in response to cyclical variations of said relative velocity falling in a given error frequency range, apparatus responsive to said correction signal to vary the physical position of said pickup means with respect to said record medium; said apparatus comprising:

- transducer means having a stationary portion which includes means for generating magnetic flux and a movable portion which is subject to movement with respect to said stationary portion;
- resilient means intercoupling said stationary portion and said movable portion, said resilient means being disposed so as to urge said movable portion to return to a null position with respect to said stationary portion when motion of said movable portion causes displacement from such null position;
- mechanical means coupling said movable portion to said pickup means;
- an electrical winding disposed on said movable portion in the path of said magnetic flux such that said correction signal passing through said winding imparts motion to said movable portion to vary the position of said pickup means in a manner that opposes said undesired variations in relative velocity; and
- electrical damping means, mounted on said movable portion and disposed in the path of said flux throughout the range of motion of said movable portion for opposing any relative motion of said movable portion with repect to said stationary portion;

wherein the resilience of said resilient means is so related to the other mechanical characteristics of said transducer apparatus as to establish a natural resonance for said transducer apparatus under operating conditions at a frequency falling within said given error frequency range.

3,983,319

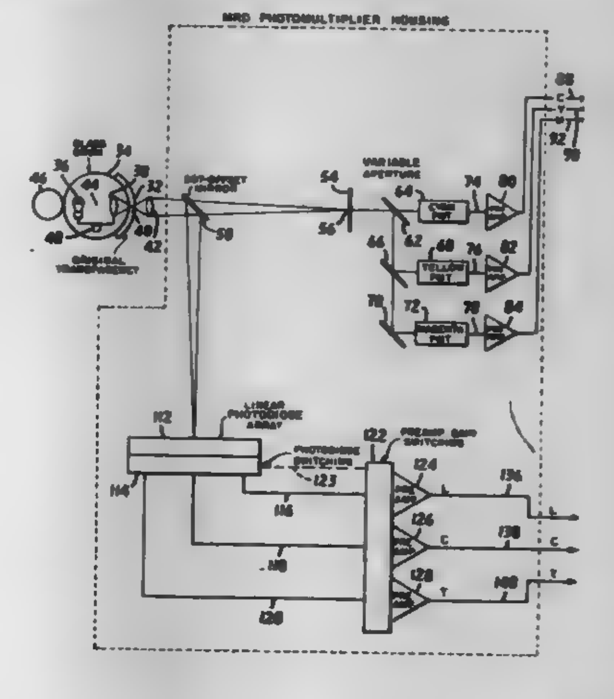
ELECTRONIC SCREENING FOR IMAGE REPRODUCTION

William West Moe, Stratford; Robert William Lotz, Darien; Ethan Robert Green, Monroe, and Rodolfo Fazio, Southport, all of Conn., assignors to Printing Developments, Inc., New York, N.Y.

Filed Nov. 12, 1973, Ser. No. 414,798

Int. Cl.² H04N *5/84*

U.S. Cl. 178—6.7 R **9 Claims**



1. Apparatus comprising means for generating digital signals representing the calculated position of a halftone dot, recording means for forming a halftone dot on a recording medium, means for generating digital signals representing the actual position of said recording means with respect to said recording medium, comparator means for comparing said signals and producing, when they are equal, a digital print-command signal, and dot-forming means responsive to said digital print-command signal for causing said recording means to commence the forming of a halftone dot.

3,983,320

RASTER DISPLAY HISTOGRAM EQUALIZATION

David J. Ketcham; Roger W. Lowe, both of Lakewood; Michael D. Pruznick, Huntington Beach, and Eugene W. Opittek, Santa Ana, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 25, 1975, Ser. No. 608,319

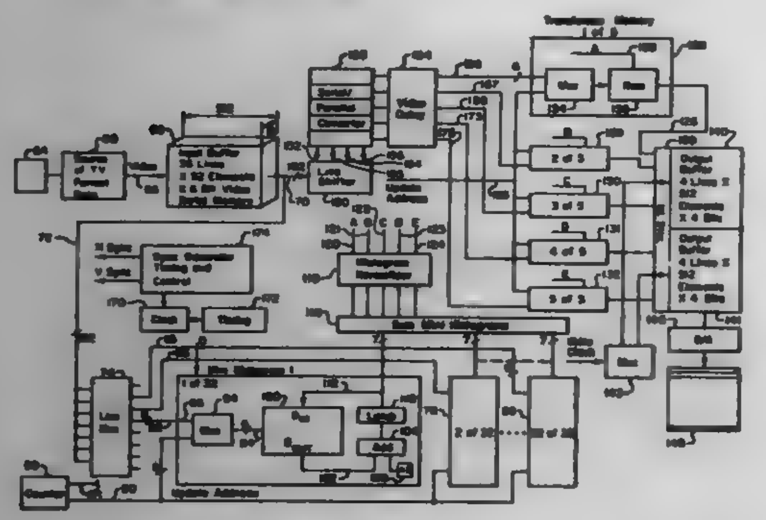
Int. Cl.² H04N *3/00*

U.S. Cl. 178—6.8 **10 Claims**

1. A histogram equalization system for converting data from a source of a first number of bits to a second number of bits for forming a display raster including a selected number of vertical elements by a selected number of horizontal elements comprising:

- first means coupled to said source of data for forming sub histograms of a selected portion of a histogram area,
- second means coupled to said first means for forming a histogram of a selected area of said raster,
- transform means coupled to second means for forming transformed data representing truncation points,

third means coupled to said transform means for storing said transform data, and



means coupled to said source for transforming input data of selected elements in said histogram area through said third means to transfrom said input data to truncated equalized output data.

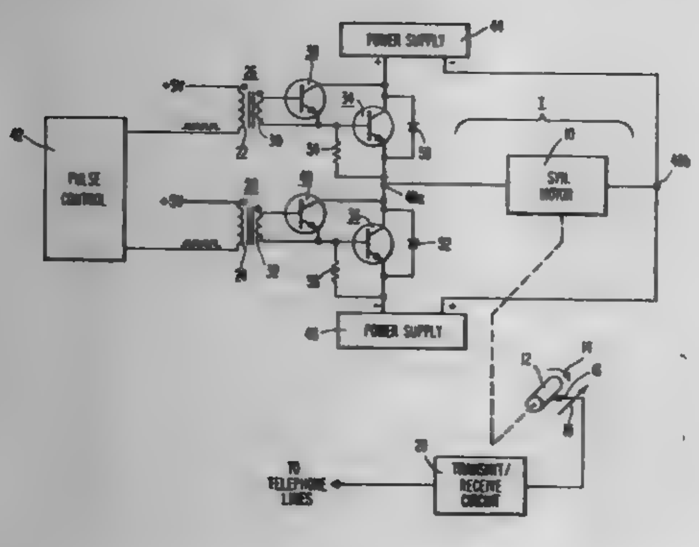
3,983,321
SWITCHING CIRCUIT UTILIZING A BASE STORAGE CHARACTERISTICS OF A TRANSISTOR FOR USE IN A FACSIMILE TRANSCEIVER AND THE LIKE

John M. Vandling, Pleasantville, N.Y., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed July 30, 1974, Ser. No. 493,118

Int. Cl.² H04N *1/36*

U.S. Cl. 178—7.6 **10 Claims**



5. A facsimile unit comprising scanning means, a scanning motor for driving said scanning means and a scanning transducer means comprising:

a source of low voltage, substantially constant frequency pulses separated by a substantially constant time interval;

high voltage isolation means having an input and an output;

pulse control means coupled to said source and said input of said high voltage isolation means for controlling the application of pulses to said input; and

a switching transistor having a base, an emitter and a collector, said transistor being characterized by a base storage time exceeding said time interval between said low voltage pulses, said base being coupled to said output of said isolation means so as to render said transistor conductive between said emitter and said collector during said pulses and during said intervals between said pulses and

a power supply coupled to said transistor and said motor so as to apply power to said motor during the application of pulses to the base of the transistor.

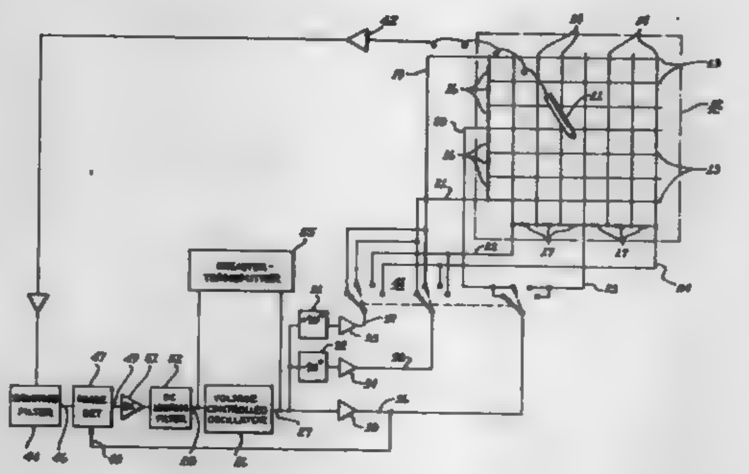
3,983,322
METHOD AND APPARATUS FOR CONVERTING THE LOCATION AND MOVEMENT OF A MANUALLY CONTROLLED INSTRUMENT INTO CORRESPONDING ELECTRICAL SIGNALS

James L. Rodgers, Tempe, Ariz., assignor to Talos Systems, Inc., Scottsdale, Ariz.

Filed July 31, 1975, Ser. No. 600,820

Int. Cl.² G08C *21/00*

U.S. Cl. 178—19 **10 Claims**



1. A method for obtaining an electrical signal corresponding to the position of an instrument along an axis on a surface having a plurality of conductors orthogonally oriented with respect to said axis and positioned proximate said surface, said method comprising the steps of:

a. generating a first signal having a predetermined frequency and phase;

b. advancing the phase of said first signal to generate a second signal having the predetermined frequency and a phase leading said first signal;

c. retarding the phase of said first signal to generate a third signal having the predetermined frequency and a phase lagging said first signal;

d. generating a time varying electrostatic field across said surface by applying said first signal to a first of said conductors, applying said second signal to a second of said conductors, and applying said third signal to a third of said conductors;

e. sensing the phase and frequency of the time varying electrostatic field at the position of the instrument and generating a control signal in response thereto having said predetermined frequency and a phase unique to said position;

f. comparing said control signal to said first signal;

g. changing the predetermined frequency until a first stable condition is reached in which said control signal compares to said first signal in accordance with a predetermined relationship;

h. producing a first output signal representative of said first stable condition;

i. reversing said second signal and said third signal to apply said second signal to said third conductor and said third signal to said second conductor, thereby changing the electrostatic field at the position of the instrument;

j. sensing the changed electrostatic field and changing said control signal in response thereto;

k. changing the predetermined frequency until a second stable condition is reached in which said changed control signal compares to said first signal in accordance with said predetermined relationship;

l. producing a second output signal representative of said second stable condition; and

m. combining said first output with said second output signal to obtain a differential output signal uniquely corresponding to the position of the instrument on said axis.

3,983,323
FULL-DUPLEX DIGITAL TRANSMISSION LINE SYSTEM

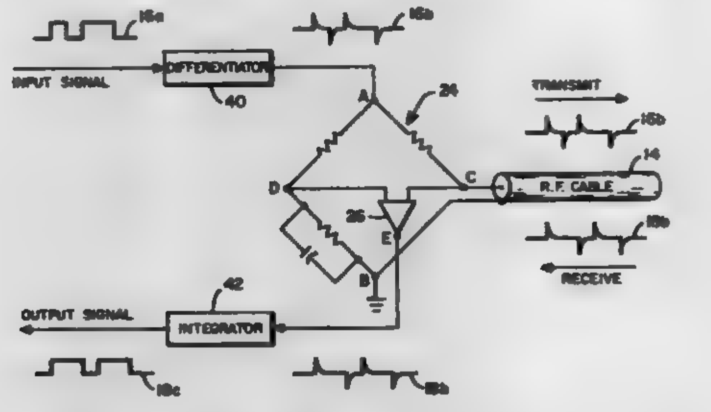
Ernest S. Griffith, St. Louis Park, and William W. Davis, Minneapolis, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 24, 1973, Ser. No. 399,908

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² H04L *5/14;* **H04B** *3/50*

U.S. Cl. 178—58 R **6 Claims**



1. A transceiver comprising:

input means for receiving a binary-level, digital input signal:

a Wheatstone bridge having four external legs AD, DB, BC, CA and an internal leg DC between the nodes A, B, C and D, said bridge formed of:

first impedance means coupled between said nodes C, A for forming said leg CA;

second impedance means coupled between said nodes A, D for forming said leg AD;

third impedance means coupled between said nodes D, B for forming said leg DB;

a single coaxial cable transmission line having its center conductor and its outer conductor coupled directly to nodes C and B, respectively, for forming said leg BC;

an amplifier coupled between said nodes D, C for forming said leg DC and amplifying a portion of a differentiated received signal that is received from said transmission line;

a capacitor coupled to said input means for differentiating said input signal and coupling a differentiated input signal to said node A of said Wheatstone bridge, a portion of which appears across said leg BC as a differentiated input signal to be transmitted by said transmission line;

bistable means coupled to the output of said amplifier for converting the output of said amplifier to a binary-level digital output signal.

3,983,324
FULL DUPLEX DRIVER/RECEIVER

William Arthur Lacher, Lansdale, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 31, 1975, Ser. No. 563,610

Int. Cl.² H04L *5/14*

U.S. Cl. 178—59 **10 Claims**

1. A full duplex driver/receiver module comprising:

a driver and a receiver portion;

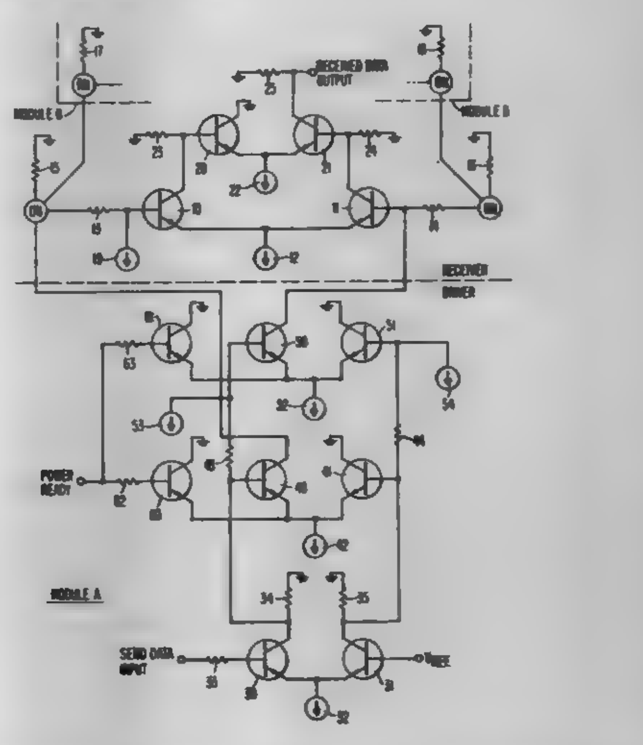
said receiver portion comprising a plurality of semiconductor current amplifying devices including a first differentially configured current-mode switch;

said driver portion comprising a plurality of semiconductor current amplifying devices including second and third differentially configured current-mode switches;

a drive node and a receive node within said module, the data being sent by said module and being received thereby appearing respectively on said drive and receive nodes, means coupling said drive and receive nodes respectively to the current amplifying devices of said first current-mode switch;

an input stage comprising a pair of current amplifying devices configured as a fourth differential current-mode switch, the data being sent by said module being applied to one of said last mentioned current amplifying devices, the other of said current amplifying devices being coupled to a reference potential;

each of said pair of current amplifying devices of said fourth current-mode switch being coupled to a current amplifying device in each of said second and third current-mode switches, the state of conduction of each of said last-mentioned devices being a function of the respective conductive states of the devices in said fourth current-mode switch, which states are in turn dependent upon said data being sent by said module;



means coupling the outputs of a current amplifying device in each of said second and third current-mode switches respectively to said drive node and to the current amplifying device in said first current-mode switch which is coupled to said receive node;

the state of conduction of the current amplifying devices in said first current-mode switch being a function of the data on said receive node, and being unaffected by the data being sent by said module and appearing on said drive node.

3,983,325
METHOD OF ESTABLISHING SYNCHRONISM BETWEEN TELETYPEWRITER TRANSMITTER AND TELETYPEWRITER RECEIVER

Max Öllinger, and Wernhard Markwitz, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 31, 1973, Ser. No. 411,368

Claims priority, application Germany, Dec. 4, 1972, 2259335

Int. Cl.² H04L *7/04;* **H04B** *3/10*

U.S. Cl. 178—69.5 R **3 Claims**

1. In a data transmission system wherein unidirectional teletypewriter transmissions occur between a transmitter and receiver, wherein character signals including a start signal, information signals and stop signals are produced in binary code form for transmission, wherein operating conditions signals including a continuous start signal and a continuous stop signal are produced for transmission and wherein a character frame discriminator produces a clock signal for ensuring character frame synchronism between said transmitter and receiver, a method for establishing character frame synchronism during transmission of telegraph signals comprising the steps of:

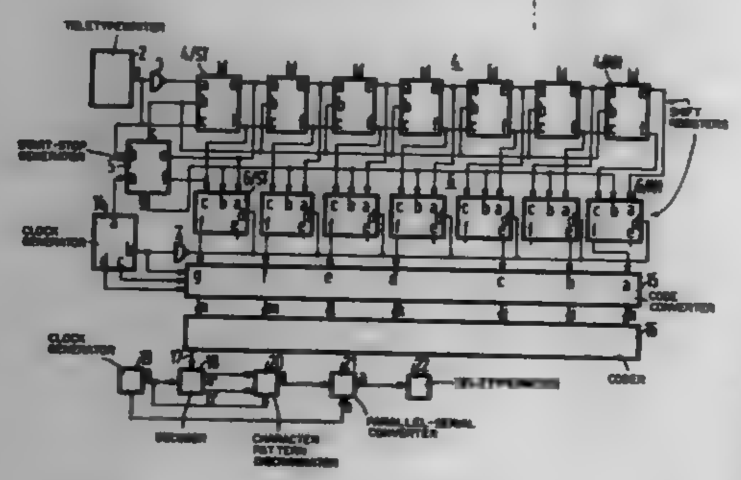
encoding, firstly, said character signals in said transmitter for producing character code words therefrom said character code words each comprising an initial bit corresponding to said start signal, all of said character code words having initial bits of like polarity, a plurality of bits corresponding to said information signals and a parity bit for establishing the parity of the other bits in said character code word,

encoding, secondly, in said transmitter said operating condition signals producing therefrom operating condition signal code words which indicate a character frame, said operating condition code words each comprising a first bit which is inverted relative to said initial bit of said character code words, a number of other bits equalling the number of information signal elements in said character signal and a parity bit for establishing the parity of the preceding bits in said operating condition signal code word,

transmitting said operating condition signal code words to said receiver,

synchronizing said character frame discriminator with said operating condition signal code words throughout the duration of the character signals and

decoding said operating condition signal code words in said receiver.



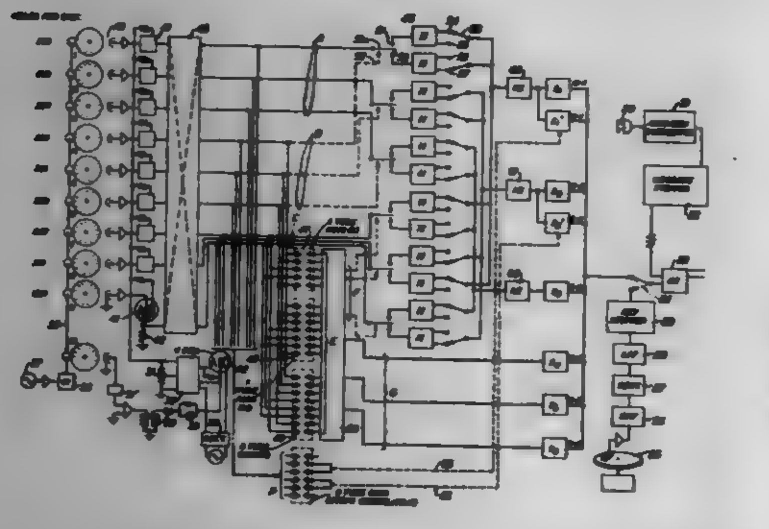
3,983,326
KEY PULSE GENERATOR FOR SECRECY SIGNALLING CIRCUIT

Danforth K. Gannett, Mountain Lakes, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 27, 1944, Ser. No. 555,913

Int. Cl.² H04L *9/04*

U.S. Cl. 179—1.5 R **18 Claims**



6. In a pulse generating system, means for producing irregular pulses in each of a number of separate circuits, an output for each of said circuits, a pair of holding devices for each of said circuits, means for connecting said holding devices one at a time to their respective circuits and means for combining pulses impressed on each of said outputs from said several circuits with other pulses from a corresponding one of said holding devices.

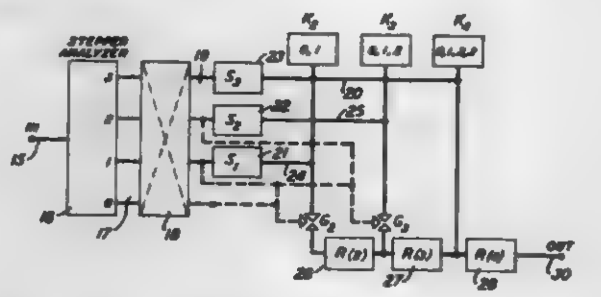
3,983,327
ELECTRICAL SIGNALING

Danforth K. Gannett, Mountain Lakes, and Andrew C. Norwine, Short Hills, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 9, 1945, Ser. No. 603,936

Int. Cl.² H04L *9/02*

U.S. Cl. 179—1.5 R **12 Claims**



1. A signal value permuting system comprising a succession of reentry circuits having successively higher reentry point values, means to send signals through a plurality of said reentry circuits in tandem, and a key for each reentry circuit, means to add key and signal values together at the input side of each reentry circuit, each key having a range of values the maximum value of which is lower than the reentry point value of the reentry circuit with which the respective key is associated.

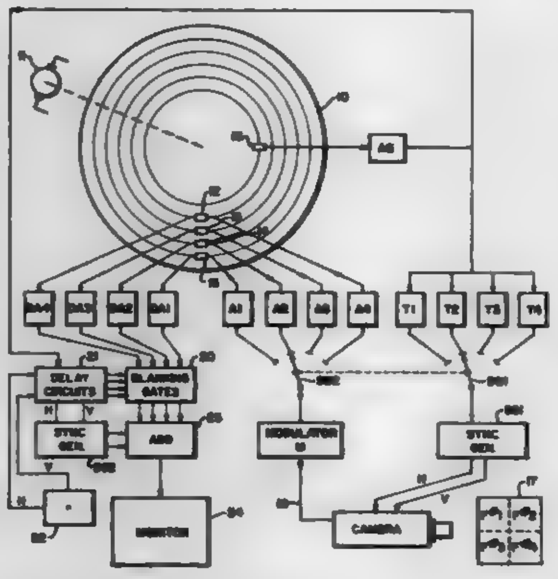
3,983,328
TELEVISION SYSTEM FOR THE DISPLAY OF VISUALS WITH HIGH RESOLUTION

George F. Newell, Sutton, England, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 7, 1975, Ser. No. 556,373

Int. Cl.² H04M *5/78*

U.S. Cl. 178—6.8 **15 Claims**



1. In a television system of the type wherein a portion of a transmitted scene is displayed by a television receiving tube with high resolution as compared with the display resolution of the entire scene by the same television receiving tube, the combination comprising:

means for producing separate video signals corresponding to separate frames forming an array of component frames of a scene,

a storage medium including independent recording means to separately record the video signal corresponding to each frame in the array of frames forming the scene,

timing control means to synchronize the video signals in phase-shifted relations for separate recording by said storage medium such that a video signal corresponding to one component frame of the scene is recorded at a predetermined time-displaced relation to the recording of the video signal corresponding to a different component frame that is contiguous therewith in the scene, said timing control means including time delay means for each one of at least some of the separate video signals,

means coupled to each time delay means for producing a sync phase control signal,

sync generator means for applying horizontal and vertical scan control pulses to said means for producing separate video signals, and

control means for coupling each sync phase control signal to said sync generator means to phase shift the horizontal and vertical scan control pulses and thereby provide phase-shifted video signals corresponding to the component frames in the array forming the scene.

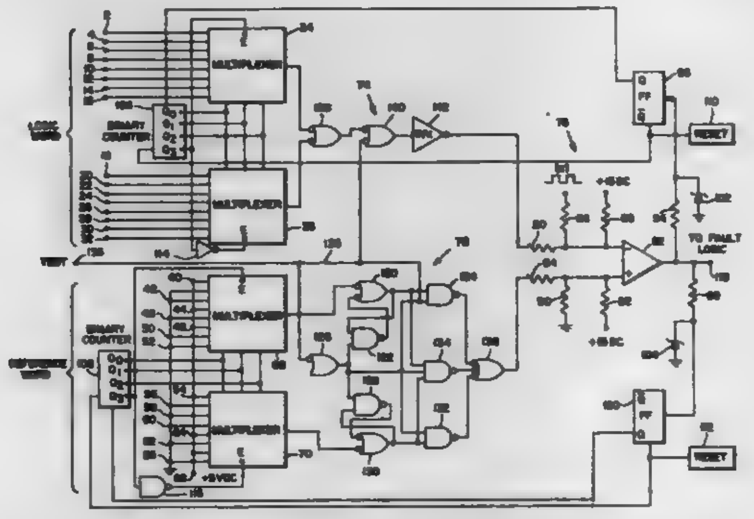
3,983,329
FAIL SAFE LOGIC MONITOR

Michael H. Rock, Glen Rock, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Mar. 17, 1975, Ser. No. 559,346

Int. Cl.² H04J *3/00;* **G06F** *7/02*

U.S. Cl. 179—15 BF **6 Claims**



1. A fail safe system for monitoring a multi-bit logic word, comprising:

first multiplexing means for multiplexing the multi-bit logic word;

second multiplexing means for multiplexing a multi-bit reference word;

first gating means connected to the first multiplexing means for gating the output therefrom;

second gating means connected to the second multiplexing means for gating the output therefrom;

comparator means connected to the first and second gating means and responsive to the gated outputs therefrom for providing an alternating output when the gated outputs are in substantial agreement, and otherwise providing a constant level output;

first means connected to the comparator and to the first multiplexing means and responsive to the alternating comparator output for providing an address for the first multiplexing means;

second means connected to the comparator and to the second multiplexing means and responsive to the alternating comparator output for providing an address for the second multiplexing means;

each of the first and second means including means connected to the comparator for dividing the frequency of the alternating output therefrom, counting means connected to the frequency dividing means and to a corresponding multiplexing means, and responsive to the divided comparator outpout for providing the address for said multiplexing means; and

the counting means in each of the first and second means being normally synchronized, with an internal system failure rendering the counters desynchronized, whereupon the gated outputs are otherwise than in substantial agreement and the comparator means provides the constant level output.

3,983,330
TDM SWITCHING NETWORK FOR CODED MESSAGES

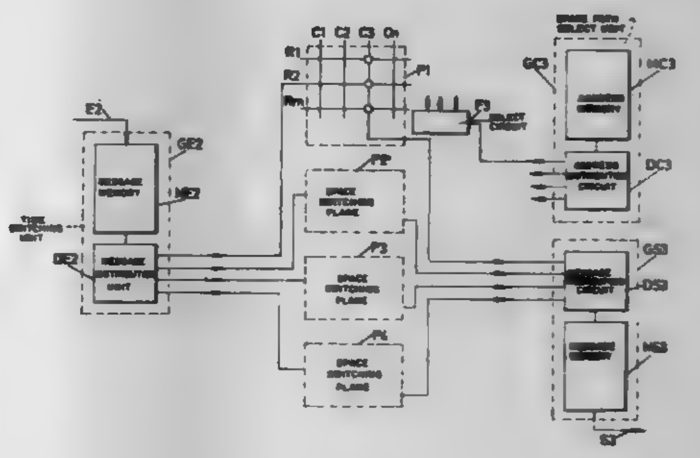
Erich Tongi, Viroflay, France, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 11, 1975, Ser. No. 567,120

Claims priority, application France, Apr. 18, 1974, 74.13453

Int. Cl.² H04J *3/00*

U.S. Cl. 179—15 AT **7 Claims**



7. A switching network for coded messages transmitted by time-division multiplexing over multiplex lines each having several time channels, including a set of identical space-division switching planes comprised of crosspoints at the intersections of input lines and output lines, and means for controlling the said crosspoints, wherein said set of space-division switching planes is divided into groups of planes, with each group completely independent from each other group, and each group being capable of transmitting different messages, each of the planes of one group transmitting in serial form only one message of a communication while the other messages of said communication are transmitted respectively by the other planes of the said group, said network further including means for storing messages at the input of said network, means for distributing messages for serial transmission through said planes, and means for regrouping messages at the output of said network.

3,983,331
SWITCH HAVING A MATRIX OF RELAYS

Christian Vie, St.-Cyr-l'Ecole, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, France

Filed Sept. 20, 1974, Ser. No. 507,958

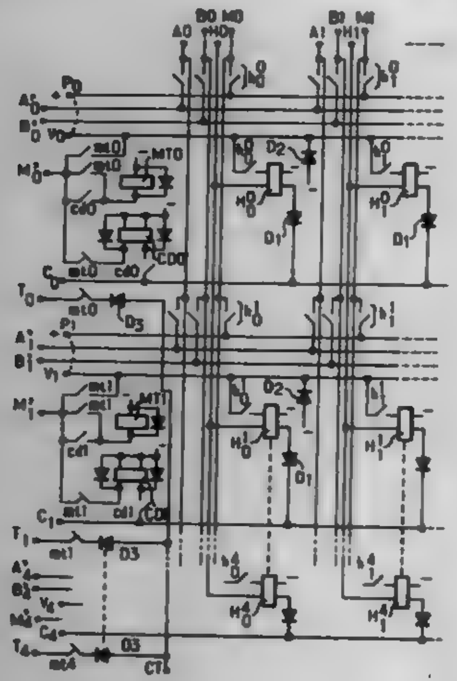
Claims priority, application France, Sept. 20, 1973, 73.33808

Int. Cl.² H04Q *3/42*

U.S. Cl. 179—18 GE **17 Claims**

1. A switch for use in telecommunications comprising a matrix of main relays including rows and columns of said main relays, each of said main relays controlling a multi-channel connection at a junction of said rows and said columns of said matrix, and each of said main relays being controlled by a row control signal applied to respective rows of said main relays of said matrix and by a column control signal applied to respective columns of said main relays of said matrix; and control means for controlling said main relays, said control means including two auxiliary relays for each column, a first of said two auxiliary relays effecting operation of a main relay being

controlled by both said row control signal and said column control signal, and a second of said two auxiliary relays effecting a holding of the operation of said main relay by means of only said column control signal.



3,983,332
CONFERENCE CALL CIRCUITRY FOR TDM SIGNAL EXCHANGE

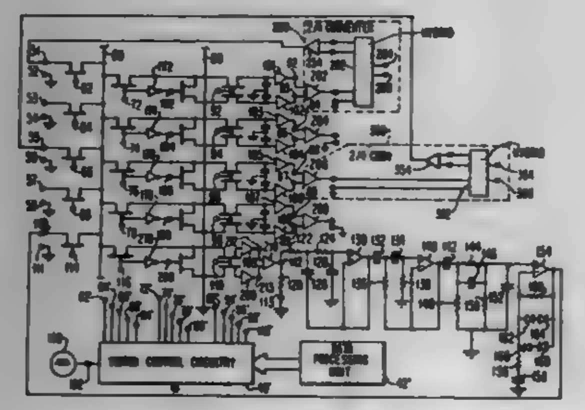
Michael Allen Patten, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 3, 1974, Ser. No. 475,681

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 20, 1976

Int. Cl.² H04M *3/56*

U.S. Cl. 179—1 CN **13 Claims**



1. Conference call circuitry for conferencing more than two subscribers sets connected in a time division electric signal exchange switching circuit arrangement of the type having

a multiple of pairs of exchange input terminals at which the output signals of subscriber sets are applied,

one pair of said pairs of input terminals being reserved for said conference call circuitry,

a multiple of pairs of exchange output terminals at which the output signals for said subscriber sets appear in reconstructed form,

one pair of said pairs of output terminals being reserved for said conference call circuitry, and

circuitry connected in said switching circuit arrangement for successively sampling the signals appearing at all of said pairs of input terminals and multiplexing the sampling to all of said pairs of output terminals at a predetermined rate at which at least all of the applied signals are translated individually to said pairs of output signal terminals,

the improvement comprising said conference call circuitry including

other input terminals connected to said one reserved pair of exchange output terminals of said switching circuit arrangement,

other output terminals connected to said one reserved pair of exchange input terminals, and

signal reconstructing circuitry comprising active and reactive signal modifying components connected between said other input terminals and said other output terminals for compensating for signal regeneration due to conferencing.

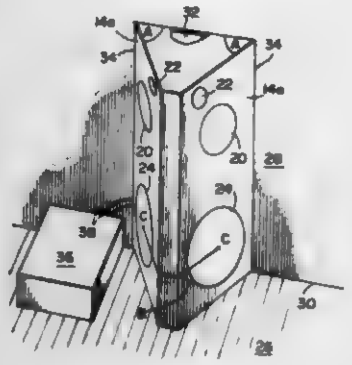
3,983,333
LOUD SPEAKER SYSTEM

Roy F. Allison, Wayland, Mass., assignor to Allison Acoustics Inc., Natick, Mass.

Continuation-in-part of Ser. No. 447,065, March 1, 1974, abandoned. This application Apr. 7, 1975, Ser. No. 565,875

Int. Cl.² H04R *1/28*

U.S. Cl. 179—1 E **14 Claims**



7. A room audio speaker system for use in combination with at least one room boundary surface comprising:

an enclosure having

a closed end wall free from any audio reproducer means and adapted for placement closely adjacent said room boundary surface,

a pair of side walls, each of said pair extending away from said end wall at an angle with respect to said end wall of no more than 90° and providing a front edge, side edges, and a rear edge,

said rear edge of each of said pair forming a boundary with said end wall, and

said front edges of said pair being closely adjacent and connected to each other whereby said end wall and said side walls define a triangle in cross-section; and,

direct radiator audio reproducer means mounted on each of said pair of walls midway between said front edge and said rear edge of said each of said pair of walls for projecting sound outwardly therefrom.

3,983,334
MATRIX AND EQUALIZER CIRCUIT WITH GAIN CONTROL

Nobuaki Takahashi, Yamato; Yasuo Itoh, Tokyo, and Masao Kasuga, Sagamihara, all of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Feb. 21, 1975, Ser. No. 551,733

Claims priority, application Japan, Feb. 26, 1974, 49-21888

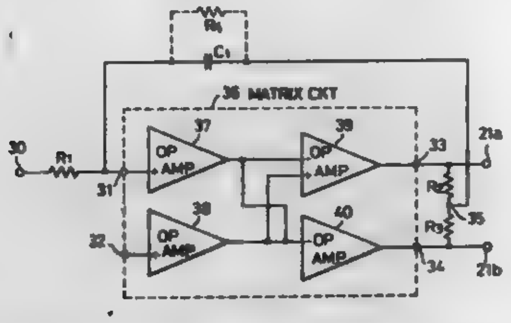
Int. Cl.² G11B *3/74, 3/00*

U.S. Cl. 179—100.4 ST **4 Claims**

1. A matrix and equalizer circuit comprising:

matrix operational circuit means having two input terminals to which are applied, respectively, sum and difference signals derived from first and second channel signals, and two output terminals through which said first and second channel signals are respectively transmitted, means in said matrix for giving gains to said sum and difference signals applied to said input terminals;

a pair of resistance elements having equal resistance value connected in series and between said output terminals of said matrix operational circuit means; and



a feedback loop connected from a junction of the pair of resistance elements through a capacitor to the input terminal of said sum signal of the matrix operational circuit means,

said feedback loop causing said sum signal to have a specific equalizing characteristic.

3,983,335
STYLUS ASSEMBLY AND TRANSDUCER USING SAME

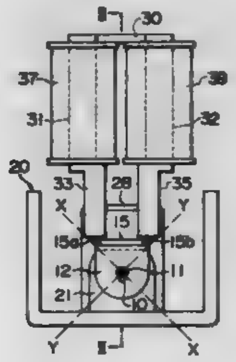
Mitsuo Nemoto, Machida, Japan, assignor to Kabushiki Kaisha Audio-Technica, Machida, Japan

Filed Oct. 23, 1974, Ser. No. 517,044

Claims priority, application Japan, Nov. 27, 1973, 48-133790

Int. Cl.² H04R *11/12*

U.S. Cl. 179—100.41 K **6 Claims**



1. A stylus assembly for a stereophonic cartridge comprising an elongate axially extending cantilever arm having a stylus tip at its forward end adapted to track a sound groove having modulated walls, a carrier fixed to said cantilever arm at the rear end thereof, said carrier consisting of a material having a rigidity reduced as compared to that of the centilever arm, a single horizontally disposed armature secured to said carrier at an elevation above the point at which the carrier is fixing to said cantilever arm in an orientation transverse to that of said axially extending cantilever arm, and support means for supporting said cantilever arm, said carrier and armature for vibratory movement and comprising a mounting member fixed in rearwardly spaced relation to said carrier and including a fulcrum wire disposed axially of said cantilever arm and connected between said mounting member and said carrier, said fulcrum wire having a point thereon defining a fulcrum about which said support means is adapted to vibrate, said cantilever arm lying in a first imaginary vertical plane which passes through said armature substantially midway between its opposite ends and said armature lying in a second imaginary vertical plane transverse to the first vertical plane, which second vertical plane passes through said fulcrum, said armature additionally lying in an imaginary horizontal plane which is parallel to the imaginary underlying horizontal plane in which the cantilever arm lies, imaginary lines joining the respective ends of the armature and said fulcrum being projections of said modulated walls of said sound groove which said stylus is adapted to track.

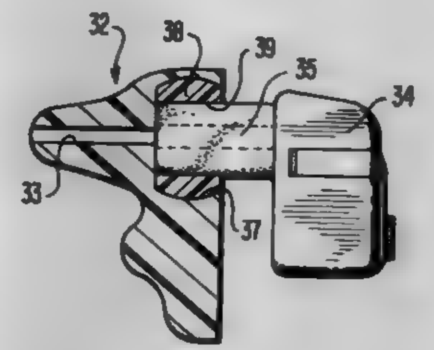
3,983,336
DIRECTIONAL SELF CONTAINING EAR MOUNTED HEARING AID

Hooshang Malek, 3028 Essex Road, Baltimore, Md. 21207, and Alvin F. Polan, 444 E. Belvedere Ave., Baltimore, Md. 21212

Filed Oct. 15, 1974, Ser. No. 514,931

Int. Cl.² H04R *1/32, 25/00, 25/02*

U.S. Cl. 179—107 FD **13 Claims**



12. Method of aiding the reception of audible signals by a human ear in conjunction with a self-powered, self-contained, electromechanical hearing aid provided with a directional microphone to detect audible signals, amplifier means and a receiver to transmit amplified audible signals into the inner ear canal, comprising the steps of:

a. attaching the directional microphone to an ear to support the microphone exteriorly of the ear canal for unrestricted adjustment of the direction of the microphone in a plane generally normal to the entrance to the ear canal, and;

b. adjusting the direction of said microphone in said plane by the wearer of the hearing aid while the hearing aid is so attached to select a position of the microphone which produces optimum reception of audible signals.

3,983,337
BROAD-BAND ACOUSTIC SPEAKER

Burton A. Babb, Dallas, Tex., assignor to Babbco, Ltd., Dallas, Tex.

Filed June 21, 1973, Ser. No. 372,074

Int. Cl.² H04R *7/14, 7/18, 9/02, 9/04*

U.S. Cl. 179—115.5 R **39 Claims**

1. In an acoustic transducer, the combination of:

a magnetic assembly having an annular flux gap formed between a cylindrical center pole of uniform diameter and an outer pole disposed around the center pole;

a coil assembly including a tubular coil form means reciprocally disposed in the flux gap, the interior of the coil form means having a plurality of circumferentially spaced, Teflon bearing surfaces in continuous sliding contact with the uniform diameter of the cylindrical center pole to guide the coil form means relative to the magnetic assembly;

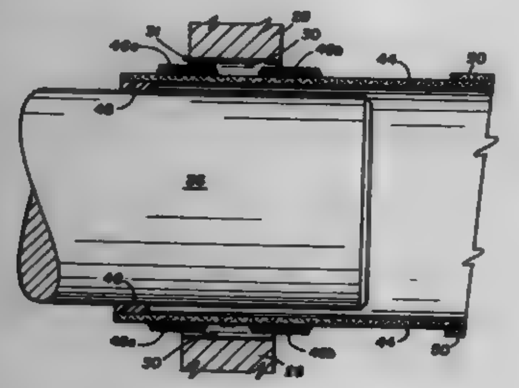
means forming an acoustic radiating surface attached to the coil assembly and reciprocated by the coil assembly when an electrical signal is passed through the coil; and

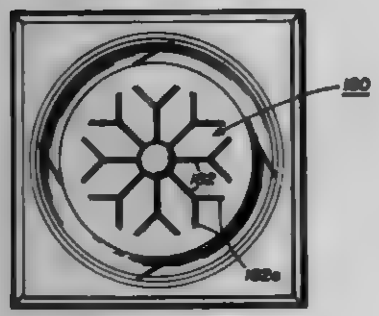
means for providing a peripheral air seal between the radiating surface and a stationary baffle.

2. In an acoustic transducer, the combination of:

a magnetic assembly having an annular flux gap formed between a cylindrical center pole having a free end and an outer pole disposed around the center pole, the cylindrical center pole having a constant diameter for at least the length of the flux gap and no greater diameter than the constant diameter between the flux gap and the free end of the center pole, the constant diameter forming a continuously cylindrical bearing surface extending into the flux gap;

a coil assembly including a voice coil wound on a tubular coil form and reciprocally disposed in the flux gap, the coil form having an internal Teflon bearing surface in continuous sliding contact with the cylindrical bearing surface including a portion of the bearing surface within the flux gap to guide the coil form means relative to the magnetic assembly, the Teflon bearing surface being formed by a substantially continuous ring of Teflon and the bearing surface having an axial length substantially shorter than the coil form means and being disposed near the end of the coil form remote from the means forming the radiating surface;





means forming an acoustic radiating surface attached to the end of the coil assembly beyond the free end of the center pole and reciprocated by the coil assembly when an electrical signal is passed through the coil; and

means for providing a peripheral air seal between the radiating surface and a stationary baffle and radial support for the radiating surface.

4. In an acoustic transducer, the combination of:

a magnetic assembly having an annular flux gap formed between a cylindrical center pole and an outer pole disposed around the center pole;

a coil assembly including a tubular coil form means reciprocably disposed in the flux gap, said coil form means being in continuous sliding contact with the magnetic assembly to guide the coil form means relative to the magnetic assembly;

means forming an acoustic radiating surface attached to the coil assembly and reciprocated by the coil assembly when an electrical signal is passed through the coil; and

means for providing a peripheral air seal between the radiating surface and a stationary baffle and radial support for the radiating surface, said means also axially biasing the radiating surface to a predetermined axial position and providing essentially the only axial bias to the radiating surface and the coil assembly, and including a plurality of spring metal members cantilevered from the peripheral support flange and extend toward the peripheral edge of the means forming the acoustic radiating surface.

6. The transducer comprising a magnetic assembly forming a flux gap, a coil assembly having a coil reciprocally disposed in the flux gap, means forming an acoustic radiating surface attached to the coil assembly and having a peripheral edge, means forming an annular opening around the peripheral edge, a flexible membrane sealing the annular opening while permitting reciprocation of the means forming the radiating surface, and a plurality of circumferentially spaced spring means disposed between the means forming the radiating surface and the means forming the annular opening for applying a spring biasing force to the means forming the radiating surface, the spring means being characterized by having a resonant frequency in the audible range, the spring means and the flexible membrane being interconnected to dampen the resonance of the spring means in the audible range.

10. The acoustic driver comprising:

magnetic means forming an annular flux gap having an axis;

a tubular coil form having a voice coil thereon disposed in the flux gap for reciprocation coaxially with the flux gap;

a thin, acoustic radiating membrane fastened to the coil form having an axis coaxial with the axis of the flux gap and coil form; and

a plurality of rib members coupled to the coil form by means for transmitting acoustic energy at frequencies above about 8,000 Hz and radiating outwardly from the coil form, each rib member being coupled along its length to the membrane by means for transmitting acoustic energy at frequencies above about 8,000 Hz to the adjacent portion of the membrane, each rib being fabricated from a material of high rigidity and having its major cross sectional dimension-disposed substantially at a right angle to the membrane surface, each rib having, when coupled to the membrane, a longitudinal transmission velocity at least near the coil form for acoustic vibrations parallel to the axis of reciprocation between 8,000 Hz and 16,000 Hz that is equal the velocity of acoustic energy in standard air.

3,983,338

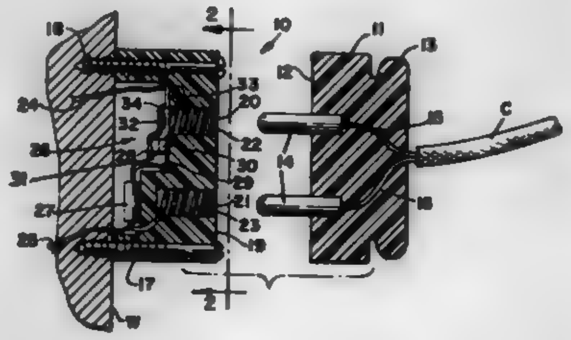
APPARATUS AND METHOD TO TEST THE CONDITION OF AN ELECTRICAL SERVICE LINE AND TO DETERMINE THE PRESENCE AND/OR REMOVAL OF ELECTRICAL EQUIPMENT CONNECTED TO THE LINE

William R. Mathauser, Box 5, Sun Valley, Idaho 83353

Continuation-in-part of Ser. No. 398,593, Sept. 19, 1973, abandoned. This application July 30, 1975, Ser. No. 600,512

Int. Cl.² H04M *3/22*

U.S. Cl. 179—175.2 C **14 Claims**



13. A coupling device for selectively connecting and disconnecting electrical equipment to a service line, including impedance means and switch means connected in series across the service line in the coupling device, said switch means operable in response to connection of electrical equipment thereto to remove the impedance from the line and thus modify a signal transmitted to the coupling device through the line to indicate the presence of the electrical equipment connected to the line.

3,983,339

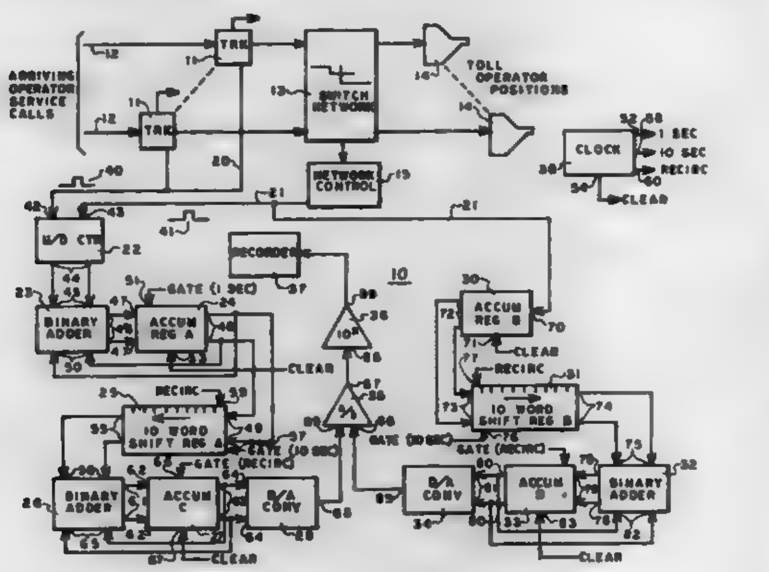
DYNAMIC SPEED OF ANSWER RECORDER

William R. Wedmore, Glen Ellyn, and Dennis H. Verbeek, Lisle, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Nov. 28, 1975, Ser. No. 636,385

Int. Cl.² H04M *3/36*

U.S. Cl. 179—175.2 C **13 Claims**



1. In a toll telephone operating system of the type including a plurality of access trunks adapted to be conditioned by subscribers for initiating calls for service, a plurality of operator positions for servicing the subscriber calls for service, a switch network for connecting the calls for service to the available operator positions, and a network control for controlling the connections established by the switch network, a monitoring system for monitoring the average wait time for service comprising:

first means coupled to each of the access trunks for providing a pulse responsive to each call for service;

second means coupled to the network control for providing a pulse responsive to each connection of a call for service at the trunks to an operator position;

first counting means coupled to said first and second means and responsive to said first and second means pulses whereby the contents of said first counting means represents the total number of outstanding calls for service;

first adding means coupled to said first counting means for adding the contents of said first counting means at periodic intervals during predetermined time periods of a fixed duration to thereby provide a first added count at the end of each of said predetermined time periods;

first storing means coupled to said first adding means for storing a given number of the last said first added counts provided by said first adding means;

second adding means coupled to said first storing means for adding said given number of said first added counts stored in said first storing means at the end of each of said predetermined time periods to thereby provide a first total count at the end of each of said predetermined time periods;

second counting means coupled to the network control and responsive to said second means pulses for accumulating said second means pulses during each said predetermined time period whereby the contents of said second counting means represents a second added count which is the total number of calls for service at the trunks which have been connected to an operator position during each respective predetermined time period;

second storing means coupled to said second counting means for storing said given number of the last said second added counts provided by said second counting means;

third adding means coupled to said second storing means for adding said given number of said second added counts stored in said second storing means at the end of said predetermined time periods to thereby provide a second total count at the end of each of said predetermined time periods;

dividing means coupled to said first adding means and to said third adding means for dividing said first total count by said second total count at the end of said predetermined time periods to thereby provide a quotient at the end of said predetermined time periods which represents the average wait time for service; and

display means coupled to said dividing means for periodically displaying said quotient.

3,983,340

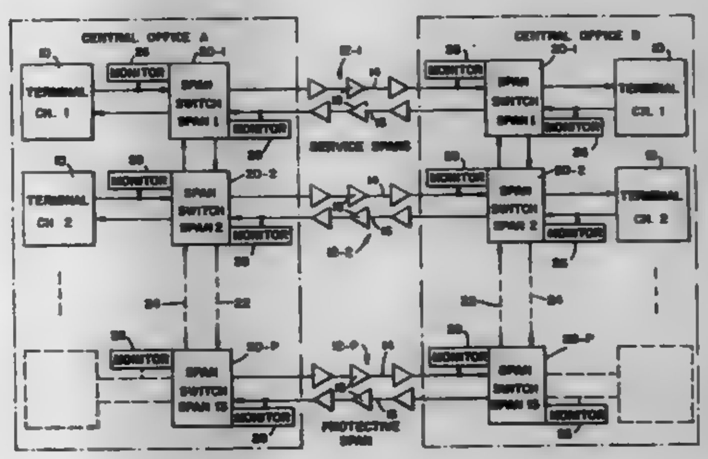
AUTOMATIC SPAN LINE SWITCH

Paul J. Lima, and Todd V. Townsend, both of Washoe County, Nev., assignors to Lynch Communication Systems, Inc., Reno, Nev.

Filed Jan. 27, 1975, Ser. No. 544,483

Int. Cl.² H04B *3/46*

U.S. Cl. 179—175.3 S **9 Claims**



8. The method of automatically transferring a service span channel to a protective span upon occurrence of a service span failure comprising the steps of:

a. detecting a failure on said service span;

b. transmitting, in response to said failure detection, coded switching information in the form of valid code words over said service span; and

c. using said coded switching information to effect the transfer of said channel.

3,983,341

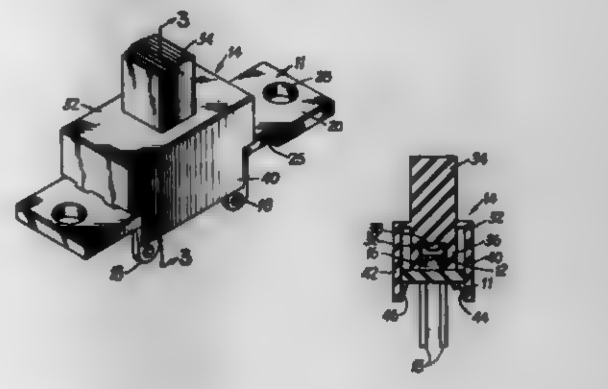
SIMPLIFIED SLIDE SWITCH

Ronald J. Stanish, Hollywood, Fla., assignor to AMF Incorporated, White Plains, N.Y.

Filed June 3, 1975, Ser. No. 583,466

Int. Cl.² H01H *15/00, 9/02*

U.S. Cl. 200—16 D **8 Claims**



1. A slide switch comprising

a thin insulator base member having two end portions and an intermediate portion therebetween,

- a plurality of stationary contacts extending from one surface of the base member in said intermediate portion,
- a plurality of terminal means for said stationary contacts extending from the opposite surface of said base member,
- a slidable housing member formed as a unitary plastic piece having an upper portion extending transversely of said intermediate portion of the base member and including yieldable side skirts extending downwardly over the sides of said intermediate portion of the base member,
- one or more barb or latch elements at the lower portion of each side skirt and extending inwardly for slidingly engaging the under side of the intermediate portion of said base member,
- a movable contact member disposed between the housing member and said stationary contacts and operable in response to the sliding motion of the housing member for selectively making and breaking contact with one or more of said stationary contacts,
- stop means on said base member for limiting sliding movement of said housing member to the intermediate portion of said base member,
- said yieldable side skirts being spaced apart relative to the width of said intermediate portion of the base member to maintain said barbs or latching elements in sliding contact with the underside of the base member when said housing member is slid relative to the base member,.and said side skirts being sufficiently yielding to permit easy engagement and disengagement of the barbed side skirts with the base member.

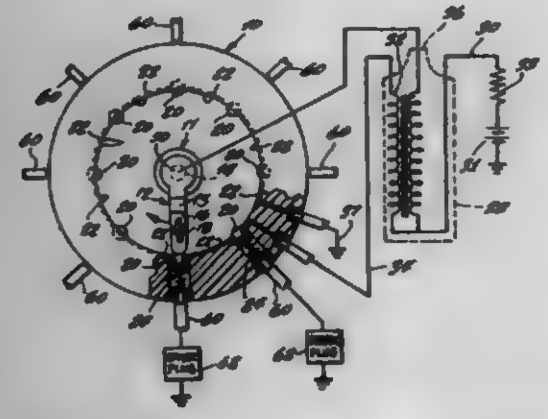
3,983,342
MULTIPLE CONTACT PERIODIC SWITCH HAVING FLEXIBLE RADIALLY EXTENDING CONTACTS CONNECTED TO IGNITION COIL WINDINGS

James D. Scapardine, Chicago, Ill., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Jan. 30, 1975, Ser. No. 545,577

Int. Cl.² H01H *19/00*; F02P *7/00*

U.S. Cl. 200—26 **1 Claim**



1. A distributor device for an internal combustion engine which comprises: an electrically conductive split ring member having a first non-conductive gap separating angularly spaced apart opposite ends of said member; a pair of first terminals coupled respectively to said opposite ends for connecting said split ring member in a first circuit in series with the primary winding of an ignition coil; said split ring member being formed by plural angularly spaced apart electrically conductive arcuate sections separated by second non-conductive gaps, plural radially moveable contacts respectively disposed in said second gaps, electrically conductive spring means extending radially outward from said contacts for biasing said contacts to a first position characterized by said contacts protruding radially inward from the inside diameter of said split ring member with said contacts respectively electrically bridging between adjacent ring sections on opposite sides of each contact for completing said first circuit; plural second terminals respectively electrically coupled to said spring means for feeding a plurality of spark plugs; a rotor carried within said split ring member for rotation about the axis of said member; said rotor including a radially elongated electrically conductive arm of a length for sequentially engaging said contacts in response to rotation of said rotor; said arm being of a length for driving an engaged one of said contacts radially outward and away from said adjacent ring sections on either side of said contact for opening said first circuit; and conductive wiper means for constantly engaging said arm, despite the rotation of said rotor, for enabling said arm to be electrically coupled to the secondary winding of said igniton coil.

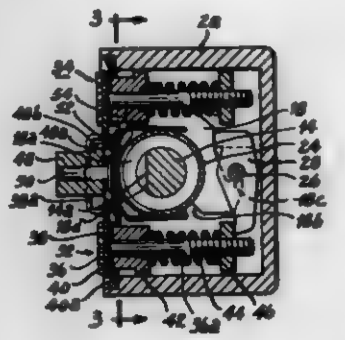
3,983,343
LIMIT SWITCH OPERATING SHAFT RETURN SPRING DAMPING DEVICE

Eugene F. Duncan, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed June 25, 1975, Ser. No. 590,210

Int. Cl.² H01H *3/16*

U.S. Cl. 200—47 **5 Claims**



1. In a limit switch operator head, in combination

- a shaft rotatable in opposite directions;
- a pair of spaced apart cams rotatably supported on said shaft and each having a driving connection with said shaft such that they are each rotatable in one direction only which is opposite to that which the other is rotatable by said shaft;
- a helically coiled torsion spring concentrically mounted about said shaft and having its opposite ends anchored in respective ones of said cams, said torsion spring acting to return said shaft and said cams to center positions following rotation of said shaft in either direction therefrom, and
- spring return retarding means comprising a member which applies a constant frictional force on the outer surface of the coils of said spring to damp the recoiling action thereof.

3,983,344
OPERATED SWITCH CONTROLLER FOR DENTAL ENGINE AND ASSOCIATED APPARATUS

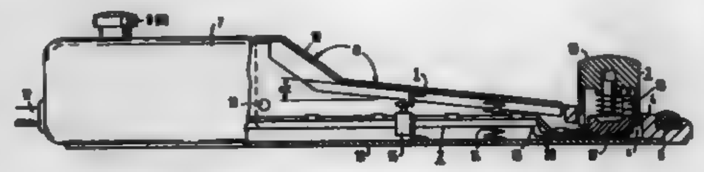
Reinhard Straihammer, Kirschhausen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed June 19, 1973, Ser. No. 371,544

Claims priority, application Germany, June 26, 1972, 2231234

Int. Cl.² H01H *3/14*; A61C *1/00*; G05G *9/00*

U.S. Cl. 200—86.5 **15 Claims**



1. Foot control installation comprising a housing; actuating means supported within said housing for pivotal movement in a horizontal plane and having an end portion extending therefrom, said actuating means being horizontally movable between an initial inoperative position and at least one operative

position; foot operator means mounted on the projecting portion of said actuating means for imparting movement to the latter, said foot operator means being imparted a generally linear to slightly concave motion proximate the edge of the housing from which it projects; control and first switching element means operatively connected to said actuating means and adapted to be actuated upon displacement of said actuating means from its initial position; a large-surfaced foot-actuated pressure plate being located at the upper surface of said housing and having downward foot-pressure applied thereto for actuation thereof, said actuating element being positioned in proximity to the path of movement of said foot operator means; and a second switching element being operatively connected to said actuating element so as to be actuated in response to downward foot pressure being imparted thereto.

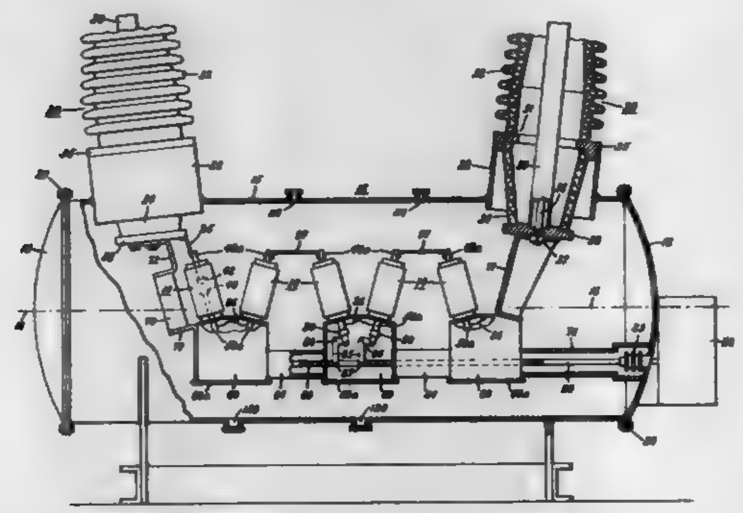
3,983,345
METHOD OF DETECTING A LEAK IN ANY ONE OF THE VACUUM INTERRUPTERS OF A HIGH VOLTAGE CIRCUIT BREAKER

Virgel E. Phillips, Springfield, Pa., assignor to General Electric Company, Phila., Pa.

Filed Jan. 30, 1975, Ser. No. 545,636

Int. Cl.² H01H *33/66*

U.S. Cl. 200—144 B **7 Claims**



1. A method of detecting loss of vacuum in one or more of the vacuum interrupters of a high-voltage vacuum circuit breaker that comprises: (i) a grounded metal tank containing a gaseous insulator, (ii) a plurality of vacuum interrupters located within said tank within said gaseous insulator and disposed in spaced relationship to the wall of the tank, each vacuum interrupter having spaced-apart terminals and separable contacts respectively connected to said terminals, (iii) means for normally electrically connecting said vacuum interrupters in series, and (iv) high voltage terminal bushings extending through said tank, each including a conductor for connecting the series combination of said vacuum interrupters to an external circuit, said method comprising:

- a. operating said circuit breaker in a manner to provide a gap between the contacts of each vacuum interrupter,
- b. inserting through the wall of said tank at a first location first rod structure having electrically-connected conductive portions that make electrical connection with predetermined terminals of said interrupters,
- c. inserting through the wall of said tank at a second location spaced from said first location second rod structure having electrically-connected conductive portions that make electrical connection with predetermined other terminals of said interrupters,
- d. the predetermined terminals with which said first and second rod structures make electrical connection being such as to connect said interrupters electrically in parallel with each other between the conductive portions of said first and second rod structures,
- e. maintaining said conductive portions of one of said rod structures insulated from said tank,
- f. applying between said first and second rod structures across said interrupters in parallel a test voltage that is of insufficient value to cause a dielectric breakdown between said rod structures externally of said interrupters at the gas pressure then prevailing in the tank but is of sufficient value to produce a high probability of dielectric breakdown within any interrupter stressed by said voltage that has lost its vacuum, and
- g. determining whether a dielectric breakdown occurs within any of said stressed interrupters when said voltage is applied.

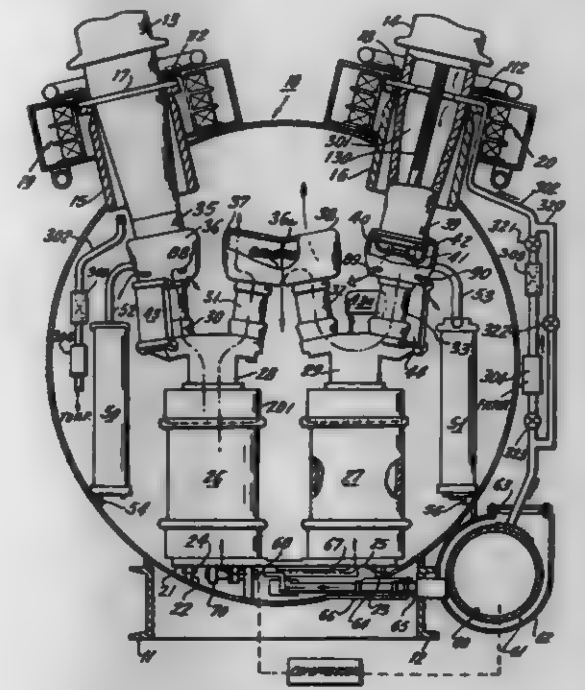
3,983,346
TWO-PRESSURE GAS CIRCUIT BREAKER WITH LOW PRESSURE GAS HEATING

Giovanni Paolo Guaglione, Irvine, Calif., assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed Nov. 22, 1974, Ser. No. 526,416

Int. Cl.² H01H *33/82*

U.S. Cl. 200—148 R **6 Claims**



1. A two-pressure circuit breaker comprising, in combination:

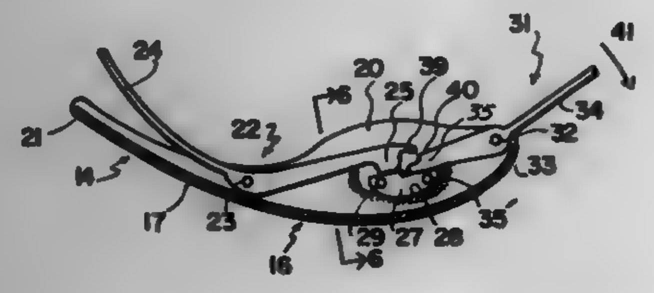
- a grounded hollow tank structure which is filled with a gas at relatively low pressure;
- a source of relatively high-pressure gas;
- means heating said source of relatively high pressure gas;
- at least one circuit interrupter mounted within said tank structure and having gas blast valve means therein connected to said source of high-pressure gas and operable to connect said high pressure gas source to the interior of said hollow tank structure during circuit interruption;
- first and second terminals for said interrupter which each extend through the wall of said tank structure for enabling the connection of external circuits to said circuit interrupter; at least said first terminal comprising a terminal bushing having an external elongated hollow insulation housing supported by said tank structure and having a hollow elongated conductor extending through said insulation housing and being spaced from the interior walls of said insulation housing to define an elongated annular chamber;
- means for isolating said annular chamber from said low-pressure tank structure;
- said hollow conductor having one end disposed within said tank structure and communicating with the interior of said tank structure and isolated from said annular chamber and having a second end communicating with said annular chamber;

and means for injecting heated gas from said source of relatively high-pressure gas at relatively low pressure into said annular chamber; said gas injected being free to flow through said annular chamber, into said hollow conductor second end, through said hollow conductor, and into said lowpressure tank structure;
compressor means connected between said source of high-pressure gas and said hollow tank;
and permanently open restriction means connected between said high-pressure source and said means for injecting gas, restricting the flow of gas into said annular chamber to a given and relatively small volumetric flow.

3,983,347
AUTOMATIC KILL SWITCH ASSEMBLY

Timothy Brenzen, 206 - 641 Staffird St., Winnipeg, Manitoba, Canada

Filed Nov. 11, 1974, Ser. No. 522,461
Int. Cl.² H01H *9/06*
U.S. Cl. 200—157 6 Claims



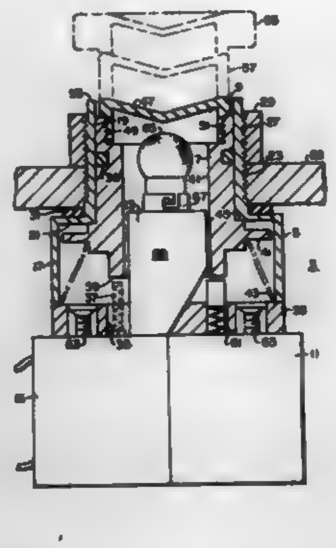
1. A kill switch assembly operatively connectable to the ignition system of an engine; comprising in combination a casing, a first lever pivoted within said casing, insulated contact assembly in said casing operatively connected to the associated ignition system of said engine, means to ground said first lever, spring means operatively connected between said casing and said first lever normally urging said first lever into contact with said contact assembly whereby said ignition system is grounded and inoperative, a second lever mounted in said casing for detachably holding said first lever clear of said insulated contact assembly against the pressure of said spring means, and means to disconnect said second lever from said first lever when said first lever is actuated whereby actuation of said first lever disconnects said first lever from said contact assembly against pressure of said spring means.

3,983,348
SWITCH OPERATOR

Walter J. Kellogg, Beaver, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 16, 1974, Ser. No. 461,331
Int. Cl.² H01H *9/18*
U.S. Cl. 200—314 9 Claims

1. A switch operator comprising a tubular base comprising an enlarged portion and a reduced portion having an inturned flange therebetween, a tubular contact actuator movably mounted within the base and having an outturned shoulder, bias means biasing the shoulder in abutment with the inturned flange and disposed on the side of the outturned flange opposite the outturned flange, tubular manual means detachably mounted on said actuator for manually moving said actuator within the tubular base, the tubular manual means having an outer closed end portion, the reduced portion and the tubular contact actuator being in surface-to-surface contact substantially throughout the length of the actuator between the outturned shoulder and the outer closed end portion, said actuator extending into and being enclosed within the enlarged portion on the side of the shoulder opposite the flange, a switch unit including a contact operator adjacent the end portion of said actuator opposite said tubular manual means,

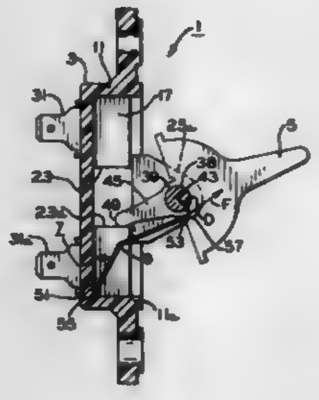


and means including said end portion for actuating the contact operator upon movement of said manual means.

3,983,349
ELECTRICAL SWITCH

Dann W. Denny, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed May 2, 1974, Ser. No. 466,390
Disclosure was also published under second Trial Voluntary Protest Program on Feb. 24, 1976
Int. Cl.² H01H *19/14*
U.S. Cl. 200—339 15 Claims

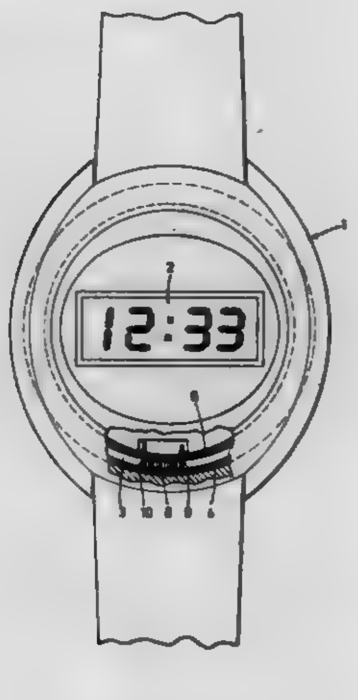


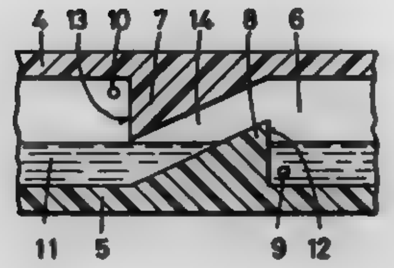
1. An electrical switch comprising a housing, means for controlling a circuit through the housing and operable generally between circuit making and breaking positions, means electrically disassociated from the controlling means and adapted to be selectively momentarily movable in the housing for operating the controlling means, and means for yielding generally as a collapsible column to oppose the selective momentary movement of the operating means including a pair of generally opposite portions respectively mounted between the housing and the operating means to bias the operating means against the controlling means urging it toward one of its circuit making and breaking positions, and a permanent bend in the yielding means for determining the magnitude range of the compressive force of the yielding means in opposition to a momentarily applied force on the operating means to effect the selective momentary movement thereof against the yielding means, and the controlling means assuming the other of its circuit making and breaking positions upon the selective momentary movement of the operating means against the compressive force of the yielding means.

3,983,350
LIQUID CONTACT SWITCH ASSEMBLY INCORPORATED WITHIN WRIST WATCH CASING

Michel G. Camin, Cortaillod, Switzerland, assignor to Henri Gunzinger-Gunzinger, Welschenrohr, Switzerland

Filed Apr. 14, 1975, Ser. No. 568,115
Claims priority, application Switzerland, Dec. 20, 1974, 17153/74
Int. Cl.² G04B *37/00*; H01H *29/04*, *29/20*
U.S. Cl. 200—61.47 12 Claims



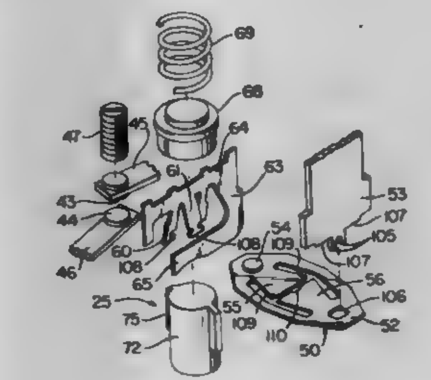


1. An electric switch device for wrist-watches equipped with electric or electronic members and having a case with a sidewall, comprising:
an enclosure assembly having at least one component adapted to be secured in a said wrist-watch, said assembly defining an annular enclosed chamber of a predetermined volume, and
an electricaly conductive liquid confined within said enclosed chamber and having a volume less than said predetermined volume of said chamber,
said assembly comprising two annular electrically insulating parts having complementary L-shaped profiles for forming said annular enclosed chamber when joined, at least one of said insulating parts having an annular shape enabling it to be secured in said sidewall, and said assembly further comprising two electrically conductive parts,
said electrically conductive parts being structurally spaced from one another and each being exposed outside said enclosed annular chamber for connection to said electric or electronic members, and inside said enclosed chamber adapted to be selectively either electrically connected to one another via said liquid or left electrically separated from one another in response to movements of said liquid within said annular chamber depending upon various positions assumed by said assembly,
at least one of said conductive parts comprising a portion made of electrically conductive material accommodated in one of said insulating parts and exposed within said annular chamber only at a predetermined location thereof where it is delimited by a curved surface,
said switch device further comprising at least one baffle element disposed in said enclosed chamber in proximity to said predetermined location for preventing said liquid from coming in contact by simple inertia with said portion made of electrically conductive material when said assembly is subjected to jolts.

3,983,351
ELECTRICAL SWITCH CONSTRUCTION AND METHOD OF MAKING THE SAME

Werner R. Bauer, Radnor, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 27, 1973, Ser. No. 428,876
Int. Cl.² H01H *35/40*
U.S. Cl. 200—83 R 20 Claims

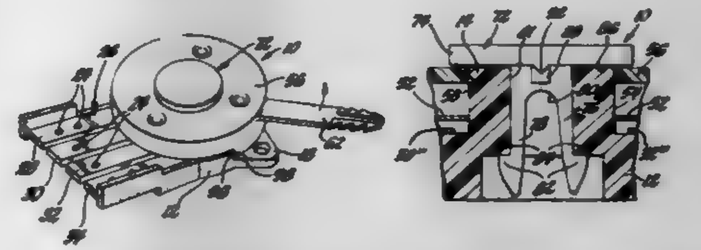


1. An electrical switch construction comprising a housing means carrying fixed contact means, a snap blade carried by said housing means and carrying contact means to be snapped relative to said fixed contact means as said blade is moved relative to said housing means to provide a switching function, a generally C-shaped actuator having opposed ends disposed on opposite sides of said blade, one end of said actuator being interconnected to said blade to cause snap movement thereof upon movement of said one end of said actuator in one direction relative to said housing means, a compression spring means disposed between said one end of said actuator and said housing means to tend to oppose movement of said one end of said actuator in said one direction, and motion transmitting means carried by said housing means and being operatively associated with the other end of said actuator whereby movement of said other end toward said blade by said motion transmitting means in said one direction causes an initial flexure of said actuator between said ends before said one end is moved sufficiently in said one direction to cause said blade to snap relative to said housing means.

3,983,352
ROTARY SELECTOR SWITCH

Richard B. Ellis, Jr., and James R. Wilson, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 12, 1975, Ser. No. 576,465
Int. Cl.² H01H *21/22*
U.S. Cl. 200—11 J 3 Claims



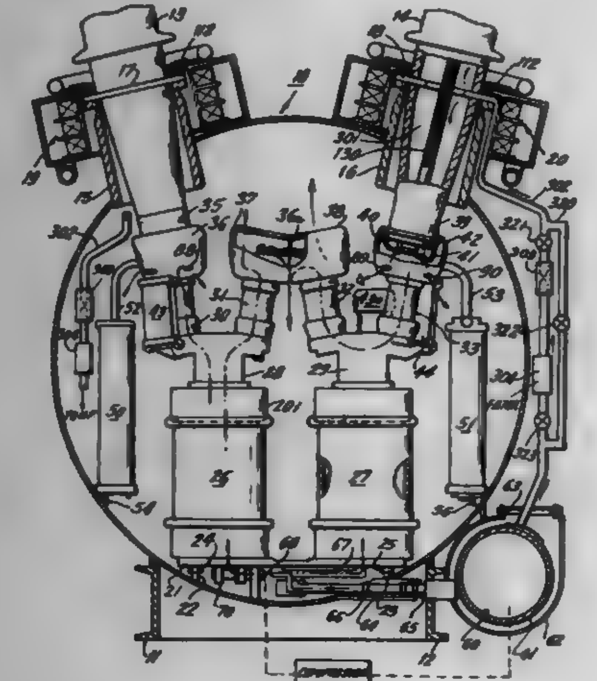
3. A rotary-type selector switch comprising: a base member of plastic material having a substantially flat surface with a boss projecting therefrom; a plurality of conductive terminal members attached to said base with arcuate portions arranged

around said boss; said base having raised portions with respect to said flat surface located between and bridging adjacent arcuate portions to define a generally even circular track about said boss; a conductive contactor overlying said terminals and engaging said boss for rotative movement thereabout; contact means extending from the plane of said contactor into engagement with said arcuate terminal portions and raised bridge portions for electrically connecting selective terminal members when said contactor is rotated about said boss; a cover member overlying said contactor and attached thereto for rotative movement together with respect to said base; spring means between said contactor and said cover thereby forcing said contacts into engagement with said arcuate terminal portions; a retainer attached to said boss and having an enlarged head portion overlying said cover to maintain said contactor and cover in spaced relation to said base; means including a projecting tang and circumferentially spaced detents between said enlarged head portion and said cover for selective engagement with one another as said cover and contactor are rotated with respect to said base member thereby positively positioning said contactor and the contacts thereon with respect to said arcuate terminal portions in predetermined angular position along said circular track; means including an abutment formed on said base member and a semicircular skirt with end portions on said cover limiting the extreme pivotal movement of said cover with respect to said base by engagement between said abutment and skirt end portions.

3,983,353
GAS-FILLED HIGH CURRENT BUSHING WITH FORCED COOLING ARRANGEMENT

Giovanni Paolo Guaglione, Irvine, Calif., and Christian Tschannen, Unterentselden, Switzerland, assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed Nov. 18, 1974, Ser. No. 524,471
Int. Cl.² H01H *33/82*
U.S. Cl. 200—148 R **5 Claims**

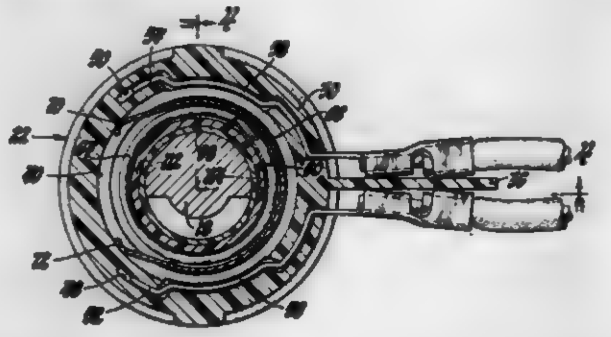


1. A two-pressure circuit breaker comprising, in combination:
- a grounded hollow tank structure which is filled with a gas at relatively low pressure;
- a source of relatively high pressure gas;
- at least one circuit interrupter mounted within said tank structure and having gas blast valve means therein connected to said source of high-pressure gas and operable to connect said high pressure gas source to the interior of said hollow tank structure during circuit interruption;
- first and second terminals for said interrupter which each extend through the wall of said tank structure for enabling the connection of external circuits to said circuit interrupter; at least said first terminal comprising a terminal bushing having an external elongated hollow insulation housing supported by said tank structure and having a hollow elongated conductor extending through said insulation housing and being spaced from the interior walls of said insulation housing to define an elongated annular chamber;
- means for isolating said annular chamber from said low-pressure tank structure;
- said hollow conductor having one end disposed within said tank structure and communicating with the interior of said tank structure and isolated from said annular chamber and having a second end communicating with said annular chamber;
- means for injecting gas at relatively low pressure into said annular chamber; said gas injected being free to flow through said annular chamber, into said hollow conductor second end, through said hollow conductor, and into said low-pressure tank structure;
- .compressor means connected between said source of high-pressure gas and said hollow tank;
- and permanently open restriction means connected between said high pressure source and said means for injecting gas, restricting the flow of gas into said annular chamber to a given and relatively small volumetric flow.

3,983,354
ROTARY ELECTRIC SWITCH

Joseph E. Gammie, Southgate, and Bert R. Wanlass, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed June 30, 1975, Ser. No. 591,847
Int. Cl.² H01H *19/28*
U.S. Cl. 200—155 R **4 Claims**



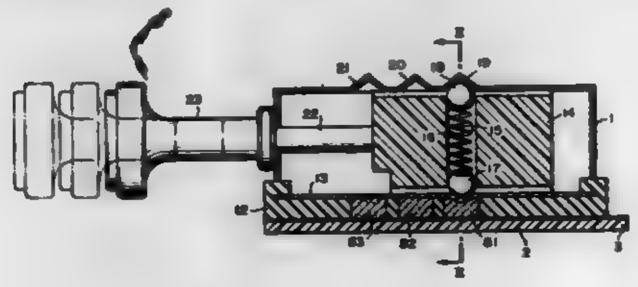
1. A rotary electric switch comprising cylindrical housing means of insulating material having an integral circular flange portion defining first and second interior wall surfaces of first and second internal diameters respectively, the second internal diameter being greater than said first internal diameter, an annular groove formed in said flange portion, an O-ring seal located in said annular groove, a first contact blade in abutting relationship with said flange portion and in sealing engagement with said seal, second and third contact blades extending through said housing means, at least a portion of each of said second and third contact blades being exposed to the interior of said housing means, said housing means including a cover portion of insulating material secured at one end of said housing, a cylindrical shaped rotor member of electrically conductive material having a pair of integral flexible fingers extending radially outward therefrom and self-biased into engagement with said second interior wall surface, said fingers being located in transverse plane containing said portions of said second and third contacts so that said fingers engage and disengage with said portions of said second and third contact blades as said rotor is rotated, spring means biasing said rotor away from said cover and into engagement with said first contact blade, a rotor driving and sealing member keyed to said rotor for selectively rotating said rotor in a clockwise or counter-clockwise direction for establishing an electrically conductive path between said first contact blade and said

second or third contact blades through one or the other of said pair of fingers respectively, said first contact blade and said rotor member and said cover portions having axially aligned openings therein, said rotor driving and sealing member including an integrally formed cylindrical flange portion axially extending through the opening of said first contact blade, said rotor member and said cover member and rotatably coupled to said cover member.

3,983,355
SWITCHING APPARATUS

Masayoshi Hyodo, Aichi, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed June 19, 1974, Ser. No. 480,803
Int. Cl.² H01H *1/02*
U.S. Cl. 200—264 **15 Claims**



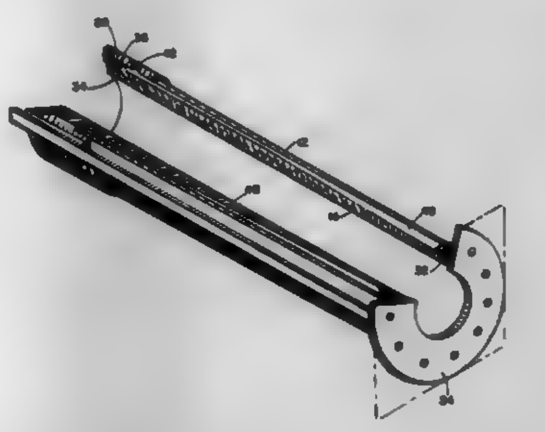
1. An electrical switch for selectively opening and closing a plurality of contacts comprising:
- a base member formed of an electrical insulating material and having a first surface which defines therein a plurality of apertures,
- contact electrode means on said first surface for defining a plurality of circuit paths thereon each of which extends to at least one of said apertures and is normally open circuited at the location of said aperture,
- a contact element of elastomeric material of the type which becomes electrically conductive upon compression and being supported in each said aperture in said base member,
- and slider means movable laterally over said first surface between preselected positions, said slider means including at least one pressure imparting means which exerts a compression force in a direction normal to the direction of movement of said slider means, said force imparting means being so positioned relative to said apertures in said first surface that in at least one of said preselected positions of said slider means said force imparting means compresses a respective control element and closes a circuit path associated with said aperture.

3,983,356
END LOAD FOR MICROWAVE OVENS

Peter D. Jurgensen, San Carlos, Calif., assignor to Gerling Moore Inc., Palo Alto, Calif.

Filed Apr. 30, 1974, Ser. No. 465,489
Int. Cl.² H05B *9/06*
U.S. Cl. 219—10.55 A **5 Claims**

5. An end load for providing access to a microwave oven having means forming a port through the wall thereof, said end load comprising an inner cylindrical member having an internal dimension corresponding to said port, an outer cylindrical member concentrically supported about said first member, said outer member being made of conductive material to provide an inwardly facing surface reflective to microwaves, said outer conductive member being spaced apart a predetermined distance from said first member thereby defining an annular region therebetween having a thickness of approximately one-fourth of the wavelength of said microwave energy divided by the square root of the dielectric constant of said liquid, means sealably interconnecting the ends of said inner and outer members into a unitary structure, means for interconnecting said end load to said microwave oven such that one end of the bore of said inner member opens into said port of said oven, means forming a liquid inlet and outlet to the region between inner and outer members, said inner member being made of dielectric material having a dielectric constant of approximately the square root of the product of said liquid

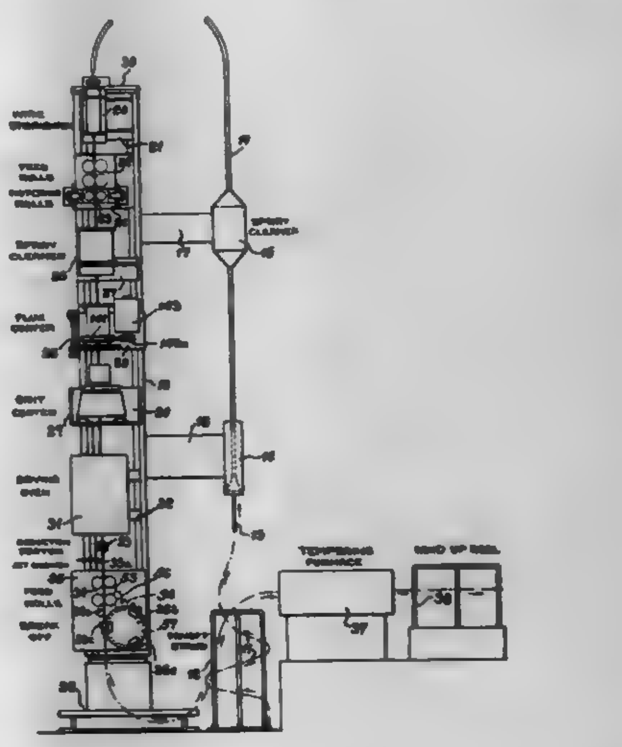


and air, means for delivering liquid to said end inlet, said inner member having a thickness of approximately one-fourth of the wavelength of the microwave energy being used within said oven divided by the square root of the dielectric constant of said inner member.

3,983,357
APPARATUS FOR PRODUCING ARMORED ROD AND WIRE SAWS

Paul V. Whitney, Jr., Victoria, Tex.; Robert J. Bolen, Bridgeport, and William W. Cotter, Jr., Stratford, both of Conn., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Division of Ser. No. 220,294, Jan. 24, 1972, Pat. No. 3,854,898, which is a continuation-in-part of Ser. No. 12,724, Feb. 19, 1970, abandoned. This application Sept. 9, 1974, Ser. No. 504,150
Int. Cl.² B23K *1/04;* B05C *3/12*
U.S. Cl. 219—85 A **8 Claims**



1. Apparatus for the quantity production of armored wire and rod saw stock from wire substrate stock in long lengths suitable for coiling, comprising in combination: an upstanding framework having mounted thereon in substantially vertical wire feeding alignment, pairs of upper and lower feed roll means peripherally grooved for gripping and progressively feeding said wire as freely suspended therebetween, said roll pairs having successively interposed therebetween seriatum on said framework and free from contact with said wire,

means for progressively and peripherally spray cleaning said wire, means for progressively and peripherally applying thereto a coating of a flux adhesive and brazing metal powder slurry, means for thence progressively and peripherally overcoating said slurry coating with a layer of abrasive particles, means for thence progressively drying said coating, high frequency induction heating means for thence progressively heating the so-coated wire to brazing temperature of said brazing metal powders, means for thence progressively cooling the heated wire to substantially ambient temperature, a payoff stand for receiving a coil of said wire substrate, a wind-up reel for winding thereon the armored wire stock, wire guide means for guiding said wire substrate from said payoff stand to said upper feed roll means, and means for concurrently driving said upper and lower feed roll means, for progressively pulling said wire off said payoff stand and under tension between said upper and lower feed roll means, and thence delivering the same to said wind-up reel.

3,983,358

SCANNING DEVICE FOR TIG-SPOT WELDING OF COMMUTATOR SEGMENT LUGS TO TAPS ON ROTOR WINDING

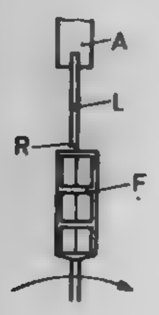
Urs Karlen, Fislisbach, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Nov. 29, 1973, Ser. No. 419,929

Claims priority, application Switzerland, Dec. 12, 1972, 18027/72

Int. Cl.² B23K *9/12*

U.S. Cl. 219—124 **7 Claims**



1. A scanning device for use in conjunction with spot welding lugs on a commutator to taps on the winding of a rotar comprising a support, a scanning arm pivotally mounted on said support, a scanning finger depending from the lower end of said scanning arm, means for actuating said support between a raised position wherein the lower end of said scanning finger is disposed outside a circle circumscribed by the ends of the commutator lugs and a lowered position wherein said scanning finger projects into the gaps existing between adjacent lugs, means cooperative with said pivotally mounted scanning arm and actuated in response to deflection of said arm brought about by contact of said scanning finger with a commutator lug upon rotation of said rotor for releasing a welding order and for activating said actuating means for said support to move the latter from its lowered to its raised position and thereafter return it to its lowered position after a predetermined time delay to scan the next-following commutator lug.

3,983,359

ELECTRICAL FLUID HEATER

John A. Walker, and Dimitri S. Dimitri, both of Northridge, Calif., assignors to Datametrics Corporation, Van Nuys, Calif.

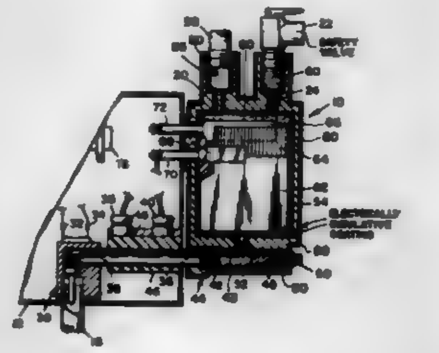
Division of Ser. No. 385,275, Aug. 3, 1973, Pat. No. 3,908,588. This application Sept. 10, 1974, Ser. No. 504,814

Int. Cl.² H05B *3/60;* **F24H** *1/10*

U.S. Cl. 219—284 **2 Claims**

1. In a fluid heater for heating fluid flowing therethrough by passing electrical current through the fluid, the combination comprising:

a container composed of electrically conductive metal and enclosing a fluid heating chamber for receiving fluid to be heated, said container having spaced apart electrically conductive electrodes positioned within said chamber adapted to be connected to a source of electric power for passing electric current through the fluid within the said heating chamber, said container having a fluid input tube and a fluid output tube, said input tube having an inner section connecting and communicating with said chamber and an outer section adapted for connection to a source of fluid, and said output tube having an inner section connecting and communicating with said chamber and an outer section adapted for connection with a receiver of fluid, said inner portions of said input and output tubes each further including a reduced aperture portion having substantial length, said reduced aperture portion providing further electrical resistance to the passage of leakage current through fluid confined in said inner sections of said input and output tubes, said chamber having an electrically continuous layer of electrically insulating material covering and insulating the fluid contacting surfaces of said chamber and extending into and covering and insulating the fluid contacting surfaces of the said inner sections of said input and output tubes for directing leakage current from said electrodes through said inner sections of said input and output tubes to thereby limit such leakage current with the electrical resistance of fluid confined within said inner sections of said input and output tubes and a safety port tube having an inner portion connecting and communicating with said heating chamber and on outer portion communicating with an external pressure relief valve, said layer of insulating material extending into and insulating the fluid contacting surfaces of said inner section of said safety port tube, whereby the total leakage current from within said heating chamber consists of the sum of the leakage current through said input tube, said output tube and said safety port tube.



3,983,360

MEANS FOR SECTIONALLY INCREASING THE HEAT OUTPUT IN A HEAT-GENERATING PIPE

Paul F. Offermann, Redwood City, Calif., assignor to Chevron Research Company, San Francisco, Calif.

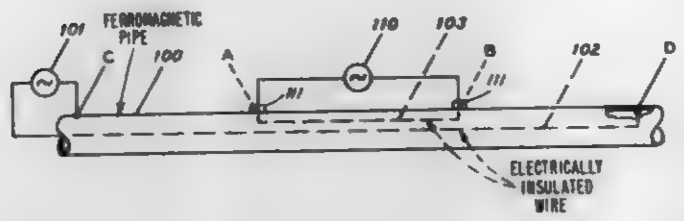
Filed Nov. 27, 1974, Ser. No. 527,796

Int. Cl.² H05B *3/00, 5/00;* **F16L** *53/00*

U.S. Cl. 219—301 **9 Claims**

1. In combination with a heat-generating pipe of the type wherein a ferromagnetic pipe has extending longitudinally through a predetermined length of said pipe a first insulated wire portion connected in series with an alternating current supply means and said predetermined length of ferromagnetic pipe and a return path means through said pipe to said alternating current supply means, the improvement comprising:

a second insulated wire portion parallel to said first insulated wire portion and extending within a selected portion of said predetermined length of ferromagnetic pipe a distance less than the length of said predetermined length; and means for connecting said second insulated wire portion to said alternating current supply means so that the magnetic field resulting from the current flow from said supply means in said second insulated wire is additive to the magnetic field resulting from the alternating current flow in said first insulated wire from said supply means whereby the heat output within said selected portion through which said second insulated wire is located is additionally increased.



3,983,361

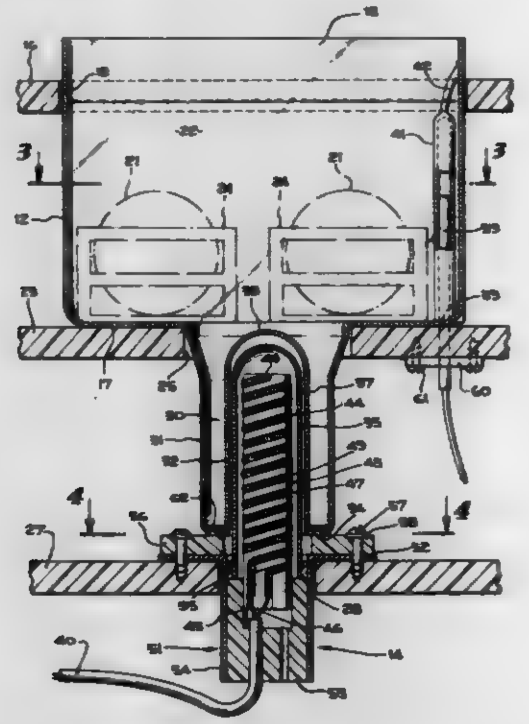
ELECTRIC HEATING APPARATUS FOR HEATING CORROSIVE SOLUTIONS

Fred A. Wild, Arcadia; Joseph S. Romance, Woodland Hills, and Carson T. Richert, Buena Park, all of Calif., assignors to Radiant Technology Corporation, Cerritos, Calif.

Filed Mar. 20, 1975, Ser. No. 560,355

Int. Cl.² H05B *1/00;* **F24H** *1/18*

U.S. Cl. 219—433 **4 Claims**



1. Apparatus for heating solutions comprising:

a tank having a main body portion with an open top and having on the botton thereof a relatively smaller depending elongated annular cavity portion with a central opening accessible from the bottom thereof, said tank having anchored adjacent the inside wall of the main body portion thereof an upright tube having a closed upper end and an open lower end connected to an opening in the bottom of the tank;

a support means;

a thermocouple fixedly supported in an upright position on said support means; and

a heater unit including a heating coil enclosed in an elongated quartz tube fixedly supported in an upright position on said suport means;

the central opening of the depending annular cavity portion of the tank and the upright tube in said tank each being of such a size and shape that said tank is removably supported on said support means with said central opening freely fitted over said quartz tube and with said upright tube slidably fitted over said thermocouple

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3,983,362

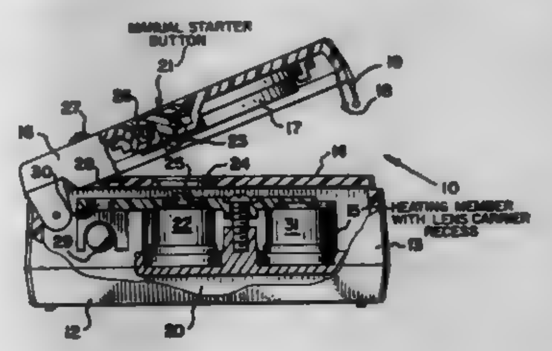
MANUAL SWITCHING MEANS FOR CONTACT LENS DISINFECTING APPARATUS

Paul A. Hoogesteger, Penfield, and John Kadlecik, Macedon, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed July 18, 1975, Ser. No. 597,127

Int. Cl.² A61L *3/00;* **F24C** *1/16*

U.S. Cl. 219—521 **6 Claims**



1. A contact lens disinfecting apparatus comprising a housing having a base and a movable cover, the base portion including a heat storage-transfer means and heating means, the housing when the cover is in closed position forming a chamber for a contact lens carrying case, the apparatus further including the combination of a switching means and selectively operable control means for activating the heating means, the switching means disposed in the cover and extending upwardly and downwardly through the cover, the downward end of the switching means being minutely spaced apart from the control means when the cover is in closed position but substantially spaced apart from the control means when the cover is not closed, said switching means being capable of actuating the control means when the cover is in closed position but unable to actuate the control means when the cover is not completely closed.

3,983,363

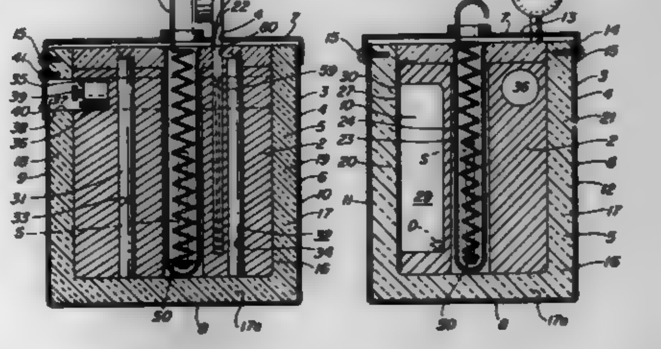
ELECTRICALLY HEATED SEMEN WARMING AND STORAGE UNIT

Raymond R. Alter, Rte. 1, Darien, Wis. 53114

Filed Feb. 3, 1975, Ser. No. 546,349

Int. Cl.² H05B *3/06;* **F24C** *7/10;* **A61D** *7/02*

U.S. Cl. 219—521 **4 Claims**



1. A warming and storage unit for warming and thawing containers of frozen semen and storing such warmed and thawed containers of semen in guns used in the injection of such semen into an animal in artificial insemination operations, said unit comprising

a. a housing of heat-insulating material,

b. a metal block mounted in said housing,

c. said block having

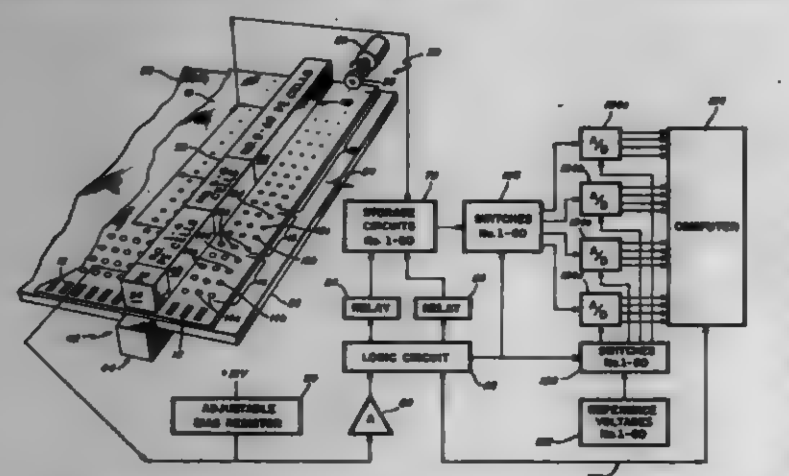
1. an upwardly opening compartment therein for removably receiving such a container of frozen semen to be warmed and thawed, and
2. another outwardly opening compartment of such size as to removably receive at least one such a gun to be stored.

d. said housing having openings therethrough in communication with respective ones of said compartments for affording access to the latter from outside said housing, and
e. means for controllably heating said block to a predetermined temperature;
f. said means for heating comprising
  1. electrically energized heater means mounted in said block in spaced relation to said compartments, and
  2. means for connecting said heater means to a source of electric power, and
g. said means for connecting including a heat-sensitive switch attached to said block.
h. said first mentioned compartment
  1. being elongated,
  2. extending substantially vertically, and
  3. being substantially centered in said block and
i. said other compartment
  1. extending substantially horizontally and opening outwardly through one side of said block, and
  2. being disposed in spaced relation to said first mentioned compartment, and
j. said opening which is in communication with said other compartment being disposed in said housing in overlying relation to said one side of said block.

3,983,364
APPARATUS UTILIZING ANALOG-TO-DIGITAL CONVERSION IN THE PHOTOELECTRIC READING OF DOCUMENTS

John D. Firehammer, Burnsville, and Dale W. Gruebele, Bloomington, both of Minn., assignors to National Computer Systems, Inc., Minn.

Filed July 3, 1972, Ser. No. 268,445
Int. Cl.² G06K *5/00*
U.S. Cl. 235—61.6 E 14 Claims

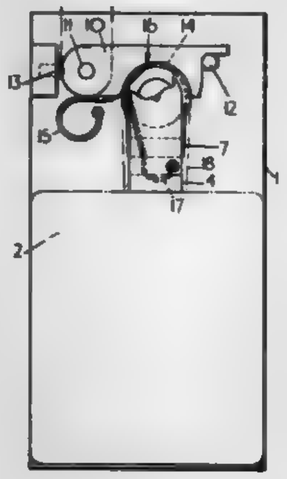


1. Apparatus for scoring an answer sheet having discrete response areas thereon, the darkening of a particular area within a group of areas denoting the answer to a question selected by an examinee, a plurality of fixedly located photoelectric cells, means for feeding the answer sheet relative to said photoelectric cells, said photoelectric cells providing individual analog voltage signals representative of the degree of opacity for the particular areas positioned in juxtaposition to said photoelectric cells so that said areas are sensed by said photoelectric cells, respective means for storing the maximum value of each voltage signal reached during a certain period as said areas move relative to said photoelectric cells, means for converting said stored analog voltage signals to digital signals including a lesser number of analog-to-digital converters than the number of photoelectric cells, the number of said storage means corresponding to the number of photocells, and means for successively connecting said converters to one group of said storage means corresponding in number to the number of converters and then to a second group of said storage means corresponding in number to the number of converters, and means for processing said digital signals to ascertain the correctness or error of a particular answer.

3,983,365
TAPE READERS

Gordon Howard Reed, and Michael Anthony Yates, both of Jersey, Guernsey (Channel Is.), assignors to Television Research Limited, Jersey, Guernsey (Channel Is.)

Filed June 6, 1975, Ser. No. 584,483
Claims priority, application United Kingdom, June 8, 1974, 25525/74
Int. Cl.² G06K *7/06;* H04L *15/20;* H01H *43/08*
U.S. Cl. 235—61.11 A 10 Claims



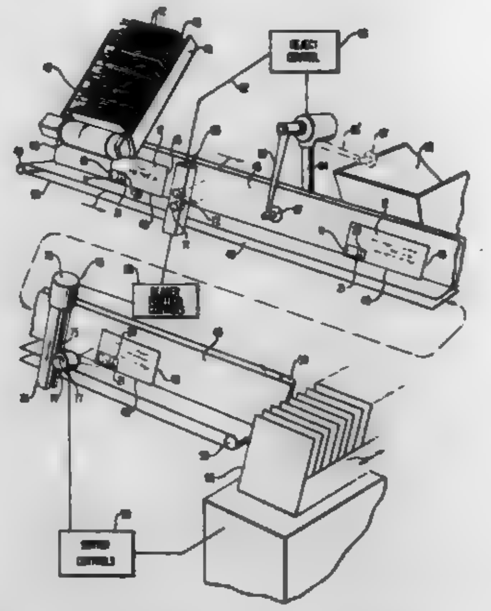
1. A tape reader for reading perforated tapes comprising rotatable drive means peripherally engageable in use with an apertured tape to drive the tape along an arcuate path, first means located on one side of the path, second means mounted on a rotatable support on the other side of the path to co-operate with the first means to detect the presence between it and the first means of an aperture in the tape, means for engaging the support with the drive means so that they rotate together, means for disengaging the support from the drive means after a predetermined rotation of the support from a starting position, and means for returning the support to the starting position after its disengagement from the drive means.

3,983,366
ARTICLE SORTING APPARATUS AND METHOD

Damon M. Gunn, 4007 49th St. NW., Washington, D.C. 20016

Division of Ser. No. 374,171, June 27, 1973, which is a division of Ser. No. 91,701, Nov. 23, 1970, Pat. No. 3,757,942. This application Mar. 18, 1975, Ser. No. 559,610
Int. Cl.² G06K *7/015, 7/14, 7/08*
U.S. Cl. 235—61.11 R 5 Claims

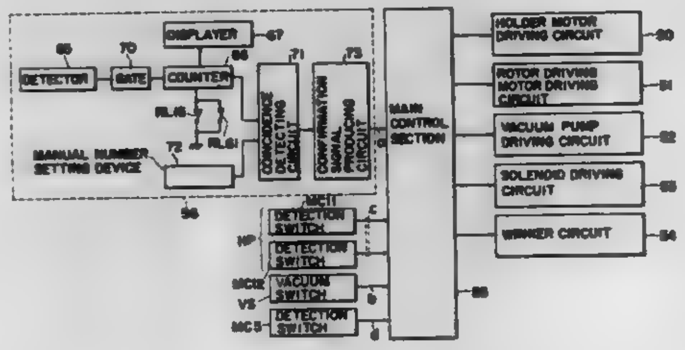
1. A code reading device comprising a reading head for reading information code marks as measured from a basic point, location means for establishing the location and orientation of said basic point with respect to said information code marks, said basic point being printed with a material which is physically sensed differently from the way said information marks are sensed and, means for adjusting said reading by said reading head, with respect to said information code marks, to the location of said basic point.



3,983,367
SHEET COUNTING MACHINE

Takashi Kondō; Motoaki Fukunaga, and Hisashi Kitakami, all of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Japan

Filed Feb. 7, 1975, Ser. No. 548,080
Int. Cl.² H03K *21/36*
U.S. Cl. 235—92 SB 1 Claim



1. In a sheet counting machine having a counting means for counting a number of sheets being separated one by one from a stack of sheets held in a sheet holder; a number setting means for setting in advance a number of sheets desired to be counted; a coincidence detecting means to which said counting means and said number setting means are coupled for producing, when a count value obtained by said counting means coincides with the numerical value set in said number setting means, a coincidence detection signal; a completion detecting means for detecting, when the operation of counting all of the sheets in a stack held by said holder has been completed, the completion of said counting operation and producing a completion detection signal; and a control means to which said coincidence detecting means and said completion detecting means are coupled for controlling a sheet counting operation in cooperation with said counting means, said control means:

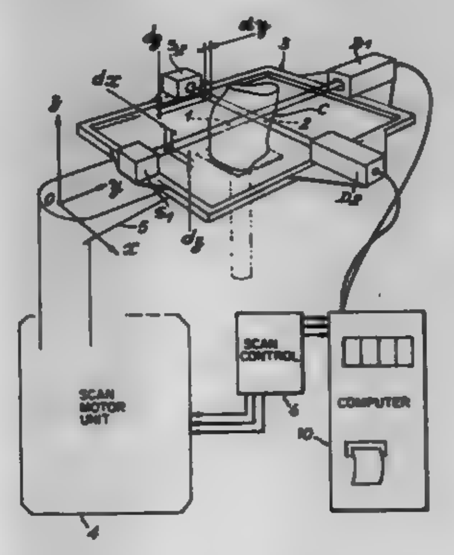
a. automatic stop mode means for controlling the machine in an automatic stop mode and responsive to the coincidence detection signal produced by said coincidence detecting means for stopping the sheet counting operation of said machine when the count value obtained by said counting means coincides with the numerical value set in said number setting means;
b. alarm mode means for controlling the machine in an alarm mode and including alarm means and means responsive to the coincidence detection signal produced by said coincidence detecting means for inhibiting the stopping of a sheet counting operation through said control means and responsive to the completion detection signal produced by said completion detection means for stopping the sheet counting operation when an operation of counting all of the sheets in a stack held in said holder is completed, and if during this operation no coincidence detection signal is produced by said coincidence detecting means operating said alarm means; and
c. count mode designating means for controlling the machine in a count mode and including means for inhibiting the sheet counting operations effected by operation of said automatic stop mode means and said alarm mode means, and means responsive to the completion detection signal produced by said completion detecting means for stopping, when the counting of all of the sheets in a stack held in said holder is completed, the sheet counting operation,

whereby sheets in a stack held in said holder are counted in a desired mode selected from among said automatic stop mode, alarm mode, and count mode by selective operation of said automatic stop mode means, alarm mode means and count mode designating means.

3,983,368
APPARATUS FOR NON-TRAUMATIC DETERMINATION OF THE MASS AND THE POSITION OF THE CENTER OF GRAVITY OF A BODY

Etienne Csakvary, Maurepas, and André Pascal, Palaiseau, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 13, 1974, Ser. No. 450,564
Claims priority, application France, Mar. 19, 1973, 73.09762
Int. Cl.² G01T *1/20*
U.S. Cl. 235—151.3 3 Claims



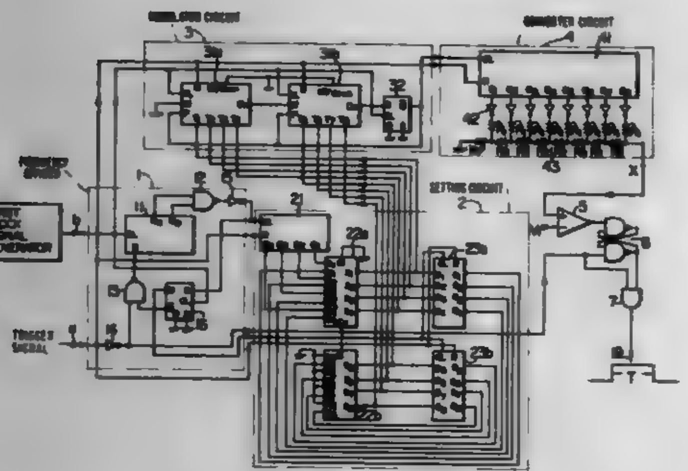
1. A device for determining the mass and the position of the center of gravity of an object comprising:

at least one source of electromagnetic radiation which emits a beam of said radiation in a first predetermined direction, said first direction being the same for each source in the case of plural sources, and a corresponding number of detectors which serve to detect said radiation and each of which receives one of said beams,
at least one source of electromagnetic radiation which emits a beam of said radiation in a second predetermined direction substantially perpendicular to said first predetermined direction,
a movable support frame rigidly fixed to and mounting all of said sources and said detectors,
means for moving said support frame with reference to a fixed base and with reference to said object linearly in at

least two mutually perpendicular directions in such a manner as to cause said beams to scan all of said object,
a system for determining the coordinates of the sources with respect to a reference trihedron during the scanning operation of said frame moving means, and
calculating means comprising on the one hand stages for calculating the logarithm of the respective ratios between the intensity I_0 received by each detector when said detector is in inobstructed view of the source and the intensity I received by the same detector when the object is interposed between the source and the detector and, on the other hand, an assembly for calculating the coordinates of the center of gravity of the object, said calculating assembly being connected to and responsive to the outputs of said system for the determination of coordinates and to the outputs of said calculating stages.

3,983,369
DIGITAL HYPERBOLIC FUNCTION GENERATOR

Ritsu Katsuoka, Okazaki, and Hisasi Kawai, Toyohashi, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed May 20, 1975, Ser. No. 579,052
Claims priority, application Japan, July 20, 1974, 49-83694
Int. Cl.² G06F *15/34*
U.S. Cl. 235—150.53 4 Claims



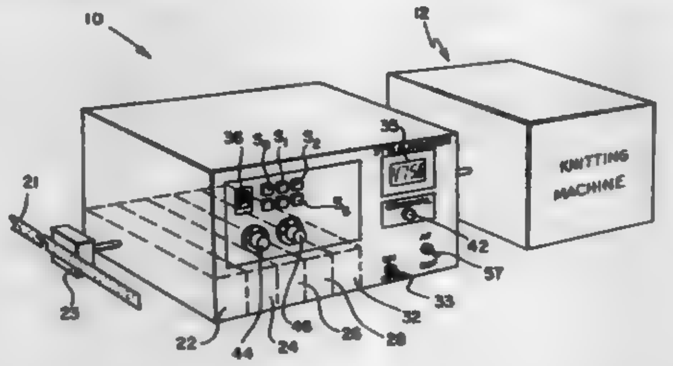
1. A digital hyperbolic function generator comprising means for generating first clock signals of a first fixed frequency, means for generating second clock signals at a fixed time interval, a setting circuit, the setting of which is varied with the number *n* of the second clock signals, said setting circuit producing said setting in a binary code, a modulating circuit connected to said setting circuit for frequency modulating the first clock signals in response to said setting to produce third clock signals, the period of which is proportional to

$$1 + n + \sum_{r=1}^{n} r$$

and is shorter than that of said second clock signals, and a converter circuit connected to said modulating circuit for producing a voltage corresponding to said number of said third clock signals, whereby a hyperbolic function of polygonal line approximation, the gradient of which changes at a fixed time interval, is generated.

3,983,370
TEXTILE MACHINE CONTROLLER

Amiram Caspi, and Michael N. Kahn, both of Tel-Aviv, Israel, assignors to Sci-Tex Corporation Ltd., Herzlia "B", Israel
Continuation of Ser. No. 352,863, April 20, 1973, abandoned. This application May 22, 1975, Ser. No. 580,397
Int. Cl.² D04B *15/78*
U.S. Cl. 235—151.1 12 Claims

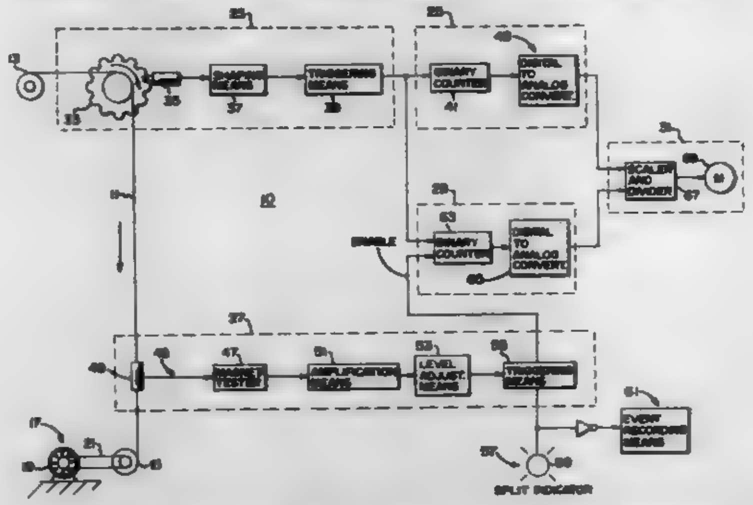


1. A controller for controlling a textile machine having stitching elements to make a patterned fabric comprising
A. first means for storing data representing the stitch types comprising a subpart of the pattern on the fabric,
B. means for determining the location of each stitch on the fabric, said location determining means including
  1. first means for counting the number of stitches formed by the machine in a given row between an index location and the given stitch, and
  2. second means for counting the number of stitches formed by the machine in a given column between an index location and the given stitch,
C. means for repetitively reducing the count in at least one of the counting means by an integral multiple of the pattern subpart width if the deduction is from the first counting means count and of the pattern subpart height if the deduction is from the second counting means count until the remaining count is less than the number of stitches in the corresponding direction of the pattern subpart so that each said stitch location on the fabric is related to an equivalent location in the pattern subpart,
D. means for retrieving from the storage means data representing the selected stitch type for said equivalent location, and
E. output means responsive to said retrieved data for causing textile machine stitching elements to form the selected stitch type at said determined location on the fabric.

3,983,371
APPARATUS AND METHOD FOR DETERMINING THE PROPORTION OF DEFECTIVE WIRE IN A LENGTH OF MOVING WIRE

J. Donald Siranni, Sugar Run, and Charles W. Smith, Bethel Park, both of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.
Filed Jan. 6, 1975, Ser. No. 538,869
Int. Cl.² G01B *19/32;* G01N *27/82*
U.S. Cl. 235—151.3 13 Claims

1. An apparatus for determining the proportion of defective wire in a length of wire moving along an established path, said apparatus comprising:
first detection means positioned relative to said established path of travel of said moving wire for providing a first pulse signal having a pulse rate proportioned to the rate at which said wire travels along said path;
first summing means including a binary counter operatively connected to said first detection means for counting the pulses of said first signal and for providing a second signal in digital output form representative of the length of said wire moving along said established path;
second detection means positioned relative to said established path for providing a third signal indicative of defective portions of said moving wire;
second summing means including a binary counter operatively connected to said first and second detection means for receiving said first and third signals respectively, for counting said pulses included in said first signal in response to enablement by said third signal, and for providing a fourth signal in digital output form representative of the length of said defective portions of said wire moving along said established path; and
computation means operatively connected to said first and second summing means for receiving said second and fourth signals respectively, and for providing an output indication of a ratio thereof representative of the proportion of said length of said defective portions of said wire to said length of wire moving along said established path.



3,983,372
APPARATUS AND METHOD FOR A DIGITAL READOUT OF DISTANCE TRAVELED, FUEL CONSUMED AND MILES PER GALLON OF A MOVING MOTOR VEHICLE

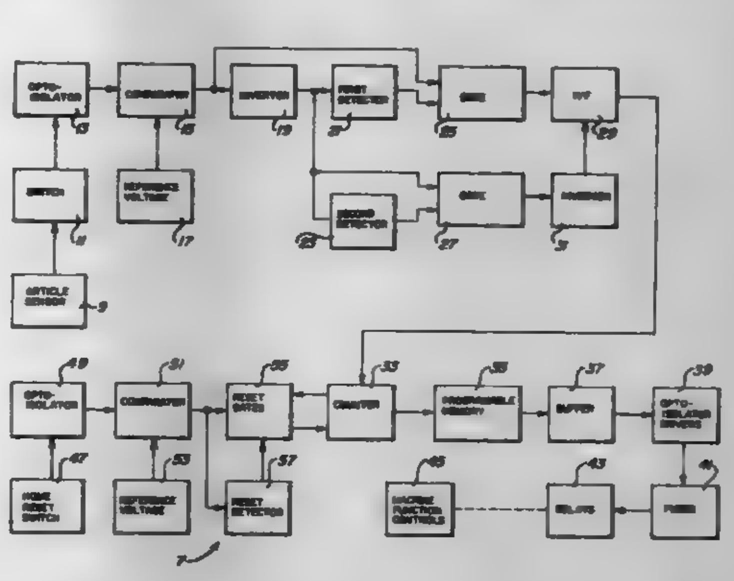
Rudolf F. Klaver, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Feb. 3, 1975, Ser. No. 546,664
Int. Cl.² G10M *15/00*
U.S. Cl. 235—150.21 12 Claims

1. An apparatus for indicating distance traveled per unit of fuel used by a vehicle having an internal combustion engine, comprising:
first means for generating a series of electrical pulses related to a given unit quantity of fuel flowing to said engine;
second means for generating a series of electrical pulses related to a given unit of distance traveled by said vehicle;
means for summing the series of pulses from said second means to form a distance-traveled sum;
singular means for displaying said distance-traveled sum accumulated up to emission of a pulse from said first means so that said distance-traveled sum is equivalent to distance traveled per unit of fuel flowing to said engine;
means for replacing a first distance-traveled sum with a subsequent distance-traveled sum on said means for displaying when each subsequent pulse from said first means is received by said means for summing so that semi-instantaneous distance traveled per unit of fuel flowing to said engine is displayed.

3,983,373
ARTICLE CONTROL SYSTEM

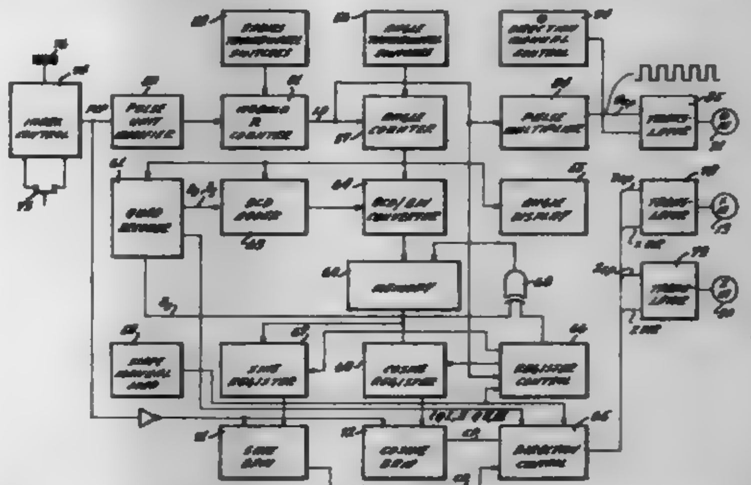
David S. Russell, Lakewood, Colo., assignor to Columbine Glass Company, Inc., Wheatridge, Colo.
Filed Apr. 30, 1975, Ser. No. 572,977
Int. Cl.² G05B *11/00;* B65G *57/00*
U.S. Cl. 235—151.3 20 Claims

1. A control system for use with a palletizing apparatus, comprising: article sensing means for producing a signal indicative of the sensed presence of an article; logic means connected with said article sensing means for verifying the presence of an article and producing a signal indicative thereof; counter means for counting in response to a signal received from said logic means; memory means for receiving said counter output and providing outputs at predetermined times; and driver means responsive to said outputs from said memory means for providing output signals for effecting predetermined palletizing functions.



3,983,374
DIGITAL SYSTEM FOR SLOPE AND CURVATURE CONTROL

Andrew J. Sorensen, III, Granada Hills, and John A. Robinson, Chatsworth, both of Calif., assignors to Uresco, Inc., Downey, Calif.
Filed June 20, 1975, Ser. No. 588,663
Int. Cl.² G01N *29/04;* G06F *15/20*
U.S. Cl. 235—151.3 20 Claims



1. A digital control system for indexing an operating unit along a sloped path including:
a memory for storing sine and cosine functions,
means for indicating an input angle corresponding to the slope of said path,
a sine register and a cosine register,
means responsive to the input angle for addressing said memory to load the sine and cosine functions of said input angle into said respective sine registers and cosine register,
index control means for providing a number of clock pulses corresponding to the distance said operating unit is to be indexed along said sloped path,
a sine proportion means and a cosine proportion means each passing portions of said clock pulses in accordance with the functions loaded in said respective sine register and cosine register, and
a vertical axis stepping motor means and a horizontal axis stepping motor means simultaneously responsive to the portions of the clock pulses passed by said respective sine

proportion means and cosine proportion means for indexing said operating unit along said sloped path.

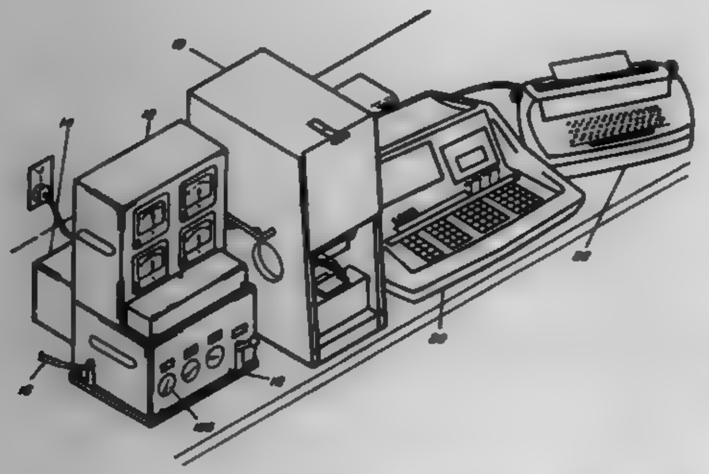
3,983,375
TILTESTER

Allen M. L. Johnson, Succasunna, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 472,324, May 22, 1974, abandoned. This application Sept. 26, 1975, Ser. No. 617,214

Int. Cl.² G01D *1/00;* **G01M** *1/14, 19/00;* **G01L** *15/00*

U.S. Cl. 235—151.3 **7 Claims**



1. An apparatus for measuring a composite effect of tilt, in individual nozzles of a rocket, on spin, pitch and yaw in a multi-nozzle work piece for determining acceptance or rejection of said work piece which comprises:

housing means;

electro-pneumatic gaging menas, operatively disposed in said housing means, for determining the magnitude and direction of said tilt of said individual nozzles;

programmable calculator means for receiving and storing the output signals from said gaging means and then generating output signals in response thereto;

visual signal means electrically connected to said calculator means for indicating acceptance or rejection of said work piece, said visual signal means indicating acceptance of said multi-nozzle work piece, when said calculator means calculates a vectorial sum for each flight component of spin, pitch and yaw which does not exceed a predetermined limit, and said visual signal means indicating rejection of said multi-nozzle work piece, when said calculator means calculates a vectorial sum for each flight component of spin, pitch and yaw which exceeds a predetermined limit; and

printing means for making a record of the arithmetic equivalent of said output signals produced by said calculator means.

3,983,376
CONTROL DEVICE FOR A MACHINE TOOL

Mario Pozzetti, Bologna, Italy, assignor to Finike Italiana Marposs-Soc. In Accomandita Semplice di Mario Possati & C., Bentivoglio, Italy

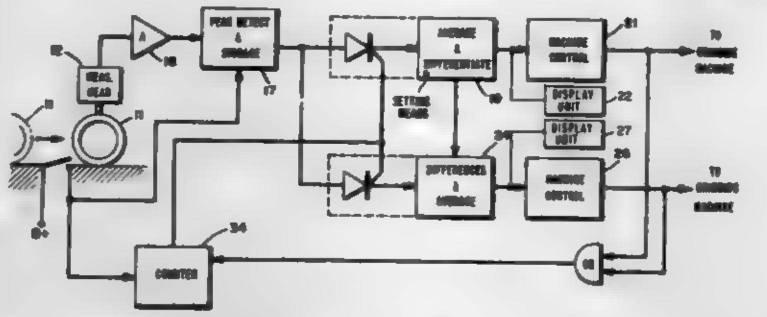
Continuation of Ser. No. 455,494, March 27, 1974, which is a continuation of Ser. No. 273,710, July 21, 1972, abandoned. This application Nov. 15, 1974, Ser. No. 524,212

Claims priority, application Italy, July 30, 1971, 3487/71

Int. Cl.² B24B *49/04*

U.S. Cl. 235—151.13 **6 Claims**

1. An apparatus for controlling a machine tool comprising a measuring head for measuring a given dimension of the successive workpieces machined by the machine tool; detecting and storing means for detecting workpieces being measured and storing a signal representing the successive values of the dimensions of the workpieces measured by said measuring head; calculating means connected to said detecting and storing means for calculating a mean value of said successive values; control means connected to said calculating means for controlling the machine tool; and counting means connected with said detecting and storing means, said calculating means, and said control means for receiving information regarding the adjustments made to the machine, and for providing a count signal indicating that a predetermined number of workpieces has been counted after an adjustment, said calculating means having a presettable configuration for accelerating the updating of said mean value after said count signal has been generated.



3,983,377
METHOD AND APPARATUS FOR DETECTING A FAULT LOCATION AT AN ELECTRICAL CONDUCTOR

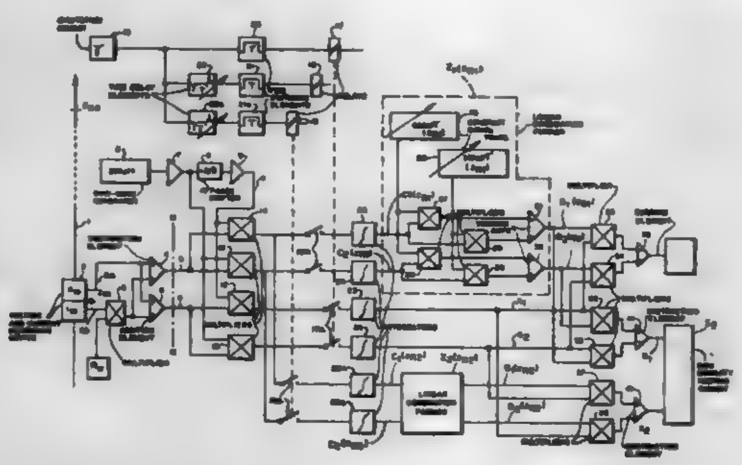
Michael Vitins, Zurich, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed June 30, 1975, Ser. No. 591,343

Claims priority, application Switzerland, July 8, 1974, 9361/74

Int. Cl.² G01R *31/08;* **G06G** *7/12*

U.S. Cl. 235—151.31 **18 Claims**



12. An apparatus for detecting a fault location at an electrical conductor for measurement voltages and measurement currents received at the measurement location following an error-indicating excitation signal, comprising, the combination of:

a. an excitation circuit having an error-indicating excitation signal as the output;
b. measurement elements for the measurement of a measurement voltage and measurement current at a predetermined measurement location;
c. a multiplier connected in circuit with the measuring element for measurement of the measurement current for forming a signal representative of the product of the characteristic impedance of the conductor and the measurement current;
d. an additional and subtraction circuit connected in circuit with said multiplier and having two outputs, a first output thereof carrying a signal substantially corresponding to a first wave function and a second output thereof carrying a signal substantially corresponding to a second wave function;
e. a multiplier device provided with inputs for at least one signal which is substantially sinusoidal as a function of time and for the signals corresponding to the first and second wave functions, said multiplier device having outputs at which there appear signals representative of four weighted functions in the form of the products of the first wave function and two substantially sinusoidal-type signals and the second wave function and two substantially sinusoidal-type signals;
f. an integration device having inputs for receiving said signals representative of the four weighting functions;
g. a switching device connected in circuit with said multiplier device and said integration device for determining the duration coinciding with integration intervals for said four weighted functions as the integrands;
h. said integration device having four integral signal outputs, each of said integral signal outputs carrying a signal substantially corresponding to one of four integral functions, each integral function being associated with the time integral of one of the weighted functions;
i. a multiplication and subtraction device for forming an evaluation function of the form:

$$A_1.B_2 - A_2.B_1$$

wherein A_1, A_2, B_1, B_2 represent the respective four integral functions; and

j. a sign testing circuit connected in circuit with said multiplication and subtraction device for delivering an output signal representative of the direction of the position of the fault location with respect to a reference location.

3,983,378
METHOD AND APPARATUS FOR MEASURING TAXI FARES

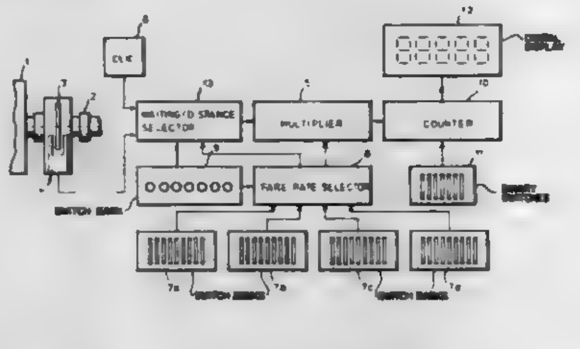
Tapio A. Tammi, Oulu, Finland, assignor to Kajaani Oy, Elektroniika, Oulu, Finland

Continuation-in-part of Ser. No. 455,936, March 28, 1974. This application Oct. 1, 1974, Ser. No. 511,009

Claims priority, application Finland, Mar. 30, 1973, 988/73

Int. Cl.² G07B *13/00*

U.S. Cl. 235—151.32 **10 Claims**



1. A meter for measuring a fare in a taxi vehicle comprising:

a binary multiplier having two signal input channels and a signal output channel;

means for producing a series of electrical pulses related to use of the taxi vehicle connected to be applied to one signal input channel;

a plurality of banks of binary switch means for preadjustment to different positions with each bank adjusted to calibrate the meter when operating in the taxi vehicle, wherein each bank of binary switch means comprises a plurality of two position switches manually operable for calibration of the meter for operation in a particular taxi vehicle as well as for calibration of the meter to correspond to a different approved fare rate schedule;

a manually operable switch disposed for operation by the taxi driver each time the taxi is hired to connect a predetermined one of said banks of binary switch means to the other signal input channel to control said binary multiplier in accord with the approved selected fare rate schedule; and

an indicating device connected to be responsive to the electrical pulses in the output signal channel for displaying the fare.

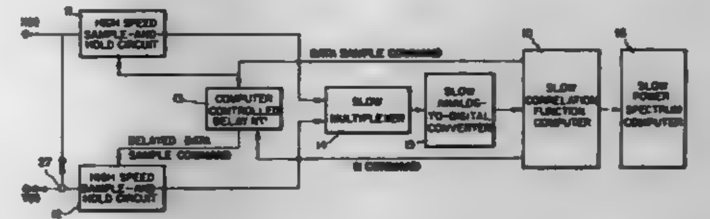
3,983,379
RANDOM SAMPLE STATISTICAL FUNCTION ANALYZER

Paul F. Scott, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 18, 1975, Ser. No. 550,452

Int. Cl.² G06F *15/34*

U.S. Cl. 235—152 **10 Claims**


HIGH SPEED SAMPLE-AND-HOLD CIRCUIT
DATA SAMPLE COMMAND
COMPUTER CONTROLLED DELAY
SLOW MULTIPLEXER
SLOW ANALOG-TO-DIGITAL CONVERTER
SLOW CORRELATION FUNCTION COMPUTER
SLOW POWER SPECTRUM COMPUTER
DELAYED DATA SAMPLE COMMAND
HIGH SPEED SAMPLE-AND-HOLD CIRCUIT

1. A random sample statistical function analyzer comprising

first and second high sampling speed sample-and-hold circuits for sampling a high bandwidth signal having a frequency exceeding 100 kilohertz which is representative of a stationary ergodic process, and a digital delay circuit connected to an input of said second sample-and-hold circuit for generating variable delay intervals,

said first and second sample-and-hold circuits being repetitively operative in response to first commands each applied to said first sample-and-hold circuit and digital delay circuit to obtain a large number of randomly sampled pairs of analog data samples with a predetermined digital delay between each sample pair as determined by second commands each selectively applied to said digital delay circuit,

slow processing speed multiplexer and analog-to-digital converter means connected to the outputs of said sample-and-hold circuits for processing each pair of analog data samples and producing a pair of digital representations thereof, and

slow processing speed digital computer means to which each pair of digital representations is supplied for performing desired statistical function estimate computations including at least autocorrection function estimate computations, said digital computer means further generating each first command and selectively generating each second command following completion of the desired statistical function computations.

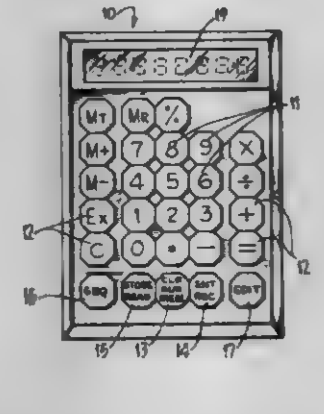
3,983,380
AUXILIARY MEMORY UNIT FOR USE WITH AN ELECTRONIC DISPLAY CALCULATOR

Louay E. Sharif, Atherton, and John R. Moore, Pasadena, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Aug. 11, 1975, Ser. No. 603,401

Int. Cl.² G06F *3/14, 3/02, 7/38*

U.S. Cl. 235—156 **19 Claims**



1. In an electronic calculator having a keyboard with a plurality of digit keys and arithmetic function keys for generating signals representative of numeric data and functions to

be performed on said data, calculator means for receiving said signals and performing said functions with said numeric data to provide computational results, and display means for displaying said numeric data and said results, the improvement comprising auxiliary store means for sequentially storing and retaining successively generated ones of said numeric data and function signals in accordance with the order of generation thereof, read means for sequentially reading out at least some of said signals in a predetermined order after said calculator means has provided said computational results, and means for enabling sequential display in said predetermined order of the numeric data signals read out by said read means.

3,983,381

DIGITAL AUTOMATIC GAIN CONTROL CIRCUIT

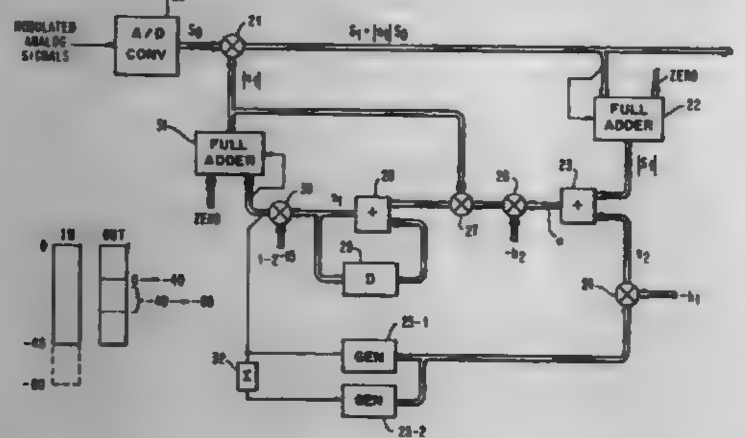
Gardner D. Jones, Jr., Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1974, Ser. No. 534,016

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976

Int. Cl.² G06F *5/00*

U.S. Cl. 235—154 **12 Claims**



1. A digital gain control circuit suitable for use in a digital signal processor such as a digital demodulator comprising:

a multiplier for forming the product of an uncontrolled digital input signal and a digital gain control signal;

a feedback loop responsive to the magnitude of the output of the said multiplier and a digital reference for generating the said digital gain control signal;

said feedback loop including;

means for forming an error signal corresponding in magnitude and sign to the difference between the magnitude of the multiplier output and the said reference;

accumulator means responsive to said error signal for generating said gain control signal; and

a feedback control loop responsive to the sign of the accumulator output for modifying the sign of the reference to cause said error signal to assume alternate negative and positive fixed values when the multiplier output falls to zero for a predetermined period of time.

3,983,382

ADDER WITH FAST DETECTION OF SUM EQUAL TO ZEROES OR RADIX MINUS ONE

Arnold Weinberger, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

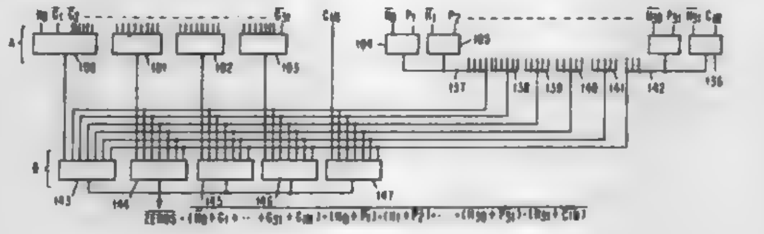
Filed June 2, 1975, Ser. No. 583,023

Int. Cl.² G06F *7/50*

U.S. Cl. 235—173 **18 Claims**

1. A logic system for determining a binary sum of all zeros which makes use of the half-sum (H), carry propagate (P) and carry generate (G) pulses of each bit position in said sum together with a low order input carry signal C_{in}, comprising

first logic circuit means for combining H and G pulses, second logic circuit means for combining H, P and C_{in} pulses, and third logic circuit means for combining the outputs of said first and second logic circuit means and said input carry signal C_{in}, said first, second and third logic circuit means connected to receive and combine pulse inputs according to



$$\text{ZEROS} = (\overline{H}_0 + G_1 + \ldots G_{n-1} + C_{in}) \cdot (H_0 + \overline{P}_1) \cdot\cdot (H_{n-2} + \overline{P}_{n-1}) \cdot (H_{n-1} + \overline{C}_{in})$$

where the subscripts 0 to $n-1$ refer to bit positions, high to low order, respectively, in an n—bit sum.

3,983,383

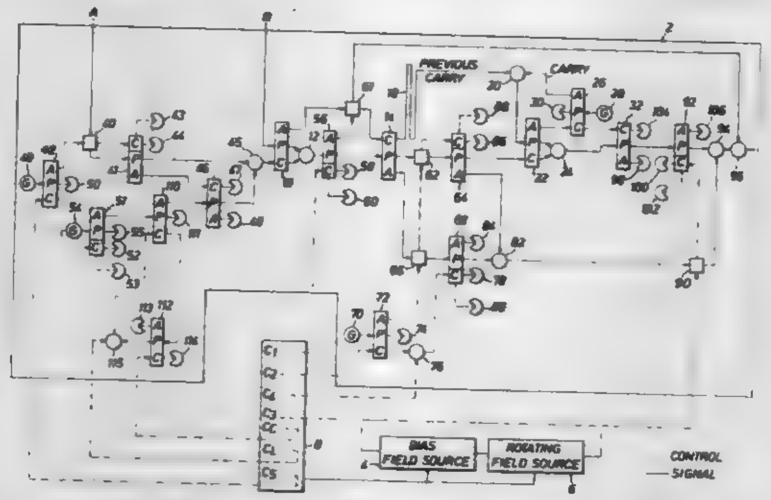
PROGRAMMABLE ARITHMETIC AND LOGIC BUBBLE ARRANGEMENT

Rex Alan Naden, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 10, 1974, Ser. No. 468,963

Int. Cl.² G06F *7/50;* **G11C** *11/14*

U.S. Cl. 235—176 **11 Claims**



1. A programmable magnetic bubble arithmetic and logic arrangement comprising:

a substrate,

a body of magnetic material capable of supporting magnetic domains secured adjacent one surface of said substrate,

said magnetic material having bubble propagation path pattern means arranged for the selective performance of serial arithmetic and logic operations on two streams of digital information provided as magnetic bubble domains,

periodic drive means coupled to said body for providing a step movement of bubbles through said bubble propagation path pattern means of said magnetic material,

said bubble propagation path pattern means of said magnetic material including

a plurality of transient bubble switches for respectively receiving a first and second bubble input and passing bubbles in said first input therethrough along a control path, bubbles in said second input passing therethrough along a preferred path when there is simultaneously a bubble void in said first input, bubbles in said second input passing therethrough along an alternate path when there is simultaneously a bubble occurrence in said first input,

a plurality of bubble generators for respectively producing a bubble domain at each periodic step,

a plurality of bubble annihilators for respectively annihilating bubble domains applied thereto,

a plurality of exclusive merge elements for respectively permitting bubbles from two inputs occurring nonsimultaneously to pass therethrough to a single output,

a plurality of crossover elements for respectively permitting bubbles from two inputs to pass therethrough to two respective outputs without interference,

a plurality of resident bubble switches for respectively receiving a first and second bubble input, a bubble in said first input lodging in a control path until a subsequent bubble causes expulsion thereof, bubbles in said second input passing therethrough along a preferred path when there is a simultaneous bubble void in said first input, bubbles in said second input passing therethrough along an alternate path when there is a simultaneous bubble occurrence in said first input, and

said transient bubble switches, bubble generators, annihilators, merge elements, crossover elements and resident bubble switches being interconnected in at least partially defining said bubble propagation path pattern means in such a manner to achieve a plurality of arithmetic and logic operations on two streams of digital information, programming thereof being at least in part by lodging bubbles in the control paths of appropriate resident bubble switches.

3,983,384

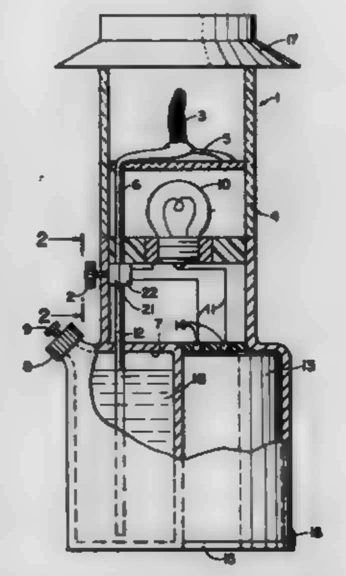
COMBINATION LANTERN

Archangelo Joseph Bucci, Bayonne, N.J., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed May 13, 1975, Ser. No. 577,067

Int. Cl.² F21V *19/04*

U.S. Cl. 240—37 **6 Claims**



1. A portable light source comprising a battery, a selector switch, an incandescent lamp, a combustible fuel, a valve, a knob, a series electrical circuit including said selector switch and said incandescent lamp and said battery, piping fluidly connecting said combustible fuel to said valve and to a point of combustion, said knob for manual operation of said valve and said selector switch, said knob capable of being manually disposed closing the terminals of said selector switch and closing said valve, said knob capable of being manually disposed opening said terminals of said selector switch and opening said valve, said knob capable of being manually disposed opening said terminals of said selector switch and closing said valve.

3,983,385

METHOD AND APPARATUS FOR OPERATING A MERCURY VAPOR LAMP

Harden Henry Troue, Plainfield, Ind., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 499,932, Aug. 23, 1974, abandoned. This application Nov. 17, 1975, Ser. No. 632,633

Int. Cl.² H01J *61/52*

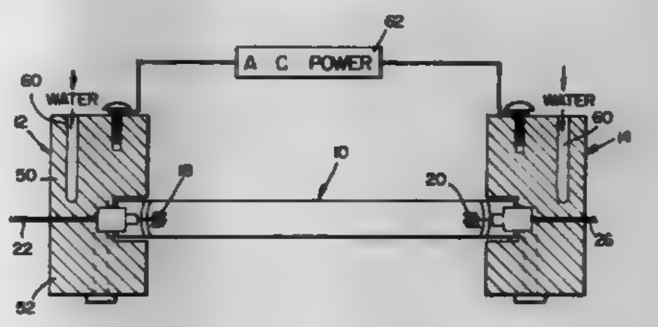
U.S. Cl. 240—47 **6 Claims**

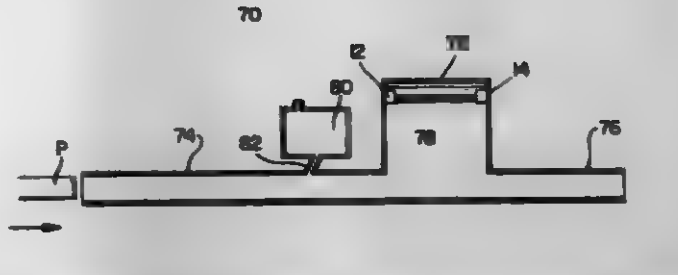
1. A method for continuously operating at least one mercury vapor UV lamp in any gaseous environment existing in a confined optical enclosure; said lamp consisting of a single elongated quartz envelope, a quartz to metal seal at each end and an exposed terminal at each end; the improvement comprising the steps of:

a. providing at least one thermally conductive heat sink independent of said lamp and locating said heat sink so that it does not contact said single elongated quartz envelope;

b. mechanically connecting only each exposed terminal of said lamp to said thermally conductive heat sink;

c. maintaining said heat sink at a temperature below 100°C by passing a cooling liquid therethrough;





d. and locating said heat sink in such close physical proximity to said quartz to metal seal so that the seal temperature is held below 400°C.

4. Apparatus for photopolymerizing chemical coatings comprising an enclosure having a radiation chamber therein; an inlet tunnel to said radiation chamber and an outlet tunnel from said radiation chamber; a plurality of terminal assemblies mounted in said radiation chamber; a plurality of mercury vapor lamps having sealed ends and exposed power terminals mounted in said terminal assemblies so that the exposed power terminals only are connected to the terminal assembly; each of said terminal assemblies having water passages therein for carrying cooling water sufficiently close to the power terminals of said mercury vapor lamp to keep said sealed ends below a temperature of 400°C.

3,983,386

SWING ARM LAMP

Fred Schallenkammer, 107-18 101st Ave., Ozone Park, N.Y. 11416

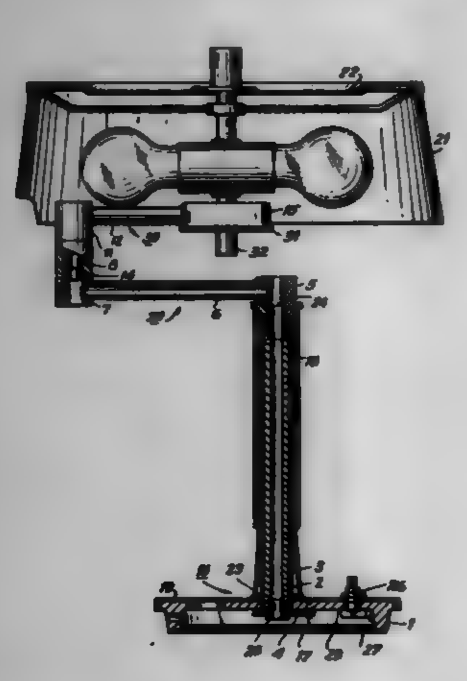
Filed May 7, 1975, Ser. No. 575,242

Int. Cl.² F21S *1/12*

U.S. Cl. 240—81 R **1 Claim**

1. In a combination swing arm lamp structure a round tubular stem extending vertically upward from a heavy base and protruding slightly into a recess at the bottom of said base; said stem serving as a sleeve bearing for an inner tube rotating within it and resting with a cap fastened to its top end on the open top end of said tubular stem and said cap supporting the entire swing arm linkage branching horizontally from it; said inner tube extending thru the entire length of said tubular stem and having a shoulder recess turned on its bottom end which protrudes slightly beyond the bottom end of said tubular stem when assembled together, and having a lug washer fastened to said shoulder recess; said lug washer having a protruding lug engaging on counter clockwise rotation, a stop pin in the bottom recess of said lamp base when the swing arms are folded up and extending toward the rear; said swing arm linkage comprising a tubular arm extending horizontally

from said cap and terminating in the bottom portion of a swivel having a hole thru its center serving as a sleeve bearing for a tubular stem extending from the rotating top portion of said swivel whose rotation is confined to less than one revolution by means of stop pins mounted on the joint faces; one of said stop pins being mounted on the top face of said fixed bottom portion of said swivel and extending into an annular recess at the bottom face of said rotating top portion of said swivel where it engages a pin mounted in said recess for a positive stop of rotation; from said rotating top portion of said swivel extending horizontally, a tubular arm which terminates in a shallow drum-shaped box for intermediate electrical wire connections, said connection box also supporting the shaded lighting unit mounted to its top face; the location of said stop pins in the swivel in relation to the swing arm linkage being such that on clockwise rotation of said swivel a stop to the swing action is effected when the lower and upper swing arms are folded in closed position, that is, one above the other, the top and bottom portions of said swivel being held together with a minimum of end play by a flanged nipple screwed into the bottom end of said rotating tubular stem; for proper swing operation the direction of rotation of said inner tube of the lamp post being the opposite of the direction of rotation of said swivel portion; fastened to said cap connected to the top end of said inner tube a tubular handle which is open at its bottom end and extends downward amply clearing on rotation said tubular stem which extends upward from said stationary lamp base; said handle, said cap and said inner tube being fastened together for rotating in unison when swinging said interconnected lower swing arm, lifting the lamp by said handle arresting the primary swing action pivotally about said lamp stem permitting only said shaded lighting unit to be swung pivotally about said swivel thus preventing any uncontrollable flapping about of the swing arm linkage.



3,983,387
CONCEALED, SPRING-LOADED, SLIDE HINGE FOR LUMINAIRE DOOR

Frank Van Steenhoven, Peninsula, and Adolf Meeuwen, Kent, both of Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

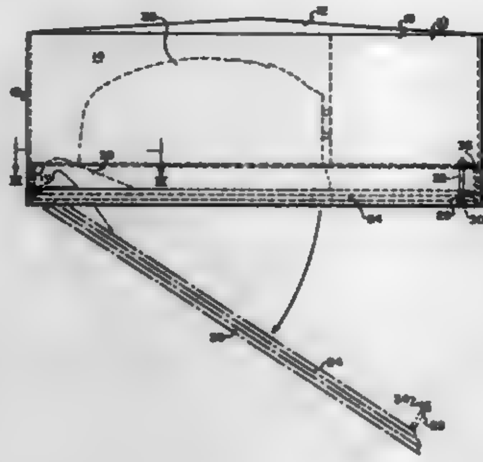
Filed June 10, 1975, Ser. No. 585,734
Int. Cl.² F21V *17/00*
U.S. Cl. 240—147 **7 Claims**

1. In a luminaire including a housing having side and end walls and a light transmitting door including a door frame contiguous with said side and end walls of said housing, an improved door mounting means comprising:

a pair of spaced hinge hooks on one end wall of said housing;

hidden hinge means on said door frame adjacent each of said hinge hooks for mounting said door to said housing, said hidden hinge means including a pair of hinge slides mounted to said door frame sides, a hinge arm mounted to each of said hinge slides for relative sliding movement therebetween, spring means interconnecting each of said hinge arms to said door frame and urging said hinge arms toward said one end wall, and a pivot pin mounted to each of said hinge arms constructed and arranged to mount said hidden hinge means to said pair of spaced hinge hooks; and

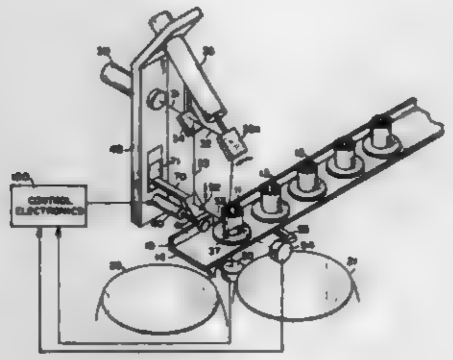
latch means for latching the other end of said door frame to said housing.



3,983,388
APPARATUS FOR HARDWARE ITEM INSPECTION

George Gugliotta, Ridgefield, Conn., assignor to Automation Systems, Inc., Bethel, Conn.

Filed Oct. 6, 1975, Ser. No. 619,785
Int. Cl.² G01D *21/04*
U.S. Cl. 250—223 R **3 Claims**



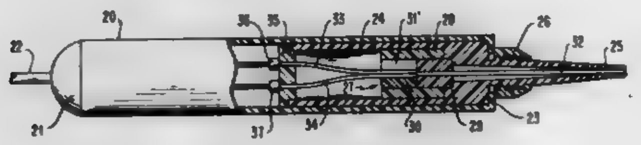
1. Nut inspection apparatus for monitoring the height of nuts and adaptable to also determine if threading is present on the inner surface thereof, comprising:

a. a ramp for carrying said nuts, said ramp having a slot which defines an inspection position;
b. means for generating a laser beam;
c. means for splitting said laser beam into first and second beams;
d. adjustable means for directing said first beam transverse said ramp and over said slot at the inspection position, said means being adjustable to a predetermined position above said ramp;
e. a first photodetector for receiving said first beam in the absence of a nut of prescribed height at the inspection position;
f. means for directing said second beam toward the inner surface of a nut at the inspection position;
g. a second photodetector for receiving through said slot the light reflected from said inner surface;
h. means enabled by the output of said second photodetector and responsive to the output of said first photodetector for generating a height monitoring occurrence indication; and
i. means enabled by the output of said first photodetector for generating a thread indicative occurrence indication when the output of said second photodetector exceeds a predetermined threshold level.

3,983,389
WAND FOR READING OPTICALLY ENCODED GRAPHIC SYMBOLS

Robert L. Cowardin, Cary, and George J. Laurer, Raleigh, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 11, 1975, Ser. No. 560,765
Disclosure was also published under second Trial Voluntary Protest Program on Feb. 3, 1976
Int. Cl.² G02B *5/14*
U.S. Cl. 250—227 **11 Claims**



1. A wand suitable for scanning graphically encoded indicia and providing electric signals which are an analog of the graphically encoded indicia comprising:

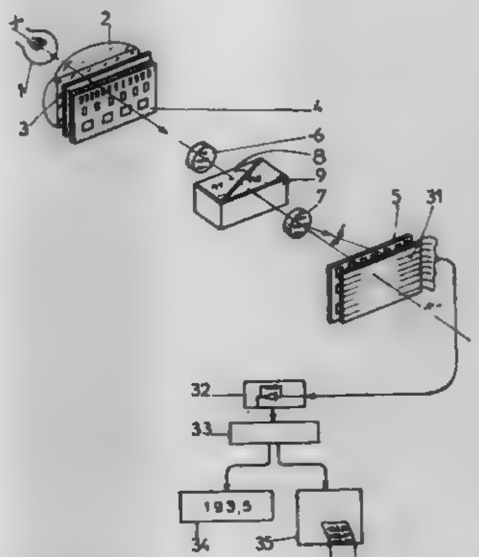
first, second and third substantially cylindrical optically conductive fibers;
a first retainer including means for locating said first and second fibers with respect to a reference dimension of said first retainer such that the said first and second fibers are in contact along a line which includes common tangent points on the substantially cylindrical surfaces of the fibers and the line of contact is coincident with the said reference dimension;
a second retainer including means for locating said third fiber with respect to a reference dimension substantially identical to the first retainer such that the axis of the cylindrical third fiber is coincident with the said reference dimension;
a support for supporting said first and second retainers in juxtaposition such that the said respective reference dimensions are in alignment whereby the point of tangency of the said first and second fiber coincides with the axis of the said third fiber;
a housing for retaining said support, positioning said third fiber in a substantially elongated position, supporting a light source and a photodetector; and
means for connecting the free end of the first and second fibers to the light source and the photodetector, respectively.

3,983,390
DEVICE FOR MEASURING ANGULAR DEVIATION OF A LIGHT BEAM BY USE OF GRATINGS

Helenio Llop, Montreuil, France, assignor to Societe d'Optique, Precision Electronique et Mechanique Sopelem, Paris, France

Filed June 6, 1975, Ser. No. 584,496
Claims priority, application France, June 12, 1974, 74.20285
Int. Cl.² G01D *5/34*
U.S. Cl. 250—231 R **9 Claims**

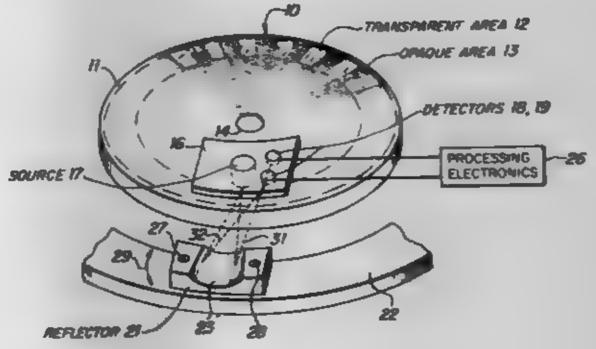
1. An instrument for measurement of angular deviations comprising a luminous source for projecting a luminous beam along an optical axis, means for angularly displacing the beam with respect to the optical axis as a function of the angular deviation to be measured, a transmitting diffraction grating interposed between said source and said beam displacing means and having tracks of recurrent transparent areas for producing an image with a given transverse field, a receiving diffraction grating disposed downstream of the beam displacing means for receiving said image of the transmitting diffraction grating thereon, and means for detecting displacement of the image of the transmitting grating on the receiving grating, said image covering substantially the entire extent of the receiving grating, said gratings being centered on said optical axis and each being constituted by a plurality of engraved track arrangements, the image of each track arrangement of the transmitting grating being projected onto a corresponding track arrangement of the receiver grating, the corresponding track arrangements having tracks with corresponding spacing, the track arrangements of each grating having stepwise successively increasing spacing between tracks, said gratings extending over the width of the field such that each track is illuminated over the entire length thereof, the width of each track being greater than the displacement corresponding to the maximum angular deviation to be measured.



3,983,391
OPTICAL ENCODER OF THE REFLECTIVE TYPE

Calvin Clemons, Boston, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed May 21, 1975, Ser. No. 579,516
Int. Cl.² H01J *3/14*
U.S. Cl. 250—237 G **13 Claims**



1. Encoder apparatus comprising:

A. a code member, said code member having code track means thereon, said code track means comprising a pattern of alternating radiation transmissive and radiation opaque areas; and,
B. monitoring means for monitoring relative movement of said code member, said monitoring means comprising:
  a. source means supported on one side of said code member for directing radiation to said code track means;
  b. detector means responsive to radiation from said source means, said detector means including at least first and second detector means for generating first and

second signals, respectively, proportional to the radiation impinging thereon;

c. reflector means supported on the opposite side of said code member from said source means for receiving radiation passing through said code track means from said source means and for reflecting at least a portion of said received radiation back through said code track means to said first and second detector means whereby said first and second detector means will each be impinged by radiation modulated by said code track means as a function of the relative movement of said code member and will generate signals indicative of said relative movement of said code member, said reflector means including an aspheric reflecting surface for directing radiation to said first detector means out of phase with respect to radiation directed to said second detector means; and,

d. processing means coupled to said first and second detector means for processing said first and second signals.

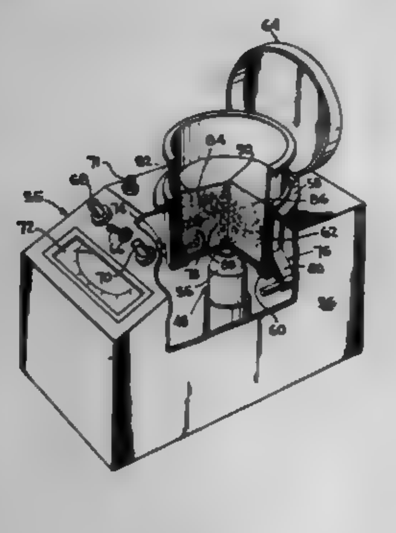
3,983,392
METHOD AND APPARATUS FOR MEASURING INCOMBUSTIBLE CONTENT OF COAL MINE DUST USING GAMMA-RAY BACKSCATTER

Frederick E. Armstrong, Copan, Okla., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Feb. 14, 1975, Ser. No. 550,099

Int. Cl.² G01N *23/20*; G21K *1/00*

U.S. Cl. 250—272 **17 Claims**



1. Apparatus for measuring the incombustible content of particulate material using a radiation backscatter technique comprising

container means for holding a sample of the particulate material, said container means having first and second angularly oriented walls defining first and second angularly oriented surfaces of the sample; first and second

radiation source assembly means disposed on opposite sides of said container for producing low energy incident beams through said first wall of said container means at the first surface of the sample; and

radiation detector means disposed adjacent said second wall of said container means for detecting backscattered radiation from the second surface of the sample whereby variations in scattered radiation caused by variations in density of the sample are compensated by variations in attenuation of said incident radiation beam and said backscattered radiation.

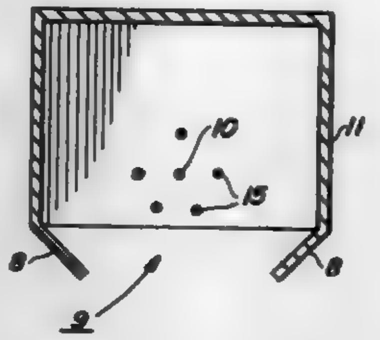
3,983,393
CORONA DEVICE WITH REDUCED OZONE EMISSION

Raghulinga R. Thettu, Webster; Phillip L. Harrison, Ontario, and John Stavisky, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed June 11, 1975, Ser. No. 585,937

Int. Cl.² H01T *19/04*

U.S. Cl. 250—326 **16 Claims**



1. A corona discharge device with reduced ozone emitting properties comprising

an elongated wire electrode,

an elongated shield, running parallel to said wire and spaced therefrom,

electrical means for applying a corona generating potential to said wire, and

an ozone decomposing means spaced from said wire and said shield and located intermediate therebetween.

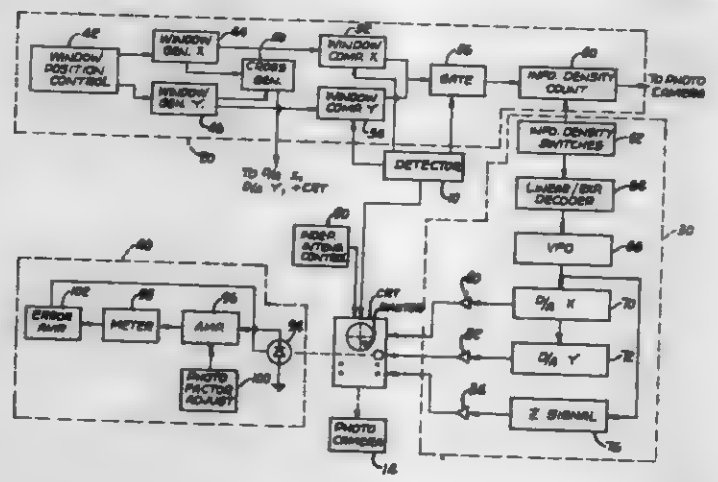
3,983,394
RADIATION CAMERA EXPOSURE CONTROL

Ronald J. Martone, Cheshire; Michael Yarsawich, East Haven, and Walter Wolczek, Trumbull, all of Conn., assignors to Picker Corporation, Cleveland, Ohio

Filed June 10, 1974, Ser. No. 477,940

Int. Cl.² G01T *1/164*

U.S. Cl. 250—363 S **32 Claims**



1. An exposure control system for use in a scintillation camera couplable to an image sensing camera and having a display apparatus responsive to radiation signals representing the position of radiation stimuli to produce and expose to the image sensing camera an image representing the positional location of the stimuli, said image being adjustable in intensity independently of said radiation signals, and a detector having a predetermined field of view and being responsive to the radiation stimuli to produce the radiation signals, said exposure control system comprising:

a. an information control circuit connected to the detector for controlling the amount of exposure of the image to the image sensing camera by terminating the exposure in response to the accumulation of a predetermined quantity of radiation occurring within a predetermined zone of said detector field.

b. a circuit connected to said information control circuit for producing an index representing the value of said quantity of radiation, said representation further being controllable as a function of said independent intensity adjustmennt of said display apparatus, and

c. a circuit for indicating the value of said index representation to enable calibration of the image intensity by varying said independent intensity adjustment in accordance with said quantity of radiation and said exposure amount to maintain the detectability of the image by the image sensing camera.

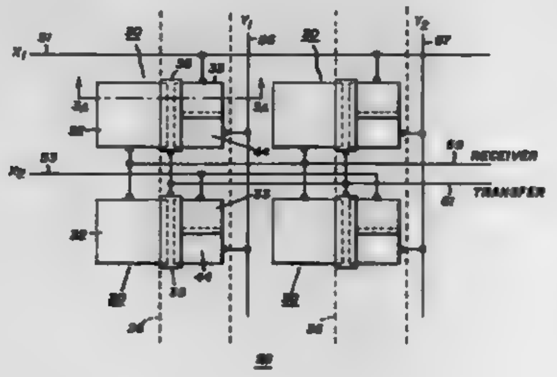
3,983,395
MIS STRUCTURES FOR BACKGROUND REJECTION IN INFRARED IMAGING DEVICES

James C. Kim, Liverpool, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Nov. 29, 1974, Ser. No. 528,582

Int. Cl.² G01T *1/22*; H01L *27/14*

U.S. Cl. 250—370 **6 Claims**



1. A CID sensing array of sensing sites, each sensing site comprising:

a. an optically sensitive receiver MIS capacitor for receiving incident radiation from a scene and storing signal and background charge corresponding to said incident radiation thereon;

b. a pair of optically insensitive MIS storage capacitors, said storage capacitors being coupled together, one of said pair being an X-storage capacitor and the other of said pair a Y-storage capacitor, and

c. an optically insensitive transfer control MIS capacitor disposed in an overlapping manner between and coupled to said receiver capacitor and to said pair of storage capacitors for controlling the transfer of charge between said receiver and storage capacitors,

d. and wherein said array is comprised of a two-dimensional array of sensing sites having rows of X-storage capacitors and columns of Y-storage capacitors.

3,983,396
APPARATUS FOR ADJUSTING THE FILAMENT CURRENT OF AN X-RAY TUBE

Jan Joseph Mattheus Mulleneers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

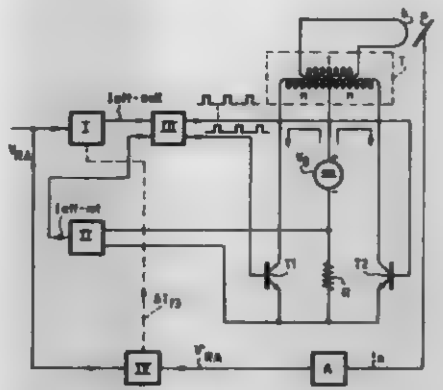
Filed Oct. 7, 1974, Ser. No. 512,916

Claims priority, application Netherlands, Oct. 12, 1973, 7314036

Int. Cl.² H05G *1/34*, *1/30*

U.S. Cl. 250—402 **14 Claims**

5. A filament current supply for an x-ray tube comprising, a function generator responsive to first and second control voltages related to the logarithm of the tube operating current and the logarithm of the tube operating voltage, respectively, and including means for combining said first and second control voltages to derive a first output signal indicative of the desired value of the tube filament current, means responsive to the actual filament current to derive a second output signal determined thereby, and comparison means responsive to said first and second output signals for deriving a third output signal for controlling the amplitude of the tube filament current.



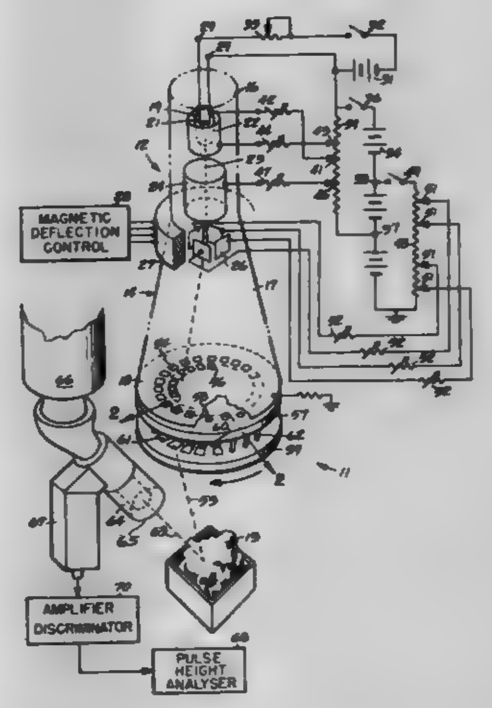
3,983,397
SELECTABLE WAVELENGTH X-RAY SOURCE

Richard D. Albert, 317 Hartford Road, Danville, Calif. 94523

Division of Ser. No. 353,451, April 24, 1973, Pat. No. 3,925,660, which is a continuation-in-part of Ser. No. 251,378, May 8, 1972. This application Dec. 30, 1974, Ser. No. 537,072

Int. Cl.² H05G *1/70*

U.S. Cl. 250—406 **25 Claims**



1. A method of producing X-rays having a selected one of a plurality of predetermined specific wavelength spectrums comprising the steps of:

selectively directing accelerated charged particles to a selected one of a plurality of primary targets each of different composition to produce primary X-rays which include specific wavelengths characteristics of the composition of said selected primary target and also include bremsstrahlung;

directing said primary X-rays to a selected one of a plurality of secondary targets each of different composition, said secondary target being selected to emit said selected predetermined specific wavelength spectrum upon irradiation by said primary X-rays from said selected primary target; and

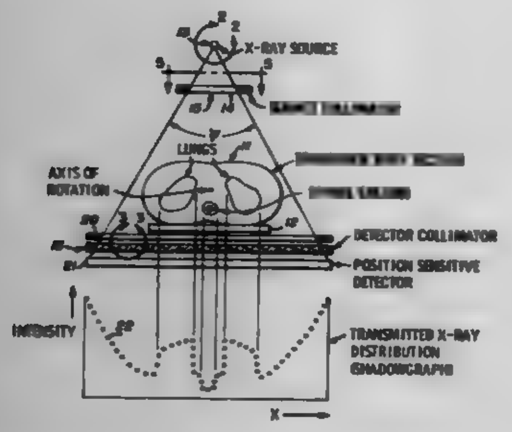
absorbing at least a substantial portion of said bremsstrahlung in at least one of said selected primary target and said selected secondary target.

3,983,398

METHOD AND APPARATUS FOR X-RAY OR γ-RAY 3-D TOMOGRAPHY USING A FAN BEAM

Douglas P. Boyd, Palo Alto, Calif., assignor to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Nov. 29, 1974, Ser. No. 528,024
Int. Cl.² G01N *21/34*
U.S. Cl. 250—445 T 20 Claims


X-RAY SOURCE
AXIS OF ROTATION
LUNGS
DETECTOR COLLIMATOR
POSITION SENSITIVE DETECTOR
INTENSITY
TRANSMITTED X-RAY DISTRIBUTION SHADOWGRAPH
X

1. In a method of penetrating ray 3-D tomography the steps of:
- directing a divergent beam of penetrating radiation through a body to be examined from a source on one side of the body to a detector on the other side of the body;
- effecting relative angular displacement between the divergent beam of penetrating radiation and the body;
- detecting the penetrating radiation that has passed through the body at a number of angularly spaced positions within the angle subtended by the divergent beam as a function of the angular position of the divergent beam to derive sets of detected radiation data representative of a plurality of angularly spaced shadowgrams of absorption or transmission of the penetrating radiation by the body, each of said shadowgrams representing the transmission of the penetrating radiation through the body along an array of divergent paths subtended by the divergent beam, and different ones of said sets of angularly spaced shadowgraphic data corresponding to different sets of intersecting rays of penetrating radiation; and
- reordering the sets of data corresponding to absorption or transmission shadowgraphic data of divergent rays of said penetrating radiation into sets of data corresponding to absorption or transmission shadowgrams of parallel rays of said penetrating radiation.

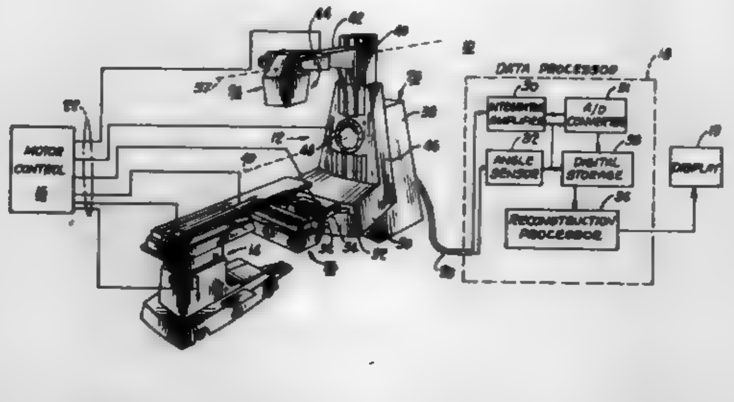
3,983,399

TOMOGRAPHY SYSTEM HAVING AXIAL SCANNING

Jerome R. Cox, Jr., St. Louis, and Donald L. Snyder, Clayton, both of Mo., assignors to Picker Corporation, Cleveland, Ohio

Filed Mar. 18, 1975, Ser. No. 559,412
Int. Cl.² G01M *23/00*
U.S. Cl. 250—445 T 14 Claims

1. Apparatus for repetitiously scanning an interior section of a body with a beam of radiation through coplanar points $[t(k), \theta(n)\ ]$ about an origin in a plane passing through the body, comprising:
- a. a rotatable support assembly;
- b. rotatably mounted radiation source means supported by the assembly for orbit in said plane about an area including said origin, the source being adapted to transmit a beam of radiation along said plane and through a body under examination; said beam being of relatively small cross-sectional area compared to said body,
- c. radiation detector means connected to the assembly and aligned with said rotatably mounted source means for receiving said beam after it passes through such body; and,
- d. data collection means, including said radiation detector means, for measuring intensity values of said beam at values of an angle ϕ of rotation and at values of an angle γ of orbit characterized substantially as $\phi = [(k\Delta t/d)]$ for small values of the angle ϕ and $\gamma = \phi + n\ \Delta\ \theta$, where d represents the distance between the origin and the center of rotation of said rotatable radiation source means, and k, n are integers.

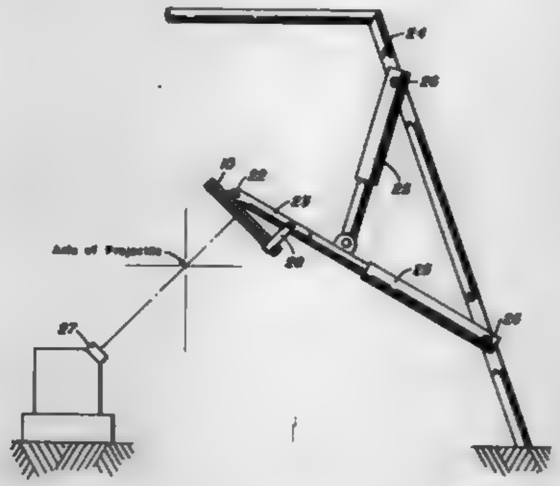


3,983,400

ROTATING CASSETTE HOLDER

William F. Donovan, Aberdeen, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 8, 1975, Ser. No. 575,856
Int. Cl.² G03B *41/16*
U.S. Cl. 250—468 9 Claims



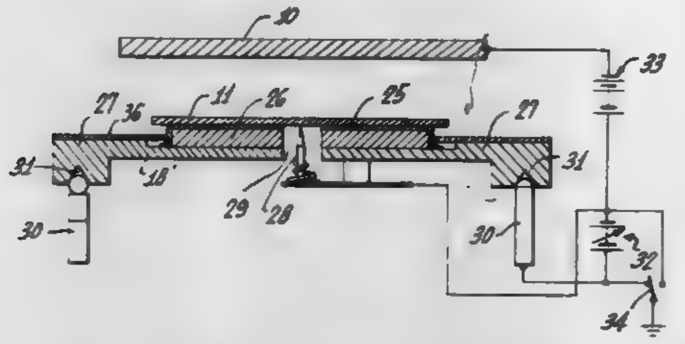
1. An X-ray film holder to be used in the vicinity of a projectile blast for holding film in opposite spaced relation to an X-ray source, the line of sight between the X-ray source and film intersecting a projectile path, the holder comprising:
- means for receiving X-ray film therein;
- a structural support;
- means for mounting the film receiving means to said structural support for rotation about an axis;
- means interconnecting the receiving means and the structural support for holding the receiving means in a particular orientation with respect to said X-ray source and for releasing the receiving means for spinning about said axis when subjected to projectile blast forces;
- said rotatable mounting means being eccentrically mounted with respect to the centroid of the receiving means so that the receiving means responds aerodynamically to blast forces by spinning in an energy dissipating manner thereby minimizing the interval during which said spinning occurs.

3,983,401

METHOD AND APPARATUS FOR TARGET SUPPORT IN ELECTRON PROJECTION SYSTEMS

William R. Livesay, San Diego, Calif., assignor to Electron Beam Microfabrication Corporation, San Diego, Calif.

Filed Mar. 13, 1975, Ser. No. 558,073
Int. Cl.² H01J *37/30*
U.S. Cl. 250—492 A 14 Claims



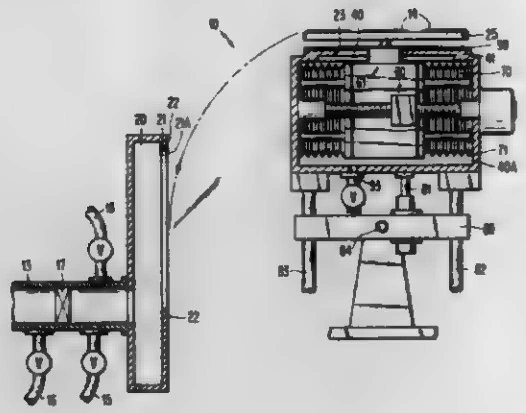
1. For use in an electron image projection system having an electron-emitting cathode, apparatus for supporting a target wafer in an electron-accelerating electric field with minimal distortion of the field, said apparatus comprising:
- a wafer support;
- a dielectric layer overlying said support; and
- means for applying a bias voltage across the thickness of said dielectric layer, and for thereby maintaining substantially uniform and undistorted voltage gradient in the electric field between the cathode and said wafer support.

3,983,402

ION IMPLANTATION APPARATUS

Herbert Lorenz Arndt, Jr.; Demetrios Balderes, both of Wappingers Falls; John Robert Kranik, and Charles John Lucas, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1975, Ser. No. 643,221
Int. Cl.² G01M *23/00*
U.S. Cl. 250—492 A 10 Claims



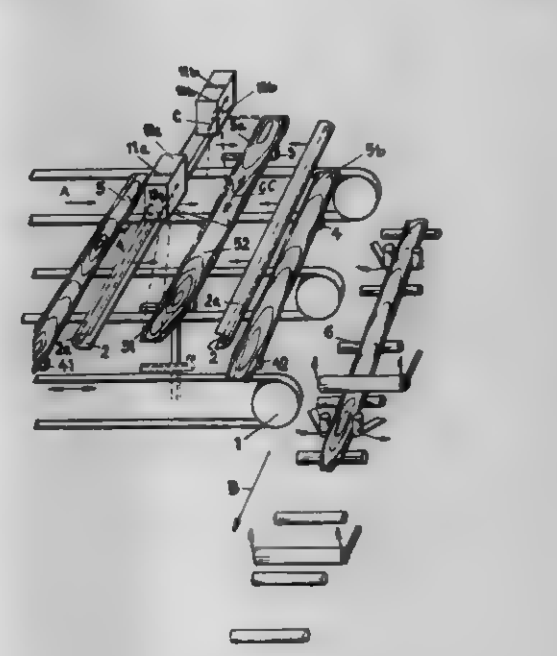
1. Ion implantation apparatus comprising in combination: a disc shaped workpiece holder and drive means to effect both reciprocation and rotation of said holder, a first chamber in which said holder is mounted for reciprocation and rotation, and a second chamber housing said drive means, said first and second chambers being in fluid communication when said apparatus is in operation; means for decreasing the pressure below atmospheric in said first and second chamber at least during rotation and reciprocation of said holder and selectively operable vent means to increase the pressure in at least said first chamber when desired; means to withdraw said workpiece holder from said first chamber and check means to inhibit a pressure increase in said second chamber upon operation of said vent means to thereby maintain a sub-atmospheric pressure in said second chamber upon withdrawal of said workpiece holder.

3,983,403

METHOD AND DEVICE FOR OPTICAL SCANNING OF A SERIES OF TRANSVERSAL DIMENSIONAL VALUES AT A BOARD OR PLANK

Claes Dahlström, Vasteras; Børje Bång, Vaxjo, and Harding Tannerstål, Soderhamn, all of Sweden, assignors to Rema Electronic Ltd., Vasteras, Sweden

Filed June 12, 1975, Ser. No. 586,403
Int. Cl.² G01N *21/22*
U.S. Cl. 250—560 13 Claims



1. A method of optically scanning the dimensions of a plurality of selected transverse zones of a board having two sawn planar and parallel faces, at least on one side said faces being connected by an oblique wane, so that one of the said planar faces is narrower than the other, said method including the step of:
- transporting the board to a scanning station and stopping it there in motionless position;
- illuminating at least a first selected transverse zone of the board from each side where the board has an oblique wane by a beam of light substantially parallel with the planar faces, so that on each existing wane a maximum and on each planar face a minimum of light is reflected;
- receiving the reflected light by at least one objective lens disposed at a location spaced from and opposite the narrower planar face;
- forming by means of said objective lens an optical image of the light reflecting parts of the board on a rectilinear array of photosensitive pulse generators disposed behind the objective lens substantially in the image plane thereof and parallel with the selected transverse zone of the board;
- transmitting the pulses generated by said generators in the array which have been activated by incident light to computer means for processing;
- consecutively moving at least one of the objective lens and the array relative to the motionless board in such a way that an optical image of another selected transverse zone of the board is formed on the array; and
- repeating the scanning and transmitting steps.

3,983,404

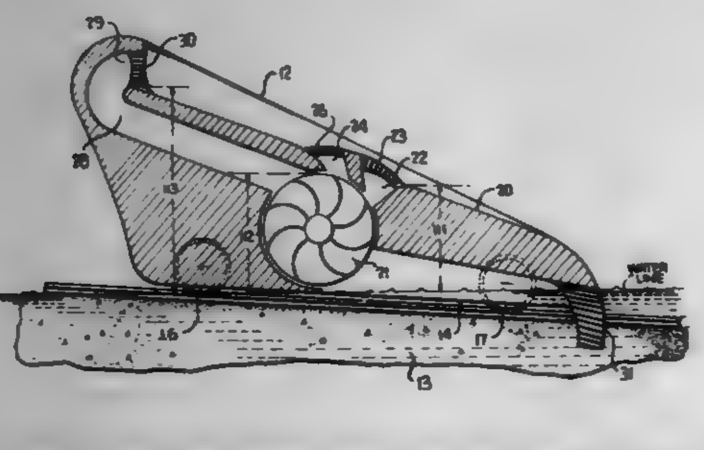
SURF-TURBINE GENERATING SYSTEM

William A. Sherrard, 25 S. Garfield St., Cleona, Pa. 17042

Filed Aug. 22, 1974, Ser. No. 499,559
Int. Cl.² F03B *13/10*
U.S. Cl. 290—53 5 Claims

1. In a generating system for deriving electricity from the kinetic energy in ocean waves, the combination comprising:
- a housing adapted to be positioned in surf proximate the ocean shore;

- a turbine located within said housing and including blades adapted to be rotatably driven by fluid flow about an axis extending generally parallel to the shore line;
- positioning means for controllably moving said housing closer to and further from said shore, whereby to permit said turbine to be maintained entirely above the normal water level and to permit said housing to be impacted by ocean waves for substantially all tide levels;
- an inclined surface of said housing directed upwardly toward said shore and positioned to be impacted by said ocean waves;
- a first intake port defined through said inclined surface at a first level below the height of the average wave in said surf, said intake port being oriented to receive wave water flowing up said inclined surface and to direct wave water flow into driving relationship with said turbine blades such that turbine blades below said axis are driven in the same direction as waves approaching said shore;



- a second intake port defined through said inclined surface at a level adjacent and above said first level, said second intake port being oriented to receive wave water flowing down said inclined surface from above said second level and to direct the received wave water against the turbine blades above said axis in a direction to aid the turbine drive imparted by flow through said first intake part;
- a flow reversing channel having an inlet opening positioned proximate the upper end of said inclined surface to receive wave water overshooting said upper end, said inlet part being substantially higher and further downstream of the wave flow than said turbine, said channel being oriented to direct wave water received by said inlet port back down toward the turbine to impact against turbine blades above said axis in a direction which aids turbine drive imparted by flow through said first and second intake ports; and
- wherein said housing includes a vent opening leading from generally below said turbine for permitting wave water used to drive said turbine to at all times drop back into the ocean beneath said housing.

3,983,405

SHIFT CONTROL SYSTEM FOR MULTI-STAGE TRANSMISSION

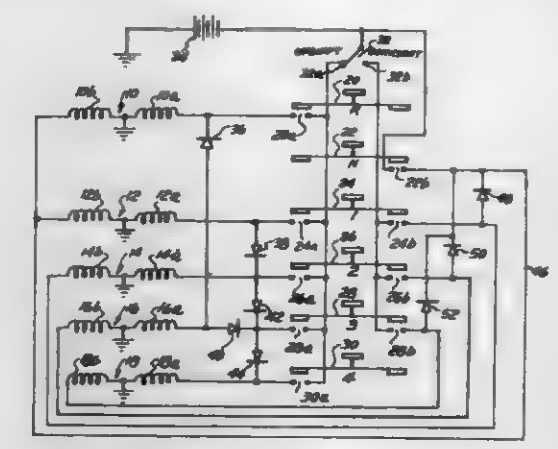
John S. Donovan, 16503 Santa Rosa, Detroit, Mich. 48221

Filed Dec. 19, 1974, Ser. No. 534,287

Int. Cl.² H01H *47/00*

U.S. Cl. 307—10 R **6 Claims**

1. In a transmission having a plurality of stages adapted to be engaged in a serial manner, a shift control system comprising: a plurality of electrically energized two-position actuators, one associated with each transmission stage, each adapted to place its associated stage in either an engaged or non-engaged position; a manually controlled state selector having a plurality of positions equal to at least the number of stages in the transmission; a source of electrical power; a plurality of switches having their conditions controlled by the state selector; a shift direction control switch and electrical conductor means interconnecting said source of electric power, said switches, said shift direction control switch, and said two-position actuators so as to control the engagement and disengagement of the stages of the transmission as a function of the position of the state selector.



3,983,406

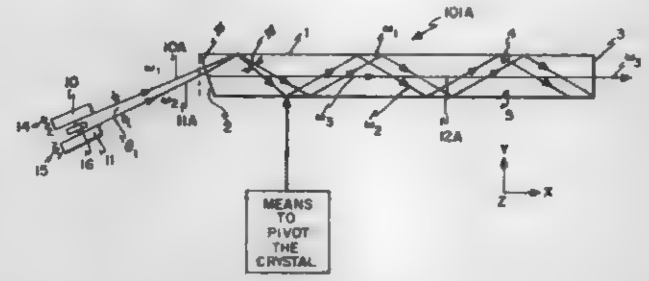
METHOD OF AND APPARATUS FOR GENERATING TUNABLE COHERENT RADIATION BY NONLINEAR LIGHT MIXING IN SYSTEMS HAVING FOLDED NONCOLLINEAR GEOMETRIES

Benjamin Lax, Chestnut Hill; Roshan L. Aggarwal, Burlington, and Neville K. S. Lee, Framingham, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed June 16, 1975, Ser. No. 587,030

Int. Cl.² H03F *7/04*

U.S. Cl. 307—88.3 **41 Claims**



38. Apparatus for generating coherent radiation at a frequency ω_3, that comprises: means providing a first laser beam at frequency ω_1 and a second laser beam at frequency ω_2; means to adjust the two laser beams in a noncollinear converging configuration with an angle θ therebetween; nonlinear medium means operatively disposed to receive the radiation of the two laser beams, the radiation at the frequency ω_1 and the radiation at the frequency ω_2 being mixed in the nonlinear medium means to provide the radiation at the frequency ω_3; means reflecting the two beams along a zig-zag path through said medium means such that mixing is effected by way of folded noncollinear geometry; means for adjusting the angle θ and for adjusting the direction of propagation of the two laser beams into the nonlinear medium means such that the conditions for mixing by folded noncollinear geometry are satisfied, that is, the electric fields of the radiation at the frequency ω_3 are added up in phase.

3,983,407

VOLTAGE-ADJUSTING ELECTRICAL PLUG

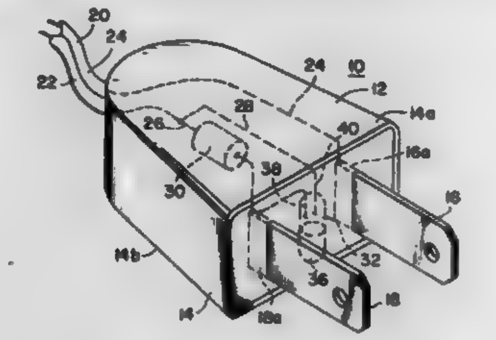
George W. Shott, Fords, N.J., assignor to Lawrence Peska Associates, Inc., New York, N.Y.

Filed July 26, 1974, Ser. No. 492,133

Int. Cl.² H02J *4/00*

U.S. Cl. 307—146 **4 Claims**

1. Means for connecting an electrical load system to a voltage source of a predetermined first voltage level for the operation of said system at optionally one of said first voltage level and a lower second voltage level, said means comprising an electrical plug element comprising a housing member, electrical conductor prongs extending from said housing member, and electrical conductor means electrically connected at one end thereof to said load system, said conductor means comprising separate first and second conductor paths electrically connected to respectively first and second said conductor prongs, said first conductor path comprising parallel first and second circuit paths electrically connected to said conductor prong associated with said conductor path, one of said circuit paths comprising an electrical rectifier element and another of said circuit paths comprising switching means that is open when said plug element is at a first orientation at said voltage source and closed when said plug element at a second such orientation, said switching means being vertically disposed so that said first and second orientations are 180 degrees apart with respect to the principal axis of said housing member.



3,983,408

BUCKET-BRIGADE CIRCUIT

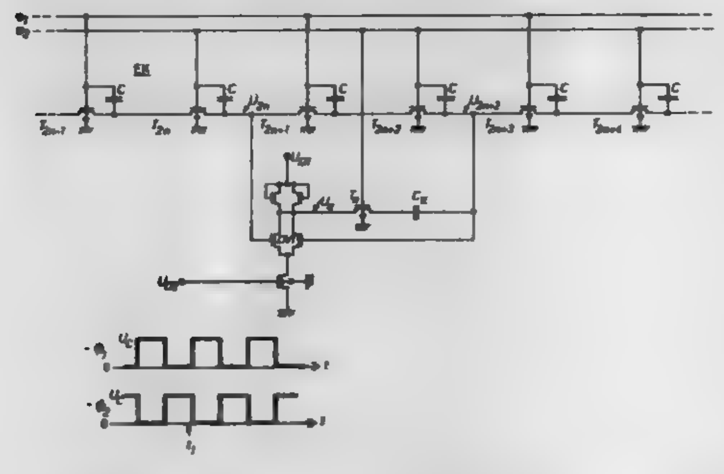
Fritz Gunter Adam, Freiburg, and Klaus Wilmsmeyer, Denzlingen, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Apr. 5, 1974, Ser. No. 458,153

Claims priority, application Germany, Apr. 6, 1973, 2317251; July 14, 1973, 2335988

Int. Cl.² G11C *19/28;* **H03K** *23/02*

U.S. Cl. 307—221 D **23 Claims**



1. A bucket brigade circuit wherein there is provided a plurality of stages which are all of the same kind, each consisting of a transistor and a capacitor coupled between the gate and drain terminal thereof, and coupled together such that the drain terminal of each transistor is connected to the source terminal of the next successive transistor, wherein the gate terminals of even-numbered transistors are controlled by a first square wave clock signal; and the gate terminals of odd-numbered transistors are controlled by a second square wave clock signal of the same frequency having effective pulses lying in the intervals between effective pulses of said first clock signal comprising:

- a first differential amplifier (DV1) having first and second inputs, said first input coupled to the drain of a first transistor (T_{2n}) and said second input coupled to the drain of a second transistor (T_{2n+2}), said first and second transistors each contained in first and second alternate stages of said plurality of stages; said first differential amplifier having first and second outputs, said first output coupled to the drain terminal of one of the transistors in said bucket brigade circuit.

3,983,409

BUCKET-BRIGADE CIRCUIT

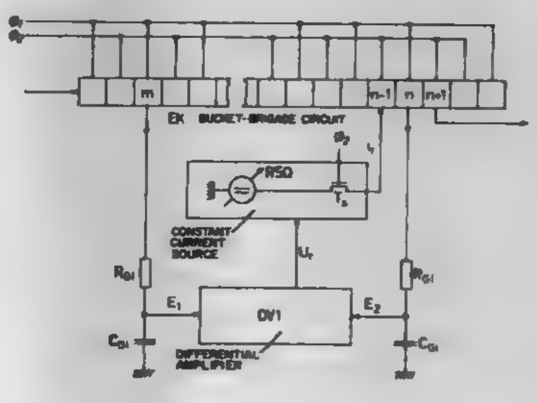
Fritz Gunter Adam, Freiburg, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 27, 1974, Ser. No. 455,438

Claims priority, application Germany, Apr. 6, 1973, 2317252; July 14, 1973, 2335989

Int. Cl.² G11C *19/28;* **H03K** *23/02*

U.S. Cl. 307—221 D **14 Claims**



1. A bucket-brigade circuit wherein there is provided a plurality of stages which are all of the same kind, each consisting of a transistor and a capacitor coupled between the gate and drain terminal thereof, and coupled together such that the drain terminal of each transistor is connected to the source terminal of the next successive transistor, wherein the gate terminals of even numbered transistors are controlled by a first squarewave clock signal and the gate terminals of odd numbered transistors are controlled by a second squarewave clock signal of the same frequency having effective pulses lying in the intervals between effective pulses of said first clock signal comprising:

- a differential first amplifier (DV1) havin first and second inputs, said first input coupled to the drain of a first transistor (T_m) near the input of said bucket-brigade circuit and said second input coupled to the drain terminal of a second transistor (T_n) far from the input of said bucket-brigade circuit, said first and second transistors controlled by the same clock signal, said differential amplifier having first and second outputs, said first output coupled to the drain terminal of one of the transistor preceding said second transistor for applying a compensating signal.

3,983,410

CROSS-TALK REDUCTION IN SEMICONDUCTOR MEMORY DEVICE

Anthony Donald Stalley, Camberley, England, assignor to Quantel Limited, England

Filed June 2, 1975, Ser. No. 583,145

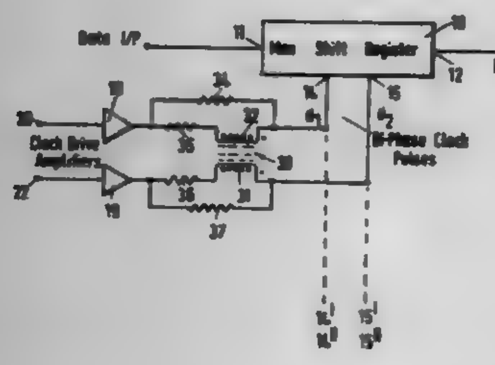
Claims priority, application United Kingdom, June 6, 1974, 25076/74

Int. Cl.² G11C *19/00;* **H03B** *1/00;* **H03K** *5/00*

U.S. Cl. 307—221 R **5 Claims**

1. In a memory circuit comprising a semiconductor shift register having first and second clock inputs and first and second clocking means connected with said clock inputs for effecting two phase clocking of the digital information through said shift register; the provision of apparatus comprising transformer means having a first winding connected in series with said first clocking means and said first clock input and a second winding connected in series with said second

clock input, said windings being connected in phase with each other to induce a controlled amount of cross-talk in each of said two phases in the opposite sense to cross-talk generated by capacitive components present in said shift register whereby said induced cross-talk substantially cancels out said capacitive generated cross-talk.



3,983,411
FREQUENCY DIVIDER

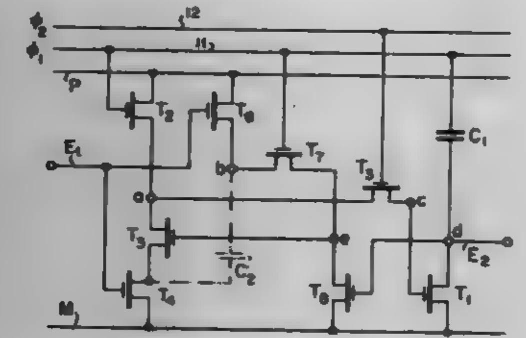
Jakob Lüscher, Carouge-Geneva, and Andreas Rusznyak, Chene-Bougeries, both of Switzerland, assignors to Ebauches S.A., Neuchatel, Switzerland

Filed May 27, 1975, Ser. No. 580,569

Claims priority, application Switzerland, May 29, 1974, 7368/74

Int. Cl.² H03K *23/30*

U.S. Cl. 307—225 C **4 Claims**



1. A binary frequency-divider stage comprising:

a plurality of field-effect transistors of one and the same conductivity type each having a pair of channel electrodes and a capacitively chargeable insulated gate, said field-effect transistors including a first, a second, a third, a fourth, a fifth, a sixth, a seventh and an eighth transistor;

a first and a second bus bar connected across a supply of direct current;

a first control lead connected to receive a train of first control pulses;

a second control lead connected to receive a train of second control pulses of the frequency of said first control pulses and oppositely phased with reference thereto;

an amplifier including said first transistor and a capacitor in series therewith, said capacitor being connected to said first control lead and forming a junction with one channel electrode of said first transistor, the other channel electrode of said first transistor being connected to said first bus bar;

an input lead for a sequence of incoming pulses of a cadence to be halved, said incoming pulses substantially coinciding with respective second control pulses;

an output lead tied to said junction;

a first charging circuit including said second and third transistors serially connected between said second bus bar and the gate of said first transistor for controlling the charging of the gate capacitance thereof, said second and third transistors having their gates respectively connected to said first and second control leads for conduction in the presence of said first and second control pulses;

a normally blocked discharge circuit including said fourth and fifth transistors serially connected between said first bus bar and the gate of said first transistor, said fourth transistor having its gate connected to said input lead for conduction in the presence of an incoming pulse; and

a second charging circuit including said sixth and seventh transistors serially connected between said second bus bar and the gate of said fifth transistor, said sixth and seventh transistors having their gates respectively connected to said input lead and to said first control lead whereby said fifth transistor is rendered conductive by an incoming pulse and an immediately following first control pulse to condition said normally blocked discharge circuit for discharging the gate capacitance of said first transistor upon the occurrence of the next incoming pulse with resulting generation of an outgoing pulse on said output lead upon the occurrence of the next-following first control pulse applied to said capacitor;

said eighth transistor being connected between said first bus bar and the gate of said fifth transistor for cutting off said fifth transistor by discharging the gate capacitance thereof upon the generation of said outgoing pulse, the gate of said eighth transistor being connected to said output lead.

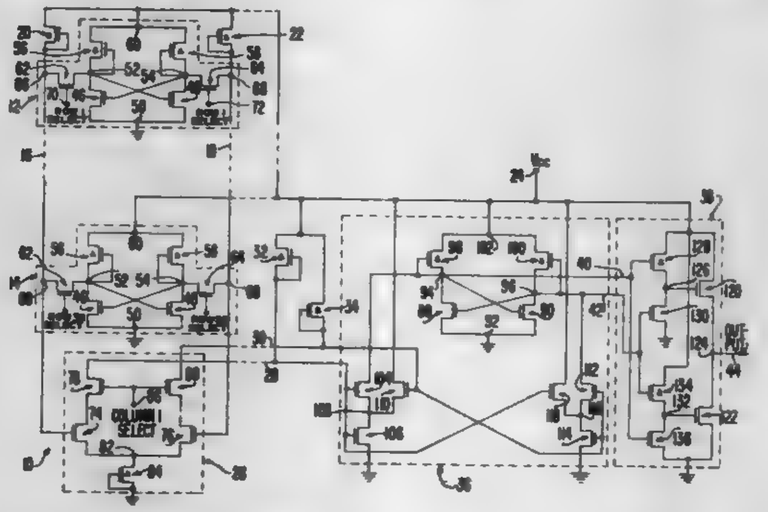
3,983,412
DIFFERENTIAL SENSE AMPLIFIER

Gregory Roberts, and Roger Badertscher, both of Cupertino, Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed July 2, 1975, Ser. No. 592,706

Int. Cl.² H03K *5/20, 3/286, 3/353;* **G11C** *11/40*

U.S. Cl. 307—235 F **6 Claims**



1. A structure comprising:

a bistable amplifier means for sensing two signals at differing voltages, said bistable amplifier means possessing a first node and a second node; and,

differential pull-down means coupled to said first and second nodes for selectively latching said bistable amplifier means, said differential pull-down means comprising a selected voltage supply means; and, six enhancement mode MOSFET's 1, 2, . . .*i*, ...6 wherein *i* is an integer from 1 to 6 and the ith MOSFET has an ith gate electrode, an ith drain and an ith source, said first drain coupled to said first node, said second source coupled to ground, said third drain coupled to said selected supply voltage supply means;

said first source, said second drain and said third source being coupled together, said fourth drain being coupled to said second node, said fifth source coupled to ground, said sixth drain being coupled to said selected voltage supply means;

said fourth source, said fifth drain and said sixth source coupled together, said first, second and sixth gate electrodes being coupled together to form a first differential input signal terminal;

said third, fourth and fifth gate electrodes being coupled together to form a second differential input signal terminal, whereby when two signals at differing voltages are applied to said first and second terminals respectively, selective latching of said bistable amplifier means is accomplished.

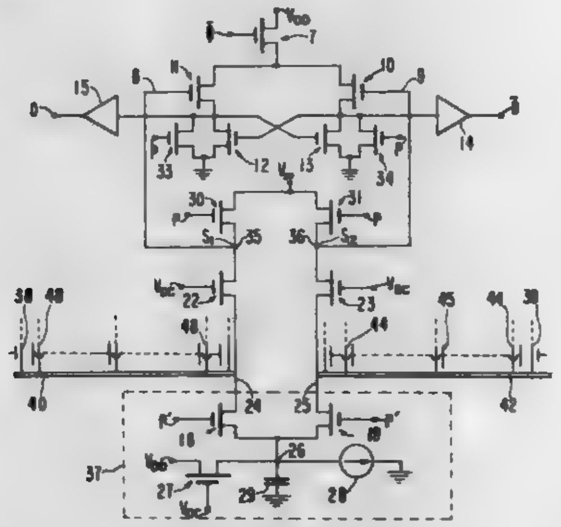
3,983,413
BALANCED DIFFERENTIAL CAPACITIVELY DECOUPLED CHARGE SENSOR

Kamleshwar C. Gunsagar, Campbell, and John P. Guadagna, San Jose, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed May 2, 1975, Ser. No. 574,185

Int. Cl.² H03K *5/20;* **H01L** *29/78;* **G11C** *19/28*

U.S. Cl. 307—235 F **8 Claims**



1. A balanced differential capacitively decoupled charge sensor for detecting small amounts of charge, comprising:

balanced differential sensing means adapted to receive charge representing data and charge representing a reference value, said differential sensing means comparing said data charge and said reference charge to determine the logic state represented by said charge representing data;

a pair of capacitance decoupling transistors, the respective drains of each of said pair of capacitance decoupling transistors being electrically coupled to the respective inputs of said differential sensing means;

a matched pair of charge output nodes electrically coupled to the respective sources of said capacitance decoupling transistors and adapted to receive, respectively, data charge and reference charge; and

charging means for biasing and resetting both of said charge output nodes so that said capacitance decoupling transistors are functioning in a high transconductance mode when data charge and reference charge are received.

3,983,414
CHARGE CANCELLING STRUCTURE AND METHOD FOR INTEGRATED CIRCUITS

Kenneth R. Stafford, and John P. Guadagna, both of San Jose, Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Feb. 10, 1975, Ser. No. 548,302

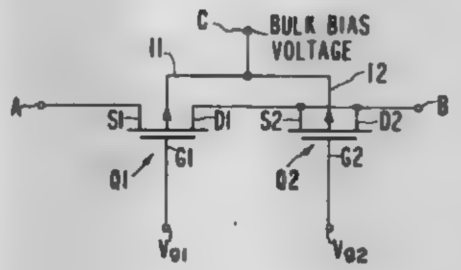
Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.² H03K *17/16, 17/60*

U.S. Cl. 307—251 **3 Claims**

3. The method of operating a transistor switching circuit comprising a first MOS switching transistor and a second MOS charge cancelling transistor wherein said second MOS charge cancelling transistor possesses a source and drain region each connected to the drain of said first MOS switching transistor, comprising the steps of:

1. applying a first gate voltage to the gate of said first MOS transistor; and
2. simultaneously applying a second gate voltage, the complement of said first gate voltage, to the gate of said second MOS transistor thereby to cancel any charge induced by said first gate voltage in the drain of said first MOS transistor by a charge equal in magnitude but opposite in polarity induced in the source and drain regions of said second MOS transistor.



3,983,415
SEMICONDUCTOR SWITCHING CIRCUIT

Herbert F. Nichols, San Jose, Calif., assignor to Joel Bauman, San Francisco, Calif.

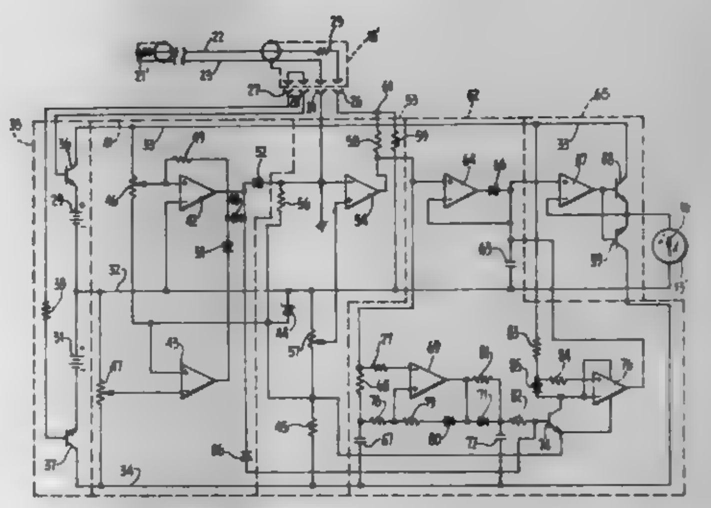
Division of Ser. No. 295,448, Oct. 6, 1972, Pat. No. 3,851,528.

This application July 29, 1974, Ser. No. 492,688

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 20, 1976

Int. Cl.² H03K *17/60;* **G05F** *3/00*

U.S. Cl. 307—255 **2 Claims**



1. A semiconductor switching circuit for simultaneously connecting the separate terminals of two dc potentials respectively of positive and negative polarity to a load with a single pole of a switch comprising a load; a terminal providing negative potential; a terminal providing positive potential; a pair of transistors, one of which is a PNP transistor having its emitter connected to said terminal providing positive potential and its collector connected to said load, and the other of which is a NPN transistor having its emitter connected to said terminal providing negative potential and its collector connected to said load; a resistance; and a single pole of a switch, the bases of said transistors being connected to one another through said resistance and said single pole of a switch whereby the closing of said switch results in simultaneous current flow through said bases to turn said transistors on simultaneously for the simultaneous application of both of said potentionals to said load.

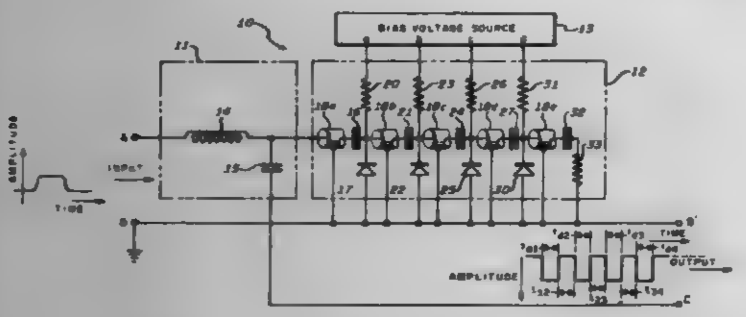
3,983,416
SHORT PULSE SEQUENTIAL WAVEFORM GENERATOR

Harry M. Cronson, Lexington, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 30, 1974, Ser. No. 537,237

Int. Cl.² H03K *4/00, 3/33*

U.S. Cl. 307—260 **9 Claims**



1. An apparatus for providing a sequence of short pulses in response to an applied input pulse of a predetermined pulse width and a predetermined rise time, said apparatus comprising

transmission line means for dispersionless propagation including a plurality of sections and a terminating section,

a plurality of stages each including a section of said transmission line means and semiconductor means connected in shunt across said section of said transmission line means wherein each of said semiconductor means stores charge therein when forward biased and produces a first step voltage in response to an incident step voltage and produces a second step voltage when said stored charge is depleted,

bias voltage means coupled to each of said semiconductor means for providing forward bias voltage to each of said semiconductor means,

impedance means coupled to said terminating section of said transmission line means, and

input means coupled to said transmission line means for coupling said applied input pulse to the first of said plurality of stages and each stage produces an output pulse formed from said first and second step voltage thereby forming a sequence of short pulses wherein the number of short pulses is proportional to the number of semiconductor means in said plurality of stages, the sum of the pulse widths of said short pulses in the sequence is less than the pulse width of the applied input pulse and the rise time of each of said short pulses is less than the rise time of the applied input pulse.

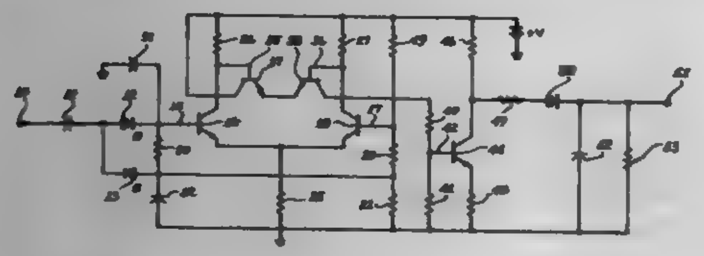
3,983,417
RF LEVEL SENSING CIRCUIT

William A. Rheinfelder, Phoenix, Ariz., assignor to Alpha Engineering Corporation, Phoenix, Ariz.

Continuation-in-part of Ser. No. 553,924, Feb. 28, 1975. This application Apr. 17, 1975, Ser. No. 569,107

Int. Cl.² H03K *5/00, 1/14*

U.S. Cl. 307—261 **6 Claims**



1. An rf level sensing circuit comprising:
- a. an input terminal and an output terminal;
- b. a back diode having one side thereof connected to said input terminal;
- c. a voltage supply source;
- d. a differential amplifier having a pair of inputs and an output and including a pair of transistors, each having their emitter-collector circuits connected in parallel, the base of each transistor forming one of said inputs, the base of one of said transistors connected to said input terminal;
- e. a voltage divider comprising first, second and third resistors connected in series across said voltage supply source;
- f. means connecting the other side of said diode to the junction of said second and third resistors;
- g. means connecting the base of the other of said transistors to the junction of said first and second resistors; and
- h. means connecting the output of said differential amplifier to said output terminal.

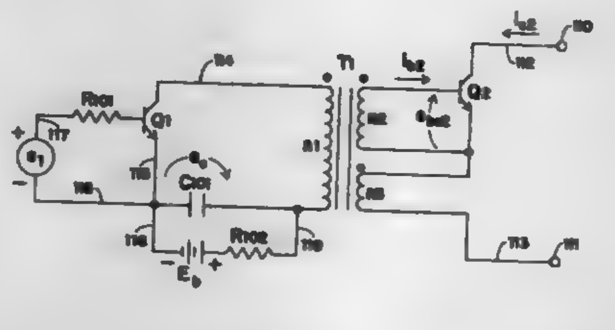
3,983,418
DRIVE CIRCUIT FOR POWER SWITCHING DEVICE

Kenneth A. Wallace, Franklin, Ohio, assignor to North Electric Company, Galion, Ohio

Filed May 29, 1975, Ser. No. 581,914

Int. Cl.² H03K *17/00*

U.S. Cl. 307—270 **4 Claims**



1. In a drive circuit for a power switching device, said device having a control electrode and first and second output electrodes, means for controlling the conduction state of said device comprising;

transformer means including a primary winding, a first transformer secondary winding connected between said control electrode and said first output electrode, a second transformer secondary winding connected between said first output electrode and a path for carrying current flowing between said first and second electrodes, said first and second windings mutually poled to provide regenerative coupling therebetween,

control switch means having a first switching state and a second switching state, and biasing means connected in series with said control switch means across said primary winding of said transformer means,

said control switch means operative, in said first switching state, to enable said biasing means to initiate, via said transformer means, turn-off of said power switching device, to provide a reverse bias to said control electrode, and to reset the transformer core flux operating point, and said control switch means further operative, in said second switching state, to render, via said transformer means, said power switching device conductive by substantially isolating said biasing means from said primary winding.

3,983,419
ANALOG WAVEFORM TRANSDUCING CIRCUIT

Frank F. Fang, Yorktown Heights, N.Y., assignor to International Business Machines - IBM, Yorktown Heights, N.Y.

Filed Dec. 31, 1974, Ser. No. 537,803

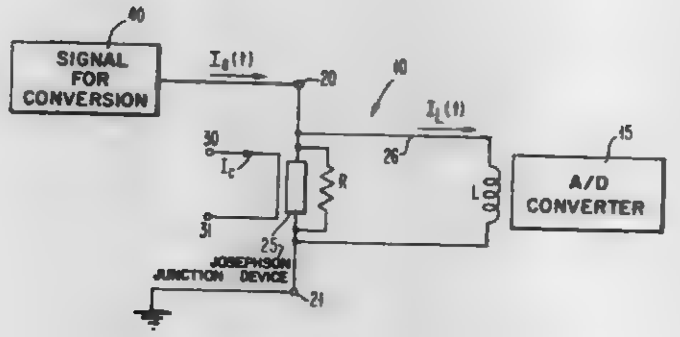
Int. Cl.² H03K *3/38;* **G11C** *27/02;* **G08C** *9/00*

U.S. Cl. 307—277 **22 Claims**

1. An analog waveform transducing circuit including at least a pair of circuits responsive to an analog signal input in the form of a current for transferring at least a predetermined portion of said input current to said second circuit comprising:

a first superconducting circuit including a Josephson device connected between input and output terminals,

a second superconductive circuit connected in parallel with said first circuit and having an inductance greater than that of said first circuit,



an analog current signal source,

means for applying said analog signal to said input terminal, and

means coupled to said device for switching said device to transfer at least a portion of said analog signal to said second circuit.

3,983,420
SIGNAL GENERATOR CIRCUIT

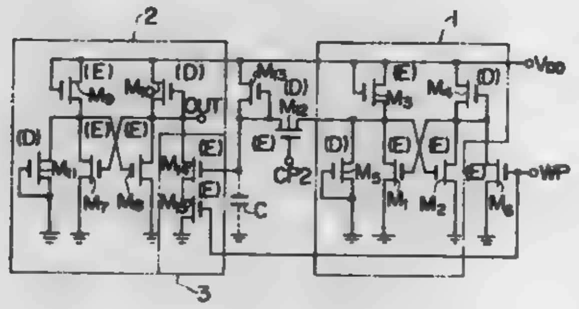
Tadao Kikuchi, Hinode, Japan, assignor to Hitachi, Ltd., Japan

Filed Aug. 28, 1975, Ser. No. 608,736

Claims priority, application Japan, Sept. 4, 1974, 49-100926

Int. Cl.² H03K *3/26*

U.S. Cl. 307—279 **7 Claims**



1. A signal generator circuit characterized by comprising at least first and second flip-flops which are first stabilized to one value when a power supply is energized, memory means, a logical product circuit, and first and second pulse signals which arrive periodically and which differ in phase, said first pulse signal being applied to an inversion input terminal of said first flip-flop, an inversion output signal of this flip-flop being stored in synchronism with said second pulse signal by said memory means provided at one input of said logical product circuit, said first pulse signal being applied to the other input of said logical product circuit, an output thereof being applied to an inversion input terminal of said second flip-flop, an inversion output signal of said second flip-flop being made an output signal.

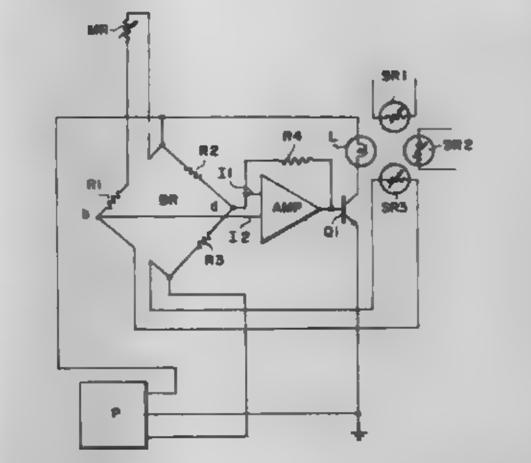
3,983,421
REMOTE AUDIO ATTENUATOR

Mario G. Yogore, Rosemead, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jan. 24, 1975, Ser. No. 543,819

Int. Cl.² H03K *3/42*

U.S. Cl. 307—311 **2 Claims**



1. An electronic control circuit for the remote regulation of a first photo-resistor which is otherwise electrically isolated from the said control circuit, said control circuit fitted with feed back means to compensate for drift of the said first photo-resistor, comprising

an electronic control circuit incorporating an amplifier, the input of which is regulated by a resistance bridge, and the output of which is connected to a light source in the form of an electric light,

said resistance bridge fitted with a variable control resistor in a first arm of the bridge and a second photo-resistor in a second arm of the bridge,

said first and second photo-resistors being of matched characteristics and physically located to be illuminated by the said electric light,

said first and second arms of the resistance bridge being joined to resistors connected as the third and fourth arms of the resistance bridge such that the output of the connected amplifier is constant when the resistance of the said first arm is in a constant fixed ratio to the resistance of the said second arm of the resistance bridge, with

a change of the resistance of the said second arm causing the amplifier to vary its output signal to the connected electric light to alter the illumination of said light and to consequently alter the resistance of the second photo-resistor so as to cancel said change of resistance such that

the resistance of the first photo-resistor remains in the said constant fixed ratio to the resistance of the said variable control resistor of the said first bridge arm, despite any common drift of resistance value in each of the matched photo-resistors with respect to a constant output of light from the electric light.

3,983,422
DETECTOR HAVING A CONSTANT FALSE ALARM RATE

Alexander M. Nicolson, Concord, and Richard M. Mara, Tewksbury, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 16, 1975, Ser. No. 568,644

Int. Cl.² H03K *1/12*

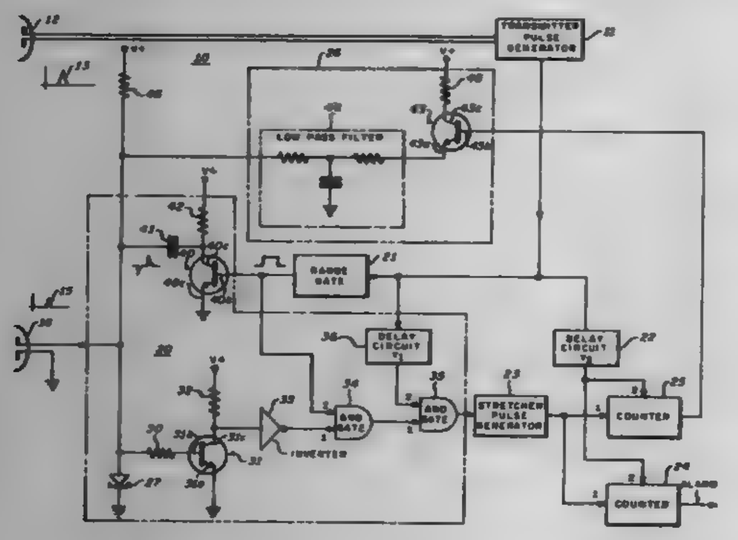
U.S. Cl. 307—322 **12 Claims**

1. In a constant false alarm rate detector for use with a signal source which provides input signals at known repetition rates within a useful frequency band to said detector in an environment where noise is present, said detector including a range gate generator, a long time constant feedback circuit and an improved variable threshold means comprising

bistable circuit means having a first terminal coupled to an output terminal of said long time constant feedback circuit, a variable threshold, and first and second stable states for switching from said first stable state to said second stable state in response to noise or input signals of an amplitude greater than the instantaneous value of the variable threshold,

control circuit means coupled between said range gate generator and said first terminal of the bistable circuit means for setting the bistable circuit means to said first stable state and for regulating the period of time during which the detector is sensitive, and

logic circuit means coupled to said control circuit means, said first terminal of said bistable circuit means and an input terminal of said long time constant feedback circuit for providing an output signal in response to the bistable circuit means switching from said first stable state to said second stable state during the period of time said detector is sensitive.



3,983,423

THERMIONIC CONVERTER

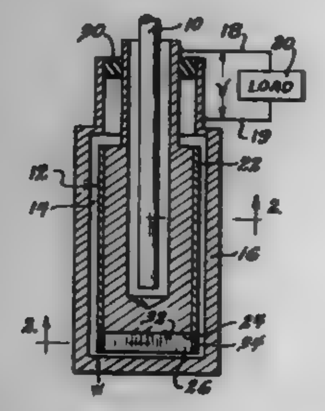
Ned S. Rasor, Sunnyvale, and Edward J. Britt, Cupertino, both of Calif., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 9, 1975, Ser. No. 539,746

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.^{2} H01J *45/00*

U.S. Cl. 310—4 R **7 Claims**



1. A gas-filled thermionic converter for generating a current through a load in response to heat applied to the converter from a heat source, comprising, a collector, an emitter coupled to said collector by the load and having a main emitter surface region so positioned with respect to said collector to form a main gap therebetween and having an auxiliary emitter surface region in direct electrical and thermal contact with said main emitter region so that said regions are at about the same temperature, said auxiliary emitter region being so positioned with respect to said collector to form an auxiliary gap therebetween partially isolated from said main gap with access allowed therebetween, and an ionizable gas within said auxiliary gap and said main gap capable of migrating therebetween, with sufficient heat from the heat source applied to said emitter to cause the emission of electrons therefrom, the work function of said auxiliary emitter region being of such value with respect to the sum of the work function of said collector and the voltage across the load that an ignited discharge occurs between the auxiliary emitter and collector in said auxiliary region and the work function of said main emitter region being of sufficient value with respect to the sum of the work function of said collector and the voltage across the load that an unignited discharge occurs in said main gap simultaneously with the ignited discharge in said auxiliary gap, said ignited discharge ionizing a portion of said ionizable gas so that the resulting ionized gas migrates to said main gap to sustain said unignited discharge.

3,983,424

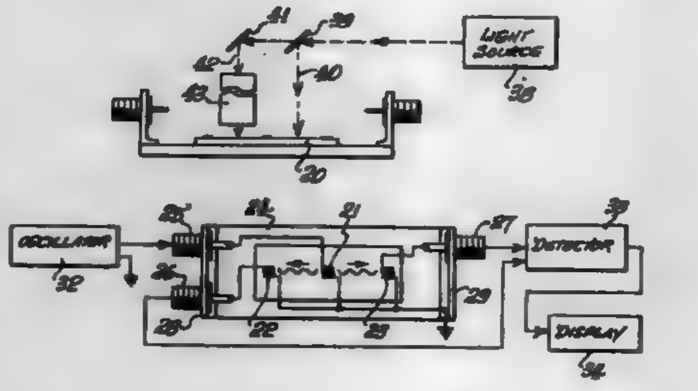
RADIATION DETECTOR EMPLOYING ACOUSTIC SURFACE WAVES

Joel H. Parks, Los Angeles, Calif., assignor to The University of Southern California, Los Angeles, Calif.

Filed Oct. 3, 1973, Ser. No. 403,096

Int. Cl.^{2} G01K *11/22;* **H01L** *41/10*

U.S. Cl. 310—8.1 **12 Claims**



1. In a radiation detector, the combination of:

an acoustic surface wave transmission line including a substrate with a first surface and having first and second acoustic transducers directly mounted on said first surface for transmitting an acoustic surface wave at said first surface from the first transducer to the second transducer with the penetration of the acoustic wave into the substrate being in the order of the wavelength of the acoustic wave;

first means for coupling an electrical signal source operating in the megahertz range to said first transducer;

second means for detecting change in phase of the wave received at said second transducer; and

means for directing a beam of radiation onto said first surface between said transducers, with the phase change at the surface of said substrate between said transducers being a function of the temperature change at said first surface resulting from incident radiation at said first surface.

3,983,425

TUNED PLATE ACOUSTIC PROJECTOR WITH PIEZOELECTRIC DRIVER

Michael L. Barlow, Silverdale, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 15, 1975, Ser. No. 613,715

Int. Cl.^{2} H01L *41/08*

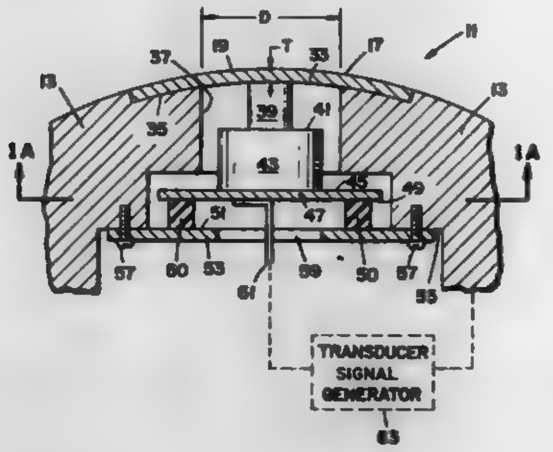
U.S. Cl. 310—8.7 **8 Claims**

1. An acoustic projector comprising:

a. a plate having a lower surface an an upper surface;

b. said plate having the periphery supported by a structure and an unsupported central section;

c. said upper surface being exposed to an acoustic transmitting medium;



d. motion generating means for imparting an upward motion to the lower surface of the unsupported central section of said plate;

e. said plate having a predetermined thickness; whereby

f. said thickness is selected such that the ourwardly radiating velocity of the flexural waves imparted by said means is about equal to the velocity of sound of said medium.

3,983,426

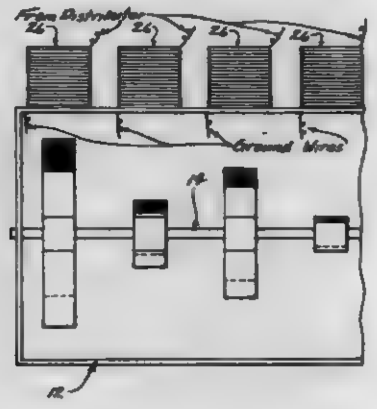
METHOD AND MEANS OF UTILIZING MAGNETISM TO ACHIEVE ROTATION OF A DRIVE SHAFT

Charles L. Kilmer, 2221-23 Jones St., Omaha, Nebr. 68102

Filed Apr. 28, 1975, Ser. No. 571,999

Int. Cl.^{2} H02K *37/00*

U.S. Cl. 310—46 **4 Claims**



1. A device of the class described, comprising,

a support means,

a drive shaft rotatably mounted on said support means,

a plurality of magnet supports secured to said drive shaft in a spaced-apart and staggered relationship,

each of said supports having a plurality of radially spaced permanent magnets operatively secured thereto,

each of said magnets having a positive pole on one side thereof and a negative pole on the other side thereof, the magnetic north-south polar axis of each magnet aligned substantially radially to said drive shaft axis,

a plurality of air-core solenoids mounted on said support means in a spaced-apart relationship and being positioned relative to said supports whereby the permanent magnets on one of said supports will rotate past one of said solenoids in close proximity thereto, said solenoids being disposed longitudinally with respect to the longitudinal axis of said shaft,

said staggered relationship of said supports causing the permanent magnets on supports to be radially offset with respect to each other,

a distributor means operatively mechanically connected to said drive shaft whereby rotation of said drive shaft will cause said distributor means to be actuated,

means electrically connecting said distributor means to a source of electrical energy,

and means electrically connecting said distributor means with said solenoids whereby the actuation of one of said solenoids will cause the flux emanating from one side of the core of the solenoid to repel one of said magnets on said one support and whereby the flux emanating from the other side of the core of said solenoid will simultaneously attract one of said magnets on said one support to impart rotation to said drive shaft.

3,983,427

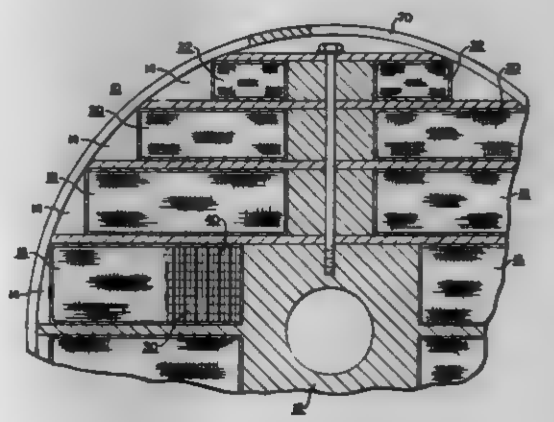
SUPERCONDUCTING WINDING WITH GROOVED SPACING ELEMENTS

Asim Ulke, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 14, 1975, Ser. No. 577,517

Int. Cl.^{2} H02K *1/32*

U.S. Cl. 310—61 **12 Claims**



1. In combination,

a rotor member of a dynamoelectric machine, said rotor member including a core having slots in which a number of conductor turns are convolutely wound to form a plurality of coils, said coils being electrically connected one to another to constitute a rotor winding, each of said coils having a plurality of conductor layers; and,

a spacing element disposed between adjacent conductor layers in each coil and extending therethrough in a convolute relation therewith, said spacing element comprising:

rib portions which engage and space apart confronting surfaces of conductor turns of adjacent conductor layers; and,

non-contacting rib portions disposed intermediate said contacting rib portions which in combination with said contacting rib portions and the confronting surfaces of said conductors define a plurality of channels to permit passage of a cooling fluid through said coils, said channels being separated one from another by said non-contacting rib portions, each said channel providing a continuous, discrete flow path through said channel and having an inlet port to receive the cooling fluid and an outlet port to discharge the cooling fluid after it has passed through said coil.

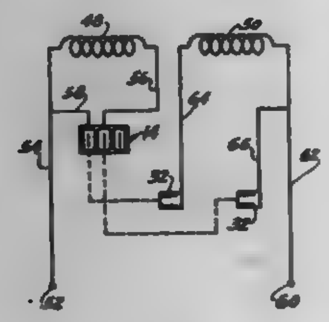
3,983,428
INTERCHANGEABLE CONNECTOR MEANS FOR ELECTRIC MOTOR OPERATION ON EITHER OF TWO SUPPLY VOLTAGES

Richard C. Bitsch, and Lawrence E. McCrary, both of St. Louis, Mo., assignors to Emerson Electrical Co., St. Louis, Mo.

Filed June 10, 1974, Ser. No. 477,686

Int. Cl.² H02K *11/00*

U.S. Cl. 310—71 **1 Claim**



1. In an electric motor having a casing and a stator winding therein,

means for interchangeably connecting two portions of said winding in parallel or in series across a power source comprising;

a first main lead for connecting one end of a first winding portion to one side of a power source, and

a second main lead for connecting one end of a second winding portion to the other side of the power source,

a receptacle mounted in an aperture in a wall of said casing comprising;

a floor substantially closing said aperture,

four outwardly extending side walls forming a rectangle, and

two partitioning walls forming a series of three open end compartments,

three terminals fixed in said receptacle floor each having a portion extending interiorly and a portion extending exteriorly in one of said compartments and arranged for cooperation with a push-fit lead connector,

a first internal lead connecting said one end of said first winding portion to said interiorly extending portion of a first terminal, and

a second internal lead connecting the other end of said first winding portion to said interiorly extending portion of a second terminal,

first and second internally and externally extending leads connected at their internal ends to the opposite ends of said second winding portion and each having a push-fit connector at their exterior end for engagement with said exterior extending portion of said terminals,

a cover member comprising four side walls forming a rectangle arranged for push-fit assembly over said receptacle side walls in either of two end-for-end positions, and said cover member having a bottom wall portion enclosing one end compartment of the series when assembled in said one position and enclosing the other end compartment when assembled in said other position.

3,983,429
ADJUSTABLE MOTOR BASE

William D. Allardice, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 8, 1975, Ser. No. 575,889

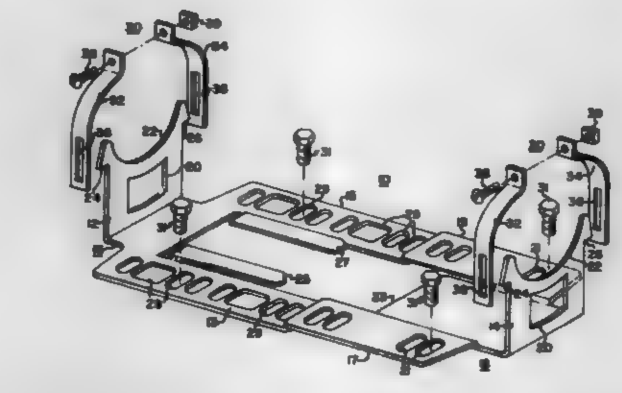
Int. Cl.² H02K *5/00*

U.S. Cl. 310—91 **7 Claims**

1. In combination, a dynamoelectric machine and a mounting base therefore, said dynamoelectric machine including an axially projecting end bell having first and second hub mounting portions;

said mounting base including first and second interlocking base portions slidably engaged one with another to permit expansion and contraction of the axial length of said mounting base, and a yoke carried by one of said interlocking base portions;

said first base portion having two shoulder members projecting therefrom and a tongue portion disposed between said shoulder members; and, said second base portion having two shoulder members projecting therefrom and two channel members disposed between said shoulder members, said shoulder members of said first and second base portions being arranged in an overlapping relationship and said tongue portion being engaged in sliding contact with said channel members;



the axial length of said mounting base being adjustable to permit alignment of said yoke with a selected one of said hub mounting portions; and,

means securing said yoke to said selected one of said hub mounting portions.

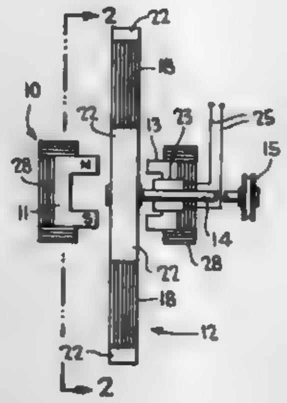
3,983,430
ELECTRIC GENERATOR

Gerald T. Howard, Rte. 7, Box 606, Augusta, Ga. 30906

Continuation-in-part of Ser. No. 463,484, April 24, 1974, abandoned. This application Sept. 11, 1975, Ser. No. 612,322

Int. Cl.² H02K *21/38*

U.S. Cl. 310—155 **4 Claims**



1. An electric generator comprising:

at least one stationary magnet and at least one stationary core of non-permanent magnetic material provided with induction field coil windings and disposed in alignment with said magnet with poles facing one another,

a magnetic flux field suppressor movably mounted between said magnet and said core, said suppressor comprising a rotary circular disc having first portions forming alternate sectors of stacked non-permanent magnetic sheets interleaved with thin layers of non-magnetic material,

the remaining portions of said disc being sectors of non-magnetic material, said sectors being in alignment with said facing poles,

means rotating said disc so that, upon rotation of said disc, the magnetic flux lines passing between said aligned magnet and core pass through said remaining portions and

through said core and back to said magnet and are redirected and focused by said first portions as said flux lines pass along said sheets to thereby alternately induce and electric voltage and current in said coil as the flux field of said magnet is alternately allowed to pass through said core via said remaining portions of said disc during rotation thereof.

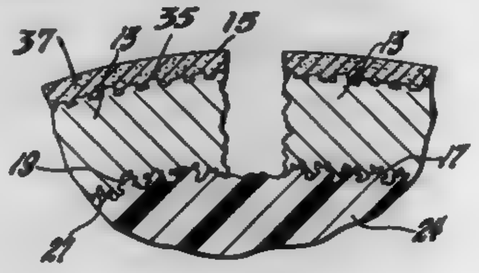
3,983,431
LOW VOLTAGE ALUMINUM COMMUTATORS

James Lloyd Hancock, Fairborn, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1974, Ser. No. 535,348

Int. Cl.² H02K *13/04*

U.S. Cl. 310—233 **2 Claims**



1. A wear-resistant commutator particularly suitable in electrical machinery applications where the applied or produced voltage is as low as 3 volts, said commutator comprising:

a. a molded resinous electrically nonconductive spool; and

b. a plurality of etched and electrically conductive aluminum alloy bars, each electrically insulated from all others, uniformly spaced around and securely bonded to the periphery of said spool, the etched surfaces of said bars having thereon a tenacious and conductive oxide layer having a thickness in the range of from about 500 to about 1,500 angstroms, wherein the surface of said layer is characterized by many small irregular cavities which on the inner surfaces of said bars contain the resinous spool material thereby forming a strong interlocking mechanical bond between said bars and said spool and which cavities on the outer surfaces of said bars are filled with a soft conductive material thereby increasing the electrical conductivity of said bars.

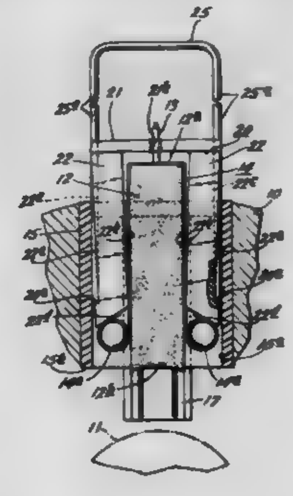
3,983,432
BRUSH HOLDER ASSEMBLY

Alexander Rankin, 1720 Penns Lane, Ambler, Pa. 19002

Filed Apr. 22, 1975, Ser. No. 567,720

Int. Cl.² H02K *13/00*

U.S. Cl. 310—242 **9 Claims**



1. In an electric maching having a housing, an armature rotatable in said housing, at least one brush engaging the armature, and spring means urging said brush into engagement with said armature, the improvement comprising:

guideway means in said housing providing an access opening to said armature from outside said housing,

a brush and spring holder received in said guideway means and being displaceable inwardly toward and outwardly away from said armature,

releasably engaging latching surfaces on said guideway means and said holder,

resilient means mounting at least one of said latching surfaces for movement laterally out of engagement with the other, and

means providing a camming surface on said resilient means for cooperating with said guideway means to define therebetween an inwardly and laterally narrowing space adapted to receive an operator displaceable axially inward from outside said housing, said camming surface being shaped to deflect said resilient means laterally for effecting disengagement of said latching surfaces upon said inward displacement of said operator, whereby the brush holder can be withdrawn out of the guideway means.

3,983,433
WIRE STATOR CORE STRUCTURE AND METHOD OF MAKING SAME

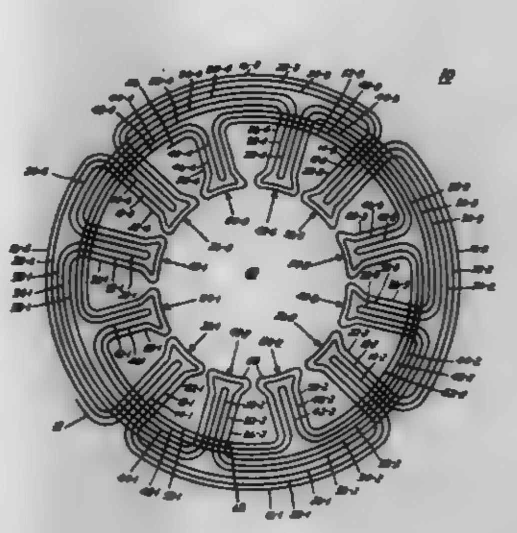
Marion W. Sims, South Whitley, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Nov. 5, 1974, Ser. No. 521,045

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 24, 1976

Int. Cl.² H02K *1/06, 1/12*

U.S. Cl. 310—254 **18 Claims**



1. A stator core structure for a dynamo-electric machine comprising a filament of ferro-magnetic material generally spirally disposed in at least one generally planar layer and including a plurality of spaced apart teeth in the layer each respectively constituted by a plurality of generally contiguous open loop portions of the filament, one of the loop portions in each of the teeth having an end defining at least in part a bore in the stator core structure, and a plurality of connecting portions of the filament respectively joined between the loop portions.

3,983,434

SEGMENTED STATOR CORE STRUCTURE AND METHOD FOR MAKING SAME

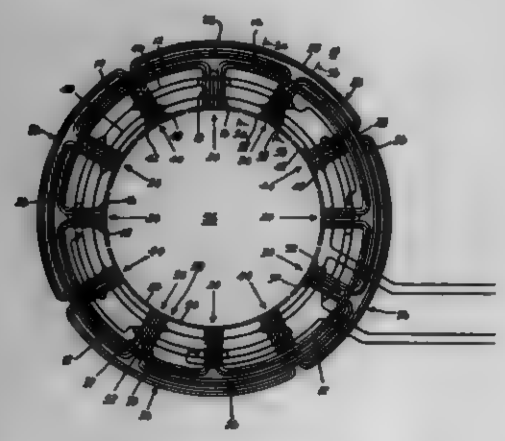
Marion W. Sims, South Whitley, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Nov. 5, 1974, Ser. No. 521,046

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 24, 1976

Int. Cl.² H02K *1/12*

U.S. Cl. 310—254 **16 Claims**



1. A stator core structure for a dynamoelectric machine comprising a first plurality of generally U-shaped segments each having a bight portion and a pair of leg portions, each of said first segments being formed of at least one flat strip of ferro-magnetic material, the bight portions of each of said first segments having an opening formed therethrough intermediate its leg portions, said first segments being arranged with said bight portions thereof forming a first periphery and with said leg portions thereof extending radially, the leg portions of adjacent first segments being in adjacent, parallel relationship mutually to form first teeth, and at least a second plurality of generally U-shaped segments equal in number to said first segments and each having a bight portion and a pair of leg portions, each of said second segments being formed of at least one flat strip of ferro-magnetic material, said second segments being arranged with their bight portions forming generally a second periphery larger than and coaxial with said first periphery, the leg portions of adjacent second segments being in adjacent, parallel relationship and extending radially through a said opening in the bight portion of a respective one of said first segments thereby mutually to form second teeth respectively between said first teeth, said first and second teeth having inner ends terminating in a bore defining configuration within the stator core structure.

3,983,435

STATOR ASSEMBLY FORMED OF FLAT, STRIP MATERIAL

Marion W. Sims, South Whitley, Ind., assignor to General Electric Company, Fort Wayne, Ind.

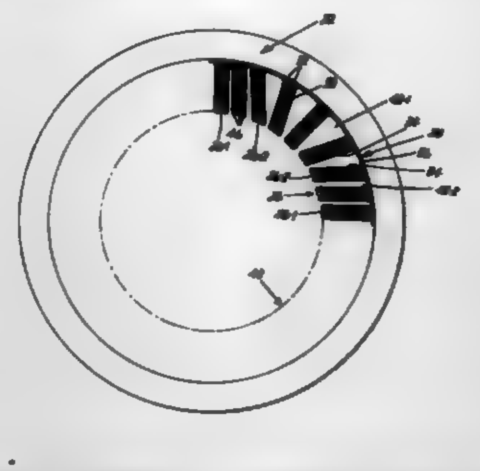
Filed Nov. 5, 1974, Ser. No. 521,044

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 24, 1976

Int. Cl.² H02K *1/06, 1/12*

U.S. Cl. 310—259 **9 Claims**

1. A stator assembly for a dynamoelectric machine comprising a yoke member formed of a continuous strip of ferro-magnetic material and having an inner surface facing toward a bore; a plurality of spaced teeth extending generally axially along and inwardly from the inner surface and having inner ends defining the bore, each of the teeth having a plurality of generally axially and inwardly extending ferro-magnetic flat segments; and connecting portions respectively positioned between adjacent ones of the teeth, each of the connecting portions including a pair of leg elements respectively forming parts of the adjacent teeth, and a bight portion between the leg elements and disposed adjacent the bore; the teeth and connecting portions providing a plurality of coil winding slots open adjacent the yoke.



3,983,436

ELECTRIC ARC DISCHARGE LAMP

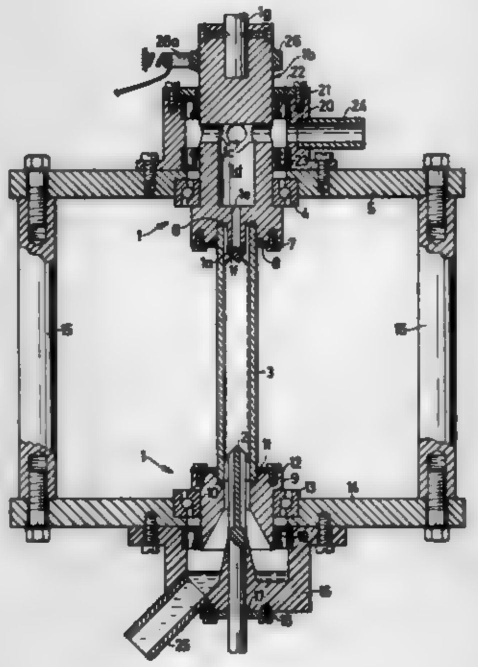
Fritz Peter Schäfer, Goettingen-Nikolausberg, Germany, assignor to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Goettingén, Germany

Filed Dec. 4, 1975, Ser. No. 637,651

Claims priority, application Germany, Dec. 19, 1974, 2460277

Int. Cl.² H01J *61/52*

U.S. Cl. 313—35 **10 Claims**



1. Electric arc discharge lamp having two electrodes (1*a*, 2) defining therebetween an arc discharge path;

a tube (3) transparent to the light of the arc discharge surrounding the electrodes and confining the arc discharge therein;

and means generating a layer of liquid on the inner wall of the tube, which layer rotates about the axis of the tube, said lamp further comprising

a rotatable tube holder fitting (1) holding the tube sealed therein to rotate therewith, said fitting carrying a first one of the electrodes (1*a*) located to extend into the tube (3);

a liquid supply duct (1*c*, 1*d*, 1*e*) formed in the fitting in fluid communication with the interior of the tube (3);

liquid supply means (20, 24) relatively rotatable and sealingly located adjacent the rotatable fitting and in fluid communication with the liquid supply duct;

and a rotatable drain fitting (9–12) secured to the other end of the tube formed with drain ducts to drain liquid from the tube.

3,983,437

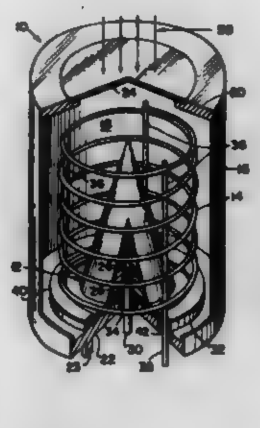
ELECTROMAGNETIC RADIATION DETECTOR

Jay L. Benson, and Gordon J. Hansen, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Mar. 12, 1968, Ser. No. 713,279

Int. Cl.² H02K *7/10*

U.S. Cl. 313—99 **9 Claims**



1. An electromagnetic radiation detector having a central axis and a radiation entrance end, comprising a cathode member having an exterior photoelectric emissive surface disposed at an acute angle to said central axis, anode means separated from and cylindrically disposed about said cathode member for collecting primary electrons emitted from said emissive cathode surface, high transmissive grid means disposed between said cathode member and said collecting means for blocking secondary electrons emitted from said emissive cathode surface with said primary electrons.

3,983,438

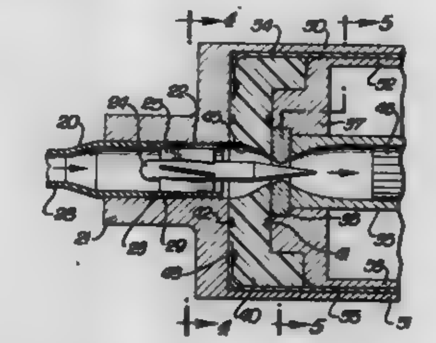
SPARK GAP SWITCH

Jeffrey I. Levatter, Palo Alto; Shao-Chi Lin, La Jolla, and Paul B. Scott, Topanga, all of Calif., assignors to Xonics, Inc., Van Nuys, Calif.

Filed Aug. 21, 1975, Ser. No. 606,519

Int. Cl.² H01T *3/00*

U.S. Cl. 313—146 **16 Claims**



1. In a spark gap switch, the combination of:

a first central electrode;

a second annular electrode;

a first fluid line;

a second fluid line;

a first electrical conducting frame, with said first electrode and fluid line mounted therein for fluid flow through said line about said electrode;

a second electrical conducting frame, with said second electrode and fluid line mounted therein for fluid flow through said line and electrode;

an electrical insulator;

means for mounting said insulator between said first and second frames in fluid sealing relation, with said first electrode positioned within said second electrode, and with said insulator defining a fluid flow path between said lines; and

means for connecting a voltage across said electrodes.

3,983,439

MERCURY VAPOR DISCHARGE LAMP WITH MERCURY CONTAINER IN ENVELOPE EXHAUST TUBE

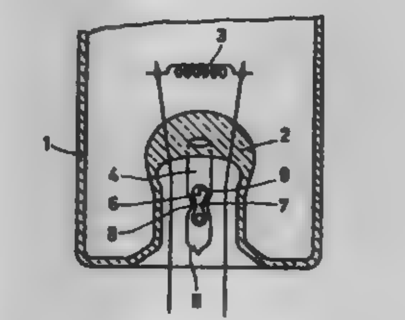
Cornelis Wilhelmus Adrianus Blommerde; Johannes Antonius Maria Ridders, both of Eindhoven, and Huibregt Westerbeke, Middelburg, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 20, 1975, Ser. No. 560,166

Claims priority, application Netherlands, Feb. 12, 1975, 7501631

Int. Cl.² H01J *61/20, 61/28, 61/30*

U.S. Cl. 313—174 **6 Claims**



1. A mercury vapour discharge lamp which comprises a lamp envelope and an exhaust tube in fluid communication with the interior of said envelope, said exhaust tube including a closed metal container in which a quantity of mercury in a metallic form is disposed in a reservoir section, said container being at least plate-shaped for a portion thereof and dimensioned and configured to allow fluid flow within said tube, said container having a constriction at one axial location, and said exhaust tube having a constriction at one axial location, said constrictions cooperating to constrain movement of said container with respect to said exhaust tube.

3,983,440

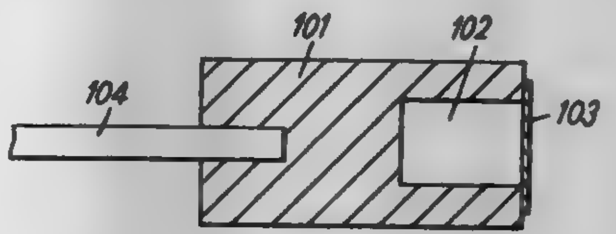
DISCHARGE LAMP COMPONENT

Kenneth Scott, and Arthur Samuel Vause, both of London, England, assignors to Thorn Electrical Industries Limited, London, England

Continuation-in-part of Ser. No. 321,797, Jan. 8, 1973, abandoned. This application May 23, 1975, Ser. No. 580,283

Int. Cl.² H01J *61/06*

U.S. Cl. 313—217 **15 Claims**



1. In an electric discharge lamp comprising a discharge envelope, electrodes disposed therein for establishment of said discharge, a fill of gas therein, and at least one arc-modifying substance selected from halogens, metals and metal halides, the improvement which comprises a structure mounted within the discharge envelope and including: a refractory metal body formed with a cavity therein; a source of said arc-modifying substance contained in said cavity; and a cover closing said cavity and serving to protect said source from the environmental atmosphere; said source and structure being capable of releasing such substance into said discharge envelope upon subsequent treatment.

14. A method of making an electrical discharge lamp comprising the steps of: fabricating a refractory body containing a cavity; introducing into said cavity a source of arc-modifying material; enclosing said material within said cavity by a cover

comprising a metal closure; fitting the resulting component in a discharge lamp envelope together with other necessary electrodes and components; sealing said envelope; exhausting and gas-filling said envelope; and fusing said metal closure to release said material.

3,983,441

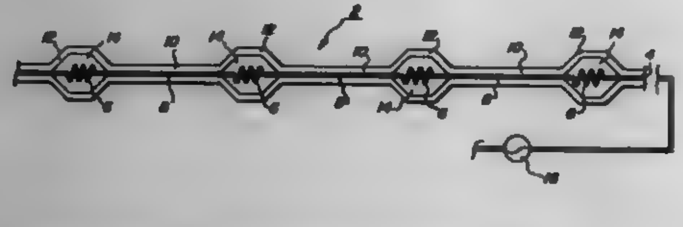
MULTIPLE PINCH INCANDESCENT LAMP

Karl A. Northrup, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed July 3, 1975, Ser. No. 592,840

Int. Cl.² H01K *1/28, 3/02*

U.S. Cl. 313—222 **4 Claims**



1. An incandescent filament lamp including:

a filament operatively connected to a source of electrical energy, said filament including a series of alternate active coil sections and inactive straight sections,

an envelope disposed around said filament along its length, said envelope being drawn down around said filament along said straight sections thereof to accurately position and support said filament and to reduce the volume within said envelope, said envelope defining cavities about said coil sections for the incandescent operation therein of said coil sections.

3,983,442

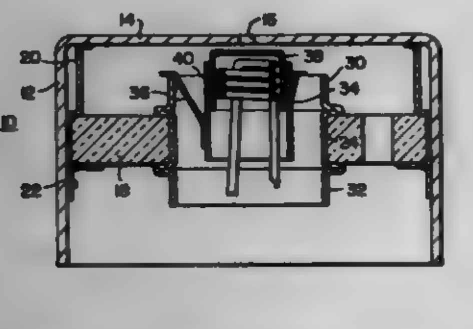
ELECTRON GUN CATHODE SUPPORT STRUCTURE

Praveen K. Jariwala, Hammondsport, and Ernest F. Smart, Horseheads, both of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 19, 1975, Ser. No. 578,797

Int. Cl.² H01J *1/88, 19/42*

U.S. Cl. 313—251 **3 Claims**



1. An electron gun component comprising a disc-shaped insulator with a centralized aperture through the disc, an elongated cylindrical support sleeve the central portion of which is fitted within the disc aperture and engaged with the disc, with the elongated ends of the support sleeve extending beyond each side of the disc, a generally cylindrical cathode element supported coaxially within the support sleeve and having a closed electron emissive end portion projecting beyond one end of the support sleeve, a plurality of symmetrically spaced elongated support straps connecting and supporting the cylindrical cathode element to the forward end of the support sleeve, wherein the support straps are contoured to a predetermined radius for improved structural stability and wherein the contoured support straps comprise integral extensions from the open end of the cylindrical cathode element with the elongated strap being bent to extend toward the forward end of the support sleeve to which it is connected.

3,983,443

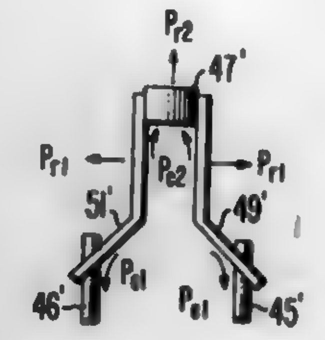
VACUUM ELECTRON DEVICE HAVING DIRECTLY-HEATED MATRIX-CATHODE-HEATER ASSEMBLY

Horst Ernst Paul Schade, Blawenburg, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 24, 1975, Ser. No. 561,440

Int. Cl.² H01J *1/15, 17/08;* **H01K** *1/02*

U.S. Cl. 313—341 **10 Claims**



1. An electron device comprising an evacuated envelope and means for producing an electron emission in said envelope, said means comprising

- a. a porous electrically-conducting body having electron-emission material in the pores thereof,
- b. at least two electrically-resistive legs attached directly to spaced positions on said body and
- c. connection means for producing a current flow through said body and said legs.

3,983,444

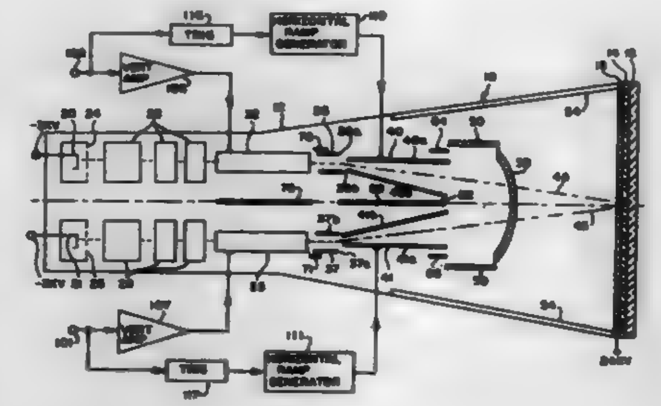
DUAL BEAM CRT WITH INNER GUN AND OUTER GUN SHIELD MEANS FOR CORRECTING KEYSTONE DISTORTION

Conrad John Odenthal, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Division of Ser. No. 486,022, July 5, 1974, Pat. No. 3,921,025. This application Oct. 24, 1975, Ser. No. 625,612

Int. Cl.² H01J *29/51, 29/82*

U.S. Cl. 313—413 **3 Claims**



1. A horizontal deflection system for a dual electron beam apparatus comprising;

a first and a second pair of horizontal deflection plates disposed side-by-side, each of said pairs of plates including an inner plate and an outer plate spaced from each other;

support means for supporting said deflection plates;

isolation shield means disposed between said first and second pair of deflection plates and being supported by said support means; and

innergun and outergun shield means carried by said isolation shield means and disposed adjacent the exit of said deflection plates for correcting keystone pattern distortion.

3,983,445

PLASMA DISPLAY PANEL INCLUDING ELECTRODES FOR TRAPPING IONS

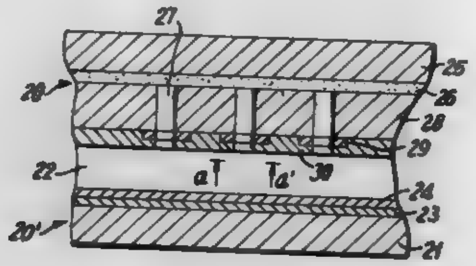
Susumu Yasuda, and Takao Mimitsuka, both of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed May 22, 1975, Ser. No. 579,849

Claims priority, application Japan, May 22, 1974, 49-57441

Int. Cl.² H01J *63/04*

U.S. Cl. 313—485 **13 Claims**



1. A plasma display panel comprising a front board, a rear board spaced from the front board to define a discharge space therebetween, and an ionizable gas filling the discharge space, wherein the improvement comprises a front plate forming part of the front board and a luminescent layer set rendered luminous by excitation from ultraviolet rays affixed to the inside surface of the front plate, a central plate having a number of through holes mounted on the inside surface of the front plate over the luminescent layer set, and a plurality of first electrode members affixed about each of said through holes on an inside surface of said central plate, said electrodes being connected to each other by conductive lines, and said rear board including a rear plate having second electrode members affixed to the inside surface thereof corresponding to said through holes of the central plate.

3,983,446

GRIDDED CONVERGENT FLOW ELECTRON GUN FOR LINEAR BEAM TUBES

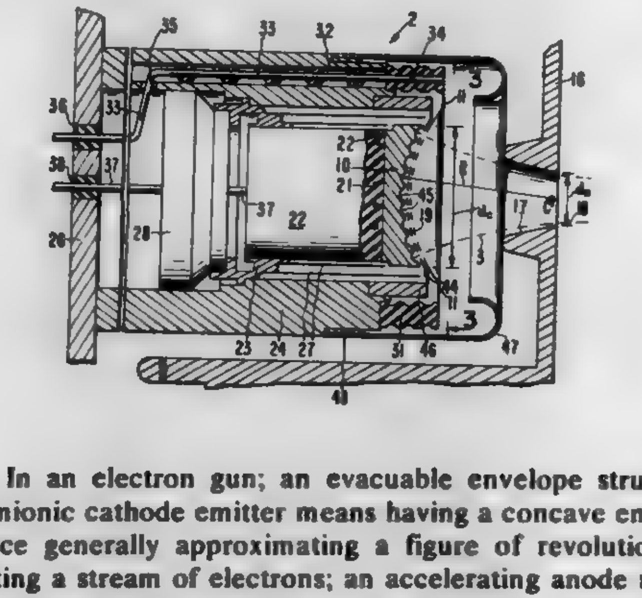
George V. Miram, San Mateo County, and Gerhard B. Kuehne, Santa Clara County, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed July 6, 1971, Ser. No. 160,045

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.² H01J *29/02, 29/46*

U.S. Cl. 313—452 **5 Claims**



1. In an electron gun; an evacuable envelope structure; thermionic cathode emitter means having a concave emitting surface generally approximating a figure of revolution for emitting a stream of electrons; an accelerating anode means spaced from said cathode emitter and having a central aperture of substantially smaller diameter than the diameter of the concave emitting surface of said cathode emitter, such anode central aperture being disposed in axial alignment with the axis of revolution of said concave emitting surface of said cathode emitter for accelerating and converging a stream of electrons through said aperture into a linear beam of electrons; a multi-apertured concave control grid means disposed overlaying said concave emitting surface of said cathode emitter in spaced relation therefrom for controlling the beam current drawn from said cathode through the apertures in said control grid means; control grid support means for supporting said control grid from the periphery thereof and disposed in electrically insulative and substantially thermally insulative relation relative to said cathode emitter means; said control grid support means being connected in heat exchanging relation with said control grid and including, a thermally conductive support structure surrounding said cathode emitter in thermally insulative relation thereto and thermally communicating through the evacuable envelope of the gun to the surrounds for conducting heat from said control grid to the surrounds of the electron gun and having an electrically insulative thermally conductive first portion interposed within said evacuable envelope in heat exchanging relation between the periphery of said control grid means and an electrically conductive second portion of said grid support structure, said second portion being in physical contact with a portion of said evacuable envelope, said second portion of said grid support structure includes a tubular metallic member surrounding said cathode emitter, and said first portion includes an annular ceramic member joined at one end to said tubular metallic second portion and at the other end to the periphery of said control grid means, a multi-apertured concave focus grid means interposed between said cathode emitter and said multi-apertured control grid means in thermally insulative relation relative to said cathode emitter for focusing the electrons drawn from said cathode emitter through the apertures in said multi-apertured control grid means, the apertures in said focus grid means being aligned along the direction of the convergent beam path with the apertures in said control grid means, a third portion of said grid support means being interposed in heat exchanging relation between the periphery of said focus grid and said second portion of said grid support structure for supporting said focus grid means, and wherein said second portion of said grid support structure is common to said control grid means and said focus grid means for defining a unitary support structure portion providing common support to both of said grid means.

3,983,447

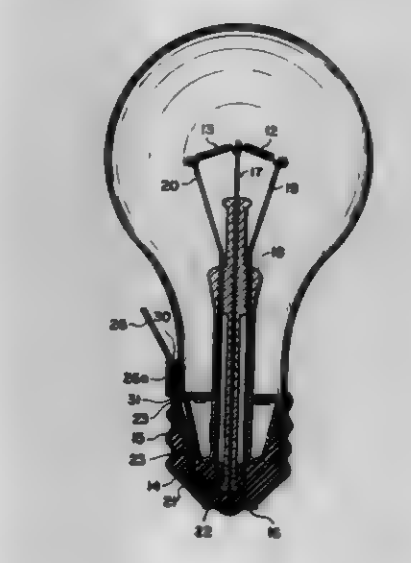
SWITCH AND DUAL LAMP AND SWITCH COMBINATION

Arnold Mark, 2485 Malibu Road; Donald J. Berman, 3091 Seaview Lane, both of Bellmore, and Sam Cohen, 136 Beach 136 St., Bell Harbor, all of N.Y. 11710

Filed May 23, 1975, Ser. No. 580,448

Int. Cl.² H01K *1/64*

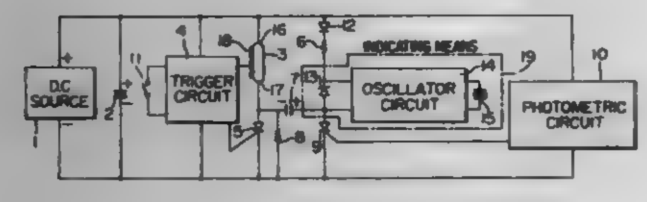
U.S. Cl. 315—64 **9 Claims**



5. A combination switch and multiple filament light bulb, comprising:

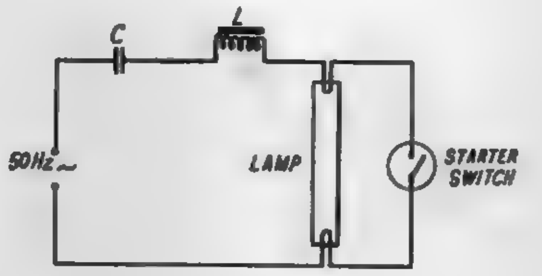
a light bulb having a glass envelope enclosing at least two filaments and a base insulating material, the latter being surrounded by a metallic screw-on section;
a first wire and a second wire extending from said at least two filaments, respectively, into said base insulating material;
at least two substantially vertically extending conductive strips spaced from each other and disposed in said base insulating material and extending upwardly out of the latter along said glass envelope, and each strip having a contact point adjacent an upper end thereof, said strips at a bottom thereof being electrically connected to said first and second wires of said light bulb, respectively;
a center conductive section connected with said base insulating material and insulated thereby from said metallic screw-on section;
a third wire connecting said filaments to said center conductive section;
a handle having a base, the latter being pivotably mounted with respect to said contact points;
conductive means for operatively selectively contacting at least one of said contact points of said at least two conductive strips by a pivotal movement of said handle; and
a conductive member integral with at least a portion of said conductive means and adapted to engage said metallic screw-on section of said light bulb.

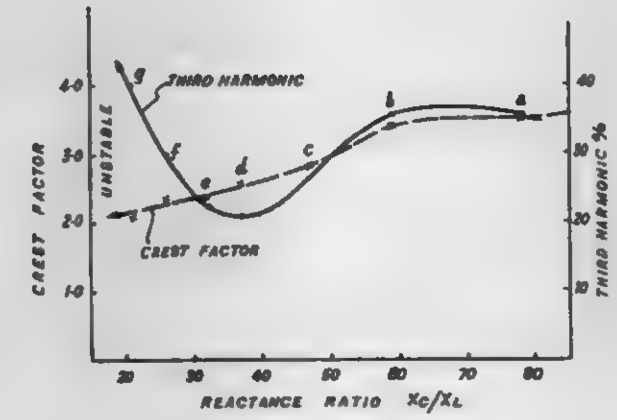
3,983,448
AUTOMATIC STROBO FLASH DEVICE
Shinichiro Nakanishi, Higashi-Osaka, Japan, assignor to West Electric Company, Ltd., Japan
Filed May 8, 1975, Ser. No. 575,488
Claims priority, application Japan, May 16, 1974, 49-56159[U]
Int. Cl.² H05B *41/00, 41/32;* **G03B** *15/05*
U.S. Cl. 315—151 **8 Claims**



1. An automatic strobo flash device of the type comprising, a DC power supply; a main flash capacitor connected in parallel to said DC power supply; a strobo tube which is coupled to said flash capacitor and is lighted by the discharge of said flash capacitor; a first control element connected in series to said strobo tube for controlling the current flowing through said strobo tube; a trigger circuit for generating the trigger signal to be applied to the trigger electrode of said strobo tube and to said first control element; a photometric circuit for detecting the quantity of light reflected back from a subject and generating the signal when the quantity of reflected light reaches a predetermined level; a control circuit for controlling said first control element comprising a second control element which is turned on in response to the signal from said photometric circuit and a switching capactor; and a circuit for charging said switching capacitor; characterized in that indicating means for indicating the signal during the recharge of said switching capacitor is connected to said switching capacitor charging circuit.

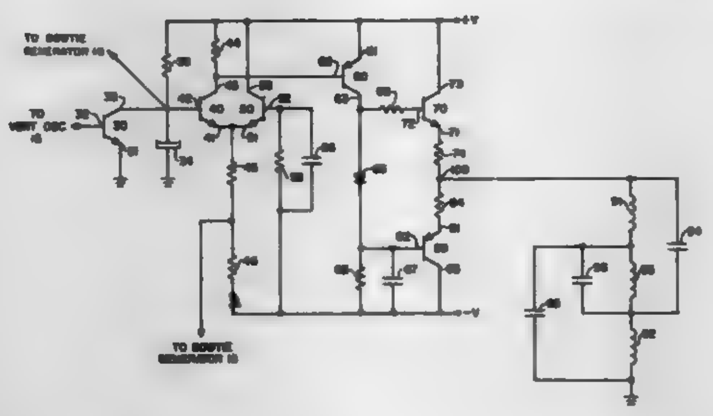
3,983,449
DISCHARGE LAMP BALLAST CIRCUITS
Peter Adrian Dear, and Wladyslaw Pelc, both of London, England, assignors to Thorn Electrical Industries Limited, London, England
Filed Nov. 24, 1975, Ser. No. 634,549
Claims priority, application United Kingdom, Dec. 11, 1974, 53588/74
Int. Cl.² H05B *41/16*
U.S. Cl. 315—244 **14 Claims**





1. In a discharge lamp circuit comprising an a.c. supply, and a discharge lamp, a ballast consisting of a capacitor and an inductor connected in series between the supply and the lamp, the ratio of capacitative reactance provided by the capacitor to inductive reactance provided by the inductor being from about 24 to about 55 at the supply frequency.

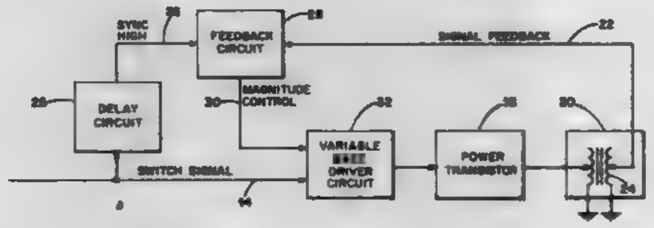
3,983,450
LOW LEVEL PINCUSHION CORRECTION SYSTEM WITH A DUAL IMPEDANCE YOKE
Stanley E. Lehnert, Addison, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Feb. 26, 1975, Ser. No. 553,343
Int. Cl.² H01J *29/56*
U.S. Cl. 315—370 **7 Claims**



1. Display means, including a scannable viewing screen having geometry such that pincushion distortion is introduced during scanning comprising:

high frequency scanning means producing high frequency scanning signals for scanning said viewing screen in a first direction;
low frequency scanning means producing low frequency scanning signals for scanning said viewing screen in a second direction;
waveforming means, coupled to said high and low frequency scanning means, producing a pincushion distortion compensation signal having both high and low frequency components;
deflection means, responsive to said low frequency scanning signals, including first and second inductive impedances; and
means configuring said first and second inductive impedances serially for said low frequency components of said pincushion distortion compensation signal, and parallelly for said high frequency components of said pincushion distortion compensation signal.

3,983,451
SCAN CONTROL CIRCUIT FOR A VIDEO TERMINAL DISPLAY DEVICE USING FEEDBACK TO CONTROL SYNCHRONIZATION
Michael Leis, Framingham, and Russell C. Doane, Concord, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Apr. 24, 1975, Ser. No. 571,139
Int. Cl.² H01J *29/70*
U.S. Cl. 315—387 **14 Claims**

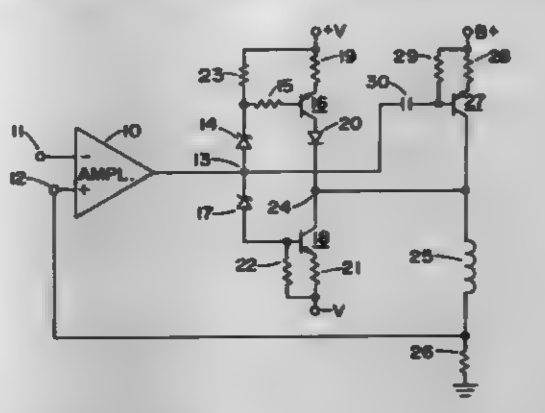


1. A circuit for regulating the scan in a video terminal, said circuit comprising:

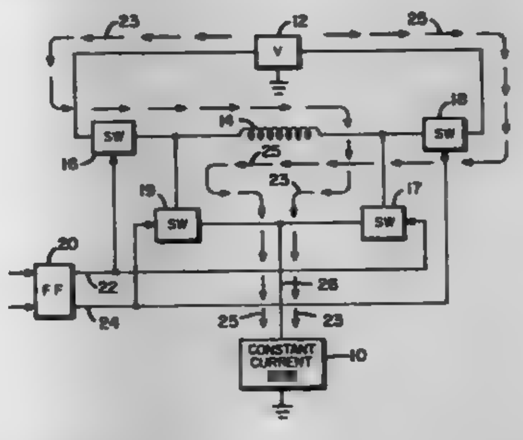
A. first means for controlling said scan across said video terminal;
B. second means providing a first and second control signal, said first control signal having a fixed period and said second control signal terminating at a predetermined time after initiation of said first control signal;
C. said first means including means responsive to said first control signal for generating a feedback signal;
D. third means responsive to said first means subsequent to said first control signal for storing from said feedback signal a charge prior to the termination of said second control signal; and
E. fourth means for varying in response to said charge the conduction of said first means such that the position of said scan is synchronized to said second means.

3,983,452
HIGH EFFICIENCY DEFLECTION CIRCUIT
Lucas John Bazin, Stratford, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Mar. 31, 1975, Ser. No. 563,878
Int. Cl.² H01J *29/70, 29/76*
U.S. Cl. 315—397 **5 Claims**

1. A deflection circuit comprising:
first and second serially coupled transistors forming a push-pull amplifier stage coupled to a first source of relatively low direct operating voltage, a junction of said first and second transistors forming an output terminal;
a deflection winding and a feedback resistor serially coupled to said output terminal and a point of reference potential;
a driver stage coupled to said amplifier stage and said feedback resistor and responsive to a source of input signals for defining trace and retrace intervals during each deflection cycle;
first switching means coupled in a main current conduction path of said first transistor and said deflection winding; and
second switching means coupled to said output terminal and a second source of relatively high direct operating voltage and responsive to signals obtained from said driver stage for coupling said deflection winding to said second source only during said retrace interval;
said first switching means serving to disconnect the main current conducting path of said first transistor when retrace voltage developed across said deflection winding exceeds said first source voltage, and said feedback resistor sampling current in said deflection winding for determining the end of said retrace interval and the start of the next succeeding trace interval.



3,983,453
SWITCHABLE CONSTANT CURRENT SINK
Vernal M. Benrud, Minneapolis, Minn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed May 8, 1974, Ser. No. 467,971
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976
Int. Cl.² H01J *29/70, 29/76*
U.S. Cl. 315—399 **6 Claims**



1. A switchable constant current sink for a CRT display system comprising:
a first transistor T1 having collector, emitter and base electrodes;
a first resistor R1;
a first diode D1 having an anode and a cathode;
means directly intercoupling the collector electrode of said first transistor T1 and the cathode of said first diode D1 for forming a first node;
means coupling the emitter electrode of said first transistor T1 directly to a first terminal of said first resistor R1 the second terminal of which is coupled directly to ground;
V_{REFX} reference voltage source means coupled to said transistor T1 constantly forward biasing the base emitter

junction of said first transistor T1 for controlling a current I_{T1} to constantly flow from said first node, through said first transistor T1 and then through said first resistor R1 to ground;
a second transistor T3 having collector, emitter and base electrodes;
means coupling the emitter electrode of said third transistor T3 to said first node;
a first voltage source V;
an inductive load formed by the X deflection coil of said CRT coupled intermediate said first voltage source V and the anode of said first diode D1;
a second voltage source V +ΔV coupled to the collector electrode of said third transistor T3;
logic means coupled to said second transistor T3 controlling said second transistor T3 to be either conducting ON or nonconducting OFF, respectively, said ON second transistor T3 coupling said second voltage source V +ΔV to said first node and reverse biasing said first diode D1 for drawing said current I_{T1} through said second transistor T3 from said second voltage source V +ΔV, or, alternatively, said OFF second transistor T3 decoupling said second voltage source V +ΔV from said first node and forward biasing said first diode D1 for drawing said current I_{T1} through said inductive load from said first voltage source V.

3,983,454

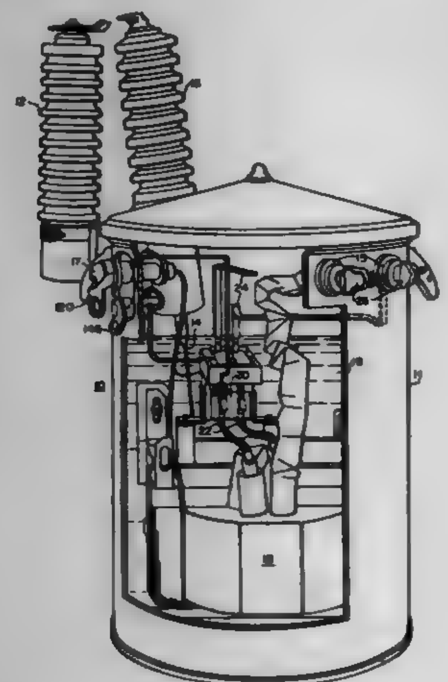
DISTRIBUTION TRANSFORMER SECONDARY CIRCUIT BREAKER

John F. Cotton, Athens, Ga.; Jack G. Hanks, Bethel Park, and Raymond E. Wien, Trafford, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 12, 1974, Ser. No. 496,800

Int. Cl.² H02H *7/04*; H01H *75/00*

U.S. Cl. 317—14 J **17 Claims**



1. A distribution transformer, comprising:
a housing;
primary and secondary transformer coils disposed within said housing;
a circuit interrupter disposed within said housing and operable between a closed position permitting current flow through said transformer and an open position interrupting current flow through said transformer, said circuit interrupter being operable to automatically trip to said open position upon overload current conditions through said transformer;
a handle connected to said circuit breaker for manually operating said circuit breaker between said open and closed positions;
signal means for indicating when current flow through said transformer exceeds a predetermined level; and
signal reset means for ceasing signal indication, said reset means being connected to said handle and resetting said signal means when said handle is operated past the closed position away from the open position.

3,983,455

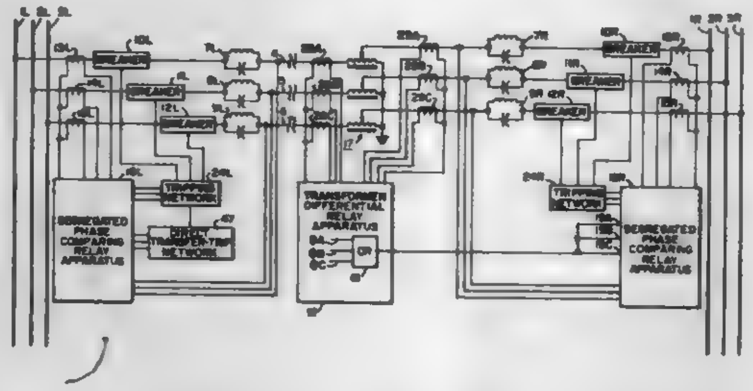
DIRECT TRANSFER-TRIP RELAYING SYSTEM

Walter L. Hinman, Jr., New Providence, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 15, 1975, Ser. No. 541,369

Int. Cl.² H02H *7/26*

U.S. Cl. 317—27 R **10 Claims**



1. In a segregated phase relaying system for protecting a section of an alternating potential polyphase power transmission network having first and second end portions, said system comprising, first and second protective relaying networks respectively individually associated with said first and second end portions of said network section, each of said relaying networks comprising three current sensors individually associated with three of the conductors of said transmission network, each of said sensors providing first and second output signals during first and second portions of the cycle of the current sensed thereby, communicating means interconnecting said relaying networks and effective to transmit three sets of communicated signals from one of said relaying networks at one of said end portions of said transmission network to the other of said relaying networks at the other of said end portions of said transmission network, each of said sets of communicated signals being individual to said sensors of said one relaying network, each said set of signals comprising first and second transmitted signals corresponding respectively to said first and second output signals of the said sensor with which it is associated, a fault detector associated with said one end portion of said transmission network and effective to provide a fault signal upon the occurrence of a fault in said protected section of said transmission network, said one relaying network including transfer trip initiating means, said trip initiating means being effective when actuated to cause said communicating means to prevent the transmission of said sets of communicated signals under control of said sensors and to cause said communicating means to initiate the transmission of a selected one of said transmitted signals of at least two of said sets of communicated signals, said other relaying network including at least three signal comparing networks, each of said comparing networks having first and second input circuits and an output circuit, first circuit means individually connecting said first input circuits of said networks to individual ones of said sensors of said other relaying network, said other relaying network including a receiver energized by said communicated signals, second circuit means connecting said second input circuits of said networks to said receiver and effective to individually energize said second input circuits of said networks with individual ones of said sets of said communicated signals received by said receiver, a tripping network comprising three tripping circuits, third circuit means individually connecting said tripping circuits to individual output circuits of said comparing networks, each said comparing network being effective when both of its input circuits are receiving a selected one of said output signals from the said sensor which it is associated and a predetermined one of said communicated signal of said sets of signal to actuate its respective said tripping circuit, and fourth circuit means interconnecting said receiver and said tripping network and effective to provide a tripping output when said receiver is receiving all of said selected ones of all of said sets of communicated signals which are being transmitted.

3,983,456

PHASE COMPARISON PROTECTIVE RELAY FOR A TRANSMISSION

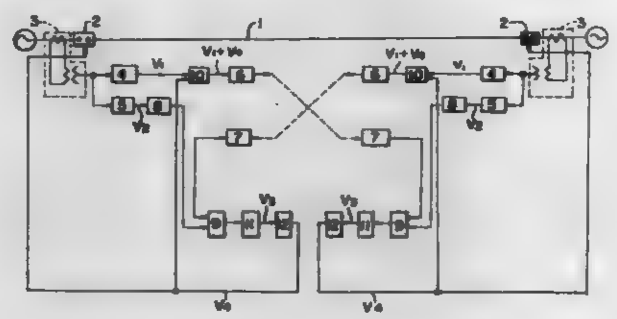
Kenji Suzuki, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed June 11, 1974, Ser. No. 478,371

Claims priority, application Japan, June 11, 1973, 48-65603

Int. Cl.² H02H *3/26*, *7/26*

U.S. Cl. 317—28 R **3 Claims**



1. A phase comparison protective relay for a transmission line which comprises:
a local terminal;
a remote terminal;
a current converter circuit at the local terminal for generating a local signal corresponding to the local terminal current;
a current converter circuit at the remote terminal for generating a remote signal corresponding to the remote terminal current;
first means at the local terminal for transmitting a first signal during a period when the instantaneous value of the local signal is positive with respect to a predetermined positive level and for transmitting a second signal during another period;
first means at the remote terminal for transmitting a first signal during a period when the instantaneous value of the remote signal is positive with respect to a predetermined positive level and for transmitting a second signal during another period;
second means at the local terminal for transmitting a third signal during a period when the instantaneous value of the local signal is positive with respect to a predetermined negative level and for transmitting a fourth signal during another period;
second means at the remote terminal for transmitting a third signal during a period when the instantaneous value of the remote signal is positive with respect to a predetermined negative level and for transmitting a fourth signal during another period;
a transmitter for transmitting the first and second signals at the local terminal to the remote terminal;
a transmitter for transmitting the first and second signals at the remote terminal to the local terminal;
a receiver at the local terminal for receiving the first and second signals from the remote terminal;
a receiver at the remote terminal for receiving the first and second signals from the local terminal;
third means at the local terminal for transmitting a fifth signal when the overlapping period of the third signal at the local terminal and the first signal at the remote terminal is longer than a predetermined period;
third means at the remote terminal for transmitting a fifth signal when the overlapping period of the third signal at the remote terminal and the first signal at the local terminal is longer than a predetermined period;
said transmitter at the local terminal also functioning for transmitting the fifth signal at the local terminal to the remote terminal;
said transmitter at the remote terminal also functioning for transmitting the fifth signal at the remote terminal to the local terminal;
said receiver at the local terminal also functioning for receiving the fifth signal at the remote terminal from the remote terminal;
said receiver at the remote terminal also functioning for receiving the fifth signal at the local terminal from the local terminal;
said third transmitting means at the local terminal also functioning for transmitting the fifth signal at the remote terminal when the overlapping period of the third signal at the local terminal and the fifth signal at the remote terminal is longer than a predetermined period;
said third transmitting means at the remote terminal also functioning for transmitting the fifth signal at the local terminal when the overlapping period of the third signal at the remote terminal and the fifth signal at the local terminal is longer than a predetermined period;
an automatic breaker at the remote terminal connected to the transmission line, said breaker being opened by the fifth signal transmitted from the local terminal; and
an automatic breaker at the local terminal connected to the transmission line, said breaker at the local terminal being opened by the fifth signal transmitted from the remote terminal.

3,983,457

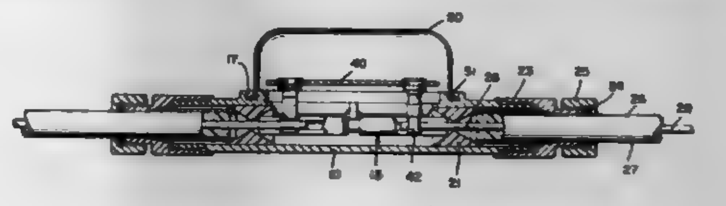
COAX CABLE SEIZURE DEVICE

Sidney R. Smith, Buckeye, Ariz., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 18, 1976, Ser. No. 659,182

Int. Cl.² H05K *5/04*

U.S. Cl. 317—99 **10 Claims**

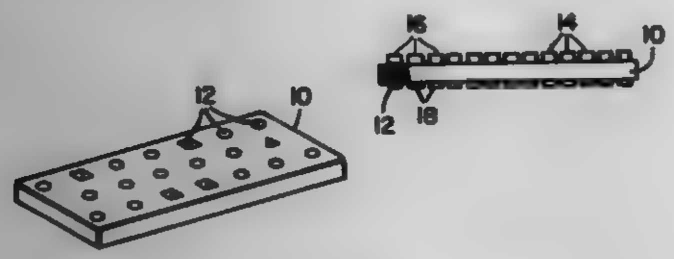


1. A connecting device for coaxial cable transmission lines comprising, in combination:
a conductive housing having a recessed portion extending substantially transversely therethrough;
said housing having at least one threaded cylindrical extension with an opening communicating with said recessed portion;
a dielectric seizure post holder having a pair of tines and at least one aperture extending transversely therebetween;
a seizure post having a pair of tines and at least one aperture extending transversely therebetween, said seizure post being disposed within the aperture of said seizure post holder;
a cylindrical serrated ferrule axially aligned with said seizure post holder and disposed at least partially within the opening formed in said extension;
a cylindrical dielectric guide clamp axially disposed within said opening between said ferrule and said seizure post holder; and
clamping means engaging said threaded extension and mechanically cooperating with both said ferrule and said seizure post holder for providing a lateral clamping force to said ferrule and the tines of said seizure post.

3,983,458
ELECTRICAL DEVICE ASSEMBLY AND METHOD

Lester J. Jordan, Smethport, and Steve Platko, Bradford, both of Pa., assignors to Corning Glass Works, Corning, N.Y.

Filed July 21, 1971, Ser. No. 164,747
Int. Cl.² H05K *1/18*
U.S. Cl. 317—101 CP 32 Claims



1. A device comprising:
a flat dielectric substrate having a plurality of apertures communicating between the flat surfaces thereof,
a leadless electrical component having opposing terminal ends disposed within each of at least two of said apertures, with at least one of the terminal ends of selected components extending beyond at least one of said flat surfaces of said substrate,
a plurality of metallic members each having an aperture therein accommodating one of the terminal ends of one of said electrical components, said metallic members being fixedly attached to the extending terminal ends of selected ones of said components adjacent at least one of the flat surfaces of said substrate, each metallic member providing an external electrical connection to one terminal of one component, and
a conductive path disposed on at least one of the flat surfaces of said substrate electrically connecting terminal ends of selected ones of said components in a desired manner.

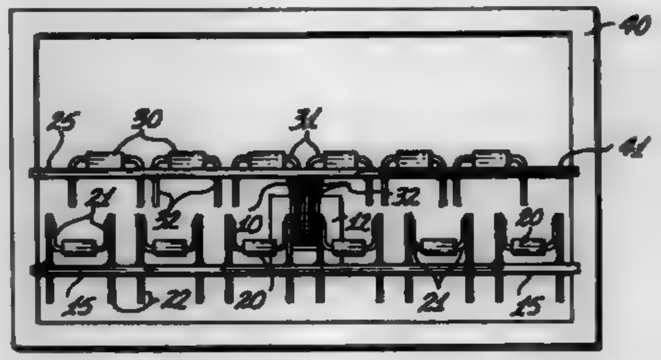
20. A method of forming an electrical circuit or network comprising the steps of:
providing a flat dielectric substrate,
forming a plurality of apertures in said substrate communicating between the flat surfaces thereof,
disposing a leadless electrical component having opposing terminal ends within each of at least two of said apertures so that at least one of the terminal ends of selected components extend beyond at least one of said flat surfaces of said substrate,
providing a plurality of metallic members each having an aperture to accommodate a selected one of the extending terminal ends of said electrical components,
electrically connecting said metallic members to said extending terminal ends of said selected ones of said components adjacent at least one of the flat surfaces of said substrate by disposing said extending terminal ends within said apertures, said metallic member, being fixedly maintained in electrical contact with said terminal ends by friction, each said metallic member providing an external electrical connection to one terminal of one component, and
disposing a conductive path on at least one of the flat surfaces of said substrate electrically connecting the terminal ends of selected ones of said components in a desired manner.

3,983,459
CIRCUIT BOARD SPACER

Herbert E. Passler, Phoenix, Ariz., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed July 2, 1975, Ser. No. 592,567
Int. Cl.² H02B *1/02*
U.S. Cl. 317—101 DH 6 Claims

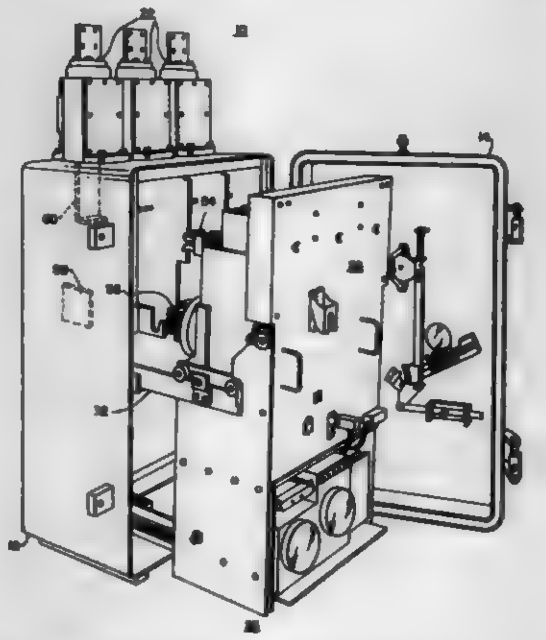
1. A circuit board spacer for maintaining two relatively flexible circuit boards, one overlying the other in a circuit board rack, in physical isolation from one another, said spacer comprising
a roller formed of a plurality of relatively thin, tough, closely spaced concentric disks mounted on a common shaft, said disks being formed of an electrically insulating material, and
support means for said roller, said support means including means for securing said roller to a first one of said circuit boards in such an orientation that the shaft of said roller is parallel to the plane of said first circuit board and perpendicular to the direction in which said circuit boards are inserted and removed from said circuit board rack, the distance from the surface of said first circuit board to the outermost portion of said roller being sufficient to space said circuit boards to prevent physical contact between said boards or any portions thereof.



3,983,460
ENCLOSED CIRCUIT INTERRUPTER WITH IMPROVED FUSE ASSEMBLY

Edmund W. Kuhn, and Jesse L. Uber, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 2, 1975, Ser. No. 564,576
Int. Cl.² H02B *1/18*
U.S. Cl. 317—114 2 Claims

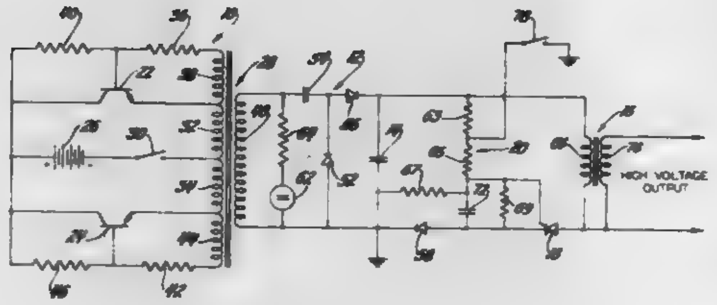


1. An enclosed circuit interrupter comprising:
an enclosure;
a drawout type circuit interrupter mounted within said enclosure;
at least one fuse assembly externally mounted upon said enclosure and adapted to support a fuse to be connected in series circuit relationship with said drawout type circuit interrupter;
said enclosure comprising means defining a feed-through aperture, and said fuse assembly comprising a fuse housing of molded insulating material having a fuse cavity internal thereto, a breaker terminal, and a cable terminal; each of said terminals having first and second ends, said first ends adapted to be connected to a fuse, said second end of said breaker terminal extending through said feed-through aperture and being adapted for connection to said circuit interrupter, said second end of said cable terminal being adapted for connection to a cable; and
said breaker and cable terminals being integrally molded within said housing and including at least one stud resiliently mounted within said housing and adapted to engage a fuse.

3,983,461
IGNITION PULSE GENERATOR

Richard James Jordan, Roseville, Mich., assignor to General Marine, Inc., Bloomfield Hills, Mich.

Continuation-in-part of Ser. No. 463,001, Dec. 21, 1973, Pat. No. 3,900,786, which is a continuation of Ser. No. 284,309, Aug. 28, 1972, abandoned. This application Feb. 25, 1975, Ser. No. 552,892
Int. Cl.² F02P *9/00*
U.S. Cl. 317—151 3 Claims

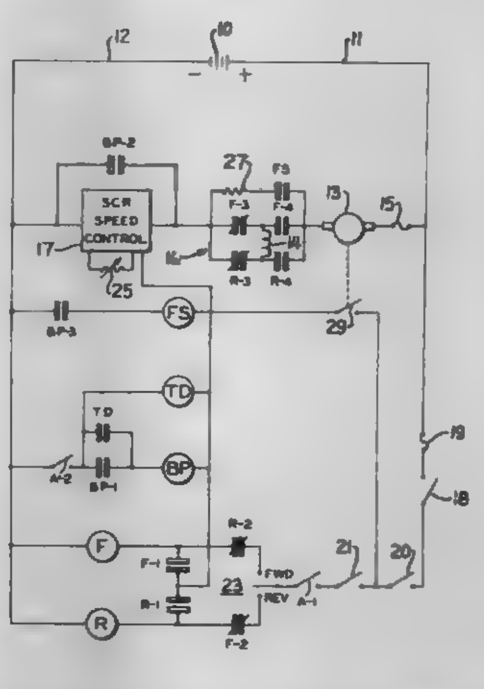


1. An ignition circuit for internal combustion engines comprising an alternating voltage source, a charging circuit including a coupling capacitor, a rectifier and a storage capacitor connected in series across said source, a thyristor including an anode, a cathode and a gate, a discharging circuit including the anode and cathode of the thyristor, and an ignition coil connected in series across said storage capacitor, control means including switching means for preventing turn-on of the thyristor when closed and enabling turn-on of the thyristor when opened, said control means also including a current leakage resistor having one terminal connected to one terminal of said storage capacitor, an output resistor having one terminal connected to the other terminal of said storage capacitor, and an isolation resistor connected between the leakage resistor and the output resistor, the junction of the output resistor and the isolation resistor being connected to said gate, said switching means being connected between the other terminal of said storage capacitor and the junction of the leakage resistor and the isolation resistor, said switching means being adapted to be alternately closed for a time interval and opened for a time interval in timed relation with operation of the engine, the frequency of said source being high enough in relation to the closed interval of said switching means at maximum engine speed so that there is at least one charging cycle for each closed interval and a controlled discharge pulse is produced through said ignition coil when said switching means is opened, said frequency being high enough in relation to the opened interval at minimum engine speed so that at least one additional charging cycle occurs during each opened interval to produce a free-running discharge pulse through said ignition coil.

3,983,462
FIELD SHUNTING CONTROL FOR A DC SERIES MOTOR

Francis Lyle Jones, Mentor, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Aug. 15, 1974, Ser. No. 497,656
Int. Cl.² H02P *5/06*
U.S. Cl. 318—139 9 Claims

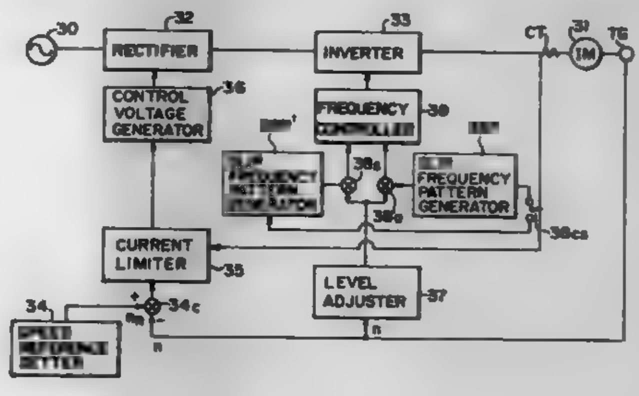


1. In a vehicle powered by a battery and driven by a series DC electric motor having an armature with a series connected field winding and a circuit connected in parallel with the series field winding for shunting a portion of the armature current around the field winding to increase the maximum motor speed, said circuit having a switch therein, an improved speed control including:
means responsive directly to the speed of said motor, closing said switch to complete the field shunt circuit above a selected motor speed.

3,983,463
METHOD AND APPARATUS FOR CONTROLLING THE SPEED OF INDUCTION MOTORS

Akira Nabae, and Takeo Shimamura, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Aug. 29, 1974, Ser. No. 501,783
Claims priority, application Japan, Aug. 31, 1973, 48-97242
Int. Cl.² H02P *5/40*
U.S. Cl. 318—227 18 Claims



1. In a method of controlling the speed of an induction motor which is energized from a source of variable frequency, the improvement which comprises the steps of producing a control signal which is a function of the primary current of said induction motor, generating a second signal having a predetermined slip frequency pattern in accordance with said control signal, generating a frequency signal proportional to the speed of said induction motor, producing a variable frequency control signal corresponding to the algebraic sum of

said frequency signal and said second signal, and controlling said source in accordance with said variable frequency control siganl for controlling the operating frequency of said source thereby operating said induction motor at or near the maximum value of the torque coefficient thereof.

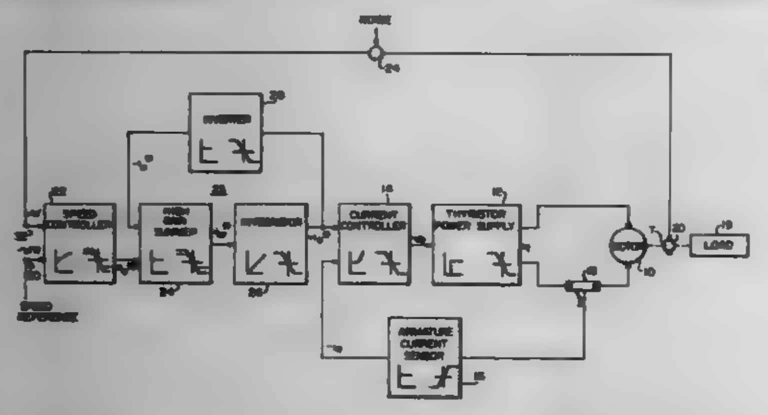
3,983,464
DIRECT CURRENT MOTOR SPEED CONTROL APPARATUS

Robert S. Peterson, Williamsville, N.Y., assigner to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 13, 1974, Ser. No. 469,587

Int. Cl.² H02P *5/16*

U.S. Cl. 318—327 **11 Claims**



1. In speed control apparatus for a direct current motor, the combination of

means operative with said motor for supplying the armature current of said motor,

speed control means responsive to the difference between a desired speed and the actual speed of said motor for providing a motor speed determining armature current control signal,

means operative with said armature current control signal, for providing a predetermined limit on the controlled rate of change for all values of said armature current control signal; and

means operative with said armature current supply means for controlling the armature current of said motor in response to said current control signal.

3,983,465
ELECTRIC BRAKING CONTROL APPARATUS FOR DC MOTOR

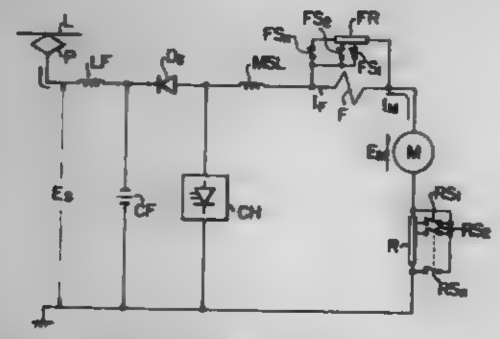
Takashi Tsubei; Hiroshi Narita, and Toru Higuchi, all of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 15, 1975, Ser. No. 568,195

Claims priority, application Japan, Apr. 17, 1974, 49-42128; Sept. 13, 1974, 49-105070

Int. Cl.² H02P *3/14*

U.S. Cl. 318—376 **16 Claims**



1. In an electric braking control apparatus for the DC motor comprising a DC power supply; a series circuit including a smoothing reactor connected in series with said DC power supply, a DC motor with the armature and field winding thereof connected in series with each other, and a resistor; a chopper connected in parallel to said series circuit; and a diode inserted between said DC power supply and said parallel circuit including said series circuit and said chopper; said chopper being turned on and off for effecting the regenerative braking: the improvement further comprising field regulating means for regulating the field of said field winding and resistance regulating means for regulating the resistance value of said resistor, the regenerative braking being effected by combined use of said field regulating means and said resistance regulating means.

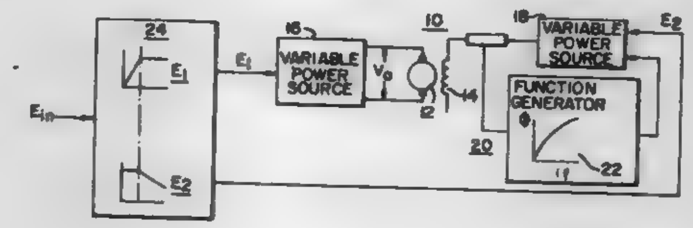
3,983,466
MOTOR FIELD CONTROL FOR D.C. DRIVES

Mohammed Safiuddin, N. Tonawanda, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 19, 1974, Ser. No. 534,531

Int. Cl.² H02P *5/06*

U.S. Cl. 318—338 **6 Claims**



1. D.C. motor control circuitry for regulating the speed in response to an input command signal E_{in}, by the control of motor armature voltage and field flux intensity respectively, comprising:

- a. means for receiving said command signal E_{in} as an input, and for delivering a ramp signal E_1 having a maximum absolute magnitude equal to E_F, for controlling the motor armature voltage up to base speed;
- b. means for potential attenuation, connected to the output of said motor armature voltage control means to receive said signal E_1 and for delivering a signal $-\alpha$ E$_1$ the factor α being adjustable between $(0. . .n)$;
- c. means for summing three inputs: a first input connected to a source of potential $- E_F$, a second input connected to receive said signal E_{in}, and a third input connected to receive said attenuation signal $-\alpha E_1$, said summation means delivering an output E_2 for field flux control beyond base speed, where $E_2 = E_F - E_{in} + \alpha E_1$, whereby the selection of the factor α determines the cross-over point between motor armature voltage and field flux speed controls.

3,983,467
COARSE/FINE SHEETER CONTROLS IN PARTICULAR AND MACHINE DRIVE SYSTEMS IN GENERAL

Walter Howard Bossons, and Colin George Langworthy, both of Bristol, England, assignors to Masson Scott Thrissell Engineering Limited, Bristol, England

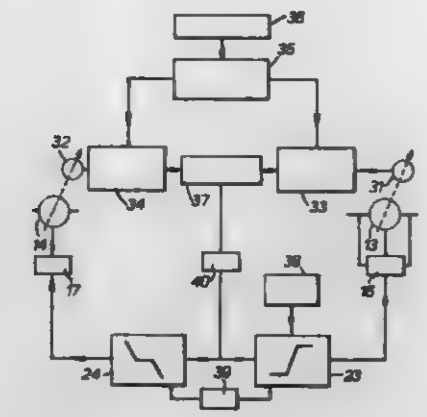
Filed Nov. 15, 1974, Ser. No. 524,343

Claims priority, application United Kingdom, Nov. 17, 1973, 53476/73

Int. Cl.² G05F *1/46;* G05B *7/02*

U.S. Cl. 318—593 **5 Claims**

1. A continuous web cutting machine comprising rotary web feed mechanism, rotary cutting means downstream thereof and means for driving the feed mechanism and the cutting means at a selected average velocity ratio, wherein the improvement comprises providing respective separate variable speed electric motors continuously to drive the feed mechanism and the cutting means, coarse motor control means for governing the cutting means motor to adjust the speed of the latter to within a given range, and fine motor control means, operable when said given range is achieved, for governing the feed mechanism motor to achieve said selected average velocity ratio.



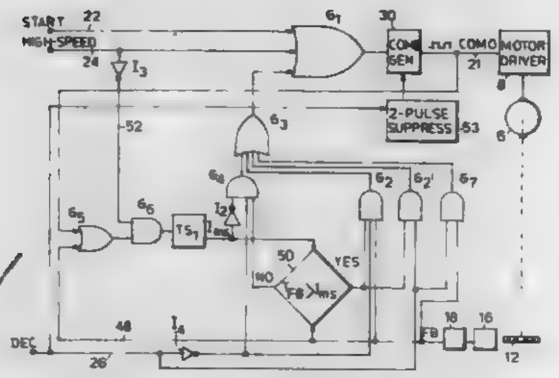
3,983,468
MOTOR DRIVE SYSTEM INCLUDING A FEEDBACK LOOP

Gerard Maitrias, Brussels, Belgium, assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 30, 1974, Ser. No. 537,588

Int. Cl.² H02K *37/00*

U.S. Cl. 318—685 **25 Claims**



1. A motor drive system for driving a motor incrementally in accordance with the generation of motion-command-pulses supplied thereto, the drive system comprising a motor-starting and speed-regulation control including:

motor-rotation sensing means for sensing the rotation of the motor and generating in response thereto a feedback pulse for each movement of the motor a predetermined increment;

timing means for measuring a predetermined time interval after the starting of the timing means;

means for starting the timing means with each generation of a feedback pulse; and

means for comparing the length of said predetermined time interval to the length of the time interval between consecutive feedback pulses and for generating a motion-command-pulse at the end of the longer of either said predetermined time interval or said time interval between consecutive feed-back pulses; whereby the motor rotates at a speed limited to a regulated speed in which the time of each increment of movement is not less than said predetermined time interval.

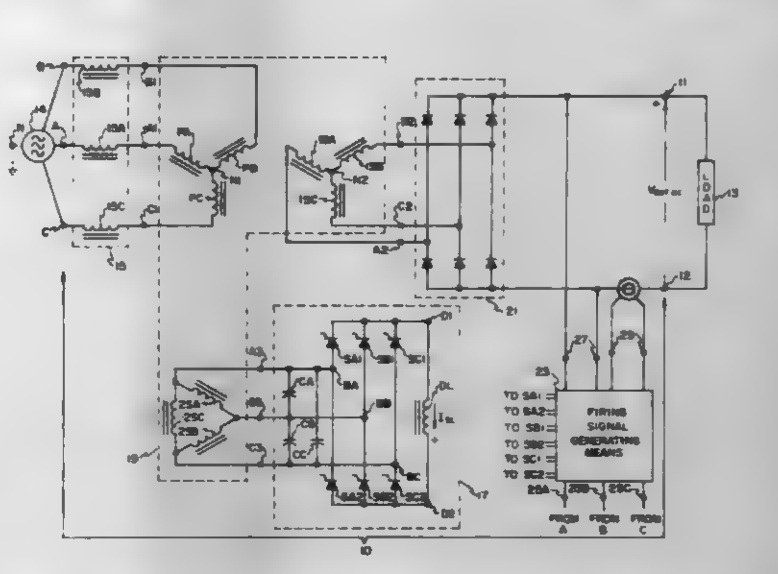
3,983,469
CONTROLLED REACTANCE REGULATOR CIRCUIT

Harold J. Brown, Lorain, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed Feb. 3, 1975, Ser. No. 546,554

Int. Cl.² H02M *7/155*

U.S. Cl. 321—9 R **18 Claims**



15. A voltage regulator circuit comprising, in combination, a circuit input for connection to a polyphase a-c source, a circuit output for connection to a load, polyphase line inductance means for supporting a voltage dependent upon the difference in voltages between the a-c voltages at the circuit input and the voltage at the circuit output, a transformer having a set of polyphase primary windings, having a first set of polyphase secondary windings and having a second set of polyphase secondary windings, means for connecting the line inductance means between the circuit input and the primary windings, means for connecting the first set of secondary windings to the circuit output, at least three capacitors connected in a closed circuit path such that each capacitor can exchange charge with each adjacent capacitor, the capacitors serving as means for drawing a leading component of current from the circuit input through the line inductance means and the transformer, means for connecting the capacitors to the second set of secondary windings, controllable switching means for sequentially conducting a resonant discharge current pulse through each capacitor to reverse the polarity of the charge across that capacitor and redistribute charge among the then remaining capacitors, each resonant discharge current pulse having a resonant discharge frequency of from three to ten times the frequency of the voltage at the circuit input, and control means for changing the phase relationship between said resonant discharge current pulses and the voltages at the circuit input, in accordance with the voltage at the circuit output, to maintain the voltage at the circuit output at a substantially constant value.

3,983,470
SUPERCONDUCTING APPARATUS FOR GENERATING HIGH FREQUENCY MICROWAVES

G. John Dick, Pasadena, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 20, 1975, Ser. No. 606,160

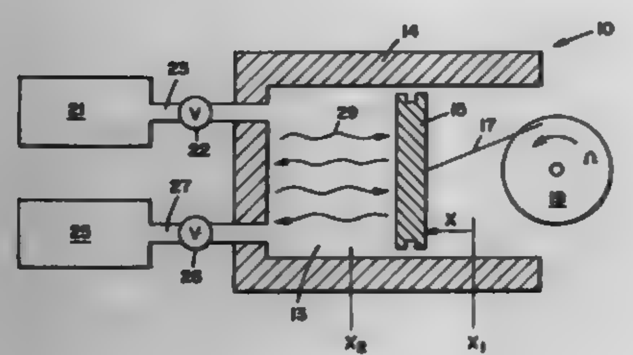
Int. Cl.² H02M *5/02*

U.S. Cl. 321—60 **10 Claims**

1. A superconducting microwave frequency conversion apparatus comprising:

- a. a cavity with superconducting walls;
- b. injection means for injecting microwaves into said cavity;
- c. transfer means for transferring microwaves out of said cavity;
- d. said cavity being deformable;
- e. deformation means for deforming said cavity; whereby
- f. microwaves are injected into said cavity by said injection

means, said cavity is deformed by said deformation means to increase the energy state of said microwaves, where-



upon said microwaves in said increased energy state are transferred out of said cavity by said transfer means.

3,983,471

VOLTAGE REGULATING SYSTEM

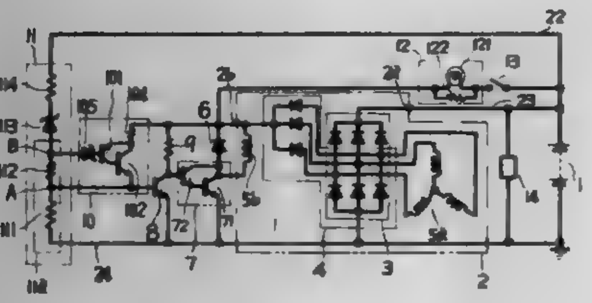
Katsumi Itoh, Ohbu, and Kazumasa Mori, Aichi, both of Japan, assignors to Nippondenso Co., Ltd., Japan

Filed Feb. 5, 1975, Ser. No. 567,952

Claims priority, application Japan, Feb. 2, 1975, 49-16659

Int. Cl.² H02H *7/06;* **H02J** *7/16*

U.S. Cl. 322—28 **6 Claims**



1. A voltage regulating system comprising;

an alternating current generator having an output winding and a field winding;

a full-wave rectifier connected with said output winding and providing a positive and negative direct current terminal;

a battery connected across said positive and negative terminal by conductors;

rectifier means connected with said full-wave rectifier and providing one other positive direct current terminal;

a field control circuit connected at one end thereof with said other positive terminal through said field winding and with said negative terminal at the other end thereof;

a control transistor connected with said field control circuit;

a voltage sensing circuit connected across said battery and further connected with said control transistor;

an additional circuit containing an emitter-base path of a PNP transistor and a zener diode connected between said other positive terminal and said voltage sensing circuit; [illegible]

a collector-emitter path of a NPN transistor connected between said other positive terminal and the base of said control transistor, the base of said NPN transistor being connected with the collector of said PNP transistor.

3,983,472

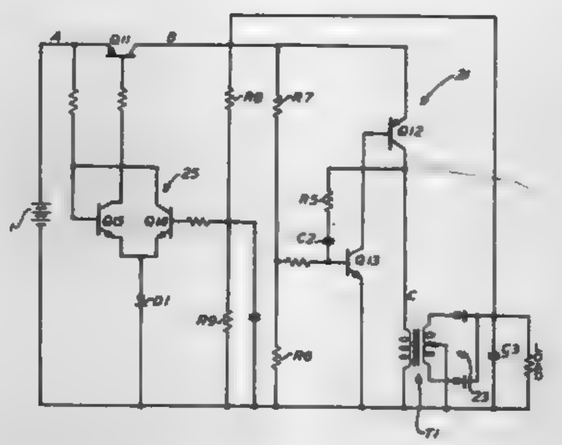
CHOKELESS SCHMITT-TRIGGER REGULATOR

David Morris, Brooklyn, N.Y., assignor to Litton Business Systems, Inc., Morris Plains, N.J.

Filed Mar. 11, 1974, Ser. No. 449,688

Int. Cl.² H02M *3/335*

U.S. Cl. 323—17 **5 Claims**



1. An electrical power supply comprising:

first coupling means for coupling a direct current input voltage source;

second coupling means for coupling a regulated voltage to an output load;

schmitt trigger means having an input terminal, an output terminal, and a control terminal;

a storage capacitor directly coupled across said output load;

and non-conduction conditions, comprising a switching regulator means and an oscillator, said switching regulator means having an input terminal coupled to said first coupling means, a control terminal coupled to said output terminal of said schmitt trigger means, and an output terminal coupled to the input of said oscillator, the output of said oscillator coupled to the input of said storage capacitor, a switching amplifier means having conduction for switching said switching amplifier means to either a conduction or non-conduction condition, and for only allowing charging of said storage capacitor during said conduction condition; and

output voltage detector means having an input terminal coupled to said storage capacitor, and an output terminal coupled to said control terminal of said schmitt trigger means.

3,983,473

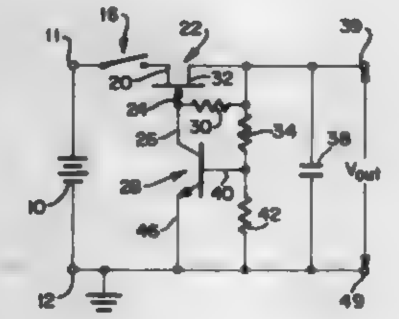
SERIES DIRECT-CURRENT VOLTAGE REGULATOR

Albert E. Sanderson, Carlisle, Mass., assignor to Inventronics, Inc., Carlisle, Mass.

Filed May 6, 1974, Ser. No. 466,992

Int. Cl.² G05F *1/58*

U.S. Cl. 323—22 R **4 Claims**



1. A circuit for producing an output voltage, V_{out}, that is independent of variations of an input voltage and that varies predictably in response to changes in ambient temperature under constant load conditions, said circuit comprising:

A. a common conductor,

B. an input terminal for coupling, with said common conductor, the input voltage to said circuit,

C. an output terminal for coupling, with said common conductor, the output voltage from said circuit,

D. a series regulating, junction-type field effect transistor having a gate electrode, a drain electrode connected to said input terminal and a source electrode connected to said output terminal,

E. control means connected only to said output terminal and said common conductor, said control means including:

  i. voltage divider means connected to said output terminal and said common conductor and including a tap connection, the voltage at said tap connection being AV_{out} where A is a constant,

  ii. transistor means including a collector-emitter current path in circuit between said gate electrode and said common conductor and a base-emitter current path including a base-emitter diode junction connected to said tap connection, the temperature of said diode junction being the ambient temperature and said diode junction being forward biased by the voltage at said tap connection, the voltage across said diode junction being V_{be} and the current through said diode junction controlling the conductivity of said collector-emitter current path, and

  iii. a constant-current source connected to said output terminal as the sole source of current to said collector-emitter current path, all the current from said constant-current source passing through said collector-emitter path and the output voltage from said circuit being $V_{out}=V_{be}/A$ wherein the voltage across said forward biased diode junction, V_{be}, and therefore the output voltage V_{out}, vary predictably in accordance with the ambient temperature.

3,983,474

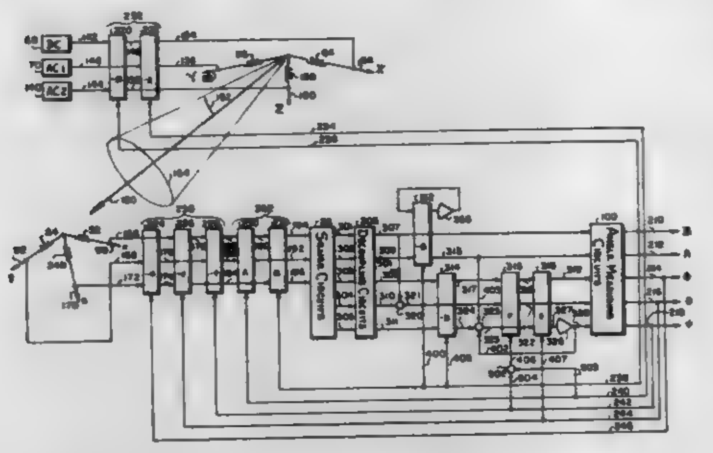
TRACKING AND DETERMINING ORIENTATION OF OBJECT USING COORDINATE TRANSFORMATION MEANS, SYSTEM AND PROCESS

Jack Kuipers, Grand Rapids, Mich., assignor to Polhemus Navigation Sciences, Inc., Burlington, Vt.

Filed Feb. 21, 1975, Ser. No. 551,984

Int. Cl.² G01R *33/02*

U.S. Cl. 324—43 R **10 Claims**



1. An object locating system in which the object is free to translate and orient in three dimensions and which comprises:

three orthogonal radiators for defining a reference coordinate frame and for radiating a directable nutating field about a pointing vector direction;

a pointing coordinate frame having the *x*-axis coincident with the pointing vector direction and the *y*-axis in the *x-y* plane of the reference frame;

three orthogonal sensors located at the object to be tracked for sensing the nutating field and for defining a sense coordinate frame;

sources of signals to be passed through each of the three radiators;

means for measuring signals induced in the sensors;

means for processing the signals induced in the sensors to determine the translation displacement of the sense frame with respect to the x-axis of the pointing frame and the orientation displacement of the sense frame with respect to the pointing frame; and

means for determining the translation displacement of the sense frame with respect to the pointing vector defined in the reference frame and the orientation displacement of the sense frame with respect to the reference frame.

3,983,475

FREQUENCY SELECTIVE DETECTING SYSTEM FOR DETECTING ALTERNATING MAGNETIC FIELDS

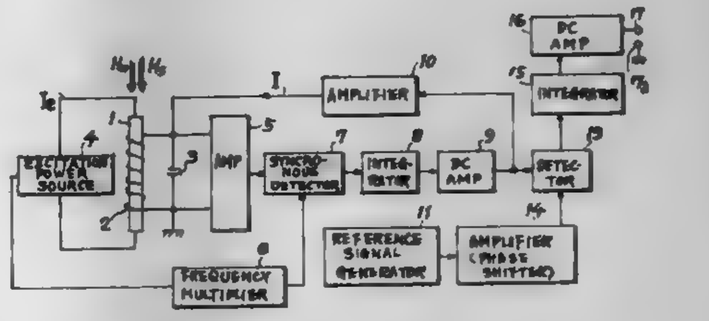
Teruji Watanabe, Niza; Shizuo Suzuki; Kazuomi Yamamura, both of Yokohama, and Yoshinao Iwamoto, Fujimi, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Dec. 30, 1974, Ser. No. 537,417

Claims priority, application Japan, Jan. 10, 1974, 49-5638

Int. Cl.² G01R *33/02*

U.S. Cl. 324—43 R **2 Claims**



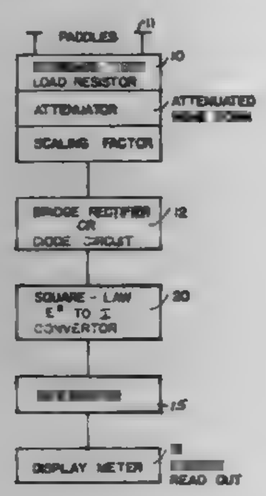
1. A system for detecting alternating magnetic fields comprising: a magnetic sensing element comprised of a parametrically excited second harmonic oscillator having an output winding for developing an oscillatory outout signal therein, an excitation signal source for applying to the magnetic sensing element an alternating exciting current having a frequency higher than a frequency of an alternating magnetic field to be detected, a frequency doubler receptive of the excitation signal for developing an output signal having a frequency equal to twice the excitation signal frequency, a synchronous detector for synchronous detection of an oscillatory output signal of the magnetic sensing element in synchronism with the frequency doubler output signal, a first integrator for integrating the output of the synchronous detector and having an integration time constant sufficiently shorter than the period of the alternating magnetic field to be detected to provide an integrated output having a polarity corresponding to the phase of the oscillation output signal of the magnetic detecting element and an instantaneous magnitude corresponding to the amplitude of the oscillation output signal, means defining a feedback path for negatively feeding back the output of the first integrator to the output winding of the magnetic sensing element, a reference signal generator for generating a reference signal of a frequency substantially equal to the frequency of the alternating magnetic field to be detected, a detector for detecting the output of the first integrator in synchronism with the reference signal, and a second integrator for integrating the output of the detector and having an integration time constant longer than the period of the alternating magnetic field to be detected to obtain an integrated output having an instantaneous magnitude which varies in accordance with the phase- difference between the reference signal and the output of the first integrator and proportional to the amplitude of an AC signal included in the output of the first integrator which is representative of the alternating magnetic field to be detected, whereby the output of the second integrator is em-

ployed to detect an alternating field of a frequency close to the frequency of the reference signal.

3,983,476

DEFIBRILLATOR TESTING DEVICE

Francis Konopasek, 151 Marine Drive, Rottingdean, England
Filed June 28, 1974, Ser. No. 484,124
Int. Cl.² G01R *15/08, 15/10*
U.S. Cl. 324—111 **4 Claims**



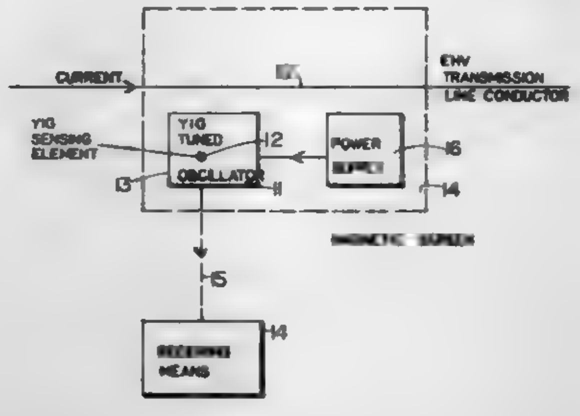
1. A passive defibrillator tester, requiring no manipulation of controls, comprising in combination a standard test load resistor, means operatively connecting said test load resistor to the defibrillator being tested, whereby said defibrillator is discharged into said standard test load resistor, a passive square-law converter, circuit means operatively connecting said standard test load resistor to said converter, and a passive meter circuit operatively connected to said square-law converter, said meter circuit including a passive integrator circuit and a display meter to indicate the true delivered watt seconds input from the defibrillator being tested, into the standard test load resistor, and switch means between said standard test load resistor and said converter, a pair of variable resistors in parallel between said standard test load resistor and said switch means, said switch means placing one variable resistor or the other variable resistor in circuit thereby scaling said meter to one range or another range, said integrator circuit including a diode and capacitor network in said meter circuit.

3,983,477

DEVICE FOR MEASURING EXTRA HIGH VOLTAGE LINE CURRENT

Stanislaw Szczesny Stuchly, Winnipeg, Canada; Michael Napoleon Rzewuski, Warsaw, Poland, and Michael Zenon Tarnawecky, Winnipeg, Canada, assignors to Manitoba Research Council, Winnipeg, Canada
Filed May 29, 1974, Ser. No. 474,168
Int. Cl.² G01R *19/00, 19/26*
U.S. Cl. 324—117 R **6 Claims**

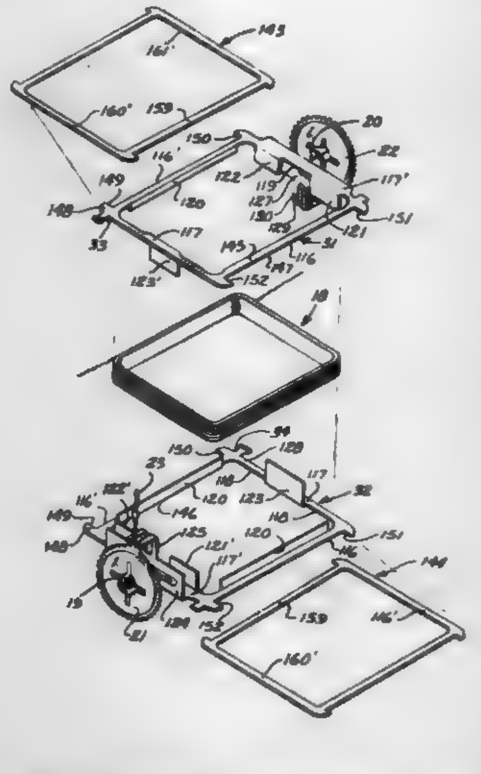
1. An electrical measuring device adapted to sense an electrical current flowing in a conductor of an extra high voltage electrical transmission line in a region of high potential, and to transmit a generated signal corresponding to said current, to receiving means in a region of relatively low potential in order to provide an output signal related to said electrical current; comprising in combination a single crystal yttrium-iron-garnett sensing element magnetically coupled to said extra high voltage transmission line in said region of high potential, an electrical oscillator, operatively connected to said sensing element whereby said sensing element tunes said oscillator, for generating a signal whose frequency is related to the current flowing in said extra high voltage transmission line, temperature compensated regulated power supply means in said region of high potential for operating said electrical oscillator, microwave transmission means operatively connected to said oscillator for transmitting the generated signal from said region of high potential, receiving means in said region of relatively low potential for receiving the signal from said transmission means, and means in said region of relatively low potential for converting said received signal into an output signal, which is related to the electrical current flowing in said extra high voltage transmission line.



3,983,478

MOVING COIL INSTRUMENT HAVING ELECTRICALLY CONDUCTIVE COIL FORM PARTS CONNECTED TO THE COIL

David B. Pearson, Raritan, N.J., assigner to Weston Instruments, Inc., Newark, N.J.
Division of Ser. No. 391,496, Aug. 24, 1973, Pat. No. 3,882,389, which is a division of Ser. No. 173,425, Aug. 20, 1971, Pat. No. 3,764,909. This application Dec. 12, 1974, Ser. No. 532,246
Int. Cl.² G01R *5/02, 1/04, 1/14*
U.S. Cl. 324—154 R **23 Claims**

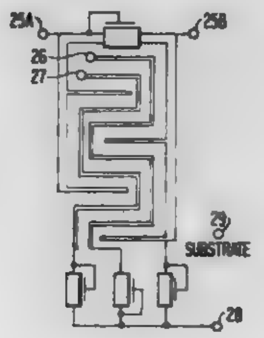


1. A moving coil instrument comprising: a first unitary electrically conductive coil form part, a second unitary electrically conductive coil form part mounted adjacent, and in spaced, electrically insulated relation to the first coil form part, coil support means on the coil form parts, a coil extending around the coil support means and bridging said coil form parts, said coil including a winding having ends electrically connected respectively to said coil form parts, said coil form parts and coil comprising a coil assembly; first and second coil assembly supports; support means mounting said coil assembly supports in electrically insulated relation to each other; electrically conductive means connected between said first coil form part and said first support, and between said second coil form part and said second support, so that an electrical connection can be made to said coil from said supports.

3,983,479

ELECTRICAL DEFECT MONITOR STRUCTURE

James H. Lee; Akella V. S. Satya, both of Wappingers Falls, N.Y.; Ashwin K. Ghatalia, Essex Junction, and Donald R. Thomas, Westford, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 23, 1975, Ser. No. 598,480
Int. Cl.² G01R *31/26*
U.S. Cl. 324—158 R **5 Claims**



1. An electrical defect-monitor structure for semiconductor wafers comprising:

a plurality of coextending serpentine first diffusions,
two-spaced coextending second diffusions sandwiching said first diffusions therebetween and having lateral extensions extending into the valleys of said first diffusions,
first gating means shorting said second diffusions at adjacent ends thereof,
first gating means in each of said first diffusions and one of said second diffusions at common ends thereof, all of said gating means being connected in common,
test contact pads adjacent each distal end of said first diffusions, one of said diffusions and the common connection of said first gating means,
an insulating layer over said first and second diffusions,
a plurality of serpentine first metal conductor lines on said insulating layer and extending transversely to said plurality of first diffusions,
two spaced second metal conductor lines sandwiching said first metal conductor lines therebetween and having lateral extensions extending into the valleys of said first metal conductor lines,
means shorting said second metal conductor lines at adjacent ends thereof,
second gating means connected to each said first metal conductor lines at common ends thereof and one of said second metal conductor lines, all of said second gating means being connected in common, and
second test contact pads, adjacent each distal end of said first metal conductor lines, one of said second metal conductor lines and the common connection of said fourth gating means.

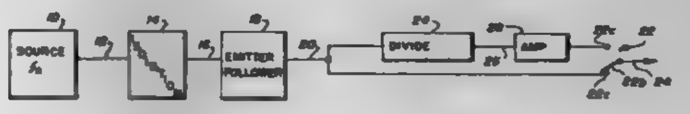
3,983,480

CALIBRATION CIRCUIT AND METHOD

Francis P. Meserow, Highland Park, and Frank H. Mills, Chicago, both of Ill., assignors to Alston, Inc., Chicago, Ill.
Filed Jan. 29, 1975, Ser. No. 544,972
Int. Cl.² G01P *21/00, 3/48*
U.S. Cl. 324—169 **4 Claims**

1. In combination, an impulse tachometer and a calibration circuit therefor, said tachometer including:

means for generating constant amplitude electrical pulses in response to the application of electrical pulses at the input thereof, said constant amplitude electrical pulses having a repetition rate equal to the repetition rate of said applied electrical pulses;
means for alternatively applying to the input of said constant amplitude pulse generating means either said input electrical pulses having a repetition rate determined by the speed of rotation of a rotating device or simulating electrical pulses produced by said calibration circuit; and
means for displaying said speed of rotation in response to said constant amplitude electrical pulses as a function of the repetition rate and duration thereof; and means for adjusting the duration of said constant amplitude pulses, whereby said display means may be calibrated to accurately display the speed of rotation represented by said input pulses;
said calibration circuit generating electrical pulses of known repetition rate at the output thereof for simulating a selected speed of rotation, and including:
means for connecting the input of said calibration circuit to a line source generating a reference signal of known frequency;

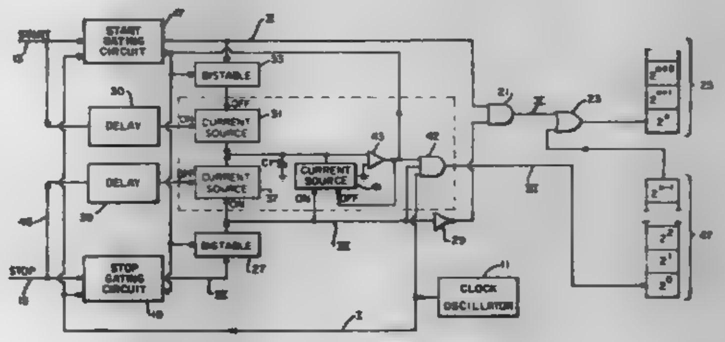


optoisolator circuit means, said optoisolator circuit means producing electrical pulses having a repetition rate equal to the frequency of said reference signal and electrically isolated therefrom;
current limiting means connecting said reference signal source to said optoisolator circuit means,
means connecting the output of said optoisolator circuit means to the input of pulse altering circuit means, said pulse altering circuit means altering said electrical pulses by producing at its output electrical pulses having a reduced repetition rate equal to one electrical pulse for every x electrical pulses received at its input, where x is an integer greater than 1; and
switch means selectively operable to provide at the output of said calibration circuit as said simulating electrical pulses either said produced electrical pulses or said altered electrical pulses.

3,983,481

DIGITAL INTERVALOMETER

Ronald Nutt, Knoxville; Kelly Milam, Concord, and Charles W. Williams, Powell, all of Tenn., assignors to Ortec Incorporated, Oak Ridge, Tenn.
Filed Aug. 4, 1975, Ser. No. 601,907
Int. Cl.² G04F *8/00*
U.S. Cl. 324—186 **8 Claims**



1. Apparatus for providing a digital measurement of the interval between start and stop signals, said apparatus comprising:

a clock signal source providing a pulsatile clock signal having an accurately predetermined period;
a timing capacitor;
means for charging said chapacitor, starting at a predetermined starting voltage, at a first predetermined rate from the occurrence of said start signal to a subsequent clock

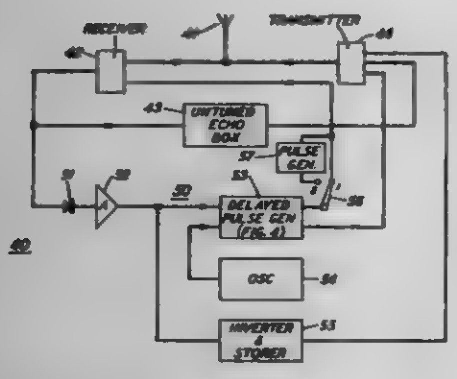
pulse and for charging said capacitor at said first predetermined rate from the occurrence of a clock pulse subsequent to said stop signal to a time following said stop signal by an interval corresponding to an integer number of clock periods;

means including a first series of counting register stages for counting clock periods between said clock pulse subsequent to said start signal and said clock pulse subsequent to said stop signal;

means operative after the second charging interval for discharging said capacitor at a second predetermined rate which is substantially less than said first rate and which is an integer fraction of said first rate; and

means including a second series of counting register stages for counting clock periods during discharging of said capacitor back to said predetermined starting voltage, the two counting means being provided with means permitting carrys from the most significant stage of said second series of register stages to the least significant stage of said first series of register stages, whereby the count accumulated in the two counting means togethr represents the interval between said start and stop signals with a resolution substantially finer than one clock period.

3,983,482
DELAYED PULSE TRANSMISSION SYSTEMS
William H. Doherty, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 14, 1951, Ser. No. 256,273
Int. Cl.² H04K *3/00*
U.S. Cl. 325—6 **5 Claims**



1. In combination, means normally unblocked for receiving incident wave energy pulses, a multi-resonant cavity supplied with the received pulses for storage of the radio frequency energy in said pulses, means normally blocked to be supplied with the received pulse energy for transmitting said received pulse energy after storage for a finite time in said multi-resonant cavity, a control circuit for disabling the receiving means and enabling the transmitting means at intervals subsequent to the reception of incident pulses, and a timing source for continuously varying the duration of said intervals.

3,983,483
COMMUNICATIONS DEVICE ARRANGED TO BE WORN IN INTIMATE CONTACT WITH THE BODY OF A USER
Donald J. Pando, 6 Rosemont Road, Milton, Morris County, N.J. 07438
Filed Mar. 10, 1975, Ser. No. 557,112
Int. Cl.² H04B *1/04*
U.S. Cl. 325—16 **18 Claims**

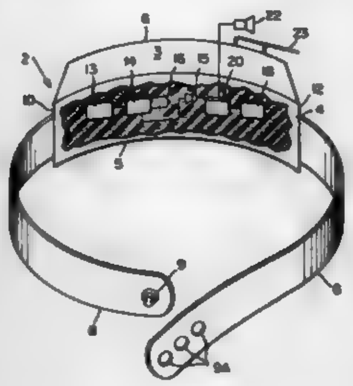
1. A communications device adapted to be worn in intimate contact with th body of a user comprising:

circuitry including a radio transmitter having a power supply and a microphone connected thereto, an amplifier stage including a first transistor and a first capacitor connected to the collector of the first transistor, an oscillator stage including a second transistor with the base thereof connected to the first capacitor, and a radio receiver having a power supply, an antenna and an earphone connected thereto;

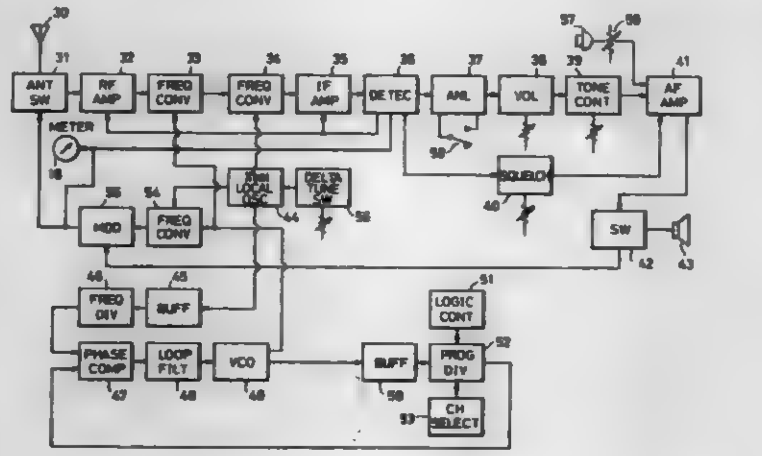
a collar for housing the circuitry and including a strap for supporting the collar about the neck of the user so as to be in intimate contact therewith, said collar and circuitry housed within the collar arranged for permitting communication with a remote station while maintaining maximum body mobility;

said collar being generally oblong in shape and including a longitudinally convex face and a longitudinally concave face adjacent the neck, substantially parallel upper and lower edges and substantially parallel opposite ends separating the convex and concave faces, and the strap extending from the opposite ends and being integral with the concave face; and

means included in the transmitter and operative with the body of the user when the collar is worn in intimate contact with the neck for providing a predetermined transmission frequency range and including a grounded conductor for providing one plate of a second capacitor, with the body of the user being effectively connected to the collector of the second transistor for providing the other plate of the second capacitor.



3,983,484
MULTICHANNEL SIGNAL TRANSMITTING AND RECEIVING APPARATUS
Takuo Hodama, Okegawa, Japan, assignor to Nihon Dengyo Co., Ltd., Tokyo, Japan
Filed May 9, 1975, Ser. No. 576,238
Claims priority, application Japan, Dec. 6, 1974, 49-146912[U], Apr. 10, 1975, 50-47590
Int. Cl.² H04B *1/40*
U.S. Cl. 325—20 **5 Claims**



1. A multichannel signal transmitting and receiving apparatus comprising:

a single reference local oscillator producing a signal of an output oscillation frequency;

a first frequency divider for dividing said output oscillation frequency with a specific frequency division ratio and producing an output;

a phase locked loop circuit having a phase comparator receiving at one input thereof said output of the first frequency divider and producing an output, and a voltage controlled oscillator producing an output of an oscillation frequency controlled by said output of the phase comparator;

a second frequency divider for frequency dividing the output of the voltage controlled oscillator with a frequency division ratio in accordance with each of a plurality of channels to produce a corresponding output and supplying said corresponding output as another input to the phase comparator;

means for subjecting a signal received through an antenna to heterodyning by the oscillation output of the local oscillator and the oscillation output of the voltage controlled oscillator and thereafter detecting the resulting signal, thereby to obtain a first audio signal;

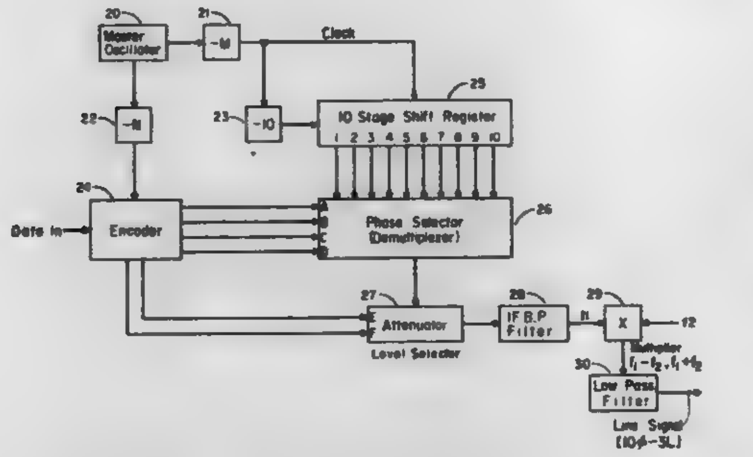
means for obtaining a carrier wave for signal transmission from the oscillation outputs of the local oscillator and the voltage controlled oscillator;

means for modulating said carrier wave for signal transmission with a second audio signal and transmitting the same through the antenna at times when said heterodyning means receives no antenna output signal;

first changeover means for controllably changing over the oscillation frequency of the local oscillator between different values respectively for signal reception and transmission; and

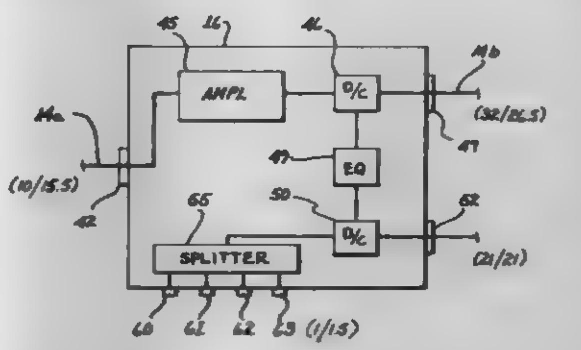
second changeover means for controllably changing over the frequency division ratio of the second frequency divider between different values respectively for signal transmission and reception for each of said channels.

3,983,485
MULTI-PHASE AND MULTI-AMPLITUDE LEVEL MODULATOR AND MODULATION AND DEMODULATION METHODS
Richard L. Stuart, Simpsonville, Md., assignor to Rixon Inc., Silver Spring, Md.
Filed Feb. 28, 1975, Ser. No. 554,112
Int. Cl.² H04L *27/20*
U.S. Cl. 325—30 **32 Claims**



1. A multi-phase, multi-amplitude level modulation method comprising generating a carrier signal, generating a modulating signal having first, second and third amplitude levels and ten phases, and modulating said carrier with said first, second and third amplitude levels and ten phases to produce sixteen signal states, said first level corresponding to carrier off operation and providing a first signal state, said second level comprising an intermediate level and said carrier being modulated at five equally spaced phases for said second level to provide five of said sixteen signal states, and said third level comprising an amplitude level which is substantially higher than said intermediate level and said carrier being modulated at ten equally spaced phases for said third level to provide ten of said sixteen signal states, alternate/equally spaced phases of said third level being in phase with respective phases of the five phases of the second level.

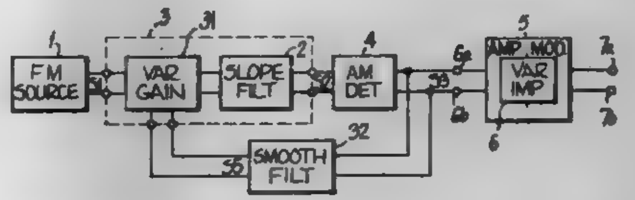
3,983,486
MODULAR CATV SYSTEM
William A. Rheinfelder, Phoenix, Ariz., assignor to Alpha Engineering Corporation, Phoenix, Ariz.
Filed Nov. 29, 1974, Ser. No. 528,459
Int. Cl.² H04N *7/10*
U.S. Cl. 325—308 **17 Claims**



1. In a CATV system having cables with amplifying means spaced along said cables at predetermined unit intervals, or fractions thereof, to compensate for the attenuation of the signals being carried by said cables, the improvement comprising:

- a. amplifying means for receiving said signals as input signals and having a first and a second output terminal;
- b. said amplifying means including means for amplifying said input signals to a first level equal to the input signal levels plus the attenuation of said signals incurred by said signals while traveling said unit interval;
- c. means connecting signals amplified to said first level to said first output terminal;
- d. said amplifying means also including means for amplifying said input signals to a second level equal to the input signal levels plus a fraction of the attenuation of said signals incurred by said signals while traveling said unit interval;
- e. means connecting signals amplified to said second level to said second output terminal.

3,983,487
FM-AM CONVERTER
Masaharu Ohno, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 6, 1975, Ser. No. 602,186
Claims priority, application Japan, Aug. 14, 1974, 49-92903
Int. Cl.² H04B *1/06*
U.S. Cl. 325—315 **7 Claims**



1. An FM-AM converter comprising:

A. a transmission system comprising a slope filter having a frequency response that varies monotonically over a predetermined frequency band;

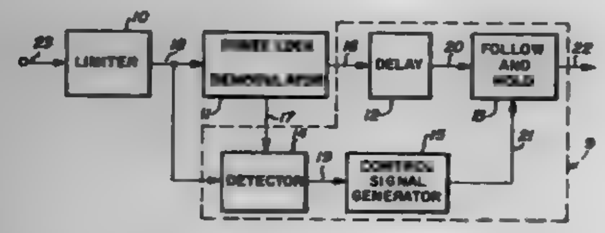
B. means to apply an FM signal to said filter, said FM signal being within said frequency band, whereby said FM signal is modified by said filter to an amplitude modulated FM signal, the envelope of which corresponds to the signal that modulates the frequency of said FM signal;

C. a carrier signal source;
D. means connected to said transmission system to receive the amplitude modulated FM signal from said filter and connected to said carrier source to receive the carrier signal therefrom and to modulate the amplitude of said carrier signal by a signal corresponding to the envelope of said amplitude modulated FM signal; and
E. control means responsive to the mean value of the signal corresponding to the envelope of said amplitude modulated FM signal to control said transmission system to maintain the mean value of said amplitude modulated FM signal substantially constant.

3,983,488
FREQUENCY-MODULATION DEMODULATOR THRESHOLD EXTENSION DEVICE

John A. Bush, Sunol; Drew R. Lance, Saratoga, and John E. Altstatt, Palo Alto, all of Calif., assignors to California Microwave, Inc., Sunnyvale, Calif.

Filed June 17, 1974, Ser. No. 479,808
Int. Cl.² H04B *1/10*
U.S. Cl. 325—346 **11 Claims**



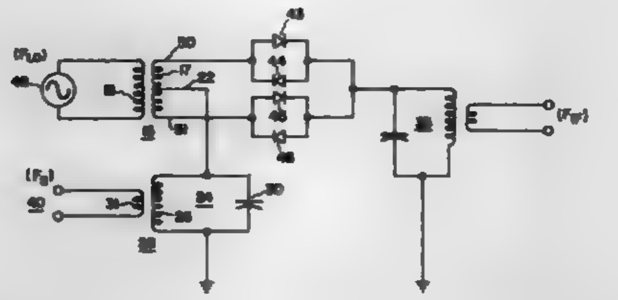
1. A threshold extension circuit for use in a receiver having a phase locked demodulator, comprising:
a delay means and a follow-and-hold means coupled together in a series circuit for connecting the output of the demodulator to a receiver output terminal, said delay means being operative to delay the demodulated signal developed by the demodulator for a predetermined period of time, said follow-and-hold means being responsive to a control signal and operative to interrupt said series circuit and to hold the signal level at the output terminal constant during such interruption;
detector means having a first input for receiving the VCO signal developed by the voltage controlled oscillator of the demodulator and a second input for receiving an IF signal input to the demodulator, said detector being operative to detect a relative phase shift of greater than 180° between said IF signal and said VCO signal and to develop a detector output signal; and
control signal generating means responsive to said detector output signal and operative to generate said control signal, said control signal causing said follow-and-hold means to interrupt said series circuit a short period of time before the occurrence of a click impulse in the delayed demodulated signal caused by said relative phase shift and to terminate the interruption a short period of time after the occurrence of the click impulse in the delayed demodulated signal thereby effectively removing the click impulse from the signal developed at the receiver output terminal.

3,983,489
DOUBLING MIXER

Norman C. Gittinger, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed June 16, 1975, Ser. No. 586,876
Int. Cl.² H04B *1/26*
U.S. Cl. 325—449 **2 Claims**

1. A balanced doubling mixer comprising:
radio frequency transformer means including a primary winding adapted to be connected to a source of local oscillator signals at a first radio frequency and a center tapped secondary winding having a first and second end;
first tuned circuit means connected to said center tap, said tuned circuit means including an input port adapted to be connected to a source of radio frequency signals at a second radio frequency;
first diode means including at least two semiconductor diodes connected in back-to-back circuit relationship, a first end of said diode means connected to said first end of said secondary winding,

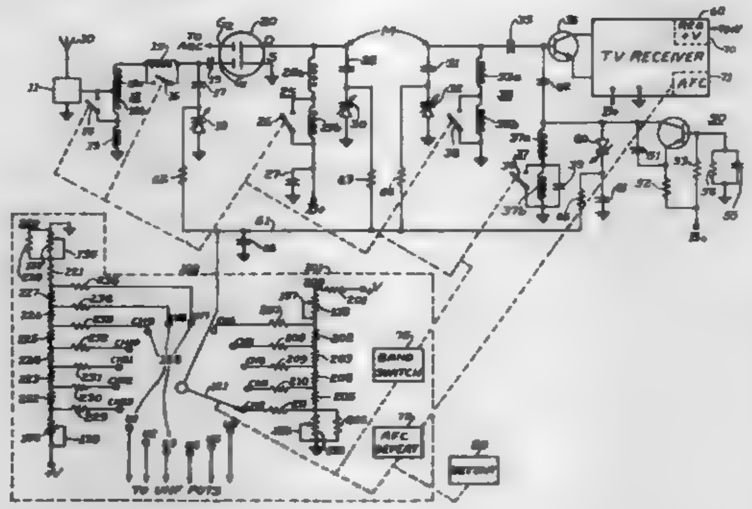


second diode means including at least two semiconductor diodes connected in back-to-back circuit relationship, a first end of said diode means connected to said second end of said secondary winding;
second tuned circuit means tuned to the output frequency of said mixer connected to the second ends of each of said first and second diode means, said second tuned circuit means including an output port, said output port producing an output signal at a frequency equal to the sum or difference of said second radio frequency and twice said first radio frequency.

3,983,490
SIGNAL OVERLOAD PROTECTION CIRCUIT FOR VARACTOR TUNER

John Y. Ma, Glenview, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 5, 1975, Ser. No. 602,172
Int. Cl.² H04B *1/18*
U.S. Cl. 325—452 **8 Claims**

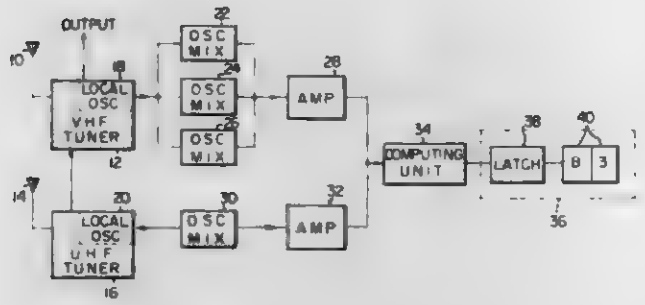


1. A television tuner comprising:
a tunable circuit including a varactor diode providing the variable capacitance therefor;
means applying a DC tuning voltage to bias said varactor diode for adjusting the resonance of said tunable circuit to receive and translate broadcast television signals in a given frequency spectrum, the maximum and minimum capacitance exhibited by said varactor diode being such that over a certain portion of said frequency spectrum the magnitude of a received broadcast television signal may significantly exceed the magnitude of said DC tuning voltage; and
means limiting distortion of said received television signal whenever its magnitude substantially exceeds said DC tuning voltage by automatically back-biasing said varactor diode.

3,983,491
TELEVISION CHANNEL INDICATOR

Akiyuki Yoshizato, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1975, Ser. No. 553,071
Claims priority, application Japan, Mar. 1, 1974, 49-24583
Int. Cl.² G01R *23/14*
U.S. Cl. 325—455 **5 Claims**



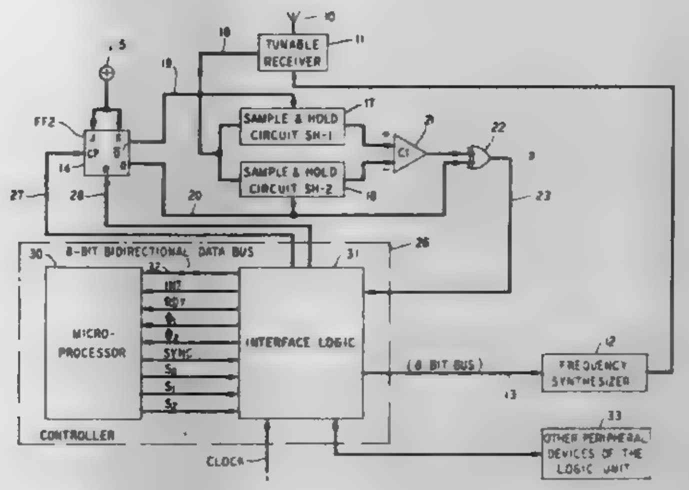
1. An indicator for a heterodyne receiver arranged to selectively receive a plurality of electromagnetic signals at frequencies respeetively designated by numbers which are proportional to the local oscillator frequencies for the respective signals, the indicator comprising:
computing means connected to the local oscillator of the receiver to compute, based on the local oscillator frequency, the number corresponding to the signal selected by the receiver,
said computing means comprising a counter to count the number of oscillations of the local oscillator during a predetermined period of time so that the final count of the counter contains the number corresponding to the selected signal;
the computing means further comprising a frequency divider connected between the local oscillator and the counter;
at least three mixers each connected between the local oscillator and the counter and at least three fixed frequency oscillators each connected to one of the mixers, each of the mixers feeding to the counter a signal having a frequency equal to the difference between the local and its respective fixed frequency oscillator frequencies; and
display means connected to the computing means to display the number.

3,983,492
FREQUENCY SCAN AND LOCK CIRCUIT FOR MOBILE RADIO CHANNEL SELECTION

Reed Edward Fisher, Parsippany-Troy Hills Township, Morris County, N.J., and Robert William Humes, Martinsville, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 29, 1975, Ser. No. 544,961
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976
Int. Cl.² H04B *1/32*
U.S. Cl. 325—468 **5 Claims**

1. A mobile radio telecommunication unit having a tunable receiver and a circuit for ascertaining which one of predetermined receivable frequency channels is strongest, said circuit comprising
first and second analog signal sample and hold circuits,
controllable means for steering an output, which is indicative of received signal strength in one of said channels, of said receiver to one or the other of said sample and hold circuits,
means for comparing outputs of said sample and hold circuits,
means, responsive to an output of said comparing means, for producing a signal pulse state when a new channel sample is the larger of two compared samples and a signal no-pulse state when the new sample is the smaller of the two compared samples, and
control means comprising
means for sequentially tuning said receiver to each of said channels,

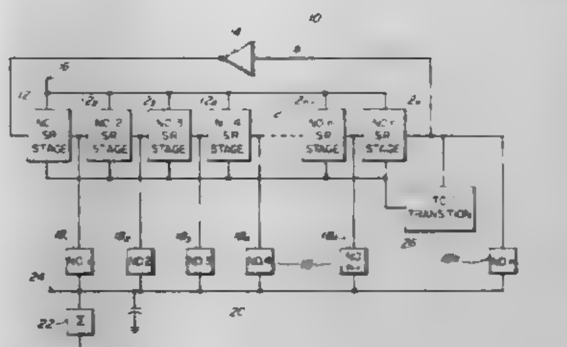


means, responsive to said pulse state, for storing the name in said sequence of said channel having said larger sample, and
means for controlling said steering means to steer each sequential channel sample from said receiving means to the one of said sample and hold circuits that held said smaller sample of two previously compared samples.

3,983,493
DIGITAL SYMMETRIC WAVEFORM SYNTHESIZER

Jerry M. Gladstone, Santa Rosa, Calif., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed June 27, 1975, Ser. No. 590,991
Int. Cl.² H03K *23/08, 14/02;* **G11C** *19/28;* **G06G** *7/28*
U.S. Cl. 328—14 **5 Claims**



1. A digital generator for producing an analog waveform including:
a. an *n* stage clocked shift register having an inverter coupled between the output of the *n*th stage and the input of the first stage, the logic state of any stage being shifted to an adjacent stage in the direction from the first stage to the *n*th stage at a rate related to the clock signal,
b. means responsive to a first logic level of each shift register stage for generating up to *n* preselected weighted currents, and responsive to a second logic level of each shift register stage for generating no current,
c. means for summing the preselected weighted currents to produce an analog voltage waveform whose shape is related to the sum of the preselected weighted output currents, and
d. means responsive to the output of the *n*th stage for resetting each stage of the shift register to the second level when the *n*th stage changes from the first level to the second level to insure that each shift register stage at said change is at the second level.

3,983,494

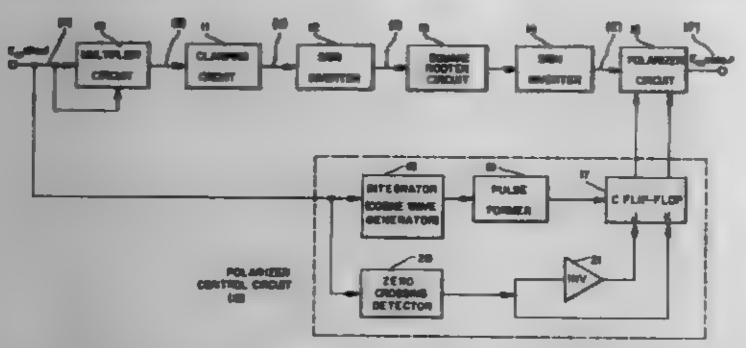
FREQUENCY INSENSITIVE SINE WAVE-TO-COSINE WAVE CONVERTER

Bimal K. Bose, Troy, and Paul M. Espelage, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 24, 1975, Ser. No. 561,592

Int. Cl.² H03K *17/07*

U.S. Cl. 328—21 **7 Claims**



1. A frequency insensitive sine wave-to-cosine wave converter based on the relationship $\cos \omega t = \sqrt{1-\sin^2\omega t}$ comprising

first circuit means for continuously multiplying a variable frequency sine wave input signal by itself to generate a first signal representative of the square $\sin^2\omega t$,

second circuit means for effectively level shifting said first signal to generate a second signal representative of the difference $1-\sin^2\omega t$, and

third circuit means for effectively taken the square root of said second signal to generate a cosine wave output signal with an amplitude proportional to the input signal amplitude,

said second circuit means being comprised by a clamping circuit and a sign inverter circuit, and

said third circuit means being comprised by a square rooter circuit for generating a full wave rectified cosine wave, a polarizer circuit for converting said full wave rectified cosine wave to the alternating voltage cosine wave output signal, and a polarizer control circuit for generating control signals for said polarizer circuit at intervals corresponding to the zero crossings of said cosine wave output signal.

3,983,495

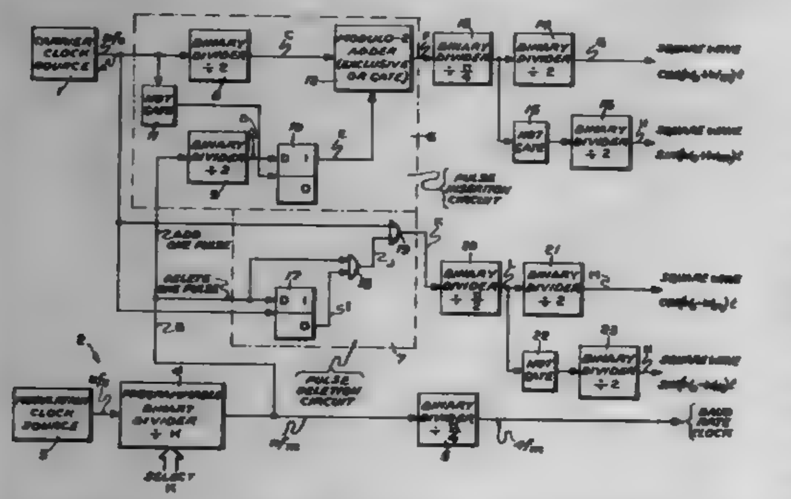
DIGITAL WAVEFORM GENERATOR

Marvin Aaron Epstein, Monsey, N.Y., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Sept. 29, 1975, Ser. No. 617,545

Int. Cl.² H03K *5/08, 3/04, 1/12*

U.S. Cl. 328—34 **22 Claims**



1. A digital waveform generator to generate $\mathrm{COS}(w_o + w_m)t$, $\mathrm{SIN}(w_o + w_m)t$, $\mathrm{COS}(w_o - w_m)t$ and $\mathrm{SIN}(w_o - w_m)t$ square wave waveforms comprising:

a first source to provide a first square wave pulse stream having a first given frequency;

a second source to provide a second square wave pulse stream having a second given frequency less than said first given frequency;

first means coupled to said first and second sources to periodically insert one additional pulse into said first pulse stream to provide a first resultant pulse stream;

second means coupled to said first and second sources to periodically delete one pulse from said first pulse stream to provide a second resultant pulse stream;

third means coupled to said first means to divide said first resultant pulse stream by a first given division factor;

fourth means coupled to said third means to divide said divided first resultant pulse stream by a factor of two to generate said $\mathrm{COS}(w_o + w_m)t$ waveform;

fifth means coupled to said third means to divide the complement of said divided first resultant pulse stream by a factor of two to generate said $\mathrm{SIN}(w_o + w_m)t$ waveform;

sixth means coupled to said second means to divide said second resultant pulse stream by a second given division factor;

seventh means coupled to said sixth means to divide said divided second resultant pulse stream by a factor of two to generate said $\mathrm{COS}(w_o - w_m)t$ waveform; and

eighth means coupled to said sixth means to divide the complement of said divided second pulse stream by a factor of two to generate said $\mathrm{SIN}(w_o - w_m)t$ waveform.

3,983,496

PULSE CIRCUITS

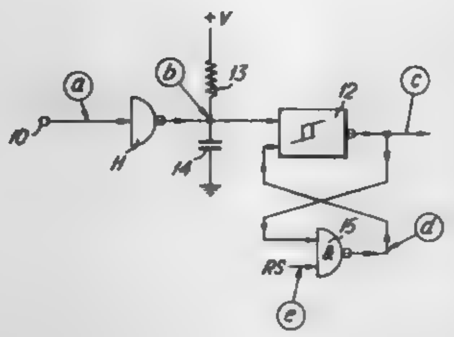
John Bedford, Gorebridge, Scotland, and John Alexandre Sherrington, Camberley, England, assignors to Ferranti, Limited, Hollinwood, England

Filed Apr. 15, 1975, Ser. No. 568,200

Claims priority, application United Kingdom, Apr. 16, 1974, 16609/74

Int. Cl.² H03K *5/20*

U.S. Cl. 328—110 **13 Claims**



1. A high-speed pulse detection circuit comprising an input terminal to which a pulse may be applied, input means connected to the input terminal for providing a short discharge time when a pulse is applied to the input terminal and a long charge time when the pulse is terminated, a Schmitt trigger stage having a first and a second input and an output, said first input being connected to said input means, a second stage having a reset input, an input connected to said output of the Schmitt trigger stage and an output connected to said second input of the Schmitt trigger stage, and means connected to the output of the Schmitt trigger stage, the Schmitt trigger stage and the second stage forming a bistable loop which is set to one stable state by the application of a pulse to the input terminal of a duration sufficient to provide a voltage at said first input equal to a first threshold level of the Schmitt trigger stage, and is reset to the other stable state on the application of a pulse to the reset input of the second stage which allows the input of the Schmitt trigger stage to reach a second threshold level.

3,983,497

PHASE LOCKED LOOP

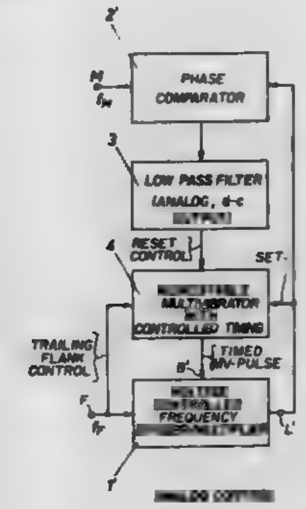
Wilhelm Hegeler, Hildesheim, Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Germany

Filed Mar. 10, 1975, Ser. No. 557,040

Claims priority, application Germany, Mar. 21, 1974, 2413604

Int. Cl.² H03B *3/04*

U.S. Cl. 328—155 **4 Claims**



1. A phase locked loop comprising

a phase comparator (2) having a signal input (M) to which an input signal (f_M) is applied and a comparison input (L) to which a comparison signal (f_L) developed within the phase locked loop is applied, and a comparison output having a comparison output signal appear thereon which is representative of the relative phase position of the signals applied to said inputs (M, L);

and a controllable frequency divider/multiplier (1) having a control input (B) to control the division/multiplication ratio (a) thereof in accordance with the comparison output signals applied to said control input (B);

a fixed reference frequency (f_F) being applied to said divider/multiplier (1), the divider/multiplier providing an output frequency (f_L), said output frequency (f_L) forming said comparison signal being applied to the phase comparator (2), said output frequency (f_L) being representative of the reference frequency divided by the division/-multiplication ratio (a) of the frequency divider/multiplier;

the output signal of said phase comparator (2) being connected to, and controlling the control input (B) of said frequency divider/multiplier (1) to control the division/-multiplication ratio (a) thereof.

3,983,498

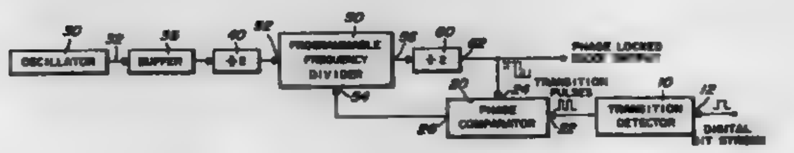
DIGITAL PHASE LOCK LOOP

Charles John Malek, Berwyn, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 13, 1975, Ser. No. 631,785

Int. Cl.² H03B *3/04*

U.S. Cl. 328—155 **20 Claims**



1. A means for processing a digital bit stream and generating a signal in phase lock therewith comprising:

means for producing a defined pulse at each data stream transition;

means for producing a reference frequency signal;

means for frequency dividing said reference signal by a selected one of a plurality of divisors; and

means for phase comparing said transition pulses with said divided reference signal and selecting a predetermined divisor in response thereto,

whereby said frequency divided output tends to phase lock with said digital bit stream.

3,983,499

MULTI-PHASE PSK DEMODULATOR

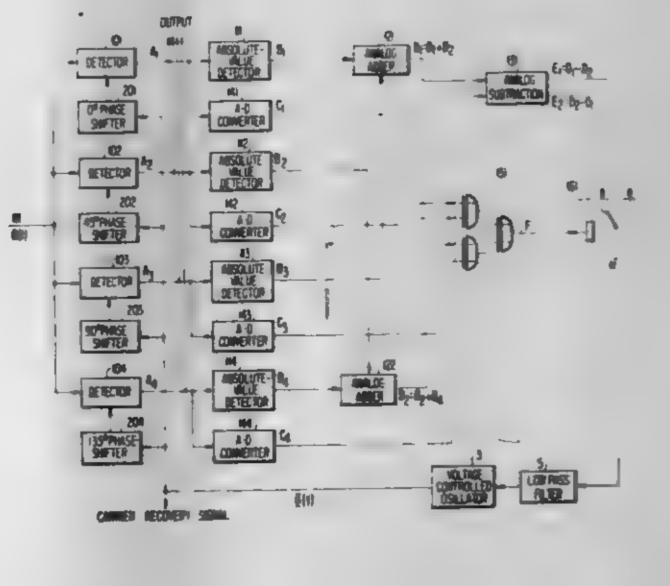
Yoichi Tan, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Sept. 24, 1975, Ser. No. 616,462

Claims priority, application Japan, Sept. 25, 1974, 49-110293

Int. Cl.² H03D *3/00*

U.S. Cl. 329—112 **4 Claims**



1. An n-phase PSK demodulator (n being equal to the m-th power of 2, with n and m being integers and m equal to or larger than 3) comprising:

a. a voltage controlled oscillator;

b. $n/2$ phase-detectors for comparing an incoming PSK-modulated signal with the output signal of said oscillator to provide phase-difference-representing signals;

c. $n/2$ phase-shifters connected respectively to the output of said oscillator and the inputs of said phase detectors for shifting the phase of said oscillator output by

$$\frac{2K\pi}{n} \text{ radian } \left(K = 0, 1, 2, \ldots, \frac{n}{2} - 1\right) \quad ;$$

d. $n/2$ absolute-value detecting circuits for converting the phase-difference-representing signals into absolute values, respectively;

e. means for extracting from the output signals of said absolute value detecting circuits, phase error signals mutually phase-displaced by $2\pi/n$;

f. means for analogue-to-digital converting the output signals of said phase detectors and synthesizing the converted signal; and

g. gate means for controllably switching said error signal producing means in response to said synthesized signal whereby said error signals are selectively fed to said oscillator.

3,983,500

ANGLE MODULATED WAVE DEMODULATION SYSTEM

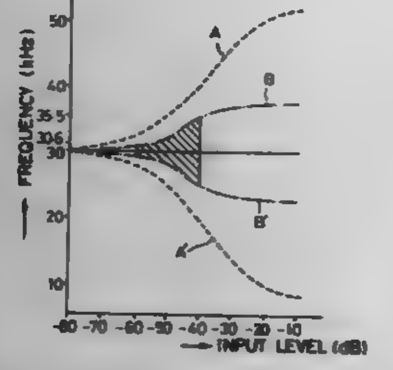
Nobuaki Takahashi, Yamato; Kazunori Nishikawa, Fujisawa; Yoshiki Iwasaki, Yokohama; Masaaki Satoh, Yokohama; Katsuhiro Ohba, Yokohama; Shinji Nakamura, Minamiashigara; Tatsuo Sawada, Sagamihara; Nobuhide Ohsaki, Yokohama; Yasuo Itoh, Tokyo; Nobuaki Suda, Yamato; Yasuhisa Okabe, Zama, and Hideaki Ozaki, Sagamihara, all of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Continuation of Ser. No. 294,371, Oct. 2, 1972, abandoned. This application Sept. 3, 1974, Ser. No. 502,531

Claims priority, application Japan, Oct. 5, 1971, 46-77531; Feb. 16, 1972, 47-16186; Feb. 23, 1972, 47-18109; Mar. 3, 1972, 47-22098; Apr. 6, 1972, 47-33842; Apr. 22, 1972, 47-40677; May 24, 1972, 47-51495

Int. Cl.^{2} G11B *3/04, 3/74;* **H03D** *3/00*

U.S. Cl. 329—122 **4 Claims**



1. A system for demodulating an angle modulated wave which is picked up from a recording medium on which is recorded an audio signal which is angle modulated on a carrier wave, said system comprising:

a phase locked loop system including voltage controlled oscillator means; phase comparator means for comparing the phase of a carrier wave of the picked-up angle modulated wave with the phase of an oscillation signal generated by said voltage controlled oscillator means and for generating an output signal corresponding to the phase difference; time constant circuit means responsive to the phase comparator means output signal for attenuating audio frequency components more than frequency components which are lower than the audio frequency components, the audio frequency components and the frequency components being lower than the audio frequency components appearing in the output signal of said phase comparator means, the output signal of said time constant circuit means providing a demodulation of the picked-up angle modulated wave, means responsive to a feed back from the output of said time constant circuit means to said voltage controlled oscillator means to cause the oscillator output to follow the frequency of the carrier wave of the picked-up angle modulated wave, means whereby said phase locked loop system has first and second lock frequency ranges falling within the oscillation frequency of said voltage controlled oscillator means and controlled responsive to the output of said time constant means, said second lock frequency range being more narrow than the first lock frequency range, means responsive to the lower than audio frequency components for establishing said first lock frequency range and causing said voltage controlled oscillator means to follow any deviations between the frequency of the picked-up carrier wave and the frequency which the carrier wave had when it was originally recorded, and means responsive to the audio frequency components for establishing said second lock frequency range and causing said voltage controlled oscillator means to follow any audio frequency deviations of the picked-up carrier wave;

means responsive to the frequency of the carrier wave of the picked-up angle modulated wave which lies outside of said first lock frequency range for operating said voltage controlled oscillator means to oscillate at a frequency which is substantially equal to the frequency which the carrier wave had when the carrier wave was recorded on the recording medium; and

means responsive to the level of the picked-up carrier wave exceeding the frequency width where said second lock frequency range begins to saturate for adjusting the level of the picked-up carrier wave to be below a predetermined level, and means for applying the output of said level adjusting means to said phase comparator means.

3,983,501

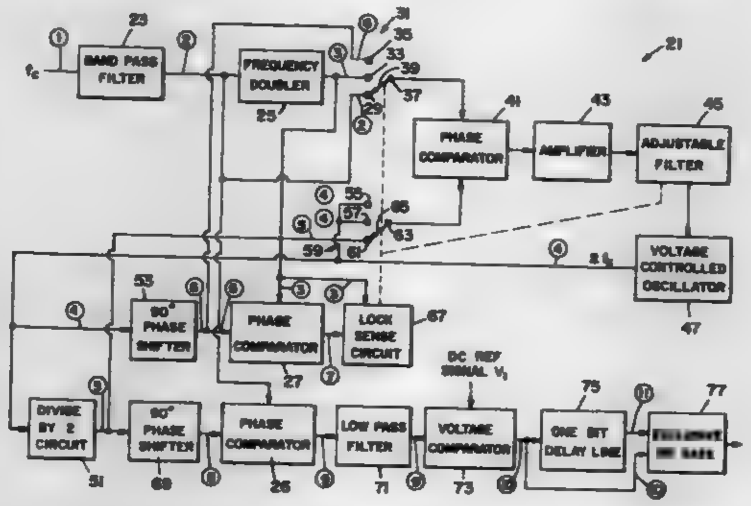
HYBRID TRACKING LOOP FOR DETECTING PHASE SHIFT KEYED SIGNALS

Alan L. Lindstrum, Port Blakely, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 29, 1975, Ser. No. 617,885

Int. Cl.^{2} H03D *3/00*

U.S. Cl. 329—122 **10 Claims**



1. A detector for detecting phase shift keyed signals including a carrier signal having a frequency f_c comprising:

a. receiver means for receiving said phase shift keyed signals;

b. a phase locked loop means for locking onto said carrier signal;

c. the output of said receiver means connected to the input of said phase locked loop means;

d. control means;

e. said control means operably connected to said receiver means and said phase locked loop means for selecting one or more of a plurality of input signals to be applied to said phase locked loop means in response to the output of said receiver means and the output of said phase locked loop means.

3,983,502

BRIDGE-OUTPUT AMPLIFIER WITH DIRECT-COUPLED DIFFERENTIAL-MODE FEEDBACK

Carl Franklin Wheatley, Jr., Somerset, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 363,630, May 24, 1973, abandoned. This application Feb. 27, 1975, Ser. No. 553,634

Int. Cl.^{2} H03F *1/34, 3/213, 3/26*

U.S. Cl. 330—14 **11 Claims**

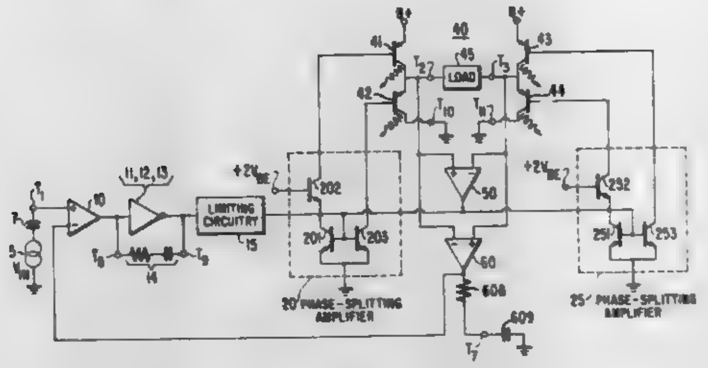
1. In a bridge-output amplifier with

first and second terminals between which operating potential as referred to a reference potential is applied;

third and fourth terminals for supplying first and second output signals for application to respective ends of a floating load;

means for generating an error signal responsive to the difference between an input signal potential referred to said reference potential and the signal appearing between said third and said fourth terminals; and

first, second, third and fourth transistor means arranged for substantially Class B operation, the principal conduction path of the first being connected between said first and third terminals, of the second between said third and second terminals, of the third between said first and fourth terminals, of the fourth between said fourth and second terminals, the connection of their principal conduction paths forming a bridge, said first and fourth transistor means conducting in response to positive swings of said error signal, said second and third transistor means conducting in response to negative swings of said error signal;



improved means for adjusting the balance of the bridge for quiescent potentials at said third and fourth terminals comprising:

a difference amplifier having inverting and non-inverting input terminals connected respectively to said third terminal for receiving said first output signal and to said fourth terminal for receiving said second output signal, and having an output terminal for providing a feedback signal in response to the difference in potential between its input terminals; and

means for applying at least a portion of the quiescent component of said feedback signal as a component of said error signal.

3,983,503

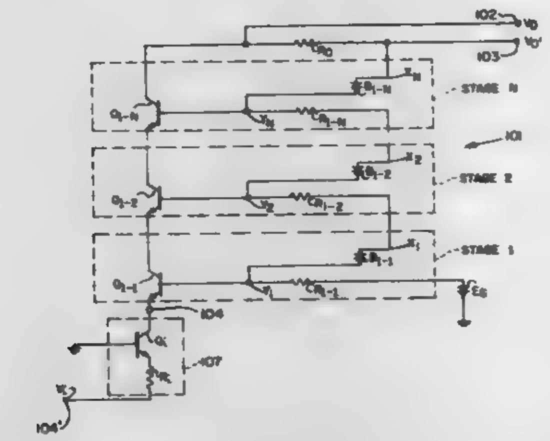
HIGH VOLTAGE AMPLIFIER

Lawrence H. Bannister, Dedham, and Richard H. Baker, Bedford, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sept. 23, 1974, Ser. No. 508,293

Int. Cl.^{2} H03F *3/42*

U.S. Cl. 330—18 **6 Claims**



1. A linear amplifier having a plurality of stages connected in cascade including an input and an output stage, each of said stages including a transistor having an emitter, a collector and a base, said emitter and collector forming a series circuit between adjacent stages of the cascade, and a bias circuit connected to the base, each bias circuit including a bias resistor through which bias voltage is applied to the base and a separate source of bias potential connected to the bias resistor, the source of bias potential connected to the bias resistor of the input stage being a primary source of voltage while each of the other sources of bias potential is interconnected between the base and the bias resistor of the next succeeding stage.

3,983,504

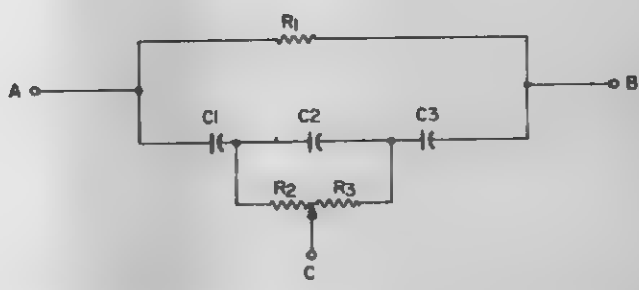
ACTIVE FILTER

Franklin Moy, 2038 Cunningham Drive, Hampton, Va. 23666

Filed Nov. 21, 1975, Ser. No. 627,303

Int. Cl.^{2} H03F *1/36*

U.S. Cl. 330—107 **9 Claims**



1. In an active filter having an operational amplifier means with an inverting input terminal, a noninverting input terminal and an output terminal and a filtering means connected between said output terminal and said inverting input terminal, the improved filtering means comprising:

a first resistor means;

a first, second and third capacitor means connected in series and said series connected capacitor means being connected in parallel with said first resistive means;

a second and third resistive means connected in parallel with said second capacitive means; and

the junction point of said second and third resistive means being connected to a fixed potential.

3,983,505

SIGNAL FREQUENCY BAND CONTROL SYSTEM

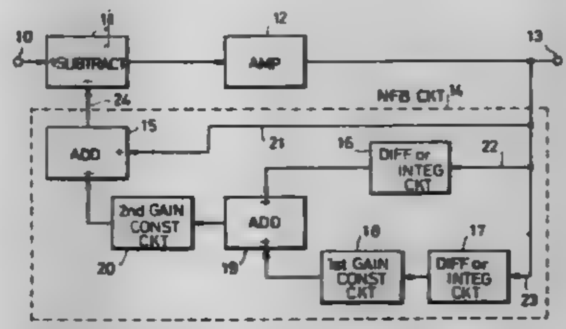
Yukinobu Ishigaki, Yamato, and Takaro Mori, Yokohama, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Apr. 8, 1975, Ser. No. 566,072

Claims priority, application Japan, Apr. 10, 1974, 49-41424; Apr. 15, 1974, 49-40891; Apr. 22, 1974, 49-44423; Apr. 22, 1974, 49-44424

Int. Cl.^{2} H03F *1/36*

U.S. Cl. 330—107 **14 Claims**



1. A signal frequency band control system comprising:

amplifier means for amplifying input signals having a certain frequency band;

first differentiation circuit means responsive to an output signal of said amplifier means for providing a primary differentiation;

second differentiation circuit means responsive to the output signal of said amplifier means for providing a secondary differentiation;

first gain constant circuit means for multiplying the output signal of said second differentiation circuit means by a first gain constant K1;

adding means for adding the output signals of said first differentiation circuit means and of said second differentiation circuit means after being multiplied by the first gain constant K1;

second gain constant circuit means for multiplying the output signal of said adding means by a second gain constant K2 which is variable;

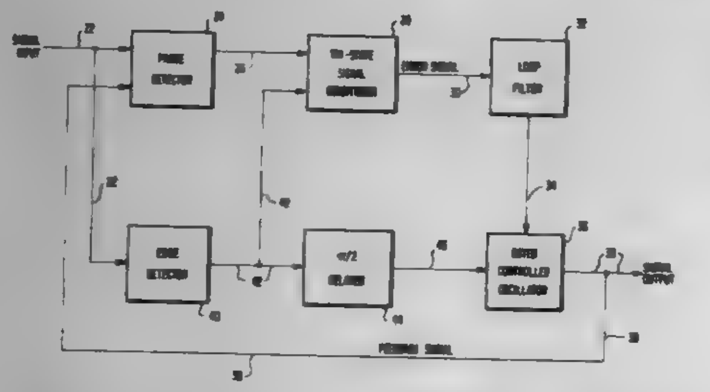
control means for varying the second gain constant K2 to control the cut-off frequency of the frequency band of the output signal of said amplifier means; and

feedback means for negatively feeding back to an input of said amplifier means a sum signal resulting from the addition of the output signal of said second gain constant circuit means and the output signal of said amplifier means.

3,983,506
ACQUISITION PROCESS IN A PHASE-LOCKED-LOOP BY GATED MEANS

Lawrence John Rettinger, Jr., and Layton Balliet, both of Huntsville, Ala., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 11, 1975, Ser. No. 595,250
Int. Cl.² H03B *3/04*
U.S. Cl. 331—17 **1 Claim**



1. A phase-locked-loop circuit configuration for improving the acquisition process comprising:

phase detector means for comparing the phase between an input signal and a feedback signal providing at its output an error signal proportional thereto;

edge detector means driven by said input signal for detecting the positive edge thereof providing at its output a positive going step signal;

tri-state signal conditioner means having a first input driven by said error signal from said phase detector means, and a second input driven by said positive going step signal from said edge detector means for providing at is output an error signal having three levels;

loop filter means driven by said error signal having three levels for further conditioning said three level error signal;

gated controlled oscillator means driven by said further conditioned three level error signal for providing an output signal that tracks said input signal, and for providing said feedback signal to said phase detector, said further conditioned three level error signal biasing said gated controlled oscillator at a point which enables said gated control oscillator to be turned on at the frequency of said input signal and at the stable null $\pi/2$ when a gating signal is present;

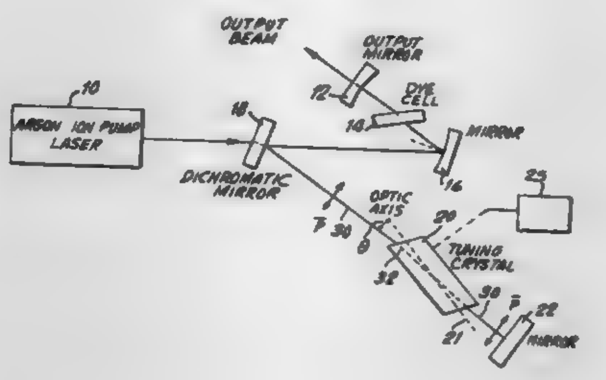
$\pi/2$ delayer means driven by said positive going step voltage from said edge detector means for delaying thereof, said delayed positive going step signal gating said gated controlled oscillator on;

said gated controlled oscillator locking up at said stable null $\pi/2$ and at said frequency of said input signal and eliminating the statistical nature of said acquisition process and decreasing the lock-up-time of the loop.

3,983,507
TUNABLE LASER SYSTEMS AND METHOD

Chung-Liang Tang, and John M. Telle, both of Ithaca, N.Y., assignors to Research Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 538,585, Jan. 6, 1975, abandoned. This application Jan. 13, 1975, Ser. No. 540,435
Int. Cl.² H01S *3/10*
U.S. Cl. 331—94.5 M **10 Claims**



1. In a tunable laser having a tunable laser cavity, the improvement which comprises:

a birefringent tuning crystal disposed in the laser light path within the cavity and having an end surface through which the optic axis of the crystal projects; and

means for positioning the crystal with said light path incident upon said crystal end surface and the optic axis of the crystal at selected small acute angles to the direction of the laser light path through the crystal, to tune the laser to selected wavelengths.

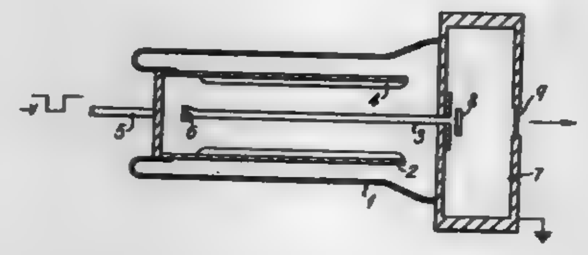
3,983,508
LASERS

Daniel Joseph Bradley, London, and Marcus Henry Ritchie Hutchinson, Harrow, both of England, assignors to National Research Development Corporation, London, England

Filed Mar. 19, 1975, Ser. No. 559,751

Claims priority, application United Kingdom, Mar. 29, 1974, 14102/74

Int. Cl.² H01S *3/097*
U.S. Cl. 331—94.5 PE **4 Claims**

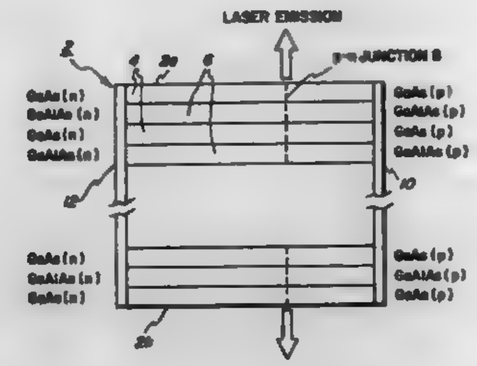


1. A laser comprising a field-emission diode of annular configuration defined between an outer cathode and an inner anode coxial therewith, which anode is in the form of a hollow container for a high pressure gaseos lasing medium, the walls of the container being at least partly pervious to electrons emitted from the cathode, mirrors at opposite ends of the container to enable resonance to occur therein at the lasing frequency, and means for abstracting energy at the lasing frequency from the container.

3,983,509
DISTRIBUTED FEEDBACK DIODE LASER

Donald R. Scifres, and Robert D. Burnham, both of Los Altos, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 25, 1975, Ser. No. 572,475
Int. Cl.² H01S *3/19*
U.S. Cl. 331—94.5 H **6 Claims**



1. An electrically pumped multi-layered, diode laser comprising:

a first plurality of layers of a first semiconductor material,

a second plurality of layers of a second semiconductor material,

said first and second semiconductor materials having different indices of refraction and different bandgaps, said second plurality of layers being interleaved with said first plurality of layers such that alternate layers of said laser are of different semiconductor material,

each of said plurality of interleaved layers having a thickness t according to the relationship $t = m\,\lambda/2n$ where m is an integer equal to the mode of the laser oscillations, λ is the wavelength of the light photons generated in the first plurality of layers when they are electrically pumped, and n is the refractive index of the material of said each layer,

a rectifying junction extending through at least said first plurality of layers, and

means for electrically pumping said first plurality of layers to produce said light photons of said wavelength whereby said light photons are coupled and reinforced in phase by said second plurality of layers to thereby provide a coherent output beam.

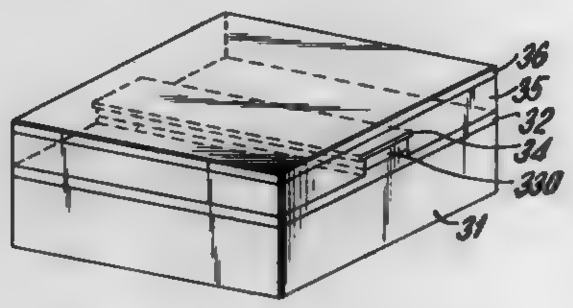
3,983,510
SEMICONDUCTOR DOUBLE HETEROSTRUCTURE LASER DEVICE AND METHOD OF MAKING THE SAME

Izuo Hayashi, and Yasuo Nannichi, both of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed June 6, 1975, Ser. No. 584,405

Claims priority, application Japan, June 11, 1974, 49-66733

Int. Cl.² H01L *21/208;* H01S *3/19*
U.S. Cl. 331—94.5 H **6 Claims**



1. A method of making a stripe-geometry semiconductor double-heterostructure laser device comprising the steps of:

a. providing an n-GaAs substrate;

b. liquid-epitaxially growing a first layer of n-$Al_xGa_{1-x}As$ on one surface of said substrate;

c. epitaxially growing a second layer of p-$Al_yGa_{1-y}As$ on said first layer;

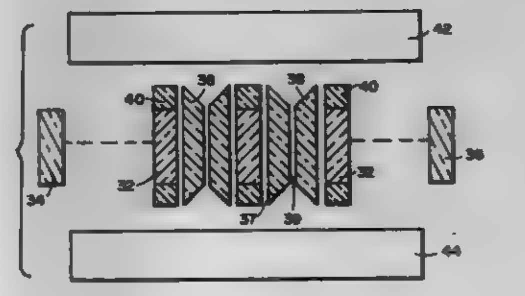
d. forming a third layer of heat- and Ga melt-resistant material of narrow stripe geometry on said second layer; and

e. bringing a gallium melt liquid of a composition to be formed into a fourth layer of n-$Al_zGa_{1-z}As$ on said second layer into contact with said second and third layers, said second layer except for the area coated with said third layer, and part of said first layer in the thickness direction being meltbacked by Ga melt liquid, and then forming said fourth layer by epitaxial growth techniques.

3,983,511
NORMAL INCIDENCE FACE PUMPED DISC LASER

William C. Fricke, Arlington, Va., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Sept. 8, 1975, Ser. No. 610,969
Int. Cl.² H01S *3/06*
U.S. Cl. 331—94.5 P **6 Claims**



1. A laser device, comprising:

a laser cavity;

at least one disc of active laser medium arranged normal to the axis of laser radiation;

pumping means for emitting radiation of pumping wavelengths; and

means for refracting said pumping radiation onto at least one face of said laser disc.

3,983,512
CURRENT CONTROLLED ELECTRICAL CIRCUITS

William Mark Lipscombe, Haywards Heath, England, assignor to Feedback Instruments Limited, England

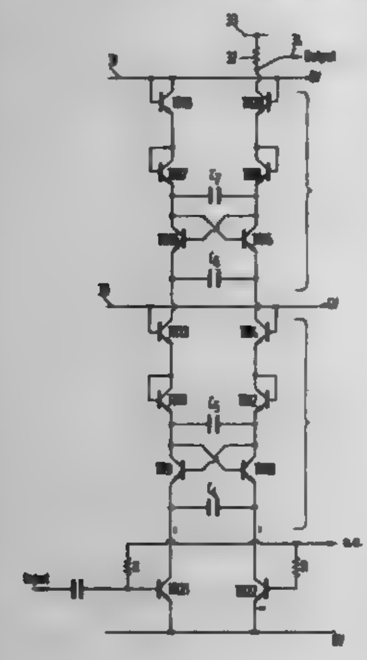
Filed Aug. 22, 1975, Ser. No. 606,764

Claims priority, application United Kingdom, Aug. 27, 1974, 37397/74

Int. Cl.² H03B *5/24*
U.S. Cl. 331—108 B **17 Claims**

1. A resonant circuit including a plurality of balanced phase shift circuits connected in series, a pair of transistors interconnected by a capacitor defining one of said phase shift circuits, and control means connected in series with the phase shift circuits for supplying balanced direct currents to the balanced

phase shift circuits, wherein the control means is effective to define the direct current flowing through the transistors, the emitter resistance of the transistors and hence the frequency of oscillation of the circuit.



3,983,513

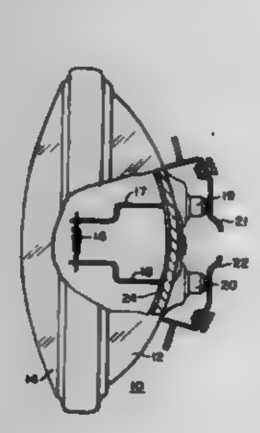
INCANDESCENT LAMP HAVING A HALOGEN-CONTAINING ATMOSPHERE AND AN INTEGRAL REFLECTOR OF NON-REACTIVE SPECULAR METAL

Aristide R. DeCaro, Edison, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 18, 1973, Ser. No. 407,727

Int. Cl.² H01K *1/32*

U.S. Cl. 313—113 14 Claims



1. A halogen-cycle reflector type electric incandescent lamp that has a predetermined rated life, said lamp comprising;

a sealed envelope of light-transmitting material that contains (*a*) an atmosphere which consists essentially of an inert fill gas and a halogen and (*b*) a filament which consists essentially of tungsten and is thus adapted, when energized, to coact with said halogen and establish a regenerative cycle within the lamp during operation thereof that returns vaporized tungsten to said filament,

lead-in conductors extending into said envelope and electrically connected to said filament, the portions of said conductors that are exposed to said halogen being composed of a material that is substantially inert with respect to the halogen, and

reflector means disposed on and integral with a selected portion of said envelope, said reflector means consisting essentially of a thin specular coating of a metal that withstands both the atmosphere and temperatures to which it is exposed when the lamp is energized and operated so that the specular metal coating thereby retains its light-reflective property and serves as an integral reflector throughout the rated life of the lamp.

3,983,514

SURFACE ACOUSTIC WAVE DEVICE AND METHOD OF MANUFACTURING SAME

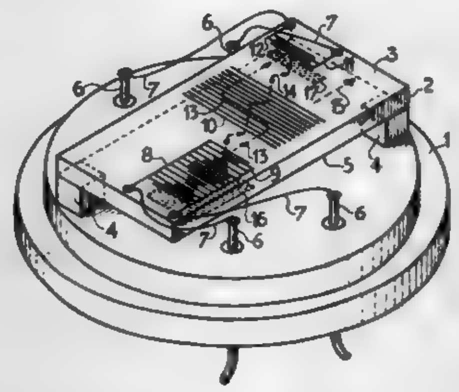
Gérard Coussot, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 14, 1975, Ser. No. 550,035

Claims priority, application France, Feb. 15, 1974, 74.05204

Int. Cl.² H03H *9/26, 9/30, 9/32;* **H01L** *41/10*

U.S. Cl. 333—30 R 5 Claims



1. Surface acoustic wave device comprising a piezo-electric wafer having two main faces opposite one another and two sets of interdigitated comb shaped electrodes lying on one of said main faces, said sets respectively forming a launching and a receiving transducer, said device further comprising on said one main face surface acoustic wave coupling means positioned between said transducers for causing the surface acoustic waves to follow within said one main face a path including a step, the other of said main faces comprising at least one ground zone facing at least one of said sets for scattering the bulk acoustic waves travelling across the thickness of said piezo-electric wafer.

3,983,515

ACOUSTIC SURFACE WAVE DEVICES

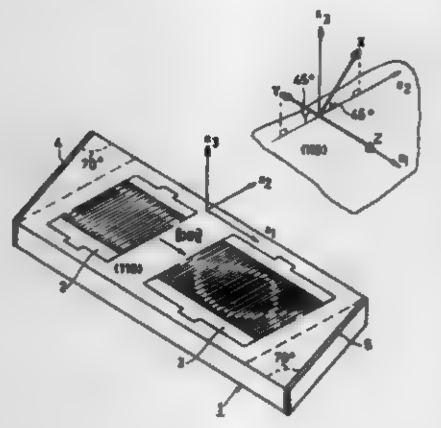
Richard Frank Mitchell, Kingston; Eileen Read, High Wycombe, and Richard Stevens, Copthorne, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 10, 1974, Ser. No. 513,701

Claims priority, application United Kingdom, Oct. 12, 1973, 47743/73; Oct. 12, 1973, 47744/73

Int. Cl.² H03H *9/26, 9/30, 9/32;* **H01L** *41/18*

U.S. Cl. 333—30 R 17 Claims



1. A method of manufacturing an acoustic surface wave device comprising the steps of forming a monocrystalline body of a selected piezoelectric substance, forming a planar acoustic surface wave propagation surface on said body oriented in a selected manner with respect to the crystallographic axes of said monocrystal, and applying launching and receiving interdigital electrode arrays to said acoustic surface wave propagation surface respectively to launch and to receive acoustic surface waves along a selected acoustic surface wave propagation axis on said surface so as to provide a desired amplitude-frequency response, said piezoelectric substance and the orientation of said respective acoustic surface wave propagation surface and axial propagation direction relative to the crystallographic axes of said monocrystalline body being selected to provide substantially zero piezoelectric coupling between said interdigital electrode arrays and at least one of the group of axial-bulk-waves including the longitudinal axial-bulk-wave and that one of the two shear axial-bulk-waves which has substantially no component of particle motion at right angles to said acoustic surface wave propagation surface, whereby the piezoelectric coupling between a respective interdigital electrode array and the axial-bulk-waves which are generated thereby are small enough to prevent a significant disturbance of the desired amplitude-frequency response of the device.

3,983,516

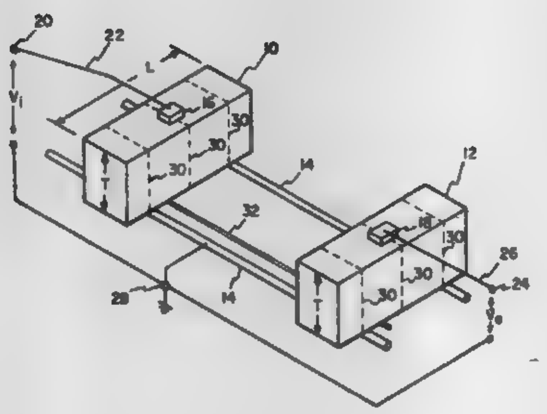
LONGITUDINAL-MODE MECHANICAL BANDPASS FILTER

Robert A. Johnson, Tustin, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 25, 1975, Ser. No. 607,725

Int. Cl.² H03H *9/04, 9/26*

U.S. Cl. 333—71 5 Claims



1. A mechanical bandpass filter, comprising:

at least two bar resonators, aligned in parallel array along their longitudinal axes;

two piezoelectric transducers, each being affixed to a longitudinal surface of a different one of said resonators;

at least two support rods for rigidly joining said resonators along their aligned nodal planes, the number and location of the nodal planes being determined by operating the filter in a bandpass frequency range which corresponds to a single one of the harmonic longitudinal-mode resonant frequencies for said resonators whereby the support rods lie in different nodal planes of the same resonator;

coupling means for flexurally coupling said resonators;

means for applying an electrical input signal to one of said transducers for mechanically driving its associated resonator, and

means for extracting an electrical output signal from the other one of said transducers.

3,983,517

SURFACE ACOUSTIC WAVE MULTI-CHANNEL FILTER

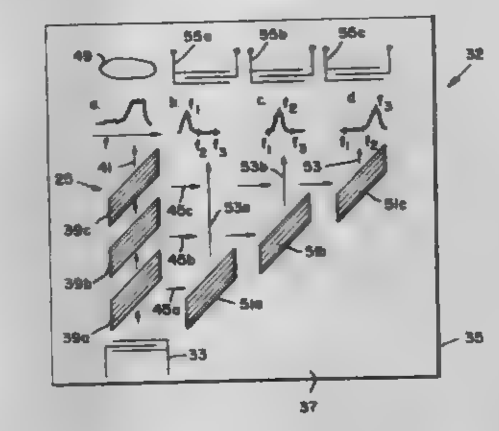
Rolf D. Weglein, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 20, 1974, Ser. No. 534,991

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² H03H *9/26, 9/30, 9/32;* **H01L** *41/08*

U.S. Cl. 333—72 7 Claims



1. A surface acoustic wave multi-channel filter, comprising:

a substrate having a surface capable of supporting propagating surface acoustic wave energy;

input transducer means disposed on said substrate surface for converting electrical input energy to surface acoustic wave energy in said substrate and propagating said energy along a first predetermined path;

periodic grating filter means disposed on said substrate and including a first set of spaced periodic grating filter arrays tandemly positioned in said first predetermined path each for reflecting a portion of the propagating surface acoustic wave energy incident thereon along a separate predetermined intermediate path skew to said first predetermined path, and also including a second set of periodic grating filter arrays each lying along a different one of said separate predetermined intermediate paths and each reflecting at least a portion of the propagating surface acoustic wave energy incident thereon along a separate predetermined output path skew to the associated intermediate path, each of said periodic grating filter arrays including a plurality of spaced parallel reflector elements having a fixed periodicity, said periodic grating filter arrays in each associated pair of such arrays having the same reflector element periodicity but different from the reflector element periodicity of other associated pairs of such arrays thereby providing a predetermined different frequency-selective characteristic for each said associated pairs of said periodic grating filter arrays; and

output transducer means disposed on said substrate surface and including output transducers each lying along a different one of said predetermined output paths and each converting surface acoustic wave energy incident thereon, as reflected by said associated pairs of said periodic grating filter arrays in said first and second sets, to electrical output energy having a desired different center frequency.

3,983,518

FILTER CHAIN

Jan Adrianus Bezemer, Zwijndrecht, Netherlands, assignor to De Statt der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie, The Hague, Netherlands

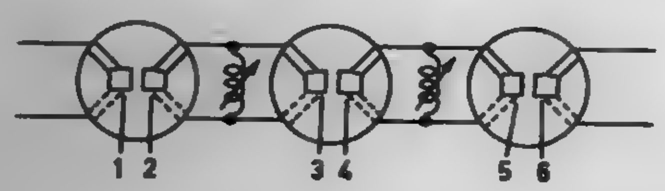
Filed Apr. 24, 1975, Ser. No. 571,408

Int. Cl.² H03H *9/26, 7/14;* **H04R** *17/00*

U.S. Cl. 333—70 R 8 Claims

1. A band-pass filter chain for passing frequencies within a given frequence band comprising a plurality of monolithic filter units made of quartz or other piezoelectric material and

adapted to vibrate according to the thickness shear mode, each filter unit being provided with at least two acoustically coupled resonators, said filter units being coupled electrically so that the electric coupling impedances within the frequency pass band of the filter chain are substantially ohmic, the electric coupling impedances being very large with respect to the equivalent acoustic coupling impedances and the acoustic coupling coefficients all being equal.



3,983,519

ELECTROMAGNET

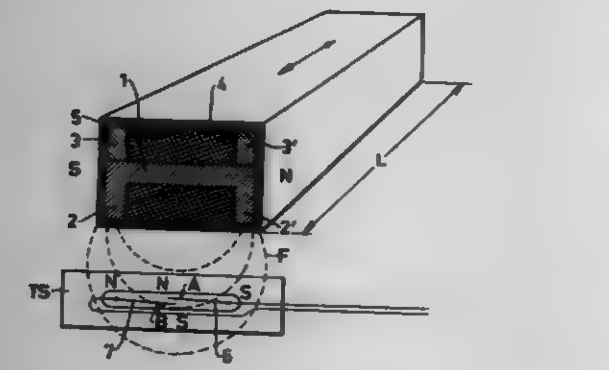
Hans-Göran Stadigh, Undersaker, Sweden, assignor to Linden-Alimak AB, Skelleftea, Sweden

Continuation of Ser. No. 449,882, March 11, 1974, abandoned. This application Apr. 18, 1975, Ser. No. 569,424

Claims priority, application Sweden, Mar. 9, 1973, 7303335

Int. Cl.² H01H *51/28*

U.S. Cl. 335—151 **5 Claims**



1. In apparatus for generating a distinctive signal when an electromagnetic device and a magnetic responsive means are moved relative to each other into a magnetic coupling relationship wherein:

said electromagnetic device includes a ferromagnetic core of generally U-shaped cross-section which is elongated in the direction normal to said U-shaped cross-section.

and a coil wound about said core with the turns thereof encircling the bight portion of said core and lying generally parallel to the leg portions of said U-shaped core to provide when energized a magnetic field of flux lines extending between the free ends of said leg portions which field is substantially uniform over the entire length of said core,

said magnetic responsive means and said electromagnetic device being movable relative to each other in a direction parallel to that of the turns of said coil, and thus transversely to the direction of the flux lines, into and out of said magnetic coupling relationship, said magnetic responsive means when in its magnetic coupling relationship with said electromagnetic device being on the side of said U-shaped core towards which the legs of the U are directed,

said magnetic responsive means providing said distinctive signal when said magnetic responsive means is in magnetic coupling relationship with said electromagnetic device.

3,983,520

SOLENOID ELECTROMAGNET HAVING A WIDE, CONTROLLED STROKE

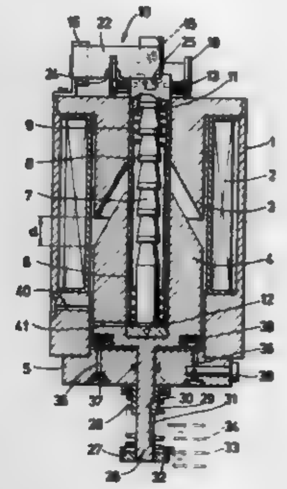
Denjiro Sakata, N. 6-11, Muromachi, Ikeda, Osaka, Japan

Filed Oct. 1, 1975, Ser. No. 618,678

Claims priority, application Japan, Oct. 4, 1974, 49-115979

Int. Cl.² H01H *9/20*

U.S. Cl. 335—170 **5 Claims**



1. A solenoid electromagnet comprising a casing having an electromagnet coil, a fixed core in said casing, a moving core mounted within said casing and slidable towards and away from said fixed core, a spring urging said moving core away from said fixed core, an operation rod having thereabout plural detent projections at predetermined spaces and slidably extending into said moving core, a picker means having a radially retractile and axially fixed connection with said moving core, a catch means having a radially retractile and axially fixed connection with said fixed core, said picker and catch means being engageable with said detent projections of the operation rod, and means for releasing said picker and catch means from the detent projections.

3,983,521

FLEXIBLE SUPERCONDUCTING COMPOSITE COMPOUND WIRES

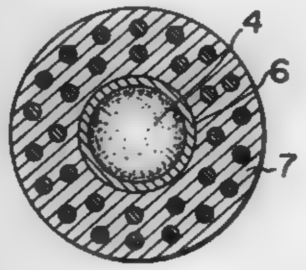
Yoshio Furuto, Oiso; Takuya Suzuki, Kawasaki; Masaru Ikeda, Tokyo; Yasuzo Tanaka, Yokohama; Shinichiro Meguro, Kawasaki, and Takeshi Miura, Yokohama, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Sept. 7, 1973, Ser. No. 395,178

Claims priority, application Japan, Sept. 11, 1972, 47-91016; Feb. 27, 1973, 48-23598; Mar. 13, 1973, 48-29303; Nov. 28, 1972, 47-119116; Oct. 13, 1972, 47-102594; Oct. 13, 1972, 47-102593; Oct. 13, 1972, 47-102592; Oct. 13, 1972, 47-102591

Int. Cl.² H01F *7/22*

U.S. Cl. 335—216 **9 Claims**



1. A superconducting compound wire which comprises a plurality of strands having a superconducting compound therein, at least some of the strands having an inclination to the lengthwise direction of the superconducting wire and the strands being movable with respect to one another, said wire having a reinforcing material provided at least in the center portion of the superconducting wire selected from the group consisting of tungsten, molybdenum, stainless steel, glass, carbon, and alumina, in the form of a wire, and wherein the outer diameter of the strand is smaller than the product of the allowable bending diameter of the superconducting wire to be obtained and the strain limit for not degrading the superconducting characteristics of the strands and wherein the stranding pitch length of the strands is in the range of 20 to 1000 times of the strand outer diameter.

3,983,522

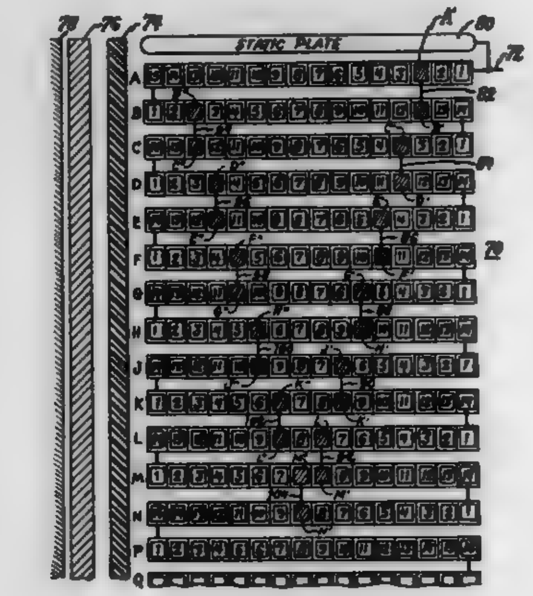
TAPERING ELECTROSTATIC SHIELDS FOR DISC WINDINGS

Robert E. Gearhart, Rome, Ga., assignor to General Electric Company, N.Y.

Filed Dec. 19, 1975, Ser. No. 642,579

Int. Cl.² H01F *15/14*

U.S. Cl. 336—70 **8 Claims**



1. An electrostatic shielding device for inductive apparatus of the type having,

a winding, including a plurality of generally coaxially disposed annular disc coils, each of said coils having a plurality of insulated conductor turns, each of said conductor turns having at least one strand;

spirally wound, in the same direction, alternately radially inward and radially outward, beginning with an initial coil at one end of said winding and terminating with a final coil at the opposite end of said winding,

a finish-end of a coil being connected to a start-end of an immediately adjacent coil to form a winding connected in an electrical series circuit relation, at least the start end of said initial coil being for connection to a high potential source,

wherein the improvement comprises:

at least one electrostatic shield-conductor between turns of a plurality of spirally wound disc coils of said winding,

selected shield-conductors in some adjacent spirally wound coils being connected together in shield-conductor pairs,

said shield-conductor pairs progressing inwardly from an outer portion of said winding, shield-conductors of said inwardly progressing shield-conductor pairs being the outermost shield-conductors of the spirally wound disc coils in which they are located,

and outermost shield-conductor pair being located near a high-potential end of said winding.

3,983,523

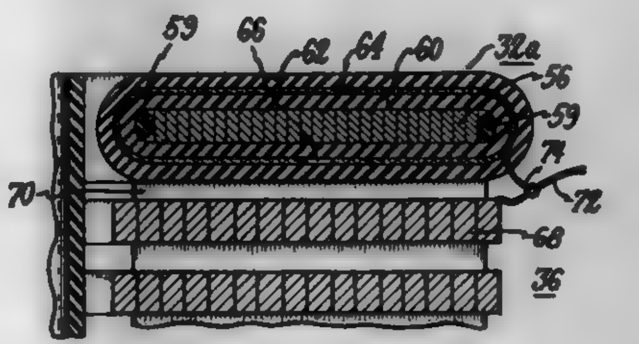
COMBINATION STATIC PLATE AND CLAMPING RING

Ralph E. Ayers, Rome, Ga., assignor to General Electric Company

Filed Nov. 3, 1975, Ser. No. 627,901

Int. Cl.² H01F *15/04*

U.S. Cl. 336—84 **6 Claims**



1. In electric induction apparatus of the type having,

a housing,

a magnetic core including a plurality of legs, said magnetic core being mounted internal of and in a fixed relation with respect to said housing,

a cylindrical winding having upper and lower ends incorporating a plurality of radially spaced-apart coils,

said winding being disposed around a leg of said magnetic core in an electrically insulated relationship thereto,

first clamping support structure proximate to said upper end and second clamping support structure proximate to said lower end of said winding, said first and second clamping support structure being in a fixed relation with respect to said magnetic core and said housing,

a lower force distributing member positioned between said lower end of said winding and said second clamping structure,

wherein the improvement comprises:

a. a foundation ring formed of concentrically positioned, generally circular, core-steel strips, adjacent surfaces of said core-steel strips being held together by bonding means, said foundation ring having a slot extending completely through said foundation ring in a generally radial direction;

b. electrically conductive material placed on and electrically insulated from said foundation ring, for connection to a high voltage terminal of said electrical induction apparatus; and

c. force generating means reacted between the combination of said foundation ring and said electrically conductive material, and said first clamping support structure for the applicaton of a compressive force to the upper and lower ends of said winding.

3,983,524

ELECTRICAL CURRENT LIMITING FUSE HAVING FUSIBLE ELEMENT WITH ADDITIONAL CROSS-SECTIONAL NECKS AT AN ARCING CLIP

Robert E. Koch, Pittsfield, Mass., assignor to General Electric Company, N.Y.

Filed Oct. 9, 1975, Ser. No. 621,080

Int. Cl.² H01H *85/04*

U.S. Cl. 337—159 **6 Claims**

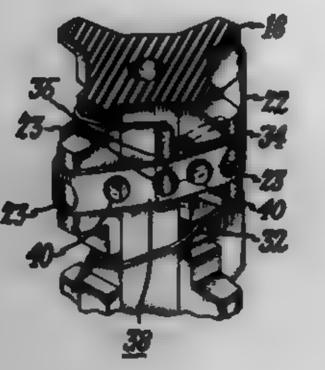
1. A current-limiting fuse of the type having a tubular insulating casing;

first and second conductive terminal members closing the first and second ends, respectively, of said casing;

an insulating core extending longitudinally inside said casing between said terminal members;

a main fusible element wound helically on said core and connected at its ends to said terminal members;

- at least a first conductive arcing clip mounted on said core adjacent a segment of said main fusible element; and,
- an auxiliary conductive element wound around said core and having one end connected to said arcing clip,



wherein the improvement comprises that:

said segment of said main fusible element is provided with cross-sectional necks which are in addition to any regularly spaced necks provided along the length of the element for high-current melting characteristics.

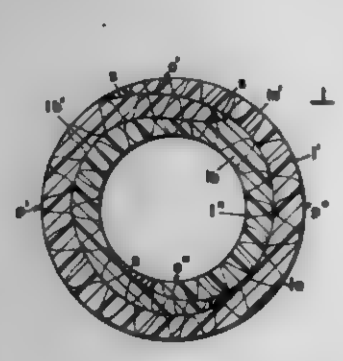
3,983,525
ELECTRIC FUSE AND TUBE MATERIAL ADAPTED FOR USE AS FUSE CASING

Daniel P. Healey, Jr., Merrimacport, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Continuation-in-part of Ser. No. 579,972, May 22, 1975. This application June 30, 1975, Ser. No. 591,629

Int. Cl.² H01H *85/20*

U.S. Cl. 337—186 **3 Claims**



1. In an electric fuse the combination of
   - a. a fusible element;
   - b. a body of pulverulent arc-quenching filler embedding said fusible element;
   - c. a pair of terminal elements are arranged adjacent one of the ends of said fusible element for connecting said fusible element into an electric circuit; and
   - d. a tubular casing of synthetic-resin-glass-cloth laminate housing said fusible element and said filler and supporting said pair of terminal elements, said casing having a plurality of re-inforcement plies of woven glass fiber cloth excluding any non-woven mat material, each of said plurality of plies forming an overlap angularly displaced relative to said overlap of all others of said plurality of plies, the wall of said casing including first regions where the ratio of the glass-to-resin content is relatively large and the wall of said casing including second regions where the ratio of glass-to-resin content is relatively small, said first regions and said second regions alternating along the entire perimeter of said casing, so that the wall thickness of said casing is substantially uniform throughout the entire perimeter thereof.

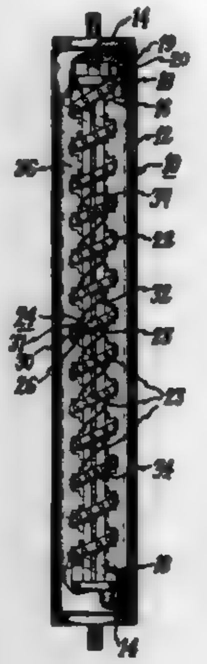
3,983,526
CURRENT LIMITING FUSE WITH AUXILIARY ELEMENT ARCING CLIP SPACED BY NONPOROUS DIELECTRIC MEMBER

Robert E. Koch, Pittsfield, Mass., assignor to General Electric Company

Filed Oct. 9, 1975, Ser. No. 621,079

Int. Cl.² H01H *85/38*

U.S. Cl. 337—278 **6 Claims**



1. A current limiting fuse of the type having a tubular insulating casing;
   - first and second conductive terminal members closing the first and second ends, respectively, of said casing;
   - an insulating core extending longitudinally inside said casing between said terminal members;
   - a main fusible element wound helically on said core and connected at its ends to said terminal members;
   - at least a first conductive arcing clip mounted on said core adjacent said main fusible element; and,
   - an auxiliary conductive element wound around said core and having one end connected to said arcing clip, the improvement therein comprising:
   - a non-porous dielectric member covering a major portion of the exposed surface of said first arcing clip interposed between and in physical contact with both said first arcing clip and said main fusible element.

3,983,527
HUMIDITY-SENSITIVE SENSOR

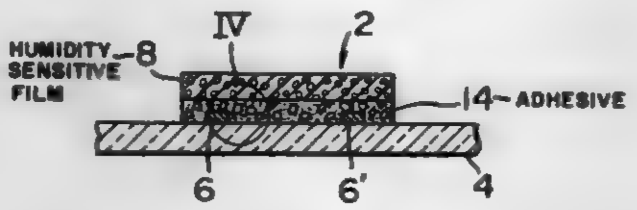
Nobuyoshi Ohsato, Itami; Kenzo Sono, Nishinomiya, and Keihachiro Tanaka, Itami, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Aug. 12, 1974, Ser. No. 496,856

Claims priority, application Japan, Aug. 14, 1973, 48-91449; Nov. 6, 1973, 48-124008; Dec. 26, 1973, 49-1934; Jan. 7, 1974, 49-5525; Mar. 25, 1974, 49-33697; Mar. 8, 1974, 49-27666[U]; Apr. 26, 1974, 49-48854[U]

Int. Cl.² H01C *13/00*

U.S. Cl. 338—35 **11 Claims**



1. A humidity-sensitive sensor comprising:
   - an electrically non-conductive base plate;
   - a pair of spaced electrodes fixed on said base plate;
   - a humidity-sensitive coating composed of a hygroscopic resin having dispersed therein electrically conductive particles and extending over said pair of electrodes; and
   - an adhesive layer bonding said humidity-sensitive coating to said base plate, said adhesive layer being composed of an adhesive having dispersed therein electrically conductive particles and electrically connecting each of said electrodes to said humidity-sensitive coating while electrically insulating said electrodes from each other.

3,983,528
RESISTOR NETWORK WITH ADJUSTABLE RESISTANCE VALUE

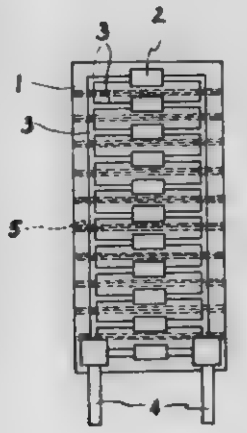
William Clyde King, Helsinki, Finland, assignor to Oy Paramic AB, Helsinki, Finland

Filed June 17, 1975, Ser. No. 587,674

Claims priority, application Finland, June 18, 1974, 1866/74

Int. Cl.² H01C *10/00*

U.S. Cl. 338—195 **3 Claims**



1. An adjustable resistance resistor network comprising a plurality of individual resistors disposed on an insulating substrate, said resistors being connected together in parallel by strips of conductive material disposed on said insulating substrate, said substrate being provided with weakened lines which extend across said strips of conductive material between each adjacent pair of resistors whereby the substrate can be broken along said weakened lines to remove at least one of said resistors to thereby adjust the resistance value of said resistor network.

3,983,529
DETECTOR FOR USE IN ACOUSTIC HOLOGRAPHY

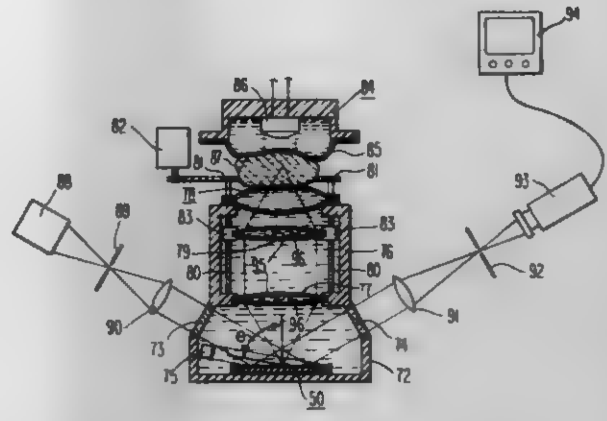
Gary Norris Langlois, Richland, Wash., assignor to Holosonics, Inc., Richland, Wash.

Filed Mar. 28, 1975, Ser. No. 563,123

Int. Cl.² G01N *29/04;* G01S *9/66*

U.S. Cl. 340—5 H **15 Claims**

1. Improved detector apparatus responsive to impingent acoustic wavefronts to form a hologram, comprising:
   - a rigid substrate having a continuous substantially planar upper surface;
   - a layer of liquid metal covering said planar upper surface;
   - said upper surface of said substrate being formed of a material which is wetted by said liquid metal;
   - said layer of liquid metal being thinner than the thinnest layer of said metal which could exist upon a planar surface of a material not wetted by said metal; and defining an upper surface and defining a lower surface in intimate contact with the upper surface of said rigid substrate;
   - a mass of a second liquid, said layer of liquid metal being submersed in said second liquid;
   - first transducer means positioned to direct a beam of object-modified acoustic energy through said second liquid directly onto the upper surface of said layer of liquified metal;
   - second transducer means positioned to direct a reference beam of acoustic energy through said second liquid directly onto the upper surface of said layer of liquid metal;



   - the beam from said second transducer means being oriented at a predetermined angle with respect to the beam from said first transducer means to give rise to a pattern of disturbances on said upper surface of said layer of liquid metal; and
   - means for directing illuminating energy upon the pattern of disturbances.

3,983,530
ECHO SIMULATING PROBE

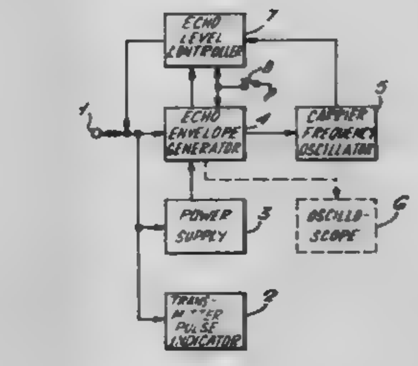
Sverre Johannessen, Horten, Norway, assigner to Simrad A.S., Horten, Norway

Filed Mar. 7, 1975, Ser. No. 556,344

Claims priority, application Norway, Mar. 7, 1974, 801/74

Int. Cl.² G01S *7/40*

U.S. Cl. 340—5 C **12 Claims**



1. An echo probe for providing simulated sonar signals to test distance measuring systems measuring lapsed time between transmitted anad reflected pulses, comprising:
   - input/output terminal means adapted to be connected to the distance measuring equipment;
   - control means for producing a control signal in response to a received pulse at said input/output terminal means, said control signal including spaced first and second control signals, said first and second control signals having different characteristics from one another;
   - power supply means for tapping power from the pulses received at said input/output terminal means and connected to said control means; and
   - carrier frequency oscillator means responsive to said first and second control signals for generating simulated first and second sonar signals at said input/output terminal means and having substantially the same frequency as the carrier frequency of said distance measuring system.

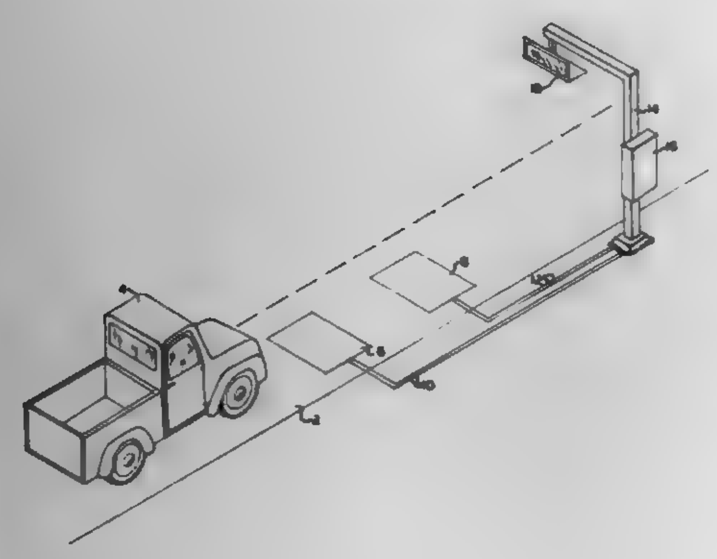
3,983,531
VEHICLE-RESPONSIVE SIGNAL MEANS

Thomas B. Corrigan, Prince George, Canada, assignor to Northern Traffic & Signal Systems Ltd., Prince George, Canada

Continuation-in-part of Ser. No. 477,656, June 10, 1974, abandoned. This application Nov. 6, 1975, Ser. No. 629,296

Int. Cl.^{2} G08G *1/00*

U.S. Cl. 340—31 R 6 Claims



1. A vehicle-responsive signal system comprising a first, vehicle-responsive detector disposed in operative relation to a lane of a roadway and a first detector-responsive switch means coupled with said first detector; a second, vehicle-responsive detector disposed in operative relation to said lane of a roadway, positioned in measured, spaced relation to said first detector, spaced in the direction of travel of vehicular traffic in said lane of a roadway, and a second, detector-responsive switch means coupled with said second detector; a first, electrically operated timer having a predetermined time cycle and having a first timer normally open, switch blade means movable to closed position, for its timed cycle period, upon energizing of said first timer; a second, electrically operable switch means having normally closed switch blade means movable to open position, after a predetermined time delay, upon energizing of said second switch means; a first electrical circuit comprising said first switch means, and said second electrical switch means, whereby upon energizing of said first circuit said normally closed switch blade means of said second electrical switch means will move, after time delay, to open position; a first electrical relay having normally open switch blade means; a second electrical circuit comprising said switch blade means, when closed, of said second electrical switch means, and said first timer, whereby said first circuit is controlled by the operation of said first switch means, and said second circuit to said timer may move to closed position only when said switch blade means of said second switch means is in its normally closed position; a first holding circuit for maintaining said first timer energized, comprising switch blade means, when closed, of said electric relay, and said switch blade means of said first timer; a second holding circuit for maintaining said electrical relay energized comprising said switch blade means of said first timer, the electrical relay, and the switch blade means of said electrical relay, whereby said first timer, after being energized, will remain energized until its switch blade means opens; a third electrical circuit including therein switch means closing in response to closing of said first timer switch means and other switch means closing in response to closing of said second detector switch means; and an electrically controlled signal means responsive to the operation of said third electrical circuit.

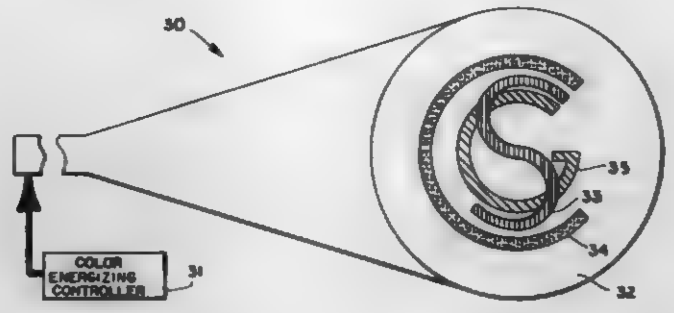
3,983,532
TRAFFIC CONTROL SIGNAL APPARATUS

Royce Hayes, 2785-A Shallowford Road, Chamblee, Ga. 30341

Continuation-in-part of Ser. No. 441,638, Feb. 11, 1974, Pat. No. 3,870,991. This application Dec. 26, 1974, Ser. No. 536,343

Int. Cl.^{2} G08G *1/00*

U.S. Cl. 340—41 R 4 Claims



1. Traffic control signal apparatus, comprising:

CRT means positioned in signal display relation to a traffic path;

said CRT means including separate sets of color phosphors corresponding to at least certain selected traffic control colors, and phosphor energizing means corresponding to said sets of phosphors and selectively operative for light-emitting energization of said corresponding phosphors;

one of said sets of phosphor being missing from a predetermined region which is configured to define a traffic signal indicium on said CRT means, so that energization of said one set of phsophor produces a particular color illumination surrounding and defining said indicium by the absence of said particular color illumination; and

color energizing control means operatively connected to supply said phosphor energizing means of said CRT means with input signals to selectively energize certain ones of said traffic control colors.

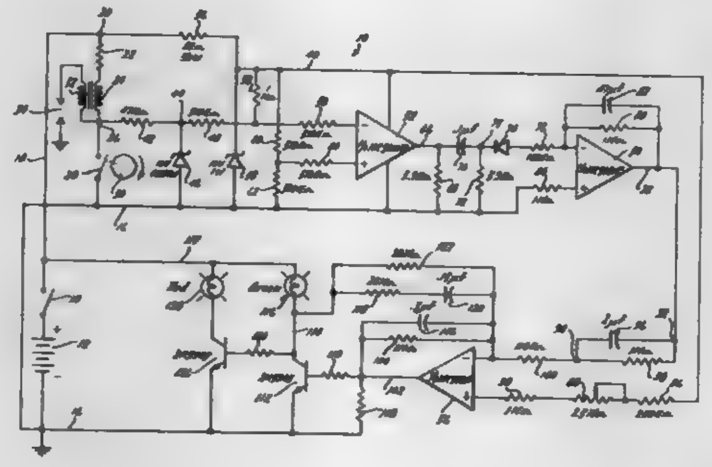
3,983,533
MOTOR VEHICLE FUEL ECONOMY INDICATING CIRCUIT

Kurt A. Goszyk, Westland, and Richard A. Schaefer, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 19, 1975, Ser. No. 588,442

Int. Cl.^{2} G08B *21/00*

U.S. Cl. 340—52 R 14 Claims



1. In combination with a motor vehicle having a drive train including an engine, a fuel economy indicating circuit for indicating to the operator of said vehicle that said engine is operating under conditions likely to produce poor fuel economy, said fuel economy indicating circuit comprising:

first circuit means for generating a first electrical signal, said first electrical signal having a magnitude proportional to the angular velocity of a component of said vehicle drive train;

second circuit means for generating a second electrical signal, said second electrical signal having a magnitude proportional to the angular acceleration of a component of said vehicle drive train;

third circuit means for combining said first and second electrical signals, thereby, to generate a third electrical signal, said third electrical signal having a magnitude that is a function of the magnitudes of said first and second electrical signals;

an electrically-actuable indicating device positioned in or on said vehicle for ready observation by an operator of said vehicle; and

fourth circuit means, responsive to said third electrical signal, for actuating said indicating device when the magnitude of said third electrical signal reaches a predetermined threshold level.

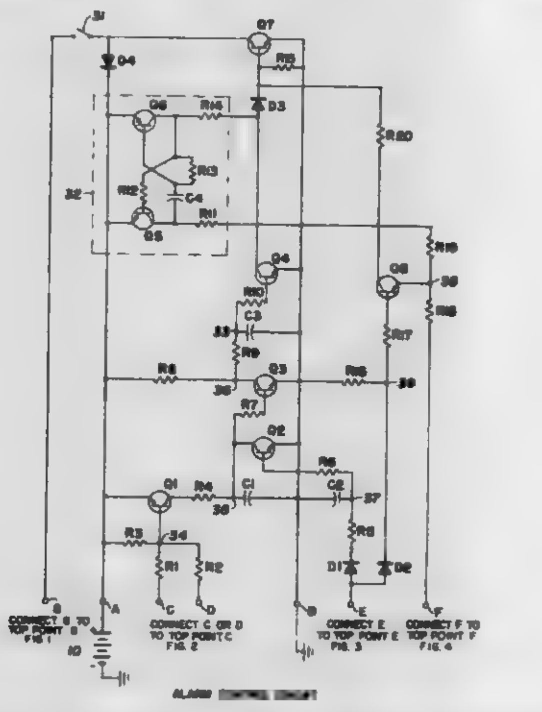
3,983,534
VEHICLE ALARM

James R. Goodman, 209 Linda Lane, Euless, Tex. 76039

Filed Mar. 17, 1975, Ser. No. 559,131

Int. Cl.^{2} B60R *25/10*

U.S. Cl. 340—63 10 Claims


Q7
D4
D3
Q6
R14
R20
CONNECT B TO TOP POINT B FIG. 1
CONNECT C OR D TO TOP POINT C FIG. 2
CONNECT E TO TOP POINT E FIG. 3
CONNECT F TO TOP POINT F FIG. 4

1. An alarm control circuit for use with a vehicle having a battery, an ignition switch circuit including an on-off switch for determining respective closed and open conditions of said ignition switch circuit, a closure operated switch circuit including an on-off switch for determining respective closed and open conditions of said closure switch circuit, and an alarm device; said alarm control circuit comprising

an output circuit including a transistor switch for energizing said alarm device;

a signal generator circuit for generating a control signal, said signal generator circuit being coupled to the base of said output circuit transistor switch;

diversion circuit means including a normally closed switch, for diverting said signal generator circuit control signal to effect shut-off of said output circuit transistor switch; closure control circuit means, including a terminal for connection to a vehicle closure switch; ignition control circuit means including a terminal for connection to the vehicle ignition switch circiut; said alarm control circuit being responsive to the open condition of said closure switch circuit and the open condition of said ignition switch circuit to maintain said diversion circuit switch closed; and said alarm control circuit being responsive to the closed condition of said closure switch circuit and the open condition of said ignition switch circuit to effect the opening of said diversion circuit switch; and the opening of said diversion circuit switch effecting the closing of said output circuit transistor switch to effect energization of said alarm device.

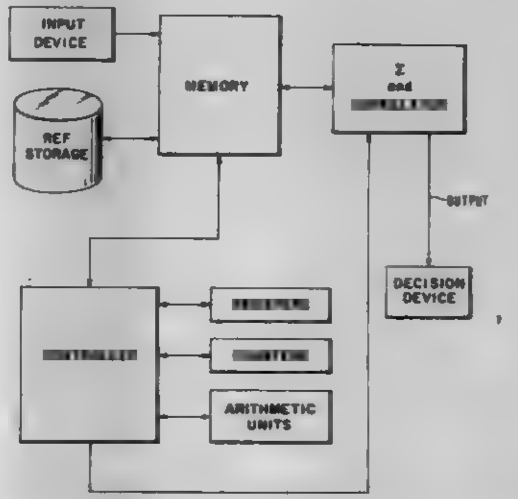
3,983,535
SIGNATURE VERIFICATION METHOD AND APPARATUS

Noel M. Herbst, Mount Kisco, and John H. Morrissey, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 4, 1975, Ser. No. 555,216

Int. Cl.^{2} G06K *9/10*

U.S. Cl. 340—146.3 SY 30 Claims



1. A method of signature verification which comprises producing and storing a first signal set comprising a plurality of electrical signals representative of the acceleration forces transmitted by a signer's hand to a writing instrument during the writing on a writing surface of at least one signature by a known person, producing and storing a similar second set of electrical signals by a putative signer at a different time, segmenting said two signal sets for both the known and putative signatures to facilitate identifying regions of high probable correlation, individually correlating similar regions in said two sets of acceleration representative signals, combining the correlation results obtained for said regions and utilizing this combined correlation value to produce a resultant correlation level valve.

3,983,536
DATA SIGNAL HANDLING ARRANGEMENTS

Charles Richard Telfer, Coulsdon, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed July 3, 1975, Ser. No. 592,995

Claims priority, application United Kingdom, July 4, 1974, 29590/74

Int. Cl.^{2} H04L *1/10*; G08C *25/00*

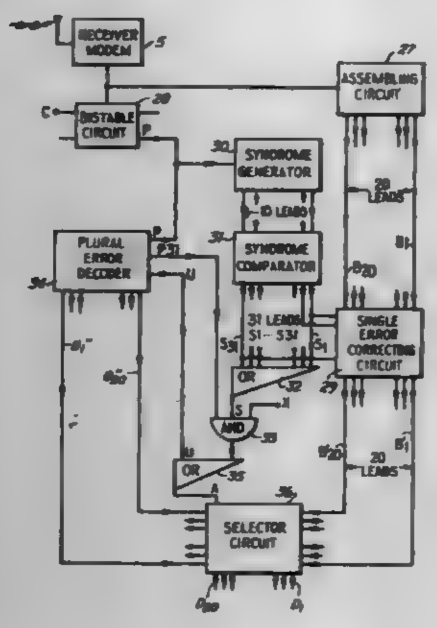
U.S. Cl. 340—146.1 AL 8 Claims

1. A method of data handling for correcting errors arising in a transmission channel in a system in which double adjacent errors are predominant, which comprises the steps of:

a. transmitting a succession of K data bits as a codeword of N bits B_1 to B_n where $N > K$ and where the bits B_1 to B_n are related to bits P_1 to P_n of a codeword of any code capable of correcting errors occurring at random by the fact that each *i*th term P_i is equal to the cumulative sum modulo 2 of the terms B_1 to B_i and that the last bit P_n of each codeword P_1 to P_n has the same value, i.e., 0 or 1;

b. receiving the transmitted codeword and recovering therefrom the codeword P_1 to P_n or its inverse by cumulatively summing the received bits B_1 to B_n;

c. correcting for double adjacent errors introduced by the transmission of step (a) by decoding said recovered codeword according to said code capable of correcting errors



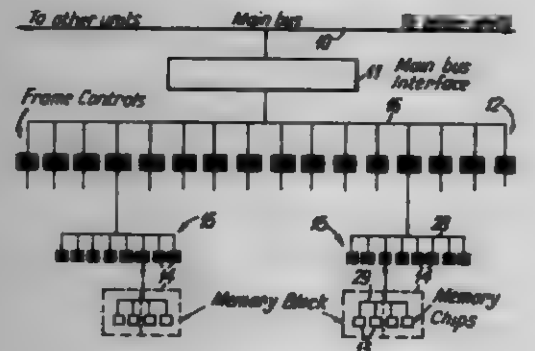
occurring at random to produce a corrected codeword B_1 to B_n; and

d. recovering the K data bits from the corrected codeword.

3,983,537
RELIABILITY OF RANDOM ACCESS MEMORY SYSTEMS

Brian Jeremy Parsons, Stevenage, and Lynne Margaret Pursell, Rayleigh, both of England, assignors to Hawker Siddeley Dynamics Limited, England

Filed Apr. 1, 1974, Ser. No. 456,647
Int. Cl.² G06F *11/00*; G11C *11/00*
U.S. Cl. 340—172.5 8 Claims

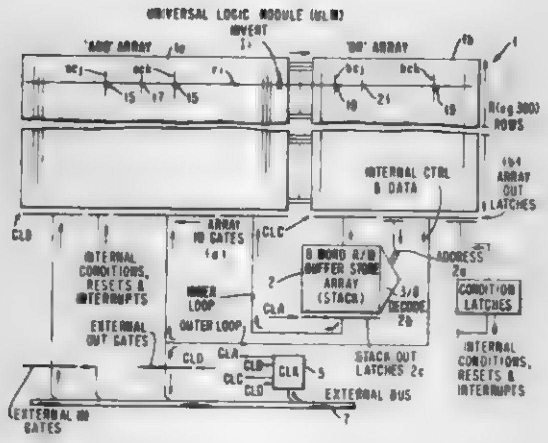


1. A digital memory system hierarchically organized with at least three levels in the hierarchy, and comprising a first level bus, a plurality of main memory units each independently interfaced to said first level bus, each main memory unit itself in turn comprising a second level bus within and respective to said main memory unit, a plurality of memory frames each independently interfaced to said second level bus, each memory frame in turn comprising a third level bus within and respective to said memory frame, and a plurality of memory storage blocks each independently interfaced to said third level bus, and wherein each said memory storage block comprises at least one storage array and is arranged for virtual addressing, said block containing means for decoding the whole of an address applied from said main bus through the several levels of the hierarchy.

3,983,538
UNIVERSAL LSI ARRAY LOGIC MODULES WITH INTEGRAL STORAGE ARRAY AND VARIABLE AUTONOMOUS SEQUENCING

John W. Jones, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 1, 1974, Ser. No. 465,783
Int. Cl.² G06F *7/00*
U.S. Cl. 340—172.5 68 Claims



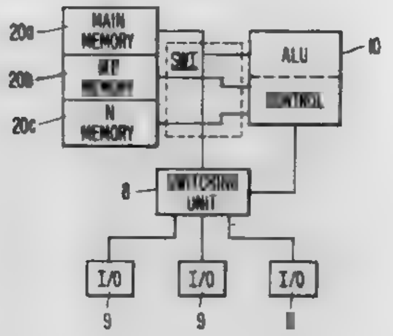
1. Interconnected logic array and addressible storage array matrix elements in a cyclically operative modular unit, wherein the logic array and interconnections thereof with said storage array are configured to permit said unit to be operated autonomously over plural cycles of operation relative to data stored in said storage array, said elements and interconnections comprising:

- first and second and third input conduction paths for cyclically presenting input signals to said logic array in parallel form;
- first, second and third output conduction paths for cyclically transferring outputs from said logic array;
- addressing lines coupled switchably between said first output path and address selection circuits of said storage array for selecting one of plural word locations in said storage array under control of addressing information variously shifted through said logic array;
- storage write-in lines coupled switchably between said second output path and said storage array for transferring information signals from said second output path into said addressed word location for temporary storage over an arbitrary number of consecutive cycles of operation of said unit;
- storage read-out lines coupled switchably between said storage array and said first input path in an INNER LOOP circuit, for transferring stored information from a said addressed location into said logic array as a partial input of a unit cycle;
- means switchably connecting said second input path with said third output path in an OUTER LOOP circuit, for permitting a portion of the logic array output in one cycle of said unit to be presented as a partial input to the logic array in the next cycle; and
- means connecting with said third input and output paths for providing gated external access to said logic array for conducting external input and output relative to said unit.

3,983,539
POLYMORPHIC PROGRAMMABLE UNITS EMPLOYING PLURAL LEVELS OF SUB-INSTRUCTION SETS

Ulbe Faber, Honeybrook; Robert L. Davis, Downingtown; David A. Fisher, Pittsburgh, and Joseph D. McGonagle, Media, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 825,569, May 19, 1969. This application July 10, 1975, Ser. No. 594,668
Int. Cl.² G06F *9/06*
U.S. Cl. 340—172.5 32 Claims



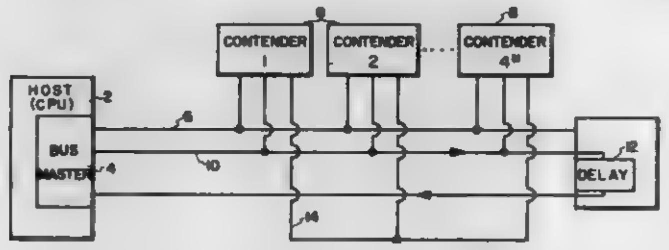
1. A programmable unit including a logic unit coupled to a plurality of registers for data transfer, said programmable unit comprising:

- circuit means coupled to said logic unit and registers to transmit thereto different specific sets of control signals;
- a control memory to store a plurality of different sets of control signals, said control memory being coupled to said circuit means;
- a command memory to store a plurality of retrievable encoded operational commands some of which specify given ones of said sets of control signals; and
- a command decoder coupled to said control memory and to said command memory to retrieve given ones of said specific sets of control signals to condition either said logic unit or said registers.

3,983,540
RAPID BUS PRIORITY RESOLUTION

Harry Keller, and Edward H. Forrester, both of Phoenix, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 8, 1975, Ser. No. 611,439
Int. Cl.² G06F *3/00*
U.S. Cl. 340—172.5 8 Claims



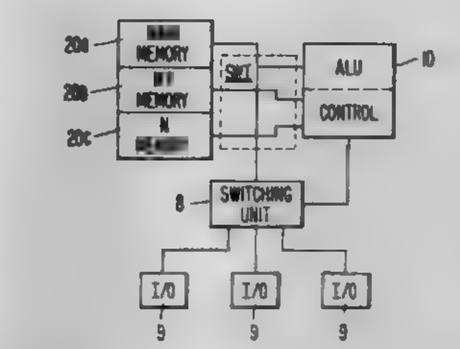
1. In a computer system having a common communication bus for a plurality of contending devices all connected in parallel to said bus,

- a logic circuit means at each of said contending devices, said logic circuit means each including means for establishing a priority level, and
- access contention bus means connected in parallel to each of said logic circuit means,
- said logic circuit means being responsive to an external signal substantially simultaneously applied to each such logic circuit means to enable a selected one of said contending devices for access to said communication bus.

3,983,541
POLYMORPHIC PROGRAMMABLE UNITS EMPLOYING PLURAL LEVELS OF PHASED SUB-INSTRUCTION SETS

Ulbe Faber, Honeybrook; Robert L. Davis, Downingtown; David A. Fisher, Pittsburgh, and Joseph D. McGonagle, Media, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 825,569, May 19, 1969. This application July 10, 1975, Ser. No. 594,576
Int. Cl.² G06F *9/06*
U.S. Cl. 340—172.5 13 Claims



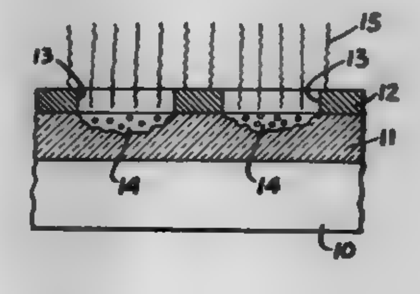
1. A programmable unit including a logic unit coupled to a plurality of registers for data transfer, said programmable unit comprising:

- circuit means coupled to said logic unit and registers to transmit thereto different specific sets of control signals;
- a control memory to store a plurality of different sets of control signals, said control memory being coupled to said circuit means;
- a command memory to store a plurality of retrievable encoded operational commands some of which specifiy given ones of said sets of control signals;
- a command decoder coupled to said control memory and to said command memory to retrieve given ones of said specific sets of control signals to condition either said logic unit or said registers;
- clock means coupled to said command decoder to generate timing pulses representing phases during which said sets of control signals are implemented; and
- addressing means coupled between said command decoder and said control memory and adapted to retrieve a set of control signals during the implementation of a previous set of control signals.

3,983,542
METHOD AND APPARATUS FOR RECORDING INFORMATION

Stanford R. Ovshinsky, Bloomfield Hills, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Division of Ser. No. 161,219, July 9, 1971, Pat. No. 3,868,651, which is a continuation-in-part of Ser. No. 63,404, Aug. 13, 1970, abandoned. This application Feb. 3, 1975, Ser. No. 546,290
Int. Cl.² G11C *13/00*, *11/34*
U.S. Cl. 340—173 R 54 Claims



1. The method of recording information comprising the steps of: providing a layer of substantially disordered and generally amorphous memory material which has one struc-

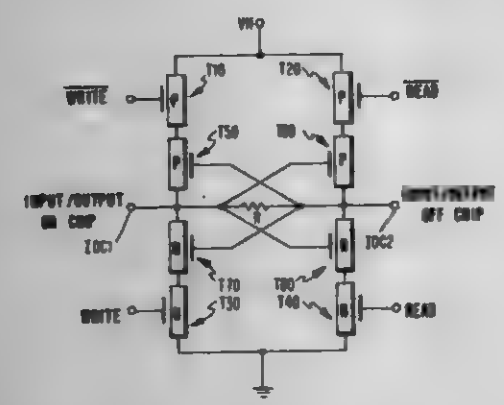
tural condition which is substantially disordered and generally amorphous and having one detectable characteristic, which is capable of having discrete portions thereof physically changed to another structural condition having another detectable characteristic, which has internal biasing forces toward said other structural condition, and which has internal inhibitions against the action of said biasing forces; providing said layer with a catalytic material which is catalytically capable of relatively increasing said biasing forces and decreasing said inhibitions against the action of said biasing forces of the memory material; and selectively, at selected desired discrete portions of the layer of memory material in accordance with a desired pattern of useful information, activating the catalytic material at said selected desired discrete portions of the layer and physically changing said layer at said selected desired discrete portions from said one detectable structural condition which is substantially disordered and generally amorphous to said other detectable structural condition to record the desired pattern of useful information in said layer.

3,983,543

RANDOM ACCESS MEMORY READ/WRITE BUFFER CIRCUITS INCORPORATING COMPLEMENTARY FIELD EFFECT TRANSISTORS

William Cordaro, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1975, Ser. No. 591,989
Int. Cl.² G11C *11/40*; H03K *3/281*
U.S. Cl. 340—173 FF 11 Claims



1. A Read/Write buffer circuit contained on a monolithic random access memory chip and connected to the random access memory, said Read/Write buffer circuit comprising:

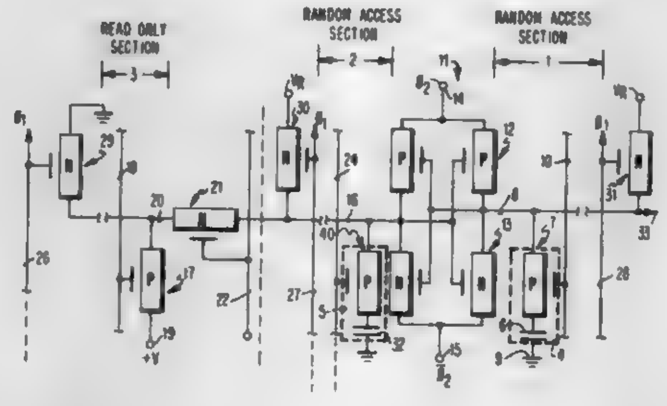
a first input/output terminal;
a second input/output terminal;
first, second, third, fourth, fifth, sixth, seventh and eighth field effect transistors, each of said field effect transistors having a first terminal, a second terminal and a gate electrode;
said first terminal of said first field effect transistor and said first terminal of said second field effect transistor being connected in common to a first substantially constant potential source;
said first terminal of third transistor and said first terminal of said fourth transistor being connected in common to a second substantially constant potential source, said second potential source differing in magnitude from the magnitude of said first potential by a predetermined potential difference;
said fifth field effect transistor having its first terminal connected to said second terminal of said first field effect transistor, its second terminal connected to said first input/output terminal and, said gate electrode of said fifth field effect transistor being connected to said second input/output terminal;
said sixth field effect transistor having its first terminal connected to said second terminal of said second field effect transistor, its second terminal connected to said second input/output terminal and, said gate electrode of said sixth field effect transistor being connected to said first input/output terminal;
said seventh field effect transistor having its first terminal connected to said second terminal of said third field effect transistor, its second terminal connected to said first input/output terminal, said gate electrode of said seventh field effect transistor being connected to said second input/output terminal;
said eighth field effect transistor having its first terminal connected to said second terminal of said fourth field effect transistor, its second terminal connected to said second input/output terminal, said gate electrode of said seventh field effect transistor being connected to said first input/output terminal;
resistor means connecting said first input/output terminal to said second input/output terminal, whereby when a Read signal is impressed on the gate electrode of said fourth field effect transistor and a $\overline{\text{Read}}$ signal impressed on the gate electrode of said second field effect transistor said sixth and eighth field effect transistors function as a basic inverting amplifier stage and said resistor means functions as feedback means to form a transadmittance amplifier and when a Write signal is impressed on the gate electrode of said third field effect transistor and a $\overline{\text{Write}}$ signal is impressed on the gate electrode of said first field effect transistor said fifth and seventh field effect transistors function as a basic inverting amplifier stage and said resistor means functions as feedback means to form a transadmittance amplifier.

3,983,544

SPLIT MEMORY ARRAY SHARING SAME SENSING AND BIT DECODE CIRCUITRY

Richard Thomas Dennison, Hopewell Junction; Leo Boyes Freeman, Poughkeepsie; Helen Janet Kelly, Wappingers Falls, and Peter Tsung-Shih Liu, Wallkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 25, 1975, Ser. No. 607,330
Int. Cl.² G11C *7/00*
U.S. Cl. 340—173 R 8 Claims



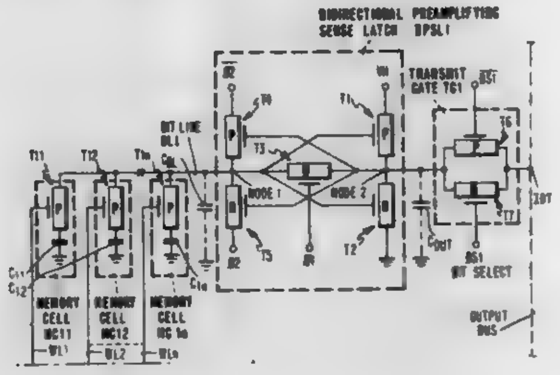
1. In combination,
a first array of memory cells,
a second array of memory cells,
the cells of each said array being connected along the same bit rows but along different word columns,
a plurality of actuatable switches equal to the number of said bit rows,
each bit row of said first array being selectively connectable to the same bit row of said second array upon the actuation of a respective one of said switches,
a plurality of sense amplifier means equal to said number of said bit rows,
each said amplifier means being connected to a respective bit row within said first array,
means for word addressing cells within said second array and concurrently actuating said switches, and
means for word addressing cells within said first array while said switches are deactuated.

3,983,545

RANDOM ACCESS MEMORY EMPLOYING SINGLE ENDED SENSE LATCH FOR ONE DEVICE CELL

William Cordaro, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1975, Ser. No. 591,988
Int. Cl.² G11C *11/40*; H03K *3/281*
U.S. Cl. 340—173 FF 12 Claims



1. In a monolithic memory having a plurality of groups of storage cells, each storage cell of each group being adapted to store an electrical manifestation of a binary 1, or an electrical manifestation of a binary 0, a preamplifying sense latch for each of said groups of storage cells for controllably sensing the binary value 0 or 1 stored in any one of said storage cells included within the group of storage cells with which said preamplifying sense latch is associated, each of said preamplifying sense latches comprising:

a first input/output terminal, a second input/output terminal,
a first field effect transistor directly connected to each cell of the group of said storage cells associated with said sense latch,
said first field effect transistor being directly connected between said first input/output terminal and said second input/output terminal,
second, third, fourth and fifth field effect transistors respectively connected to said first field effect transistor and to each of the other ones of said second, third, fourth and fifth effect transistors,
control means for controlling the conductivity of said first, second, third, fourth and fifth field effect transistors on a selective basis, further means cooperating with said control means for selectively conditioning a predetermined memory cell in the group associated with said sense latch,
whereby a binary 1 or a binary 0 may be written into, or read/restored from said predetermined memory cell of each said group of said monolithic memory.

3,983,546

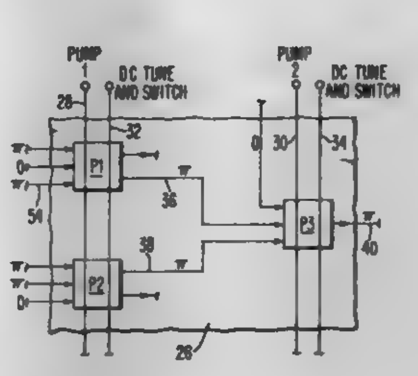
PHASE-TO-PULSE CONVERSION CIRCUITS INCORPORATING JOSEPHSON DEVICES AND SUPERCONDUCTING INTERCONNECTION CIRCUITRY

Hans H. Zappe, Granite Springs, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 341,002, March 14, 1973, Pat. No. 3,863,078, which is a continuation of Ser. No. 267,840, June 30, 1972, abandoned. This application Jan. 23, 1975, Ser. No. 543,568
Int. Cl.² G11C *11/44*
U.S. Cl. 340—173.1 8 Claims

1. An apparatus for converting information represented by the phase of a signal to information represented by electrical pulses, comprising:

a Josephson tunneling device having coupled thereto a first input signal of a first phase, said tunneling device having a superconducting state and a resistive state and being capable of being switched therebetween by said input signal,



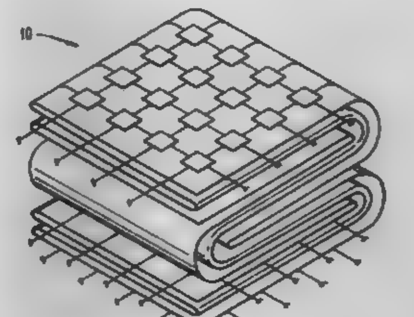
a conductor line connected to said Josephson tunneling device for conducting an electrical pulse when said Josephson tunneling device switches to its resistive state,
means for providing electrical current through said Josephson tunneling device.

3,983,547

THREE-DIMENSIONAL BUBBLE DEVICE

George S. Almasi, Katonah, N.Y., assignor to International Business Machines - IBM, Yorktown Heights, N.Y.

Filed June 27, 1974, Ser. No. 483,500
Int. Cl.² G11C *11/14*
U.S. Cl. 340—174 TF 7 Claims



1. A three-dimensional magnetic apparatus characterized by a plurality of magnetic bubble supporting regions located on a continuous substrate wherein said substrate is folded on itself to form said three-dimensional apparatus and means for providing a magnetic field for supporting and propagating magnetic bubbles in said regions which is common to all said regions.

3,983,548

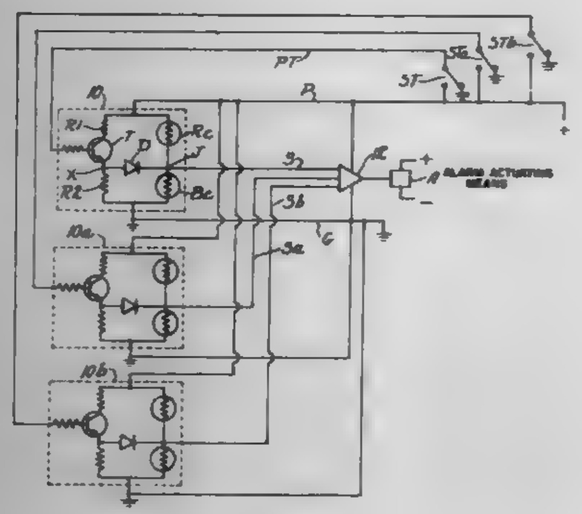
FIRE DETECTION SYSTEM

Howard L. Tufts, 9 Fisher Road, Hingham, Mass. 02043

Filed Feb. 19, 1975, Ser. No. 550,932
Int. Cl.² G08B *17/06*
U.S. Cl. 340—228 R 8 Claims

1. A detector system, comprising alarm actuating means and a detector element remote therefrom and connected thereto by a power lead, a signal lead and a ground path, and means for testing the continuity of the power lead and the signal lead, said means comprising first switching means at the detector which, when activated, completes a circuit between the power lead and the signal lead to apply a voltage from the

power lead to the signal lead great enough to activate the alarm actuating means and second switching means remote



from the first switching means for activating said first switching means at the detector.

3,983,549
DIGITALLY-OPERATED DISPLACEMENT DETECTING SYSTEM

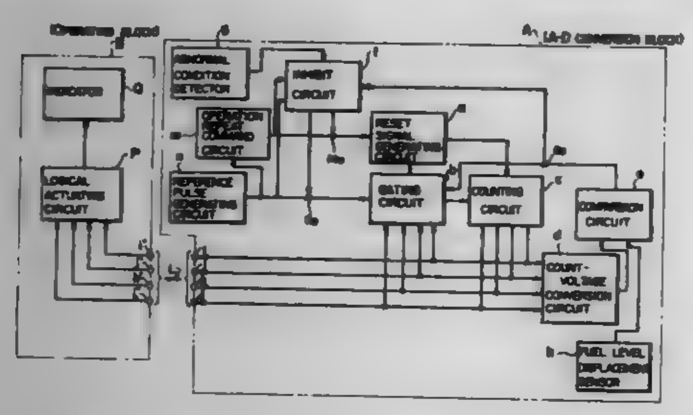
Sigeyuki Akita, Okazaki, and Akira Kuno, Nagoya, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 26, 1974, Ser. No. 445,901

Claims priority, application Japan, Feb. 27, 1973, 48-23917; May 17, 1973, 48-54934

Int. Cl.² G08C *19/16*

U.S. Cl. 340—206 **14 Claims**


INDICATOR
ABNORMAL CONDITION DETECTOR
INHIBIT CIRCUIT
OPERATION REQUEST COMMAND CIRCUIT
RESET SIGNAL GENERATING CIRCUIT
REFERENCE PULSE GENERATING CIRCUIT
LOGICAL ACTUATING CIRCUIT
GATING CIRCUIT
COUNTING CIRCUIT
COMPARISON CIRCUIT
COUNT-VOLTAGE CONVERSION CIRCUIT
FUEL LEVEL DISPLACEMENT SENSOR
A-D CONVERSION BLOCK

13. A digital displacement detecting system for detecting the amount of displacement of the level of fluid in a tank in the form of a digital value comprising:

reference pulse generating means for generating reference pulses having a predetermined frequency;

counting means having an input terminal connected to said reference pulse generating means and a plurality of output terminals and resettable at predetermined intervals of time to count said reference pulses in the form of a digital value;

count-voltage conversion means having a plurality of input terminals connected to the plurality of output terminals of said counting means and an output terminal whereby the count of said counting means is converted into a count voltage having an analog value corresponding to said count;

a displacement sensor for generating a detected voltage having an analog value corresponding to said fluid level;

comparison means having a first input terminal connected to said displacement sensor, a second input terminal connected to the output terminal of said count-voltage conversion means and an output terminal whereby an output is generated when said count voltage generated by said count-voltage conversion means attains the value of said detected voltage generated by said displacement sensor;

a count holding means responsive to an output signal generated at the output terminal of said comparison means, thereby to hold the counted value of said counting means;

means for detecting an abnormal condition which would erroneously vary the analog value of said displacement sensor and producing an abnormal condition signal in response thereto; and

inhibit logic means connected between said count holding means and said comparison means for preventing passage of said output signal generated by the output terminal of said comparison means to said count holding means when said abnormal condition signal is produced.

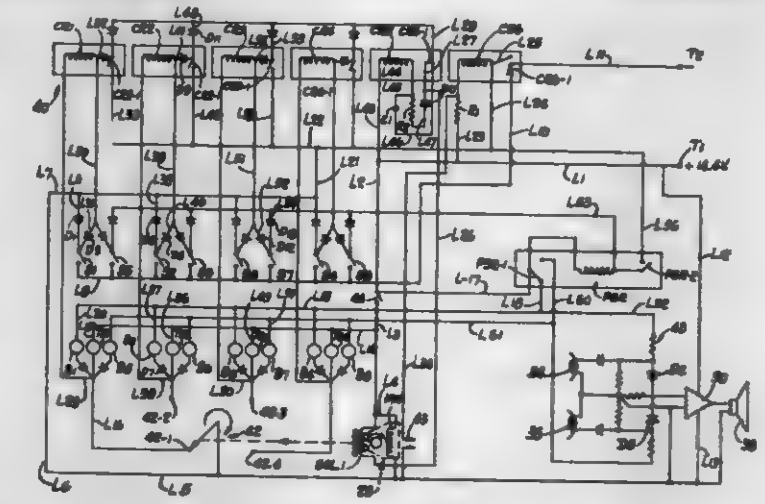
3,983,550
AURAL-VISUAL PRODUCT DISPLAY

Stanley B. Goss, Pepper Pike; Martin J. Nagel, Northfield Center, and Ole K. Nilssen, Chagrin Falls, all of Ohio, assignors to Tenna Corporation, Warrensville Heights, Ohio

Filed Jan. 25, 1974, Ser. No. 436,523

Int. Cl.² G09F *9/00*

U.S. Cl. 340—221 **22 Claims**



1. An audio-visual display system especially useful for displaying and promoting the sale of products, comprising:

a support for displaying a plurality of products,

a plurality of individual means to separately produce visually perceivable outputs,

a single information storage medium with a surface carrying a plurality of separate audio messages at different locations,

means including a plurality of actuatable selectors each associated with different support locations for displayed products, a different stored message, and a different visually perceivable output, and circuit means associated with each selector and operative to select any one of a plurality of messages recorded at different locations on said surface and an accompanying visible effect responsive to actuation of any one of said selectors,

means responsive to actuation of any one of said selectors to emit a selected message and to produce an accompanying visible effect, and

means operable in response to actuation of any one of said actuatable selectors to prevent an actuation of a second selector from selecting a message while a message is being emitted.

3,983,551
ALARM SYSTEM FOR COIN-OPERATED TELEPHONE

William R. Raymond, La Canada, Calif., assignor to Theodore S. Hoffman, San Marino, Calif.

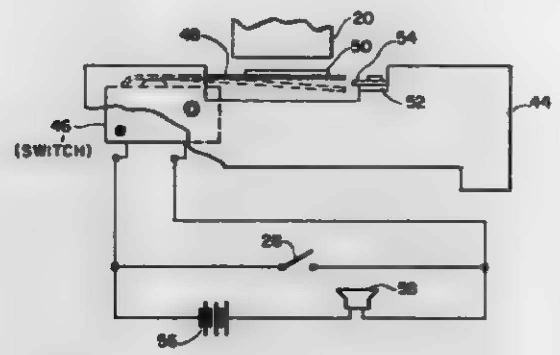
Filed July 15, 1974, Ser. No. 488,325

Int. Cl.² G08B *13/00*

U.S. Cl. 340—276 **3 Claims**

1. An alarm system for use with a device having a housing and a removable portion releasably secured to the housing by means of a lock assembly affixed to the removable portion, said lock assembly having a latch bolt movable between a first position engaging a recess in said housing and a second position for releasing the removable portion, said system comprising:

switch means secured to said housing in proximity to said recess, said switch means having a switch arm positioned in the path of travel of said latch bolt, said switch arm being normally biased toward said latch bolt along said path and being operable against its bias by engaging said latch bolt when said latch bolt is being moved to said first position;



a power source;

alarm means;

electrical circuit means interconnecting said power source. said alarm means and said switch means, said switch means electrically connecting said power source to activate said alarm means only when said latch bolt is out of engagement with said switch arm; and

manually operable retaining means for retaining said switch arm in a position against its bias when said actuating arm is out of engagement with said switch arm to inactivate said alarm system.

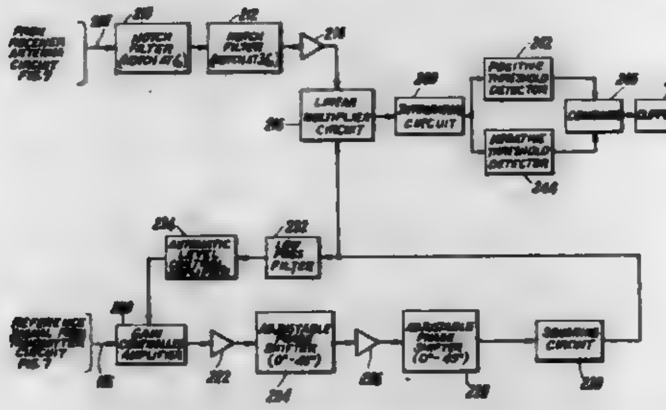
3,983,552
PILFERAGE DETECTION SYSTEMS

Paul E. Bakeman, Jr., Elnora, and Albert L. Armstrong, Latham, both of N.Y., assignors to American District Telegraph Company, Jersey City, N.J.

Filed Jan. 14, 1975, Ser. No. 540,950

Int. Cl.² G08B *13/22*

U.S. Cl. 340—280 **37 Claims**


NOTCH FILTER
NOTCH FILTER
LINEAR MULTIPLIER CIRCUIT
INTEGRATING CIRCUIT
POSITIVE THRESHOLD DETECTOR
NEGATIVE THRESHOLD DETECTOR
CLIPPER
LOGIC OUTPUT ALARM CIRCUIT
AUTOMATIC LEVEL CONTROL
LOW PASS FILTER
GAIN CONTROLLED AMPLIFIER
ADJUSTABLE PHASE SHIFTER (0°-45°)
ADJUSTABLE PHASE SHIFTER (0°-45°)
SQUARING CIRCUIT

1. A system for detecting removal of articles from a protected area comprising:

a magnetic marker associated with each article, each marker including a remanently magnetized control element of relatively high coercivity and a switching element of relatively low coercivity, at least a portion of which is magnetized by said remanently magnetized control element in the absence of other magnetic fields of sufficient strength to counteract the effect of said remanently magnetized control element;

means for generating a periodic magnetic field in a region through which an article must pass to leave the protected area for periodically altering the magnetization of the switching element of a marker in said region, said periodic magnetic field having a first frequency and being free of a detectable amount of a predetermined even harmonic of said first frequency;

means for detecting said predetermined even harmonic of said first frequency in the magnetic field produced by the switching element of a marker in response to said periodic magnetic field; and

means for demagnetizing the control element of a marker sufficiently to preclude the aforesaid production of said predetermined even harmonic when the associated article is to leave the protected area undetected.

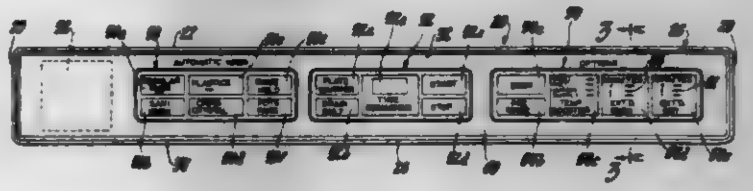
3,983,553
APPLIANCE REMOTE TOUCH-CONTROL PANEL WITH SOUND SYSTEM

Keith K. Kesling, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 12, 1975, Ser. No. 576,802

Int. Cl.² G08C *1/00*

U.S. Cl. 340—365 R **4 Claims**



1. A touch control apparatus for a domestic appliance comprising, an elongated box-shaped casing having a rectangular opening in one side wall, a composite touch responsive control panel assembly closing said wall opening, the user's side of said panel assembly presenting a continuous uninterrupted surface formed by a flexible sheet of impervious plastic material having deflectable areas, said user's side having a plurality of appliance control flexible pads delineated thereon at said deflectable areas with each pad including indicia defining an appliance function, electrically conducting means on said panel assembly in the form of a plurality of single fixed contacts, each of said fixed contacts arranged to interconnect with a movable contact member secured on the inner face of each said flexible pad at a deflectable area providing a series of flexible pad switches, a musical tone generator circuit including a speaker positioned in said casing, each said flexible pad switch being responsive to a preselected deflecting force to the flexible pad to selectively establish an electrical path for the flow of current between different portions of said circuit, and each said flexible pad switch being operative when closed to select a predetermined resistive value in said tone generator circuit causing an electrical pulse to generate a frequency for driving said speaker producing a predetermined audible tone, whereby a distinguishable audible musical tone is obtained for each flexible pad switch to assure the user of the actuation of the preselected appliance function.

3,983,554
ELECTRIC POWER DISTRIBUTION SYSTEM INCLUDING A MASTER ANNUNICATOR AND CENTRAL CONTROL UNIT

John Park Goode, Fort Mitchell, Ky., assignor to ESB Incorporated, Philadelphia, Pa.

Filed Mar. 25, 1975, Ser. No. 561,794

Int. Cl.² G08B *26/00*

U.S. Cl. 340—413 **2 Claims**

1. In a power distribution system comprising a plurality of isolated power supplies and a plurality of line isolation monitors wherein each line isolation monitor is operatively connected to an individual isolated power supply and wherein each line isolation monitor comprises:

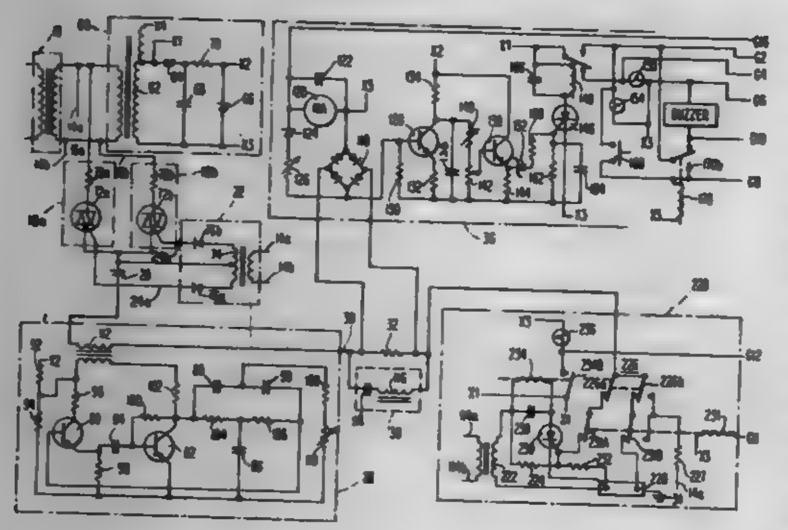
a. a power supply;

b. measuring means for measuring the leakage current to ground of the individual isolated power supply to which it is connected;

c. first alarm means for emitting a first audible alarm signal and an electrical alarm signal when the leakage current to ground is greater than a chosen limit;
d. first silencing means for silencing the first audible signal; and
e. test means for inserting an artificial current leakage to ground in the isolated power supply to which it is connected

the improvement comprising: a single master annunciator and remote control unit for monitoring and controlling each line isolation monitor, said single master annunciator and remote control unit being operatively connected to each line isolation monitor via a plurality of connecting circuits with each connecting circuit connecting an individual line isolation monitor to the master annunciator and remote control unit, the single master annunciator and remote control unit comprising:

1. second alarm means for emitting a second audible alarm when any line isolation monitor emits an electrical alarm signal;
2. indicating means for indicating which of the plurality of line isolation monitors is emitting an electrical alarm signal;
3. second silencing means for silencing the second audible alarm in the master annunciator and remote control unit;



4. energizing means for energizing the first silencing means in any line isolation monitor emitting an audible alarm and for energizing the second silencing means to thereby simultaneously silence both the first and second audible alarms;
5. single means for sequentially determining the magnitude of any leakage current in each isolated power supply;
6. activating means for sequentially activating the test means of each of the plurality of line isolation monitors to thereby sequentially insert an artificial current leakage to ground in each of the isolated power supplies;
7. line isolation monitor failure means for emitting a failure alarm signal upon the occurance of at least one of the following events, failure of the power supply of any of the line isolation monitors, loss of ground connection in any of the line isolation monitors and opening of the alarm signal loop of any of the line isolation monitors;
8. identifying means for identifying the line isolation monitor emitting a failure alarm signal, and;
9. aborting means for aborting any sequential function and returning the master annunciator and remote control unit to an initial alert position.

3,983,555
RADAR RECEIVERS

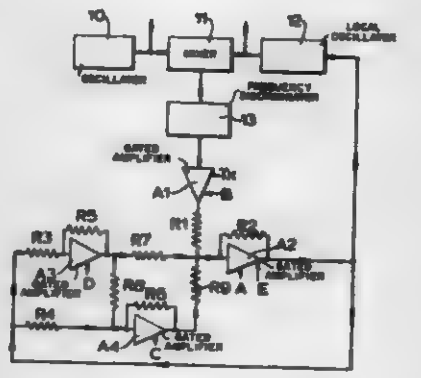
John Malcolm Morrison, and Charles McGregor Stewart, both of Edinburgh, Scotland, assignors to Ferranti, Limited, Hollinwood, England

Filed July 12, 1974, Ser. No. 488,179

Claims priority, application United Kingdom, July 14, 1973, 33647/73

Int. Cl.^{2} G01S *9/02*; H04B *1/40*

U.S. Cl. 343—5 R **4 Claims**



1. In a radar receiver for a frequency agile radar which includes a variable - frequency local oscillator and an automatic frequency control circuit responsive to a transmitted pulse to produce a fine control signal to exert fine control over the frequency generated by the local oscillator, the improvement of control means operable to produce a coarse control signal to exert coarse control over the frequency generated by the local oscillator, said control means comprising a first, a second and a third gated storage amplifier, means for connecting the output of the automatic frequency control circuit to the input of the third storage amplifier, means for applying a gate signal to said first storage amplifier such that said first amplifier is gated at such a time as to store the sum of the fine and coarse control signals produced in response to a previous transmitted pulse, means for connecting the output of the first gated storage amplifier to the input of said second gated amplifier, and to the input of said third gated amplifier, means for connecting the output of the second gated storage amplifier to the input of the third gated storage amplifier, means for applying a gate signal to said second storage amplifier such that said second amplifier is gated at such a time as to store the difference between the said sum of the fine and coarse control signals and the sum of the fine and coarse control signals produced in response to another previous transmitted pulse, the outputs of the first and second gated storage amplifiers forming the coarse control signal, means for gating said third storage amplifier and means for connecting outputs to an input of the automatic frequency control the output from said third gated storage amplifier to the input of said first and said second storage amplifiers and to the variable-frequency local oscillator to control the frequency of oscillation thereof.

3,983,556
RADAR VIDEO CLIPPING LEVEL DERIVED FROM TARGET SIGNAL

Paul M. Danzer, Norwalk, and Giles E. Rae, Ridgefield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 27, 1972, Ser. No. 248,240

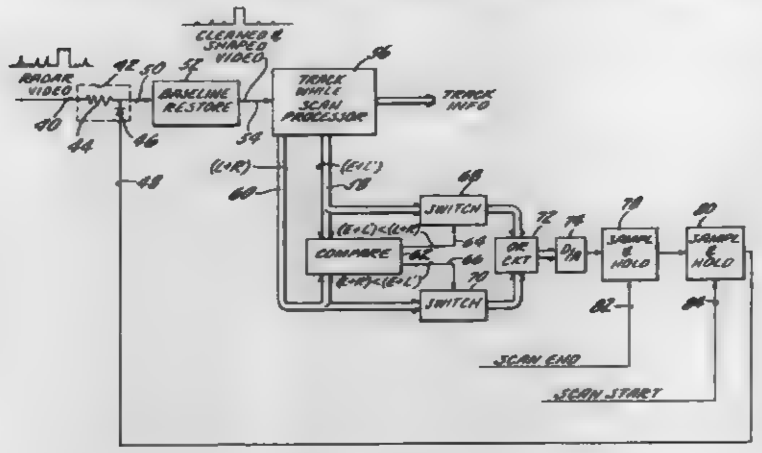
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 13, 1976

Int. Cl.^{2} G01S *7/28*

U.S. Cl. 343—7 A **5 Claims**

1. In a scanning pulse radar system having processing means providing signals representing the summation of early and late target return signal voltages and the summation of right and left target return signal voltages in response to target return signal voltage levels in a multi-phase target window, and having a radar video clipper responsive to a reference voltage for cleaning and shaping radar video prior to application to the processing means, the improvement comprising:

means for developing a clipping level voltage proportional to at least one of the signals included in the group of the



left and right summation signals and the early and late summation signals in one scan; and

means for applying said clipping level voltage in a next succeeding scan as the reference voltage to the radar video clipper.

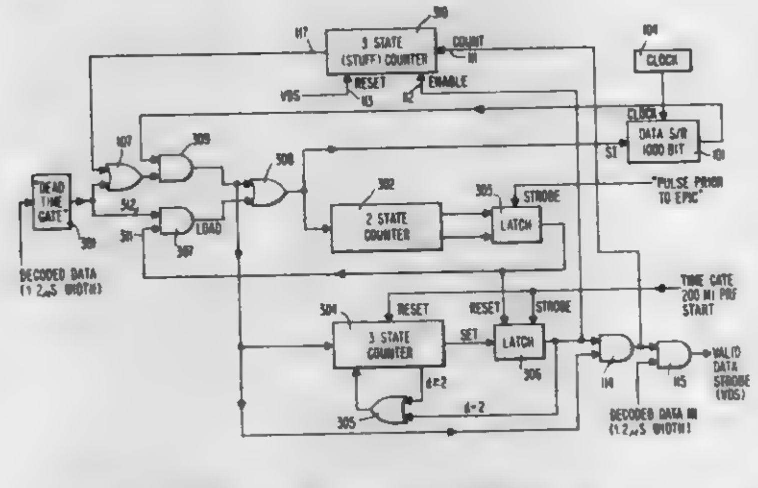
3,983,557
DIGITAL DME WITH COMPENSATION FOR GROUND STATION INTERMITTENCIES

Ronald Lee Powell, King of Prussia, and Frank Patterson Smith, II, Dresher, both of Pa., assignors to Narco Scientific Industries, Inc., Fort Washington, Pa.

Filed Apr. 28, 1975, Ser. No. 571,844

Int. Cl.^{2} G01S *9/56*

U.S. Cl. 343—7.3 **10 Claims**



1. Digital apparatus for determining distance to a remote station by transmitting signals to the station and by decoding return signals from the remote station, comprising:

a. memory means for storing signals representative of the relative time relationship of received return signals;
b. pass-recirculate logic means
  i. for coupling all return signals received during a first epic to said memory means,
  ii. for comparing return signals received during subsequent epics with stored signals from a previous epic in said memory having associated time relationships, and
  iii. for restoring signals in said memory upon coincidence of a received return signal with an associated stored signal; and
c. logic means for restoring a given stored signal in said memory means for a predetermined number of epics, irrespective of receipt of return signals from said ground station; and
d. means for identifying when only one signal is stored in said memory means, and deriving said distance therefrom.

3,983,558
MOVING TARGET INDICATING (MTI) RADAR SYSTEMS EMPLOYING VEHICLE DISCRIMINATOR APPARATUS

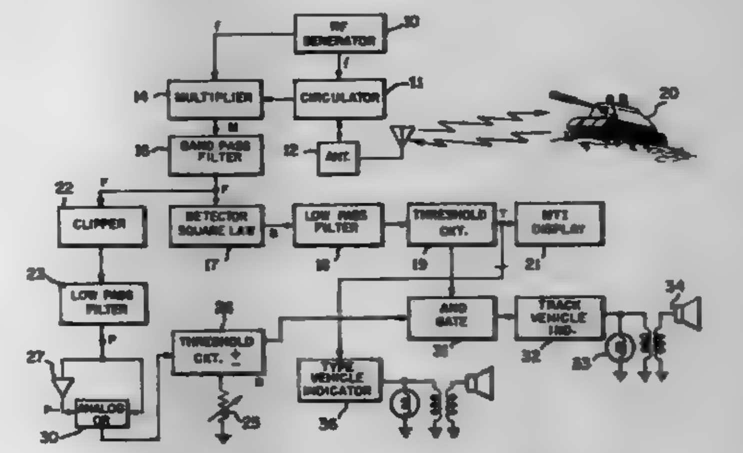
Otto E. Rittenbach, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 28, 1974, Ser. No. 484,029

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 10; 1976

Int. Cl.^{2} G01S *9/42*; G08B *13/22*

U.S. Cl. 343—7.7 **13 Claims**



3. In a moving target indicator radar system of the type including a receiver capable of responding to a return or echo signal reflected from a target within the range of a radar transmitter, which generates a signal free of harmonics, wherein said returned signal includes a Doppler frequency component containing information relative to the nature or type of target, in combination therewith apparatus for identifying the type of target, comprising:

a. first means included in said receiver and responsive to the reception of said returned signal for detecting the magnitude of an even harmonic component of said Doppler component at an output thereof, and
b. means coupled to the output of said first means for providing a control signal when said magnitude of said even harmonic component exceeds a predetermined level indicative of the presence of a moving target of a given nature.

3,983,559
NOVEL STRUCTURE FOR RADIO POSITION FIXING USING HYPERBOLIC PHASE MEASUREMENT

Etienne A. H. Honofe, Chatenay-Malabary, and Emile L. G. Torcheux, Paris, both of France, assignors to Societe d'Etude et d'Application des Techniques Nouvelles NEO-TEC, Paris, France

Filed Dec. 18, 1972, Ser. No. 316,428

Claims priority, application France, Dec. 17, 1971, 71.45492; July 27, 1972, 72.27058; July 27, 1972, 72.27059

Int. Cl.^{2} G01S *1/30*

U.S. Cl. 343—105 R **30 Claims**

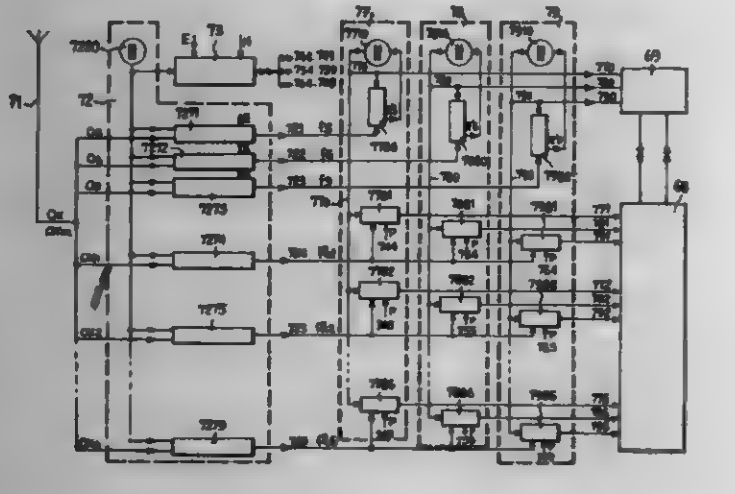
1. A radio-position-fixing receiver of the hyperbolic-position-line phase-measurement type, for use with at least two transmitting stations $(E_1 ; E_2)$ transmitting continuous waves $(0_1 ; 0_2)$ having respective "specific" frequencies $(Fs_1 ; Fs_2)$ of known nominal values which are specific of the transmitting stations, and interrupted waves $(0_{11} ; 0_{21})$ having a "measuring" frequency (F_1) of the same known nominal value for both transmitting stations,

the interrupted waves being non-simultaneously transmitted by the two stations, in accordance with a known fashion related to the locations of the stations and the specific frequencies thereof, characterized in that said receiver comprises:

a first synchronous receiving circuit, having inputs for receiving waves at the said two "specific" frequencies $(Fs_1 ; Fs_2)$, other inputs for local signals to heterodyne and synchronously demodulate waves at said two specific frequencies (Fs_1 ; Fs_2), and outputs supplying two first remainder signals (R_1' ; R_2') representing the frequency remainders after heterodyning and synchronously demodulating waves received at the two specific frequencies with local signals, respectively;

a first frequency generator for permanently delivering first local signals to the other inputs of said first synchronous receiving circuit, at least two of the first local signals being individually controllable in frequency;

a first control circuit for controlling frequency adjustments of the said two controllable first local signals so as to have said first remainder signals (R_1' ; R_2') representing substantially no frequency remainders for the two specific frequencies, respectively;



a second synchronous receiving circuit, having an input for receiving waves of the said measuring frequency (F_1), other inputs for local signals to heterodyne and synchronously demodulate waves at the measuring frequency (F_1), and an output supplying a second remainder signal representing the frequency and phase remainder after heterodyning and synchronously demodulating received waves at the measuring frequency (F_1) with the local signals;

a second frequency generator, capable of selectively delivering second local signals to the other inputs of the second synchronous receiving circuit, the second frequency generator being coupled to the first frequency generator so that at least two of the second local signals are subjected to frequency corrections which are coupled in predetermined proportionality ratios with the frequency adjustments of said two controllable first local signals, respectively, the predetermined proportionality ratios being substantially equal to the ratios of the known measuring frequency (F_1) to each of the two known specific frequencies (Fs_1 ; Fs_2) respectively associated to the two controllable first local signals, and also at least two of the second local signals being individually controllable in phase;

a second control circuit capable of selectively controlling phase adjustments of said phase controllable second local signals so as to have said second remainder signal representing substantially no frequency remainder and a substantially constant phase remainder; and

a time-programme circuit, operative during each known time-period of transmission of an interrupted wave by a station having anyone of the two specific frequencies, for selectively coupling the second frequency generator to the second synchronous receiving circuit with the corrected second local signal having a predetermined correction proportionality ratio which is related to the specific frequency of that station, and with an associated one of the two phase controllable second local signals, and for selectively coupling the second control circuit to the second frequency generator to control phase adjustments of that associated phase-controllable second local signal.

3,983,560

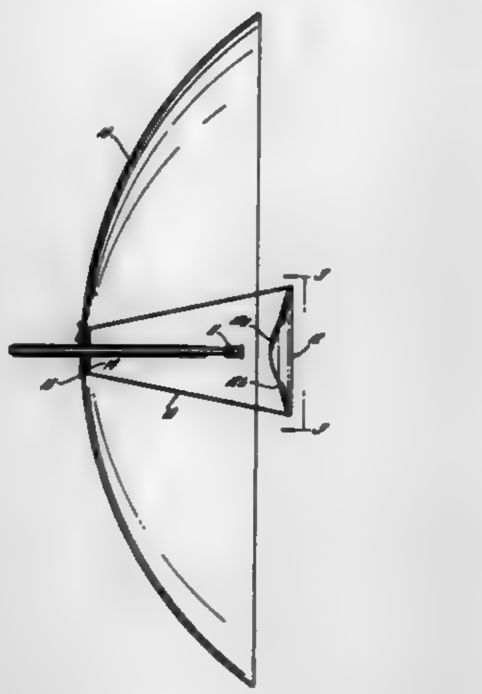
CASSEGRAIN ANTENNA WITH IMPROVED SUBREFLECTOR FOR TERRESTRIAL COMMUNICATION SYSTEMS

James Bruce MacDougall, New Lenox, Ill., assignor to Andrew Corporation, Orland Park, Ill.

Filed June 6, 1974, Ser. No. 476,775

Int. Cl.² H01Q *19/18*

U.S. Cl. 343—781 CA 6 Claims



1. A Cassegrain antenna for use in terrestrial communication systems, said antenna comprising the combination of a parabolic main reflector, a primary feed horn, and a subreflector illuminated by the primary feed horn including a central area forming the surface of revolution of a hyperbolic conic section for providing tapered illumination of the main reflector in the transmitting mode, said central area providing an antenna gain of less than about 40% and at least one peripheral area of the same kind of conic section as said central area, said areas both having virtual focal points coincident with each other and with the phase center of the primary feed horn, and orientation for directing spillover from said central area onto the peripheral portion of the main reflector to improve the uniformity of illumination of the main reflector.

3,983,561

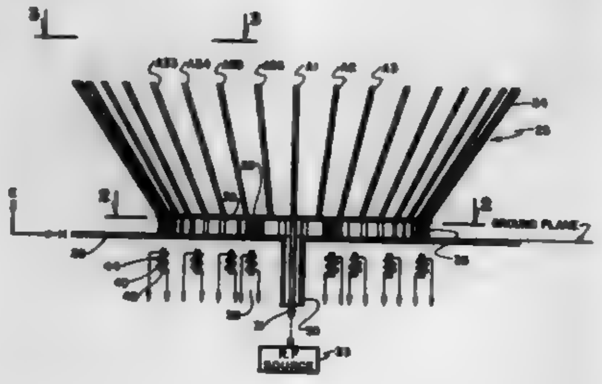
HIGH FREQUENCY WAVE RADIATION SYSTEM PRODUCING A ROTATING BEAM DEFINING A PREDETERMINED GEOMETRICAL PATTERN

Alvaro D. Biagi, Huntington Station; Richard Silbiger, Dix Hills, and Leslie Orloff, Huntington, all of N.Y., assignors to Republic Electronic Industries, Inc., Melville, N.Y.

Filed Sept. 2, 1975, Ser. No. 609,235

Int. Cl.² G01S *1/48*

U.S. Cl. 343—787 4 Claims



1. An electromagnetic wave radiation system comprising:

a stationary discone antenna array for transmitting a beam rotating in one plane and defining a directional wave pattern in another plane orthogonal to said one plane;

a source of high frequency wave energy comprising an input conductor located at the center of said antenna array at a ground plane thereof;

a multiplicity of stationary phase modulator units which are ferro magnetic masses located in a circle around the periphery of said array and arranged to cause phase displacement of said beam so that said beam rotates continuously through 360° in said one plane while producing said directional wave pattern in said other plane; and

modulator driving means associated with each of said modulator units for activating the same to cause the phase displacement and rotation of said beam; said modulator driving means comprising:

a plurality of electromagnets located below said ground plane at each of said phase modulator units;

a source of sine waves of one frequency connected to certain spaced ones of said electromagnets;

a means for shifting said sine waves in phase by 90°; and

a circuit means connecting said wave shifting means to other spaced ones of said electromagnets whereby a multiple lobed pattern is generated when said beam rotates through 360°.

3,983,562

MONO-LOBED SCANNER

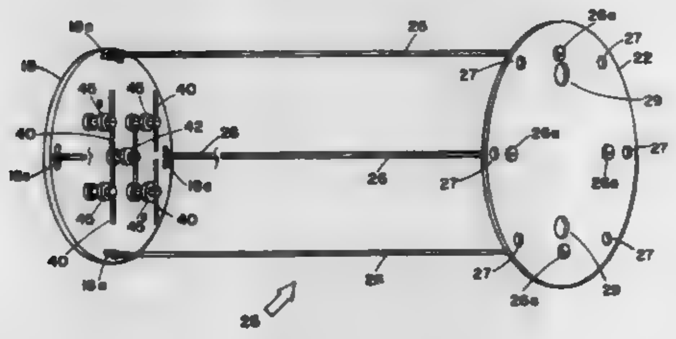
William C. Blanchard, and James E. Kreiner, Jr., both of Baltimore, Md., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 28, 1975, Ser. No. 563,244

Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976

Int. Cl.² H01Q *19/16*

U.S. Cl. 343—815 9 Claims



1. Apparatus for correcting the positional inaccuracy of an antenna having a parabolic dish and an antenna element array spaced apart from said parabolic dish and directed into said dish, said antenna element array having at least four antenna elements polarized alike and displaced with orthagonal symmetry about the boresight axis of said antenna comprising:

a ground plane for said antenna elements;

means for fixedly holding said ground plane spaced apart from said parabolic dish and parallel thereto with said four antenna elements displaced with orthagonal symmetry about the boresight axis of said antenna; and,

four elongated electrically conductive elements each having a relatively small cross sectional area arranged about said antenna elements equally spaced radially from said boresight axis and generally parallel thereto and generally equally angularly spaced about one wavelength apart, the spacing being adjustable.

3,983,563

ANTENNA ADAPTER FOR TELEVISION

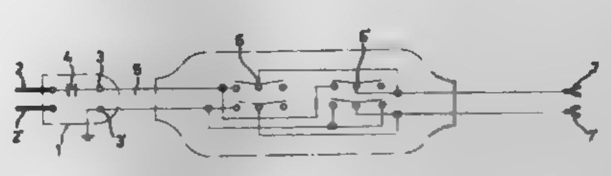
Koji Nakayama, 305, No. 1-1-1, Hara, Meguro, Tokyo, Japan

Filed Oct. 15, 1974, Ser. No. 514,888

Claims priority, application Japan, Oct. 16, 1973, 48-110125

Int. Cl.² H01Q *1/46*

U.S. Cl. 343—861 5 Claims



1. An antenna adapter for television comprising: an input connector to be inserted into a standard electrical plug socket for domestic use, which is connected to one end of a feeder intermediately with a condenser, the other end thereof being formed so as to be connectable to the input terminal of an antenna, at least one circuit-changing switch disposed in the midpoint of said feeder for appropriately changing the impedance of said feeder and interconnection means connected to said switch for providing different impedance paths depending on the position of said switch.

3,983,564

IMAGE RECORDING MEMBER

Mitsunobu Nakazawa, Tokyo; Yoshiaki Araki, Yokohama; Masahiro Haruta, Funabashi, and Kunio Satomi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 509,684, Sept. 26, 1974, abandoned. This application Aug. 18, 1975, Ser. No. 605,469

Claims priority, application Japan, Sept. 28, 1973, 48-109963

Int. Cl.² G01D *15/34*

U.S. Cl. 346—1 36 Claims

1. A method for forming an image on an image recording member comprising the step of applying energy to a recording layer comprising at least one kind of graphite fluoride and at least one kind of fluorine acceptor, both being the effective components of said image recording layer.

3,983,565

DEVICE FOR RECORDING SPEED OPERATING CONDITIONS OF A WHEELED VEHICLE

Ernst Koller, Paradiesstrasse 64, Binningen, Switzerland (CH-4102)

Filed Dec. 23, 1975, Ser. No. 643,819

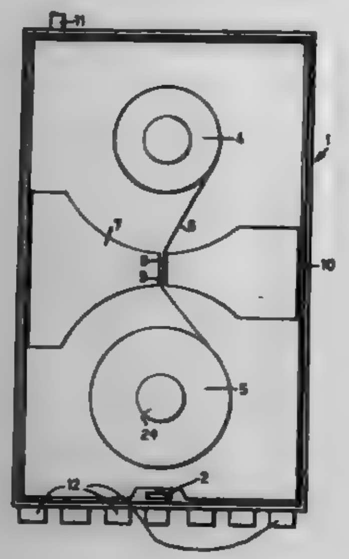
Claims priority, application Switzerland, Dec. 27, 1974, 17274/74

Int. Cl.² G01D *9/00, 9/30*

U.S. Cl. 346—18 7 Claims

1. A device for recording speed operating conditions of a vehicle, having means such as a wheel on which it travels over the ground, comprising a housing, at least one first speed information recording stylus, a connection on said housing for connecting said first speed information recording stylus to the wheel for indicating the speed of travel of the vehicle, a continuous recording medium movable past the stylus for receiving the recording of the speed of travel of the vehicle, at least one second excess speed information recording stylus located adjacent the recording medium, speed settable means connectable to said second stylus and said connection to actuate

said second stylus to record excess speed information on said medium when the speed which has been set on said settable



means is exceeded, and drive means connected to said medium to move said medium at a predetermined speed.

3,983,566
APPARATUS FOR RECORDING OF AN ANNULAR RECORD CARRIER

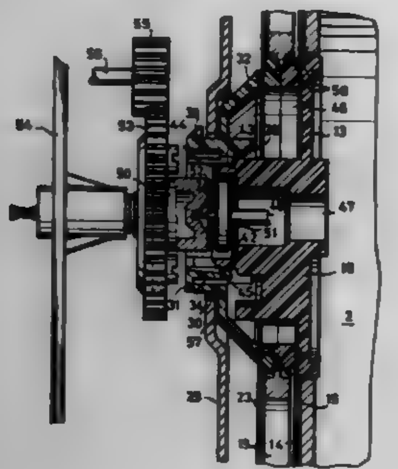
Karl Vögtlin; Hans Zimmermann, and Hartmut Schultze, all of Villingen-Schwenningen, Germany, assignors to Kienzler Apparate GmbH, Villingen, Germany

Filed July 9, 1975, Ser. No. 594,261

Claims priority, application Germany, July 13, 1974, 2431745

Int. Cl.² G01D *9/04*

U.S. Cl. 346—44 **13 Claims**



1. In an apparatus wherein an annular record carrier is rotated in correspondence with the passage of time and an ongoing recording is made thereon, a combination comprising a housing having two sections which are relatively pivotable between an open position in which record carriers can be inserted into and removed from said housing, and a close position in which a recording is made on a record carrier located within the closed housing; first means in one of said housing sections for rotating the record carrier and including a rotary support for the record carrier and a spindle extending through a center opening of the latter; and self-centering second means turnably mounted in the other of said housing sections with freedom of play for centering itself relative to said spindle in response to movement of said housing sections towards said closed position, and for snapping in its centered position against a record carrier on said support when said housing sections move to said closed position, so that said second means rotates with said support and record carrier.

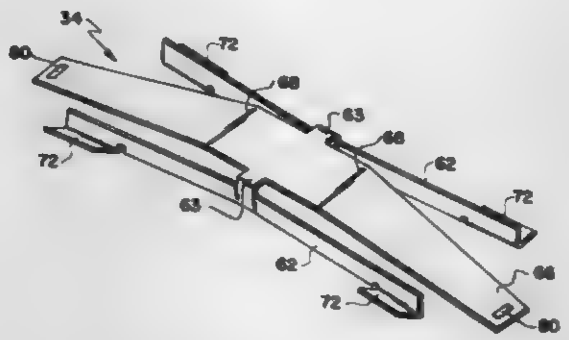
3,983,567
PRESSURE ROLLER ASSEMBLY FOR SELF PROCESSING CAMERA

Guilford E. Kindig, and James E. Dierks, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 20, 1975, Ser. No. 551,445

Int. Cl.² G03B *17/50*

U.S. Cl. 354—86 **6 Claims**



1. A pressure applying assembly for use in self-processing cameras to process self-developing film units, comprising:

a. a pair of elongate pressure applying members between which the self-developing film unit is passed to initiate developing;

b. means for retaining said pressure applying members in substantially parallel alignment while allowing some relative displacement away from each other;

c. a spring for yieldably resisting such displacement of one of said pressure applying members relative to the other, said spring having three substantially parallel strips connected near their centers by relatively narrow bridges of spring material, said narrow bridges being bent so that the two outside strips form arms that are flexible in a direction generally perpendicular to the flex of the center strip and substantially inflexible in a direction parallel to the flex of said center strip, and

d. cooperating means on the ends of said arms and on said retaining means for holding said spring in position relative to said pressure applying members and said retaining means, such that the end portions of said center strip are positioned to yieldably resist displacement of said one pressure applying member.

3,983,568
TIME RECORDER HAVING WHEEL ALIGNMENT MEANS

Rudolph B. Danke, Petersham, Mass., assignor to Simplex Time Recorder Company, Gardner, Mass.

Division of Ser. No. 436,148, Jan. 24, 1974, Pat. No. 3,890,624, which is a division of Ser. No. 236,358, March 20, 1972, Pat. No. 3,800,301. This application Apr. 10, 1975, Ser. No. 566,802

Int. Cl.² G07C *1/06*

U.S. Cl. 346—91 **3 Claims**

1. A time recorder, comprising:

a. a housing,

b. a time stamp shaft mounted in the housing,

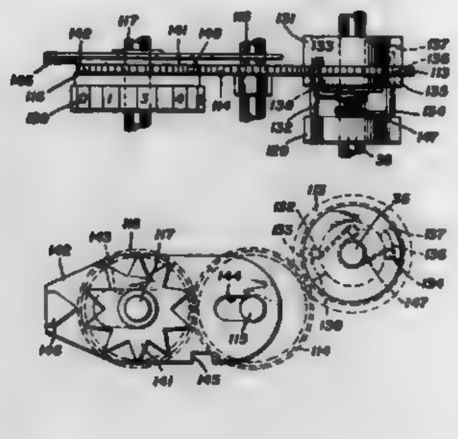
c. a plurality of time wheels mounted on the shaft,

d. an electric motor mounted on the frame and serving to drive a driver shaft,

e. a pawl mechanism operated by the motor and operative to index the wheels,

f. an additional wheel having a plurality of characters formed on its periphery mounted on the shaft and continuously driven by the motor, and

g. means to bring the closest character on the additional wheel to a printing position in alignment with characters on the other wheels, the means consisting of two spaced collars fastened to the driver shaft, a gear and a washer rotatably mounted on the shaft between the collars, a first peg fastened to the gear and extending axially through a notch in the washer, a second peg fastened to the washer and extending through an arcuate slot in the gear into a notch in one of the collars, and a torsion spring coiled around the shaft and having two ends each of which engages a peg to bias the two pegs and their respective gear and washer in different directions of rotation, the means serving to return the additional wheel after printing to the position it would have occupied if printing had not taken place.



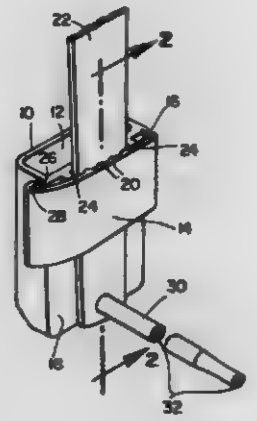
3,983,569
INSTRUMENT PEN WITH INTEGRAL PEN ARM ATTACHMENT MEANS

James R. Hubbard, Moorestown, and Charles A. Erdman, Marlton, both of N.J., assignors to Graphic Controls Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 540,123, Jan. 10, 1975. This application Oct. 6, 1975, Ser. No. 619,632

Int. Cl.² G01D *15/18*

U.S. Cl. 346—140 A **12 Claims**



1. In an instrument marker pen body including an ink reservoir and means for receiving a writing tip, the improvement comprising a pen arm holding means consisting of an integrally molded hinged member adapted to fold against a surface of the pen body and to be locked against said surface by engageable locking means and to receive and secure in place against said surface a pen arm when said hinged member is in its folded and locked position.

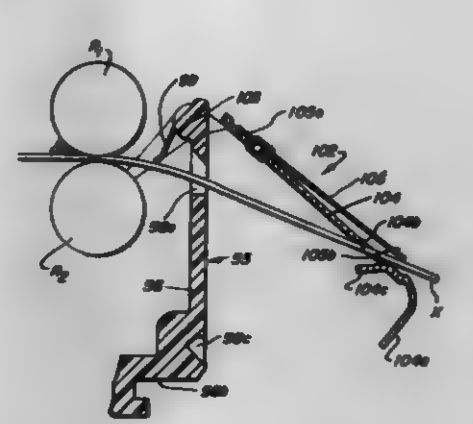
3,983,570
CAMERA CONSTRUCTION

John Maltese, Saddle Brook, N.J.; Israel Nesson, Brighton, Mass., and Robert Mitchell, Pequannock, N.J., assignors to Berkey Photo, Inc., Clifton, N.J.

Filed Mar. 17, 1975, Ser. No. 558,933

Int. Cl.² G03B *17/50*

U.S. Cl. 354—86 **7 Claims**



1. A camera construction comprising a housing with a compartment therein provided with an entry for removably accommodating a cartridge containing a plurality of selfdeveloping photographic sheets arranged in superposed relation and with a corresponding surface of each sheet being light sensitive and having mounted thereon a rupturable packet containing a predetermined amount of developing liquid, drive means within the housing for selectively removing a sheet from the cartridge subsequent to the light sensitive surface thereof being exposed, spreader means rupturing the packet and spreading the developing liquid thereof across the exposed surface of the sheet removed from the cartridge, and a door assembly mounted on the housing for movement between open and closed positions with respect to the compartment entry; said door assembly including a first member for overlying in a fixed position the compartment entry, when said assembly is in a closed position, said first member being provided with an elongated narrow opening through which the exposed photographic sheet passes while said first member is in said fixed position and subsequent to being removed from the accommodated cartridge and being engaged by said spreader means, and a second member carried on said first member and normally assuming a closed relation with respect to said narrow opening, said second member being movable independently of said first member by the leading edge of the moving photographic sheet to an angular open relation with respect to said narrow opening while said first member remains in said fixed position whereby said first and second members cooperate with one another to impart a convex deflection to the exposed light sensitive surface of the moving photographic sheet as it passes through said narrow opening.

3,983,571
ELECTRONIC IMAGE IDENTIFYING SYSTEM

Paul Michael Russo, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 30, 1975, Ser. No. 591,952

Int. Cl.² G03B *17/24*

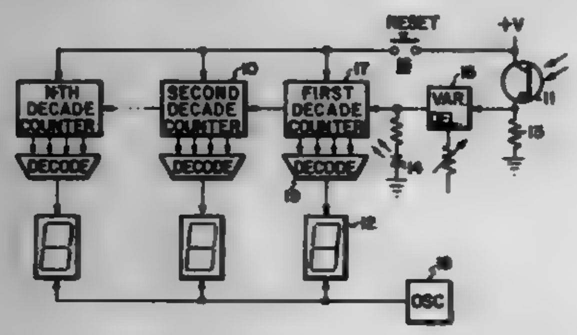
U.S. Cl. 354—105 **5 Claims**

1. A image identifying system for use in a light-activated image reproduction apparatus, comprising in combination:

light sensing means responsive to a change in ambient light generated by said reproduction apparatus for producing an output signal;

counter means responsive to said output signal for incrementing an electrically encoded number; and

display means arranged to be disposed between the image to be reproduced and said reproduction apparatus, and responsive to said counter means for producing an identifier corresponding to said encoded number in a manner to be reproduced superimposed on a portion of said image.



3,983,572

SEMICONDUCTOR DEVICES

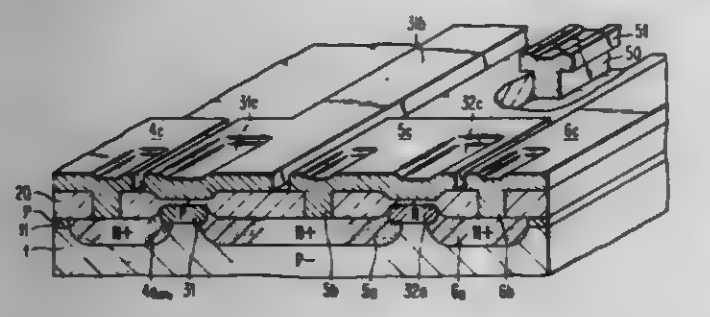
William S. Johnson, Hopewell Junction, N.Y., assignor to International Business Machines, Armonk, N.Y.

Division of Ser. No. 377,851, July 9, 1973, Pat. No. 3,873,372. This application Oct. 18, 1974, Ser. No. 516,060

Disclosure was also published under second Trial Voluntary Protest Program on Feb. 17, 1976

Int. Cl.² H01L *29/78, 27/02*

U.S. Cl. 357—23 **4 Claims**



1. A semiconductor device structure including an enhancement mode field effect transistor and a depletion mode field effect transistor, said semiconductor device structure comprising:

a body of silicon semiconductor material of P— conductivity type and having at least one planar surface;

a first discrete region of N+ conductivity type lying beneath and extending to said surface of said planar surface;

a second discrete region of P conductivity type lying beneath and extending to said surface of said planar surface;

a third discrete region of N+ conductivity type lying beneath and extending to said surface of said planar surface;

a fourth discrete region of N conductivity type lying beneath and extending to said surface of said planar surface;

a fifth discrete region of N+ conductivity type lying beneath and extending to said surface of said planar surface;

said second region lying between and extending from said first region to said third region;

said fourth region lying between and extending from said third region to said fifth region;

a sixth discrete region of P conductivity type;

said sixth region lying beneath and extending to the surface of said planar surface;

said first, second, third, fourth and fifth regions being wholly encompassed on said planar surface by said sixth region;

a relatively thick insulating layer overlaying said planar surface;

said layer being of substantially uniform thickness except for a relatively thin first area of said layer precisely overlaying said second region, and a relatively thin second area of said layer precisely overlaying said fourth region;

said layer having first, second and third apertures respectively exposing portions of said planar surface in said first, third and fifth regions;

first, second and third electrodes respectively making electrical contact with via said first, second and third apertures with said first, third and fifth regions;

a fourth electrode overlaying said relatively thin first area of said insulating layer to form a capacitive couple to said second region;

a fifth electrode overlaying said relatively thin second area of said insulating layer to form a capacitive couple to said fourth region;

where said first region constitutes the source of said enhancement mode field effect transistor, said second region constitutes the channel of said enhancement mode field effect transistor, said third region constitutes the drain of said enhancement mode field effect transistor and the source of said depletion mode transistor,

said fourth region constitutes the channel of said depletion mode field effect transistor,

said fifth region constitutes the source of said depletion mode field effect transistor,

said fourth electrode constitutes the gate electrode of said enhancement mode field effect transistor,

said fifth electrode constitutes the gate electrode of said depletion mode field effect transistor, and

said sixth region provides field protection for said structure comprising said enhancement mode field effect transistor and said depletion mode field effect transistor.

3,983,573

CHARGE-COUPLED LINEAR IMAGE SENSING DEVICE

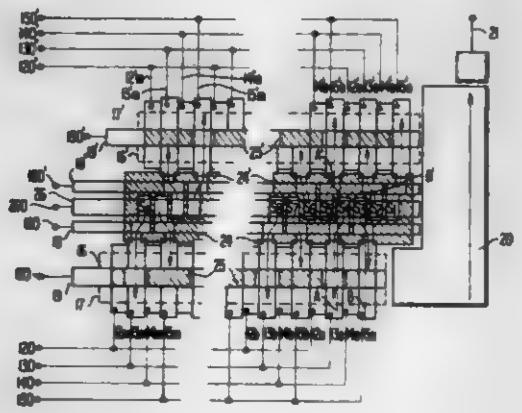
Yasuo Ishihara, Tokyo, Japan, assignor to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Mar. 12, 1975, Ser. No. 557,845

Claims priority, application Japan, Mar. 12, 1974, 49-28234; Feb. 24, 1975, 50-23189

Int. Cl.² H01L *29/78, 27/14, 31/00;* **H03K** *3/353*

U.S. Cl. 357—24 **4 Claims**



1. A charge-coupled linear image sensing device comprising:

an image sensor array having a plurality of image sensor elements to develop electric charges upon incidence of light rays thereon;

first and second charge-transfer arrays disposed on opposite sides of said image sensor array, respectively, each having a plurality of charge-transfer stages corresponding to respectively ordered ones in each sequential set of four successive said image sensor elements;

third and fourth charge-transfer arrays disposed between said image sensor array and said first and second charge-transfer arrays, respectively, each having a plurality of charge-transfer stages corresponding to respectively ordered ones in each sequential set of four successive said image sensor elements; and

first means for transferring the charges developed in the four successive image sensor elements of said each set to said first, second, third and fourth charge-transfer arrays, respectively;

said first transferring means including first and second electrodes disposed between said first and third charge-transfer arrays and between said second and fourth charge-transfer arrays, respectively, and third and fourth electrodes being disposed between said image sensor array and said third and fourth charge-transfer arrays, respectively;

second means for transferring the developed charges transferred from said image sensor array to said first, second, third and fourth charge-transfer arrays therein; said second transferring means including a plurality of charge-transfer electrodes disposed to extend between said first and third charge-transfer arrays and between said second and fourth charge-transfer arrays, respectively.

3,983,574

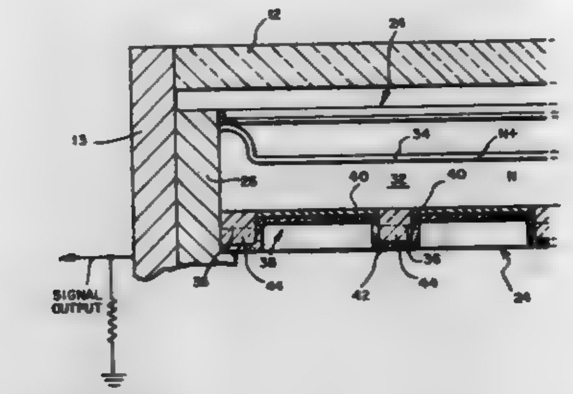
SEMICONDUCTOR DEVICES HAVING SURFACE STATE CONTROL

Hermann Statz, Wayland, and Wolfgang M. Feist, Burlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 365,927, June 1, 1973, abandoned. This application Feb. 27, 1975, Ser. No. 553,717

Int. Cl.² H01L *27/14*

U.S. Cl. 357—31 **14 Claims**



1. In combination:

a body of semiconductor material having a plurality of junctions formed at spaced locations on said body;

said junctions being formed between said semiconductor body and thin regions of insulating material;

means for producing a reverse bias across said junctions; and

means for preventing the formation of conductive channels through said semiconductor material between said junction regions comprising means for producing charge regions in insulating material between adjacent ones of said junctions which are of a polarity opposite to the polarity of charges produced by said reverse bias.

3,983,575

COLOR SATURATION AND CONTRAST CONTROL CIRCUITRY RESPONSIVE TO AMBIENT LIGHT

Kunio Nagai, Tokyo, and Tooru Akutagawa, Chiba, both of Japan, assignors to Sony Corporation, Tokyo, Japan

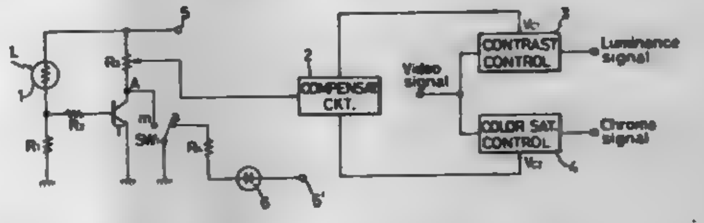
Filed May 12, 1975, Ser. No. 576,892

Claims priority, application Japan, May 20, 1974, 49-57266[U]

Int. Cl.² H04N *9/535, 5/58*

U.S. Cl. 358—27 **8 Claims**

1. A picture control circuit for use in a color television receiver comprising power supply means; a first variable resistor having a movable contact; a first resistor connected between said power supply means and said first variable resistor; a variable impedance element connected in series with said variable resistor, said variable impedance element having a control electrode for receiving a control signal to determine the impedance thereof; a photosensitive device coupled to said control electrode of said variable impedance element to supply said impedance determining control signal thereto in response to ambient light; a voltage-controlled contrast control circuit and a voltage-controlled color saturation control circuit operable on the video signal from which said picture is reproduced to thereby adjust the contrast and color saturation of said reproduced picture, said contrast control circuit and said color saturation control circuit being controlled by a control voltage derived from said movable contact of said first variable resistor; a first switch connected in parallel with said variable impedance element having a movable contact and a stationary contact adapted to be selectively closed so as to establish a manual control mode independent of the ambient light condition and to be selectively opened so as to establish an automatic control mode whereby said picture is controlled as a function of said ambient light condition; and a second switch connected in parallel with said first resistor and ganged with said first switch, said second switch having a movable contact and a stationary contact adapted to be opened in an automatic control mode, thereby enabling said control voltage to change in response to the condition of said ambient light in an automatic control mode even if said movable contact of said first variable resistor is at a predetermined extreme position.



3,983,576

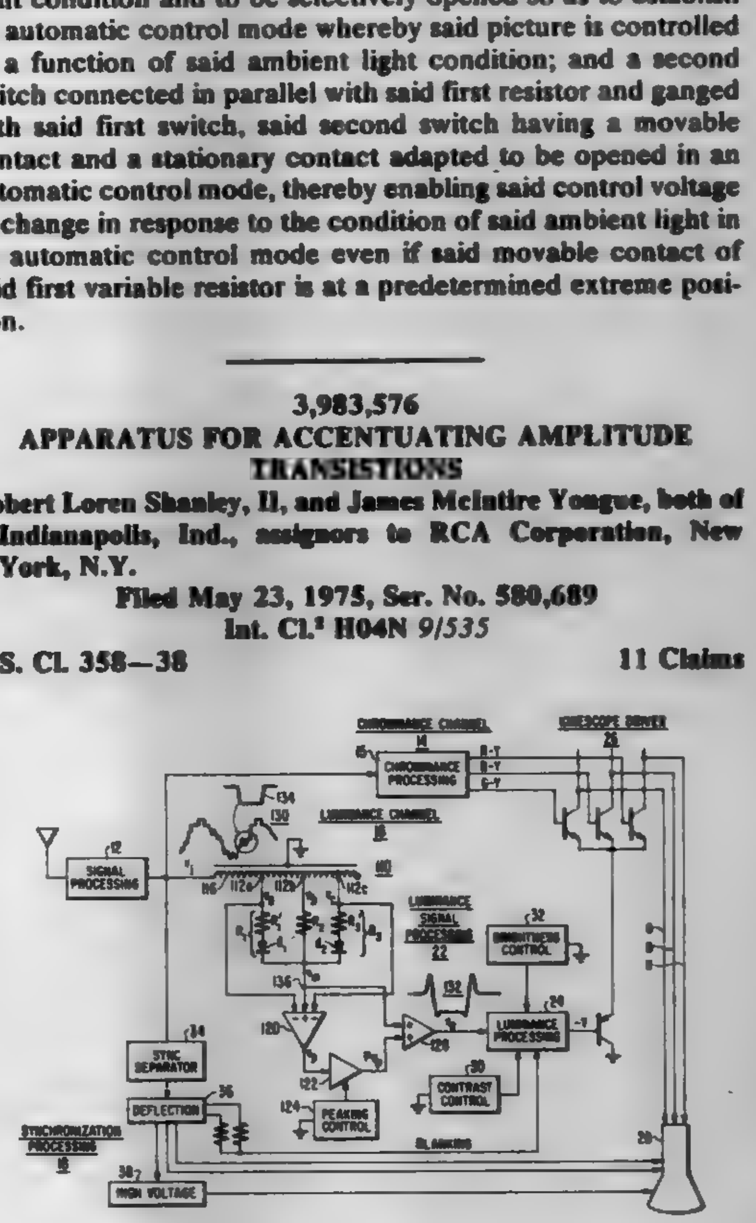
APPARATUS FOR ACCENTUATING AMPLITUDE TRANSISTIONS

Robert Loren Shanley, II, and James McIntire Yongue, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed May 23, 1975, Ser. No. 580,689

Int. Cl.² H04N *9/535*

U.S. Cl. 358—38 **11 Claims**



1. Apparatus comprising:

a source of video signals, said video signals including amplitude transitions;

signal delaying means coupled to said source having a plurality of terminals for developing a plurality of video signals delay by different amounts;

means for combining two of said delayed signals which are delayed in time from one another by a predetermined time interval to derive a first combined signal;

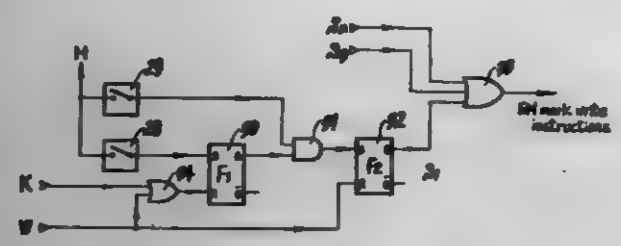
means for selectively combining a portion of one of said two delayed signals dependent upon the direction of said amplitude transitions with a portion of at least one other of said delayed signals, said other signal have a time delay intermediate the time delays of said two delayed signals, to derive a second combined signal; and

means for combining said first and second combined signals to derive an output signal.

3,983,577

INTRODUCTION OF DATA ENTRY COMPLETION SIGNALS TO A CASSETTE TAPE CONTAINING DATA PROCESSING TERMINAL UNIT

Youichi Ito, Osaka, and Kozo Kitamura, Kyoto, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Aug. 27, 1974, Ser. No. 500,928
Claims priority, application Japan, Aug. 30, 1973, 48-98055
Int. Cl.² G11B *19/04, 15/04*
U.S. Cl. 360—4 **6 Claims**



1. A data processing terminal unit comprising:

tape means including at least one data field;

recording means associated with said tape means for recording data thereon;

data input means connected with said recording means for transmitting data therethrough to said tape means;

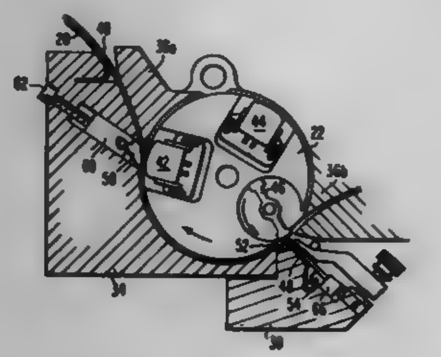
entry means in said data input means providing end marking signals to said recording means to effect end markings on said tape means defining the end of said data field, said entry means including first and second switches for generating said end marking signals in response to operation of both of said switches; and

control circuit means interconnecting said first and second switches for precluding the generation of said end marking signals unless said first and second switches are operated in a predetermined timed relationship, said predetermined timed relationship being the successive operation of said first switch and then said second switch.

3,983,578

TICKET INFORMATION RECORDING AND WEB PARTING MECHANISM

George Edmund Price, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed July 1, 1974, Ser. No. 484,365
Disclosure was also published under second Trial Voluntary Protest Program on Jan. 27, 1976
Int. Cl.² G11B *5/00*
U.S. Cl. 360—1 **8 Claims**



1. A ticket information recording and parting mechanism for producing individual tickets from web ticket stock without waste, comprising

a frame structure,

a continuously rotating carrier arranged on said frame structure and carrying,

an information recording member arranged within said carrier, and

one ticket parting anvil member rotatably mounted within said carrier,

a complementary ticket parting blade member arranged on said frame structure,

a web advancing arrangement on said frame structure for passing a web about a part of said carrier and between said carrier and said complementary ticket parting blade member,

camming track means arranged on said frame structure and having a portion of generally circular loop configuration for presenting said anvil member in an attitude permitting said web stock to pass said blade member intact and another portion of generally triangular loop configuration for presenting said anvil member in an attitude substantially normal to the first said attitude for parting said web stock,

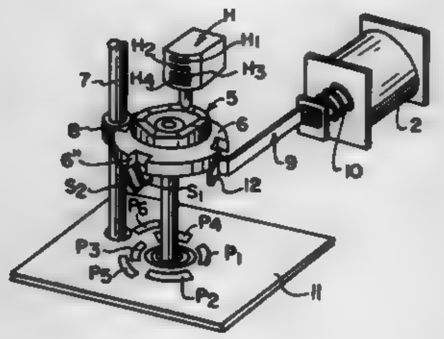
camming track following members travelling in said camming track and coupled to said one ticket parting anvil member, and

camming diverter means arranged in said camming track for engaging said camming track follower members for selectively changing the attitude of said one ticket parting anvil member.

3,983,579

TWO-CHANNEL AND FOUR-CHANNEL CARTRIDGE TAPE PLAYER

Motoshi Nishinakagawa, Iwaki, Japan, assignor to Alps Motorola, Inc., Tokyo, Japan
Filed July 10, 1974, Ser. No. 487,411
Claims priority, application Japan, July 13, 1973, 48-79081
Disclosure was also published under second Trial Voluntary Protest Program on Feb. 24, 1976
Int. Cl.² G11B *21/08, 23/04, 5/54, 5/56*
U.S. Cl. 360—78 **4 Claims**



1. A cartridge-type tape player adapted to receive and play two-channel and four-channel tape cartridges, and having amplifier means and output means connected to said amplifier means for receiving signals therefrom for audible reproduction thereof, said player including in combination:

changeover switch means operable between a first position when a two-channel tape cartridge is inserted into the player and a second position when a four-channel tape cartridge is inserted into the player,

magnetic tape head means having four magnetic pick-up areas, said tape head means being movable upon the insertion of two-channel and four-channel tape cartridges to align said pick up areas with selected tracks on the tape,

head shifting means mounted in said player and movable between first, second, third and fourth positions, said head shifting means being engageable with said magnetic tape head means to move the same to align said pickup areas with selected tracks on the tape, said head shifting means includes a rotatable disc having a top and a bottom surface thereon and having a plurality of notches on the peripheral edge thereof, said top surface having four successive cam regions thereon which correspond to the four-channel tape tracks and said bottom surface having a pair of contacts mounted thereto and selectively engageable with said rotary switch means,

drive means coupled to said head shifting means for rotating said head shifting means between said first, second, third and fourth positions, said drive means further includes a coupling member engageable with and driven by the capstan drive and positioned in a spaced relation for engagement with said rotatable disc to cause the same to be rotated by the coupling member, a solenoid, a lever adapted to engage a notch on the rotatable disc and magnetic linkage means coupled to the said lever, said solenoid operating to move said magnetic linkage means to cause said lever to engage said rotatable disc to move the same whereby said rotatable disc is engaged and rotated by the coupling on the capstan drive shaft to thereby position said pick-up areas on said magnetic tape head means with selected tracks on the tape,

rotary switch means including a first switch portion and a second switch portion, means coupling said second switch portion to said drive means for actuating the same to move said head shifting means, and

said drive means being responsive to operation of said second portion of said switch means to rotate said head shifting means between said first, second, third and fourth positions when said changeover switch means is in said first position and responsive to operation of said second switch portion of said rotary switch means to rotate said head shifting means to successive positions when said changeover switch means is in said second position.

DESIGN PATENTS

GRANTED SEPTEMBER 28, 1976

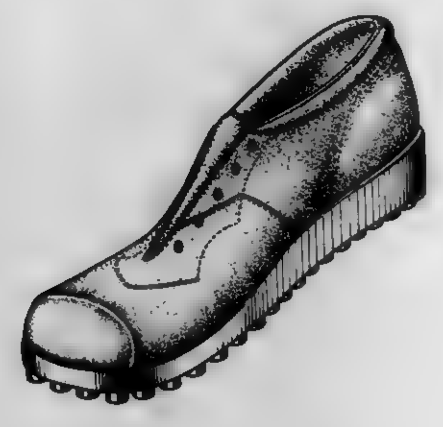
ERRATA

For CLASS	See PATENT NO.
025–056	241,632
025–098	241,634
011–157	241,659
011–146	241,666
011–152	241,667
015–026	241,668
011–081	241,669
015–122	241,675
015–136	241,676
015–145	241,677
016–059	241,680
016–026	241,681
015–004	241,682

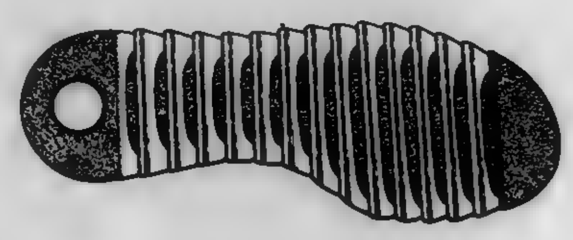
DESIGNS

SEPTEMBER 28, 1976

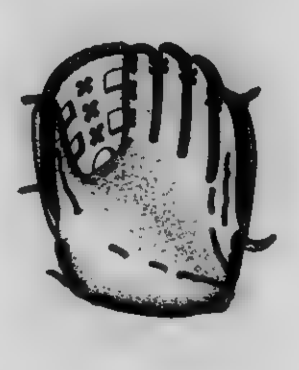
241,585
SPORT BOOT
Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.
Filed Apr. 15, 1974, Ser. No. 461,005
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—311



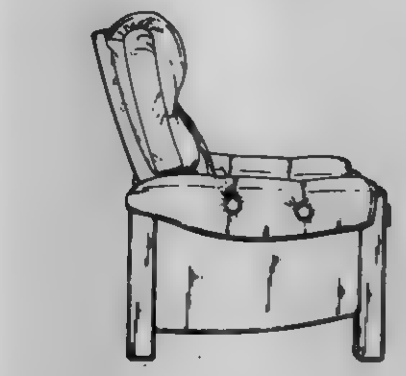
241,586
SOLE
Ladislav Sebestik, Lorraine, Quebec, Canada, assignor to Baron Rubber Ltd., St. Jerome, Quebec, Canada
Filed Jan. 30, 1976, Ser. No. 653,821
Claims priority, application France Nov. 6, 1975
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



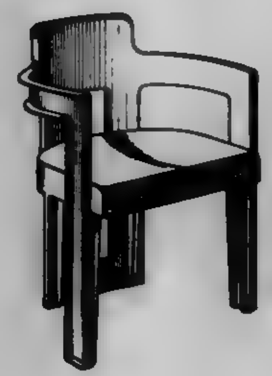
241,587
BASEBALL GLOVE
Kozo Takebayashi, Kaohsiung, Taiwan, assignor to Sakurai International, Inc., Santa Ana, Calif.
Filed May 27, 1975, Ser. No. 573,910
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—361



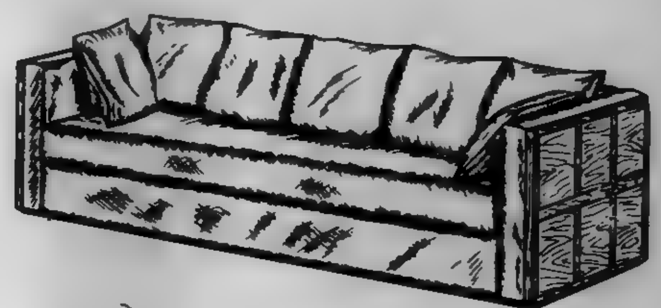
241,588
SEAT
Stapleton Long, Morristown, Tenn., assignor to The Berkline Corporation, Morristown, Tenn.
Filed Aug. 26, 1975, Ser. No. 607,920
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—37



241,589
ARM CHAIR
Harry Laylon, Syracuse, N.Y., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Apr. 2, 1975, Ser. No. 564,249
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—55

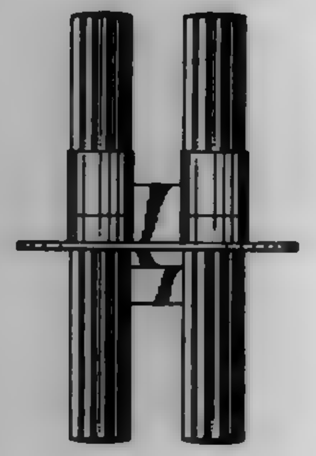


241,590
SEAT
Burton H. Kaplan, Potomac, Md., assignor to Rowe Furniture Corporation
Filed May 13, 1975, Ser. No. 577,080
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



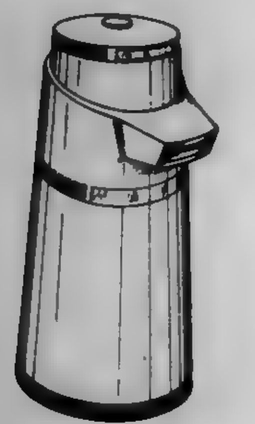
241,591
COMBINED SUPPORT AND CONTAINERS FOR TOOTHBRUSHES

Charles S. Fentules, 15 Illinois Ave.,
Youngstown, Ohio 44505
Filed May 14, 1975, Ser. No. 577,416
Term of patent 7 years
Int. Cl. D23—*02*
U.S. Cl. D6—94



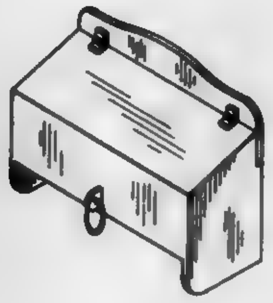
241,592
DISPENSER FOR HEATING CREAMS, FOAMS, LOTIONS AND THE LIKE

George L. Schick, Trumbull, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Continuation-in-part of design application Ser. No. 467,329, May 6, 1974, now Patent No. 234,483. This application Feb. 10, 1975, Ser. No. 548,492.
Term of patent 14 years
The term of this patent subsequent to Mar. 18, 1989, has been disclaimed
Int. Cl. D9—*01*
U.S. Cl. D6—95



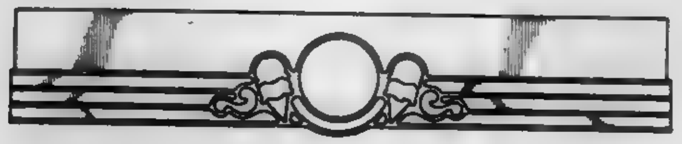
241,593
TOILET PAPER COVER

James W. Wriede, 3466 Pinewood Drive,
West Homestead, Pa. 15120
Filed Oct. 26, 1971, Ser. No. 168,797
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97



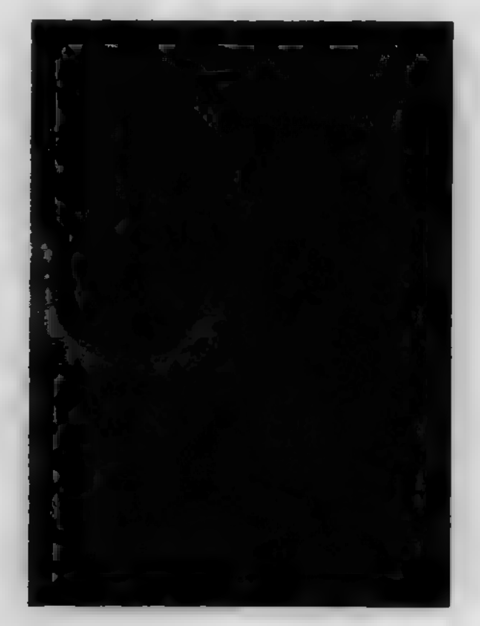
241,594
DECORATIVE PANEL FOR USE ABOVE A BACK BAR

Leon H. Richman, Long Beach, and James Michael Clayton, Costa Mesa, Calif., assignors to Baskin-Robbins Ice Cream Co., Burbank, Calif.
Original design application Mar. 28, 1974, Ser. No. 455,557. Divided and this application May 22, 1975, Ser. No. 580,011
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—193



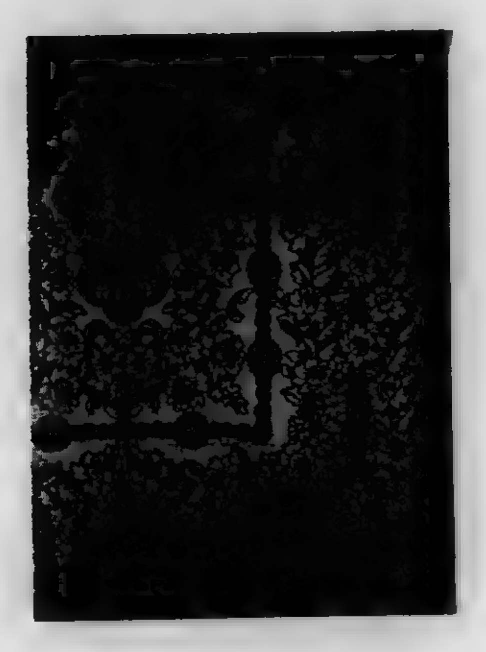
241,595
TABLECLOTH

Richard A. Fees, Ardsley, Pa., assignor to Quaker Lace Company, Philadelphia, Pa.
Filed Sept. 11, 1975, Ser. No. 612,476
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—285



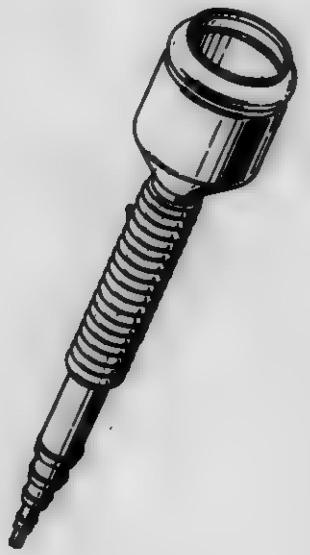
241,596
TABLECLOTH

Richard A. Fees, Ardsley, Pa., assignor to Quaker Lace Company, Philadelphia, Pa.
Filed Sept. 11, 1975, Ser. No. 612,477
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—285



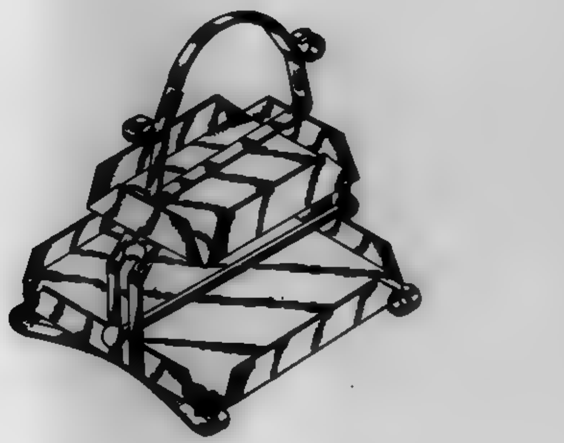
241,597
FUNNEL

Raymond C. Confer and Douglas C. Confer, Gasport, N.Y., assignors to Confer Plastics Inc.
Filed Jan. 15, 1975, Ser. No. 541,220
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—68



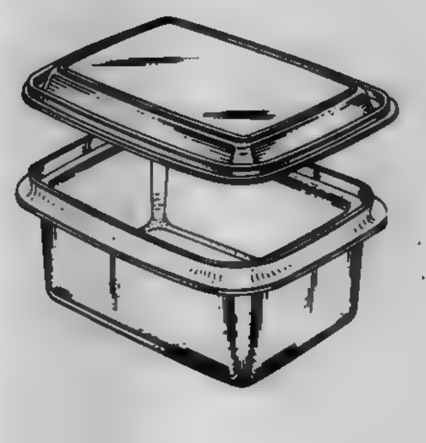
241,598
COMBINED NAPKIN HOLDER AND CONDIMENT CADDY

Hyman Abrams, Paramus, N.J.
(P.O. Box 27, North Hackensack Station, River Edge, N.J. 07661)
Filed Dec. 13, 1974, Ser. No. 532,592
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—72



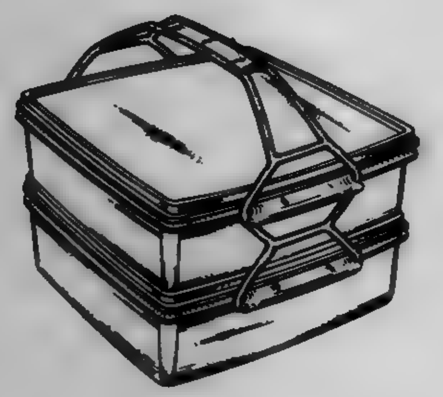
241,599
FREEZER STORAGE CONTAINER

Jack V. Croyle, Woonsocket, R.I., and James B. Swett, Altamonte Springs, Fla., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Mar. 24, 1975, Ser. No. 560,759
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—76



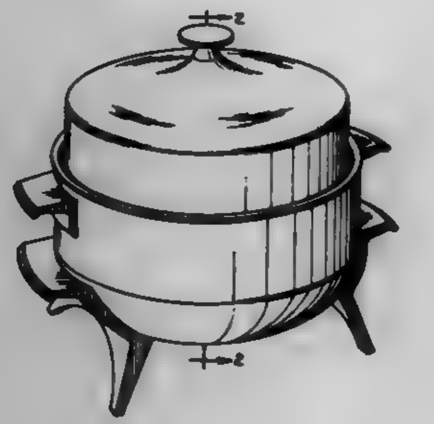
241,600
COMBINED FOOD STORAGE CONTAINERS AND CARRYING HANDLE

Harold P. Ashton, Providence, R.I., assignor to Dart Industries, Inc., Los Angeles, Calif.
Filed Mar. 21, 1975, Ser. No. 560,468
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—76



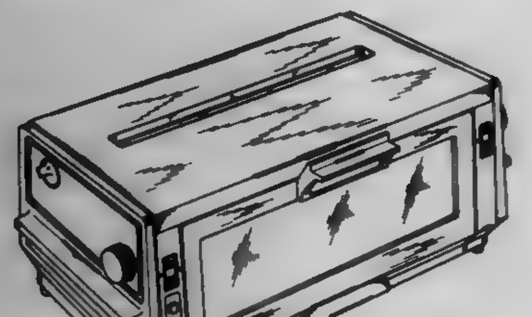
241,601
COMBINED SKILLET AND CHAFING DISH OR THE LIKE

William Joseph Cook, Trumbull, Conn., assignor to General Electric Company
Filed Sept. 6, 1974, Ser. No. 503,643
Term of patent 3½ years
Int. Cl. D7—*02*
U.S. Cl. D7—90



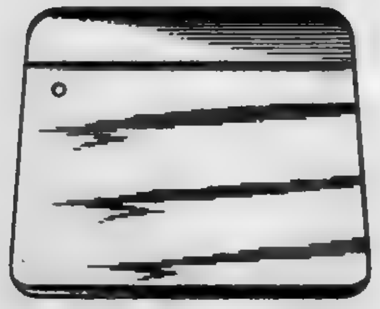
241,602
TOASTER-OVEN

Thomas E. Hanson, Philadelphia, Pa., and Stephen Maher, Portsmouth, Va., assignors to SCM Corporation, New York, N.Y.
Filed Apr. 16, 1975, Ser. No. 568,638
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—93



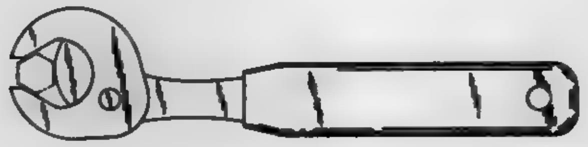
241,603
COMBINED FOOD SCOOP AND CHOPPER

Robert P. MacNeil, 360 1st Ave., New York, N.Y. 10010
Filed Apr. 18, 1975, Ser. No. 569,357
Term of patent 3½ years
Int. Cl. D7—*04*
U.S. Cl. D7—104



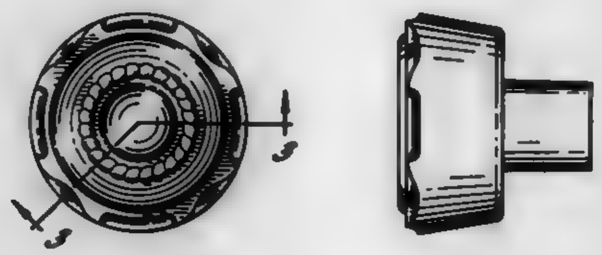
241,604
TUBE FITTING WRENCH

Jerry E. Ward, Star Route, Box 222, Vian, Okla. 74962
Filed May 12, 1975, Ser. No. 576,335
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—22



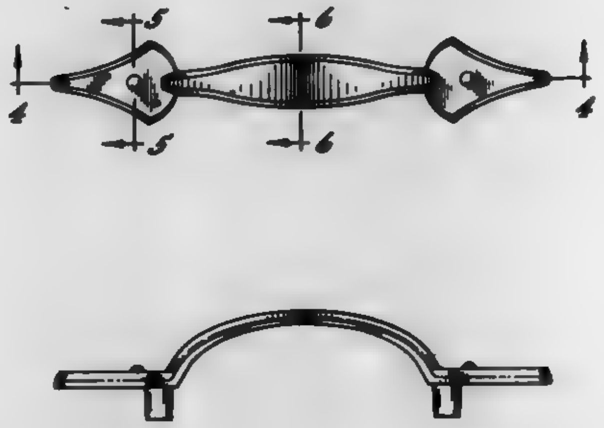
241,605
DOOR KNOB

Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 12, 1975, Ser. No. 640,031
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—143



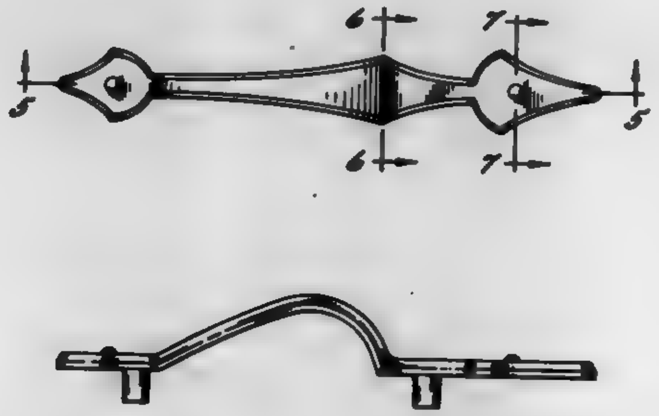
241,606
PULL

Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Sept. 17, 1975, Ser. No. 614,317
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—166



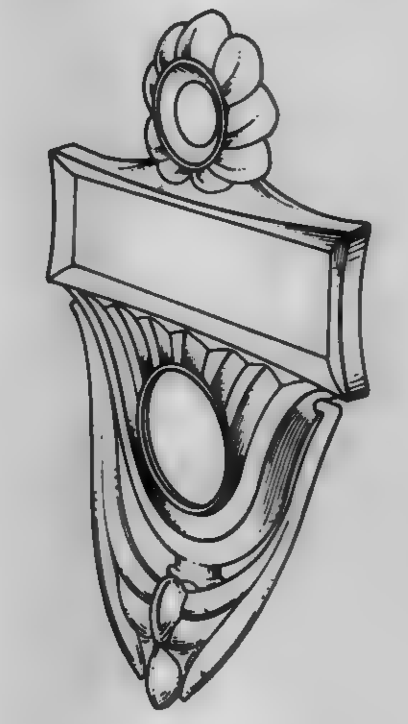
241,607
PULL

Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Sept. 18, 1975, Ser. No. 614,485
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—169



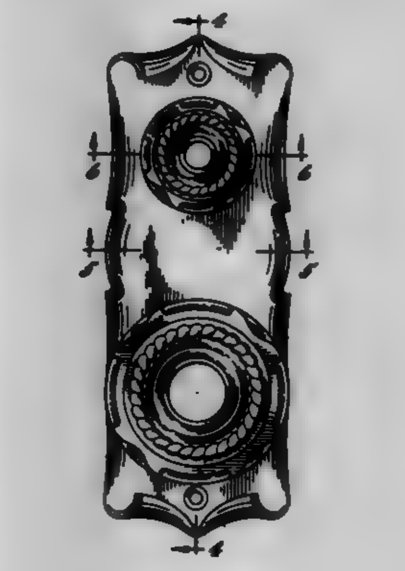
241,608
DOOR KNOCKER

Edward J. Kunkel, Concord, Calif., assignor to Henry A. Smith
Filed Dec. 19, 1975, Ser. No. 642,393
Term of patent 14 years
Int. Cl. D8—*09*; D10—*06*
U.S. Cl. D8—177



241,609
ESCUTCHEON

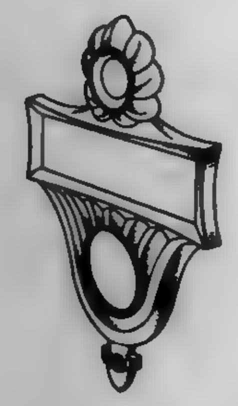
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 12, 1975, Ser. No. 640,078
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—179



241,610

DOOR PLATE

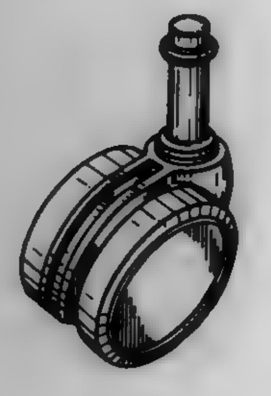
Edward J. Kunkel, Concord, Calif., assignor to Henry A. Smith
Filed Dec. 19, 1975, Ser. No. 642,401
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—180



241,611

DUAL WHEEL CASTER

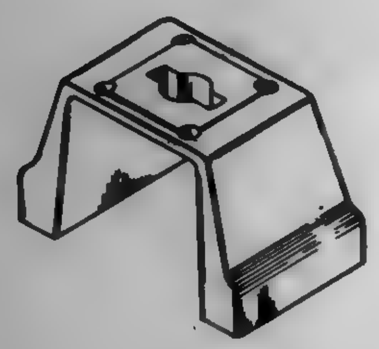
Donald C. Crescenzi, Branford, and Frank J. Fontana, Stratford, Conn., assignors to Stewart-Warner Corporation, Chicago, Ill.
Filed Nov. 17, 1975, Ser. No. 632,724
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—226



241,612

MOUNTING BRACKET FOR FLUID CONTROL VALVE OR SIMILAR ARTICLES

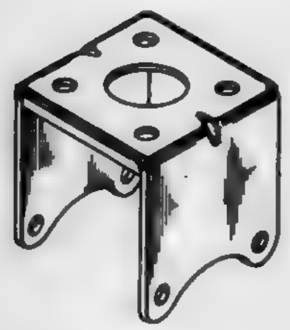
Stephen Matousek, and Ulrich H. Koch, Moraga, Calif., assignors to Whitey Research Tool Co., Emeryville, Calif.
Filed May 19, 1975, Ser. No. 578,409
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—233



241,613

MOUNTING BRACKET FOR FLUID CONTROL VALVE OR SIMILAR ARTICLES

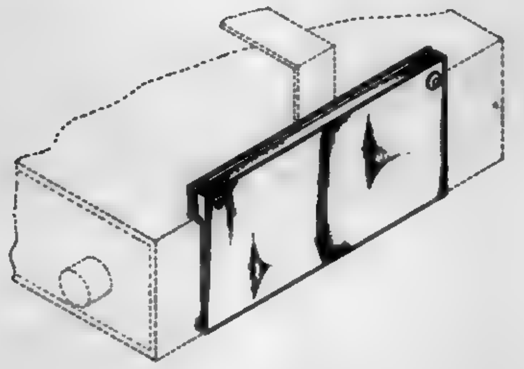
Stephen Matousek, and Ulrich H. Koch, Moraga, Calif., assignors to Whitey Research Tool Co., Emeryville, Calif.
Filed May 19, 1975, Ser. No. 578,756
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—233



241,614

SECURITY DEVICE FOR MOBILE TRANSCEIVERS OR THE LIKE

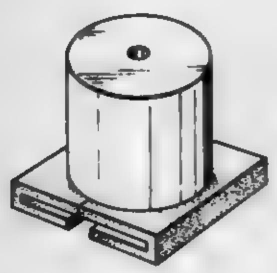
Jimmy D. Wallace, 800 Beckford Court W., Hurst, Tex. 76053
Filed June 4, 1975, Ser. No. 583,581
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—233



241,615

CONNECTOR FOR SUSPENDING PANELS OR THE LIKE FROM CEILINGS

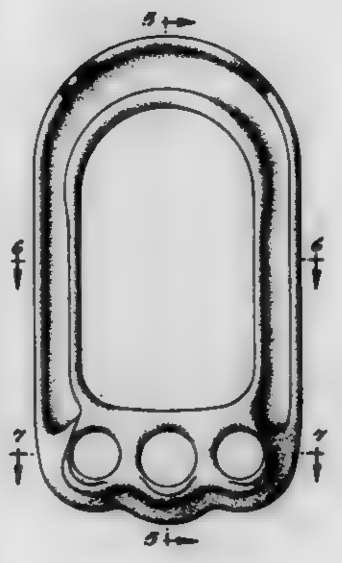
Donald G. King, 241 Dickson Park Crescent, Mississauga, Ontario, Canada
Filed Dec. 2, 1974, Ser. No. 528,701
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235



241,616

MASTER LINK

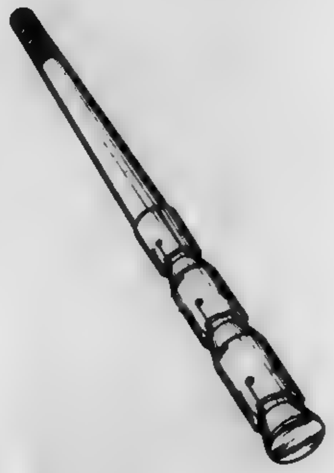
Kenneth D. Schreyer, Clarence, and Edward R. Behnke, Lockport, N.Y., assignors to Columbus McKinnon Corporation, Tonawanda, N.Y.
Filed Mar. 10, 1975, Ser. No. 556,656
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—261



241,617

EXPANSIBLE ANCHOR BOLT

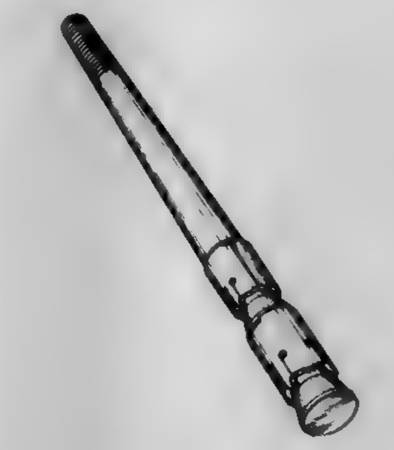
Illar Toomingas, Enskede, Sweden, assignor to Telefonaktiebolaget L. M. Ericsson, Stockholm, Sweden
Claims priority, application Sweden Mar. 19, 1975
Filed Sept. 2, 1975, Ser. No. 609,363
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—272



241,618

EXPANSIBLE ANCHOR BOLT

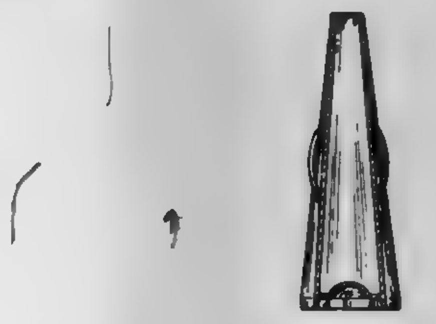
Illar Toomingas, Enskede, Sweden, assignor to Telefonaktiebolaget L. M. Ericsson, Stockholm, Sweden
Claims priority, application Sweden Mar. 19, 1975
Filed Sept. 5, 1975, Ser. No. 610,614
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—272



241,619

STORAGE CONTAINER FOR LIQUIDS OR THE LIKE

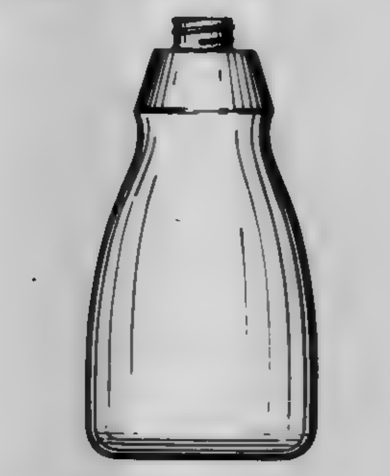
George W. MacFarlane, 504 Richmond St., Orlando, Fla. 32806
Filed Oct. 1, 1973, Ser. No. 402,033
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—46



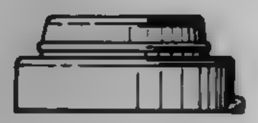
241,620

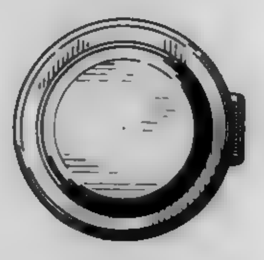
BOTTLE

Victor Koenigsberg, Franklin Square, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Apr. 10, 1975, Ser. No. 566,897
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—116

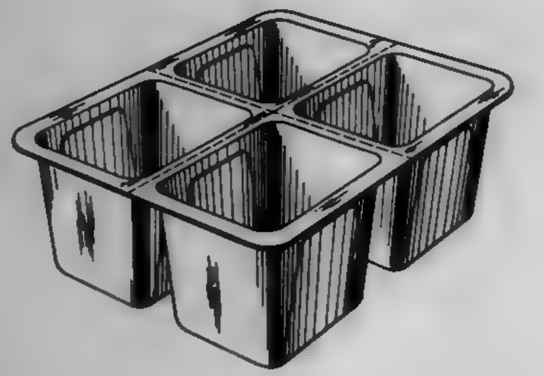


241,621
COMBINED SAFETY CAP AND TEMPORARY STOPPER FOR A CONTAINER
Glenn H. Morris, 4203 Highwood Drive,
Chattanooga, Tenn. 37415
Filed May 24, 1973, Ser. No. 363,638
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—281

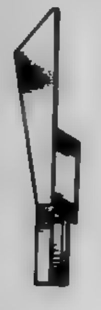




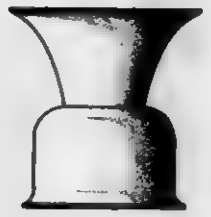
241,622
PACKAGING CONTAINER HAVING SEVERABLY CONNECTED CONTAINER COMPARTMENTS
Ernest L. Smith, Kansas City, Mo., assignor to
Phillips Petroleum Company, Bartlesville, Okla.
Filed June 28, 1974, Ser. No. 484,268
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—184



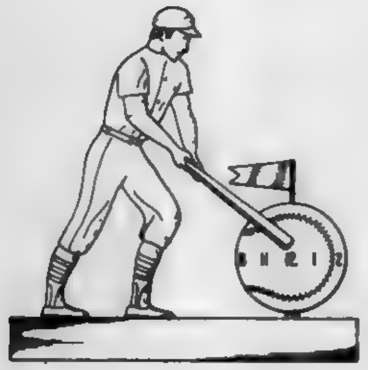
241,623
POURING ATTACHMENT FOR A CONTAINER
Emett O. Meeks, P.O. Box 10493,
Midwest City, Okla. 73110
Filed Feb. 21, 1975, Ser. No. 551,885
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—290



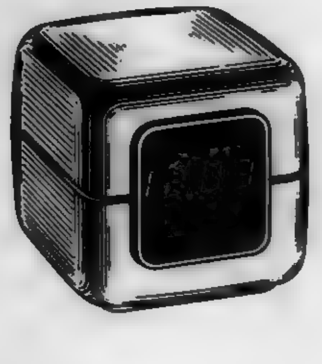
241,624
POURING SPOUT
David H. Trott, Cincinnati, Ohio, assignor to
Crossbow, Inc., Cincinnati, Ohio
Filed Apr. 25, 1975, Ser. No. 571,755
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—290



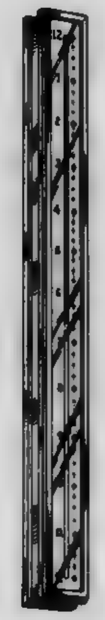
241,625
CLOCK OR SIMILAR ARTICLE
James O. O'Brien, 2101 Hawk Lane,
Rolling Meadows, Ill. 60008
Filed Mar. 3, 1975, Ser. No. 554,648
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—8



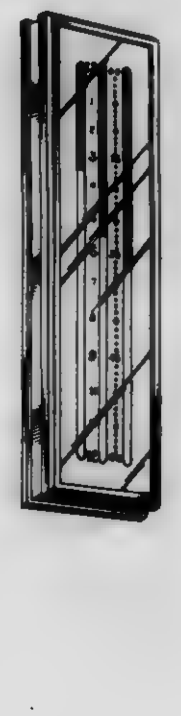
241,626
DIGITAL CLOCK
Andrew Durco, Jr., 7463 Brentcove Circle,
Dallas, Tex. 75214
Filed Feb. 11, 1974, Ser. No. 441,264
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



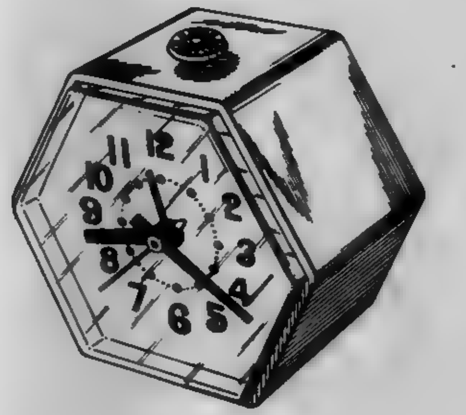
241,627
LINEAR CLOCK
James R. Bailey, 4020 N. Pioneer Ave.,
Chicago, Ill. 60634
Filed Apr. 25, 1975, Ser. No. 571,648
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



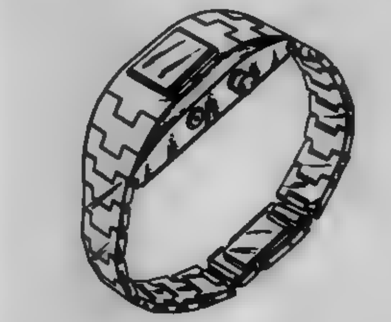
241,628
LINEAR CLOCK
James R. Bailey, 4020 N. Pioneer Ave.,
Chicago, Ill. 60634
Filed Apr. 25, 1975, Ser. No. 571,649
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



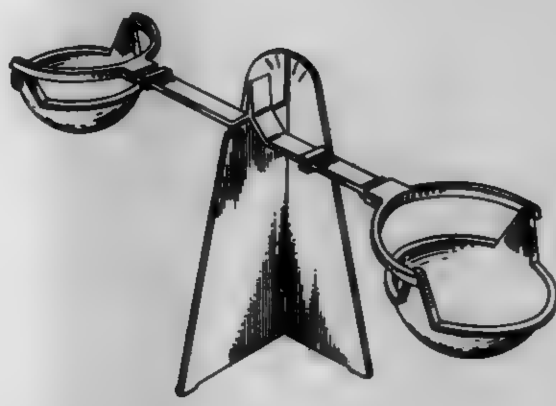
241,629
CLOCK OR SIMILAR ARTICLE
Arthur M. Felske, Westport, Conn., assignor to
General Electric Company
Filed May 7, 1975, Ser. No. 575,191
Term of patent 7 years
Int. Cl. D10—*01*
U.S. Cl. D10—21



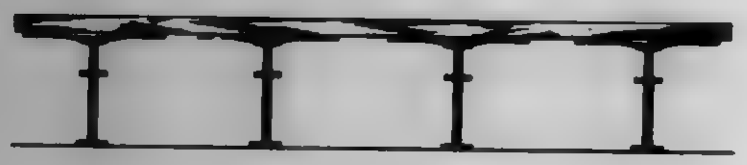
241,630
DIGITAL WRISTWATCH
Roger A. Burke, Laguna Beach, and Paul J. Clemmer, Mission Viejo, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Dec. 16, 1974, Ser. No. 532,810
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—32



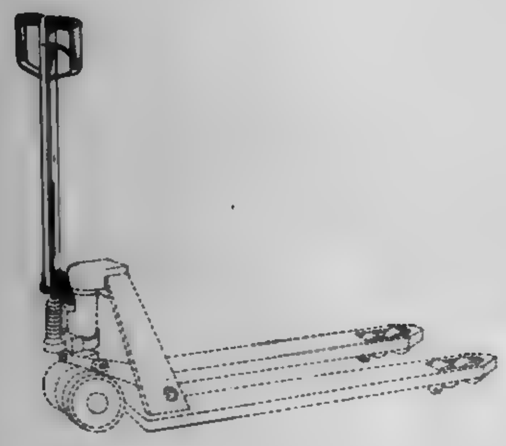
241,631
BALANCE SCALE
Deborah J. Gleason, Norfolk, Mass., assignor to
Zerox Corporation, Stamford, Conn.
Filed Oct. 11, 1974, Ser. No. 513,920
Term of patent 14 years
The term of this patent subsequent to Sept. 30, 1989, has been disclaimed
Int. Cl. D10—*04*
U.S. Cl. D10—90



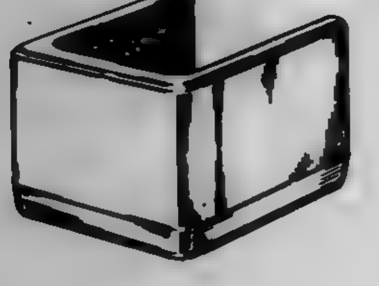
241,632
ISLAND CANOPY
Eliot F Noyes, New Canaan, Conn., assignor to Mobil Oil Corporation
Filed June 10, 1974, Ser. No. 477,956
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—56



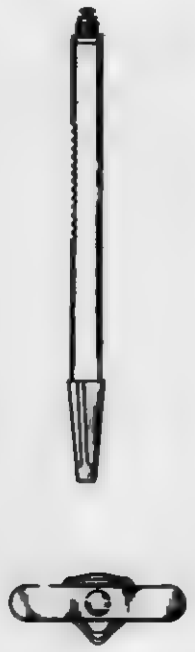
241,633
OPERATING HANDLE FOR FORK-LIFT TRUCK, OR THE LIKE
Rune G. Mone, Taby, Sweden, assignor to AB Byggoch Transportekonomi (BT), Bromma, Sweden
Original design application Feb. 13, 1973, Ser. No. 332,177, now abandoned. Divided and this application Feb. 12, 1975, Ser. No. 549,482
Claims priority, application Sweden Aug. 17, 1972
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—174



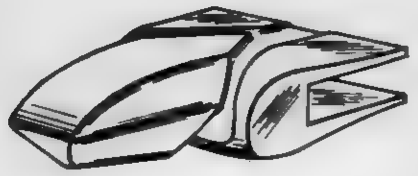
241,634
INSULATING INSERT FOR A BUILDING BLOCK OR THE LIKE
David Nickerson, Wilbraham, Mass., assignor to Korfil, Inc., Chicopee, Mass.
Filed Jan. 27, 1975, Ser. No. 544,666
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—98



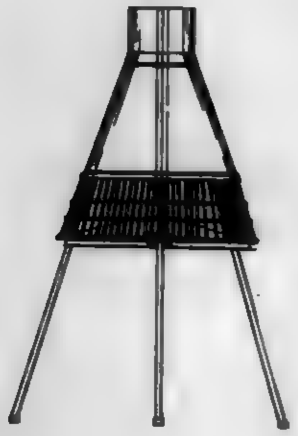
241,635
WRITING INSTRUMENT
Donald J. Kuntz, Box 43, Sullivan Road, Aurora, Ill. 60504
Filed Jan. 4, 1974, Ser. No. 430,745
Term of patent 3½years
Int. Cl. D19—*06*
U.S. Cl. D19—42



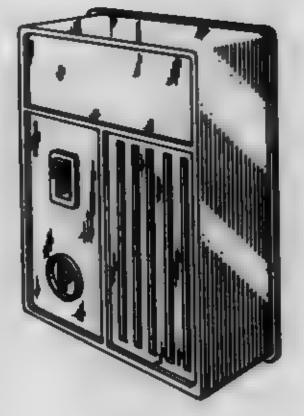
241,636
BOW NOCK
Marc G. Wood, Ogden, Utah, assignor to Browning Arms Company, Morgan, Utah
Filed Dec. 1, 1975, Ser. No. 636,674
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—12



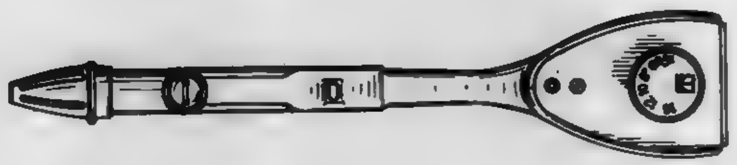
241,637
INSECT TRAP
Emil Krush, Winnipeg, Manitoba, and Roger Boulanger, Calgary, Alberta, Canada, assignors to Alladin Enterprises Ltd., Winnipeg, Manitoba, Canada
Filed Apr. 8, 1975, Ser. No. 566,077
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19



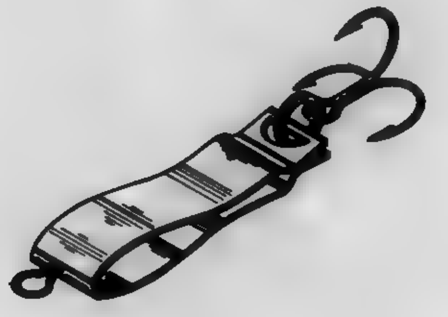
241,638
MOSQUITO REPELLER
Earl W. Holt, 6731 Hillwood Lane, Dallas, Tex. 75224
Filed Aug. 25, 1975, Ser. No. 607,477
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19



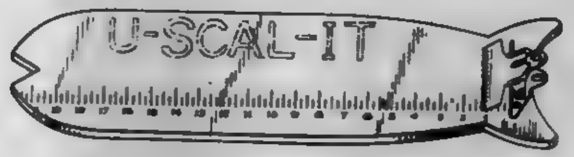
241,639
COMBINATION FISHING ROD HANDLE AND RADIO
John A. Francis, 3720 Morgan Drive, Weirton, W. Va. 26062
Filed Apr. 8, 1975, Ser. No. 567,143
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—26



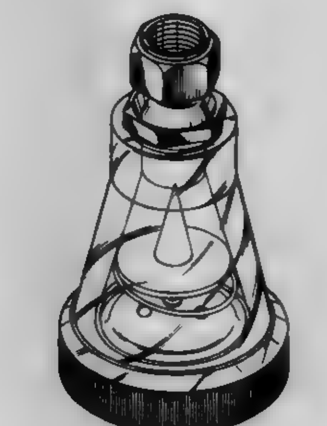
241,640
FISHING LURE
Gary R. Miralles, 300 W. Blake St., Yreka, Calif 96097
Filed July 7, 1975, Ser. No. 593,630
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



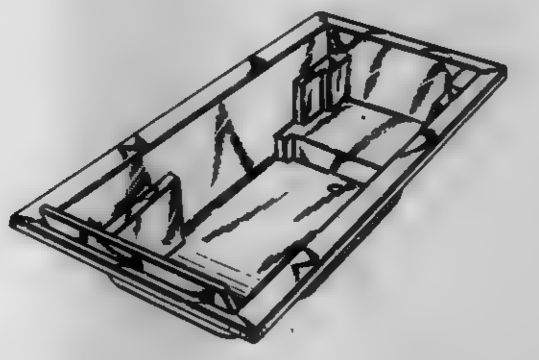
241,641
FISH SCALER
Daniel H. Brown, 107 S. Jonesville Blvd., Jonesville, N.C. 28642, and Joseph R. Brown, P.O. Box 6273, Greensboro, N.C. 27405
Filed Apr. 24, 1975, Ser. No. 571,277
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—31



241,642
SHOWER HEAD
John B. Arpin, 1716 Melville St., Ocean, N.J. 07712, and Samuel L. Feldman, 3 Sunset Drive, Asbury Park, N.J. 07712
Filed Oct. 9, 1975, Ser. No. 621,160
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35

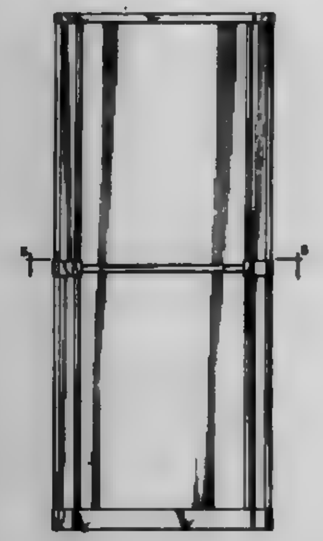


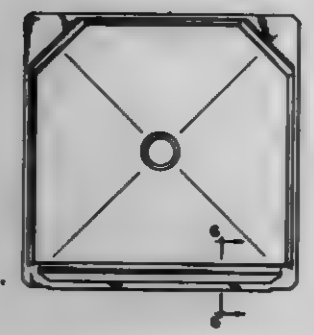
241,643
BATHTUB
Horst Godfrey Bonsack, London, England, assignor to Bonsack Baths Limited, London, England
Filed Sept. 29, 1975, Ser. No. 617,645
Claims priority, application United Kingdom Apr. 14, 1975
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



241,644
SHOWER STALL

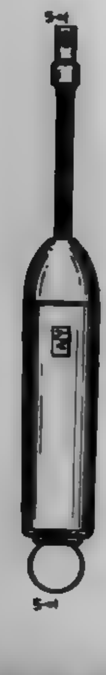
Richard W. Van Riper, Jr., Crawfordsville, Ind., assignor to Ingress Manufacturing Company, Inc.
Filed Sept. 11, 1975, Ser. No. 612,309
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57





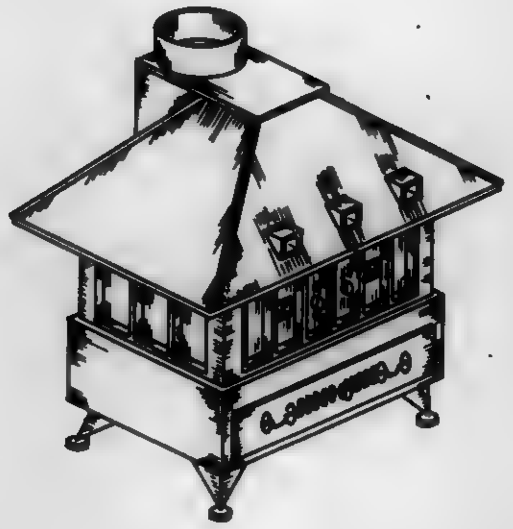
241,645
GAS LIGHTER

Ralph Lanzi, 108 St. Stephens Place, Staten Island, N.Y. 10306
Filed Nov. 6, 1975, Ser. No. 629,651
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—90.1



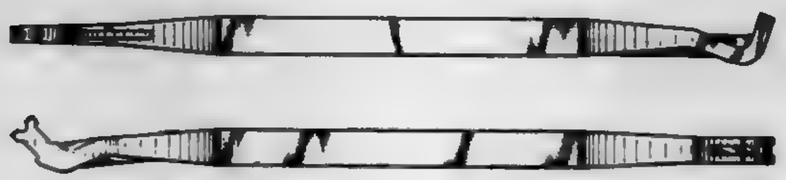
241,646
HEATER

Wilbur E. Lilly and David A. Rogers, Mount Gilead, Ohio, assignors to Lilly Industries, Inc.
Filed July 24, 1975, Ser. No. 598,719
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—93



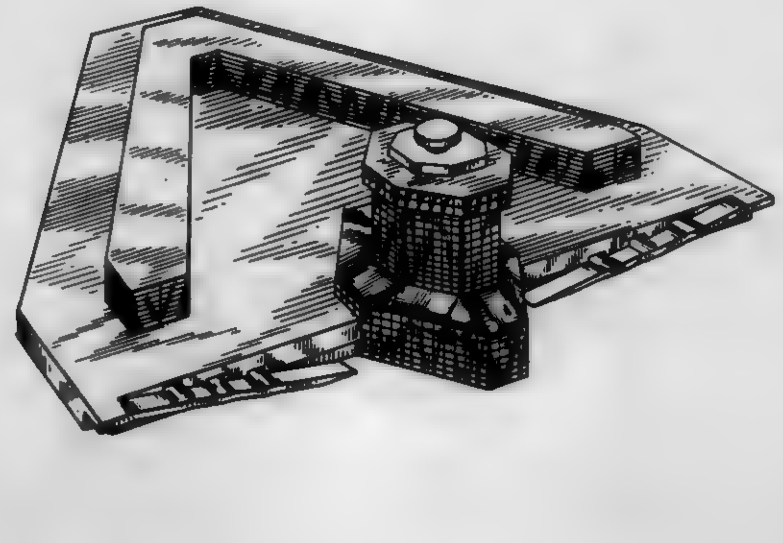
241,647
ORTHODONTIC BAND CHECKER INSTRUMENT

Albert P. Ruggieri, Flourtown, Pa., assignor of fractional part interest to Bernard D. Stalnaker, Philadelphia, Pa.
Filed Apr. 28, 1975, Ser. No. 572,003
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 D



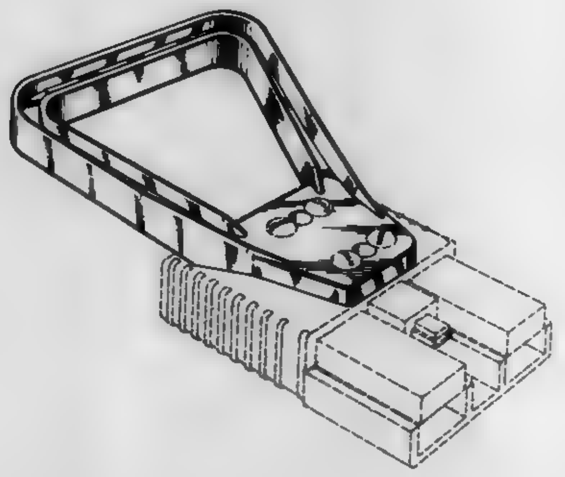
241,648
AIRPORT

John W. Magill, 700 N. Michigan Ave., Chicago, Ill. 60611
Filed Mar. 6, 1975, Ser. No. 555,982
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—3



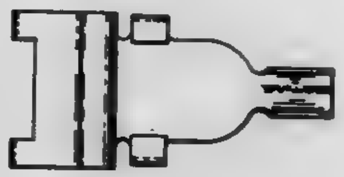
241,649
HANDLE FOR ELECTRICAL CONNECTORS

Herbert Hamilton Andersen, Jr., 140 Highplain Road, Andover, Mass. 01810, and Stephen Anthony Machcinski III, 19 Seymour St., Winthrop, Mass. 02152
Filed Dec. 19, 1974, Ser. No. 534,549
Term of patent 14 years
Int. Cl. D7—*02;* D8—*07;* D13—*03*
U.S. Cl. D26—1 R



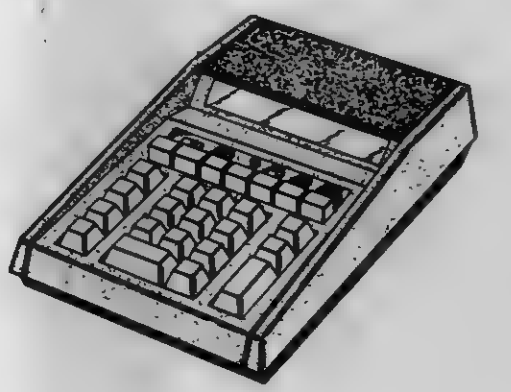
241,650
ELECTRICAL TAB RECEPTACLE

William Vito Pauza, Palmyra, and Wilmer Lee Sheesley, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Original design application Jan. 7, 1974, Ser. No. 431,178. Divided and this application Feb. 4, 1975, Ser. No. 546,961
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 A



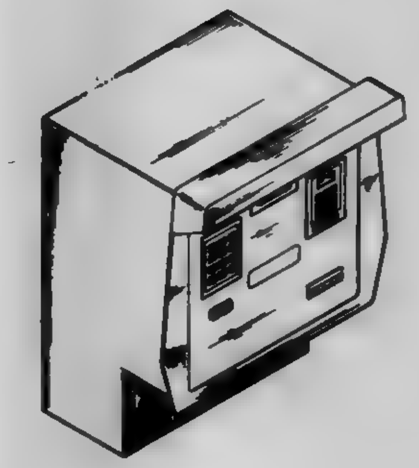
241,651
CALCULATOR

Steven G. Hauser, Tarzana, Calif., assignor to Addmaster Corporation, San Gabriel, Calif.
Filed May 17, 1973, Ser. No. 353,993
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D26—5 C



241,652
BANKING MACHINE TERMINAL

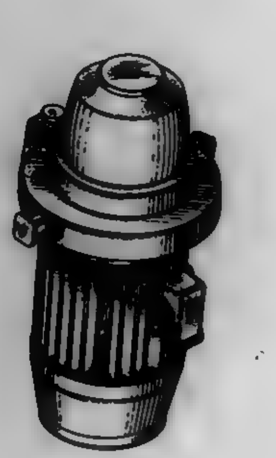
Edward H. McCauley, Dallas, and Lewis J. O'Kelly, Fort Worth, Tex., assignors to Docutel Corporation, Irving, Tex.
Filed Mar. 10, 1975, Ser. No. 557,048
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



241,653

DYNAMOELECTRIC MACHINE

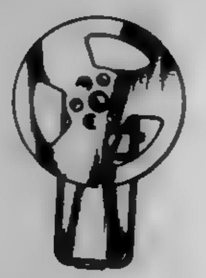
Robert F. Gleichman, San Jose, Calif., assignor to
General Electric Company
Filed Aug. 7, 1975, Ser. No. 602,624
Term of patent 14 years
Int. Cl. D13—*01*
U.S. Cl. D26—5 A

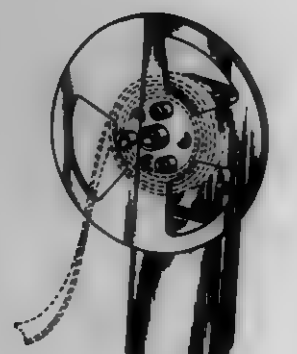


241,654

CORDLESS TAPE WINDER

Donald A. Burns, Putnam Valley, N.Y., assignor to
Donald A. Burns
Filed Feb. 13, 1975, Ser. No. 549,710
Term of patent 14 years
Int. Cl. D14—*99*; D16—*05*
U.S. Cl. D26—14 B





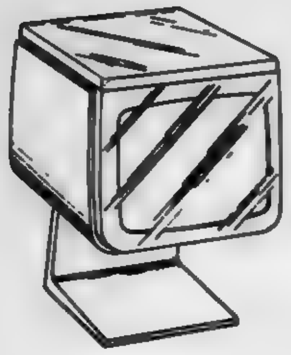
241,655

VIDEOTELEPHONE RECEIVER

Donald Michael Genaro, Haworth, and Thomas Joseph Kelly, Middletown, N.J., John Niel McGarvey, Drexel Hill, Pa., and Daniel Wescoat Tyler, Middletown, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Original design application Oct. 15, 1974, Ser. No. 514,401. Divided and this application June 25, 1975, Ser. No. 590,326

Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



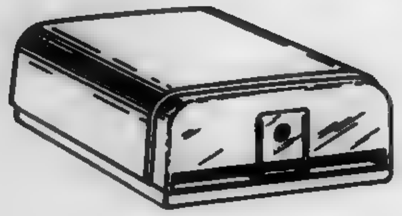
241,656

VIDEOTELEPHONE TRANSMITTER

Donald Michael Genaro, Haworth, and Thomas Joseph Kelly, Middletown, N.J., John Niel McGarvey, Drexel Hill, Pa., and Daniel Wescoat Tyler, Middletown, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Original design application Oct. 15, 1974, Ser. No. 514,401. Divided and this application June 25, 1975, Ser. No. 590,335

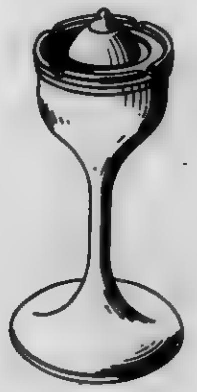
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



241,657

ASH TRAY

Shohichi Shinkai, 29, Kuramamichi-cho 4-chome,
Higashi-ku, Nagoya, Aichi, Japan
Filed June 10, 1975, Ser. No. 585,584
Claims priority, application Japan Jan. 27, 1975
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—12

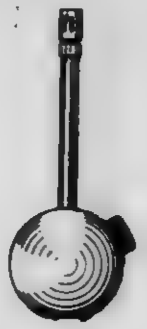


241,658

GAS-LIGHTER

Alain Huguet, Lyon, and Marcel Vache, Sainte-Foy-les-Lyon, France, assignors to Application Des Gaz, Paris, France

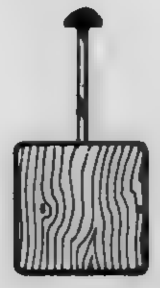
Filed Feb. 24, 1975, Ser. No. 552,386
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—39



241,659

RELIGIOUS DISPLAY

Wiley H. Dill, 2002 Gail Ave.,
Albany, Ga. 31705
Filed Feb. 22, 1973, Ser. No. 334,946
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—157

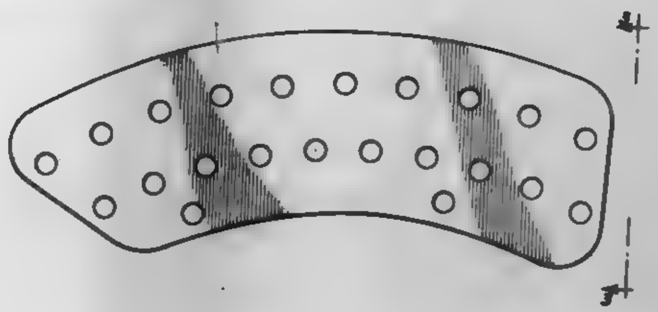


241,660

CUVETTE HOLDER

Dennis F. Shine, Huntington Beach, Calif., John C. Wilson, Cleveland, Ohio, and Michael E. Witty, El Toro, Calif., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

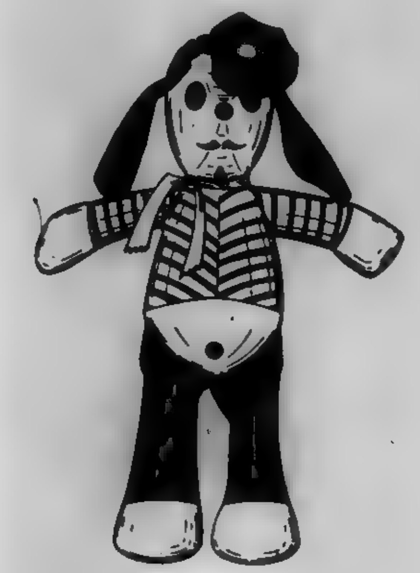
Filed Oct. 17, 1974, Ser. No. 515,761
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D32—2 C



241,661

TOY STUFFED DOG

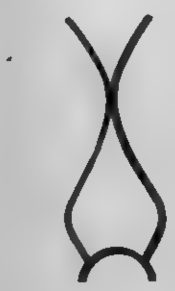
Thomas J. Dawson, St. Louis, Mo., assignor to
Genie Toys, Inc.
Filed June 20, 1975, Ser. No. 588,667
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



241,662

GAME PLAYING PIECE

Tim Radmall, 431 Dahlia, Corona del Mar,
Calif. 92625
Filed Mar. 20, 1975, Ser. No. 560,471
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 GP

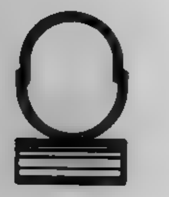


241,663

GAME PLAYING PIECE

Tim Radmall, 431 Dahlia, Corona del Mar,
Calif. 92625
Filed Mar. 20, 1975, Ser. No. 560,474
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—5 GP

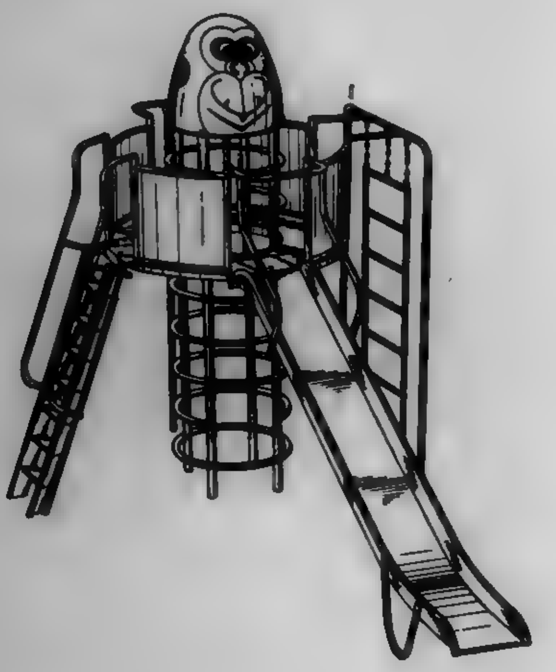


241,664

COMBINED PLAYGROUND CLIMBER AND SLIDE

Ronald L. Ewers, Litchfield, Mich., and Ronald W. Zick, Minneapolis, Minn., assignors to The Toro Company, Minneapolis, Minn.
Filed Apr. 9, 1975, Ser. No. 566,381
Term of patent 14 years
Int. Cl. D21—*03*

U.S. Cl. D34—5 H

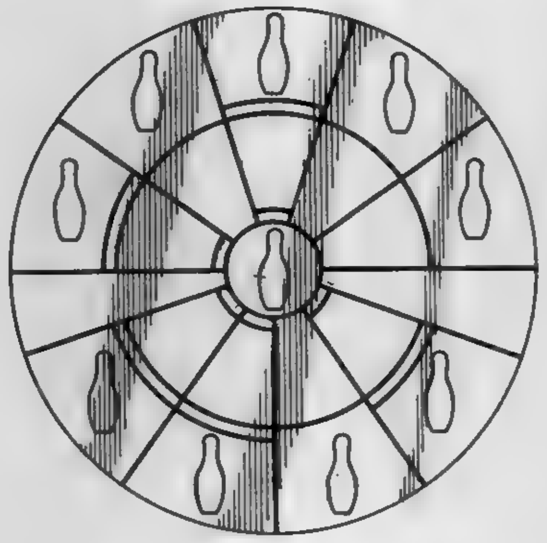


241,665

DART GAME BOARD

Ruhl H. Reed, 3006 Ridgeway Drive,
Fort Wayne, Ind. 46816
Filed Apr. 21, 1975, Ser. No. 570,018
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—5 PP

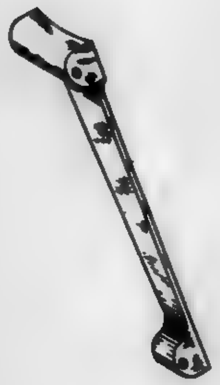


241,666

CORSAGE HOLDER

Robert A. Shulkin, East 24122 Sprague Ave.,
Liberty Lake, Wash. 99012
Filed Apr. 23, 1975, Ser. No. 570,870
Term of patent 14 years
Int. Cl. D11—*02*

U.S. Cl. D11—146

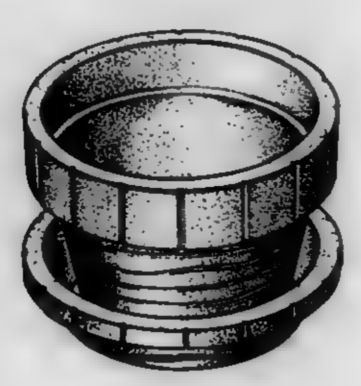


241,667

COMBINED FLOWER POT AND OVERFLOW DISH THEREFOR

Marten Gottsegen, 1212 Lake Shore Drive,
Chicago, Ill. 60610
Filed May 16, 1975, Ser. No. 578,002
Term of patent 14 years
Int. Cl. D11—*2*

U.S. Cl. D11—152

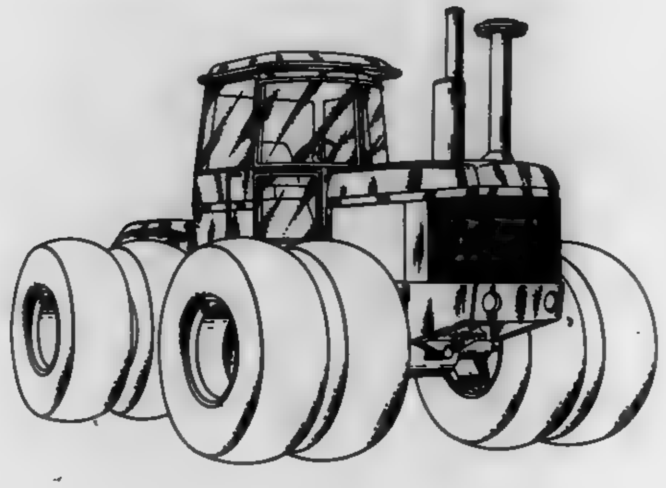


241,668

TRACTOR

John Donald Singer and Lawrence R. Beard, Waterloo, Iowa, and James Mervyn Conner, Mamaroneck, N.Y., assignors to Deere & Company, Moline, Ill.
Filed May 14, 1975, Ser. No. 577,560
Term of patent 14 years
Int. Cl. D12—*09*

U.S. Cl. D15—26

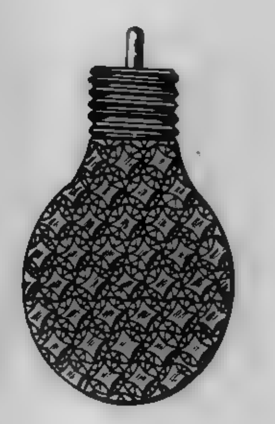


241,669

DIAMOND PENDANT

Alfred Joseph Durante, Forest Hills, N.Y., assignor to Cartier, Inc., New York, N.Y.
Filed Mar. 3, 1975, Ser. No. 554,606
Term of patent 14 years
Int. Cl. D11—*01*

U.S. Cl. D11—81

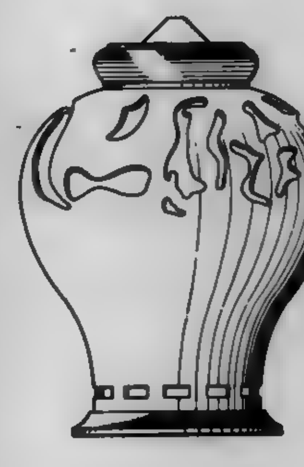


241,670

COMBINED LOUDSPEAKER AND LAMP BASE

Francis Joseph Walker, 23600 Lee Baker Drive,
Southfield, Mich. 48075
Filed Apr. 29, 1975, Ser. No. 572,638
Term of patent 7 years
Int. Cl. D14—*01;* D26—*05*

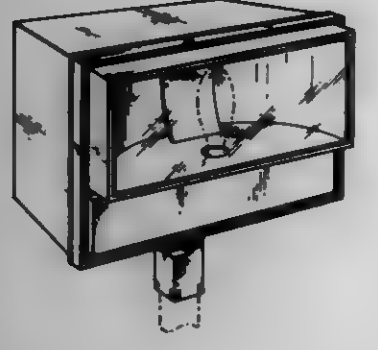
U.S. Cl. D48—20 C



241,671

FLOODLIGHT

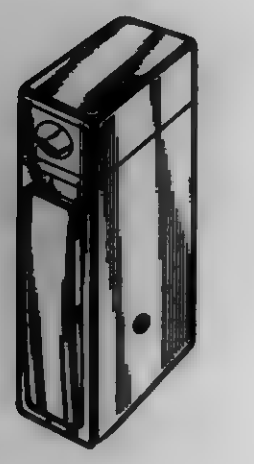
Giacinto C. D'Ercoli, Rolling Meadows, Ill., and James P. Kelly, Cudahy, Wis., assignors to McGraw-Edison Co., Elgin, Ill.
Filed Oct. 10, 1975, Ser. No. 621,410
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—20 K



241,672

FLASHLIGHT

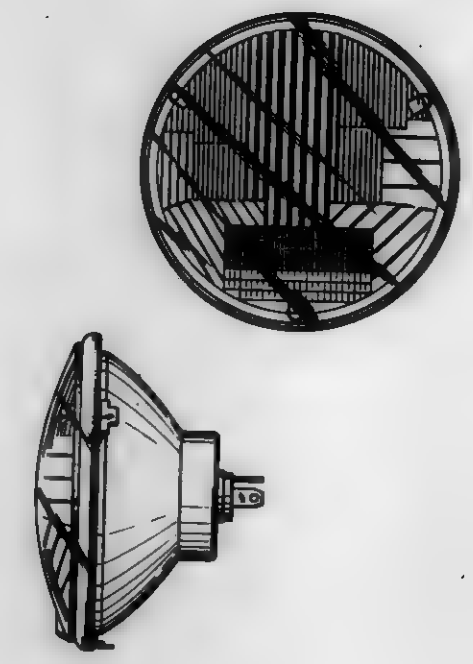
Maynard Frank Wolfe, Hong Kong, assignor to Prodev Limited, Hong Kong
Filed Apr. 23, 1975, Ser. No. 570,968
Claims priority, application Great Britain Jan. 17, 1975
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 A



241,673

SEALED BEAM HEADLIGHT

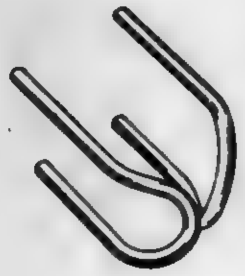
Pierre Cibie, Bobigny, France, assignor to Cibie Projecteurs, Bobigny, France
Filed Aug. 18, 1975, Ser. No. 605,474
Claims priority, application France Apr. 3, 1975
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 R



241,674

GUARD FOR COIN SLIDES

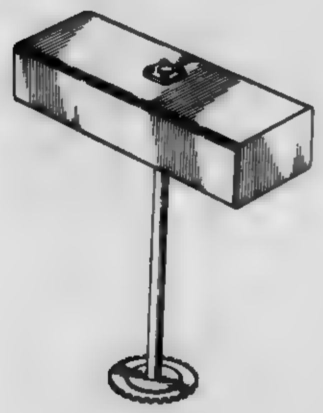
Robert E. Sill, 429 15th Ave. SW., Rochester, Minn. 55901
Filed Mar. 28, 1975, Ser. No. 563,142
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—4 R



241,675

DISPERSING APPARATUS

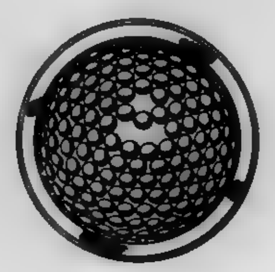
Donald M. Schnear, Corona del Mar, Calif., assignor to Morehouse Industries, Inc., Fullerton, Calif.
Filed Oct. 16, 1974, Ser. No. 515,203
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—122



241,676

GOLF BALL MOLD

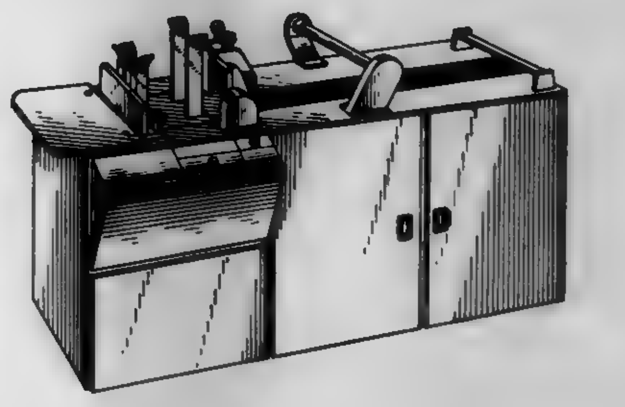
Francis deS. Lynch, Mattapoisett, John W. Jepson, Marion, and Robert A. Brown, Mattapoisett, Mass., assignors to Acushnet Company, New Bedford, Mass.
Filed Jun. 1, 1973, Ser. No. 365,862
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—136



241,677

LABELING MACHINE

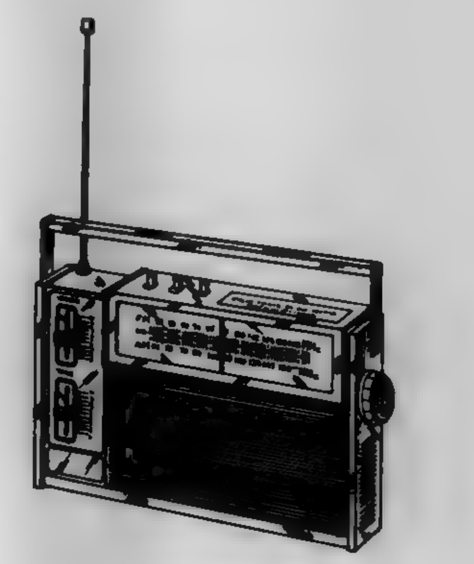
Jaroslaw Pacholok, Downers Grove, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Mar. 31, 1975, Ser. No. 563,558
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D15—145



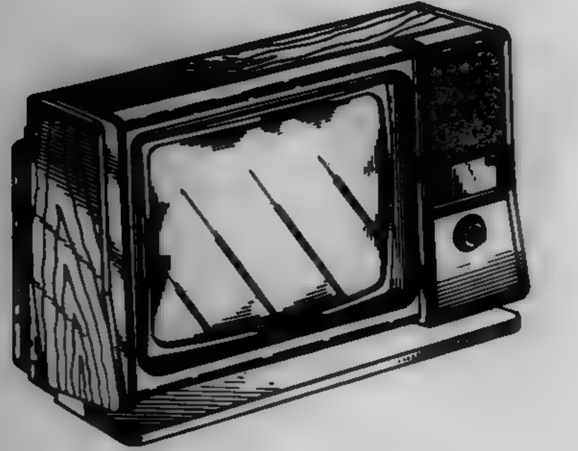
241,678

PORTABLE RADIO

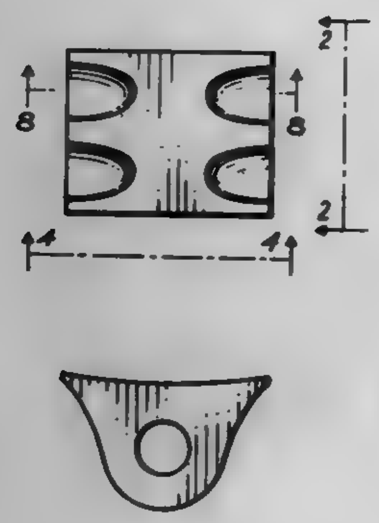
Leonard Kaye, Westfield, N.J., assignor to Capehart Corporation, New York, N.Y.
Filed Nov. 25, 1974, Ser. No. 526,518
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



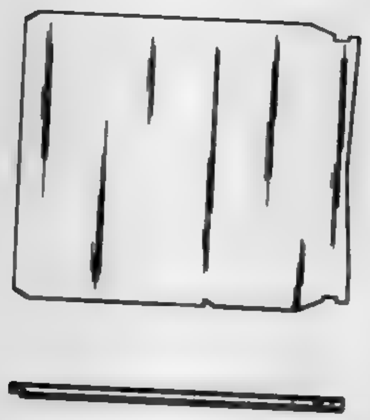
241,679
TELEVISION RECEIVER
Richard K. Althans, Long Grove, and Melvin H. Boldt, Glenview, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.
Filed Apr. 18, 1975, Ser. No. 569,522
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 D



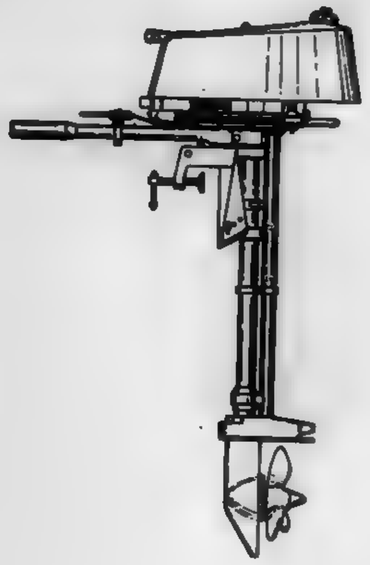
241,680
BINOCULAR ADJUSTMENT KNOB
Claus O. Huckenbeck, Sherman Oaks, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Apr. 30, 1975, Ser. No. 573,576
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—59



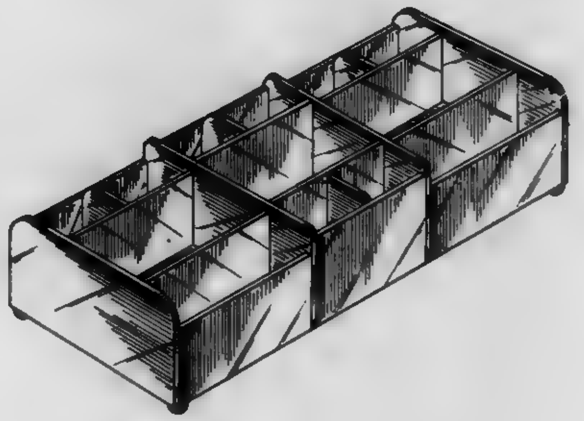
241,681
MICROFICHE CARRIER
Thomas R. Wells, Des Plaines, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Dec. 16, 1974, Ser. No. 532,808
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—26



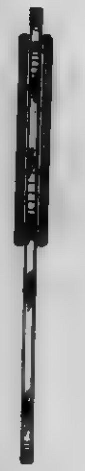
241,682
OUTBOARD MOTOR
Goro Muto, Funabashi, and Kenji Fujie, Tokyo, Japan, assignors to Tanaka Kogyo Kabushiki Kaisha, Narashino-shi, Chiba, Japan
Filed June 23, 1975, Ser. No. 589,264
Claims priority, application Japan Dec. 27, 1974
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D15—4



241,683
COSMETIC VANITY CONTAINER
Rebecca Mark, 195 Turn of River Road, Stamford, Conn. 06905
Filed Apr. 10, 1975, Ser. No. 567,004
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 A



241,684
HAND MIRROR
Arnold Rose, Providence, R.I., assignor to Trina, Inc.
Filed June 30, 1975, Ser. No. 591,441
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 H



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF SEPTEMBER, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. E. Staley Manufacturing Company: *See—*
  - Blevins, Charles W.; and Protzman, Thomas F., 3,982,420.
- AB Bofors: *See—*
  - Brattsand, Ralph Lennart; Ekenstam, Bo Thuresson af; Claeson, Karl Goran; and Thalen, Bror Arne, 3,983,233.
- Abbott, Andrew D., to Chevron Research Company. Rust inhibitor for mono- or polyurea greases. 3,983,041, Cl. 252-17.000.
- Abdallah, Abdulmuniem H.; and Shea, Philip J., to Dow Chemical Company, The. Halophenyl acetamidines as anxiolytic antidepressants. 3,983,250, Cl. 424-326.000.
- Abe, Masaru: *See—*
  - Inoue, Osamu; Abe, Masaru; and Tezuka, Toshiro, 3,982,580.
- Abernathy, Kenneth T., to Dual Fuel Systems, Inc. Standby system. 3,982,516, Cl. 123-120.000.
- Abex Corporation: *See—*
  - Adams, Cecil E.; and Dillon, Leo H., 3,982,470.
- Abey, John A., to Bud Antle, Inc. Apparatus for making molded articles of expanded cellular material and product thereof. 3,982,875, Cl. 425-444.000.
- Abolins, Visvaldis; and Reinhard, Donald L., to General Electric Company. Composition of a polyphenylene ether and styrene resin and an acrylic resin in combination with a diene rubber-container resin. 3,983,090, Cl. 260-42.180.
- Abraham, John C.; Grebner, Gary L.; Brandon, William D.; and Jero, John, to Caterpillar Tractor Co. Controlled bonding of fluoroelastomers to metal substrates. 3,982,983, Cl. 156-154.000.
- Acevedo, Ignacio. Fluid valve with float actuator. 3,982,557, Cl. 137-441.000.
- Acker, Jesse L.; and Meserol, Peter M., to Akro-Medic Engineering, Inc. Method for determining minimum inhibitory concentration of antibiotic. 3,983,006, Cl. 195-103.50R.
- Ackerman, Don; and Schwartztol, Robert Ira, to PerCare, Inc. Decorating placemat construction with a graphic pattern. 3,983,277, Cl. 428-46.000.
- Adam, Fritz Gunter; and Wilmsmeyer, Klaus, to ITT Industries, Inc. Bucket-brigade circuit. 3,983,408, Cl. 307-221.00D.
- Adam, Fritz Gunter, to ITT Industries, Inc. Bucket-brigade circuit. 3,983,409, Cl. 307-221.00D.
- Adams, Cecil E.; and Dillon, Leo H., to Abex Corporation. Control system for axial piston fluid energy translating device. 3,982,470, Cl. 91-506.000.
- Adams, Charles De Witt, to Endo Laboratories, Inc. Trans-octahydropyridoindolobenzazepines. 3,983,123, Cl. 260-293.550.
- Adams, Jim Mills; and de Zabala, Edward Francis, to Hoffmann-La Roche Inc. Apparatus for high-speed accurate counting and handling of discrete objects such as tablets. 3,982,865, Cl. 425-149.000.
- Adams, Vernon: *See—*
  - Burchett, Lawrence; and Adams, Vernon, 3,982,695.
- Addressograph Multigraph Corporation: *See—*
  - Kolibas, James A., 3,982,833.
- Aetna-Standard Engineering Company: *See—*
  - Pozsgay, Dezsoe Albert; and Scheib, William R., 3,982,416.
- Affiliated Hospital Products, Inc.: *See—*
  - Mitchell, Larry D.; and Tanner, Murray Q., III, 3,982,741.
- Aftergut, Siegfried; and Cole, Herbert S., Jr., to General Electric Company. Liquid crystal compositions with positive dielectric anisotropy. 3,983,049, Cl. 252-299.000.
- Agari, Yujiro: *See—*
  - Momiyama, Kikuo; and Agari, Yujiro, 3,982,823.
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- Akiyama, Kenzo, to Tomy Kogyo Co., Inc. Toy musical vehicle. 3,982,459, Cl. 84-83.000.
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- Albert, Richard D. Selectable wavelength X-ray source. 3,983,397, Cl. 250-406.000.
- Albrecht, William L.; Horgan, Stephen W.; Sill, Arthur D.; and Fleming, Robert W., to Richardson-Merrell Inc. Fluorene compounds. 3,983,124, Cl. 260-293.620.
- Aldinger, Karl, heir: *See—*
  - Aldinger, Ulrich, deceased; Aldinger, Ruth, heir; and Aldinger, Karl, heir, 3,982,855.
- Aldinger, Ruth, heir: *See—*
  - Aldinger, Ulrich, deceased; Aldinger, Ruth, heir; and Aldinger, Karl, heir, 3,982,855.
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- Alexander, Richard J.; and Krueger, Robert K., to Krause Milling Company. Art of manufacturing compression molded particle board with nitrogenous modified amylaceous binder. 3,983,084, Cl. 260-17.200.
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- Allison, James Frederick: *See—*
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- Allison, Roy F., to Allison Acoustics Inc. Loud speaker system. 3,983,333, Cl. 179-1.00E.
- Almasi, George S., to International Business Machines - IBM. Three-dimensional bubble device. 3,983,547, Cl. 340-174.0TF.
- Alpha Engineering Corporation: *See—*
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- Alston, Inc.: *See—*
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- Alter, Raymond R. Electrically heated semen warming and storage unit. 3,983,363, Cl. 219-521.000.
- Alterman, David S.; and Chun, Kil Whan, to Lever Brothers Company. Encapsulation particles. 3,983,254, Cl. 428-403.000.
- Alton Box Board Company: *See—*
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Anderson, Robert F., to Universal Oil Products Company. Alkylation reaction chamber. 3,982,903, Cl. 23-288.00E.

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Bahrton, Per Svante. Signal device for dialysis apparatus. 3,982;535, Cl. 128-214.00E.

Bailey, John M., to Caterpillar Tractor Co. Accumulator type fuel injection assembly. 3,982,694, Cl. 239-96.000.

Bailey, Paul D., to General Motors Corporation. Dishwasher rack having retention means. 3,982,802, Cl. 312-348.000.

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Bargenda, Siegfried, to Audi NSU Auto Union Aktiengesellschaft; and Wankel GmbH. Ignition system for a rotary piston combustion engine. 3,982,502, Cl. 123-8.090.

Barger, Frank L.: *See—*

Harrison, Charles W.; Mead, Theodore C.; Moreland, Howard R.; and Barger, Frank L., 3,982,422.

Barlow, Michael L., to United States of America, Navy. Tuned plate acoustic projector with piezoelectric driver. 3,983,425, Cl. 310-8.700.

Barnhart, Donald M.; and Carpenter, James H., Jr., to Carborundum Company, The. Sand lump grinder. 3,982,702, Cl. 241-58.000.

Barrett, Joseph Edward, to British Petroleum Company Limited, The. Method of molding reinforced articles. 3,983,205, Cl. 264-254.000.

Bartlett, Richard F.; and Case, Laura K., to Itek Corporation. Electrophotographic copying process. 3,982,935, Cl. 96-1.00R.

Bartolucci, Edgar O., to Instore Advertising, Inc. False fingernail kit. 3,982,551, Cl. 132-73.000.

Baruffini, Agostino: *See—*

Arsura, Emilio; Baruffini, Agostino; Gialdi, Franco; Pellegrini, Giovanni; Ponci, Riccardo; and Scrivani, Pietro, 3,982,931.

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Rauch, Konrad; Kiefer, Hans; Hesse, Dieter; Strohmeyer, Max; and Hohenschutz, Heinz, 3,983,010.

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Scheuermann, Horst; and Mach, Wolfgang, 3,983,117.

Bashaw, Robert Niles; and Atkins, Bobby Leroy, to Dow Chemical Company, The. Absorbent fibers and process for their preparation. 3,983,095, Cl. 526-15.000.

Bashkirov, Dmitry Vasilievich: *See—*

Pozdneev, Viktor Timofeevich; Khina, Mikhail Lvovich; Bashkirov, Dmitry Vasilievich; Judin, Nikolai Fedorovich; and Kobzev, Nikolai Sergeevich, 3,983,088.

Bass, Henry Herschel, to Unisearch Limited. Preparation of fertilizer and animal feed from molasses fermentation residue. 3,983,255, Cl. 426-54.000.

Bassett, Eugene E. Coil dispenser. 3,982,712, Cl. 242-129.000.

Bateman, John; and Gordon, David A., to Ciba-Geigy Corporation. Phenylindane diamine mixture and epoxy resin therewith. 3,983,092, Cl. 260-47.0EN.

Battelle Memorial Institute: *See—*

Conroux, Jean-Jacques; Pilet, Daniel; and Roehrich, Christian, 3,982,409.

Bauer, Werner R., to Robertshaw Controls Company. Electrical switch construction and method of making the same. 3,983,351, Cl. 200-83.00R.

Bauman, Joel: *See—*

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Bausch & Lomb Incorporated: *See—*

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Bayer Aktiengesellschaft: *See—*

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Dieterich, Dieter; and Markusch, Peter, 3,983,081.

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BBC Brown Boveri & Company Limited: *See—*

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Bean, Lloyd F., to Xerox Corporation. Multiple layer migration imaging system. 3,982,939, Cl. 96-1.500.

Beatty, Theodore R.; and Vourlis, Harry, to Union Carbide Corporation. Alkaline cell with double collector positive, negative and third terminal connections. 3,982,966, Cl. 429-136.000.

Beaty, Robert C.: *See—*

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Beck, David Ernest; and Thom, Derek Walter, to Imperial Chemical Industries. Yarn crimping process and apparatus. 3,982,310, Cl. 28-1.300.

Beck, David Walter. Folding boat propeller. 3,982,853, Cl. 416-142.000.

Beck, Otto: *See—*

Hamm, Klaus; and Beck, Otto, 3,982,991.

Becker, Rudolf, to Linde Aktiengesellschaft. Partition wall for tanker carrying cryogenic-temperature liquid. 3,982,653, Cl. 220-9.0LG.

Becker, Sylvester J. Portable wash stand. 3,982,284, Cl. 4-145.000.

Beckert, Werner F.: *See—*

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Beeby, Philip J., to Syntex (U.S.A.) Inc. Cephalosporin type antibacterials. 3,983,113, Cl. 260-240.00R.

Beecham Group Limited: *See*—
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Bell, Albert H., III, to General Motors Corporation. Gas turbine engine cooling system. 3,982,390, Cl. 60-39.16R.

Bell & Howell Company: *See*—
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Bell Telephone Laboratories, Incorporated: *See*—
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Bellino, Joseph A.; Geis, David G.; Hodne, Ingard B.; and Lindberg, Arthur F., to Teletype Corporation. Actuator mechanisms for wire matrix printers. 3,982,622, Cl. 197-1.00R.

Belluomo, Carl. Automatic cleaner. 3,982,297, Cl. 15-97.00R.

Benasutti, Louis D.: *See*—
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Bendix Corporation, The: *See*—
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Benkert, Donald E. Distribution valve for irrigation channels. 3,982,400, Cl. 61-24.000.

Bennett, Harry A. Cable and converter security device. 3,982,803, Cl. 339-37.000.

Benrud, Vernal M., to Sperry Rand Corporation. Switchable constant current sink. 3,983,453, Cl. 315-399.000.

Benson, Jay L.; and Hansen, Gordon J., to United States of America, Energy Research and Development Administration. Electromagnetic radiation detector. 3,983,437, Cl. 313-99.000.

Berkey Photo, Inc.: *See*—
Maltese, John; Nesson, Israel; and Mitchell, Robert, 3,983,570.

Berman, Donald J.: *See*—
Mark, Arnold; Berman, Donald J.; and Cohen, Sam, 3,983,447.

Bernard, James A., to General Motors Corporation. Magnetic control valve. 3,982,722, Cl. 251-4.000.

Bernard, James A.: *See*—
Heidorn, John H.; and Bernard, James A., 3,982,801.

Bernasconi, Felix; Brunner, Heinz; and Meylan, Pierre, to BBC Brown Boveri & Company Limited. Low pressure steam turbine construction. 3,982,849, Cl. 415-101.000.

Berry, James E.; and Straus, Andrew J. D., to Mobil Oil Corporation. Acoustical logging apparatus having signal delay means. 3,982,606, Cl. 181-102.000.

Berry, Robert N. Notching machine. 3,982,457, Cl. 83-516.000.

Berry, Thomas F.; Rajala, Ronald G.; and Mullins, Harold L., to General Electric Company. Friction welded metallic turbomachinery blade element. 3,982,854, Cl. 416-213.00R.

Berthiaume, Derek B., to Bralorne Resources Limited. Eccentric stabilizer. 3,982,594, Cl. 75-337.000.

Beverung, Warren Neil; and Partyka, Richard Anthony, to Bristol-Myers Company. Process for the preparation of optionally substituted 1,2,3,5-tetrahydroimidazo[2,1-b]quinazolin-2-ones. 3,983,120, Cl. 260-256.40F.

Beverung, Warren Neil, Jr.; Partyka, Richard Anthony; and Jenks, Thomas Andrew, to Bristol-Myers Company. Process for the preparation of optionally substituted 1,2,3,5-tetrahydroimidazo[2,1-b]quinazolin-2-ones. 3,983,119, Cl. 260-256.40F.

Bezemer, Jan Adrianus, to De Statt der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie. Filter chain. 3,983,518, Cl. 333-70.00R.

Biagi, Alvaro D.; Silbiger, Richard; and Orloff, Leslie, to Republic Electronic Industries, Inc. High frequency wave radiation system producing a rotating beam defining a predetermined geometrical pattern. 3,983,561, Cl. 343-787.000.

Bianchetta, Donald L., to Caterpillar Tractor Co. Apparatus for controlling work element operating pressures in a fluid system. 3,982,469, Cl. 91-412.000.

Bianchi, Rodolfo Edmundo; and Ueltschi De Bianchi, Olga Beatriz. Flexible portable dispensing container. 3,982,574, Cl. 150-9.000.

BICC Limited: *See*—
Waterhouse, Norman Howard, 3,982,403.

Bice, Charles D., to Westinghouse Electric Corporation. Method for connecting a tap assembly to an energized high-voltage cable. 3,982,319, Cl. 29-628.000.

Bidanset, Edward J., to Textron, Inc. Latch operated centrifugally released safety clutch for saws. 3,982,616, Cl. 192-104.00C.

Bieri, Hans. Heavy duty jig saw. 3,982,521, Cl. 125-16.00R.

Biermann, Udo Klaus Paul; Lynch, Brian; and van de Wijgert, Willibrordus Maria, to U.S. Philips Corporation. Method of manufacturing articles from metal coated with a zirconium nitride layer. 3,983,303, Cl. 428-457.000.

Billigmann, Joseph; Schneider, Christoph; Siewert, Johannes; and Sodeik, Manfred, to Rasselstein Aktiengesellschaft. Method for the manufacture of a cold-rolled steel strip in thin and super-thin metal plate thickness for producing stretch-formed cans or other deep-drawn parts. 3,982,968, Cl. 148-6.15R.

Bird, Thomas C.; and Paetzold, Walter J., to Corral Industries, Inc. Moisture reduction press. 3,982,483, Cl. 100-117.000.

Bird, Thomas Lewis: *See*—
Jones, Ivor Wynn; Robinson, Graham; and Bird, Thomas Lewis, 3,982,957.

Bisaillon, Jean-Pierre. Clutch release bearing monitoring device. 3,982,614, Cl. 192-30.00W.

Bitsch, Richard C.; and McCrary, Lawrence E., to Emerson Electrical Co. Interchangeable connector means for electric motor operation on either of two supply voltages. 3,983,428, Cl. 310-71.000.

Bituminous Coal Research, Inc.: *See*—
Saltsman, Robert D.; and Harris, Robert D., 3,982,330.

Blanchard, Clarence E., to Outboard Marine Corporation. Seal and isolation mounting system. 3,982,496, Cl. 115-.50S.

Blanchard, William C.; and Kreiner, James E., Jr., to Bendix Corporation, The. Mono-lobed scanner. 3,983,562, Cl. 343-815.000.

Blaupunkt-Werke GmbH: *See*—
Hegeler, Wilhelm, 3,983,497.

Blay, Jorge A., to Celanese Corporation. Recovery of vanadium and copper catalyst metals using ketones. 3,983,208, Cl. 423-27.000.

Blevins, Charles W.; and Protzman, Thomas F., to A. E. Staley Manufacturing Company. Method and apparatus for determining the pasting temperature of starch and the like. 3,982,420, Cl. 73-17.00R.

Blom, Ingvar Gustav Axel: *See*—
Ivarsson, Paul Lennart; and Blom, Ingvar Gustav Axel, 3,982,953.

Blommerde, Cornelis Wilhelmus Adrianus; Ridders, Johannes Antonius Maria; and Westerbeke, Huibregt, to U.S. Philips Corporation. Mercury vapor discharge lamp with mercury container in envelope exhaust tube. 3,983,439, Cl. 313-174.000.

Bloomfield, David P., to United Technologies Corporation. Pressurized fuel cell power plant with steam powered compressor. 3,982,962, Cl. 429-19.000.

Blumenfield, Arthur: *See*—
Kraynak, Joseph Stephen; and Blumenfield, Arthur, 3,982,744.

BMT Manufacturing Corporation: *See*—
Vanderpool, Charles C., 3,982,377.

Boden, Heinrich; and Knipp, Ulrich, to Bayer Aktiengesellschaft. Apparatus for producing molded foam articles without defects. 3,982,870, Cl. 425-252.000.

Bodenseewerk Perkin-Elmer & Co. GmbH: *See*—
Tamm, Rolf Gunther Arnold, 3,982,834.

Boeing Company, The: *See*—
Kuehn, Riley, Jr., 3,982,987.

Boetto, Charles: *See*—
Stufflebeam, John F.; and Boetto, Charles, 3,982,773.

Boggio, Robert J., to Western Electric Company, Inc. In-line apparatus for electroplating a metal onto an article. 3,983,024, Cl. 204-198.000.

Bohman, Gote Bertil Sivert: *See*—
Wulker, Jan-Eric Lennart; and Bohman, Gote Bertil Sivert, 3,983,193.

Bolen, Robert J.: *See*—
Whitney, Paul V., Jr.; Bolen, Robert J.; and Cotter, William W., Jr., 3,983,357.

Boliver, Vincent J., to General Electric Company. Power cable separable connector having gasket means for restricting the flow of arc-generated gases therefrom. 3,982,812, Cl. 339-111.000.

Bolli, Hans-Ulrich, to SIG Schweizerische Industrie-Gesellschaft. Apparatus for transversely sealing a wrapper hose. 3,982,381, Cl. 53-180.00R.

Bonded Fibre Fabric Limited: *See*—
Elliott, Gordon Henry, 3,983,273.

Booth Fire Escape Ltd.: *See*—
Booth, Frederick, 3,982,608.

Booth, Frederick, to Booth Fire Escape Ltd. Fire escape. 3,982,608, Cl. 182-49.000.

Borbely, Gyula John; Illis, Alexander; and Brandt, Bernardus Jacobus, to International Nickel Company, Inc., The. Purification of nickel electrolyte by electrolytic oxidation. 3,983,018, Cl. 204-130.000.

Borg-Warner Corporation: *See*—
Aubel, John A.; and Reinke, Ronald E., 3,982,555.
Reed, David F., 3,982,615.

Borne, Mel. Night light toilet seat. 3,982,288, Cl. 4-237.000.

Borsatti, Mario: *See*—
Murer, Angelo; and Borsatti, Mario, 3,983,295.

Bos, Arie, to MacMillan Bloedel Limited. Vacuum lifting apparatus for cylindrical articles. 3,982,782, Cl. 294-64.00R.

Bose, Bimal K.; and Espelage, Paul M., to General Electric Company. Frequency insensitive sine wave-to-cosine wave converter. 3,983,494, Cl. 328-21.000.

Bossons, Walter Howard; and Langworthy, Colin George, to Masson Scott Thrissell Engineering Limited. Coarse/fine sheeter controls in particular and machine drive systems in general. 3,983,467, Cl. 318-593.000.

Botter nee Bergheaud, Fernande; Scaringella nee Desnoyer, Monique; and Wacongne, Michel, to Commissariat a l'Energie Atomique. Separation of the mercury isotopes by the indirect photochemical method. 3,983,019, Cl. 204-157.10R.

Bouplon, Edward J., to Chicago Pneumatic Tool Company. Air line lubricator. 3,982,609, Cl. 184-56.00A.

Bourlet, Maurice V., to Fabrique Nationale Herstal S.A. Device for handling cartridge magazines and suchlike. 3,982,676, Cl. 224-45.00R.

Boutle, David Leonard: *See*—
Cunningham, Victor Ralph; and Boutle, David Leonard, 3,982,335.

Bowman, Raymond Earl, to Co-Steel International Limited. Device for slitting billets. 3,982,455, Cl. 83-105.000.

Boyd, Douglas P., to Leland Stanford Junior University, The Board of Trustees of. Method and apparatus for X-ray or γ-ray 3-D tomography using a fan beam. 3,983,398, Cl. 250-445.00T.

Boys, John T., to Standard Pressed Steel Co. Apparatus for and method of determining rotational and linear stiffness. 3,982,419, Cl. 73-139.000.

Bozek, John S.; and Peyser, Harry A., to Continental Can Company, Inc. Easy opening container with retained closure. 3,982,658, Cl. 220-337.000.

BP Chemicals International Limited: *See*—
Hawkins, Edwin George Edward, 3,983,142.

Bradley, Daniel Joseph; and Hutchinson, Marcus Henry Ritchie, to National Research Development Corporation. Lasers. 3,983,508, Cl. 331-94.5PE.

Bradley, Frank M.; and Markle, Larry D. Sod laying machine. 3,982,711, Cl. 242-86.520.

Bradshaw, Cyril E., to Eaton Corporation. Exhaust gas recirculation control assembly. 3,982,515, Cl. 123-119.00A.

Braithwaite, David G.: *See*—
Allain, Ronald J.; and Braithwaite, David G., 3,983,224.

Braitinger, Helmut: *See*—
Schneider, Franz; and Braitinger, Helmut, 3,982,454.

Bralorne Resources Limited: *See*—
Berthiaume, Derek B., 3,982,594.

Bramley, Anthony; and Clabburn, Robin J. T. Netting. 3,983,280, Cl. 428-107.000.

Brandeis, Johann; and Kurze, Joachim, to BASF Aktiengesellschaft. Mixtures of methylolalkyl ureas and their butyl ethers. 3,983,043, Cl. 252-8.800.

Brandl, Rudolf; Moller, Tilo; Saile, Karl; and Streckfuss, Heinrich, to Heckler & Koch GmbH. Trigger mechanism for electrically ignited weapons. 3,982,347, Cl. 42-84.000.

Brandon, William D.: *See*—
Abraham, John C.; Grebner, Gary L.; Brandon, William D.; and Jero, John, 3,982,983.

Brandt, Bernardus Jacobus: *See*—
Borbely, Gyula John; Illis, Alexander; and Brandt, Bernardus Jacobus, 3,983,018.

Brann, Theodore L.: *See*—
Brumfield, Walter T.; Baker, Robert C.; and Brann, Theodore L., 3,983,311.

Branson, J. Howard. Knock down convertible toy. 3,982,352, Cl. 46-17.000.

Brass, Ronald William, to Deere & Company. Disengageable planter seed meter drive. 3,982,670, Cl. 222-177.000.

Brattle Instrument Corporation: *See*—
Phillipps, Patrick G., 3,982,528.

Brattsand, Ralph Lennart; Ekenstam, Bo Thuresson af; Claeson, Karl Goran; and Thalen, Bror Arne, to AB Bofors. Compositions and method of treating with stereoisomeric mixtures of 2-unsymmetrical 16,17-methylenedioxy steroids. 3,983,233, Cl. 424-241.000.

Braun, Morris; Gerty, John M., Jr.; and Spransy, George B., to W. Braun Company. Container and closure cap therefor. 3,982,651, Cl. 220-4.00B.

Breidenbach, Hans: *See*—
Gerresheim, Jost; Drennhaus, Alfons; Breidenbach, Hans; Mansour, Rodolf; and Pfeil, Christian, 3,982,600.

Brenzen, Timothy. Automatic kill switch assembly. 3,983,347, Cl. 200-157.000.

Bridgestone Tire Company Limited: *See*—
Inoue, Osamu; Abe, Masaru; and Tezuka, Toshiro, 3,982,580.
Tezuka, Toshiyata, 3,982,731.

Brink, Thomas E.; Chelin, Charles R.; and Thompson, Norman D., to Towmotor Corporation. Container handling attachment. 3,982,645, Cl. 214-620.000.

Bristol-Myers Company: *See*—
Beverung, Warren Neil; and Partyka, Richard Anthony, 3,983,120.
Beverung, Warren Neil, Jr.; Partyka, Richard Anthony; and Jenks, Thomas Andrew, 3,983,119.

British Petroleum Company Limited, The: *See*—
Barrett, Joseph Edward, 3,983,205.

Britt, Edward J.: *See*—
Rasor, Ned S.; and Britt, Edward J., 3,983,423.

Brown, Harold J., to Lorain Products Corporation. Controlled reactance regulator circuit. 3,983,469, Cl. 321-9.00R.

Brown, Patrick R.: *See*—
Haldimann, Hans Rudolf; Buehler, Max; and Brown, Patrick R., 3,982,639.

Brown, Richard E.; Puchalski, Chester; and Shavel, John, Jr., to Warner-Lambert Company. Substituted benzopyranopyridine. 3,983,110, Cl. 260-247.20B.

Browning Arms Company: *See*—
Browning, Val A., 3,982,468.

Browning, Howard Edmund, to Imperial Chemical Industries Limited. Method for the production of polytetrafluoroethylene moulding powders. 3,983,200, Cl. 264-117.000.

Browning, Val A., to Browning Arms Company. Piston and obturator assembly for autoloading firearms. 3,982,468, Cl. 89-193.000.

Brumfield, Walter T.; Baker, Robert C.; and Brann, Theodore L., to Square D Company. Auxiliary gutter with lay-in end walls and universal cover. 3,983,311, Cl. 174-50.000.

Brunner, Heinz: *See*—
Bernasconi, Felix; Brunner, Heinz; and Meylan, Pierre, 3,982,849.

Brunner, Ronald H. M.; Jensen, Billy M.; and Wong, Lang S., to China Bazaar, Inc. Automatic fortune cookie folding method. 3,983,262, Cl. 426-502.000.

Brute, Inc.: *See*—
Burchett, Lawrence; and Adams, Vernon, 3,982,695.

Bublitz, Arthur T.; and Holfien, Eugene F., to Reliance Electric Company. Adjustable valve assembly. 3,982,726, Cl. 251-133.000.

Bucalo, Louis. Dynamic implants and method for implanting the same. 3,982,537, Cl. 128-260.000.

Bucci, Archangelo Joseph, to Lawrence Peska Associates, Inc., a part interest. Combination lantern. 3,983,384, Cl. 240-37.000.

Buchalter, Gilbert. Stable dialdehyde-containing disinfectant compositions and methods. 3,983,252, Cl. 424-333.000.

Buchel, Karl Heinz; Plempel, Manfred; and Kramer, Wolfgang, to Bayer Aktiengesellschaft. Compositions and method for treating mycoses. 3,983,240, Cl. 424-269.000.

Buchoff, Leonard S.; Kosiarski, Joseph P.; and Dalamangas, Chris A., to Technical Wire Products, Inc. Method of making electrically conductive connector. 3,982,320, Cl. 29-630.00R.

Buckle, Derek Richard; Smith, Harry; and Cantello, Barrie Christian Charles, to Beecham Group Limited. Substituted ω-nitroacetophenones. 3,983,156, Cl. 260-471.00R.

Buckman, Thomas P. Intravenous administration system. 3,982,534, Cl. 128-214.00C.

Bud Antle, Inc.: *See*—
Abey, John A., 3,982,875.

Budd Company, The: *See*—
Leavesley, George W.; and Cleavenger, Dever C., 3,982,418.

Budge, James D. Wind-propelled skateboard. 3,982,766, Cl. 280-1.000.

Budrys, Vitolis: *See*—
Wilson, Phillip M.; Erickson, John W.; Nelson, Charles C.; and Budrys, Vitolis, 3,982,589.

Buehler, Max: *See*—
Haldimann, Hans Rudolf; Buehler, Max; and Brown, Patrick R., 3,982,639.

Buffington, Donald R., to Anning-Johnston Company. Wall system having detachable wall panels and a method of assembling same. 3,982,370, Cl. 52-481.000.

Bundy, Gordon L., to Upjohn Company, The. 4-Oxa phenyl-substituted PGF compounds. 3,983,157, Cl. 260-473.00A.

Bundy, Gordon L., to Upjohn Company, The. 3-Oxa phenyl-substituted PGA compounds. 3,983,158, Cl. 260-473.00A.

Burchett, Lawrence; and Adams, Vernon, to Brute, Inc. Steam producing device. 3,982,695, Cl. 239-136.000.

Burgin, Gerard; and Klingler, Adolf. Chair or armchair. 3,982,786, Cl. 297-284.000.

Burnham, Peter B., to Harsco Corporation. Dock leveling apparatus. 3,982,295, Cl. 14-71.500.

Burnham, Robert D.: *See*—
Scifres, Donald R.; and Burnham, Robert D., 3,983,509.

Burns Foods Limited: *See*—
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Burroughs Corporation: *See*—
Faber, Ulbe; Davis, Robert L.; Fisher, David A.; and McGonagle, Joseph D., 3,983,539.
Faber, Ulbe; Davis, Robert L.; Fisher, David A.; and McGonagle, Joseph D., 3,983,541.
Lacher, William Arthur, 3,983,324.
Maitrias, Gerard, 3,983,468.

Bury, Fred, to Singer Company, The. Yarn jerker system for tufting machines. 3,982,490, Cl. 112-79.00R.

Bush, John A.; Lance, Drew R.; and Altstatt, John E., to California Microwave, Inc. Frequency-modulation demodulator threshold extension device. 3,983,488, Cl. 325-346.000.

Bussi, Giancarlo; and Baradel, Pierpaolo, to Aquila S.p.A. Orthophosphoric esters and process for producing same. 3,983,098, Cl. 260-963.000.

Buttner, Gerhard; Klauke, Erich; and Sasse, Klaus, to Bayer Aktiengesellschaft. Bis-halogen carbonyl anilines and process for the production. 3,983,172, Cl. 260-544.00C.

Byrd, William J., to Salk Institute for Biological Studies, The. Multiple sample pipetting apparatus. 3,982,438, Cl. 73-425.600.

Cabaraux, Emile; and Schoberle, Robert, to Solvay & Cie. Electrolytic cells with vertical electrodes. 3,983,026, Cl. 204-258.000.

Cabot Corporation: *See*—
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- De Statt der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie: *See—*
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- De Anda, Nicholas; and Dyer, Robert Ford, to Mattel, Inc. Tape fastening system. 3,982,844, Cl. 403-211.000.
- Dear, Peter Adrian; and Pelc, Wladyslaw, to Thorn Electrical Industries Limited. Discharge lamp ballast circuits. 3,983,449, Cl. 315-244.000.
- DeCaro, Aristide R., to Westinghouse Electric Corporation. Incandescent lamp having a halogen-containing atmosphere and an integral reflector of non-reactive specular metal. 3,983,513, Cl. 313-113.000.
- Decker, John M. Apparatus for working and testing solid elastomers. 3,982,427, Cl. 73-101.000.
- Dedona, Francis A.: *See—*
  - Newman, Frederick S.; Hartman, John T.; and Dedona, Francis A., 3,983,014.
- Deere & Company: *See—*
  - Brass, Ronald William, 3,982,670.
  - Herscovici, Saul; and Anderson, Lawrence Vernon, 3,982,599.
  - MacGregor, William Roderick; and Spicer, Dalton Harold, 3,982,643.
  - Mott, Roger Eugene, 3,982,383.
  - Rohweder, Glen Willard; and Hengen, Edward John, 3,982,384.
  - Williams, Lary Lynn, 3,982,601.
- Deering Milliken Research Corporation: *See—*
  - Gilpatrick, Michael William, 3,982,309.
  - Gordon, David Edward, 3,982,977.
- De Keermaecker, Guido: *See—*
  - Clabburn, Robin James T.; Pettit, Maurice Raymond; and De Keermaecker, Guido, 3,982,564.
- de Latour, Christopher, to Massachusetts Institute of Technology. Process for removing dissolved phosphorus from water magnetically. 3,983,033, Cl. 210-49.000.
- DeLeon, Isrrael M.; and Thompson, Edward D., to Owens-Illinois, Inc. Thermoplastic injection runner transfer system. 3,982,632, Cl. 209-75.000.
- Delerue, Dominique. Winding machines having independent spindles. 3,982,706, Cl. 242-18.100.
- Delkor Industries, Inc.: *See—*
  - Klund, Robert N., 3,982,474.
- Demag Aktiengesellschaft: *See—*
  - Reth, Erich; Varwig, Karl-Heinz; and Backhaus, Karl-Heinz, 3,982,439.
- De Mayo, William D.: *See—*
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- Demessemaekers, Emiel Mathilde Anna Alfons: *See—*
  - Spadini, Gianfranco Luigi; and Demessemaekers, Emiel Mathilde Anna Alfons, 3,983,079.
- de Moreau, Guy. Apparatus for constructing structures, particularly for children's playgrounds and gardens. 3,982,754, Cl. 272-113.000.
- Denman, Dennis, to Matthias Spencer & Sons Limited. Coupling socket with releasable tool retainer. 3,982,842, Cl. 403-20.000.
- Dennison, Richard Thomas; Freeman, Leo Boyes; Kelly, Helen Janet; and Liu, Peter Tsung-Shih, to International Business Machines Corporation. Split memory array sharing same sensing and bit decode circuitry. 3,983,544, Cl. 340-173.00R.
- Denny, Dann W., to General Electric Company. Electrical switch. 3,983,349, Cl. 200-339.000.
- Dentsply Research & Development Corporation: *See—*
  - Folkenroth, Richard P.; Mader, William G.; and Williams, Ralph J., 3,982,718.
- Denver Plastics, Inc.: *See—*
  - Wanderer, Herbert J., 3,982,649.
- Denzel, Theodor: *See—*
  - Hoehn, Hans; and Denzel, Theodor, 3,983,128.
- DePas, Laddie; and Wheeler, Stanley T., to W. M. Cissell Manufacturing Company. Pick off device. 3,982,623, Cl. 198-362.000.
- De Pauw, Richard A.; and Gustafson, David J., to International Harvester Company. Helical element rotor-axial flow combine. 3,982,549, Cl. 130-27.00T.
- DeRoo, Paul W., Sr. Method of manufacturing books. 3,982,743, Cl. 270-1.000.
- Desaules, Jean-Jacques. Watches, and a method of making them. 3,982,386, Cl. 58-1.00R.
- DeSoto, Inc.: *See—*
  - Sekmakas, Kazys, 3,983,059.
- Det Norske Zinkkompani A/S: *See—*
  - Steintveit, Georg, 3,983,210.
- Deutsch, Ernst; and Reifenscheid, Bernhard, to Chemische Werke Huls Aktiengesellschaft. Modified structure for lining generally curved surfaces. 3,982,361, Cl. 52-80.000.
- Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
  - Janzon, Karlheinz; Haschke, Heinz; and Muller, Rudolf, 3,983,223.
  - Troger, Jurgen; Weiberg, Otto; and Weigert, Wolfgang, 3,983,131.
- Deutsche Vergaser GmbH & Co. Kommanditgesellschaft: *See—*
  - Hartel, Gunter, 3,982,394.
- Devoe, Donald R., to Leisure Technology, Inc. Jar filling funnel with level indicia. 3,982,570, Cl. 141-95.000.
- DeVogelaere, George E. Cantilevered pellet backstop. 3,982,761, Cl. 273-102.400.
- de Zabala, Edward Francis: *See—*
  - Adams, Jim Mills; and de Zabala, Edward Francis, 3,982,865.
- Dhawan, Bhola Nath: *See—*
  - Murthi, Varanasi Aruna; Jain, Padam Chand; Sharma, Jitendra Nath; Srimal, Rikhab Chand; Dhawan, Bhola Nath; and Anand, Nitya, 3,983,121.
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  - Nielinger, Werner; Dhein, Rolf; Haberland, Ulrich; Michael, Dietrich; and Hermann, Karl-Heinz, 3,983,306.
- Diamond, Julius; and Douglas, George H., to William H. Rorer, Inc. Ethynylindenyl compounds and derivatives thereof used in the treatment of pain, fever and inflammation. 3,983,253, Cl. 424-340.000.
- Dibert, Fred. Ventilating apparatus for heat transfer systems. 3,982,560, Cl. 137-527.800.
- Dick, G. John, to United States of America, Navy. Superconducting apparatus for generating high frequency microwaves. 3,983,470, Cl. 321-60.000.
- Dick, Perry J.; and Dick, Perry J., Jr., to Trumbull Corporation. Material handling apparatus. 3,982,338, Cl. 37-102.000.
- Dick, Perry J., Jr.: *See—*
  - Dick, Perry J.; and Dick, Perry J., Jr., 3,982,338.
- Dickens, Elmer D., Jr., to B. F. Goodrich Company, The. Smoke retardant vinyl chloride and vinylidene chloride polymer compositions. 3,983,086, Cl. 260-23.0XA.
- Dieball, Walter L. Electrical game apparatus. 3,982,764, Cl. 273-135.00A.
- Dierks, James E.: *See—*
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- Dieterich, Dieter; and Markusch, Peter, to Bayer Aktiengesellschaft. Inorganic-organic composition. 3,983,081, Cl. 260-2.5AJ.
- Dietz, Paul L.: *See—*
  - Hoekje, Howard H.; and Dietz, Paul L., 3,982,960.
- Diggs, Richard E. Heater for orchards and the like. 3,982,524, Cl. 126-59.500.

- Digital Equipment Corporation: *See—*
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- Dill, Douglas W., to S. C. Johnson & Son, Inc. Low temperature glazing composition. 3,983,060, Cl. 260-29.6RW.
- Dillon, Leo H.: *See—*
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- Dimitri, Dimitri S.: *See—*
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- Dins, Carl R.: *See—*
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- Djokic, Slobodan: *See—*
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- Doades, William E.; Short, James E., Jr.; and Whorrall, Karen S., to United States of America, Navy. Method for disposal of tracer bullets. 3,982,930, Cl. 75-101.00R.
- Doane, Russell C.: *See—*
  - Leis, Michael; and Doane, Russell C., 3,983,451.
- Dockery, Benjamin F.; and Mason, Jack H. Apparatus for preparing furniture backs and cushions for tufting. 3,982,845, Cl. 408-1.00R.
- Doherty, William H., to Bell Telephone Laboratories, Incorporated. Delayed pulse transmission systems. 3,983,482, Cl. 325-6.000.
- Dojyo, Satoshi; and Yoshino, Tsutomu, to Toyo Kogyo Co., Ltd. Honing machine for finishing trochoidal bore of rotor housing of rotary engine. 3,982,356, Cl. 51-34.00J.
- Donahue, Paul E.: *See—*
  - Williams, Frank J., III; and Donahue, Paul E., 3,983,093.
- Donovan, John S. Shift control system for multi-stage transmission. 3,983,405, Cl. 307-10.00R.
- Donovan, William F., to United States of America, Army. Rotating cassette holder. 3,983,400, Cl. 250-468.000.
- Dorfman, Edwin; Hindersinn, Raymond R.; and Schwartz, Willis T., Jr., to Hooker Chemicals & Plastics Corporation. Halogen containing polyester resins having improved smoke-resistance. 3,983,185, Cl. 260-863.000.
- Dorr-Oliver Incorporated: *See—*
  - Steever, Andrew Beaumont; and Jukkola, Walfred Wilhelm, 3,982,901.
- Dorris, John P., to DDK Investments, Ltd. Frangible insert. 3,982,363, Cl. 52-98.000.
- Dougherty, Harold F. Method and apparatus for drying grain. 3,982,329, Cl. 34-22.000.
- Douglas, George H.: *See—*
  - Diamond, Julius; and Douglas, George H., 3,983,253.
- Dow Chemical Company, The: *See—*
  - Abdallah, Abdulmuniem H.; and Shea, Philip J., 3,983,250.
  - Bashaw, Robert Niles; and Atkins, Bobby Leroy, 3,983,095.
  - Gray, Charles H., 3,983,196.
  - Najvar, Daniel J.; and Hawkins, Jerry M., 3,983,167.
  - Olstowski, Franciszek, 3,983,063.
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  - Miyahara, Kingo, 3,982,880.
- Downer, John Douglas: *See—*
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- Draganov, Samuel M. Fire-retardant composition and process of producing same. 3,983,040, Cl. 252-8.100.
- Drennhaus, Alfons: *See—*
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- Dresser Industries, Inc.: *See—*
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- Drioton, Guy: *See—*
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- Dual Fuel Systems, Inc.: *See—*
  - Abernathy, Kenneth T., 3,982,516.
- Duenke, Milton J. Match book. 3,982,629, Cl. 206-106.000.
- Dufour, Claude. Aryloxy pyridine carboxylic-4-acids. 3,983,126, Cl. 260-295.00R.
- Dumbaugh, William H., Jr., to Corning Glass Works. Infrared detection system and windows used therein. 3,982,952, Cl. 106-47.00Q.
- Duncan, Eugene F., to Cutler-Hammer, Inc. Limit switch operating shaft return spring damping device. 3,983,343, Cl. 200-47.000.
- Dunlop, Eric Hutton: *See—*
  - Courtney, James McNiven; Gilchrist, Thomas; and Dunlop, Eric Hutton, 3,983,053.
- Dunlop Limited: *See—*
  - Wild, Hiram Leslie, 3,982,578.
- Dunn, Neil C.: *See—*
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- Du Pont de Nemours, E. I., and Company: *See—*
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- Dyck, Manfred, to Johnson & Johnson. Device for everting a probe into a body cavity. 3,982,544, Cl. 128-349.00R.
- Dyer, Robert Ford: *See—*
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- E. R. Squibb & Sons, Inc.: *See—*
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  - Krapcho, John; and Turk, Chester F., 3,983,106.
  - Narayanan, Venkatachala Lakshmi; and Haugwitz, Rudiger D., 3,983,130.
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- Eastech, Inc.: *See—*
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- Eastland, Bernard J., to Fusion Systems Corporation. Non-symmetrical reflector for ultraviolet curing. 3,983,039, Cl. 250-492.00R.
- Eastman Kodak Company: *See—*
  - Chapman, Derek D., 3,983,288.
  - Goodhue, Charles T.; Risley, Hugh A.; Snoke, Roy E.; and Underwood, Gary M., 3,983,005.
  - Kindig, Guilford E.; and Dierks, James E., 3,983,567.
  - Korosi, Matyas, 3,982,932.
- Eaton Corporation: *See—*
  - Bradshaw, Cyril E., 3,982,515.
- Eaton, David L.; and Messing, Ralph A., to Corning Glass Works. Immobilized glucose isomerase. 3,982,997, Cl. 195-31.00F.
- Ebauches S.A.: *See—*
  - Luscher, Jakob; and Rusznyak, Andreas, 3,983,411.
- Ebauches Tavannes SA: *See—*
  - Guyot, Charles; and Muller, Jacques, 3,982,388.
- Eberle, William J., to General Battery Corporation. Apparatus and method for handling and stacking battery plates and the like. 3,982,624, Cl. 198-486.000.
- Eckels, Robert E. Non-expendable positioning frame for multiple explosive charges. 3,982,486, Cl. 102-24.0HC.
- Economics Laboratory, Inc.: *See—*
  - Kleimola, David L.; Nystuen, Marcus I.; and Nystuen, David L., 3,982,666.
- Edel, William A.; and Regh, Joseph, to International Business Machines Corporation. Compensation of autodoping in the manufacture of integrated circuits. 3,982,974, Cl. 148-175.000.
- Edwards, Melvin R.: *See—*
  - Tucker, Walter J.; Edwards, Melvin R.; and Tucker, Richard J., 3,982,781.
- Eggers, James W. Injection molding apparatus with alternatively shuttled mold sections. 3,982,869, Cl. 425-246.000.
- Ehrreich, Stewart J.; and Zitowitz, Lester, to Science Union et Cie Societe Francaise de Recherche Medical. Method for treating angina pectoris with certain N-arylsulfonyl-N'(aza-3-bicycloalkyl) ureas. 3,983,249, Cl. 424-321.000.
- Eilers, Kenneth L.; and Kopacki, Adam F., to Stauffer Chemical Company. Process for preparing rigid PVC formulations. 3,983,186, Cl 260-876.00R.
- Eisenbach, Kurt, to Rheinische Chamotte und Dinas-Werke. Apparatus for making plate elements. 3,982,876, Cl. 425-501.000.
- Ekenstam, Bo Thuresson af: *See—*
  - Brattsand, Ralph Lennart; Ekenstam, Bo Thuresson af; Claeson, Karl Goran; and Thalen, Bror Arne, 3,983,233.
- Elbel, Karl; and Wolfinger, Kurt, to ROC A.G. Abrasive member of bonded aggregates in an elastomeric matrix. 3,982,359, Cl. 51-295.000.
- Elcik, Robert G., to Stauffer Chemical Company. Fire retardant polyvinyl chloride containing compositions. 3,983,290, Cl. 428-285.000
- Eldridge, John D.; and De Mayo, William D. Cleaning device for cauterizing knives. 3,982,357, Cl. 51-181.00R.
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  - Jones, Ivor Wynn; Robinson, Graham; and Bird, Thomas Lewis, 3,982,957.
- Electron Beam Microfabrication Corporation: *See—*
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- Elliott, Gordon Henry, to Bonded Fibre Fabric Limited. Carding machines. 3,983,273, Cl. 427-430.000.
- Ellis, Richard B., Jr.; and Wilson, James R., to General Motors Corporation. Rotary selector switch. 3,983,352, Cl. 200-11.00J.
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- Ellsworth, Arthur C.; and Carlin, William W., to PPG Industries, Inc. Method of preparing chromium. 3,983,016, Cl. 204-89.000.
- Elrick, Donald E.; and Gilbert, Harry, to Hercules Incorporated. Propellants having improved resistance to oxidative hardening. 3,982,975, Cl. 149-19.900.
- Emco Wheaton Inc.: *See—*
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- Emerson Electric Co.: *See—*
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- Emerson Electrical Co.: *See—*
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Endo Laboratories, Inc.: *See—*
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Endzweig, Abraham. Connecting apparatus for frame members. 3,982,841, Cl. 403-19.000.

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Esser, Hans-Helmut. Multi-functional furniture. 3,982,784, Cl. 297-1.000.

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Etter, Berwyn E. Method of flame cutting. 3,982,883, Cl. 432-13.000.

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Evans, Arnold D. Loudspeaker cabinet having an integrally constructed horn. 3,982,607, Cl. 181-152.000.

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Faber, Ulbe; Davis, Robert L.; Fisher, David A.; and McGonagle, Joseph D., to Burroughs Corporation. Polymorphic programmable units employing plural levels of sub-instruction sets. 3,983,539, Cl. 340-172.500.

Faber, Ulbe; Davis, Robert L.; Fisher, David A.; and McGonagle, Joseph D., to Burroughs Corporation. Polymorphic programmable units employing plural levels of phased sub-instruction sets. 3,983,541, Cl. 340-172.500.

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Roberts, Gregory; and Badertscher, Roger, 3,983,412.
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Fales, Douglas L; and Holl, William H., to General Motors Corporation. Closed loop carburetor air-fuel ratio control. 3,982,517, Cl. 123-122.00D.

Fang, Frank F., to International Business Machines - IBM. Analog waveform transducing circuit. 3,983,419, Cl. 307-277.000.

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Farmer, William Robert. Colorcode speller. 3,982,333, Cl. 35-36.000.

Farmery, Horstine. Applicators of granular materials. 3,982,672, Cl. 222-274.000.

Fattore, Vittorio; and Notari, Bruno, to Snam Progetti S.p.A. Catalytic composition and its applications to the production of unsaturated nitriles and to the oxidation of olefines. 3,983,054, Cl. 252-439.000.

Faulconer, Harry A. Electrical wire connector. 3,983,312, Cl. 174-84.00R.

Faulkner, Duane Harold; Sanford, Steven Douglas; and Chenoweth, Vaughn Charles, to Johns-Manville Corporation. Primary electrode arrangement for high temperature melting furnace. 3,983,309, Cl. 13-6.000.

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Feichtinger, Heinrich, to Leybold-Heraeus-Verwaltung G.m.b.H. Method and apparatus for degassing metallic melts. 3,982,913, Cl. 55-55.000.

Feichtner, John D., to Westinghouse Electric Corporation. Collinear acousto-optical tunable filter and acousto-optically tunable laser. 3,982,817, Cl. 350-149.000.

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Fellwock, Charles G.; and Russell, Charles R., to Whirlpool Corporation. Storage apparatus. 3,982,798, Cl. 312-138.00A.

Felton, George F., Jr., to Sun Oil Company of Pennsylvania. Low smoking lubricating composition for cold heading operations. 3,983,044, Cl. 252-33.600.

Feltrop, Floyd L. Seed planter for individual seeds. 3,982,661, Cl. 221-235.000.

Feng, Bai C.; Flachbart, Richard H.; Fried, Leonard J.; and Levine, Harold A., to International Business Machines Corporation. Lift-off method of fabricating thin films and a structure utilizable as a lift-off mask. 3,982,943, Cl. 96-38.400.

Fenton, David T.; and Swain, Leonard W., to Emco Wheaton Inc. Vapor recovery nozzle with mechanical flow interlock. 3,982,571, Cl. 141-225.000.

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Ferre, Roy E.: *See—*
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Feyrer, Klaus; and Mueller, Wolfgang P., to R. Stahl Aufzuege GmbH. Clamping means for elevator guide rails and the like. 3,982,692, Cl. 238-349.000.

Fickelscher, Kurt Gerhard; and Anders, Christian Michael, to Balcke-Durr Aktiengesellschaft. Piston pump. 3,982,765, Cl. 277-53.000.

Fife, Rodger L., to Georgia-Pacific Corporation. Preparation of a wax containing paper sheet. 3,982,993, Cl. 162-158.000.

Filhaber, Ilmar J., to Fargo Mfg. Company, Inc. Dead front multi-tap terminal connector casing. 3,983,314, Cl. 174-138.00F.

Filippi, Ernest A.: *See—*
Smith, Matthew S.; and Filippi, Ernest A., 3,982,467.

Findley, John Eugene: *See—*
Yen, Teh Fu; Appleman, Milo Don; and Findley, John Eugene, 3,982,995.

Finger, John F., to Sioux Steam Cleaner Corporation. Seal in pump piston intermittently permitting conduction of pump fluid. 3,982,471, Cl. 92-156.000.

Finike Italiana Marposs-Soc. In Accomandita Semplice di Mario Possati & C.: *See—*
Pozzetti, Mario, 3,983,376.

Finzer, John O. Tubular roller sleeve. 3,982,312, Cl. 29-130.000.

Firehammer, John D.; and Gruebele, Dale W., to National Computer Systems, Inc. Apparatus utilizing analog-to-digital conversion in the photoelectric reading of documents. 3,983,364, Cl. 235-61.60E.

Fischer, Horst, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Connection between a socket and a liquid cooled cable. 3,983,310, Cl. 174-19.000.

Fisher, David A.: *See—*
Faber, Ulbe; Davis, Robert L.; Fisher, David A.; and McGonagle, Joseph D., 3,983,539.
Faber, Ulbe; Davis, Robert L.; Fisher, David A.; and McGonagle, Joseph D., 3,983,541.

Fisher, Reed Edward; and Humes, Robert William, to Bell Telephone Laboratories, Incorporated. Frequency scan and lock circuit for mobile radio channel selection. 3,983,492, Cl. 325-468.000.

Fitch, Troy W., to Eagle Custom Manufacturing Company. Power take-off unit. 3,982,443, Cl. 74-15.880.

Fitzpatrick, Joseph W.: *See—*
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Fives-Cail Babcock: *See—*
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Flachbart, Richard H.: *See—*
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Flasck, Richard A.: *See—*
Rockstad, Howard K.; and Flasck, Richard A., 3,983,076.

Flatau, Abraham; Olson, Donald N.; and Miller, Miles C. Kinetic energy ring projectile. 3,982,489, Cl. 102-92.400.

Fleer, Ernst Otto, to Siemens Aktiengesellschaft. Arrangement for the switching on-and-off of a pressurized medium flow. 3,982,322, Cl. 32-22.000.

Fleer, Thomas P.: *See—*
Love, John J.; and Fleer, Thomas P., 3,982,523.

Fleischer, Friedrich: *See—*
Graeber, August; Fleischer, Friedrich; and Werner, Gerhard, 3,982,873.

Fleming, Robert W.: *See—*
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FMC Corporation: *See—*
Gibbons, Loren Kenneth; Peake, Clinton Joseph; and Harnish, Wayne Nelson, 3,983,246.
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Focke, Heinz, to Focke & Pfuhl. Process and a device for wrapping articles, more particularly, groups of cigarettes. 3,982,375, Cl. 53-32.000.

Focke & Pfuhl: *See—*
Focke, Heinz, 3,982,375.

Folkenroth, Richard P.; Mader, William G.; and Williams, Ralph J., to Dentsply Research & Development Corporation. Operatory chair operating mechanism. 3,982,718, Cl. 248-421.000.

Ford, Freeman A.; and Rhodes, Richard O., to Fafco Incorporated. Pinch valve and method for fabrication. 3,982,723, Cl. 251-5.000.

Ford, John L.; and Serafin, John. Electroresectroscope and method of laparoscopic tubal sterilization. 3,982,542, Cl. 128-303.140.

Ford, John L. Medical stirrups. 3,982,742, Cl. 269-328.000.

Ford, Karl L., to Ball Corporation. Quick cooling pressure cooker system. 3,983,260, Cl. 426-403.000.

Ford Motor Company: *See—*
Colovas, Denny D.; Logan, John S.; and Mniece, Roland L., 3,982,794.
Goszyk, Kurt A.; and Schaefer, Richard A., 3,983,533.
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Formica Corporation: *See—*
Power, George Edward; and Wulfekotter, Dudley, 3,983,307.

Fornells, Gilbert P. Dismantable and directable rail or balustrade. 3,982,735, Cl. 256-59.000.

Forrester, Edward H.: *See—*
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Forteau, Lloyd H., to Standard Folding Cartons, Inc. Carton with pouring spout. 3,982,683, Cl. 229-17.00R.

Foster, Elton Gordon. Swimming pool cover. 3,982,286, Cl. 4-172.140.

Fournitures Internationales de Materieles Electroniques: *See—*
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Francis, Marion David: *See—*
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Frankl, Gerald P. Conversion of animal waste. 3,982,499, Cl. 119-16.000.

Franz, William F.: *See—*
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Fraula, Louis F., to Hobart Corporation. Thermal protection for dishwashing machine. 3,982,552, Cl. 134-57.00D.

Freed, Larry E.: *See—*
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Freeman, Leo Boyes: *See—*
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Freitag, Dieter: *See—*
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Fremion, Edwin A., to Westvaco Corporation. Corner post. 3,982,682, Cl. 229-14.00C.

Frenken, Hans; Schindler, Georg; and Friedsam, Josef, to AGFA-Gevaert, A.G. Out-flow metering device. 3,982,665, Cl. 222-67.000.

Fricke, William C., to Sanders Associates, Inc. Normal incidence face pumped disc laser. 3,983,511, Cl. 331-94.50P.

Friebel, Eberhard, to Siemens Aktiengesellschaft. Fluid-volume measuring apparatus. 3,982,436, Cl. 73-233.000.

Fried, Leonard J.: *See—*
Feng, Bai C.; Flachbart, Richard H.; Fried, Leonard J.; and Levine, Harold A., 3,982,943.

Friedsam, Josef: *See—*
Frenken, Hans; Schindler, Georg; and Friedsam, Josef, 3,982,665.

Friend, John H. Device for draining a body cavity. 3,982,546, Cl. 128-350.00R.

Frieser, Rudolf G.; Powell, Jimmie L.; and Tummala, Rao R., to International Business Machines Corporation. Process for preparing a copper containing sealing glass. 3,982,918, Cl. 65-66.000.

Fuji Photo Film Co., Ltd.: *See—*
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Maekawa, Yukio; and Sakanoue, Seiki, 3,982,946.
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Fukai, Masakazu: *See—*
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Fukuda, Heijiro. Laminated resinoid wheels, method for continuously producing same and apparatus for use in the method. 3,982,358, Cl. 51-207.000.

Fukui, Norio: *See—*
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Fuller, Peter G.; and Stoeckler, Hans A., to Texas Instruments Incorporated. Process for making ceramic resistor materials. 3,983,077, Cl. 252-520.000.

Fullerton, Hodgart & Barclay Limited: *See—*
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Funk, Erwin D., to Kamyr, Inc. Process and apparatus for conveying large particle mined coal, oil shale, ore, etc. from underground mines or from strip mines via a pipeline. 3,982,789, Cl. 302-14.000.

Furbee, Harold D.: *See—*
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Furukawa Electric Co., Ltd., The: *See—*
Furuto, Yoshio; Suzuki, Takuya; Ikeda, Masaru; Tanaka, Yasuzo; Meguro, Shinichiro; and Miura, Takeshi, 3,983,521.

Furuto, Seiji. Car lifting apparatus. 3,982,636, Cl. 214-1.00A.

Furuto, Yoshio; Suzuki, Takuya; Ikeda, Masaru; Tanaka, Yasuzo; Meguro, Shinichiro; and Miura, Takeshi, to Furukawa Electric Co., Ltd., The. Flexible superconducting composite compound wires. 3,983,521, Cl. 335-216.000.

Fusion Systems Corporation: *See—*
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Futatsuya, Fumio: *See—*
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Gali Mallofre, Salvador. Washing machines for printing or processing tables. 3,982,485, Cl. 101-425.000.

Galin, Harry E., to Universal Vendors, Inc. Vending machine. 3,982,621, Cl. 194-1.00G.

Gambs, Paul Frederic Marie. Opthalmic instrument. 3,982,827, Cl. 351-14.000.

Gammie, Joseph E.; and Wanlass, Bert R., to General Motors Corporation. Rotary electric switch. 3,983,354, Cl. 200-155.00R.

Gannett, Danforth K., to Bell Telephone Laboratories, Incorporated. Key pulse generator for secrecy signalling circuit. 3,983,326, Cl. 179-1.50R.

Gannett, Danforth K.; and Norwine, Andrew C., to Bell Telephone Laboratories, Incorporated. Electrical signaling. 3,983,327, Cl. 179-1.50R.

Gannon, Jack Edward, to Girling Limited. Disc brake torque regulating structure. 3,982,611, Cl. 188-71.100.

Garcea, Giampaolo; Surace, Filippo; and Rogora, Edgardo, to Alfa Romeo S.p.A. Device for automatically adjusting the spark timing in an electronic ignition system for an explosion engine. 3,982,512, Cl. 123-117.00R.

Garcia Rodenas, Manuel. Etui for jewelry. 3,982,628, Cl. 206-45.140.

Garland, Carl Curtis: *See—*
Storm, Donald William; and Garland, Carl Curtis, 3,982,790.

Garnier, Marcel, to Micro-Mega S.A. Package for dental root canal and the like instruments. 3,982,630, Cl. 206-369.000.

Garriott, Eugene L. Snow moving apparatus. 3,982,337, Cl. 37-43.00L.

Gaskin, Graham Edward, to Ransomes Sims & Jefferies Limited. Reach trucks. 3,982,646, Cl. 214-670.000.

Gates Rubber Company, The: *See—*
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Gearhart, Robert E., to General Electric Company. Tapering electrostatic shields for disc windings. 3,983,522, Cl. 336-70.000.
Geck, Gunther; and Langhammer, Hans Jurgen, to Klockner-Werke AG. Method for melting charges. 3,982,926, Cl. 75-48.000.
Geckle, Raymond James: *See—*
  Kahn, David; and Geckle, Raymond James, 3,983,074.
Geczy, Bela A.: *See—*
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  Tschirky, John E.; and Geczy, Bela A., 3,982,859.
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General Company, Ltd.: *See—*
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Getchell, Nelson F.; Hollies, Norman R. S.; and Stanton, Samuel S., to Cotton Incorporated. Apparatus for the continuous treatment of an advancing web. 3,982,410, Cl. 68-5.00E.
Getman, Alvin Dean. Dolly. 3,982,768, Cl. 280-79.100.
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Gibbons, Loren Kenneth; Peake, Clinton Joseph; and Harnish, Wayne Nelson, to FMC Corporation. N-(sulfonyloxy) benzimidoyl halides as bactericidal or fungicidal agents. 3,983,246, Cl. 424-303.000.
Gibson, Myron R., to Caterpillar Tractor Co. Rotor construction for slant axis rotary mechanisms. 3,982,861, Cl. 418-53.000.
Gibson, Robert C.: *See—*
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Giliberty, Richard P. Hip-joint prosthesis device. 3,982,281, Cl. 3-1.913.
Gilli, Paul Viktor; and Beckmann, Georg, to Siempelkamp Giesserei KG. Steam-type peak-power generating system. 3,982,379, Cl. 60-659.000.
Gilmore, Guy T., to Multi-Fab, Inc. Facing tool. 3,982,451, Cl. 82-4.00C.
Gilpatrick, Michael William, to Deering Milliken Research Corporation. Method of providing cut loop pile fabrics. 3,982,309, Cl. 26-9.000.
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Gleason, Paul W.; and Lehrke, Kenneth E., to Graco Inc. Tire filling apparatus and method. 3,982,569, Cl. 141-5.000.
Glindmeyer, Friedrich; Hennenberg, Wilhelm Friedrich; and Limpens, Karl, to William Prym-Werke KG. Method and apparatus of making a woven zipper. 3,982,566, Cl. 139-35.000.
Glorioso, Charles A., to Teletype Corporation. Astigmatizer for laser recording and reproducing system. 3,983,317, Cl. 178-6.60R.
Glory Kogyo Kabushiki Kaisha: *See—*
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Godel, Albert, deceased (by Aubron, Yves, administrator), to Fives-Cail Babcock. Fluidized bed system. 3,982,884, Cl. 432-14.000.
Goebel, Ronald C. Forming apparatus. 3,982,990, Cl. 156-443.000.
Goffe, William L., to Xerox Corporation. Deformation imaging system. 3,982,936, Cl. 96-1.100.
Goldring, John E., to Jegco, Inc. Water conserving device for flushing apparatus. 3,982,283, Cl. 4-67.00A.
Goode, John Park, to ESB Incorporated. Electric power distribution system including a Master Annunicator and Central Control Unit. 3,983,554, Cl. 340-413.000.
Goodhue, Charles T.; Risley, Hugh A.; Snoke, Roy E.; and Underwood, Gary M., to Eastman Kodak Company. Integral element for the analysis of cholesterol. 3,983,005, Cl. 195-103.50R.
Goodman, James R. Vehicle alarm. 3,983,534, Cl. 340-63.000.
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Gordon, Walter R., to Grumman American Aviation Corporation. Jet noise suppressor nozzle. 3,982,696, Cl. 239-265.170.
Gorman, Jonas, to Lawrence Peska Associates, Inc., a part interest. Automobile anti-theft device. 3,982,602, Cl. 180-114.000.
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Gorton, Howard Bryon; and Miller, Warren Hall, to Ajax Hardware Corporation. Rotary-position catch for rotatable corner shelf units. 3,982,800, Cl. 312-305.000.
Goss, Stanley B.; Nagel, Martin J.; and Nilssen, Ole K., to Tenna Corporation. Aural-visual product display. 3,983,550, Cl. 340-221.000.

Goswami, Jagadish C., to Stauffer Chemical Company. Method of making plastic foam laminates and product formed thereby. 3,983,294, Cl. 428-310.000.
Goszyk, Kurt A.; and Schaefer, Richard A., to Ford Motor Company. Motor vehicle fuel economy indicating circuit. 3,983,533, Cl. 340-52.00R.
Gottsegen, Robert S. Plastic case system. 3,982,654, Cl. 220-21.000.
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Grant, Geoffrey F. Tennis court line monitoring apparatus. 3,982,759, Cl. 273-31.000.
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Graphic Controls Corporation: *See—*
  Hubbard, James R.; and Erdman, Charles A., 3,983,569.
Grard, Charles, to Rhone-Poulenc S.A. Process for the preparation of unsaturated ketones. 3,983,177, Cl. 260-593.00R.
Grasso, Albert P., to United Technologies Corporation. Fuel cell stack with an integral ejector for reactant gas recirculation. 3,982,961, Cl. 429-34.000.
Graubremse GmbH: *See—*
  Gruner, Hans, 3,982,795.
Graves, Charles Berger; Richnak, Paul J.; Wilkinson, Robert M.; and Wright, Robert G., to Alton Box Board Company. Paperboard hogshead. 3,982,681, Cl. 229-4.500.
Gray, Charles H., to Dow Chemical Company, The. Method of injection molding structural foam having accurate mold surface reproductions. 3,983,196, Cl. 264-45.500.
Gray, Frederick W., to Colgate-Palmolive Company. Activated peroxy bleach composition. 3,982,892, Cl. 8-111.000.
Grebner, Gary L.: *See—*
  Abraham, John C.; Grebner, Gary L.; Brandon, William D.; and Jero, John, 3,982,983.
Green, Ethan Robert: *See—*
  Moe, William West; Lotz, Robert William; Green, Ethan Robert; and Fazio, Rodolfo, 3,983,319.
Green, Harold; and Halasz, Stephen J., to Green, Harold. Method and means for enhancing prints for direct comparison. 3,982,836, Cl. 356-119.000.
Grega, Jozsef: *See—*
  Meszaros, Lajos; Grega, Jozsef; Lako, Lajos; Marko, Laszlo; Salamon, Zoltan; Szatmari, Istvan; and Tasi, Laszlo, 3,982,736.
Gribsvad, Jorgen, to Haldor Topsoe A/S. Heat exchange apparatus. 3,982,585, Cl. 165-83.000.
Griffith, Ernest S.; and Davis, William W., to Sperry Rand Corporation. Full-duplex digital transmission line system. 3,983,323, Cl. 178-58.00R.
Grimble, Ralph E., to Westinghouse Electric Corporation. Drift eliminators for evaporative cooling towers. 3,982,914, Cl. 55-257.0QV.
Grinev, Alexei Nikolaevich; Stolyarchuk, Alexandr Alexandrovich; Galenko-Yaroshevsky, Pavel Alexandrovich; Tantsjura, Vladimir Spiridonovich; and Arkhangelskaya, Natalya Vitalievna. Derivatives of 5-hydroxy-6-diloweralkylaminomethyl-benzofurans. 3,983,141, Cl. 260-346.20R.
Grisar, Johann M.; Sill, Arthur D.; and Fleming, Robert W., to Richardson-Merrell Inc. Bis(aminoalkylsulfamoyl)anthraquinone antiviral agents. 3,983,248, Cl. 424-321.000.
Grobe, Wolfgang: *See—*
  Hoger, Karl; and Grobe, Wolfgang, 3,982,885.
Grobey, Paul A. Power cultivator with reciprocating blade. 3,982,593, Cl. 172-40.000.
Groleau, Rodney J.; and Paulson, Donald C., to Control Process, Incorporated. Method of determining molded part profile. 3,982,440, Cl. 73-432.00R.
Gross, Rodney T.: *See—*
  Venal, Wilfredo V.; Klein, H. Joseph; Daniel, Richard R.; and Gross, Rodney T., 3,982,925.
Grosseau, Albert, to Societe Anonyme Automobiles Citroen. Universal joint with assembly feature. 3,982,840, Cl. 403-14.000.
Grosso, Donald S.; and Asmundsson, Einar, to Teleco Inc. Control system for borehole sensor. 3,982,431, Cl. 73-151.000.
Grozier, John David: *See—*
  Koros, Peter J.; and Grozier, John David, 3,982,969.
Gruebele, Dale W.: *See—*
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Gruffaz, Max: *See—*
  Balme, Maurice; and Gruffaz, Max, 3,983,100.
Grumman American Aviation Corporation: *See—*
  Gordon, Walter R., 3,982,696.
Gruner, Hans, to Graubremse GmbH. Multi-circuit air-brake system, in particular for motor vehicles. 3,982,795, Cl. 303-52.000.
Grunwald, Thomas Ludwig: *See—*
  Knorr, Eberhard; Grunwald, Thomas Ludwig; and Oswald, Arno, 3,982,582.
Gruppo Lepetit S.p.A.: *See—*
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  Tarzia, Giorgio; and Panzone, Gianbattista, 3,983,127.
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  Ward, Ronald C.; and Kosten, Richard B., 3,982,809.
  Wedmore, William R.; and Verbeek, Dennis H., 3,983,339.
GTE Laboratories Incorporated: *See—*
  Gladstone, Jerry M., 3,983,493.
GTE Sylvania Incorporated: *See—*
  Siranni, J. Donald; and Smith, Charles W., 3,983,371.
Guadagna, John P.: *See—*
  Gunsagar, Kamleshwar C.; and Guadagna, John P., 3,983,413.
  Stafford, Kenneth R.; and Guadagna, John P., 3,983,414.
Guagliardo, Matthew: *See—*
  Stone, Edward; Zamer, Joseph; and Guagliardo, Matthew, 3,982,986.
Guaglione, Giovanni Paolo, to I-T-E Imperial Corporation. Two-pressure gas circuit breaker with low pressure gas heating. 3,983,346, Cl. 200-148.00R.
Guaglione, Giovanni Paolo; and Tschannen, Christian, to I-T-E Imperial Corporation. Gas-filled high current bushing with forced cooling arrangement. 3,983,353, Cl. 200-148.00R.
Guenette, Jean Guy, to Lawrence Peska Associates, Inc., a part interest. Garbage container unit. 3,982,407, Cl. 62-441.000.
Gugliotta, George, to Automation Systems, Inc. Apparatus for hardware item inspection. 3,983,388, Cl. 250-223.00R.
Gunn, Damon M.,Article sorting apparatus and method. 3,983,366, Cl. 235-61.11R.
Gunsagar, Kamleshwar C.; and Guadagna, John P., to Fairchild Camera and Instrument Corporation. Balanced differential capacitively decoupled charge sensor. 3,983,413, Cl. 307-235.00F.
Gunzinger-Gunzinger, Henri: *See—*
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Gupta, Avinash: *See—*
  Schoenrock, Karlheinz W. R.; Gupta, Avinash; and Rounds, Hugh G., 3,982,956.
Gustafson, David J.: *See—*
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Gustafsson, Rune; Karlsson, Ingemar; and Akesson, Rolf, to Aktiebolaget Svenska Flaktfabriken. Dryer for material coated on two surfaces. 3,982,328, Cl. 34-156.000.
Gutman, David. Clamping device. 3,982,740, Cl. 269-110.000.
Gutman, Mark Borisovich; Kaufman, Vsevolod Grigorievich; Gorodinsky, Mikhail Savelievich; Shakhnes, Jury Alexandrovich; Mezhueva, Larisa Sergeevna; Altukhova, Irina Stepanovna; Kaloshin, Jury Grigorievich, deceased; and by Kaloshina, Albina Adolfovna, administratrix. Method of electrolytic borating of articles. 3,983,013, Cl. 204-39.000.
Guyot, Charles; and Muller, Jacques, to Ebauches Tavannes SA. Digital display mechanism for a time-keeper. 3,982,388, Cl. 58-85.500.
H. B. Fuller Company: *See—*
  Juba, Bernard T.; and Collins, James A., 3,983,206.
H. Krantz, Firma: *See—*
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Haapala, Jalo P. Structural space element. 3,982,366, Cl. 52-220.000.
Habata, Kiichi; Tanaka, Shozo; and Araki, Hitoyuki, to Shinetsu Chemical Company. Process for preparing methyl chloride. 3,983,180, Cl. 260-657.000.
Haberland, Ulrich: *See—*
  Nielinger, Werner; Dhein, Rolf; Haberland, Ulrich; Michael, Dietrich; and Hermann, Karl-Heinz, 3,983,306.
Haeussler, Ernst. Facade wall assembly. 3,982,372, Cl. 52-513.000.
Haffenden-Richborough Limited: *See—*
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Hagiwara, Yoshitoshi: *See—*
  Osawa, Makoto; Hagiwara, Yoshitoshi; Kawakita, Takao; Motoyoshi, Kenya; and Kuroishi, Nobuhito, 3,982,905.
Hahn, James R.; and Vallender, James A., to Dow Corning Corporation. Polyorganosiloxane pressure sensitive adhesives and articles therefrom. 3,983,298, Cl. 428-355.000.
Hahn & Kolb: *See—*
  Scheiffele, Helmut, 3,982,452.
Halasz, Stephen J.: *See—*
  Green, Harold; and Halasz, Stephen J., 3,982,836.
Haldimann, Hans Rudolf; Buehler, Max; and Brown, Patrick R., to Weelpal, A.G. Shelf storage system. 3,982,639, Cl. 214-16.40C.
Haldor Topsoe A/S: *See—*
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Halldin, Matts Arne Bernhard; and Andreasson, Nils Rune Gustaf, to Gnosjoplast AB. Breathing mask, particularly for artificial respiration. 3,982,532, Cl. 128-146.000.
Halliburton Company: *See—*
  Harriman, Donald W., 3,982,590.
Hamm, Klaus; and Beck, Otto, to Fr. Hesser Maschinenfabrik AG. Device for welding and parting thermoplastic foils. 3,982,991, Cl. 156-515.000.
Hammond, William D. Well monitoring and analyzing system. 3,982,432, Cl. 73-151.500.
Hamrick, Joseph T.; and Rose, Leslie C., to World Energy Systems. Downhole recovery system. 3,982,591, Cl. 166-302.000.

Hamrick, Joseph T.; and Rose, Leslie C., to World Energy Systems. In situ hydrogenation of hydrocarbons in underground formations. 3,982,592, Cl. 166-302.000.

Hancock, James Lloyd, to General Motors Corporation. Low voltage aluminum commutators. 3,983,431, Cl. 310-233.000.

Hancock, Reginald Ronald; and Maw, Peter James Reuben, to Imperial Chemical Industries Limited. Apparatus and method for processing yarn. 3,982,708, Cl. 242-36.000.

Hanks, Jack G.: *See—*
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Hansen, Knud Erik: *See—*
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Hanslik, Tomas: *See—*
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Hanson, Robert S.; and Benasutti, Louis D., to General Motors Corporation. Refrigerator water storage and dispensing system with water filter. 3,982,406, Cl. 62-339.000.

Hardtmann, Goetz E.; and Jackson, Thomas E., to Sandoz, Inc. 3-Alkylsulfinyl-2-indolinones and their pharmaceutical compositions and use. 3,983,242, Cl. 424-274.000.

Harnau, Hans D.: *See—*
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Harned, John L., to General Motors Corporation. Air mass flow measuring apparatus. 3,982,435, Cl. 73-194.00M.

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Gibbons, Loren Kenneth; Peake, Clinton Joseph; and Harnish, Wayne Nelson, 3,983,246.

Harriman, Donald W., to Halliburton Company. Well bore cleaning device. 3,982,590, Cl. 166-173.000.

Harris, Robert D.: *See—*
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Harrison, Charles W.; Mead, Theodore C.; Moreland, Howard R.; and Barger, Frank L., to Texaco Inc. Means for measuring the wax content of waxy oil. 3,982,422, Cl. 73-53.000.

Harrison, Phillip L.: *See—*
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Harsco Corporation: *See—*
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Hartel, Gunter, to Deutsche Vergaser GmbH & Co. Kommanditgesellschaft. Control installation for the proportioning of a secondary air quantity for achieving optimum combustion or after-burning in internal combustion engines. 3,982,394, Cl. 60-276.000.

Harthun, Norman Edward, to Telford Smith, Inc. Combination surge relief and back flow prevention valve. 3,982,561, Cl. 137-596.200.

Hartman, John T.: *See—*
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Hartman, Wayne J.: *See—*
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Hartung, Herbert; Durckheimer, Walter; Schrinner, Elmar; and Gerhards, Hermann, to Hoechst Aktiengesellschaft. 2-Carboxamido-substituted tetracyclines and process for their manufacture. 3,983,173, Cl. 260-559.0AT.

Haruta, Masahiro: *See—*
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Hasbro Industries, Inc.: *See—*
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Haschke, Heinz: *See—*
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Hasegawa, Kohichi; and Konomi, Toshiaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust system for multi-cylinder internal combustion. 3,982,395, Cl. 60-278.000.

Hasegawa, Tetsuo: *See—*
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Hashimoto, Kimio. Tooth pick holder. 3,982,660, Cl. 221-190.000.

Hashimoto, Sho; Nakada, Akira; Kano, Saburo; and Takahashi, Susumu, to Nippon Soda Company Limited. Imidazole derivatives. 3,983,241, Cl. 424-273.000.

Hashizume, Hikaru: *See—*
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Hattori, Katsuji; Fukai, Masakazu; Moriyama, Akio; and Nishizawa, Yasuhiro, to Matsushita Electric Industrial Co., Ltd. Liquid crystal display device. 3,982,820, Cl. 350-160.0LC.

Hatzmann, John F.: *See—*
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Haugwitz, Rudiger D.: *See—*
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Hauser, Raimund: *See—*
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Hawker Siddeley Dynamics Limited: *See—*
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Hawkins, Edwin George Edward, to BP Chemicals International Limited. Peroxy compounds and processes for their preparation. 3,983,142, Cl. 260-348.00C.

Hawkins, Jerry M.: *See—*
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Hayashi, Izuo; and Nannichi, Yasuo, to Nippon Electric Company, Ltd. Semiconductor double heterostructure laser device and method of making the same. 3,983,510, Cl. 331-94.50H.

Hayes, John C.: *See—*
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Hayes, Royce. Traffic control signal apparatus. 3,983,532, Cl. 340-41.00R.

Healey, Daniel P., Jr., to Chase-Shawmut Company, The. Electric fuse and tube material adapted for use as fuse casing. 3,983,525, Cl. 337-186.000.

Health Technology Labs, Inc.: *See—*
Muriot, Edward E., 3,982,539.

Heck, Willis A.; and Ferre, Roy E., to ESM, Inc. Composition for a fluidizing flux in the production of iron and steel. 3,982,929, Cl. 75-94.000.

Heckathorn, Donald W. Fishing line weight. 3,982,350, Cl. 43-43.100.

Heckler & Koch GmbH: *See—*
Brandl, Rudolf; Moller, Tilo; Saile, Karl; and Streckfuss, Heinrich, 3,982,347.

Hegeler, Wilhelm, to Blaupunkt-Werke GmbH. Phase locked loop. 3,983,497, Cl. 328-155.000.

Hehl, Karl. Base and power unit for injection molding machine. 3,982,856, Cl. 417-360.000.

Heidorn, John H.; and Bernard, James A., to General Motors Corporation. Power-operating vertically adjustable cantilever shelves for appliance cabinets. 3,982,801, Cl. 312-3[illegible]6.000.

Heimberger, Helmut, to Opti-Holding AG. Apparatus for making slide-fastener stringers. 3,982,988, Cl. 156-380.000.

Heins, Sidney M. Method for dry removal of sulfur dioxide from furnace flue, coal and other gases. 3,983,218, Cl. 423-244.000.

Helmuth, Gene R.: *See—*
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Hengen, Edward John: *See—*
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Henis, Jay M., to Monsanto Company. Nitrogen oxide decomposition process. 3,983,021, Cl. 204-164.000.

Hennenberg, Wilhelm Friedrich: *See—*
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Hennenfent, Douglas Joseph; and Holmstrand, Allan Lawrence, to Control Data Corporation. Magnetic transducer head core manufacturing method. 3,982,318, Cl. 29-603.000.

Hentz, Lyle J.; and Otto, Willard G., to Western Electric Company, Inc. Methods for mounting an article on an adherent site on a substrate. 3,982,979, Cl. 156-73.600.

Hentzschel, Hanspeter P. K.: *See—*
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Herbst, Noel M.; and Morrissey, John H., to International Business Machines Corporation. Signature verification method and apparatus. 3,983,535, Cl. 340-146.3SY.

Hercules Incorporated: *See—*
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Elrick, Donald E.; and Gilbert, Harry, 3,982,975.

Herman, John A. Hot air furnace. 3,982,525, Cl. 126-99.00R.

Hermann, Karl-Heinz: *See—*
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Herro, Richard E. Athletic shoe with a detachable sole. 3,982,336, Cl. 36-62.000.

Herscovici, Saul; and Anderson, Lawrence Vernon, to Deere & Company. Tractor having transmission-driven power take-off. 3,982,599, Cl. 180-53.00R.

Hersey, Carl; and Resop, W. Paul. Sit-n-cycle. 3,982,756, Cl. 272-126.000.

Hertel, Heinz E., to Bell & Howell Company. Film core with restrainer. 3,982,709, Cl. 242-74.000.

Herzer, William P.; and Cullen, Robert E., to Union Special Corporation. Automatic sewing machine. 3,982,491, Cl. 112-121.120.

Herzner, Frederick C.: *See—*
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Hess, Howard V.; and Franz, William F., to Texaco Inc. Brine desalination process with phase-breaking by cold hydrocarbon injection. 3,983,032, Cl. 210-22.00R.

Hesse, Dieter: *See—*
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Hi-Shear Corporation: *See—*
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Hickey, Christopher Daniel Dowling, to Airflex Containers Limited. Clamps for joining tubes or tubular structural members. 3,982,779, Cl. 285-328.000.

Hicks, Alton D.: *See—*
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Hill, Alfred, to Glacier Metal Company Limited, The. Thrust bearings. 3,982,796, Cl. 308-122.000.

Hill, Gerald L. Bicycle powered boat. 3,982,495, Cl. 115-27.000.

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Hills, William H. Fishing lure. 3,982,349, Cl. 43-42.480.

Hindersinn, Raymond R.: *See—*
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Hino, Naganori: *See—*
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Hirai, Masataka; Takahashi, Toshio; Arita, Kishio; Yamauchi, Goro; and Kubo, Shugo, to Nippon Telegraph and Telephone Public Corporation. Production of aluminum-aluminum oxide dispersion composite conductive material and product thereof. 3,982,906, Cl. 29-182.500.

Hirano, Masachika: *See—*
Satomi, Takeo; Mukai, Kunio; Mine, Akihiko; Hino, Naganori; Tateishi, Kohshi; and Hirano, Masachika, 3,982,921.

Hirata, Chuji; Yokogawa, Yasunori; and Tabira, Tsutomu, to Ajinomoto Co., Inc. Process for preparing NaOH.3.5 H_2O crystals. 3,983,215, Cl. 423-198.000.

Hirooka, Masaaki; and Takeo, Shigeru, to Hodogaya Chemical Co., Ltd. Process for preparing polyurethane emulsions. 3,983,058, Cl. 260-29.21N.

Hirth, Heimo, to Hoechst Aktiengesellschaft. Exposure means for photocopying apparatus. 3,982,829, Cl. 355-1.000.

Hitachi, Ltd.: *See—*
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Hitachi Metals, Ltd.: *See—*
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Hitzman, Donald O.; and Wegner, Eugene H., to Phillips Petroleum Company. Methanol foam fermentation to single cell protein by microorganisms. 3,982,998, Cl. 195-49.000.

Hobart Corporation: *See—*
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Hodama, Takuo, to Nihon Dengyo Co., Ltd. Multichannel signal transmitting and receiving apparatus. 3,983,484, Cl. 325-20.000.

Hodne, Ingard B.: *See—*
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Illmann, Gunther; and Mayer, Norbert, 3,983,057.
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Hoehn, Hans; and Denzel, Theodor, to E. R. Squibb & Sons, Inc. Alcohol derivatives of pyrazolo[3,4-b]pyridines. 3,983,128, Cl. 260-296.00H.

Hockje, Howard H.; and Dietz, Paul L., to PPG Industries, Inc. Secondary electrochemical cell having non-consumable silicon cathode. 3,982,960, Cl. 429-199.000.

Hoffman, Theodore S.: *See—*
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Hoffmann-La Roche Inc.: *See—*
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Hoger, Karl; and Grobe, Wolfgang, to International Standard Electric Corporation. Method and arrangement for inhomogeneous annealing of small parts. 3,982,885, Cl. 432-24.000.

Hohenschutz, Heinz: *See—*
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Holben, Eugene F.: *See—*
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Holl, William H.: *See—*
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Holland, Gerald F., to Pfizer Inc. Hypolipidemic alkenesulfonamides. 3,983,107, Cl. 260-240.00J.

Holland-Letz, Guenter, to Nixdorf Computer AG. Device for locking a movable form feed. 3,982,677, Cl. 226-75.000.

Holle, Bernd: *See—*
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Hollies, Norman R. S.: *See—*
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Hollingsworth, Charles M.; and Kosicki, Witold W., to Horsman Dolls Inc. Walking doll mechanism. 3,982,354, Cl. 46-149.000.

Holloway, Arthur John: *See—*
Latham, Raymond John; and Holloway, Arthur John, 3,982,863.

Hollyday, William C., Jr., to Exxon Research and Engineering Company. Nitrogen-containing cold flow improvers for middle distillates. 3,982,909, Cl. 44-66.000.

Holmstrand, Allan Lawrence: *See—*
Hennenfent, Douglas Joseph; and Holmstrand, Allan Lawrence, 3,982,318.

Holosonics, Inc.: *See—*
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Holtrop, John W. Stratified charge internal combustion engine. 3,982,506, Cl. 123-75.00B.

Homma, Yasuo: *See—*
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Honda Giken Kogyo Kabushiki Kaisha: *See—*
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Osawa, Makoto; Hagiwara, Yoshitoshi; Kawakita, Takao; Motoyoshi, Kenya; and Kuroishi, Nobuhito, 3,982,905.

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Honeywell Information Systems, Inc.: *See—*
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Honjo, Satoru; Miyatuka, Hajime; and Matsumoto, Seiji, to Fuji Photo Film Co., Ltd. Photoconductive toners which include photoconductive pigment particles in a charge-transporting insulating binder. 3,982,938, Cl. 96-1.500.

Honma, Uichi, to Nippon Piston Ring Co., Ltd. Heat and wear resistant sintered alloy. 3,982,907, Cl. 29-182.700.

Honore, Etienne A. H.; and Torcheux, Emile L. G., to Societe d'Etude et d'Application des Techniques Nouvelles NEO-TEC. Novel structure for radio position fixing using hyperbolic phase measurement. 3,983,559, Cl. 343-105.00R.

Honshima, Masakatsu: *See—*
Yamanaka, Yoshio; Watanabe, Kazuyoshi; Honshima, Masakatsu; and Kikuchi, Hideaki, 3,982,971.

Hoogesteger, Paul A.; and Kadlecik, John, to Bausch & Lomb Incorporated. Manual switching means for contact lens disinfecting apparatus. 3,983,362, Cl. 219-521.000.

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Hooper, Burrell Francis; and Hooper, Ronald Francis. Foldable toboggan. 3,982,748, Cl. 280-18.000.

Hooper, Ronald Francis: *See—*
Hooper, Burrell Francis; and Hooper, Ronald Francis, 3,982,748.

Horgan, Stephen W.: *See—*
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Horsch, Joachim, to International Harvester Company. Brake provided with gravity-feed automatic supplementary-cooling control. 3,982,618, Cl. 192-113.00B.

Horsman Dolls Inc.: *See—*
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Horvath, Louis W., to Spaceair Products, Inc. Prefabricated support and floor system for building. 3,982,364, Cl. 52-126.000.

Hosoda, Minoru; Kasiwagi, Eiichi; Murayama, Fumio; and Isayama, Kohei, to Dai Nippon Toryo Co., Ltd. Aqueous epoxy resin paint composition. 3,983,056, Cl. 260-29.2EP.

Hosogai, Takeo: *See—*
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Hottenroth, Fred W.; and Hottenroth, Fred W., III. Portable forced draft cooker. 3,982,522, Cl. 126-2.000.

Hottenroth, Fred W., III: *See—*
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Houseman, John; and Cerini, Donald J., to United States of America, National Aeronautics and Space Administration. Hydrogen-rich gas generator. 3,982,910, Cl. 48-61.000.

Howard, Gerald T. Electric generator. 3,983,430, Cl. 310-155.000.

Howatt, George F., to New England Envelope Manufacturing Co. Envelope machine with window patch removal mechanism. 3,982,472, Cl. 93-61.00A.

Howes, Charles L., Jr. Dual-use tennis court parking lot construction methods and apparatus. 3,982,758, Cl. 273-29.00R.

Huang, Keng Tang: *See—*
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- Hubalkova, Olga: *See—*
  - Coupek, Jiri; Trukova, Jaroslava; Hubalkova, Olga; Krivakova, Miroslava; and Mansfeld, Viktor, 3,983,001.
- Hubbard, James R.; and Erdman, Charles A., to Graphic Controls Corporation. Instrument pen with integral pen arm attachment means. 3,983,569, Cl. 346-140.00A.
- Hubbard, Winchester Loomis: *See—*
  - Ariyan, Zaven Stephen; Grahame, Robert Edward, Jr.; and Hubbard, Winchester Loomis, 3,983,244.
- Huber, Peter; Pirson, Ewald; and Lampelzammer, Helga, to Wacker-Chemie GmbH. Method for improving the lubricating properties and imparting antistatic properties to organic fibers. 3,983,272, Cl. 427-407.00R.
- Hughes Aircraft Company: *See—*
  - Ketcham, David J.; Lowe, Roger W.; Pruznick, Michael D.; and Opittek, Eugene W., 3,983,320.
  - Smith, Sidney R., 3,983,457.
  - Weglein, Rolf D., 3,983,517.
- Hulsing, Kenneth L., to General Motors Corporation. Orifice plunger valve fuel injector. 3,982,693, Cl. 239-88.000.
- Humes, Robert William: *See—*
  - Fisher, Reed Edward; and Humes, Robert William, 3,983,492.
- Huston, Ernest Lee: *See—*
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- Hutchison, Stanley O.; and Anderson, Glenn W., to Chevron Research Company. Method of determining actual size of flow openings in a tubular member located in a well. 3,982,324, Cl. 33-302.000.
- Hyman, Myles, to Sperry Rand Corporation. Stalk rolls for corn harvesters. 3,982,385, Cl. 56-106.000.
- Hyodo, Masayoshi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Switching apparatus. 3,983,355, Cl. 200-264.000.
- Hyperion Incorporated: *See—*
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- I-T-E Imperial Corporation: *See—*
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  - Guaglione, Giovanni Paolo; and Tschannen, Christian, 3,983,353.
  - Wilson, Walter M.; and Katzheck, John W., Jr., 3,982,806.
- Ichihara, Shigeo, to Dainippon Plastics Co., Ltd. Collapsible container. 3,982,650, Cl. 220-4.00F.
- Ichikawa, Yataro; and Yamaji, Teizo, to Teijin Limited. Process for producing biphenylpolycarboxylic acid ester. 3,983,159, Cl. 260-473.00R.
- ICI United States Inc.: *See—*
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- Idemitsu Kosan Co., Ltd.: *See—*
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- Iijima, Kazumi: *See—*
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- Ikeda, Masaomi, to Toyo Seikan Kaisha Limited. Apparatus for filling and sealing retort foods. 3,982,376, Cl. 53-53.000.
- Ikeda, Masaru: *See—*
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- Ilford Limited: *See—*
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- Illinois Tool Works Inc.: *See—*
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- Illis, Alexander: *See—*
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- Illmann, Gunther; and Mayer, Norbert, to Hoechst Aktiengesellschaft. Process for the manufacture of water-clear copolymer dispersions. 3,983,057, Cl. 260-29.6TA.
- IMC Chemical Group, Inc.: *See—*
  - Jurisch, Louis A., 3,983,071.
- Imperial Chemical Industries: *See—*
  - Beck, David Ernest; and Thom, Derek Walter, 3,982,310.
- Imperial Chemical Industries Limited: *See—*
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  - Hancock, Reginald Ronald; and Maw, Peter James Reuben, 3,982,708.
  - Jones, Michael Edward Benet, 3,983,300.
  - Latham, Raymond John; and Holloway, Arthur John, 3,982,863.
  - Ryan, James Ernest; and Smale, Rodney, 3,982,985.
  - Wardle, Glynn Arthur, 3,983,278.
- Imperial-Eastman Corporation: *See—*
  - Chudgar, Anil H., 3,982,982.
  - Kowal, Leonard J.; and Gibson, Robert C., 3,982,563.
- Inderbiethen, Herbert, to Spezial-Maschinenfabrik Hans Kurschner. Candle casting apparatus and method. 3,982,720, Cl. 249-81.000.
- Indicon Inc.: *See—*
  - Citrin, Paul S., 3,982,724.
- Industrial Machine Service Company: *See—*
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- Ingersoll-Rand Company: *See—*
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- Inmont Corporation: *See—*
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- Inoue, Osamu; Abe, Masaru; and Tezuka, Toshiro, to Bridgestone Tire Company Limited. Pneumatic tire for construction vehicles. 3,982,580, Cl. 152-361.00R.
- Inskip, Harold Kirkwood, to Du Pont de Nemours, E. I., and Company. Photopolymerizable paste compositions and their use. 3,982,941, Cl. 96-34.000.
- Instore Advertising, Inc.: *See—*
  - Bartolucci, Edgar O., 3,982,551.
- Inter-Lakes Engineering Co.: *See—*
  - Kasper, Cass S., 3,982,321.
- Interlego A.G.: *See—*
  - Christiansen, Godtfred Kirk, 3,982,353.
- International Business Machines: *See—*
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- International Business Machines Corporation: *See—*
  - Arndt, Herbert Lorenz, Jr.; Balderes, Demetrios; Kranik, John Robert; and Lucas, Charles John, 3,983,402.
  - Auyang, Raymond P.; and Koenig, Harold R., 3,983,022.
  - Baker, Theodore H.; Ghafghaichi, Majid; and Tuman, Daniel, 3,983,023.
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  - Daniels, Raymond A.; and Knight, Arthur H., 3,982,830.
  - Dennison, Richard Thomas; Freeman, Leo Boyes; Kelly, Helen Janet; and Liu, Peter Tsung-Shih, 3,983,544.
  - Edel, William A.; and Regh, Joseph, 3,982,974.
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  - Jones, Gardner D., Jr., 3,983,381.
  - Jones, John W., 3,983,538.
  - Ku, San-Mei; Pillus, Charles A.; Poponiak, Michael R.; and Schwenker, Robert O., 3,982,967.
  - Lee, James H.; Satya, Akella V. S.; Ghatalia, Ashwin K.; and Thomas, Donald R., 3,983,479.
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  - Rettinger, Lawrence John, Jr.; and Balliet, Layton, 3,983,506.
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  - Zappe, Hans H., 3,983,546.
- International Business Machines - IBM: *See—*
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- International Harvester Company: *See—*
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  - Stufflebeam, John F.; and Boetto, Charles, 3,982,773.
- International Nickel Company, Inc., The: *See—*
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- International Organics, Inc.: *See—*
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- International Standard Electric Corporation: *See—*
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- International Telephone and Telegraph Corporation: *See—*
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  - Epstein, Marvin Aaron, 3,983,495.
- Inventronics, Inc.: *See—*
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- Irwin Toy Limited: *See—*
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- Isaacs, Robert O.: *See—*
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- Isayama, Kohei: *See—*
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- Ishigaki, Yukinobu; and Mori, Takaro, to Victor Company of Japan, Limited. Signal frequency band control system. 3,983,505, Cl. 330-107.000.
- Ishihara, Yasuo, to Nippon Electric Company, Ltd. Charge-coupled linear image sensing device. 3,983,573, Cl. 357-24.000.

- Ishijima, Yoichi: *See—*
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- Ishikawa, Hidehiko: *See—*
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- Ishikawa, Kanichi; and Iijima, Kazumi, to Nippondenso Co., Ltd. Soldering method. 3,982,680, Cl. 228-174.000.
- Isoard, Bernard; and Juppet, Paul, to Rhone-Poulenc-Textile. Yarn handling pneumatic device. 3,982,412, Cl. 68-200.000.
- Isohata, Junji, to Canon Kabushiki Kaisha. Automatic wafer orienting apparatus. 3,982,627, Cl. 214-1.00Q.
- Itek Corporation: *See—*
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  - Clemons, Calvin, 3,983,391.
  - Madigan, Thomas M., 3,982,484.
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- Ito, Kensaku: *See—*
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- Ito, Youichi; and Kitamura, Kozo, to Sharp Kabushiki Kaisha. Introduction of data entry completion signals to a cassette tape containing data processing terminal unit. 3,983,577, Cl. 360-4.000.
- Itoh, Katsumi; and Mori, Kazumasa, to Nippondenso Co., Ltd. Voltage regulating system. 3,983,471, Cl. 322-28.000.
- Itoh, Yasuo: *See—*
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  - Takahashi, Nobuaki; Nishikawa, Kazunori; Iwasaki, Yoshiki; Satoh, Masaaki; Ohba, Katsuhiro; Nakamura, Shinji; Sawada, Tatsuo; Ohsaki, Nobuhide; Itoh, Yasuo; Suda, Nobuaki; Okabe, Yasuhisa; and Ozaki, Hideaki, 3,983,500.
- Itoi, Kazuo: *See—*
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- ITT Industries, Inc.: *See—*
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  - Adam, Fritz Gunter, 3,983,409.
- Ivarsson, Paul Lennart; and Blom, Ingvar Gustav Axel, to Hoganas Aktiebolag. Refractory casting, ramming or stamping mass. 3,982,953, Cl. 106-55.000.
- Ivashuk, Michael; and McDaniel, Marvin Lee. Vehicle crash bag. 3,982,774, Cl. 280-737.000.
- Iwaki, Shigeo: *See—*
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- Iwata, Masao; Ishijima, Yoichi; and Fujita, Osamu, to Hitachi Metals, Ltd. Semihard magnetic alloy and a process for the production thereof. 3,982,972, Cl. 148-31.550.
- J. E. Hanger & Company Limited: *See—*
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- Jain, Padam Chand: *See—*
  - Murthi, Varanasi Aruna; Jain, Padam Chand; Sharma, Jitendra Nath; Srimal, Rikhab Chand; Dhawan, Bhola Nath; and Anand, Nitya, 3,983,121.
- Jain, Sulekh C.; and Morris, Charles A., to Wyman-Gordon Company. Water-based forging lubricant. 3,983,042, Cl. 252-18.000.
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- Japan Atomic Energy Research Institute: *See—*
  - Kaetsu, Isao; Kumakura, Minoru; Ito, Akihiko; and Maeda, Yuji, 3,983,083.
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- Jaskulski, Leon: *See—*
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- Jegco, Inc.: *See—*
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- Jenkins, Thomas Rhys: *See—*
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- Jenkinson, John, to Rolls-Royce (1971) Limited. Matching differential thermal expansions of components in heat engines. 3,982,850, Cl. 415-178.000.
- Jenks, Thomas Andrew: *See—*
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- Jeskey, Carl C., to Mt. Lassen Cinder Company. Pozzolan and concrete product thereof. 3,982,954, Cl. 106-97.000.
- Jha, Mahesh Chandra: *See—*
  - Chiotti, Premo; and Jha, Mahesh Chandra, 3,982,928.
- Joerns Furniture Company: *See—*
  - Damico, Frank M., 3,982,291.
- Johannessen, Sverre, to Simrad A.S. Echo simulating probe. 3,983,530, Cl. 340-5.00C.
- John Zink Company: *See—*
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- Johns Hopkins University, The: *See—*
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- Johns-Manville Corporation: *See—*
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- Johnson, Allen M. L., to United States of America, Army. Tiltester. 3,983,375, Cl. 235-151.300.
- Johnson, Charles H.: *See—*
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- Johnson & Johnson: *See—*
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- Johnson, Leo D., to Raymond Lee Organization, Inc., The, a part interest. Boat trailer. 3,982,292, Cl. 9-1.200.
- Johnson, Robert A., to Rockwell International Corporation. Longitudinal-mode mechanical bandpass filter. 3,983,516, Cl. 333-71.000.
- Johnson, W. Delmar: *See—*
  - Moczygemba, George A.; Johnson, W. Delmar; and Clark, Earl, 3,983,187.
- Johnson, William S., to International Business Machines. Semiconductor devices. 3,983,572, Cl. 357-23.000.
- Johnston, Daniel U.; and Larson, Robert L., to General Motors Corporation. Vacuum reducer valve assembly. 3,982,553, Cl. 137-81.000.
- Jones, Francis Lyle, to Towmotor Corporation. Field shunting control for a DC series motor. 3,983,462, Cl. 318-139.000.
- Jones, Gardner D., Jr., to International Business Machines Corporation. Digital automatic gain control circuit. 3,983,381, Cl. 235-154.000.
- Jones, Ivor Wynn; Robinson, Graham; and Bird, Thomas Lewis, to Electricity Council, The. Sodium sulphur cells. 3,982,957, Cl. 429-163.000.
- Jones, James J., to Texas Instruments Incorporated. Vehicle skid control system. 3,982,793, Cl. 303-21.00P.
- Jones, John W., to International Business Machines Corporation. Universal LSI array logic modules with integral storage array and variable autonomous sequencing. 3,983,538, Cl. 340-172.500.
- Jones & Laughlin Steel Corporation: *See—*
  - Koros, Peter J.; and Grozier, John David, 3,982,969.
- Jones, Michael Edward Benet, to Imperial Chemical Industries Limited. Article comprising an adherend with a thermoplastic polymer including —$ArSO_2$— repeating units adhering thereto. 3,983,300, Cl. 428-411.000.
- Jones, Walter C., to Rubber Dynamics Corporation. Elastic storage tank and method for making the same. 3,982,573, Cl. 150-.500.
- Jonsson, Olov; and Milaszewski, Edward. Edge reinforcement for sandwich-type building panel. 3,982,367, Cl. 52-309.000.
- Jordan, Lester J.; and Platko, Steve, to Corning Glass Works. Electrical device assembly and method. 3,983,458, Cl. 317-101.0CP.
- Jordan, Richard James, to General Marine, Inc. Ignition pulse generator. 3,983,461, Cl. 317-151.000.
- Joseph Stamm KG: *See—*
  - Schweinsberg, Hubert, 3,982,747.
- Joslyn, Larry James, to Sybron Corporation. Sterilizer control method and apparatus. 3,982,893, Cl. 21-2.000.
- Juba, Bernard T.; and Collins, James A., to H. B. Fuller Company. Sealant system for burial vault and method of application. 3,983,206, Cl. 264-255.000.
- Judin, Nikolai Fedorovich: *See—*
  - Pozdneev, Viktor Timofeevich; Khina, Mikhail Lvovich; Bashkirov, Dmitry Vasilievich; Judin, Nikolai Fedorovich; and Kobzev, Nikolai Sergeevich, 3,983,088.
- Jugle, Don B.; and Levine, Charles J., to Xerox Corporation. Three component developer composition. 3,983,045, Cl. 252-62.10P.
- Jukkola, Walfred Wilhelm: *See—*
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- Juppet, Paul: *See—*
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- Jurgensen, Peter D., to Gerling Moore Inc. End load for microwave ovens. 3,983,356, Cl. 219-10.55A.
- Jurisch, Louis A., to IMC Chemical Group, Inc. Process of preparing sand cores by using oxazoline condensates. 3,983,071, Cl. 260-42.000.
- Just, George E.; and Simonovitch, Chaim, to Just, George E. Intermediates for producing prostaglandins. 3,983,136, Cl. 260-326.800.
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- Kabushiki Kaisha Audio-Technica: *See—*
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- Kageyama, Yuriaki: *See—*
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- Kahn, David; and Geckle, Raymond James, to AMP Incorporated. Ceramic binder for polyconductor powders. 3,983,074, Cl. 252-500.000.
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- Kaiserswerth, Hans-Peter; Wimmer, Josef; and Schaller, Rudolf, to Siemens Aktiengesellschaft. Dampened choke coil. 3,982,814, Cl. 323-78.000.
- Kajaani Oy, Elektroniika: *See—*
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- Kampf, Wolfgang, to Chemische Werke Huls Aktiengesellschaft. Production of high-vinyl group, low-molecular weight unsaturated hydrocarbon polymers. 3,983,183, Cl. 260-680.00B.
- Kamphuis, Gerrit George, to Stork Amsterdam B.V. Column for draining a whey-curd mixture. 3,982,480, Cl. 99-456.000.
- Kamyr, Inc.: *See—*
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- Karasawa, Tadahiko: *See—*
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- Kaupert, Gunther. Nestable compartmentalized trays. 3,982,655, Cl. 220-23.600.
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- Kee Woo, Peter Wing; and Haskell, Theodore Herbert, to Parke, Davis & Company. Process for preparing 5″-amino-4′,5″-dideoxybutirosin A. 3,983,102, Cl. 536-17.000.
- Keisling, Charles A.; and Sand, Leonard B., to Zeochem Corporation. Test method for determining zeolite. 3,982,896, Cl. 23-230.00R.
- Keith, Roger H., to Minnesota Mining and Manufacturing Company. Conformable plastic body side molding. 3,982,780, Cl. 293-1.000.
- Keleske, Henry P. Insulated building block. 3,982,369, Cl. 52-407.000.
- Keller, Harry; and Forrester, Edward H., to Honeywell Inc. Rapid bus priority resolution. 3,983,540, Cl. 340-172.500.
- Keller, Jerome Edmund; Moore, Ronald Lynn; and Cook, Harold, Jr., to Coors Container Company. One piece container end member with an integral hinged opening tab portion. 3,982,657, Cl. 220-268.000.
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- Kenney, Joseph F., to Remington Arms Company, Inc. Ammunition priming mixtures and method of forming same. 3,983,149, Cl. 260-435.00A.
- Keranen, Theodore W., to Bendix Corporation, The. Air density computer for an internal combustion engine fuel control system. 3,982,503, Cl. 123-32.0EA.
- Kerotest Manufacturing Corporation: *See—*
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- Kesling, Keith K., to General Motors Corporation. Appliance remote touch-control panel with sound system. 3,983,553, Cl. 340-365.00R.
- Ketcham, David J.; Lowe, Roger W.; Pruznick, Michael D.; and Opittek, Eugene W., to Hughes Aircraft Company. Raster display histogram equalization. 3,983,320, Cl. 178-6.800.
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- Khina, Mikhail Lvovich: *See—*
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- Kikuchi, Tadao, to Hitachi, Ltd. Signal generator circuit. 3,983,420, Cl. 307-279.000.
- Kikuzawa, Kenji; Sasaguri, Kiichiro; Oda, Yasuyoshi; Sano, Hiroshi; and Okina, Katsumi, to Asahi Kasei Kogyo Kabushiki Kaisha. Unsaturated polyester resin composition. 3,983,184, Cl. 260-837.00R.
- Kilborne, George B. Picture hanger. 3,982,719, Cl. 248-489.000.
- Killop, James Thomas, to Anderson-Cook, Inc. Forming method and machine for splining power transmission members. 3,982,415, Cl. 72-88.000.
- Kilmer, Charles L. Method and means of utilizing magnetism to achieve rotation of a drive shaft. 3,983,426, Cl. 310-46.000.
- Kim, James C., to General Electric Company. MIS structures for background rejection in infrared imaging devices. 3,983,395, Cl. 250-370.000.
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- Kindig, Guilford E.; and Dierks, James E., to Eastman Kodak Company. Pressure roller assembly for self processing camera. 3,983,567, Cl. 354-86.000.
- King, William Clyde, to Oy Paramic AB. Resistor network with adjustable resistance value. 3,983,528, Cl. 338-195.000.
- Kingsley, William, to Xerox Corporation. Electrostatographic reproduction apparatus and drive therefor. 3,982,831, Cl. 355-5.000.
- Kinjo, Kikuo; Matsuno, Hiroshi; Hasegawa, Tetsuo; and Kato, Hideo, to Canon Kabushiki Kaisha. Process for the formation of images. 3,982,940, Cl. 96-27.00R.
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- Kirk, Bradley S., to Airco, Inc. Methods and apparatus for controlling the supply of a feed gas to dissolution devices. 3,983,031, Cl. 210-15.000.
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- Kleimola, David L.; Nystuen, Marcus I.; and Nystuen, David L., to Economics Laboratory, Inc. Fine timing apparatus for electronic detergent dispensing system. 3,982,666, Cl. 222-70.000.
- Klein, H. Joseph: *See—*
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- Klingler, Adolf: *See—*
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- Klingler, Josef F. Simulated article display structure. 3,982,343, Cl. 40-27.500.
- Klockner-Werke AG: *See—*
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- Klund, Robert N., to Delkor Industries, Inc. Case erecting and forming machine. 3,982,474, Cl. 93-53.0SD.
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- Knorr, Eberhard; Grunwald, Thomas Ludwig; and Oswald, Arno, to Concast AG. Method and apparatus for casting metals into a continuous casting mold. 3,982,582, Cl. 164-136.000.
- Knott, Roger L.; Taunton-Rigby, Alison; and Mead, John A. R., to United States of America, Health, Education and Welfare. Production of N^5-methyltetrahydrohomofolic acid and related reduced derivatives of homofolic acid. 3,983,118, Cl. 260-251.500.
- Kobe, Inc.: *See—*
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- Kobrehel, Gabrijela; Tamburasev, Zrinka; and Djokic, Slobodan, to PLIVA Pharmaceutical and Chemical Works. N-(Benzenesulfonyl)-erythromycylamine derivatives. 3,983,103, Cl. 536-9.000.
- Kobzev, Nikolai Sergeevich: *See—*
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- Koch, Robert E., to General Electric Company. Electrical current limiting fuse having fusible element with additional cross-sectional necks at an arcing clip. 3,983,524, Cl. 337-159.000.
- Koch, Robert E., to General Electric Company. Current limiting fuse with auxiliary element arcing clip spaced by nonporous dielectric member. 3,983,526, Cl. 337-278.000.
- Koenig, Harold R.: *See—*
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- Kolibas, James A., to Addressograph Multigraph Corporation. Compressed optical system. 3,982,833, Cl. 355-11.000.
- Koller, Ernst. Device for recording speed operating conditions of a wheeled vehicle. 3,983,565, Cl. 346-18.000.
- Kompan, Louis, to Burns Foods Limited. Meat cutter. 3,982,299, Cl. 17-1.00R.
- Kondo, Takashi; Fukunaga, Motoaki; and Kitakami, Hisashi, to Glory Kogyo Kabushiki Kaisha. Sheet counting machine. 3,983,367, Cl. 235-92.0SB.
- Kondo, Tatsunori: *See—*
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- Kong, Ch'ng Seow. Reducing water consumption in water closets. 3,982,282, Cl. 4-1.000.
- Konig, Hans-Bodo; Schrock, Wilfried; and Metzger, Karl Georg, to Bayer Aktiengesellschaft. Penicillins. 3,983,105, Cl. 260-239.100.
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- Konopasek, Francis. Defibrillator testing device. 3,983,476, Cl. 324-111.000.
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- Korosi, Matyas, to Eastman Kodak Company. Recovery of silver from gelatinous photographic wastes. 3,982,932, Cl. 75-118.00P.
- Kortendick, Russell D. Manual log splitter. 3,982,572, Cl. 144-193.00D.
- Kortenhaus, Dieter, to NSM Apparatebau GmbH Kommanditgesellschaft. Coin computing apparatus. 3,982,620, Cl. 194-1.00N.
- Kosiarski, Joseph P.: *See—*
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- Kowal, Leonard J.; and Gibson, Robert C., to Imperial-Eastman Corporation. Clamp-on valve structure. 3,982,563, Cl. 137-798.000.
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- Kraynak, Joseph Stephen; and Blumenfield, Arthur, to Me-Books Publishing Company. Personalized computer printed hard covered book. 3,982,744, Cl. 270-12.000.
- Kreiner, James E., Jr.: *See—*
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- Kreitz, Hans, to H. Krantz, Firma. Wet treatment device for dyeing textile material in the form of an endless rope. 3,982,411, Cl. 68-177.000.
- Krenzer, John; and Richter, Sidney B., to Velsicol Chemical Corporation. Herbicidal compositions containing furancarboxamides. 3,982,922, Cl. 71-88.000.
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- Krizan, Bradford J.; and Pfaffendorf, James L., to Liberty Carton Co. Mail box container. 3,982,690, Cl. 232-17.000.

Krogseng, Gerald P.; and Paul, Fred R., Jr., to Minnesota Mining and Manufacturing Company. Ballistic inoculation of animals and projectile therefor. 3,982,536, Cl. 128-260.000.
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Krupka, Morris. Brake lining device. 3,982,612, Cl. 188-73.100.
Krylov, Nikolai Ivanovich; Popov, Boris Vasilievich; Sidorov, Pavel Ivanovich; and Kim, Jury Efimovich. Circular saw for cutting rolled products. 3,982,456, Cl. 83-490.000.
Ku, San-Mei; Pillus, Charles A.; Poponiak, Michael R.; and Schwenker, Robert O., to International Business Machines Corporation. Method of proton-enhanced diffusion for simultaneously forming integrated circuit regions of varying depths. 3,982,967, Cl. 148-1.500.
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Kugisawa, Toshio, to Kabushiki Kaisha Kawai Gakki Seisakusho. Musical-tone signal forming apparatus for electronic musical instrument. 3,982,461, Cl. 84-1.030.
Kugisawa, Toshio: *See—*
Obayashi, Nobuharu; Hashizume, Hikaru; Sakashita, Noriji; Kameyama, Seiji; Ezawa, Sadaaki; Kugisawa, Toshio; Washiyama, Yutaka; Kondo, Tatsunori; and Watanabe, Hironori, 3,982,460.
Kuhn, Edmund W.; and Uber, Jesse L., to Westinghouse Electric Corporation. Enclosed circuit interrupter with improved fuse assembly. 3,983,460, Cl. 317-114.000.
Kuhn, Harland L. Proportional lead guidance. 3,982,714, Cl. 244-3.160.
Kuipers, Jack, to Polhemus Navigation Sciences, Inc. Tracking and determining orientation of object using coordinate transformation means, system and process. 3,983,474, Cl. 324-43.00R.
Kumakura, Minoru: *See—*
Kaetsu, Isao; Kumakura, Minoru; Ito, Akihiko; and Maeda, Yuji, 3,983,083.
Kunik, I. Jordan; and Goodman, Maurice, Jr., to Kunik, I. Jordan; and Goodman, Maurice, Jr., part interest to each. Dispensing case for needles or the like. 3,982,631, Cl. 206-380.000.
Kuno, Akira: *See—*
Akita, Sigeyuki; and Kuno, Akira, 3,983,549.
Kuntz, Hillard L.: *See—*
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Kunze, Carl Theodore: *See—*
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Kuraray Co., Ltd.: *See—*
Tamai, Yoshin; Nishida, Takashi; Mori, Fumio; Omura, Yoshiaki; Tanomura, Masahisa; Hosogai, Takeo; Ninagawa, Yoichi; and Itoi, Kazuo, 3,983,175.
Kurashiki Boseki Kabushiki Kaisha: *See—*
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Kuratomi, Tatsuo: *See—*
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Kurie, Eugene J.; and Yunghahn, Richard J., to Midland-Ross Corporation. Air-dispensing web-floating apparatus. 3,982,327, Cl. 34-156.000.
Kuroda, Masao: *See—*
Endo, Akira; Kuroda, Masao; Terahara, Akira; Tsujita, Yoshio; and Tamura, Chihiro, 3,983,140.
Kuroishi, Nobuhito: *See—*
Osawa, Makoto; Hagiwara, Yoshitoshi; Kawakita, Takao; Motoyoshi, Kenya; and Kuroishi, Nobuhito, 3,982,905.
Kurozumi, Akira: *See—*
Yamada, Osamu; Kurozumi, Akira; Ishida, Shuichi; Futatsuya, Fumio; Ito, Kensaku; and Yamamoto, Hiroshi, 3,983,176.
Kurze, Joachim: *See—*
Brandeis, Johann; and Kurze, Joachim, 3,983,043.
Kusmierski, Edward C.; Lopez, John R.; and Silverman, Phillip. Can sealer. 3,982,656, Cl. 220-238.000.
Kyowa Hakko Kogyo Co., Ltd.: *See—*
Sumikawa, Shozo; Maida, Rikichi; and Kageyama, Yuriaki, 3,983,170.
L. Schuler GmbH: *See—*
Schneider, Franz; and Braitinger, Helmut, 3,982,454.
La Cellophane: *See—*
Riboulet, Robert; and Charvet, Eugene, 3,983,285.
Lacher, William Arthur, to Burroughs Corporation. Full duplex driver/receiver. 3,983,324, Cl. 178-59.000.
Ladd, David L.; and Ross, Stephen T., to SmithKline Corporation. Certain 4-(3-azacycloalkoxy or azacycloalkylmethoxy)benzoylbenzofurans or benzothiophenes. 3,983,245, Cl. 424-285.000.
Lagervall, Otto Leonard. Foot rests for kayaks. 3,982,293, Cl. 9-7.000.
Lagow, Richard J., to Massachusetts Institute of Technology. Alkali metal organic compounds and their method of preparation. 3,983,182, Cl. 260-665.00R.
Lako, Lajos: *See—*
Meszaros, Lajos; Grega, Jozsef; Lako, Lajos; Marko, Laszlo; Salamon, Zoltan; Szatmari, Istvan; and Tasi, Laszlo, 3,982,736.
Lamandri, Joseph G.: *See—*
Console, Edward T.; Wilson, Anthony G.; and Lamandri, Joseph G., 3,982,481.
Lampelzammer, Helga: *See—*
Huber, Peter; Pirson, Ewald; and Lampelzammer, Helga, 3,983,272.
Lamson, Frederick W. Device for converting pallets into a storage rack. 3,982,638, Cl. 214-10.50R.
Lance, Drew R.: *See—*
Bush, John A.; Lance, Drew R.; and Altstatt, John E., 3,983,488.
Lang, Alexander Craig; and Lunde, Peter Alan, to Santa Fe International Corporation. Submarine pipeline laying vessel. 3,982,402, Cl. 61-109.000.
Langford, Forrest L., to Terminal Data Corporation. Document guide. 3,982,752, Cl. 271-248.000.
Langhammer, Hans Jurgen: *See—*
Geck, Gunther; and Langhammer, Hans Jurgen, 3,982,926.
Langlois, Gary Norris, to Holosonics, Inc. Detector for use in acoustic holography. 3,983,529, Cl. 340-5.00H.
Langworthy, Colin George: *See—*
Bossons, Walter Howard; and Langworthy, Colin George, 3,983,467.
Lapeyronnie, Andre Gabriel, to Fournitures Internationales de Materieles Electroniques. Electronic ignition device for internal combustion engines. 3,982,518, Cl. 123-148.0CB.
Larkin, Terrance M., to Gates Rubber Company, The. Method and apparatus for metering thixotropic battery paste. 3,982,663, Cl. 222-1.000.
Larson, Robert L.: *See—*
Johnston, Daniel U.; and Larson, Robert L., 3,982,553.
Larsson, Hans Gustav Ingvar; and Stjarnovitt, Sven Gunnar Harald, to Marco Materialhantering AB. Hand-operated pallet truck. 3,982,767, Cl. 280-43.120.
Lassen, Frederick O.: *See—*
Sigl, Wayne C.; and Lassen, Frederick O., 3,982,325.
Latham, Raymond John; and Holloway, Arthur John, to Imperial Chemical Industries Limited. Quenching of polymeric film. 3,982,863, Cl. 425-135.000.
Laurent, Pierre Alfred. Apparatus for afterburning the exhaust gases of an internal combustion engine to remove pollutants therefrom. 3,982,397, Cl. 60-286.000.
Laurer, George J.: *See—*
Cowardin, Robert L.; and Laurer, George J., 3,983,389.
Lauterbach, William L., to United States Steel Corporation. Device for alignment of briquette rolls. 3,982,866, Cl. 425-168.000.
Lauzeral, Jean; and Laville, Christian, to European Atomic Energy Community (Euratom). Method and device for unclogging filter cloths. 3,983,036, Cl. 210-356.000.
Laville, Christian: *See—*
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Lawrence Peska Associates, Inc.: *See—*
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Gorman, Jonas, 3,982,602.
Guenette, Jean Guy, 3,982,407.
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Lawrence, Robin: *See—*
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Lax, Benjamin; Aggarwal, Roshan L.; and Lee, Neville K. S., to Massachusetts Institute of Technology. Method of and apparatus for generating tunable coherent radiation by nonlinear light mixing in systems having folded noncollinear geometries. 3,983,406, Cl. 307-88.300.
Leavesley, George W.; and Cleavenger, Dever C., to Budd Company, The. Press brake testing apparatus. 3,982,418, Cl. 73-11.000.
Le Blanc, Maurice: *See—*
Riess, Jean; Santini, Georges; and Le Blanc, Maurice, 3,983,179.
Leduc, Malcolm E.: *See—*
Suh, Kyung W.; Skochdopole, Richard E.; and Leduc, Malcolm E., 3,983,080.
Lee, Jae Yoon; and Lee, Kuem Ja. Apparatus for transfer, storage, and distribution of liquid. 3,983,037, Cl. 210-416.00R.
Lee, James H.; Satya, Akella V. S.; Ghatalia, Ashwin K.; and Thomas, Donald R., to International Business Machines Corporation. Electrical defect monitor structure. 3,983,479, Cl. 324-158.00R.
Lee, Kuem Ja: *See—*
Lee, Jae Yoon; and Lee, Kuem Ja, 3,983,037.
Lee, Minyoung, to General Electric Company. Process for the preparation of a composite cubic boron nitride layer abrasive body. 3,982,911, Cl. 51-307.000.
Lee, Neville K. S.: *See—*
Lax, Benjamin; Aggarwal, Roshan L.; and Lee, Neville K. S., 3,983,406.
Leeds Travelwear, a division of Rapid-American Corporation: *See—*
Wood, Robert H., 3,982,613.
Leemhuis, Johannes Antonius Joseph, to Akzona Incorporated. Novel 11β-alkyl steroids of the estrane series. 3,983,144, Cl. 260-397.300.
Leezer, James R.: *See—*
Parlour, A. Kenneth; Leezer, James R.; and Turpin, Charles H., 3,982,686.

Lehnert, Stanley E., to Zenith Radio Corporation. Low level pincushion correction system with a dual impedance yoke. 3,983,450, Cl. 315-370.000.
Lehrke, Kenneth E.: *See—*
Gleason, Paul W.; and Lehrke, Kenneth E., 3,982,569.
Lehto, Timo Kalevi, to Kemira Oy. Removing nitrates with an organic amine salt and ion exchange. 3,983,222, Cl. 423-395.000.
Leis, Michael; and Doane, Russell C., to Digital Equipment Corporation. Scan control circuit for a video terminal display device using feedback to control synchronization. 3,983,451, Cl. 315-387.000.
Leisure Technology, Inc.: *See—*
Devoe, Donald R., 3,982,570.
Leland Stanford Junior University, The Board of Trustees of: *See—*
Boyd, Douglas P., 3,983,398.
Cohen, Uri, 3,983,012.
Leogrande, Antonio: *See—*
Rudolph, Gunther; Schelzke, Erhard; and Leogrande, Antonio, 3,982,933.
L'Esperance, Francis A., Jr. Eye surgical instrument. 3,982,541, Cl. 128-303.100.
Lestage, Joseph C.: *See—*
Van Brussel, William R.; Lestage, Joseph C.; and Hartman, Wayne J., 3,982,673.
Letellier, Jules P., to United States of America, Navy. Fluid gap glan-laser prism. 3,982,819, Cl. 350-157.000.
Letoffe, Michel, to Rhone-Poulenc S.A. Method of coating a substrate with curable organopolysiloxane compositions. 3,983,265, Cl. 427-58.000.
Levatter, Jeffrey I.; Lin, Shao-Chi; and Scott, Paul B., to Xonics, Inc. Spark gap switch. 3,983,438, Cl. 313-146.000.
Lever Brothers Company: *See—*
Alterman, David S.; and Chun, Kil Whan, 3,983,254.
Levine, Charles J.: *See—*
Jugle, Don B.; and Levine, Charles J., 3,983,045.
Levine, Harold A.: *See—*
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Lewis, Clarke H.: *See—*
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Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, 3,983,236.
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Liberty Carton Co.: *See—*
Krizan, Bradford J.; and Pfaffendorf, James L., 3,982,690.
Licari, James J.; and Willing, Robert, to Rockwell International Corporation. Composition for boundary lubricant and method. 3,983,270, Cl. 427-372.000.
Lima, Paul J.; and Townsend, Todd V., to Lynch Communication Systems, Inc. Automatic span line switch. 3,983,340, Cl. 179-175.30S.
Limpens, Karl: *See—*
Glindmeyer, Friedrich; Hennenberg, Wilhelm Friedrich; and Limpens, Karl, 3,982,566.
Lin, Kang, to Du Pont de Nemours, E. I., and Company. Herbicidal triazines. 3,983,116, Cl. 260-249.500.
Lin, Shao-Chi: *See—*
Levatter, Jeffrey I.; Lin, Shao-Chi; and Scott, Paul B., 3,983,438.
Lindberg, Arthur F.: *See—*
Bellino, Joseph A.; Geis, David G.; Hodne, Ingard B.; and Lindberg, Arthur F., 3,982,622.
Lindblad, Oskar Lennart. Device for tightening of a belt forming part of a safety harness assembly for vehicles. 3,982,775, Cl. 280-744.000.
Linde Aktiengesellschaft: *See—*
Becker, Rudolf, 3,982,653.
Linden-Alimak AB: *See—*
Stadigh, Hans-Goran, 3,983,519.
Lindgren, Kenneth; and Erlandsson, Sten, to Verkstadsproduktion I Borlange AB. Adjustable tool positioning structure. 3,982,715, Cl. 248-2.000.
Lindmayer, Joseph; and Allison, James Frederick, to Communications Satellite Corporation (Comsat). Dotted contact fine geometry solar cell. 3,982,964, Cl. 136-89.000.
Lindner, Irmgard: *See—*
Zolss, Gerhard; Pittner, Heribert; Stormann-Menninger-Lerchenthal, Heimo; and Lindner, Irmgard, 3,983,169.
Lindstrum, Alan L., to United States of America, Navy. Hybrid tracking loop for detecting phase shift keyed signals. 3,983,501, Cl. 329-122.000.
Lipscombe, William Mark, to Feedback Instruments Limited. Current controlled electrical circuits. 3,983,512, Cl. 331-108.00B.
Lissant, Kenneth J., to Petrolite Corporation. Use of emulsions in crowd control. 3,983,213, Cl. 424-170.000.
Litton Business Systems, Inc.: *See—*
Morris, David, 3,983,472.
Litzinger, William A.: *See—*
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Liu, Peter Tsung-Shih: *See—*
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Livesay, William R., to Electron Beam Microfabrication Corporation. Method and apparatus for target support in electron projection systems. 3,983,401, Cl. 250-492.00A.
Ljubartovich, Natalya Vasilievna: *See—*
Badenkov, Petr Fedorovich; Portny, Gennady Lazarevich; Muslaev, Igor Mikhailovich; Pukhova, Regina Lazarevna; Roitburd, Isaak Shlemovich; Ljubartovich, Natalya Vasilievna; Rossin, Valery Donovich; Petrokas, Leonid Venediktovich; and Tsaplin, Nikolai Sergeevich, 3,982,989.
Llach, Lawrence; and Picas, Arturo. Variable drive mechanism for carding machine. 3,982,301, Cl. 19-.250.
Llop, Helenio, to Societe d'Optique, Precision Electronique et Mechanique Sopelem. Device for measuring angular deviation of a light beam by use of gratings. 3,983,390, Cl. 250-231.00R.
Loeliger, Peter: *See—*
Chodnekar, Madhukar Subraya; Schwieter, Ulrich; Loeliger, Peter; Pfiffner, Albert; Suchy, Milos; and Zurfluh, Rene, 3,983,247.
Logan, John S.: *See—*
Colovas, Denny D.; Logan, John S.; and Mniece, Roland L., 3,982,794.
Loggins, John T., to Texaco Inc. Marine structure with detachable anchor. 3,982,401, Cl. 61-93.000.
Lopez, John R.: *See—*
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Lorain Products Corporation: *See—*
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L'Oreal: *See—*
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Lortz, Russell W., to Phillips Petroleum Company. Implement support apparatus. 3,982,902, Cl. 23-288.00R.
Lotz, Robert William: *See—*
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Love, Calvin M.: *See—*
Chong, Clyde H. H.; Love, Calvin M.; Prisc, Martin D.; and Russo, Alexander J., 3,983,219.
Love, Gordon David. Mixing devices. 3,982,700, Cl. 241-46.110.
Love, John J.; and Fleer, Thomas P., to Emerson Electric Co. Mounting means for a domestic gas oven burner orifice member. 3,982,523, Cl. 126-19.00R.
Lovell, Paul L., to Cyclamatic, Inc. Method and apparatus for curing concrete products. 3,982,890, Cl. 432-138.000.
Lowe, Roger W.: *See—*
Ketcham, David J.; Lowe, Roger W.; Pruznick, Michael D.; and Opittek, Eugene W., 3,983,320.
Lowenstein, Arthur Michael: *See—*
Lowenstein, Hyman Moses; and Lowenstein, Arthur Michael, 3,983,212.
Lowenstein, Hyman Moses; and Lowenstein, Arthur Michael. Alumina production. 3,983,212, Cl. 423-137.000.
Lowndes Engineering Co., Inc.: *See—*
Waldron, David W., 3,982,351.
Lu, Robert T., to ICI United States Inc. Photopolymerization of ethylenically-unsaturated organic compounds. 3,982,942, Cl. 96-35.100.
Lucas, Charles John: *See—*
Arndt, Herbert Lorenz, Jr.; Balderes, Demetrios; Kranik, John Robert; and Lucas, Charles John, 3,983,402.
Lucas Industries Limited: *See—*
Maker, Paul Manwaring, 3,982,389.
Luedtke, Ronald E.; and Ardelt, Clarence A., to International Harvester Company. Lift arm safety bar. 3,982,648, Cl. 214-776.000.
Lundberg, Charles Andrew, to Richardson-Merrell Inc. Process for the preparation of quinolizinone derivatives. 3,983,122, Cl. 260-289.0AZ.
Lunde, Peter Alan: *See—*
Lang, Alexander Craig; and Lunde, Peter Alan, 3,982,402.
Luscher, Jakob; and Rusznyak, Andreas, to Ebauches S.A. Frequency divider. 3,983,411, Cl. 307-225.00C.
Lynch, Brian: *See—*
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Lynch Communication Systems, Inc.: *See—*
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Lynenwerk KG: *See—*
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Ma, John Y., to Zenith Radio Corporation. Signal overload protection circuit for varactor tuner. 3,983,490, Cl. 325-452.000.
MacDougall, James Bruce, to Andrew Corporation. Cassegrain antenna with improved subreflector for terrestrial communication systems. 3,983,560, Cl. 343-781.0CA.
MacGregor, William Roderick; and Spicer, Dalton Harold, to Deere & Company. Power loader. 3,982,643, Cl. 214-131.00A.
Mach, Wolfgang: *See—*
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Machacek, Jiri: *See—*
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Machinefabriek en Constructiewerkplaats Gebr. Klinkenberg B.V.: *See—*
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Machinefabriek M. Brouwer & Co. B.V.: *See—*
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- MacMillan Bloedel Limited: *See—*
  - Bos, Arie, 3,982,782.
- Mader, William G.: *See—*
  - Folkenroth, Richard P.; Mader, William G.; and Williams, Ralph J., 3,982,718.
- Madigan, Thomas M., to Itek Corporation. Roller moistening wick system for preventing dripping within a duplicating machine. 3,982,484, Cl. 101-422.000.
- Madsen, Harold L. Drapery hanger and manipulator. 3,982,581, Cl. 160-340.000.
- Maeda, Yuji: *See—*
  - Kaetsu, Isao; Kumakura, Minoru; Ito, Akihiko; and Maeda, Yuji, 3,983,083.
- Maekawa, Yukio; and Sakanoue, Seiki, to Fuji Photo Film Co., Ltd. Bis-azo pyrazolone type dye developer and light-sensitive material. 3,982,946, Cl. 96-73.000.
- Maes, Roger V. Portable vise. 3,982,739, Cl. 269-37.000.
- Mahoney, Edmund J.; and Natanson, Paul S., to Solar Power Corporation. Solar battery maintainer. 3,982,963, Cl. 136-89.000.
- Maida, Rikichi: *See—*
  - Sumikawa, Shozo; Maida, Rikichi; and Kageyama, Yuriaki, 3,983,170.
- Maior, David G., to Campbell Research Corporation. Food processing system. 3,983,259, Cl. 426-401.000.
- Maitrias, Gerard, to Burroughs Corporation. Motor drive system including a feedback loop. 3,983,468, Cl. 318-685.000.
- Maker, Paul Manwaring, to Lucas Industries Limited. Electronic fuel control for a gas turbine engine. 3,982,389, Cl. 60-39.16R.
- Malatesta, Alberto: *See—*
  - Baldwin, Francis P.; Malatesta, Alberto; and O'Farrell, Charles P., 3,983,062.
- Malek, Charles John, to Motorola, Inc. Digital phase lock loop. 3,983,498, Cl. 328-155.000.
- Malek, Hooshang; and Polan, Alvin F. Directional self containing ear mounted hearing aid. 3,983,336, Cl. 179-107.0FD.
- Malgarini, Giansilvio; and Pasero, Edoardo, to Centro Sperimentale Metallurgico S.p.A. Plate for fluid-bed reactors. 3,982,900, Cl. 23-284.000.
- Malmberg, Rolf; and Olenfalk, Lars Gustav, to Alfa-Laval AB. Production of milk with predetermined fat content. 3,983,257, Cl. 426-231.000.
- Maltese, John; Nesson, Israel; and Mitchell, Robert, to Berkey Photo, Inc. Camera construction. 3,983,570, Cl. 354-86.000.
- Mangels, John A., to Ford Motor Company. Method of increasing the oxidation resistance of silicon nitride. 3,983,198, Cl. 264-65.000.
- Manitoba Research Council: *See—*
  - Stuchly, Stanislaw Szczesny; Rzewuski, Michael Napoleon; and Tarnawecky, Michael Zenon, 3,983,477.
- Mansfeld, Viktor: *See—*
  - Coupek, Jiri; Trukova, Jaroslava; Hubalkova, Olga; Krivakova, Miroslava; and Mansfeld, Viktor, 3,983,001.
- Mansmann, Manfred; and Schmidt, Ludwig, to Bayer Aktiengesellschaft. Aluminum oxide fibers and their production. 3,982,955, Cl. 106-307.000.
- Mansour, Rodolf: *See—*
  - Gerresheim, Jost; Drennhaus, Alfons; Breidenbach, Hans; Mansour, Rodolf; and Pfeil, Christian, 3,982,600.
- Manufacturers Systems, Inc.: *See—*
  - Anderson, Leroy E., 3,982,414.
- Mao, Chung-Ling, to Uniroyal Inc. 3-(Hydroxyhydrocarbylsecondaryamino)thiophene 1,1-dioxides and polyurethanes chain extended therewith. 3,983,139, Cl. 260-330.500.
- Maples, H. Eugene. Spraying apparatus. 3,982,697, Cl. 239-289.000.
- Mara, Richard M.: *See—*
  - Nicolson, Alexander M.; and Mara, Richard M., 3,983,422.
- Marchese, Vincent P.: *See—*
  - Rakowsky, Edward L.; and Marchese, Vincent P., 3,982,488.
- Marciniec, Edmund T., to Teletype Corporation. Method of evaluating the cleanliness of silicon wafers. 3,982,976, Cl. 156-7.000.
- Marco Materialhantering AB: *See—*
  - Larsson, Hans Gustav Ingvar; and Stjarnovist, Sven Gunnar Harald, 3,982,767.
- Marconi Company Limited, The: *See—*
  - Telfer, Charles Richard, 3,983,536.
- Marconi, Walter: *See—*
  - Palladino, Nicola; Mazzei, Marcello; and Marconi, Walter, 3,983,308.
- Marechal, Gilles, to Societe d'Exploitation des Procedes Marechal S.E.P.M. Selective electrical connection device. 3,982,804, Cl. 339-41.000.
- Marechal, Gilles, to Societe d'Exploitation des Procedes Marechal S.E.P.M. (Societe Anonyme). Single wire electrical connector. 3,982,808, Cl. 339-88.00R.
- Marinis, Spyridon: *See—*
  - Vigelius, Wolf-Dieter; and Marinis, Spyridon, 3,983,089.
- Mark, Arnold; Berman, Donald J.; and Cohen, Sam. Switch and dual lamp and switch combination. 3,983,447, Cl. 315-64.000.
- Markle, Larry D.: *See—*
  - Bradley, Frank M.; and Markle, Larry D., 3,982,711.
- Marko, Laszlo: *See—*
  - Meszaros, Lajos; Grega, Jozsef; Lako, Lajos; Marko, Laszlo; Salamon, Zoltan; Szatmari, Istvan; and Tasi, Laszlo, 3,982,736.
- Markusch, Peter: *See—*
  - Dieterich, Dieter; and Markusch, Peter, 3,983,081.
- Markwitz, Wernhard: *See—*
  - Olfinger, Max; and Markwitz, Wernhard, 3,983,325.
- Marlatt, Orlean F. Liner for doghouse. 3,982,500, Cl. 119-19.000.
- Marsh, William Francis, to Haffenden-Richborough Limited. Plastic forceps hinge. 3,982,450, Cl. 81-416.000.
- Marshall, David W.; and Agarwal, Jagdish Chandra, to Kennecott Copper Corporation. Copper filled conductive epoxy. 3,983,075, Cl. 252-511.000.
- Martin, Adam Eugene. Pipe connection to manholes and the like. 3,982,777, Cl. 285-192.000.
- Martin, John J., to United States of America, Army. Ballistic missile defense system. 3,982,713, Cl. 244-3.100.
- Martinec, Josef: *See—*
  - Riha, Miloslav; Martinec, Josef; and Cernocky, Jiri, 3,982,568.
- Martone, Ronald J.; Yarsawich, Michael; and Wolczek, Walter, to Picker Corporation. Radiation camera exposure control. 3,983,394, Cl. 250-363.00S.
- Marzocco, Angelo T. Automatic dog and cat feeder. 3,982,501, Cl. 119-51.140.
- Masaki, Kenji; and Saito, Masaaki, to Nissan Motor Co., Ltd. Internal combustion engine exhaust cleaning method and system. 3,982,393, Cl. 60-274.000.
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  - Graeber, August; Fleischer, Friedrich; and Werner, Gerhard, 3,982,873.
- Maschinenfabrik Augsburg-Nurnberg AG: *See—*
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- Maschinenfabrik Fahr Aktiengesellschaft: *See—*
  - Scherer, Werner, 3,982,772.
- Mase, Tamio: *See—*
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- Massachusetts Institute of Technology: *See—*
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  - de Latour, Christopher, 3,983,033.
  - Lagow, Richard J., 3,983,182.
  - Lax, Benjamin; Aggarwal, Roshan L.; and Lee, Neville K. S., 3,983,406.
- Masson Scott Thrissell Engineering Limited: *See—*
  - Bossons, Walter Howard; and Langworthy, Colin George, 3,983,467.
- Mathauser, William R. Apparatus and method to test the condition of an electrical service line and to determine the presence and/or removal of electrical equipment connected to the line. 3,983,338, Cl. 179-175.20C.
- Matiosian, Jake: *See—*
  - Zecevic, Vuk, 3,982,323.
- Matoba, Kazuo: *See—*
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- Matsuguma, Yoshihiko: *See—*
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- Matsui, Masanao; Mori, Kenji; Kitahara, Takeshi; Kitamura, Seiichi; and Ohba, Kazumasa, to Teikoku Chemical Industry Co., Ltd. Ureylenethiophanes and their related compounds, and production thereof. 3,983,134, Cl. 260-309.700.
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  - Honjo, Satoru; Miyatuka, Hajime; and Matsumoto, Seiji, 3,982,938.
- Matsumoto, Yasuo, to Fuji Photo Film Co., Ltd. Adhesive tape. 3,983,276, Cl. 428-40.000.
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  - Kinjo, Kikuo; Matsuno, Hiroshi; Hasegawa, Tetsuo; and Kato, Hideo, 3,982,940.
- Matsuo, Eiichi: *See—*
  - Skinsnes, Olaf K.; and Matsuo, Eiichi, 3,983,003.
- Matsushita Electric Industrial Co., Ltd.: *See—*
  - Hattori, Katsuji; Fukai, Masakazu; Moriyama, Akio; and Nishizawa, Yasuhiro, 3,982,820.
  - Kubo, Shuji, 3,982,315.
- Matsushita, Hiromu; Yamahata, Takashi; and Kakimoto, Hiroshi, to General Company, Ltd. Multiple heat-sensitive copying medium. 3,983,279, Cl. 428-101.000.
- Matsuura, Shinzo: *See—*
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- Maurino, William J.; and Putzer, Raymond M., to Precision Flexmold, Inc. Molding apparatus including a one-piece flexible mold deformable by fluid pressure differential. 3,982,721, Cl. 249-139.000.
- Maw, Peter James Reuben: *See—*
  - Hancock, Reginald Ronald; and Maw, Peter James Reuben, 3,982,708.
- Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See—*
  - Schafer, Fritz Peter, 3,983,436.
- May, Denis Ronald William, to J. E. Hanger & Company Limited. Alignment device for artificial limbs. 3,982,278, Cl. 3-21.000.
- Mayama, Mikao: *See—*
  - Okabe, Kei; Mayama, Mikao; and Matsuura, Shinzo, 3,983,230.

- Mayer, Norbert: *See—*
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- McArthur, Dennis P., to Union Oil Company of California. Process for rejuvenating automobile emission control catalysts. 3,983,052, Cl. 252-412.000.
- McCollum, John D.; and Quick, Leonard M., to Standard Oil Company (Indiana). Process for recovering upgraded products from coal. 3,983,027, Cl. 208-8.000.
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- McConaghy, John S., Jr., to Monsanto Company. Oxidation of unsaturated amines. 3,983,161, Cl. 260-465.900.
- McCrary, Lawrence E.: *See—*
  - Bitsch, Richard C.; and McCrary, Lawrence E., 3,983,428.
- McDaniel, Marvin Lee: *See—*
  - Ivashuk, Michael; and McDaniel, Marvin Lee, 3,982,774.
- McDonald, Bernard. Apparatus for collecting urine sample. 3,982,898, Cl. 23-259.000.
- McDonald, Robert N.: *See—*
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  - Sheratte, Martin B., 3,983,046.
- McDonnell, Richard J. Torsion type arm exercising apparatus. 3,982,757, Cl. 272-134.000.
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  - Faber, Ulbe; Davis, Robert L.; Fisher, David A.; and McGonagle, Joseph D., 3,983,541.
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- McLain, Robert E., to Rockwell International Corporation. Ultrasonic inspection system. 3,982,425, Cl. 73-67.80S.
- McLane, Jack S. Cooking apparatus. 3,982,476, Cl. 99-339.000.
- McMurtrie, Charles Louis, to Eastech, Inc. Fluid flow signal processing circuit. 3,982,434, Cl. 73-194.0VS.
- McNeil Laboratories, Incorporated: *See—*
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- Me-Books Publishing Company: *See—*
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  - Harrison, Charles W.; Mead, Theodore C.; Moreland, Howard R.; and Barger, Frank L., 3,982,422.
- Mecham, William J., to United States of America, Energy Research and Development Administration. Method for storage of solid waste. 3,983,050, Cl. 252-301.10W.
- Med-Pro, Ltd.: *See—*
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- Meeuwen, Adolf: *See—*
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- Mehta, Bharat C., to Allis-Chalmers Corporation. Belt elevator for bulk material. 3,982,626, Cl. 198-626.000.
- Meier, Eugen; and Ellner, Milan, to Mettler Instrumente AG. Dash-pot arrangement for balance. 3,982,738, Cl. 267-121.000.
- Mendoza, Fausto Celorio. Method for milling grain while simultaneously cooking the grain. 3,983,261, Cl. 426-473.000.
- Menshen, Arnold. Plastic clamping apparatus. 3,982,304, Cl. 24-73.0AP.
- Merck & Co., Inc.: *See—*
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- Meserow, Francis P.; and Mills, Frank H., to Alston, Inc. Calibration circuit and method. 3,983,480, Cl. 324-169.000.
- Messing, Ralph A.; and Odstrchel, Gerald, to Corning Glass Works. Bonding proteins to inorganic supports. 3,983,000, Cl. 195-63.000.
- Messing, Ralph A.: *See—*
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- Meszaros, Lajos; Grega, Jozsef; Lako, Lajos; Marko, Laszlo; Salamon, Zoltan; Szatmari, Istvan; and Tasi, Laszlo, to Eszakmagyarorszagi Vegyimuvek. Intensification of fluid-fluid transport processes. 3,982,736, Cl. 259-107.000.
- Mettler Instrumente AG: *See—*
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- Metzger, Karl Georg: *See—*
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- Meyer, Horst, to Bayer Aktiengesellschaft. Process for the preparation of 4-hydroxy-3-methoxy-phenylacetonitrile. 3,983,151, Cl. 260-465.00F.
- Meyer, Horst, to Bayer Aktiengesellschaft. Process for the preparation of hydroxyphenylacetonitriles. 3,983,160, Cl. 260-465.00F.
- Meyer, Ruth, to Raymond Lee Organization, Inc., The, a part interest. Shoulder strap holder pin. 3,982,305, Cl. 24-85.00R.
- Meyers, Theodore F., to Hobart Corporation. Mounting assembly for food waste disposer. 3,982,703, Cl. 241-100.500.
- Meylan, Pierre: *See—*
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- Mezhueva, Larisa Sergeevna: *See—*
  - Gutman, Mark Borisovich; Kaufman, Vsevolod Grigorievich; Gorodinsky, Mikhail Savelievich; Shakhnes, Jury Alexandrovich; Mezhueva, Larisa Sergeevna; Altukhova, Irina Stepanovna; Kaloshin, Jury Grigorievich, deceased; and Kaloshina, Albina Adolfovna, administratrix, 3,983,013.
- Michael, Dietrich: *See—*
  - Nielinger, Werner; Dhein, Rolf; Haberland, Ulrich; Michael, Dietrich; and Hermann, Karl-Heinz, 3,983,306.
- Michael, Robert, to Transports-Recherches-Etudes et Groupement d'Interet Economique (TREGIE). Steering systems for guided vehicles. 3,982,603, Cl. 180-131.000.
- Micro-Mega S.A.: *See—*
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- Micromedic Diagonistics, Inc.: *See—*
  - Niswender, Gordon Dean, 3,983,099.
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- Mildern, William D. Valve. 3,982,674, Cl. 222-402.210.
- Milicic, Tony, to Irwin Toy Limited. Outdoor game dart. 3,982,762, Cl. 273-106.50B.
- Miller, Donald P.: *See—*
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- Miller, Howard. Device for attaching a sink rim to a drainboard. 3,982,287, Cl. 4-187.00A.
- Miller, Michael Evans; and Amery, John Gordon, to RCA Corporation. Velocity correction system with damping means. 3,983,318, Cl. 178-6.6DD.
- Miller, Miles C.: *See—*
  - Flatau, Abraham; Olson, Donald N.; and Miller, Miles C., 3,982,489.
- Miller, Roy W., to Pullman Incorporated. Hopper car door actuating mechanism. 3,982,641, Cl. 214-58.000.
- Miller, Stewart Edward, to Bell Telephone Laboratories, Incorporated. Method for forming optical fiber preform. 3,982,916, Cl. 65-3.00A.
- Miller, Warren Hall: *See—*
  - Gorton, Howard Bryon; and Miller, Warren Hall, 3,982,800.
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  - Conder, Terrence M.; and Newman, Donald J., 3,982,822.
  - Goossen, Charles G.; and Peterson, Stanley G., 3,983,287.
  - Keith, Roger H., 3,982,780.
  - Krogseng, Gerald P.; and Paul, Fred R., Jr., 3,982,536.
- Miram, George V.; and Kuehne, Gerhard B., to Varian Associates. Gridded convergent flow electron gun for linear beam tubes. 3,983,446, Cl. 313-452.000.
- Mirtain, Henri J., to Uniroyal S.A. Pneumatic tire. 3,982,579, Cl. 152-361.00R.
- Misato, Tomomasa; Huang, Keng Tang; Homma, Yasuo; Shida, Toshiro; and Wakamatsu, Hachiro, to Ajinomoto Co., Inc. Fungicidal compositions and method for protecting plants by the use thereof. 3,983,214, Cl. 424-180.000.
- Mr. Tuffy Co.: *See—*
  - Scimeca, Frank M., 3,982,577.
- Mitchell, Larry D.; and Tanner, Murray Q., III, to Affiliated Hospital Products, Inc. Operating table or the like with geometrically compensated differentially movable load sharing multiple hydraulic cylinder and piston arrangement. 3,982,741, Cl. 269-325.000.
- Mitchell, Richard Frank; Read, Eileen; and Stevens, Richard, to U.S. Philips Corporation. Acoustic surface wave devices. 3,983,515, Cl. 333-30.00R.
- Mitchell, Robert: *See—*
  - Maltese, John; Nesson, Israel; and Mitchell, Robert, 3,983,570.
- Mitchell, Robert W., to Photo Systems, Inc. Color filter head for photographic enlargers. 3,982,825, Cl. 350-313.000.
- Mitchell, Thomas O.; and Whitehurst, Darrell Duayne, to Mobil Oil Corporation. Synthetic amorphous silicas of predetermined pore distribution method of producing same. 3,983,055, Cl. 252-454.000.
- Mitsche, Roy T.; Kuntz, Hillard L.; and Hayes, John C., to Universal Oil Products Company. Preparation of alumina extrudates. 3,983,197, Cl. 264-56.000.
- Mitsubishi Chemical Industries Ltd.: *See—*
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- Miyazaki, Moritugu, to Mitsui Shipbuilding and Engineering Co., Ltd. Method and apparatus for erecting a vertical structure. 3,982,634, Cl. 212-1.000.
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  - Mitchell, Thomas O.; and Whitehurst, Darrell Duayne, 3,983,055.
  - Moffitt, Myron L., 3,982,992.
  - Rosynek, Michael P.; Shipman, George F.; and Yan, Tsoung-Yuan, 3,983,030.
  - Theissen, Robert J., 3,983,168.
- Moczygemba, George A.; Johnson, W. Delmar; and Clark, Earl, to Phillips Petroleum Company. Iodine molecular weight regulators in suspension polymerization systems. 3,983,187, Cl. 260-880.00R.
- Moddel, Adolf. Method and device for forming a socket on a plastic tube. 3,982,871, Cl. 425-393.000.
- Moe, William West; Lotz, Robert William; Green, Ethan Robert; and Fazio, Rodolfo, to Printing Developments, Inc. Electronic screening for image reproduction. 3,983,319, Cl. 178-6.70R.
- Moffitt, Myron L., to Mobil Oil Corporation. Production of heat seals in thermoplastic material with press head having a temperature gradient. 3,982,992, Cl. 156-583.000.
- Mogaki, Katsuo: *See—*
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- Moll, Hans, to Maschinenfabrik Augsburg-Nurnberg AG. Seat arrangement for a passenger car. 3,982,787, Cl. 297-317.000.
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- Momiyama, Kikuo; and Agari, Yujiro, to Canon Kabushiki Kaisha. Retrofocus wide-angle objective lens system of large relative aperture. 3,982,823, Cl. 350-214.000.
- Monsanto Company: *See—*
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  - Chin, Charles L. D.; Wiggins, William R.; and Yonko, Jon D., 3,982,635.
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  - Segalini, Angelo, 3,983,096.
- Moon, Roger A., to Ford Motor Company. Electronic-fuel-injection-system enrichment circuit for use during engine cranking. 3,982,519, Cl. 123-179.00L.
- Moore, Alvin Edward. Insulated structure of end-joined cans and stuccoed mesh. 3,982,362, Cl. 52-91.000.
- Moore, C. Bradley; and Yeung, Edward S., to University of California, The Regents of the. Isotopic separation by photopredissociation. 3,983,020, Cl. 204-157.10R.
- Moore, Charles T., to Dayton-Hudson Corporation. Interchangeable price indicating sign. 3,982,342, Cl. 40-5.000.
- Moore, John R.: *See—*
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- Moore, Leo M., to Industrial Machine Service Company. Hot melt dispensing apparatus and method. 3,982,669, Cl. 222-146.0HE.
- Moore, Ronald Lynn: *See—*
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- Mori, Takaro: *See—*
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- Morita, Akira: *See—*
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- Morris, David, to Litton Business Systems, Inc. Chokeless Schmitt-trigger regulator. 3,983,472, Cl. 323-17.000.
- Morris, Robert C.: *See—*
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- Morrison, John Malcolm; and Stewart, Charles McGregor, to Ferranti, Limited. Radar receivers. 3,983,555, Cl. 343-5.00R.
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- Motorola, Inc.: *See—*
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- Mott, Roger Eugene, to Deere & Company. Harvesting platform with a floating cutter bar. 3,982,383, Cl. 56-11.600.
- Moussou, Jean; and Calvet, Robert, to Ceraver. Heat treatment tunnel kiln for products having a circular cross-section. 3,982,888, Cl. 432-128.000.
- Moy, Franklin. Active filter. 3,983,504, Cl. 330-107.000.
- Mt. Lassen Cinder Company: *See—*
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- Mueller, Wolfgang P.: *See—*
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  - Satomi, Takeo; Mukai, Kunio; Mine, Akihiko; Hino, Naganori; Tateishi, Kohshi; and Hirano, Masachika, 3,982,921.
- Mulleneers, Jan Joseph Mattheus, to U.S. Philips Corporation. Apparatus for adjusting the filament current of an X-ray tube. 3,983,396, Cl. 250-402.000.
- Muller, Hans, to Grapha-Holding AG. Method and arrangement for storing and transporting paper sheets. 3,982,642, Cl. 214-301.000.
- Muller, Jacques: *See—*
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- Muller, Rudolf: *See—*
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- Multi-Fab, Inc.: *See—*
  - Gilmore, Guy T., 3,982,451.
- Muraki, Ryoji; Endo, Masao; Aoki, Nobuaki; Mizutani, Kazuo; and Fukui, Norio, to Kurashiki Boseki Kabushiki Kaisha. Method for removing sulfur dioxide from waste gases. 3,983,217, Cl. 423-242.000.
- Murayama, Fumio: *See—*
  - Hosoda, Minoru; Kasiwagi, Eiichi; Murayama, Fumio; and Isayama, Kohei, 3,983,056.
- Murer, Angelo; and Borsatti, Mario, to Exxon Research and Engineering Company. Rigid or semirigid foams and process of making them. 3,983,295, Cl. 428-315.000.
- Muriot, Edward E., to Health Technology Labs, Inc. Medical/surgical suction equipment. 3,982,539, Cl. 128-276.000.
- Murray, James M. Dish stabilizing mechanisms for dish-washing machines. 3,982,799, Cl. 312-270.000.
- Murray, Leo Thomas, to Colgate-Palmolive Company. Bleaching and detergent compositions having imide activator and peroxygen bleach. 3,982,891, Cl. 8-111.000.
- Murthi, Varanasi Aruna; Jain, Padam Chand; Sharma, Jitendra Nath; Srimal, Rikhab Chand; Dhawan, Bhola Nath; and Anand, Nitya, to Council of Scientific and Industrial Research. 1-Substituted 4-(β-2-quinolylethyl)piperazines and 1,2,3,4-tetrahydroquinolyl-ethyl analogues thereof. 3,983,121, Cl. 260-268.0BQ.
- Muslaev, Igor Mikhailovich: *See—*
  - Badenkov, Petr Fedorovich; Portny, Gennady Lazarevich; Muslaev, Igor Mikhailovich; Pukhova, Regina Lazarevna; Roitburd, Isaak Shlemovich; Ljubartovich, Natalya Vasilievna; Rossin, Valery Donovich; Petrokas, Leonid Venediktovich; and Tsaplin, Nikolai Sergeevich, 3,982,989.

- Naarmann, Herbert: *See—*
  - Scharf, Emil; Naarmann, Herbert; and Reichel, Fritz, 3,983,268.
- Nabae, Akira; and Shimamura, Takeo, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for controlling the speed of induction motors. 3,983,463, Cl. 318-227.000.
- Naden, Rex Alan, to Texas Instruments Incorporated. Programmable arithmetic and logic bubble arrangement. 3,983,383, Cl. 235-176.000.
- Nagai, Kunio; and Akutagawa, Tooru, to Sony Corporation. Color saturation and contrast control circuitry responsive to ambient light. 3,983,575, Cl. 358-27.000.
- Nagai, Yasutaka; Uno, Hitoshi; Shimizu, Masanao; and Karasawa, Tadahiko, to Dainippon Pharmaceutical Co., Ltd. Hexahydro-γ-carboline derivatives and their salts. 3,983,239, Cl. 424-267.000.
- Nagaoka, Tadahiko: *See—*
  - Yamane, Kimitaka; Ueno, Zene; Morita, Akira; Nagaoka, Tadahiko; and Iwaki, Shigeo, 3,982,878.
- Nagel, Martin J.: *See—*
  - Goss, Stanley B.; Nagel, Martin J.; and Nilssen, Ole K., 3,983,550.
- Najvar, Daniel J.; and Hawkins, Jerry M., to Dow Chemical Company, The. Acrylate and methacrylate monomers. 3,983,167, Cl. 260-486.00R.
- Nakada, Akira: *See—*
  - Hashimoto, Sho; Nakada, Akira; Kano, Saburo; and Takahashi, Susumu, 3,983,241.
- Nakagawa, Yasuhiko; and Nakai, Meroji, to Nissan Motor Co., Ltd. Carburetor for torch ignited engine. 3,982,513, Cl. 123-119.00D.
- Nakai, Meroji: *See—*
  - Nakagawa, Yasuhiko; and Nakai, Meroji, 3,982,513.
- Nakajima, Norio, to Caterpillar Mitsubishi Ltd. Emergency brake system for a vehicle. 3,982,792, Cl. 303-6.00A.
- Nakamura, Shinji: *See—*
  - Takahashi, Nobuaki; Nishikawa, Kazunori; Iwasaki, Yoshiki; Satoh, Masaaki; Ohba, Katsuhiro; Nakamura, Shinji; Sawada, Tatsuo; Ohsaki, Nobuhide; Itoh, Yasuo; Suda, Nobuaki; Okabe, Yasuhisa; and Ozaki, Hideaki, 3,983,500.
- Nakanishi, Shinichiro, to West Electric Company, Ltd. Automatic strobo flash device. 3,983,448, Cl. 315-151.000.
- Nakano, Kazuo: *See—*
  - Senda, Hisakazu; Yamamoto, Toshiaki; Ueno, Hiroshi; and Nakano, Kazuo, 3,983,147.
- Nakayama, Koji. Antenna adapter for television. 3,983,563, Cl. 343-861.000.
- Nakayama, Osamu, to Nippon Electric Company, Ltd. Connector for light-transmitting cables. 3,982,815, Cl. 350-96.00C.
- Nakazawa, Mitsunobu; Araki, Yoshiaki; Haruta, Masahiro; and Satomi, Kunio, to Canon Kabushiki Kaisha. Image recording member. 3,983,564, Cl. 346-1.000.
- Nalco Chemical Company: *See—*
  - Allain, Ronald J.; and Braithwaite, David G., 3,983,224.
- Nannichi, Yasuo: *See—*
  - Hayashi, Izuo; and Nannichi, Yasuo, 3,983,510.
- Narayanan, Venkatachala Lakshmi; and Haugwitz, Rudiger D., to E. R. Squibb & Sons, Inc. Anthelmintic isothiocyanobenzoxazoles. 3,983,130, Cl. 260-307.00D.
- Narco Scientific Industries, Inc.: *See—*
  - Powell, Ronald Lee; and Smith, Frank Patterson, II, 3,983,557.
- Narita, Hiroshi: *See—*
  - Tsuboi, Takashi; Narita, Hiroshi; and Higuchi, Toru, 3,983,465.
- Nasyrov, Gakif Zakirovich; Kaluzhsky, Nikolai Andreevich; and Kostin, Vladimir Nikolaevich. Method of producing alumina and potassium sulphate form alunite. 3,983,211, Cl. 423-128.000.
- Natanson, Paul S.: *See—*
  - Mahoney, Edmund J.; and Natanson, Paul S., 3,982,963.
- National Computer Systems, Inc.: *See—*
  - Firehammer, John D.; and Gruebele, Dale W., 3,983,364.
- National Research Development Corporation: *See—*
  - Bradley, Daniel Joseph; and Hutchinson, Marcus Henry Ritchie, 3,983,508.
- National Steel Corporation: *See—*
  - Peters, Gordon L.; and Saunders, William T., 3,983,305.
- Nauta, Drewes Jan, to Machinefabriek en Constructiewerkplaats Gebr. Klinkenberg B.V. Silo or reservoir for free flowing solid material. 3,982,640, Cl. 214-17.0CB.
- Nayar, Harbhajan S., to Viking Metallurgical Corporation. Metal rings made by the method of particle ring-rolling. 3,982,904, Cl. 29-182.000.
- Nazzer, Don Barkley; and Thayer, Victor R., to Canada, Atomic Energy of, Limited. Gas stripping and recirculation process in heavy water separation plant. 3,983,226, Cl. 423-580.000.
- Neal, David A.; and Stone, Patrick L. Method and apparatus for destructive distillation of solid wastes and recovery of distilled products. 3,983,009, Cl. 202-93.000.
- Neles Oy: *See—*
  - Nelimarkka, Juha Antti E., 3,982,727.
- Nelimarkka, Juha Antti E., to Neles Oy. Flangeless valve. 3,982,727, Cl. 251-152.000.
- Nelson, Charles C.: *See—*
  - Wilson, Phillip M.; Erickson, John W.; Nelson, Charles C.; and Budrys, Vitolis, 3,982,589.
- Nelson, Norman A., to Upjohn Company, The. 5-Oxa phenyl- and phenoxy-substituted prostaglandin β_1 analogs. 3,983,163, Cl. 260-473.00A.
- Nelson, William B., Jr. Method for automatically fastening deck boards to stringers. 3,982,313, Cl. 29-432.000.
- Nemoto, Mitsuo, to Kabushiki Kaisha Audio-Technica. Stylus assembly and transducer using same. 3,983,335, Cl. 179-100.41K.
- Nemoto, Tadashi: *See—*
  - Ariga, Keiji; Nemoto, Tadashi; and Yasunaka, Kenji, 3,982,314.
- Nenner, Johannes: *See—*
  - Kendziora, Heinz; Nenner, Johannes; Schoer, Heinz; and Schultze, Werner, 3,982,887.
- Nesson, Israel: *See—*
  - Maltese, John; Nesson, Israel; and Mitchell, Robert, 3,983,570.
- Neuray, Dieter: *See—*
  - Tresper, Erhard; Freitag, Dieter; and Neuray, Dieter, 3,983,146.
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  - Howatt, George F., 3,982,472.
- Newall, Christopher Earle: *See—*
  - Phillipps, Gordon Hanley; Lawrence, Robin; and Newall, Christopher Earle, 3,983,111.
- Newell, George F., to Westinghouse Electric Corporation. Television system for the display of visuals with high resolution. 3,983,328, Cl. 178-6.800.
- Newhouse, Vernon L.; and Cooper, George R., to Purdue Research Foundation. Random signal flaw detector system. 3,982,426, Cl. 73-67.900.
- Newman, Donald J.: *See—*
  - Conder, Terrence M.; and Newman, Donald J., 3,982,822.
- Newman, Ernest L. Mobile home roof apparatus. 3,982,360, Cl. 52-22.000.
- Newman, Frederick S.; Hartman, John T.; and Dedona, Francis A., to Scionics Corporation, The. Anodizing means and techniques. 3,983,014, Cl. 204-58.000.
- Newman, Gerald Henry, to Union Carbide Corporation. Non-aqueous battery system. 3,982,958, Cl. 429-57.000.
- Ney, Robert; and Rhiem, Hans-Christoph, to Lynenwerk KG. Electric cables. 3,983,313, Cl. 174-121.0SR.
- Nichols, Herbert F., to Bauman, Joel. Semiconductor switching circuit. 3,983,415, Cl. 307-255.000.
- Nick, Kurt: *See—*
  - Pfarrwaller, Erwin; and Nick, Kurt, 3,982,567.
- Nicolson, Alexander M.; and Mara, Richard M., to Sperry Rand Corporation. Detector having a constant false alarm rate. 3,983,422, Cl. 307-322.000.
- Nielinger, Werner; Dhein, Rolf; Haberland, Ulrich; Michael, Dietrich; and Hermann, Karl-Heinz, to Bayer Aktiengesellschaft. Composite sheet structures. 3,983,306, Cl. 428-474.000.
- Niemand, Carolyn M.: *See—*
  - Norris, Helen R.; Niemand, Carolyn M.; and Andreas, David W., 3,983,256.
- Nihon Beru-Haueru Kabushiki Kaisha (Bell & Howell Japan, Ltd.): *See—*
  - Saito, Fumio, 3,982,826.
- Nihon Dengyo Co., Ltd.: *See—*
  - Hodama, Takuo, 3,983,484.
- Nilssen, Ole K.: *See—*
  - Goss, Stanley B.; Nagel, Martin J.; and Nilssen, Ole K., 3,983,550.
- Nilsson, Lennart. Reversible slide-on digger tooth with easy removal arrangement. 3,982,339, Cl. 37-141.00T.
- Ninagawa, Yoichi: *See—*
  - Tamai, Yoshin; Nishida, Takashi; Mori, Fumio; Omura, Yoshiaki; Tanomura, Masahisa; Hosogai, Takeo; Ninagawa, Yoichi; and Itoi, Kazuo, 3,983,175.
- Nippon Electric Company, Ltd.: *See—*
  - Hayashi, Izuo; and Nannichi, Yasuo, 3,983,510.
  - Ishihara, Yasuo, 3,983,573.
  - Nakayama, Osamu, 3,982,815.
  - Tan, Yoichi, 3,983,499.
  - Yasuda, Susumu; and Mimitsuka, Takao, 3,983,445.
- Nippon Hume Pipe Company Limited: *See—*
  - Iida, Hideo, 3,982,565.
- Nippon Kayaku Kabushiki Kaisha: *See—*
  - Yamada, Osamu; Kurozumi, Akira; Ishida, Shuichi; Futatsuya, Fumio; Ito, Kensaku; and Yamamoto, Hiroshi, 3,983,176.
- Nippon Piston Ring Co., Ltd.: *See—*
  - Honma, Uichi, 3,982,907.
- Nippon Sheet Glass Co., Ltd.: *See—*
  - Ohsato, Nobuyoshi; Sono, Kenzo; and Tanaka, Keihachiro, 3,983,527.
- Nippon Soda Company Limited: *See—*
  - Hashimoto, Sho; Nakada, Akira; Kano, Saburo; and Takahashi, Susumu, 3,983,241.
- Nippon Soken, Inc.: *See—*
  - Akita, Sigeyuki; and Kuno, Akira, 3,983,549.
  - Katsuoka, Ritsu; and Kawai, Hisasi, 3,983,369.
  - Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, 3,982,504.
- Nippon Telegraph and Telephone Public Corporation: *See—*
  - Hirai, Masataka; Takahashi, Toshio; Arita, Kishio; Yamauchi, Goro; and Kubo, Shugo, 3,982,906.
- Nippondenso Co., Ltd.: *See—*
  - Ishikawa, Kanichi; and Iijima, Kazumi, 3,982,680.
  - Itoh, Katsumi; and Mori, Kazumasa, 3,983,471.
- Nishida, Takashi: *See—*
  - Tamai, Yoshin; Nishida, Takashi; Mori, Fumio; Omura, Yoshiaki;

Tanomura, Masahisa; Hosogai, Takeo; Ninagawa, Yoichi; and Itoi, Kazuo, 3,983,175.

Nishikawa, Kazunori: *See—*
  Takahashi, Nobuaki; Nishikawa, Kazunori; Iwasaki, Yoshiki; Satoh, Masaaki; Ohba, Katsuhiro; Nakamura, Shinji; Sawada, Tatsuo; Ohsaki, Nobuhide; Itoh, Yasuo; Suda, Nobuaki; Okabe, Yasuhisa; and Ozaki, Hideaki, 3,983,500.

Nishinakagawa, Motoshi, to Alps Motorola, Inc. Two-channel and four-channel cartridge tape player. 3,983,579, Cl. 360-78.000.

Nishizaki, Syunichiro; Teratani, Hiroshi; Fujisawa, Osamu; Fukushima, Jiro; Tokizawa, Makoto; Wakabayashi, Nobukatsu; and Saito, Takashi, to Mitsubishi Chemical Industries Ltd.; and Mitsubishi Denki Kabushiki Kaisha. Electrically insulating prepreg. 3,983,289, Cl. 428-268.000.

Nishizawa, Yasuhiro: *See—*
  Hattori, Katsuji; Fukai, Masakazu; Moriyama, Akio; and Nishizawa, Yasuhiro, 3,982,820.

Nissan Motor Co., Ltd.: *See—*
  Masaki, Kenji; and Saito, Masaaki, 3,982,393.
  Nakagawa, Yasuhiko; and Nakai, Meroji, 3,982,513.
  Takao, Hiroshi; Togawa, Kinmochi; and Matoba, Kazuo, 3,982,981.
  Yamane, Kimitaka; Ueno, Zene; Morita, Akira; Nagaoka, Tadahiko; and Iwaki, Shigeo, 3,982,878.

Niswender, Gordon Dean, to Micromedic Diagonistics, Inc. Thyroxine- and triiodothyronine-tyrosine dipeptide derivatives. 3,983,099, Cl. 260-112.50R.

Nixdorf Computer AG: *See—*
  Holland-Letz, Guenter, 3,982,677.

Nobbe, Paul J. Production line apparatus for producing concrete floors. 3,982,874, Cl. 425-424.000.

Nobel Hoechst Chimie: *See—*
  Christidis, Yani; and Vallejos, Jean-Claude, 3,983,114.

Noble, Roger K.: *See—*
  Schwartz, Robert E.; and Noble, Roger K., 3,982,881.

Noel, Albert D. G., deceased; and by Noel, Josette D., sole heir. Distribution blocks for the formation of joints resisting to differential settling and joints obtained by using said blocks. 3,982,365, Cl. 52-125.000.

Noel, Josette D., sole heir: *See—*
  Noel, Albert D. G., deceased; and Noel, Josette D., sole heir, 3,982,365.

Noguchi, Masaaki; Sumiyoshi, Masaharu; Tanaka, Yukiyasu; and Tanaka, Taro, to Nippon Soken, Inc. Internal combustion engine. 3,982,504, Cl. 123-32.0SP.

Norback, Per Gunnar, to Aktiebolaget Carl Munters. Liquid-gas contact apparatus and method for making the same. 3,983,190, Cl. 261-111.000.

Nordgren, Hans-Elov. Fastening device in collapsible containers. 3,982,652, Cl. 220-7.000.

Norlin, Bertil; and Olsson, Karl Oscar, to Akermans Verkstad AB. Speed regulators for internal combustion engines, particularly diesel engines, in earth movers and workers. 3,982,508, Cl. 123-97.00R.

Norris, Helen R.; Niemand, Carolyn M.; and Andreas, David W., to Pillsbury Company, The. Precooked farinaceous foods adapted for microwave heating and a syrup topping therefor. 3,983,256, Cl. 426-94.000.

Norris, Philip John, to W. Canning & Company Limited. Treatment of the surfaces of polyphenylene oxide materials. 3,983,267, Cl. 427-307.000.

North Electric Company: *See—*
  Wallace, Kenneth A., 3,983,418.

Northern Traffic & Signal Systems Ltd.: *See—*
  Corrigan, Thomas B., 3,983,531.

Northrop Corporation: *See—*
  Rookey, Earl T., 3,982,399.

Northrup, Karl A., to Xerox Corporation. Multiple pinch incandescent lamp. 3,983,441, Cl. 313-222.000.

Norwine, Andrew C.: *See—*
  Gannett, Danforth K.; and Norwine, Andrew C., 3,983,327.

Notari, Bruno: *See—*
  Fattore, Vittorio; and Notari, Bruno, 3,983,054.

NSM Apparatebau GmbH Kommanditgesellschaft: *See—*
  Kortenhaus, Dieter, 3,982,620.

Nutt, Ronald; Milam, Kelly; and Williams, Charles W., to Ortec Incorporated. Digital intervalometer. 3,983,481, Cl. 324-186.000.

N.V. Internationale Octrooi Maatschappij "Octropa": *See—*
  Sharpe, Anthony Nelson, 3,982,538.

Nystuen, David L.: *See—*
  Kleimola, David L.; Nystuen, Marcus I.; and Nystuen, David L., 3,982,666.

Nystuen, Marcus I.: *See—*
  Kleimola, David L.; Nystuen, Marcus I.; and Nystuen, David L., 3,982,666.

Obayashi, Nobuharu; Hashizume, Hikaru; Sakashita, Noriji; Kameyama, Seiji; Ezawa, Sadaaki; Kugisawa, Toshio; Washiyama, Yutaka; Kondo, Tatsunori; and Watanabe, Hironori, to Kabushiki Kaisha Kawai Gakki Seisakusho. Musical-tone-waveform forming apparatus for an electronic musical instrument. 3,982,460, Cl. 84-1.030.

Obenshain, David Noel, to Westvaco Corporation. Parallel action jogger. 3,982,751, Cl. 271-221.000.

Obert, Peter: *See—*
  Schonwald, Siegfried; and Obert, Peter, 3,982,848.

O'Brien, William J.; and Sakal, John, to Standard Register Company, The. Direct mail advertising booklet and method of production. 3,982,746, Cl. 270-37.000.

Ochs, Paul. Fluid pressure control valve. 3,982,558, Cl. 137-455.000.

Ochs, Paul. High temperature fluid pressure control valve. 3,982,559, Cl. 137-455.000.

Oda, Osamu; Sakai, Kiyoshi; Yusa, Takashi; and Katano, Hamako, to Sankyo Company Limited. 9-Oxo-11α-hydroxymethyl-15e-hydroxyprost-13(trans)-enoic acid derivatives and process for the preparation thereof. 3,983,152, Cl. 260-468.00D.

Oda, Yasuyoshi: *See—*
  Kikuzawa, Kenji; Sasaguri, Kilchiro; Oda, Yasuyoshi; Sano, Hiroshi; and Okina, Katsumi, 3,983,184.

Odenthal, Conrad John, to Tektronix, Inc. Dual beam CRT with inner gun and outer gun shield means for correcting keystone distortion. 3,983,444, Cl. 313-413.000.

Odstrchel, Gerald: *See—*
  Messing, Ralph A.; and Odstrchel, Gerald, 3,983,000.

Oesterlein, Fritz: *See—*
  Seitz, Karl; Begrich, Rainer; Riat, Henri; and Oesterlein, Fritz, 3,983,115.

Oettinger, Peter E., to Thermo Electron Corporation. Optical device with liquid coating. 3,982,818, Cl. 350-157.000.

O'Farrell, Charles P.: *See—*
  Baldwin, Francis P.; Malatesta, Alberto; and O'Farrell, Charles P., 3,983,062.

Offermann, Paul F., to Chevron Research Company. Means for sectionally increasing the heat output in a heat-generating pipe. 3,983,360, Cl. 219-301.000.

Offshore Company, The: *See—*
  Steddum, Riddle E., 3,982,492.

Ogawa, Akira: *See—*
  Shiba, Keisuke; Takei, Haruo; Sato, Akira; and Ogawa, Akira, 3,982,950.

Ohba, Katsuhiro: *See—*
  Takahashi, Nobuaki; Nishikawa, Kazunori; Iwasaki, Yoshiki; Satoh, Masaaki; Ohba, Katsuhiro; Nakamura, Shinji; Sawada, Tatsuo; Ohsaki, Nobuhide; Itoh, Yasuo; Suda, Nobuaki; Okabe, Yasuhisa; and Ozaki, Hideaki, 3,983,500.

Ohba, Kazumasa: *See—*
  Matsui, Masanao; Mori, Kenji; Kitahara, Takeshi; Kitamura, Seiichi; and Ohba, Kazumasa, 3,983,134.

Ohi, Reiichi; Shimada, Takeo; and Oishi, Yasushi, to Fuji Photo Film Co., Ltd. Antifoggant dispersion for color photographic materials. 3,982,944, Cl. 96-56.000.

Ohno, Masaharu, to Sony Corporation. FM-AM converter. 3,983,487, Cl. 325-315.000.

Ohsaki, Nobuhide: *See—*
  Takahashi, Nobuaki; Nishikawa, Kazunori; Iwasaki, Yoshiki; Satoh, Masaaki; Ohba, Katsuhiro; Nakamura, Shinji; Sawada, Tatsuo; Ohsaki, Nobuhide; Itoh, Yasuo; Suda, Nobuaki; Okabe, Yasuhisa; and Ozaki, Hideaki, 3,983,500.

Ohsato, Nobuyoshi; Sono, Kenzo; and Tanaka, Keihachiro, to Nippon Sheet Glass Co., Ltd. Humidity-sensitive sensor. 3,983,527, Cl. 338-35.000.

Ohuchi, Keishi; Matsui, Kenzo; and Tamai, Keizo, to Toyo Kohan Co., Ltd. Mold for forming glass articles. 3,983,293, Cl. 428-306.000.

Ohya, Takaichi; Yokoi, Nobumasa; and Mase, Tamio, to Amano Pharmaceutical Co., Ltd. Process for preparation of cellulase. 3,983,002, Cl. 195-66.00R.

Oishi, Yasushi: *See—*
  Ohi, Reiichi; Shimada, Takeo; and Oishi, Yasushi, 3,982,944.

Okabe, Kei; Mayama, Mikao; and Matsuura, Shinzo, to Shionogi & Co., Ltd. Antibiotic siomycin A derivatives and production thereof. 3,983,230, Cl. 424-117.000.

Okabe, Yasuhisa: *See—*
  Takahashi, Nobuaki; Nishikawa, Kazunori; Iwasaki, Yoshiki; Satoh, Masaaki; Ohba, Katsuhiro; Nakamura, Shinji; Sawada, Tatsuo; Ohsaki, Nobuhide; Itoh, Yasuo; Suda, Nobuaki; Okabe, Yasuhisa; and Ozaki, Hideaki, 3,983,500.

Okina, Katsumi: *See—*
  Kikuzawa, Kenji; Sasaguri, Kilchiro; Oda, Yasuyoshi; Sano, Hiroshi; and Okina, Katsumi, 3,983,184.

Okubo, Tsuneo; and Ise, Norio. Method of producing high molecular derivatives. 3,983,097, Cl. 526-49.000.

Olenfalk, Lars Gustav: *See—*
  Malmberg, Rolf; and Olenfalk, Lars Gustav, 3,983,257.

Olin Corporation: *See—*
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  Schiessl, Henry W.; Kaufman, John D.; and Csejka, David A., 3,983,048.

Ollinger, Max; and Markwitz, Wernhard, to Siemens Aktiengesellschaft. Method of establishing synchronism between teletypewriter transmitter and teletypewriter receiver. 3,983,325, Cl. 178-69.50R.

Ollis, Raymond, Jr.; and Thomas, William J., to Standard Pressed Steel Co. Thread forming self-locking screw. 3,982,575, Cl. 151-22.000.

Olson, Benjamin F. Preheating system for aluminum remelt furnace. 3,982,889, Cl. 432-128.000.

Olson, Donald N.: *See—*
  Flatau, Abraham; Olson, Donald N.; and Miller, Miles C., 3,982,489.

Olson, Jerome A. Nail driving apparatus. 3,982,678, Cl. 227-63.000.

Olsson, Karl Oscar: *See—*
  Norlin, Bertil; and Olsson, Karl Oscar, 3,982,508.

Olstowski, Franciszek, to Dow Chemical Company, The. Solid, rapid-setting, rigid polyurethanes. 3,983,063, Cl. 260-30.200.

Olstowski, Franciszek, to Dow Chemical Company, The. Solid, rapid-setting, rigid polyurethanes. 3,983,064, Cl. 260-30.200.

Olstowski, Franciszek, to Dow Chemical Company, The. Solid, rapid-setting, rigid polyurethanes. 3,983,065, Cl. 260-30.40N.

Olstowski, Franciszek, to Dow Chemical Company, The. Solid, rapid setting, rigid polyurethanes. 3,983,066, Cl. 260-30.40N.

Olstowski, Franciszek, to Dow Chemical Company, The. Solid, rapid-setting, rigid polyurethanes. 3,983,068, Cl. 260-33.20R.

Olstowski, Franciszek, to Dow Chemical Company, The. Solid, rapid-setting, rigid polyurethanes. 3,983,069, Cl. 260-33.8UB.

Omura, Yoshiaki: *See—*
  Tamai, Yoshin; Nishida, Takashi; Mori, Fumio; Omura, Yoshiaki; Tanomura, Masahisa; Hosogai, Takeo; Ninagawa, Yoichi; and Itoi, Kazuo, 3,983,175.

Ono, Tomoyoshi; and Matsuguma, Yoshihiko, to Teijin Limited. Pressure-sensitive adhesive tape or drape. 3,983,297, Cl. 428-355.000.

Opinsky, Jerome L.; and Stewart, Ralph D., to Uniroyal, Inc. Recessed last and method of lasting and molding a shoe sole to upper including positioning insole in recessed last. 3,983,204, Cl. 264-244.000.

Opittek, Eugene W.: *See—*
  Ketcham, David J.; Lowe, Roger W ; Pruznick, Michael D.; and Opittek, Eugene W., 3,983,320.

Oppici, Ernesto; and Gianantonio, Anacleto, to Gruppo Lepetit S.p.A. Process for recovering cephalosporin C from A fermentation broth as the N-(p-nitrobenzoyl) derivative. 3,983,109, Cl. 260-243.00C.

Opti-Holding AG: *See—*
  Heimberger, Helmut, 3,982,988.

OR-DA Industries Ltd.: *See—*
  Solomon, Arieh, 3,982,331.

Orloff, Daniel L.; and Johnson, Charles H., to Oscar Mayer & Co. Inc. Mold with plug take-up mechanism. 3,982,477, Cl. 99-351.000.

Orloff, Leslie: *See—*
  Biagi, Alvaro D.; Silbiger, Richard; and Orloff, Leslie, 3,983,561.

Orme, Myrl E., to Bendix Corporation, The. Gimbaled sheave with cable angle sensors. 3,982,733, Cl. 254-173.00R.

Ortec Incorporated: *See—*
  Nutt, Ronald; Milam, Kelly; and Williams, Charles W., 3,983,481.

Ortho Pharmaceutical Corporation: *See—*
  Kanojia, Ramesh Maganlal, 3,983,112.

Osawa, Makoto; Hagiwara, Yoshitoshi; Kawakita, Takao; Motoyoshi, Kenya; and Kuroishi, Nobuhito, to Honda Giken Kogyo Kabushiki Kaisha; and Sumitomo Electric Industries, Ltd. Porous valve seat materials for internal combustion engines. 3,982,905, Cl. 29-182.500.

Oscar Mayer & Co. Inc.: *See—*
  Orloff, Daniel L.; and Johnson, Charles H., 3,982,477.

O'Shea, Francis X., to Uniroyal, Inc. Thermally stable polyurethane elastomers produced from poly(oxypropylene)-poly(oxyethylene)glycols of high oxyethylene group content. 3,983,094, Cl. 260-77.5AM.

Oswald, Arno: *See—*
  Knorr, Eberhard; Grunwald, Thomas Ludwig; and Oswald, Arno, 3,982,582.

Ota, Tunezo. Mitt type shoe cleaner. 3,982,298, Cl. 15-106.000.

Otsuka, Misao. Strut spring compressor. 3,982,730, Cl. 254-10.500.

Ott, Eugene Gray, to Dresser Industries, Inc. Rock boring cutter with replaceable cutting elements. 3,982,595, Cl. 175-373.000.

Otto, Willard G.: *See—*
  Hentz, Lyle J.; and Otto, Willard G., 3,982,979.

Outboard Marine Corporation: *See—*
  Blanchard, Clarence E., 3,982,496.

Overbye, Milan R., to Lewis Refrigeration Co. Individual quick-freezing of moist articles using deep fluidized bed and input conditioner. 3,982,404, Cl. 62-57.000.

Ovshinsky, Stanford R., to Energy Conversion Devices, Inc. Method and apparatus for recording information. 3,983,542, Cl. 340-173.00R.

Ovutime, Inc.: *See—*
  Schuster, Samuel R., 3,982,423.

Owens-Illinois, Inc.: *See—*
  David, Frank A., 3,982,684.
  DeLeon, Isrrael M.; and Thompson, Edward D., 3,982,632.
  Spanoudis, Louis, 3,982,584.
  Uhlig, Albert R., 3,983,199.

Oxe, Josef; and Keller, Rudolf, to Ciba-Geigy Corporation. Process for the permanent finishing of fiber materials. 3,983,061, Cl. 260-29.6MN.

Oxy Metal Industries Corporation: *See—*
  Richardson, John L.; Segovia, Gilbert; and Lewis, Clarke H., 3,983,194.

Oy Paramic AB: *See—*
  King, William Clyde, 3,983,528.

Ozaki, Hideaki: *See—*
  Takahashi, Nobuaki; Nishikawa, Kazunori; Iwasaki, Yoshiki; Satoh, Masaaki; Ohba, Katsuhiro; Nakamura, Shinji; Sawada, Tatsuo; Ohsaki, Nobuhide; Itoh, Yasuo; Suda, Nobuaki; Okabe, Yasuhisa; and Ozaki, Hideaki, 3,983,500.

Padovani, Francois A : *See—*
  Schroen, Walter H.; Padovani, Francois A.; and Hentzschel, Hanspeter P. K., 3,983,264.

Paetzold, Walter J.: *See—*
  Bird, Thomas C.; and Paetzold, Walter J., 3,982,483.

Palagos, Miguel Coll, to Stauffer Chemical Company. Aluminum chromate protective coatings for aluminum. 3,982,951, Cl. 106-14.000.

Palladino, Nicola; Mazzei, Marcello; and Marconi, Walter, to Snam Progetti S.p.A. Process for making degradable polymers and degradable polymers obtained thereby. 3,983,308, Cl. 526-1.000.

Palyi-Hansen International APS: *See—*
  Palyi, Leslie, 3,982,704.

Palyi, Leslie, to Palyi-Hansen International APS. Grinding disk for disk mills. 3,982,704, Cl. 241-298.000.

Pando, Donald J. Communications device arranged to be worn in intimate contact with the body of a user. 3,983,483, Cl. 325-16.000.

Pangle, James C., Jr.; and Hicks, Alton D., to Dan River Inc. Yarn sizes, sizing treatments and resulting sized yarns. 3,983,271, Cl. 427-390.000.

Panzone, Gianbattista: *See—*
  Tarzia, Giorgio; and Panzone, Gianbattista, 3,983,127.

Papa, Sisto Sergio; Condo, Antonino; and Ferrario, Renzo, to Aziende Colori Nazionali Affini ACNA S.p.A. Water-soluble polyazo compound derived from 4-4-diaminobenzanilide. 3,983,101, Cl. 260-144.000.

Parcor: *See—*
  Amselem, Armand, 3,983,125.

Park Lane Research Corporation: *See—*
  Peck, Raymond A.; and Yarrish, Leon J., 3,982,705.

Parke, Davis & Company: *See—*
  Kee Woo, Peter Wing; and Haskell, Theodore Herbert, 3,983,102.

Parks, Joel H., to University of Southern California, The. Radiation detector employing acoustic surface waves. 3,983,424, , Cl. 310-8.100.

Parlour, A. Kenneth; Leezer, James R.; and Turpin, Charles H., to Pillsbury Company, The. Spiral wound can with provision for printing lower side of label. 3,982,686, Cl. 229-51.0BP.

Parsons, Brian Jeremy; and Pursell, Lynne Margaret, to Hawker Siddeley Dynamics Limited. Reliability of random access memory systems. 3,983,537, Cl. 340-172.500.

Partridge, Bernard Austin; Jenkins, Thomas Rhys; and McGuire, Michael, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Industry in Her Britannic Majesty's Government of the. Sodium-sulphur battery cells. 3,982,959, Cl. 429-163.000.

Partyka, Richard Anthony: *See—*
  Beverung, Warren Neil; and Partyka, Richard Anthony, 3,983,120.
  Beverung, Warren Neil, Jr.; Partyka, Richard Anthony; and Jenks, Thomas Andrew, 3,983,119.

Pascal, Andre: *See—*
  Csakvary, Etienne; and Pascal, Andre, 3,983,368.

Pasero, Edoardo: *See—*
  Malgarini, Giansilvio; and Pasero, Edoardo, 3,982,900.

Passler, Herbert E., to Honeywell Information Systems, Inc. Circuit board spacer. 3,983,459, Cl. 317-101.0DH.

Patten, Michael Allen, to International Business Machines Corporation. Conference call circuitry for TDM signal exchange. 3,983,332, Cl. 179-1.0CN.

Pattison, Victor A.; and Carr, Russell L. K., to Hooker Chemicals & Plastics Corporation. Immonium salts and derivatives thereof. 3,983,178, Cl. 260-621.00R.

Paul, Fred R., Jr.: *See—*
  Krogseng, Gerald P.; and Paul, Fred R., Jr., 3,982,536.

Paulson, Donald C.: *See—*
  Groleau, Rodney J.; and Paulson, Donald C., 3,982,440.

Pavelle, Richard; and Ferber, Leon A. Holder for tissue boxes. 3,982,717, Cl. 248-313.000.

Payne, William P., to Sun Oil Company (Delaware). Apparatus for connecting submarine pipelines to offshore structures. 3,982,776, Cl. 285-24.000.

Peach, Robert W. Apparatus for measuring metacentric height of a ship. 3,982,424, Cl. 73-65.000.

Peacock Laboratories, Inc.: *See—*
  Bahls, Harry, 3,983,266.

Peake, Clinton Joseph: *See—*
  Gibbons, Loren Kenneth; Peake, Clinton Joseph; and Harnish, Wayne Nelson, 3,983,246.

Pearson, David B., to Weston Instruments, Inc. Moving coil instrument having electrically conductive coil form parts connected to the coil. 3,983,478, Cl. 324-154.00R.

Pearson, Glenn A. Durable press composition and process. 3,983,269, Cl. 427-370.000.

Pease, Bobbylee, to Clark Equipment Company. Side shift and skewing device for van carrier. 3,982,644, Cl. 214-394.000.

Peck, Raymond A.; and Yarrish, Leon J., to Park Lane Research Corporation. Sliderless shuttle and wire guide assembly. 3,982,705, Cl. 242-4.00B.

Pekic, Branislav; Mladenovic, Vladislav; and Cvetkovic, Dragan, to Zdravlje fabrika farmaceutskih i hemijskih proizvoda. Novel agent for treatment of dehydrations in veterinary medicine, process for preparation and new use thereof. 3,983,232, Cl. 424-180.000.

Pelc, Wladyslaw: *See—*
  Dear, Peter Adrian; and Pelc, Wladyslaw, 3,983,449.

Pellegrini, Giovanni: *See—*
  Arsura, Emilio; Baruffini, Agostino; Gialdi, Franco; Pellegrini, Giovanni; Ponci, Riccardo; and Scrivani, Pietro, 3,982,931.

Pender, David R. Apparatus for transporting and erecting modular housing system. 3,982,732, Cl. 254-139.100.

Peng, Song-Tsuen: *See—*
  Tamir, Theodor; and Peng, Song-Tsuen, 3,982,810.

Penneck, Richard John, to Raychem Corporation. Polymeric adhesive. 3,983,070, Cl. 260-38.000.

Pennington, John James. Display device. 3,982,633, Cl. 211-4.000.
PerCare, Inc.: *See—*
  Ackerman, Don; and Schwartztol, Robert Ira, 3,983,277.
Perfect, Frederick H., to Reading Alloys, Inc. Process for producing carbide addition agents. 3,982,924, Cl. 75-.5BA.
Perrin, Arthur, to American Volkscastle International Inc. Wall construction and method to make same. 3,982,368, Cl. 52-381.000.
Perronnet, Jacques; Taliani, Laurent; Girault, Pierre; and Poittevin, Andre, to Roussel-UCLAF. Certain isothiazolol esters of phosphorus acids. 3,983,129, Cl. 260-302.00E.
Peters, Dale Thompson; Sandrock, Gary Dale; and Huston, Ernest Lee, to International Nickel Company, Inc., The. Cube textured nickel. 3,982,973, Cl. 148-32.000.
Peters, Gordon L.; and Saunders, William T., to National Steel Corporation. Method of increasing the corrosion resistance and improving the organic coating characteristics of cold rolled steel and the products thus prepared. 3,983,305, Cl. 428-467.000.
Peterson, Robert S., to Westinghouse Electric Corporation. Direct current motor speed control apparatus. 3,983,464, Cl. 318-327.000.
Peterson, Stanley G.: *See—*
  Goossen, Charles G.; and Peterson, Stanley G., 3,983,287.
Petrokas, Leonid Venediktovich: *See—*
  Badenkov, Petr Fedorovich; Portny, Gennady Lazarevich; Muslaev, Igor Mikhailovich; Pukhova, Regina Lazarevna; Roitburd, Isaak Shlemovich; Ljubartovich, Natalya Vasilievna; Rossin, Valery Donovich; Petrokas, Leonid Venediktovich; and Tsaplin, Nikolai Sergeevich, 3,982,989.
Petrolite Corporation: *See—*
  Annand, Robert R.; and Woodson, Aldred E., 3,982,894.
  Lissant, Kenneth J., 3,983,213.
Pettit, Maurice Raymond: *See—*
  Clabburn, Robin James T.; Pettit, Maurice Raymond; and De Keermaecker, Guido, 3,982,564.
Peyser, Harry A.: *See—*
  Bozek, John S.; and Peyser, Harry A., 3,982,658.
Pfaffendorf, James L.: *See—*
  Krizan, Bradford J.; and Pfaffendorf, James L., 3,982,690.
Pfarrwaller, Erwin; and Nick, Kurt, to Sulzer Brothers Limited. Shuttle return apparatus. 3,982,567, Cl. 139-439.000.
Pfefferle, William C., to Engelhard Minerals & Chemicals Corporation. Furnace apparatus and method. 3,982,879, Cl. 431-10.000.
Pfeil, Christian: *See—*
  Gerresheim, Jost; Drennhaus, Alfons; Breidenbach, Hans; Mansour, Rodolf; and Pfeil, Christian, 3,982,600.
Pfiffner, Albert; and Schwieter, Ulrich, to Hoffmann-La Roche Inc. Epithio compounds. 3,983,243, Cl. 424-275.000.
Pfiffner, Albert: *See—*
  Chodnekar, Madhukar Subraya; Schwieter, Ulrich; Loeliger, Peter; Pfiffner, Albert; Suchy, Milos; and Zurfluh, Rene, 3,983,247.
Pfizer Inc.: *See—*
  Holland, Gerald F., 3,983,107.
Philip Morris Incorporated: *See—*
  de la Burde, Roger Z.; Aument, Patrick E.; Dawson, Ray F.; and Tamol, Ronald A., 3,982,550.
Phillipps, Gordon Hanley; Lawrence, Robin; and Newall, Christopher Earle, to Glaxo Laboratories Limited. Steroidal anaesthetics of the pregnane and 19-norpregnane series. 3,983,111, Cl. 260-239.500.
Phillipps, Patrick G., to Brattle Instrument Corporation. Apparatus for refining signals derived from fetal heartbeats. 3,982,528, Cl. 128-2.05T.
Phillips, Calman P. Audio-visual display device. 3,982,344, Cl. 40-106.100.
Phillips Fibers Corporation: *See—*
  Saleeby, Ralph, 3,982,707.
Phillips Petroleum Company: *See—*
  Childs, William V., 3,983,015.
  Hitzman, Donald O.; and Wegner, Eugene H., 3,982,998.
  Lortz, Russell W., 3,982,902.
  Moczygemba, George A.; Johnson, W. Delmar; and Clark, Earl, 3,983,187.
Phillips, Virgel E., to General Electric Company. Method of detecting a leak in any one of the vacuum interrupters of a high voltage circuit breaker. 3,983,345, Cl. 200-144.00B.
Photo Systems, Inc.: *See—*
  Mitchell, Robert W., 3,982,825.
Picas, Arturo: *See—*
  Llach, Lawrence; and Picas, Arturo, 3,982,301.
Picker Corporation: *See—*
  Cox, Jerome R., Jr.; and Snyder, Donald L., 3,983,399.
  Martone, Ronald J.; Yarsawich, Michael; and Wolczek, Walter, 3,983,394.
Pickett, David A., to Allied Chemical Corporation. Pressure control apparatus. 3,982,562, Cl. 137-625.400.
Pickett, John E. P.; Kinney, Thomas D.; and Winders, Gene M. Two-part composite device for histologic tissue processing and embedding. 3,982,862, Cl. 425-117.000.
Piercey, Anthony C. Adjustable blind structure. 3,982,355, Cl. 49-74.000.
Pilet, Daniel: *See—*
  Conroux, Jean-Jacques; Pilet, Daniel; and Roehrich, Christian, 3,982,409.
Pillsbury Company, The: *See—*
  Norris, Helen R.; Niemand, Carolyn M.; and Andreas, David W., 3,983,256.
  Parlour, A. Kenneth; Leezer, James R.; and Turpin, Charles H., 3,982,686.
Pillus, Charles A.: *See—*
  Ku, San-Mei; Pillus, Charles A.; Poponiak, Michael R.; and Schwenker, Robert O., 3,982,967.
Pilorget, Andre. Cartridge or cartridge case ejectors for revolver cylinders. 3,982,346, Cl. 42-68.000.
Pines, Seemon, to Merck & Co., Inc. Antibiotic purification process. 3,983,108, Cl. 260-243.00C.
Pirson, Ewald: *See—*
  Huber, Peter; Pirson, Ewald; and Lampelzammer, Helga, 3,983,272.
Pittner, Heribert: *See—*
  Zolss, Gerhard; Pittner, Heribert; Stormann-Menninger-Lerchenthal, Heimo; and Lindner, Irmgard, 3,983,169.
Platko, Steve: *See—*
  Jordan, Lester J.; and Platko, Steve, 3,983,458.
Platt, John G.; Arnold, Harmon W.; Tieman, Lloyd E.; and Isaacs, Robert O., to Flex-O-Lators, Inc. Spring assembly for upholstered seats. 3,982,737, Cl. 267-102.000.
Plempel, Manfred: *See—*
  Buchel, Karl Heinz; Plempel, Manfred; and Kramer, Wolfgang, 3,983,240.
PLIVA Pharmaceutical and Chemical Works: *See—*
  Kobrehel, Gabrijela; Tamburasev, Zrinka; and Djokic, Slobodan, 3,983,103.
Plyler, Robert G.: *See—*
  Cope, Kenneth P.; and Plyler, Robert G., 3,982,813.
Poittevin, Andre: *See—*
  Perronnet, Jacques; Taliani, Laurent; Girault, Pierre; and Poittevin, Andre, 3,983,129.
Polak, James C.; and Ross, Phillip J., to General Motors Corporation. Input-split hydromechanical transmission. 3,982,448, Cl. 74-687.000.
Polan, Alvin F.: *See—*
  Malek, Hooshang; and Polan, Alvin F., 3,983,336.
Polaroid Corporation: *See—*
  Chiang, Yunn H., 3,983,137.
Polhemus Navigation Sciences, Inc.: *See—*
  Kuipers, Jack, 3,983,474.
Pollet, Robert Joseph; and Vandenberghe, Antoon Leon, to AGFA-GEVAERT, N.V. Fog-inhibitors for silver halide photography silver halide photographic material containing an iodo benzene compound as antifoggant. 3,982,947, Cl. 96-109.000.
Pollock, Charles W., to United States of America, Energy Research and Development Administration. Recovery of boric acid from ion exchangers. 3,983,220, Cl. 423-283.000.
Pommellet, Olivier; and Drioton, Guy, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Process and device for immobilizing a mobile component of a tire testig device relative to a fixed component thereof. 3,982,430, Cl. 73-146.000.
Ponci, Riccardo: *See—*
  Arsura, Emilio; Baruffini, Agostino; Gialdi, Franco; Pellegrini, Giovanni; Ponci, Riccardo; and Scrivani, Pietro, 3,982,931.
Poponiak, Michael R.: *See—*
  Ku, San-Mei; Pillus, Charles A.; Poponiak, Michael R.; and Schwenker, Robert O., 3,982,967.
Popov, Boris Vasilievich: *See—*
  Krylov, Nikolai Ivanovich; Popov, Boris Vasilievich; Sidorov, Pavel Ivanovich; and Kim, Jury Efimovich, 3,982,456.
Porter, Gerald K.: *See—*
  Asbelle, Charles C.; Helmuth, Gene R.; Applegate, William R.; and Porter, Gerald K., 3,982,280.
Portny, Gennady Lazarevich: *See—*
  Badenkov, Petr Fedorovich; Portny, Gennady Lazarevich; Muslaev, Igor Mikhailovich; Pukhova, Regina Lazarevna; Roitburd, Isaak Shlemovich; Ljubartovich, Natalya Vasilievna; Rossin, Valery Donovich; Petrokas, Leonid Venediktovich; and Tsaplin, Nikolai Sergeevich, 3,982,989.
Porvair Limited: *See—*
  Cunningham, Victor Ralph; and Boutle, David Leonard, 3,982,335.
Posti, Jouko Juhani. Auxiliary rudder for a jet propulsion unit. 3,982,494, Cl. 115-12.00R.
Powell, Jimmie L.: *See—*
  Frieser, Rudolf G.; Powell, Jimmie L.; and Tummala, Rao R., 3,982,918.
Powell, Ronald Lee; and Smith, Frank Patterson, II, to Narco Scientific Industries, Inc. Digital DME with compensation for ground station intermittencies. 3,983,557, Cl. 343-7.300.
Power, George Edward; and Wulfekotter, Dudley, to Formica Corporation. Thin, tough, stable laminate. 3,983,307, Cl. 428-503.000.
Pozdneev, Viktor Timofeevich; Khina, Mikhail Lvovich; Bashkirov, Dmitry Vasilievich; Judin, Nikolai Fedorovich; and Kobzev, Nikolai Sergeevich. Coating for local protection of parts. 3,983,088, Cl. 260-24.000.
Pozsgay, Dezsoe Albert; and Scheib, William R., to Aetna-Standard Engineering Company. Indexing wedge drive for cold tube reducing mills and the like. 3,982,416, Cl. 72-214.000.
Pozzetti, Mario, to Finike Italiana Marposs-Soc. In Accomandita Semplice di Mario Possati & C. Control device for a machine tool. 3,983,376, Cl. 235-151.130.
PPG Industries, Inc.: *See—*
  Ellsworth, Arthur C.; and Carlin, William W., 3,983,016.
  Hoekje, Howard H.; and Dietz, Paul L., 3,982,960.

Pratt, Richard D.; Proffitt, Paul F.; and Webb, George, to General Electric Company. Intumescent fire retardant material and article. 3,983,082, Cl. 260-2.50S.
Precision Flexmold, Inc.: *See—*
  Maurino, William J.; and Putzer, Raymond M., 3,982,721.
Preu, Willi, to Scovill Manufacturing Company. Panel holding structure. 3,982,371, Cl. 52-498.000.
Price, George Edmund, to International Business Machines Corporation. Ticket information recording and web parting mechanism. 3,983,578, Cl. 360-1.000.
Printing Developments, Inc.: *See—*
  Moe, William West; Lotz, Robert William; Green, Ethan Robert; and Fazio, Rodolfo, 3,983,319.
Prisc, Martin D.: *See—*
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Procter & Gamble Company, The: *See—*
  Collins, Jerome H., 3,983,078.
  Schaefer, Jean E., 3,982,374.
  Singh, Gyanendra, 3,983,251.
  Spadini, Gianfranco Luigi; and Demessemaekers, Emiel Mathilde Anna Alfons, 3,983,079.
  Tofe, Andrew John; and Francis, Marion David, 3,983,227.
Produits Chimiques Pechiney-Saint Gobain: *See—*
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Produits Chimiques Ugine Kuhlmann: *See—*
  Riess, Jean; Santini, Georges; and Le Blanc, Maurice, 3,983,179.
Proffitt, Paul F.: *See—*
  Pratt, Richard D.; Proffitt, Paul F.; and Webb, George, 3,983,082.
Promecam Sisson-Lehmann: *See—*
  Cailloux, Paul, 3,982,417.
Protzman, Thomas F.: *See—*
  Blevins, Charles W.; and Protzman, Thomas F., 3,982,420.
Pruett, Vernon E. Construction deck elevation gauge and easy-out bolt assembly. 3,982,867, Cl. 425-171.000.
Pruznick, Michael D.: *See—*
  Ketcham, David J.; Lowe, Roger W.; Pruznick, Michael D.; and Opittek, Eugene W., 3,983,320.
Pryde, Everett H.: *See—*
  Awl, Richard A.; and Pryde, Everett H., 3,983,067.
Pryor, Michael J.: *See—*
  Winter, Joseph; Setzer, William C.; Graham, Douglas L.; and Pryor, Michael J., 3,983,275.
Puchalski, Chester: *See—*
  Brown, Richard E.; Puchalski, Chester; and Shavel, John, Jr., 3,983,110.
Pukhova, Regina Lazarevna: *See—*
  Badenkov, Petr Fedorovich; Portny, Gennady Lazarevich; Muslaev, Igor Mikhailovich; Pukhova, Regina Lazarevna; Roitburd, Isaak Shlemovich; Ljubartovich, Natalya Vasilievna; Rossin, Valery Donovich; Petrokas, Leonid Venediktovich; and Tsaplin, Nikolai Sergeevich, 3,982,989.
Pulda, William F., to Vanguard Machinery Corporation. Method for transporting and reorienting a stack of materials. 3,982,750, Cl. 271-151.000.
Pullman Incorporated: *See—*
  Miller, Roy W., 3,982,641.
Purcell, Robert J.; Balzer, David J.; and Van Zandt, Rollin P., to Caterpillar Tractor Co. Multidirectional resilient suspension for vehicles. 3,982,598, Cl. 180-9.540.
Purdue Research Foundation: *See—*
  Newhouse, Vernon L.; and Cooper, George R., 3,982,426.
  Regnier, Frederick E., 3,983,299.
Pursell, Lynne Margaret: *See—*
  Parsons, Brian Jeremy; and Pursell, Lynne Margaret, 3,983,537.
Purvis, Marshall T.; and Grant, R. Peter, to Rohm and Haas Company. Modifiers for PVC foam, process for extruding modified PVC foam and modified PVC foam compositions. 3,983,296, Cl. 428-315.000.
Putzer, Raymond M.: *See—*
  Maurino, William J.; and Putzer, Raymond M., 3,982,721.
Pyles, Wayne Douglas: *See—*
  Wentz, Edward A.; and Pyles, Wayne Douglas, 3,982,625.
Quantel Limited: *See—*
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Quick, Leonard M.: *See—*
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  McCollum, John D.; and Quick, Leonard M., 3,983,028.
R. A. Pearson Company: *See—*
  Graham, Robert H., 3,982,662.
R. Stahl Aufzuege GmbH: *See—*
  Feyrer, Klaus; and Mueller, Wolfgang P., 3,982,692.
Rabenhorst, David W., to Johns Hopkins University, The. Convoluted rotor structures. 3,982,447, Cl. 74-572.000.
Rademachers, Jakob; Woditsch, Peter; Erfurth, Henning; Holle, Bernd; and Schnell, Wilhelm, to Bayer Aktiengesellschaft. Production of basic aluminium nitrate solution. 3,983,221, Cl. 423-395.000.
Radiant Technology Corporation: *See—*
  Wild, Fred A.; Romance, Joseph S.; and Richert, Carson T., 3,983,361.
Rae, Giles E.: *See—*
  Danzer, Paul M.; and Rae, Giles E., 3,983,556.
Raeymaekers, Alfons Herman Margaretha: *See—*
  Van Gelder, Josephus Ludovicus Hubertus; Raeymaekers, Alfons Herman Margaretha; Roevens, Leopold Frans Corneel; and Van Laerhoven, Willy Joannes, 3,983,133.
Rajala, Ronald G.: *See—*
  Berry, Thomas F.; Rajala, Ronald G.; and Mullins, Harold L., 3,982,854.
Rakowsky, Edward L.; and Marchese, Vincent P., to United States of America, Army. Flueric through bulkhead rocket motor ignitor. 3,982,488, Cl. 102-81.000.
Ralston, Richard W., Jr., to Olin Corporation. Apparatus for regulating anode-cathode spacing in an electrolytic cell. 3,983,025, Cl. 204-225.000.
Rambauske, Werner R., to Raytheon Company. Catoptric lens arrangement. 3,982,824, Cl. 350-294.000.
Rank Xerox Ltd.: *See—*
  Bendall, Dennis M.; and Thorp, Peter M., 3,982,832.
Rankin, Alexander. Brush holder assembly. 3,983,432, Cl. 310-242.000.
Ransomes Sims & Jefferies Limited: *See—*
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Rasmussen, Chris Royce, to McNeil Laboratories, Incorporated. 4-Oxo-2-imidazolidinylidene ureas. 3,983,135, Cl. 260-309.700.
Rasmussen, Gunnar Olaf Vestergaard. Convector for heating buildings and tools and method for manufacturing convector modules for such convectors. 3,982,311, Cl. 29-33.00G.
Rasor, Ned S.; and Britt, Edward J., to United States of America, Energy Research and Development Administration. Thermionic converter. 3,983,423, Cl. 310-4.00R.
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  Sarich, John I., 3,982,755.
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Reedy, James Dale; and Furbee, Harold D., to Union Carbide Corporation. Process for producing cyclic siloxanes. 3,983,148, Cl. 260-448.20E.
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- Retrum, Fergus. Returnable mailing envelope. 3,982,689, Cl. 229-71.000.
- Rettinger, Lawrence John, Jr.; and Balliet, Layton, to International Business Machines Corporation. Acquisition process in a phase-locked-loop by gated means. 3,983,506, Cl. 331-17.000.
- Reymond, Edgard. Half-tone screen making by decapitation of substrate projections. 3,982,949, Cl. 96-116.000.
- Reynolds, Orr E. Apparatus and process for mechanical power production by acetylene combustion. 3,982,391, Cl. 60-39.020.
- Rheinfelder, William A., to Alpha Engineering Corporation. RF level sensing circuit. 3,983,417, Cl. 307-261.000.
- Rheinfelder, William A., to Alpha Engineering Corporation. Modular CATV system. 3,983,486, Cl. 325-308.000.
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- Riccio, Pasquale R., to Ciba-Geigy Corporation. Aerosol dispenser for plurality of fluent materials. 3,982,668, Cl. 222-95.000.
- Richardson, John L.; Segovia, Gilbert; and Lewis, Clarke H., to Oxy Metal Industries Corporation. Process for manufacturing a helical reverse osmosis segment. 3,983,194, Cl. 264-41.000.
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- Richert, Carson T.: *See*—
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- Riha, Miloslav; Martinec, Josef; and Cernocky, Jiri, to Zbrojovka Vsetin, narodni podnik. Device for gripping and forming a supply of weft thread before weft insertion. 3,982,568, Cl. 139-452.000.
- Rinker, William Richard, to B. F. Goodrich Company, The. Continuous mold thermo forming. 3,982,868, Cl. 425-223.000.
- Risley, Hugh A.: *See*—
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- Rittenbach, Otto E., to United States of America, Army. Moving target indicating (MTI) radar systems employing vehicle discriminator apparatus. 3,983,558, Cl. 343-7.700.
- Rivere, Jean-Pierre, to Regie Nationale des Usines Renault. Circuitry for controlling the response time of electromagnetic devices with a solenoid. 3,982,505, Cl. 123-32.0EA.
- Rixon Inc.: *See*—
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- Robbins, David. Disposable sink strainer. 3,982,289, Cl. 4-292.000.
- Robbins, Elmer A.; and Key, William D., to Tokheim Corporation. Batch controller for gasoline having dribble feed. 3,982,664, Cl. 222-21.000.
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- Roberts, John, IV, to American Paper Products Company. Envelope-making method. 3,982,473, Cl. 93-63.00M.
- Roberts, R. Douglas, Jr. Combined grab bar and shower head fixture. 3,982,285, Cl. 4-145.000.
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- Rock, Michael H., to Bendix Corporation, The. Fail safe logic monitor. 3,983,329, Cl. 179-15.0BF.
- Rockstad, Howard K.; and Flasck, Richard A., to Energy Conversion Devices, Inc. N-type amorphous semiconductor materials. 3,983,076, Cl. 252-518.000.
- Rockwell International Corporation: *See*—
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  - McLain, Robert E., 3,982,425.
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- Rodgers, James L., to Talos Systems, Inc. Method and apparatus for converting the location and movement of a manually controlled instrument into corresponding electrical signals. 3,983,322, Cl. 178-19.000.
- Roeder, Richard L.: *See*—
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- Roehrich, Christian: *See*—
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- Roetgerink, Johannes Antonius, to Machinefabriek M. Brouwer & Co. B.V. Device for directed discharge of conical articles. 3,982,637, Cl. 214-6.00D.
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- Roitburd, Isaak Shlemovich: *See*—
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- Rookey, Earl T., to Northrop Corporation. Fuel degassing method. 3,982,399, Cl. 60-706.000.
- Roosa, Vernon D. Tank flushing means. 3,982,556, Cl. 137-432.000.
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  - Hamrick, Joseph T.; and Rose, Leslie C., 3,982,592.
- Ross, John R. Gastrointestinal aspirator pump system and method. 3,982,540, Cl. 128-278.000.
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- Ross, Richard T., to Scott Paper Company. Bulk package for substantially wet sheets and dispensing device therefor. 3,982,659, Cl. 221-63.000.
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- Rosynek, Michael P.; Shipman, George F.; and Yan, Tsoung-Yuan, to Mobil Oil Corporation. Combination process for residua demetalation, desulfurization and resulting coke gasification. 3,983,030, Cl. 208-253.000.
- Rounds, Hugh G.: *See*—
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- Rouverol; William S. Constant tooth-load gearing. 3,982,444, Cl. 74-462.000.
- Rouverol, William S. High torque gearing. 3,982,445, Cl. 74-462.000.
- Rubber Dynamics Corporation: *See*—
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- Ruble, Theodore A., to Sid Richardson Carbon & Gasoline Co. Method and apparatus for controlling surface temperature. 3,982,586, Cl. 165-107.000.
- Rudolph, Gunther; Schelzke, Erhard; and Leogrande, Antonio, to Vereinigte Deutsche Metallwerke AG. Brass alloy. 3,982,933, Cl. 75-156.500.
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- Russo, Alexander J.: *See*—
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- Russo, Doris A. Hair brush and comb cleaning apparatus. 3,982,296, Cl. 15-38.000.
- Russo, Paul Michael, to RCA Corporation. Electronic image identifying system. 3,983,571, Cl. 354-105.000.
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- Ryan, James Ernest; and Smale, Rodney, to Imperial Chemical Industries Limited. Method of forming panels. 3,982,985, Cl. 156-303.100.
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- Saito, Fumio, to Nihon Beru-Haueru Kabushiki Kaisha (Bell & Howell Japan, Ltd.). Cine camera. 3,982,826, Cl. 352-14.000.
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- Sakai, Kiyoshi: *See*—
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- Sakata, Denjiro. Solenoid electromagnet having a wide, controlled stroke. 3,983,520, Cl. 335-170.000.
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- Saleeby, Ralph, to Phillips Fibers Corporation. Method and apparatus for the production of two packages of yarn with transfer tails. 3,982,707, Cl. 242-18.0PW.
- Saleil, Jean, to Creusot-Loire. Method of blowing to obtain a very low amount of carbon in chrome steels. 3,982,927, Cl. 75-60.000.
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- Saltsman, Robert D.; and Harris, Robert D., to Bituminous Coal Research, Inc. Method and apparatus for simulating in a model the disbursement of gas and dust in a mine. 3,982,330, Cl. 35-13.000.
- Samaranch, Jorge Capella: *See*—
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- Samour, Carlos M., to Kendall Company, The. Monomeric emulsion stabilizers. 3,983,166, Cl. 260-481.00R.
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- Sato, Haruhiko; Ishikawa, Hidehiko; and Mogaki, Katsuo, to Konishiroku Photo Co. Ltd. Process for preparing silver halide emulsion containing a rhodium salt and a decomposition product of nucleic acid. 3,982,948, Cl. 96-109.000.
- Sato, Takuya R. Bioelectrodes. 3,982,529, Cl. 2.06 E-.
- Satoh, Masaaki: *See*—
  - Takahashi, Nobuaki; Nishikawa, Kazunori; Iwasaki, Yoshiki; Satoh, Masaaki; Ohba, Katsuhiro; Nakamura, Shinji; Sawada, Tatsuo; Ohsaki, Nobuhide; Itoh, Yasuo; Suda, Nobuaki; Okabe, Yasuhisa; and Ozaki, Hideaki, 3,983,500.
- Satoh, Takao; and Horino, Kazutaka, to Yamaha, Hatsudoki Kabushiki Kaisha. Bicycle suspension. 3,982,770, Cl. 280-284.000.
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- Satomi, Takeo; Mukai, Kunio; Mine, Akihiko; Hino, Naganori; Tateishi, Kohshi; and Hirano, Masachika, to Sumitomo Chemical Company, Limited. Organo phosphorus herbicides. 3,982,921, Cl. 71-87.000.
- Satterwhite, Charles R., to Unit Rig and Equipment Co. Two wheel excavating and loading system. 3,982,340, Cl. 37-190.000.
- Satterwhite, Charles R., to Unit Rig and Equipment Co. Transverse oscillation for excavating and loading system. 3,982,341, Cl. 37-190.000.
- Satya, Akella V. S.: *See*—
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Thacker, Louis H., to United States of America, Energy Research and Development Administration. Compact fast analyzer of rotary cuvette type. 3,982,838, Cl. 356-201.000.
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Tricini, John D., to Kerotest Manufacturing Corporation. Back-up seal for diaphragm valve. 3,982,729, Cl. 251-214.000.
Trifiro, Ferruccio; Villa, Pierluigi; and Cairati, Luciano, to Societa' Italiana Resine S.I.R. S.p.A. Process for preparing a catalyst for the oxidation of methanol to formaldehyde. 3,983,073, Cl. 252-470.000.
Trobisch, Heiner; and Schwinn, Horst, to Behringwerke Aktiengesellschaft. Preparation of a diagnostic agent for measuring the coagulability of blood. 3,983,004, Cl. 195-99.000.
Troger, Jurgen; Weiberg, Otto; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of 1,1'-peroxydicyclohexylamine. 3,983,131, Cl. 260-307.0FB.
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Tschirky, John E.; and Geczy, Bela A., to Smith International Corporation, Inc. Floating flow restrictors for fluid motors. 3,982,859, Cl. 418-48.000.
Tsuboi, Takashi; Narita, Hiroshi; and Higuchi, Toru, to Hitachi, Ltd. Electric braking control apparatus for DC motor. 3,983,465, Cl. 318-376.000.
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- Valenti, Mario Capella; and Samaranch, Jorge Capella. Mechanical prosthesis of the knee. 3,982,279, Cl. 3-27.000.
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- Van Brussel, William R.; Lestage, Joseph C.; and Hartman, Wayne J., to United States of America, Army. Dispenser for explosives having adjustable trap chamber. 3,982,673, Cl. 222-306.000.
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- Vanderpool, Charles C., to BMT Manufacturing Corporation. Automatic bagging machine. 3,982,377, Cl. 53-66.000.
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- Van Dyken, Andrew. Cruise control apparatus for hand grip throttle control. 3,982,446, Cl. 74-488.000.
- Van Gelder, Josephus Ludovicus Hubertus; Raeymaekers, Alfons Herman Margaretha; Roevens, Leopold Frans Corneel; and Van Laerhoven, Willy Joannes, to Janssen Pharmaceutica N.V. 2-Substituted imidazolines. 3,983,133, Cl. 260-309.600.
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- Van Ostrom, David L., to General Motors Corporation. Throttle motion control device. 3,982,510, Cl. 123-103.00E.
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- Vie, Christian, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Switch having a matrix of relays. 3,983,331, Cl. 179-18.0GE.
- Vigelius, Wolf-Dieter; and Marinis, Spyridon, to Warner-Lambert Company. Novel 1-aryl-2-arylalkyl-3-or-4-[4'-(substituted-alkyl)-piperazino-1']-butanols-2 or-butenes-1, and methods of manufacture thereof. 3,983,089, Cl. 260-240.00K.
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- Vitins, Michael, to BBC Brown Boveri & Company Limited. Method and apparatus for detecting a fault location at an electrical conductor. 3,983,377, Cl. 235-151.310.
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- Vogtlin, Karl; Zimmermann, Hans; and Schultze, Hartmut, to Kienzler Apparate GmbH. Apparatus for recording of an annular record carrier. 3,983,566, Cl. 346-44.000.
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- Waldron, David W., to Lowndes Engineering Co., Inc. Cab mounted remote control apparatus. 3,982,351, Cl. 43-129.000.
- Walker, Amy Thelma. Skirt, or slacks supporting brassiere. 3,982,547, Cl. 128-452.000.
- Walker, Grant W., to Dynamics Research and Manufacturing, Inc. Impact barrier and restraint. 3,982,734, Cl. 256-13.100.
- Walker, John A.; and Dimitri, Dimitri S., to Datametrics Corporation. Electrical fluid heater. 3,983,359, Cl. 219-284.000.
- Wallace, Kenneth A., to North Electric Company. Drive circuit for power switching device. 3,983,418, Cl. 307-270.000.
- Wallace, Maynard. Fishing rod handle and reel. 3,982,348, Cl. 43-20.000.
- Wallace, Richard G. Seal tester. 3,982,421, Cl. 73-40.000.
- Walley, Esmet, to Westinghouse Air Brake Company. Brake apparatus to provide power cut off and a service brake application upon train separation. 3,982,791, Cl. 303-3.000.
- Walsh, Edward N., to Stauffer Chemical Company. Methoxy-substituted cyanophenyl ester derivatives of phosphorus acids. 3,983,188, Cl. 260-940.000.
- Wanderer, Herbert J., to Denver Plastics, Inc. Bung for a barrel. 3,982,649, Cl. 217-108.000.
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- Ward, Ronald C.; and Kosten, Richard B., to GTE Automatic Electric Laboratories Incorporated. Cord adapter. 3,982,809, Cl. 339-91.00R.
- Wardle, Glynn Arthur, to Imperial Chemical Industries Limited. Method of making a thermoplastic pile sheet. 3,983,278, Cl. 428-92.000.
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- Watanabe, Hironori: *See—*
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- Waterhouse, Norman Howard, to BICC Limited. Laying cables and the like under water. 3,982,403, Cl. 61-72.400.
- Waters, James B., Jr. Piano-like musical instrument. 3,982,463, Cl. 84-476.000.
- Watkins, Laurence Shrapnell, to Western Electric Company, Inc. Method for measuring the parameters of optical fibers. 3,982,816, Cl. 356-103.000.
- Weaver, Norman D., to Continental Can Company, Inc. Process of packaging edible products containing exposed bones. 3,983,258, Cl. 426-307.000.
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- Weiss, Philip; and Cheever, Gordon D., to General Motors Corporation. Powdered acrylic paint composition and method. 3,983,263, Cl. 427-27.000.
- Wentz, Edward A.; and Pyles, Wayne Douglas, to American Chain & Cable Company, Inc. Sorter induction system. 3,982,625, Cl. 198-572.000.
- Wentzell, Joseph M., to United Technologies Corporation. Method of forming uniform density articles from powder metals. 3,982,934, Cl. 75-208.00R.
- Wenz, William. Retrofit improvements in tong head assemblies. 3,982,919, Cl. 65-172.000.
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- White, Robert J., to Chevron Research Company. Hydrotreating catalyst and process. 3,983,029, Cl. 208-59.000.
- White, William P., Jr. Machine for driving spring pins. 3,982,679, Cl. 227-116.000.
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- **Wiggill, John Bentley, to Du Pont de Nemours, E. I., and Company. Removal of chloride impurities from an adiponitrile feed by distillation in the presence of a high boiling amine. 3,983,011, Cl. 203-59.000.**
- **Wiggins, William R.:** *See—*
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- **Wild, Ernst, to Electrowatt AG. Double-wall facade element for buildings having an overpressure ventilating or air conditioning installation. 3,982,475, Cl. 98-31.000.**
- **Wild, Fred A.; Romance, Joseph S.; and Richert, Carson T., to Radiant Technology Corporation. Electric heating apparatus for heating corrosive solutions. 3,983,361, Cl. 219-433.000.**
- **Wild, Hiram Leslie, to Dunlop Limited. Pneumatic tires. 3,982,578, Cl. 152-358.000.**
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- **Willems, Jozef Frans, to AGFA-GEVAERT, N.V. Development of silver halide emulsions. 3,982,945, Cl. 96-66.00R.**
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- **Wilson, Jack A., to Clayton Manufacturing Company. Grooved wheel-contact rollers for vehicle testing apparatus. 3,982,428, Cl. 73-126.000.**
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- **Wilson, Walter M.; and Katzbeck, John W., Jr., to I-T-E Imperial Corporation. Plug-in electric contact with improved contact finger support and shielding. 3,982,806, Cl. 339-64.00R.**
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  - Hamrick, Joseph T.; and Rose, Leslie C., 3,982,592.
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- Wyeth, Nathaniel Convers; and Arnoth, Frank William, to Du Pont de Nemours, E. I., and Company. Apparatus for expanding sealing a laminated plastic preform. 3,982,877, Cl. 425-503.000.
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- Zappe, Hans H., to International Business Machines Corporation. Phase-to-pulse conversion circuits incorporating Josephson devices and superconducting interconnection circuitry. 3,983,546, Cl. 340-173.100.
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  - Ehrreich, Stewart J.; and Zitowitz, Lester, 3,983,249.
- Zoller, Heinrich, to Swiss Aluminium Ltd. Aluminum-copper-nickel alloy for the production of heat resistant pans and utensils coated with enamels and/or other non-metallic materials and corresponding aluminous metal articles. 3,983,274, Cl. 428-35.000.
- Zolss, Gerhard; Pittner, Heribert; Stormann-Menninger-Lerchenthal, Heimo; and Lindner, Irmgard, to Chemie Linz Aktiengesellschaft. Phenoxypropylamine derivatives. 3,983,169, Cl. 260-501.170.
- Zucker, Richard S., to CBS Inc. Magnetic recording medium. 3,983,302, Cl. 428-425.000.
- Zurfluh, Rene: *See—*
  - Chodnekar, Madhukar Subraya; Schwieter, Ulrich; Loeliger, Peter; Pfiffner, Albert; Suchy, Milos; and Zurfluh, Rene, 3,983,247.

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER TRIAL VOLUNTARY PROTEST PROGRAM

JANUARY 28, 1975 NOW ISSUED AS PATENTS

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 24,017	3,914,140	Oct. 21, 1975	B 288,018	3,925,239	Dec. 9, 1975
B 24,018	3,914,206	Oct. 21, 1975	B 288,627	3,916,179	Oct. 28, 1975
[redacted]	3,914,141	Oct. 21, 1975	B 288,638	3,925,132	Dec. 9, 1975
B 78,331	3,914,142	Oct. 21, 1975	B 289,175	3,924,309	Dec. 9, 1975
B 112,422	3,913,484	Oct. 21, 1975	B 289,471	3,917,184	Nov. 4, 1975
B 150,560	3,913,654	Oct. 21, 1975	B 289,523	3,921,166	Nov. 18, 1975
B 176,995	3,915,773	Oct. 28, 1975	B 289,883	3,925,063	Dec. 9, 1975
B 178,475	3,944,602	Mar. 16, 1976	B 290,328	3,924,838	Dec. 9, 1975
B 189,772	3,925,367	Dec. 9, 1975	B 291,104	3,925,007	Dec. 9, 1975
B 189,773	3,925,405	Dec. 9, 1975	B 291,694	3,925,339	Dec. 9, 1975
B 190,679	3,925,346	Dec. 9, 1975	B 292,054	3,915,877	Oct. 28, 1975
B 198,810	3,916,043	Oct. 28, 1975	B 292,126	3,914,465	Oct. 21, 1975
B 204,161	3,924,605	Dec. 9, 1975	B 292,140	3,914,340	Oct. 21, 1975
B 207,272	3,914,123	Oct. 21, 1975	B 292,300	3,927,167	Dec. 16, 1975
B 211,786	3,914,300	Oct. 21, 1975	B 292,563	3,923,653	Dec. 2, 1975
B 213,211	3,925,269	Dec. 9, 1975	B 293,378	3,923,725	Dec. 2, 1975
[redacted]	3,914,471	Oct. 21, 1975	B 293,437	3,913,414	Oct. 21, 1975
B 222,188	3,914,739	Oct. 21, 1975	B 294,103	3,924,396	Dec. 9, 1975
B 223,621	3,925,526	Dec. 9, 1975	B 294,579	3,916,737	Nov. 4, 1975
B 224,323	3,925,476	Dec. 9, 1975	B 294,673	3,916,023	Oct. 28, 1975
B 233,383	3,925,424	Dec. 9, 1975	B 295,481	3,921,593	Nov. 25, 1975
B 233,741	3,925,326	Dec. 9, 1975	B 295,674	3,916,107	Oct. 28, 1975
B 235,011	3,925,086	Dec. 9, 1975	B 295,860	3,923,880	Dec. 2, 1975
B 235,925	3,924,949	Dec. 9, 1975	B 299,267	3,917,106	Nov. 4, 1975
[redacted]	3,925,187	Dec. 9, 1975	B 300,353	3,921,734	Nov. 25, 1975
B 237,953	3,924,051	Dec. 2, 1975	B 302,271	3,929,130	Dec. 30, 1975
B 239,289	3,922,711	Nov. 25, 1975	B 302,692	3,924,598	Dec. 9, 1975
B 241,433	3,923,711	Dec. 2, 1975	B 302,836	3,923,573	Dec. 2, 1975
B 245,194	3,919,179	Nov. 11, 1975	B 302,998	3,928,233	Dec. 23, 1975
B 248,916	3,920,862	Nov. 18, 1975	B 303,011	3,930,188	Dec. 30, 1975
B 251,109	3,914,148	Oct. 21, 1975	B 303,655	3,924,642	Dec. 9, 1975
B 251,635	3,914,149	Oct. 21, 1975	B 303,702	3,914,131	Oct. 21, 1975
B 252,947	3,923,803	Dec. 2, 1975	B 304,687	3,924,783	Dec. 9, 1975
B 254,211	3,917,677	Nov. 4, 1975	B 305,417	3,915,882	Oct. 28, 1975
B 254,708	3,923,878	Dec. 2, 1975	B 305,868	3,921,463	Nov. 25, 1975
B 255,756	3,923,781	Dec. 2, 1975	B 305,881	3,923,478	Dec. 2, 1975
B 256,334	3,924,988	Dec. 9, 1975	B 306,829	3,925,411	Dec. 9, 1975
B 256,936	3,925,513	Dec. 9, 1975	B 306,938	3,916,050	Oct. 28, 1975
B 258,687	3,914,221	Oct. 21, 1975	B 307,677	3,915,276	Oct. 28, 1975
B 259,236	3,924,874	Dec. 9, 1975	B 308,661	3,924,349	Dec. 9, 1975
B 259,274	3,928,688	Dec. 23, 1975	B 308,892	3,919,624	Nov. 11, 1975
B 260,455	3,925,634	Dec. 9, 1975	B 309,207	3,914,743	Oct. 21, 1975
B 260,945	3,925,250	Dec. 9, 1975	B 309,499	3,922,002	Nov. 25, 1975
B 261,378	3,913,468	Oct. 21, 1975	B 309,681	3,927,374	Dec. 16, 1975
B 261,828	3,925,551	Dec. 9, 1975	B 309,755	3,919,468	Nov. 11, 1975
B 262,241	3,925,528	Dec. 9, 1975	B 309,756	3,914,136	Oct. 21, 1975
B 262,287	3,921,209	Nov. 18, 1975	B 309,860	3,922,485	Nov. 25, 1975
B 262,378	3,914,410	Oct. 21, 1975	B 310,149	3,924,705	Dec. 9, 1975
B 264,257	3,928,665	Dec. 23, 1975	B 310,271	3,923,689	Dec. 2, 1975
B 264,833	3,923,566	Dec. 2, 1975	B 311,313	3,925,142	Dec. 9, 1975
B 265,369	3,925,245	Dec. 9, 1975	B 311,317	3,918,975	Nov. 11, 1975
B 265,727	3,914,479	Oct. 21, 1975	B 311,413	3,925,515	Dec. 9, 1975
B 265,862	3,915,915	Oct. 28, 1975	B 311,910	3,924,357	Dec. 9, 1975
B 266,195	3,923,599	Dec. 2, 1975	B 311,911	3,925,233	Dec. 9, 1975
B 269,673	3,914,377	Oct. 21, 1975	B 312,139	3,925,530	Dec. 9, 1975
B 270,089	3,923,875	Dec. 2, 1975	B 312,477	3,923,714	Dec. 2, 1975
B 271,104	3,925,400	Dec. 9, 1975	B 313,098	3,925,045	Dec. 9, 1975
B 274,945	3,924,992	Dec. 9, 1975	B 313,531	3,925,548	Dec. 9, 1975
B 275,426	3,925,168	Dec. 9, 1975	B 313,594	3,924,626	Dec. 9, 1975
B 276,271	3,916,028	Oct. 28, 1975	B 313,900	3,915,932	Oct. 28, 1975
B 276,560	3,916,030	Oct. 28, 1975	B 314,049	3,920,588	Nov. 18, 1975
B 276,993	3,948,823	Apr. 6, 1976	B 314,255	3,923,764	Dec. 2, 1975
B 277,449	3,924,048	Dec. 2, 1975	B 314,271	3,921,845	Nov. 25, 1975
B 278,491	3,921,170	Nov. 18, 1975	B 314,489	3,925,016	Dec. 9, 1975
B 278,991	3,914,469	Oct. 21, 1975	B 314,800	3,930,087	Dec. 30, 1975
B 279,583	3,923,749	Dec. 2, 1975	B 314,977	3,923,459	Dec. 2, 1975
[redacted]	3,925,378	Dec. 9, 1975	B 315,363	3,920,673	Nov. 18, 1975
B 280,395	3,919,604	Nov. 11, 1975	B 315,397	3,923,963	Dec. 2, 1975
B 281,341	3,920,643	Nov. 18, 1975	B 315,731	3,914,108	Oct. 21, 1975
B 281,943	3,924,013	Dec. 2, 1975	B 316,014	3,920,861	Nov. 18, 1975
[redacted]	3,913,483	Oct. 21, 1975	B 316,239	3,913,546	Oct. 21, 1975
[redacted]	3,924,997	Dec. 9, 1975	B 316,917	3,925,494	Dec. 9, 1975
B 282,819	3,982,932	Sep. 28, 1976	B 317,080	3,925,324	Dec. 9, 1975
B 283,124	3,923,512	Dec. 2, 1975	B 317,347	3,923,552	Dec. 2, 1975
[redacted]	3,925,011	Dec. 9, 1975	B 317,624	3,925,167	Dec. 9, 1975
[redacted]	3,913,722	Oct. 21, 1975	B 318,195	3,915,699	Oct. 28, 1975
B 284,427	3,952,812	Apr. 27, 1976	B 318,618	3,915,365	Oct. 28, 1975
[redacted]	3,923,680	Dec. 2, 1975	B 318,640	3,925,186	Dec. 9, 1975
[redacted]	3,914,303	Oct. 21, 1975	B 318,745	3,916,571	Nov. 4, 1975
[redacted]	3,914,129	Oct. 21, 1975	B 319,226	3,925,082	Dec. 9, 1975
B 286,614	3,924,696	Dec. 9, 1975	B 319,339	3,916,056	Oct. 28, 1975
B 286,913	3,928,696	Dec. 23, 1975	B 319,402	3,919,568	Nov. 11, 1975
B 287,164	3,914,139	Oct. 21, 1975	B 319,414	3,928,666	Dec. 23, 1975
B 287,270	3,924,825	Dec. 9, 1975	B 320,261	3,924,033	Dec. 2, 1975
B 287,275	3,925,141	Dec. 9, 1975	B 320,452	3,925,083	Dec. 9, 1975
B 287,373	3,918,568	Nov. 11, 1975	B 320,603	3,915,571	Oct. 28, 1975

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DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 321,018	3,921,623	Nov. 25, 1975	B 346,210	3,916,142	Oct. 28, 1975
B 321,101	3,917,163	Nov. 4, 1975	B 346,350	3,915,824	Oct. 28, 1975
B 321,938	3,923,889	Dec. 2, 1975	B 346,487	3,927,406	Dec. 16, 1975
B 322,182	3,925,390	Dec. 9, 1975	B 346,585	3,913,820	Oct. 21, 1975
B 322,239	3,920,973	Nov. 18, 1975	B 346,613	3,923,545	Dec. 2, 1975
B 322,564	3,914,373	Oct. 21, 1975	B 346,901	3,915,583	Oct. 28, 1975
B 322,611	3,920,863	Nov. 18, 1975	B 348,083	3,923,774	Dec. 2, 1975
B 322,777	3,924,382	Dec. 9, 1975	B 348,383	3,923,452	Dec. 2, 1975
B 323,127	3,923,967	Dec. 2, 1975	B 348,495	3,914,654	Oct. 21, 1975
B 323,191	3,914,566	Oct. 21, 1975	B 348,558	3,914,109	Oct. 21, 1975
B 323,203	3,916,165	Oct. 28, 1975	B 349,141	3,915,363	Oct. 28, 1975
B 323,568	3,920,536	Nov. 18, 1975	B 349,177	3,914,033	Oct. 21, 1975
B 323,666	3,924,568	Dec. 9, 1975	B 349,231	3,915,831	Oct. 28, 1975
B 324,495	3,928,664	Dec. 23, 1975	B 349,321	3,916,103	Oct. 28, 1975
B 324,503	3,928,524	Dec. 23, 1975	B 349,948	3,914,557	Oct. 21, 1975
B 324,505	3,925,294	Dec. 9, 1975	B 350,025	3,927,415	Dec. 16, 1975
B 324,739	3,924,990	Dec. 9, 1975	B 350,143	3,924,419	Dec. 9, 1975
B 324,879	3,923,538	Dec. 2, 1975	B 350,219	3,917,802	Nov. 4, 1975
B 325,102	3,924,355	Dec. 9, 1975	B 350,245	3,914,331	Oct. 21, 1975
B 325,262	3,921,304	Nov. 25, 1975	B 350,523	3,924,726	Dec. 9, 1975
B 326,514	3,925,080	Dec. 9, 1975	B 350,589	3,927,419	Dec. 16, 1975
B 327,109	3,925,350	Dec. 9, 1975	B 350,708	3,923,871	Dec. 2, 1975
B 327,363	3,923,504	Dec. 2, 1975	B 350,843	3,915,461	Oct. 28, 1975
B 327,612	3,925,620	Dec. 9, 1975	B 351,055	3,914,074	Oct. 21, 1975
B 327,674	3,918,540	Nov. 11, 1975	B 351,218	3,914,186	Oct. 21, 1975
B 327,899	3,925,674	Dec. 9, 1975	B 351,222	3,921,179	Nov. 18, 1975
B 328,164	3,914,703	Oct. 21, 1975	B 351,348	3,923,563	Dec. 2, 1975
B 328,200	3,916,031	Oct. 28, 1975	B 351,421	3,914,733	Oct. 21, 1975
B 328,205	3,914,106	Oct. 21, 1975	B 351,493	3,914,758	Oct. 21, 1975
B 328,210	3,914,275	Oct. 21, 1975	B 351,535	3,915,239	Oct. 28, 1975
B 328,870	3,916,486	Nov. 4, 1975	B 351,665	3,919,701	Nov. 11, 1975
B 329,115	3,924,727	Dec. 9, 1975	B 351,672	3,914,000	Oct. 21, 1975
B 329,476	3,920,562	Nov. 18, 1975	B 351,735	3,913,385	Oct. 21, 1975
B 329,612	3,925,128	Dec. 9, 1975	B 351,863	3,914,700	Oct. 21, 1975
B 329,787	3,920,688	Nov. 18, 1975	B 351,883	3,924,657	Dec. 9, 1975
B 329,816	3,923,947	Dec. 2, 1975	B 351,926	3,914,133	Oct. 21, 1975
B 330,536	3,925,452	Dec. 9, 1975	B 351,939	3,913,480	Oct. 21, 1975
B 330,828	3,913,589	Oct. 21, 1975	B 352,445	3,928,746	Dec. 23, 1975
B 331,417	3,914,157	Oct. 21, 1975	B 352,934	3,913,692	Oct. 21, 1975
B 331,557	3,916,577	Nov. 4, 1975	B 352,950	3,922,[illegible]90	Nov. 25, 1975
B 331,895	3,916,403	Oct. 28, 1975	B 352,965	3,921,[illegible]26	Nov. 25, 1975
B 332,527	3,924,017	Dec. 2, 1975	B 353,317	3,916,446	Nov. 4, 1975
B 332,811	3,924,359	Dec. 9, 1975	B 353,387	3,924,404	Dec. 9, 1975
B 333,876	3,921,208	Nov. 18, 1975	B 353,546	3,913,273	Oct. 21, 1975
B 333,928	3,927,172	Dec. 16, 1975	B 354,008	3,925,081	Dec. 9, 1975
B 334,251	3,924,719	Dec. 9, 1975	B 354,098	3,925,547	Dec. 9, 1975
B 334,868	3,919,469	Nov. 11, 1975	B 354,145	3,927,279	Dec. 16, 1975
B 334,985	3,923,912	Dec. 2, 1975	B 354,296	3,914,580	Oct. 21, 1975
B 335,670	3,928,686	Dec. 23, 1975	B 354,510	3,928,658	Dec. 23, 1975
B 335,741	3,925,615	Dec. 9, 1975	B 354,889	3,913,204	Oct. 21, 1975
B 335,773	3,920,953	Nov. 18, 1975	B 354,979	3,914,251	Oct. 21, 1975
B 336,129	3,923,606	Dec. 2, 1975	B 355,095	3,925,656	Dec. 9, 1975
B 336,243	3,925,422	Dec. 9, 1975	B 355,269	3,914,561	Oct. 21, 1975
B 336,345	3,925,179	Dec. 9, 1975	B 355,510	3,913,704	Oct. 21, 1975
B 336,652	3,914,211	Oct. 21, 1975	B 355,595	3,925,649	Dec. 9, 1975
B 336,902	3,918,897	Nov. 11, 1975	B 355,876	3,925,685	Dec. 9, 1975
B 336,946	3,919,425	Nov. 11, 1975	B 356,032	3,928,636	Dec. 23, 1975
B 336,978	3,923,968	Dec. 2, 1975	B 356,253	3,925,025	Dec. 9, 1975
B 337,235	3,919,386	Nov. 11, 1975	B 356,602	3,927,393	Dec. 16, 1975
B 337,409	3,925,258	Dec. 9, 1975	B 356,724	3,924,586	Dec. 9, 1975
B 337,442	3,913,658	Oct. 21, 1975	B 357,039	3,924,406	Dec. 9, 1975
B 337,703	3,914,690	Oct. 21, 1975	B 357,057	3,913,738	Oct. 21, 1975
B 337,787	3,923,506	Dec. 2, 1975	B 357,131	3,924,453	Dec. 9, 1975
B 339,057	3,924,822	Dec. 9, 1975	B 357,402	3,914,180	Oct. 21, 1975
B 339,218	3,925,121	Dec. 9, 1975	B 357,682	3,924,973	Dec. 9, 1975
B 339,699	3,933,527	Jan. 20, 1976	B 357,803	3,919,470	Nov. 11, 1975
B 339,838	3,930,221	Dec. 30, 1975	B 358,174	3,924,958	Dec. 9, 1975
B 340,212	3,922,645	Nov. 25, 1975	B 358,244	3,913,411	Oct. 21, 1975
B 340,833	3,925,208	Dec. 9, 1975	B 358,311	3,923,561	Dec. 2, 1975
B 341,579	3,913,363	Oct. 21, 1975	B 358,939	3,924,713	Dec. 9, 1975
B 342,084	3,928,694	Dec. 23, 1975	B 359,174	3,914,117	Oct 21, 1975
B 342,423	3,925,334	Dec. 9, 1975	B 359,187	3,924,525	Dec. 9, 1975
B 342,886	3,923,507	Dec. 2, 1975	B 359,540	3,915,235	Oct. 28, 1975
B 343,136	3,919,453	Nov. 11, 1975	B 359,740	3,936,212	Feb. 3, 1976
B 343,240	3,925,693	Dec. 9, 1975	B 359,791	3,929,430	Dec. 30, 1975
B 343,506	3,916,021	Oct. 28, 1975	B 359,825	3,921,344	Nov. 25, 1975
B 343,577	3,921,165	Nov. 18, 1975	B 359,946	3,914,132	Oct. 21, 1975
B 344,203	3,928,719	Dec. 23, 1975	B 359,947	3,914,653	Oct. 21, 1975
B 344,479	3,924,042	Dec. 2, 1975	B 360,208	3,923,750	Dec. 2, 1975
B 345,060	3,916,018	Oct. 28, 1975	B 360,296	3,916,720	Nov. 4, 1975
B 345,384	3,916,146	Oct. 28, 1975	B 360,719	3,915,715	Oct. 28, 1975
B 345,390	3,940,343	Feb. 24, 1976	B 360,910	3,925,696	Dec. 9, 1975
B 345,422	3,914,392	Oct. 21, 1975	B 361,265	3,923,569	Dec. 2, 1975
B 345,527	3,927,365	Dec. 16, 1975	B 361,443	3,927,405	Dec. 16, 1975
B 345,567	3,913,985	Oct. 21, 1975	B 361,569	3,914,554	Oct. 21, 1975
B 346,165	3,913,293	Oct. 21, 1975	B 361,604	3,922,702	Nov. 25, 1975

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DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 361,734	3,915,764	Oct. 28, 1975	B 386,403	3,924,895	Dec. 9, 1975
B 362,589	3,914,012	Oct. 21, 1975	B 386,592	3,925,305	Dec. 9, 1975
B 363,205	3,923,744	Dec. 2, 1975	B 387,039	3,924,510	Dec. 9, 1975
B 363,337	3,928,639	Dec. 23, 1975	B 387,331	3,913,701	Oct. 21, 1975
B 363,457	3,922,595	Nov. 25, 1975	B 387,363	3,927,378	Dec. 16, 1975
B 363,674	3,929,716	Dec. 30, 1975	B 387,687	3,918,151	Nov. 11, 1975
B 363,892	3,913,395	Oct. 21, 1975	B 387,761	3,914,245	Oct. 21, 1975
B 363,962	3,921,826	Nov. 25, 1975	B 387,790	3,925,380	Dec. 9, 1975
B 364,022	3,913,499	Oct. 21, 1975	B 387,818	3,918,935	Nov. 11, 1975
B 364,163	3,916,092	Oct. 28, 1975	B 388,580	3,923,712	Dec. 2, 1975
B 364,241	3,916,668	Nov. 4, 1975	B 389,070	3,914,171	Oct. 21, 1975
B 364,334	3,924,670	Dec. 9, 1975	B 389,285	3,914,631	Oct. 21, 1975
B 364,528	3,919,510	Nov. 11, 1975	B 389,327	3,924,504	Dec. 9, 1975
B 364,786	3,921,673	Nov. 25, 1975	B 389,639	3,914,626	Oct. 21, 1975
B 364,910	3,925,335	Dec. 9, 1975	B 389,726	3,921,010	Nov. 18, 1975
B 365,490	3,918,527	Nov. 11, 1975	B 389,807	3,922,623	Nov. 25, 1975
B 365,834	3,914,702	Oct. 21, 1975	B 389,932	3,913,268	Oct. 21, 1975
B 365,841	3,925,628	Dec. 9, 1975	B 389,933	3,913,267	Oct. 21, 1975
B 365,855	3,917,258	Nov. 4, 1975	B 390,679	3,913,668	Oct. 21, 1975
B 366,287	3,924,946	Dec. 9, 1975	B 390,732	3,913,878	Oct. 21, 1975
B 366,402	3,928,053	Dec. 23, 1975	B 391,184	3,914,214	Oct. 21, 1975
B 366,589	3,914,719	Oct. 21, 1975	B 391,210	3,914,220	Oct. 21, 1975
B 367,021	3,914,752	Oct. 21, 1975	B 391,437	3,915,416	Oct. 28, 1975
B 367,040	3,924,775	Dec. 9, 1975	B 391,509	3,925,175	Dec. 9, 1975
B 367,661	3,914,158	Oct. 21, 1975	B 391,675	3,916,017	Oct. 28, 1975
B 367,739	3,923,648	Dec. 2, 1975	B 392,154	3,923,809	Dec. 2, 1975
B 367,812	3,924,789	Dec. 9, 1975	B 392,242	3,926,636	Dec. 16, 1975
B 368,081	3,924,691	Dec. 9, 1975	B 392,696	3,916,175	Oct. 28, 1975
B 368,387	3,924,923	Dec. 9, 1975	B 392,732	3,914,903	Oct. 21, 1975
B 368,392	3,913,812	Oct. 21, 1975	B 392,753	3,916,341	Oct. 28, 1975
B 368,397	3,914,677	Oct. 21, 1975	B 392,894	3,914,763	Oct. 21, 1975
B 369,152	3,925,549	Dec. 9, 1975	B 393,163	3,914,535	Oct. 21, 1975
B 369,563	3,924,449	Dec. 9, 1975	B 393,970	3,914,638	Oct. 21, 1975
B 369,607	3,923,786	Dec. 2, 1975	B 394,088	3,914,740	Oct. 21, 1975
B 369,997	3,913,533	Oct. 21, 1975	B 394,188	3,924,591	Dec. 9, 1975
B 370,453	3,964,101	Jun. 15, 1976	B 394,300	3,914,159	Oct. 21, 1975
B 370,706	3,925,242	Dec. 9, 1975	B 394,712	3,916,306	Oct. 28, 1975
B 371,073	3,930,135	Dec. 30, 1975	B 395,478	3,922,577	Nov. 25, 1975
B 371,085	3,923,783	Dec. 2, 1975	B 395,496	3,919,435	Nov. 11, 1975
B 371,787	3,921,217	Nov. 18, 1975	B 395,671	3,920,418	Nov. 18, 1975
B 371,805	3,914,433	Oct. 21, 1975	B 395,889	3,913,190	Oct. 21, 1975
B 371,836	3,923,541	Dec. 2, 1975	B 396,025	3,913,869	Oct. 21, 1975
B 372,823	3,924,660	Dec. 9, 1975	B 396,551	3,921,929	Nov. 25, 1975
B 373,297	3,924,436	Dec. 9, 1975	B 397,027	3,923,736	Dec. 2, 1975
B 373,326	3,920,433	Nov. 18, 1975	B 397,527	3,913,488	Oct. 21, 1975
B 373,428	3,915,511	Oct. 28, 1975	B 397,990	3,914,848	Oct. 28, 1975
B 375,220	3,920,417	Nov. 18, 1975	B 398,262	3,913,481	Oct. 21, 1975
B 375,652	3,921,303	Nov. 25, 1975	B 398,551	3,924,924	Dec. 9, 1975
B 376,504	3,914,570	Oct. 21, 1975	B 398,597	3,913,743	Oct. 21, 1975
B 376,654	3,922,513	Nov. 25, 1975	B 398,625	3,920,996	Nov. 18, 1975
B 376,742	3,924,392	Dec. 9, 1975	B 399,292	3,914,810	Oct. 28, 1975
B 376,799	3,913,955	Oct. 21, 1975	B 399,304	3,919,567	Nov. 11, 1975
B 377,172	3,918,255	Nov. 11, 1975	B 399,349	3,925,694	Dec. 9, 1975
B 377,683	3,924,433	Dec. 9, 1975	B 399,766	3,915,667	Oct. 28, 1975
B 377,833	3,913,884	Oct. 21, 1975	B 400,080	3,925,163	Dec. 9, 1975
B 377,869	3,917,002	Nov. 4, 1975	B 400,293	3,923,719	Dec. 2, 1975
B 378,621	3,923,840	Dec. 2, 1975	B 400,310	3,915,507	Oct. 28, 1975
B 379,038	3,923,994	Dec. 2, 1975	B 401,133	3,924,443	Dec. 9, 1975
B 379,172	3,914,379	Oct. 21, 1975	B 401,992	3,924,898	Dec. 9, 1975
B 379,282	3,913,462	Oct. 21, 1975	B 402,065	3,925,413	Dec. 9, 1975
B 379,955	3,913,157	Oct. 21, 1975	B 402,555	3,914,688	Oct. 21, 1975
B 380,114	3,921,915	Nov. 25, 1975	B 403,140	3,913,486	Oct. 21, 1975
B 380,141	3,925,161	Dec. 9, 1975	B 403,355	3,913,352	Oct. 21, 1975
B 380,310	3,921,048	Nov. 18, 1975	B 403,990	3,914,684	Oct. 21, 1975
B 380,312	3,913,953	Oct. 21, 1975	B 403,996	3,916,016	Oct. 28, 1975
B 380,338	3,924,873	Dec. 9, 1975	B 404,290	3,924,918	Dec. 9, 1975
B 380,446	3,923,836	Dec. 2, 1975	B 404,437	3,915,200	Oct. 28, 1975
B 380,900	3,913,307	Oct. 21, 1975	B 405,136	3,915,565	Oct. 28, 1975
B 380,926	3,925,095	Dec. 9, 1975	B 405,137	3,915,566	Oct. 28, 1975
B 381,074	3,919,583	Nov. 11, 1975	B 405,160	3,924,821	Dec. 9, 1975
B 381,632	3,914,732	Oct. 21, 1975	B 405,248	3,926,294	Dec. 16, 1975
B 381,847	3,921,152	Nov. 18, 1975	B 405,305	3,922,111	Nov. 25, 1975
B 382,018	3,929,742	Dec. 30, 1975	B 405,360	3,913,403	Oct. 21, 1975
B 382,021	3,913,212	Oct. 21, 1975	B 405,495	3,924,577	Dec. 9, 1975
B 382,161	3,914,991	Oct. 28, 1975	B 405,938	3,920,109	Nov. 18, 1975
B 382,290	3,924,717	Dec. 9, 1975	B 406,065	3,914,199	Oct. 21, 1975
B 382,383	3,919,527	Nov. 11, 1975	B 406,357	3,924,529	Dec. 9, 1975
B 382,798	3,924,435	Dec. 9, 1975	B 406,800	3,952,708	Apr. 27, 1976
B 382,840	3,922,007	Nov. 25, 1975	B 407,736	3,924,463	Dec. 9, 1975
B 383,465	3,927,412	Dec. 16, 1975	B 407,357	3,924,614	Dec. 9, 1975
B 383,532	3,914,246	Oct. 21, 1975	B 407,728	3,925,240	Dec. 9, 1975
B 383,581	3,925,318	Dec. 9, 1975	B 408,487	3,924,046	Dec. 2, 1975
B 384,499	3,925,135	Dec. 9, 1975	B 408,749	3,914,116	Oct. 21, 1975
B 384,618	3,913,452	Oct. 21, 1975	B 409,026	3,925,497	Dec. 9, 1975
B 384,773	3,915,416	Oct. 28, 1975	B 409,220	3,915,648	Oct. 28, 1975
B 385,210	3,913,406	Oct. 21, 1975	B 409,251	3,922,620	Nov. 25, 1975

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER TRIAL VOLUNTARY PROTEST PROGRAM

JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 409,657	3,927,362	Dec. 16, 1975	B 425,345	3,922,015	Nov. 25, 1975
B 409,816	3,921,317	Nov. 25, 1975	B 425,470	3,923,796	Dec. 2, 1975
B 410,062	3,923,855	Dec. 2, 1975	B 425,539	3,916,742	Nov. 4, 1975
B 410,168	3,914,717	Oct. 21, 1975	B 425,541	3,914,051	Oct. 21, 1975
B 411,145	3,914,168	Oct. 21, 1975	B 425,572	3,923,822	Dec. 2, 1975
B 411,356	3,919,649	Nov. 11, 1975	B 427,631	3,921,433	Nov. 25, 1975
B 411,483	3,925,196	Dec. 9, 1975	B 428,177	3,914,624	Oct. 21, 1975
B 411,633	3,914,741	Oct. 21, 1975	B 428,795	3,921,056	Nov. 18, 1975
B 412,516	3,927,417	Dec. 16, 1975	B 429,442	3,923,485	Dec. 2, 1975
B 412,619	3,925,292	Dec. 9, 1975	B 430,106	3,918,941	Nov. 11, 1975
B 412,867	3,924,587	Dec. 9, 1975	B 430,140	3,922,084	Nov. 25, 1975
B 413,006	3,914,850	Oct. 28, 1975	B 430,798	3,918,204	Nov. 11, 1975
B 413,546	3,924,314	Dec. 9, 1975	B 430,944	3,922,096	Nov. 25, 1975
B 414,129	3,925,484	Dec. 9, 1975	B 432,373	3,919,670	Nov. 11, 1975
B 414,288	3,925,537	Dec. 9, 1975	B 433,587	3,914,567	Oct. 21, 1975
B 415,113	3,915,717	Oct. 28, 1975	B 435,343	3,919,244	Nov. 11, 1975
B 415,124	3,915,944	Oct. 28, 1975	B 435,844	3,925,170	Dec. 9, 1975
B 415,845	3,925,076	Dec. 9, 1975	B 437,173	3,924,627	Dec. 9, 1975
B 415,847	3,914,208	Oct. 21, 1975	B 437,172	3,913,251	Oct. 21, 1975
B 415,957	3,925,635	Dec. 9, 1975	B 437,195	3,914,618	Oct. 21, 1975
B 415,977	3,927,359	Dec. 16, 1975	B 437,450	3,922,479	Nov. 25, 1975
B 416,598	3,923,473	Dec. 2, 1975	B 438,053	3,916,013	Oct. 28, 1975
B 416,832	3,924,975	Dec. 9, 1975	B 438,706	3,925,050	Dec. 9, 1975
B 416,710	3,923,746	Dec. 2, 1975	B 439,168	3,919,676	Nov. 11, 1975
B 416,933	3,924,968	Dec. 9, 1975	B 439,669	3,921,499	Nov. 25, 1975
B 417,299	3,918,235	Nov. 11, 1975	B 440,898	3,921,789	Nov. 25, 1975
B 418,121	3,925,023	Dec. 9, 1975	B 441,024	3,913,629	Oct. 21, 1975
B 418,153	3,925,251	Dec. 9, 1975	B 441,416	3,913,851	Oct. 21, 1975
B 418,302	3,913,252	Oct. 21, 1975	B 442,280	3,914,054	Oct. 21, 1975
B 419,327	3,921,197	Nov. 18, 1975	B 442,859	3,918,570	Nov. 11, 1975
B 419,481	3,924,970	Dec. 9, 1975	B 442,919	3,925,483	Dec. 9, 1975
B 420,016	3,914,572	Oct. 21, 1975	B 444,614	3,927,996	Dec. 23, 1975
B 420,148	3,927,414	Dec. 16, 1975	B 445,471	3,914,711	Oct. 21, 1975
B 420,514	3,923,929	Dec. 2, 1975	B 445,740	3,923,612	Dec. 2, 1975
B 420,568	3,925,069	Dec. 9, 1975	B 448,571	3,924,760	Dec. 9, 1975
B 421,026	3,914,785	Oct. 21, 1975	B 449,647	3,916,797	Nov. 4, 1975
B 421,362	3,924,817	Dec. 9, 1975	B 450,499	3,920,526	Nov. 18, 1975
B 421,383	3,925,047	Dec. 9, 1975	B 450,546	3,924,417	Dec. 9, 1975
B 421,797	3,914,023	Oct. 21, 1975	B 450,927	3,913,844	Oct. 21, 1975
B 422,399	3,928,656	Dec. 23, 1975	B 455,520	3,922,543	Nov. 25, 1975
B 422,467	3,924,804	Dec. 9, 1975	B 455,775	3,914,356	Oct. 21, 1975
B 422,949	3,921,873	Nov. 25, 1975	B 456,346	3,914,531	Oct. 21, 1975
B 424,415	3,919,458	Nov. 11, 1975	B 459,425	3,928,773	Dec. 23, 1975
B 424,462	3,920,522	Nov. 18, 1975	B 461,872	3,919,586	Nov. 11, 1975
B 424,572	3,924,979	Dec. 9, 1975	B 467,684	3,915,119	Oct. 28, 1975
B 424,748	3,924,395	Dec. 9, 1975	B 468,198	3,925,340	Dec. 9, 1975
B 425,035	3,914,025	Oct. 21, 1975			

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER SECOND TRIAL VOLUNTARY PROTEST PROGRAM AND NOW ISSUED AS PATENTS

DOCUMENT NUMBER	PATENT NUMBER	PUB. DATE	ISSUE DATE
B 78,315	3,982,192	Feb. 10, 1976	Sep. 21, 1976
B 79,099	3,982,177	Jan. 13, 1976	Sep. 21, 1976
B 150,142	3,981,767	Jan. 27, 1976	Sep. 21, 1976
B 160,045	3,983,446	Jan. 13, 1976	Sep. 28, 1976
B 163,463	3,981,659	Jan. 27, 1976	Sep. 21, 1976
B 244,240	3,983,556	Jan. 13, 1976	Sep. 28, 1976
B 270,274	3,982,223	Feb. 17, 1976	Sep. 21, 1976
B 308,659	3,981,947	Jan. 27, 1976	Sep. 21, 1976
B 339,194	3,982,215	Feb. 3, 1976	Sep. 21, 1976
B 356,187	3,981,222	Jan. 20, 1976	Sep. 21, 1976
B 359,901	3,981,729	Jan. 13, 1976	Sep. 21, 1976
B 378,513	3,981,750	Jan. 27, 1976	Sep. 21, 1976
B 379,177	3,981,976	Jan. 27, 1976	Sep. 21, 1976
B 385,631	3,982,924	Jan. 27, 1976	Sep. 28, 1976
B 386,257	3,981,915	Feb. 3, 1976	Sep. 21, 1976
B 394,350	3,982,200	Jan. 13, 1976	Sep. 21, 1976
B 399,908	3,983,323	Jan. 13, 1976	Sep. 28, 1976
B 402,553	3,983,219	Feb. 17, 1976	Sep. 28, 1976
B 403,507	3,982,095	Feb. 10, 1976	Sep. 21, 1976
B 405,726	3,981,241	Jan. 13, 1976	Sep. 21, 1976
B 409,848	3,983,270	Jan. 27, 1976	Sep. 28, 1976
B 411,471	3,982,933	Feb. 17, 1976	Sep. 28, 1976
B 412,068	3,981,244	Jan. 13, 1976	Sep. 21, 1976
B 414,481	3,982,979	Jan. 20, 1976	Sep. 28, 1976
B 417,014	3,981,851	Jan. 13, 1976	Sep. 21, 1976
B 427,883	3,982,277	Jan. 20, 1976	Sep. 21, 1976
B 430,172	3,982,563	Jan. 13, 1976	Sep. 28, 1976
B 430,276	3,982,171	Jan. 20, 1976	Sep. 21, 1976
B 430,334	3,981,677	Jan. 27, 1976	Sep. 21, 1976
B 438,916	3,983,050	Jan. 13, 1976	Sep. 28, 1976
B 439,542	3,982,199	Jan. 27, 1976	Sep. 21, 1976
B 442,866	3,982,351	Feb. 24, 1976	Sep. 28, 1976
B 443,163	3,981,242	Feb. 3, 1976	Sep. 21, 1976
B 443,712	3,982,233	Jan. 27, 1976	Sep. 21, 1976
B 450,521	3,982,838	Feb. 17, 1976	Sep. 28, 1976
B 450,967	3,983,055	Jan. 13, 1976	Sep. 28, 1976
B 452,672	3,981,602	Jan. 13, 1976	Sep. 21, 1976
B 452,885	3,981,735	Jan. 27, 1976	Sep. 21, 1976
B 459,811	3,982,173	Jan. 20, 1976	Sep. 21, 1976
B 460,441	3,981,828	Jan. 13, 1976	Sep. 21, 1976
B 461,336	3,982,231	Feb. 3, 1976	Sep. 21, 1976
B 461,352	3,981,681	Jan. 13, 1976	Sep. 21, 1976
B 461,874	3,982,276	Jan. 27, 1976	Sep. 21, 1976
B 465,145	3,981,148	Jan. 27, 1976	Sep. 21, 1976
B 466,390	3,983,349	Feb. 24, 1976	Sep. 28, 1976
B 467,412	3,981,265	Jan. 13, 1976	Sep. 21, 1976
B 467,971	3,983,453	Jan. 13, 1976	Sep. 28, 1976
B 468,310	3,981,922	Jan. 13, 1976	Sep. 21, 1976
B 470,348	3,981,929	Jan. 13, 1976	Sep. 21, 1976
B 471,221	3,981,974	Jan. 13, 1976	Sep. 21, 1976
B 472,284	3,982,078	Jan. 13, 1976	Sep. 21, 1976
B 475,681	3,983,332	Jan. 20, 1976	Sep. 28, 1976
B 476,577	3,982,070	Jan. 20, 1976	Sep. 21, 1976
B 479,242	3,983,074	Feb. 17, 1976	Sep. 28, 1976
B 481,600	3,981,235	Jan. 27, 1976	Sep. 21, 1976
B 481,737	3,982,057	Jan. 13, 1976	Sep. 21, 1976
B 483,256	3,981,723	Feb. 10, 1976	Sep. 21, 1976
B 484,029	3,983,558	Feb. 10, 1976	Sep. 28, 1976
B 484,363	3,983,578	Jan. 27, 1976	Sep. 28, 1976
B 485,060	3,983,067	Feb. 17, 1976	Sep. 28, 1976
B 486,280	3,983,130	Feb. 3, 1976	Sep. 28, 1976
B 487,411	3,983,579	Feb. 24, 1976	Sep. 28, 1976
B 488,395	3,982,245	Jan. 27, 1976	Sep. 21, 1976
B 488,634	3,982,158	Jan. 20, 1976	Sep. 21, 1976
B 491,032	3,981,892	Feb. 10, 1976	Sep. 21, 1976
B 492,301	3,981,073	Jan. 13, 1976	Sep. 21, 1976
B 492,688	3,983,415	Jan. 20, 1976	Sep. 28, 1976
B 496,487	3,982,261	Jan. 20, 1976	Sep. 21, 1976
B 498,300	3,982,241	Jan. 20, 1976	Sep. 21, 1976
B 499,227	3,981,344	Jan. 27, 1976	Sep. 21, 1976
B 499,352	3,981,391	Jan. 27, 1976	Sep. 21, 1976
B 501,122	3,981,385	Feb. 17, 1976	Sep. 21, 1976
B 501,415	3,982,051	Jan. 13, 1976	Sep. 21, 1976
B 501,993	3,981,606	Jan. 13, 1976	Sep. 21, 1976
B 502,289	3,982,274	Jan. 13, 1976	Sep. 21, 1976
B 502,973	3,982,161	Jan. 27, 1976	Sep. 21, 1976
B 504,189	3,981,219	Jan. 13, 1976	Sep. 21, 1976
B 505,124	3,981,745	Feb. 10, 1976	Sep. 21, 1976
B 506,284	3,982,085	Jan. 20, 1976	Sep. 21, 1976
B 506,744	3,981,176	Jan. 13, 1976	Sep. 21, 1976
B 507,647	3,982,240	Jan. 27, 1976	Sep. 21, 1976
B 508,940	3,981,321	Feb. 17, 1976	Sep. 21, 1976
B 509,238	3,982,399	Feb. 24, 1976	Sep. 28, 1976
B 510,588	3,981,539	Jan. 27, 1976	Sep. 21, 1976
B 510,855	3,981,059	Jan. 27, 1976	Sep. 21, 1976
B 511,156	3,981,364	Jan. 27, 1976	Sep. 21, 1976
B 511,407	3,981,485	Feb. 10, 1976	Sep. 21, 1976
B 511,454	3,982,333	Feb. 24, 1976	Sep. 28, 1976
B 511,885	3,981,346	Jan. 27, 1976	Sep. 21, 1976
B 511,909	3,981,183	Feb. 17, 1976	Sep. 21, 1976
B 512,745	3,981,294	Jan. 13, 1976	Sep. 21, 1976
B 512,849	3,982,141	Feb. 3, 1976	Sep. 21, 1976
B 513,368	3,982,138	Feb. 3, 1976	Sep. 21, 1976
B 513,789	3,981,599	Feb. 3, 1976	Sep. 21, 1976
B 515,455	3,982,149	Jan. 27, 1976	Sep. 21, 1976
B 516,060	3,983,572	Feb. 17, 1976	Sep. 28, 1976
B 519,979	3,982,067	Feb. 3, 1976	Sep. 21, 1976
B 520,924	3,982,113	Jan. 27, 1976	Sep. 21, 1976
B 521,044	3,983,435	Feb. 24, 1976	Sep. 28, 1976
B 521,045	3,983,433	Feb. 24, 1976	Sep. 28, 1976
B 521,046	3,983,434	Feb. 24, 1976	Sep. 28, 1976
B 521,324	3,983,143	Jan. 27, 1976	Sep. 28, 1976
B 521,480	3,982,665	Jan. 13, 1976	Sep. 28, 1976
B 521,600	3,981,458	Jan. 27, 1976	Sep. 21, 1976
B 521,984	3,983,220	Feb. 17, 1976	Sep. 28, 1976
B 521,986	3,981,607	Feb. 3, 1976	Sep. 21, 1976
B 522,577	3,982,123	Jan. 27, 1976	Sep. 21, 1976
B 523,885	3,981,040	Feb. 17, 1976	Sep. 21, 1976
B 524,121	3,982,536	Feb. 3, 1976	Sep. 28, 1976
B 526,190	3,982,129	Feb. 17, 1976	Sep. 21, 1976
B 527,054	3,981,559	Feb. 17, 1976	Sep. 21, 1976
B 527,669	3,982,206	Jan. 13, 1976	Sep. 21, 1976
B 527,999	3,981,682	Feb. 3, 1976	Sep. 21, 1976
B 528,761	3,982,221	Feb. 10, 1976	Sep. 21, 1976
B 530,925	3,983,161	Feb. 24, 1976	Sep. 28, 1976
B 532,969	3,981,706	Jan. 13, 1976	Sep. 21, 1976
B 533,580	3,982,255	Feb. 3, 1976	Sep. 21, 1976
B 534,016	3,983,381	Feb. 3, 1976	Sep. 28, 1976
B 534,313	3,981,675	Jan. 27, 1976	Sep. 21, 1976
B 534,314	3,981,786	Feb. 10, 1976	Sep. 21, 1976
B 534,333	3,981,480	Feb. 17, 1976	Sep. 21, 1976
B 534,767	3,982,180	Feb. 3, 1976	Sep. 21, 1976
B 534,991	3,983,517	Jan. 27, 1976	Sep. 28, 1976
B 535,076	3,981,718	Jan. 20, 1976	Sep. 21, 1976
B 535,386	3,981,150	Jan. 13, 1976	Sep. 21, 1976
B 535,391	3,981,386	Jan. 27, 1976	Sep. 21, 1976
B 535,466	3,981,309	Jan. 27, 1976	Sep. 21, 1976
B 535,813	3,981,819	Jan. 27, 1976	Sep. 21, 1976
B 535,928	3,981,466	Jan. 13, 1976	Sep. 21, 1976
B 536,009	3,982,112	Jan. 27, 1976	Sep. 21, 1976
B 537,102	3,981,829	Jan. 13, 1976	Sep. 21, 1976
B 537,709	3,981,368	Jan. 13, 1976	Sep. 21, 1976
B 538,491	3,982,928	Feb. 17, 1976	Sep. 28, 1976
B 538,686	3,982,199	Jan. 13, 1976	Sep. 21, 1976
B 539,746	3,983,423	Feb. 17, 1976	Sep. 28, 1976
B 540,632	3,981,600	Jan. 13, 1976	Sep. 21, 1976
B 540,872	3,982,135	Jan. 20, 1976	Sep. 21, 1976
B 541,376	3,981,690	Feb. 17, 1976	Sep. 21, 1976
B 541,415	3,982,080	Feb. 3, 1976	Sep. 21, 1976
B 541,496	3,982,232	Jan. 27, 1976	Sep. 21, 1976
B 542,158	3,981,886	Jan. 13, 1976	Sep. 21, 1976
B 544,961	3,983,492	Jan. 13, 1976	Sep. 28, 1976
B 545,050	3,982,073	Jan. 20, 1976	Sep. 21, 1976
B 545,630	3,981,337	Jan. 27, 1976	Sep. 21, 1976
B 546,426	3,982,063	Jan. 27, 1976	Sep. 21, 1976
B 546,911	3,981,058	Jan. 13, 1976	Sep. 21, 1976
B 548,058	3,983,050	Feb. 17, 1976	Sep. 28, 1976
B 548,155	3,981,477	Jan. 13, 1976	Sep. 21, 1976
B 548,302	3,983,414	Feb. 17, 1976	Sep. 28, 1976
B 549,198	3,981,975	Jan. 13, 1976	Sep. 21, 1976
B 549,244	3,981,125	Jan. 27, 1976	Sep. 21, 1976
B 549,394	3,981,611	Jan. 27, 1976	Sep. 21, 1976
B 550,693	3,982,194	Jan. 20, 1976	Sep. 21, 1976
B 551,527	3,982,599	Jan. 13, 1976	Sep. 28, 1976
B 552,498	3,983,139	Jan. 13, 1976	Sep. 28, 1976
B 554,283	3,981,152	Jan. 27, 1976	Sep. 21, 1976
B 555,772	3,982,641	Jan. 13, 1976	Sep. 28, 1976
B 558,251	3,981,289	Jan. 13, 1976	Sep. 21, 1976
B 558,973	3,981,126	Feb. 10, 1976	Sep. 21, 1976
B 559,954	3,982,673	Feb. 3, 1976	Sep. 28, 1976
B 560,717	3,982,034	Feb. 10, 1976	Sep. 21, 1976
B 560,765	3,983,389	Feb. 3, 1976	Sep. 28, 1976
B 563,244	3,983,562	Jan. 27, 1976	Sep. 28, 1976
B 565,180	3,981,685	Jan. 27, 1976	Sep. 21, 1976
B 568,770	3,982,213	Feb. 10, 1976	Sep. 21, 1976
B 574,128	3,982,961	Feb. 17, 1976	Sep. 28, 1976
B 575,757	3,981,170	Jan. 27, 1976	Sep. 21, 1976
B 579,104	3,982,081	Jan. 27, 1976	Sep. 21, 1976
B 578,447	3,982,658	Jan. 20, 1976	Sep. 28, 1976
B 583,089	3,982,174	Jan. 27, 1976	Sep. 21, 1976
B 584,520	3,981,149	Jan. 27, 1976	Sep. 21, 1976
B 586,387	3,981,311	Feb. 3, 1976	Sep. 21, 1976
B 747,785	3,981,899	Feb. 10, 1976	Sep. 21, 1976
B 843,038	3,981,785	Feb. 3, 1976	Sep. 21, 1976

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF SEPTEMBER, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Association pour la Recherche et le Developpement des Methodes et Processus Industriels A.R.M.I.N.E.S.: *See—*
  Sindzingre, Michel Jacques; Villamayor, Michel; and Robert, Alain, Re. 28,983.
Boyles, Robert L.; and Polonsky, Samuel, to General Electric Company. Alarm clock timer with manually operable reset mechanism. Re. 28,985, Cl. 200-38.0FA.
Brooks, Warren B., to Mobil Oil Corporation. Fail-safe subsea fluid transportation system. Re. 28,978, Cl. 166-.500.
Crawford, Robert W.; and Witsiepe, William K., to Du Pont de Nemours, E. I., and Company. Blends of thermoplastic copolyester elastomers with vinyl chloride polymers. Re. 28,982, Cl. 260-873.000.
Drinkuth, William H.; and Stephens, Edward J., to Emhart Industries, Inc. Article inspection by successively televised images. Re. 28,984, Cl. 178-6.000.
Du Pont de Nemours, E. I., and Company: *See—*
  Crawford, Robert W.; and Witsiepe, William K., Re. 28,982.
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General Electric Company: *See—*
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Grad-Line, Inc.: *See—*
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Heinrich, Theodore M.; and Kernick, Andress, to Westinghouse Electric Corporation. Static inverter wherein a plurality of square waves are so summed as to produce a sinusoidal output wave. Re. 28,986, Cl. 321-5.000.
Hyde, Jack, to Koppers Company, Inc. Refractory shapes and jamb structure of coke oven battery heating wall. Re. 28,981, Cl. 202-223.000.
Johnson, Floyd C.: *See—*
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Long, George E.; Johnson, Floyd C.; and Reese, Dennis L., to Grad-Line, Inc. Control system for road grader. Re. 28,979, Cl. 172-4.500.
Mackenzie, Harold B. Discrete material transporting and dumping apparatus and method. Re. 28,980, Cl. 214-38.00D.
Mason, Edward E., to Shotcrete Engineering, Ltd Method for the construction of a retaining wall. Re. 28,977, Cl. 61-39.000.
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Polonsky, Samuel: *See—*
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ISSUED SEPTEMBER 28, 1976

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	3,982,899
284	3,982,900
	3,982,901
288E	3,982,903
288R	3,982,902
CLASS 24	
6	3,982,303
73AP	3,982,304
85R	3,982,305
243K	3,982,306
255SL	3,982,307
261R	3,982,308
CLASS 26	
9	3,982,309
CLASS 28	
1.3	3,982,310
CLASS 29	
33G	3,982,311
130	3,982,312
182	3,982,904
182.5	3,982,905
	3,982,906
182.7	3,982,907
195	3,982,908
432	3,982,313
527.4	3,982,314
572	3,982,315
577	3,982,316
588	3,982,317
603	3,982,318
624	3,982,321
628	3,982,319
630R	3,982,320
CLASS 32	
22	3,982,322
CLASS 33	
1C	3,982,323
302	3,982,324
CLASS 34	
9	3,982,325
22	3,982,326
	3,982,329
156	3,982,327
	3,982,328
CLASS 35	
13	3,982,330
31D	3,982,331
35R	3,982,332
36	3,982,333
66	3,982,334
CLASS 36	
45	3,982,335
62	3,982,336
CLASS 37	
43L	3,982,337
102	3,982,338
141T	3,982,339
190	3,982,340
	3,982,341
CLASS 40	
5	3,982,342
27.5	3,982,343
106.1	3,982,344
132R	3,982,345
CLASS 42	
68	3,982,346
84	3,982,347
CLASS 43	
20	3,982,348
42.48	3,982,349
43.1	3,982,350
129	3,982,351
CLASS 44	
66	3,982,909
CLASS 46	
17	3,982,352
22	3,982,353
149	3,982,354
CLASS 48	
61	3,982,910
CLASS 49	
74	3,982,355
CLASS 51	
34J	3,982,356
181R	3,982,357
207	3,982,358
295	3,982,359
307	3,982,911
CLASS 52	
22	3,982,360
80	3,982,361
91	3,982,362
98	3,982,363
125	3,982,365
126	3,982,364
220	3,982,366
309	3,982,367
381	3,982,368
407	3,982,369
481	3,982,370
498	3,982,371
513	3,982,372
588	3,982,373
747	Re.28,976
CLASS 53	
28	3,982,374
32	3,982,375
53	3,982,376
66	3,982,377
77	3,982,380
180R	3,982,381
252	3,982,382
CLASS 55	
35	3,982,912
55	3,982,913
257QV	3,982,914
CLASS 56	
11.6	3,982,383
106	3,982,384
	3,982,385
CLASS 58	
1R	3,982,386
50R	3,982,387
85.5	3,982,388
CLASS 60	
39.02	3,982,391
39.16R	3,982,389
	3,982,390
39.23	3,982,392
274	3,982,393
276	3,982,394
278	3,982,395
282	3,982,396
286	3,982,397
531	3,982,398
650	3,982,378
659	3,982,379
706	3,982,399
CLASS 61	
24	3,982,400
39	Re.28,977
72.4	3,982,403
93	3,982,401
109	3,982,402
CLASS 62	
57	3,982,404
181	3,982,405
339	3,982,406
441	3,982,407
CLASS 64	
9R	3,982,408
CLASS 65	
1	3,982,915
3A	3,982,916
31	3,982,917
86	3,982,918
172	3,982,919
CLASS 66	
1R	3,982,409
CLASS 68	
5E	3,982,410
177	3,982,411
200	3,982,412
CLASS 70	
229	3,982,413
CLASS 71	
1	3,982,920
87	3,982,921
88	3,982,922
100	3,982,923
118	3,982,931
CLASS 72	
50	3,982,414
88	3,982,415
214	3,982,416
453.01	3,982,417
CLASS 73	
11	3,982,418
17R	3,982,420
40	3,982,421
53	3,982,422
54	3,982,423
65	3,982,424
67.8S	3,982,425
67.9	3,982,426
101	3,982,427
126	3,982,428
	3,982,429
139	3,982,419
146	3,982,430
151	3,982,431
151.5	3,982,432
155	3,982,433
194VS	3,982,434
194M	3,982,435
233	3,982,436
410	3,982,437
423R	3,982,439
425.6	3,982,438
432R	3,982,440
CLASS 74	
5.7	3,982,441
10R	3,982,442
15.88	3,982,443
462	3,982,444
	3,982,445
488	3,982,446
572	3,982,447
687	3,982,448
CLASS 75	
.5BA	3,982,924
10R	3,982,925
41	3,982,926
60	3,982,927
84.1R	3,982,928
94	3,982,929
101R	3,982,930
118P	3,982,932
156.5	3,982,933
208R	3,982,934
337	3,982,594
CLASS 81	
57.18	3,982,449
416	3,982,450
CLASS 82	
4C	3,982,451
36R	3,982,452
CLASS 83	
23	3,982,453
74	3,982,454
105	3,982,455
490	3,982,456
516	3,982,457
685	3,982,458
CLASS 84	
1.03	3,982,460
	3,982,461
83	3,982,459
306	3,982,462
476	3,982,463
CLASS 85	
47	3,982,464
CLASS 86	
36	3,982,465
CLASS 89	
1.5G	3,982,466
1.818	3,982,467
193	3,982,468
CLASS 91	
412	3,982,469
506	3,982,470
CLASS 92	
156	3,982,471
CLASS 93	
53SD	3,982,474
61A	3,982,472
63M	3,982,473
CLASS 96	
1R	3,982,935
1.1	3,982,936
1.5	3,982,937
	3,982,938
	3,982,939
27R	3,982,940
34	3,982,941
35.1	3,982,942
38.4	3,982,943
56	3,982,944
66R	3,982,945
73	3,982,946
109	3,982,947
	3,982,948
116	3,982,949
139	3,982,950
CLASS 98	
31	3,982,475
CLASS 99	
339	3,982,476
351	3,982,477
419	3,982,478
447	3,982,479
456	3,982,480
477	3,982,481
491	3,982,482
CLASS 100	
117	3,982,483
CLASS 101	
422	3,982,484
425	3,982,485
CLASS 102	
24HC	3,982,486
70R	3,982,487
81	3,982,488
92.4	3,982,489
CLASS 106	
14	3,982,951
47Q	3,982,952
55	3,982,953
97	3,982,954
307	3,982,955
CLASS 112	
79R	3,982,490
121.12	3,982,491
CLASS 114	
.5D	3,982,492
144R	3,982,493
CLASS 115	
.5S	3,982,496
12R	3,982,494
27	3,982,495
70	3,982,497
CLASS 118	
637	3,982,498
CLASS 119	
16	3,982,499
19	3,982,500
51.14	3,982,501
CLASS 123	
[illegible]	3,982,502
32EA	3,982,503
	3,982,505
32SP	3,982,504
75B	3,982,506
97B	3,982,507
97R	3,982,508
	3,982,509
103E	3,982,510
	3,982,511
117R	3,982,512
119A	3,982,514
	3,982,515
119D	3,982,513
120	3,982,516
122D	3,982,517
143CB	3,982,518
179L	3,982,519
196A	3,982,520
CLASS 125	
16R	3,982,521
CLASS 126	
2	3,982,522
19R	3,982,523
59.5	3,982,524
99R	3,982,525
270	3,982,526
	3,982,527
CLASS 127	
46A	3,982,956
CLASS 128	
2.05T	3,982,528
24R	3,982,531
79	3,982,530
146	3,982,532
184	3,982,533
214C	3,982,534
214E	3,982,535
260	3,982,536
	3,982,537
276	3,982,538
	3,982,539
278	3,982,540
303.1	3,982,541
303.14	3,982,542
335.5	3,982,543
349R	3,982,544
350R	3,982,545
	3,982,546
452	3,982,547
CLASS 129	
27T	3,982,548
	3,982,549
CLASS 131	
140P	3,982,550
CLASS 132	
73	3,982,551
CLASS 134	
57D	3,982,552
100	3,982,965
CLASS 136	
89	3,982,963
	3,982,964
CLASS 137	
[illegible]	3,982,553
[illegible]	3,982,554
103	3,982,555
432	3,982,556
441	3,982,557
455	3,982,558
	3,982,559
527.8	3,982,560
596.2	3,982,561
625.4	3,982,562
798	3,982,563
CLASS 138	
110	3,982,564
176	3,982,565
CLASS 139	
35	3,982,566
439	3,982,567
452	3,982,568
CLASS 141	
8	3,982,569
95	3,982,570
225	3,982,571
CLASS 144	
193D	3,982,572
CLASS 148	
1.5	3,982,967
6.15R	3,982,968
12F	3,982,969
20.3	3,982,970
31.55	3,982,972
31.57	3,982,971
32	3,982,973
175	3,982,974
CLASS 149	
19.9	3,982,975
CLASS 150	
.5	3,982,573
9	3,982,574
CLASS 151	
22	3,982,575
CLASS 152	
155	3,982,576
204	3,982,577
158	3,982,578
161R	3,982,579
	3,982,580
CLASS 156	
7	3,982,976
72	3,982,977
	3,982,978
73.5	3,982,980
73.6	3,982,979
79	3,982,981
143	3,982,982
154	3,982,983
244	3,982,984
303.1	3,982,985
308	3,982,986
361	3,982,987
310	3,982,988
403	3,982,989
443	3,982,990
515	3,982,991
583	3,982,992
CLASS 160	
140	3,982,581
CLASS 162	
158	3,982,993
CLASS 164	
136	3,982,582
CLASS 165	
16	3,982,583
42	3,982,584
83	3,982,585
107	3,982,586

149	3,982,587
165	3,982,588
CLASS 166	
.5	Re.28,978
53	3,982,589
173	3,982,590
302	3,982,591
	3,982,592
CLASS 172	
4.5	Re.28,979
40	3,982,593
CLASS 174	
19	3,983,310
50	3,983,311
84R	3,983,312
121SR	3,983,313
138F	3,983,314
CLASS 175	
373	3,982,595
410	3,982,596
CLASS 176	
78	3,982,994
CLASS 178	
6	Re.28,984
	3,983,315
6.6DD	3,983,318
[illegible]	3,983,316
6.6R	3,983,317
6.7R	3,983,319
6.8	3,983,320
	3,983,328
7.6	3,983,321
[illegible]	3,983,322
58R	3,983,323
59	3,983,324
[illegible]	3,983,325
CLASS 179	
1CN	3,983,332
1E	3,983,333
1.5R	3,983,326
	3,983,327
15AT	3,983,330
[illegible]	3,983,329
18GE	3,983,331
[illegible]	3,983,334
100.41K	3,983,335
107FD	3,983,336
115.5R	3,983,337
175.2C	3,983,338
	3,983,339
175.3S	3,983,340
CLASS 180	
3R	3,982,597
9.54	3,982,598
53R	3,982,599
[illegible]	3,982,600
89R	3,982,601
114	3,982,602
131	3,982,603
158	3,982,604
CLASS 181	
47B	3,982,605
102	3,982,606
152	3,982,607
CLASS 182	
49	3,982,608
CLASS 184	
56A	3,982,609
CLASS 188	
18A	3,982,610
71.1	3,982,611
73.1	3,982,612
CLASS 190	
58B	3,982,613
CLASS 192	
30W	3,982,614
103F	3,982,615
104C	3,982,616
106.2	3,982,617
113B	3,982,618
CLASS 193	
31R	3,982,619
CLASS 194	
1G	3,982,621
1N	3,982,620
CLASS [illegible]	
[illegible]	3,982,995
[illegible]	3,982,996
31F	3,982,997
49	3,982,998
[illegible]	3,982,999
	3,983,000
66R	3,983,001
	3,983,002
96	3,983,003
99	3,983,004
[illegible]	3,983,005
	3,983,006
[illegible]	3,983,007
104	3,983,008
CLASS 197	
1R	3,982,622
CLASS 198	
362	3,982,623
486	3,982,624
572	3,982,625
626	3,982,626
CLASS 200	
11J	3,983,352
[illegible]	3,983,341
26	3,983,342
38FA	Re.28,985
47	3,983,343
61.47	3,983,350
83R	3,983,351
86.5	3,983,344
144R	3,983,345
148R	3,983,346
	3,983,353
155R	3,983,354
157	3,983,347
264	3,983,355
314	3,983,348
339	3,983,349
CLASS 202	
93	3,983,009
223	Re.28,981
CLASS 203	
15	3,983,010
59	3,983,011
CLASS 204	
15	3,983,012
39	3,983,013
58	3,983,014
59F	3,983,015
89	3,983,016
106	3,983,017
130	3,983,018
157.1R	3,983,019
	3,983,020
164	3,983,021
192	3,983,022
	3,983,023
198	3,983,024
225	3,983,025
258	3,983,026
CLASS 206	
45.14	3,982,628
106	3,982,629
369	3,982,630
380	3,982,631
CLASS 208	
8	3,983,027
9	3,983,028
59	3,983,029
253	3,983,030
CLASS 209	
75	3,982,632
CLASS 210	
15	3,983,031
22R	3,983,032
49	3,983,033
73W	3,983,034
138	3,983,035
356	3,983,036
416R	3,983,037
447	3,983,038
CLASS 211	
4	3,982,633
CLASS 212	
1	3,982,634
CLASS 214	
1BB	3,982,635
1A	3,982,636
1Q	3,982,627
6D	3,982,637
10.5R	3,982,638
16.4C	3,982,639
17CB	3,982,640
38D	Re.28,980
58	3,982,641
131A	3,982,643
301	3,982,642
394	3,982,644
620	3,982,645
670	3,982,646
750	3,982,647
776	3,982,648
CLASS 217	
108	3,982,649
CLASS 219	
10.55A	3,983,356
85A	3,983,357
124	3,983,358
284	3,983,359
301	3,983,360
433	3,983,361
521	3,983,362
	3,983,363
CLASS 220	
4B	3,982,651
4F	3,982,650
7	3,982,652
9LG	3,982,653
21	3,982,654
23.6	3,982,655
238	3,982,656
268	3,982,657
337	3,982,658
CLASS 221	
63	3,982,659
190	3,982,660
235	3,982,661
296	3,982,662
CLASS 222	
1	3,982,663
21	3,982,664
87	3,982,665
70	3,982,666
	3,982,667
95	3,982,668
146HE	3,982,669
177	3,982,670
178	3,982,671
274	3,982,672
306	3,982,673
402.21	3,982,674
CLASS 224	
26R	3,982,675
45R	3,982,676
CLASS 226	
75	3,982,677
CLASS 227	
63	3,982,678
116	3,982,679
CLASS 228	
174	3,982,680
CLASS 229	
4.5	3,982,681
14C	3,982,682
17R	3,982,683
28R	3,982,684
51BP	3,982,686
51TS	3,982,685
62	3,982,687
71	3,982,689
CLASS 232	
17	3,982,690
CLASS 233	
2	3,982,691
CLASS 235	
61.11A	3,983,365
61.11R	3,983,366
61.6E	3,983,364
92SB	3,983,367
150.21	3,983,372
150.33	3,983,369
151.1	3,983,370
151.13	3,983,376
151.3	3,983,368
	3,983,371
	3,983,373
	3,983,374
	3,983,375
151.31	3,983,377
151.32	3,983,378
152	3,983,379
154	3,983,381
156	3,983,380
173	3,983,382
176	3,983,383
CLASS 238	
349	3,982,692
CLASS 239	
88	3,982,693
96	3,982,694
136	3,982,695
265.17	3,982,696
289	3,982,697
394	3,982,698
CLASS 240	
37	3,983,384
47	3,983,385
81R	3,983,386
147	3,983,387
CLASS 241	
14	3,982,699
46.11	3,982,700
58	3,982,702
100.5	3,982,703
298	3,982,704
CLASS 242	
4B	3,982,705
18PW	3,982,707
18.1	3,982,706
36	3,982,708
55.19A	3,982,701
74	3,982,709
75.5	3,982,710
86.52	3,982,711
129	3,982,712
CLASS 244	
3.1	3,982,713
3.16	3,982,714
CLASS 248	
2	3,982,715
206A	3,982,716
313	3,982,717
421	3,982,718
489	3,982,719
CLASS 249	
81	3,982,720
139	3,982,721
CLASS 250	
223R	3,983,388
227	3,983,389
231R	3,983,390
237G	3,983,391
272	3,983,392
326	3,983,393
363S	3,983,394
370	3,983,395
402	3,983,396
406	3,983,397
445T	3,983,398
	3,983,399
468	3,983,400
492A	3,983,401
	3,983,402
492R	3,983,039
566	3,983,403
CLASS 251	
4	3,982,722
5	3,982,723
7	3,982,724
14	3,982,725
133	3,982,726
152	3,982,727
214	3,982,729
CLASS 252	
8.1	3,983,040
8.8	3,983,043
17	3,983,041
18	3,983,042
33.6	3,983,044
62.1P	3,983,045
78.5	3,983,046
119	3,983,047
178	3,983,048
299	3,983,049
301.1W	3,983,050
301.4R	3,983,051
412	3,983,052
430	3,983,053
439	3,983,054
454	3,983,055
460	3,983,072
470	3,983,073
500	3,983,074
511	3,983,075
518	3,983,076
520	3,983,077
540	3,983,078
545	3,983,079
CLASS 254	
10.5	3,982,730
93HP	3,982,731
139.1	3,982,732
173R	3,982,733
184	3,982,728
CLASS 256	
13.1	3,982,734
59	3,982,735
CLASS 259	
107	3,982,736
CLASS 260	
2.3	3,983,087
2.5AJ	3,983,081
2.5B	3,983,080
2.5S	3,983,082
17.2	3,983,084
23XA	3,983,085
	3,983,086
24	3,983,088
29.2EP	3,983,056
29.2TN	3,983,058
29.4UA	3,983,059
29.6MN	3,983,061
29.6RW	3,983,060
29.6TA	3,983,057
29.7H	3,983,062
30.2	3,983,063
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30.4N	3,983,065
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30.4R	3,983,067
33.2R	3,983,068
33.8UB	3,983,069
38	3,983,070
42	3,983,071
42.18	3,983,090
45.95H	3,983,091
47CP	3,983,093
47EN	3,983,092
77.5AM	3,983,094
112.5R	3,983,099
143	3,983,100
144	3,983,101
239.1	3,983,105
239.3B	3,983,106
239.5	3,983,111
239.55R	3,983,112
240J	3,983,107
240K	3,983,089
240R	3,983,113
243C	3,983,108
	3,983,109
247.2B	3,983,110
248AS	3,983,114
249.5	3,983,115
	3,983,116
249.8	3,983,117
251.5	3,983,118
256.4F	3,983,119
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268BQ	3,983,121
289AZ	3,983,122
293.55	3,983,123
293.62	3,983,124
294.8C	3,983,125
295R	3,983,126
295.5B	3,983,127
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307D	3,983,130
308B	3,983,132
309.6	3,983,133
309.7	3,983,134
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326.43	3,983,138
326.8	3,983,136
330.5	3,983,139
343.5	3,983,140
346.2R	3,983,141
348C	3,983,142
348.5L	3,983,143
373	3,983,145
395	3,983,146
397.3	3,983,144
412.8	3,983,147
435A	3,983,149
448R	3,983,150
448.2E	3,983,148
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473R	3,983,159
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486R	3,983,167
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562B	3,983,174
586R	3,983,175
591	3,983,176
593R	3,983,177
621R	3,983,178
653.3	3,983,179
657	3,983,180
658R	3,983,181
665R	3,983,182
680B	3,983,183
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940	3,983,188
963	3,983,098
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111	3,983,190
114R	3,983,191
115	3,983,192
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45.3	3,983,195
45.5	3,983,196
56	3,983,197
85	3,983,198
89	3,983,199
117	3,983,200
129	3,983,201
147	3,983,202
150	3,983,203
244	3,983,204
254	3,983,205
255	3,983,206
297	3,983,207
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102	3,982,737
121	3,982,738
CLASS 269	
37	3,982,739
110	3,982,740
325	3,982,741
328	3,982,742
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1	3,982,743
12	3,982,744
31	3,982,745
37	3,982,746
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4	3,982,749
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221	3,982,751
248	3,982,752
275	3,982,753
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117	3,982,755
126	3,982,756
134	3,982,757
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29R	3,982,758
31	3,982,759
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106.5B	3,982,762
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18	3,982,748
43.12	3,982,767
79.1	3,982,768
284	3,982,770
289R	3,982,771
462	3,982,772
656	3,982,773
737	3,982,774
744	3,982,769
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137E	3,982,783
CLASS 297	
1	3,982,784
160	3,982,785
284	3,982,786
317	3,982,787
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64	3,982,688
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44T	3,982,788
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14	3,982,789
31	3,982,790
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6A	3,982,792
21P	3,982,793
24A	3,982,794
52	3,982,795
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10R	3,983,405
86.3	3,983,406
146	3,983,407
221D	3,983,408
	3,983,409
221R	3,983,410
225C	3,983,411
235F	3,983,412
	3,983,413
251	3,983,414
255	3,983,415
260	3,983,416
261	3,983,417
270	3,983,418

277	3,983,419
279	3,983,420
311	3,983,421
322	3,983,422
CLASS 308	
122	3,982,796
139	3,982,797
CLASS 310	
4R	3,983,423
8.1	3,983,424
8.7	3,983,425
46	3,983,426
61	3,983,427
71	3,983,428
91	3,983,429
155	3,983,430
233	3,983,431
242	3,983,432
254	3,983,433
	3,983,434
259	3,983,435
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138A	3,982,798
270	3,982,799
305	3,982,800
306	3,982,801
348	3,982,802
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35	3,983,436
99	3,983,437
113	3,983,513
146	3,983,438
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376	3,983,465
593	3,983,467
685	3,983,468
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468	3,983,492
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110	3,983,496
155	3,983,497
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112	3,983,499
122	3,983,500
	3,983,501
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14	3,983,502
18	3,983,503
107	3,983,504
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17	3,983,506
94.5PE	3,983,508
94.5H	3,983,509
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94.5P	3,983,511
108B	3,983,512
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70R	3,983,518
71	3,983,516
72	3,983,517
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151	3,983,519
170	3,983,520
216	3,983,521
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70	3,983,522
84	3,983,523
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159	3,983,524
186	3,983,525
278	3,983,526
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35	3,983,527
195	3,983,528
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37	3,982,803
41	3,982,804
59R	3,982,805
64R	3,982,806
75MP	3,982,807
88R	3,982,808
91R	3,982,809
105	3,982,811
111	3,982,812
127R	3,982,813
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5R	3,983,529
31R	3,983,531
41R	3,983,532
52R	3,983,533
61	3,983,534
146.1AL	3,983,536
146.3SY	3,983,535
172.5	3,983,537
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173R	3,983,542
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221	3,983,550
228R	3,983,548
276	3,983,551
280	3,983,552
365R	3,983,553
413	3,983,554
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5R	3,983,555
7A	3,983,556
7.3	3,983,557
7.7	3,983,558
105R	3,983,559
781CA	3,983,560
787	3,983,561
815	3,983,562
861	3,983,563
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1	3,983,564
18	3,983,565
44	3,983,566
91	3,983,568
140A	3,983,569
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96C	3,982,810
	3,982,815
149	3,982,817
157	3,982,818
	3,982,819
160LC	3,982,820
175ML	3,982,821
211	3,982,822
214	3,982,823
294	3,982,824
313	3,982,825
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14	3,982,827
23	3,982,828
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14	3,982,826
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86	3,983,567
	3,983,570
105	3,983,571
CLASS 355	
1	3,982,829
3DD	3,982,830
5	3,982,831
8	3,982,832
11	3,982,833
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85	3,982,834
103	3,982,816
106R	3,982,835
119	3,982,836
168	3,982,837
201	3,982,838
250	3,982,839
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23	3,983,572
24	3,983,573
31	3,983,574
CLASS 358	
27	3,983,575
38	3,983,576
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1	3,983,578
4	3,983,577
78	3,983,579
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14	3,982,840
19	3,982,841
20	3,982,842
53	3,982,843
211	3,982,844
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1R	3,982,845
226	3,982,846
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9	3,982,847
53T	3,982,848
101	3,982,849
178	3,982,850
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92	3,982,851
95	3,982,852
142	3,982,853
213R	3,982,854
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270	3,982,855
360	3,982,856
519	3,982,857
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48	3,982,858
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53	3,982,860
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149	3,982,864
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27	3,983,208
106	3,983,210
128	3,983,211
137	3,983,212
198	3,983,215
240	3,983,216
242	3,983,217
244	3,983,218
249	3,983,219
283	3,983,220
395	3,983,221
	3,983,222
415P	3,983,223
498	3,983,224
514R	3,983,225
580	3,983,226
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1	3,983,227
78	3,983,209
89	3,983,228
92	3,983,229
117	3,983,230
118	3,983,231
170	3,983,213
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241	3,983,233
250	3,983,234
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263	3,983,237
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285	3,983,245
303	3,983,246
312	3,983,247
321	3,983,248
	3,983,249
326	3,983,250
333	3,983,252
340	3,983,253
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135	3,982,863
149	3,982,865
158	3,982,866
171	3,982,867
223	3,982,868
246	3,982,869
252	3,982,870
393	3,982,871
397	3,982,872
404	3,982,873
424	3,982,874
444	3,982,875
501	3,982,876
503	3,982,877
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14	3,983,255
94	3,983,256
231	3,983,257
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329	3,983,251
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195	3,983,284
212	3,983,285
225	3,983,286
241	3,983,287
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268	3,983,289
285	3,983,290
290	3,983,291
306	3,983,292
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310	3,983,294
315	3,983,295
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355	3,983,298
403	3,983,254
415	3,983,299
411	3,983,300
413	3,983,301
425	3,983,302
457	3,983,303
460	3,983,304
467	3,983,305
474	3,983,306
500	3,983,307
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19	3,982,962
34	3,982,961
57	3,982,958
136	3,982,966
163	3,982,957
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199	3,982,960
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2	3,982,878
10	3,982,879
168	3,982,880
202	3,982,881
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14	3,982,884
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106	3,982,886
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	55	241,589
	63	241,590
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	193	241,594
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	76	241,599
		241,600
	90	241,601
	93	241,602
	104	241,603
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	143	241,605
	166	241,606
	169	241,607
	177	241,608
	179	241,609
	188	241,610
	226	241,611
	233	241,612
		241,613
		241,614
	235	241,615
	261	241,616
	272	241,617
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D9—	46	241,619
	116	241,620
	134	241,622
	281	241,621
	290	241,623
		241,624
D10—	8	241,625
	15	241,626
		241,627
		241,628
	21	241,629
	32	241,630
	90	241,631
D11—	81	241,669
	146	241,666
	152	241,667
	157	241,659
D12—	74	241,633
D15—	4	241,682
	26	241,668
	122	241,675
	138	241,676
	145	241,677
D16—	26	241,681
	59	241,680
D19—	43	241,635
D22—	12	241,636
	19	241,637
	26	241,638
		241,639
	27	241,640
	31	241,641
D23—	53	241,642
	55	241,643
	57	241,644
	90.1	241,645
	93	241,646
D24—	1D	241,647
D25—	3	241,648
	56	241,632
	98	241,634
D26—	1A	241,650
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	C	241,651
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	B	241,654
D27—	12	241,657
	39	241,658
D32—	1C	241,660
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